(2) WR-ALC/LB will provide support with the USAF Standard Automated Remote Autodin Host (SARAH) message system. (Support and signature authority will be required for all outgoing message traffic, as well as downloading and distribution of incoming messages.) Also the assignment of a unique local SPO message code, such as WR-ALC/LB-USN for example, will be required to identify the Navy POC.

(3) WR-ALC/LB will provide individual communication services to include official telephone service (class "AV") and equipment, with access to DSN/FTS, leased lines and the commercial telephone system. All services shall be equal to those of the supplier unit and be provided on a non-cost reimbursable basis.

(4) 78 SFS will provide access to Robins AFB/WR-ALC facility, providing pass and identification badge(s), vehicle registration services, and parking assignments equivalent to WR-ALC co-workers of the same rate/grade.

(5) After advance approval by PMA207 Det "A", WR-ALC/FM will provide finance and cost accounting services, travel orders, and travel advances/ settlements. Travel will be in support of PMA207 and/or the C-130 SPO for conferences, meetings, job assignments, and training. Official travel will be funded by PMA207.

(6) WR-ALC/LB will provide supervisory support on policy matters where enforcement of local regulations, and procedures are required. The individual assigned will be required to comply with Robins AFB/WR-ALC regulations. The representative is exempt from any details not directly related to the position, except in case of disaster or in an emergency situation.

(7) After advance approval by PMA207 Det "A", 78 MSS/DPE will provide training classes that are or will be directly related to the performance of official duties. Funds will be provided by PMA207.

(8) 78 ABW/LGT will provide or coordinate household goods support to expeditiously process the movement of incoming and outgoing DoN civilian personnel and their effects.

(9) 78 SPTG/SV will provide normal MWR/Club services as allowed for civilian personnel at the corresponding rate/grade.

(10) 78 MDG will provide ambulance service, occupational health services and emergency medical care for treatment of job related injuries or illnesses.

(11) WR-ALC/JA will provide legal support for receiver including but not limited to procurement, administrative and civil law, labor law, and military justice.

(12) 78 CS/SCBA will provide classified mail control and official mail sorting, routing, and delivery. Postage for outgoing official correspondence will be charged to WR-ALC/LB.

(13) 78 SPTG/DPC will provide services that include but are not limited to, personal affairs, passports, personnel actions, etc.

b. PMA207/PMA207 Detachment "A" Functions and Responsibilities:

(1) Ensure the placement of a highly qualified individual with a broad knowledge of the aerospace industry, and the structure and operating procedures of NAVAIR, OPNAV, and other Navy Department/DoD organizations to include previous work experience Naval Aviation Program Management and technical knowledge of the Navy/Marine Corps C-130 Weapon System.

(2) Individual will possess a security clearance of SECRET.

(3) Assist, when required, in the adjudication of personal issues between Robins AFB/C-130 SPO, and DoN personnel. The Technical Representative is administratively assigned to PMA207 Detachment "A". For the purpose of filling the requirement for Performance Evaluations and Approval/Disapproval of Travel and Leave the "SUPERVISOR" will be the PMA207 Detachment "A".

(4) Provide personal computer equipment and software (i.e., word processing, etc.) compatible with local WR-ALC system requirements. Future hardware and software upgrades will be provided by PMA207.

3. OTHER SIGNIFICANT TECHNICAL AND ADMINISTRATIVE GUIDELINES:

a. The assigned is not an instructor and shall not be responsible for training WR-ALC personnel.

b. The assigned shall not make technical decisions concerning Navy/Marine Corps Depot Maintenance Inter-service Support Agreements (DMISA) work content or repair authorizations.

c. Technical evaluations regarding Navy/Marine Corps DMISA work requirements shall be handled through the WR-ALC engineer and forwarded to the cognizant responsible NAVAIR organization for evaluation and guidance.

d. The individual will assist WR-ALC personnel in interpretation of engineering specification(s), however, final authority remains with the cognizant responsible NAVAIR organization.

4. **TERMS OF THE MOA:** This MOA becomes effective upon signature by the parties listed below. Changes to this MOA will be made as needed by mutual consent. Either party upon giving at least 180 days written notice to the other party may cancel this MOA.

**FOR US AIR FORCE**

[redacted]

Colonel (USAF)
C-130 System Program Director
WR-ALC C-130 SPO
Robins AFB, GA

Date: 17 Jul 98

[redacted]

Colonel (USAF)
78TH Air Base Wing Commander

Date: 21 Sept 98

**FOR US NAVY**

[redacted]

Captain (USN)
Program Manager-Transport Aircraft
Program Manager Air 207
Naval Air Systems Command
Patuxent River, MD

Date: 20 Jul 98

[redacted]

Commander (USN)
C-130 Deputy Program Manager
Program Manager Air 207
Naval Air Systems Command
Patuxent River, MD

Date: 17 July 1998

[redacted]

C-130 Det "A" Team Leader
Program Manager Air 207 Det "A"
Cherry Point, NC

Date: 17 July 1998

01/24/2018

# Production Acceptance Certification Standards

## SUPERVISOR/EMPLOYEE REPORT

## Work Center: 572 CMMXS

**Supervisors ID**

[redacted] PIN

| Employee | Primary Stamp | Additional Stamps | P/P Series-Grade | Status | PIN Assgmt |
|---|---|---|---|---|---|
| [redacted] | WR-MAN-M0643 | | WG 8810-10 | Active | PIN |
| | WR-MAN-M1414 | | WG 8810-10 | Active | PIN |
| | WR-MAN-M1240 | | WG 8810-10 | Active | PIN |
| | WR-MAN-M1413 | | WG 8810-10 | Active | PIN |
| | WR-MAN-M0613 | | WG 8810-10 | Active | PIN |
| | WR-MAN-M0407 | | WL 8810-10 | Active | PIN |
| | WR-MAN-M1135 | | WG 8810-10 | Active | PIN |
| | WR-MAN-M1314 | | WG 8810-10 | Active | PIN |
| | WR-MAN-M0218 | | WG 8810-10 | Active | PIN |

Total employee(s) for supervisor [redacted] 9

End of Report

01/24/2018

# Production Acceptance Certification Standards

## SUPERVISOR/EMPLOYEE REPORT
## Work Center: 572 CMMXS

**Supervisors ID**

[redacted]

| Employee | Primary Stamp | Additional Stamps | P/P Series-Grade | Status | PIN Assgmt |
|---|---|---|---|---|---|
| [redacted] | WR-MAN-M0287 | | WG 8810-10 | Active | PIN |
| | WR-MAN-M0014 | | WG 8810-10 | Active | PIN |
| | WR-MAN-M0982 | | WG 8810-10 | Active | PIN |
| | WR-MAN-M1456 | | WG 8810-10 | Active | PIN |
| | WR-CMXG-MI0492 | WR-MAN-M0492 | WL 8810-10 | Active | PIN |
| | WR-CMXG-MI0527 | WR-MAN-M0527 | WG 8810-10 | Active | PIN |
| | WR-MAN-M0963 | | WL 8810-10 | Active | PIN |
| | WR-CMXG-MI1144 | WR-MAN-M1144 | WG 8810-10 | Active | PIN |
| | WR-MAN-M1236 | | WG 8810-10 | Active | PIN |

Total employee(s) for supervisor [redacted] 9

**End of Report**

01/24/2018

# Production Acceptance Certification Standards

## SUPERVISOR/EMPLOYEE REPORT

## Work Center: 572 CMMXS

**Supervisors ID**

(b) (6) [redacted]

PIN

| Employee | Primary Stamp | Additional Stamps | P/P Series-Grade | Status | PIN Assgmt |
|---|---|---|---|---|---|
| (b) (6) [redacted] | WR-MAN-M0497 | | WG 8810-10 | Active | PIN |
| | WR-MAN-M0440 | | WL 8810-10 | Active | PIN |
| | WR-MAN-M0451 | | WG 8810-10 | Active | PIN |
| | WR-MAN-M1142 | | WG 3806-10 | Active | PIN |
| | WR-MAN-M0799 | | WG 8810-10 | Active | PIN |
| Total employee(s) for supervisor | | | (b) (6) [redacted] | | 5 |

End of Report

01/24/2018

# Production Acceptance Certification Standards

## SUPERVISOR/EMPLOYEE REPORT
## Work Center: 572 CMMXS

**Supervisors ID**

[redacted]

| Employee | Primary Stamp | Additional Stamps | P/P Series-Grade | PIN Status | PIN Assgmt |
|---|---|---|---|---|---|
| [redacted] | WR-MAN-M1313 | | WG 3414-10 | Active | PIN |
| | WR-MAN-M1092 | | WG 3414-10 | Active | PIN |
| | WR-MAN-M1112 | | WG 3414-11 | Active | PIN |
| | WR-MAN-M0928 | | WL 3414-11 | Active | PIN |
| | WR-MAN-M0787 | | WG 3414-11 | Active | PIN |
| | WR-MAN-M1445 | | WG 3414-11 | Active | PIN |
| | | | WG 3401-05 | Active | PIN |
| | WR-MAN-M0957 | | WG 3414-11 | Active | PIN |

Total employee(s) for supervisor [redacted] 8

End of Report

PTTUZYUW RHOIAAA1234 0761318-UUUU--RHSSSUU.
ZNR UUUUU
P 281601Z NOV 17
FM COMNAVAIRSYSCOM PATUXENT RIVER MD//DRPO//
TO VMGR FOUR FIVE TWO//QA/QAO/AMO//
INFO AIG 423
CG FOURTH MAW
CG FOURTH MAW ALD
COMFLTREADCEN PATUXENT RIVER MD
COMNAVAIRSYSCOM PATUXENT RIVER MD//DRPO/QA//
FLTREADCEN EAST CHERRY POINT NC//C-130/C130FST/PROPIPT//
MALS FOUR NINE//AAMO/AMO/QA//
FLTREADCENSOUTHEAST JACKSONVILLE FL//T56FST//
COMNAVSAFECEN NORFOLK VA//90//
BT
UNCLAS //N04790//
MSGID/GENADMIN/MIL-STD-6040(SERIES)/B.0.01.00
/COMNAVAIRSYSCOM PAX DRPO/-/-/-/-/USA/UNCLASSIFIED//
SUBJ/KC-130T PROPELLER, AIRCRAFT, VARIABLE PITCH-54H60-111 CAT I EI/
/FINAL REPORT//
REF/A/DOC/COMNAVAIRFORINST 4790.2C/15JAN2017//
REF/B/MSG/COMNAVAIRSYSCOM PATUXENT RIVER/072212ZAUG2017//
REF/C/DOC/NA 01-75GAA-6/01MAY2017//
REF/D/DOC/NA 03-20VAM-1/01JAN2006//
REF/E/DOC/NA 03-20CBBJ-2/01JUN2007//
REF/F/DOC/NA 01-75GAA-2-11/01JUN2012//
REF/G/DOC/CP6819585MER1/05OCT2017//
REF/H/DOC/CP6829129MER1/16NOV2017//
REF/I/DOC/NA 03-20C-4/01MAR2003//
REF/J/DOC/TEC REPORT NO. R-2017-557/31OCT2017//
REF/K/DOC/HAMILTON STANDARD SA#767/22FEB1980//
REF/L/DOC/CP6811083MER1/03NOV2017//
NARR/REF A IS THE NAVAL AVIATION MAINTENANCE PROGRAM
REF B IS THE DEFICIENCY REPORT
REF C IS THE PERIODIC MAINTENANCE INFORMATION MANUAL FOR KC-130T AIRCRAFT, CHANGE 1 DATED 01 SEP 2017
REF D IS THE ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE MANUAL FOR T-56 PROPULSION SYSTEM VIBRATION ANALYSIS, CHANGE 8 DATED 15 JUL 2015
REF E IS THE INTERMEDIATE AND DEPOT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS BREAKDOWN FOR THE 54H60-111 PROPELLER, CHANGE 8 DATED 01 JUN2015
REF F IS THE PROPELLER ORGANIZATIONAL MAINTENANCE MANUAL FOR THE KC-130T AIRCRAFT, CHANGE 4 DATED 01 AUG 2017
REF G IS THE FAILURE ANALYSIS REPORT FOR PROPELLER BLADE SERIAL NUMBER N844995A
REF H IS THE MATERIALS ENGINEERING REPORT FOR PROPELLER BLADES ON THE MISHAP AIRCRAFT
REF I IS THE PROPELLER DEPOT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS BREAKDOWN FOR ALUMINUM ALLOY PROPELLER BLADES PART NUMBERS A7111D-2, A7111E-2, A7121B-2, CHANGE 11 DATED 15 JUL 2016
REF J IS THE RESIDUAL COMPRESSIVE STRESS ANALYSIS FOR BLADE SERIAL NUMBER N844995A
REF K IS THE ANALYTICAL INVESTIGATION OF TRAJECTORIES OF PROPELLERS

IN FREE FLIGHT AS RELATED TO P-3B AIRCRAFT BUNO 154596
REF L IS THE FAILURE ANALYSIS REPORT FOR THE CENTER FUSELAGE STRUCTURE AND THE RIGHT OUTBOARD SECTION OF THE HORIZONTAL STABILIZER

(b) (6) [redacted]
(b) (6) [redacted]AST CHERRY P/LOC:PROP IPT

GENTEXT/REMARKS/THIS MESSAGE WAS AUTO GENERATED FROM THE JDRS WEBSITE FOR NON-WEB SITE CAPABLE ORGANIZATIONS. THE REPORT WAS ORIGINATED BY:
------ FLTREADCEN EAST CHERRY POINT NC/PROPIPT.
IF RESPONSE VIA WEB SITE IS NOT POSSIBLE, TO: LINE RECIPIENTS SHOULD ADDRESS RESPONSE DIRECTLY TO:
------ FLTREADCEN EAST CHERRY POINT NC/PROPIPT WHEN APPROPRIATE. THIS DEFICIENCY REPORT WILL BE PROCESSED VIA THE JDRS WEBSITE. FOR FURTHER DETAILS OR REAL TIME STATUS VISIT THE JDRS WEB SITE AT: JDRS.MIL.

1. VMGR-452/V55215
2. V55215-17-0044
3. TMS/MDS: KC-130T, BUNO: 165000, NOMENCLATURE: PROPELLER, AIRCRAFT, VARIABLE PITCH, P/N: 54H60-111, S/N: N244247, LOT/BATCH NR: N/A, NSN: 1610 - 000309552, CONTRACT NR: UNK, WUC/LCN: 3251360
4. FLTREADCEN EAST CHERRY POINT NC
5. ICN: WC2EI-PROP-0021-17M
6. TIME SINCE NEW: 9967.3 TIME SINCE REWORK: N/A
7. LAST REPAIR DATE: 12-SEP-2011
8. BACKGROUND (DESCRIPTION OF DEFICIENCY): A. IAW REF A, REF B WAS SUBMITTED AS REQUESTED BY THE AVIATION MISHAP BOARD TO LOOK AT THE STRUCTURAL INTEGRITY OF THE NUMBER 2 PROPELLER, BLADES, BARREL, DOME ASSEMBLY AND MISCELLANEOUS COMPONENTS FOR FAILURE ANALYSIS, INDICATIONS OF OVERTORQUE OR OVERSPEED AND LAST KNOWN PROPELLER BLADE ANGLE RELATED TO THE MISHAP OF BUNO 165000.
9. DESCRIPTION OF FINDINGS (VALIDATION OF DEFICIENCY): A. PROPELLER LOGBOOK WAS REVIEWED SHOWING THAT PROPELLER SERIAL NUMBER N244247 ACCUMULATED APPROXIMATELY 1316.2 HOURS SINCE LAST OVERHAUL WITH THE FOLLOWING PROPELLER BLADES INSTALLED. BLADE 1: N844403, BLADE 2: N851258A, BLADE 3: N876052A, BLADE 4: N844995A. LETTER A DESIGNATION AT THE END OF THE PROPELLER BLADE SERIAL NUMBER INDICATES THE BLADE BUSHING BORE HAD BEEN COLD WORKED BY LOW PLASTICITY BURNISHING (LPB) IN LIEU OF SHOTPEEN. THE PROPELLER WAS LAST OVERHAULED BY WARNER ROBINS AIR LOGISTICS COMPLEX (WRALC) IN SEP 2011. BLADE NUMBER 4, SERIAL NUMBER N844995, WAS MANUFACTURED IN 1983. FIRST AVAILABLE LOGBOOK RECORD OF THIS BLADE IS FOR INSTALLATION INTO POSITION 3 OF PROPELLER N241730 IN JUL 2004 AT WRALC. PROPELLER N241730 WAS INSTALLED ON ENGINE 3 OF BUNO 165313 ON 02 AUG 2004 AND REMAINED IN SERVICE UNTIL IT WAS REMOVED FOR LEAKAGE ON 10 FEB 2007. PROPELLER SERIAL NUMBERS N244247 AND N241730 WERE INDUCTED AT WRALC IN AUG 2011. BLADE N844995 WAS OVERHAULED, RECEIVED LPB AND WENT BACK INTO SERVICE WITH PROPELLER N244247 IN POSITION 4. PROPELLER WAS BUILT UP AND MADE RFI ON 12 DEC 2012 BY FLEET READINESS CENTER WEST (FRCW) FORT WORTH, TX. (56 DAY CONDITIONAL INSPECTION CLOCK WOULD COMMENCE THIS DAY.) PROPELLER WAS ROTATED ON 02 FEB 2012 BY FRCW IN COMPLIANCE WITH CONDITIONAL INSPECTION REQUIREMENTS. PROPELLER WAS NEXT ROTATED ON 03 APR 2012, 61 DAYS AFTER THE PREVIOUS ROTATION, NO RECORDS EXIST OF THE EDDY CURRENT INSPECTION REQUIRED, A VIOLATION OF INSPECTION REQUIREMENTS PER REF C. PROPELLER WAS INSTALLED ON BUNO 162311 ON 27 APR 2012 UNTIL ITS REMOVAL ON 20 NOV 2013. PROPELLER WAS REINSTALLED THE SAME DAY ON BUNO 165162 UNTIL BEING REMOVED ON 09

OCT 2014. INSTALLATION ON BUNO 165000 OCCURRED ON 10 OCT 2014. DYNAMIC BALANCE WAS COMPLETED ON 16 NOV 2015 WITH THE APPLICATION OF 100 GRAMS IN QUADRANT A AND 66 GRAMS IN QUADRANT D, APPROXIMATELY 231 FLIGHT HOURS AFTER PROPELLER INSTALL. PER REF D PROPELLER BALANCING SHOULD OCCUR WITHIN 25 HOURS AND NO MORE THAN 75 HOURS (WITH DOCUMENTED WAIVER) AFTER PROPELLER INSTALLATION.

B. THE PROPELLER WAS RECOVERED WITH THE FRONT HALF OF THE ENGINE REDUCTION GEAR ASSEMBLY (RGA) A LITTLE OVER A MILE NORTHEAST OF THE FUSELAGE AND 800 YARDS EAST OF THE NUMBER 3 PROPELLER. THE NUMBER 2 PROP AND RGA CAME TO REST 4 TO 6 FEET IMPACTED INTO THE EARTH IN A HORIZONTAL ORIENTATION. BLADE 1 WAS RETAINED IN THE BARREL (HUB). BLADE 3 WAS FRACTURED NEAR THE BLADE RETENTION WITH THE PROPELLER BARREL, AND WAS RECOVERED IN THE SAME LOCATION AS THE PROPELLER. BLADE 4 WAS RECOVERED WEST OF THE PROPELLER; BLADE 2 WAS RECOVERED EAST OF THE PROPELLER. THE DAMAGED PROPELLER PUMP HOUSING, SERIAL NUMBER: WR19175, WAS INSTALLED ON THE PROPELLER TAILSHAFT. THE PUMP HOUSING WAS CRACKED IN MULTIPLE LOCATIONS WITH SOME MISSING PIECES. THE ELECTRONIC VALVE HOUSING (EVH), SERIAL NUMBER: 2013110021, WITH THE SEAL PLATE ATTACHED, WAS RECOVERED FROM THE SUNFLOWER FIELD JUST WEST OF THE NUMBER 2 PROPELLER/RGA ASSEMBLY AND LARGELY INTACT. THE INPUT LEVER RESOLVER AND THE BREATHER/FILL CAP WERE MISSING FROM THE EVH AND THE HOUSING WAS CRACKED AND CAKED IN DIRT.

C. THE PROPELLER WAS DISASSEMBLED IAW REF E AND REF F AND INSPECTED ON SITE WITH THE FOLLOWING FINDINGS:

(1) PROPELLER DOME CAP AND TRANSFER TUBE WERE REMOVED AND THE DOME CONTAINED RESIDUAL HYDRAULIC FLUID. DOME CAP WAS MISSING RETAINING RING REQUIRED PER REF E AND REF F. THE DOME WAS REMOVED WITHOUT ISSUE.

(2) UPON DOME REMOVAL A TEMPLATE WAS USED TO DETERMINE BLADE ANGLE BASED ON THE POSITION OF THE DOME FEATHER AND REVERSE STOP RING. BLADE ANGLE WAS MEASURED TO BE 53 DEGREES. BLADE SEGMENT GEARS WERE INTACT AND CORRESPONDED WITH THIS POSITION.

(3) THE PITCHLOCK REGULATOR AND ASSOCIATED COMPONENTS WERE REMOVED WITH NO DEFICIENCIES.

(4) THE PROPELLER NUT WAS REMOVED, NO DAMAGE WAS FOUND; BREAKAWAY TORQUE WAS NOT RECORDED BUT WAS AT OR NEAR ZERO AS THE NUT WAS ROTATED BY HAND. THE PROPELLER ASSEMBLY WAS THEN SEPARATED FROM THE RGA. THE PROPELLER AFT CONE SHOWED TYPICAL WEAR INDICATIONS. THE SPACER AND PACKING INSTALLED ON THE PROPELLER SHAFT IMMEDIATELY FORWARD OF THE AFT CONE WERE PRESENT AND INTACT. THE FRONT CONE AND RGA PROPELLER SHAFT HAD NO VISIBLE DAMAGE.

(5) PROPELLER BARREL BOLTS WERE LOOSENED AND REMOVED TO FACILITATE SPLITTING OF THE BARREL AND REMOVAL OF BLADES FROM THE BARREL. SOME OF THE BARREL BOLTS WERE LOOSE AND BENT.

(6) BLADE 1 WAS RETAINED IN THE PROPELLER BARREL. THE AIRFOIL SHOWED MECHANICAL DAMAGE ON THE LEADING EDGE APPROXIMATELY 21 INCHES INBOARD OF THE BLADE TIP. THE TOP TRAILING EDGE WAS SLIGHTLY BENT. ALL BLADE RETENTION COMPONENTS WERE INTACT. BLADE BUSHING HAD LOST PRESS FIT AND DRIVE PINS AND SCREWS WERE FRACTURED DUE TO OVERLOAD. WITNESS MARKS ON SHIM PLATE CORRESPOND TO A BLADE ANGLE BETWEEN 40 AND 50 DEGREES AT TIME OF IMPACT.

(7) BLADE 2 WAS THE FURTHEST EAST PROPELLER COMPONENT FOUND IN THE DEBRIS FIELD. VISUAL INSPECTION OF THE FRACTURE SURFACE SHOWED OVERLOAD SIGNATURE. THE BLADE AIRFOIL HAD SIGNIFICANT MECHANICAL DAMAGE ON THE FACE (BACK) SIDE OF THE BLADE FROM THE BLADE TIP TO THE

BLADE CUFF. ALL BLADE RETENTION COMPONENTS WERE INTACT. BLADE BUSHING HAD LOST PRESS FIT AND DRIVE PINS AND SCREWS WERE FRACTURED DUE TO OVERLOAD. WITNESS MARKS ON SHIM PLATE CORRESPOND TO A BLADE ANGLE BETWEEN 40 AND 50 DEGREES AT TIME OF IMPACT. PART OF THE BLADE RETAINED IN THE BARREL PROTRUDED A FEW INCHES OUT OF THE BARREL.

(8) BLADE 3 WAS FRACTURED DUE TO OVERLOAD NEAR WHERE THE BLADE SHANK ENTERS THE BARREL. THE BLADE HAD DAMAGE TO THE TRAILING EDGE 12 INCHES INBOARD OF THE BLADE TIP (3/4 INCH BY 1 INCH), AND 14.5 INCHES FROM THE BLADE TIP (2 INCH BY 1.5 INCH). NO DAMAGE WAS FOUND ON THE LEADING EDGE. ALL BLADE RETENTION COMPONENTS WERE INTACT. BLADE BUSHING HAD LOST PRESS FIT AND DRIVE PINS AND SCREWS WERE FRACTURED DUE TO OVERLOAD. WITNESS MARKS ON SHIM PLATE CORRESPOND TO A BLADE ANGLE BETWEEN 40 AND 50 DEGREES AT TIME OF IMPACT.

(9) BLADE 4 WAS RECOVERED WEST OF THE PROPELLER ASSEMBLY AND GEARBOX AND WEST OF BLADE 2. VISUAL INSPECTION OF THE FRACTURE SURFACE SHOWED SIGNS OF FATIGUE CRACK PROPAGATION. THE BLADE CAMBER (FRONT) SIDE HAD HEAVY MECHANICAL DAMAGE AND SCARRING WITH BLACK MARKS FROM THE BLADE TIP EXTENDING INBOARD APPROXIMATELY 15 INCHES. THE TRAILING EDGE AT THE BLADE TIP WAS RIPPLED AND BENT FOR APPROXIMATELY 9 INCHES. THE TRAILING EDGE HAD A 2.5 INCH BY 3 INCH U SHAPED GOUGE 39.5 INCHES INBOARD OF THE BLADE TIP. ALL BLADE RETENTION COMPONENTS WERE INTACT. THE BLADE BUSHING HAD LOST PRESS FIT. SHIM PLATE SHOWED NO WITNESS MARKS INDICATING BLADE ANGLE.

D. VISUAL INSPECTION OF THE PROPELLER CONTROL SHOWED ALL PUMPS IN THE PUMP HOUSING AND THEIR DRIVE GEARS INTACT. PUMP SCREENS WERE REMOVED AND INSPECTED FOR EVIDENCE OF PUMP FAILURE. SCREENS CONTAINED NO METALLIC DEBRIS. THE EVH WAS DISASSEMBLED TO REMOVE THE MAIN PUMP FILTER, NO METALLIC OR OTHER DEBRIS WAS FOUND.

E. THE DISASSEMBLED PROPELLER WAS RETURNED TO FRC EAST, CHERRY POINT FOR FURTHER EVALUATION AND FOLLOW ON ANALYSIS.

F. DOME DISASSEMBLY REVEALED NO DISCREPANCIES. THE LOW PITCH STOP (LPS) WAS INSTALLED 1.975 INCHES INTO THE DOME FROM THE FORWARD SURFACE OF THE DOME SHELL. MEASUREMENTS TAKEN ON MULTIPLE DOMES SET TO THE NOMINAL LPS POSITION OF 23.25 DEGREES SHOW SIMILAR MEASUREMENTS TO THE MISHAP PROPELLER.

G. LOW PITCH STOP DISASSEMBLY REVEALED NO DISCREPANCIES.

H. PITCHLOCK REGULATOR DISASSEMBLY REVEALED A MISSING PACKING (REF E, FIGURE 7-4, INDEX 17) INSIDE THE RETAINING CAP.

I. DETAILED ANALYSIS OF THE FATIGUE FAILURE OF BLADE 4 CONDUCTED BY THE MATERIALS LAB CAN BE FOUND IN REF G, ANALYSIS OF OTHER BLADES CAN BE FOUND IN REF H. BELOW IS A SUMMARY OF THE LAB FINDINGS AS IT RELATES TO BLADE FAILURE ANALYSIS, TAPERBORE CORROSION, CRACKING AND CONFIGURATION.

(1) BLADE 1 COVERAGE OF BUSHING EPOXY PRIMER REQUIRED PER REF I WAS ADEQUATE. PERMATREAT REQUIRED PER REF I DID NOT SHOW 100 PERCENT COVERAGE. ANODIZE REQUIRED PER REF I WAS ADEQUATE. INDICATIONS OF ISOLATED ACTIVE CORROSION WERE FOUND WITH FLUORESCENT PENETRANT INSPECTION (FPI), AND WERE CONFIRMED WITH EDDY CURRENT. ACTIVE CORROSION WAS FOUND THAT CONTAINED ANODIZE EXTENDING DOWN INTO THE CORROSION PITTING.

(2) BLADE 2 COVERAGE OF BUSHING EPOXY PRIMER REQUIRED PER REF I WAS NOT ADEQUATE. PERMATREAT REQUIRED PER REF I DID NOT SHOW 100 PERCENT COVERAGE. ANODIZE REQUIRED PER REF I WAS ADEQUATE. INDICATIONS OF ISOLATED CORROSION WERE FOUND WITH FPI AND WERE NOT CONFIRMED WITH EDDY CURRENT. ACTIVE CORROSION WAS NOT FOUND. ANALYSIS OF THE BLADE

FRACTURE SURFACE SHOWED BLADE LIBERATION WAS DUE TO OVERLOAD.
(3) BLADE 3 COVERAGE OF BUSHING EPOXY PRIMER REQUIRED PER REF I WAS NOT ADEQUATE. PERMATREAT REQUIRED PER REF I WAS NOT PRESENT. ANODIZE REQUIRED PER REF I WAS ADEQUATE. INDICATIONS OF ISOLATED ACTIVE CORROSION WERE FOUND WITH FPI AND WERE CONFIRMED WITH EDDY CURRENT. ACTIVE CORROSION WAS FOUND THAT CONTAINED ANODIZE EXTENDING DOWN INTO THE CORROSION PITTING.
(4) BLADE 4 INSPECTION OF THE BLADE BUSHING AND TAPER BORE REVEALED THE BUSHING EPOXY PRIMER REQUIRED PER REF I WAS NOT PRESENT. PERMATREAT REQUIRED PER REF I WAS NOT PRESENT. ANODIZE REQUIRED PER REF I WAS ADEQUATE. INDICATIONS OF SUBSTANTIAL CLUSTERED ACTIVE CORROSION WERE FOUND WITH FPI AND WERE CONFIRMED WITH EDDY CURRENT IN THE BUSHING BORE AREA OF THE BLADE TAPER BORE. ACTIVE CORROSION AND THE RESULTING INTERGRANULAR ATTACK WAS FOUND IN THE BUSHING BORE AREA OF THE BLADE TAPER BORE. ANODIZE COATING WAS FOUND EXTENDING INTO CORROSION PITTING AND INTERGRANULAR CRACKING (IGC). AN INTERGRANULAR RADIAL CRACK PROPAGATED FROM IGC THROUGH 64 PERCENT OF THE SHANK WALL SECTION FOR 2.7 INCHES TOWARDS THE TIP OF THE BLADE. A FATIGUE CRACK INITIATED FROM THE OUTER BOUND OF THE RADIAL CRACK, PROPAGATING CIRCUMFERENTIALLY FOR AN ARC LENGTH OF 100 DEGREES PRIOR TO CATASTROPHIC OVERLOAD FAILURE. X RAY DIFFRACTION (XRD) TESTING WAS PERFORMED TO DETERMINE IF THE RESIDUAL COMPRESSIVE STRESSES IMPARTED IN THE BLADE VIA LPB, SHOTPEEN, AND COLD ROLLING WERE PRESENT. THE XRD RESULTS DETAILED IN REF J WERE AS EXPECTED FOR A PROPERLY PROCESSED BLADE. MATERIAL ANALYSIS OF THE BLADE SHOWED COMPOSITION (7076-T6), TEMPER, AND HARDNESS TO BE COMPLIANT WITH ALL DRAWING REQUIREMENTS.
10. CONCLUSIONS: A. PROPELLER 2 WAS CAPABLE OF OPERATING NORMALLY PRIOR TO LIBERATION OF BLADE 4. NO EVIDENCE WAS FOUND OF SIGNIFICANT OVERTORQUE OR OVERSPEED OF THE PROPELLER.
B. THE AREA OF CLUSTERED ACTIVE CORROSION AND IGC WAS PRESENT IN THE BUSHING AREA OF THE TAPERBORE BUT NOT REMOVED AT THE LAST PROPELLER OVERHAUL. APPLICATION OF THE ANODIZE COATING TO THE BLADE OCCURS TOWARDS THE END OF THE BLADE OVERHAUL PROCESS. PRESENCE OF ANODIZE IN THE CORROSION PROVES THE CORROSION WAS PRESENT AND NOT REMOVED AT THE LAST OVERHAUL. THE PRESENCE OF THE CLUSTERED ACTIVE CORROSION AND IGC ALLOWED FOR THE FORMATION OF THE INTERGRANULAR RADIAL CRACK IN BLADE 4. THIS CRACK PROPAGATED TOWARDS THE BLADE TIP AND LED TO THE FORMATION OF THE CIRCUMFERENTIAL FATIGUE CRACK WHICH PROPAGATED AROUND THE BLADE SHANK DUE TO NORMAL OPERATING LOADS. WHEN THE CIRCUMFERENTIAL FATIGUE CRACK REACHED ITS CRITICAL LENGTH THE REMAINDER OF THE BLADE SHANK STRUCTURE FAILED IN OVERLOAD CAUSING THE INSTANTANEOUS LIBERATION OF BLADE 4 FROM THE PROPELLER BARREL.
C. IMMEDIATELY AFTER BLADE 4 FAILED, THE UNBALANCE FORCES ON THE PROPELLER LIKELY CAUSED THE FAILURE OF THE RGA AND THE OVERLOAD FAILURE (LIBERATION) OF BLADE 2. THE ANALYSIS PERFORMED IN REF K SUBSTANTIATES THIS THEORY FOR THE P-3 AIRCRAFT PROPELLER AND FRONT HALF OF THE RGA. PROPELLER ASSEMBLIES ARE SIMILAR WHERE THE EXPECTED FAILURE MODE AND SEQUENCE WOULD BE THE SAME, ALTHOUGH IT IS BELIEVED THAT DIFFERENCES IN THE RGA CASE BETWEEN THE C-130 AND P-3 WOULD RESULT IN SOME DIFFERENCE OF IMBALANCE FORCES REQUIRED TO FAIL THE RGA CASE.
D. REF L DISCUSSES MECHANICAL DAMAGE TO BLADE AIRFOILS AND INTERACTION OF THE LIBERATED PROPELLER BLADES WITH THE AIRCRAFT STRUCTURE.

E. LOGBOOK REVIEW SHOWED THAT THE PROPELLER HAD MISSED A 56 DAY CONDITIONAL INSPECTION AFTER THE PROPELLER WAS BUILT UP AND MADE READY FOR ISSUE (RFI) PRIOR TO ANY FLIGHT HOURS BEING ACCRUED. AT THIS POINT TO COMPLY WITH INSPECTION REQUIREMENTS THE PROPELLER SHOULD HAVE BEEN DISASSEMBLED AND INSPECTED IAW REF E, WHICH CONSISTS OF AN OFF WING EDDY CURRENT INSPECTION OF THE TAPER BORE JUST OUTBOARD OF THE BLADE BUSHING AT THE INTERMEDIATE LEVEL. IT IS UNLIKELY THAT ANY CORROSION OR CRACKING WOULD HAVE BEEN DETECTED SINCE THE CLUSTERED CORROSION AND IGC WOULD HAVE BEEN HIDDEN UNDER THE INSTALLED BLADE BUSHING. THE LOGBOOK ALSO SHOWED PROPELLER BALANCING WAS NOT ACCOMPLISHED WITHIN THE FLIGHT HOUR ALLOWABLE LIMITS PER REF D. DURING BUILDUP OF THE PROPELLER BARREL AND BLADE ASSEMBLY A STATIC BALANCE IS COMPLETED, DYNAMIC BALANCE IS REQUIRED TO BALANCE THE PROPELLER AND POWER PLANT ASSEMBLY TO FINE TUNE THE BALANCE SOLUTION. IF VIBRATION IS SEVERE IT WOULD BE FELT BY THE CREW AND TROUBLESHOOTING WOULD HAVE OCCURRED. THE WEIGHTS ADDED DURING THIS BALANCE WERE NOT EXTREME. THE FACT THAT THIS PROPELLER FLEW FOR 231 HOURS WITHOUT BALANCE DID NOT CONTRIBUTE TO THE FATIGUE PROPAGATION AND SUBSEQUENT FAILURE OF BLADE 4.
F. THE MISSING DOME CAP RETAINING RING WAS LIKELY DUE TO AIRCRAFT OR GROUND IMPACT OF THE PROPELLER. THE FRACTURE OF BLADE THREE AT THE BARREL INTERFACE AND BENDING OF THE BARREL BOLTS WERE DUE TO PROPELLER IMPACT WITH THE GROUND. DAMAGE TO THE PROPELLER PUMP HOUSING WAS DUE TO SEPARATION FROM THE AIRCRAFT AND GROUND IMPACT. DAMAGE TO THE PROPELLER EVH LIKELY RESULTED FROM SEPARATION FROM THE AIRCRAFT AND IMPACT DAMAGE WITH THE GROUND.
G. ZERO PROP NUT TORQUE WAS DUE TO GROUND IMPACT. PROPELLER NUT, REAR AND FRONT CONES, RGA PROP SHAFT AND SPACER AND PACKING SHOWED NO SIGNS OF DAMAGE INDICATING PROPELLER OPERATION AT ZERO TORQUE THEREFORE THE PROPELLER WAS OPERATING WITH SUFFICIENT TORQUE FOR SAFE OPERATION.
H. SMALL DIFFERENCES IN MEASURED BLADE ANGLE OF THE DOME AND BLADE ANGLE APPROXIMATIONS AT TIME OF IMPACT ON BLADE SHIMS ARE LIKELY DUE TO PROPELLER IMPACT WITH THE GROUND. THE 40 TO 50 DEGREE ANGLE IMPRESSIONS ON BLADE SHIMS LIKELY OCCURRED IMMEDIATELY AFTER THE PROPELLER AND RGA ASSEMBLY DEPARTED THE AIRCRAFT. GROUND IMPACT LIKELY ALLOWED THE DOME POSITION TO INCREASE TO 53 DEGREES.
I. THE MISSING PACKING IN THE PITCHLOCK REGULATOR DID NOT AFFECT OPERATION OF THE PROPELLER. THE FAILURE MODE, EFFECTS AND CRITICALITY ANALYSIS SHOWS NO EFFECT ON OPERATION FOR THE FAILURE OF THE COMPONENT, IT IS INSTALLED TO PREVENT METAL TO METAL CONTACT IN THE ASSEMBLY. PITCHLOCK REGULATORS ARE TESTED DYNAMICALLY DURING OVERHAUL, AND CHECKED DURING AIRCRAFT GROUND TURNS TO VERIFY FUNCTION.
J. DISCREPANCIES IN BLADE TAPER BORE CONFIGURATION AND BLADES THAT SHOW ANODIZE INSIDE CORROSION AND PITTING IS DUE TO IMPROPER PROCESSING AT THE LAST PROPELLER OVERHAUL. ALL CORROSION AND PITTING SHALL BE REMOVED AT OVERHAUL PER REF I.
11. RECOMMENDATIONS:
A. ALIGN TECHNICAL REQUIREMENTS BETWEEN NAVY, AIR FORCE, AND ORIGINAL EQUIPMENT MANUFACTURER (OEM) TO DEVELOP AND ACHIEVE BEST PRACTICES FOR PROPELLER INSPECTION, OVERHAUL, PRESERVATION, AND QUALITY ASSURANCE. UPDATE TECHNICAL MANUALS, PROCESS ORDERS, WORK CONTROL DOCUMENTS, AND TECHNICIAN TRAINING AS REQUIRED. ESTABLISH PROCEDURES TO COMMUNICATE FUTURE CHANGES BETWEEN STAKEHOLDERS.

B.  REQUIRE SCHEDULED RECURRING AUDITS OF ALL PROPELLER OVERHAUL FACILITIES.
C.  IDENTIFY ROOT CAUSE FOR CORROSION IN PROPELLER BLADE TAPER/BUSHING BORES, IMPLEMENT APPROPRIATE MITIGATION TO PREVENT.
12.  RELATED INFORMATION: A. DURING THIS INVESTIGATION QUALITY ISSUES WERE UNCOVERED AT A PROPELLER OVERHAUL FACILITY (ADHERENCE TO TECH DATA/WORK CONTROL DOCUMENTS, PRESERVATION).  THIS INVESTIGATION ALSO REVEALED AMBIGUITY AND DIFFERENCES BETWEEN NAVY, AIR FORCE, AND ORIGINAL EQUIPMENT MANUFACTURER (OEM) TECHNICAL DATA USED TO OVERHAUL THE SAME BLADES.  PROPELLER PRESERVATION REQUIREMENTS FOR PACKAGED PROPELLERS POST OVERHAUL WERE NOT BEING FOLLOWED; AREAS FOR IMPROVEMENT IN PRESERVATION INSTRUCTIONS WERE ALSO IDENTIFIED. ESTABLISHED PROPELLER BLADE INSPECTION PROCESSES REQUIRE REFINEMENT AND IMPROVEMENT IN ORDER TO DETECT DAMAGE AND CORROSION THAT COULD POTENTIALLY LEAD TO CATASTROPHIC BLADE FAILURE DISCUSSED IN REF G.
B. EI RCN V55215-17-0043, V55215-17-0044, V55215-17-0045, AND V55215-17-0046 SUBMITTED FOR PROPELLERS ONE, TWO, THREE, AND FOUR FROM SAME MISHAP.  EI RCN V55215-17-0049, V55215-17-0050, V55215-17-0051, AND V55215-17-0052 SUBMITTED FOR PROPELLER ELECTRONIC PROPELLER CONTROLS FROM SAME MISHAP.
13.  PENDING ACTIONS: NA
14.  JDRS WEB SITE HAS A SUPPORTING DOCUMENT ATTACHED. ACCESS WEB SITE TO VIEW SUPPORTING DOCUMENTS.
15.  THIS IS CONSIDERED CLOSING ACTION ON CAT I EI RCN: V55215-17-0044, INVESTIGATION CONTROL NUMBER WC2EI-PROP-0021-17M.//
BT
#1234
NNNN

PAAUZYUW RUOISTA9321 2192214-UUUU--RUJIAAA.
ZNR UUUUU
P 072212Z AUG 17
FM COMNAVAIRSYSCOM PATUXENT RIVER MD
TO ZEN/FLTREADCEN EAST CHERRY POINT NC
AIG 423
ZEN/FLTREADCEN EAST CHERRY POINT NC
INFO ZEN/COMNAVAIRSYSCOM PATUXENT RIVER MD
RUJIAAA/CG FOURTH MAW ALD
RUJIAAA/CG FOURTH MAW
ZEN/COMFLTREADCEN PATUXENT RIVER MD
ZEN/FLTREADCEN EAST CHERRY POINT NC
RUJIAAA/MALS FOUR NINE
BT
UNCLAS //N04790//
PASS TO OFFICE CODES:
FM COMNAVAIRSYSCOM PATUXENT RIVER MD//DRPO//
INFO RUJIAAA/MALS FOUR NINE//QA/AAMO/AMO//
MSGID/GENADMIN/MIL-STD-6040(SERIES)/B.0.01.00
/COMNAVAIRSYSCOM PAX DRPO/-/-/-/-/USA/UNCLASSIFIED//
SUBJ/KC-130T PROPELLER, AIRCRAFT, VARIABLE PITCH-54H60-111 CAT I/
/EI//
REF/A/DOC/COMNAVAIRFORINST 4790.2C/15JAN2017//
REF/B/DOC/OPNAVINST 3750.6S/13MAY2014//
NARR/REF A IS THE NAVAL AVIATION MAINTENANCE PROGRAM
REF B IS THE NAVAL AVIATION SAFETY PROGRAM//
GENTEXT/REMARKS/THIS MESSAGE WAS AUTO GENERATED FROM THE JDRS WEBSITE
FOR NON-WEB SITE CAPABLE ORGANIZATIONS. THE REPORT WAS ORIGINATED BY:
------ VMGR FOUR FIVE TWO/QA.
IF RESPONSE VIA WEB SITE IS NOT POSSIBLE, TO: LINE RECIPIENTS SHOULD
ADDRESS RESPONSE DIRECTLY TO:
------ VMGR FOUR FIVE TWO/QA WHEN APPROPRIATE. THIS DEFICIENCY REPORT
WILL BE PROCESSED VIA THE JDRS WEBSITE. FOR FURTHER DETAILS OR REAL
TIME STATUS VISIT THE JDRS WEB SITE AT: JDRS MIL
1. (b) (6) [redacted]
2. FLTREADCEN EAST CHERRY POINT NC
3A. V55215-17-0044
3B. INVESTIGATION ON #2 PROPELLER N244247 ORDERED BY AVIATION MISHAP
BOARD SENIOR MEMBER COLONEL (b) (6) [redacted]. EI TO LOOK AT THE STRUCTURAL
INTEGRITY OF THE #2 PROPELLER, BLADES, BARREL HALVES, DOME ASSEMBLY,
PITCH LOCK REGULATOR, MISCELLANEOUS COMPONENTS AND INSTALLATION
HARDWARE, FOR MATERIAL FAILURE, FATIGUE, WEAR, WITH SPECIAL ATTENTION
FOR INDICATIONS OF OVER TORQUE, AND OVERSPEED AS WELL AS LAST KNOWN
BLADE POSTION AND ANGLE.
4. 17191/STEWART ANGB, NEWBURGH NY 12550
5. 7R, 1610-000309552
6. PROPELLER, AIRCRAFT, VARIABLE PITCH
7. 3405.3 FLIGHT HOURS

8. 54H60-111
9. HAMILTON SUNDSTRAND CORPORATION, 73030, WINDSOR LOCKS, CT
10. N/A, N/A, N/A, N/A
11. N244247, N/A, N/A
12. OVERHAULED
12B. 12-SEP-2011
12C. AIMD FT WORTH, N/A, FORT WORTH, TX
13A. UNK
13B. UNK
13C. UNK
13D. 146228 DOLLARS/N/A MHRS/N/A DOLLARS
14. N/A
15A. N/A
15B. N/A
16. 3251360
17. N/A, N/A, N/A, N/A, N/A
18. N/A, N/A, N/A, N/A, N/A
19. OTHER (EXPLAIN IN ITEM 3)
20A. UNIT THAT WILL SHIP EXHIBIT: NON-JDRS ACTIVITY
20B. EXHIBIT CURRENTLY IN THE POSSESSION OF THE INVESTIGATION TEAM
21. OTHER (EXPLAIN IN BLOCK 3)
22A. N/A
22B. N/A
22C. N/A
22D. EXHIBIT CURRENTLY IN THE POSSESSION OF THE INVESTIGATION TEAM.
22E. NA
22F. N/A
22G. N/A
22H. MAJOR [redacted] [redacted]
SSGT [redacted]
MSGT [redacted]
CAPT [redacted]
22I. KC-130T, 165000
22J. T56-A-16, 1TH2118, 9967.3, N/A
22K1A. NA
22K1B. NA
22K1C. NA
22K2. NA
22K3. NA//
BT
#9321
7F84

**Propeller Blade Repair at Warner Robins ALC**
**Process Audit 25-26 AUG 2017**
**A7111-2 (C-130), A7121-2 (P-3)**

Reference:

A. Technical Manual: NA 03-20C-4, Depot Maintenance for Aluminum Alloy Propeller Blades
B. Technical Manual: NA 03-20CBBJ-2, Intermediate and Depot Maintenance Manual for the 54H60-111 Propeller
C. Technical Order: TO 3H1-18-3, Depot Maintenance for 54H60 Propeller
D. Technical Manual: NA 15-01-500, Preservation of Naval Aircraft

Key Findings Summary:

- Review and referral to pubs prior to and while performing repair process not demonstrated or well-practiced. Discovered a process where procedure being used was not current (bushing installation).
- Preservation of blade taper bore not adequate. No corrosion prevention compounds outboard of bushing applied.
- Corrosion pit detection via Borescope Inspection not being performed IAW Navy publications. Equipment, operator qualification, qualification standard, either inadequate or could not be demonstrated/verified.
- Fluorescent Penetrant Inspection of taper bore not IAW with Navy Pub and coverage incomplete; approx. 15 inches of taper bore including and beyond “transition zone” not performed.
- Navy QA oversight not performed by QA personnel. Certified Operator performing second verification. Many cases no second source verification performed.
- Borescope, Permatreat, Epoxy Primer not performed on Air Force C-130 propeller blades
- DLA Warehouse First-In,-First-Out (FIFO) not always practiced on incoming propellers.
- No supplemental local engineering instruction written for any of the audited processes. AF TO and Navy publication was the only instruction available.

Audit Process

An audit plan was established that followed the typical blade repair process through its sequence of operations from induction to packaging for shipment. The focus of the audit was on the blade shank and taper bore area, airfoil inspection and fairing installation processes were omitted from review. Appendix C provides the agenda and a listing of the operations that were audited. The three-member Navy team remained together throughout the audit process. The audit team observed a demonstration of each process from beginning to end, in most cases the artisan performed the repair on actual hardware. The audit team was afforded as much time as was needed both during the process and after to ask questions. It proved very beneficial to have the process narrated by the actual technician rather than a lead or engineer. This gave the audit team additional insight into how the process was actually performed rather than how it should be performed.

WRALC has averaged 400 C-130 props per year over the last 10 years. Navy C-130 props processed by WR-ALC averaged 21 props per year over the last nine years, equaling just 5% of their AF C-130 workload. P-3 props approximated 3% of their AF workload.

A list of attendees is given in the attached Appendix A.

**<u>Discussion of Findings</u>**

<u>Technical Publications</u>

Warner Robins utilizes electronic pubs throughout the shop. At each operation the Audit Team witnessed a “toughbook” nearby with the Air Force Technical Order (REF C) and the Navy depot publication (REF A) opened. The utilization of these pubs, however, was not always apparent. In most of the Day 1 process audits, the publication was up but never referenced during process execution or during pre or post-process discussions. While there are clear benefits to electronic publications, there are also negatives. In this writer’s opinion, electronic pubs are cumbersome and more difficult to read and follow, especially for lengthier processes and hence are not as readily referenced. That was evident during some of the processes that were witnessed. Some technicians relied strongly on their memory, it appeared, rather than a steady referral back to the instructions. During the anodize process review, the technician cited information that was not consistent with the current technical publication, stating that the AF set their bath time by coating weight checks of specimens where the NAVY had a straight 30 minute tank time when in fact they were both the same and had been for some time.

The Audit Team found one case where an outdated publication was being used to install the blade bushing in the taper bore. The publication being referenced had not incorporated the Interim Rapid Action Change (IRAC) 14 that was released to REF A. 6 months prior. IRAC 14 had changed gap dimensions and added a QA check of the torque on the bushing retaining screws to prevent a known in-flight failure that resulted in a loss of blade pitch control.

It also became evident that there would be a clear benefit to having supplemental instruction for some of the more complex processes. The Navy uses Local Engineering Instruction or Special Process Instructions to augment technical publications and give clarity to process details. The borescope inspection, anodize, FPI, and final preservation processes could benefit from special process instructions.

<u>Preservation/Storage</u>

The Audit Team evaluated the preservation and packaging process that is now performed by DLA representatives. The propeller should be preserved and packaged IAW instructions in REF A, B, and D. The propeller is packaged in a well-designed plastic shipping container specifically designed for the propeller that provided adequate protection from damage. A number of desiccant bags were loaded in a compartment on the inner side wall to protect from moisture.

Blades are preserved well with a heavy preservation oil over the exterior surfaces of the blade shank and wrapped with a foil bag and taped. However, during application the taper bore bushing area was quickly wiped with oil and the inner taper bore was barely touched. REF A states that all metal surfaces should be coated. Taper bore corrosion pits have been found to form in the taper bore in storage when proper preservation was not applied.

The Audit Team reviewed the Defense Logistics Agency (DLA) Warehouse storage facilities for incoming and outgoing propellers and talked with DLA about their policies. DLA utilizes a First In First Out (FIFO) inventory management system and the data showed that repaired propellers remain in storage only for a short period –long enough to complete the paperwork. All are prepositioned. It was explained that this is due to the NAVY's current high demand for propellers. The same cannot be said about incoming propellers. Records indicate that one of the mishap propellers was received in 2007 but was not inducted for repair until 2011.

<u>Borescope Inspection</u>

The borescope inspection process was developed in response to corrosion pitting found at the origin of stress corrosion cracks in the taper bore. Combined with other mitigations, the borescope inspection process offers a detection probability sufficient to reduce the risk of initiating Stress Corrosion Cracking (SCC). The Audit Team reviewed the borescope inspection process at WRALC and found several deficiencies. REF A defines a rigorous qualification process of the operator which includes the mapping of pits in a standard specimen and maintaining that qualification through periodic verifications of proficiency. Several problem areas were identified in the WRALC process: 1. REF A specifies P/N GS23709 standard specimen shall be used. The standard specimen used to qualify the operator had no part number or documentation of its origin. 2. The index ring to ensure 115% coverage of the taper bore was not equivalent to the equipment listed in the manual nor was the technique used sufficient to ensure complete coverage. 3. The Operator Training Records showed that no repeat qualification of operators had occurred, as dictated by REF A when 30 days have elapsed since last blade inspection. WRALC took action to provide the NAVY with a list of other equipment (digital camera, Monitor) so compliance with REF A could be verified.

It is noteworthy that WRALC does not perform borescope on AF blades or apply surface protections such as Permatreat and epoxy primer to the bushing area where most pitting has historically formed. These were introduced as product and process improvements to protect the taper bore from corrosion and electrically insulate the blade and bushing materials as mitigation to prevent corrosion pitting. The borescope was added as an enhanced detection method.

Fluorescent Penetrant Inspection (FPI)

The first and often only detection method for finding linear or linear aligned indications in the taper bore is through FPI. REF A calls for FPI of the entire blade, including butt end and taper bore, in accordance with ASTM E 1417, using Type 1, Method B or D, Sensitivity Level 3 materials. Step b. states "…particular attention to the taper bore…" It was discovered that WRALC uses Method C, and has been since at least 2008. A deviation request was presented to NAVAIR in May 2017 asking for permission to use this method. NAVAIR approved this request with concurrence from Materials Engineering Non Destructive Inspection (NDI) experts. Upon further discussion as a result of the ongoing engineering investigations it was determined that Method C is likely inadequate for a shotpeened surface. A major concern in observing the FPI process was the lack of attention to the inner taper bore and to some degree the "transition area" between the bushing area and inner taper bore. Only the first 3 inches of the 15 inch bore is being inspected. REF A calls for FPI of the entire bore. Corrosion and/or mechanical damage are not uncommon in these areas and it is imperative that these areas inspected for cracks and other damage.

QA Checks

Throughout the Navy publications "QA checks" are added to critical process steps that are essential to equipment performance as a means of ensuring quality. These are a second-source verification of the requirement before proceeding to the next step in a procedure. WRALC utilizes a certified operator program to control quality throughout the process and does not utilize Quality Assurance personnel to perform this verification. Instead, the QA verification is performed by a second person certified by the department, usually the lead mechanic. This process was agreed to in September 2015 via Email between NAVAIR and WRALC when transitioning P-3 propeller workload.

Due to the criticality of these operations, QA checks performed by QA personnel is preferred as they possess a distinct skill set and are usually insulated from the pressures of meeting production schedules. One major concern is that many QA checks had no second source verification at all. These should be corrected immediately. A complete list of QA checks without a second source verification is given in the Appendix B.

Standardization of Navy/AF Processes

Throughout the repair process it was evident that many process steps for Navy and AF blades were different, this was unexpected especially for the C-130 blades. While some differences can be expected, common processes will yield consistent results. The biggest concern is that differences can lead to missed or incorrectly applied repairs. Action should be taken by NAVY/AF to standardize their processes. Below is a short list of key differences:

- AF Blades do not receive borescope inspection of taper bore
- AF blades do not Permatreat coating or epoxy primer on/in bushing area
- Bluing check for bushing fit
- Bushing clearance
- Caustic Soda Etch
- Meandering Winding Magnetometry (MWM) Inspection

Conclusion/Recommendations

The usage of Technical Publications throughout the overhaul process cannot be overemphasized and is vital to process integrity, especially when similar products have process differences. Supplemental instruction can play an important role in providing amplifying information and filling gaps to create a repeatable process. It is recommended that special process instruction be developed for Preservation, Borescope Inspection, FPI and Eddy Current Inspection.

The two primary areas of concern identified during the audit were the FPI and borescope inspection processes. The coverage area for FPI did not include the area outboard of the bushing and the borescope equipment and operator certification process was not robust enough to ensure 100% compliance with NAVY requirements. With only 1 out of every 20 C-130 blades being a Navy asset, a concern remains whether sufficient preventative steps are embedded in the workflow process to ensure that Navy critical requirements such as borescope inspection and Permatreat/Epoxy Primer coatings are being met.

To the greatest extent possible, a standard process should be developed for all C-130 blades processed at the depot. Process standardization is a vital initiative for maintaining process control and ensuring that all blades receive all critical process step.

Actions

1) Verify time in chromic acid anodize sufficient to produce desired coating thickness.
2) Is there a max time limit to process a blade for anodize after etch?
3) LPB over shot peening. As effective? Any detriments?
4) Investigate why AF does not glass bead blast and borescope blades as NAVY is?
5) Why is Caustic soda etch bath time different between NAVY and AF?
6) Investigate addition of Special Process Instructions (SPI) for borescope inspection, anodize, FPI, and final preservation.
7) NAVY investigate Method C FPI for sensitivity and detection probability.
8) Performance of NAVY QA checks – is certified operator acceptable?
9) Investigate SPI for preserving all prop components
10) AF provide equipment list for borescope equipment
11) AF add second verification for all QA checks
12) AF add SSQ for Borescope process

Appendix A

List of Attendees

# Navy Engineering Visit to WRALC/CMXG

**In-Brief Attendees**

| Name | Title |
|---|---|
| (b) (6) [redacted] | Director, Commodities Maintenance Group |
| [redacted] | Deputy Director, Commodities Maintenance Group |
| [redacted] | Director, WRALC Quality Assurance |
| [redacted] | Director, 409 Supply Chain Management Squadron |
| [redacted] | Director, 571 Commodities Maintenance Squadron |
| [redacted] | Director, 572 Commodities Maintenance Squadron |
| [redacted] | Chief Engineer, Commodities Maintenance Group |
| [redacted] | Director of Operations, Commodities Maintenance Group |
| [redacted] | Director, Propeller Repair Flight |
| [redacted] | QA Chief, Commodities Maintenance Group |
| [redacted] | Supervisor, 409 Supply Chain Management Squadron |
| [redacted] | Director, 572 EPSC Flight |

| | |
|---|---|
| (b) (6) [redacted] | AIR-4.4.1.1 Propulsion Systems Engineering Lead |
| [redacted] | AIR 4.4.2.5 Propeller Engineer |
| [redacted] | AIR 4.4.2.5 Propeller Engineer |

## Appendix B

List of QA Inspections not being performed by Quality Assurance

WP 005 00

- If shank diameter at any one of these stations is below the minimum specified in Table 2, blade shall be scrapped. (QA)
- Check the contact area. The blade bore shall exhibit at least 75 percent total contact area (blued by the gage). The contact area must be continuous around the entire circumference of the bore. (QA)
- Inspect fillet area for galling and corrosion. Use a brass pronged indicator pedestal manufactured as shown in Figure 20 and a dial indicator to check depth of pits. (QA)

WP 006 00

- If difference between measured and last recorded value is 0.080 inch or less, blade is considered acceptable for overhaul. (QA)
- Blades involved in a known or suspected impact incident shall not have a face alignment change at the check station in excess of 0.040 inch. (QA)
- Blades involved in a known or suspected impact incident with face alignment change in excess of 0.040 inch will be subjected to conditions of paragraph on IMPACT DAMAGE in WP 004 00. (QA)
- Upon completion of overhaul, recheck face alignment at tip station. Obliterate old face alignment value from blade butt OD and stencil new actual value (for future reference) using 1/16-inch stencils. (QA)
- If face alignment and tip station are not stenciled on blade butt OD, stencil the post-overhaul value and tip check station on the butt OD. (QA)
- When bends occur, inspect bent portion for cracks, in accordance with applicable inspection paragraphs of WP 004 00. If any cracks are found that cannot be eliminated, blade shall be scrapped. (QA)
- …the two adjacent stations must be within blade service limits Tables 2 through 21. Do not take measurements of thickness or width within a locally reworked area. (QA)
- This dimension is actual blade thickness at 12-inch station. Repeat this operation at each of blade stations. (See Figure 13.) (QA)
- WIDTH CHECK. Use vernier calipers to check blade width. Be sure to align calipers directly on station being checked. (QA)
- LENGTH CHECK. Place scale portion of combination square against blade tip extremity. Measure distance from scale to last outboard scribed station. (QA)

- Do not shorten 7111 and 7121 blades beyond 79.0-inch station. Doing so will unbalance propeller and cause propeller performance to decrease. (Shortening other blades to compensate for unbalance condition is not acceptable, since it will establish a propeller diameter unsuited for pertinent engine-airplane combination.) (QA)
- Perform water break free test prior to anodizing. (QA)
- Rinse blades thoroughly in clean cold water for not more than 5 minutes immediately after anodic treatment. Pay particular attention to taper bore, screw holes and drive pin holes. (QA)

WP 007 00

- Remove any air bubbles trapped under boot using a number 17 hypodermic needle, making certain not to scratch metal beneath boot in shank area. Upon releasing air, roll rubber flat. (QA)
- If heater resistance is not within specified tolerance, heater is unsatisfactory for service and shall be discarded. (QA)
- Electrical contact rings are sometimes damaged during removal from blades. Rings with damaged ends may be cut back to remove damage. Minimum required ring overlap when installed on blade is 1.50 inches. (QA)
- Only flux, J-STD-004, ROM0, and previously described solder are acceptable for tinning and soldering operation. (QA)
- When measuring across width of blade, sealer shall extend 0.25 to 0.75 inch over each rubber part and same distance over adjacent mating surface; when measuring over length of blade, controlling dimensions shall be 0.25 to 1.50 inches. (QA)
- Make sure that there are no voids in cement in gap between ends of Teflon strip. Voids in adhesive may lead to oil leaks. (QA)
- A gap not exceeding 0.125 inch is permitted at butt joint of strip ends providing that gap is completely filled with Bondmaster and lightly sanded with 3/0 or finer abrasive after curing, until a smooth even surface is obtained. A longitudinal misalignment of strip ends not exceeding 0.060 inch is permissible. Strip must meet location requirements of Figure 13. (QA)
- Installed Teflon friction reduction strip may have no more than four areas of discoloration. No area of discoloration shall exceed 0.200 inch in diameter, and areas shall have minimum separation of 0.200 inch. (QA)
- Surface of friction reduction strip must be relatively smooth and free of major imperfections such as wrinkles, creases or indentations which could impair fit of blade seal. An uneven surface indicating a heavy cement buildup is not acceptable and requires that Teflon strip be removed and reapplied. (QA)

- Check that all damage is removed from blade tip surfaces prior to painting. Do not repaint any blade tip on which gouges have not been properly repaired. (QA)
- Measure the drive pin holes in the blade, the pin holes in the bushing, and the drive pins to insure they meet the requirements of Table 1 for the pin size stamped on the bushing and blade. If components do not meet required dimensions the discrepancies must be corrected prior to bushing installation. (QA)
- Measure clearance between bushing (23) flange and blade (1) butt face. It shall be 0.020 to 0.030 inch except for 7111 and 7121 blade assemblies, which require 0.032 to 0.037-inch clearance. (QA)
- Dimensionally check bushing (23) ID. Refer toTable 2 for clearance limitations. (QA)
- Place propeller blade in a dry storage environment at all times. Proper preservation techniques and storage in a dry atmosphere will minimize corrosion in butt end of blade. (QA)
- Coat all surfaces of overhauled blades, except rubber parts, with MIL-PRF-16173, Grade 4, corrosion preventive compound. This will prepare them for storage and shipment. (QA)
- Place a piece of grease-proofed paper, Grade A, MIL-PRF-121, over butt end of blade and extend up shank under thrust washers for approximately six inches. (QA)
- Use a suitable wooden container that provides sufficient protection from handling damage to contain blades. Make provisions for securing blades in a fixed position. (QA)

## Appendix C

## Audit Plan

| Date/Time | location | Team Lead Mr. [redacted] |
|---|---|---|
| 25-Aug | | |
| 07:00-07:30 | Bldg 140 / RM 11 | Navy Team Jn-Brief |
| 07:45-08:45 | Bldg 140 Prop D&C | Blade Tear down, Bushing and Plug removal, Clean [redacted] |
| 09:00-09:45 | Bldg 142 | Glass Bead Blast Taper Bore [redacted] |
| 10:00-11:00 | Bldg 142 | Caustic Soda Etch [redacted] |
| 11:00-12:30 | | lunch |
| 12:30-01:30 | Bldg 142 | Inspect Taper Bore-Borescope [redacted] |
| 01:30-02:30 | Bldg 142 | Flourescent Penetrant-Taper Bore, Screw Holes, Drive Pin Holes [redacted] |
| 02:30-03:30 | Bldg 142 | Verify Penetrant Indications with Eddy Current [redacted] |
| 3:30 | OP Conference Rm | End of Day debrief/Next day plan |
| 26-Aug | | |
| 07:45-11:00 | Bldg 140 Machine | Taper Bore Ream [redacted] |
| | | Butt Face Cut [redacted] |
| 11:00-12:30 | | lunch |
| 12:30-03:30 | Bldg 140 Machine | Cold Roll [redacted] |
| | | Low Plasticity Burnishing (LPB) [redacted] |
| 3:30 | OP Conference Rm | End of Day debrief/Next day plan |
| 27-Aug | | |
| 08:00-10:00 | Bldg 142 | Chromic Acid Anodize [redacted] |
| 10:00-10:45 | Bldg 142 | Perma Treat Taper Bore [redacted] |

| | | |
|---|---|---|
| 11:00-12:30 | | **Lunch** |
| 12:30-01:30 | Bldg 140 Prop | **Fit check of Bushing**<br>(b) (6) [redacted] |
| 01:30-02:30 | Bldg 140 Prop | **Wet installation of Bushing**<br>(b) (6) [redacted] |
| 3:30 | **OP Conference Rm** | **End of Day debrief** |

Notes from Warner Robbins ALC interview.

I. On 9 November 2017, LtCol [redacted] visited the Warner Robins – Air Logistics Complex as part of the JAGMAN Investigation into the Yankee 72 Mishap that occurred on 10 July 2017. The day was broken up into 4 segments.
   a. On site walk through of all steps of the process to overhaul, or refurbish a blade;
   b. Quality Assurance and Quality Control presentation
   c. Air Force specific concerns wrt the KC-130T
   d. Proper, preservation, storage and shipping of the propellers

II. Individuals interviewed included:
   a. Mr. [redacted]
      i. Director, 402d Commodities Maintenance Group, [redacted]
   b. Mr. [redacted],
      i. Director, DLA Distribution Warner Robins, Georgia, [redacted]
   c. Mr. [redacted]
      i. AFMC 402d Commodities Maintenance Group Quality Assurance Chief, [redacted]
   d. Ms. [redacted]
      i. AFMC 572nd Commodities Maintenance Squadron Director, [redacted]
   e. Ms. [redacted]
      i. AFMC 571st Commodities Maintenance Squadron Director, [redacted]
   f. Mr. [redacted], Chief Engineer Air Force
      i. C-130 Hercules Division [redacted]
   g. Mr. [redacted]
      i. Propeller Engineer
      ii. ISSC Cherry Point, NC, [redacted]
   h. Mr. [redacted]
      i. Mechanical Engineer
      ii. FRC East, Cherry Point, NC, [redacted]

III. Process to overhaul a KC-130 Propeller.
   a. Water Jet to Clean and remove blade fairing/bulk balance lead

b. Caustic Soda Etch
    i. A chemical process which uses
    ii. Sodium Hydroxide
        1. (tested for proper concentration at least weekly)
c. Borescope, to find
    i. Corrosion
    ii. Pitting
    iii. Anomalies
        1. Not cracks
    iv. Uses 10 times magnification and a TV camera
    v. Two person job:
        1. One person works the lighted camera wand the other documents
    vi. These anomalies are documented on a paper which makes a record of (maps) the precise location and size of the anomalies.
        1. These records are only kept for 2 years. Then destroyed per Air Force requirements.
    vii. THIS DOCUMENTATION IS DESTROYED AFTER ONLY TWO YEARS. AFMC POLICY.
d. Fluorescent Penetrant Inspection
    i. Fluorescent liquid is sprayed onto the surface of the bore and ultraviolet light used to identify cracks and corrosion pitting.
        1. The spraying method referred to above is Method C which is not normally allowed for Navy/Marine Corps propellers, but WR-ALC has received an exemption from the Navy to allow them to use this method.
            a. Methods B and D require part submersion in fluorescent penetrant rather than localized spray, (penetrant removal techniques are also different with Methods B and D)
        2. WR-ALC only uses a 30 minute penetrant dwell time. (The longer the dwell time, the more time available for the penetrant to penetrate the metal and find deeper cracks.)
    ii. Identifies cracks, especially in and around the bushing bore area)
    iii. Air Force authorized 3 profiles, B,C or D
    iv. Navy only authorized B or D, but WR got an exception to use C

            1. Again, C is unique due to the fact that the spray can be hand sprayed on locally in the first 4 inches of the bushing bore

e. ONLY IF AN FPI SHOWS CRACKS, THEN AN EDDY CURRENT INSPECTION IS PERFORMED
    i. Eddy Current inspection uses electronic signals into the metal of the blade to identify cracks,
    ii. , While Eddy Current inspections can find cracks below the surface, according to NDI experts these are only reliable to a very minimal depth. (Cannot find them unless they are close to the surface.) There is difficulty in predicting the depth at which an eddy current inspection can be relied upon to find a crack below the surface.
f. Prop Machine Shop
    i. Uses the map from the Borescope inspection to either
        1. Fix local blemishes or
        2. Re ream the ~~taper~~ bushing bore inside the blades
g. Regrind the Blade airfoil beyond the shotpeened region
    i. Fixes defects beyond the shotpeened region on the blades airfoil if found
h. Locally repair airfoil within the shotpeened region
    i. Fixes defects within the shotpeened region on the blades airfoil if found
i. Shot Peen if needed on a defect repaired in the previous procedure
    i. Uses small metal balls at high velocity, imparting localized residual compressive stresses to resist crack formation/propagation
    ii. It can be used on a small section, less than 10 sq in.(locally repairing the shotpeened region of the blade airfoil.)
j. LPB is only performed on the inner bushing bore
    i. (But not on the Taper Bore)
    ii. Air Force uses LPB if the bore has been re reamed
    iii. Navy uses LPB on all the blades

        This is used whether re reamed or not. Only required since the introduction of the LPB in the 2010 Time Frame. Current Navy blade population is roughly 60/40 for LPBed/non-LPBed blades

    iv. If the blade still has defects after the LPB, it is either
        1. Re reamed again or
        2. Condemned.

k. Grit Blast is then used to smooth the rough grind marks out of the surface of the blade.
    i. This actually uses Aluminum Oxide to blasts the blade
    ii. (Think of it scruff sanding a surface before you paint it so that the paint will adhere to it better.)
    iii. It helps the deicing boot material to adhere to the prop better
l. Caustic Soda Etch to clean the propeller again
m. Anodize the entire Blade, both bore and exterior
n. Permatreat the entire Taper Bore and Bushing Bore
o. Blade fairing and blade heater (deice boot) are installed on the inboard end of the propeller blade
p. Blade is balanced by installing and securing lead wool and weights in the taper bore
q. Epoxy Primer is applied to the outside of the blade Bushing and the bushing is installed, which provides a minimum of 75% contact area.
r. Water jet to clean (again)
s. Glass Bead Blast to clean (again.
t. Blade final inspection is performed
u. Steppen foam is added to the base of the propeller
    i. Leaving conduits for the electric deice boot
v. Deice boot put on
w. Propeller assembly is built up
x. Propeller assembly is balanced
y. Propeller assembly hydraulic flow check is performed
z. Propeller assembly is all then disassembled and the entire assembly is put inside a specially made container.
    i. These containers are reused and are not always waterproof
    ii. When water gets in, it may remain in the box with the prop for some time
aa. Preservative grease and barrier paper are put onto the blade to protect it while it is waiting to be installed onto an aircraft.
    i. At the time of the accident, AF and Navy used 2 different types of grease. As a result of the accident, the Navy has decided to use the same preservative as the Air Force.
bb. There are no standard practices at DLA to ensure FIFO is used with the blades

IV. Quality Assurance vs. Quality Control

a. Mr. [redacted], with Quality Assurance at WR-ALC described in detail on the Air Force doctrine that redundant layers of quality inspections only adds to, or covers up, a deeper systemic problem within the institution. Under this doctrine, there are two main tenets:
    i. Eg. Adding quality control/assurance levels of inspections will not help to correct or eliminate Quality issues; instead
    ii. Must get buy in from everyone in the process to focus on quality.
b. In order to enact these beliefs two systems are in place:
    i. Quality Assurance and
    ii. Quality Control
c. In their Quality Assurance program, the inspectors work directly for the General of the Base and they inspect the various processes within the system of propeller overhaul on a randomly scheduled basis. The theory is, that by randomly inspecting various processes, then they can ensure that they have the focus on quality throughout the system and, in theory, be safer than a redundant system of checks which can cause the artisans to focus less on quality over time and more reliant on the actual inspections to catch the error, thereby lowering the overall quality of the work.
d. Problems with this process is that
    i. Not every blade which goes through the process is guaranteed that someone inspects it during that particular rework.
    ii. There are two stamps (or quality control checks) required but only for the designate QA call points. The first comes from the Artisan who did the work. The second 'set of eyes' comes from an individual with no formal QA training or certification. Essentially no more than a 'second set of eyes.'
    iii. By letting every individual artisan 'stamp' or quality control his own work,
    iv. There is also the chance that the artisan can choose to employ various different levels of quality when performing the work:
        1. A quicker method if he is the only person to 'inspect' the blade, and
        2. A slightly higher quality if he knows another person on the line will be looking over it later and,

3. A much more thorough level of quality if he knows that that work on that particular blade is being observed as part of the "Quality Assurance" program.

v. In comparison, when Marine Corps maintenance personnel perform maintenance functions, every job is inspected. But the Air Force perspective is that this system can cause lower quality work as the artisan knows every job will be inspected, the artisan can take the attitude of producing the lowest quality of work that will pass the inspection. The problem with this logic is that, if a Marine Corps maintenance inspection is failed, depending on the severity of the damage, the potential negative ramifications to the maintenance Marine, and the associated inspectors, can include reprimand, reduction in rank and pay. On the other hand, the major flaw in the Air Force's system, where an artisan "stamps" or quality checks their own work, and then fails a "Quality Assurance" inspection, is that there are no negative ramifications. The Artisan may have to suffer a little bit of embarrassment, but that Artisan the gets to go back through training; which is essentially a vacation/break away from his job.

V. Air Force Representative issues

a. Met with Mr. [redacted], the C-130 Chief Engineer for the Air Force. to attempt to identify the areas that Mr. [redacted] and the Air Force are trying to focus on in their efforts to try to prevent this from occurring with the Air Force.

b. Important take way was the perception that Mr [redacted] was working from the perspective that the overhaul of this propeller did not miss IGC, instead only missed the corrosion pits. Upon further review of the first audit conducted at WR-ALC, the report was clear that both the corrosion pits and the IGC, (or intergranular cracking) were present there when the blade was reworked.

i. (This is stated in the Cherry Point Materials Lab report for th failed propeller blade.)

VI. Met with Mr. [redacted] Director of DLA who is responsible for the preservation, storage and transportation of the blades both when they are finished overhaul at the complex and when they arrive at Warner Robins before going to the rework facility.

a. Do not guarantee FIFO,
b. Do not guarantee that the boxes the props are stored in are water proof
c. These services can be performed, but it is at a higher cost the government has not been willing to pay in the past.

VII. Lessons learned from the JAGMAN IO WR-ALC

a. The original Warner Robins –ALC report stresses the proposition that if both the Air Force and the Navy had the same processes; then issues like this would not have happened due to the fact that online production artisans of the props have trouble identifying which propeller is an Air Force propeller and which is a Navy C-130.
    i. In reality the Work Documents (or Planning Documents) are sheets that travel through the rework facility with the blade they are reworking. They show the results of each phase of the rework with respect to the work being done to that specific blade. These sheets are easily identifiable as one of three categories:
        1. An Air Force Propeller Blade because it:
            a. Says "AIR FORCE BLADE" in large capitalized letters at the top of the page, and
            b. Is printed on paper that is colored WHITE:
        2. A Navy/USMC C-130 blade because it:
            a. Says "NAVY BLADE" in large capitalized letters at the top of the page, and
            b. Is printed on paper that is colored BRIGHT YELLOW:
        3. A Navy P-3 blade because it:
            a. Says "P-3 BLADE" in large capitalized letters at the top of the page, and
            b. Is printed ono paper that is colored BLUE.
    ii. Due to the fact that this process is in place, then the only area where the confusion could occur would be in the origination/indoctrination of the process.
    iii. This could be an effort to limit liability to the WR-ALC by attempting to find a causal factor that moves the blame away from this institution for missing the corrosion pits and intergranular cracking at the last propeller overhaul.

b. Quality Control vs Quality Assurance
    i. The Air Force model lets the artisans Quality Stamp their own work, then relies on their contemporaries to check themselves.  To provide checks and balances for this system, the Air Force then inspect the process from time to time; calling this Quality Assurance.
        1. Problems are that not every blade is inspected by a certified QA representative and
        2. The person(s) performing the work, do their own quality check and there are not negative ramifications if they fail.

c. One of the major flaws in the WR-ALC system is that the flaws found on a particular blade, either through the Borescope Inspection, the FPI, the Eddy Current Inspection, and any other report which applies to a particular blade, is automatically destroyed after 2 years.
    i. So in a case like the one at hand, there existed no documentation which shows what actions were performed on the blade.

VIII. Recommendations

a. Paperwork on each blade rework must be kept for 20 years, not 2 years which is currently the process.
    i. Lack of accountability adds to the potential for another propeller to fail

b. Make both sets of processes (AF and Navy) the same as much as possible.

c. Alter the QA process so that every blade gets checked, specifically for IGC and Corrosion stress fractures in the vicinity of the end of the bushing bore.  This should be performed by someone higher level than a plain artisan, and should also have a QA verify on every blade.

d. Alter the process so that there is a QA verification on the Permatreat and Epoxy coatings added

e. Alter the process to ensure a QA verification on the storage/greasing/ preservative addition stage of the process.

f. Permanently assign a former Marine as the Marine Corps Liaison who can ensure that these processes are continually enforced.

g. Pay the extra fee to ensure that the blades are processed on a FIFO basis and to ensure that the containers used to store the blades are water proof and fully serviceable.

