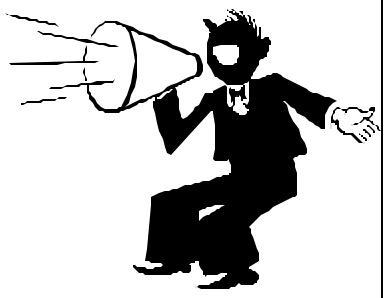
THE ASSIST

July 2003 | Issue No. 17

**** Serving the RAST Fleet ****

A Word From the RAST Fleet Liaison



In case you didn't see the last issue of the ASSIST, my name is EN1 Tony Wine, and I am your RAST Fleet Liaison. I reported for duty in Lakehurst, after completing the RAST Mechanical school in Norfolk, VA in February 2001. Prior to that, I spent five years on sea duty. I served aboard the USS Lassalle from Feb. '87 to Feb '89. Then, I spent a few years on the USS Holland.

In 1992, I was stationed at NWS Earle as the Chief Engineer on board the USN Bogalusa. After decom, I transferred to ACU-2 onboard LCU 1658/1654 as YTB Chief Engineer.

My job is to help ***YOU.*** If you need help, please call or send an e-mail. I'm in the unique position of being in contact with RAST Engineers, ASIRs, Logisticians, and TYCOMS.

Please let me help you resolve whatever problems you might be having. I can't help you if you don't tell me what your problem is. One of the main goals of the RAST In-Service Engineering Team (made up of engineers, logisticians, and technical specialists) here at Lakehurst is to provide as much assistance as possible directly to you, the RAST Technician. But they need your input to do it. So please fill out the feedback forms, send an e-mail, or give us a call. All the POC's are inside on page 2. I'm looking forward to hearing from you. Until next time, take care.

- EN1 SW/AW Tony Wine

Internet Access !!

You can view issues no. 1 through 16 simply by logging on to: **www.lakehurst.navy.mil/rast** This is recommended reading for all RAST techs. All of the maintenance tips and general information in the back issues can be just as helpful today.

Inside this issue...

RSD LATCH AND PIVOT DESIGN CHANGE

After an extensive development and test program, the new RSD arresting beam latch and pivot design change was approved at the program level in mid-March, and has entered the production and logistics execution phases. The engineering phase ended with the release of the complete data package at the beginning of April.

During 20 years of operational experience with the RAST System, NAVAIR has had occasional reports of RSD arresting beams becoming unlatched during straightening and traversing maneuvers. These reports were rare in the early 1990's, but rose gradually until reaching a peak in 1998 with three ships reporting incidents that year.

When investigated, all these failures were linked to issues of extensive wear and tear during usage, overhaul and maintenance. Each time new guidelines on overhaul and shipboard maintenance were issued. To complicate matters, the SH-60 program had started phasing in a larger diameter RAST main probe earlier in the decade that was changed to an intermediate size when discovered mid-decade by our ASIRs investigating unlatching events. Both of these new probes caused additional prying loads on the arresting beams and latches. The original large probe was shown analytically to cause latching failure, and was suspected of causing several units to require early change-out due to extraordinary amounts of wear and degradation on arresting beams and components.

After putting out the fires with additional short-term fixes in 1999, engineers at Lakehurst continued looking at long-term design fixes for this problem. The initial approach was to isolate and quantify each factor thought to have a significant impact on unlatching. Since unlatching had never been simulated and studied in testing, all failure modes where still theoretical. All short term fixes had been generated by evaluation of the equipment after a failure. A long-term design fix would require positive identification of significant factors, and proof that the new design offered an acceptable improvement in performance over the existing design when exposed to those factors.

