

NAVSEA
STANDARD ITEM

FY-17

ITEM NO: 009-57
DATE: **30 JUL 2015**
CATEGORY: II

1. SCOPE:

1.1 Title: Reduction Gear Security Requirements; accomplish

2. REFERENCES:

2.1 Standard Items

2.2 S9086-H7-STM-010/CH-262, Lubricating Oils, Greases, Specialty Lubricants, and Lubrication Systems

2.3 S9086-HK-STM-010/CH-241, Propulsion Reduction Gears, Couplings, Clutches, and Associated Components

3. REQUIREMENTS:

3.1 Accomplish the requirements of Paragraphs 262-3.5.6 and 262-3.5.7 of 2.2 to prevent entry of foreign matter into the lube oil system during work accomplished by the Work Item.

3.1.1 Notify the ship's Engineering Officer via the SUPERVISOR before opening and closing each main reduction gear or main reduction gear attached components.

3.1.2 Accomplish the requirements of Paragraph 241-3.5.2 of 2.3 to prevent rust/moisture damage to components when the reduction gear is going to remain inoperative in excess of 2 weeks.

3.2 Remove and dispose of system fluids to accomplish the requirements of the Work Item.

3.3 Provide and install temporary machinery protection in accordance with Paragraph 241-6.1.1.m of 2.3 and the following requirements:

3.3.1 Establish a limited access area and the physical boundary of the security control area.

3.3.2 The security control area shall be established prior to and maintained during the time an access to the reduction gears (including the main reduction gear [MRG] case, MRG sump, lube oil [LO] lines which terminate in the MRG, or LO cooler) is opened.

(V) (G) "INSPECTION/APPROVAL OF SECURITY CONTROL AREA"

3.3.3 Notify the SUPERVISOR prior to opening any clean system or component within the area. The SUPERVISOR shall inspect and approve the security control area prior to start of work.

3.3.4 Maintain on site Accountability Logs, Attachments A and B, of all tools, equipment, **and personnel** entering and leaving the security control area to verify adherence to the requirements set forth in **3.7 and 3.8**.

3.3.4.1 Inspect the log at the beginning and end of each shift to ensure that it describes the equipment and tools within the security control area.

3.3.4.2 Use Attachment A to log all tools, equipment, **and personnel**.

3.3.4.3 Use Attachment B for shift turnover verification.

3.3.5 Post warning signs at the entry points to the security control area and limited access area to maintain control of the area and inform personnel that the reduction gear is open.

3.3.5.1 Set up Limited Access Area with rope/line and signs to restrict unnecessary traffic.

3.3.6 Provide 24-hour continuous on-site surveillance by contractor personnel in the area as long as the reduction gear is exposed.

3.3.6.1 Policing of limited access area shall be routine while gear is exposed or systems which flow into the MRG are open (e.g., propulsion lube oil [PLO] system, dehumidifier, vent fog precipitator [VFP]).

3.4 Observe Ship's Force security control/accountability measures.

3.5 Provide reduction gear security in accordance with Paragraph 241-4.2 of 2.3 during periods that require the gear train to be exposed from access openings where direct or indirect paths to gearing will result.

3.5.1 Notify the ship's Engineering Officer or designated representative prior to disassembly and removal of the following gear casing components:

3.5.1.1 Hinged, pinned, or bolted gear casing covers, inspection ports, and plates

3.5.1.2 Sight flow indicators, gear mesh spray nozzles, thermometers, and associated fittings

3.5.1.3 Oil supply and return piping, vent lines, fittings, and plugs.

3.5.2 The ship's Engineering Officer or designated representative shall be present at all times when external connections are attached to the reduction gear casing, oil sump, and oil piping.

3.5.3 The surrounding limited access area shall be secured and policed to remove overhead or local dirt, loose objects, or any potential security violating objects prior to and during gear exposure.

(V) (G) "PRE-OPENING CLEANLINESS"

3.5.4 Prior to opening casing, ensure no foreign material exists on adjacent surfaces that could contaminate the internal areas upon lifting casing covers, piping, and associated equipment.

3.5.5 Construct a temporary cover over openings of the gear train, in addition to the required limited access area controls, if it becomes necessary to stop work with the casing/covers removed.

3.6 Protective coverings:

3.6.1 When repairs require the removal of main bolted cover plates, assemble an enclosure made from Herculite or canvas covering conforming to A-A-55308 over the top of the reduction gear housing, lashing the bottom of the enclosure to the deck structure or piping at deck level.