U.S. AIR FORCE



# 54H60 Propeller Blade Cracking


(b) (6) [redacted]

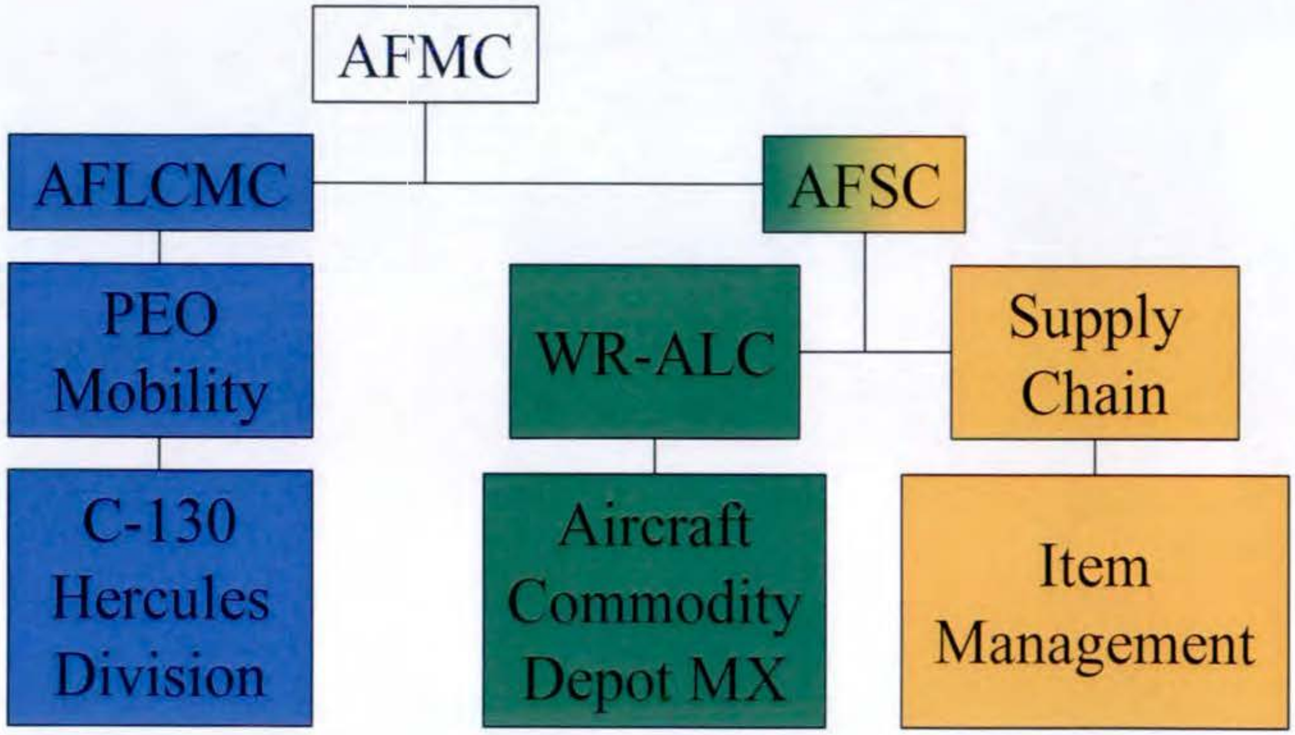
Chief Engineer
C-130 Hercules Division
AFLCMC/WLN

(b) (6) [redacted]

# AFMC Management of C-130H Propellers

U.S. AIR FORCE

*AFLCMC... Providing the Warfighter's Edge*




- C-130 Life Cycle Management, Engineering Authority, Depot Requirements

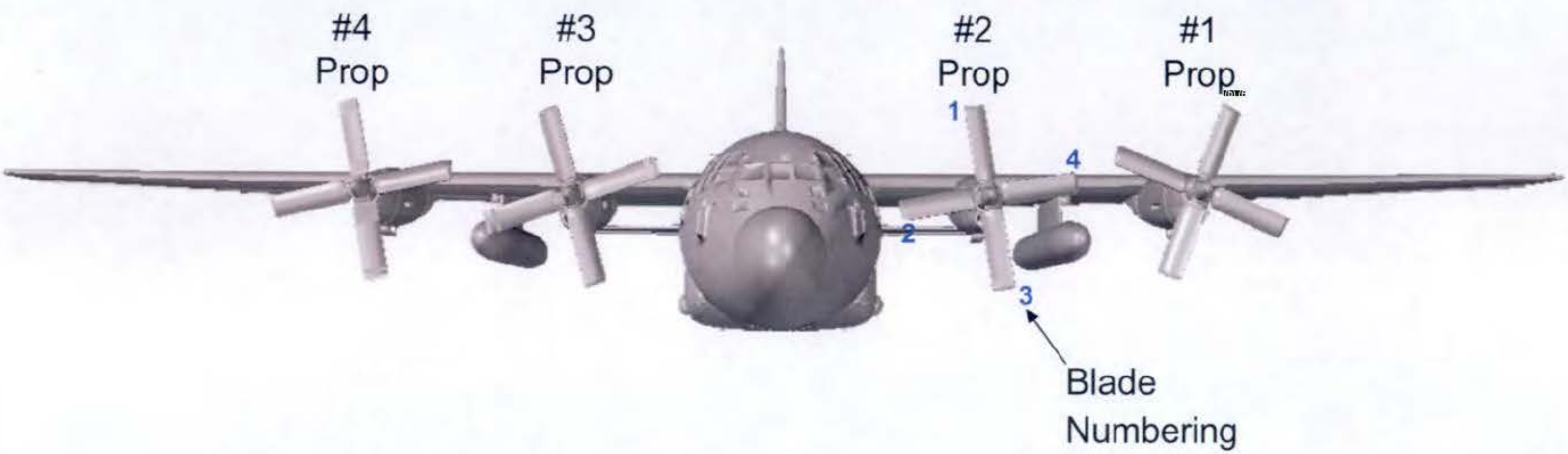
- Execution of C-130 Aircraft and Commodity (Propeller) Depot Maintenance

- Management of Propeller Supply Chain and Technical Orders

# Background



- **C-130 propeller numbering convention**



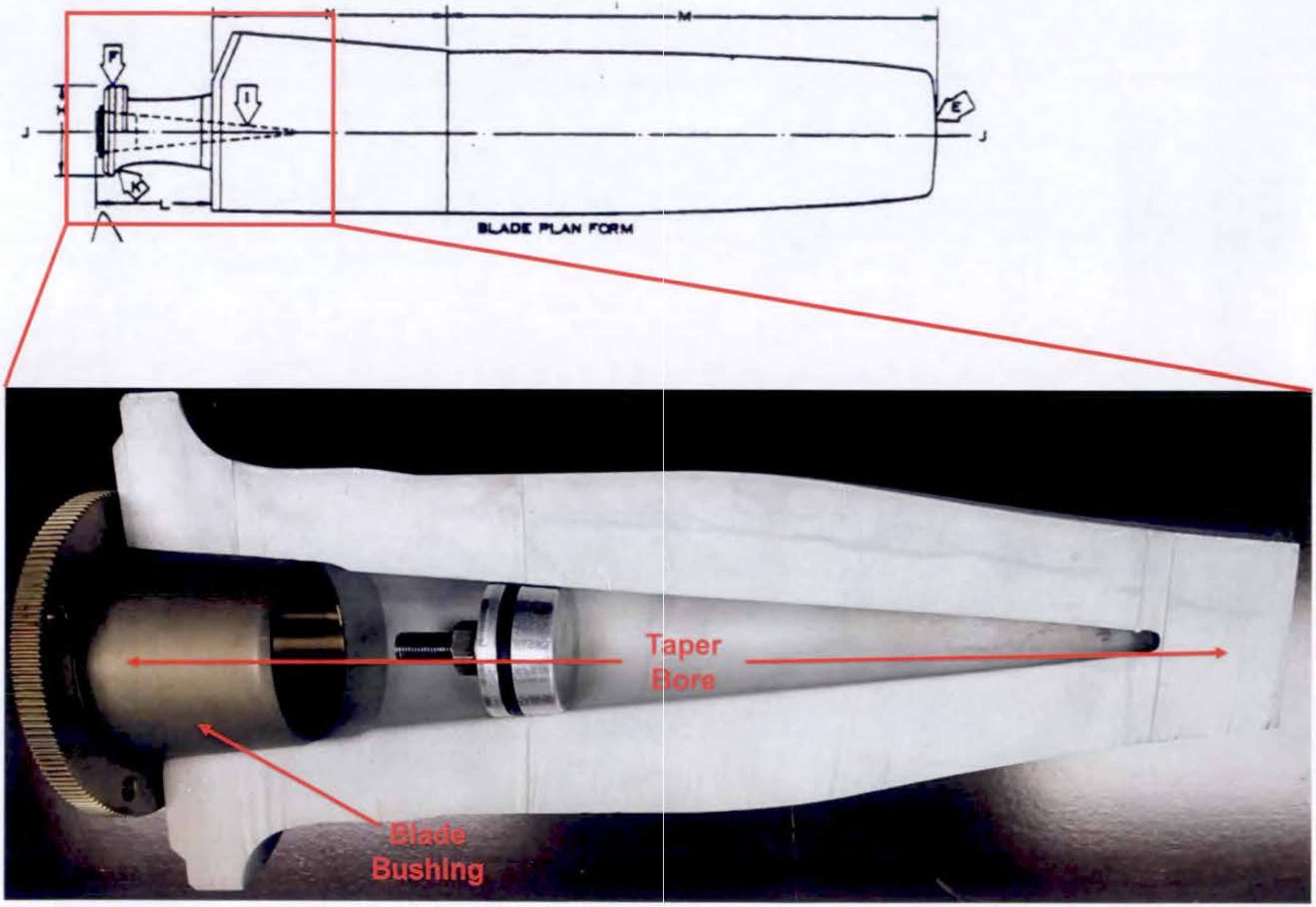
# Background

- 54H60 (4 blade) propeller in use on C-130 since 1958
  - Over 20,000 props/80,000 blades manufactured plus spares
  - Also used on P-3
  - Propellers overhauled worldwide
    - Robins AFB only complete overhaul facility for USAF & Navy
  - Current C-130 distribution: USAF: 266 Navy/USMC: 43 USCG: 20
- Propeller Blade
  - Manufactured from 7076-T6 aluminum
  - Taper bore machined in blade base
    - Allows for install of lead wool and weights to balance blade
    - Aluminum-Bronze bushing installed in taper bore
      - Pitch control imparted through bushing to blade
      - Bushing installed with interference fit
      - Corrosion commonly occurs at blade/bushing interface
  - Material & taper bore design used on various aircraft

# Blade Shank Cross-Section

U.S. AIR FORCE

*AFLCMC... Providing the Warfighter's Edge*



# Taper Bore Cracking Background



- Taper bore cracking
  - Basic design unchanged for 70+ years
    - Susceptible to corrosion & IGC – root cause not known
  - Cracking identified for at least 40 years
    - USAF aware of 23 documented instances of IGC
    - Includes C-123s, C-130s, P-3s, and commercial aircraft
    - IRT action item to develop exhaustive list
  - Corrosion/cracking mechanism not understood
    - Blade & bushing dissimilar metals leads to galvanic corrosion
      - Permatreat/primer intended to prevent galvanic corrosion
      - Possible IGC mechanism: SCC, hydrogen embrittlement
  - Measures to definitively eliminate corrosion/cracking unknown

U.S. AIR FORCE

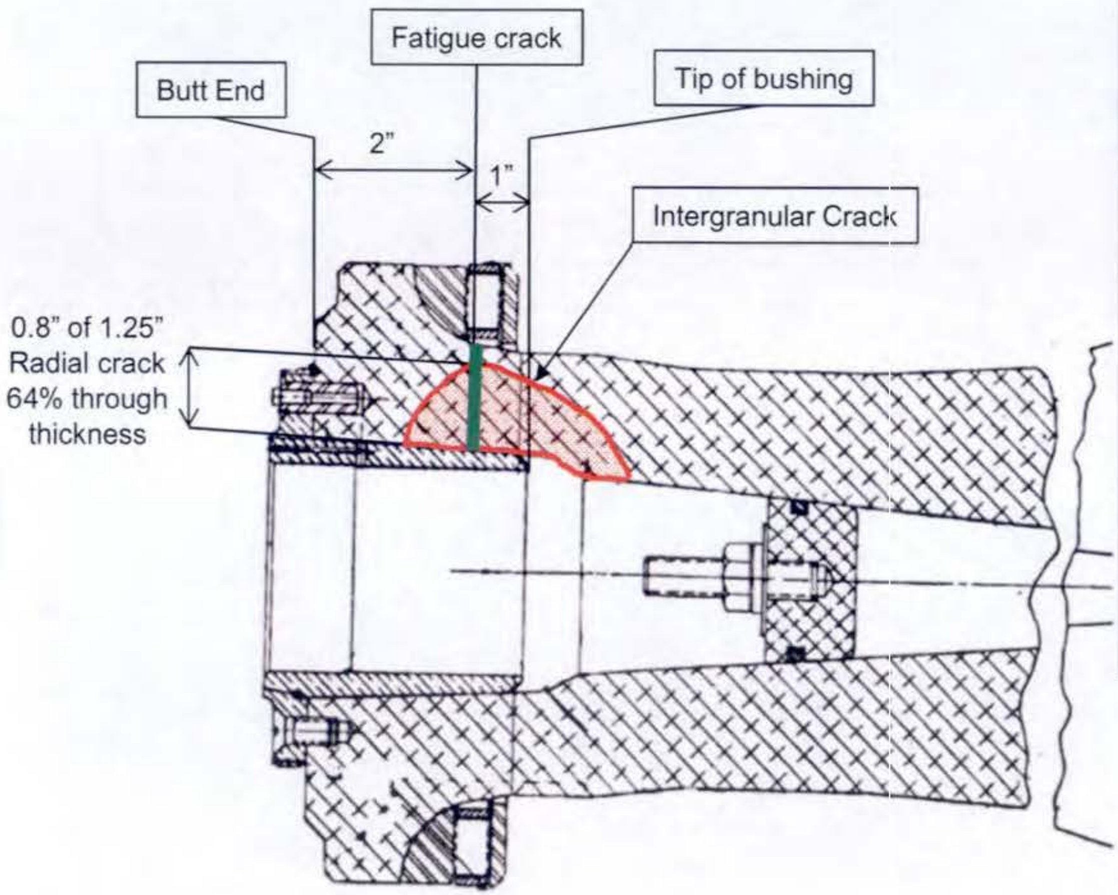
# KC-130T Mishap



- **Aircraft experienced catastrophic failure in flight**
  - Mishap occurred 10 July 2017 over West Central Mississippi
  - Blade 4 of prop 2 (P2B4) liberated due to blade fatigue cracking
    - Navy analysis concluded fatigue initiated due to corrosion and intergranular cracking (IGC) in blade taper bore
      - Corrosion and IGC present during last overhaul in 2011
        - » Corrosion/IGC not removed – reason unknown
      - IGC crack propagated radially and axially
        - » IGC crack did not extend to outer surface of blade
      - Fatigue crack initiated from IGC
        - » Crack propagated circumferentially to failure
    - IRT reviewing history of cracks to understand cracking mechanism
  - All subsequent mishap events resulted from liberation of P2B4

# P2B4 Crack Locations






**Key Dimensions:**

- Radial crack initiated at ID, extending radially 0.8" towards OD, at which point the fatigue crack initiated
- Radial crack runs a total axial length of 2.65"
    - Inspectable length of crack from ID with bushing installed is 1.25", i.e. length beyond outboard tip of bushing along ID
- Fatigue initiation from radial crack is 1" inside outboard tip of bushing

# Overhaul Background

- **USAF and Navy reqmnts originated with UTAS manual**
- **USAF, Navy, and UTAS reqmnts diverged**
  - Divergence due to differing engineering assessments
    - Borescope Inspection
      - Developed by UTAS and adopted by Navy
      - USAF initially implemented; deemed subjective – discontinued
    - Permatreat and install bushing with primer
      - Developed by UTAS and adopted by Navy
      - Not adopted by USAF – deemed not effective
    - Low plasticity burnishing
      - Developed under Navy contract; 100% application for Navy
      - Not adopted by UTAS
      - Authorized for USAF blades on condition; replaced shot peen
    - Various process parameters differed
      - Ex: Etch time, concentrations, and temperatures

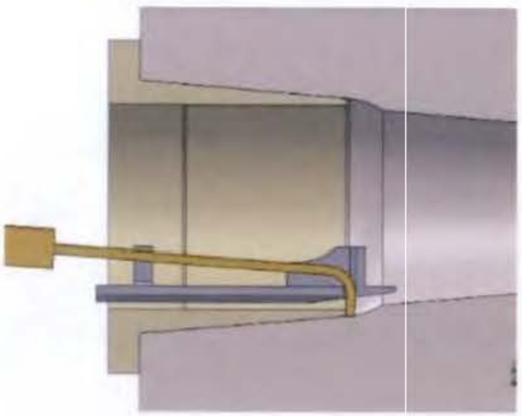
# USAF Response to USMC Mishap

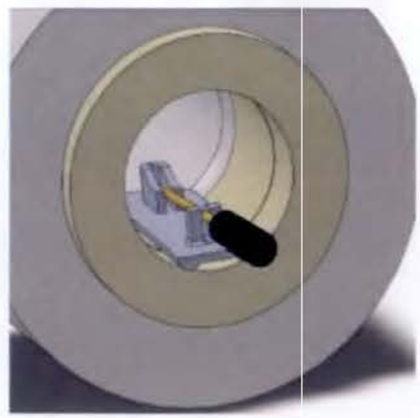


- TCTO issued 23 Aug to remove props with LPB blades
  - USAF concern LPB contributed to atypical crack propagation
    - Intergranular crack did not propagate to blade outer surface
    - 45 blades/26 props removed from service
    - TCTO complete
- Independent Review Team requested 5 Sep 17
  - Members: AFLCMC, AFSC, AFRL, Navy, UTAS, and Lockheed
  - Assess operational risk of continued operation of USAF aircraft
    - Risk assessed as SERIOUS and accepted by PEO Mobility
  - Evaluate blade maintenance requirements to maintain structural integrity
    - Overhaul requirements deemed insufficient to ensure prop airworthiness after overhaul
    - Overhaul line for USAF props suspended on 29 Sep 17
      - Navy – blade suspended: 2 Sep 17, props: 5 Oct 17

# Field Level Efforts

- **Back shop inspection**
  - **Inspection of taper bore for cracks beyond bushing**
    - **Only capable of detecting long cracks**
    - **TCTO issued 17 Nov 17**
      - **130 of ~1200 USAF props inspected**
      - **Corrosion detected on 2 blades – no other defects noted**
    - **Inspection required during prop build-up and repairs**



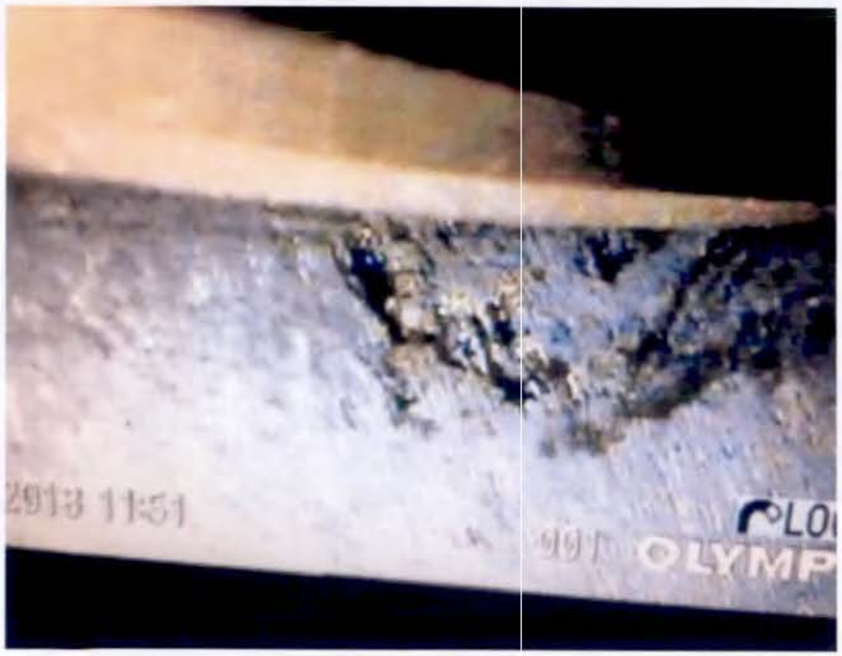


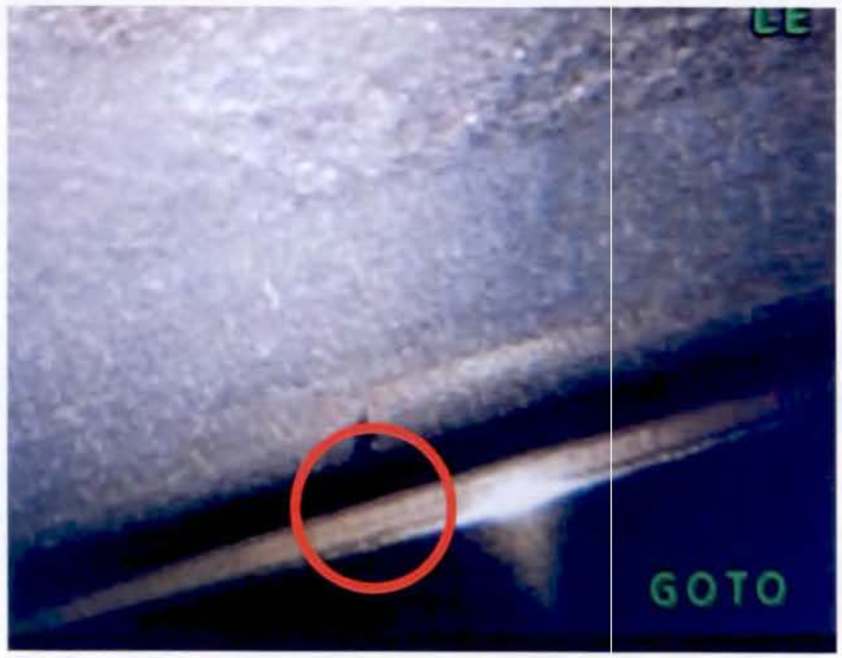
# Field Level Efforts – cont'd

U.S. AIR FORCE

*AFLCMC... Providing the Warfighter's Edge*

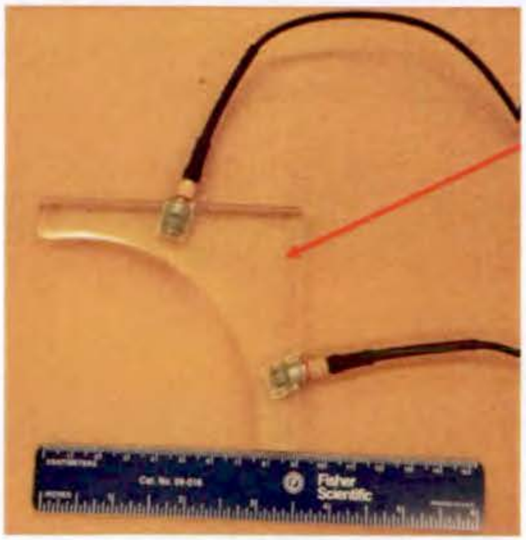
- **TCTO 3H1-18-515 results**
  - **Pitting corrosion found on 2 blade via TCTO**
    - **Blade Serial N830842 found at Peterson AFB**
    - **Blade Serial N829452 found at Carswell ANG**
    - **Blades being evaluated by AFRL metallurgists**



# Field Level Efforts – cont'd

- AFRL attempting to develop on wing ultrasonic insp
  - On wing access to blade shank very limited
  - Inspection technically challenging
  - Specialized training would be required
  - Feasibility is questionable




Actual size required for on-wing testing, except wedge thickness needs to shrink from 0.45" to 0.2"

# Depot Level Efforts

- Overhaul processes for non-blade components
  - Joint USAF and Navy effort to update requirements
  - No major technical challenges
  - Technical Order (T.O.) and Work Control Document (WCD) updates
    - Align USAF and Navy Requirements
    - Optimize processes and procedures
    - Identify and correct omissions and errors
  - LRIP start on 14 Dec 17
    - T.O.s and WCDs updated to correct identified issues
    - Operational supplement being finalized

U.S. AIR FORCE

# Critical Processes

*AFLCMC... Providing the Warfighter's Edge*

Updated: 20 Feb 2018

| Category | Process | Interim Tech Data | WCDs | Process Orders | Facilities | Equipment | Personnel Training | Personnel Certification |
|---|---|---|---|---|---|---|---|---|
| Barrel | Teardown | | | N/A | | | | |
| | Inspection (NDI) | | | N/A | | | | |
| | Repair | | | | | | | |
| | Surface Treatment | | | | | | | |
| Dome | Teardown | | | N/A | | | | |
| | Inspection (NDI) | | | N/A | | | | |
| | Repair | | | N/A | | | | |
| | Surface Treatment | | | N/A | | | | |
| | Build-up | | | N/A | | | | |
| Prop Assembly | Build-up | | | | | | | |
| | Test | | | N/A | | | | |
| | Disassemble/Preserve & Wrap Blade | | | N/A | | | | |
| Preservation | In-process requirements | | | N/A | | Spray/Dip Barrel | | |
| Packaging | Crate Inspection | | N/A | N/A | | | | |
| | Preservation | Per SPI | | N/A | | | | |
| | Packing | Per SPI | | N/A | | | | |
| Quality | QC Inspection | | | N/A | | | | |

# Depot Level Efforts – Cont'd

- Overhaul of propeller blade
  - Efforts guided by IRT
  - Significant efforts in work
    - Determine optimum process flow
    - Determine optimum etch process
    - Update Fluorescent Penetrant Inspection process/facilities
    - Develop eddy current inspection equipment/procedures
    - Develop ultrasonic inspection procedure
    - Update borescope inspection and equipment
    - Determine optimum bead blast process
    - Update tech data, work control documents, process orders

# Optimum Blade Process Flow



1. Aquamizer
2. Glass Bead Blast
3. Borescope Inspection
4. Etch and DeSmut
5. FPI
6. Eddy current inspection of taper bore with "honing" probe
7. Ultrasonic inspection of screw holes
8. MWM
9. Magnetic particle inspection of beveled washer
10. Repair processes
    a. Reaccomplish steps 5-8, shot peening, etc as applicable
    b. Repair and inspection of beveled washer
11. Bushing fit check
12. Anodize
13. Permatreat
14. Install bushing with primer

U.S. AIR FORCE

# Critical Blade Overhaul Requirements
# Low Rate Production

*AFLCMC... Providing the Warfighter's Edge*

Updated: 20 Feb 2018

| Critical Processes | Technical Solution | Tech Data | WCDs | Process Orders | IRT Review | Facilities | Equipment | Personnel Training | Personnel Certification |
|---|---|---|---|---|---|---|---|---|---|
| Aquamiser | | | | | | | | | |
| Glass Bead Blast | | | | N/A | | | | | |
| Borescope Inspection | | | | | | | | | |
| Etch and DeSmut | | | | N/A | | | | | |
| FPI | | | | | | | | | |
| Eddy Current Insp w/honing probe | | | | N/A | | | | | |
| Ultrasonic Insp screw holes | | | | N/A | | | | | |
| MWM | | | | N/A | | | | | |
| MPI Beveled Washer | | | | N/A | | | | | |
| Document Insp findings | | | | N/A | | N/A | N/A | | |
| Insp disposition criteria | | | | N/A | | N/A | N/A | | |
| Repair processes | | | | | | | | | |
| Insp following repair | | | | N/A | | | | | |
| Repair and Insp of Beveled Washer | | | | N/A | | | | | |
| Bushing Fit Check | | | | N/A | | | | | |
| Anodize | | | | N/A | | | | | |
| Permatreat | | | | N/A | | | | | |
| Bushing Install w/primer | | | | N/A | | | | | |
| Quality | | | | N/A | | N/A | N/A | | |

# Depot Blade Overhaul – cont'd

- LRIP
  - Remaining efforts
    - Borescope – update procedures and manufacture fixture
    - FPI – complete facility updates & validate final procedures
    - MWM – update procedures and reference standards testing
  - Readiness Review ECD: 8 Mar 18
- Long term efforts
  - Identify root cause of corrosion and cracking
  - Identify optimum methods to eliminate corrosion/cracking mechanisms

# Summary

- **USAF operating aircraft with SERIOUS risk**
  - Inspection in work to identify long cracks at field level
  - SERIOUS risk will remain until props overhauled with new process or new blades installed
- **Majority of Navy/USMC C-130 fleet remain grounded**
- **Significant overhaul improvements being implemented**
  - Common requirements for USAF, Navy, and UTAS
- **Long term efforts to identify and eliminate corrosion/cracking of propeller blade**

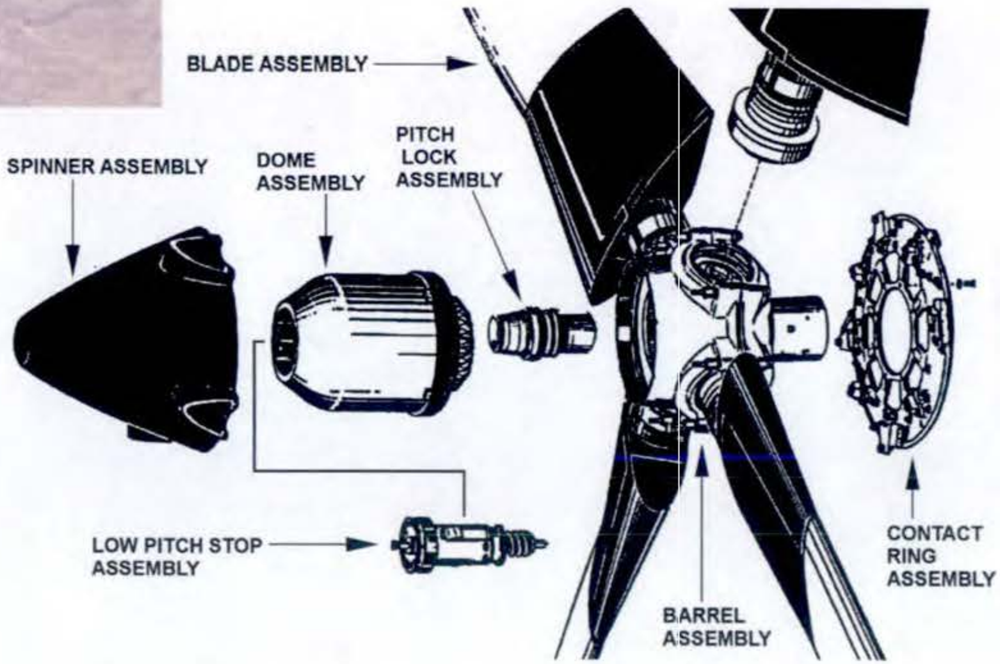
UTC Aerospace Systems

# 54H60 Propeller Blade 101

September 22, 2017

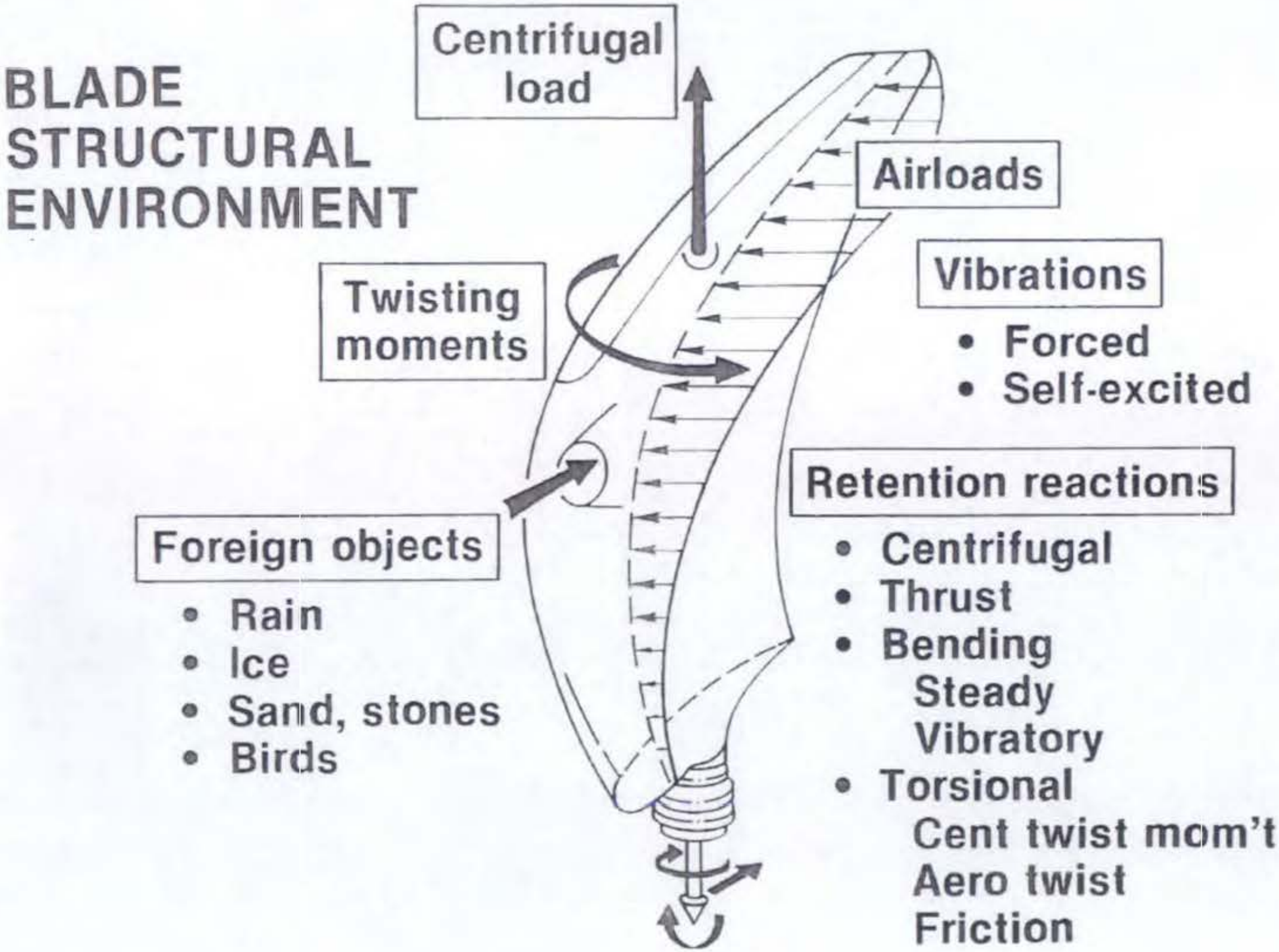
# 54H60 Loads and Stress

## Rotating Components of 54H60 Propeller



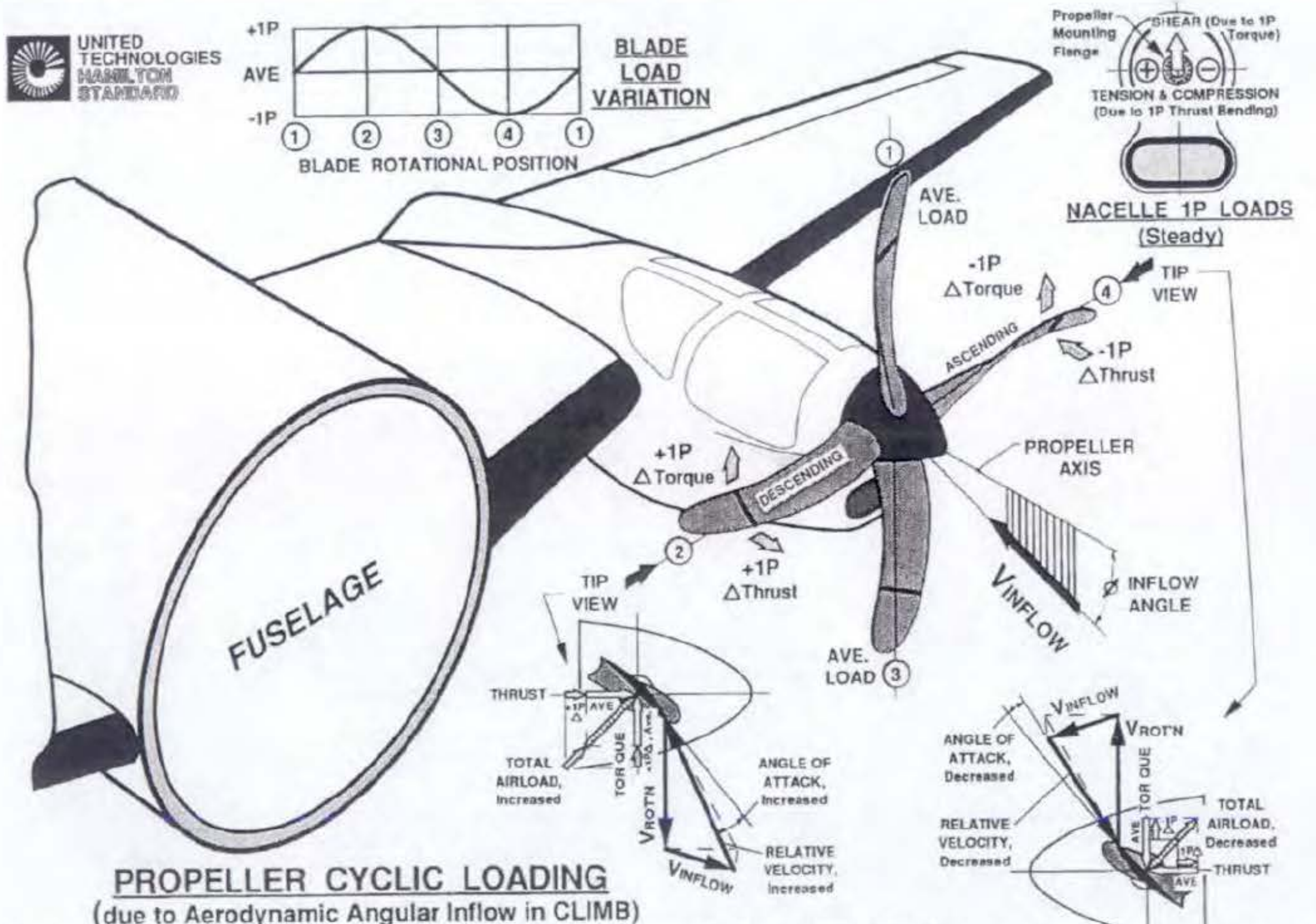
# 54H60 Loads and Stress

## Blade Structural Environment



# 54H60 Loads and Stress

## Blade Stresses from External Loading 1P




PROPELLER CYCLIC LOADING
(due to Aerodynamic Angular Inflow in CLIMB)

NOTE: Increased Airload on Blade 2 and decreased Airload on Blade 4 cause 1P (once per rev) Cyclic Loading on Prop Components including Blades, Seals, Retentions & Hub, as well as Mounting Flange & Prop Shaft. However, the loading on Nacelle & Wing static structures is Steady & Includes an upward Shear & a Bending Moment (Tension & Compression, shown in sketch, upper right)

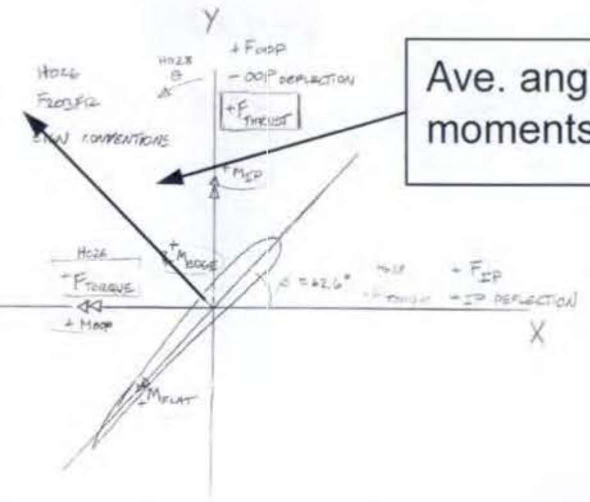
(b) (6)

Feb. 14, 1994

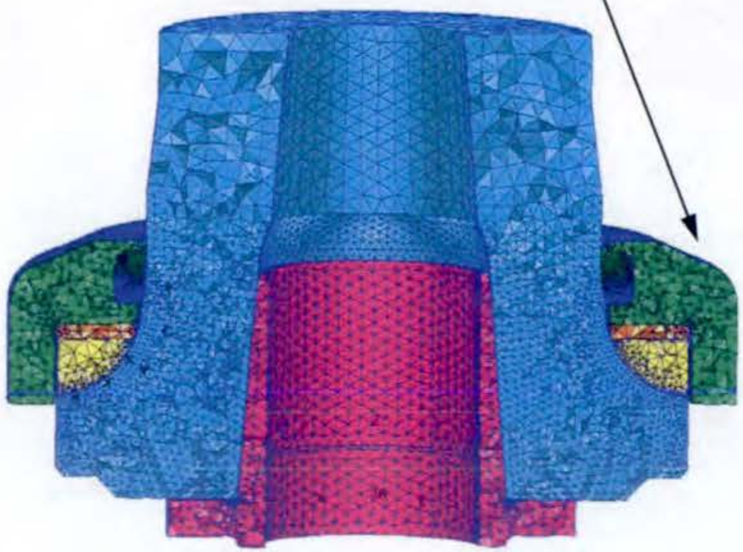
# EX. 54H60 Shank FEM with Hub and Thrust Washer

Loads applied to top of shank. Steady and Cyclic moments applied as actual moments at appropriate moment angles.

Ave. angle for Steady plus Cyclic moments is 50 deg




Section of hub taken at approx 50 deg. From OOP direction to be in-line with moments

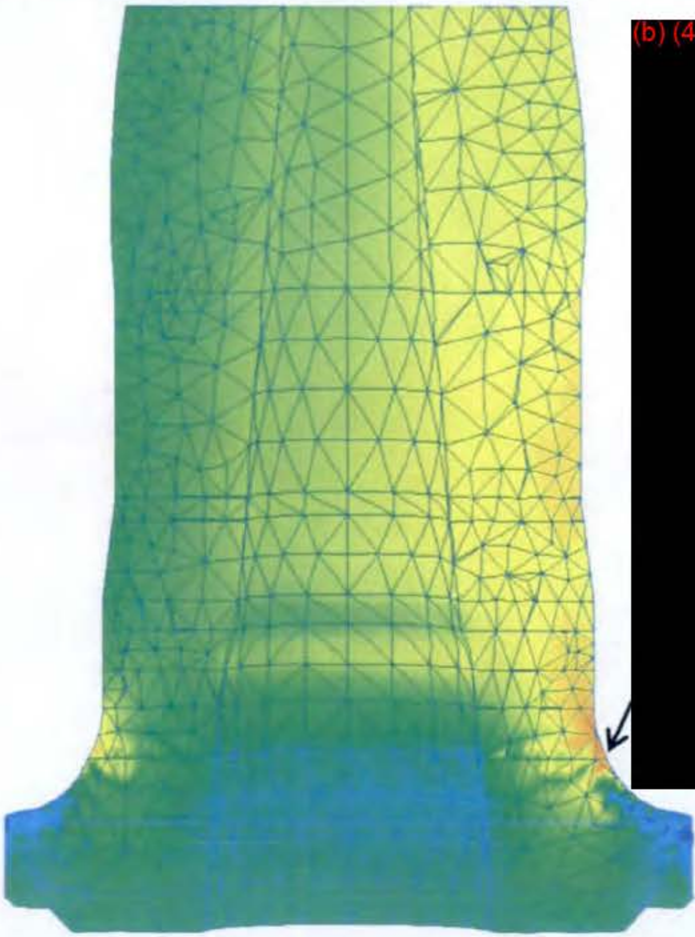


*Not the final model*

# 54H60 Loads and Stress

Steady Loads

Camber Side Face Side



(b) (4) [redacted]

(b) (4) [redacted]

Cyclic Loads

Camber Side Face Side

(b) (4) [redacted]

(b) (4) [redacted]

C130 Climb Loads Spanwise Stress

*Not the final model*

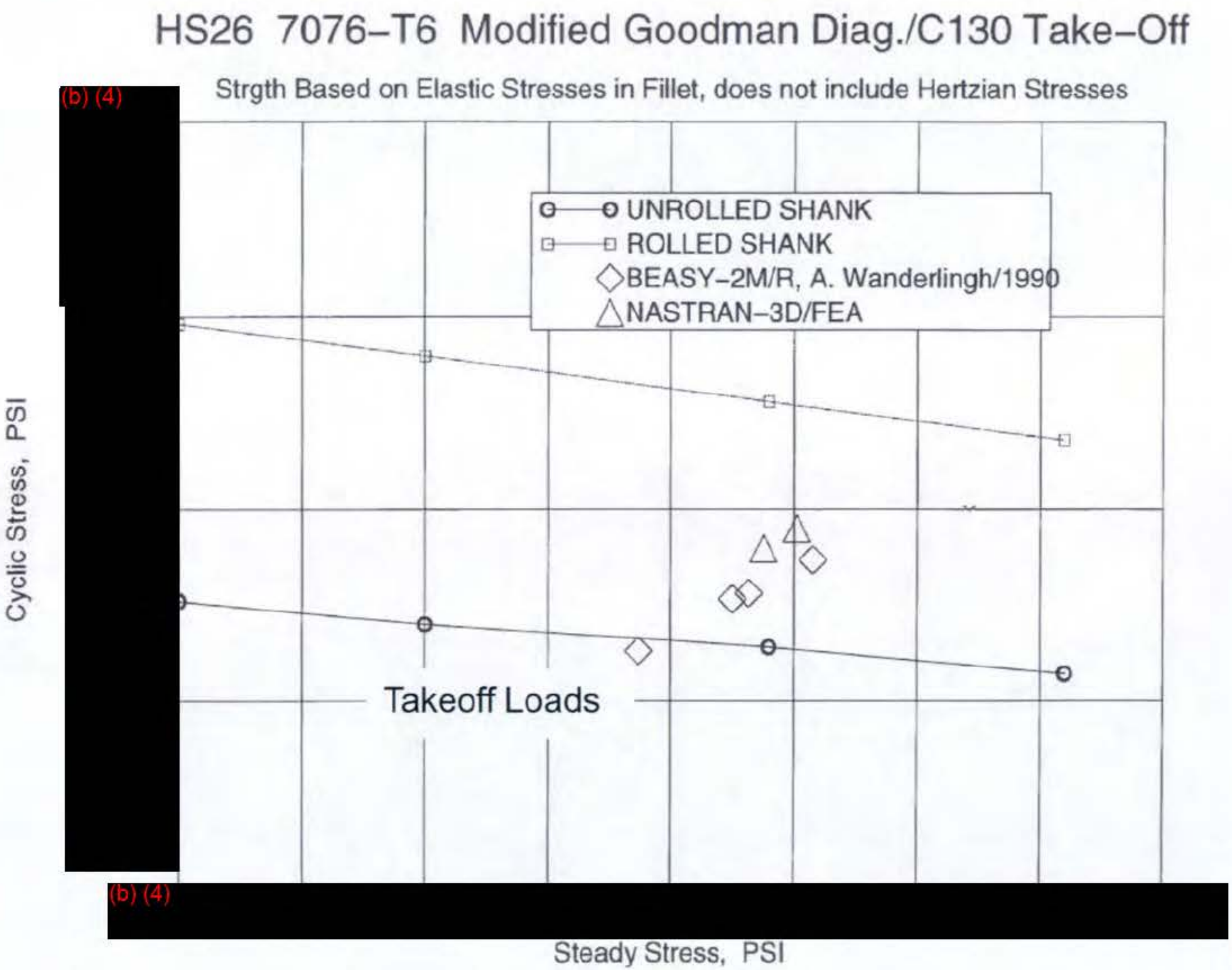
UTC Aerospace Systems

# Blade Stresses from External Loading 1P

(b) (4)

[redacted]

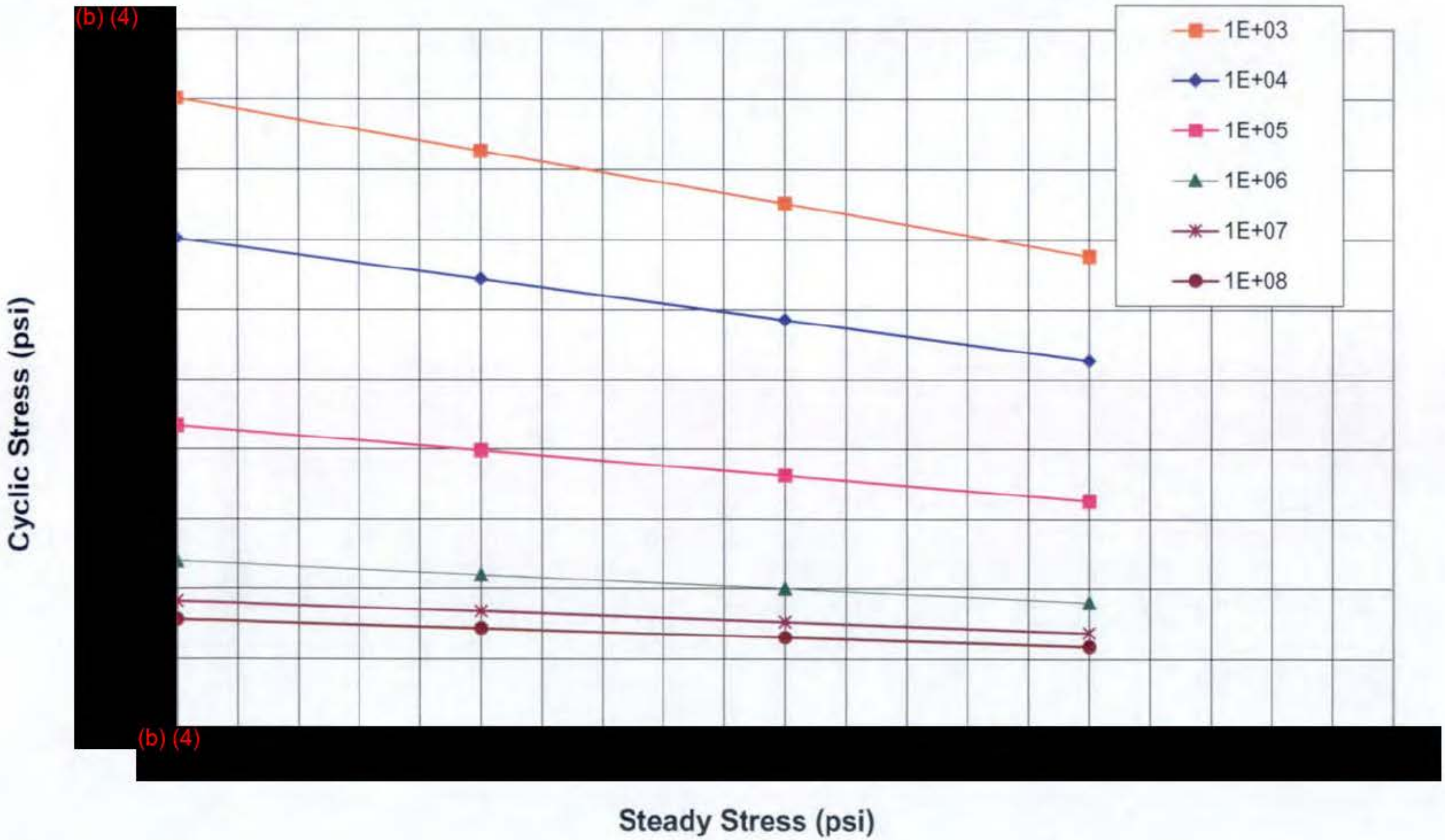
# Blade Stresses from External Loading 1P




Tue Nov 19 14:01:16 1996

# Blade Shank Allowables based on Beam Theory

## 54H60 Rolled Shank Design Goodman



# Blade Shank Allowables based on Beam Theory

Table I: 54H60 Aluminum Blade Shank Design Limits

| Location | Surface Condition | Continuous Stress (psi) |
|---|---|---|
| Shank | Rolled | (b) (4) [redacted] mean (1) |

(1) Mean Stress correction is (b) (4) [redacted]

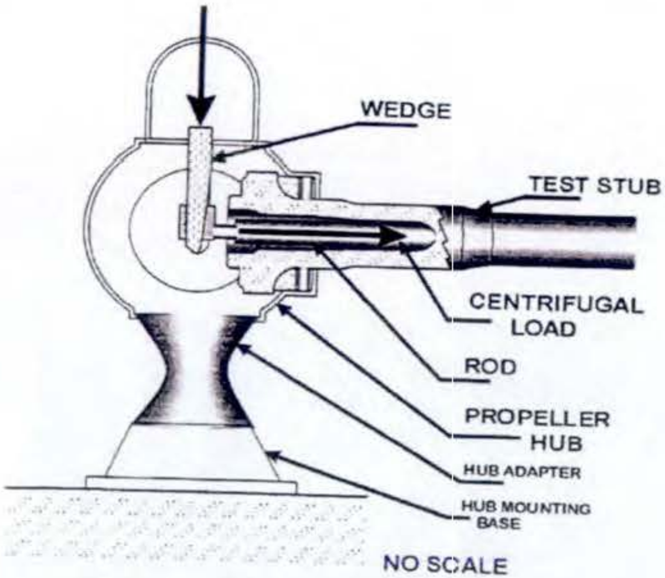
| | | Test Results , HCF | | | | | |
|---|---|---|---|---|---|---|---|
| Location | Surface Condition | X Bar, psi | σ/X Bar (%) | n | Comments | A-Basis | Design Limit |
| Shank (2) | Rolled | 10440 | 10.5 | 10 | Mean Stress=15 ksi | 6052 | (b) (4) [redacted] |

(2) B-shank results, H-shank show no fractures with runout at 9300 psi, see Fig. 1

# Blade Shank Allowables based on Hub Test Stubs

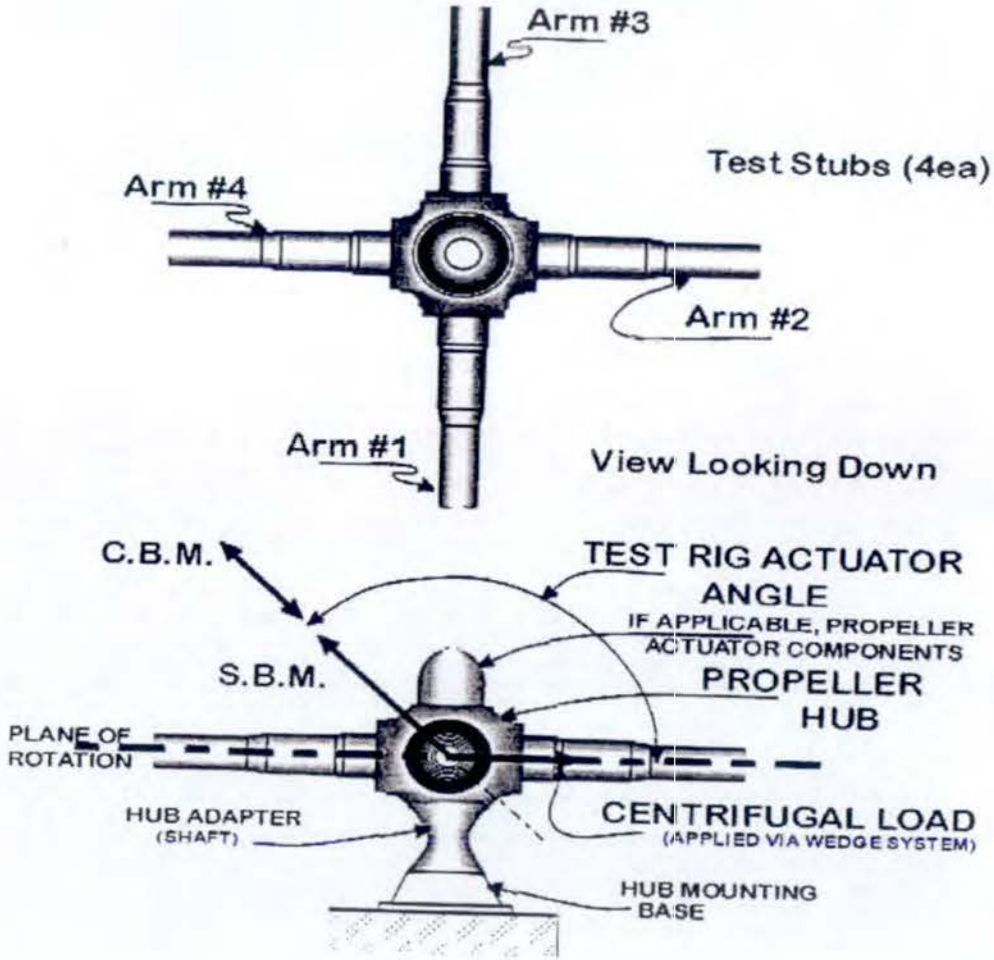
FIGURE 1
SKETCH OF THE WEDGE SYSTEM THAT IMPOSES THE CENTRIFUGAL LOAD ON THE TEST BARS

See drawing 11X60610 (Fig. 4) for actual test parts.




The wedge system shown above drives the rod into the blade taper bore of the test stub thus simulating the centrifugal load.

FOUR BLADED HUB ESA OR FSI LOAD SCHEMATIC
1P TEST MODE



# Blade Shank Allowables based on Beam Theory (n=10)

(b) (4)

[redacted]

UTC Aerospace Systems

# Unrolled "H" shank tests from late 1900's

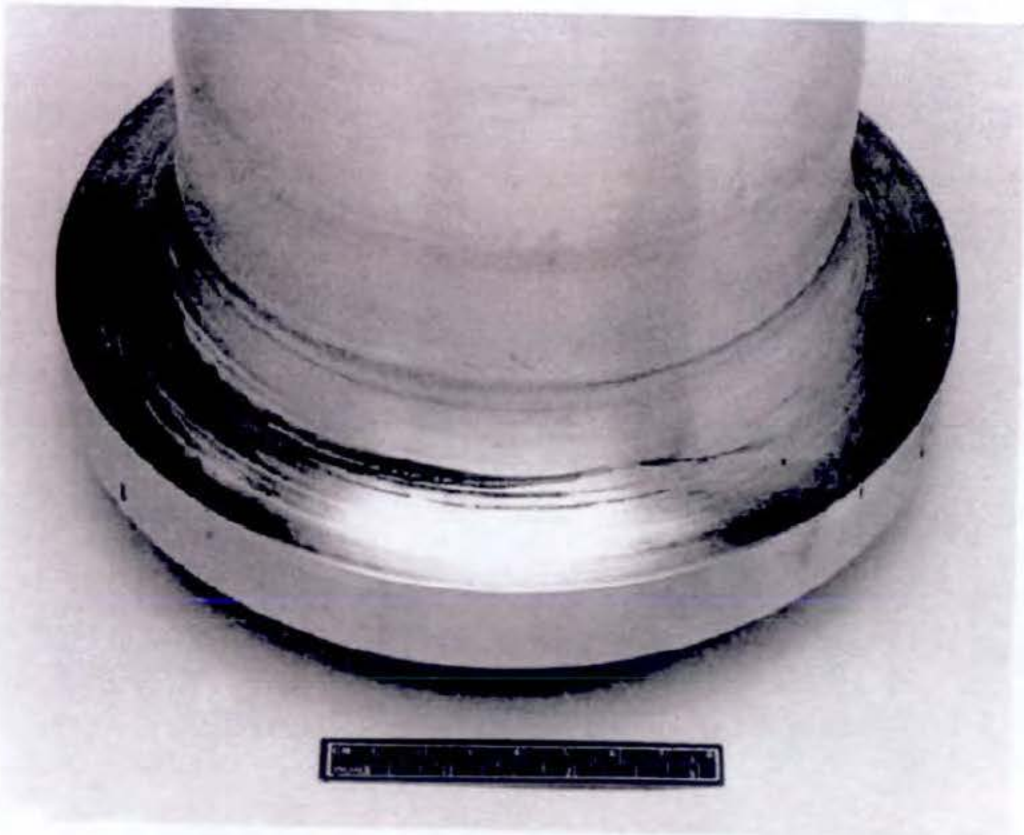
(b) (4)

[redacted]

UTC Aerospace Systems

# Unrolled "H" shank tests from late 1900's

Overview of the blade retention fillet on test bar 4 that had developed the pictured crack at 550,000 cycles. Fretting patterns adjacent to the crack from contact with the bevel washer are evident in this view.

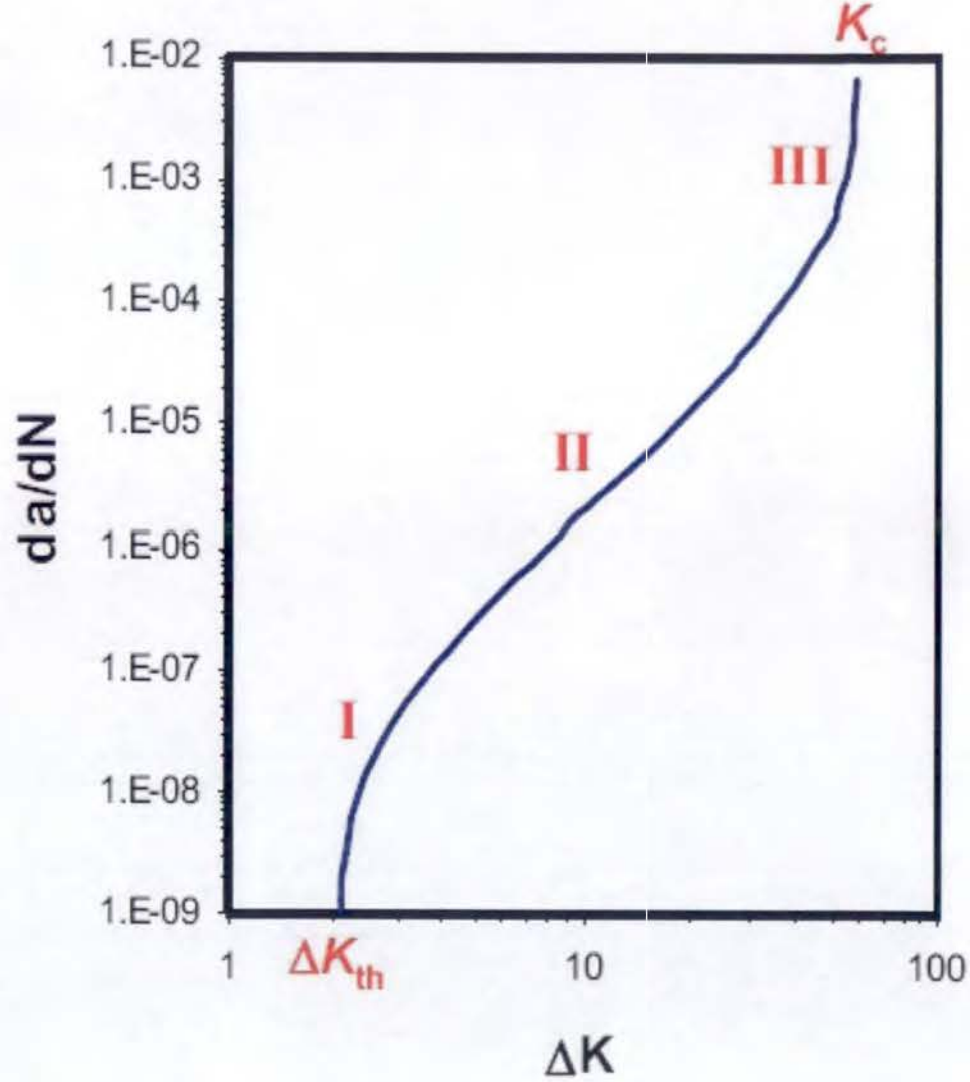


## Testing with Radial Cracks

- No full scale hub-stub testing with radial cracks
- Radial cracks occur at different locations
- Some testing for evaluation of corrosion and SCC in 2010 (HSER29567)
- BEASY analysis was performed for determining stress intensity factors and crack propagation in 2003

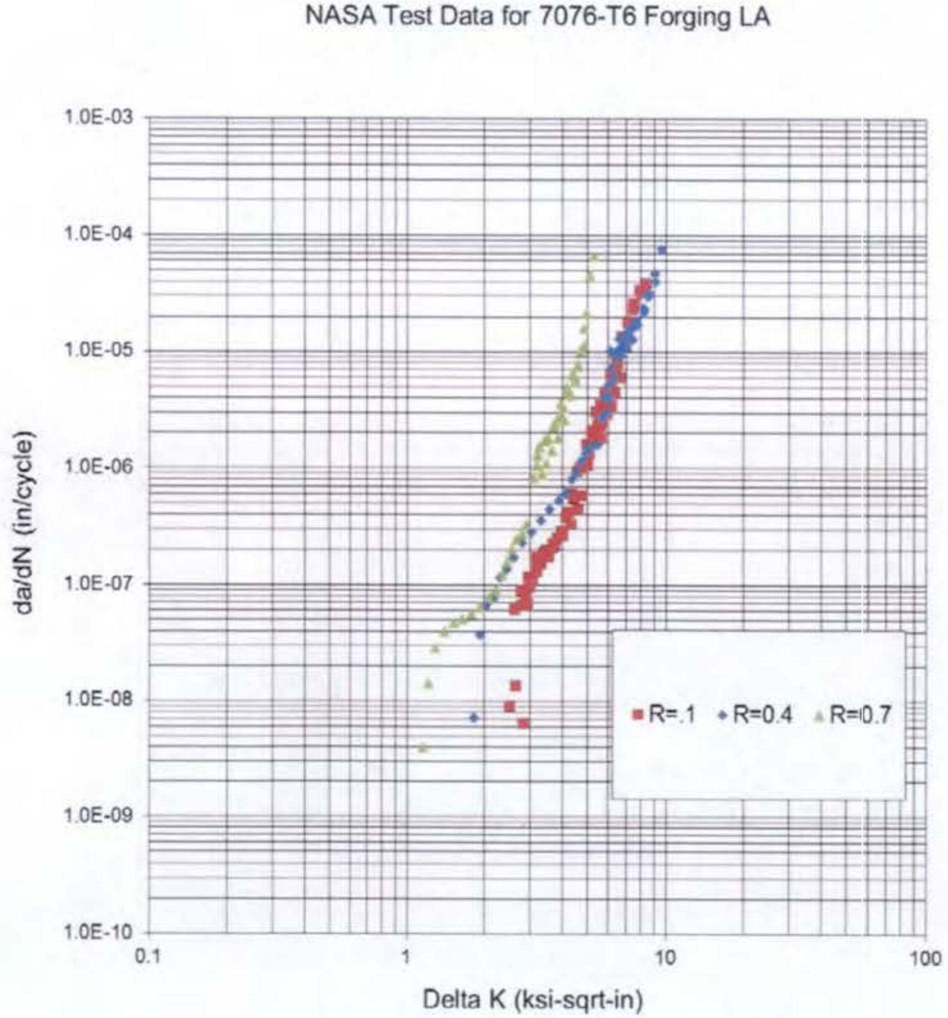
# Fatigue Crack Growth Model 2003

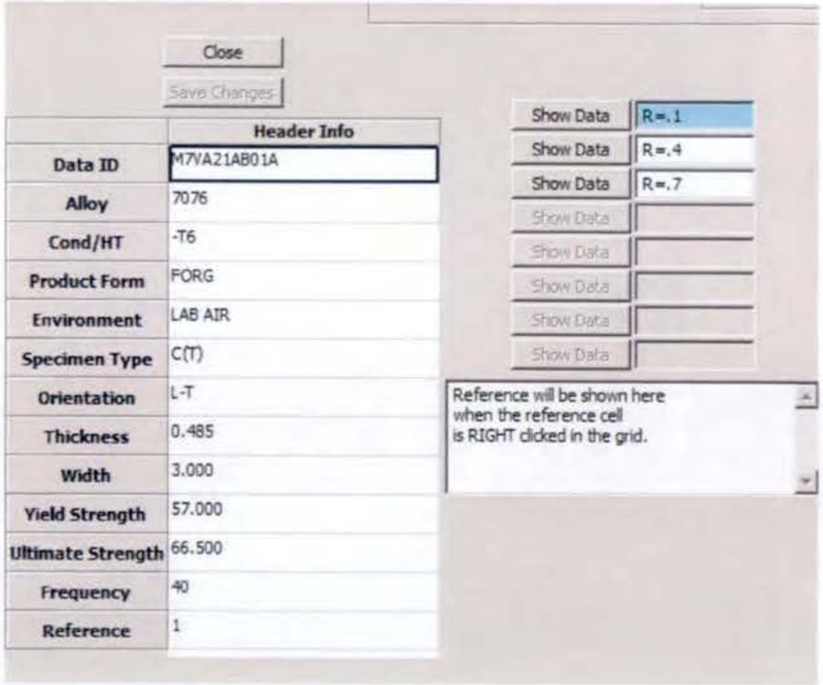
- **FCG data are commonly represented on a log-log graph of $\Delta K$ vs. *da/dN***
- **Three typical regions:**
  - Region I (near-threshold)
    - Very slow growth
    - No growth below $\Delta K_{th}$
  - Region II (steady-state)
    - $\Delta K$ vs. *da/dN* is linear
  - Region III (near instability)
    - Rapid, unstable growth
    - Fracture at $K_{max} = K_c$



# Fatigue Crack Growth Model 2003

## NASA data on 7076-T6 Specimens removed from Forgings L-T




ITAR DATA - Subject to the export control restrictions of the first page of this document

# Fatigue Crack Growth Model 2003

## NASA data on 7076-T6 Specimens removed from Forgings L-T

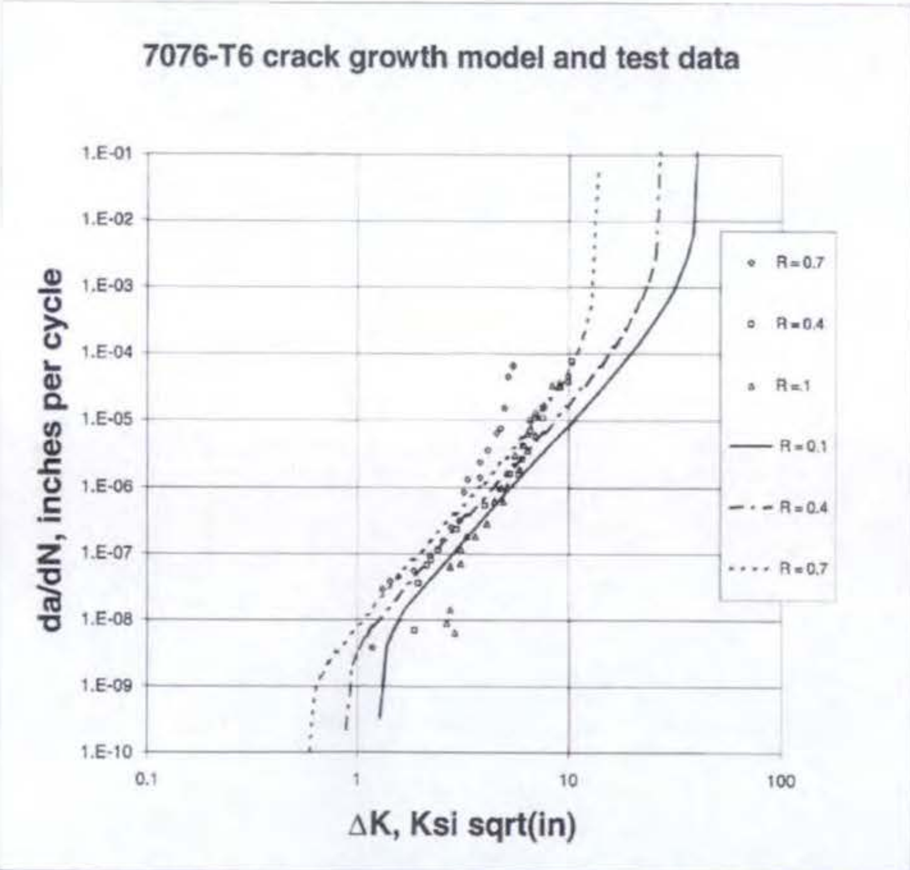
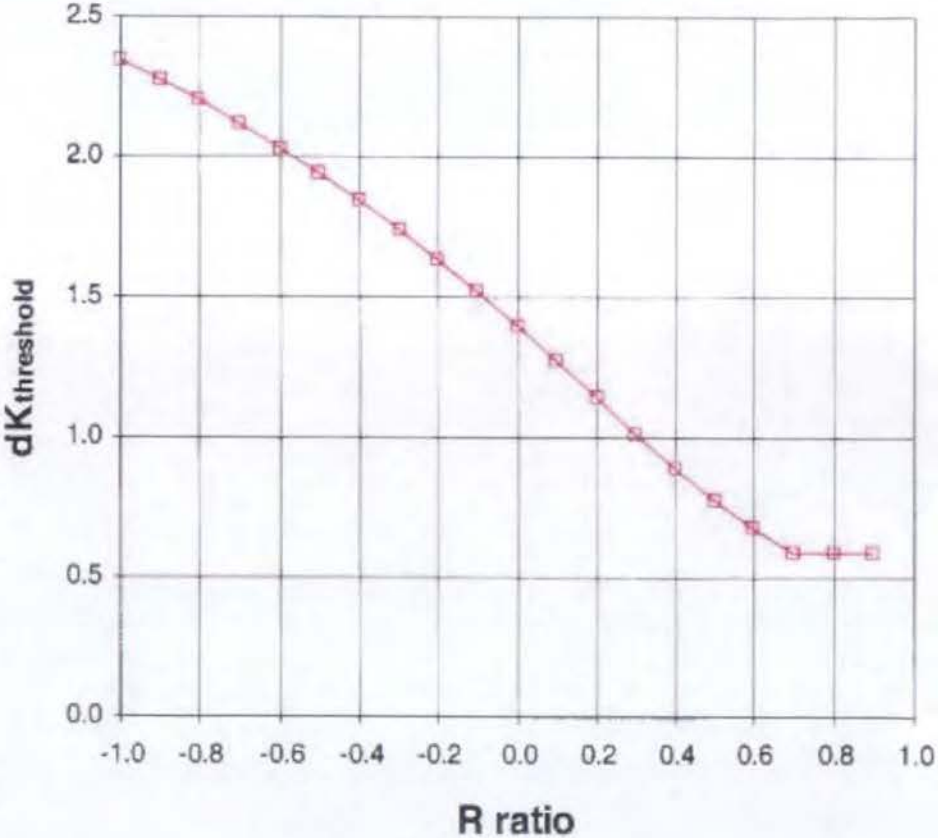



Figure 1. Existing 7076-T6 crack growth rate data and the model used in the crack growth analysis.



# Fatigue Crack Growth Model 2003

## Used a BEASY to model for Propagation Study

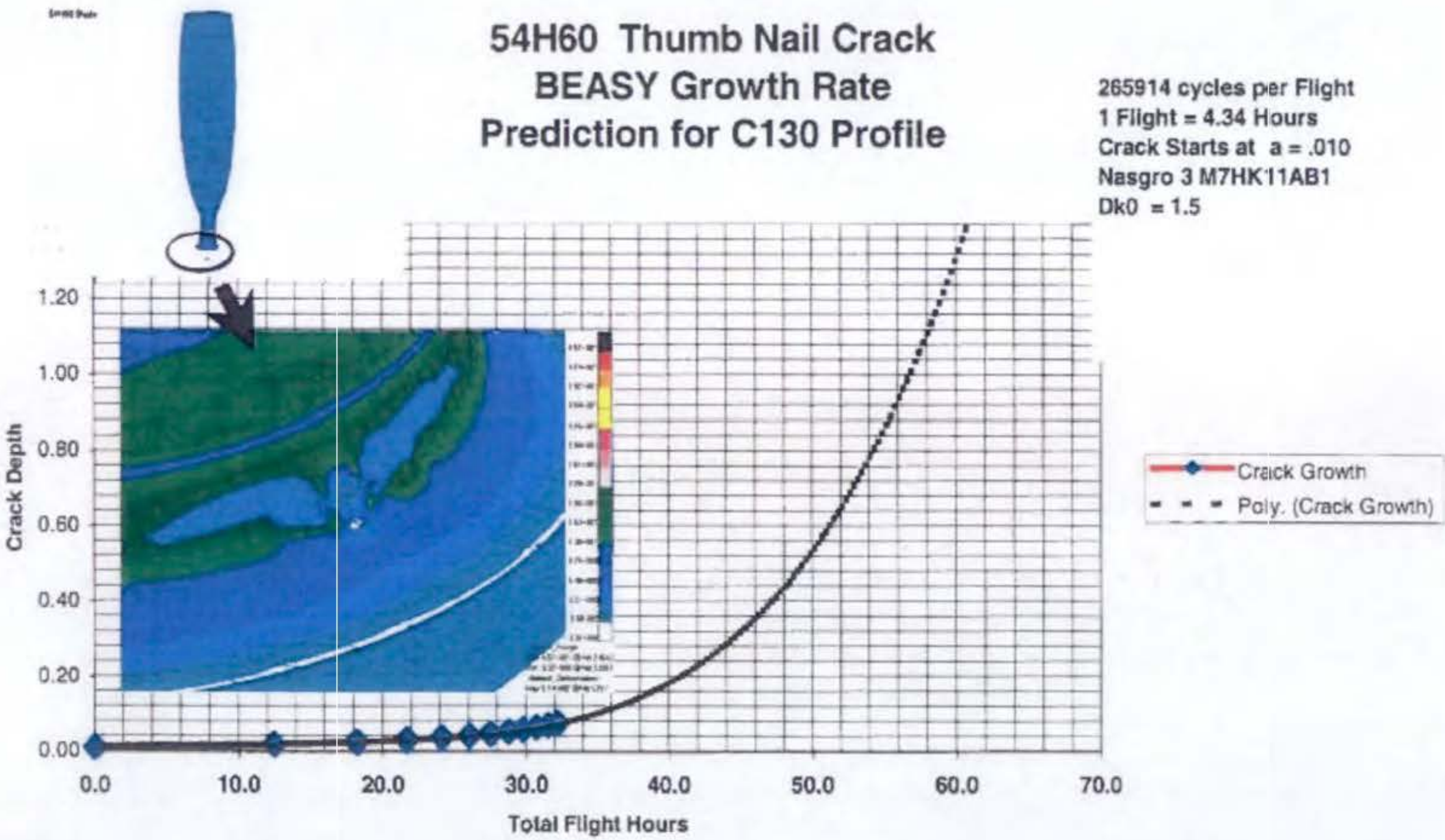



Figure 10. BEASY crack growth simulation of a .010" deep semicircular crack under C130 mission loading.

