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IN REPLY REFER TO:
OPNAVINST 9220.3
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OPNAV INSTRUCTION 9220.3

From: Chief of Naval Operations

Subj: PROPULSION AND AUXILIARY PLANT INSPECTION AND INSPECTOR
CERTIFICATION PROGRAM

Ref: (a) NAVSEA S9086-GY-STM-010, Naval Ships Technical Manual,
Chapter 221 - Boilers (NOTAL)
(b) NAVSEA S9587-B1-MMA-010, Catapult Steam Support
Systems for CV/CVN Class Ships (NOTAL)
(c) NAVSEA S9221-D2-MMA-010, Steam Generating Plant
Inspection Manual (Non-Nuclear) (NOTAL)
(d) JFFM CLF/CPF INST 4790.3 (NOTAL)
(e) NAVSEA S9233-CJ-HBK-010/20, Navy Diesel Engine
Inspector Handbook (NOTAL)
(f) CNET 1500/19 (Series) Catalogue of Navy Training
Courses (CANTRAC) (NOTAL)

1. Purpose

a. To establish policy for the inspection requirements of all U.S. Navy diesel engines, conventional steam generating plants, steam catapult accumulators, and marine gas turbine engines; and to outline command and incumbent functional area of responsibilities.

b. To establish training and certification guidelines for all steam generating plant inspectors (SGPI), diesel engine inspectors (DEI) and marine gas turbine inspectors (MGTI).

2. Cancellation. OPNAVINSTs 9221.1B, 9233.1A, and 9234.1A

3. Discussion

a. To maintain fleet operational capability and preclude serious personnel and material casualties, a stringent inspection program is established for all diesel engines, conventional steam generating plants, steam catapult accumulators, and marine gas turbine engines. Inspection requirements must be carefully prescribed and standardized to achieve consistency and effectiveness of inspections. Emphasis at all levels of command is required to achieve the desired standards and to maintain overall fleet readiness.

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b. Steam plant pressure vessels including steam catapult accumulators must receive strength and integrity inspections and industrial inspections by the Naval Surface Warfare Center, Carderock Division - Ship Systems Engineering Station (NSWCCD-SSES), Life Cycle Manager (LCM) inspectors, in accordance with references (a) and (b). These inspections involve areas not normally covered by SGPIs.

c. Steam generating plants on leased Foreign Military Sales (FMS) ships are required to be inspected under the requirements listed herein for inspection periodicity and inspector certification.

4. Policy. All diesel engines, conventional steam generating plants, steam catapult accumulators, and marine gas turbine engines shall be given periodic standardized inspections as delineated in this instruction. All inspectors will perform assigned duties in accordance with responsibilities as outlined in this instruction. Certification requirements for SGPIs, DEIs, and MGTIs are outlined in this instruction. Inspection program managers are as assigned per paragraph 8.a.

5. Inspection Requirements. All diesel engines (to include main propulsion, ship service and emergency diesel generators), conventional steam generating plants (to include main propulsion, auxiliary, and waste heat boilers), steam catapult accumulators, marine gas turbine engines in U.S. Navy ships, submarines, small boats, craft and engineering school hot plant training sites shall be inspected. Inspection requirements for diesel engines on small boat and craft apply only to diesel engines 400 hp and above. Material condition of inspected equipment shall be formally documented in the respective inspection and repair management information systems. Specific requirements:

a. Standardized inspection procedures and criteria must be followed. SGPIs are to follow inspection guidance provided by references (a) through (d). DEIs are to follow inspection guidance provided by references (d) and (e). MGTIs are to follow inspection guidance promulgated by the program manager, via gas turbine bulletins, and reference (d).

b. Required periodicity for inspections to be accomplished by certified SGPIs, MGTIs or DEIs on applicable equipment is provided in Table 1. Required periodicity for inspections to be accomplished by NSWCCD-SSES LCM inspector on boilers and catapults is provided in Table 2. SGPI will accompany the NSWCCD-SSES LCM inspector as delineated in Table 2.