AT SEA ABOARD *USS MOBILE BAY*, SEPT. 26, 2002 — AN SH-60B *SEA HAWK* HELICOPTER RESTS ON THE FANTAIL OF *USS MOBILE BAY* (CG 53) AS *USS FLETCHER* (DD 992) STEAMS IN THE BACKGROUND. U.S. NAVY PHOTO BY PHOTOGRAPHER'S MATE 2ND CLASS DAN LAPIERRE. [020926-N-3349L-004] SEPT. 26, 2002

NAWC Lakehurst RAST Points of Contact

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RSD LATCH AND PIVOT DESIGN CHANGE - Continued

This is the classic approach of generating hard design requirements from an engineering investigation. Unfortunately, the team of engineers, ASIRs, and Fleet Liaison identified 29 possible factors related to design, environment, operations, maintenance and manufacturing. To quantify the significance of 29 factors would be extremely complicated and cost prohibitive.

Instead we took a slightly different tack. We assumed all factors were significant, and launched an effort to design a change that neutralized every factor. In doing this we could validate the change by designing a single test that combines all the factors into 3 general levels of "noise": low level stress, moderate stress, max stress. These three test levels are outlined as follows:

RSD LATCH & PIVOT CHANGE ETL VIBRATION TEST LEVELS

LEVEL 1
Low level 2 Axis vibration
RSD Arresting Beams end gaps per LRB 20: .005"- .010"
RSD Arresting Beam operating cable tension: all cables @ 90 Lbs
Latch Condition: Clean
Probe Size: 2.730" & 2.800"
Probe Roll: 3 Degrees
Probe Peak Load: 5,000 lbs.
Probe Roll Period: 3 Seconds
Roll/Load Direction: +/- 15 Degrees to C.L.
Probe Position in Beams: Fwd, Centered and Aft (3 positions)
Beam Positions: Starboard Beam engaged in Cam Brakes, Port beam engaged in Cam Brakes (ensure beams not against either side), and straightening through
capture area (2 fixed positions & 1 cam brakes off for straightening)

RSD TEST SETUP LOOKING FORWARD

LEVEL 2
Low level 2 Axis vibration
RSD Arresting Beams end gaps per LRB 20: .025"- .030"
RSD Arresting Beam operating cable tension: all cables @ 60 lbs
Latch Condition: Apply small amount of dirt & grit
Probe Size: 2.730" & 2.800"
Probe Roll: 9 Degrees
Probe Peak Load: 13,000 lbs.
Probe Roll Period: 6 Seconds
Roll/Load Direction: +/- 15 Degrees to C.L.
Probe Position in Beams: Fwd, Centered and Aft (3 positions)
Beam Positions: Starboard Beam engaged in Cam Brakes, Port beam engaged in Cam Brakes (ensure beams not against either side), and straightening through
capture area (2 fixed positions & 1 cam brakes off for straightening)

"THE ASSIST" is an unclassified, quarterly publication issued by the RAST team of the Recovery Branch, SE/ALRE In-Service Engineering Division, Naval Air Warfare Center, Aircraft Division, Lakehurst, New Jersey.

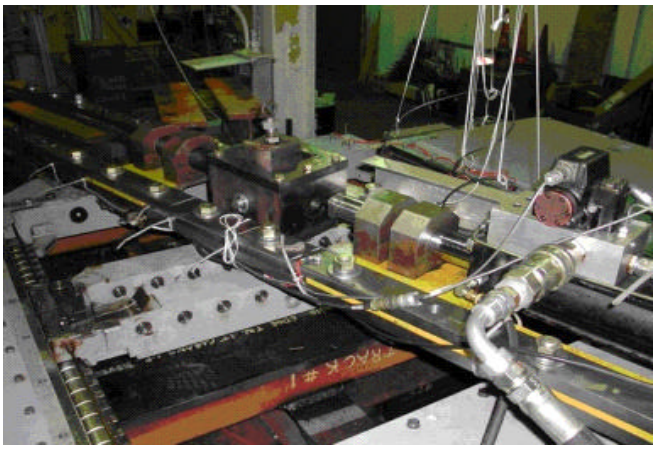
The information herein is unofficial and is provided to assist the RAST community in the operation and maintenance of the RAST system.