# Fatigue Crack Growth Model 2003

## Used a BEASY model in the presence of a radial crack

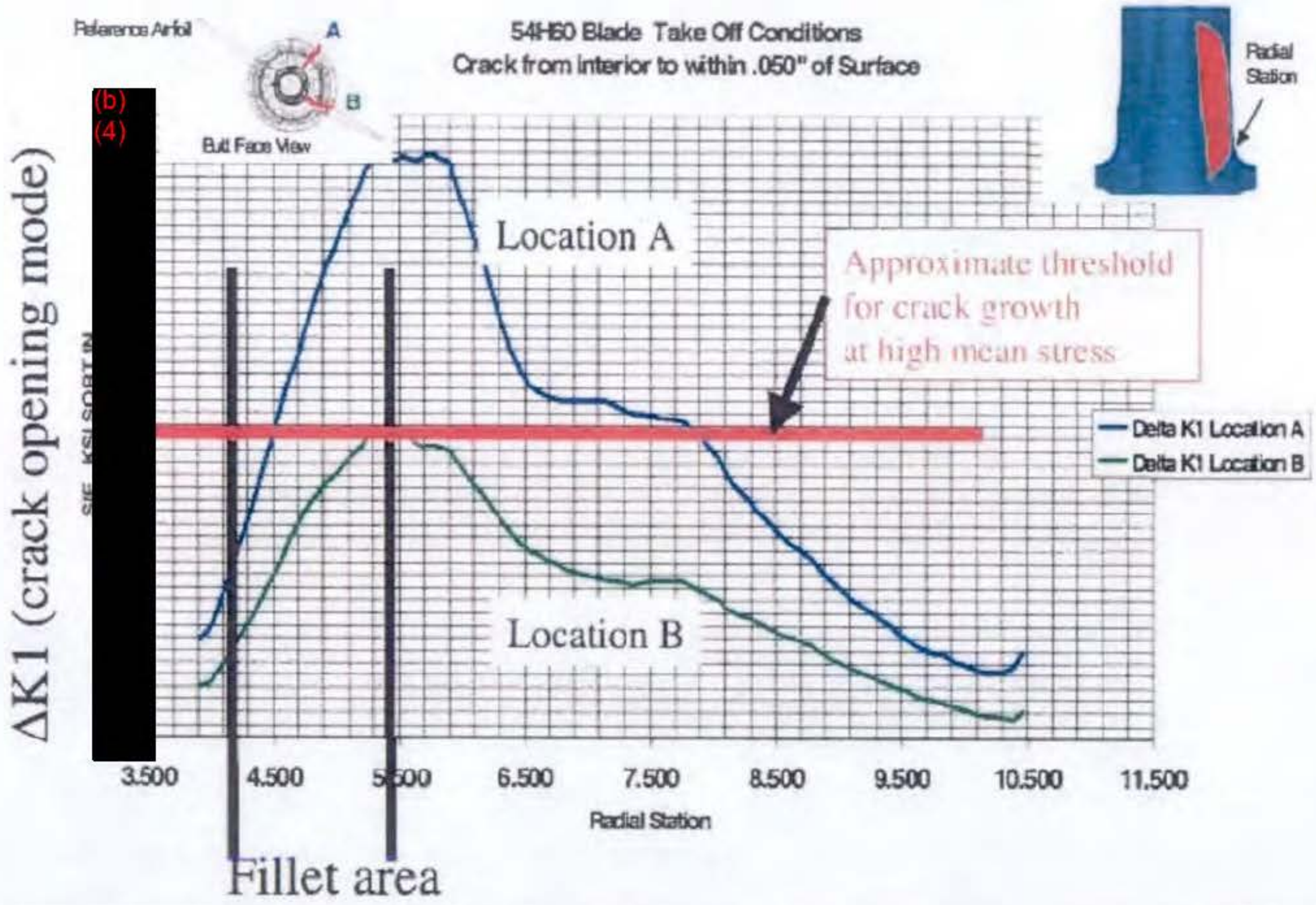
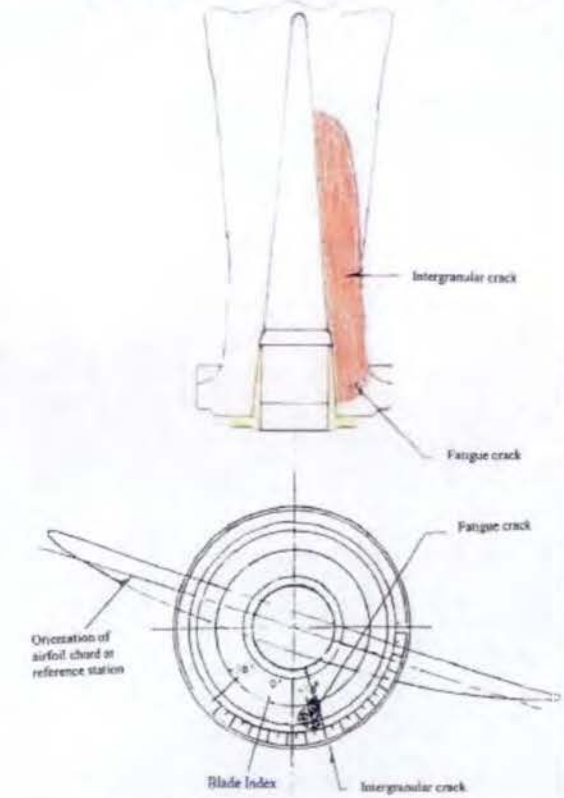



**Figure 3. Crack opening stress intensity during take-off for a stress corrosion crack that ends .050 inches below the outer surface of the blade shank.**

# Fatigue Crack Growth Model

## 3 previous fractures where radial crack turned chordal

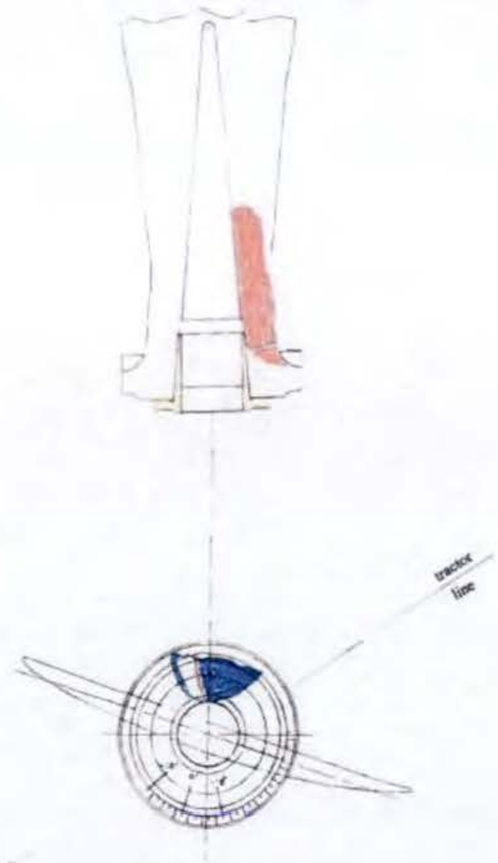
HSER 29566
Similar location to recent event




Blade S/N N793341 Propeller S/N N226244

Royal Saudi Air Force C-130/T56-A-15 Installation 1,090 Hours TSO

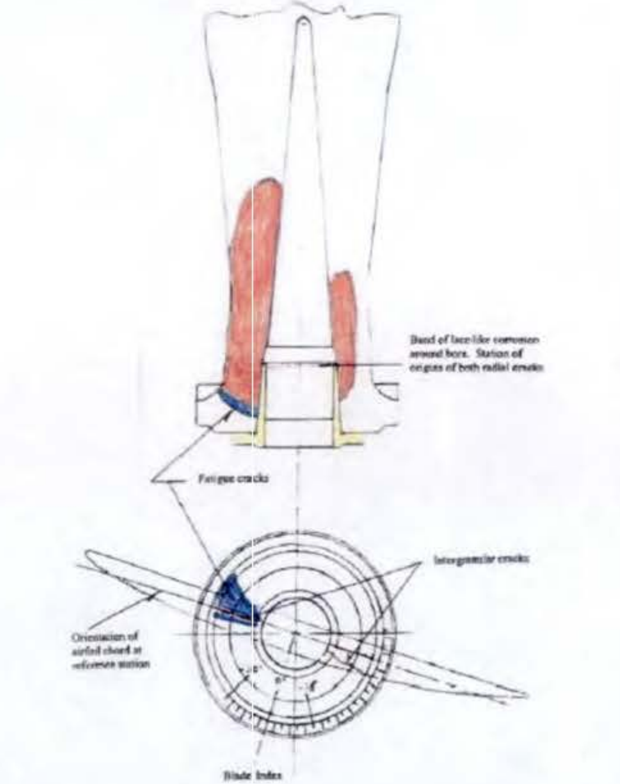
HSER 29565




Blade S/N N812826 Propeller S/N N243168

U.S. Navy P-3C/T56-A-15 Installation Approximately 60 Hours Since Last Inspec

HSER 29564

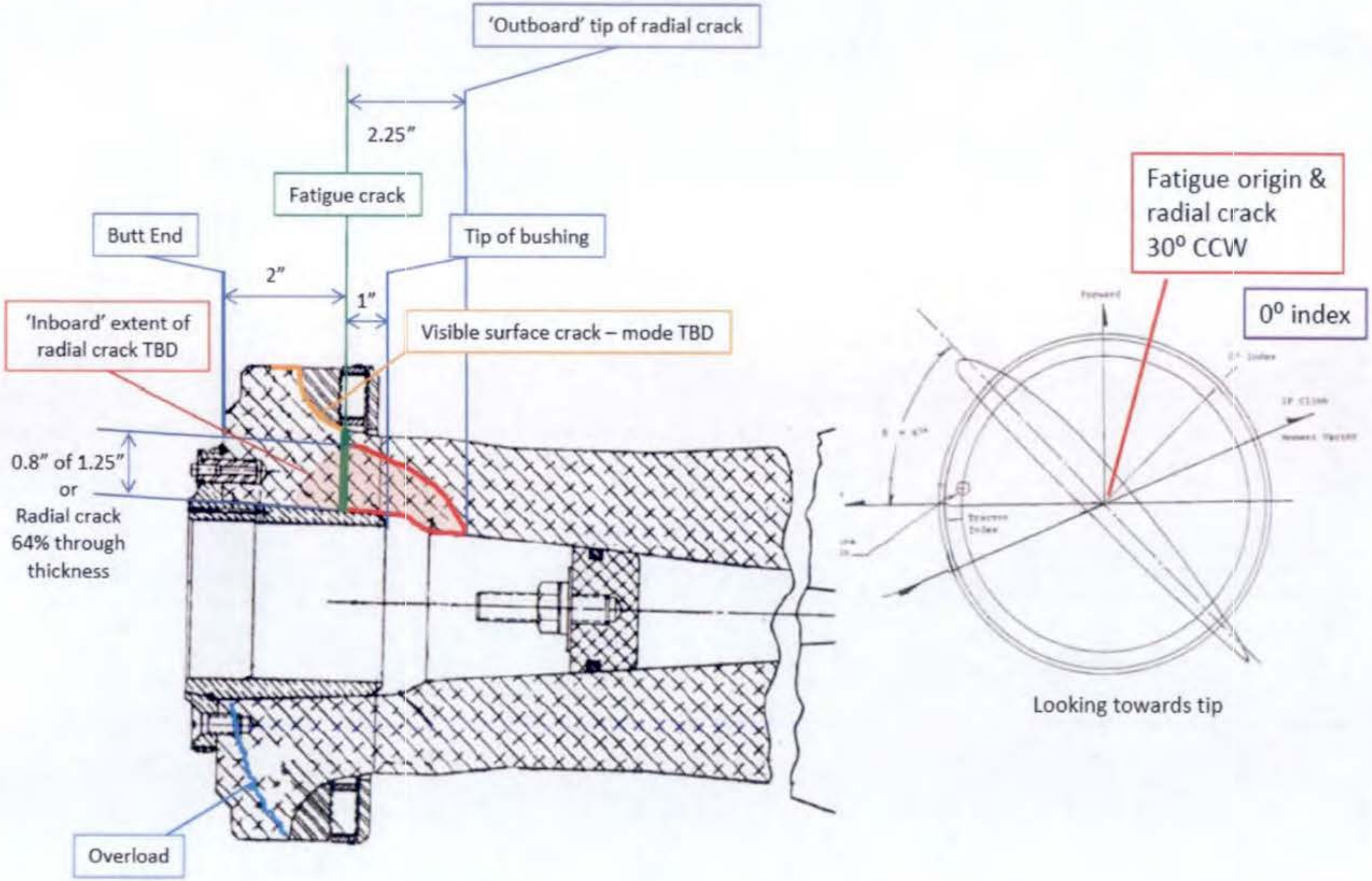



Blade P/N 7121B-2 S/N N812067

Propeller S/N Unknown, U.S. Navy P-3C/T56-A-15 Installation, 2,626 Hours TSO

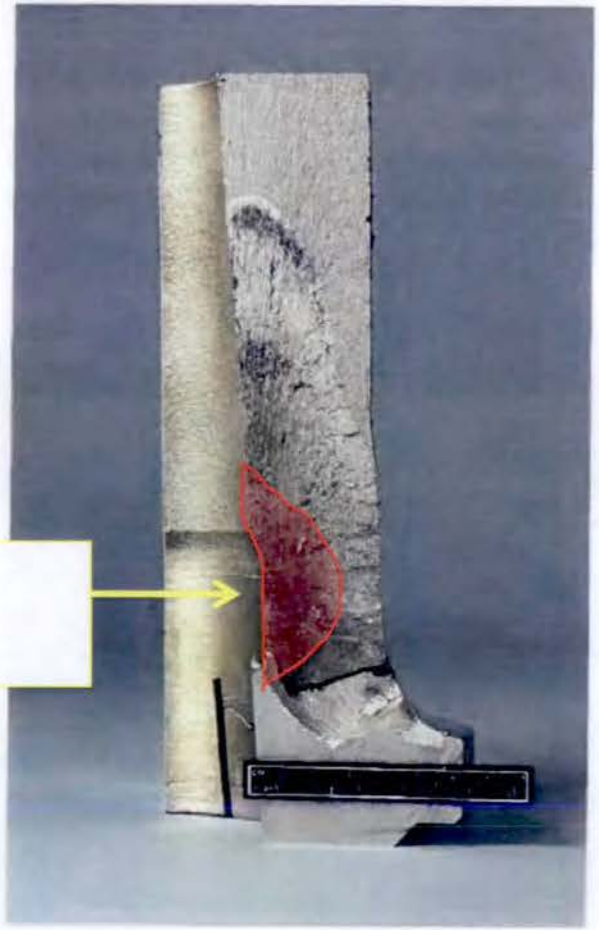
# Fatigue Crack Growth Model

## Recent Fracture Location 30° CCW



# Comparison to Prior Navy Crack

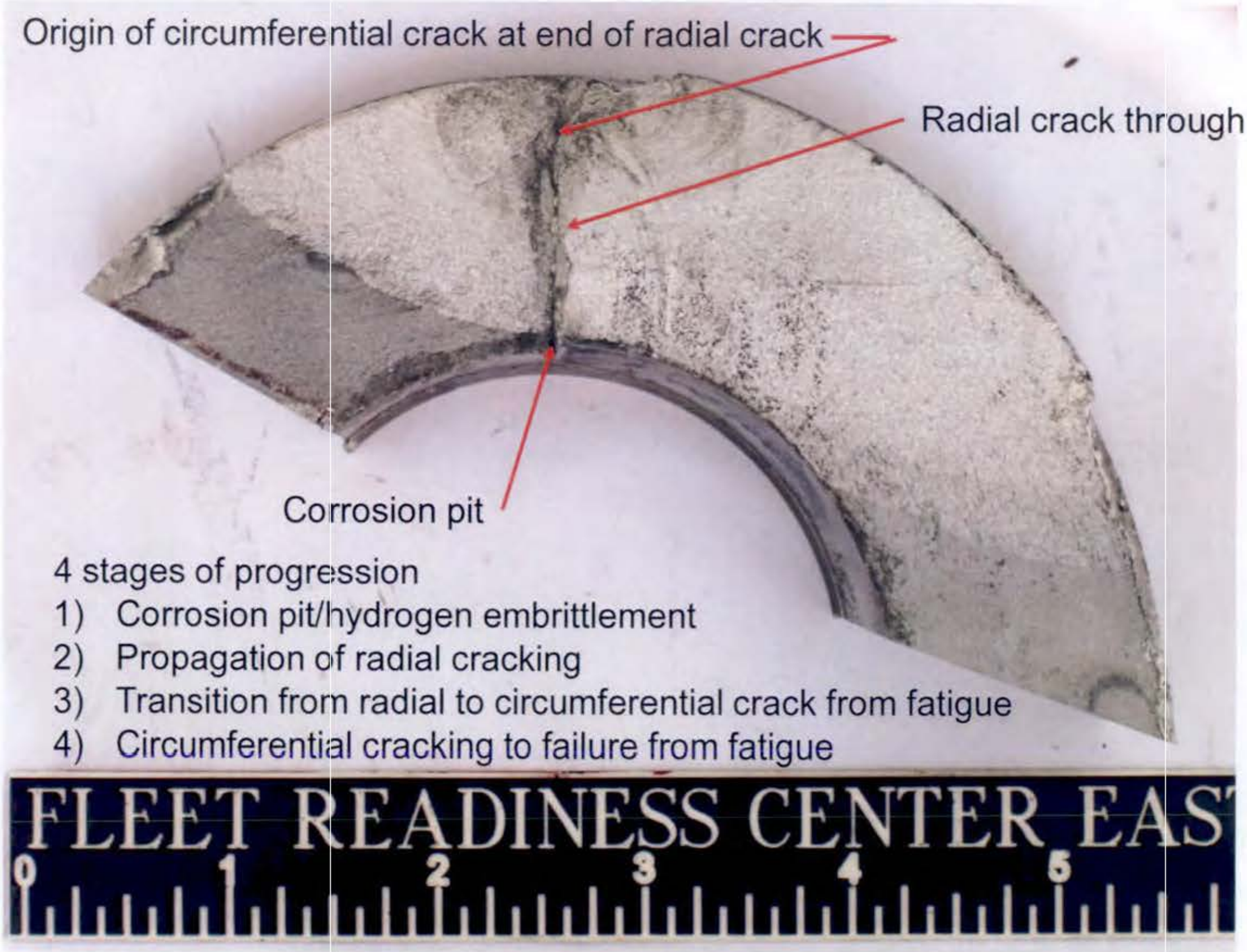
- Key Differences:
  - Radial crack length shorter than historical



Approximate location of intergranular band
Coincident with outboard tip of bushing

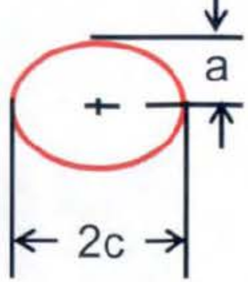
# Radial Crack Root Cause

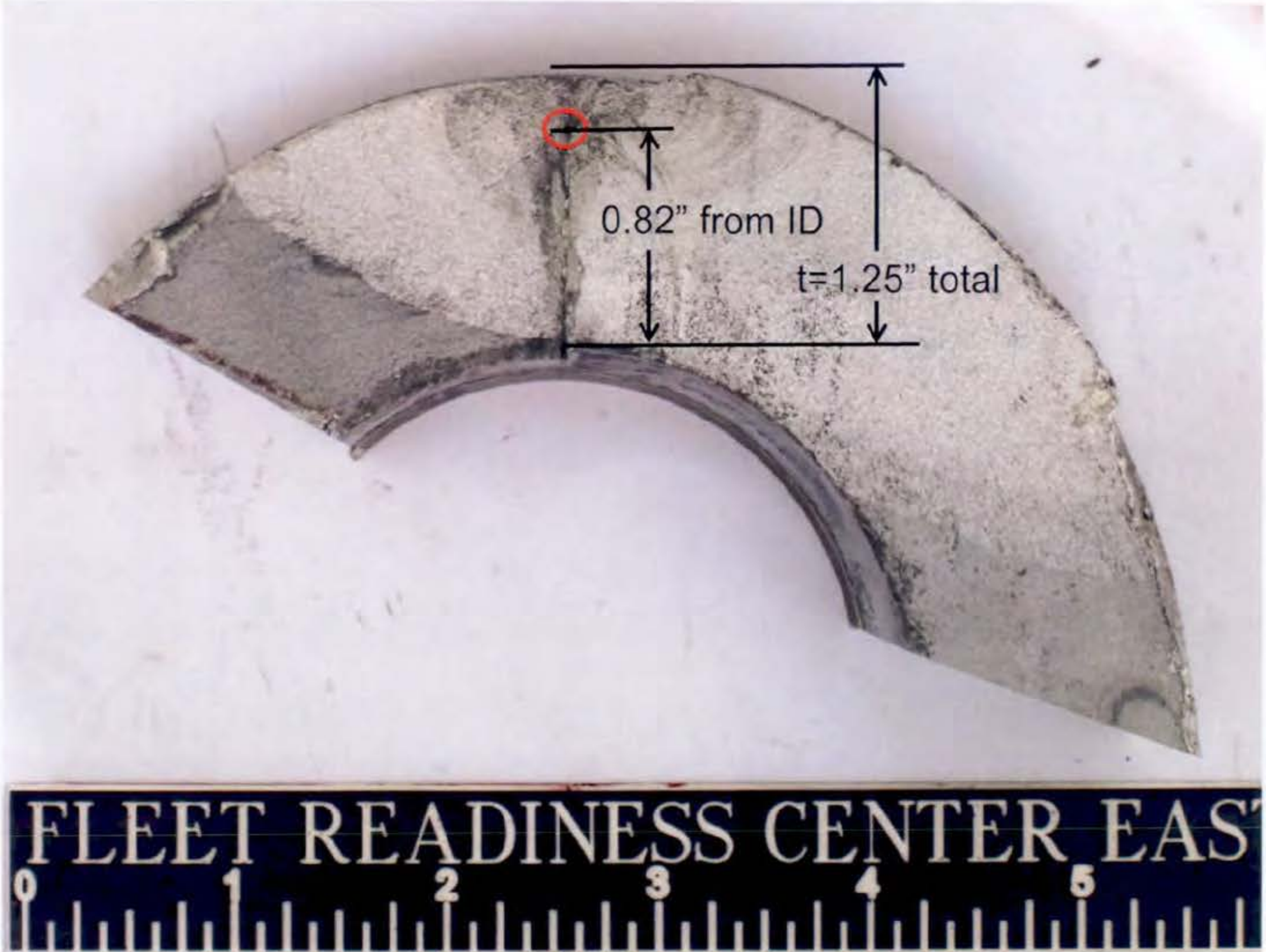
## FRACTURE SURFACE SHOWING INFLUENCE OF RADIAL CRACK



# Fatigue Crack Growth Model

**Initial Flaw Size** (b) (4) [redacted] a=0.02" and 2c=0.035"

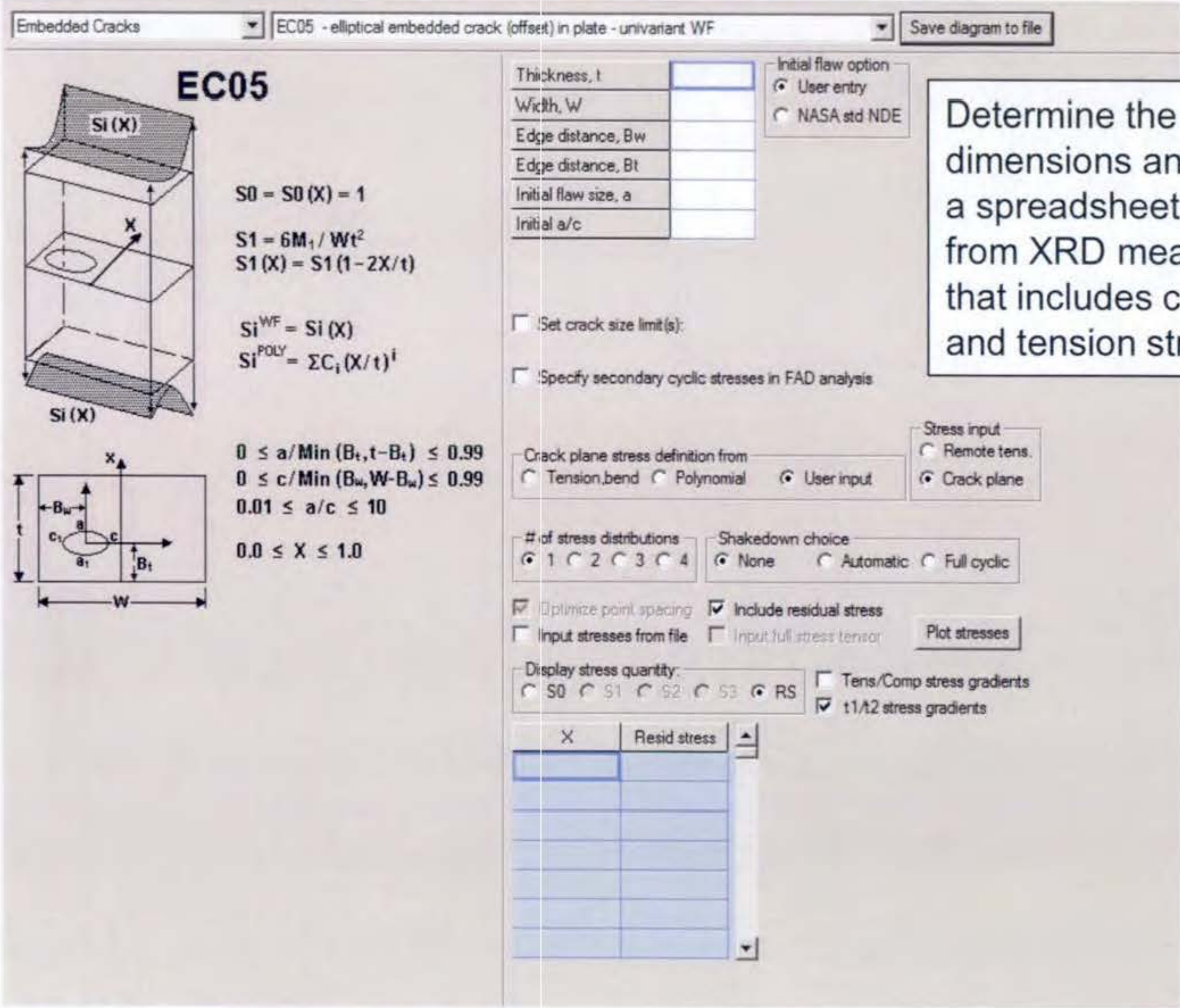



UTC Aerospace Systems

# Potential Fatigue Crack Growth Model

## NASGRO V8.1 Embedded Flaw EC05 Inputs for Residual Stresses

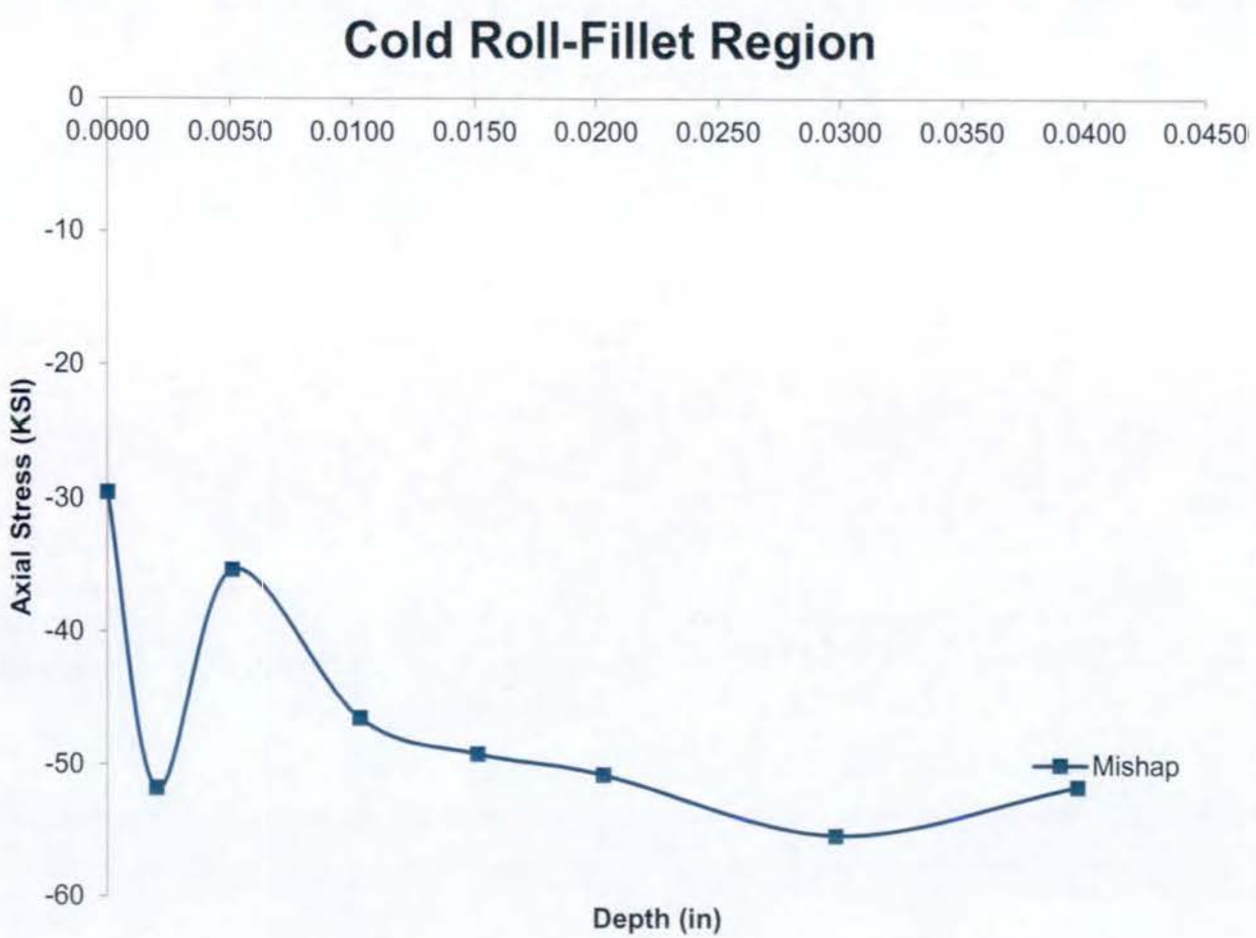



Determine the normalized dimensions and stresses in a spreadsheet retrieved from XRD measurements that includes compression and tension stresses.

UTC Aerospace Systems

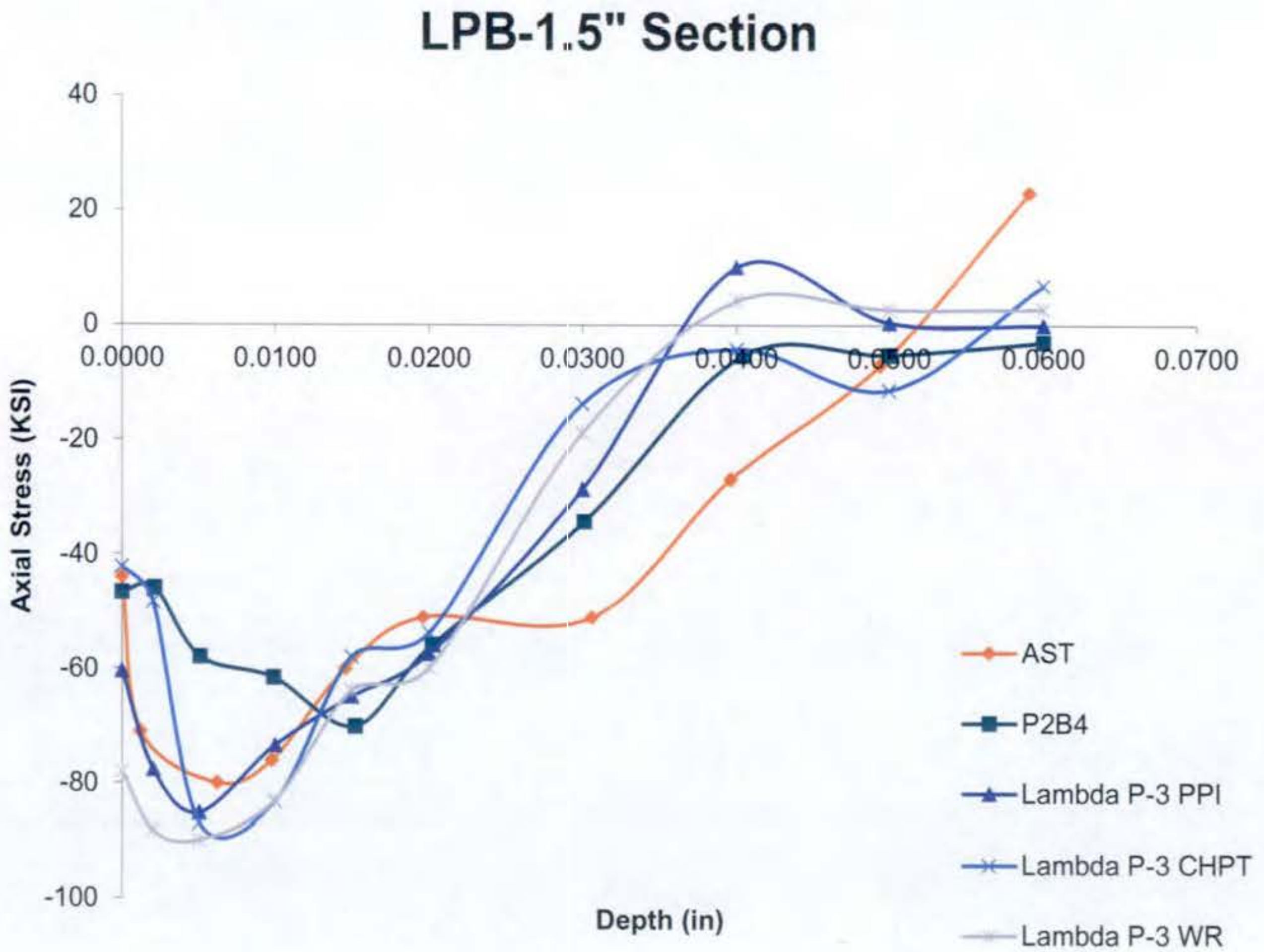
# Potential Fatigue Crack Growth Model

## Need more definition that shows deeper readings with tension stresses



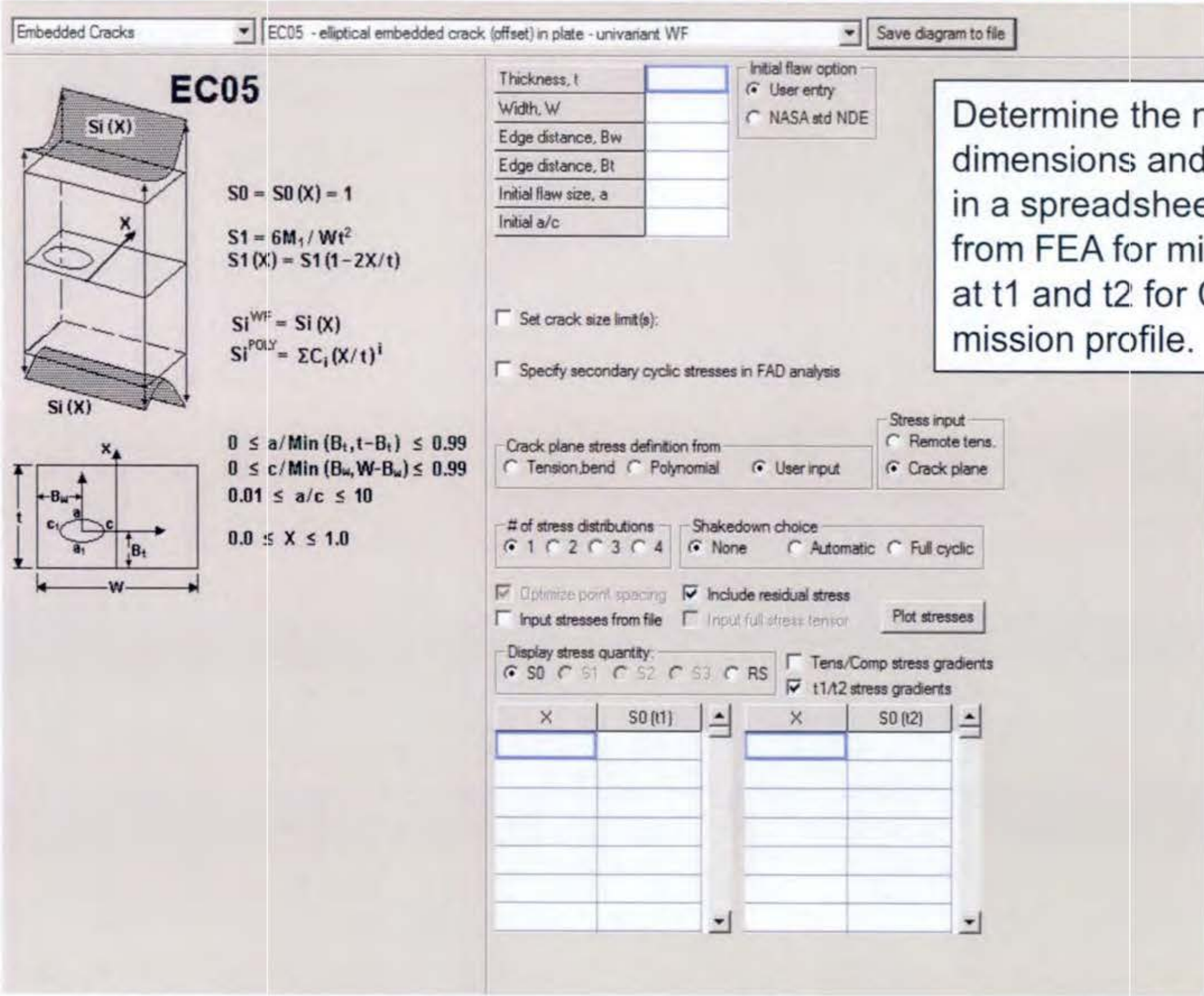
# Potential Fatigue Crack Growth Model

## Need more definition that shows deeper readings with tension stresses



# Potential Fatigue Crack Growth Model

## NASGRO V8.1 Embedded Flaw EC05 Inputs for External Loads




Determine the normalized dimensions and stresses in a spreadsheet retrieved from FEA for min and max at t1 and t2 for C130 mission profile.

# 7076-T6 Fatigue Crack Growth Data

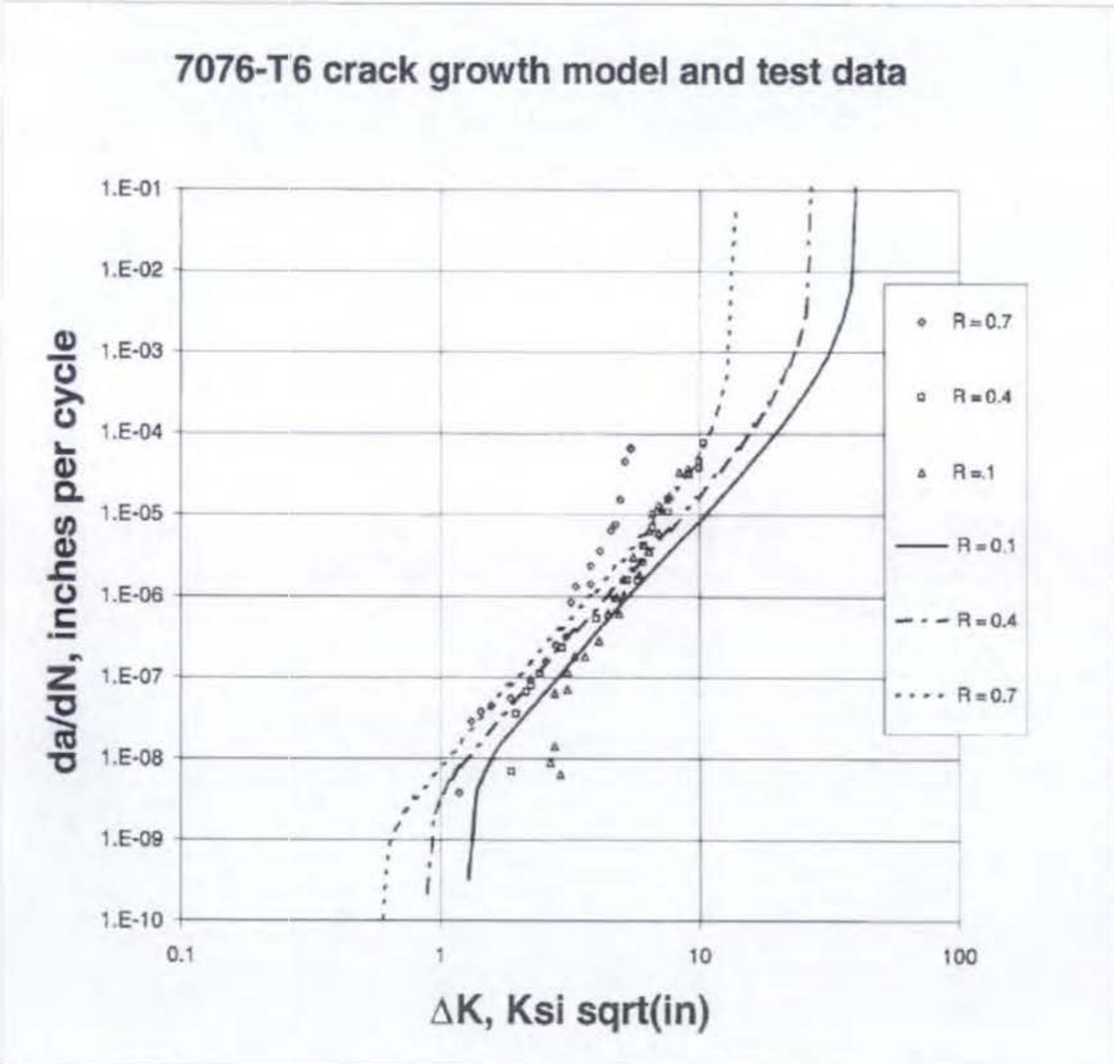


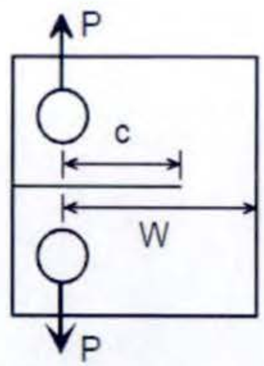

Figure 1. Existing 7076-T6 crack growth rate data and the model used in the crack growth analysis.

This data comes from NASA tested with Lab Air.

I think we need data from blade forgings in the T-L orientation and tested in LA, humid air, and after exposure to hydrogen embrittlement from galvanic corrosion from contact with the bushing material.

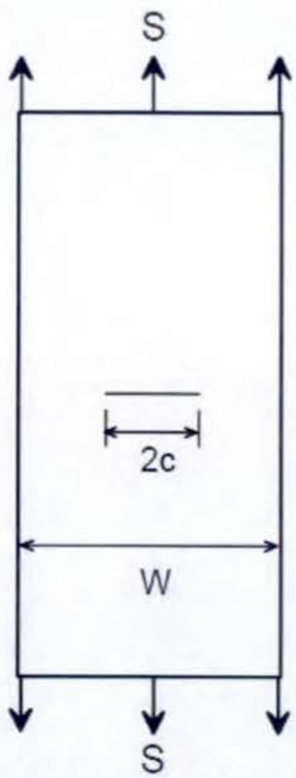
# How do we determine the properties?

For Metallic Materials Mode I



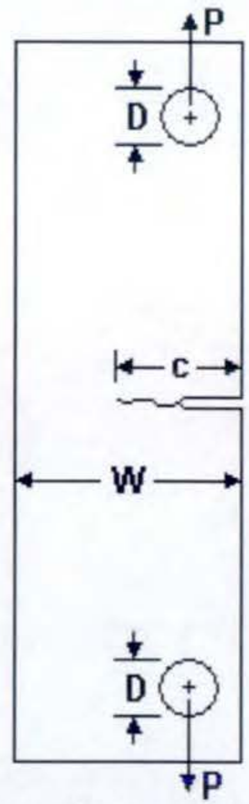

Compact tension

C(T)




Middle-crack tension

M(T)




Eccentrically-loaded Single Edge Tension

ESE(T)

Thru-crack Specimens (Also known as Long Crack Specimens)

# BLADE OVERHAUL PROCESSS

## (as of September 2017)

U.S. AIR FORCE

*AFLCMC... Providing the Warfighter's Edge*

| | Blades Processes | Navy | USAF |
|---|---|---|---|
| 1 | Blade Tear Down, Bushing and Plug Removal, Cleaning | Yes | Yes |
| 2 | Glass Bead Blast Taper Bore | Yes | No |
| 3 | Caustic Soda Etch | Yes | Yes |
| 4 | Taper Bore Inspection – Borescope | Yes | No |
| 5 | Taper Bore, Screw Holes, Drive Pin Hole Inspection - Fluorescent Penetrant | Yes | Yes |
| 6 | Taper Bore Back-up Inspection – Eddy Current<br>Taper Bore Back-up Inspection – FPI | Yes<br>No | No<br>Yes |
| 7 | MWM | Yes on Condition | Yes 100% |
| 8 | Taper Bore Ream | Yes on Condition | Yes on Condition |
| 9 | Beveled Thrust Ring Grinding | Yes on Condition | Yes on Condition |
| 10 | Barkhausen Noise - Beveled Thrust Ring | No | Yes on Condition |
| 11 | Thrust Ring Inspection – Mag Particle | Yes on Condition | Yes on Condition |
| 12 | Butt Face Cut | Yes on Condition | Yes on Condition |
| 13 | Cold Rolling Retention Fillet | Yes on Condition | Yes on Condition |

# BLADE OVERHAUL PROCESSS

(as of September 2017)

*AFLCMC... Providing the Warfighter's Edge*

| | Blades Processes | Navy | USAF |
|---|---|---|---|
| 14 | Airfoil Shot Peen | Yes on Condition | Yes on Condition |
| 15 | Airfoil Grit Blast | Yes | Yes |
| 16 | Low Plasticity Burnishing – Taper Bore | Yes 100% | Yes on Condition |
| 17 | Chromic Acid Anodize | Yes | Yes |
| 18 | Perma Treat Taper Bore | Yes | No |
| 19 | Foam Application | Yes | Yes |
| 20 | Fairing Rubber Goods, Heater | Yes | Yes |
| 21 | Balancing | Yes | Yes |
| 22 | Taper Bore Bushing Fit Check | Yes | Yes |
| 23 | Bushing Installation – Wet<br>Bushing Installation – Dry | Yes<br>No | No<br>Yes |
| 24 | Final Build Up / Balance Test | Yes | Yes |
| 25 | Disassembly | Yes | Yes |
| 26 | Application of Preservative / Packaging | Yes | Yes |

NAVAIR 03-20C-4
1 March 2003
Change 6 – 15 August 2011

TECHNICAL MANUAL

# DEPOT MAINTENANCE WITH ILLUSTRATED PARTS BREAKDOWN

# ALUMINUM ALLOY PROPELLER BLADES PART NUMBERS

A7111D-2
A7111E-2
A7121B-2

This change incorporates IRAC's 5, 6 and 7.

DISTRIBUTION STATEMENT C. Distribution authorized to U.S. government agencies and their contractors to protect publications required for official use or for administrative or operational purposes only, determined on 15 August 2011. Other requests for this document shall be referred to Commanding Officer, FRC-EAST (PROP-IPT), PSC Box 8021, Cherry Point, NC 28533-0021.

DESTRUCTION NOTICE. For unclassified, limited documents, destroy by any method that will prevent disclosure of contents or reconstruction of the document.

PUBLISHED BY DIRECTION OF COMMANDER NAVAL AIR SYSTEMS COMMAND

**DEPOT MAINTENANCE**

**WITH ILLUSTRATED PARTS BREAKDOWN**

**INTRODUCTION**

**ALUMINUM ALLOY PROPELLER BLADES**

**PART NUMBERS**

**A7121B-2**
**A7111D-2**
**A7111E-2**

## 1. PURPOSE.

2. This manual provides depot level maintenance instructions for aluminum alloy propeller blades manufactured by Hamilton Sundstrand, a Division of United Technology, Windsor Locks, CT 06096-1010.

## 3. SCOPE.

4. There are three basic blade groups; surface treated blades, non-surface treated blades and nickel plated blades. The manual is written to cover the surface treated blades as basic overhaul. Non-surface treated and nickel plated blades are included in the basic overhaul procedures except that any deviation from normal procedure is noted in that particular area of overhaul.

5. **SURFACE TREATED BLADES.** Airfoil sections are shotpeened and/or fillets are cold rolled. All blades with a design number of 6801 or higher have one or both of these operations incorporated.

6. **NON-SURFACE TREATED BLADES.** Blades having only their taper bores shotpeened are not considered to be surface treated.

7. **NICKEL PLATED BLADES.** Nickel plated blades are overhauled similarly to other blades in the cold rolled shank region; however, the nickel plated airfoil and plating end seal areas require special overhaul procedures.

8. The manual is written to the work package concept as specified in MIL-M-81927A (AS), MIL-M-81928A (AS) and MIL-M-81929A (AS). Illustrations are included when required. Work Packages may be subdivided into subordinate work packages to provide smaller data units. Each package is assigned a five-digit number which, with its applicable publication number, provides a means of locating specific data units. The first three digits represent the work package (WP) number; the last two, related subordinate work package (SWP) number.

9. Work packages and subordinate work packages are arranged in numerical sequence. To find a work package or subordinate work package when only the subject matter is known, refer to the alphabetical index (WP 001 00).

## 10. PUBLICATION DATE AND COPY FREEZE DATE.

11. The publication date which appears on this manual represents the copy freeze date of the material contained in the manual. The copy freeze date is established by the procuring activity and represents that date after which no further additions, deletions, and changes to the publications material were inserted.

## 12. WARNINGS AND CAUTIONS APPLICABLE TO HAZARDOUS MATERIALS.

13. Warnings and cautions for hazardous materials listed in this manual are designed to apprise personnel of hazards associated with such items when they come in contact with them by actual use. Additional information related to hazardous materials is provided in OPNAVINST 5100.23 Navy Occupational Safety and Health (NAVOSH) Program Manual and the DOD 6060.5 Hazardous Materials Information System (HMIS) series publications. Consult your local safety and health staff concerning specific personnel protective requirements and appropriate handling and emergency procedures.

14. The writing specification for this manual requires that a warning precede every mention of a hazardous material. When a material is used repeatedly in a particular procedure, however, the warning statement may only appear at the first use of the material.

15. **SCOPE OF TECHNICAL DIRECTIVES.**

16. The Record of Applicable Technical Directives in this manual indicates incorporation of information contained in technical directives issued against the propeller.

17. **QUALITY ASSURANCE PROVISIONS.**

18. Quality assurance procedures essential to equipment performance or to safety of personnel, are indicated by use of the letters QA in parentheses following the applicable procedure; for example. **(QA)** These items shall be observed or checked by a quality assurance inspector before the technician continues to the next step in the procedure.

19. **INTRODUCTION TO THE ILLUSTRATED PARTS BREAKDOWN.**

20. The Illustrated Parts Breakdown lists and describes the parts necessary for depot maintenance support of aluminum alloy propeller blades manufactured by Hamilton Sundstrand, a Division of United Technology, Windsor Locks, CT 06096-1010.

**21. VENDOR CODES.** Part numbers other than those of the prime contractor are identified by vendor codes in parentheses following the description of the part. Reference should be made to Cataloging Handbook H4, Federal Supply Code for Manufacturers, and amendment thereto, for names and addresses of manufacturers that supply articles not carried under the prime contractor's part numbers. If a vendor code is not assigned in the H4 handbook, the seller's full name is given, in parentheses, following the description of the part. Applicable specification control drawing for the vendor item is indicated, in parentheses, after the vendor code.

**22. ATTACHING PARTS.** Attaching parts are listed directly beneath the part to be attached and are assigned a corresponding index number. The words "Attaching Parts" appear on the line preceding the listing of attaching parts. The symbol ----*---- appears on the line following the last attaching part.

**23. SM&R CODES.** SM&R Codes (Source, Maintenance and Recoverability Codes) as assigned by the Naval Air Systems Command have been applied to the Group Assembly Parts List and are shown in the appropriate code column. SM&R Codes are defined in NAVSUPINST 4423.3.

**24. NUMERICAL INDEX.** The Numerical Index of Part Numbers is provided in subordinate work package (SWP 001 01). When the part number is known, refer to the numerical index, locate the part number, and note the work package, figure, and index number.

**25. INDENTION TO SHOW RELATIONSHIP.** When the provisioning documentation dictates that repair or replacement of the component or assembly is authorized, the breakdown provides the repair parts data. The nomenclature of the component or assembly is indented to show the parts list relationship to the applicable next higher assembly.

**26. PARTS KIT.** Supporting items for maintenance, repair, and rework of selected aeronautical repairable end items will be procured, stocked, requisitioned, accounted for, and used on a kit basis as a one line item. Kit parts should not be ordered from separate stock to make up a kit.

**27. USABLE ON CODE.** This column contains suitable coding for assemblies and parts to indicate specific usability by serial, type, model or series numbers of the articles for which the breakdown is prepared. Absence of a code in the Usable On Code column indicates that the parts so shown are usable as replacements on all models covered by this work package.

28. **SUPPORT EQUIPMENT REQUIRED.**

29. Table 1 lists all support equipment required to overhaul the aluminum alloy propeller blades.

30. **BLADE VERSUS TOOLS REQUIRED.**

31. Table 2 is a list of blades versus tools required.

32. **MATERIALS REQUIRED.**

33. Table 3 lists consumable materials required to overhaul aluminum alloy propeller blades.

34. **REFERENCE MATERAL.**

35. Table 4 lists all reference material cited in work packages.

36. **HISTORICAL RECORD OF APPLICABLE TECHNICAL DIRECTIVES.**

37. Table 5 lists all historical record of applicable technical directives.

**Table 2. Blade Terms (Continued)**

| Term | Definition |
|---|---|
| Surface Treated | Blades which have the inboard portion of the airfoil section shotpeened, or the fillet area cold-rolled, or a combination of the two. |
| Taper Bore | The conical shaped hole machined from the butt face into the blade shank. The taper bore extends to a point beyond the 12-inch station. |
| Thickness | The maximum dimension of a blade cross section measured perpendicularly to the chord at the respective blade stations. |
| Tip | The portion of the blade outermost from the axis of propeller rotation. |
| Twisting | Twisting is accomplished when the blade is installed in a fixture that holds the blade stationary at one point and twists the blade at another point, thereby changing the angular values of the blade. |
| Water Break Free Surface | This refers to the condition of a blade surface after proper cleaning, prior to application of cements for adhering rubber parts. A water-break-free surface is evidenced by the fact that when this area is wetted, the entire surface remains wet. |
| Width | The maximum dimension of a blade cross section measured perpendicular to the center line and running from the leading edge to the trailing edge, taken at each blade station. |

**Table 3. Damage Definitions**

| Term | Definition |
|---|---|
| Blistering | Separation and raising of a plated, painted or adhered surface from its base. Associated with Flaking. |
| Brinelling | Indentations sometime found on thrust washer or roller bearing surfaces resulting from overloads, shock loading, etc. |
| Burning | Surface damage caused by electrical arcing or excessive heat and evidenced by discoloration, loss or flow of metal in severe cases. May be caused by lightning, magnafluxing, anodizing or shorting of the blade heater. |
| Chafing | A rubbing action between two parts having a limited relative motion producing an undesirable surface condition. |
| Corrosion | A result of chemical attack and breakdown of surface areas. |

**Table 3. Damage Definitions (Continued)**

| Term | Definition |
|---|---|
| Crack | A material fracture either visually perceived or revealed by anodic, magnetic or similar inspection. |
| Erosion | Metal removed by action of water and/or abrasives such as sand, grit, etc. |
| Flaking | Breaking away of surface pieces such as occasionally evidenced on thrust washers. |
| Fretting | An advanced condition of chafing. |
| Galling | A transfer of metal from one surface to another. An advance form of fretting. Note: Do not confuse with Pick-up, Scoring or Scuffing. |
| Gouging | An indentation, cutting, tearing or displacement of surface material. |
| Grooving | Smooth rounded furrows, similar to score marks whose sharp edges have been polished off. |
| Inclusion | Material foreign to the base metal but contained in it. Surface and near surface inclusions in the blade thrust washers may be detected by magnetic inspection. |
| Lightning Strikes | Usually manifested by localized burning, discoloration, puddled metal, and pits. |
| Pick-up | Rolling up of metal, or transfer of metal from one surface to another due to rubbing of two surfaces without sufficient lubrication. |
| Pitting | Small irregularly shaped cavities from which material has been removed by erosion or corrosion. Corrosive pitting is usually accompanied by a deposit formed by the corrosive agent on the base metal. |
| Scoring | Deep scratches or elongated gouges made by the sharp edges of foreign particles. |
| Scratching | Narrow, shallow marks, less than gouges, caused by the movement of a sharp object across a surface. |
| Scuffing | Surface injury resulting from the incipient seizure of reciprocating parts. Evidenced by pick-up and caused by insufficient clearance or lubrication. |
| Spalling | Breaking away of surface layers of material that are subject to high cyclic compressive loads. |

e. After each start up perform the following inspections, refer to manufacturer's manual for maintenance and repair:

(1) Check oil level pump.

(2) Inspect canister water strainer.

(3) Inspect system for water leaks.

(4) Inspect for oil leaks.

(5) Inspect high-pressure hoses for kinking, cuts, and leaks.

(6) Inspect all power cords for breaks or cuts.

f. Turn Recirculating Pump Electrical Disconnect ON. Turn the Pressure Washer Electrical Disconnect ON. Ensure the gun trigger is locked. Start the recirculating pump. Start the water pressure.

**WARNING**

High pressure removal of lead taper bores is noise hazardous. Lead is a poison. Long-term overexposure to lead can cause severe damage to the blood-forming, reproductive, nervous, and urinary systems. Symptoms include metallic taste in the mouth, loss of appetite, anxiety, excessive tiredness, insomnia, headache, tremors and colic. Poisoning can occur with few or no symptoms. Hearing protection, safety glasses, faceshield, rubber apron, gloves and boots are required to be worn during this operation. Employees are required to read the Appendices A and B to the OSHA Lead Standard prior to working with lead. For more information, consult the Appendices A and B to the OSHA Lead Standard and the most recent industrial hygiene survey.

g. Disengage safety lock. While squeezing the trigger, hold spray nozzle in opening of blade taper bore. Stop blasting process and visually inspect with flashlight for remaining balance lead. Continue to repeat blasting until all lead is removed.

h. To secure unit, STOP Pressure Washer, STOP Recirculating Pump, turn Pressure Washer Electrical Disconnect OFF, turn Recirculating Pump OFF, and trigger gun to release high-pressure water left in the pump, hose, and gun. Unplug machine from wall receptacle when left unattended to prevent the possibility of inadvertent motor startup in the event of a switch failure.

## 21. CLEANING.

DRY CLEANING SOLVENT 5
MIL-PRF-680

**CAUTION**

To prevent damage or excessive stock removal from blade, vapor or grit-blasting or use of abrasives for cleaning is not permitted except for grit-blasting of foam fairing area.

**NOTE**

Cleaning fluids shall be kept free of dirt, etc., using suitable strainers or by periodic renewal.

a. After disassembly, clean all metal parts such as bare blade including taper bore and thrust washer using clean dry cleaning solvent, MIL-PRF-680, Type II, or an approved equivalent. Clean parts so they are left completely free of oil and dirt and wiped dry of cleaning fluid.

EPOXY PAINT REMOVER 4
MIL-R-81294, Type I, II

b. Remove paint from blades using MIL-R-81294.

c. Wash blade thoroughly with clean water and wipe dry after cleaning and removing paint.

LUBRICATING OIL 6
MIL-PRF-32033

FINGERPRINT REMOVER 7
MIL-C-15074

d. Apply lubricating oil, MIL-PRF-32033 or fingerprint remover, MIL-C-15074 to blade thrust washers and bearing retainer assemblies (8, Figure 1) which are not inspected and reassembled within a reasonable time.

SODIUM HYDROXIDE 8
ASTM D456

**CAUTION**

For blades with formed foam fairings, it is necessary to completely remove residual foam from blade surface in accordance with PLASTIC FORMED FAIRING REMOVAL, this WP, because foam can cover cracks and they will not be detected during fluorescent penetrant inspection.

It is mandatory that entire blade surface including blade butt taper bore, fillet, bushing screw holes and drive pin holes be stripped of its old anodic surface at overhaul (before inspection) to facilitate inspection and rework procedures.

**NOTE**

De-oxidizing (stripping) of blades and caustic etch are two entirely separate processes and should not be construed to be related.

3

**22. STRIPPING OF ANODIC COATING AND CAUSTIC ETCH.** Use sodium hydroxide for removal of anodic coating as follows to strip areas including filter, taper bore, butt OD, butt face, blade bushing screw holes and drive pin holes.

**CAUTION**

Do not, under any circumstances, immerse in etch solution soda blades with fairings (3, Figure 1), rubber parts, corrosion barriers, teflon strips (24), bushing (23), drive pins (22), screws (10) or threaded screw inserts attached.

a. Prior to etching and cleaning, slide thrust washers toward tip of blade as far as possible with washers remaining loose on blade. Retain in position away from shank end by use of wooden or cork wedges inserted between ID of thrust washers and blade.

SODIUM HYDROXIDE 8
ASTM D456

b. Immerse blade in 16 oz. of sodium hydroxide per gallon water for 10 minutes to assure removal of all existing anodize coating

c. Immediately following etch, thoroughly cold water rinse the blade.

(1) Check for presence of anodize coating with a continuity tester. Lack of continuity indicates residual coating and blade must be restripped.

**CAUTION**

Repeat anodic coating stripping process only one time, if necessary.

(2) If anodize coating is still present, steps b through step c, substep (1) can be repeated **only one time**.

d. A caustic etch of blades in preparation for fluorescent penetrant inspection may be performed as follows:

(1) Fill the etch tank 1/2 full of water.

(2) Slowly and with constant agitation, add 15-16 ounces of sodium hydroxide per gallon of final solution volume.

(3) Immerse the blade into the etch solution until a black smut is formed for a length of time not to exceed 30 seconds.

(4) Thoroughly cold water rinse.

DE-SMUT SOLUTION 9
ISOPREP 184

(5) De-smut the etched area by immerging into a 20-25% by volume Isoprep 184 solution or equivalent.

(6) Thoroughly cold water rinse.

e. Thoroughly rinse entire blade with clean water paying particular attention to taper bore, screw holes and drive pin holes.

**WARNING**

Handling hot items presents a serious burn potential. Wear heat-resistant gloves.

f. Allow blade to air dry before fluorescent penetrant inspection.

LUBRICATING OIL 6
MIL-PRF-32033

FINGERPRINT REMOVER 7
MIL-C-15074

**CAUTION**

To prevent corrosion, do not allow water to remain on steel thrust washers.

h. Be sure thrust washers are completely dry. If further processing will be delayed, cover thrust washers with corrosion preventive compounds, such as lubricating oil, MIL-PRF-32033 or fingerprint remover MIL-C-15074.

## 23. INSPECTION.

a. Inspect every blade to determine if it is within limits given in applicable Blade Service Limits table of WP 006 00 and Local Rework Limits figure of WP 006 00.

b. Perform procedures specified in following paragraphs.

**NOTE**

Since most inspection procedures are so intimately involved with repair procedures, their details are covered in Repair paragraphs of WP 005 00 through WP 008 00. However, listed below are specific crack detection procedures.

## 24. BLADE BUTT AND TAPER BORE.

a. Remove Blade Bushing Drive Pins, P/N 549799, Blade Balance Plug P/N 557625, Blade Cork, and lead wool from taper bore in accordance with the same work package.

b. Deleted.

c. Visually inspect blade butt for gouges and cracks. Check area around drive pin (22, Figure 1) holes for cracks.

METHYL ETHYL KETONE (MEK) 3
ASTM D 740

d. Remove substantial lead and adhesive residue with a plastic scraper and/or a green scotch brite pad moistened with Methyl Ethyl Ketone (MEK).

e. Visually inspect the taper bore. Ensure that the taper bore is free of substantial lead and adhesive residue. If any substantial lead and/or adhesive residue exist, repeat step d.

GLASS BEAD BLASTING 11 2

f. Remove any smeared lead, adhesive and/or protective coating residue from the blade taper bore, including the blade bushing seating area as follows:

(1) Mask the entire blade butt face using impact resistant tape, in accordance with locally approved specifications, to prevent media impact damage and intrusion.

**CAUTION**

Care must be taken not to allow the nozzle to contact the taper bore surface, as this may cause nicks, scratches, or gouges.

**NOTE**

Nozzle pressure shall not exceed 45 psi.

(2) Check nozzle pressure using a needle gauge.

(3) Using the straight bore detail nozzle, glass bead blast the closed end of the taper bore to remove all remaining lead residue.

(4) Using the standard blasting nozzle, blast the taper bore, except the smooth area, to remove lead and adhesive residue.

(5) Remove glass beads from the taper bore using clean compressed air.

**CAUTION**

All evidence of lead, adhesive and protective coating must be removed prior to inspection or there is a rish of cracks being masked by the lead, adhesive and/or protective coating.

(6) Visually inspect the taper bore for signs of lead and/or adhesive residue using a bright flashlight. If no evidence of lead and/or adhesive exists, proceed to step g. If lead and/or adhesive residue is still present, repeat step f, substeps (1) through (6) as necessary.

g. Caustic etch and de-smut taper bore as follows:

SODIUM HYDROXIDE 8
ASTM D456

(1) Fill taper bore and etch using a one pound per gallon solution of sodium hydroxide for approximately three minutes and drain.

(2) Thoroughly rinse the taper bore with water. Three rinses are recommended.

DE-SMUT SOLUTION 9
ISOPREP 184

(3) Fill taper bore with 20-25% de-smut solution, Isoprep 184. Allow to dwell for 2 minutes, then drain.

(4) Thoroughly rinse taper bore with water. Three rinses are recommended.

(5) After final rinse, dry the taper bore by using compressed air and/or towels to completely dry the inside of the taper bore.

**NOTE**

All operators shall be qualified using Blade Inspection Standard, P/N GS23709. Defects shall be located on the bushing bore, the transition area, and the outboard balance bore. The location of the defects shall be mapped. The operator shall inspect and map the defects in the test piece. The operators map shall be compared to the map of the defects as produced in the test piece. The operator must find all defects to be qualified. This qualification shall be documented in the operator's training records. If the operator should not perform the operation for 30 days he/she will be required to re-qualify.

During the initial development of the inspection process at any facility, the first 4 blades shall be inspected and defects mapped during two independent inspections by two different operators at two different times. The maps, Figure 8, shall be compared. The two inspections shall be in agreement on all defects with any dimension in excess of 0.020 inch, as determined by the template and the video image.

During the normal inspection process, the operators shall be relieved every 50 minutes for 10 minutes minimum to avoid operator fatigue and ensure maximum effectiveness in locating defects.

The operator shall be within three feet of the monitor.

Due to the orientation of the "transition area" (the area that blends between the bushing taper bore and the outboard balance taper bore), visual inspection is not as efficient and defect detection is more difficult. Pay particular attention in this area.

The Borescope shall be connected to a video monitor and shall be 10X magnification at the monitor screen, with capability of inspecting both on the axis as well as 90 degrees to the axis.

A blade indexing fixture shall be provided with the Borescope that will assure that the Borescope field of view will be indexed to ensure 115 percent coverage of the entire taper bore surface. See Figure 6.

A comparison template shall be developed for the particular make and model of both Borescope and video monitor to assist in verifying the magnification factor and evaluating defect size. An example is provided in Figure 7.

**24A. BORESCOPE INSPECTION.** Visually inspect the taper bore for corrosion, gouges and scratches using a 10X borescope and the blade indexing fixture, ensuring that 115 percent of the taper bore is inspected. If residual lead larger than 0.020 inch is found it must be removed in accordance with BLADE BUTT AND TAPER BORE, step f, this WP. 4

**25. FLUORESCENT PENETRANT INSPECTION.** Use a 10X magnifying glass and an inspection mirror such as GS18038, for inspection purposes. 5

a. Before penetrant inspection clean blade in accordance with CLEANING and STRIPPING OF ANODIC COATING AND CAUSTIC ETCH, this WP.

FLUORESCENT PENETRANT 12
ASTM E 1417

b. Perform fluorescent penetrant inspection of the entire blade including butt face and taper bore for cracks in accordance with ASTM E 1417, using Type 1, Method B or D, Sensitivity Level 3 materials (reference AMS 2644). Mark location of any linear and/or aligned indications. Indicate if orientation of indication is circumferential or axial. Pay particular attention to blade taper bore, butt face, screw holes, and drive pin holes.

c. Confirm any fluorescent penetrant indication using the eddy current inspection method. Using VM202A-24 probe, eddy current inspect suspect areas in accordance with locally approved process. For inspection of the bushing taper bore (smooth surface), calibrate MIZ-20A or equivalent eddy current flaw detector and probe for two major divisions vertical amplitude using the 0.020 inch deep EDM notch of the VM89A aluminum reference standard. For Inspection of the remainder of the taper bore 6 (rough surface), calibrate MIZ-20A or equivalent eddy current flaw detector and probe for two major divisions vertical amplitude using the 0.040 inch deep EDM notch of the VM89A aluminum reference standard. Inspect area indicated by fluorescent penetrant inspection. Scan perpendicular to the expected defect, index 1/16 inch between scans, until the entire area has been covered. A propeller blade is considered cracked for any rapid, upward arcing indication similar to that seen from the EDM notch which exceeds one major division vertical amplitude on the eddy current flaw detector display.

FLUORESCENT PENETRANT 12
ASTM E 1417

d. Rework affected areas of the blade butt in accordance with screw hole repair in WP 005 00, if cracks are evident adjacent to either of the two blade bushing attaching screw (10, Figure 1) holes. After rework of screw hole cracks, repeat fluorescent penetrant rework area in accordance with this paragraph. Any evidence of cracks must be removed. Scrap blade if cracks are still evident after reworking to acceptable limits.

e. Rework affected areas of the blade taper bore in accordance with taper bore rework procedures in WP 005 00.

f. Scrap blade for any fluorescent penetrant crack indication in any other area of taper bore, linear indication, or aligned indication that is confirmed by eddy current.

g. Fluorescent penetrant inspect (ASTM E 1417) entire blade according to following procedure:

**NOTE**

Make certain that blades are cleaned and dried in such a manner as to leave surface free from grease, oil, soaps, alkalis and other substances which would interfere with inspection.

(1) Apply penetrant to the blade surface for 30 minutes minimum.

(2) Remove penetrant form surface by application of an approved emulsifier followed by a water rinse, or by application of an approved cleaner/remover.

DEVELOPER 14
SKD-S2

(3) Dry the blade by exposure to clean air or in a drying oven, after which apply a developer to the surface. When a dry developer is used apply developing powder by dusting it uniformly over part after part is dry.

(4) Examine part in a darkened enclosure under a suitable ultraviolet light after sufficient time has been allowed to develop indications.

(5) Scrap any blades which have cracks that can't be removed within dimensional limits given in applicable Blades Service Limits table of WP 006 00 and/or Local Rework Limits figure of WP 006 00. See Figures 9 and 10 which illustrate chordwise and longitudinal penetrant crack indications.

FLUORESCENT PENETRANT 12
ASTM E 1417

(6) For blades, which have been reworked to remove cracks, etch and perform fluorescent penetrant inspection (ASTM E 1417) to verify crack removal.

ISOPROPYL ALCOHOL 14
TT-I-735

(7) Use isopropyl alcohol, TT-I-735 to clean all blades after inspection to remove penetrant residues.

**NOTE**

Blades with no penetrant indications shall be later anodized.

CORROSION PREVENTIVE COMPOUND 15
MIL-PRF-16173

(8) Coat all parts susceptible to corrosion with corrosion preventive compound, MIL-PRF-16173.

## 26. THRUST WASHER INSPECTION.

a. Inspect thrust washers for burning as distinguished by a blue tempered color and possible deformation of surface in center of burn. Scrap any blades exhibiting this condition.

b. Remove pitting, brinelling, galling and/or corrosion per applicable paragraphs in WP 005 00.

MAGNETIC PARTICLE 16
ASTM E 1444

**27. MAGNETIC PARTICLE INSPECTION.** Magnetically inspect thrust washers for cracks at each overhaul and after grinding.

a. Identify magnetic indications, in general, by dividing them into one of three following types: (See Figure 11).

(1) Non-metallic inclusions are described as follows:

(a) Inclusions are small surface or subsurface impurities in the steel. They may appear anywhere on the washer and are acceptable if they are aligned in a nearly circumferential pattern. Non-metallic inclusion indications are generally short, stubby, straight and sharp in detail. This type of indication will remain intense after the current reduction. Inclusions are also inherent in the manufacture of washers and are not cause for concern to the inspector since they have been accepted by the manufacturer as being within the production specifications with regard to size, location and direction.

(2) Carbide indications are described as follows:

(a) These are formed during the manufacture of the washers. Carbide indications are easily recognized by the pattern which, if present, will always be circumferential in direction and concentrated near the inside diameter of the washer.

(b) The indications are distinguished by their fuzzy outline and light build up of the indicating powder. Carbides are acceptable.

(3) True crack indications are described as follows:

(a) Grinding, quenching, fatigue cracks and other obviously serious defect indications fall within this category. Figure 11 illustrates this type of indication. True crack indications are sharp in detail and will remain sharp and intense in outline after current reduction. They may be found at any angle to the washer radius and at any location on the washer. Unlike non-metallic inclusions, cracks are not short and stubby, but are sharp and jagged in outline and well defined. A heavy concentration of powder will form rapidly over the defect as the indicating solution is applied locally over the area suspected. If careful inspection exposes a true crack indication that cannot be reworked, the blade shall be scrapped.

b. Perform calibration as follows:

(1) Calibrate equipment by means of test piece shown in Figure 12, details 1 and 2.

(2) Calibrate equipment at a current density of 500 ±25 amperes.

(3) Contact the calibration pieces one at a time directly at both ends.

(4) Never flux a calibration piece on a bar or in a coil.

(5) Flux each piece so that resulting magnetic field will be perpendicular to slots and slots shall be placed uppermost.

(6) Demagnetize each piece before each test fluxing, and be sure each piece has a clean bright surface over the slot area. Indications shall be affected as little as possible by washing or runoff of bath.

(7) Use only a single "shot" or flux of current of 1/2 to 1 second duration to magnetize a test piece.

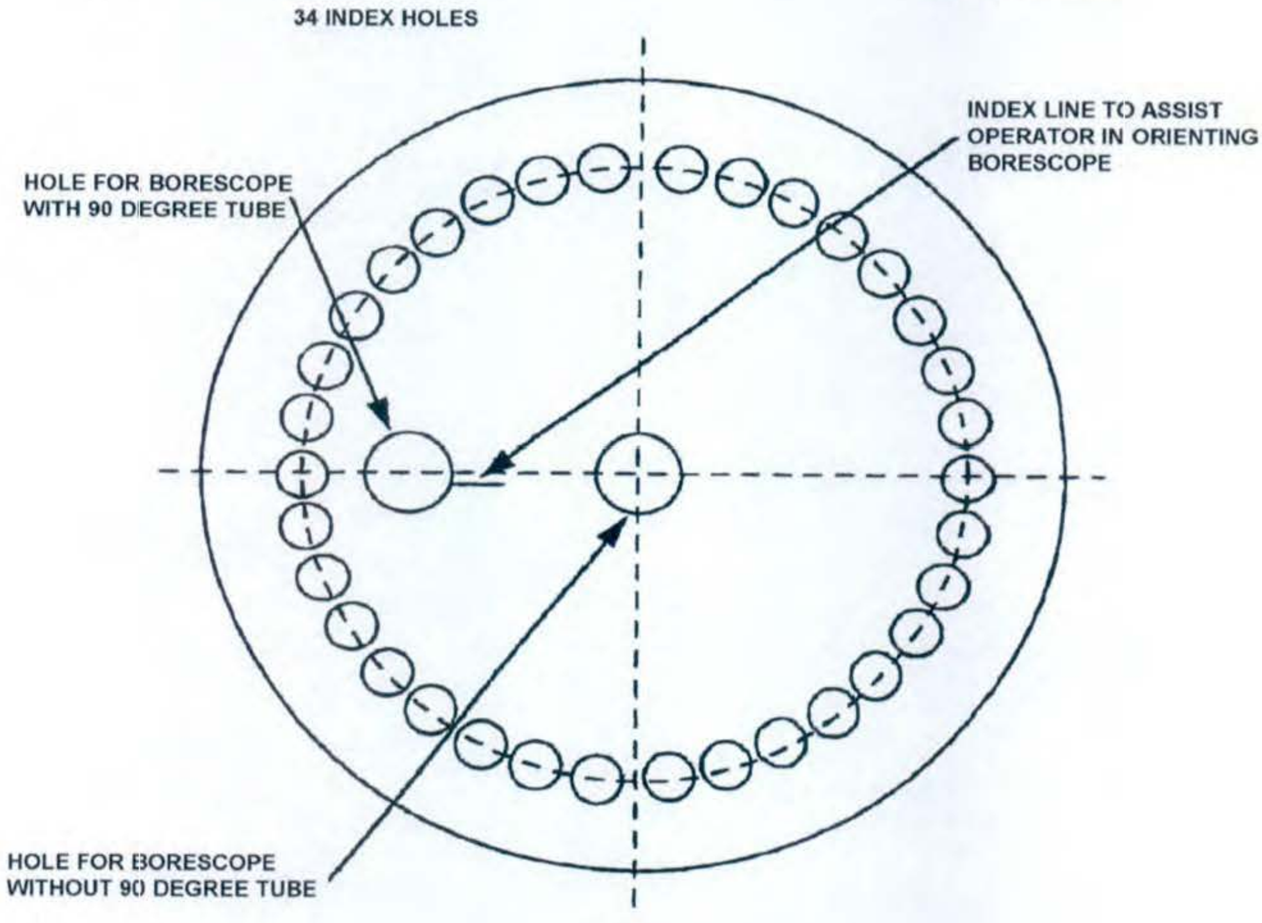
(8) Use continuous method of applying indicating solution.

(9) Be sure concentration of indicating powder in bath is between 1 and 1.5 ml per 100 ml of bath for tank or immersion units, or between 1.5 to 2 ml per 100 ml of bath for spray units as determined by a standard settling test.

(10) Adjust equipment used to inspect thrust washers and use a technique such that piece No. 2 will show no accumulation of powder and piece No. 1 will just faintly show an accumulation of powder.

This image is applicable to:
ITI P/N 123500 borescope with RT angle view tube 22 inches long
ITI P/N 125500/6 or /8 light transmission cable
ITI P/N 125010 light source
Panasonic digital KR212 industrial color camera
Sony PMV - 8044Q color video monitor

Available from:
Instrument Technology, Inc.
33 Airport Road
P.O. Box 381, Westfield,
MA 01086-0381
Phone: (413) 562-3606




Guide is to be used with 2 setscrews.

- The setscrews are installed in blade screw holes.
- The index plate is installed over the setscrews.
- The borescope with the 90 degree tube is inserted in the indicated hole.
- The borescope is inserted towards the tip.
- The plate is rotated one set of index holes and the inspection is repeated.
- When all index holes have been used, the borescope is inserted into the center hole without 90 degree tube installed to view the end of the taper bore.

Figure 6. Borescope Indexing

This image is applicable to:
ITI P/N 123500 borescope with RT angle view tube 22 inches long
ITI P/N 125500/6 or /8 light transmission cable
ITI P/N 125010 light source
Panasonic digital KR212 industrial color camera
Sony PMV - 8044Q color video monitor

Available from:
Instrument Technology, Inc.
33 Airport Road
P.O. Box 381, Westfield,
MA 01086-0381
Phone: (413) 562-3606

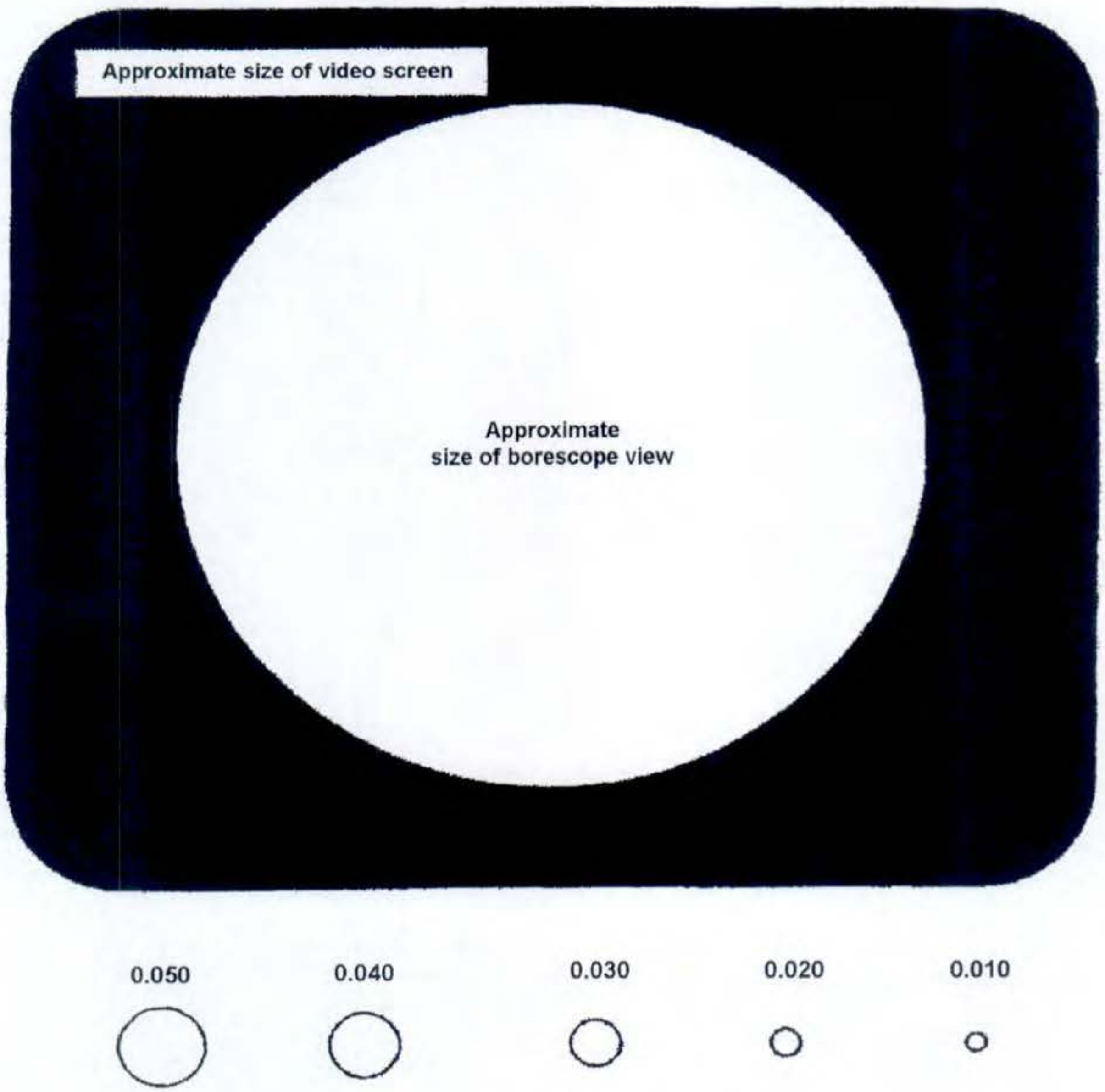



Figure 7. Borescope Comparison Template

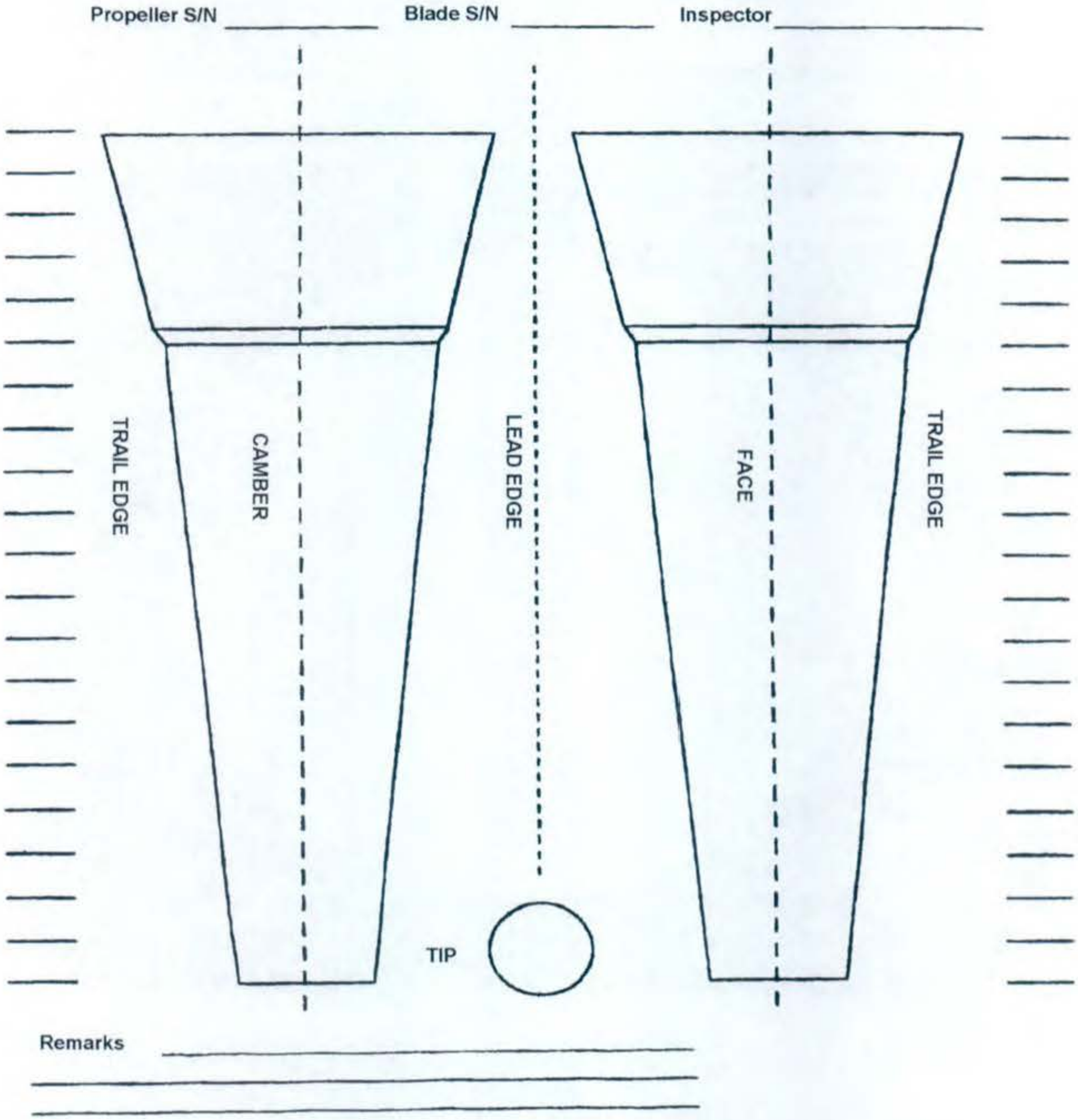
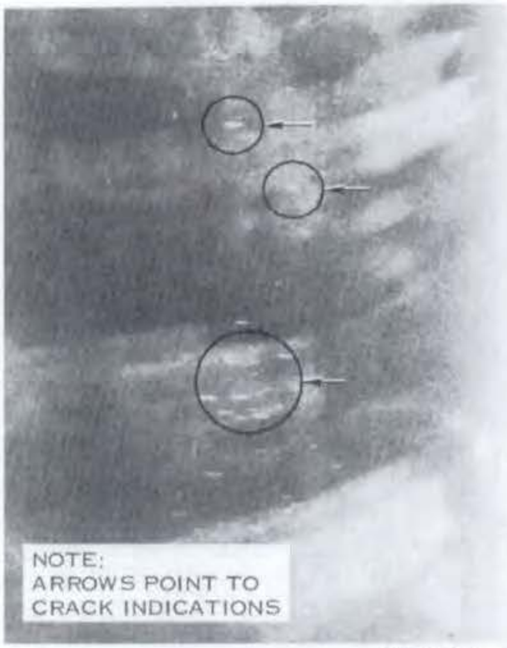



Figure 8. Taper Bore Map




11—L18D—86

Figure 9. Fluorescent Penetrant Indications of Chordwise Cracking

NOTE:
ARROWS POINT TO
CRACK INDICATIONS

11—L18D—87

Figure 10. Fluorescent Penetrant Indications of Longitudinal Cracking

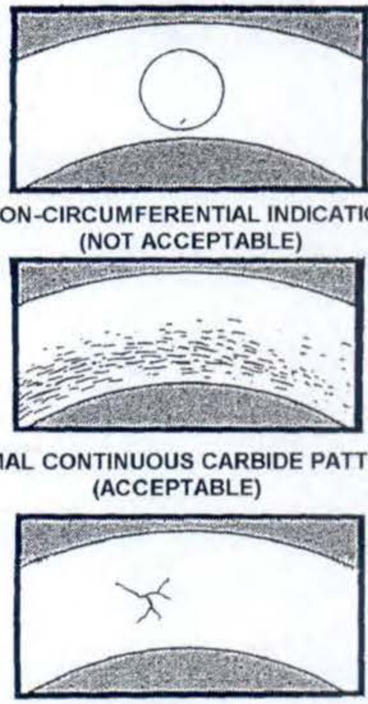
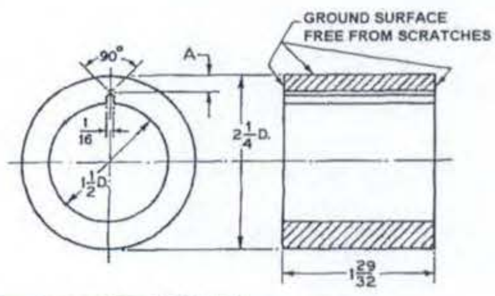



Figure 11. Thrust Washer Magnetic Indications




| TEST PIECE | DIMENSION "A" |
|---|---|
| # 1 | .199-.201 |
| # 2 | .239-.241 |
| # 3 | .259-.261 |
| # 4 | .274-.276 |
| # 5 | .289-.291 |
| # 6 | .304-.306 |

MATERIAL:
AMS 6415 STEEL
HEAT-TREATED TO A
BRINELL HARDNESS
OF 375-415

32X-1C

Figure 12. Calibration Test Piece

MAGNETIC PARTICLE 16
ASTM E 1444

c. Perform direct method of magnetic particle inspection as follows:

(1) Thoroughly clean thrust washers to eliminate all traces of grease and dirt.