<u>TYPE INSPECTION</u>	<u>EQUIPMENT</u>	<u>SCHEDULE DATE</u>
Routine	Boiler/ Catapult (1)	<ul style="list-style-type: none"> ▪ Initial: within 18 Months before ship acceptance ▪ Once during Inter-deployment Training Cycle (IDTC) ▪ Normal interval 18 months ▪ Not to exceed 24 Months ▪ No earlier than 12 months
	Diesel (2)	<ul style="list-style-type: none"> ▪ Initial: within 90 days before ship acceptance ▪ Once during IDTC ▪ Not to exceed 24 months ▪ Normal interval 18 months ▪ No earlier than 12 months
	Gas Turbine	<ul style="list-style-type: none"> ▪ Initial: within 18 Months before ship acceptance ▪ Once during IDTC ▪ Not to exceed 24 months ▪ Schedule 90 to 120 days prior to deployment
Phased Maintenance Availability/ Overhaul	Gas Turbine	<ul style="list-style-type: none"> ▪ Optional prior to each availability/overhaul
Other	Boiler/ Catapult	<ul style="list-style-type: none"> ▪ Strength & Integrity inspection support as delineated in Table 2
	Diesel (3)	<ul style="list-style-type: none"> ▪ Inspect prior to any unplanned overhaul ▪ When major malfunctions or casualties occur or are suspected
	Gas Turbine	<ul style="list-style-type: none"> ▪ To maintain compliance with Gas Turbine Bulletins
<p>(1) The Type Commander (TYCOM) SGPI normally performs routine boiler inspections during a pre-assigned time period. However, the routine boiler inspection can be accomplished in connection with the completion of availability/overhaul inspection (CAI/COI) industrial boiler inspections. The pressure vessel portion of the industrial inspection conducted by the NSWCCD-SSES LCM inspector can be combined with the TYCOM SGPI inspector's Automatic Boiler Controls (ABC) and Boiler Water/Feed Water (BW/FW) portions to account for the routine inspection.</p> <p>(2) TYCOMs may exempt diesel engines on boats and craft from the routine inspection requirement where the engine or boat configuration provides insufficient access to accomplish inspection.</p> <p>(3) Technical assist or casualty inspections are not to be considered a routine inspection.</p>		

TABLE 1: DEI, MGTI, And SGPI Inspection Scheduling And Responsibilities.

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<u>TYPE INSPECTION</u>	<u>EQUIPMENT</u>	<u>SCHEDULE DATE</u>	<u>SCHEDULER</u>
Five Year Strength And Integrity (1)	Boiler/ Catapult	<ul style="list-style-type: none"> ▪ Normal interval 60 months ▪ No earlier than 48 months ▪ Not to exceed 72 months. 	TYCOM (Coordinate with LCM)
Pre-Start of Availability/ Overhaul Inspection (PSAI/PSOI) (1)	Boiler/ Catapult	<ul style="list-style-type: none"> ▪ 8 to 12 months prior to availability /overhaul. ▪ To be accomplished only during IDTC in conjunction with routine inspection and only with TYCOM concurrence. 	TYCOM
Start of Availability Overhaul (SAI/SOI) (1)	Boiler/ Catapult	<ul style="list-style-type: none"> ▪ At start of availability/overhaul in conjunction with strength and integrity. 	Naval Shipyard or SUPSHIP
Industrial Support/ Visit (ISV) (2)	Boiler only	<ul style="list-style-type: none"> ▪ During availability/overhaul. 	Naval Shipyard or SUPSHIP
Completion of Availability/ Overhaul (CAI/COI) (1)	Boiler/ Catapult	<ul style="list-style-type: none"> ▪ To be conducted before re-assembly of equipment and final hydrostatic test 	Naval Shipyard or SUPSHIP
Newly constructed ship Acceptance Inspection	Boiler/ Catapult	<ul style="list-style-type: none"> ▪ Prior to delivery. ▪ In conjunction with the open-and-inspect phase of the Board of Inspection and Survey (INSURV) acceptance trials. ▪ For catapult accumulators, initial strength & integrity inspection shall be accomplished 6 months after vessel is placed in service and prior to expiration of the ships guarantee period. 	NAVSEA Acquisition Manager
Inactivation/ Reactivation	Boiler only	<ul style="list-style-type: none"> ▪ Prior to final action and disposition. 	INACTSHIPFAC Naval Shipyard or SUPSHIP
<p>(1) The cognizant TYCOM SGPI inspector shall accompany the NSWCCD-SSES LCM Inspector.</p> <p>(2) The Industrial Support Visit (ISV) is normally provided during major overhaul and/or repair assignments. These ISVs may be deleted by the LCM with TYCOM concurrence for any short duration availability or any availability with no major repair assignments.</p>			

TABLE 2: NSWCCD-SSES LCM Boiler/Catapult Inspection Scheduling and Responsibility.