3.6.1.1 Snaps, staples, or similar shall not be used on enclosure. Utilize heavy duty zippers and Velcro hook-pile. Secure all grommets attached to enclosure with line or lanyard to prevent loss of grommets.

3.6.1.2 Lash the top edge of the enclosure to overhead structural members to form a work area over and around the reduction gear casing.

3.6.1.3 Lace the top flaps to the sides. The top shall utilize a center joint if lifting gear is utilized. Unlace center joint when utilizing lifting gear.

3.6.1.4 Lace all but one of the corners to each other, utilizing stiffeners, to form a secure work area. The unlaced corner shall be used for a security door constructed to be capable of being secured. Stencil "CONTROLLED AREA - AUTHORIZED PERSONNEL ONLY" on the sides and top of the enclosure or install signs at enclosure boundaries.

3.6.2 For non-nuclear ships, when repairs do not require removal of main bolted cover plates, protect planned open and accessible areas of the reduction gear by assembling an enclosure made from Herculite or canvas covering conforming to A-A-55308.

3.6.2.1 Submit one legible drawing or sketch of proposed enclosure(s) to the SUPERVISOR 5 days prior to entering the reduction gear. Drawing shall include enclosure access for installation of lifting gear (if required).

3.6.2.2 Snaps, staples, or similar shall not be used on enclosure. Utilize heavy duty zippers and Velcro hook-pile. Secure all grommets attached to enclosure with line or lanyard to prevent loss of grommets.

3.6.2.3 Stencil "CONTROLLED AREA - AUTHORIZED PERSONNEL ONLY" on the sides and top of the enclosure or install signs at enclosure boundaries.

3.7 Prepare an Accountability Log, Attachment A **and B**, immediately after limited access area has been approved by the SUPERVISOR, but prior to opening an access. Maintain the Accountability Log while reduction gears and attached components are open.

3.7.1 Station a Control Watch at the enclosure door/flap and maintain Attachment A for all material and hardware which is small enough to fit inside access opening.

3.7.2 The Control Watch shall record the date and time in the appropriate block on Attachment **B** each time accountability is started or stopped, and each time access is opened or closed. **Any time the log is turned over to another Control Watch, both the outgoing and incoming Control Watches shall sign Attachment B to document that all items are accounted for.**

3.7.3 Any material permanently or temporarily installed shall be noted as such in the remarks column on Attachment A.

3.8 Inspection equipment, tools, and personnel clothing shall be captured, secured, and accounted for to preclude introduction of foreign matter into the reduction gear.

3.8.1 Acceptable methods of capturing are:

3.8.1.1 Drilling and lockwiring

3.8.1.2 Tackwelding or silver brazing

3.8.1.3 Using nylock-type locking devices

3.8.1.4 Upsetting or staking threads

3.8.1.5 Attaching a lanyard

3.8.1.6 Taping with duct tape

3.8.2 All personnel working in or around an open gear casing shall have all eye glasses, buttons, zippers, and other loose items on their clothing properly taped to prevent them from breaking loose and falling into the gear casing. All jewelry, pens, change, metal objects, loose items, etc., shall be removed from the person and clothing pockets prior to entering area.

3.9 Notify the SUPERVISOR in all matters involving foreign material retrieval from the reduction gear. Report all incidents breaching reduction gear security to the ship's Engineering Officer or Engineering Duty Officer via the SUPERVISOR.

(V) (G) "INSPECTION PRIOR TO CLOSURE"

3.10 Accomplish a visual inspection of the exposed reduction gear and associated components prior to each closing (daily and final). Ensure no foreign matter has entered or remains within the reduction gear and/or components. Inspect each ledges, including the underside of ledges, pockets, gear teeth, and bearing journals and caps, using mirrors, periscopes, and borescopes.

3.10.1 The inspection shall be made jointly with the SUPERVISOR and the ship's Engineering Officer or designated representative.

3.10.2 Prior to each closing verify that all tools and equipment listed on Attachments A and B have been either logged out satisfactorily or are annotated as installed, permanently or temporarily, in the remarks column.

3.10.2.1 Accountability shall stop when the access is closed.

3.10.3 Attachments A and B shall be available for review by the SUPERVISOR at time of final closure.

3.10.3.1 Submit one legible copy, in hard copy or approved transferrable media, of completed Attachments A and B to the SUPERVISOR within 2 days of final closure.