**CAUTION**

Only use braided copper contacts to minimize possibility of damage to blade thrust washers during direct method of magnetic inspection process. It has been found that lead contacts tend to melt and become deformed under test current and contact pressure with the result that arcing and burning occurs at thrust washer.

(2) Use braided copper contacts during thrust washer magnetic inspection process. Place strips of synthetic rubber behind copper braids to provide additional cushioning.

(3) Use a test machine with a pneumatic head and apply lowest possible air pressure.

(4) Apply test current (approximately 500 amps) for a period not to exceed l/2 to 1 second.

(5) Remagnetize washer after washers have been rotated about 30 degrees since indications in contact area may be clouded by magnetic flux build-up.

d. Perform induced method of magnetic particle inspection as follows:

(1) The induced magnetic inspection method may be used on blade thrust washers.

(2) Place a braided copper cable between washers and blade.

(3) It is not necessary to insulate cable from washers or blade.

(4) Use a test current of 1500 amperes, and magnetize washers in five or more equally spaced positions to insure complete coverage.

e. Alternate magnetic particle inspection procedure – Perform magnetic particle inspection as per ASTM E 1444 and as follows:

(1) Set DA-200 Parker Probe switch to DC and rotate intensity control to maximum. Adjust leg spacing to approximately 7-5/8 inches.

(2) Place Parker Probe legs against the outer diameter of the thrust washer, with the legs contacting the thrust washer 180 degrees apart.

MAGNETIC INSPECTION COMPOUND 17
DOD-F-87935

(3) Apply 14AM fluorescent magnetic particle inspection compound to the thrust washer. Press Parker Probe power switch and hold for approximately 5 seconds.

(4) Evaluate thrust washer for crack indications using ZB26 black light.

(5) Rotate thrust washer 90 degrees and repeat steps (2) through (4).

f. Demagnetize and clean thrust washers after inspection.

LUBRICATING OIL 6
MIL-PRF-32033

FINGERPRINT REMOVER 7
MIL-C-15074

**CAUTION**

To prevent corrosion, be sure thrust washers are completely dry after inspection.

g. If further processing will be delayed, cover thrust washers with corrosion preventive compound, such as lubricating oil, MIL-PRF-32033 or fingerprint mover, MIL-C-15074.

**28. IMPACT DAMAGE.** Treat blades received at overhaul involved in suspected or known impact as follows.

a. Perform following procedures when there is blade impact damage on surface treated blades:

(1) Perform face alignment inspection on blades involved in static (non-rotating) impact or blades involved in rotating impact with relatively solid and non-continuous objects (such as runway lights, rubber tire treads, or birds in flight) using applicable face alignment checking station. Measure, record and compare face value with last previously recorded value for each blade station. (See FACE ALIGNMENT INSPECTION and FACE ALINGMENT CONNECTION, WP 006 00). Remove blades from service (scrap) if difference between the values exceeds 0.040 inch. Include all available data in an Impact Report (Figure 13) and attach report, along with face alignment values, to the blade.

(2) Refer blades involved in rotating impact with relatively yielding and/or continuous objects such as snow banks, water, slush, sand piles, maintenance stands, etc. to the Hamilton Sundstrand Service Department for recommendations. Send a complete description of impact incident with a complete transcript of current and last previously recorded face alignment value with Impact Report. (See Figure 13.) Attach report to blade.

(3) Refer blades involved in other types of unusual incidents which might affect strength and plan-form of blade to Hamilton Sundstrand Service Department for review and disposition. Include all available data on an Impact Report (Figure 13) and attach report to blade.

b. Perform following procedure when there is blade impact damage on non-surface treated blades.

(1) Thoroughly inspect taper bore, thrust washer and fillet area on blades involved in known or suspected impact.

(2) Check airfoil section for bending, twisting and cracks. If gross damage is not evident, check face alignment in accordance with FACE ALIGNMENT INSPECTION, WP 006 00.

c. Perform following procedure when there is blade impact damage on nickel plated blades.

(1) Inspect nickel plated blades involved in impact incidents for cracks, chipping, blistering, buckling and/or delamination and an out of track condition. Route blades showing evidence of any of these conditions to storage.

(2) Be sure overhaul facility submits a completed impact report to Hamilton Sundstrand, a Division of United Technology Service Department for review and disposition

Operator ____________________
Aircraft Type ____________ Model No. ____________ Serial No. ____________
Nacelle No. ____________________
Engine Model No. ____________________ Serial No. ____________
Propeller Model No. ____________________ Serial No. ____________
Date of Occurrence ____________________
Propeller Gear Ratio ____________________
Blade Design No. ____________________ Blade Serial No. 1 ____________
Blade Serial No. 2 ____________
Blade Serial No. 3 ____________
Blade Serial No. 4 ____________
Propeller Control Model No. ____________ Serial No. ____________
RPM Setting at Time of Impact ____________________
Propeller Rotating or Static ____________________
Aircraft Speed at Time of Impact ____________________
Engine Speed at Time of Impact (rpm or percent) ____________________
Object Struck ____________________
Object Moving or Static ____________________
Approximate Weight of Object Struck ____________________
Description of Visual Damage ____________________
Track or Blade Alignment Affected ____________________

(State Amount)

No. 1 ____________
No. 2 ____________
No. 3 ____________
*No. 4 ____________

Remarks ____________________

Note: The above information is required on blades returned to the approved overhaul facility and to Hamilton Sundstrand Service Department, in order that damage can be properly evaluated.

*If applicable

Figure 13. Impact Report

# DEPOT MAINTENANCE

# WITH ILLUSTRATED PARTS BREAKDOWN

# REPAIR OF BLADE BUTT AND BLADE SHANK

# ALUMINUM ALLOY PROPELLER BLADES

## PART NUMBERS

**A7121B-2**
**A7111D-2**
**A7111E-2**

## Reference Material

| | |
|---|---|
| Assembly of Propeller Blade Assemblies | WP 008 00 |
| Disassembly, Cleaning and Inspection | WP 004 00 |
| Hamilton Sundstrand Specification | HS102 |
| Hamilton Sundstrand Specification | HS299 |
| Introduction | WP 002 00 |
| Low Plasticity Burnishing (LPB) of Blade Butt | SWP 005 01 |
| Repair of Blade Airfoils | WP 006 00 |
| Rubber Masking | MIL-R-6855 |
| Shotpeening Media | SAE AMS 2431 |
| Shotpeening Size | SAE AMS 2431/2B or SAE AMS 2431/8 |
| Variable Pitch Aircraft Propeller System Model Number 54H60-77 | NAVAIR 03-20CBBK-1 |
| Variable Pitch Aircraft Propeller System Model Number 54H60-75/HSTPB34 | NAVAIR 03-20CBBJ-2 |

## Alphabetical Index

## Alphabetical Index (Cont.)



## Record of Applicable Technical Directives

| Type/Number | Date | Title and ECP Number | Date Inc. | Remarks |
|---|---|---|---|---|
| PRC-135 | 02 Sept 10 | Propeller Blade Tape Bore Low Plasticity Burnishing ECP CHPT-08PROP-001 | 15 Aug 11 | (---) |

## 1. INTRODUCTION.

2. This work package provides instructions for repair of blade butt and blade shank on aluminum alloy propeller blades.

### Support Equipment Required

| Nomenclature | Part Number |
|---|---|
| Almen Strip Fixture | HS102 |
| Angle Graduation Stamp | HS9375 |
| Beveled Thrust Washer Grinding Machine | Model T1984 |
| Blade Checking Indicator | HSP1827 or equivalent |
| Blade Holding Fixture | 17238 |
| Blade Taper Bore Plug Gage & Gage Plate | GS19706-1 |
| Comparitor Gage | -- |
| Dial Indicator | 711F Supplied with Universal Shank and Case (FSCM 57163) (Ref. GS18029 (FSCM 73030)) |

### Support Equipment Required (Cont.)

| Nomenclature | Part Number |
|---|---|
| Electric Hand Grinder | 8-011 1/20 HP 115V 8A 18000 RPM (FSCM 18797) (Ref. GS18034-1 (FSCM 73030)) |
| Emery Bob | Fine |
| Gage Point Gage | PE17454-5 |
| Grinding Stone | T1977-28 |
| Grinding Wheel | 32A54-H12VBEP (6-inches OD x 1.5 inches ID x 1.25 inches Wide) (FSCM 44197 or equivalent |
| Inside Micrometer | 124A-2 to 8-inch (Include Case) (FSCM 57163) (Ref. GS18023) (FSCM 73030)) |
| Outside Micrometers | 3 to 4 inches<br>4 to 5 inches<br>5 to 6 inches<br>7 to 8 inches |
| Pneumatic Power Drill | -- |
| Power-Operated Hand Drill | -- |

**Support Equipment Required (Cont.)**

| Nomenclature | Part Number |
|---|---|
| Sharp Pointed Probe | 0.005-inch Maximum Point Diameter |
| Shot Tester | (Cage Code 02204) or equivalent |
| Shotpeening Fixture | PE17562 |
| Split 0.5-inch Drill Extension | -- |
| Staking Tool | HS8694 |
| Steel Stencils | 0.06-inch |
| Steel Stencils | 0.125-inch |
| Stone Wheel | Fine |
| Taper Bore Bushing Area Rough Reamer | PE17454-1 |
| Taper Bore Bushing Area Finish Reamer | PE17454-2 |
| Taper Bore Plug Gage and Gage Plate | GS19706-1 |
| Taper Bore Second Bore 1st Step Rough Reamer | PE17454-3 |
| Taper Bore Second Bore 2nd Step Rough Reamer | PE17454-4 |
| Telescopic Expansion Gage | -- |
| Thrust Washer Grinder | 3AH – Includes Mandrels for D, E and H Shank 220/400V, 60 Cyc, 3 Phase or 220/400V, 50 Cyc, 3 Phase (FSCM 10210) (Ref. GS18027 (FSCM 73030)) or equivalent |

**Materials Required**

| Nomenclature | Specification/ Part Number |
|---|---|
| 180 Grit Emery Wedge | Open Purchase |
| 1 1/4 inches x 8-32 Overlap/slotted Cloth Disk 180 Grit | Open Purchase |
| 1 1/2 inches x 8-32 Overlap/slotted Cloth Disk 180 Grit | Open Purchase |
| 1/2 x 1 1/2 inches 180 Grit Barrel | Open Purchase |
| 3/8 x 1 1/2 inches 180 Grit Tapered Cone Point | Open Purchase |
| 1/2 x 1 1/2 x 1/8 inches 180 Grit Straight Cartridge Roll | Open Purchase |
| Abrasive/Emery Cloth | A-A-1048, Fine, Nos. 100, 120, 180, 240, 320 |
| Aircraft Cleaning Compound | MIL-PRF-85570, Type II |
| Alkaline Cleaner | Chemidize 740 |
| Cast Steel No. 550 Shot with Hardness of 30 to 40 Rc | MIL-S-851 |
| Dry Cleaning Solvent | MIL-PRF-680 |
| Epoxy Primer | MIL-PRF-23377 |
| Fine Hand Stone | Grade AHF-l-BY |
| Impression Material, Dental Polysulfride Paste, Heavy Bodied | 00675 |
| Layout Dye | FSCM 73977 |
| Magnetic Rubber Inspection, Dynacheck | MR-502K, NSN 6850-01-163-0276 |
| Micromul No. 50 Coolant | FSCM 77490 |
| Nitric Acid | A-A-59105 |

**Materials Required (Cont.)**

| Nomenclature | Specification/ Part Number |
|---|---|
| Permatreat<br>Betz Laboratories<br>4636 Somerton Road<br>Trevose, PA 19053<br>(215) 355-3300 | 686A or 1900 |
| Prussian Blue | FSCM 73977 |
| Rubber Masking | MIL-R-6855, Class 2, Type A or B, Grade 70 |
| Sheet Aluminum | 75 S-T (0.1545 to 0.1585-inch thick) |
| Shot | SAE No. 550 (0.047-inch Diameter) LD62 Steel Shot (Conditioned Cut Wire) (0.060- to 0.064-inch Diameter) Nominal Diameter: 0.0625-inch |
| Split Rod | -- |
| Zinc Chromate Primer | TT-P-1757 |

## 3. REPAIR OR REPLACEMENT.

**NOTE**

If the blade, through some unusual incident is subjected to elevated temperatures which would result in a generally overall surface temperature in the rolled area exceeding 170°F and/or generally overall surface temperature in the shotpeened area exceeding 190°F, the blade will require re-surface treatment.

This condition does not apply to blades subjected to local hot spot damage normally resulting from lightning strikes or heater burnout. Such local damage shall be repaired per applicable local repair instructions. The necessity for re-surface treatment shall be considered before starting repair procedures.

**4. BLADE PLUG.** Grit blast blade plug (20, Figure 1) if surface is smooth using No. 00 grit at a pressure of 80 psi.

## 5. BLADE BUSHING.

a. Remove galling and/or wear on bushing (23) flange or bearing surfaces using a fine stone or fine emery cloth. Do not attempt to remove pits in galled area.

b. Polish bushing ID with No. 240 emery cloth to remove light chafing marks.

c. Maximum diameter of larger ID of bushing (23) shall not exceed values shown in Table 1. A standard telescopic expansion gage and outside micrometer or a comparitor gage shall be used to make this measurement. If this value is not exceeded, the bushing shall be inspected and reworked in accordance with steps d. through i. and Figure 2.

d. Bushing serration damage up to and including complete removal of no more than three consecutive teeth is considered satisfactory for continued service providing that:

(1) No more than three teeth are removed in any 120 degrees of circumference.

(2) No removed teeth are exactly 180 degrees apart.

(3) The fit of the blade segment is not impaired.

EPOXY PRIMER 18
MIL-PRF-23377

ZINC CHROMATE PRIMER 19
TT-P-1757

e. Drill distorted or damaged bushing screw hole threads in blade butt and tap to accept an MS122122 screw-thread insert. Apply a coat of undiluted epoxy primer per MIL-PRF-23377 or undiluted zinc chromate primer per TT-P-1757 to newly tapped area before installing the insert.

f. Determine whether blade bushing may be reworked and rotated or if it must be scrapped by measuring inside diameter of blade bushing, across a diameter that includes the worn area, with a set of inside micrometers.

g. If ID of bushing, as measured in step f, is greater than maximum value shown in Table 1, scrap the bushing.

h. If ID of 548942 bushing (used on 7111 and 7121 blades), as measured in step f., is less than or equal to 2.641 inches, the bushing may be returned to service without rotation or rework.

CAUTION

Do not rotate any blade bushing more than once. (A bushing which has been rotated can be identified by the presence of obliterated A and arrow markings.)

i. If ID of 548942 bushing, as measured in step f, is greater than 2.641 inches, but less than or equal to 2.668 inches, the bushing may be rotated 180 degrees in blade bore as follows. (Also, rotate other bushings shown in Table 1 if bushing ID is below appropriate maximum allowable dimension shown in Table 1).

(1) Mark a new locating arrow and a new letter A by the shallow-impression method (less than 0.003 inch deep) by any of such methods as roll-stamping, electric-arc-scribing, or engraving, exactly 180 degrees from existing arrow and letter A. (Locating arrow markings appear on face of bushing flange.)

(2) After new markings have been added, obliterate old markings.

CAUTION

Do not remove material beneath worn surface.

(3) Blend the wear step with unworn portion of blade bushing. Maximum ID of bushing after blending shall not exceed dimensions shown in Table 1. (See Figure 2.)

## 6. THRUST BEARING RETAINER ASSEMBLY.

a. Inspect retainers (8, Figure 1) for cracks. Scrap all cracked retainers.

CAUTION

If one roller in a set is damaged, replace all rollers in retainer. Do not mix new and used rollers in same retainer.

b. Inspect rollers (9) for cracks, flat spots and corrosion. Rollers having any of these conditions shall be scrapped. Replace rollers as follows: (Reference Figures 3 and 4).

(1) Set up the blade thrust bearing retainer in such a way that area immediately surrounding rollers to be removed is well supported.

(2) Drive out damaged rollers using a drift which is small enough to fit between the sections of bearing retainer.

(3) Turn retainer over and place new rollers in position. Assure that retainer is well supported.

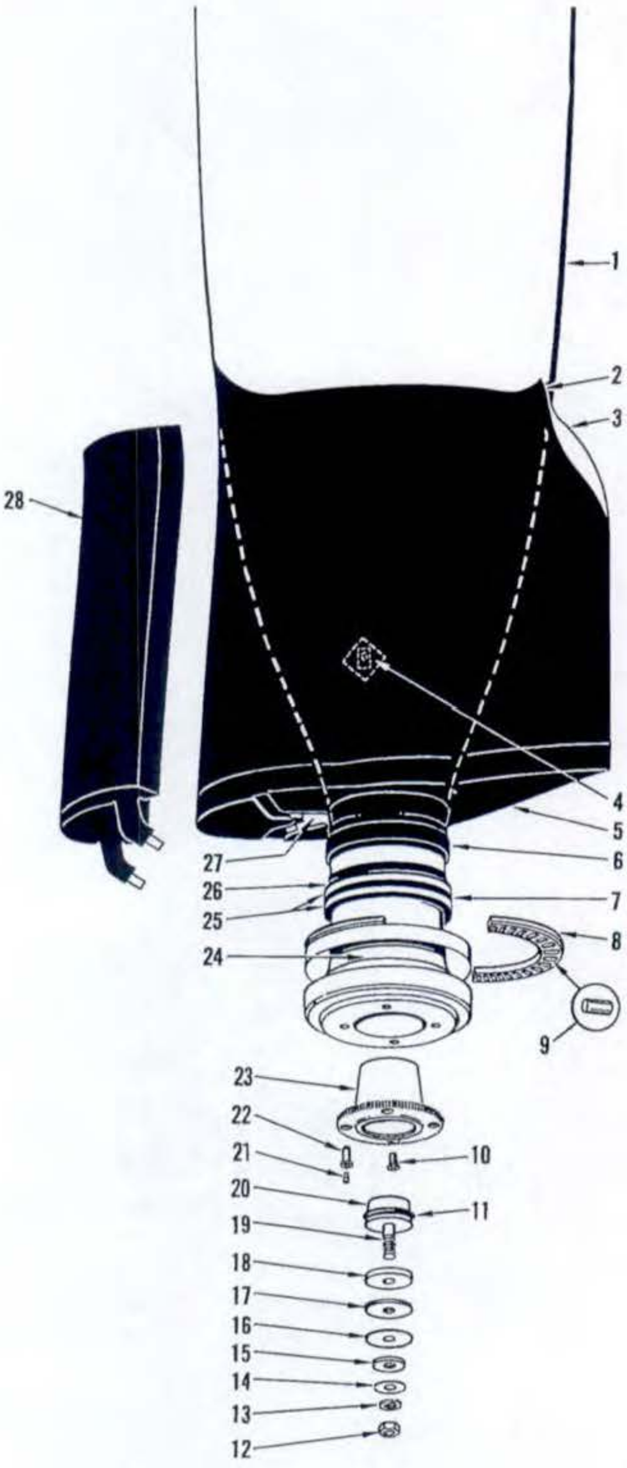
(4) Tap new rollers into position.

(5) Reset extended edges of retainer over rollers by staking the sides of retainer using HS8694 staking tool, to prevent rollers from dropping out.

(6) Check reworked retainers to make certain that all rollers are free to operate over entire depth of slot and that they roll freely without binding.

**Table 1. Blade Bushing Wear Limits**

| (Hydromatic) Bushing Part Number | | Max. Bushing Inside Diameter (Inches) (Large) | (Small) |
|---|---|---|---|
| 548942 | (H Shank) | 2.668 | - |




LEGEND TO FIGURE 1

1. Aircraft Propeller Blade Assembly
2. Neoprene Coverstock
3. Formed Fairing
4. Gage Locating Patch
5. Fairing Rubber Boot
6. Rubber Strip Seal
7. Electrical Contact Ring Holder
8. Thrust Bearing Retainer
9. Crowned Rollers
10. Flat Head Machine Screw
11. Preformed Packing
12. Plain Nut
13. Lock Washer
14. Washer
15. Flat Washer
16. Flat Lead Washer
17. Flat Lead Washer
18. Flat Lead Washer
19. Blade Plug Stud
20. Blade Plug
21. Shim Plate Drive Pin
22. Drive Pin
23. Propeller Blade Bushing
24. Friction Reduction Strip
25. Electrical Contact Rings
26. Insulation Sheet (Not Shown)
27. Electrical Braided Special Purpose Cable Assembly
28. Blade Deicer Heater

15-22377

**Figure 1. A7111D-2 Aircraft Propeller Blade Assembly**

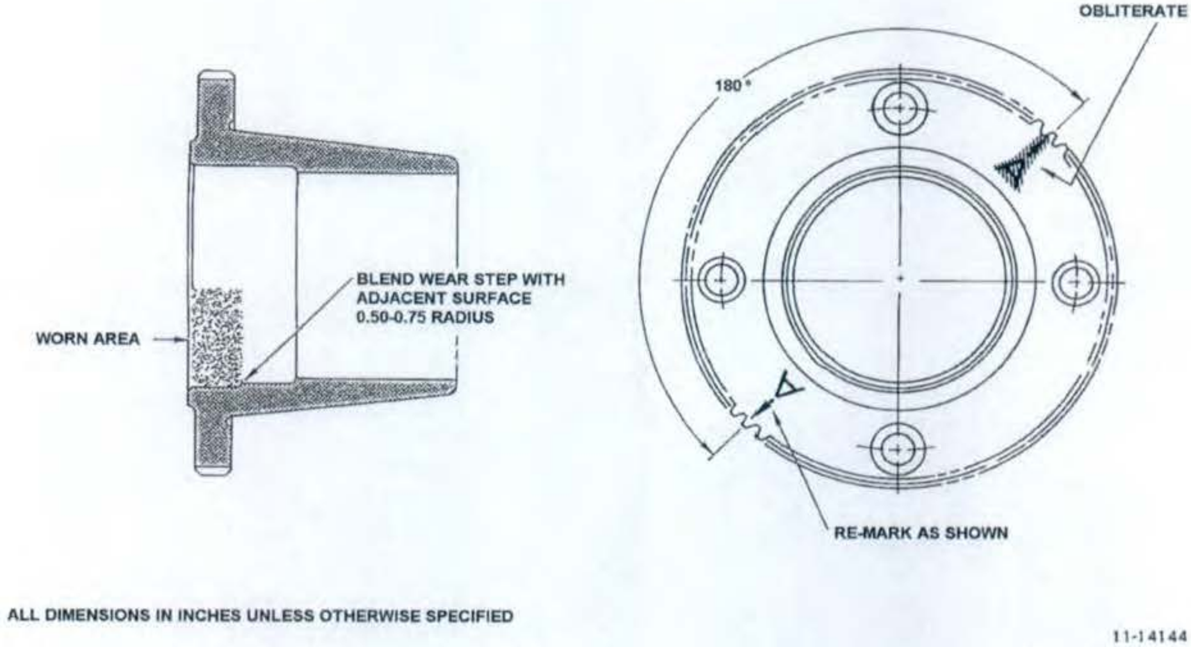



Figure 2. Blade Bushing Rework and Rotation

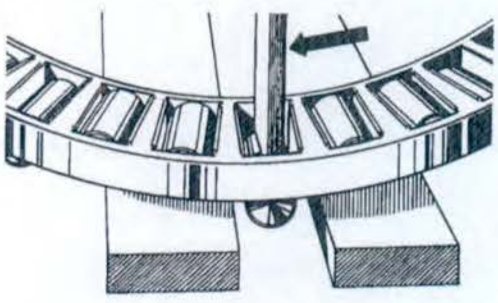


Figure 3. Removing Damage Roller

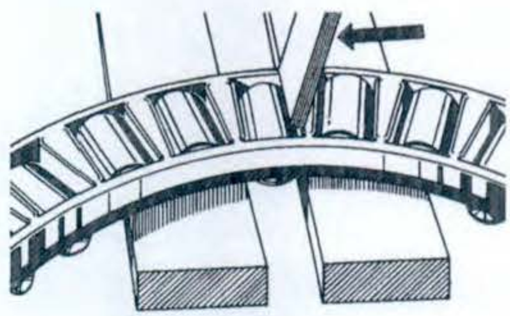


Figure 4. Restaking Replacement Roller

**7. BLADE SHANK REPAIR.**

**NOTE**

Shank repair non-surface treated blade is similar to procedures for surface treated blades except as noted in the appropriate paragraphs.

When considering repairs to blade shank such as taper bore, butt face, fillet or thrust washers each operation shall be appraised with regard to its effect or shank dimensional limits and/or other repairs. For example, rework of taper bore requires rework of butt face and, conversely, complete butt face rework requires reworking taper bore. Rework of butt face and fillet is subject to an overall limitation of butt flange thickness as well as individual limits to each surface.

**8. Locating and Measuring Shank Diameter at N, P, G and H Stations.** Place blade and spacers, if required, in proper holding fixtures. See Figures 5, 6 and Figure 8 and Table 2 to locate N, P, G and H stations and for shank repair limits.

a. Using a soft pencil mounted in a surface gage, lightly mark these stations while rotating the blade.

b. Measure shank diameter at each of these blade stations.

c. If shank diameter at any one of these stations is below the minimum specified in Table 2, blade shall be scrapped. **(QA)**

d. Local depressions are permitted provided rework is well blended to allow proper seating of blade packing or teflon strip.

**CAUTION**

It is mandatory that all evidence of pitting and corrosion be removed from blade since exact depth of this type of damage cannot be evaluated accurately. This is because of difficulty in distinguishing between pitting due to mechanical action and pitting caused by corrosion.

**9. Station N (or outboard edge of fillet radius) to Station P.** (See Figure 6.)

a. Remove all corrosion and pitting using 100-grit emery cloth and final polish using 320-grit emery cloth..

b. Rework gouges, dents and nicks deeper than 0.004 inch and up to 0.006 inch in depth by polishing the entire fillet as shown in Figure 7 using emery cloth specified in step a.

c. Measurements shall be made using gage HSP1827 or equivalent. Remove all raised edges adjacent to damage that will interfere with proper seating of gage and will cause an incorrect measurement.

d. Check the gage on a flat surface. Depress dial plunger and zero the gage pointer. Rock the gage on its knife edge to determine that the pointer will remain at zero.

e. Place the gage so that its knife edge is parallel to the blade longitudinal axis.

f. Take several readings to obtain the point of greatest damage depth.

g. Remove stock by hand using PC451 No. 180- or 240-grit emery cloth followed by hand polishing of entire fillet with No. 320-grit or finer, emery cloth.

**10. Stamping P and G Dimensions on Blade Butt Face.**

**NOTE**

For 7111 and 7121 blades, P and G dimensions are the same.

a. Measure the N, P and G dimensions before reworking blade.

b. Stamp the dimensions on blade butt face using 0.125-inch steel stencils (stamps) if not previously stamped. These dimensions, which determine the need for re-rolling, will remain unchanged until cold re-rolling of the blade is accomplished. Make stencil markings on butt face in areas not contacted by blade segment gear or segment gear shim to prevent obliteration of these markings during service.

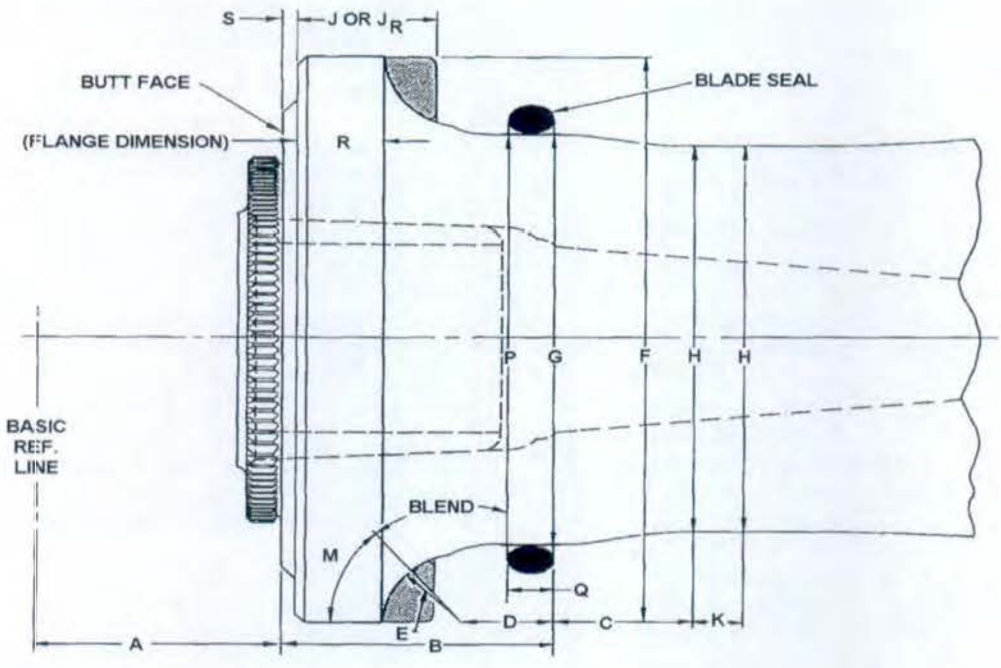



Figure 5. Blade Shank Rework Diagram for 7111 and 7121 Blade Assemblies

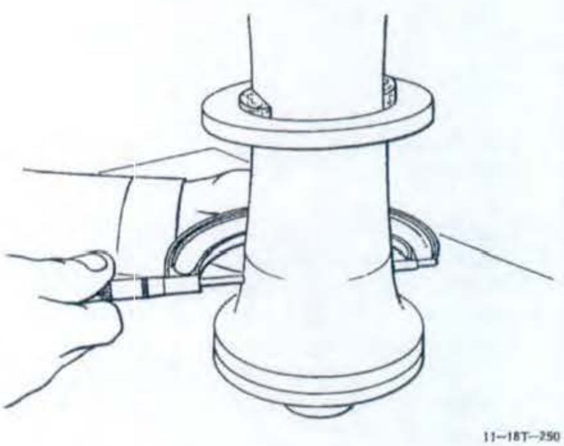



Figure 6. Measuring Shank Diameter

(1) Control the amount of material removed from shank area of blade as follows:

**NOTE**

Such control is necessary because the blade must be re-rolled if more than 0.024 inch is removed from diameter of blade at P or G station (0.012 inch from each side).

(a) If there is no P or G dimension on blade, measure these values and stamp them on blade butt face before recutting as specified in step b.

(b) If there is a P or G dimension stamped on blade butt face, use these values and proceed with following steps.

**Table 2. Shank Repair Limits – Hydromatic Blade Shanks (See Figure 5)**

| | | (TURBO) H | |
|---|---|---|---|
| | | 549798<br>557649 | (7111)<br>(7121) |
| A | | 3.05 | |
| B | | 3.56 | |
| C | Blend as required | 1.16 | |
| D | Length of taper<br>Shank taper | 0.91*<br>None | |
| E | Fillet radius<br>± 0.003 | 1.075 | |
| F | Fillet radius<br>locating diameter | 7.765 | |
| G | Seal outboard area<br>minimum diameter | 5.410 | |
| H | Cam mount area<br>minimum diameter | 5.172 | |
| J | (See J DIMENSION MEASUREMENT AND APPLICATION, this WP)<br>or<br>Jr | 1.545 Main | |
| K | Cam mount width | 0.82 | |
| M | | 45° | |
| N | | None | |
| | Plug gage depth and squareness<br>± 0.001 | 0.219 | |
| P | | 5.410 | |
| Q | Seal area | 0.70 | |
| R | Flange dimensions | 0.912 Min | |
| S | | 0.193 Min | |

* Length of constant diameter.

**NOTE**

Do not change values on blade butt after re-cutting. Original values are needed to determine amount of material removed since the time the values were originally stamped on blade butt. Values will be re-stamped when blade is at manufacturer for re-rolling.

(c) Subtract 0.024 from value P stamped on butt face, then subtract 0.024 from value G stamped on butt face. The results are the diameters at the P and G stations, respectively, that blade can be machined to without requiring re-rolling.

1 If blade is machined below these resultant diameters, blade must be recold per Local Engineering Specifications.

2 If 0.024 inch or less is removed from the P and G value stamped on blade butt at the P and G station diameters, return blade to service. **(QA)**

## 11. Station P to G.

a. Remove all evidence of pitting, corrosion and other damage as described in STATION N (OR OUTBOARD EDGE OF FILLET RADIUS) TO STATION P, this WP. Damage deeper than 0.004 inch and up to 0.006 inch shall be removed in accordance with STATION N (OR OUTBOARD EDGE OF FILLET RADIUS) TO STATION P, this WP. Removal of more than 0.012 inch per side (or more than 0.024 inch from diameter) from cold rolled shanks will require re-rolling of the shanks. Blades requiring re-rolling shall be rerolled by local engineering instructions.

## 12. Station G to 12-inch Station.

**NOTE**

For 7111 and 7121 blade assemblies, the local rework limit from station G to 12-inch station is the same as that shown in Figure 9, 0.06 inch.

a. Repair procedures and limitations in this area are shown in Figures 5 and 9. Local repairs may be made provided that they are carefully blended (as indicated in Figure 9) into the adjacent surface and do not enter into blade seal area. Twelve-inch station limits are given in the blade service limits Tables in WP 006 00. Refer to these Tables in WP 006 00 to determine extent of cold rolling on blades incorporating this feature.

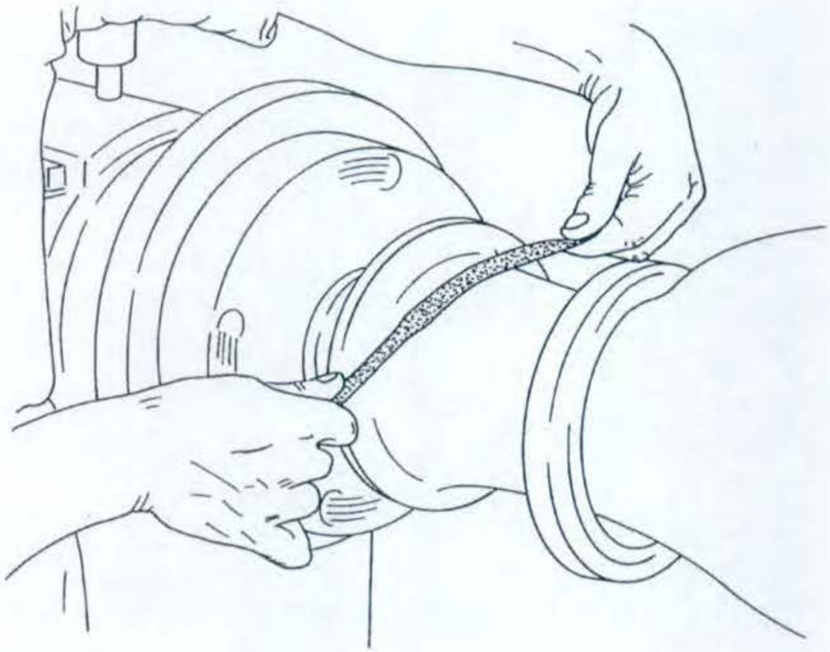



**Figure 7. Blending Station N with Fillet**

13. Taper Bore.

a. Taper bore rework shall only be performed after visual borescope and fluorescent penetrant inspections, WP 004 00.

**NOTE**

Low Plasticity Burnishing (LPB) is the preferred method for applying a compressive layer to the blade taper bore. LPB shall be performed if the equipment is available at the repair/rework activity. Shotpeening is permissible if LPB equipment is not available.

It is not permissible to have LPBed and shotpeened blades installed together in a propeller assembly.

Refer to Figures 11A and 11B (flowcharts) for particular taper bore rework instructions.

b. Low Plasticity Burnishing (LPB) Taper Bore.

(1) All Navy and other LPB approved contractual customer asset propeller blades, P/N A7121B-2, A7111E-2, and A7111D-2, are to have LPB in accordance with SWP 005 01. Contact propeller Integrated Product team for activities.

(2) When receiving "RFI" or "A-Condition" blades from supply for a scrap "exchange" visually examine root end of blade to determine if the blade was LPBed, as indicated by the letter "A" after the blade S/N. If the letter "A" is not present the bushing bore requires LPB in accordance with SWP 005 01.

c. Shotpeeing Taper Bore.

(1) All other blades not required to have LPB, P/N A7121B-2, A7111E-2, and A7111D-2, require taper bore shotpeening including the bushing seat surface in accordance with procedures in this WP.

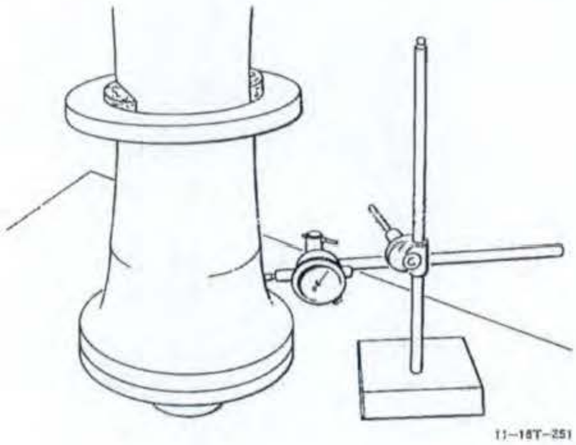



**Figure 8. Checking Shank Concentricity**

**NOTE**

The taper bores of all blades shall be inspected for cracks. Any evidence of a crack in a taper bore or around a blade bushing screw hole which cannot be repaired in accordance with SCREW HOLES REPAIR (CRACKS IN AREA OF) FOR 7111 AND 7121 BLADE ASSEMBLIES, this WP, is cause for retiring the affected blade from service. The method used to inspect for cracks is the fluorescent penetrant method as described in WP 004 00.

d. Use a pneumatic powered drill with any of the following combinations of 180 grit abrasives and rods (See WP 004 00, Figure 5):

(1) A 180 grit emery wedge and split rod of appropriate length.

(2) 1 1/4 inches X 8-32 overlap/slotted cloth disk 180 grit and a rod of appropriate length.

(3) 1 1/2 inches X 8-32 overlap/slotted cloth disk 180 grit and a rod of appropriate length.

(4) 1/2 X 1 1/2 inches 180 grit barrel and a rod of appropriate length.

(5) 3/8 X 1 1/2 inches 180 grit tapered cone point and a rod of appropriate length.

(6) 1/2 X 1 1/2 X 1/8 inches 180 grit straight cartridge roll and a rod and a rod of appropriate length.

**NOTE**

Refer to Figure 11A and 11B determine correct rework procedures of blade taper bore area.

e. Restrict taper bore local rework to the following limits:

(1) Rework blade plug area as follows:

**CAUTION**

Do not rework closer than 0.250 inch within the contact area of blade plug.

(a) Rework no closer than 0.250 inch within the contact area of blade plug.

(b) Rework to a maximum allowable depth of 0.015 inch in the blade plug area, where the prime consideration is to retain a satisfactory seal.

(c) Carefully blend all rework. Maximum diameter of rework is 0.50 inch.

(d) Perform a maximum of two (2) reworks provided they do not overlap and are not in line along blade axis.

(2) Rework blade bushing area as follows:

(a) Perform local rework to a maximum allowable depth of 0.015 inch. Blend all rework. If corrosion exceeds 0.015 inches, glass bead blast in accordance with GLASS BEAD BLASTING OF TAPER BORE, this WP.

(b) Blend rework parallel to blade axis to a maximum length of 1.5 inches. Maximum circumferential width is 0.50 inch.

(c) Perform a maximum of four local reworks provided that following conditions are met:

1 They do not overlap.

2 They are not directly in line along blade axis or around bore inside diameter.

3 The required 75 percent bluing is obtained in accordance with CHECK OF BLADE BUSHING CONTACT AREA IN TAPER BORE, this WP.

(3) Rework remaining areas of taper bore as follows:

(a) Rework to maximum depth of 0.035 inch.

(b) Blend rework to a diameter of 30 times repair depth.

(c) Perform a maximum number of four reworks in each of the remaining areas provided the reworks do not overlap. If they extend into areas previously described, be sure they comply with requirements in these areas.

(4) Measure depth of rework using one of the three following methods:

(a) Using impression material, dental polysulfide paste, heavy bodied, make a mold of the reworked area. Compare the impression with the suitable standard to check depth and diameter of rework.

(b) Using magnetic rubber inspection, Dynachek MR-502K, make a mold of the taper bore. Compare the impression on the mold with a suitable standard to check depth and diameter of rework.

(c) Use a calibrated bore measuring device to measure the depth of the rework in the taper bore.

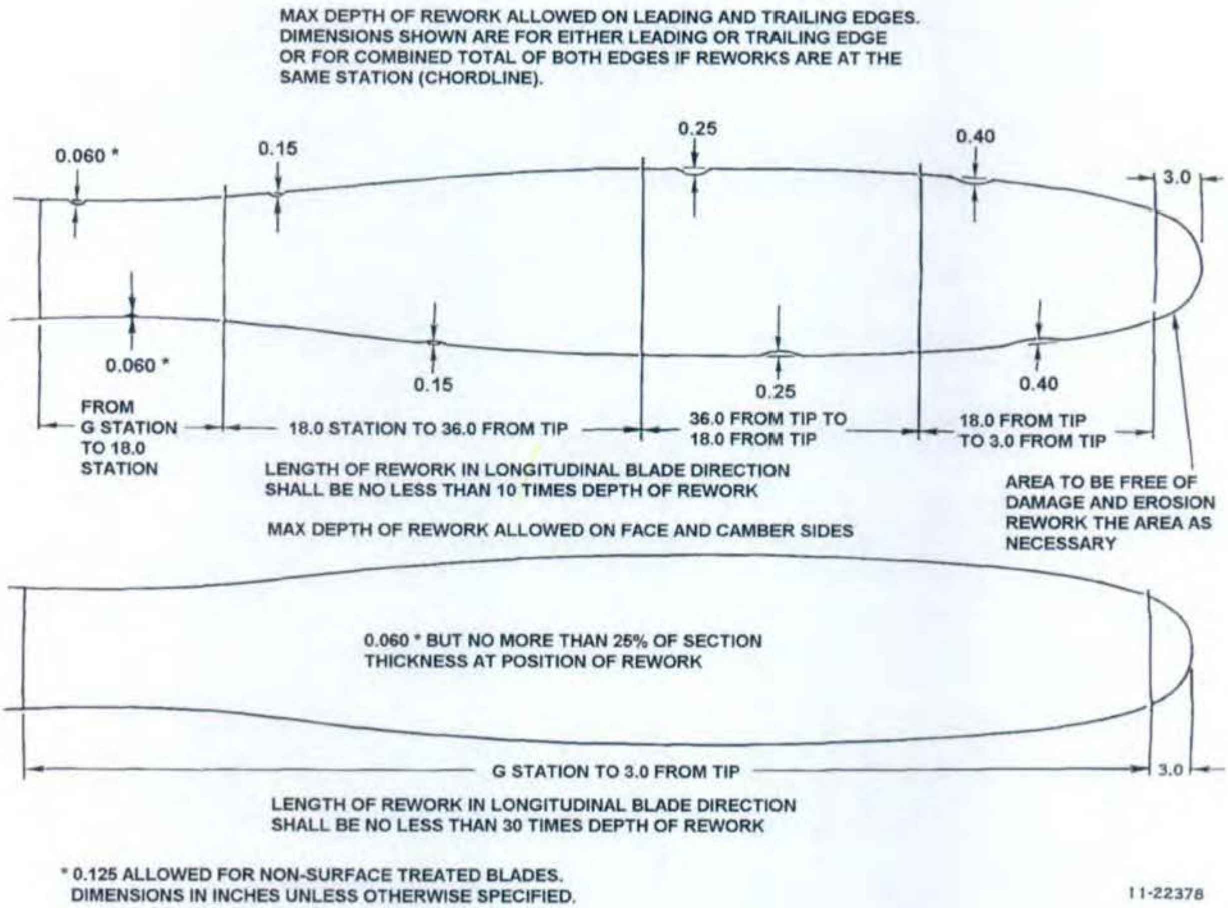



Figure 9. Airfoil Local Repair Limits for Blades Other Than 7111 and 7121

| | "A" |
|---|---|
| FACE AND CAMBER SIDES | 30 |
| LEADING AND TRAILING EDGES | 10 |

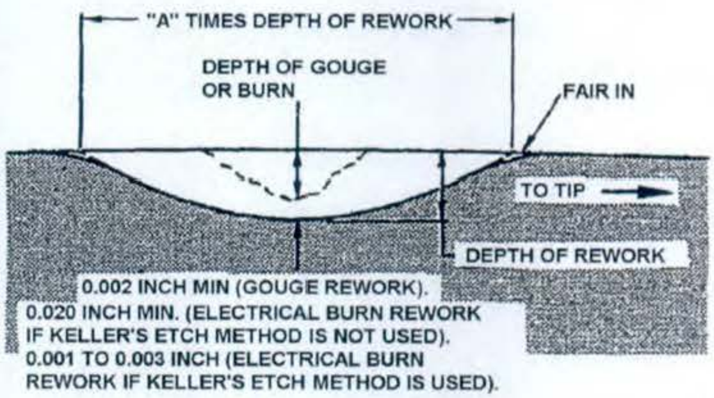



Figure 10. Example of Local Rework

**NOTE**

There is a need to track the number and location of local reworks in the taper bore, therefore all local reworks shall be identified by the area of rework and the number of reworks in that area.

(5) Identify the blade with the location and number of reworks as follows:

(a) Using 0.06 Steel Stencils (1/16 inch stamps), mark the location and the number of the local reworks on the beta gear relief cut (the first flat surface outboard on the butt), in the area outside the blade angle markings.

(b) Stamp the code that corresponds to the area where the local rework was performed as follows:

"BA-" = Blade Bushing Area local reworks (four reworks max.).
"BB-" = Blade Balance Plug Area (two reworks max.).
"BC-"= All other areas of the Taper Bore (four reworks max.).

(c) Add a numeral "I" for each rework performed in that area as follows:

"I" means one rework
"II" means two reworks
"III" means three reworks
"IIII"means four reworks

(d) If the maximum number or depth of reworks is exceeded, the taper bore requires reaming. Blades requiring reaming must be reworked in accordance with TAPER BORE ROUGH REAMING, this WP. When the taper bore is reamed, the taper bore rework codes shall be obliterated by using X's to indicate no local reworks remain.

2

### 13A. GLASS BEAD BLASTING OF TAPER BORE.

GLASS BEAD BLASTING 11

a. If corrosion exceeds limits, remove using glass bead blasting as follows:

(1) Mask the entire blade butt face and damage inside the taper bore using impact resistant tape, in accordance with locally approved specifications, to prevent media impact damage and intrusion.

(2) Glass bead blast to a maximum allowable depth of 0.025 inches Maximum circumferential width of 0.50 inches.

**CAUTION**

Care must be taken not to allow the nozzle to contact the taper bore surface, as this may cause nicks, scratches, or gouges.

**NOTE**

Nozzle pressure shall not exceed 45 psi.

(3) Check nozzle pressure using a needle gauge.

(4) Using the straight bore detail nozzle, glass bead blast the taper bore to remove corrosion.

(5) Remove glass beads from the taper bore using clean compressed air.

(6) Visually inspect the taper bore for signs of remaining corrosion using a bright flashlight. If corrosion is still present, repeat steps a.(1) through a.(6) as necessary.

(7) Caustic etch and de-smut taper bore in accordance with WP 004 00.

(8) Perform Non-destructive Inspection (NDI) on taper bore in accordance with WP 004 00.

### 13B. TAPER BORE ROUGH REAMING.

8

a. Mount the blade in a desired holding fixture for reaming, using a standard 0.001 inch dial indicator.

b. Set fixture so butt end is perpendicular with machine spindle. Insert gage point gage, P/N PE17454-5, to find the centerline of the taper bore.

c. Using a dial indicator, indicate on machine, radius of gage point gage. Check using minor centering pin. Using machine spindle, align with taper point gage, within 0.001 inch.

**CAUTION**

When using taper bore reamers, be sure it is the proper reamer for that step in the reaming process.

d. Rough ream the bushing and transition step as follows:

(1) Remove gage point gage, P/N PE17454-5, and insert the bushing area rough reamer, P/N PE17454-1

**NOTE**

If blade tip is deflecting (vibrating), then ream RPM is too high and chattering of reamer inside of taper bore will result.

As reaming progresses, visually inspect taper bore for residual corrosion, gouges, and scratches.

(2) Locate centerline of taper bore by aligning the bushing area rough reamer with the machine spindle. Run reamer at 13 RPM. Remove only enough material to remove damage.

(3) Remove bushing area rough cut reamer, P/N PE17454-1, and verify centerline with gage point gage, P/N PE17454-5, and machine spindle, within 0.001 inch; if determined to be out of alignment, contact engineering for disposition.

(4) Determine if blade has the minimum step thickness in accordance with FINISH REAMING, this WP.

e. Ream the second taper area as follows:

(1) If installed, remove gage point gage, P/N PE17454-5, and insert the second bore rough reamer, P/N PE17454-3 and PE17454-4.

**NOTE**

If blade tip is deflecting (vibrating), then ream RPM is too high and chattering of reamer inside of taper bore will result.

As reaming progresses, visually inspect taper bore for residual corrosion, gouges, and scratches.

(2) Locate centerline of taper bore by aligning the second bore rough reamer, P/N PE17454-3 and PE17454-4, with the machine spindle. Run reamer at 13 RPM. Remove only enough material to remove damage.

(3) Remove second bore rough reamer, P/N 17454-3 and PE17454-4, and verify centerline with gage point gage, P/N PE17454-5, and machine spindle, within 0.001 inch; if determined to be out of alignment, contact engineering for disposition.

(4) Determine if blade has the minimum butt face thickness in accordance with MEASURING BUTT FACE THICKNESS, this WP.

f. Caustic etch and de-smut taper bore in accordance with WP 004 00

g. Perform Non-Destructive Inspections (NDI) on taper bore in accordance with WP 004 00.

h. When bushing seat area has been rough reamed the bushing area must be LPBed per SWP 005 01 or shotpeened per this WP taperbore, as applicable. See TAPERBORE, this WP.

i. Finish ream shotpeened bushing seat area of blades in accordance with FINISH REAMING, this WP.

j. Check bushing fit in accordance with CHECK OF BLADE BUSHING FIT, this WP. Record bushing gap.

## 13C. MEASURING BUTT FACE THICKNESS.

a. Measure from flat side of beveled thrust washer to butt face of shank, and record as measurement "a". Minimum requirement is 1.790 inches. (See Figure 17). Failure to have minimum requirement is grounds for removing blade from service.

b. Measure from flat side of beveled thrust washer to next inboard flat surface of butt end, and record as measurement "b". Minimum requirement is 1.545 inches (See Figure 17 and Table 8). Failure to have minimum requirement is grounds for removing blade from service.

c. Determine the step thickness by subtracting measurement "a" from measurement "b". Minimum requirement is 0.193 inches. Failure to have minimum requirement is grounds for removing blade from service.

**NOTE**

If finishing reaming is required, Low Plasticity Burnishing (SWP 005 01) may have to be completed again. See CHECK OF BLADE BUSHING FIT, this WP for requirements.

8 **13D. FINISH REAMING.**

a. Mount the blade in a desired holding fixture for reaming, using a standard 0.001 inch dial indicator.

b. Set fixture so butt end is perpendicular with machine spindle. Insert gage point gage, P/N PE17454-5, to find the centerline of the taper bore.

c. Using a dial indicator, indicate on machine, radius of gage point gage. Check using minor centering pin. Using machine spindle, align with taper point gage, within 0.001 inch.

d. Remove gage point gage, P/N PE17454-5, and insert blade bushing area finish reamer, P/N PE17454-2.

e. Locate the centerline of taper bore by aligning reamer with machine spindle.

f. Ream by hand, remove only enough material to provide a uniform bearing surface for blade bushing and to achieve a gap between the bushing flange and blade butt of 0.025 to 0.037 inches.

g. Remove bushing area finish reamer, P/N PE17545-2, and use gage point gage, P/N PE17454-5, and depth micrometer measure and record distance from taper gage point gage face and butt face.

h. For LPBed blades, as indicated by the letter "A" after the blade S/N, when the gap between the blade butt face and bushing flange has changed to 0.030 inches or more from the previously recorded gap, the blade bushing seat area shall be LPBed per SWP 005 01. For shotpeened blades 10% of bottom of shotpeen dimple shall remain, when less blade bushing seat area shall be shotpeened in accordance with SHOTPEENING TAPER BORE, this WP.

**13E. SHOTPEENING TAPER BORE.** Shotpeen the taper bore on blades made of hard aluminum alloy (HS26) after all machining (except final cut to fit blade bushing) as follows:

a. Make a thorough inspection of area to be shotpeened. Check for cracks and other damage in accordance with visual inspection and fluorescent penetrant inspection instructions in WP 004 00.

b. Mask the exterior of the blade shank and butt face of the blade to prevent shot impingement.

c. Shotpeen parameters shall be verified using almen strip fixture manufactured per Hamilton Sundstrand Specification HS102 held in blade holding fixture, P/N 17238.

**NOTE**

When using cut wire 62 on blade taper bore repaired area, almen arc height of 0.005 is favorable.

d. Using a 90 degree angle lance mounted in alignment fixture, P/N 17236, the almen strips are to be shotpeened to an intensity of 0.007-0.010C2 (0.005-0.007Y1) using cast or conditioned cut wire steel shot that meets the general requirements of SAE AMS 2431. Shot size shall be in accordance with Hamilton Sundstrand Specification HS299 grade 4, or SAE AMS 2431/2B, size 550, or SAE AMS 2431/8 cut wire size 62. Shotpeen reworked areas using the parameters and set-up verified by the almen strips. Shotpeen coverage in the taper bore shall be 100 percent.

**NOTE**

The Low Plasticity Burnishing (LPB) machine has a reach of 3.0 inches inside the taper bore from the blade butt face. Mask the blade bushing retention area so that the LPB surface will overlap the shotpeen by 0.25 inches.

e. Mask the blade bushing area to prevent shot impingement on the seating surface, using a protective flat rubber mask about 0.187 inch thick and large enough to cove the area. The rubber masking material should be in accordance with SAE AMS-R-6855, Class 2, Type A or B, Grade 70. Shotpeen overspray is acceptable in the blade taper bore outward of the blade bushing area.

**CAUTION**

Exercise caution to prevent shotpeened surfaces from becoming scratched or gouged by shotpeening nozzle.

f. Check shot flow in machine periodically and maintain it within 10 percent of flow established by peening test. Check flow by observing weight of shot for peening test and then periodically checking weight of shot used and comparing it against this reference weight.

g. Use new shot to determine that no greater than 25 grams of a 100 gram sample break when subjected to twenty passes through a Shot Tester or its equivalent at a wheel speed of 4590 RPM.

h. Check shot supply daily or prior to use by visual inspection. The shot will be acceptable when a sample spread out on a flat surface includes no more broken shot particles than specified in Table 3. Roll sample shot and examine individually to fulfill this requirement.

i. Tempered shot shall have a minimum of 50 percent of shot within hardness range of 300 to 500 Vickers and/or more than 10 percent shall have a hardness greater than 550 Vickers. Require shot supplier to certify that shot complies with hardness specified, and if possible, recheck shot as shown in Figure 12.

NITRIC ACID 20
A-A-59105

j. Nitric acid etch using 30 to 50 percent nitric acid solution or glass bead blast the shotpeened area to remove the steel shot residue from the blade prior to surface treatments the shotpeened area.

**14. Taper Bore Squareness Check.** Determine squareness of taper bore to blade butt face by rotating plug gage, as shown in Figure 11, 360 degrees against blade butt after zeroing the dial indicator using yoke portion of plug gage. See Table 2 for limits.

**15. Check of Blade Bushing Contact Area in Taper Bore.** Before final installation, determine that blade bushing contact area within blade taper bore is within specified limits using applicable tapered bluing gage (taper bore plug gage, see Figure 11) as follows:

a. Apply a light coat of Prussian blue to gage.

b. Insert gage into taper bore.

c. Remove gage from taper bore.

d. Check the contact area. The blade bore shall exhibit at least 75 percent total contact area (blued by the gage). The contact area must be continuous around the entire circumference of the bore. **(QA)**

**CAUTION**

Blades with stepped taper bores, such as 7111 and 7121, must be re-machined with special reamers. Return blades to manufacturer if re-machining is required.

**NOTE**

For 7111 and 7121 blade assemblies, the bushing contact surface is maintained to a taper of 1.9995 to 2.0005 inch per foot over a 2.73- to 2.79-inch length. Removal of material from this surface will require removal of material from blade butt face to ensure proper fit of blade bushing. (Use GS19706-1 plug gage to check fit.) (See TAPER BORE, step e, this WP)

e. Remove material from taper bore as necessary to meet bluing requirements.

**15A. Check of Blade Bushing Fit.** Before final installation determine that the gap between the blade bushing flange and the blade butt is 0.025 to 0.037 inches.

a. Install blade bushing in taper bore by hand and measure the gap between the blade butt and blade bushing flange.

b. If the gap is greater than 0.037, the blade taper bore must be finish reamed to achieve proper bushing fit. If the gap is greater than 0.067, the blade must have LPB completed again after the finish ream.

c. If the gap is less than 0.025, the blade butt must be machined to achieve proper bushing fit.

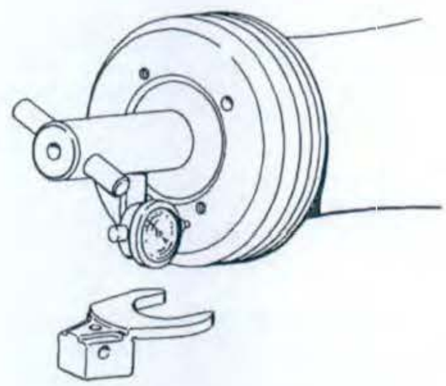


**Figure 11 Typical Taper Bore Plug Gage**

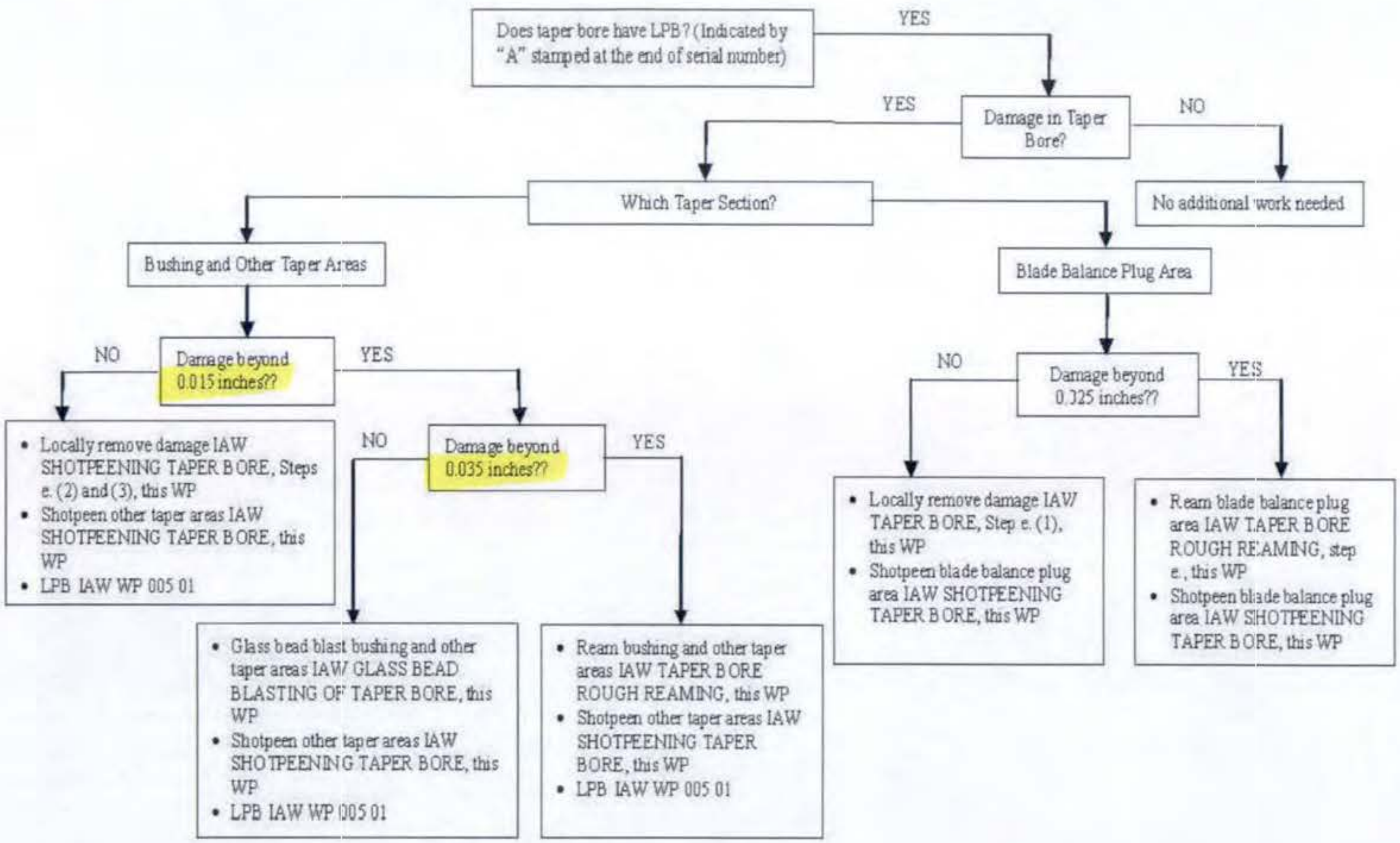



Figure 11A. Troubleshooting Taper Bore With LPB

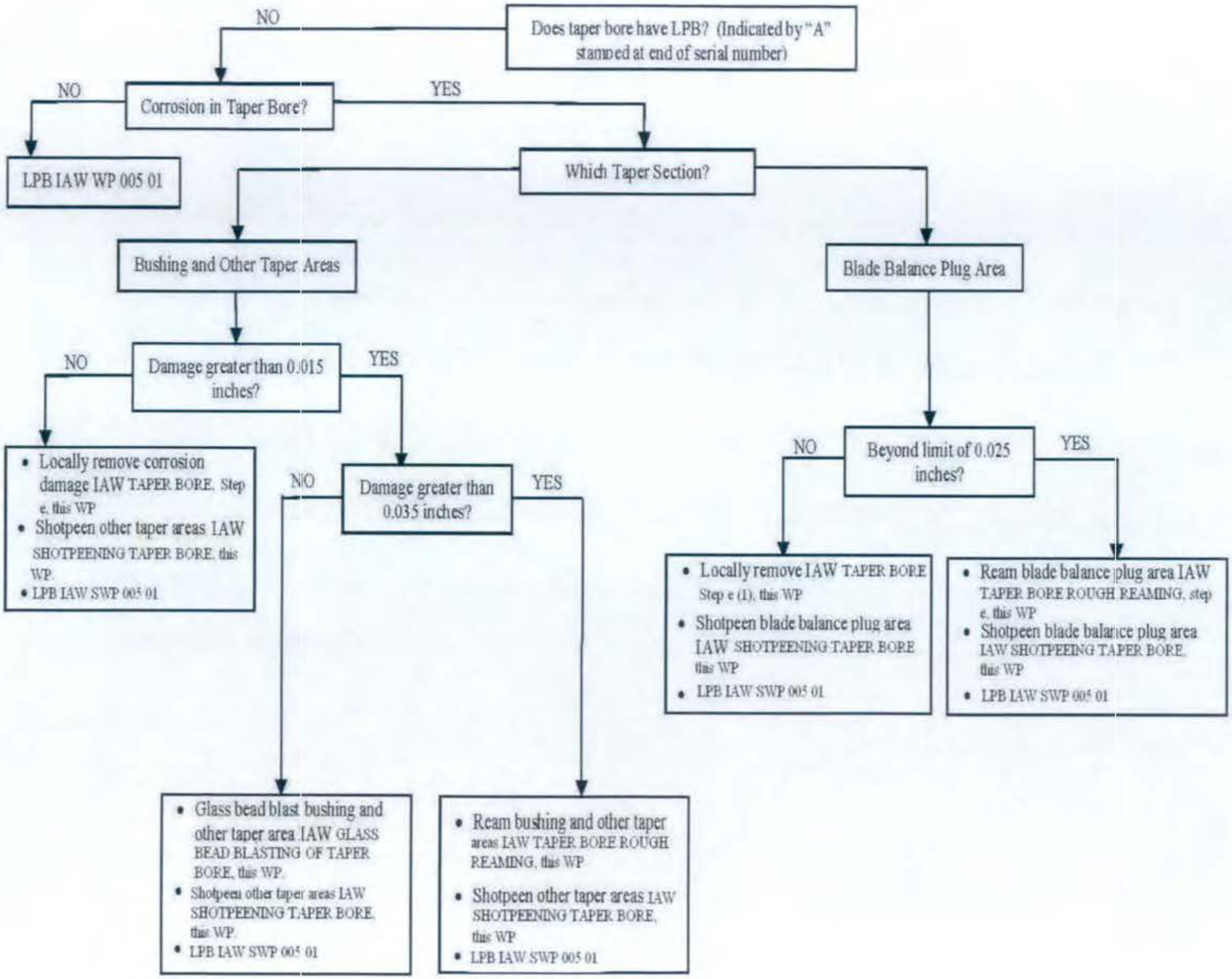



Figure 11B. Troubleshooting Taper Bore Without LPB

16. DELETED

17

### 17. Anodize Taper Bore.

**CAUTION**

Do not anodize blade before fluorescent penetrant inspection since the anodizing will hide cracks.

If steel, screw-thread inserts are present in blade butt (see SCREW HOLES REPAIR (STRIPPED OR DISTORTED THREADS), this WP) paragraph in this work package, remove them before anodizing blade. If steel inserts are in contact with aluminum blade during anodizing, arcing and dissimilar metals type corrosion will take place.

**NOTE**

Blade does not have to be etched again if it was etched before fluorescent penetrant inspection in WP 004 00.

a. Anodizing aluminum alloy blades produces a blade surface that is more corrosion-resistant and more suitable for good paint adherence.

AIRCRAFT CLEANING COMPOUND MIL-PRF-85570 — 10

**WARNING**

Compressed air used for cleaning can create airborne particles that may enter the eyes. Use approved goggles, face-shield and hearing protection when using compressed air for cleaning, cooling or drying. Air pressure shall not exceed 30 psig. Compressed air shall not be directed towards self or other persons.

**CAUTION**

Ensure all lead wool is removed before anodizing.

**NOTE**

Caustic etch outlined in WP 004 00, may be used as an alternate to above for cleaning blade. If caustic etch was used prior to accomplishing required rework, then cleaning for anodizing shall be accomplished only with a hot, free-rinsing, non-chlorine soap cleaner.

To ascertain that shop air supply is oil-free, check it by performing a water break test on a clean plate of un-anodized aluminum and drying a test piece with the shop air.

b. Aqueous degrease and clean the taper bore. MIL-PRF-85570, Type II may be used as a cleaner of the taper bore surfaces in order to achieve a uniform anodize finish. Use cleaner immediately before anodic treatment. Apply cleaner by swabbing with clean cloths. Rinse cleaner off of blade surface and taper bore, screw holes, and drive pinholes thoroughly with clean water. Use an air hose to dry surfaces or wipe with clean, dry cloths.

**CAUTION**

Ensure thrust washer is insulated or arcing, which can damage blade or thrust washer can occur.

c. Insulate thrust washer from blade to prevent arcing which can damage blade or thrust washer.

**Table 3. Grade Numbers of Shot**

| Nominal Dia. | Size | Area to be Shotpeened | Unacceptable Shot Sample Count |
|---|---|---|---|
| 0.0625 inch. | SAE No. 550 shot (0.047-inch dia.) LD62 steel shot (conditioning cut wire)(0.060- to 0.064-inch dia.) | Taper bore, spotface of drive pin hole | 12 per 1 square inch maximum |

NITRIC ACID 20
A-A-59105

d. Using an anode-equipped fixture, fill the taper bore with a 50 percent nitric acid solution. Allow to dwell for 5 minutes, then drain.

e. Rinse the taper bore thoroughly with water.

ALKALINE CLEANER 21
CHEMIDIZE 740

f. Using an anode equipped fixture, fill the taper bore with Chemidize 740. Allow to dwell for 1 minute, then drain.

g. Thoroughly rinse the taper bore with water.

h. Using an anode equipped fixture, chromic anodize the taper bore at 25V for 2 to 5 amp-hours.

i. Thoroughly cold water rinse the taper bore, then remove fixture.

j. Verify the presence of anodic coating using the modified conductivity meter.

**18. DELETED.**

**19. Drive Pin Holes Repair.**

a. Spotface blade drive pin holes (on blades made from hard alloy material, HS26), 0.750 ±0.010 inch in diameter and 0.003 to 0.010 inch deep.

b. Shotpeen over spotfaced area according to the following procedure:

(1) Protect drive pin holes and blade butt face, other than 0.750-inch diameter spotfaced portions, from shotpeening using one of the following. (Those areas are not to be shotpeened in step (2)):

(a) Use protective shotpeening fixture, P/N PE17562. Secure to blade butt face with blade bushing screws.

(b) Use a protective flat rubber mask about 0.187 inch thick and large enough to cover the blade butt face. The rubber masking material should be per MIL-R-6855, Class 2, Type A or B, Grade 70. Make a tracing of butt face showing position of screw holes and spotfaced drive pin holes. Transfer out the holes. Fasten rubber mask to blade butt face with blade bushing screws.

(c) To protect drive pin holes, insert two steel dowels in drive pin holes to a depth of at least 0.350 inch. The dowels should have a light press fit in drive pin holes.

(2) Shotpeen exposed (spotfaced) surfaces of blade butt. The method used is same as that described for shotpeening the taper bore. (See SHOTPEENING TAPER BORE, this WP.) Shotpeen spotface to an intensity of 0.007–0.010C. Incomplete overlapping or shot impressions or non-uniform coverage will require repeening of exposed areas.

c. If either of the drive pin holes is corroded, worn and/or damaged, proceed as follows:

**NOTE**

Both of the holes must be reworked as follows if only one hole is corroded, worn or damaged. It is not permissible to rework only one hole.

(1) Drill and ream both holes to the minimum diameter, per Blade Bushing Drive Pin Table in WP 008 00, that will remove all corrosion, wear and/or damage. Follow procedure specified in Figure 13.

(2) Spotface drive pin holes per step a. (Refer to Figure 13.)

(3) Shotpeen spotfaced area per step b.

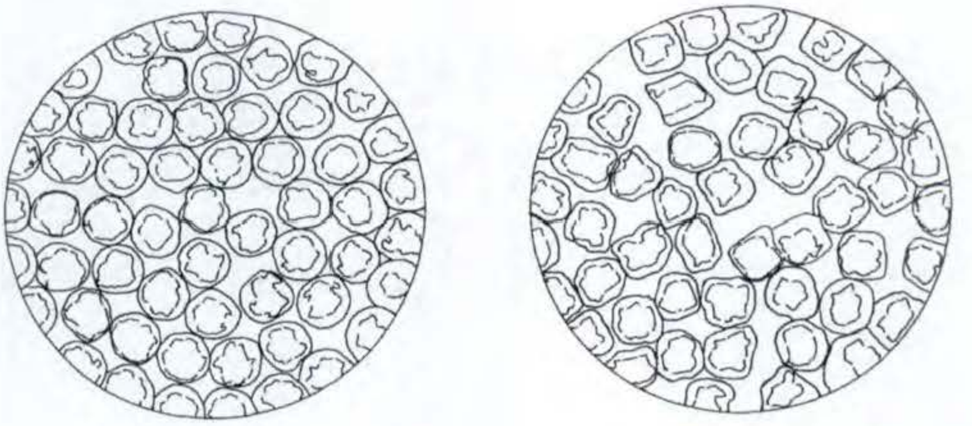



**Figure 12. Properly and Improperly Conditioned Shot**

**20. Screw Holes Repair (Cracks in Area of) for 7111 and 7121 Blade Assemblies.** When radial cracks are present in taper bore adjacent to either blade bushing screw hole, proceed as follows:

a. Rework taper bore by machining recesses over screw holes as shown in Figure 14. Remove all indications of cracks. If maximum depths listed in Figure 14 are achieved and cracks still exist, the butt face dimension "S", Figures 5 and 13, may be reduced towards the minimum dimension in order to accommodate crack removal. After machining, check the clearance between the bushing and the flange. If it is reduced below 0.025 inch, the taper bore must be reamed.

**NOTE**

Presence of a crack adjacent to either tapped hole requires rework of both locations. Evidence of cracks after completion of this repair requires that the blade be scrapped.

b. Perform a fluorescent-penetrant inspection of recessed areas according to instructions in WP 004 00 to make sure that all cracks have been removed. If any cracks are still visible, the blade must be scrapped.

c. If results of fluorescent-penetrant inspection are satisfactory, clean the area and shotpeen reworked portion in accordance with SHOTPEENING TAPER BORE, this WP, and as follows:

(1) Mask off area adjacent to rework.

(2) Use cast steel No. 550 shotpeen MIL-S-851 with hardness of 30 to 40 Rc. Unacceptable shot sample count is 12 per 1 square inch maximum.

d. Drill and tap two new blade bushing screw holes 45 degrees from the old as shown in Figure 14. Do not disturb drive pin holes.

**CAUTION**

Before anodizing the blade, remove any steel screw-thread inserts that may have been installed at previous overhauls in accordance with SCREW HOLES REPAIR (STRIPPED OR DISTORTED THREADS), this WP. (If steel inserts are in contact with aluminum blades during anodizing, arcing and dissimilar-metals-type corrosion will take place.)

e. Anodize butt end of blade (threaded holes and taper bore included) in accordance with ANODIC TREATMENT, WP 006 00 following any rework.

**CAUTION**

To prevent blade fracture, do not stamp any closer than 0.125 inch to edge of blade butt face or closer than 0.100 inch from fillet edge.

f. Reidentify reworked 7111 blade assemblies by stamping (SK112168) adjacent to part number on blade shank OD.

g. Rework the blade bushing per Figure 15 to relocate screw holes so that they correspond to newly drilled screw holes in butt face.