RSD LATCH AND PIVOT DESIGN CHANGE - Continued

LEVEL 3
High level 2 Axis vibration
RSD Arresting Beams end gaps per LRB 20: .035"- .040"
RSD Arresting Beam operating cable tension: 40-60 Ibs (different tensions each cable)
Latch Condition: Apply small amount of dirt & grit with sea water wash
Probe Size: 2.730" & 2.800"
Probe Roll: 15 Degrees
Probe Peak Load: 21,000 Ibs.
Probe Roll Period: 9 Seconds
Roll/Load Direction: +/- 15 Degrees to **C.L.**
Probe Position in Beams: Fwd, Centered and Aft (3 positions)
Beam Positions: Starboard Beam engaged in Cam Brakes, Port beam engaged in Cam Brakes (ensure beams not against either side), and straightening through capture area (2 fixed positions & 1 cam brakes off for straightening)

Test RSD with Beams OPEN

In taking this approach, we lost the ability to come away from the testing with a clear understanding of the impact of each factor, but we validated the hardiness of the design change against the current baseline configuration, rapidly and cost effectively.



Test RSD with Beams CLOSED

We still learned a few things in the testing of the current baseline configuration. We learned that the forward latch repeatedly unlatched after only 2 to 4 cycles at level 1, when the probe was captured in the center of the arresting beams. When the probe was captured in the forward end of the arresting beams the forward latch held at level 1, but failed at level 2. In the aft position, both latches passed level 3. We also learned that vibration is not a significant factor because we could repeat the failures with the vibration turned off. The new latches never failed at any level, in any position.

Following the lab testing the new latch was successfully tested with live aircraft at the RAST Elevated Fixed Platform in Lakehurst, then out at sea aboard the USS ELROD.

You should start seeing the new latch out in the Fleet in late 2003/early 2004. This change will be incorporated by both overhaul facilities and by VRT simultaneously.

New Latch Design

FAULT DETECT FOR PROBE SLIPPAGE

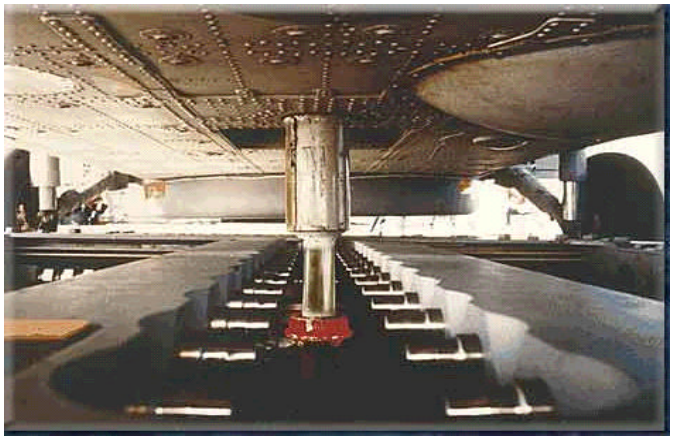
The RAST Fleet has recently experienced a rise in the fore/aft slipping of the A/C through the RSD beam pins during straightening and traversing. In the past, isolated incidents of slipping through one or two beam pin positions had been experienced on FFG7, CG47, and DD963 Class RAST ships. However, the chronic, excessive slipping that was recently reported across the DDG 51 Flight IIA Class ships indicated a condition requiring resolution, which we are currently working on.

SH60B landing on USS OSCAR AUSTIN (DDG 79)

The following procedure is being provided as a "heads-up"…..this same procedure will be in the next revision of the OMI manual (to be issued by August 2003), and will be listed as a "fault-detect" procedure. For DDG FLT IIA ships, due to slippage severity on that Class, the initial assessment (fault-detect procedure) is to be performed with ASIR assistance IAW NAWCADLKE LTR.
Ser # 48J200B596-1/1849, 14 April 2003.

FAULT-DETECT Procedure

The aircraft mounted RAST Main Probe may slip one or two positions in the RSD arresting beams during normal tailguiding and traversing operations. This is because the RSD was designed to secure the aircraft with just one pin forward and one pin aft of the probe.