3.11 Disassemble and remove the enclosure and limited area boundary when directed by the SUPERVISOR.

3.12 ***Accomplishment of cleaning and painting for new and disturbed surfaces shall be in accordance with NAVSEA Standard Items (See Note 4.3).***

4. NOTES:

4.1 In support of emergency inspections, limited inspections or minor repairs to the propulsion reduction gear, the requirements for a security control area may be omitted at the discretion of the SUPERVISOR with the concurrence of the ship's Engineering Officer. If the security control area

is precluded during these special circumstances, the security of the reduction gear shall be maintained.

4.1.1 The requirements for contractor accountability cannot be waived.

4.2 Definitions of terms used are:

4.2.1 Clean Work Area: An area requiring a cleanliness/ accountability level at least equal to that required for in-shop repair of similar equipment to permit the easy recovery of any dropped tools, material, etc. This area shall be free of excess moisture and contaminants, i.e., abrasive materials resulting from blasting, grinding, or other particle generating processes. Areas where this condition would apply are inspection and/or access covers removed or open.

4.2.2 Security Control Area: An area or enclosure that provides a physical boundary around access opening (Herculite) which will preclude the inadvertent introduction of any uncontrolled personnel, tools, equipment or foreign material. This area shall always meet the requirements of a Clean Work Area and can be upgraded to a Limited Access/Exclusion Area. A Controlled Area shall always require Physical Separation.

4.2.3 Full Enclosure: An enclosure that has all edges (sides, top, and bottom) secured with cabling that is woven through grommets and secured to stanchions, foundations, deck grating, etc. The enclosure will be considered adequately secured if a person cannot enter through any opening other than the designed entry accesses.

4.2.4 Limited Access Area: An area requiring the maximum level of concern and accountability for personnel and material. During this condition a Full Enclosure is required. This type of area isolation is required where the recovery of dropped or broken material would be difficult and/or requires extensive rework of the task in progress. The Full Enclosure shall be locked when unattended by production and during the unattended time keys shall be controlled by the Ship's Engineering Office. An area established outside the security control area to limit the personnel allowed to enter the reduction gear area and is intended to prevent unnecessary traffic.

4.2.5 Accountability: The method used to maintain foreign material exclusion from reduction gears by keeping a formal record (accountability log) of all materials, including tools and hardware that may pass through access opening.

4.3 If cleaning and painting for new and disturbed surfaces of 3.12 are required; the use of Category II Standard Item 009-32 "Cleaning and Painting Requirements; accomplish" will be specified in the Work Item.

ATTACHMENT A
ACCOUNTABILITY LOG

SHEET _____ OF _____

SHIP/HULL _____ SPEC. ITEM _____ SYSTEM-LOCATION _____

Item No.	Personnel Name/Item Description	Entered Area (Note 1)			Exited Area (Note 2)			Remarks (Note 3)
		Qty of Item (N/A for Personnel)	Date/Time	CTRL Watch*	Qty of Item (N/A for Personnel)	Date/Time	CTRL Watch*	

* The person designated to sign for an action verifies, based on personal observation, and certifies by their signature that the action has actually been performed in accordance with the specified requirements.

Note 1: Verify personnel and material entering area meet the requirements of 3.8

Note 2: Existing material removed shall be documented with "Entered Area" marked "N/A".

Note 3: Record if item is temporarily or permanently installed in system per para 3.7.3. Include additional remarks as required for clarification.

ATTACHMENT B
ACCOUNTABILITY LOG (WATCH TURNOVER VERIFICATION)

SHIP/HULL _____ *SPEC. ITEM* _____ *SYSTEM-LOCATION* _____

Logged items remaining within the exposed location at the change of watch shall be verified present by the in-coming and out-going control watches. This verification shall be accomplished by physically checking the area and confirming those items required to be logged. Both the outgoing and incoming watches shall sign the watch turnover verification to certify that the remaining items have been physically verified, no unnecessary items are left in accountability area, containments are satisfactory, and area is cleaned.

Ctrl Watch Name	Date/Time Started	Date/Time Stopped	Date/Time System Open	Date/Time System Closed	Logged items on Attachment A verified at watch turnover		Remarks
					Off Going watch signature*	On Coming watch signature*	

THIS LOG IS CLOSED. ALL ITEMS ARE ACCOUNTED FOR AS INDICATED.

*Inspector*** _____ *Date/Time* _____ *Supervisor*** _____ *Date/Time* _____

** The person designated to sign for an action verifies, based on personal observation, and certifies by their signature that the action has actually been performed in accordance with the specified requirements.*

*** The person designated to sign for an action verifies, based on personal observation or certified records, and certifies by their signature that the action has been performed in accordance with the specified requirements.*