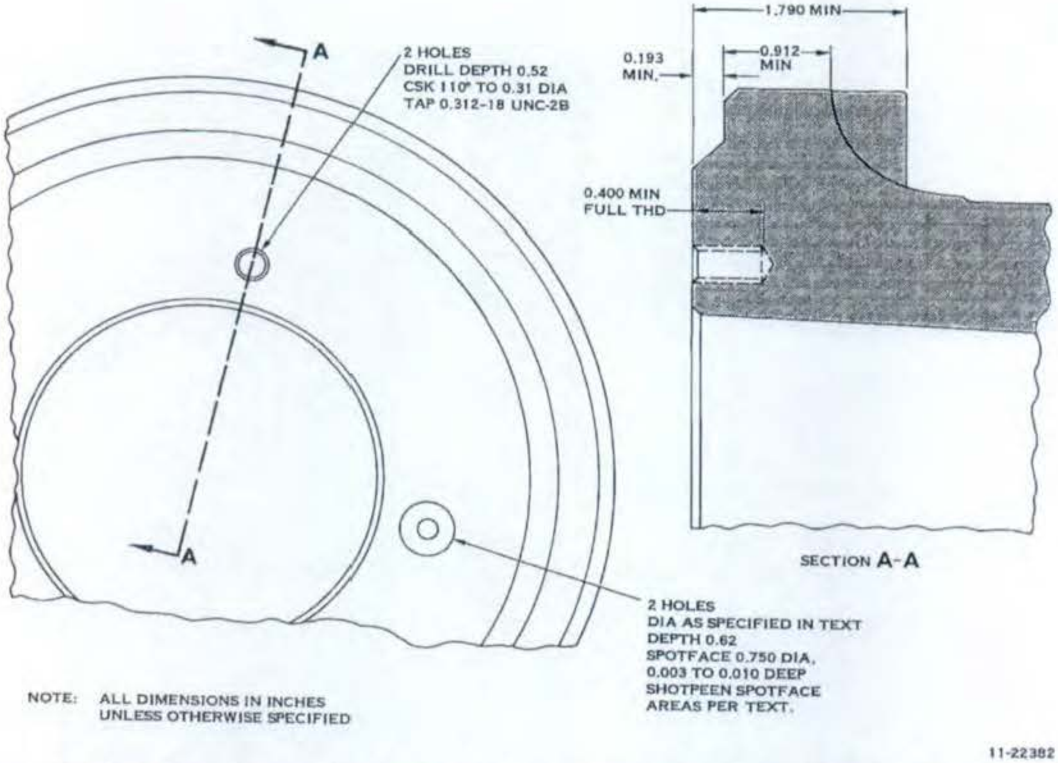



**Figure 13. Butt Face Dimensions and Hole Rework Dimensions (for 7111 and 7121 Blades)**

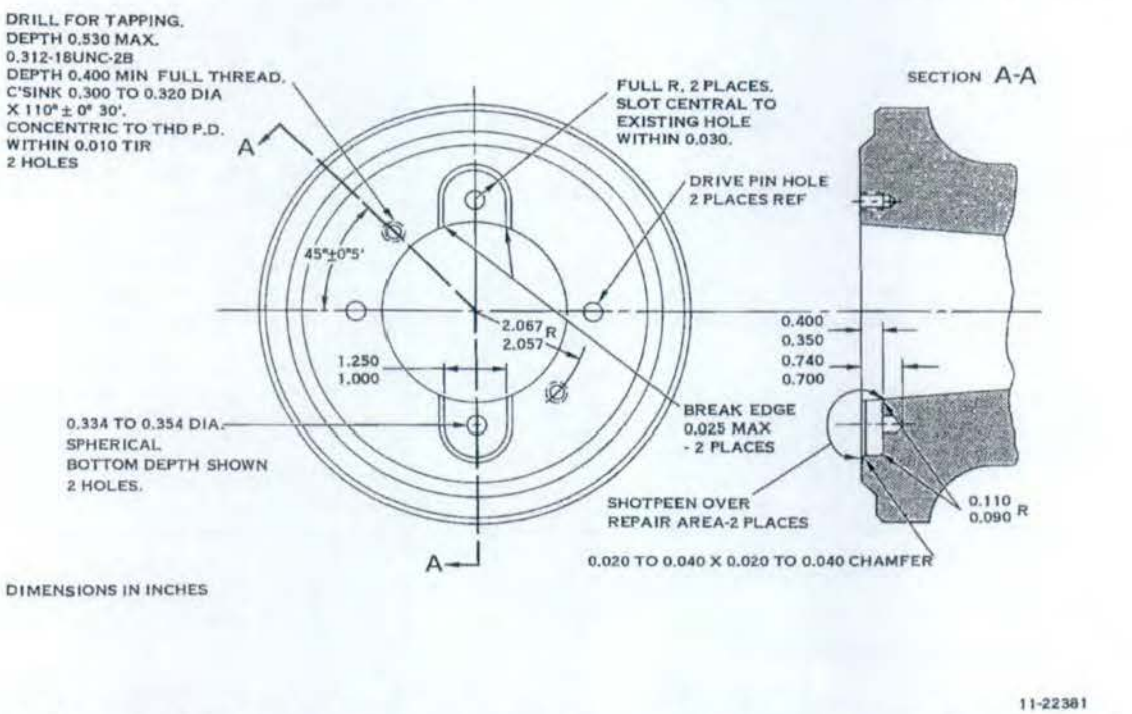



**Figure 14. Blade Bushing Screw – Threaded Hole Relocation for 7111 and 7121 Blade Assemblies**

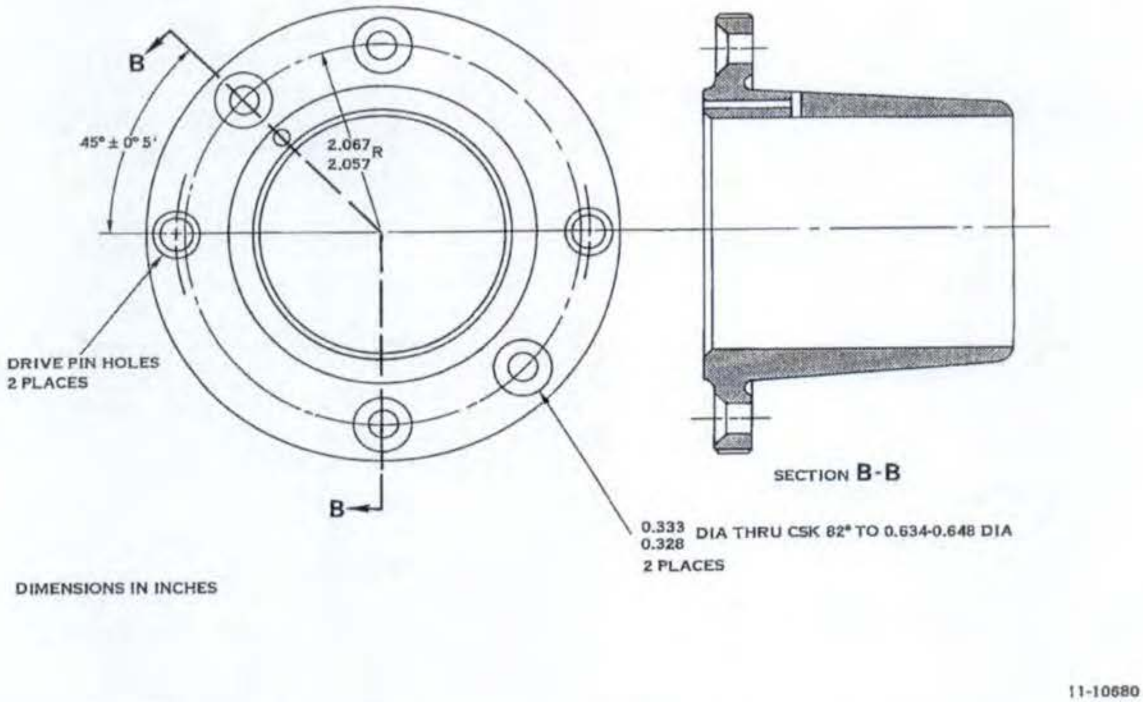



**Figure 15. Blade Bushing Screw Hole Relocation for 7111 and 7121 Blade Assemblies**

**CAUTION**

If following rework is required, inserts shall be installed after blade is anodized. The inserts must be removed before blade is anodized at next overhaul. (If steel inserts are in contact with aluminum blades during anodizing, arcing and dissimilar-metals-type corrosion will take place.)

### 21. Screw Holes Repair (Stripped or Distorted Threads).

a. Drill and tap blade bushing screw hole threads in blade butt to accept an MS122122 screw-thread insert when pushing screw hole threads are stripped or distorted.

EPOXY PRIMER 18
MIL-PRF-23377

ZINC CHROMATE PRIMER 19
TT-P-1757

b. Apply a coat of undiluted strontium chromate primer per MIL-PRF-23377 or undiluted zinc chromate primer per TT-P-1757 to newly tapped area before installing the insert.

### 22. Blade Butt OD Repair.

a. Perform local reworks up to 0.040 inch in depth on blade butt OD. Blend rework so that surface dimensions are about 20 times reworked depth. This blend must be no closer than 0.05 inch to the fillet.

**CAUTION**

To prevent blade fracture, do not stamp any closer than 0.125 inch to edge of blade butt face or closer than 0.100 inch from fillet edge. If blade has been fillet cut and/or cold rolled, stamps may be closer than 0.125 inch to edge of blade butt or 0.100 in from fillet edge without compromising integrity of blade.

b. If butt OD must be machined, diameter after machining must be 7.670 inches minimum for 7111 and 7121 blade assemblies. If butt OD is cut on any blade, record data which is on OD and restamp it after the repair.

**23. Recutting Butt Face.** (See Table 4.)

**NOTE**

Recutting butt face may require cutting taper bore to ensure proper fit of bushing.

a. Reface blade butt face under following conditions:

(1) Reface when it is pitted or corroded.

(2) Reface if worn areas are 0.013 inch deep or greater.

(3) Reface to square butt face with taper bore after bore has been reamed.

b. Perform one of two approved methods of refacing provided all pitting and corrosion are removed.

(1) The first method requires cutting entire butt face.

(a) Remachine butt face, when required. See Figure 13 for limits applicable to 7111 and 7121 blade assemblies. See Figure 16 for recutting butt face.

(b) Choose a segment gear shim and a blade bushing shim such that shim stackup is of same thickness (or is 0.001 thicker than) the material removed. See ACTUAL J DIMENSION TO COMPENSATED J DIMENSION BUILD-UP and succeeding paragraphs, WP 008 00.

**NOTE**

Dash numbers of segment gear shims and blade bushing shims indicate their thicknesses. A -8 shim for instance is 0.008 inch thick and a -45 shim is 0.045 inch thick.

(2) An alternate method, which requires only a segment gear shim after stock removal, is to reface that portion of the butt outboard of bushing so that bushing fit is not affected. (See Figure 17.) Adhere to limits in Table 6.

(a) Place appropriate blade shank lathe arbor in blade.

(b) Support blade tip using appropriate blade tip lathe fixture.

(c) Remove material from butt face in increments of 0.005 inch.

c. When required due to stock removal from butt face on 7111 and 7121 blade assemblies, redrill and tap the 0.312-18 UNC-2B thread to provide required minimum full thread depth of 0.400 inch per Figure 13. Redrill, rebream, spotface and repeen the 0.3730- to 0.3735-inch diameter drive pin hole to required depth of 0.62 inch and spotface per Figure 13. Refer to DRIVE PIN HOLES REPAIR, this WP, for spotfacing and shotpeening procedure.

**CAUTION**

To prevent blade fracture, do not stamp any closer than 0.125 inch to edge of blade butt face or closer than 0.100 inch from fillet edge. If blade has been fillet cut and/or cold rolled, stamps may be closer than 0.125 inch to edge of blade butt or 0.100 in from fillet edge without compromising integrity of blade.

d. Steel-stamp amount of material removed on reworked area directly below 0 stamping on butt OD, 0.125 inch from fillet edge.

**Table 4. Minimum Butt Flange Thickness (Butt Face to Fillet)**

| Shank Size | *Minimum Flange Thickness |
|---|---|
| H (7111, 7121 Blades) | 0.912 |

**NOTE**

See Figure 5 for dimension R.

* Measure beveled and flat thrust washer thickness (only beveled washer on 7111 blades) and subtract this Figure from actual J dimension to calculate minimum flange thickness. An additional 0.015 inch may be removed outboard of bushing flange only, when minimum listed above has been reached by recutting entire butt face.

**NOTE**

The value stamped in step d. will facilitate computation of shim thickness required at propeller assembly. See applicable Table in WP 008 00 for shim selection.

e. Maximum shim thickness is 0.045 inch on 7111 and 7121 blade assemblies. If greater dimension is required, see blade shim selection procedure in applicable propeller assembly overhaul manual.

f. For 7111 and 7121 blade assemblies, measure beveled washer thickness and subtract this figure from actual J or Jr dimension to calculate actual flange thickness. See Figure 5 and Table 2 for J or Jr location and dimension.

g. To measure wear on butt face, for blades other than 7111 and 7121, proceed as follows to find J dimension which will indicate wear of the butt face. Using standard micrometers, measure width from butt face to outside face of flat washer. This will give actual J dimension. (See J DIMENSION MEASUREMENT AND APPLICATION, this WP.)

h. For 7111 and 7121 blade assemblies, an additional 0.015 inch. may be removed outboard of bushing flange only, when minimum listed in Figure 13 has been reached by recutting the entire butt face.

### 24. Blade Butt Markings.

a. Restamp the word TRACTOR on butt face if it has become vague or obliterated during rework.

b. On right hand blades, use centerline of drive pin holes as a reference line. Stamp a line on butt face 0.02 inch wide by 0.01 inch deep by 0.44 inch long that will form an angle of 45 degrees with reference line and be toward blade face and leading edge. Stamp another line of same dimensions, 180 degrees apart from first line stamped. (See Figure 18.)

**CAUTION**

Do not stamp closer than 0.125 inch to edge of blade butt face.

c. On right hand hydromatic blades using 0.06 inch steel stencils, stamp the word TRACTOR adjacent to stamped line toward blade face side.

### 25. Angle Graduations.

a. As marking of blade angle graduations is an exacting procedure, make light trial markings before final stamping. See Figure 19 which gives graduated scales drawn to size H shank hydromatic blades. Attach a tracing of pertinent drawing to blade butt OD or face to aid in the operation.

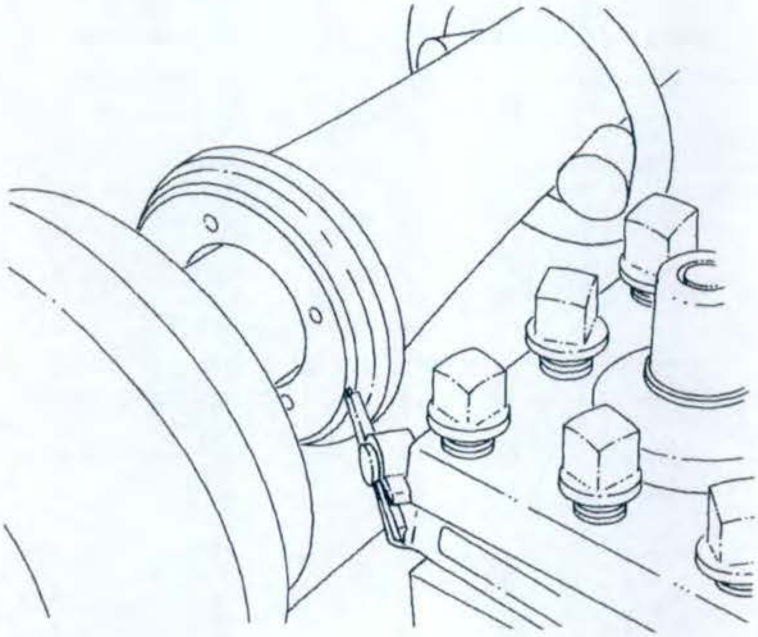



Figure 16. Recutting Butt Face

Table 5. Minimum Actual and Compensated J Dimensions

| Shank | | Minimum J Dimension (Inches) | *Compensated J Dimension (Inches ±0.005) |
|---|---|---|---|
| | | Non-Chafing Ring Type Blades | |
| H | (54H60 only) | 1.545 | *** |

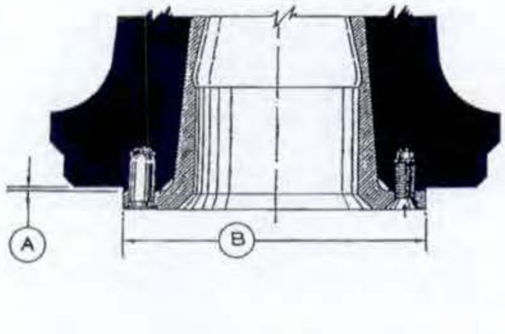



**Figure 17. Stock Removal Outboard of Bushing**

b. Mark graduations on same side as leading edge of blade. Mark blade angle graduations for 7111 and 7121 blade assemblies using HS9375 angle graduation stamp or blade angle graduation template (shown in Figure 19). Stamp graduations with 0.06 inch stencils; lines are to be 0.02 inch wide by 0.02 inch deep.

## 26. J Dimension Measurement and Application.

a. The J or Jr dimension serves two purposes. The first application refers to measurement obtained from blade butt face to outboard side of beveled thrust washer for 7111 and 7121 blade assemblies or to outboard side of flat washer for other blade assemblies. (See Figure 5.) Use this measurement to determine amounts removed from blade butt face, fillet, and washer surfaces after rework.

b. Refer to minimum dimensions for various size blades given in Table 5. Should this minimum be exceeded or minimum for any one of the parts making up this dimension be exceeded (blade butt flange, fillet, or thrust washers) scrap the blade.

c. After determining that rework of these surfaces has not violated minimum given in Table 5, build up (compensate) actual J dimension to original manufactured size to establish correct relationship between segment gear and rotating cam gear at propeller assembly. Accomplish this build-up procedure by use of a segment gear shim (only when area outboard of blade bushing has been refaced) or a combination of a segment gear shim and a blade bushing shim or a chafing ring or bearing spacer on blades using them or a thicker split thrust washer for 7111 and 7121 blade assemblies. See ACTUAL J DIMENSIONS TO COMPENSATED J DIMENSIONS BUILD-UP, WP 008 00, for build-up procedure.

**NOTE**

The Jr dimension does not apply to non-rolled blades.

d. To measure J dimension, place blade in a horizontal position with camber side up and align 0 etched on beveled thrust washer with 0 stamped on blade butt flange. Hold the two thrust washers, or just beveled thrust washer for 7111 and 7121 blade assemblies, well seated on blade fillet and measure overall dimension with a precision micrometer at two o'clock position viewing butt face from inboard end. (Thrust bearing retainer assembly should not be included for this measurement.) J dimension may be checked while blade is in a vertical position if taper bore is mounted on a spindle, in which case measuring will be done approximately three inches circumferentially to the right of zeroes.

e. In addition to its use described in previous paragraphs J or Jr dimension has an added significance for surface-treated blades. It determines amount of material that may be removed from cold-rolled fillet area before re-rolling is necessary. Originally, cold-rolled blades were stamped at factory with J dimension after cold rolling and machining. On these blades a 0.004 inch reduction in fillet area is permitted.

f. In order to increase amount of removable material in fillet area, J measurement is now made immediately after cold rolling, but before final machining, and is called Jr dimension. Since it has been found that final machining after cold rolling usually removes only a small amount of metal, the operator is now permitted nearly a 0.012-inch reduction for 7111 and 7121 blade assemblies and nearly 0.008 inch reduction for other blade assemblies with cold-rolled fillets (depending on the application of J dimension).

**CAUTION**

To prevent blade fracture, do not stamp any closer than 0.125 inch to edge of blade butt face or closer than 0.100 inch from fillet edge. If blade has been fillet cut and/or cold rolled, stamps may be closer than 0.125 inch to edge of blade butt or 0.100 in from fillet edge without compromising integrity of blade.

**NOTE**

If there is no dash number stamped next to J or Jr dimension, the fillet has not been previously recut.

CAUTION

To prevent blade fracture, do not stamp any closer than 0.125 inch to edge of blade butt face or closer than 0.100 inch from fillet edge. If blade has been fillet cut and/or cold rolled, stamps may be closer than 0.125 inch to edge of blade butt or 0.100 in from fillet edge without compromising integrity of blade.

g. **Cold Roll After Fillet Rework.** In order to determine when re-cold roll is required after fillet rework, refer to step h for blades with fillet and thrust washer rework, subtract the measured J or Jr from the stamped J or Jr. When the difference of the measured J or Jr and the stamped J or Jr is EQUAL to or EXCEEDS 0.012 inch, the blade must be re-cold rolled. Unless the blade serial number is S/N N840119 thru and including S/N N866281 and has not been re-rolled since original manufacture; then the blade shall be re-cold rolled regardless of the difference of the measured J or Jr and the stamped J or Jr. For example: the measured Jr is 1.865"; the stamped Jr is 1.882"; the difference is 0.017" (1.882"-1.865"=0.017"); thus the blade would require re-cold roll. After cold roll, obliterate stamped J or Jr and any subsequent dash numbers after the stamped J or Jr. After fillet rework and cold roll, refer to step h for cold roll after thrust washer rework, the new J or Jr is the measured J or Jr. Stamp the new J or Jr dimension on the blade butt OD.

h. **Cold Roll After Fillet and Thrust Washer Rework.** Material removed from a thrust washer will cause a reduction in the MEASURED J or Jr dimension and imply that re-rolling of the blade fillet is in order though there is no damage in the fillet area. If material has been removed from a thrust washer, amount removed shall be stamped on the blade butt OD, i.e. TW-5. During next overhaul period if rework of the thrust washer is required obliterate the -5 and record the total amount of material removed from the thrust washer by adding the present amount removed to the previous amount stamped on the blade. Stamp new TW on the blade butt OD. In order to determine when re-cold roll is required after fillet and thrust washer rework, **subtract** the measured J or Jr and **subtract** the stamped TW from the stamped J or Jr. When the difference of the measured J or Jr and stamped TW and the stamped J or Jr is EQUAL to or EXCEEDS 0.012 inch, the blade must be re-cold rolled. Unless the blade serial number is S/N N840119 thru and including S/N N866281 and has not been re-rolled since original manufacture, then the blade shall be re-cold rolled regardless of the difference of the measured J or Jr and the stamped J or Jr. For example: the measured Jr is 1.867"; TW is -5; the stamped Jr is 1.882"; the difference is 0.010" **(1.882"- 1.867"- 0.005"=0.010");** thus the blade would <u>not</u> require re-cold roll. After cold roll, obliterate stamped J or Jr and any subsequent dash numbers after the stamped J or Jr. After fillet and thrust washer rework and cold roll, the new J or Jr is the measured J or Jr **plus** TW. For example: Measured J or Jr is 1.867" and TW is 0.005", thus new J or Jr is 1.872" (1.867"+ 0.005"=1.872"). Stamp the new J or Jr dimension on the blade butt OD. Do not obliterate the total TW from the blade but OD; this dimension will be required during subsequent reworks. 13

## 27. <u>Cold-Rolled</u>.

a. Inspect fillet area for galling and corrosion. Remove surface or light corrosion by polishing entire fillet using 320 or finer grit emery cloth. Perform local reworks provided limits established in Tables 2 and 7 are not exceeded. Use a brass pronged indicator pedestal manufactured as shown in Figure 20 and a dial indicator to check depth of pits. **(QA)**

CAUTION

Remove only a minimum amount of stock when recutting fillet.

**NOTE**

54H60 blades 7111A-2 and 7121A-2 only may be reworked to 0.012 inch below the Jr dimension before cold rolling is required.

b. Remove a minimum amount of stock by recutting fillet to eliminate pitting and galling exceeding limits of Tables 2 and 7. Use appropriate cutting tool. See Figure 21 and tool Tables in WP 002 00. Only a relatively small amount of material can be removed on cold rolled blades before re-rolling is required. On cold rolled blades 7111A-2 and 7121A-2 only may be reworked to 0.012 inch below the Jr dimension before cold rolling is required.

**Table 6. Butt Face Reduction with Bushing in Place (See Figure 17)**

| Shank | Material Removed Dim A | Dim B |
|---|---|---|
| | <u>Blades with serrated type bushings</u> | |
| H (7111, 7121 Blade) | 0.015 ± 0.0005 | 4.958 to 4.960 |

c. Re-roll cold-rolled blades subjected to excessive temperature. (See TEMPERATURE RESTRICTIONS ON ALUMINUM BLADE, WP 006 00). Other conditions that may require re-rolling are unequal blade loading, over-speeds, impact, etc. Re-roll blades per local engineering specifications.

**28. Fillet Bluing Check.**

**NOTE**

Bluing of thrust washers at overhaul is not required unless blade fillet and/or beveled side of thrust washers has been reworked.

a. If a bluing check is required to determine proper contact between beveled thrust washer and blade fillet, reference Figure 22 for requirements. See Figure 22 which also illustrates a gage, locally manufactured, used to aid in determining proper limits.

**Table 7. Fillet Local Rework Limits**

| Condition | Rolled Shanks |
|---|---|
| Depth of rework | 0.006 in. max |
| Circumferential length | 0.060 to 0.250 in. |
| Radial width | 0.060 to 0.250 in. |
| Distance to OD | 0.100 in. min |
| Distance between reworks | 0.125 in. min |
| Number of reworks in one 90 degree segment | 3 max |

**NOTE**

If depth of rework or number of reworks in one 90 degree segment exceed the limits, return blade to Hamilton Sundstrand for recut and/or re-roll as applicable.

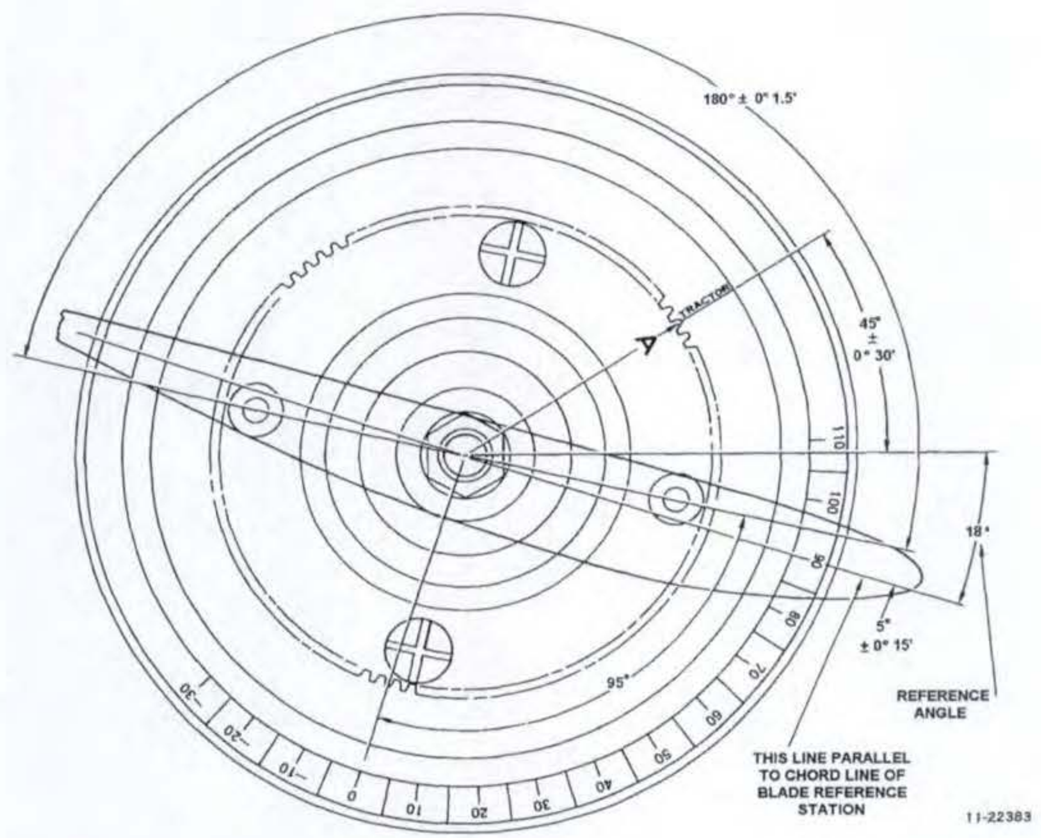



**Figure 18. Blade Butt Face Markings on 7111 Blade Assembly**

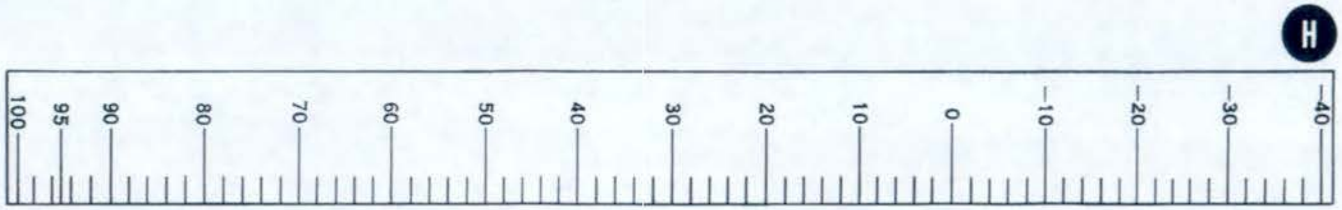



Figure 19. Blade Angle Graduation Template; H Shanks –Actual Size

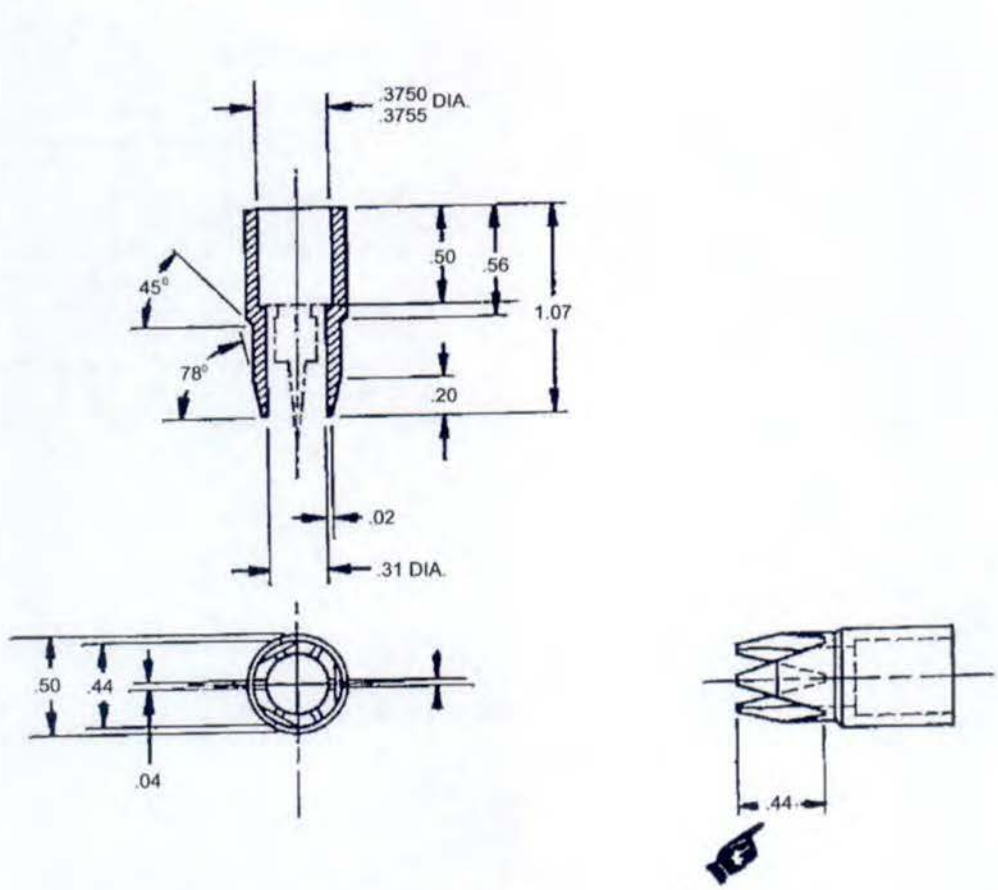



Figure 20. Brass Prolonged Indicator Pedestal

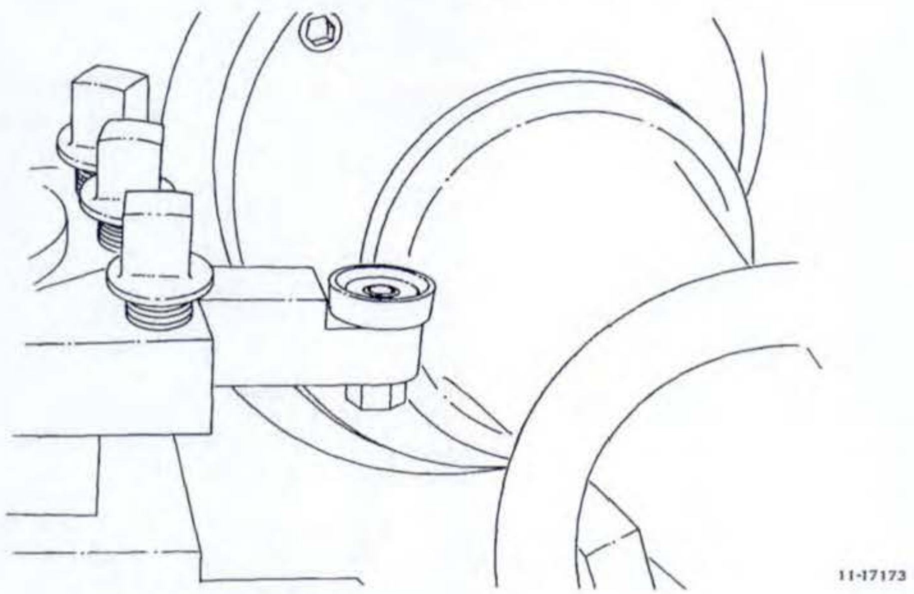



Figure 21. Recutting Blade Fillet

b. Slide flat thrust washer outboard of blade shank and retain by means of wooden wedges. Apply a light coating of Prussian blue to beveled side of beveled thrust washer. Contact both beveled surfaces. Apply hand pressure to obtain a well distributed blue area over a minimum of 50 percent of bluing range. Align 0 on thrust washer with 0 on blade butt OD. Rotate washer back and forth approximately 15 degrees to obtain required bluing. If minimum contact bluing is not obtained, machine fillet radius of blade and/or thrust washer in accordance with COLD-ROLLED, THRUST WASHER REPAIR, BEVELED THRUST WASHER REPAIR ON 7111 AND 7121 BLADE ASSEMBLIES, MAGNETIC PARTICLE INSPECTION or LOCAL REPAIR OF ALL SURFACES OF THRUST WASHER, this WP.

**NOTE**

Repair split flat thrust washers on 7111 and 7121 blades in accordance with manuals NAVAIR 03-20CBBK-1 or NAVAIR 03-20CBBJ-2.

## 29. Thrust Washer Repair.

a. Magnetically inspect flat and beveled thrust washers for cracks according to instructions in WP 004 00.

b. Stone smooth brinelling and galling on flat surfaces providing damage is not excessive. Remove excessive brinelling and galling and/or concentrated areas of corrosion and pitting from flat surfaces of thrust washers by grinding. Remove isolated pitting and corrosion on any surface by local rework in accordance with LOCAL REPAIR OF OUTSIDE DIAMETER ONLY OF BEVELED THRUST WASHER, this WP, provided limits established per Figure 23 and Tables 8 and 9 are not exceeded.

**Table 8. Thrust Washer Thickness Limits**

| Rework Limits Table | Beveled Thrust Washer | Flat Thrust Washer | Nominal Thickness | Minimum Thickness |
|---|---|---|---|---|
| *H Shank | 97073 | | 0.688 | 0.633 |
| | | 97072 | 0.375 | 0.340 |

* Split flat washers for H shank propellers are reworked in accordance with procedures covered in the pertinent propeller overhaul manuals.

In addition to the above reductions in washer thickness, local reworks may be made in accordance with Table 9. Do not exceed minimum J dimensions per Table 5.

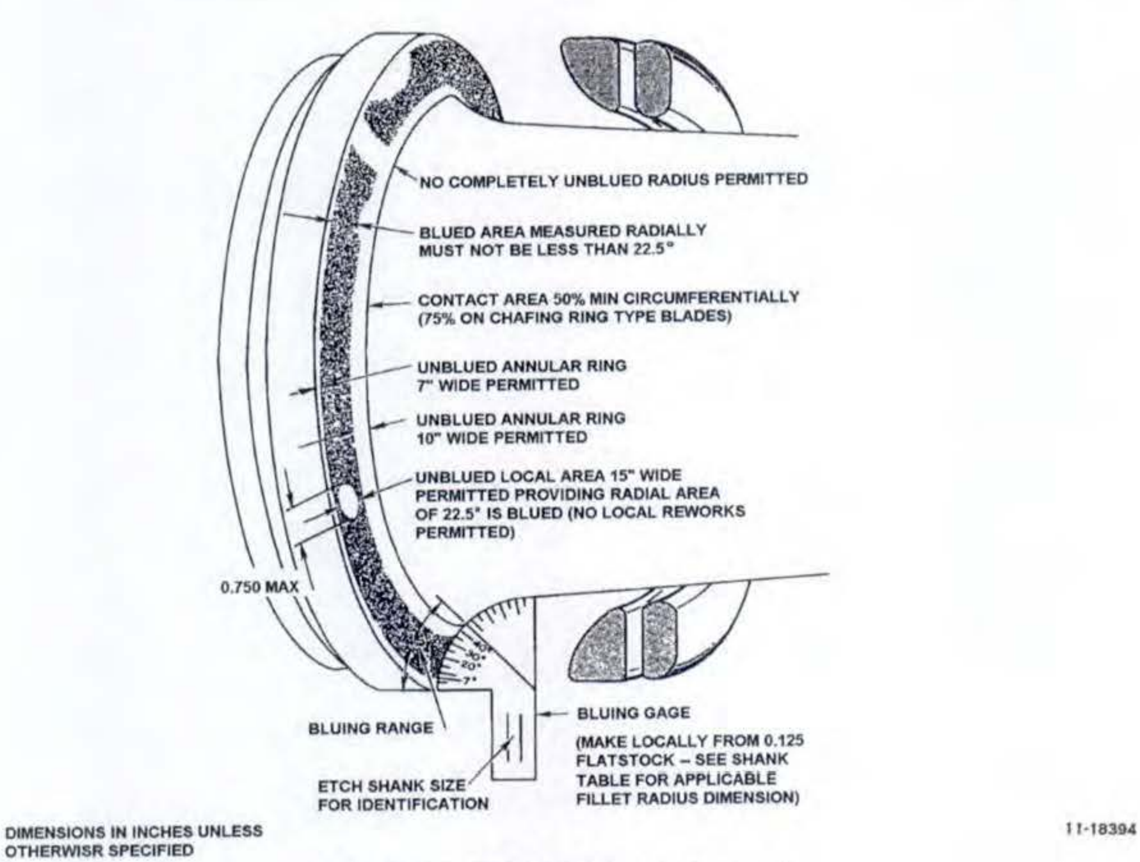



Figure 22. Fillet Bluing Requirements

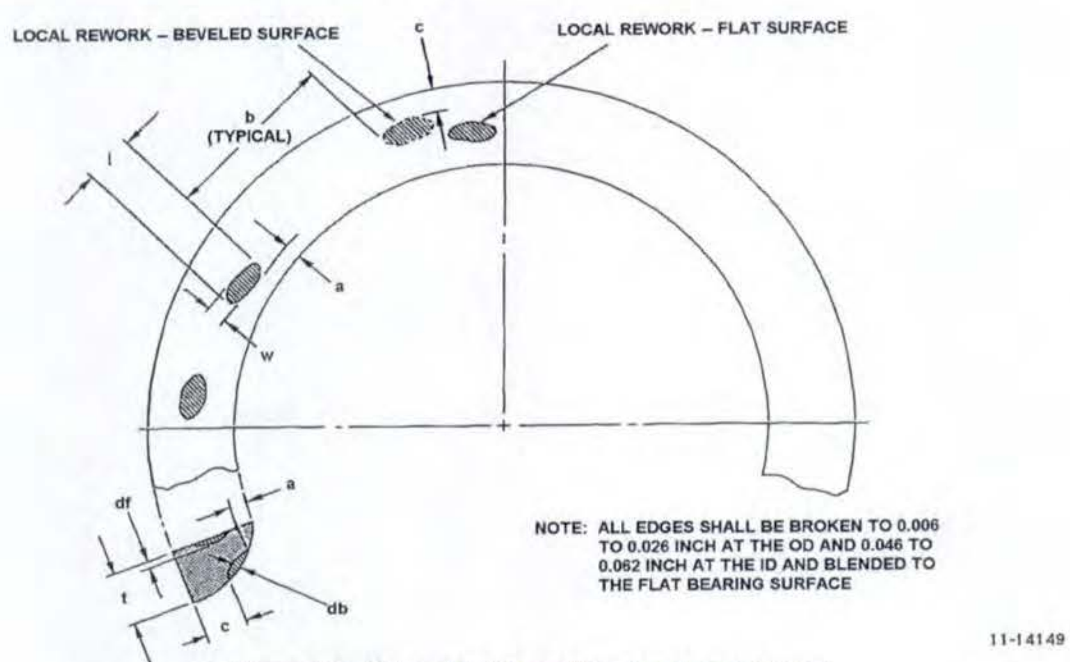



Figure 23. Allowable Thrust Washer Local Repair

Table 9. Beveled Thrust Washer Local Rework Limits

Beveled Surface vs Washer Thickness

"H" Shank 7111 and 7121 Blades (97073 Beveled Washers)

| Symbol | Definition | Dimensions | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| t | Thrust Washer Thickness | 0.633 | 0.638 | 0.643 | 0.648 | 0.653 | 0.658 | 0.663 | 0.668 | 0.673 |
| $d_f$ | See FLAT SURFACE VS WASHER THICKNESS | | | | | | | | | |
| $d_b$ | Local Rework Depth Beveled Surface - Maximum | 0.003 | 0.006 | 0.009 | 0.012 | 0.014 | 0.016 | 0.017 | 0.018 | 0.019 |
| a | Distance to I.D. - Minimum | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| b (See notes 1 & 2) | Distance between Adjacent Reworks - Minimum | 0.25 | 0.30 | 0.38 | 0.50 | 0.62 | 0.75 | 0.75 | 0.75 | 0.75 |
| c | Distance to O.D. - Minimum | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| l | Circumferential Length - Minimum/Maximum | 0.08/ 0.50 | 0.09/ 0.50 | 0.10/ 0.50 | 0.12/ 0.50 | 0.13/ 0.50 | 0.13/ 0.50 | 0.14/ 0.50 | 0.15/ 0.50 | 0.15/ 0.50 |
| w | Radial Width - Minimum/Maximum | 0.08/ 0.50 | 0.09/ 0.50 | 0.10/ 0.50 | 0.12/ 0.50 | 0.13/ 0.50 | 0.13/ 0.50 | 0.14/ 0.50 | 0.15/ 0.50 | 0.15/ 0.50 |
| d/w | Depth to Width Ratio - Maximum | 0.04 | 0.07 | 0.09 | 0.10 | 0.11 | 0.12 | 0.12 | 0.12 | 0.13 |
| d/l | Depth to Length Ratio - Maximum | 0.04 | 0.07 | 0.09 | 0.10 | 0.11 | 0.12 | 0.12 | 0.12 | 0.13 |
| $N_b$ | Number of Reworks On Bevelled Surface In 90° - Maximum | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| dT | Combined Rework Depth of Bevel and Flat Surfaces - Maximum | 0.003 | 0.008 | 0.017 | 0.023 | 0.026 | 0.027 | 0.028 | 0.029 | 0.030 |
| $N_T$ | Combined Number of Reworks in 90° - Maximum | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |

Note 1: When dimension "b" is less than value specified for adjacent reworks on opposite surfaces, "dT" becomes the limiting factor.

For example: t = 0.653, $d_b$ = 0.014, $d_f$ = 0.012, b = 0.25, and dT = 0.026 is an acceptable condition.

Note 2: The "b" dimension for any two adjacent reworks, on the same surface, is that "b" dimension that corresponds to the deeper "$d_b$" of the two reworks.

For example: t = 0.648, $d_{b_1}$ = 0.009, $d_{b_2}$ = 0.003, b = 0.38 minimum.

Table 9. Beveled Thrust Washer Local Rework Limits (Cont.)

Flat Surface vs Washer Thickness

"H" Shank 7111 and 7121 Blades (97073 Beveled Washers)

| Symbol | Definition | Dimensions | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| t | Thrust Washer Thickness | 0.633 | 0.638 | 0.643 | 0.648 | 0.653 | 0.658 | 0.663 | 0.668 | 0.673 |
| $d_b$ | See BEVELED SURFACE VS WASHER THICKNESS | | | | | | | | | |
| $d_f$ | Local Rework Depth Flat Surface - Maximum | 0.003 | 0.009 | 0.014 | 0.019 | 0.021 | 0.022 | 0.023 | 0.024 | 0.025 |
| a | Distance to I.D. - Minimum | 0.10 | 0.10 | 0.10 | 0.12 | 0.14 | 0.15 | 0.16 | 0.17 | 0.18 |
| b (See notes 1 & 2) | Distance between Adjacent Reworks - Minimum | 0.25 | 0.30 | 0.38 | 0.50 | 0.50 | 0.50 | 0.62 | 0.62 | 0.62 |
| c | Distance to O.D. - Minimum | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 |
| l | Circumferential Length - Minimum/Maximum | 0.08/ 0.38 | 0.10/ 0.38 | 0.13/ 0.38 | 0.14/ 0.38 | 0.16/ 0.38 | 0.17/ 0.38 | 0.18/ 0.38 | 0.18/ 0.38 | 0.19/ 0.38 |
| w | Radial Width - Minimum/Maximum | 0.08/ 0.25 | 0.10/ 0.25 | 0.13/ 0.25 | 0.15/ 0.25 | 0.16/ 0.25 | 0.17/ 0.25 | 0.18/ 0.25 | 0.18/ 0.25 | 0.19/ 0.25 |
| d/w | Depth to Width Ratio - Maximum | 0.04 | 0.07 | 0.11 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| d/l | Depth to Length Ratio - Maximum | 0.04 | 0.07 | 0.11 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| $N_f$ | Number of Reworks On Flat Surface In 90° - Maximum | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| dT | Combined Rework Depth of Bevel and Flat Surfaces - Maximum | 0.003 | 0.008 | 0.017 | 0.023 | 0.026 | 0.027 | 0.028 | 0.029 | 0.030 |
| $N_T$ | Combined Number of Reworks in 90° - Maximum | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |

Note 1: When dimension "b" is less than value specified for adjacent reworks on opposite surfaces, "dT" becomes the limiting factor.

For example: $t = 0.653$, $d_b = 0.008$, $d_f = 0.018$, $b = 0.25$, and $dT = 0.026$ is an acceptable condition.

Note 2: The "b" dimension for any two adjacent reworks, on the same surface, is that "b" dimension that corresponds to the deeper "$d_f$" of the two reworks.

For example: $t = 0.668$, $d_{f_1} = 0.022$, $d_{f_2} = 0.024$, therefore $b = 0.62$.

**30. Thrust Washer Grinding of Flat Surfaces Only on Both Flat and Beveled Washers.** Machine-grind flat face of thrust washer(s) as follows if there is severe evidence of brinelling, corrosion, pitting or galling.

a. Adhere to thrust washer thickness limits of Tables 8 and 9.

b. Use a 3AH grinder or equivalent, having a 32A54-H12VBEP grinding wheel or equivalent (6 inches OD x 1.5 inches ID x 1.25 inches wide). Use a coolant such as micromul No. 50 or equivalent. Refer to Figure 24 for an illustration of a suitable grinding machine.

c. To grind flat surface of beveled washer, proceed as follows:

(1) Secure blade to the grinder.

(2) If applicable, secure flat washer outboard on shank.

(3) Position and secure beveled thrust washer against blade fillet so that flat surface is in a plane perpendicular to blade taper bore axis within 0.0028 inch F.I.R. as measured on flat surface as close to OD as possible, with washer seated on fillet.

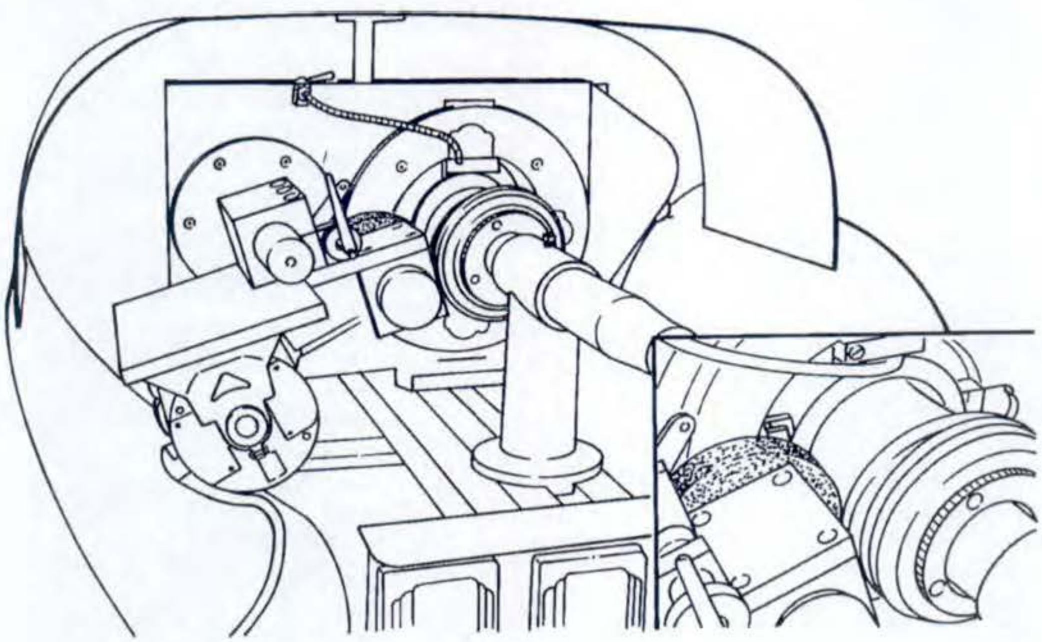
(4) Grind flat surface of thrust washer so that squareness requirement of step (3) is met. Also, follow procedure outlined in step d.

d. Grind material off in steps of 0.0005 inch, until surface defects are removed. Do not grind any more than is necessary to remove all damage. Surface finish of all grinding shall not be rougher than 16 micro-inches.

e. Service experience has shown that when one thrust bearing surface of a washer has been ground to eliminate damage, light grinding of the adjacent thrust washer contact surface is desirable if blade has two thrust washers.

f. Maximum permissible reduction of thrust washer thickness is given in Table 9.

g. Remove sharp corners remaining at inside and outside extremities of reground surfaces per note in Figure 23.



11-17174

Figure 24. Model 3AH Thrust Washer Grinding Machine

h. Grind flat washer in accordance with THRUST WASHER GRINDING OF BEVELED SURFACES ONLY ON A7111 AND A7121 PROPELLER BLADE BEVELED WASHERS, steps a through g, this WP, except for securing instructions.

i. If necessary, upon completion of grinding operation on inboard surface of flat thrust washer, grind outboard parallel to inboard surface. Thickness of flat washer must not vary more than 0.001 inch.

j. After grinding outboard surface of flat washer, regrind the large radius forming the OD/ outboard surface in order to avoid interference between flat washer and supporting shoulder of barrel. This radius should be a minimum of 0.240 inch for D shank, 0.250 inch for E shank and 0.310 inch for H shank. Blend the radius to OD and outboard surface as necessary.

**CAUTION**

To prevent blade fracture, do not stamp any closer than 0.125 inch to edge of blade butt face or closer than 0.100 inch from fillet edge.

k. Stamp amount of material removed from either or both thrust washers on blade butt OD, as follows:

(1) If there is no value stamped on blade butt OD, stamp amount of material removed from washer. (For example, if 0.003 inch of material was removed, stamp "TW-0.003" on blade butt OD.)

(2) If there is a value, it represents amount of material which has already been removed from thrust washer. Obliterate it and stamp the sum of that old value and amount removed in this overhaul. (For example, if 0.003 inch of material was removed in this overhaul, and "TW-0.002" was stamped on butt OD, obliterate the "TW-0.002" and stamp "TW-0.005".)

l. Remove any local damage such as pitting uncovered by grinding by performing more grinding or by local rework in accordance with THRUST WASHER LOCAL REWORK.

m. After grinding of thrust washer(s), perform both visual and magnetic particle inspection of thrust washers in accordance with both THRUST WASHER INSPECTION and MAGNETIC PARTICLE INSPECTION, WP 004 00.

n. Compensate for decrease of J dimension (caused by grinding thrust washer(s)) at blade assembly. Add a suitable bearing spacer, if applicable. Refer to ACTUAL J DIMENSION TO COMPENSATED J DIMENSION BUILD-UP and succeeding paragraphs of WP 008 00.

**31. Thrust Washer Grinding of Beveled Surfaces Only on A7111 and A7121 Propeller Blade Beveled Washers.** Machine grind beveled face of thrust washer as follows if there is severe evidence of brinelling, corrosion, pitting or galling.

**NOTE**

Flat side of thrust washer must be machined prior to beveled side to ensure surface is true.

a. Grind flat side of thrust washer in accordance with THRUST WASHER GRINDING OF FLAT SURFACES ONLY ON BOTH FLAT AND BEVELED WASHERS, this WP.

b. Adhere to thrust washer thickness limits of Tables 8 and 9.

c. Use a T1984 grinder or equivalent, having a T1977-28 grinding stone or equivalent. Use a coolant such as Micromul No. 50 or equivalent. Refer to Figure 25 for an illustration of a suitable grinding machine.

**NOTE**

Prior to grinding, formed fairing may need to be removed to facilitate beveled thrust washer grinding in accordance with PLASTIC FORMED FAIRING REMOVAL, WP 004 00.

d. To grind beveled surface of the beveled washer, proceed as follows:

(1) Set up grinder in accordance with manufacture's instructions.

(2) Secure the blade to the grinder with blade support.

DRY CLEANING SOLVENT 5
MIL-PRF-680

(3) Thoroughly clean the thrust washer with MIL-PRF-680, Type II or Type III.

(4) Position and secure the beveled thrust washer into the beveled washer clamping jaws. Ensure the outside edge of the flat bearing surface fits properly into the inside diameter of the clamping jaws.

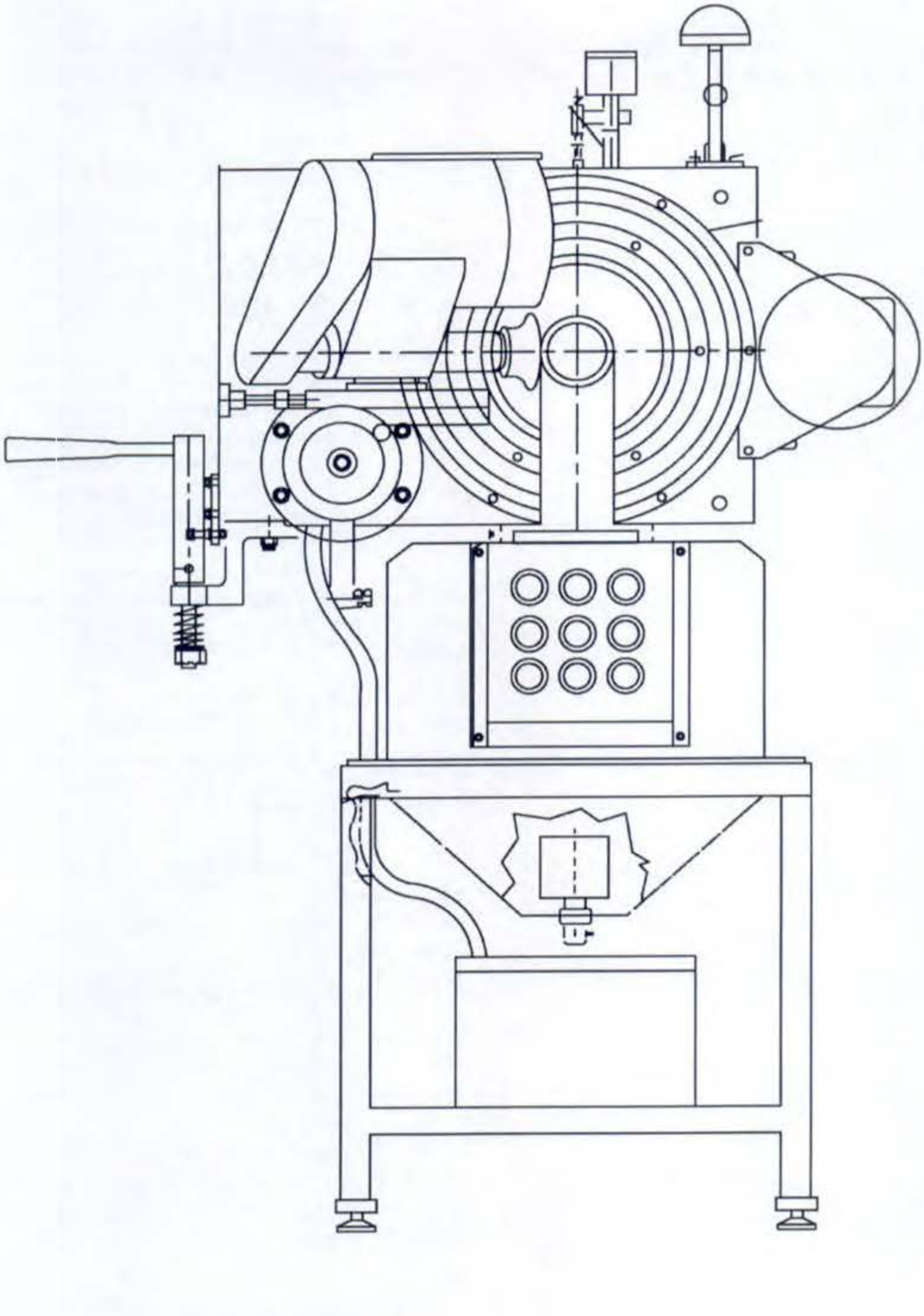


Figure 25. Model T1984 Beveled Thrust Washer Grinding Machine

LAYOUT DIE 22
FSCM 73977

(5) Apply a thin layer of Prussian Blue, FSCM 73977, or an equivalent machinist layout die, to ensure complete contact is made between the beveled thrust washer and grinding stone.

(6) Verify the truing stone diameter is set and dressed correctly in accordance with the manufacture's instructions.

**NOTE**

Maximum permissible reduction of thrust washer thickness is given in Table 9.

(7) Pivot the grinding head slide assembly into position to machine the thrust washer. Bring the grinding stone up to the ring (neither rotating at this step) contact the ring slightly, rotate the stone by hand looking for even grind marks on the ring to ensure proper alignment, back the stone out from the ring.

(8) Redress the grinding stone as needed throughout the grinding process to maintain a sharp cutting surface.

(9) Slowly move the grinding assembly inward with hand crank allowing the stone to completely regrind the beveled surface.

(10) Grind material off in steps of 0.0005 inch, until surface defects are removed. Do not grind any more than is necessary to remove all damage. Surface finish of all grinding shall not be rougher than 16 micro-inches.

(11) Perform bluing check in accordance with FILLET BLUING CHECK, this WP.

(12) If the bluing check requirements from FILLET BLUING CHECK, this WP, cannot be met, then the blade fillet shall be machined in accordance with COLD-ROLLED, this WP.

e. Remove sharp corners remaining at inside and outside extremities of reground surfaces per note in Figure 23.

**CAUTION**

To prevent blade fracture, do not stamp any closer than 0.125 inch to edge of blade butt face or closer than 0.100 inch from fillet edge.

f. Stamp amount of material removed from either or both thrust washers on blade butt OD, as follows:

(1) If there is no value stamped on blade butt OD, stamp amount of material removed from washer. (For example, if 0.003 inch of material was removed, stamp "TW 0.003" on blade butt OD.)

(2) If there is a value, it represents the amount of material, which has already been removed from thrust washer. Obliterate it and stamp the sum of that old value and amount removed in this overhaul. (For example, if 0.003 inch of material was removed in this overhaul and "TW-0.002" was stamped on butt OD, obliterate the "TW-0.002" and stamp "TW-0.005".)

g. Remove any local damage such as pitting uncovered by grinding by performing more grinding or by local rework in accordance with THRUST WASHER LOCAL REWORK, this WP.

h. After grinding of the thrust washer, perform both visual and magnetic particle inspection of thrust washer in accordance with THRUST WASHER INSPECTION and MAGNETIC PARTICLE INSPECTION, WP 004 00.

i. Compensate for decrease of J dimension (caused by grinding thrust washer at blade assembly. Add a suitable bearing spacer, if applicable. Refer to ACTUAL J DIMENSION TO COMPENSATED J DIMENSION BUILD-UP and succeeding paragraphs of WP 008 00.

**32. Thrust Washer Local Rework.** Use Tables 8 and 9 in conjunction with Figure 23 as guides for extent and number of local repairs allowed on thrust washers.

a. Use an electric hand grinder with a fine stone wheel to remove damage. Blend reworked area into surrounding surface. Remove all grinding scratches using a fine emery bob.

**33. Beveled Thrust Washer Repair on 7111 and 7121 Blade Assemblies.**

**NOTE**

Repair procedures for one-piece beveled thrust washers around blade shank on 7111 and 7121 blade assemblies provided in MAGNETIC PARTICLE INSPECTION, LOCAL REPAIR OF ALL SURFACES OF THRUST WASHER, and LOCAL REPAIR OF OUTSIDE DIAMETER ONLY OF BEVELED THRUST WASHER, this WP. Repair split flat thrust washers, which are part of barrel assembly, per applicable propeller overhaul manual.

**34. Magnetic Particle Inspection.** Magnetic particle inspect thrust washers for cracks according to MAGNETIC PARTICLE INSPECTION, WP 004 00 before and after any grinding or local rework.

**35. Local Repair of All Surfaces of Thrust Washer.**

a. Use Tables 8 and 9 in conjunction with Figure 23 as guides for extent and number of local repairs allowed on thrust washers.

**NOTE**

A cluster of pits is defined as a group of pits within a 0.1875-inch diameter circle.

b. Determine depths of pits using a sharp, suitably pointed probe whose diameter at the point does not exceed 0.005 inch.

c. Thrust washer surfaces with pits or clusters of pits 0.003 inches deep or less must be locally ground to remove all corrosion. Adhere to limits outlined in this work package, Table 9 and Figure 23. All other damage shall be removed using thrust washer grinding machines.

d. Grind thrust washer surfaces with pits or clusters of pits 0.003 inches deep or less as follows:

(1) Use an electric hand grinder with a fine stone wheel to remove damage.

(2) Blend reworked area into surrounding surface.

(3) Remove all grinding scratches with a fine emery bob.

(4) After grinding, magnetic particle inspect thrust washer in accordance with instructions given in WP 004 00.

**36. Local Repair of Outside Diameter Only of Beveled Thrust Washer.**

**NOTE**

There is no reference in Tables 8 or 9 for OD surface rework limits.

a. A maximum of 0.015 inch in depth may be removed locally from outside diameter of beveled washer providing rework is smoothly blended and sharp corners are rounded.

b. Other repair limits for OD surface are equivalent to those given in the first (left-hand) column in Table 9, "Flat Surface vs Washer Thickness" part of the Table.

c. Blend to 10 times depth of rework.

# CHAPTER 2
# LIQUID PENETRANT INSPECTION METHOD

## SECTION I LIQUID PENETRANT INSPECTION METHOD

### 2.1 GENERAL CAPABILITIES OF LIQUID PENETRANT INSPECTION.

2.1.1 Introduction to Liquid Penetrant Inspection. Penetrant inspection is a method used to detect surface-breaking discontinuities (e.g., cracks, pits, etc.) in nonporous materials. This method utilizes a dye containing fluid which penetrates surface discontinuities through capillary action. The trapped penetrant increases the visibility of the discontinuity by providing a visual contrast between the discontinuity and the surrounding surface.

2.1.2 Background of Liquid Penetrant Inspection. Liquid penetrant inspection is one of the oldest nondestructive inspection methods. It was first used in the railroad maintenance shops in the late 1800s. Parts to be inspected were immersed in used machine oil. After a suitable immersion time, the parts were withdrawn from the oil and the excess surface oil wiped off with rags or wadding. The part surfaces would then be coated with powdered chalk or a mixture of chalk suspended in alcohol (whiting). Oil trapped in cracks or flaws would bleed-out causing a noticeable stain in the white chalk coating. This became known as the oil-and-whiting method.

2.1.2.1 The oil-and-whiting method was replaced by magnetic particle inspection on steel and ferrous parts in 1930. However, industries using non-ferromagnetic metals, especially aircraft manufacturers, needed a more reliable and sophisticated tool than discolored machine oil and chalk. In 1941, fluorescent dye materials were added to highly penetrating oil to make a penetrant material. Colored dyes, primarily red, were introduced a little later. Since then, a large number of penetrant systems or families have evolved. These include developments in various types and concentrations of dye materials, types of penetrating oils and additives, materials and methods for removing the excess surface penetrant, and various materials and forms of developing agents.

2.1.3 Why Use Liquid Penetrant Inspection. Penetrant inspection is an inexpensive and reliable nondestructive inspection method for detecting discontinuities open to the surface of the item to be inspected. It can be used on metals and other nonporous materials not harmed by penetrant materials. With the proper technique, it will detect a wide variety of discontinuities ranging in size from large, readily visible flaws down to the microscopic discontinuities, as long as the discontinuities are open to the surface and are sufficiently free of foreign material.

2.1.3.1 Penetrant is also used to detect leaks in containers. The same basic fundamentals apply, however, the penetrant removal step is typically omitted. The container is either filled with penetrant or the penetrant is applied to one side of the container wall. The developer is applied to the opposite side. After an appropriate dwell time, the developer coated side is inspected for evidence of penetrant leaking through the container wall. This method is most applicable on thin parts where access is available to both internal and external surfaces and the discontinuity is expected to extend through the material.

2.1.3.2 Due to its ability to inspect ferrous and nonferrous parts of all sizes and shapes, and its portability, the liquid penetrant NDI method can be used at both depot and field repair stations. For a specific aircraft type, a technical manual on nondestructive inspection is used to define the method, technique, equipment, component preparation, and precautions required to perform NDI on each component of the aircraft. A separate manual is used for engines.

2.1.3.3 With wider use of the eddy current NDI method, liquid penetrant is now becoming the secondary method for many applications. This is a result of the improved sensitivity of new eddy current inspection techniques and the fact that eddy current does not require use and disposal of potentially hazardous chemicals. For batch inspection of large areas, the penetrant method is still preferred due to the shorter total process time when compared to eddy current. In addition, penetrant is often used as a backup method for verification of defects found by eddy current inspection.

2.1.4 Limitations of Liquid Penetrant Inspection.

2.1.4.1 Restricted Flaw Openings. Penetrant inspection depends upon the ability of the penetrant to enter and exit the flaw opening. Any surface condition, such as coatings (e.g., paint, plating), dirt, oil, grease, or resin that interferes with the

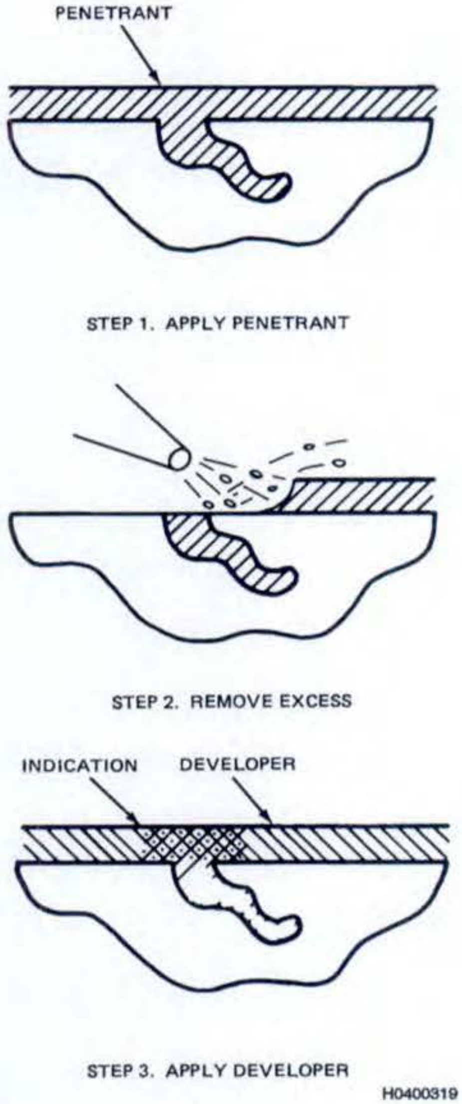



**Figure 2-1. The Penetrant Inspection Process**

2.1.8 Personnel Requirements.

**NOTE**

All individuals who apply penetrant materials or examine components for penetrant indications SHALL be qualified as specified in accordance with (paragraph 1.2).

The apparent simplicity of the penetrant inspection is deceptive. Very slight variations in the inspection process performance can result in reduced inspection sensitivity and failure to indicate serious flaws. It is essential for personnel performing penetrant inspection be trained and experienced in the penetrant process.

# SECTION III LIQUID PENETRANT INSPECTION EQUIPMENT

## 2.3 EQUIPMENT.

2.3.1 General. The equipment used in the penetrant inspection process varies from aerosol spray cans to complex automated systems. Some of the more generally used types of equipment are briefly described in the following paragraphs.

2.3.2 Portable Equipment. Portable penetrant inspection kits are for penetrant inspection of parts too large to be brought into the inspection lab, or for laboratories which process only a minimum number of parts requiring penetrant inspection. Penetrant materials are in small lightweight kits that can be easily transported to any location. Such kits are available for both visible and fluorescent penetrant processes and usually contain aerosol spray cans of penetrant, solvent remover, and developer. Penetrants may also be provided in small containers with a brush for penetrant application. Generally, portable penetrant applications are limited to localized area or spot inspections rather than entire part surfaces.

2.3.3 Stationary Inspection Equipment - General Purpose. The type of equipment most frequently used in fixed installations consists of a series of modular workstations. At each station an inspector performs a specific task. The number of stations in a processing line varies with the type of penetrant method used. A penetrant line will typically have the following stations:

- Penetrant dip tank.
- Emulsifier/remover (Methods "B" and "D") dip tank. (This station is not applicable for Method "A" Method "D" systems SHOULD include a rinse station prior to the remover tank.)
- Rinse station with black light.
- Developer tank (if liquid is used).
- Drying oven.
- Developer tank (if dry-powder is used).
- Inspection booth with black light.

2.3.3.1 Drain and dwell stations may be placed between each primary station depending on the method and equipment configuration use.

2.3.4 Small Parts Inspection Systems. There are inspection systems designed specifically for processing small parts. These units are smaller than the general systems described in (paragraph 2.3.3) above, and some of the stations serve multiple purposes. In use, the parts are loaded into wire baskets, then batch processed through each of the stations. The wash station may contain a water-driven, rotary table with spray jets to supplement the hand-held spray wand.

2.3.5 Automated Inspection Systems. The penetrant inspection process can be adapted for use with fully and semi-automated processing equipment. Semi-automated systems consist of a conveyor belt or table for moving the parts through one or more of the processing steps. Applications of penetrant, emulsifier or remover, rinse, or developer are manually performed. In fully automated systems, all of the processing steps are mechanically performed without an operator. Automated equipment allows large numbers of parts to be rapidly processed with a minimum of personnel and time. Automated equipment also provides a more uniform, though not necessarily more sensitive, testing process.

2.3.6 Inspection Lamps.

2.3.6.1 Inspection Lamp Sources. Fluorescent materials used in nondestructive testing generally respond most actively to radiant energy with a wavelength of about 365 nm. This wavelength represents near ultraviolet or UV-A radiation, light just outside the visible range on the blue or violet side, but not sufficiently far removed to be in the ultraviolet range. Because it is invisible, radiation at this frequency is commonly referred to as black light. Common sources of near UV-A radiation include:

- Incandescent lamps.
- Metallic or carbon arcs.
- Integrally filtered tubular fluorescent lamps.
- Tubular fluorescent lamps.
- Enclosed mercury vapor arc lamps.

# SECTION IV LIQUID PENETRANT APPLICATION METHODS

## 2.4 APPLICATION METHOD.

2.4.1 General. This section provides basic, intermediate, and detailed information on the specific processes relative to the performance of penetrant inspection. Functions not specifically performed by NDI personnel, such as general cleaning, are not covered under this section.

2.4.2 Basic Penetrant Processes. Abridged penetrant process flow charts illustrating the general process steps for the four penetrant methods are provided in (Figure 2-11 through Figure 2-14). Detailed descriptions of application procedures are contained in later sections and paragraphs. The process flow charts contain reference locations for the detailed information. Since the application procedures for fluorescent (Type I) and visible-dye (Type II) penetrants are similar, the process flow charts are applicable to both types of penetrants.

**NOTE**

Specific inspection procedures SHALL be developed and SHOULD be approved by an NDI Level III.

2.4.2.1 Basic Inspection Steps. The basic fundamentals of the penetrant process have not changed from the oil-and-whiting days. The following provides a simplified description of the fundamental penetrant process steps. More explicit process details are discussed in subsequent sections (Figure 2-1) for an illustration of the basic principles of the penetrant inspection process.

a. Cleaning is performed to remove residues and soils from the part surface. Cleaning is a critical part of the penetrant process and is emphasized because of its effect on the inspection results. Contaminants, soils, or moisture, either inside the flaw or on the part surface at the flaw opening, can reduce the effectiveness of the inspection. For a complete discussion on the precleaning process (paragraph 2.4.4).

b. After cleaning is complete and the part is thoroughly dry, a penetrating liquid containing dye is applied to the surface of a clean part to be inspected. The penetrant is allowed to remain on the part surface for a period of time to allow it to enter and fill any surface breaking openings or discontinuities. For a complete discussion of the penetrant application and dwell process (paragraph 2.4.5 and paragraph 2.4.7).

c. After a suitable dwell period, the penetrant is removed from the part surface. Care SHALL be exercised to prevent removal of penetrant contained in discontinuities. For a complete discussion on the penetrant removal process (paragraph 2.4.8).

d. A material called a developer is then applied. The developer aids in drawing any trapped penetrant from discontinuities and improves the visibility of indications. For a complete discussion on the development process (paragraph 2.4.11).

e. Following developer application the next step is a visual examination under appropriate lighting conditions to identify relevant indications. For a complete discussion on the examination/interpretation process (paragraph 2.5).

f. The final step is a post-cleaning of the part. This step is very important as penetrant residues can have several adverse effects on subsequent processing and service. For a complete discussion on the post-cleaning process (paragraph 2.4.12).

# CHAPTER 4
# EDDY CURRENT INSPECTION METHOD

## SECTION I EDDY CURRENT TESTING (ET) METHOD

### 4.1 GENERAL CAPABILITIES OF ET.

4.1.1 Introduction to ET. This method is used to detect discontinuities in parts that are conductors of electricity. An eddy current is a circulating electrical current induced in a conductor by an alternating magnetic field. A coil of copper wire is placed in a holder called a "probe." The probe produces the alternating magnetic field used in ET. The eddy currents induced in an electrical conductor vary in magnitude and distribution in response to specimen properties such as electrical conductivity, magnetic permeability, geometry, and discontinuities. When eddy currents encounter an obstacle, such as a crack, the normal path and strength of the currents is changed. This change is detected on a display or a meter. ET is a "reference" type inspection. The term "reference" means a standard is used to setup the equipment. Results are only as good as the reference standard(s) used. For flaw detection, a minimum of three flaws of varying sizes is recommended for setup. The three flaws represent a closer standardization method for inspection reliability and probability of detection (POD) data. Calibration standards are also used for thickness measurements and conductivity testing. The term "calibration" refers to the use of standards directly traceable to a National Institute of Standards and Technology (NIST) standard that is government controlled.

4.1.2 Definition of Eddy Current. Eddy currents are electrical currents induced in a conductor by a time-varying magnetic field. Eddy currents flow in a circular pattern, but their paths are oriented perpendicular to the direction of the magnetic field.

**NOTE**

When the ferromagnetic properties of the specimen are of interest, magneto inductive testing is the more appropriate term. For the purposes of this chapter ET will be the term of choice. Eddy currents flowing in various configurations are illustrated in (Figure 4-1).

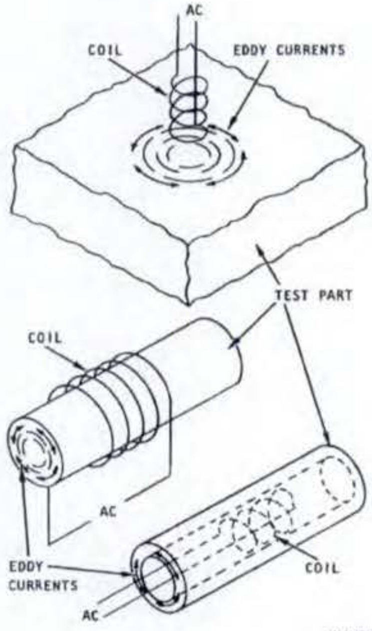



**Figure 4-1. Generation of Eddy Currents in Various Part Configurations**

4.1.3 Inspection With Eddy Current. ET can do the following:

- Detect surface and some subsurface cracks.
- Detect discontinuities in materials.
- Determine material properties.
- Measure thickness of thin metals, conductive coatings, and non-conductive coatings on conductive substrate.

4.1.4 Limitations of Eddy Current Method. The following are some limitations to the ET method:

- Inspection is limited to electrically conductive materials.
- Flaws that run parallel to the surface are difficult to detect.
- Ferromagnetic materials have permeability effects that conflict with conductivity.

4.1.5 Variables Affecting Eddy Currents. The generation and detection of eddy currents in a part are dependent on the following:

- The inspection system.
- Material properties of the part.
- The test conditions.

4.1.5.1 Inspection parameters such as the coil-to-specimen separation (also called lift-off or fill-factor, depending on the type of coil used) and coil assembly design may cause the eddy currents to vary. A consequence of this is often that ET for one condition (e.g., presence of discontinuities), can be hampered by variations in properties not of concern (e.g., specimen geometry). In most cases, the effects of variations in properties not of interest can be minimized or suppressed.

4.1.6 Eddy Current Techniques. There are a wide variety of Eddy Current techniques. A technique can be defined by the test frequencies, coil arrangements, data analyses, and data displays that are used. The techniques in (Table 4-1) are common applications used to measure or detect a variety of conditions. The table is categorized according to the actual material property or inspection parameter to be measured.

4.1.6.1 Field Application. The Eddy Current method is suited for detection of service-induced cracks in aircraft parts and related equipment. In addition, eddy current equipment is portable, with most systems using battery power. Eddy current applications are best suited for inspecting small localized areas. Scanning large areas for randomly oriented cracks is discouraged unless the system is automated. Eddy current can be more economical than other methods, because stripping and refinishing of surface coatings is not normally required.

4.1.7 Effect of Conductivity on Eddy Currents. The distribution and intensity of eddy currents in non-ferromagnetic materials is strongly affected by electrical conductivity (paragraph 4.7.1.4). In a material of relatively high conductivity, strong eddy currents are generated at the surface. In turn, the strong eddy currents form a strong secondary electromagnetic field opposing the applied primary field. As a result, the strength of the primary field decreases rapidly with increasing depth below the surface. In poorly conductive materials, the primary field generates small amounts of eddy currents, which produce a small opposing secondary field. Therefore, in highly conductive materials, strong eddy currents are formed near the surface, but their strength reduces rapidly with depth. In poorly conductive materials, weaker eddy currents are generated near the surface, but they penetrate to greater depths. The relative magnitude and distribution of eddy currents in good and poor conductors are shown in Figure 4-2).

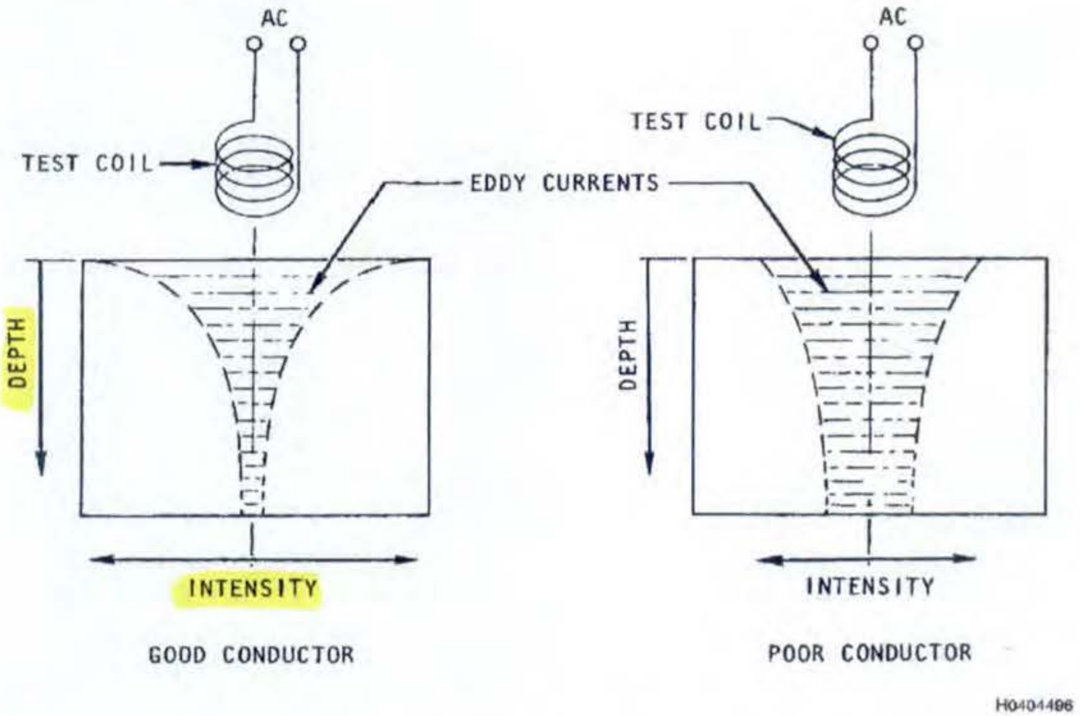



**Figure 4-2. Relative Magnitude and Distribution of Eddy Currents in Good or Poor Conductors**

4.1.7.1 Permeability. Eddy current testing of ferromagnetic parts is usually limited to testing for flaws or other conditions that exist at or very near the surface of the part. In a ferromagnetic material, as compared to a non-ferromagnetic material, the primary field results in a much greater internal field because of the large relative magnetic permeability. The increased field strength at the surface results in increased eddy current density. The increased eddy current density generates a larger secondary field that rapidly reduces the overall field strength a short distance from the surface. Consequently, the effective depth of penetration during ET is much less in ferromagnetic materials than in other conductive materials. The high relative magnetic permeability acts as a shield against the generation of eddy currents much below the surface in a ferromagnetic part. The relative effects of permeability variations on the depth of penetration and the intensity of the eddy currents are shown in Figure 4-3).