While the probe is shifting from port to starboard, such as during straightening or normal aircraft rolling, it may slip a position before it finds the pin on the starboard side (and vice versa). Anytime the aircraft slips more than two positions, maintainers should perform the following fault detect and correct any deficiencies found. Special attention should be paid to slipping that results in the probe striking the RSD cover plates. If uncorrected, this may lead to probe failure. This fault has been documented to be especially severe on DDG 51 FLT IIA Class Hulls.

A. INSPECT ARRESTING BEAM SPRING LOADED PINS

1. ENSURE LRC 65 (NEW PINS) IS INSTALLED

2. REPLACE DAMAGED WORN PINS (REF. MRC 21 9KDLY, R1, 1.B. (3) & OMI 6-161)

3. ENSURE PINS FULLY EXTEND/ RETRACT (REF. MRC 21 9KDLY, R-1, 1.B.(3))
   - 3.A. PUSH & RELEASE EACH PIN
     - I. REMOVE PIN & INSPECT BUSHING
     - II. CLEAN AND LIGHTLY LUBRICATE
   - 3.B. MEASURE PIN EXTENSION (BEFORE LRC 65: 1.313" MIN.) (AFTER LRC 65: 1.415" – 1.445")

Fault Detect for Probe Slippage—Continued

B. INSPECT ARRESTING BEAM OPERATING CABLE PRE-TENSION (REF. MRC 21 9KDH N, R-10; OMI, 6-16)

NOTE: *it's a good idea to "get a feel" for this "when required" action, because it's "required" more often than you may think.*

C. INSPECT ARRESTING BEAM LATCH & PIVOT ASSEMBLY

1. CLEAN/INSPECT LATCH CONTACT AREAS (REF. MRC 21 9KCJN, Q-8, 1.A. THRU D.)

2. ENSURE LATCH LIGHT EXTINGUISHES WHEN EACH LATCH IS MANUALLY RELEASED (REF. OMI, 6-17, B (17) THRU (31))

3. INSPECT LATCH PIVOT FOR MOVEMENT (REF. MRC 21 9KCY N, R-12)

THE GUIDED MISSILE DESTROYER USS LASSEN (DDG 82) (TAKEN FROM THE AIRCRAFT CARRIER USS CARL VINSON (CVN 70)) DURING A SCHEDULED REFUELING AT SEA (RAS). U.S. NAVY PHOTO BY PHOTOGRAPHER'S MATE AIRMAN DUSTIN HOWELL

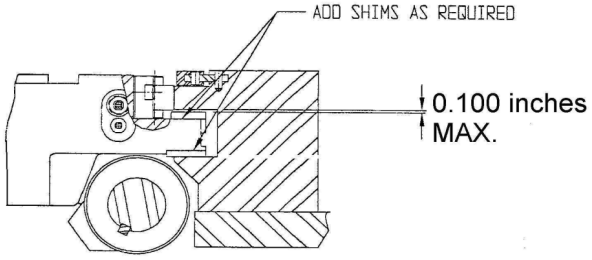
D. INSPECT PORT AND STBD ARRESTING BEAM END ROLLERS TO CROSS BEAM GAPS.

E. INSPECT ARRESTING BEAM BRONZE PADS & CROSSBEAM SLOTS FOR WEAR.

1. ENSURE THAT THE RAST SYSTEM IS NOT ENERGIZED. SHIP'S POWER (208 VAC, 400 HZ) TO THE MOTOR STARTER (RSD) SHALL BE DEACTIVATED.

2. REMOVE THE SAFETY BARS IN BOTH THE **PORT** AND **STARBOARD** RSDS, AND ENSURE THAT THE ARRESTING BEAMS ARE CLOSED AND CENTERED.

3. INSTALL THE MANUAL OPERATING LEVER ON BOTH THE PORT AND STARBOARD RSDS AND ROTATE SLOWLY CLOCKWISE/ COUNTER CLOCKWISE TO ENSURE SYSTEM HYDRAULIC PRESSURE IS DEPLETED. REMOVE MANUAL OPERATING LEVER.