Table 4-6. Standard Depths of Penetration for Clad Aluminum Alloys at Various Frequencies

| Clad Aluminum Alloy | Temper | Standard Depth of Penetration (Inches) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 100 Hz | 500 Hz | 1 kHz | 5 kHz | 10 kHz | 50 kHz | 100 kHz | 200 kHz | 500 kHz | 1 MHz | 2 MHz | 6 MHz |
| 2014 | T6 | 0.436 | 0.195 | 0.138 | 0.062 | 0.044 | 0.020 | 0.014 | 0.010 | 0.006 | 0.004 | 0.003 | 0.002 |
| 2024 | T3 | 0.487 | 0.218 | 0.154 | 0.069 | 0.049 | 0.022 | 0.015 | 0.011 | 0.007 | 0.005 | 0.003 | 0.002 |
| 2024 | T4 | 0.487 | 0.218 | 0.154 | 0.069 | 0.049 | 0.022 | 0.015 | 0.011 | 0.007 | 0.005 | 0.003 | 0.002 |
| 2024 | T6 | 0.439 | 0.197 | 0.139 | 0.062 | 0.044 | 0.020 | 0.014 | 0.010 | 0.006 | 0.004 | 0.003 | 0.002 |
| 2024 | T8 | 0.439 | 0.197 | 0.139 | 0.0062 | 0.044 | 0.020 | 0.014 | 0.010 | 0.006 | 0.004 | 0.003 | 0.002 |
| 2219 | T6 | 0.460 | 0.206 | 0.145 | 0.065 | 0.046 | 0.021 | 0.015 | 0.010 | 0.007 | 0.005 | 0.003 | 0.002 |
| 2219 | T8 | 0.467 | 0.209 | 0.148 | 0.066 | 0.047 | 0.021 | 0.015 | 0.010 | 0.007 | 0.005 | 0.003 | 0.002 |
| 6061 | T6 | 0.411 | 0.184 | 0.130 | 0.058 | 0.041 | 0.018 | 0.013 | 0.009 | 0.006 | 0.004 | 0.003 | 0.002 |
| 7075 | T6 | 0.471 | 0.211 | 0.149 | 0.067 | 0.047 | 0.021 | 0.015 | 0.011 | 0.007 | 0.005 | 0.003 | 0.002 |
| 7075 | T76 | 0.422 | 0.189 | 0.133 | 0.060 | 0.042 | 0.019 | 0.013 | 0.009 | 0.006 | 0.004 | 0.003 | 0.002 |
| 7178 | T6 | 0.483 | 0.216 | 0.153 | 0.068 | 0.048 | 0.022 | 0.015 | 0.011 | 0.007 | 0.005 | 0.003 | 0.002 |

(b) (6) [redacted]
Mecha[redacted]
Propeller IPT
27 October 2017

**1.0 PURPOSE**

1.1 To discuss the intent of the COMNAVAIRFORINST 4790.2C in regards to Quality Assurance, and how the Air Force AFSCMAN21-102 lacks in comparison. The overall goal being that the function of QA at Warner Robbins as it pertains to in-process quality verification differs from that of the Navy QA.

**2.0 SCOPE**

2.1 This report will cover Quality Assurance at Navy and Air Force depot facilities, their personnel, inspection procedures, and quality deficiencies.

**3.0 DISCUSSION**

3.1 Quality Assurance (QA) (Navy) [COMNAVAIRFORINST 4790.2C, 15JAN17, Ch 7]

"Quality Assurance (QA) is fundamentally the prevention of the occurrence of defects and is an integral part of every maintenance process from start to completion." (4790.2C, ch.7, para.7.1.1)

Chapter 7 of the 4790.2C discusses in-depth the objectives and responsibilities of a QA department. In all Naval O-level, I-level and D-levels, QA has the responsibility for ensuring the overall quality of the final product, with their main focus being the safety of the ground and flight crews that will be working on and around the various aircraft under their cognizance.

The Air Force does not have the QA requirements that we do when it comes to propeller overhaul. The A.F.T.O. 3H1-18-3 is the technical order (T.O.) from the Air Force that is their equivalent of our NA 03-20C-4 and 03-20CBBK-2/03-20CBBJ-2. In the NAVAIR blade and propeller procedures, there are approximately 53 QA call points, where in the same procedures in the T.O. there is zero. If a facility that is doing maintenance on Navy aircraft components is required to follow Navy maintenance instructions to complete the work, then it is assumed that the facility should also have in-process QA as an integral part of their overhaul procedure.

3.2 QA Personnel (Navy) [COMNAVAIRFORINST 4790.2C, 15JAN17, Para. 7.3]

The NAMP (Naval Aviation Maintenance Procedures, i.e. 4790.2C) also defines those who can perform Quality Assurance duties. This section will focus on QA as it relates to D-level facilities in chapter 7, paragraph 7.7.

3.2.1 QA Specialists (Navy) [COMNAVAIRFORINST 4790.2C, 15JAN17, Para. 7.7.1c]

"FRC D-Level QA Specialists perform, administer, monitor, and review processes and practices to verify the quality of maintenance performed for the Department of Defense (DoD)." (4790.2C, ch.7, para 7.7.1c)

The responsibilities of a QA Specialist include "monitoring of operations to prevent the occurrence of defects and to verify adherence to quality plans and requirements," (4790.2C, ch.7, para. 7.7.1c(2)) as well as "knowledge and application of QA principles and techniques, pertinent product characteristics, and associated manufacturing processes and techniques." (4790.2C, ch.7, para. 7.7.1c(4)).

This position, as defined by the 4790.2C, does not currently exist for the prop overhaul in-process maintenance structure at Warner Robins – Air Logistics Center (WRALC).The term QA Specialist is in the AFSCMAN21-102 Depot Maintenance Management Manual, but no responsibilities are listed.

3.2.2 Artisan Inspector (AI) (Navy) [COMNAVAIRFORINST 4790.2C, 15JAN17, Para. 7.7.1d]

For Navy depot activities this position is also available, and personnel that fill this billet are to be designated by the D-level FRC CO. The CO must "verify all personnel performing QA functions have sufficient training and expertise, well-defined responsibilities, authority, and latitude to identify and evaluate quality defects, and initiate, recommend, or provide solutions," (4790.2C, ch.7, para. 7.7.1d(1)). This means that the level of responsibility that an AI is expected to have isn't any less than any other personnel in the QA department. This is highlighted in the 4790.2C, paragraph 7.7.1d(2), where it states "Although AI's are assigned to production work centers, they function in the same capacity as QA specialists and must meet the activity's local qualification requirements". These requirements are detailed in the QA Specialist Training Plan, FRCEASTINST 12410.12, ENCL (1).

It is also noted in the 4790.2C that this position only applies to D-Level FRC activities. A second artisan approach has been noted as being used at WR-ALC [AFSCMAN21-102, 16MAR15, Para. 21.3.13.1]. There is precedence for this in the 4790.2C (in regards to Artisan Inspectors), however not in the way that is utilized by the Air Force. A "second set of eyes" artisan by Air Force regulations is only required to be certified on the task that is being completed, and not in QA procedures and policies. This is addressed in later sections.

3.3 Quality Assurance Terms (Navy) [COMNAVAIRFORINST 4790.2C, 15JAN17, Para. 7.1.4]

There are terms used in Navy maintenance manuals that have a specific meaning in relation to the 4790.2C and Naval Aviation Maintenance Program (NAMP).

3.3.1 QA (Navy) [COMNAVAIRFORINST 4790.2C, 15JAN17, Para. 7.1.4a]

"QA is the planned and systematic pattern of actions taken to verify the item conforms to specifications and will perform satisfactorily," (4790.2C, ch.7, para.7.1.4a).

It is this definition that drives the **(QA)** designation put at the end of tasks and procedures "essential to equipment performance or to safety of personnel," (03-20C-4, WP 002 00, para. 18). These items shall be observed or checked by a Quality Assurance Inspector before the artisan moves on to the next step. (03-20C-4, WP 002 00, para. 18).

3.3.2 Inspection (Navy) [COMNAVAIRFORINST 4790.2C, 15JAN17, Para. 7.1.4b]

"Inspection is the physical examination and testing of aircraft, engines, equipment, components, parts, and materials to determine conformance specifications," (4790.2C, ch.7, para. 7.1.4b)

Enclosure (   )

One important aspect of inspections to note, especially as it pertains to propeller overhaul, is the in-process inspection. There are many aspects of a propeller overhaul that can't be confirmed after the maintenance has been completed. It is for this reason that there are a multitude of QA call points in the NAVAIR maintenance manuals that ensure certain critical procedures have been completed

Examples:

1. Blade bushing contact area, 03-20C-4, WP 007 00, para. 15.d.
2. Blade bushing fit check, 03-20C-4, WP 008 00, para. 10.g.
3. Water break free test prior to foam fairing install, 03-20C-4, WP 007 00, para. 6.a.

3.4 Quality Assurance (Air Force) [AFSCMAN21-102, 16MAR15, Ch 8]

Chapter 8 of the AFSCMAN21-102 is titled "Quality Assurance Program Quality Assurance (QA)". This chapter describes the depot-level QA policies of Air Force maintenance. They define QA as the "process that provides adequate confidence that controls are in place to ensure products, processes, and services conform to established requirements/standards."

Their purpose aligns with the Navy's vision of QA, but the way that it is executed is different, as explained in the following paragraphs.

3.5 QA Personnel (Air Force) [AFSCMAN21-102, 16MAR15, Ch 8]

3.5.1 Quality Assurance Specialists, Inspectors, Evaluators

No delineation of responsibilities is defined in the AFSCMAN21-102 (Depot Maintenance Management) or AFI36-2232 (Maintenance Training) manuals. Paragraph 8.4.3.1 states that "All Quality Assurance Specialists, inspectors, and evaluators (i.e. QA personnel) must be trained IAW the GS-1910 CTP, ENCL(2). This publication is the Target Promotion Program for Quality Assurance Specialist, and is very similar to the Quality Assurance Specialist Training Plan at the Depot.

Unlike the 4790.2C, which explicitly calls out QA Specialists and their responsibilities, there is no entry in the AFSCMAN21-102. The above quote is the only mention in the manual of QA Specialists. No duties or responsibilities are noted in the GS-1910 QAS CTP either; however paragraph 3.1 is the "Knowledge and Understanding of Position Responsibilities (Core Doc)". This "Core Doc" may have the responsibilities listed within it, but as of this writing, I have not been able to procure a copy [UPDATE 9 Nov: ENCL(5) is the Core Doc. Has not been reviewed as of this writing yet].

3.6. PAC (Production Acceptance Certification) (Air Force) [AFSCMAN21-102, 16MAR15, Para. 21.3]

This program "documents employee certification IAW AFI21-102, para. 13.12, to perform and accept completion of assigned work. Employees certify (stamp) that the work they performed meets all technical data, safety, and other applicable directives."

The reference stated above is the Maintenance Certification Program in the AFI21-102. This program applies to all depot personnel that certify WCD's, and it defines how to track PAC certified employees. Essentially, if a WR-ALC depot employee is assigned a task, he/she must be PAC certified on that task to certify it complete.

For work that is deemed critical, paragraph 13.12.5 of the AFI21-102 explains that these tasks require a secondary certification or "second set of eyes". A task is deemed critical if:

1. A catastrophic failure of an end item (end item failure that could result in a catastrophe)
2. An end item failure that may affect safety of flight.
3. An end item failure that may present an imminent safety or health hazard or affect a life support system.

This falls in line with the intent of Navy (QA) call points, however the Air Force doesn't require a QA specialist to certify these tasks (see paragraph 3.7 for QA Q-Stamps). And employees who are only specifically PAC-certified on a task only have maintenance training, and no QA training.

3.7 Quality Verification Inspection Q-Stamp (QVIQ) (Air Force) [AFSCMAN21-102, 16MAR15, Para. 8.4.4.1.3]

These require that tasks related to safety of flight be designated with a Q-stamp to be completed. All maintenance functions/actions designated QVIQ must have QA notified every time the task is accomplished. The QA inspector that certifies the task has been completed IAW applicable technical data/instructions must be PAC certified on the specific task/operation that they are certifying.

This seems to be the closest the AF has to our (QA) call outs in the publications. Whereas we would require a QAS or AI to inspect at our call points, they would have a QAS or QAI inspect and Q-stamp it to ensure it was completed properly. This will be documented on the WCD as a separate Q-stamp block next to the PAC stamp block.

3.8 Quality Assurance Specialist Training Navy [FRCEASTINST 12410.12 (ENCL(1))] and AF [GS-1910 QAS Training Plan (ENCL(2))]

Training documents for both the Navy and Air Force QA Specialists define the exact same criteria for grading the candidate on task performance and knowledge, as well as overall subject knowledge. The differences lie in the actual training itself.

The Navy QA training has the typical department orientation training to familiarize the candidate with the operations and how QA functions. They also discuss safety, hazards, local instructions, technical data and directives, investigations, audits and FRC engineering/manufacturing products. 31% of the training is dedicated to technical functions, specifically being able to perform quality functions related to industrial processes and component repair/modification. In the AF QA Specialist training, there is no specific technical functions section. However, there are sections dedicated to routine, quality, isolated violation, special, and management inspections; these being more overarching, generalized tasks then production-specific tasks.

3.9 P-3 Product Quality Deficiency Reports (PQDR)

In 2016 it was brought to the attention of the Propeller IPT that there were multiple PQDR's related to the overhaul of P-3 propellers for which WR-ALC had just stood up capability for earlier in the year. Production of P-3 props ceased at WR-ALC until these deficiencies could be fixed after an on-site audit by the program office and the Prop-IPT. After the site visit all of these issues were addressed and repaired, and production was continued. However, a review of the following summary of the PQDR's that led to the stop in production shows that a few of these could have been prevented had they properly followed the QA call points in the 03-20C-4/03-20CBBK-2 during production:

3.9.1 9 May 2016, RCN 44329-16-0065, Propeller N243235.

1. Trailing edge blistering (QA reference: 03-20C-4, WP 007 00, para. 16.l)
2. Teflon glue chipped (QA reference: 03-20C-4, WP 007 00, para. 16.l)

3.9.2 9 May 2016, RCN 44329-16-0066, Propeller N243922

1. Incorrect blade blending. (No QA)

3.9.3 26 May 2016, RCN 44329-16-0075, Propeller N243930

1. Air pockets in the Teflon (QA reference: 03-20C-4, WP 007 00, para. 16.l)
2. Teflon chipped (QA reference: 03-20C-4, WP 007 00, para. 16.l)
3. Blending limits exceeded (multiple blades). (No QA)

3.9.4 11 August 2016, RCN 44329-16-0125, Propeller N243673

1. Barrel not coated (No QA)
2. Pitch lock regulator nicks in sealing surface (No QA)
3. Air bubbles in Teflon (QA reference: 03-20C-4, WP 007 00, para 16.l)
4. Blade blending limits exceeded. (No QA)

3.9.5 17 October 2016, RCN 44329-16-0149, Propeller N243921

1. Barrel corrosion (No QA)

3.9.6 25 October 2016, RCN 09244-16-0026, Propeller N223483

1. Tail shaft incorrectly machined, unable to install in pump housing (No QA)

3.9.7 26 October 2016, RCN 09244-16-0027, Propeller N243464

1. Tail shaft incorrectly machined, unable to install in pump housing. (No QA)

3.10 C-130 PRB-150 "Yellow Propeller" Inspection

On-site inspections at I-level facilities in New Orleans, LA, and McGuire-Dix-Lakehurst, NJ in accordance with PRB-150 were conducted to determine the condition of props that didn't fall into the PRB-149 categories. These inspections were to determine if each of the blades for the 10 propellers listed had evidence of primer squeeze out, Permatreat coverage, and anodizing in the taper bore. Of those three qualities, anodizing is the only one that is a direct QA call point in the 03-20C-4 (WP 006 00, para. 39). Only six propellers were inspected, and of those six, four had no evidence of anodizing. Although the other two qualities are not QA items as per the 03-20C-4, it should be noted that only Permatreat was found on five of twenty-four blades, and none had evidence of primer. All three of these are required as part of the overhaul procedure in 03-20C-4.

3.10.1 Propeller N238956

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | 2014100175A | 2014120091A | 2014120094A | 2014120082A |
| Acceptable Primer Squeeze Out? | No | No | No | No |
| Acceptable Permatreat Coverage? | Yes | Yes | Yes | No |
| Presence of Anodize? | No | No | No | Yes |
| Acceptable for Continued Operation? | No | | | |

3.10.2 Propeller N229549

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | 2012110183A | 2012110118A | 2012120039A | 2012120130A |
| Acceptable Primer Squeeze Out? | No | No | No | No |
| Acceptable Permatreat Coverage? | No | No | No | No |
| Presence of Anodize? | No | No | No | No |
| Acceptable for Continued Operation? | No | | | |

3.10.3 Propeller N244268

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | 2015020080A | 2015020076A | 2015030197A | 2014120089A |
| Acceptable Primer Squeeze Out? | No | No | No | No |
| Acceptable Permatreat Coverage? | Yes | No | Yes | No |
| Presence of Anodize? | No | No | No | No |
| Acceptable for Continued Operation? | No | | | |

3.10.4 Propeller 2013020038

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | 2012030076A | 2013040051A | 2013030171A | 2013040105A |
| Acceptable Primer Squeeze Out? | No | No | No | No |
| Acceptable Permatreat Coverage? | No | No | No | No |
| Presence of Anodize? | No | No | No | No |
| Acceptable for Continued Operation? | No | | | |

3.10.5 Propeller 2015040110

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | 2015100192A | 2015120150A | 2015120155A | 2015120156A |
| Acceptable Primer Squeeze Out? | No | No | No | No |
| Acceptable Permatreat Coverage? | No | No | No | No |
| Presence of Anodize? | Yes | Yes | Yes | Yes |
| Acceptable for Continued Operation? | No | | | |

3.10.6 Propeller MFG242746

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | 2012100011A | 2012100007A | 2012100032A | 2012100016A |
| Acceptable Primer Squeeze Out? | No | No | No | No |
| Acceptable Permatreat Coverage? | No | No | No | No |
| Presence of Anodize? | Yes | Yes | Yes | Yes |
| Acceptable for Continued Operation? | No | | | |

3.11 Work Control Documents (WR-ALC)

Enclosure ( )

An example of the work control document (WCD) for Navy blades can be found in ENCL (3). A review of this document shows that there are five steps that have a MGT/SP stamp, meaning that it is an in-process, secondary artisan inspection. References to the 03-20C-4 are in parentheses after the task:

1. Sub Op 0230

Ensure all steel screw threaded inserts have been removed prior to plating. If not call prop shop for removal. Mask drive pin holes. Chromic acid anodize. Verify discontinuities in anodic coating with conductivity meter. REF MIL-STD-8625. (WP 006 00, para. 39.a.3)

2. Sub Op 0255

Note date and time of anodize. If over 18 hrs stop and initiate rework paperwork for strip and anodize. If it has been less than 18 hrs, proceed. Mix and pour foam. (WP 007 00, para. 6.a)

3. Sub Op 0280

Solder tabs and install slip rings. Perform continuity check (No QA reference).

4. Sub Op 0330

Install taperbore bushing. (WP 008 00, para. 10)

5. Sub Op 0335

Final inspect and install decals. Complete form 95 when complete. Close this WCD as serviceable. (No QA reference)

Two of these five tasks listed aren't QA call points in the 03-20C-4. There are quite a few more (as listed in ENCL (4)) that aren't specifically called out, or fall under the generalized Sub Ops. Then there are steps such as Sub Op 0281, "Install Teflon Strips" that doesn't have a MGT/SP block to verify the QA callout as per WP 007 00, paragraph 16.

**4.0 CONCLUSION**

QA is a fundamental aspect of production. It is designed to eliminate defects in a production line and keep maintenance personnel and aviators safe. The mission of the Navy and Air Force as it pertains to production is the same: create a good end product. Paragraph 3.9 and 3.10 of this document show that there have been cases on both the P-3 and C-130 sides of WR-ALC production in the past year where that quality was lacking. A few of the discrepancies may have been avoided if QA was implemented as per the Navy definition, and may have alleviated any shuttering of production at the facility. However, paragraph 3.11 shows that even when there were steps designated QA in our publications, some of them weren't even in need of a secondary stamp according to the WCD. Those that did require a secondary stamp, that secondary stamp wasn't a QA stamp as per the NAMP.

In regards to Navy depots and propeller overhaul, Quality Assurance Specialists and Artisan Inspectors are thoroughly trained in industrial quality practices and procedures, and are called upon to verify in-process steps that engineering has deemed critical to flight safety. Their training involves specific tasking related to production, ensuring that they are familiar with the tasks they will be certifying.

For the Air Force, they also have tasks that are deemed critical to flight safety. For tasks deemed critical they allow a secondary PAC-certified employee to verify the work of the primary employee. For them, this is nothing unusual: both employees are PAC-certified, so you have a "second set of eyes" to verify the work was completed properly. This is where the disparity is when viewing it through the eyes of Navy QA.

There are two references in the Air Force manuals describing procedures related to safety of flight: first in paragraph 13.12.5 of the AFI21-102 (paragraph 3.6 of this report), and in paragraph 8.4.4.1.3 of the AFSCMAN21-102 (paragraph 3.7 of this report). In the first reference, critical tasks are those that the failure of an end item would affect safety of flight, and require a "second set of eyes", (i.e. a secondary PAC-certified employee). The second reference describes Quality Verification Inspection Q-Stamp, which is required when a task is critical to safety of flight. It can be argued that there is no difference between the two. The entries for either of the references don't dive further into the criteria that would constitute a Q-stamp versus a "second set of eyes".

This is where the Navy definition of a (**QA**) task comes in, as defined in paragraph 3.3.1 of this report. These are tasks that are critical to the performance of the end item and to safety of personnel. They are also required to be inspected by a QA inspector before the artisan/employee moves on to the next step in the process. As described earlier, the Navy overhaul WCD for Warner Robbins only requires a second PAC-certified employee to be able to stamp off these steps; and PAC certified employees by themselves are not trained in QA policies or procedures. If a facility is required to abide by Navy doctrine when overhauling Navy products, then the facility should be required to follow Navy Quality Assurance provisions as well. There are certain policies and procedures that govern quality as it pertains to production, and although both services have the same mission, the overall execution differs. The quick remedy to this disparity would be to add Q-Stamps to the WCD's where (**QA**) call points are listed in the Navy technical publications. Doing so would negate the argument for having a non-QA, PAC-certified, "second set of eyes" verification of critical tasks, and fit the intent of QA in regards to the Naval Aviation Maintenance Program.

UPDATE 9 NOV: After discussing QA with (b) (6) [redacted] Quality Assurance Supervisor for Warner Robins, it was learned that Q-stamps are not meant to be permanent; the stamps are put in place temporarily on a procedure or process for verification when confidence has been lost. QA at Warner Robins is not staffed to provide Quality Control as per a Q-stamp, which is the equivalent of a Navy (**QA**) call point.

# Warner Robins Air Logistics Complex
# Target Promotion Program

(Self-Nomination)

U.S. AIR FORCE

**Quality Assurance Specialist**
**GS-1910-07 Target GS-11 WR-ALC/QA**
**10 June 2016**

*Trainee Name*

*Date*

Enclosure (  )

This Page Intentionally Left Blank

WARNER ROBINS AIR FORCE BASE
Approval and Coordination

Quality Assurance Specialist GS-1910-07 Target GS-11

[redacted]

[redacted]

| | |
|---|---|
| | |
| | |

This Page Intentionally Left Blank

**Introduction**

1. This Target Promotion Program (TPP) is developed under the provision and guidelines provided in the applicable DoD, AF, and AFMC instructions and manuals for employee training and development. The intent of TPP is to provide the trainee with the necessary training and developmental opportunities to progress to the next higher grade level within the job series. The TPP also provides guidance to supervisors and managers to implement and execute the program within the organization. The TPP provides the framework for the trainee to achieve the required knowledge, skills and abilities. The TPP will ensure the trainee is provided the training by having the program execution as a shared responsibility. The promotion programs are one method to ensure a highly trained, qualified, and technically proficient workforce.

2. Each part of the program is used by trainee, supervisors, training administrators/managers, and management to plan, manage, and deliver training for the progression and promotion of the trainee.

2.1. Part I: MOA is the program agreement between management and trainee. This agreement provides the guidelines, procedures, policies, and responsibilities of the program implementation and execution. The primary focus of the agreement is to ensure the trainee and management understands their responsibilities and expectations program achievement.

2.2. Part II: Formal Training Plan (FTP) is a comprehensive training document that identifies the training and developmental requirements, training support resources, minimum core and job specific training and tasks for the occupational series and grade within the program agreement. The FTP provides a detail listing of the classroom instruction, on-the-job training, and briefings to be provided to the trainee as they progress through the program.

2.2.1. Training Procedures for On-The-Job Training (OJT) outlines the methodology for training the employee on the tasks listed on the FTP checklist. This procedure identifies the responsibilities of the trainee, trainer, and the supervisor to include the specific steps to accomplish the OJT.

2.2.2. The AF standard Proficiency Code Key is provided to ensure a clear expectation of the performance levels to complete this program. The Proficiency Code Key identifies the levels of knowledge and performance used by the trainer and supervisor to ensure the training is provided a level that can be understood and measured.

2.2.3. The Identification Table is used to identify any individual that performs the supervisor duties identified in paragraph 13 and the trainer duties identified in paragraph 14.

**Part I**

1. **Purpose:** The purpose of this agreement is to establish the requirements and responsibilities for the training and promotion of selected personnel. The program provides the employee (trainee) with the necessary knowledge, skills, and abilities to progress from the entry or developmental level position to the

Enclosure ( )





full performance targeted level position. This program provides promotional opportunity to trainees seeking job career advancement in a career group, pay schedule, or pay band. The MOA will be signed by the trainee, supervisor and Squadron Commander (or equivalent) acknowledging their responsibilities and program requirements. A scanned copy of the signed MOA will be forwarded to the WR- ALC/OBH Program Manager within 10 days of trainee's assignment to this program where it will be maintained IAW AFI 36-114, *Guide to Personnel Recordkeeping*.

2. **Selection Procedures:** Trainee will be selected from the self-nomination registers provided by the Air Force Personnel Office in accordance with applicable laws, regulations and labor agreements. Once selected, the trainee will be assigned to a Target Promotion Position. Selected trainees will be enrolled in the formal training courses and on-the-job training (OJT) for the program duration.

3. **Training Requirements:** The training is designed to provide knowledge, skills, and abilities required to perform the target position duties and responsibilities. The courses are also designed to provide the trainee with the knowledge of the principles, processes, procedures, and responsibilities. The OJT portion is designed to provide the practical application of the knowledge they have acquired in the courses. Training will be provided by classroom instruction, formal and informal briefings, and OJT. This training program will provide employees with the opportunity to acquire the experience and knowledge, skills, and abilities necessary to qualify for the targeted grade.

3.1. Classroom Instruction: Force Development Flight 78 ABW/FSS/FSD, WR-ALC Complex Training Office WR-ALC/OBHC, commercial vendor training providers, local colleges and organizational personnel will provide this method of training delivery.

3.2. OJT: Experienced higher-grade employees, leads, and supervisors (all referred to as trainers) will provide traditional OJT or structured OJT (SOJT) to the trainee. OJT is hands-on and/or over-the- shoulder training that provides the knowledge and skills required to successfully perform a process/task in accordance with the applicable procedures. The trainer conducting the OJT must train the trainee on all aspects of the process/task to include methodology, procedures, process, and local guidance.

4. **Training Procedures:** The Complex Training office will provide trainee with a working copy of the official master file Formal Training Plan (FTP) that will outline the required training and specific work processes/tasks in checklist format and proficiency levels that must be accomplished during the program. This copy will be used for the day to day documentation of program element completion. The trainee and the OJT trainer will initial each required process/task (in the working file FTP) when the trainer has successfully trained the process/task and the trainee has achieved the required level of proficiency through proficiency demonstrations. The supervisor will be provided with an original approved master file FTP and process /task listing for each applicable skill for reference and use in assigning tasks for on-the-job training. The appropriate supervisor must verify the trainee's ability to accomplish each process/task at the required proficiency level before initialing the working file FTP. On some tasks, the supervisor may require the supervisor to serve as the OJT trainer. In these cases, the supervisor will initial as the OJT trainer and the supervisor column.

4.1. Identified training requirements are mandatory.

4.1.1. Resolution of unsuccessful completion of training requirements:

4.1.1.1. Prior to the second attempt to meet any training requirement, reasonable effort must be made to provide the trainee with remedial training to increase the success rate of the trainee.

4.1.1.2. If the trainee is unable on the second attempt to meet the OJT proficiency level, a different trainer will be provided to retrain the process/task. If the trainee is unable to meet the OJT proficiency level the third time with a second trainer, the trainee may be removed from the target program.

4.1.1.3. If the trainee is removed from the program for failure to demonstrate required proficiency, the trainee will be returned to his prior permanent grade IAW applicable laws, regulations, and labor agreements.

**5. Training Progress:** Successful training and development of the trainee is the primary responsibility of the supervisor. The supervisor must ensure the trainee is provided opportunity to complete the required training within the target program. Priority must be placed on assigning work processes/tasks and formal training outlined in the master file FTP to the target trainees. The target trainee will be assigned to work with a certified/qualified trainer to ensure proper training and proficiency is achieved.

**6. Progress Evaluations:** During the training period, informal, subjective and objective observations will be made by assigned supervisor and trainer/lead personnel to determine how well the trainee is processing to the desired competencies in the training program. Progression is based on the trainee's commitment to learn the duties and perform the job, attend and complete classroom instruction. Successful progression is also their ability to achieve the required process/task proficiency levels identified in the FTP. At a minimum, the trainee and supervisor will meet quarterly or when requested by the trainee to discuss the trainee's progress and performance using the Training Progress Record (TPR), AFMC Form 362. An unsatisfactory evaluation by the supervisor may be sufficient cause for program extension or removal of the trainee from the target promotion program. During the progress evaluation, the trainee, supervisor, and trainer will review the FTP to determine the trainee's progression and to prioritize training courses and task assignments.

6.1. Evaluation of trainee's progress will be documented on the electronic TPR AFMC Form 362 and are due each quarter until the trainee reaches the target grade. The TPR will be digitally signed and submitted electronically at four predetermined dates during the year: 31 March, 30 June, 30 September, and 31 December. The reports for the periods ending these dates will be submitted to the WR-ALC/OBH Program Manager no later than the 10th day of the following month. For example, the quarterly report covering 1 January through 31 March should be submitted electronically in sufficient time to reach WR-ALC/OBH by 10 April.

6.1.1 The electronic TPR, AFMC Form 362 is the preferred method of trainee progress documentation. In the event the electronic version is unavailable, a printed and signed copy may be accepted.

6.2. The trainee or supervisor can request the trainer(s) to be a part of the quarterly review. At that time they will discuss the trainee's progress and performance. If the trainer(s) has any comments or concerns he/she may be included on the AFMC Form 362. The electronic TPR will be electronically sent to the WR-ALC/OBH Program Manager and filed in the target program file.

6.3. Upon conclusion of training, the Verification of Program Completion statement located at the end of





the checklist will be signed by the trainee and supervisor. The completed training checklist with signed statement will be forwarded to the WR-ALC/OBH Program Manager.

**7. Incomplete Training, Unsatisfactory Evaluation, or Trainee Withdraw:** If a trainee does not complete all training requirements and/or is unable to demonstrate task proficiency at the required level, requests to withdraw, or there is an elimination of the workload that directly affects the target position then the trainee may be returned to previous permanent grade, or placed in a non-target position, if available. These actions will be consistent with mission need and applicable laws, regulations, and labor agreements and would include a trainee who takes a voluntary downgrade to accept the target position. During the training period, trainees will be excluded from promotion consideration up to and including the target grade of the position held. The removal of the trainee from the target program and reassignment to a non-target position or return to previous grade (to include any trainee who takes a voluntary downgrade to accept the target position) will not affect the trainee's ability to participate in future target programs.

7.1. Trainee's return to previous permanent grade may not be to previous series or organization.

**8. Program Length:** Without disruptions, the program cannot be completed prior to the designated program length. An employee's movement from one level to the next higher level in the training program should not exceed designated length plus maximum four month extension. Requirements of CFR Title 5, Part 300.604, will be followed for progression to the next target grade. This progression will not be granted prior to the individual meeting the training requirements outlined in this FTP with the exception of provisions under CFR Title 5, Part 353. Trainees must satisfactorily complete minimum training hours established by the FTP checklist. Supervisors may request the program be extended when, in their opinion, the trainee is not performing at the expected developmental level.

8.1. Program Length:

8.1.1. One Grade, one year program will be minimum 12 months with maximum extension to 16 months.

8.1.2. Two Grade, two year program will be minimum 24 months with maximum extension to 28 months.

8.1.3. One Grade, two year program (NDI) will be a minimum 24 months with a maximum extension to 28 months.

8.1.4. Two Grade, three year program will be a minimum36 months, with a maximum extension to 40 months.

8.1.4.1. The GS-1910-07 Target GS-11 is a two grade three year program with 18 months in each level.

8.2. Request for Extension. An extension request requires the supervisor to submit a request via email stating why the program should be extended. The request must be processed from the trainee's supervisor to the Squadron Commander or equivalent to the WR-ALC/OBH Program Manager for approval.

8.3. Circumstances that disrupt training, such as illness, limited work duty or the relocation, loaning of trainees from their assigned target areas in excess of four weeks, or Guard/Reserve activation will require a letter for extension. The letter must be processed to the WR-ALC/OBH Program Manager from the trainee's Squadron Commander (or equivalent) and address the reasons and the length of extension. Any disruption, transfer, relocation, TDY or loaning of target personnel must be done only to accommodate critical situations and must be approved by the trainee's Squadron Commander (or equivalent). WR-ALC/OBH will be notified immediately of the action and receive the approved extension letter within 10 working days prior to any loan, TDY, relocation, etc.

8.3.1. Trainees who are absent because of compensable injury or Guard/Reserve military activation can be considered for promotion. In addition, agencies have an obligation to consider employees absent on military duty for any incident or advantage of employment that they may have been entitled had they not been absent.

8.3.1.1. Trainees absent for compensable injury or Guard/Reserve activation will be granted an extension equal to the time remaining on the FTP when the absence begins.

8.3.2. Trainees requiring an extension for reasons other than compensable injury or Guard/Reserve activation may receive an extension equivalent to four months over the length of the program.

8.3.3 If an employee does not complete all training requirements and/or is unable to demonstrate task proficiency consistent with the position held while on the extension, he/she may be returned to previous permanent grade, or placed in a non-target position, if available.

8.4. Trainees requesting to withdraw must submit a letter to the immediate supervisor. Withdrawal requests must be processed to the WR-ALC/OBH Program Manager from the trainee's Squadron Commander (or equivalent) and address the reasons and justification for withdrawal request.

8.5. Once trainee has completed the training program within the guidelines of this agreement, the trainee will be promoted or converted to the position consistent with the guidelines of this agreement, applicable laws and regulations.

8.5.1. The Request for Personnel Action (RPA) will be submitted by the WR-ALC/OBH Program Manager as soon as possible after receipt of all the required documentation. The trainee's promotion will not be on the trainee's anniversary date. Due to eligibility not being met until the anniversary date and the required processing time, the earliest the promotion should be effective should be the first full pay period after the anniversary date.

**9. Continued Service Agreement (CSA):** All training over 80 hours requires a CSA. The CSA is an agreement between the trainee and the government that the trainee will continue in service upon training completion. Trainees who fail to complete training covered by a CSA are still obligated for costs incurred. The CSA remains in effect to protect governmental interests even though the employee withdraws from, or otherwise fails to complete training. It should be adjusted to reflect actual costs. Requirements mandated in AFI 36-401, *Employee Training and Development* will be followed.

**10. Shift Assignment:** Trainees in the training program will be assigned to day shift for the duration of the training program. Exceptions may be granted when necessary to accomplish a task/process on another shift. The trainee will remain on the other shift only for the time required to complete those processes/tasks. The shift change assignment notice must be in writing from the appropriate Squadron Commander to the WR-ALC/OBH Program Manager a minimum of 10 workdays prior to the shift change assignment.





**11. Program Completion Process:** After completion of all mandatory classroom instruction, process/task training, and proficiency demonstrations, the trainee must be capable of full process/task demonstration at the designated proficiency level for all processes/tasks in the master file FTP.

11.1. Supervisor and trainee will sign the Verification of Program Completion statement on the last page of the FTP Part II Checklist.

11.2. Supervisor will submit the trainee's original completed and signed working copy FTP to the WR-ALC/OBH Program Manager where it will be maintained IAW AFI 36-114, *Guide to Personnel Recordkeeping*.

11.3. WR-ALC/OBH Program Manager will notify WR-ALC/OBM a minimum of 30 days in advance to initiate a Request for Personnel Action (RPA) to promote trainee to the target grade.

11.4. WR-ALC/OBH Program Manager will review the original working copy FTP and verify all program requirements are met and there are sufficient TPRs to cover the entire cycle. If the documentation package is complete, the Program Manager will verify the RPA and forward to AFPC.

**12. Trainee's Responsibilities:** The target program has been established to ensure the trainee receives the necessary training to perform the work processes/tasks and job duties at the level they will be promoted to and are responsible for performing. The trainee's responsibilities are:

12.1. The trainee will possess and maintain the working copy of the master file FTP used for documentation of program element completion. It is imperative the FTP is secured and not misplaced.

12.2. The trainee will perform the FTP processes/tasks on a repetitive basis until the proficiency level is achieved and demonstration of performance has been verified by trainer and supervisor.

12.2.1. Trainee will ensure OJT documentation is annotated as soon as possible after proficiency is demonstrated.

12.3. If trainee is assigned a process/task that has been completed in the FTP, the trainee must notify the supervisor or trainer and identify an alternative task assignment from the FTP whenever possible.

12.4. Trainee will identify any problems in the target program to the immediate supervisor and OBH Program Manager first and then ensure the proper chain of command is utilized to elevate any issue.

12.5 Trainee will address payroll and other Personnel issues with their immediate supervisor and applicable Resource Office.

12.6. Trainee will initiate an electronic TPR and forward to their supervisor at the end of each calendar quarter. The TPR must be completed and forwarded to the WR-ALC/OBH Program Manager by the 10th day of the following month.

**13. Supervisor's Responsibilities:** The target program will ensure the trainee is trained on the processes/tasks at the proficiency level required for the job series, thus enabling the supervisor to fully utilize their skills. The program is only effective if the supervisor ensures the trainee is being properly trained and assigned the required processes/tasks. The supervisor's responsibilities are:

13.1. Supervisor will possess and maintain the master file FTP to use for task assignment and requesting training.

13.2. Supervisor will obtain required signatures on the Memorandum of Agreement and forward to the OBH Program Manager for inclusion in the trainee master file within 10 days of the initial program briefing provided by the OBH Program Manager.

13.3. Supervisor will ensure training requirements are loaded in the AFMC Education and Training Management Systems (ETMS) and if appropriate the Training Scheduling System (TSS) within 45 days of target program employee assignment.

13.4. Supervisor will assign a certified/qualified trainer to work with and train the trainee.

13.5. Supervisor will ensure the trainee is assigned to FTP processes/tasks that have not previously been signed off. This procedure is a priority.

13.6. Supervisor must ensure training opportunities are provided to the trainee. The supervisor will ensure trainees have priority status when course schedules are established.

13.7. Supervisor will verify the target trainee has achieved the required proficiency level outline in the FTP prior to initialing off the checklist.

13.8. Supervisor will monitor the target trainee's progress and will identify any difficulties with the trainee's training or abilities to the WR-ALC/OBH Program Manager.

13.9. Supervisor will meet at least quarterly with the target trainee to discuss the trainee's progression using the electronic AFMC Form 362 and forward digitally signed copy to the WR-ALC/OBH Program Manager.

13.10. The supervisor will annually review FTP training requirements against DoD, OPM standards and course offerings to ensure training checklist tasks, proficiency levels and methods of measurements are accurate and notify WR-ALC/OBHB of needed changes.

**14. Trainer's (Lead, Higher-Grade, Supervisors) Responsibilities:** OJT trainers will provide OJT to trainees assigned to the target program positions at the request of the supervisor. The trainers must have a high level of knowledge and skills in the subjects and processes/tasks being trained.

14.1. Trainer will "Print" their payroll signature and enter their "Script" initials in the first available block of the Identification Table prior to beginning any OJT process.

14.2. Trainer will conduct the three-step OJT, outlined in FTP Part II, as a minimum utilizing the appropriate guides, manuals, instructions, policies, and/or other related materials for the process/task being trained.





14.3. Trainer will witness employee's process/task performance until task proficiency is attained to ensure the trainee is capable of correctly performing the task without fulltime oversight.

14.4. Trainers will periodically monitor the individual's proficiency when performing the process/task. The trainer must inspect the trainee's work and verify the trainee has performed the work properly as trained.

14.5. Trainers will conduct one-on-one training if supervisor deems it necessary for target trainees who are having difficulty in achieving the required proficiency level.

14.6. Trainer will document the "Start Date" when starting the OJT for the specific process/task, and document the "Comp Date" and initial the "Trainer Initials" block when the training session(s) are complete and the trainees has demonstrated their proficiency to the trainer. It is not acceptable to have all or most of the "Start Date" and "Comp Date" annotated with the same start and complete date since multiple tasks cannot be started at the same time and demonstration of proficiency cannot be accomplished at the same time.

14.6.1 The Proficiency Demonstration for any task/process trained via OJT will be completed and documented during the FTP training cycle.

14.6.2. Trainer will ensure OJT documentation is annotated as soon as possible after proficiency is demonstrated.

14.6.3. If the trainee declares prior experience in some areas, the trainer must verify that the trainee has current knowledge and has maintained the required proficiency level.

14.7. Formal Training completed prior to entering the Formal Training Position will be documented in the FTP checklist. The actual completion dates in TSS/PAC Section II, other training data system or other official documentation such as certificates, diplomas transcripts etc. will be transcribed to the checklist. Trainee, Trainer and Supervisor will then initial the appropriate blocks.

14.8. When requested by the supervisor, the trainer will provide input on the trainee's process/task proficiency demonstrated to the trainer.

**15. Force Development Flight (78 ABW/FSS/FSD) Responsibilities:** Force Development Flight is responsible for the FTP design, process, and implementation. AFSC/DPR is responsible for the following:

15.1. Design and development of the Installation standard for target program memorandum of agreement (MOA).

15.2. Design and development of the Installation standard for the FTP including the installation-wide core/common training requirements and associated tasks.

15.3. Target program standards, policy guidance, and compliance requirements.

15.4. Assisting supervisors/training managers in the development of organizational specific FTP training requirements and associated tasks IAW AFI 36-401, *Employee Training and Development, Chapter 6.*

15.5. Monitoring AFMC Form 362s to identify any issues with program execution, documentation, and/or program deficiencies.

15.6. Meeting at the request of the Complex Training representative to discuss any changes, issues, or impact to the target program or trainees' progression.

15.7. Conducting Target Promotion Program audits, analyzing trends, and non-compliance, and reporting program compliance to WR-ALC/OB and appropriate Complex management.

**16. Complex Training Functional Responsibilities:** The target program allows the training organization to be part of the promotion process. This enables the unit training organization and management to directly influence the structure and method of training. The Complex Program Manager will administer and monitor the target program. The Program Manager is responsible for the following:

16.1. Working with the supervisor, identify organizational specific FTP requirements to OBH for inclusion.

16.2. Program Manager will provide an initial program briefing for supervisor and trainees. A working copy will be provided to the trainees at this time.

16.3. WR-ALC/OBH Program Manager must receive and maintain signed Memorandums of Agreement for each trainee in the program within 10 after the initial program briefing.

16.4. Ensuring trainees have priority status when course schedules are established.

16.5. As a minimum, meet quarterly with the supervisors and trainees to discuss the trainee's progress.

16.6. Ensure the MOA, quarterly progress evaluations (TPRs), FTP Checklist, Waiver Request, and Extension Request are properly and accurately completed, routed and maintained.

16.7. WR-ALC/OBH Program Manager must receive quarterly progress evaluation packages within 10 days after evaluation due date.

16.8. Reporting on all target trainees' progression to the appropriate Complex management on a quarterly basis. The report metric report, as a minimum, will provide course completion status for all trainees, process/task completions for all trainees, and identify problem areas and corrective action taken. Other metrics should be provided as deemed necessary by the Complex management to adequately measure the execution of the target program.

16.9. Request RPA development from WR-ALC/OBM a minimum 30 days prior to trainee's eligibility date. Once the documentation is complete and all requirements are met, verify the RPA and forward to AFPC for action.

16.10. Monitor progress of RPA to ensure trainee receives the promotion. Additionally, if it is the promotion to the final targeted grade, ensure the trainee is removed from the "training" core document to a permanent core document.

**17. Training Waivers:** There must be a compelling need to justify a waiver to a training requirement.





It is incumbent upon the trainee and supervisor to provide full justification in support of the waiver request.

17.1. The request for training requirement waiver may be submitted by the supervisor, via email to the WR-ALC/OBH Program Manager.

17.2. In the event of a Waiver dispute, the request will be elevated through WR-ALC/OBH chain of command and that of the owning organization.

17.3. Waivers will not be granted for OPM core training requirements.

**18. Agreement:** I have read and acknowledge the MOA requirements and have been provided with a copy of the working copy file FTP containing the MOA, course requirements list, and the process/task list.

The Original MOA will be placed in my971 file. Target Promotion Program will begin upon my effective date of assignment to the Target Promotion Program position.

| | | |
|---|---|---|
| Employee Printed Name | Signature | Date |
| Supervisor Printed Name | Signature | Date |
| Squadron Commander or Equivalent | Signature | Date |



Enclosure ( )

Part II

1. Formal Training Plan (FTP): The purpose of this FTP is to formally outline and document the knowledge, skills, and abilities (KSAs) required to achieve the target grade. The FTP is a combination of classroom and on-the-job training (OJT) to provide subject knowledge and process/task performance.
The FTP is the standard for which the trainer and trainee are required to accomplish.

2. FTP Application: The FTP is a combination of classroom instruction, briefings, seminars, workshops, self-study, and on-the-job training (OJT). The FTP identifies several learning methods for the trainee to gain the required KSAs.

3. Training Requirements:

3.1. Classroom, Briefings, Seminars, and Workshops: The specific training is identified in the FTP checklist. These formal training requirements will be scheduled through the unit training manager and trainee's supervisor with priority to the trainees.

3.2. Self-Study: The self-study method is designed to provide the background and foundation of the position. The trainee must read policies, instructions, process guides, and other reference documents to increase their understanding of the overall position.

4. Training Procedures for On-The-Job Training (OJT): OJT is the most common form of training. This type of training requires the employee to work with the trainer on a day-to-day basis to obtain process/task knowledge and experience. This process continues until the trainer is satisfied that the trainee has met the training requirement through trainee demonstration of proficiency. The trainer must "supervise" the work of the assigned trainee until the individual has demonstrated the proficiency to be able to work alone. The AF standard Proficiency Code Key identifies the levels of knowledge and performance and is used by the trainer to ensure the training is provided a level that can be understood and measured. **Note:** OJT hours identified on the checklist reflect the estimated time to conduct the OJT and for the trainee to demonstrate their proficiency. It may take more or less time to meet the required level of proficiency based on the available training time and trainee's ability to obtain the knowledge and skills. The hours represent a baseline for establishing the program length, OJT trainers' requirements, and informing the trainee and management of the estimate hours to schedule the OJT process.

4.1. The OJT Process: OJT starts with the annotation of the date in the master file FTP when the employee is assigned to the trainer for a particular process/task. The trainer will explain and perform the process/task to the trainee, and then the trainer will explain the process/task as the trainee performs. Then the trainee will explain and perform the process/task to the trainer. This simple three-step process of OJT will continue until the trainee has met the required proficiency level. The trainer may explain and perform the process/task to the trainee several times before the trainee is capable to explain and perform the process/task back to the trainer. Trainer must periodically monitor the individual's proficiency when performing the process/task. The trainer must inspect the trainee's work and verify the trainee has performed the work properly as trained. OJT is completed when the trainer verifies to the supervisor that the employee is trained and proficient in the process/task documented on the master file FTP.





4.2. OJT Trainee's Role: Acquiring new knowledge, gaining proficiency, learning to think and to solve problems and developing proper attitudes are the responsibility of the trainee. This is accomplished through a formal training sequence of simple to complex. The trainer's job is to help the trainee reach these objectives to the best of his/her abilities. The OJT trainer, in contrast to the classroom instructor conducts most of his/her training in the actual work environment. The relationship is not professor-student, but trainer-trainee, which requires special procedures to ensure the trainee, can perform once training is accomplished. OJT can be as simple as telling the inexperienced worker how to set up an event, or it can be as lengthy as a "walk through" of a detailed sequential process or procedure. By its nature, OJT lacks structure and will require tracking on the checklist provided. Nevertheless, OJT is an effective way to train. It generally uses operational situations and takes place in an environment that allows the trainee to understand the purpose and importance of training. The OJT trainer must manage and document the individual's progress through "hands-on" training, along with orientation, motivation, guidance and teaching. Complicating the trainer's job is the fact that learning is a continuing process and the trainee will also be learning through day-to-day exposure and will be taught some job tasks by others. The OJT trainer must continually evaluate, fill in the gaps and finally verify that the trainee can do the task correctly.

4.2.1. Steps In Conducting Effective OJT:

4.2.2. Make Sure You Know the Subject: You may want to get the books out again and brush up on some of your weaker areas.

4.2.2.1. Determine What the Trainee Already Knows: You can determine this by reviewing the trainee's qualification records, questioning the trainee or asking co-workers or other supervisors.

4.2.2.2. Schedule Training Effectively: Try to schedule your training around equipment/facility availability and workload "peaks and valleys." Where possible, avoid distractions such as when other teams are working in the area, where informal meetings/discussions are taking place, etc.

4.2.2.3. Gather Necessary Materials and Equipment In Advance: Ensure you have the things you need before you start the training.

4.2.2.4. Motivate: Explain the importance of what you are teaching. Tell the trainee why it is something he/she needs to know. Relate the information to something the trainee already knows.

4.2.2.5. Explain: Here is where you start telling the trainee how to do the job and introduce the fundamentals related to it. Normally, this step takes place prior to the demonstration. How and when you do your explanation will depend on the subject and what works best in the environment.

4.2.2.6. Demonstrate: This is where you want to show the trainee how to do the particular procedure. For example say "See how this connects to the data we have compiled." "Note how the process flow has changed from the initial workshop flow chart." The demonstration may be the first time the trainee has seen this particular task or portion of the task. Don't zip through it. Spend enough time to clear up any gray areas, which will save you from having to re-teach a task. Also, allow time to teach the trainee the proper use of any technical guidance or process manuals. When demonstrating, make sure you complete each step before you go to the next. Pause briefly after each operation to observe the trainee's reaction. Repeat difficult steps.

4.2.2.7. Practice: Here is where you tell the trainee, "Now you try it." You must emphasize the positive aspects of progress and correct errors on the spot. Practice can take two forms:

4.2.2.7.1. Supervised- Supervised practice occurs when the instructor gives the trainee the explanation and demonstration and then immediately allows him/her to practice, again and again if needed.

4.2.2.7.2. Unsupervised- Unsupervised practice occurs when the trainee has mastered the fundamentals of a task and needs practice to gain proficiency and speed. This type of practice may come as part of the normal day-to-day job.

4.2.2.8. Evaluate: Evaluation is a lot more than the final performance measurement. It is a continuous part of the training process, including evaluating how well you maintained the trainee's interest your preparation. Some questions to consider when evaluating are did the trainee understand your explanations? Could the trainee perform the task after the demonstration? If not, why not? Did you miss a step or cover the material too quickly? Did the trainee lose interest because he/she did not know how well he/she was doing? Use the evaluation to improve your performance as well as provide your trainee a means to offer constructive criticism.



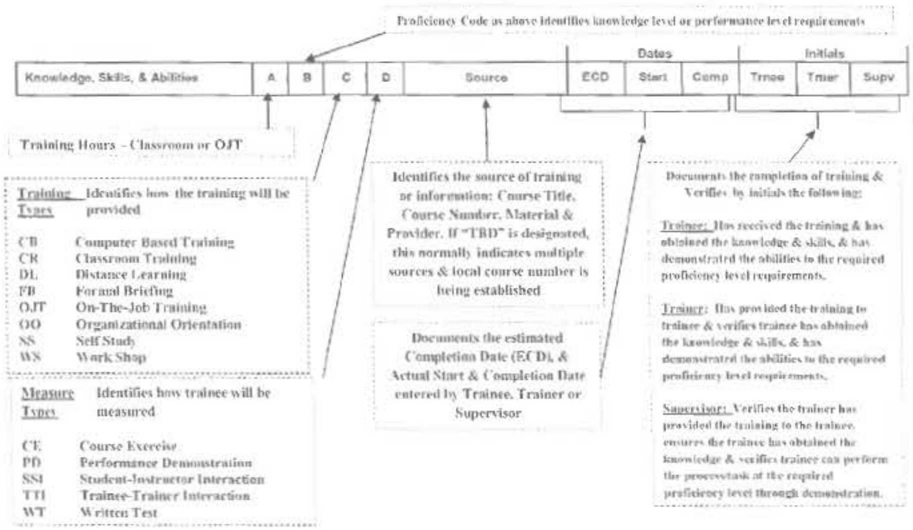
Enclosure ( )



## 5. Training Requirements - Proficiency Code Key:

| Task Levels | Scale Value | Definition: The trainee: |
|---|---|---|
| *Task* | 1 | Can perform simple parts of the task. Needs to be told or shown how to do most of the task (Extremely Limited) |
| *Performance* | 2 | Can perform most parts of the task. Needs only help on hardest parts. **(Partially Proficient)** |
| *Level* | 3 | Can perform all parts of the task. Needs only a spot check of completed work. **(Competent)** |
| | 4 | Can perform task quickly and accurately. Can tell or show others how to do the task. **(Highly Proficent** |
| **Task* | a | Can name parts, tools and simple facts about the task. **(Nomenclature)** |
| *Knowledge* | b | Can determine step-by-step procedures for performing the task. **(Procedures)** |
| *Level* | c | Can identify why and when the task must be done and why each steep is needed. **(Operating Principles)** |
| | d | Can predict, isolate and resolv |
| *** Subject* | A | Can identify basic facts and terms about the subject. **(Facts)** |
| *Knowledge* | B | Can identify relationship of basic facts and state general principles about the subject. **(Principles)** |
| *Level* | C | Can analyze facts and principles and draw conclusions about the subject. **(Analysis)** |
| | D | Can evaluate conditions and make proper decisions about the subject. **(Evaluation)** |
| | | EXPLANATION:<br><br>* A task knowledge scale value maybe used alone or with a task performance scale value to define a level of knowledge for a specific task. (Examples: b and 1b) NOTE: A task performance scale value cannot be used alone.<br>** A subject knowledge scale value is used alone to define a level of knowledge for a subject not directly related to any specific task, or for a subject common to several tasks. |

## 6. Reading & Understanding the FTP Checklist:



7. **Identification Table:** Use the following table to identify employee, trainer(s), and supervisor's initials used in the FTP.

| | | |
|---|---|---|
| Employee's Information | | |
| Printed Name (*Last, First, Middle Initial*) | Initials (*Written*) | Organization |
| | | |
| **Printed Name of Trainers and Supervisor With Written Initials** | | |
| **Trainer** | | Supervisor |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |





| Name: | | | | | FTP: GS-1910-07 Target -9 | Dates | | | Initials | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Knowledge, Skills, & Abilities | A | B | C | D | Source/Provider | Schd | Start | Comp | Trnee | Trnr | Supv |
| **1. ORGANIZATIONAL FAMILIARIZATION** | | | | | | | | | | | |
| 1.1. Knowledge and Understanding of WR-ALC's Organizational Structure & Overall Mission | 2 | B | OO | TTI | SME | | | | | | |
| 1.2. Knowledge and Understanding of Wing Staff Office Structure and Overall Mission | 2 | B | OO | TTI | SME | | | | | | |
| 1.3. Knowledge and Understanding of Quality Assurance Structure and Mission | 2 | B | OO | TTI | SME | | | | | | |
| **2. ORGANIZATION POLICY REQUIRMENTS** | | | | | | | | | | | |
| 2.1. Knowledge and Understanding of AF, AFMC, and Local Policy, Instructions, Procedures, and Directives Related to the Organization | 16 | B | OO | TTI | SME | | | | | | |
| **3. PLAN, ORGANIZE, AND EXECUTE WORK ASSIGNMENTS** | | | | | | | | | | | |
| 3.1. Knowledge and Understanding of Position Responsibilities (Core Doc) | 4 | B | OO | TTI | Supervisor Only | | | | | | |
| 3.2. Know and Understand How Duties Are Manifested for Specific Position | 4 | B | OO | TTI | Supervisor Only | | | | | | |
| **4. SECURITY** | | | | | | | | | | | |
| 4.1. Know and Understand of Position Responsibilities as Related to Security | 2 | A | OO | TTI | Supervisor Only | | | | | | |
| 4.1. Know and Understand of INFOSEC Procedures | 2 | A | FB | TTI | Supervisor Only | | | | | | |
| 4.2. Know and Understand of COMSEC Procedures | 2 | A | FB | TTI | Supervisor Only | | | | | | |
| 4.3. Know and Understand of OPSEC Procedures | 2 | A | FB | TTI | Supervisor Only | | | | | | |
| **5. SAFETY** | | | | | | | | | | | |
| 5.1. Knowledge and Understanding of Air Force Safety Procedures | 4 | A | CR | SII | MRXMAS00597005U Shop and Flight Line Safety Awareness OBHC | | | | | | |
| 5.2. Knowledge and Understanding of Fire Prevention and Safety | 2.25 | A | CB | SII | CTESAF000010SU Fire Safety and Prevention Training (Initial) TSS | | | | | | |

| Name: | | | | | FTP: GS-1910-07 Target 09 | Dates | | | Initials | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Knowledge, Skills, & Abilities | A | B | C | D | Source/Provider | Schd | Start | Comp | Trnee | Trner | Supv |
| 5.3. Knowledge and Understanding of High Intensity Sound | 1 | A | FB | TTI | MRXMAA00844001T Hearing Conservation Briefing Clinic | | | | | | |
| 5.4. Knowledge and Understanding of Hazard Communications | 3.25 | B | CR | SII | MRXENV0035300SU Federal Hazards Communication Program FSD | | | | | | |
| 5.5. Knowledge and Understanding of Foreign Object Damage(FOD) Dropped Object Prevention Program | 3 | A | CR | TTI | CHPMAS0000400SU Foreign Object Object Dropped Object Prevention TSS | | | | | | |
| 5.6. Knowledge and Understanding of Hazardous Material Waste Handling and Storage | 1.5 | B | CR | SII | MRXENV0000200SU Hazardous Material Handling FSD | | | | | | |
| 5.6.1. Knowledge and Understanding of Hazardous Chemicals | 1 | A | FB | FTI | Supervisor Lead QAS SME | | | | | | |
| 5.7. Knowledge and Understanding of Lockout Tagout Procedures | 2 | B | CR | SII | MRXMAS0067400SU Aircraft & Equipment Lockout Tagout (Initial) OBHC | | | | | | |
| 5.8. Knowledge and Understanding of Tool Control Accountability | 2.5<br>1.5 | B b<br>C | CR | SII | CHPMAS0004500SU Command Tool Control and Accountability OBHC<br>MRXMAS0001200SU 402 MXW Specific Tool Control And Accountability OBHC | | | | | | |
| 5.9. Knowledge and understanding of Flightline Driving | 1 | B b | CR | SII | MRXMAS0020600SU Robins AFB Industrial Area Flightline Driving Safety FSD | | | | | | |





| Name: | | | | | FTP: GS-1910-07 Target 09 | Dates | | | Initials | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Knowledge, Skills, & Abilities | A | B | C | D | Source/Provider | Schd | Start | Comp | Trnee | Trner | Supv |
| 5.10. Knowledge and Understanding of Aircraft and Equipment Corrosion Control | 3 | A B | CR | SII | CRXMAS0008000SU Aircraft and Equipment Corrosion Control FSD | | | | | | |
| 5.11. Knowledge and Understanding of Electro-Static Discharge | 3 | B | CR | SII | CRXMAD0002201SU Electrostatic Discharge OBHC | | | | | | |
| **6. COMPUTER SYSTEMS SOFTWARE** | | | | | | | | | | | |
| 6.1. Knowledge and Understanding of Microsoft Outlook | 8<br>8 | A<br>A | CR<br>CR | SII<br>SII | MRXCPS0022000SU Microsoft Outlook Basic MRXCPS00022001SU Microsoft Outlook Intermediate FSD | | | | | | |
| 6.1.1. Develop Contact List and Distribution List Using Microsoft Outlook | 1 | 2b | OJT | PD | SME Lead | | | | | | |
| 6.1.2. Access and Send Email Messages | 4 | 2b | OJT | PD | SME Lead | | | | | | |
| 6.1.3. Build and Schedule Appoints and Meetings for Calendar Using Microsoft Outlook | 1 | 2b | OJT | PD | SME Lead | | | | | | |
| 6.2. Knowledge and Understanding of Microsoft Word | 8<br>8 | A<br>A | CR<br>CR | SII<br>SII | MRXCPS00033000SU Microsoft Word Basic FSD MRXCPS0003301SU Word Intermediate FSD | | | | | | |
| 6.2.1. Enter and Edit Text on Word Documents | 8 | 2b | OJT | PD | SME Lead | | | | | | |
| 6.2.2. Prepare Written Documents and Create Tables in Word Document | 8 | 2b | OJT | PD | SME Lead | | | | | | |
| 6.3. Knowledge and Understanding of Microsoft Excel | 8<br>8 | A<br>A | CR<br>CR | SII<br>SII | MRXCPS0004400SU Microsoft Excel Basic FSD MRXCPS0004401SU Excel Intermediate FSD | | | | | | |



Enclosure ( )

| Name: | FTP: GS-1910-07 Target 09 | | | | | Dates | | | Initials | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Knowledge, Skills, & Abilities | A | B | C | D | Source/Provider | Schd | Start | Comp | Trnee | Trner | Supv |
| 6.3.1. Input, Extract and Compile Data Using Spreadsheets | 12 | 2b | OJT | PD | SME Lead | | | | | | |
| 6.3.2. Create and Format Spreadsheets to Meet Management Requirements | 12 | 2b | OJT | PD | SME Lead | | | | | | |
| 6.4. Knowledge and Understanding of Microsoft Power Point | 8 | A | CR | SII | MRXCPS0006600SU Microsoft PowerPoint Basic FSD | | | | | | |
| 6.4.1. Create Power Point Presentation Relating to Organizational Requirements | 2 | 2b | OJT | PD | SME Lead | | | | | | |
| 6.4.2. Build Charts for Presentation, Edit and Format Slide Content | 2 | 2b | OJT | PD | SME Lead | | | | | | |
| **7. PUBLICATIONS** | | | | | | | | | | | |
| 7.1. Knowledge and Understanding of General Technical Data | 4.5 | B | CR | SII | CHPMAS0000300SU General Technical Data OBHC | | | | | | |
| 7.1.1. Demonstrate the Ability to Use and Comply With Technical Data | 2 | 2b | OJT | PD | Supervisor Lead QAS SME | | | | | | |
| 7.2. Identify, Locate and Use Technical Data (Including Electronic Media) | 20 | 2b | OJT | PD | Supervisor Lead QAS SME | | | | | | |
| 7.3. Locate and Use AFMC Form 202 Nonconforming Technical Assistance Request and Reply | 12 | 2b | OJT | PD | Supervisor Lead QAS SME | | | | | | |
| 7.4. Locate and Use AFMC 561 Process Order | 8 | 2b | OJT | PD | Supervisor Lead QAS SME | | | | | | |
| 7.5. Locate and Use Time Compliance Tech Orders (TCTOs) | 12 | 2b | OJT | PD | Supervisor Lead QAS SME | | | | | | |
| 7.6. Locate and Use AFTO Form 22, Technical Manual Change Recommendation and Reply | 12 | 2b | OJT | PD | Supervisor Lead QAS SME | | | | | | |





| Name: | FTP: GS-1910-07 Target 09 | | | | | Dates | | | Initials | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Knowledge, Skills, & Abilities | A | B | C | D | Source/Provider | Schd | Start | Comp | Trnee | Trner | Supv |
| 7.7. Identify, Locate and Use AF Manuals and Instructions | 12 | 2b | OJT | PD | Supervisor Lead QAS SME | | | | | | |
| 7.8. Identify, Locate and Use Commercial, Military and Industrial Standards | 12 | 2b | OJT | PD | Supervisor Lead QAS SME | | | | | | |
| 7.9. Identify and Verify Process Problems | 12 | 2b | OJT | PD | Supervisor Lead QAS SME | | | | | | |
| 7.10. Apply Quality Auditing Principles | 12 | 2b | OJT | PD | Supervisor Lead QAS SME | | | | | | |
| 7.11. Process AFMC Form 77 "Request for Quality Assistance" | 12 | 2b | OJT | PD | Supervisor Lead QAS SME | | | | | | |
| 7.12. Review, Validate and Submit Revision Request for Technical Order, Work Control Documentation and Other Specifications Standards | 16 | 2b | OJT | PD | Supervisor Lead QAS SME | | | | | | |
| 7.13. Develop Review Operating Instructions, Procedures and Supplements | 12 | 2b | OJT | PD | Supervisor Lead QAS SME | | | | | | |
| 7.14. Knowledge and Understanding of Basic Blueprints (Reading and Interpretation) | 5 | B 2b | CR | SII | MRXMAS0099100SU Basic Blueprints (Reading and Interpretation) OBHC | | | | | | |
| 7.15. Identify, Locate and Use Engineering Drawings and Blueprints | 10 | 2b | OJT | PD | Supervisor Lead QAS SME | | | | | | |
| **8. PROCESS MANAGEMENT AND STANDARDS** | | | | | | | | | | | |
| 8.1. Use and Apply Basics of Lean Principles, Manufacturing and Quality Management Systems | 10 | 2b | OJT | PD | Supervisor Lead | | | | | | |
| 8.2. Use and Apply Aerospace Maintenance Quality Standard (AMQS) Principles | 10 | 2b | OJT | PD | Supervisor Lead | | | | | | |
| 8.3. Use and Apply Applicable Industry Standards | 10 | 2b | OJT | PD | Supervisor Lead | | | | | | |
| 8.4. Knowledge and Understanding of Lean (Continuous Process Improvement (CPI)) | 8 | 1a | CR | SII | MRXCPI0000100SU Lean 101 OBP 78ABW | | | | | | |
| 8.5. Know and Understanding of Air Force 8-Step Problem-Solving Process | 16 | 2b | CR | SII | MRXCPI0000200SU 8-Step Problem Solving Process OBP 78ABW | | | | | | |

| Name: | FTP: GS-1910-07 Target 09 | | | | | Dates | | | Initials | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Knowledge, Skills, & Abilities | A | B | C | D | Source/Provider | Schd | Start | Comp | Trnee | Trner | Supv |
| 8.6. Knowledge and Understanding of "*Managing the Risk of Organizational Accidents*" by James Reason | 12 | B | SS | WT | Supervisor EIMC | | | | | | |
| 8.7. Knowledge and Understanding of "*Investigating Human Error: Incidents, Accidents, and Complex Systems*" by Barry Strauch | 12 | B | SS | WT | Supervisor EIMC | | | | | | |
| 8.5. Knowledge and Understanding of Principles of Problem Solving | 24 | B | CR | WT | DEF4519P Principles of Problem Solving Ga Tech | | | | | | |
| 8.9. Knowledge and Understanding of the Craft of Problem Solving | 24 | B | CR | WT | DEF4522P Craft of Problem Solving Ga Tech | | | | | | |
| 8.10. Knowledge and Understanding of Applied Systems Thinking | 24 | B | CR | WT | DEF4523P Applied Systems Thinking Ga Tech | | | | | | |
| **9. EFFECTIVE COMMUNICATIONS** | | | | | | | | | | | |
| 9.1. Knowledge and Understanding Of Technical Communication | 45 | C | CR | WT | ENGL 1105 Technical Communication Central Ga. Tech | | | | | | |
| 9.2. Knowledge and Understanding of Presentation Skills | 16 | B 2b | CR | SII | MRXPDV0000100SU Presentation Skills FSD | | | | | | |
| 9.3. Knowledge and Understanding of Effective Writing | 20 | B 2b | CR | SII | MRXADV0000200SU Effective Writing FSD | | | | | | |
| 9.3.1. Utilize Team Building Practices | 10 | 2b | OJT | PD | Supervisor Lead QAS SME | | | | | | |
| 9.3.2. Participate in Briefings, Meetings, Committees and Boards-Includes Participation in Production Planning Team | 10 | 2b | OJT | PD | Supervisor Lead QAS SME | | | | | | |
| 9.3.3. Develop Customer Relationships | 10 | 2b | OJT | PD | Supervisor Lead QAS SME | | | | | | |
| **10. DATA ANALYSIS AND VISUALIZATION** | | | | | | | | | | | |
| 10.1. Knowledge and Understanding of Data Collection and Analysis | 40 | B | CR | WT | PGMT7001D Data Collection and Analysis Graduate School | | | | | | |





| Name: | FTP: GS-1910-07 arget -9 | | | | | Dates | | | Initials | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Knowledge, Skills, & Abilities | A | B | C | D | Source/Provider | Schd | Start | Comp | Trnee | Trner | Supv |
| 10.2. Knowledge and Understanding Mechanical Measurement | 75 | B | CR | WT | METR1132 Mechanical Measurements CGTC | | | | | | |
| 10.3. Knowledge and Understanding of Basic Statistics | 1 | B | CB | CE | TBD Introduction To Statistical Concepts American Society for Quality | | | | | | |
| **11. QUALITY ASSURANCE (GENERAL)** | | | | | | | | | | | |
| 11.1. Locate, Review and Use the Quality Assurance Plan | 2 | 2b | OJT | TTI | Supervisor Lead QAS SME | | | | | | |
| 11.2. Locate, Review and Use the Quality Management Manual | 2 | 2b | OJT | TTI | Supervisor Lead QAS SME | | | | | | |
| 11.3. Knowledge and Understanding of Depot Maintenance Quality Assurance Program | 40 | A B | CR | SII | CRXMAS0007000SU Depot Maintenance Quality Assurance Program OBHC | | | | | | |
| 11.4. Knowledge and Understanding of Root Cause Analysis | 8 | C | CR | CE WT | MFG2009P Root Cause Analysis Ga. Tech | | | | | | |
| 11.5. Knowledge and Understanding of ISO9001 Quality Standard | 16 | C | CR | CE WT | QUAL1106 ISO9001: 2015 Internal Quality Auditing Ga. Tech | | | | | | |
| 11.6. Knowledge and Understanding of AS9100 Revision D | 16 | B | CR | SII | AS9100 Rev. D BSI America | | | | | | |
| **12. ROUTINE INSPECTIONS** | | | | | | | | | | | |
| 12.1. Conduct Routine Inspection List (RIL) | 1 | A | FB | TTI | Supervisor/Lead/QAS SME | | | | | | |
| 12.2. Conduct Routine Inspection Lists (RIL) AMXG *(200 OJT Hrs Breakout Below) | * | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 12.2.1. Conduct Work Control Documents RIL | 20 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 12.2.2. Conduct Technical Data Process Orders RIL | 20 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |



Enclosure ( )

| Name: | FTP: GS-1910-07 Target -9 | | | | | Dates | | | Initials | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Knowledge, Skills, & Abilities | A | B | C | D | Source/Provider | Schd | Start | Comp | Trnee | Trner | Supv |
| 12.2.3. Conduct Technical Order Account Management RIL | 20 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 12.2.4. Conduct Foreign Object Damage RIL | 20 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 12.2.5. Conduct Material Control RIL | 20 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 12.2.6. Conduct Equipment RIL | 20 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 12.2.7. Conduct Production Acceptance Certification (PAC) Special Skills RIL | 20 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 12.2.8. Conduct Safety (Flightline Industrial) RIL | 20 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 12.2.9. Conduct Tool Control RIL | 20 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 12.2.10. Conduct Hazardous Material RIL | 10 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 12.2.11. Conduct Electro Static Discharge RIL | 10 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 12.3. Identify and Document RIL Inspection Findings | 20 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| **13. QUALITY VERIFICATION INSPECTIONS** | | | | | | | | | | | |
| 13.1. Conduct Quality Verification Inspections | 40 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 13.2. Identify and Document Quality Verification Inspection Findings | 20 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| **14. ISOLATED VIOLATIONS INSPECTIONS (IVs)** | | | | | | | | | | | |
| 14.1. Conduct Isolated Violations Inspections [illegible]92 Hours Below | [illegible] | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 14.1.1. Identify Detected Safety Violation | 24 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 14.1.2. Identify Technical Data Violation | 24 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 14.1.3. Identify Unsatisfactory Condition Report | 24 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 14.2. Identify and Document Isolated Violations | 20 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |





| Name: | FTP: GS-1910-07 Target -9 | | | | | Dates | | | Initials | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Knowledge, Skills, & Abilities | A | B | C | D | Source/Provider | Schd | Start | Comp | Trnee | Trner | Supv |
| **15. SPECIAL INSPECTIONS (SIs)** | | | | | | | | | | | |
| 15.1. Conduct Special Inspections | 40 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 15.2. Identify and Document Special Inspections (SIs) Findings | 20 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| **16. MANAGEMENT INSPECTIONS (MIs)** | | | | | | | | | | | |
| 16.1. Conduct Management Inspections | 40 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 16.2. Identify and Document Management Inspection Findings | 20 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| **17. PERSONNEL EVALUATIONS (PEs)** | | | | | | | | | | | |
| 17.1. Conduct Personnel Evaluations | 120 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 17.2. Identify and Document Personnel Evaluation Findings | 60 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| **18. QUALITY DEFICIENCY REJECTS/REPORT INVESTIGATIONS (QDRs)** | | | | | | | | | | | |
| 18.1 Conduct Deficiency Rejects/Reports Investigations | 80 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 18.1.1. Verify Product Quality | 50 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 18.1.2. Analyze Defect Data and Isolate Trends | 50 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 18.1.3. Respond to Material Deficiency Reports, by Participating in Audits, Investigations, and Special | 50 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| **19. MAINTENANCE MANAGEMENT SYSTEMS** | | | | | | | | | | | |
| 19.1. Use Maintenance Management Systems | 25 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 19.2. Knowledge and Understanding of Quality Information Management Standard System | 13 | B 2b | CR | SII | CRXMAS000241SU Quality Information Management Standard System, Module 2 User FSD | | | | | | |

| Name: | FTP: GS-1910-07 Target -9 | | | | | Dates | | | Initials | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Knowledge, Skills, & Abilities | A | B | C | D | Source/Provider | Schd | Start | Comp | Trnee | Trner | Supv |
| 19.2.1. Access System and Enter Data to Complete AFMC Form 343 | 24 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 19.2.2. Perform Advanced Queries | 24 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 19.2.3. Access System and Review Deficiency Reports | 8 | 2b | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 19.3. Knowledge and understanding of Production Acceptance Certification Standard System | 2 | A B | CR | SII | MHPMAS0000300SU Production Acceptance Certification Standard System FSD | | | | | | |
| 19.3.1. Conduct TSS PAC Record Reviews | 8 | 2b | OJT | PD | Supervisor Lead QAS SME | | | | | | |
| **20. ACQUISITION AND CONTRACTING** | | | | | | | | | | | |
| 20.1. Knowledge and Understanding of Fundamentals of Acquisition Management | 25 | C | CB | SII | ACQ101 Fundamentals of Systems Acquisition Management Defense Acquisition University | | | | | | |
| 20.2. Knowledge and Understanding of Intermediate Systems Acquisition, Part A | 35 | C | CB | SII | ACQ202 Intermediate Systems Acquisition, Part A Defense Acquisition University | | | | | | |
| 20.3. Knowledge and Understanding of Production, Quality, and Manufacturing Fundamentals as Related to Acquisition | 13 | C | CB | SII | PQM101 Production, Quality, and Manufacturing Fundamentals Defense Acquisition University | | | | | | |
| 20.4. Knowledge and Understanding of Contract Law Requirements for Non-Contracting Officer Personnel | 2 | B | CB | SII | CLC011 Contracting for the Rest of Us Defense Acquisition University | | | | | | |
| 20.5. Knowledge and Understanding of Contractor-Quality Assurance Interactions | 2 | C | FB | TTI | MRXPGM9900100BR Quality Assurance-Contractor Interactions QAX Chief or Designee | | | | | | |





| Name: | GS-1910-07 Target 09 | | | | | Dates | | | Initials | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Knowledge, Skills, & Abilities | A | B | C | D | Source/Provider | Schd | Start | Comp | Trnee | Trner | Supv |
| **21. SOFT-SKILLS** | | | | | | | | | | | |
| 21.1. Knowledge & Understanding of Being an Effective Team Member | 1 | A | CB | SII | Being an Effective Team Member https://usafprod.skillport.com/skillportfe/main.action?content=catalog | | | | | | |
| 21.2. Knowledge & Understanding of Ethical Conduct | 1 | A | CB | SII | Developing a Code of Ethical Conduct https://usafprod.skillport.com/skillportfe/main.action?content=catalog | | | | | | |
| 21.3. Knowledge & Understanding of Diversity & You | 1 | A | CB | SII | Diversity on the Job: Diversity & You https://usafprod.skillport.com/skillportfe/main.action?content=catalog | | | | | | |
| 21.4. Knowledge & Understanding of Feedback & Criticism | 1 | A | CB | SII | Receiving Feedback & Criticism https://usafprod.skillport.com/skillportfe/main.action?content=catalog | | | | | | |
| 21.5. Knowledge & Understanding of Perseverance & Resilience | 1 | A | CB | SII | Developing Character for Perseverance and Resilience https://usafprod.skillport.com/skillportfe/main.action?content=catalog | | | | | | |
| 21.6 Knowledge & Understanding of Your Work Life Balance | 1 | A | CB | SII | Optimizing Your work Life Balance https://usafprod.skillport.com/skillportfe/main.action?content=catalog | | | | | | |
| 21.7. Knowledge & Understanding of Business Grammar | 1 | A | CB | SII | Business Grammar: the Mechanics of Writing https://usafprod.skillport.com/skillportfe/main.action?content=catalog | | | | | | |
| 21.8. Knowledge & Understanding of Communication Skills | 8 | B 2b | CR | SII | MRXCOM0000200SU Communication Skills Workshop FSD | | | | | | |



Enclosure ( )

| GS-1910-07 Target 09 Program Hours Breakdown | |
|---|---|
| Formal Classroom | 502.5 |
| Organizational Orientation | 32 |
| Formal Briefings | 11 |
| Computer Based Training | 79 |
| Self-Study | 24 |
| Traditional On The Job Training | 1269 |
| Total Program Hours | 1915.5 |

**NOTE:** Items 21.1 and 21.2 are mandatory requirements. Items 21.3thru 21.8 are available and the Trainee must select three. The Total Hours are based on the trainee selecting 21.9 (8 Hrs).

**NOTE:** The GS-07 Target GS-09 is an 18 month program as identified in the MOA, paragraph 8.1.4.1

**Verification of Program Completion:**

Upon completion of this phase of the program, the Trainee and Supervisor sign the certification statements below verifying the requirements outlined in this FTP have been accomplished then forward to WR-ALC/OBH for inclusion into the employee's records.

I certify that I have received a minimum of____hours of OJT, work experience and classroom training IAW the Training Plan and the Program.