Fault Detect for Probe Slippage—Continued

4. ENSURE THAT GAPS ON BOTH **PORT** AND **STARBOARD** RSDS BETWEEN TOP OF EACH ARRESTING BEAM BRONZE PAD AND THE TOP SLIDING SURFACE OF THE FORWARD AND AFT CROSS BEAMS DO NOT EXCEED 0.100 INCHES AND THAT THE FOUR MEASUREMENTS ON EACH RSD DO NOT VARY MORE THAN 0.040 INCHES FROM SMALLEST TO LARGEST.

5.IF GAP IS LARGER THAN 0.100 IN., RECOMMEND RSD CHANGEOUT WITH ASIR/DEPOT ASSIST.

SH60 OVER IRAQI WATERS

F. INSPECT CAM BRAKES (REF. LRB 22, EXCERPTED BELOW)

P 101602Z APR 01

SUBJ/ALRE HELICOPTER LANDING SYSTEM, RAST, LAUNCH AND RECOVERY/BULLETIN (LRB) NR 22, (TD CODE 84), INSPECTION OF RAPID SECURING/DEVICE (RSD) CAM BRAKE SPACERS//

REF/A/DOC/NAVAIR MANUAL AD-700A1-OMI-000/-//

NARR/REF A IS NAVAIR TECH MANUAL AD-700A1-OMI-000, CHANGE 6 DATED 15 APRIL 1999.

PURPOSE: THIS IS A ONE TIME ONLY, UN SCHEDULED INSPECTION OF RAST RAPID SECURING DEVICE (RSD) CAM BRAKE SPACERS. INSPECTION IS REQUIRED DUE TO DISCOVERY OF INCORRECT MEASUREMENTS TAKEN DURING OVERHAUL WHILE DEPOT WAS TRANSI-TIONING INTO NEW QUALITY ASSURANCE PROCESS. EXCESSIVELY LARGE GAPS BETWEEN RSD CAM BRAKES MAY LEAD TO HIGHER LOADS ON LATCHES AND SH60 MAIN RAST PROBE, AND INADVERTENT UNLATCHING OF RSD ARRESTING BEAMS.

MAN-HOURS REQUIRED:
A. BASIC EQUIPMENT: NO. OF MEN:2
SKILL: EN
TOTAL MAN-HOURS: 1

USS LASSEN escorting USNS comfort

Fault Detect for Probe Slippage—Continued

DETAILED INSTRUCTIONS:
A. BASIC EQUIPMENT:
WARNING: USE CAUTION WHEN WORKING AROUND ARRESTING BEAMS WITH SAFETY BAR REMOVED AND HYDRAULIC PRESSURE IN ACCUMULATOR.

(1) TIE STBD ARRESTING BEAM TO STBD SIDE OF RSD.

(2) CLOSE ARRESTING BEAMS SUCH THAT PORT AND STBD BEAMS LATCH AGAINST STBD SIDE OF RSD.

(3) SWITCH OFF SHIP/RAST POWER AND TAG OUT OF SERVICE.

(4) INSTALL MANUAL ACTUATING LEVER. DEPLETE SYSTEM PRESSURE TO NITROGEN PRE-CHARGE (750-850 PSI) BY TURNING MANUAL ACTUATING LEVER OFF-CENTER.

(5) REMOVE COVER 4 IAW REF A, PARA 6-175C.C AND COVER 5 IAW REF A, PARA 6-175B.B.