____________________ Trainee Signature & Date

____________________ Supervisor Signature & Date





| Name: | FTP: GS-1910-09 Target -11 | | | | | Dates | | | Initials | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Knowledge, Skills, & Abilities | A | B | C | D | Source/Provider | Schd | Start | Comp | Trnee | Trner | Supv |
| **3. PLAN, ORGANIZE, AND EXECUTE WORK ASSIGNMENTS** | | | | | | | | | | | |
| 3.1. Knowledge and Understanding of Position Responsibilities (Core Doc) | 1 | B | OO | TTI | Supervisor Only | | | | | | |
| 3.2 Know and Understand How Duties Are Manifested for Specific Position | 1 | B | OO | TTI | Supervisor Only | | | | | | |
| **5. SAFETY** | | | | | | | | | | | |
| 5.1. Knowledge and Understanding of Occupational Safety and Health Standards (OSHA) for General Industry | 32 | C | CR | CE | OTI511 Occupational Safety and Health Standards for General Industry Ga. Tech. | | | | | | |
| 5.2. Knowledge and Understanding of OSHA Guide to Industrial Hygiene | 32 | C | CR | CE | OTI521 OSHA Guide to Industrial Hygiene Ga. Tech | | | | | | |
| 5.3. Knowledge and Understanding of Machinery and Machine Guarding Standards | 32 | C | CR | CE | OTI2045 Machinery and Machine Guarding Standards Ga. Tech. | | | | | | |
| 5.4. Knowledge and Understanding of Lean and Safe: Safety Integrated Process | 24 | B | CR | CE | EST7015 Lean and Safe: Safely Integrated Process Ga. Tech. | | | | | | |
| 5.5. Knowledge and Understanding of the Principles of Ergonomics | 32 | B | CR | CE | OTI2255 Principles of Ergonomics Ga. Tech | | | | | | |
| 5.6. Knowledge and Understanding of Accident Prevention | 8 | B | CR | CE | OTI7505 Introduction to Accident Prevention Ga. Tech | | | | | | |
| 5.7. Knowledge and Understanding of Process Safety Management- Process Hazzard Analysis | 27.5 | C | CR | CE | EST7126 Process Safety Management-Process Hazzard Analysis Ga. Tech. | | | | | | |

| Name: | FTP: GS-1910-09 Target 11 | | | | | Dates | | | Initials | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Knowledge, Skills, & Abilities | A | B | C | D | Source/Provider | Schd | Start | Comp | Trnee | Trner | Supv |
| 5.8. Knowledge and Understanding of Theories of Accident Causation | 14 | C | CR | CE | EST7127 Modern Theories in Accident Causation Ga. Tech | | | | | | |
| **6. COMPUTER SYSTEMS SOFTWARE** | | | | | | | | | | | |
| 6.1. Knowledge and Understanding of Management Internal Control Tool Set (MICT) | 4 | A | CB | TTI | https://mict.us.af.mil/Guides.aspx | | | | | | |
| 6.1.1. Download Required Checklist From MICT | 1 | 3c | OJT | PD | QAX Chief or Designee | | | | | | |
| 6.1.2. Review Assessments in MICT to Verify Completion | 1 | 3c | OJT | PD | QAX Chief or Designee | | | | | | |
| 6.1.3. Review and Evaluate MICT Inputs | 16 | 3c | OJT | PD | QAX Chief or Designee | | | | | | |
| 6.2. Export MICT Assessment Data to Excel | 1 | 3c | OJT | PD | QAX Chief or Designee | | | | | | |
| 6.2.1. Using Spreadsheet, Obtain Descriptive Statistic Using Formulae (Regression Coefficient, Estimated Standard Deviation, Measures of Central Tendency, Standard Errors for Two-Dimensional Data, Linear Regressions) | 16 | 3c | OJT | PD | QAX Chief or Designee | | | | | | |
| 6.2.2. Create Bar Column, Stacked Bar Column, Pie, Line, Scatter Plot, Donut, and Cumulative Graphs Using Quality Data | 240 | 3c | OJT | PD | QAX Chief or Designee | | | | | | |
| 6.3. Knowledge and Understanding of Joint Deficiency Reporting System (JDRS) | 2 | B | FB | TTI | DRI&R 101 Deficiency Report Investigation and Reporting | | | | | | |
| 6.4. Knowledge and Understanding of Originating Point Roles in JDRS | 8 | B | FB | TTI | JDRS Part 1-5 Originating Deficiency Reports | | | | | | |
| 6.5. Knowledge and Understanding of Root Cause Application in JDRS | 4 | B | FB | TTI | JDRS Parts 1 & 2 Root Cause Analysis | | | | | | |
| 6.6. Knowledge and Understanding of Support Point Role in JDRS | 4 | B | FB | TTI | JDRS Parts 1-4 Support Point Investigation Duties | | | | | | |





| Name: | FTP: GS-1910-09 Target 11 | | | | | Dates | | | Initials | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Knowledge, Skills, & Abilities | A | B | C | D | Source/Provider | Schd | Start | Comp | Trnee | Trner | Supv |
| **7. PUBLICATIONS** | | | | | | | | | | | |
| 7.1. Review MXG and ALC Quality Assurance Operational Instruction | 2 | A | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| 7.2. Review MXG/ALC AFSC Checklist | 2 | A | OJT | PD | Supervisor/Lead/QAS SME | | | | | | |
| **8. PROCESS MANAGEMENT AND IMPROVEMENT** | | | | | | | | | | | |
| 8.1. Knowledge and Understanding of Quality Standards and ISO9001 | 45 | C | CR | CE WT | METR 1101 Introduction to Quality Standards and ISO9001 CGTC | | | | | | |
| 8.2. Knowledge and Understanding of Aerospace Quality Standards | 8 | C | CR | CE | IAT9100 Introduction to Aerospace Quality Standards Performance Review Institute | | | | | | |
| 8.3. Knowledge and Understanding of AS9100 Internal Auditing | 25 | B | CR | CE | IAT9101 AS9100 Internal Auditing American Society for Quality (ASQ) | | | | | | |
| 8.3.1. Knowledge and Understanding of AS9100C Internal Auditing within Aircraft Maintenance Depot | 6 | B | FB | TTI | MRNMAO9900282BR Internal Auditing to AS9100C QAX Chief | | | | | | |
| 8.3.2. Knowledge and Understanding of Process Effectiveness Assessment Rating (PEAR) | 6 | B | FB | TTI | MRNMAO9900281BR Developing AS9100 Performance Effectiveness Assessment Ratings QAX Chief or Designee | | | | | | |
| 8.3.2.1. Conduct a Process Effectiveness Assessment Rating | 24 | 2b | OJT | PD | QAX Chief or Designee | | | | | | |
| 8.3.3. Evaluate the Appropriate Squadron or Group AS9100 Checklist | 80 | 2b | OJT | PD | QAX Chief or Designee | | | | | | |
| 8.4. Knowledge and Understanding of Auditing for Improvement | 13 | B | CR | CE | QA Auditing for Improvement ASQ | | | | | | |
| 8.5. Knowledge and Understanding of ASQ Root Cause Analysis | 20 | C | CR | CE | RCA ASQ Root Cause Analysis ASQ | | | | | | |
| 8.6. Knowledge and Understanding of ASQ Fish Bone Diagrams | 1 | B | CB | CE | FDASQ ASQ Fishbone Diagrams ASQ | | | | | | |



Enclosure ( )

| Name: | | | FTP: GS-1910-09 Target 11 | | | Dates | | | Initials | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Knowledge, Skills, & Abilities | A | B | C | D | Source/Provider | Schd | Start | Comp | Trnee | Trner | Supv |
| 8.7. Knowledge and Understanding of ASQ Error Proofing | 1 | B | CB | CE | EPTQG<br>ASQ Error Proofing<br>ASQ | | | | | | |
| 8.8. Knowledge and Understanding of Human Performance: Understanding Human Error | 21 | C | CR | CE | EST7124<br>Human Performance Understanding Human Error<br>Ga. Tech | | | | | | |
| 8.9. Knowledge and Understanding of ASQ Mechanical Failure Modes and Effects Analysis | 32 | C | CR | CE | FEMA01FHE<br>ASQ Failure Modes and Effects Analysis<br>ASQ | | | | | | |
| 8.10. Knowledge and Understanding of ASQ Process Failure Modes and Effects Analysis | 16 | C | CR | CE | FMEA<br>ASQ Process Failure Modes and Effects Analysis<br>ASQ | | | | | | |
| 8.11. Knowledge and Understanding of "*Managing Maintenance Error*" by James Reason and Alan Hobbs | 16 | B | SS | WT | Supervisor EIMC | | | | | | |
| **9. EFFECTIVE COMMUNICATIONS** | | | | | | | | | | | |
| 9.1. Develop a Talking Paper on an Assigned Topic | 12 | 3c | OJT | PD | GS-13 Quality Chief Only | | | | | | |
| 9.2. Build and Present Power Point Slide Set (15-30 Minutes) on an Assigned Topic | 12 | 3c | OJT | PD | GS-13 Quality Chief Only | | | | | | |
| 9.3. Knowledge and Understanding of Presenting Data and Information | 8 | C | WS | TTI | Presenting Data and Information<br>Edward Tufte | | | | | | |
| **10. DATA ANALYSIS AND VISUALIZATION** | | | | | | | | | | | |
| 10.1. Knowledge and Understanding of Quality Control and Statistics | 45 | C | CR | CE WT | METR1141<br>Quality Control and Statistics<br>CGTC | | | | | | |
| 10.1. Knowledge and Understanding of Basic Descriptive and Inferential Statistics (Minimum Grade of C) | 45 | C | CR | CE WT | MATH1127<br>Introduction to Statistics<br>CGTC | | | | | | |
| 10.2. Knowledge and Understanding of Sampling IAW ANSI ASQ Z1.4 | 2 | B | FB | CE | MRXMA0999002SBR<br>Developing & Using Attribute-Based<br>Supervisor Lead QAS | | | | | | |





| Name: | | | FTP: GS-1910-09 Target 11 | | | Date | | | Initials | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Knowledge, Skills, & Abilities | A | B | C | D | Source/Provider | Schd | Start | Comp | Trnee | Trner | Supv |
| 10.2.1. Determine Sample Size for Inspection IAW ANSI ASQ Z1.4 | 2 | 3c | OJT | PD | QAI QAX Chief or Designee | | | | | | |
| **11. QUALITY ASSURANCE GENERAL** | | | | | | | | | | | |
| 11.1. Knowledge and Understanding of Complex Inspection Team Basics | 2 | B | FB | TTI | QAI Chief or Designee | | | | | | |
| 11.2. Link Deficiencies to Air Force Inspection System (AFIS) Major Graded Area | 8 | 2b | OJT | PD | QAI Chief or Designee | | | | | | |
| 11.3. Knowledge and Understanding of Changes to ISO9100 | 24 | C | CR | CE WT | QUAL1122P<br>Changes to Your ISO 9001 System<br>Ga. Tech | | | | | | |
| **12. INSPECTION AND INVESTIGATION** | | | | | | | | | | | |
| 12.1. Conduct Process Audits and Report Writing | 160 | 3c | OJT | TTI | Group QA Chief | | | | | | |
| 12.2. Conduct Investigation for Customer Reported Deficiency (Product Quality Deficiency Report, PQDR) Outside Assigned MSG | 160 | 3c | OJT | TTI | Group QA Chief | | | | | | |
| 12.2.1 Determine Validity of PQDR * Time Blocked in Task 12.2 | * | 3c | OJT | TTI | Group QA Chief | | | | | | |
| 12.2.2. Enter PQDR Response into JDRS * Time Blocked in Task 12.2 | * | 3c | OJT | TTI | Group QA Chief | | | | | | |
| 12.2.3. Verify and Validate PQDR Corrective Actions * Time Blocked in Task 12.2 | * | 3c | OJT | TTI | Group QA Chief | | | | | | |
| 12.3. Conduct Investigation for Customer Reported Deficiency (Acceptance Inspection Deficiency Report, AIDR) Outside Assigned MXS | 160 | 3c | OJT | PD | Group QA Chief | | | | | | |
| 12.3.1. Determine Validity of AIDR * Time Blocked in Task 12.3. | * | 3c | OJT | TTI | Group QA Chief | | | | | | |
| 12.3.2. Enter AIDR Responses into JDRS * Time Blocked in Task 12.3. | * | 3c | OJT | TTI | Group QA Chief | | | | | | |
| 12.3.3. Verify and Validate AIDR Corrective Actions * Time Blocked in Task 12.3 | * | 3c | OJT | TTI | Group QA Chief | | | | | | |
| 12.4. Augment Compliance Inspection Team (QAI) in Assigned MXG Executing MICT Checklist | 160 | 2b | OJT | PD | QAI Chief or Designee | | | | | | |

| Name: | FTP: GS-1910-09 Target 11 | | | | | Date | | | Initials | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Knowledge, Skills, & Abilities | A | B | C | D | Source/Provider | Schd | Start | Comp | Trner | Trner | Sups |
| 12.5. Augment Compliance Inspection Team (QAI) Outside Assigned MXG Executing MICT Checklist | 160 | 2b | OJT | PD | QAI Chief or Designee | | | | | | |
| 12.6. Write Findings for Inspector General Report Based on MICT Checklist and or Functional Areas | 40 | 3c | OJT | PD | QAI Chief or Designee | | | | | | |
| 13. ACQUISITION AND CONTRACTING | | | | | | | | | | | |
| 13.1. Knowledge and Understanding of Defense Acquisition Process | 34 | C | CB | CEWT | ACQ203 Intermediate Systems Acquisition, Part B Defense Acq Univ | | | | | | |
| 13.2. Knowledge and Understanding of Quality Role in Defense Acquisition Process, Part A | 12 | C | CB | CEWT | PQM201A Intermediate Production Quality and Manufacturing, Part A Defense Acq Univ | | | | | | |
| 13.3. Knowledge and Understanding of Quality Role in Defense Acquisition Process, Part B | 35 | C | CB | CEWT | PQM201B Intermediate Production Quality and Manufacturing, Part B Defense Acq Univ | | | | | | |
| 13.4. Knowledge and Understanding of Writing Commercial Item Descriptions | 7 | C | CB | CEWT | PQM203 Preparation of Commercial Item Description for Engineering and Technical Personnel Defense Acq Univ | | | | | | |
| 13.5. Knowledge and Understanding of Configuration Management | 18 | C | CB | CEWT | LOG204 Configuration Management Defense Acq Univ | | | | | | |

Enclosure 7





| GS-1910-07 Target 09 Program Hours Breakdown | |
|---|---|
| Formal Classroom | 495.5 |
| Organizational Orientation | 2 |
| Formal Briefings | 34 |
| Computer Based Training | 112 |
| Self-Study | 16 |
| Traditional On The Job Training | 1257 |
| Total Program Hours | 1916.5 |
| | |
| **NOTE:** The GS-09 Target GS-11 is an 18 month program as identified in the MOA, paragraph 8.1.4.1.1 | |

**Verification of Program Completion:**

Upon completion of this phase of the program, the Trainee and Supervisor sign the certification statements below verifying the requirements outlined in this FTP have been accomplished then forward to WR-ALC/OBH for inclusion into the employee's records.

I certify that I have received a minimum of____hours of OJT, work experience and classroom training IAW the Training Plan and the Program.

Trainee Signature & Date ______________________ Supervisor Signature & Date ______________________

13100
AIR-00
1 Sep 17

MEMORANDUM

From: Commander, Naval Air Systems Command
To: Commandant of the Marine Corps
Chief of Naval Operations

Subj: C/KC-130T PROPELLER REDSTRIPE

1. Today, I am grounding the C/KC-130T aircraft due to results of engineering investigations associated with the 54H60-111 propeller blades. An audit of depot maintenance processes revealed a lack of technical compliance during overhaul/rebuild of 54H60-111 propeller blades that, left uncorrected, could lead to material failure of in-service assets.

2. A Propeller Bulletin will be issued on 2 September 2017 directing Fleet activities to inspect all propellers and remove from service any serial numbers identified in the bulletin. This includes supply assets. Initial review of logbooks indicates approximately 20 propeller assemblies across all Navy/Marine Corps aircraft will be unaffected by this bulletin.

3. NAVAIR Logistics is currently assessing supply posture and product support constraints while determining repair capacity and turnaround time for propellers and blades, as well researching alternate overhaul and repair activities to expand capacity. Additionally, NAVAIR Propeller Integrated Product Team (IPT) is in process of recertifying technical compliance of existing overhaul activity.

4. I have notified the Air Force Airworthiness Authority of these actions. We have also advised our Foreign Military Sales partners of this issue through PMA-207.

5. I will provide an update on these actions by 08 September 2017.

P. A. GROSKLAGS

Copy to:
SECNAV
ASN (RD&A)
CNO (N88, N8, N3/N5)
HQMC (A, APW, ASL)
4TH MAW
CNAFR
CNATRA

# USMC JAGMAN

**Colonel [redacted]**
**4th Marine Air Wing/Rep**
**MAG-49/Deputy Commander**

**Colonel [redacted]**
**4th Marine Air Wing/JAG**

**Lieutenant Colonel [redacted]**
**JAG Lead Investigator**

**Major [redacted]**
**JAG Investigator**

**Major [redacted]**
**JAG Investigator**

**1st Lieutenant [redacted]**
**Data Analyst**

**GySgt [redacted]**
**Data Analyst**

**Visit to**

**Warner Robins Air Logistics Complex (WR-ALC)**

**26 February - 1 March 2018**

Enclosure (      )

## ***OVERVIEW INFORMATION***

**Purpose:** To understand the C-130 prop MRO process, to include organizational structures, process controls, quality assurance, etc.

## ***LODGING***

*Pine Oaks Lodge*
*Bldg. 557 Club Dr. Warner Robins, GA 31098*
***Tel. 478-926-2100 ($69/night); DSN 468-2100***

## ***Weather***

| LOCATION | DATE | CONDITION | | TEMP |
|---|---|---|---|---|
| Robins AFB | Mon/26 Feb | | Showers | 69/52 |
| Robins AFB | Tue/27 Feb | | Partly Cloudy | 71/51 |
| Robins AFB | Wed/28 Feb | | Showers | 70/59 |
| Robins AFB | Thur/1 Mar | | Showers | 73/57 |

## SCHEDULE

**Robins AFB, GA**
**Mon, 26 Feb18**
**DRESS:** Travel Attire

**COMM AIR ATL**

**Arrive Robins AFB GA**
Pine Oaks Lodge
Bldg. 557 Club Dr. Warner Robins, GA 31098
COMM (478) 926-2100

*Evening at Leisure*

**Robins AFB, GA**
**Tues, 27 Feb 18**
**DRESS:** ABU

**0820** **Depart Pine Oaks Lodging for Bldg 215, HQ WR-ALC**
**Mode:** Rental

**0830** **Arrive Bldg 215, HQ WR-ALC; Proceed to WR-ALC/CC Office**
**Met by:** Col [redacted] WR-ALC/CR
Reserved parking in front of Bldg 215
**0830-0900: Office call with Brig Gen John Kubinec, WR-ALC/CC**
**Attendees:**
[redacted] MAW/Rep/MAG-49/CD)
[redacted] 4 MAW/JAG)
[redacted] (JAG/Lead Investigator)
[redacted] 78 ABW/JA)
[redacted] -ALC/CR)

**0900** **Proceed to WR-ALC CC Conference Room**
**Mode:** Walk

**0900-1000: USAF/MAJCOM/Centers/ALC's/Group Organizational Structure, Roles and Missions**
**Briefed by:** Col [redacted] (WR-ALC/CR)
**Attendees:**
[redacted] MAW/Rep/MAG-49/CD)
[redacted] MAW/JAG)
[redacted] JAG/Lead Investigator)
[redacted] JAG/Investigator)
[redacted] JAG/Investigator)
[redacted] ata Analyst)
[redacted], (Data Analyst)
[redacted] 8 ABW/JA)
[redacted] 2 CMXG/CL)
[redacted] (WR-ALC/QA)
[redacted] LC/TD)
[redacted] A/Distribution/CL)
[redacted] -ALC/QASC)

**1000-1100: IRT/C-130 Program Office Organizational Structure, Roles and Missions/Relationship between C-130 Program Office, MRO Activity, Tech Data and WCDs**
**Briefed by:** Mr. [redacted] Chief Engineer, C-130 Hercules Division [redacted]
**Attendees:**
[redacted] MAW/Rep/MAG-49/CD)
[redacted] MAW/JAG)
[redacted] (JAG/Lead Investigator)
[redacted] (JAG/Investigator)
[redacted] JAG/Investigator)
[redacted] ata Analyst)
[redacted], (Data Analyst)
[redacted] 8 ABW/JA)
[redacted] -ALC/CR)
[redacted] 2 CMXG/CL)
[redacted] (WR-ALC/QA)
[redacted] LC/TD)
[redacted] A/Distribution/CL)
[redacted] -ALC/QASC)

*Courtesy Break if Needed*

**1100-1145: Quality Assurance (QA) Roles and Responsibilities**
**Briefed by:** Mr. [redacted] (WR-ALC/QA)
**Attendees:**
[redacted] (4 MAW/Rep/MAG-49/CD)
[redacted] (4 MAW/JAG)
[redacted], (JAG/Lead Investigator)
[redacted], (JAG/Investigator)
[redacted], (JAG/Investigator)
[redacted] (Data Analyst)
[redacted] ez, (Data Analyst)
[redacted] (78 ABW/JA)
[redacted] R-ALC/CR)
[redacted] 402 CMXG/CL)
[redacted] -ALC/TD)
[redacted] DLA/Distribution/CL)
[redacted] R-ALC/QASC)

1115 *DV surrey arrives at Bldg 215*

**1145** **Depart for Base Restaurant, Bldg 177**
**Mode:** DV Surrey

| DV Surrey |
| --- |
| (Driver: TBD) |
| [redacted] |
| PAX: 9 |

**1150** **Arrive Base Restaurant, Bldg 177**

**1155** **Lunch – Go Through the Line**

**1240** **Depart for Bldg 140, 402d Commodities Maintenance Group**
**Mode:** DV surrey

**1245** **Arrive Bldg 140, 402d Commodities Maintenance Group; Proceed to CMXG Lean Conference Room, Door 50**
**Met by:** Mr. [redacted]

**1250-1500: Process Steps 1-5**
**1- Blade Tear Down, Bushing and Plug Removal, Cleaning**
**2- Glass Bead Blast Taper Bore**
**3- Caustic Soda Etch**
**4- Taper Bore Inspection – Borescope**
**5- Taper Bore, Screw Holes, Drive Pin Hole Inspection – Fluorescent Penetrant**
**Briefed by: 402 CMXG Leadership Team:** [redacted]
**Attendees:**
[redacted]MAW/Rep/MAG-49/CD)
[redacted]MAW/JAG)
[redacted]AG/Lead Investigator)
[redacted]AG/Investigator)
[redacted]AG/Investigator)
[redacted]ta Analyst)
[redacted] (Data Analyst)
[redacted]LC/CR)
[redacted]WR-ALC/QA)
[redacted]AFLCMC/WLN)
[redacted]ALC/QASC)

**1515-1615: Q&A Discussion**
**Attendees:**
[redacted]MAW/Rep/MAG-49/CD)
MAW/JAG)
AG/Lead Investigator)
AG/Investigator)
AG/Investigator)
ta Analyst)
(Data Analyst)
WR-ALC/QA)
C-130 SPO Engineer, (AFLCMC/WLN)
402 CMXG Leadership Team, as needed
[redacted] (WR-ALC/QASC)

*Note:* [redacted] *402 CMXG Leadership Team, C-130 SPO Engineer, and Mr.* [redacted] *depart Lean Conference Room*

**1615-1700: JAGMAN Team Wrap-up**
**Attendees:**
[redacted] 4 MAW/Rep/MAG-49/CD)
(4 MAW/JAG)
, (JAG/Lead Investigator)
, (JAG/Investigator)
(JAG/Investigator)
Data Analyst)
[redacted] (Data Analyst)

| DV Surrey (Driver: TBD) |
|---|
| [redacted] |
| PAX: 9 |

**1700** **Depart for Bldg 215, HQ WR-ALC**
**Mode:** DV Surrey

**1705** **Arrive Bldg 215, HQ WR-ALC**

**1710** **Depart for Bldg 557, Pine Oaks Lodging**
**Mode:** Rental

*Evening at Leisure*

**Robins AFB, GA**
**Wed, 28 Feb 18**
**DRESS:** ABU

**0750** **Depart Pine Oaks Lodging for Bldg 140, 402 CMXG**
**Mode:** Rental

*0750* [redacted] *arrive Bldg 140 via POVs*

**0800** **Arrive Bldg 140, 402 CMXG, Lean Conference Room, Door 50**
**Met by:** Co[redacted] (WR-ALC/CR)
Reserved parking in front of Bldg 140

**0805** **Morning Discussions as needed**
[redacted] MAW/Rep/MAG-49/CD)
[redacted] MAW/JAG)
[redacted] JAG/Lead Investigator)
[redacted] JAG/Investigator)
[redacted] JAG/Investigator)
[redacted] ata Analyst)
[redacted], (Data Analyst)
[redacted] ALC/CR)
[redacted] (WR-ALC/QA)
C-130 SPO Engineer, (AFLCMC/WLN)
402 CMXG Leadership Team
Mr. [redacted] (WR-ALC/QASC)

**0830-1200: Process Steps 6-15**
**6- Taper Bore Back-up Inspection – Eddy Current**
**7- Meandering Winding Magnetometry**
**8- Taper Bore Ream**
**9- Beveled Thrust Ring Grinding**
**10- Thrust Ring Inspection – Mag Particle**
**11- Butt Face Cut**
**12- Cold Rolling Retention Fillet**
**13- Air Foil Shot Peen**
**14- Airfoil Grit Blast**
**15- Low Plasticity Burnishing – Taper Bore**

**Briefed by: 402 CMXG Leadership Team:** [redacted] (402 CMXG/EN), [redacted] (572 CMXS/CL), [redacted] (571 CMMXS), and [redacted] (572 CMMXS)

**Attendees:**

[redacted] MAW/Rep/MAG-49/CD)
[redacted] MAW/JAG)
[redacted] JAG/Lead Investigator)
[redacted] JAG/Investigator)
[redacted] AG/Investigator)
[redacted] ta Analyst)
[redacted] (Data Analyst)
[redacted] LC/CR)
[redacted] WR-ALC/QA)
[redacted] AFLCMC/WLN)
[redacted] ALC/QASC)

1200 **Depart for Base Restaurant, Bldg 177**
**Mode:** Rental/POV

1205 **Arrive Bldg 177, Base Restaurant**

1210 **Lunch – Go Through the Line**

1255 **Depart for Bldg 140, 402 CMXG**
**Mode:** Rental/POV

1300 **Arrive Bldg 140, 402 CMXG, Lean Conference Room, Door 50**
**Met by:** Col [redacted] (WR-ALC/CR)
Reserved parking in front of Bldg 140

**1305-1515: Process Steps 16-25**
**16- Chromic Acid Anodize**
**17- Perma Treat Taper Bore**
**18- Foam Application**
**19- Fairing Rubber Goods, Heater Installation**
**20- Balancing**
**21- Taper Bore Bushing Fit Check**
**22- Bushing Installation – Wet**
**23- Final Build Up/Balance Test**
**24- Disassembly**
**25- Application of Preservative/Packaging**

**Briefed by: 402 CMXG Leadership Team:** [redacted] (402 CMXG/EN), [redacted] (572 CMXS/CL), [redacted] (571 CMMXS), and [redacted] (572 CMMXS)

**Attendees:**

[redacted] MAW/Rep/MAG-49/CD)
[redacted] MAW/JAG)
[redacted] JAG/Lead Investigator)
[redacted] JAG/Investigator)
[redacted] JAG/Investigator)
[redacted] ata Analyst)
[redacted], (Data Analyst)
[redacted] (WR-ALC/QA)
[redacted] A/Distribution/CL)
[redacted] (AFLCMC/WLN)
[redacted] -ALC/QASC)

**1515-1615: Q&A Discussion**
**Attendees:**

[redacted] MAW/Rep/MAG-49/CD)
[redacted] MAW/JAG)
[redacted] JAG/Lead Investigator)
[redacted] JAG/Investigator)
[redacted] Data Analyst)
[redacted] ata Analyst)
[redacted] ALC/CR)
[redacted] (WR-ALC/QA)
[redacted] p Team
[redacted] A/Distribution/CL)
[redacted] (AFLCMC/WLN)
[redacted] -ALC/QASC)

Note: *Col* [redacted] *402 CMXG Leadership Team, Mr.* [redacted] *C-130 SPO Engineer, and Mr.* [redacted] *depart Lean Conference Room*

**1615-1700: JAGMAN Team Wrap-up**
**Attendees:**

[redacted] MAW/Rep/MAG-49/CD)
[redacted] 4 MAW/JAG)
[redacted] (JAG/Lead Investigator)
[redacted] (JAG/Investigator)

Maj [redacted] (Data Analyst)
1LT [redacted] (Data Analyst)

**1710** **Depart for Bldg 557, Pine Oaks Lodging**
**Mode:** Rental

*Evening at Leisure*

**Robins AFB, GA**
**Thur, 1 Mar 18**
**DRESS:** ABU

**0750** **Depart Pine Oaks Lodging for Bldg 140, 402 CMXG**
**Mode:** Rental

*0750* *Col [redacted] and Mr. [redacted] arriveBldg 140 via POVs*

**0800** **Arrive Bldg 140, 402 CMXG, Lean Conference Room, Door 50**
**Met by:** Col [redacted] (WR-ALC/CR)
Reserved parking in front of Bldg 140

**0805-1145: Wrap-up, Follow-on Q&A**
**Attendees:**
[redacted]AW/Rep/MAG-49/CD)
[redacted]MAW/JAG)
[redacted]AG/Lead Investigator)
[redacted]AG/Investigator)
[redacted]ata Analyst)
[redacted]ta Analyst)
[redacted] (JAG Investigator)
[redacted]WR-ALC/QA)
[redacted] Team
[redacted]A/Distribution/CL)
[redacted]AFLCMC/WLN)
[redacted]ALC/QASC)
Others TBD

**1145** **Depart for Bldg 215, HQ WR-ALC**
**Mode:** DV Surrey

**1150** **Arrive Bldg 215, HQ WR-ALC, WR-ALC/CC Conference Room**

**1150-1200: Comfort Break**

**1200-1230: Wrap-Up, WR-ALC/CC Conference Room**
**Attendees:**
[redacted]c, (WR-ALC/CC)
[redacted]AW/Rep/MAG-49/CD)
[redacted]MAW/JAG)
[redacted]AG/Lead Investigator)
[redacted]AG/Investigator)
[redacted]AG/Investigator)
[redacted]ta Analyst)
[redacted] (Data Analyst)
[redacted] ABW/JA)
[redacted]C/CR

**1230** **Depart Bldg 215, HQ WR-ALC**
**Mode:** Rental

**// MISSION COMPLETE //**

## POC INFORMATION

*Robins Cmd Post*
*Robins Base Ops*
*Robins – Airfield Manager*
*Robins Transportation*
*Robins Security Forces Squadron*
*Robins Medical Group*
655 Seventh Street, Bldg 700
Robins AFB, GA 31098

[redacted]

# Warner Robins Air Logistics Complex

## Quality Program Roles, Responsibilities & Execution

Presented By:

(b) (6) [redacted]

Director, Quality Assurance

Warner Robins ALC

27 Feb 18

Version 2

*We Deliver Airpower...Period!*

Enclosure ( )

# Quality Assurance vs. Quality Control



- QA
  - QA is a process that provides adequate confidence that controls are in place to create products that conform to established standards
  - QA is based on random sampling using techniques based on ANSI (American National Standards Institute) methodology

- QC
  - QC is a process where each item is inspected and either accepted or rejected; it is the physical verification that the product conforms to tech data
  - The first level of quality consists of the production technician inspecting and certifying the work was done correctly
  - The second level of quality, used for more critical tasks, is the SSOE inspection and certification by a different production technician

- Air Force regulatory direction is to use QC at the 1st & 2d levels of production (tech & SSOE) and QA/random sampling

# QA Inspections/Assessments and Production Org'n Actions



- QA inspections/assessments of work force & in-process/ completed work is based on random sampling
  - Results communicated daily, weekly, monthly, quarterly and annually to production organizations
  - Production leadership takes action to correct issues (additional training or more focused training, better tooling, tech data or WCD improvement, etc)
  - Inspection/assessment program (Quality Assurance Surveillance Plan, or QASP) is dynamic and adjusts to focus on weak areas
  - QASP adjustment based on inspection results, customer feedback & incidents
- CMXG MSEP/QASP over last 6 years
  - CMXG – 47,906 inspections; pass rate of 90.4% due to 4,599 failed inspections; each failure is considered a quality escape averted
  - Within Prop Shop and Prop Machine Shop – 3,896 inspections; pass rate of 90.1% due to 384 failures
  - Inspections distributed among QVIs, PEs, SIs, MIs and RIs (see backup chart for explanation of types of inspections)
  - Evidence of a rigorous inspection regimen

Enclosure ( )

# Summary



- USAF, including WR-ALC and the 402 CMXG, has a rigorous approach to product/process quality
- Involves both QA staff and production line org'ns
- Based on a hybrid of QA and QC methodology
- Inspection program is dynamic and changes to reflect current issues and challenges
- Differs from Navy approach; not better or worse, just different
- Complemented by tools such as AFTO Form 22, AFMC Form 202 and Deficiency Reports

# Discussion/Questions



Enclosure (   )

UNITED STATES MARINE CORPS
4TH MARINE LOGISTICS GROUP
MARINE FORCES RESERVE
2000 OPELOUSAS AVENUE
NEW ORLEANS, LA 70114

IN REPLY REFER TO:
1040
CG
11 Apr 18

MEMORANDUM FOR THE RECORD

From: JAGMAN Investigating Officer, Lieutenant Colonel [redacted]
To: Y72 JAGMAN Investigation Team

Subj: REVIEW OF WR-ALC VISIT FROM 27 FEBRUARY TO 1 MARCH 2018

1. [redacted] met with WR-ALC on Robins AFB, GA from 27 February 2018 to 1 March 2018.

2. Brigadier General John Kubinec, Commander of WR-ALC, and Colonel [redacted], 78 ABW/JA, both requested that the JAGMAN Investigation Team visit in order to ensure a thorough investigation had been conducted. It was his opinion that previous reports and a one day investigation by the JAGMAN Investigating Officer was not a thorough enough evaluation of the prop re-work facility.

3. Topics of interest covered during the period included:

a. Organizational Structure

b. Relationship with the Organizational Structure, C-130 Program Office, MRO activity, Tech Data and WCDs.

c. Quality Assurance/Quality Control Roles and Responsibilities

d. Propeller Blade overhaul procedures at the 402d Commodities Maintenance Group

4. The team observed that there was, and currently are no protocol or industry standards that ensure work orders accompany their respective blades through the production process. During the investigation, work orders were difficult to find on many occasions. This carefree attitude towards the tracking of these documents and uncertain understanding of where they all are is concerning, especially given the duration this contract has resided at WR-ALC.

5. WR-ALC could not consistently produce associated color paper, designed and implemented by WR-ALC Quality Control, to help artisans differentiate between Air Force, Navy/ USMC and P-3 blades. Due to the fact that this technique was not utilized in all situations it allowed uncertainty to enter the process. If technicians were not carefully reading the work control documents

Enclosure ( )

they could misconstrue the blade process they were required to perform due to the wrong color coding.

6. The blade overhaul process at WR-ALC did not follow a logical, organized, efficient path throughout the facility, which would clearly increase efficiency and reduce the probability that overhaul production steps be missed. It is understand however that WR-ALC is utilizing modified buildings from the WWII era and that their physical layout does optimize the facility constraints that they currently operate in.

7. It is clear from discussions with the senior AF engineer that not all information was shared in reference to the research done into P2B4. It is also clear that the initial Navy FST audit at WR-ALC in August 2017 was informal and that the nature of the visit and severity of matter was not addressed to senior WR-ALC personnel. This resulted in misunderstandings of certain technical details. Though the Navy FST has had an ongoing presence at WR-ALC since the Independent Review Team was established, it appears their engagement with their AF counterparts could be more productive and forthcoming.

8. The AF maintenance structure is dynamically different than the Navy structure, though at their core they do attempt to reach the same end state. However, it would appear that the details of the structure differences has lead to confusion for expectations and requirements of key qualified maintenance personnel. It is recommended that a thorough review be conducted by NAVAIR to ensure that no such misunderstandings exist as both AF and Navy work towards a joint publication. A joint publication is only effective if all parties understand the responsibilities and requirements of the personnel executing their prescribed functions. It is also recommended that NAVAIR provide extra scrutiny and onsite supervision when this new joint publication is implemented.

9. It is noted that the Independent Review Team appears to be working towards a unified joint publication that will eliminate disparities between different branches of service. The unique requirements in each publication for different branches of service is a critical issue that must be resolved immediately. While this effort is applauded, the overall outcome is still uncertain. There is a lack of a chain of command for this Independent Review Team and thus reporting requirements or final consensus in questionable. This also leaves uncertainty of proper implementation.

10. Navy FST has not outlined a comprehensive evaluation process to ensure once propeller overhaul production begins again that a

quality product is delivered to the fleet. Nor is there sufficient oversight by non WR-ALC personnel to ensure compliance with all policies, procedures and publications. Due to the differences in the maintenance organizational structures between the AF and Navy, specifically quality assurance, the significance of resolving disparities or potential misunderstandings is critical.

11. WR-ALC failed to show significant process improvements that provided corrective solutions for all disparities noted by the Navy FST initial audit in August 2017. This is concerning considering the same procedural and quality control errors that allowed P2B4 and countless other propellers to erroneously enter the fleet could still exist. The lack of organizational level maintenance procedures and effective intermediate level maintenance procedures or requirements to inspect for potential disparities that were erroneously missed at the depot level makes this overwhelmingly critical that these errors are resolved.

12. When asked to explain disparities that existed in 2011 with higher level AF publications specifically the lack of a Chapter 8: Quality Assurance section the JAGMAN team was provided a presentation by a WR-ALC technical publication expert. In 2012 the AF went through a massive restructure of its maintenance commands. This resulted in updates to all levels of technical publications and command structures. Specifically it addressed the issue as stated by senior members of WR-ALC "every Depot facility was unique and had its own self-generated publications to cover the gaps in higher-level publications. This resulted in no standardization across the AF Depot facilities." This 2012 restructure provided specific context for all AF Depot facilities eliminating the requirement of self generated and unique local publications and thus provided a standardization for execution and expectations. However, at the time that P2B4 went through its overhaul in September 2011 this had not occurred yet.

13. WR-ALC senior leadership had no memory or record of USN visits to WR-ALC historically. It was also clear from discussions during our site visit that proper procedures were not utilized to coordinate inspections, audits or visits. Several options are annotated within the DMISA, however it was clear from our visit that only the business branch of WR-ALC, that coordinates reviews of the DMISA contract, had a functional understanding of the contract. This also includes the NAVAIR liaison who is stationed at WR-ALC. There is no history of an official quality audit or quality investigation being conducted by Navy FST personnel to ensure compliance with policies, procedures and publications.

Though the Navy has limited documentation of informal visits since the DMISAs inception in 2002.

(b) (6) [redacted]
Yankee 72
JAGMAN Investigating Officer

WR-ALC QUALITY RANDOM SAMPLE [1] aka RESULTS FROM ENGINEERING INSPECTIONS PERFORMED ON ALL YANKEE 72 PROPELLER BLADES

| | PROPELLER 1 | | | | PROPELLER 2 | | | | PROPELLER 3 | | | | PROPELLER 4 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | BLADE 1 | BLADE 2 | BLADE 3 | BLADE 4 | BLADE 1 | BLADE 2 | BLADE 3 | P2B4 | BLADE 1 | BLADE 2 [3] | BLADE 3 | BLADE 4 | BLADE 1 | BLADE 2 | BLADE 3 | BLADE 4 |
| ANODIZATION LOCATED IN CORROSION | | | | | ANODIZE DOWN INTO CORROSION PITTING September 2011 | | ANODIZE DOWN INTO CORROSION PITTING September 2011 | ANODIZE DOWN INTO CORROSION PITTING & IGC September 2011 | ANODIZE DOWN INTO CORROSION PITTING January 2015 [3] | ANODIZE DOWN INTO CORROSION PITTING Jan. 2015 [3] | ANODIZE DOWN INTO CORROSION PITTING January 2015 [3] | ANODIZE DOWN INTO CORROSION PITTING January 2015 [3] | | | | |
| ACTIVE CORROSION PRESENT | | | | | | ISOLATED CORROSION FOUND September 2011 | ISOLATED CORROSION FOUND September 2011 | ACTIVE CORROSION PRESENT AT LAST OVERHAUL September 2011 | ACTIVE CORROSION PRESENT AT LAST OVERHAUL January 2015 | ACTIVE CORROSION PRESENT AT LAST OVERHAUL January 2015 [3] | ACTIVE CORROSION PRESENT AT LAST OVERHAUL January 2015 | ACTIVE CORROSION PRESENT AT LAST OVERHAUL January 2015 | ISOLATED ACTIVE CORROSION FOUND March 2012 | ISOLATED ACTIVE CORROSION FOUND March 2012 | ISOLATED ACTIVE CORROSION FOUND March 2012 | ISOLATED ACTIVE CORROSION FOUND March 2012 |
| PERMATREAT | | | | | NOT COMPLETE September 2011 | NOT COMPLETE September 2011 | NOT PRESENT September 2011 | NOT PRESENT September 2011 | | *SEE FOOTNOTE 2* | | | NOT ADEQUATE March 2012 | NOT ADEQUATE March 2012 | NOT ADEQUATE March 2012 | NOT ADEQUATE March 2012 |
| BUSHING EPOXY PRIMER | | | | | | NOT ADEQUATE September 2011 | NOT ADEQUATE September 2011 | NOT PRESENT September 2011 | | *SEE FOOTNOTE 2* | | | NOT ADEQUATE March 2012 | NOT ADEQUATE March 2012 | NOT ADEQUATE March 2012 | NOT ADEQUATE March 2012 |
| ANODIZATION | | | LACKED ANY ANODIZATION June 2003 | | | | | | | *SEE FOOTNOTE 2* | | | | | | |

[1] DUE TO THE FACT THAT ALL THE PROPELLERS WERE ALL OVERHAULED AND ASSEMBLED AT WR-ALC, AT VARIOUS TIMES 2003, 2011, ETC. AND THERE IS NO FORMULA USED TO DETERMINE THE DATES OF THESE OVERHAULS, THIS RANDOM SAMPLE CAN BE USED AS A SNAPSHOT TO DETERMINE THE QUALITY OF PRODUCTION AT WR-ACL OVER THE YEARS.

[2] PROPELLER ASSEMBLY 2, BLADE 2 WITH SN N803064A SHOULD HAVE BEEN REMOVED FROM SERVICE BY WR-ALC AT THE LAST OVERHAUL IN 2015. THIS WAS IN VIOLATOIN OF PUBLICATIONS NA03-20-C-4.

[3] FOF 404. CORROSION WAS FOUND IN EVERY BLADE OF PROPELLER 3 AND THE EXISTENCE OF ANODIZE IN THE CORROSION PITS WAS A DIRCT RESULT OF IMPROPER PROCESSING AND FAILURE TO REMOVE THIS CORROSION AT THE MOST RECENT PRPELLER OVERHAUL AT WR-ALC.

Enclosure ( )

**DEPOT MAINTENANCE INTERSERVICE SUPPORT AGREEMENT (DMISA)**
**FOR**
**NAVY C-130 COMPONENTS**

**AGENT'S ACCEPTANCE NUMBER:** WR-ALC03 03ANKE
**(SUPERSEDES NUMBER:** WR-ALC03 03ANKE )

**DMI STUDY NUMBER:**

**PRINCIPAL:** NAVAL INVENTORY CONTROL POINT PHILADELPHIA PA, N00383
PHILADELPHIA,PA-19111-5098

| DATE | SIGNATURE | TITLE/CODE/SYMBOL |
|---|---|---|
| 15 JAN 2009 | | (b) (6) [redacted]<br>NAVICP-PHIL MISO/0341.43/ |

**CO-PRINCIPAL**
**(IF APPLICABLE):**

**AGENT:** USAF AIR LOGISTICS CENTER (MISO) ROBINS AFB GA, FD2060

| DATE | SIGNATURE | TITLE/CODE/SYMBOL |
|---|---|---|
| 15 JAN 2009 | | (b) (6) [redacted]<br>MISO//406 SCMS/GUMA |

**MAINTENANCE DEPOT (ACTIVITY/COMPANY, LOCATION, DODAAC):**
**ORGANIC DOD:** USAF AIR LOGISTICS CENTER WARNER-ROBINS GA,FB2065
**COMMERCIAL/OTHER US GOVERNMENT:**

**DEPOT COMMANDER (OR DESIGNATED REPRESENTATIVE - ORGANIC ACTIVITY ONLY)**

| DATE | SIGNATURE | TITLE/CODE/SYMBOL |
|---|---|---|

**DEFENSE DISTRIBUTION**
**DEPOT (IF APPLICABLE):**

| DATE | SIGNATURE | TITLE/CODE/SYMBOL |
|---|---|---|

## TABLE OF CONTENTS

**SECTION II - MATERIAL SUPPORT:**

DEVIATIONS

FROM

JOINT SERVICE FORMAT

DEPOT MAINTENANCE INTERSERVICE SUPPORT AGREEMENT (DMISA)

AGENT'S ACCEPTANCE NUMBER: WR-ALC03 03ANKE

| DEVIATION NUMBER | AFFECTED PAGE AND PARAGRAPH | AUTHORITY | EFFECTIVE DATE |
|---|---|---|---|

Section I:

Section II:

PERIODIC REVIEW

DEPOT MAINTENANCE INTERSERVICE SUPPORT AGREEMENT (DMISA)

AGENT'S ACCEPTANCE NUMBER: WR-ALC03 03ANKE

THIS IS TO CERTIFY THAT THIS DMISA HAS BEEN REVIEWED BY THE PRINCIPAL, CO-PRINCIPAL (IF APPLICABLE) AND THE AGENT, AND THE FOLLOWING ADDITIONS, DELETIONS,
AND/OR CHANGES HAVE BEEN AGREED TO.

_______ ADD/DELETE NEW ADDRESSES AND CODES
ON PAGES: ____________________

_______ CHANGES IN OFFICE SYMBOL
ON PAGES: ____________________

_______ CHANGES IN EXHIBITS
EXHIBIT NUMBERS: ____________________

_______ ADDITIONAL SPECIFICATIONS
ON PAGES: ____________________

_______ NO CHANGE

_______ AMENDMENT REQUIRED

SIGNED:

PRINCIPAL MISO: ____________________ DATE: __________

(b) (6) [redacted]/NAVICP-P
(PRINTED NAME/OFFICE SYMBOL)

AGENT MISO/MICO:
(IF APPLICABLE) ____________________ DATE: __________

(b) (6) [redacted]/WR-ALC-CMD
(PRINTED NAME/OFFICE SYMBOL)

CHANGE

TO

DEPOT MAINTENANCE INTERSERVICE SUPPORT AGREEMENT (DMISA)

AGENT'S ACCEPTANCE NUMBER: WR-ALC03 03ANKE

| PAGE NUMBER | CHANGE | AUTHORITY | EFFECTIVE DATE |
| --- | --- | --- | --- |

DISTRIBUTION LIST
DEPOT MAINTENANCE INTERSERVICE SUPPORT AGREEMENT (DMISA)
AGENT'S ACCEPTANCE NUMBER WR-ALC03 03ANKE

| ORGANIZATION/CODE/SYMBOL | ADDRESS | COPIES |
|---|---|---|
| **PRINCIPAL:** | | |
| NAVICP-PHIL | COMMANDER<br>NAVAL INVENTORY CONTROL POINT(CODE 0341<br>700 ROBBINS AVE<br>PHILADELPHIA , PA 19111 - 5098 | 3 |
| **AGENT:** | | |
| 402 MXW/OBWB | 420 RICHARD RAY BLVD STE 100<br>ROBINS AFB , GA 31098 - 1640 | 1 |
| 406 SCMG/GUMA | 460 RICHARD RAY BLVD, SUITE 200<br>ROBINS AFB , GA 31098 - 1813 | 3 |
| 572 CMMXS/MXDPA | 460 RICHARD RAY STE 100<br>ROBINS AFB , GA 31098 - 1637 | 1 |
| **OTHER:** | | |
| AFMC/A4BC | HEADQUARTERS<br>AIR FORCE MATERIEL COMMAND<br>4375 CHIDLAW ROAD, ROOM C109<br>WRIGHT-PATTERSON AFB , OH 45433 - 5006 | 1 |
| HQ AFMC/FM | HEADQUARTERS<br>AIR FORCE MATERIEL COMMAND<br>4375 CHIDLAW ROAD, SUITE 6<br>WRIGHT-PATTERSON AFB , OH 45433 - 5006 | 1 |
| JOINT DEPOT MAINTENANCE ANALYSIS GROUP | ATTN: JDMAG-MAU<br>BLDG. 280, DOOR 24<br>4170 HEBBLE CREEK ROAD<br>WRIGHT-PATTERSON AFB , OH 45433 - 5653 | 1 |
| NAVAIR | NAVAIR 6.7.3.2<br>47013 HINKLE CIRCLE BLDG 416<br>PATUXENT RIVER , MD 20670 - 1626 | 1 |

## SECTION I - TERMS OF AGREEMENT

**1.PURPOSE. To provide an agreement for depot maintenance support for Navy C-130 components.**

**2.AUTHORITY. OPNAVINST 4790.14A, AMC-R 750-10, AFI 21-133(I), MCO P4790.10C, DLAD 4151.16.**

**3.EFFECTIVE DATES: 1 Oct 2007 through 30 Sep 2012.**

**4.TERMINATION.**

**4.a.Items in this agreement will be supported by the Agent for the operational life of the equipment. However, if termination is required, the MISO who is initiating termination will notify the other MISO in writing at the earliest possible date, but not later than 180 days prior to the desired termination date.**

**4.b.Immediately upon the initiation of a termination request, the Agent will convene a termination review. The review will consider items cited in paragraph 8 of Section II and the cost and impact on the Agent's/Principal's programs and resources. The Agent's and Principal's financial and termination obligations will be clearly identified and assigned for resolution by them or a higher authority. Termination review will provide for the transfer of these identifiable resources based on mutual agreement between the affected parties. Transfer of resources will be in accordance with existing procedures.**

**4.c.Reductions of programmed requirements which cause the Agent to require personnel reductions or incur substantial cost will be cause for a review using procedures stated in Section I, paragraphs 4a and 4b.**

**5.PERIODIC REVIEW. The agreement will be reviewed at least annually to determine whether it should be continued, modified, or terminated. The periodic review will normally be initiated by the Principal and must be documented by both Agent and Principal utilizing the Periodic Review Certification Sheet. Modifications to an agreement can be initiated by the Principal or Agent and must be signed by both parties to the agreement. The latest date of the modification constitutes the effective date unless some later date is specified. Exhibits which change or update current requirements or cost data do not necessarily require a modification of this DMISA. Mobilization requirements that would affect the agreement will be reviewed**

to establish relative priorities and to determine whether modification of the agreement is necessary (see Section I, paragraph 10b(3)).

**6.COORDINATION REPRESENTATIVES AND RESPONSIBILITIES.**

**6.a.Agent:**

Name [redacted],
Organization and Office Symbol/Code WR-ALC/406 SCMS/GUMA
Address: 460 Richard Ray Blvd, Ste 200, Robins AFB, GA 31098-1813,
Phone No [redacted]

The Agent's representative(s) :

For Requirements and Funding Coordination (801/206) for C130
Name: [redacted]/PMS Buyer
Organization and Office Symbol/Code: WR-ALC/409 SCMS/GUMBB
Address: 460 Richard Ray Blvd, Ste 200, Robins AFB, GA 31098-1813,
Phone Number: [redacted]

For Funding Coordination for C130 (MIPR's)
Name: [redacted]
Organization and Office Symbols: WR-ALC/330 ACSG GFFA
Address: 235 Byron St., 19A, RAFB, Ga., 31098-1640
Fax DSN: [redacted]

For the Depot:
Name:[redacted]
Organization and Office Symbol: WR-ALC MXW/OBWB
Address: 420 Richard Ray Blvd., Suite 100, RAFB, Ga., 31098-1640
Phone: [redacted]

6.a(1)Develop and coordinate with the Principal the specific type and amount of support required.

6.a(2)Issue work orders for the overhaul, repair, or modification of materials.

6.a(3)Report production status to the Principal by the 10th of each month.

6.a(4)Distribute repaired items in accordance with the Principal's instructions.

6.a(5)Coordinate arrangements for add-on items and cost approval by the Principal.

6.a(6)Action Items will be furnished by the Agent as input by the Agent and Principal.

6.a(7)Negotiate mutually agreeable work specifications with the Principal.

6.a(8)Review costs at least semiannually and, based on the results of that review, propose changes for negotiation with the Principal.

6.a(9)Consolidate workloads, where practical.

6.a(10)The agent will only induct assets that are funded. The Agent will notify the Principal within 15 working days of receipt of funding.

6.a(11)Resolve material shortages that disrupt delivery schedules; report to the Principal material shortages causing schedule slippage, pending obsolescence and the anticipated date for receipt of such materials. The Agent's representative will submit electronically Production Delay Reports (PDR) to the appropriate Production Management Specialist (PMS) which will in turn provide this to the Principal.

6.a(12)Ensure that the Principal's requirements are properly reflected in any contract in support of the DMISA.

6.a(12)(a)Provide copies of all solicitations or bids to the Principal.

6.a(12)(b)Provide copies of the contract and all modifications to the Principal.

**6.a(12)(c)Invite the Principal to participate in pre-solicitation meetings, pre-award surveys, and post-award conferences.**

**6.a(12)(d)Invite the Principal to participate as a technical advisor in contract negotiations that will affect the Principal's cost and/or scope of work.**

**6.a(13)Publish the DMISA within 60 days of acceptance. The DMISA is available via IMACS.**

**6.b.Principal:**

**Requirements amd Funding Coordination for C130**

**Name:** [redacted]
**Organization and Office Symbol/Code NAVICP-Phil, 0341.43,**
**Address: 700 Robbins Ave, Philadelphia, PA 19111-5098**
**Phone No** [redacted] **,**
**Email:** [redacted]

**Requirements and Funding Coordination for Billing Inquiries C130**

**Name:** [redacted]
**Organization: NAVICP Philadelphia**
**Address: 700 Robbins Ave, Philadelphia, PA 19111-5098**
**Phone Number:** [redacted]

**6.b(1)Manage input of assets in accordance with the negotiated schedules.**

**6.b(2)Provide disposition instructions for completed items.**

**6.b(3)Interpret policy and technical data for the Agent.**

**6.b(4)Coordinate with the Agent increases and decreases in programmed workloads and provide subsequent revisions to the appropriate DMISA exhibits via IMACS.**

**6.b(5)Negotiate mutually agreeable work specifications with the Agent.**

**6.b(6)Assist the Agent with overcoming material shortages.**

**6.b(7)Develop and coordinate with the Agent the specific type and amount of support required.**

**6.b(8)Prepare the finalized DMISA for signature(s). Forward the signed DMISA to the Agent for signature(s), publication, and distribution.**

**6.b(9)Ensure negotiated programs and revisions are timely and adequately funded to meet production schedules IAW DMISA.**

**6.b.(9)(a)MICAPS: N/A**

**6.b(10)Action Items will be furnished by the Principal as input by the Principal and Agent.**

**6.b(11)Inform the Agent if the work to be performed is related to a Foreign Military Sales (FMS) case; requirements peculiar to FMS cases will be addressed separately in the agreement.**

**6.b.(12)Initially respond within 3 working days to issues affecting production and asset availability (when requested by Agent), having an outlined resolution within 15 working days.**

**6.b.(13)On Exhibit II items agree on the quarterly schedule for each applicable program beginning no later than 1 October and 15 calendar days prior to all other quarters.**

**6.b.(14)Notify the Agent of any MICAP or urgent requirements which will reduce production time normally allotted for repair. This can be mutually agreed upon between the PMS (and scheduler) with documentation through the email system.**

**7.LIAISON REPRESENTATIVE. The Principal may assign a liaison representative on a part-time or full-time basis at the Agent's depot or contract administration office.**

**8.CONTACTS WITH AGENT'S REPAIR FACILITY. All contacts with Agent's repair facility will be initiated through the coordination representatives.**

**9.CONTRACT ADMINISTRATION.** Unless specific waivers are granted by the Agent, the Principal will deal with the Agent on any matter concerning the Agent's contract.

**10.SPECIFIC PROVISIONS.**

**10.a.Support Required.** The Agent shall perform, or have performed, all depot maintenance support required for item(s) specified in appropriate exhibits to this agreement. See Exhibit VIIA.

**10.b.Program Data.** The Agent will be provided the following program data as indicated to assist in planning depot maintenance workloads:

**10.b(1)Immediate Year Requirements.**

**10.b(1)(a)Major Program.** The Principal will provide the Agent with the immediate fiscal year (FY) depot maintenance requirements expressed in units of input or output (specify) per month. Exhibit I reflects these data. As early as practicable, but not later than August 1, the Principal will provide projected requirements for the next FY.

**10.b(1)(b)Minor Program.** The Principal will provide data for field-generated repairable components or minor programs for immediate FY depot maintenance requirements expressed in units of input or output (specify) per quarter. Exhibit II reflects this schedule. Principal will identify line items containing requirements for Agent price out by 1 May for the next fiscal year and out-years. The requirements will be priced no later than 31 August. Funding will be provided quarterly, based on the Principal's projected quarterly requirements, adjusted to reflect current funding levels.

**10.b(1)(c)International Logistics Programs (ILP).** The Principal will provide data for ILP/FMS programs for immediate FY depot maintenance requirements. Exhibit I and Exhibit II reflect this schedule. Projected requirements will be provided as available.

**10.b(2)Projected Requirements.** Concurrent with the immediate FY data, the Principal will provide the Agent with a long-range (five years beyond immediate requirements) estimate of depot maintenance requirements for major programs expressed in annual units of input. Minor programs will be for a minimum of two years and will be expressed in quarterly units of input. The data are reflected in Exhibit III-A or Exhibit III-B. Exhibit III-C may be used by the Principal to identify items which will be added to Exhibits I or II as immediate FY requirements upon the Agent establishing capability.

10.b(3)National Emergency Requirements. Requirements for mobilization planning will be projected by the Principal for the Agent's commitment of capacity and capability. These projections will be included in Exhibit IV instead of negotiating a separate agreement. If a requirement does not exist or a projection cannot be made, a statement to that effect will be included as Exhibit IV.

10.b(4)Special Engineering Support. Engineering support requested by the Principal which is beyond that necessary to perform routine surveillance of the depot maintenance processes and procedures will be identified in Exhibit V. These requirements will be separately funded.

10.b(5)Failure Analysis Reports (FAR), Teardown Deficiency Reports (TDR), and Disassembly Inspection Reports (DIR). FARs, TDRs, and DIRs may be requested at any time by the Principal. However, these actions will be subject to separate funding and defined as part of Exhibit VII-A. These reporting requirements are to be identified in Exhibit X.

10.c.Man-Hour/Flow Time/Cost Estimating.

10.c(1)Cost and man-hour estimates will be developed in accordance with current regulations by the Agent for the Principal for each item to be supported, based on the total units of planned production, type of work, and delivery schedules for the proposed interservice support. Such estimates must include all applicable elements of cost and should, whenever possible, be validated by actual cost records from past repair activity operations or from comparable production data, taking into consideration the differences in workload and other factors. Estimates for a given line item will show the unit direct labor man-hours and cost for the planned production, based on the stabilized rate for the period, which includes direct labor, material, and overhead as prescribed by DoD 7000.14-R, Financial Management Regulation, Volume 11B, chapter 13. Unit cost estimates will, whenever possible, be developed and identified as fixed prices for the FY, based on Exhibit VII. Costs incurred in support of Foreign Military Sale (FMS) will be documented and reported in accordance with policies set forth per the Military Articles and Service List (MASL) and existing Service directives. Cost estimates will be provided to the Principal by the Agent normally not later than 90 calendar days after receipt of the Principal's 1 May requirement identification when history is available.

NOTE: MICAP pricing will be provided within 15 working days of receipt of requirements when there is known history.

10.c(2)Cost of depot maintenance interservice support requiring contractual effort will be estimated by the Agent.

10.c(3)Unserviceable items will normally be processed and shipped serviceable to the Principal within the time specified in Exhibits I and II. Any scheduling in excess of this time will be negotiated with the Principal. It is agreed that the time specified in Exhibits I and II is required, but the Agent will effect a reduced flow time whenever reasonable.

10.c(4)The Principal will review and evaluate these estimates prior to formal negotiation with the Agent. Specific reimbursable costs will be identified in the agreement at the time of formal negotiation.

10.c(5)Exhibits I and II reflect the negotiated cost and man-hour data.

10.c(6)Exhibit V reflects the negotiated cost/man-hour data for special engineering support.

10.d.Work Specifications. The Principal and Agent will negotiate the work specifications. Once the work specification has been agreed to, the Agent will notify the Principal before changing the work specification. Where conditions exist that are peculiar to the Principal (environmental, special equipment, procedures, etc.) and require a change or addition to the work specification, such change(s) will be defined in Exhibit VIIA and identified in Exhibit VIIB. The contents of these special sections will be agreed upon by negotiation and mutual consent before being incorporated into the Agent's work specifications as an added section. When weapon systems or

**major assemblies, such as aircraft or engines, are involved, and a common work specification cannot be developed, the Principal's work specification will be made an addendum to the Agent's work specification. Work specification addenda of this nature will be modified only by the Principal. Implementation of work specifications will be the sole responsibility of the Agent. Deviations from work specifications, such as waivers, engineering change proposals, material substitutions or alternate repair methods, not specifically authorized by the work specification or elsewhere in the DMISA, shall only be permitted after obtaining approval of the Principal.**

**10.d(1)Statement of Work. When the Agent's current work specification does not satisfy the Principals' requirements, a separate section will be mutually developed documenting the Principal's needs and included as Exhibit VIIA. Individual work specification will be developed by the Agent on each system and may be updated as needed.**

**10.d(2)Technical Data. The initial supply of the Principal's engineering directives, forms, and/or publications will be listed in Exhibit VIIB and will be furnished by the Principal prior to the beginning of work. Subsequent requirements will be obtained by the Agent by submitting requisitions to the appropriate source in accordance with AR 25-36, AFJI 21-301, OPNAVINST 5600.22, MCO P5215.17B, MDO P5115.17B, DLAR 4151.9, Interservicing of Technical Manuals and Related Technology. Direct liaison is authorized for the exchange of information relative to alterations and engineering change proposals as they occur; however, exchange of all approved engineering modifications and product improvement information between the Agent and Principal is the responsibility of the coordination representatives, as specified in Section I, paragraphs 6a and b. Technical Order deficiencies will be reported utilizing AFTO Form 22 IAW T.O. 00-5-7. This form is located on the Web at http://www.e-publishing.af.mil (Click on electronic forms; AF Technical Order) upon completion, forward the AFTO form 22 to ____________.**

**10.d(3)Bill of Materials/Material Requirements List. The list of materials required to support work specifications is shown as Exhibit VI.**

**10.d(4)Configuration Management. When configuration management across Service lines applies, an agreement will be negotiated between the Principal and the Agent and furnished as Exhibit**

IX. The Agent will not make any configuration changes to the Principal's equipment without prior approval of the Principal. The Principal and Agent will negotiate desired configuration change costs.

10.e.Quality Assurance.

10.e(1)For work accomplished in a government-owned and government-operated facility, the Agent will be responsible for maintaining an adequate quality assurance program. The Agent's established methods and procedures, ISO 9002/3 or ASQC 9002/3, or those specified in Exhibit VIIC will be used.

10.e(2)For work accomplished under contract, the Agent will ensure the contractor maintains a quality assurance system in accordance with the provision of ISO 9002/3 or ASQC 9002/3 and delivers material of acceptable quality in accordance with the terms of the applicable contracts and specifications. The Principal will deal with the Agent in all quality and contract management matters.

10.e(3)For organic or contractual work, the Agent or the Principal may require negotiated special examinations of the quality system by a team of quality assurance personnel. The need for special examination will be determined by agreement between the Agent and Principal. For organic work, unless otherwise agreed to, the Agent will conduct the examination and invite the Principal to participate. For contractual work, the contract shall specify that the Principal may request a Product-Oriented Survey (POS) in accordance with Federal Acquisition Regulation (FAR), and the Agent will participate. Exhibit VIII may be used to reflect the parameters for the POS. Normally, a POS is chaired by the requesting activity.

10.f.Economic Repair Limitations. The economic repair limitation for components listed in Exhibit II will be 75% (percent) of the latest acquisition unit cost or replacement price, if available. When it is apparent the cost to repair an item will
exceed this percentage over and above will be negotiated at that time. The Agent will provide support documentation (on an AMSEL-TY-MM FORM for BER) to the Principal for determination of item regardless of disposition. The Agent will notify the Principal and obtain disposition instructions. This notification will occur as early as possible, preferably upon visual inspection or teardown and include the reasons for the

recommendation as well as documentation, pictures, etc. Repair cost exceeding the economic repair limitation will be separately negotiated between the Principal and the Agent. When abnormal conditions are encountered that indicate funding constraints per unit will be exceeded, the Principal will be notified immediately of the conditions and the estimated costs to complete necessary repairs. Unless otherwise authorized by the Principal, all work will stop until approval to proceed is given.

10.g.Reusable containers. Reusable containers or airlift dollies will be furnished by 1) LA IAW SPI. Containers and dollies will be provided minor repair by the Agent concurrent with the maintenance program. Upon receipt of improperly packaged or damaged containers; the Agent will submit an SDR to DLA and notify the Principal. Any additional repair required will be negotiated between the Principal and Agent.

10.h.Costing: (Check as applicable),

_X__Fixed Price (Paragraph 10h(1)(a)),

____Cost Reimbursable (Paragraph 10h(1)(b))

10.h(1)Costing will be accomplished in accordance with the current DoD regulations and terms of this agreement. Emphasis will be placed on collecting data reflecting the total cost incurred. Sufficient information is required to identify such items as direct labor, overhead, operation, and maintenance of facilities, repair parts, etc., in order that the proper elements of cost can be identified to obtain reimbursement and satisfy accounting requirements.

10.h(1)(a)Fixed Price. ...Requests for changes to negotiated fixed price items, due to a change in scope of work, will be forwarded with adequate justification to the Principal for concurrence/nonconcurrence. The Principal will review the justification and advise the Agent if the price change request is approved/disapproved with 10 working days.

10.h(1)(b)Cost Reimbursable. When the items specified in Exhibits I and II are to be worked organically on a cost-reimbursable basis, a specific number of units or a specified period of time must be identified on the appropriate exhibit until sufficient repair history becomes available on which to base a fixed cost. The expenditures will be reviewed jointly at least semiannually to ensure adequate funding is available to allow the Agent to support the Principal's requirements.

10.i.Funding: (Check One),

_X__Military Interdepartmental Purchase Request (MIPR),

____ Project Order (PO)

10.i(1)Funds to cover the cost of work or services to be performed through DMISAs will be provided by MIPR or PO. MIPRs or POs will be written to cover the quantities reflected on the DMISA and exhibits; and the funds will, in all instances, be sufficient to cover cost computed under Section I, paragraph 10c. "Intent to fund documents" may be used to ensure timely induction of items listed in Exhibits I and/or II. The MIPR will be formally accepted by means of a DD Form 448-2, Acceptance of MIPR, and obligations will be recorded in accordance with FAR and/or FMR. Amendments to the funding document will include all pertinent information contained in the basic funding document .

10.i(2)When other than routine reports (see Exhibit X) are required, the funding document will include a line item to fund such requirements.

10.i(3)Funding documents will include sufficient funds to cover the cost of known packaging and crating requirements.

10.i(4)The funding document and all amendments will adequately identify the appropriate transportation fund citation, and this information will be provided to the shipping transportation officer, when the shipping function will not be performed by the DDD.

10.i(5)The funding document, to the extent allowable, will be considered only as the funding document and will not contain information other than that necessary for funding purposes. The funding document and all its amendments will reference the DMISA exhibit (or specific portions) to which it relates. The funding document will not contain information or directions that conflict with this agreement.

**10.i(6)When there are insufficient nonconsumables in the Agent's inventory to initially support both Services' requirements and the Principal cannot provide the necessary material, the Principal will provide funds to the Agent in a timely manner to procure material to meet the Principal's requirements. Follow-on support will be provided as agreed to within Section II of this DMISA.**

**10.i(7)Financial status of the funding document will be reviewed periodically to determine the adequacy of funds and the funding will be adjusted accordingly.**

**10.i(8)The Principal will address the funding document and all amendments to:**

(b) (6) [redacted]
**Warner Robins ALC/406 SCMS/GUMS**
**460 Ricahrd Ray Blvd.,, Suite 200**
**Robins AFB, GA 31098-1813.**

**10.i(9)The Agent will accept or reject funding documents within 15 calendar days of receipt.**

**10.jBilling.**

**10.j(1)Performing activities shall be reimbursed for the costs of all goods and services ordered and produced as a result of those orders. Billings and reimbursements from ordering activities for services or goods provided shall be accomplished in the most efficient and expeditious manner available.**

**10.j(2)Billings to ordering activities shall be as described in the funding document for cost of all goods and services ordered. This will be accomplished at least on a monthly basis. Guidance on disbursement of funds is provided in DoD 7000.14-R, Volume 11B, Chapter 61 and Volume 5, Chapter 11, as well as, Defense Finance and Accounting Service (DFAS) policy and procedures, FMS and Service guidelines. A review of the financial status for cost reimbursement programs will be made to effect necessary adjustments whenever billing totals 50 and 75 percent of the funding document. The Agent is required to provide billing information for the funding document when requested by the Principal**

**10.j(3)The billings will indicate the gross amount of the bill, FMS case number when applicable, progress billings to date, the net billings for the period, and other billing information on negotiated labor, material, and FMS accessorial charges.**

**10.j.(4)All billing must reference the MIPR Control number provided to the Agent upon funding submission of billing to the nearest Defense Financial Accounting Service (DFAS) office servicing your activity**

**10.k.Reports. Reporting requirements related to this DMISA, mutually agreed to by Principal and Agent, are set forth in Exhibit X-A. Reports will be provided electronically to**
(b) (6) [redacted]

**10.l.Personnel Spaces. The Agent agrees to accomplish the Principal's current year requirements without requesting personnel spaces from the Principal. Additional workload requested throughout the FY will be separately negotiated and accomplished by judicious use of overtime, if required. The Agent will program for projected or subsequent personnel requirements based on known workload requirements.**

**10.m.Security. The Principal will advise the Agent of the security classification of the line items to be supported. Classified material repaired in organic depots will be safeguarded in accordance with the Agent's security manual. Classified material contracted to commercial sources will be protected in accordance with the Armed Services Industrial Security Regulations. The Principal MISO reserves the authority to reasonably challenge all security procedures and measures.**

**10.n.Safety. The Agent will be responsible for safety practices in accordance with current procedures. Special safety requirements are listed in Exhibit XI.**

**10.o.Other Support. Any support beyond the specific provisions of this agreement shall be separately negotiated, funded, and reflected in Exhibit XVII.**

## SECTION II - MATERIAL SUPPORT

### 1.PROCEDURES FOR SHIPMENT.

1.a.The Agent will account for all items received in DODAAC FB2065 and for the return of the specific stock-numbered items, including those items with identity changes due to upgrade.

1.a(1)Agent's repair activity: FB2065 Robins AFB, GA 31098.

1.a(2)Packaging. Negotiated items being shipped to the Agent will be preserved and packaged in accordance with packaging procedures C0030 of the NAVICP publications list. Any special preservation, packaging, and packing instructions shall be in accordance with instructions in Exhibit XIV.

1.a(3)Markings. Containers and shipping documents will be marked in accordance with MIL-STD 129. Containers and shipping documents will be marked for (Navy) material for repair under DMISA WR-ALC0303 ANKE. Any additional special marking shall be in accordance with instructions in Exhibit XII.

1.b.To Principal: (See specific shipping instructions on Exhibit XIII, Part II)

1.b(1) Location/consignee.

Ship to: AS SPECIFIEDIN SPECIAL SHIPPING INSTRUCTIONS, EXHIBIT XIII.

1.b(2)Shipping Authority. Unless otherwise directed by the Principal, all serviceable production will be shipped to location(s) specified in Section II, paragraph 1b(1) (see Exhibit XIII, Part II).

1.b(3)Packaging Instructions. Negotiated items being shipped to the Principal will be preserved and packaged in accordance with MIL-STD-794. Any special preservation, packaging, and packing instructions shall be in accordance with instructions in Exhibit XIV.

1.b(4)Special Markings. All shipping documents will conform to MILSTRIP. Markings will conform to requirements of _____________. Any additional special marking shall be in accordance with instructions in Exhibit XII.

**1.b(5)Method of Transportation. The transportation mode will be determined on the basis of a DoD priority designator as specified by the Principal.**

**1.b(6)Transportation Fund Citation. A transportation fund citation may or may not be required.**

**1.b(6)(a)A transportation fund citation is not required if the Defense Logistics Agency (DLA) performs the issue of the repaired item from the maintenance depot or from storage, and its subsequent release to transportation for delivery to the consignee, or delivery to the customer. The DLA charge for the issue transaction includes second destination transportation within the contiguous United States (CONUS).**

**1.b(6)(b)A transportation fund citation is required if DLA does not perform repaired item or storage issue.**

**1.b(6)(c)If a transportation fund citation is required for return of items from the Agent's maintenance facility, the Principal will include it on the MIPR (DD Form 448, Block 12) or on the PO (Block 8), or provide it separately. All shipping documents, including Government Bills of Lading (GBL), shall cite the appropriate transportation fund citation.**

**2.PRODUCTION SUPPORT. The Agent and Principal will mutually agree to any special provisions. The Agent and the Principal shall negotiate and maintain liaison on the maximum quantities of unserviceable assets to be maintained at the Agent's repair facility in order to support the Agent's production schedule on a timely basis.**

**3.EMERGENCY REPAIR PROVISIONS. The Agent agrees to provide emergency service when called upon by the Principal if within operational and industrial capacity. The affected item(s) will be expedited compatibly with other workloads of comparable priority. When a negotiated item requires emergency processing, the Principal will advise the Agent by message or telephone call. The Agent's contact point for emergency repair requirement is WR-ALC, Code LGPC, (912)926-4165/4189; DSN 468-. When emergency services/requirements require additional funding, they will be negotiated accordingly.**

**4.ITEM ACCOUNTABILITY.**

**4.a.The Agent will account for all items received and for the return of the specific stock-numbered items, including those items with identity changes due to modification.**

**4.a.(1)Provide nonconsumable item consumption/usage data to the Principal POC** [redacted]

**4.b.Material or parts condemned as unserviceable and not repairable, as the result of any inspection procedures/methods required by the work specification and for which the Material Review Board has directed material to be scrapped, shall be disposed of in accordance with current regulations. All documents pertinent to such material or parts must contain a certificate to the effect that all required mutilation has been accomplished.**

**4.c.Other accountability procedures for items on this agreement are:**

**No exchangeable item shall be transferred to the Defense Reutilization Marketing Office (DRMO) without obtaining disposition instructions from the Principal prior to disposal.**

**5.DEPOT MATERIAL SUPPORT. The responsibility of both the Principal and the Agent for providing material support (nonconsumable and consumable) will be outlined as follows (for detailed material support procedures, see Exhibit XV):**

**5.a.Jointly Used/Jointly Managed Items. These items are normally nonconsumable material.**

**5.a(1)Initial Pipeline. When there is insufficient material in the Agent's inventory to initially support both Services' work requirements, and the Principal has material available, the Agent may requisition from the Principal that material necessary to support the Principal's requirements. The Agent's funds will be cited on the requisition form, with the expenditure recouped through material costs charged the Principal for repair.**

**5.a(2)Follow-on. The Agent will acquire sufficient material in a timely manner to ensure support of the repair negotiated.**

**5.b.Joint Support Items.** Items managed by a single service will be requisitioned by the Agent citing the Agent's funds unless otherwise provided for in a joint support plan and/or separately negotiated. Expenditures will be recouped through material costs charged to the Principal for repair.

**5.c.Peculiar Items.** Peculiar items managed by the Principal will be requisitioned by the Agent citing the Agent's funds unless otherwise provided for in a joint support plan and/or separately negotiated. The Principal shall plan for supporting the Agent's needs as negotiated. Expenditures will be recouped through material costs charged to the Principal for repair.

**5.d.Repairable Items.** The Principal and the Agent will negotiate requirements to establish a rotatable pool of repairable subassemblies. If a pool is required, specific details will be shown on Exhibit XV-A.

**5.e.Defense Logistics Agency (DLA), General Services Administration (GSA) and Other Material.** All DLA/GSA items and other material will be requisitioned by the Agent citing the Agent's funds. Local purchase/manufacture items will be the responsibility of the Agent.

**5.f.Modification Kits.** If modifications kits are required, they will be furnished by the Principal to the Agent without charge upon release of the modification directive. Exceptions will be negotiated. If and when kits are furnished, Exhibit XV-B will furnish detailed instructions.

**5.g.Material Support Procedures.** For detailed material support procedures other than Rotatable Pool Requirements (Exhibit XV-A) or Modification Kits (Exhibit XV-B) see Exhibit XV-C, Other Material Support Procedures.

**5.g.(1)Interchangeability and Substitutability (I&S).** When necessary, the Principal will ensure I&S items are provided IAW the Principal service's I&S table(s).

**5.h.Items Missing on Inventory.** When an end item is received minus an accountable asset, the Agent or DDD will immediately notify the Principal POC. of the shortage via AMSEL-TY-4304-R-E form and request instructions (Ref Exhibit X-A). The Principal POC will provide instructions to the requestor within 10 working days of receipt of the request. Refer to Technical Order 00-35D-2 concerning tools and accessory type items subject to replacement in reshipment to and from the depot.

6.SUPPORT EQUIPMENT. Common and peculiar support equipment and tooling are furnished or funded by the Principal to support the Principal's requirements in accordance with the terms of the award/decision or subsequent negotiations. All support equipment provided by the Principal remains the property of the Principal and is returned upon termination of the agreement as mutually agreed. Exhibit XVI will identify equipment/tooling on loan and disposition upon termination

6.a.Spares. Upon termination of this agreement, the Agent will furnish the Principal Program Office with a listing of Principal-owned nonconsumable items properly identified and with the appropriate condition codes. The principal will furnish disposition instructions to the Agent.

6.b.Any Conflicts regarding the responsibilities identified above will be negotiated between the Principal Program Office, and the Agent on a case by case basis.

7.MATERIAL SOURCE CHANGES. The Agent will be responsible for keeping current information on the source of material.

8.TERMINATION ASSETS DISPOSITION.

8.a.Spares. Upon termination of this agreement, the Agent will furnish the Principal with a listing of Principal-owned nonconsumable items properly identified and with appropriate condition codes. The Principal will furnish disposition instructions to the Agent.

8.b.Support Equipment and Tooling. Support equipment, tooling, and software loaned by the Principal shall be reported to the Principal for disposition instructions.

8.c.Common Material. Upon termination of this agreement, the Agent's available assets will be prorated and distributed as negotiated between the Principal(s) and the Agent.

8.d.Unique Material. Disposition of Principal-funded, Principal-unique material will be negotiated between the Agent and the Principal.

9.CRITICAL ALLOYS AND/OR PRECIOUS METALS RECOVERY. Instructions for identification, conservation, segregation, and/or reclamation of parts containing critical alloys or precious metals will be per DoD 4160.21-M, Chapter X, "Precious Metals Recovery Program", and DoD 4160.21-M, Defense Reutilization and Marketing Manual, Chapter VIII, "Property Requiring Special Processing", paragraph B103, "Strategic and Critical Materials to be Reported to General Services Administration".

10.USE OF EXHIBITS:

EXHIBIT I(Schedule and Costs - Major Programs). Each item listed will be identified with a three character, alpha-numeric WBS code in accordance with DoD 7220.9-M, Part VII, Chapter 76, Addendum 4. FSG 34 items will be coded "K-5-(blank)" (only coded to second level - use two characters). The material cost column will be broken down into sufficient subcolumns to satisfy accounting requirements. The DLA cost column will include only those costs for DDD support, negotiated as part of the DMISA, that the DDD will bill to the Agent and the Agent will bill the Principal. The DLA costs will be cross-referenced to the Exhibits that specify DLA/DDD support functions. This exhibit will be used for major items only. The Principal will determine the item to be major. Tabs will be used to differentiate between workloads on the same DMISA; Exhibit I tabs will be identified with a single alpha character. See Section I, paragraphs 10b(1)(a) and 10b(1)(c).

EXHIBIT II(Schedule and Costs - Minor Programs). Each item listed will be identified with a three character, alpha-numeric WBS code in accordance with DoD 7220.9-M, Part VII, Chapter 76, Addendum 4. FSG 34 items will be coded "K-5-(blank)" (only coded to second level - use two characters). The material cost column will be broken down into sufficient subcolumns to satisfy accounting requirements. The DLA cost column will include only those costs for DDD support, negotiated as part of the DMISA, that the DDD will bill to the Agent and the Agent will bill the Principal. The DLA costs will be cross-referenced to the Exhibits that specify DLA/DDD support functions. This exhibit will be used for secondary items only. The Principal will determine items to be secondary. Tabs will used to differentiate between workloads on the same DMISA; Exhibit II tabs will be identified with a double alpha character. See Section I, paragraphs 10b(1)(b) and 10b(1)(c).