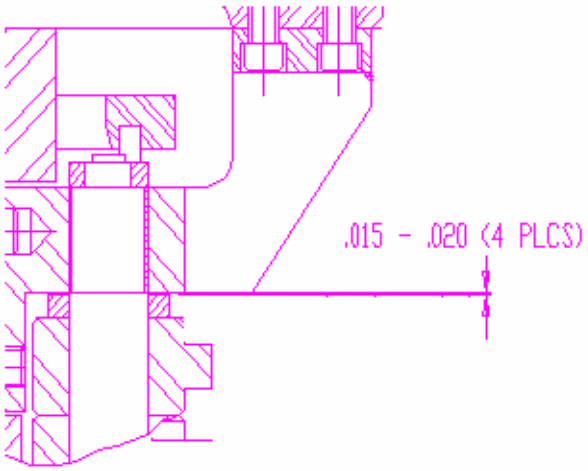
(6) INSPECT PORT SIDE GAPS OF BOTH FORWARD AND AFT CAM BRAKES IN ACCORDANCE WITH THE FOLLOWING (ITEM NUMBERS REFER TO REFERENCE A FIGURE 6-124):

NOTE: CAM BRAKE CENTER BEARING (36) IS FREE TO FLOAT IN CENTER BEARING HOUSING (29). ENSURE THAT 0.050 INCH SPACER IS PLACED AGAINST BEARING HOUSING (29) AND NOT AGAINST FLOATING BEARING (36)

(6.A.) PLACE A 0.050 INCH SPACER AGAINST PORT SIDE OF CENTER BEARING HOUSING (29).

(6.B.) USING PRY BAR, PRY ENTIRE STACK OF CAMS ON PORT SIDE AGAINST 0.050 INCH SPACER AND CENTER BEARING HOUSING.

(6.C.) USING FEELER GAGES, MEASURE GAP BETWEEN SPACER (35) AND THRUST BEARING (43). THIS GAP REPRESENTS TOTAL AXIAL PLAY ON PORT SIDE OF CENTER BEAR ING HOUSING WHEN FLOATING BEARING IS CENTERED IN HOUSING.



(7) RECORD PORT SIDE GAP MEASURE-MENTS FOR BOTH FWD AND AFT CAM BRAKES. SHOULD BE 0.015-0.020 INCHES.

(8) REPEAT STEPS A(1) THRU A(7) FOR STBD SIDE CAM BRAKES (FWD AND AFT).

(9) RETURN SYSTEM TO READINESS CONDITION.

(10)IF GAP IS LARGER THAN 0.040 IN., RECOMMEND RSD CHANGEOUT WITH ASIR/DEPOT ASSIST.

G. INSPECT AIRCRAFT PROBE DIAMETER: 2.73 +/- 0.010 INCHES

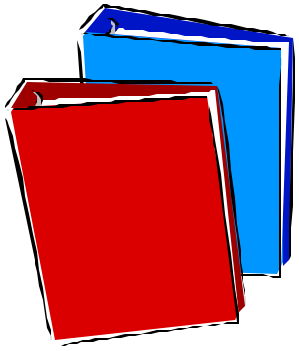
PICTURES OF THE QUARTER

In the last issue, we asked for pictures from you, so that we could publish them here. Unfortunately, we didn't receive any pictures, thus there are no pictures to show here. Please, if you want to send us good pictures, of anything (stuff that we're allowed to publish), then please do it. You will be given credit for the pictures. Thanks……..……

MRC CORRECTION

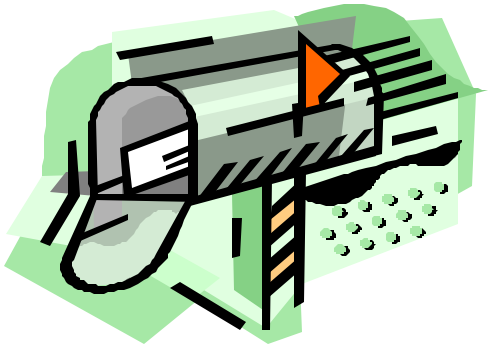
RAST MIP Control Number 5882/012-51: Maintenance Requirement Card R-7 lists the wrong part number for the RSD Line Filter Assembly Filter Element used on the Rapid Securing Device 6532E900-15 and -17 assemblies. The R7 card lists Filter Element P/N 712637 that is used on the Rapid Securing Device 6532E900-14 and -16 assemblies. The correct P/N should be 861485, NSN 4330-21-914-6127.