**EXHIBIT III(Projected Requirements - Major Programs, Minor Programs, and Pending Capability).** Major programs will be identified as Exhibit III-A, Minor Programs will be identified as Exhibit III-B, and Projected Requirements Pending Capability will be identified as Exhibit III-C. Tabs will be used for Exhibits III-A and III-B to differentiate between workloads on the same DMISA and will reflect the Exhibit I or Exhibit II tab to which they refer. Exhibit III-C will utilize single alpha tabs to differentiate between projected requirements on the same DMISA. Each item listed will be identified with a three character alpha-numeric WBS code in accordance with DoD 7220.9-M, Part VII, Chapter 76, Addendum 4. FSG 34 items will be coded "K-5-(blank)" (only coded to second level - use two characters). See Section I, paragraph 10b(2).

**EXHIBIT IV(National Emergency Requirements).** This exhibit will be used to project by month for a 12-month period requirements necessary to support the Principal's mobilization plan. If no requirement is documented, a statement to that effect will be made part of the exhibit. Tabs will be used for Exhibit IV to differentiate between workloads on the same DMISA and will reflect the Exhibit I or Exhibit II tab to which they refer. Each item listed will be identified with a three character alpha-numeric WBS code in accordance with DoD 7220.9-M, Part VII, Chapter 76, Addendum 4. FSG 34 items will be coded "K-5-(blank)" (only coded to second level - use two character). See Section I, paragraph 10b(3).

**EXHIBIT V(Special Engineering Support).** As specified in Section I, paragraph 10b(4). This exhibit will be used to identify any special engineering support required by the Principal for depot maintenance over and above that required for general surveillance of the repair process. If it is necessary to refer to specific workload items, reference to Exhibit I or II Tab and Item Numbers should be made in text. All support requirements will include estimated quantities of man-years required from the Agent.

EXHIBIT VI(Bill of Material/Material Requirements List). This exhibit will be used for listing, by usage rates, all material required for depot maintenance of the negotiated end item. The format for reflecting these data and the decision for the use of this exhibit will be agreed to during the DMISA negotiations. See paragraph 10d(3). When used, it must contain at least the negotiated end items, mission, design, and series (MDS) or must be reflected in Exhibits I and II with a breakdown of supporting parts by NSN, quantity per assembly, overhaul replacement factor, and source of supply.

EXHIBIT VII(Work Specifications/Quality Assurance). These exhibits will include applicable information cited in Section I, paragraphs 10d and 10e and agreed to during negotiations. Statement of Work will be identified as Exhibit VII-A, Technical Data List and Line Item Cross-Reference will be identified as Exhibit VII-B, and Quality Assurance Requirements will be identified as Exhibit VII-C. If it is necessary to refer to specific workload items on Exhibits VII-A and VII-C, reference to Exhibit I or II tab and item numbers should be made in text.

EXHIBIT VIII(Product Oriented Survey Parameters). This exhibit will include applicable information cited in Section I, paragraph 10e(3). If it is necessary to refer to specific workload items, reference to Exhibit I or II Tab and Item Numbers should be made in text.

EXHIBIT IX(Joint Operating Procedure for Configuration Management). When applicable, as specified in Section I, paragraph 10d(4), a joint agreement on configuration management will be negotiated and attached. If it is necessary to refer to specific workload items, reference to Exhibit I or II Tab and Item Numbers should be made in text.

EXHIBIT X-A(List of Reports). As specified in Section I, paragraph 10k. Required reports, other than the Monthly Production Report, will be negotiated and a sample, with directions attached.

EXHIBIT X-B(Monthly Production Report). As specified in Section I, paragraph 10k. If specified on Exhibit X-A, the Agent will submit this exhibit to the Principal generally within 10 calendar days of the end of each month. Definition of key terms used on this exhibit are as follows:

1.Control Number - An alpha-numeric character sequence assigned by the Agent for each workload item on a DMISA used to identify and track progress of the item through the Agent's maintenance system.

2.Negotiated Requirement (NEG REQ) - The quantity, agreed upon between the Principal Agent, that is to be repaired/overhauled by the Agent. For this exhibit, this quantity is the summation of the negotiated requirements for the FY specified within the funding document and corresponds to the appropriate Exhibit I or II.

3.Quantity Received This Month - The quantity of a workload item that has been received at the Agent's Repair Facility in the last 30 days or since the last monthly production report (if a report was submitted in the previous month).

4.Quantity Received To Date - The quantity of a workload item that has been received at the Agent's Repair Facility since the change of the FY inclusive of the last 30 days or since the last monthly production report.

5.Quantity Shipped Serviceable (SVCABLE) This Month - The quantity of a workload item that has been shipped in a serviceable condition (Condition Code "A") from the Agent's Repair Facility to a location named by the Principal in the last 30 days or since the last monthly production report (if a report was submitted in the previous month).

6.Quantity Shipped Serviceable (SVCABLE) To Date - The quantity of a workload item that has been shipped in a serviceable condition (Condition Code "A") from the Agent's Repair Facility to a location named by the Principal since the change of the FY inclusive of the last 30 days or since the last monthly production report.

7.Quantitiy Shipped Unserviceable (UNSVCABL) This Month - The quantity of a workload item that has been shipped in an unserviceable condition (Condition Code "F") from the Agent's Repair Facility to a location named by the Principal in the last 30 days or since the last monthly production report (if a report was submitted in the previous month).

8.Quantity Shipped Unserviceable (UNSVCABL) To Date - The quantity of a workload item that has been shipped in an unserviceable condition (Condition Code "F") from the Agent's Repair Facility to a location named by the Principal since the change of the FY inclusive of the last 30 days or since the last monthly production report.

9.Quantity Shipped Other Condition This Month - The quantity of a workload item that has been shipped in any condition other than Condition Codes "A" or "F" from the Agent's Repair Facility to a location named by the Principal in the last 30 days or since the last monthly production report (if a report was submitted in the previous month).

10.Quantity Shipped Other Condition To Date - The quantity of a workload item that has been shipped in any condition other than Condition Codes "A" or "F" from the Agent's Repair Facility to a location named by the Principal since the change of the FY inclusive of the last 30 days or since the last monthly production report.

11.Quantity Condemned This Month - The quantity of a workload time that has been reported as condemned by the Agent's Repair Facility in the last 30 days or since the last monthly production report (if a report was submitted in the previous month).

12.Quantity Condemned To Date - The quantity of a workload item that has been reported as condemned by the Agent's Repair Facility since the change of the FY inclusive of the last 30 days or since the last monthly production report.

13.Quantity Repaired This Month - The quantity of a workload item that has been reported as produced/repaired by the Agent's Repair Facility in the last 30 days or since the last monthly production report (if a report was submitted in the previous month).

14.Quantity Repaired To Date - The quantity of a workload item that has been reported as produced/repaired by the Agent's Repair Facility since the change of the FY inclusive of the last 30 days or since the last monthly production report.

**15.In-Supply Condition Code "A" - The quantity of a workload item that is in the possession of the local supply facility in a serviceable condition (Condition Code "A") on the date of this monthly production report.**

**16.In-Supply Condition Code "F" - The quantity of a workload item that is in the possession of the local supply facility in an unserviceable condition (Condition Code "F") on the date of this monthly production report.**

**17.In-Supply Condition Code "G" - The quantity of a workload item that is in the possession of the local supply facility in a "long-term" awaiting parts condition (Condition Code "G") on the date of this monthly production report. Items are consider in "long-term" awaiting parts status when the item has been placed in the possession of the local supply facility pending availability of repair parts rather than remaining in the possession of the Agent's Repair Facility ("short-term").**

**18.In-Supply Condition Code "OTHER" - The quantity of a workload item that is in the possession of the local supply facility in any Condition Code other than "A","F","G", or in transit (TRANS) from the storage facility to the repair facility on the date of this monthly production report.**

**19.In-Supply Condition Code "TRANS" - The quantity of a workload item that is in transit (TRANS) from the storage facility to the Agent's Repair Facility on the date of this monthly production report.**

**20.In-Maintenance Condition "AWP" - The quantity of a workload item that is in the possession of the Agent's Repair Facility and in a "short-term" awaiting parts (AWP) status on the date of this monthly production report.**

**21.In-Maintenance Condition "AWM" - The quantity of a workload item that is in the possession of the Agent's Repair Facility and in an awaiting maintenance (AWM) status on the date of this monthly production report.**

**22.In-Maintenance Condition "OWO" - The quantity of a workload item that is in the possession of the Agent's Repair Facility in an on work order (OWO) status on the date of this monthly production report.**

23.In-Maintenance Condition "TRANS" - The quantity of a workload item that is in transit (TRANS) from the Agent's Repair Facility to the local supply facility on the date of this monthly production report.

24.Comment - An entry in this column denotes a situation not fully explained by the condition or status entries on part 1 of the monthly production report and which is more fully explained on part 2 (comments).

EXHIBIT XI(Safety). As specified in Section I, paragraph 10n. The DDD located on site at the Agent's Repair Facility may have responsibilities listed on this exhibit. All support services which will be performed by the local DDD, and any associated costs, will be specifically identified on this exhibit and the costs included in the Unit DLA Cost column of Exhibits I and II. If it is necessary to refer to specific workload items, reference to Exhibit I or II Tab and Item Numbers should be made in text.

EXHIBIT XII(Special Markings). As specified in Section II, paragraphs 1a and 1b. All support services which will be performed by the local DDD, and any associated costs, will be specifically identified on this exhibit and the costs included in the Unit DLA Cost column on Exhibits I and II. If it is necessary to refer to specific workload items, reference to Exhibit I or II Tab and Item Numbers should be made in text.

EXHIBIT XIII(Special Shipping Instructions). As specified in Section II, paragraph 1b. All support services which will be performed by the local DDD, and any associated costs, will be specifically identified on this exhibit and the costs included in the Unit DLA Cost column on Exhibits I and II.

EXHIBIT XIV(Special Preservation, Packaging and Packing Instructions). As specified in Section II, paragraph 1b. All support services which will be performed by the local DDD, and any associated costs, will be specifically identified on this exhibit and the costs included in the Unit DLA Cost column on Exhibits I and II. If it is necessary to refer to specific workload items, reference to Exhibit I or II Tab and Item Number should be made in text.

EXHIBIT XV(Material Support Procedures). These exhibits will be used to prescribe detailed supply procedures for the

**Principal in support of the Agent and vice versa. Those procedures that apply only to internal operations of either the Principal or the Agent will be included, nor will the exhibit be required if the procedures are adequately covered in Section II, paragraph 5.**

**EXHIBIT XV-A(Rotatable Pool Requirements). As specified in Section II, paragraph 5d, this exhibit will identify the repairables to be loaned to the Agent, the quantity (level), identification of the lender, identification of the borrower, and the required MILSTRIP/MILSTRAP documentation.**

**EXHIBIT XV-B(Modification Kits). As specified in Section II, Paragraph 5f.**

**EXHIBIT XV-C(Other Material Support Procedures). As specified in Section II, paragraph 5g. If it is necessary to refer to specific workload items, reference to Exhibit I or II Tab and Item Numbers should be made in text.**

**EXHIBIT XVI(Tools and Equipment). This exhibit will specify the responsibility of the Principal to loan any production equipment or tooling to the Agent. See Section II, paragraph 6. This exhibit will identify this equipment, its ownership, and its disposition upon termination of the agreement.**

**EXHIBIT XVIIOther Support (Non-Engineering). As specified in Section I, paragraph 10o. This exhibit is to be used to reflect any special support required over and above the specific provisions of this agreement, such as field teams, study groups, training, etc. All support services which will be performed by the local DDD will be specifically identified on this exhibit. If it is necessary to refer to specific workload items, reference to Exhibit I or II Tab and Item Numbers should be made in text.**

# USE OF EXHIBITS

| EXHIBIT | | APPLI-CABLE | NOT APP-LICABLE |
|---|---|---|---|
| I | SCHEDULE & COSTS - Major programs | | X |
| II | SCHEDULE & COSTS - Minor Programs | X | |
| III-A | PROJECTED REQ'TS - Major Programs | | X |
| III-B | PROJECTED REQ'TS - Minor Programs | X | |
| III-C | PROJECTED REQ'TS - Pending Capability | | X |
| IV | NATIONAL EMERGENCY REQ'TS | X | |
| V | SPECIAL ENGINEERING SUPPORT | X | |
| VI | BILL OF MATERIAL/MATERIAL REQ'TS LIST | | X |
| VII-A | STATEMENT OF WORK | X | |
| VII-B | TECH DATA LIST & LINE ITEM CROSS REF | X | |
| VII-C | QUALITY ASSURANCE REQ'TS | X | |
| VIII | PRODUCT ORIENTED SURVEY PARAMETERS | | X |
| IX | JOINT OP PROC FOR CONFIG MGMT | | X |
| X-A | LIST OF REPORTS | X | |
| X-B | Monthly DMISA Production Report | X | |
| XI | SAFETY | | X |
| XII | SPECIAL MARKINGS | X | |
| XIII-Part 1 | SPECIAL SHIPPING INSTRUCTIONS PART I | X | |
| XIII-Part 2 | SPECIAL SHIPPING INSTRUCTIONS PART II | X | |
| XIII-Part 3 | SPECIAL SHIPPING INSTRUCTIONS PART III | X | |
| XIV | SPECIAL PRSRV, PACKAGING, PACKING INST. | X | |
| XV-A | ROTATABLE POOL REQ'TS | | X |
| XV-B | MODIFICATION KITS | | X |
| XV-C | OTHER MATERIAL SUPPORT PROCEDURES | | X |
| XVI | TOOLS AND EQUIPMENT | | X |
| XVII | OTHER SUPPORT (NON-ENGINEERING) | | X |

DMISA: WR-ALC03 03ANKE FY: 2009 PRINCIPAL: NAVICP-P

EXHIBIT I AGENT: WR-ALC-CMD

SCHEDULE & COSTS - MAJOR PROGRAMS DATA CURRENT AS OF: 31-AUG-10

VERSION TYPE: OF

TAB: DESCRIPTION: REPAIR FACILITY:

| ITEM NO. | NSN/PART NO. & CAGE | WBS | Input/Output | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| STOCK LIST | UNIT MAN | FLOW TIME | UNIT LABOR COST | UNIT COST MATERIAL | UNIT COST MATERIAL | UNIT DLA | TOTAL UNIT | TOTAL COST |
|---|---|---|---|---|---|---|---|---|

*** NO DATA ENTERED ***

ORIGINAL: CHANGES:

~~"For Official Use Only"~~

DMISA: WR-ALC03 03ANKE

FY: 2009

PRINCIPAL: NAVICP-P

EXHIBIT II

AGENT: WR-ALC-CMD

SCHEDULE & COSTS - MINOR PROGRAMS

DATA CURRENT AS OF: 31-AUG-10

VERSION TYPE: OF

TAB: AA DESCRIPTION:

REPAIR FACILITY: WR-ALC-SOR

| ITEM NO. | NSN/PART NO. & CAGE AND NOMENCLATURE | | WBS | Input/Output | 1ST | 2ND | 3RD | 4TH | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | STOCK LIST PRICE | UNIT MAN HOURS | FLOW TIME DAYS | FIXED COST | ESTIMATED UNIT COST | UNIT LABOR COST (INCL O/H) | UNIT COST MATERIAL EXP | UNIT COST MATERIAL INV | UNIT DLA COST* | TOTAL UNIT COST | TOTAL COST |
| | Comment Type (Change, Deviation, Negotiation, Permanent) | | Negotiator Role | Comment Text | | | | | | | |
| 0001 | DELETE - PHASE ITEM IS NIMSC 5 | | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 0.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Permanent | | Principal | NIIN 00-0835312: NIMSC 5 - NO DMISA REQUIREMENTS | | | | | | | |
| 0002 | DELETE - PHASE ITEM IS NIMSC 5 | | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 0.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Permanent | | Principal | NIIN 00-612-8048: NIMSC 5 - NO DMISA REQUIREMENTS | | | | | | | |
| 0003 | 7R 1560006136501 DOOR,ACCESS,AIRCRAFT | | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 52503.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0004 | DELETE - PHASE ITEM IS NIMSC 5 | | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 0.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Permanent | | Principal | NIIN 00-632-0042: NIMSC 5 - NO DMISA REQUIREMENTS | | | | | | | |
| 0004A | DELETE - PHASE ITEM IS NIMSC 5 | | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 0.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Permanent | | Principal | NIIN 00-083-5314: NIMSC 5 - NO DMISA REQUIREMENTS | | | | | | | |
| 0005 | 7R 1560007680083 LEADING EDGE,AIRCRAFT | | | Output | 1 | 0 | 0 | 0 | 1 | | |
| | 34407.00 | 0 | 0 | Y | | 27346.00 | 0.00 | 0.00 | 0.00 | 27346.00 | 27346.00 |

DMISA: WR-ALC03 03ANKE | FY: 2009 | PRINCIPAL: NAVICP-P
EXHIBIT II | AGENT: WR-ALC-CMD
SCHEDULE & COSTS - MINOR PROGRAMS | DATA CURRENT AS OF: 31-AUG-10
VERSION TYPE: OF

TAB: AA DESCRIPTION: | REPAIR FACILITY: WR-ALC-SOR

| ITEM NO. | NSN/PART NO. & CAGE AND NOMENCLATURE | WBS | Input/Output | 1ST | 2ND | 3RD | 4TH | TOTAL |
|---|---|---|---|---|---|---|---|---|
| 0006 | 7R 1560008635257 PANEL,STRUCTURAL,AIRCRAFT | | Output | 0 | 0 | 0 | 0 | 0 |
| 0007 | DELETE - PHASE ITEM IS NIMSC 5 | | Output | 0 | 0 | 0 | 0 | 0 |
| 0008 | 7R 1610000309552LC 54H60-111 73030 PROPELLER,AIRCRAFT | | Output | 2 | 2 | 2 | 5 | 11 |
| 0008 A | DELETE - DN DROPPED ITEM | | Output | 0 | 0 | 0 | 0 | 0 |
| 0008 B | DELETE - DN DROPPED ITEM | | Output | 0 | 0 | 0 | 0 | 0 |
| 0009 | 7R 1610001796097LC 54H60C130TC 73030 PROPELLER,AIRCRAFT | | Output | 0 | 0 | 0 | 0 | 0 |

| ITEM NO. | STOCK LIST PRICE | UNIT MAN HOURS | FLOW TIME DAYS | FIXED COST | ESTIMATED UNIT COST | UNIT LABOR COST (INCL O/H) | UNIT COST MATERIAL EXP | UNIT COST MATERIAL INV | UNIT DLA COST* | TOTAL UNIT COST | TOTAL COST |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0006 | 13055.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0007 | 0.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0008 | 124480.00 | 281.22 | 45 | Y | | 35553.00 | 15903.00 | 7638.00 | 0.00 | 59094.00 | 650034.00 |
| 0008 A | 97540.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0008 B | 97540.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0009 | 56940.00 | 288.47 | 45 | Y | | 36424.00 | 15518.00 | 0.00 | 0.00 | 51942.00 | 0.00 |

| ITEM NO. | Comment Type (Change, Deviation, Negotiation, Permanent) | Negotiator Role | Comment Text |
|---|---|---|---|
| 0007 | Permanent | Principal | NIIN 00-944-3452: NIMSC 5 - NO DMISA RQRMTS |

ORIGINAL: 22-AUG-08 CHANGES:

TAB: AA DESCRIPTION: | REPAIR FACILITY: WR-ALC-SOR

| ITEM NO. | NSN/PART NO. & CAGE AND NOMENCLATURE | | WBS | Input/Output | 1ST | 2ND | 3RD | 4TH | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | STOCK LIST PRICE | UNIT MAN HOURS | FLOW TIME DAYS | FIXED COST | ESTIMATED UNIT COST | UNIT LABOR COST (INCL O/H) | UNIT COST MATERIAL EXP | UNIT COST MATERIAL INV | UNIT DLA COST* | TOTAL UNIT COST | TOTAL COST |
| | Comment Type (Change, Deviation, Negotiation, Permanent) | | Negotiator Role | Comment Text | | | | | | | |
| 0010 | 7R 1610002097984LC 739070-1 HOUSING ASSEMBLY | 73030 | | Output | 2 | 2 | 2 | 2 | 8 | | |
| | 54296.00 | 68.35 | 22 | Y | | 8655.00 | 10807.00 | 943.00 | 0.00 | 20405.00 | 163240.00 |
| 0011 | DELE - PHASE II ITEM IS NIMSC 5 | | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 2470.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Permanent | | Principal | 1610-00-805-7593 transitioning to NIMSC 5 | | | | | | | |
| 0011A | DELE - PHASE II ITEM IS NIMSC 5 | | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 3240.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Permanent | | Principal | NSN 1610-00-179-6130 transition to Phase II, NIMSC 5 | | | | | | | |
| 0012 | 7R 1610008736424LC 560501 AFTERBODY HALF BODY | 73030 | | Output | 0 | 5 | 4 | 3 | 12 | | |
| | 2900.00 | 10.18 | 13 | Y | | 1274.00 | 131.00 | 0.00 | 0.00 | 1405.00 | 16860.00 |
| 0014 | DELETE - DN DROPPED ITEM | | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 48400.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Permanent | | Principal | Modify to Item 14c, NSN 4810-01-467-3559 , P/N 714367-3 | | | | | | | |

TAB: AA DESCRIPTION: REPAIR FACILITY: WR-ALC-SOR

| ITEM NO. | NSN/PART NO. & CAGE AND NOMENCLATURE | | WBS | Input/Output | 1ST | 2ND | 3RD | 4TH | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | STOCK LIST PRICE | UNIT MAN HOURS | FLOW TIME DAYS | FIXED COST | ESTIMATED UNIT COST | UNIT LABOR COST (INCL O/H) | UNIT COST MATERIAL EXP | UNIT COST MATERIAL INV | UNIT DLA COST* | TOTAL UNIT COST | TOTAL COST |
| | Comment Type (Change, Deviation, Negotiation, Permanent) | | Negotiator Role | Comment Text | | | | | | | |
| 0014 A | DELETE - DN DROPPED ITEM | | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 39360.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Permanent | | Principal | NIIN 00-967-9835: dropped item - 'DN' status applies | | | | | | | |
| 0014 B | 7R 4810013479419LC 714367-2 VALVE ASSEMBLY | 73030 | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 48400.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Permanent | | Principal | Modify to Item 14c, NSN 4810-01-467-3559 , P/N 714367-3 | | | | | | | |
| 0014 C | 7R 4810014673559LC 714367-3 VALVE ASSEMBLY | 73030 | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 50462.00 | 40.61 | 15 | Y | | 5129.00 | 7400.00 | 270.00 | 0.00 | 12799.00 | 0.00 |
| | Permanent | | Principal | Modify Item 0014, NSN 4810-00-962-3052, P/N 714367-1, and Item 0014B, NSN 4810-01-347-9419, P/N 714367-2, to this configuration. | | | | | | | |
| 0014 D | 4810015393649 714367-4 VALVE HOUSING | 73030 | | Output | 25 | 11 | 11 | 10 | 57 | | |
| | 0.00 | 40.61 | 15 | Y | | 5129.00 | 7400.00 | 270.00 | 0.00 | 12799.00 | 729543.00 |
| | Permanent | | Principal | NSN is a "TMS" type NSN, pending FLIS access. | | | | | | | |

TAB: AA DESCRIPTION: REPAIR FACILITY: WR-ALC-SOR

| ITEM NO. | NSN/PART NO. & CAGE AND NOMENCLATURE | | WBS | Input/Output | 1ST | 2ND | 3RD | 4TH | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | STOCK LIST PRICE | UNIT MAN HOURS | FLOW TIME DAYS | FIXED COST | ESTIMATED UNIT COST | UNIT LABOR COST (INCL O/H) | UNIT COST MATERIAL EXP | UNIT COST MATERIAL INV | UNIT DLA COST* | TOTAL UNIT COST | TOTAL COST |
| | Comment Type (Change, Deviation, Negotiation, Permanent) | | Negotiator Role | Comment Text | | | | | | | |
| 0015 | DELETED-02 TRANSFER TO TAB BB | | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 0.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Permanent | | Principal | Primary item is NIMSC 5 | | | | | | | |
| 0016 | 7R 1610011435531LC 774474-2 73030 STOP ASSEMBLY,LOW PITCH | | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 8650.00 | 14.51 | 22 | Y | | 1830.00 | 1119.00 | 0.00 | 0.00 | 2949.00 | 0.00 |
| 0016 A | 7R 1610006286032LC STOP ASSY,LOW PITCH | | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 8970.00 | 14.51 | 22 | Y | | 1830.00 | 1119.00 | 0.00 | 0.00 | 2949.00 | 0.00 |
| 0017 | 7R 1610011669359LC 773824-1 73030 SPINNER,PROPELLER,AIRCRAFT | | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 18440.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Permanent | | Principal | 1610-01-166-9359 is NIMSC 5 for Navy | | | | | | | |
| 0017 A | 7R 1610008761812LC SPINNER,PROPELLER,AIRCRAFT | | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 15050.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Permanent | | Principal | 1610-00-876-1812 is NIMSC 5 for Navy | | | | | | | |

TAB: AA DESCRIPTION: REPAIR FACILITY: WR-ALC-SOR

| ITEM NO. | NSN/PART NO. & CAGE AND NOMENCLATURE | | WBS | Input/Output | 1ST | 2ND | 3RD | 4TH | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | STOCK LIST PRICE | UNIT MAN HOURS | FLOW TIME DAYS | FIXED COST | ESTIMATED UNIT COST | UNIT LABOR COST (INCL O/H) | UNIT COST MATERIAL EXP | UNIT COST MATERIAL INV | UNIT DLA COST* | TOTAL UNIT COST | TOTAL COST |
| | Comment Type (Change, Deviation, Negotiation, Permanent) | | Negotiator Role | Comment Text | | | | | | | |
| 0018 | 7R 5977012094979<br>784755-1 73030<br>HOLDER,ELECTRICAL CONTACT RING | | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 7670.00 | 7.63 | 10 | Y | | 958.00 | 245.00 | 0.00 | 0.00 | 1203.00 | 0.00 |
| 0018 A | 7R 5977008736423<br>554631 73030<br>HOLDER,ELECTRICAL CONTACT RING | | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 6725.00 | 8.87 | 11 | Y | | 1119.00 | 738.00 | 0.00 | 0.00 | 1857.00 | 0.00 |
| 0018 B | 7R 5977000715472<br>715805-1 73030<br>HOLDER,ELECTRICAL CONTACT RING | | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 6725.00 | 7.75 | 0 | Y | | 598.00 | 580.00 | 0.00 | 0.00 | 1178.00 | 0.00 |
| 0019 | 7R 1610012688008LC<br>557700-1 73030<br>AFTERBODY ASSEMBLY | | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 8580.00 | 22.01 | 19 | Y | | 2763.00 | 365.00 | 0.00 | 0.00 | 3128.00 | 0.00 |
| 0019 A | 7R 1610008770164LC<br>AFTERBODY ASSEMBLY | | | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 8260.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

DMISA: WR-ALC03 03ANKE | FY: 2009 | PRINCIPAL: NAVICP-P
EXHIBIT II | AGENT: WR-ALC-CMD
SCHEDULE & COSTS - MINOR PROGRAMS | DATA CURRENT AS OF: 31-AUG-10
VERSION TYPE: OF

TAB: AA DESCRIPTION: | REPAIR FACILITY: WR-ALC-SOR

| ITEM NO. | NSN/PART NO. & CAGE AND NOMENCLATURE | WBS | Input/Output | 1ST | 2ND | 3RD | 4TH | TOTAL |
|---|---|---|---|---|---|---|---|---|
| 0021 | 7R 1610012688007LC<br>568156-1 73030<br>BRACKET AND CONNECTOR ASSEMBLY | | Output | 1 | 0 | 0 | 0 | 1 |
| 0021 A | 7R 1610009414353BP<br>568156 73030<br>BRACKET ASSY | | Output | 0 | 0 | 0 | 0 | 0 |
| 0022 | 7R 1560010031900<br>338329-28 98897<br>LEADING EDGE,AIRCRAFT | | Output | 0 | 0 | 0 | 0 | 0 |
| 0022 A | 7R 1560009411395<br>338329-26 98897<br>LEADING EDGE,AIRCRAFT | | Output | 0 | 0 | 0 | 0 | 0 |
| 0023 | 7R 1610004827947<br>BLADE, PROPELLER | | Output | 0 | 0 | 0 | 0 | 0 |

| ITEM NO. | STOCK LIST PRICE | UNIT MAN HOURS | FLOW TIME DAYS | FIXED COST | ESTIMATED UNIT COST | UNIT LABOR COST (INCL O/H) | UNIT COST MATERIAL EXP | UNIT COST MATERIAL INV | UNIT DLA COST* | TOTAL UNIT COST | TOTAL COST |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0021 | 3858.00 | 4.97 | 10 | Y | | 621.00 | 501.00 | 0.00 | 0.00 | 1122.00 | 1122.00 |
| 0021 A | 5746.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0022 | 10768.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0022 A | 10768.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0023 | 0.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| ITEM NO. | Comment Type (Change, Deviation, Negotiation, Permanent) | Negotiator Role | Comment Text |
|---|---|---|---|
| 0021 A | Permanent | Principal | Mod to 568156-1 |

TAB: AA DESCRIPTION: REPAIR FACILITY: WR-ALC-SOR

| ITEM NO. | NSN/PART NO. & CAGE AND NOMENCLATURE | WBS | Input/Output | 1ST | 2ND | 3RD | 4TH | TOTAL |
|---|---|---|---|---|---|---|---|---|
| 0024 | 7R 1560013116588LC UPLOCK ASSEMBLY,NOSE | | Output | 0 | 0 | 0 | 0 | 0 |
| 0024 A | 7R 1620009766099 UPLOCK ASSEMBLY,LANDING GEAR | | Output | 0 | 0 | 0 | 0 | 0 |
| 0025 | 1R 1650007177235 HOUSING,LIQUID PUMP | | Output | 0 | 0 | 0 | 0 | 0 |
| 0026 | 7R 6105006287433 55688 73030 AUX MOTOR | | Output | 0 | 0 | 0 | 0 | 0 |
| 0027 | 7R 1610008755009 554636 73030 HUB MOUNTING BULKHEAD | | Output | 0 | 4 | 4 | 4 | 12 |
| 0028 | 7R 1610012688006 767999-2 73030 PITCHLOCK REGULATOR | | Input | 0 | 0 | 0 | 0 | 0 |

| ITEM NO. | STOCK LIST PRICE | UNIT MAN HOURS | FLOW TIME DAYS | FIXED COST | ESTIMATED UNIT COST | UNIT LABOR COST (INCL O/H) | UNIT COST MATERIAL EXP | UNIT COST MATERIAL INV | UNIT DLA COST* | TOTAL UNIT COST | TOTAL COST |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0024 | 8640.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0024 A | 12951.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0025 | 14149.09 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0026 | 0.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0027 | 0.00 | 0 | 0 | Y | | 755.52 | 291.48 | 0.00 | 0.00 | 1047.00 | 12564.00 |
| 0028 | 0.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Comment Type (Change, Deviation, Negotiation, Permanent) | Negotiator Role | Comment Text |
|---|---|---|

ORIGINAL: 22-AUG-08 CHANGES:

"~~For Official Use Only~~"

TAB: BB DESCRIPTION: REPAIR FACILITY: WR-ALC-SOR

| ITEM NO. | NSN/PART NO. & CAGE AND NOMENCLATURE | WBS | Input/Output | 1ST | 2ND | 3RD | 4TH | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | STOCK LIST PRICE | UNIT MAN HOURS | FLOW TIME DAYS | FIXED COST | ESTIMATED UNIT COST | UNIT LABOR COST (INCL O/H) | UNIT COST MATERIAL EXP | UNIT COST MATERIAL INV | UNIT DLA COST* | TOTAL UNIT COST | TOTAL COST |
| | Comment Type (Change, Deviation, Negotiation, Permanent) | | Negotiator Role | Comment Text | | | | | | | |
| 0001 | 7R 1610011287400LC 774800-1 SYNCHROPHASER ASSEMBLY,AIRCRAFT P | 73030 | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 54648.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Permanent | | Principal | Primary item is NIMSC 5; alt Navy peculiar | | | | | | | |
| 0001 A | 7R 1610011559337LC 766840-2 SYNCHROPHASER,AIRCRAFT PROPELLER | 73030 | Output | 0 | 0 | 0 | 0 | 0 | | |
| | 54648.00 | 0 | 0 | Y | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

DMISA: WR-ALC03 03ANKE | FY: 2009 | PRINCIPAL: NAVICP-P

EXHIBIT III-A | AGENT: WR-ALC-CMD

PROJECTED REQUIREMENTS - MAJOR PROGRAMS | DATA CURRENT AS OF: 31-AUG-10

VERSION TYPE: OF

TAB: DESCRIPTION: REPAIR FACILITY:

| ITEM NO. | NSN/PART NO. & CAGE AND NOMENCLATURE | WBS | REQUIREMENTS FY+1 | FY+2 | FY+3 | FY+4 | FY+5 |
|---|---|---|---|---|---|---|---|

*** NO DATA ENTERED ***

ORIGINAL: CHANGES:

TAB: AA DESCRIPTION: REPAIR FACILITY: WR-ALC-SOR

| ITEM NO. | NSN/PART NO. & CAGE | WBS | FY+1 1ST | FY+1 2ND | FY+1 3RD | FY+1 4TH | FY+1 TOTAL | FY+2 1ST | FY+2 2ND | FY+2 3RD | FY+2 4TH | FY+2 TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0003 | 7R 1560 006136501<br>DOOR,ACCESS,AIRCRAFT | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0008 | 7R 1610 000309552LC<br>54H60-111<br>PROPELLER,AIRCRAFT | 73030 | 7 | 7 | 7 | 8 | 29 | 0 | 0 | 0 | 0 | 0 |
| 0009 | 7R 1610 001796097LC<br>54H60C130TC<br>PROPELLER,AIRCRAFT | 73030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0010 | 7R 1610 002097984LC<br>739070-1<br>HOUSING ASSEMBLY | 73030 | 8 | 6 | 11 | 10 | 35 | 0 | 0 | 0 | 0 | 0 |
| 0011 | DELE - PHASE II<br>ITEM IS NIMSC 5 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0012 | 7R 1610 008736424LC<br>560501<br>AFTERBODY HALF BODY | 73030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0014 B | 7R 4810 013479419LC<br>714367-2<br>VALVE ASSEMBLY | 73030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

ORIGINAL: 22-AUG-08 CHANGES:

TAB: AA DESCRIPTION: REPAIR FACILITY: WR-ALC-SOR

| ITEM NO. | NSN/PART NO. & CAGE | WBS | FY+1 1ST | FY+1 2ND | FY+1 3RD | FY+1 4TH | FY+1 TOTAL | FY+2 1ST | FY+2 2ND | FY+2 3RD | FY+2 4TH | FY+2 TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0014 C | 7R 4810 014673559LC<br>714367-3<br>VALVE ASSEMBLY | 73030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0014 D | 4810 015393649<br>714367-4<br>VALVE HOUSING | 73030 | 11 | 11 | 11 | 10 | 43 | 0 | 0 | 0 | 0 | 0 |
| 0015 | DELE TED-02<br>TRANSFER TO TAB BB | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0016 | 7R 1610 011435531LC<br>774474-2<br>STOP ASSEMBLY,LOW PITCH | 73030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0016 A | 7R 1610 006286032LC<br>STOP ASSY,LOW PITCH | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0017 | 7R 1610 011669359LC<br>773824-1<br>SPINNER,PROPELLER,AIRCRAFT | 73030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0018 | 7R 5977 012094979<br>784755-1<br>HOLDER,ELECTRICAL CONTACT RING | 73030 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 |

ORIGINAL: 22-AUG-08 CHANGES:

TAB: AA DESCRIPTION: REPAIR FACILITY: WR-ALC-SOR

| ITEM NO. | NSN/PART NO. & CAGE | WBS | FY+1 1ST | FY+1 2ND | FY+1 3RD | FY+1 4TH | FY+1 TOTAL | FY+2 1ST | FY+2 2ND | FY+2 3RD | FY+2 4TH | FY+2 TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0018 B | 7R 5977 000715472<br>715805-1 73030<br>HOLDER,ELECTRICAL CONTACT RING | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0019 | 7R 1610 012688008LC<br>557700-1 73030<br>AFTERBODY ASSEMBLY | | 2 | 1 | 2 | 1 | 6 | 0 | 0 | 0 | 0 | 0 |

ORIGINAL: 22-AUG-08 CHANGES:

TAB: BB DESCRIPTION: REPAIR FACILITY: WR-ALC-SOR

| ITEM NO. | NSN/PART NO. & CAGE | WBS | FY+1 1ST | FY+1 2ND | FY+1 3RD | FY+1 4TH | FY+1 TOTAL | FY+2 1ST | FY+2 2ND | FY+2 3RD | FY+2 4TH | FY+2 TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

ORIGINAL: 22-AUG-08 CHANGES:

DMISA: WR-ALC03 03ANKE FY: 2009 PRINCIPAL: NAVICP-P

EXHIBIT III-C AGENT: WR-ALC-CMD

PROJECTED REQUIREMENTS: Pending Capability DATA CURRENT AS OF: 31-AUG-10

VERSION TYPE: OF

TAB: DESCRIPTION: REPAIR FACILITY:

| ITEM NO. | NSN/PART NO. & CAGE AND NOMENCLATURE | WBS | STOCK LIST PRICE | ESTIMATED DATE REQ'D FOR DEPOT CAP. | REMARKS |
|---|---|---|---|---|---|

*** NO DATA ENTERED ***

DMISA: WR-ALC03 03ANKE FY: 2009 PRINCIPAL: NAVICP-P

EXHIBIT IV AGENT: WR-ALC-CMD

NATIONAL EMERGENCY REQUIREMENTS DATA CURRENT AS OF: 31-AUG-10

VERSION TYPE: OF

TAB: AA DESCRIPTION: REPAIR FACILITY: WR-ALC-SOR

PROGRAM TYPE: Minor

| ITEM NO. | NSN/PART NO. & CAGE | WBS | M+1 | M+2 | M+3 | M+4 | M+5 | M+6 | M+7 | M+8 | M+9 | M+10 | M+11 | M+12 | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0008 | 7R 1610000309552LC<br>54H60-111 73030<br>PROPELLER,AIRCRAFT | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0010 | 7R 1610002097984LC<br>739070-1 73030<br>HOUSING ASSEMBLY | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0014 | DELETE - DN<br>DROPPED ITEM | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0015 | DELETED-02<br>TRANSFER TO TAB BB | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0017 | 7R 1610011669359LC<br>773824-1 73030<br>SPINNER,PROPELLER,AIRCRAFT | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0019 | 7R 1610012688008LC<br>557700-1 73030<br>AFTERBODY ASSEMBLY | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

ORIGINAL: 22-AUG-08 CHANGES:

DMISA: WR-ALC03 03ANKE

FY: 2009

PRINCIPAL: NAVICP-P

EXHIBIT IV

AGENT: WR-ALC-CMD

NATIONAL EMERGENCY REQUIREMENTS

DATA CURRENT AS OF: 31-AUG-10

VERSION TYPE: OF

TAB: BB DESCRIPTION:

REPAIR FACILITY: WR-ALC-SOR

PROGRAM TYPE: Minor

| ITEM NO. | NSN/PART NO. & CAGE | WBS | M+1 | M+2 | M+3 | M+4 | M+5 | M+6 | M+7 | M+8 | M+9 | M+10 | M+11 | M+12 | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

The Principal has no National Emergency Requirements. Should National Emergency Requirements arise,the Agent agrees to support the Principal's requirements in accordance with the Agent's capacity.

ORIGINAL: 22-AUG-08 CHANGES:

Ref (a) NAVICP INSTRUCTION 4105.1A Dated 18 October 2000

MAN-YEARS: 0.00 PRICE:

1 Definition

LOGISTICS ENGINEERING CHANGE PROPOSAL (LECP). A LECP is a reliability or maintainability related ECP for an NAVICP managed item, sponsored and funded by NAVICP, designed to reduce cost or eliminate support costs while maintaining or improving safety and performance.

MAN-YEARS: 0.00 PRICE:

DMISA: WR-ALC03 03ANKE

FY: 2009

PRINCIPAL: NAVICP-P

EXHIBIT VI

AGENT: WR-ALC-CMD

BILL OF MATERIAL/ MATERIAL REQUIREMENTS LIST

DATA CURRENT AS OF: 31-AUG-10

VERSION TYPE: OF

TAB: AA DESCRIPTION:

REPAIR FACILITY: WR-ALC-SOR

| ITEM NO. | NSN/PART NO. & CAGE | QUANTITY PER ASSEMBLY | OVERHAUL REPLACEMENT FACTOR | SOURCE OF SUPPLY |
|---|---|---|---|---|

DMISA: WR-ALC03 03ANKE

FY: 2009

PRINCIPAL: NAVICP-P

EXHIBIT VI

AGENT: WR-ALC-CMD

BILL OF MATERIAL/ MATERIAL REQUIREMENTS LIST

DATA CURRENT AS OF: 31-AUG-10

VERSION TYPE: OF

TAB: BB DESCRIPTION:

REPAIR FACILITY: WR-ALC-SOR

| ITEM NO. | NSN/PART NO. & CAGE | QUANTITY PER ASSEMBLY | OVERHAUL REPLACEMENT FACTOR | SOURCE OF SUPPLY |
|---|---|---|---|---|

## I Scope

1.1 This Statement of Work addresses requirements for overhaul of C-130 Propeller Assemblies, Propeller Control Assemblies and all pertinent subcomponents. Included are a list of applicable documents, the work requirements and provisions for data reporting and requirement deviations. All work shall be performed at Warner Robins ALC. Warner Robins will be responsible for providing adequate indoor storage of all Navy propeller assemblies and components while in their custody.

## 2 Applicable Documents

2.1 Naval Aviation Maintenance Manuals

1. NA 03-20CBBJ-2 C-130 Intermediate and Depot Level Propeller and Control Maintenance
2. NA 03-20CAD-1 C-130 Depot Level Propeller Control Maintenance Manual
3. NA 03-20C-4 P-3/C-130 Depot Level Propeller Blade Manual
4. NA 03-20C-9 Intermediate and Depot Level Spinner and Afterbody Maintenance
5. NA 03-20CED-2 Auxiliary Motor Overhaul Instructions
6. NA 03-20CEA-1 Speed Bias Servo Assembly Overhaul Instructions

7. NA 03-20CEA-3 Speed Bias Servo Assembly Operation and Maintenance
8. NA 03-20CEG-1 Standby Pump and Scavange Pump Overhaul Instructions
9. NA 03-20CEG-3 Auxiliary Pump Overhaul Instructions
10. NA 03-20P-3 Main and Scavange Pump Depot Maintenance
11. NA 01-1A-503 Cleaning and Corrosion Control
12. Cherry Pt. Local Engineering Specification (LES) CP25-1-CC-9016, REV B
13. LES CP25-1-KK-35
14. Propeller Change (PRC)-117
15. PRC-125
16. PRC-126
17. Propeller Bulletin (PRB)-110
18. PRB-117
19. COMNAVAIRFORINST 4790.2 Naval Aviation Maintenance Program
20. NA 03-20P-1 Hydraulic Gear type Scavenge Pump assembly
21. NA 03-20P-2 Hydraulic Gear type Standby Pump assemebly
22. NA 17-1-114.1 Inspection and Proofload Testing of Lifting Slings for Aircraft and Related Components
23. NA 17-1-114.11 Inspection and Proofload Testing of Lifting Slings for Aircraft and Related Components

2.2 2.2 Document Availability and Support

1. The Air Force shall download a copy of the NAVAIR Manuals listed in paragraph 2.1 from the NATEC using Web: https://www.natec.navy.mil. The Air Force shall maintain a current online account with NATEC and receive a PKI Certificate. All instructions are contained on the NATEC website. When requesting manuals the Air Force will receive all Technical Manual Source Data Record (TMDSDR) and Interim Rapid Action Changes (IRAC) applicable to the specific manual together with the changes to the basic manual. The Air Force shall be responsible for the incorporation of all TMSDRs and IRACs released during contract performance into the applicable manuals and for compliance with changes as they apply to the work requirements of this DMISA. The Air Force shall determine if new TMSDRs or IRACs have been released. This shall be accomplished through bi-weekly review of NATEC Web Site. Applicable TMSDRs, LESs, LPSs, PRCs and PRBs will be provided to the Air Force by the Propeller IPT, Cherry Point via electronic format when available.

3. 3.0 WORK REQUIREMENTS

3.1 3.1 Requirements for Propeller Assy Overhaul - The following table lists all of the propeller components to be overhauled by P/N and NSN, the manual to be used for overhaul, and any special overhaul requirements for a particular component.

Tab/ Line Item AA/008
Component Propeller Assy
P/N 54H60-111
NSN 1610-00-030-9552
Overhaul Manual NA 03-20CBBJ-2
Special Requirements- If previously unincorporated, PRC-125 and PRB-110 shall be incorporated. Kits for PRC-125 will be supplied by Navy.
- All blades with S/N less than N813320 shall be replaced with a newer blade.

Tab/ Line AA/009
Propeller Assy (Test Club)
54H60-C130TC
1610-00-179-6097
NA 03-20CBBJ-2
- If previously unincorporated, PRC-125 and PRB-110 shall be incorporated. Kits for PRC-125 will be supplied by Navy.
- All blades with S/N less than N813320 shall be replaced with a newer blade.

Tab/Line AA/0023
Blade
A7111D-2 A7111E-2

1610-00-482-7947
NA 03-20C-4
- All blades with S/N less than N813320 shall be replaced with a newer blade.

Tab/Line AA/0028
Pitchlock Regulator
767999-2
1610-01-268-8006
NA 03-20CBBJ-2

Tab/Line AA/0016
Low Pitch Stop
774474-2
1610-01-143-5531
NA 03-20CBBJ-2

Tab/Line AA/0016A
514814
Low Pitch Stop
1610-00-628-6032

NA 03-20CBBJ-2

Tab/Line AA-0017
Front Spinner
773824-1
1610-01-166-9359
NA 03-20C-9

Tab/Line AA/0017A
Front Spinner
554664
1610-00-876-1812
NA 03-20C-9

Tab/Line AA/0021
Afterbody Bracket
568156-1
1610-01-268-8007

NA 03-20C-9

Tab/Line AA/0021A
Afterbody Bracket
568156
1610-00-941-4353
NA 03-20C-9

Tab/Line AA/0012
Afterbody Top/Bottom Half
560501
1610-00-873-6424
NA 03-20C-9

Tab/Line AA/0014B
Valve Housing
714367-2
4810-01-347-9419

NA 03-20CAD-1
- Extent of overhaul will be determined by Cherry Pt. LES CP25-1-KK-35.
- If previously unincorporated, PRC-126 shall be incorporated. Kits will be supplied by Navy.

Tab/Line AA/0014C
Valve Housing
714367-3
4810-01-467-3559
NA 03-20CAD-1
- Extent of overhaul will be determined by Cherry Pt. LES CP25-1-KK-35.
- If previously unincorporated, PRC-126 shall be incorporated. Kits will be supplied by Navy.

Tab/Line AA/0014D
Valve Housing
714367-4
4810-01-539-3649
NA 03-20CAD-1
- Extent of overhaul will be determined by Cherry Pt. LES CP25-1-KK-

35.
- If previously unincorporated, PRC-126 shall be incorporated. Kits will be supplied by Navy.

Tab/Line AA/0010
Pump Housing
739070-1
1610-00-209-7984
NA 03-20CAD-1
- Extent of overhaul will be determined by Cherry Pt. LES CP25-1-KK-35.

Tab/Line AA/0025
Pump Housing & Inserts
NA 03-20CAD-1
1650-00-717-7235

Tab/Line AA/0011

Valve Housing Cover
560780
1610-00-805-7593
NA 03-20CAD-1

Tab/Line AA/0011A
Valve Housing Cover
546488
1610-00-179-6130
NA 03-20CAD-1

Tab/Line AA/0026
Aux Motor
55688
NA 03-20CED-2
6105-00-628-7433

Tab/Line AA/0018
Electrical Contact Ring
784755-1
5997-01-209-4979
NA 03-20CBBJ-2

Tab/Line AA/0018A
Electrical Contact Ring
554631
5997-00-873-6423
NA 03-20CBBJ-2

Tab/Line AA/018B
Holder, Electrical Ring
715805-1
5977-00-071-5472
NA 03-20CBBJ-2

Tab/Line AA/0027
Hub Mounting Bulkhead
554636
1610-00-875-5009
NA 03-20CBBJ-2

Tab/Line BB/001
Synchrophaser
774800-1
766840-2
NA 03-20CEA-1
NA 03-20CEA-3
1610-01-128-7400

Tab/Line BB/001A
Synchrophaser
P/N 766840-2
1610-01-155-9337

3.2 The overhaul manuals listed above may contain references to other overhaul manuals or repair instructions for specific subcomponents. A complete listing of required manuals can be found in Section VIIB.

3.3 Preservation and Packaging requirements are detailed in Section XIV

4 DOCUMENTATION

4.1 Results of repair, assembly, balance and flow testing of each propeller component as applicable shall be documented. Use of contractor format is acceptable providing documentation is provided in a spreadsheet and includes at a minimum, the following information for each item processed:
A. Part Nomenclature
B. Part number
C. Part serial number as applicable
D. Reason for Repair
E. Time Since New as applicable
F. Time Since Overhaul as applicable
G. Date balanced (Propeller)
H. Date flow tested as applicable
I. Repairs Performed and Test results

4.2 Above documentation shall be provided electronically to the

Propeller IPT on a monthly basis. An E-mail address will be provided.

4.3 The propeller Aeronautical Equipment Service Record (AESR) and the valve housing and pump housing Equipment History Record (EHR) card shall be updated to document repairs performed. Documentation of these records shall be in accordance with COMNAVAIRFORINST 4790.2.

5. DEVIATIONS FROM STANDARDS, SPECIFICATIONS AND TECHNICAL DOCUMENTATION

5.1 When a deviation from authorized overhaul procedures or a defect has been found that is not covered in the authorized overhaul procedures, a request for deviation shall be submitted to the U. S. Navy for evaluation. The deviation request shall indicate the need for, or the events leading to, a deviation; the details of the proposed solution; and any impact the deviation will have on the U. S. Navy.

6. Points of Contact:

NAVAIR 4.4.2.3 Cherry Point Propeller Engineering
(b) (6) [redacted]
P-3/C-130 Propeller Lead Engineer, AIR-4.4.2.3 Cherry Point
PSC Box 8021

Cherry Point, North Carolina 28533-0021
[redacted]

NAVAIR 6.7.1.2 Cherry Point Propeller Logistics
Mr. [redacted]
P-3/C-130 Propeller Logistics, AIR-6.7.1.2 Cherry Point
PSC Box 8021
Cherry Point, North Carolina 28533-0021
[redacted]

6.3 NAVAIR 6.8.5.1 Cherry Point Propeller Technical Publications Data Manager
Mr. [redacted]
P-3/C-130 Propeller Data Manager, AIR-6.8.5.1 Cherry Point
PSC Box 8021
Cherry Point, North Carolina 28533-0021
[redacted]

6.4 Naval Inventory Control Point (NAVICP)

[redacted] Code 0341.43
700 Robbins Avenue
Philadelphia, PA 19111
[redacted]

6.5 Naval Inventory Control Point (NAVICP)
[redacted] Code 0313.51
Technical Team Lead
700 Robbins Avenue
Philadelphia Pa. 19111
[redacted]

TECHNICAL DATA

| PROGRAM TYPE/TAB/ITEM NO. | | | NA03-20C-4 | NA03-20C-9 | NA03-20CAD-1 | NA03-20CBBJ-2 | NA03-20CEA-1 | NA03-20CED-2 | NA03-20CEG-1 | NA03-20CEG-3 | NA03-20P-1 | NA03-20P-2 | NA03-20P-3 | PRB-110 | PRB-117 | PRB-125 | PRC-126 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Minor | AA | 0008 | X | | | X | | | | | | | | X | X | X | |
| Minor | AA | 0009 | X | | | X | | | | | | | | X | X | X | |
| Minor | AA | 0010 | | | X | | | X | X | X | X | X | X | | | | |
| Minor | AA | 0011 | | | X | | | | | | | | | | | | |
| Minor | AA | 0011 A | | | X | | | | | | | | | | | | |
| Minor | AA | 0012 | | X | | | | | | | | | | | | | |
| Minor | AA | 0014 | | | X | | | | | | | | | | | | |
| Minor | AA | 0014 B | | | X | | | | | | | | | | | | |
| Minor | AA | 0014 C | | | X | | | | | | | | | | | | X |
| Minor | AA | 0014 D | | | X | | | | | | | | | | | | |
| Minor | AA | 0016 | | | | X | | | | | | | | | | | |
| Minor | AA | 0016 A | | | | X | | | | | | | | | | | |

DMISA: WR-ALC03 03ANKE FY: 2009 PRINCIPAL: NAVICP-P
EXHIBIT VII-B AGENT: WR-ALC-CMD
TECHNICAL DATA LIST AND LINE ITEM CROSS REFERENCE DATA CURRENT AS OF: 31-AUG-10
VERSION TYPE: OF

TECHNICAL DATA

| PROGRAM TYPE/TAB/ITEM NO. | | | NA03-20C-4 | NA03-20C-9 | NA03-20CAD-1 | NA03-20CBBJ-2 | NA03-20CEA-1 | NA03-20CED-2 | NA03-20CEG-1 | NA03-20CEG-3 | NA03-20P-1 | NA03-20P-2 | NA03-20P-3 | PRB-110 | PRB-117 | PRB-125 | PRC-126 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Minor | AA | 0017 | | X | | | | | | | | | | | | | |
| Minor | AA | 0017 A | | X | | | | | | | | | | | | | |
| Minor | AA | 0018 | | | | X | | | | | | | | | | | |
| Minor | AA | 0018 A | | | | X | | | | | | | | | | | |
| Minor | AA | 0018 B | | | | X | | | | | | | | | | | |
| Minor | AA | 0021 | | X | | | | | | | | | | | | | |
| Minor | AA | 0021 A | | X | | | | | | | | | | | | | |
| Minor | AA | 0023 | X | | | X | | | | | | | | | | | |
| Minor | AA | 0025 | | | X | | | | | | | | | | | | |
| Minor | BB | 0001 | | | | | X | | | | | | | | | | |

ORIGINAL: 22-AUG-08 CHANGES:

"~~For Official Use Only~~"

1 All serviceable units being returned to the principal shall meet the requirements of MIL-I-45208A, Titled: Inspection System Requirements.

The Navy PDQR process requires that the discrepant item to be returned to the agent using federal condition code L. To ensure the Navy PDQR exhibits are processed in a timely manner, the agent shall inspect and process all L condition assets as directed by the principal.

A Quality Assurance Program, in accordance with ISO 9001:2004 or SAE AS 9001 shall be in effect at the repair facility. As part of this Quality Program, a Quality Inspection Program in accordance with ISO 9002/3 or ASQC 9002/3 shall be in effect at this repair facility pursuant to Section I, Paragraph 10.e of this agreement.

2 Quality assurance terms and definitions shall be in accordance with MIL-STD-109B.

The repair facility shall maintain a Calibration System that meets the requirements ANSI/NCSL Z540, ISO-10012-1.

3 Requests for quality audits or quality related visits by activities external to the facility shall be based on quality history and criticality of application. All requests for audit or visits will be coordinated with WR-ALC/FMLMC.

Quality audits and Quality Investigations are essential tools used to comprehensively evaluate factors and conditions affecting product or process quality. They identify potential problems, opportunities for improvement, and stimulate root cause corrective or preventive actions. The objective of quality audits and investigations is continuous improvement of a system or process. Quality Audits are independent reviews conducted to compare some aspect of performance with set quality standards for that performance. Audits are usually conducted on a regularly scheduled basis and shall not be conducted solely as a crisis response. Audits may vary in depth and scope as determined by objective quality history and product complexity. Procedures must be established to:

(a) Maintain quality audit records.
(b) Ensure follow-ups are conducted on all documented concerns.

(c) Provide written corrective and preventive actions on documented deficiencies within specified time frames.

Requests for quality audits by activities external to the facility shall be based on quality history and criticality of application. All requests for audit or visits will be coordinated with WR-ALC/FMLMC.

4 Reporting Product Quality Defincies (PQDR's)

When submitting Product Quality Deficiency Reports (QDRs), the standard form SF368 shall be used. Section III, paragraph 9e(6) of this agreement applies.

a. All product quality deficiencies shall be reported. This includes deficiencies which may occur in major weapon systems, secondary/consumable/repairable items, or spare and repair parts. Reportable PQDRs include any defect or nonconforming condition indicating deficiencies in design, specification, materiel, manufacturing, and workmanship which may be attributable to maintenance, design, specification, or any other documentation/equipment under the control or responsibility of the Government. Defects in materiel that is covered by a warranty shall be reported via the PQDR system on a SF368.

b. Any individual, or Activity within a Component, finding a product quality deficiency is responsible to report it to the appropriate Originating Point/Screening Point for that Component. PQDRs must be reported within 1 day after discovery of a Category I deficiency, or 3 days after discovery of a Category II deficiency. An Individual/Activity who discovers the defective materiel and initiates the deficiency report shall be known as the Originator/Originating Point respectively. When Originators/Originating Points determine that a deficient item is useable, the deficiency must still be reported for information and historical purposes.

5 Quality Investigations.

Quality investigations are conducted when a known or perceived problem exists. Quality investigations shall be used for the identification, correction, and prevention of conditions that degrade the quality or reliability of products, processes, or systems. A PQDR shall not be submitted for deficiencies caused through transporting of the asset or if an asset is repaired via a Maintenance Activity. These type deficiencies will be reported as a Supply Discrepancy Report through established guidelines.

All quality deficiencies shall be reported via the Naval Aviation Maintenance Discrepancy Program (NAMDRP) with supporting documentation to the correct Screening Point for verification/validation of information provided. The Originating Activity will ensure each exhibit must have a DD Form 1575-1 "Suspended Tag-Materiel" with "Q" annotated in the condition code block and DD Form 2332 "Product Quality Deficiency Report Exhibit" tag along with supporting documentation, which will be held until further instructions are received from the Support Point. The Screening Point will then forward the PQDR via NAMDRP to the designated repair facility. The Receiving Office/Action Point will acknowledge receipt of the reported discrepancy. After Action Point review, shipping instructions will be provided within 10 days to the Screening Point for input in the NAMDRP system. If additional time is needed for Action Point review, a notification shall be sent to the Support Point. The Support Point shall notify the Originator and Supply to continue to hold the exhibit until determined by the Action Point as to whether the exhibit shall be requested for investigation or if the reported deficiency can be resolved without the exhibit.

If the exhibit is required for investigation, the Action Point will provide shipping instructions to the Support Point. The Support Point will then generate a message via NAMDRP to the Originator and Supply Office providing shipping instructions. The Supply Office shall comply with all instructions provided, ensuring proper markings and paperwork are included with the exhibit. The Supply Office shall update NAMDRP with tracking information including Mode of Transportation, Tracking Number, Document Nr, etc. When the exhibit is delivered the Action Point shall send a message/email to the Support Point to notify receipt of the exhibit. The Support Point will update the NAMDRP record that exhibit has been received. Once the exhibit is received for investigation, a report of findings shall be forwarded to the Support Point within 30 days. If investigation requires additional time, an Interim Report shall be forwarded to the Support Point. The Support Point will then generate a message in

NAMDRP to the Originator advising status of the reported deficiency. The Navy PQDR process requires the discrepant item to be returned to the agent using federdal condition code L. To ensure that Navy PQDR exhibits are processed in a timely manner, the agent shall inspect and process all L condition assets as directed by the principal.

Once the investigation has been completed, the Action Point shall provide the Support Point with a Final Message providing the findings of the investigation and the root cause of the failure. Dependent on the failure and root cause, the exhibit shall be repaired and returned to the Supply System as an A-RFI Serviceable asset or if deemed Beyond Economical Repair, scrapped through established procedures. The Support Point shall generate a message to the Originator providing all information received as a result of the investigation. (continued in Paragraph 5A)

5A Should the Originator not agree with the findings, a Rebuttal may be sent to the Support Point, which in turn will be reported to the Action Point. A response to the rebuttal shall be received from the Action Point and then passed back to the Originator via a Final Report Revision within NAMDRP.

Credit shall be recommended/issued for the deficiency if determined through investigation that the root cause was not the fault of the receiving activity. This will be decided on a case-by-case basis, dependent on the findings of the root cause.

If no issues exist with the findings and root cause of the investigation, the Final Reply received from the Action Point and submitted to the originator via the Support Point, the record will be considered completed and closed. NAMDRP will maintain these records for historical and trending purposes.

6 TPDR - (Technical Publication Discrepancy Reports) - These reports are posted on the NATEC (Naval Aviation Technical Engineering Command) website www.natec.navy.mil and shall be initiated anytime a Technical Publication deficiency is discovered.

DMISA: WR-ALC03 03ANKE

FY: 2009

EXHIBIT X-A

LIST OF REPORTS

PRINCIPAL: NAVICP-P

AGENT: WR-ALC-CMD

DATA CURRENT AS OF: 31-AUG-10

VERSION TYPE: OF

REPAIR FACILITY:

| REPORT TITLE/DID | REPORT CONTENT | FREQUENCY | DISTRIBUTION |
|---|---|---|---|
| MONTHLY DMISA PRODUCTION STATUS REPORT/COMPONENTS (EX X-B) | STATUS OF PRODUCTION IAW JLC FORM 5 FORMAT | MONTHLY | QUANTITY: 1<br>NAVICP-PHIL<br>COMMANDER<br>NAVAL INVENTORY CONTROL POINT(CODE 034<br>700 ROBBINS AVE<br>PHILADELPHIA ,PA 19111 - 5098 |

ORIGINAL: 22-AUG-08 CHANGES:

~~"For Official Use Only"~~

DMISA: WR-ALC03 03ANKE

EXHIBIT XI

SAFETY

PRINCIPAL: NAVICP-P

AGENT: WR-ALC-CMD

DATA CURRENT AS OF: 31-AUG-10

VERSION TYPE: OF

REPAIR FACILITY:

Support services/responsibilities to be performed by the DDD, and any associated costs listed on Exhibits I and II, are:

ORIGINAL: CHANGES:

Special instructions for marking DD 1348-1 to ship repaired material to the principal:
[Refer to Section II 1,b (1)]

| COL/BLOCK | TITLE | ENTRY |
|---|---|---|
| 1-3 | Document Identifier | As applicable |
| 4-6 | Routing Identifier | As applicable |
| 8-22 | Stock Number | As applicable, with SMIC suffix |
| 30-43 | Document Number | In MILSTRAP format to be assigned by Air Force (utilize Navy Doc Nrs. N00383-Julian Date-Z800 to Z850 |
| 45-50 | Supplementary Address | As applicable |
| 51 | Signal Code | K |
| 52-53 | Fund Code | 26 |
| 55-56 | Distribution Code | 7R |
| 57-59 | Project Code | 3BB or as specified by NAVICP |
| Block B | Ship to | In accordance with Section IIA, para 1.b.(1) above |

**Support services/responsibilities to be performed by the DDD, and any associated costs listed on Exhibits I and II, are:**

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: BRUNSWICK/N60087 TO WR/FB2065

COMMENT:

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N60087 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | NAVY MATL |
| MARK FOR: | |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: COML_AVIA_REPTG/Q98362 To DDD_SAN_DIEGO/

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | N32 |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | Q98362 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3205 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDX |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDX |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: COML_AVIA_REPTG/Q98362 To WR-ALC-SOR/SW3

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | Q98362 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FISC-JACKSONVLE/N3307A To WR-ALC-SOR/FB2

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N3307A |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-123TRW STAN/FB6161 To WR-ALC-SOR/FB2

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB6161 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-153 ALGP/FB6501 To WR-ALC-SOR/FB2065

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

DOCUMENT IDENTIFIER (1-3):

ROUTING IDENTIFIER (FROM) (4-6): FLB

MEDIA AND STATUS CODE (7):

DOCUMENT NUMBER DODAAC (30-35): FB6501

SUPPLIMENTARY ADDRESS (45-50): FB2065

SIGNAL CODE (51):

FUND CODE (52-53):

DISTRIBUTION CODE (54-56):

PROJECT CODE (57-59):

PRIORITY (60-61):

ADVICE CODE (65-66):

ROUTING IDENTIFIER (PRINCIPAL) (67-69): SDD

OWNERSHIP PURPOSE CODE(70): 5

CONDITION CODE (71):

REMARKS (BLOCK AA): WR-ALC0303ANKE

MARK FOR: ICP: SDD

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-165AG SAVAN/FB6102 To WR-ALC-SOR/FB2

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB6102 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-377 TRANS S/FB4469 To WR-ALC-SOR/FB2

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6): FLB
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): FB4469
SUPPLIMENTARY ADDRESS (45-50): FB2065
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69): SDD
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): WR-ALC0303ANKE
MARK FOR: ICP: SDD

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-910TAG YOUN/FB6656 To WR-ALC-SOR/FB2

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB6656 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-ANG STRATTO/FB6323 To WR-ALC-SOR/FB2

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB6323 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-CHARLESTON/FB6481 To WR-ALC-SOR/FB20

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB6481 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-DAVIS MONTH/FB4877 To WR-ALC-SOR/FB2

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB4877 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-DYESS AFB/FB4661 To WR-ALC-SOR/FB206

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB4661 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-EGLIN AFB/FB2823 To WR-ALC-SOR/FB206

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB2823 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-ELMENDORF/FB5000 To WR-ALC-SOR/FB206

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB5000 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

---

(TAB DEFAULT)

SUBJECT TEXT: FLD-HARRISBURG/FB6383 To WR-ALC-SOR/FB20

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB6383 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-HENSLEY FLD/FB6431 To WR-ALC-SOR/FB2

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB6431 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-HURLBURT FL/FB4417 To WR-ALC-SOR/FB2

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB4417 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-KEESLER AFB/FB3010 To WR-ALC-SOR/FB2

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB3010 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-LITTLEROCK/FB4460 To WR-ALC-SOR/FB20

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB4460 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-LITTLEROCK/FB6031 To WR-ALC-SOR/FB20

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6): FLB
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): FB6031
SUPPLIMENTARY ADDRESS (45-50): FB2065
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69): SDD
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): WR-ALC0303ANKE
MARK FOR: ICP: SDD

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-MAPLE LEAF/FB6633 To WR-ALC-SOR/FB20

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB6633 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-MILDENHALL/FB5518 To WR-ALC-SOR/FB20

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB5518 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-MOODY AFB/FB4830 To WR-ALC-SOR/FB206

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB4830 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |



~~"For Official Use Only"~~

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-NC AIR GRD/FB6331 To WR-ALC-SOR/FB20

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB6331 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-NO KINGSTWN/FB6391 To WR-ALC-SOR/FB2

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB6391 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-POPE AFB/FB4488 To WR-ALC-SOR/FB2065

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6): FLB
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): FB4488
SUPPLIMENTARY ADDRESS (45-50): FB2065
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69): SDD
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): WR-ALC0303ANKE
MARK FOR: ICP: SDD

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

---

(TAB DEFAULT)

SUBJECT TEXT: FLD-RAMSTEIN AB/FB5612 To WR-ALC-SOR/FB2

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB5612 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-RENO ANG/FB6281 To WR-ALC-SOR/FB2065

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB6281 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-ST JOE/FB6252 To WR-ALC-SOR/FB2065

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB6252 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-WESTHAMPTON/FB6325 To WR-ALC-SOR/FB2

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB6325 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-WILMINGTON/FB6081 To WR-ALC-SOR/FB20

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB6081 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-YOKOTA AB/FB5209 To WR-ALC-SOR/FB206

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB5209 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLD-YOKOTA AB/FB5209 To WR-ALC-SOR/SW311

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6): FLB
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): FB5209
SUPPLIMENTARY ADDRESS (45-50): SW3119
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69): N32
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): WR-ALC0303ANKE
MARK FOR: ICP: N32

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: FLS SQ 55/N53855 To WR-ALC-SOR/SW3119

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | PDJ |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N53855 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC9803ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: MALS 11/R09111 TO AGENT

COMMENT:

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6):
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): R09111
SUPPLIMENTARY ADDRESS (45-50):
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69):
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): NAVY MATL FOR REPAIR
MARK FOR:

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: MALS 11/R09111 TO WR/FB2065

COMMENT:

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6):
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): R09111
SUPPLIMENTARY ADDRESS (45-50): FB2065
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69):
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): NAVY MATL
MARK FOR:

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

---

(TAB DEFAULT)

SUBJECT TEXT: MALS 11/R09111 To WR-ALC-SOR/SW3119

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | R09111 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC9803ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: MALS 14/V09114 TO WR/FB2065

COMMENT:

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6):
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): V09114
SUPPLIMENTARY ADDRESS (45-50): FB2065
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69):
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): NAVY MATL
MARK FOR:

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: MALS 14/V09114 To WR-ALC-SOR/SW3119

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | PDP |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | V09114 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC9805ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: MALS/N55555 To WR-ALC-SOR/FB2065

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N55555 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: MALS/N55555 To WR-ALC-SOR/SW3119

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | PDH |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N55555 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC9803ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: MAR_AVI_LOGSQ/R55660 To WR-ALC-SOR/FB206

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | R55660 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: MAR_AVI_LOGSQ/R55660 To WR-ALC-SOR/SW311

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6): FLB
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): R55660
SUPPLIMENTARY ADDRESS (45-50): SW3119
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69): N32
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): WR-ALC0303ANKE
MARK FOR: ICP: N32

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: MCAS FUTENMA/R09136 To DDD_SAN_DIEGO/SW3

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | N32 |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | R09136 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3205 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDX |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDX |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: MCAS FUTENMA/R09136 To WR-ALC-SOR/FB2065

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | R09136 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: MCAS FUTENMA/R09136 To WR-ALC-SOR/SW3119

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | PUJ |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | R09136 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC9805ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: N'ORLEANS/N00206 TO WR/FB2065

COMMENT:

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6):
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): N00206
SUPPLIMENTARY ADDRESS (45-50): FB2065
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69):
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): NAVY MATL
MARK FOR:

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NADEP CPT/N65923 TO WR/FB2065

COMMENT:

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6):
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): N65923
SUPPLIMENTARY ADDRESS (45-50): FB2065
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69):
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71): F
REMARKS (BLOCK AA): NAVY MATL FOR DMISA REPAIR
MARK FOR:

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NADEP JAX/N65886 TO WR/FB2065

COMMENT:

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N65886 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | F |
| REMARKS (BLOCK AA): | NAVY MATL FOR DMISA REPAIR |
| MARK FOR: | |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAF ATSUGI/N62507 To WR-ALC-SOR/FB2065

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N62507 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor    TAB: AA    REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAF ATSUGI/N62507 To WR-ALC-SOR/SW3119

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | PDJ |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N62507 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAF WASHINGTON/N00166 TO WR/FB2065

COMMENT:

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6):
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): N00166
SUPPLIMENTARY ADDRESS (45-50): FB2065
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69):
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): NAVY MATL FOR DMISA
MARK FOR:

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAF-WASHINGTON/N00166 To WR-ALC-SOR/SW31

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | PDH |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N00166 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC9803ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

---

(TAB DEFAULT)

SUBJECT TEXT: NAPRA DET SINGA/N68753 To WR-ALC-SOR/FB2

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N68753 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAPRA DET SINGA/N68753 To WR-ALC-SOR/SW3

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N68753 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor    TAB: AA    REPAIR FACILITY: WR-ALC-SOR

---

(TAB DEFAULT)

SUBJECT TEXT: NAS CORPUS CHRI/N00216 To WR-ALC-SOR/SW3

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6): PDV
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): N00216
SUPPLIMENTARY ADDRESS (45-50): SW3119
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69): N32
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): WR-ALC0303ANKE
MARK FOR: ICP: N32

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAS FT WORTH/N83447 TO WR/DLA/SW3119

COMMENT:

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6):
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): N83447
SUPPLIMENTARY ADDRESS (45-50): SW3119
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69):
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71): F
REMARKS (BLOCK AA): NAVY MATL FOR DMISA REPAIR
MARK FOR:

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAS FT WORTH/N83447 TO WR/FB2065

COMMENT:

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6):
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): N83447
SUPPLIMENTARY ADDRESS (45-50): FB2065
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59): 3BB
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69):
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): NAVY MATL
MARK FOR:

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAS-BRUNSWICK/N60087 To WR-ALC-SOR/SW311

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | PDH |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N60087 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAS-JACKSONVILL/N00207 To WR-ALC-SOR/SW3

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N00207 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAS-NEW ORLEANS/N00206 To WR-ALC-SOR/SW3

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | PDV |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N00206 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAS-SIGONELLA/N62995 To WR-ALC-SOR/SW311

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6): PDW
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): N62995
SUPPLIMENTARY ADDRESS (45-50): SW3119
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69): N32
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): WR-ALC9803ANKE
MARK FOR: ICP: N32

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAS-WILLOW GROV/N00158 To WR-ALC-SOR/SW3

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N00158 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAS_SIGONELLA/N3309A To WR-ALC-SOR/SW311

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N3309A |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAVAIR/N62649 To WR-ALC-SOR/SW3119

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | PDJ |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N62649 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAVAL BASE VENT/N0429A To WR-ALC-SOR/FB2

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6): FLB
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): N0429A
SUPPLIMENTARY ADDRESS (45-50): FB2065
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69): N32
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): WR-ALC0303ANKE
MARK FOR: ICP: N32

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAVAL BASE VENT/N0429A To WR-ALC-SOR/SW3

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | PDJ |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N0429A |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAVAL SUPPLY CE/N68620 To WR-ALC-SOR/SW3

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N68620 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAVAL_AIR_RES/N61033 To WR-ALC-SOR/FB206

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N61033 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAVAL_AIR_RES/N61033 To WR-ALC-SOR/SW311

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N61033 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAVAL_AIR_RES/N61034 To WR-ALC-SOR/SW311

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N61034 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAVAL_AIR_RES/N61035 To WR-ALC-SOR/FB206

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N61035 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAVAL_AIR_RES/N61035 To WR-ALC-SOR/SW311

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N61035 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAVAL_AIR_RES/N61036 To WR-ALC-SOR/FB206

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N61036 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAVAL_AIR_RES/N61036 To WR-ALC-SOR/SW311

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N61036 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAVDLR AGENT/N46433 To WR-ALC-SOR/SW3119

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | PDJ |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N46433 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAVY FLT DEMO S/N30929 To WR-ALC-SOR/FB2

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N30929 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAVY FLT DEMO S/N30929 To WR-ALC-SOR/SW3

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | PDH |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N30929 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAV_FSO_SIGONEL/N61112 To WR-ALC-SOR/SW3

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N61112 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | N32 |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: N32 |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: NAWPNS POINT MU/N63126 To WR-ALC-SOR/SW3

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6): PDJ
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): N63126
SUPPLIMENTARY ADDRESS (45-50): SW3119
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69): N32
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): WR-ALC0303ANKE
MARK FOR: ICP: N32

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: PAX RIV/N00421 TO WR/DLA/SW3119

COMMENT:

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6):
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): N00421
SUPPLIMENTARY ADDRESS (45-50): SW3119
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69):
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71): F
REMARKS (BLOCK AA): NAVY MATL FOR DMISA REPAIR
MARK FOR:

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: PAX RIV/N00421 TO WR/FB2065

COMMENT:

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6):
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): N00421
SUPPLIMENTARY ADDRESS (45-50): FB2065
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69):
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): NAVY MATL FOR DMISA
MARK FOR:

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: PDZ/N00246 TO WR/FB2065

COMMENT: Ship by traceable means; mark for DMISA WRALC9803 ANKE

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6):
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): N00246
SUPPLIMENTARY ADDRESS (45-50): FB2065
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69):
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): NAVY MATL FOR DMISA REPAIR
MARK FOR:

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: PNZ/N00188 TO WR/FB2065

COMMENT: Ship by traceable means; mark for DMISA WRALC9803 ANKE

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6):
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): N00188
SUPPLIMENTARY ADDRESS (45-50): FB2065
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69):
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): NAVY MATL FOR REPAIR UNDER DMISA
MARK FOR:

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: PRINCIPAL/N00189 TO AGENT/DLA/SW3119

COMMENT: SHIP BY TRACEABLE MEANS

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N00189 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | 3BB |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | NAVY MATL FOR REPAIR. ACCT 05, PROJ 3BB |
| MARK FOR: | DMISA WR-ALC0303ANKE |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

---

(TAB DEFAULT)

SUBJECT TEXT: PRINCIPAL/N00189 TO AGENT/FB2065

COMMENT: SHIP BY TRACEABLE MEANS

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N00189 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | 3BB |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | NAVY MATL FOR REPAIR, ACCT 05, PROJ 3BB |
| MARK FOR: | |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: PRINCIPAL/N00244 TO AGENT/DLA/SW3119

COMMENT: Ship by traceable means

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N00244 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | 3BB |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | MARK FOR NAVY REPAIR, ACCT 05, PROJ 3BB |
| MARK FOR: | DMISA WR-ALC0303ANKE |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: PRINCIPAL/N00244 TO AGENT/FB2065

COMMENT: Ship by traceable means

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N00244 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | 3BB |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | MARK FOR NAVY REPAIR, ACCT 05, PROJ 3BB |
| MARK FOR: | DMISA WR-ALC0303ANKE |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: PRINCIPAL/N00383 TO AGENT/DLA/SW3119

COMMENT: Ship by traceable means; M/F DMISA WRALC9803 ANKE

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N00383 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | MARK FOR NAVY REPAIR, ACCT 05, PROJ 3BAB |
| MARK FOR: | |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: PRINCIPAL/N00383 TO AGENT/FB2065

COMMENT: Ship by traceable means; M/F DMISA WRALC9803 ANKE

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6):
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): N00383
SUPPLIMENTARY ADDRESS (45-50): FB2065
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69):
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): MARK FOR NAVY REPAIR, ACCT 05, PROJ 3BB
MARK FOR:

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

---

(TAB DEFAULT)

SUBJECT TEXT: ROTA/N62863 TO WR/FB2065

COMMENT:

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6):
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): N62863
SUPPLIMENTARY ADDRESS (45-50): FB2065
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69):
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): NAVY MATL FOR DMISA
MARK FOR:

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: SIGONELLA/N62995 TO WR/FB2065

COMMENT:

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | N62995 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | NAVY MATL |
| MARK FOR: | |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: WILGRO/N00158 TO FLZ/FB2065

COMMENT:

DOCUMENT IDENTIFIER (1-3):
ROUTING IDENTIFIER (FROM) (4-6):
MEDIA AND STATUS CODE (7):
DOCUMENT NUMBER DODAAC (30-35): N00158
SUPPLIMENTARY ADDRESS (45-50): FB2065
SIGNAL CODE (51):
FUND CODE (52-53):
DISTRIBUTION CODE (54-56):
PROJECT CODE (57-59):
PRIORITY (60-61):
ADVICE CODE (65-66):
ROUTING IDENTIFIER (PRINCIPAL) (67-69):
OWNERSHIP PURPOSE CODE(70): 5
CONDITION CODE (71):
REMARKS (BLOCK AA): ACCT 05, PROJ 3BB
MARK FOR: NAVY MATL FOR REPAIR

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: WR-ALC-CMD/FD2060 To WR-ALC-SOR/FB2065

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FD2060 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: WR-ALC-CMD/FD2060 To WR-ALC-SOR/SW3119

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FD2060 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: WR-ALC-SOR/FB2065 To WR-ALC-SOR/FB2065

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB2065 |
| SUPPLIMENTARY ADDRESS (45-50): | FB2065 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |

Special instructions for DD Form 1348-1: All shipping documents will conform to MILSTRIP. The following specific entries will be made on the DD Form 1348-1 "DoD Single Line Item Release Document". Refer to Section II, 1.a(2).

EXHIBIT TYPE: Minor TAB: AA REPAIR FACILITY: WR-ALC-SOR

(TAB DEFAULT)

SUBJECT TEXT: WR-ALC-SOR/FB2065 To WR-ALC-SOR/SW3119

COMMENT: IMACS GENERATED SPECIAL SHIPPING INSTRUCTION!

| | |
|---|---|
| DOCUMENT IDENTIFIER (1-3): | |
| ROUTING IDENTIFIER (FROM) (4-6): | FLB |
| MEDIA AND STATUS CODE (7): | |
| DOCUMENT NUMBER DODAAC (30-35): | FB2065 |
| SUPPLIMENTARY ADDRESS (45-50): | SW3119 |
| SIGNAL CODE (51): | |
| FUND CODE (52-53): | |
| DISTRIBUTION CODE (54-56): | |
| PROJECT CODE (57-59): | |
| PRIORITY (60-61): | |
| ADVICE CODE (65-66): | |
| ROUTING IDENTIFIER (PRINCIPAL) (67-69): | SDD |
| OWNERSHIP PURPOSE CODE(70): | 5 |
| CONDITION CODE (71): | |
| REMARKS (BLOCK AA): | WR-ALC0303ANKE |
| MARK FOR: | ICP: SDD |