The R-7 card will be corrected in the next up-date to show the correct filter element.



PUBLICATIONS UPDATE

The RAST OMI and IPB, Change 8, should be available around Aug/Sep 2003. Change 8 is a general cleanup of minor discrepancies along with a new trouble shooting procedure to try and fix the SH60 probe slippage when straightening/ traversing the RSD. Change 8 will also list the new part number of the Test Control Panel 0-5000 psi Gage installed with Launch and Re-covery Change (LRC) 63 Rev A. (Gage P/n 627632-1, NSN 6685-01-497-7538, APL U992000440)



PUBLICATIONS DISTRIBUTION

NATEC has recently audited the technical manual publications account lists, purging many old accounts. It is important that you monitor your publication distribution accounts to ensure that you receive manual updates for all of your equipment. Your accounts can be reviewed on the NATEC website (www.natec.navy.mil). A password is required for access and can be obtained on the website.

The following is a list of the HLS technical manuals you should be receiving to maintain your equipment. If you are not getting these pubs, have your ship publications librarian put you on distribution.

AD-400A1-OMI-000 HRS OPERATION AND MAINTENANCE MANUAL CHG 5 1 JAN 97
AD-400A1-IPB-000 HRS ILLUSTRATED PARTS BREAKDOWN CHG 2 1 APR 96
AD-400B1-OMI-000 FDSSS OPERATION AND MAINTENANCE MANUAL CHG 1 1 JUN 00
AD-700A1-OMI-000 RAST OPERATION AND MAINTENANCE MANUAL CHG 7 1 SEP 02
AD-700A1-IPB-000 RAST ILLUSTRATED PARTS BREAKDOWN CHG 7 1 SEP 02

Parts List for Filters & Fluid

WHPU M8815/6-10
NSN 1650-01-033-1612
O-RING MS28775-020
NSN 5330-00-585-7723
APL U992000349

WHPU M8815/6-12
NSN 1650-01-262-1238
O-RING MS28775-024
NSN 5330-01-107-9249
APL U992000052

WHPU M8815/6-16
NSN 1650-00-149-8331
O-RING MS28775-028
NSN 5330-00-580-5056
APL U992000113

WHPU DRYER
GD00165-162W4 OR 6524E721-1
NSN 4440-01-245-8060
APL U992000143

WHPU DRYER GASKET
AA-9500-D1603
NSN 5330-01-258-6520

ROPE ACCUMULATOR
M8815/6-8
NSN 1650-01-114-1899
APL U992000242

HAND PUMP (RSD)
65322C424-1
NSN 4330-01-182-0433
APL U992000386

RSD LINE FILTER
-13 & -14 6532C292-3
FILTER P/N 712660-1
NSN 9C 4330-01-245-7699
ELEMENT P/N 712637
NSN 9C 4330-01-193-4011
-15 & SUBSEQUENT 6532C292-4
FILTER P/N 861588
NSN 9C4330-21-914-6128
ELEMENT P/N 861485
NSN 9C-4330-21-914-6127

WHPU HYDRAULIC FLUID
5 GALLON CANS
NSN 9150-00-985-7232
2075 T-H SYMBOL
60 GALLONS REQUIRED
APL 2-830024053
MIL-PRF-17672
RSD HYDRAULIC FLUID
1.8 GALLONS REQUIRED
1 GALLON CANS
NSN 9150-00-149-7432
MIL-PRF-83282A
AEL 2-830024053

RSD AIR FILTER
-15 & SUBSEQUENT 524640-1
FILTER P/N LBGCPM
NSN 9C 4310-00-847-2523

COMMANDER
NAVAL AIR WARFARE CENTER
AIRCRAFT DIVISION
CODE 4.8.10.2
HWY 547, BLDG. 596-1
LAKEHURST, NJ 08733-5090

Ships: Pass to RAST Technician