6. Certification Requirements. All inspector candidates (military personnel, civil service personnel, and civilian contractors) must satisfactorily complete the required and pre-requisite course(s) listed in reference (f). The pre-requisites for course attendance are as follows:

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a. Military enlisted personnel candidates:

(1) E-7 and above with 5 years experience in operation and maintenance of the applicable equipment, including at least 1 year of supervisory experience.

(2) Graduate from one of the "C" schools listed in reference (f) for the applicable course to include graduation from all pre-requisite courses.

(3) Commanding Officer recommendation.

(4) Type Commander (TYCOM) endorsement.

(5) SGPI candidates must have current certification in the Boiler Water/Feed Water Test and Treatment Supervisor's Course listed in reference (f).

b. Commissioned officers assigned to Board of Inspection and Survey (INSURV) or engineering readiness and training activities may attend the inspector courses, however, they shall not be certified as inspectors as delineated in this instruction.

c. Civil service and civilian contractor personnel candidates:

(1) A minimum of 5 years experience of general marine propulsion and/or power generation experience in operations, maintenance, repair, or inspections. A bachelor's or master's degree in mechanical or marine engineering may be substituted for 3 of the 5 years of experience.

(2) A minimum of 2 of the 5 years of experience will be in specialized marine propulsion or power generation maintenance, repair or inspection experience at the engineer, technician, planner, designer, foreman, or quality assurance level concentrating on the specific application (i.e. gas turbines, diesels, and boilers).

(3) A written recommendation from the candidate's employer verifying the candidate's experience level. The recommendation will be submitted through the chain of command to the appropriate program manager.

(4) SGPI candidates must successfully achieve a passing grade on the National Board of Boiler and Pressure Vessel Inspectors (NBBI) exam and provide proof of accomplishment in lieu of a state license.

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(5) SGPI candidates must graduate from one of the applicable "C" schools listed in reference (f) to include graduation from all pre-requisite courses.

d. All candidates:

(1) Physically capable of entering confined areas such as boiler steam and water drums, uptakes, stacks, engine enclosures and plenums.

(2) Pass a pre-test (as required) developed by the applicable inspector school, administered by a TYCOM designated representative, within 1 year prior to the commencement of the certification course. A retest may not be administered within 6 months of a prior test failure. Tests will indicate the individual's level of knowledge in applicable areas of boiler/engine theory, mechanics, system inter-relationships, automatic combustion control systems, boiler water chemistry, governor operation and the ability to diagnose/trouble shoot boiler/engine problems as applicable to the specific inspector discipline. The instructor school shall provide requested copies of the pre-test to the TYCOM for administration, grade the returned tests and provide the test results to the TYCOM. (Not required for SGPI civil service or civilian candidates).

7. Certification

a. Initial Certification. The school will provide a list of all course graduates to the applicable program manager.

(1) After successful completion of the SGPI school course of instruction the school will issue a 36-month certification.

(2) The program manager will issue final MGTI certification upon receipt of documentation from the appropriate Fleet Technical Support Center (FTSC) that the field portion of the course has been successfully completed.

(3) Final DEI certification will be issued by the program manager upon satisfactory completion of two inspections under instruction of a certified diesel engine inspector and an endorsement from TYCOM or appropriate FTSC.

b. Maintaining Certification. All certified inspectors must maintain up-to-date knowledge of approved inspection practices and policies. Certification will be maintained for those inspectors who comply with the following:

(1) Conduct a minimum of two inspections annually.

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(2) Attend one seminar every year. Upon written request the program manager may grant waivers to individual inspectors who are unable to attend the seminar due to circumstances beyond their control.

(3) SGPIs must maintain a current certification in Boiler Water/Feedwater Test and Treatment.

c. Extending Certification. Currently certified inspectors may request to extend their initial certification or subsequent extended certification in 36-month increments provided the requirements in paragraph 7.b. are met. The inspector must submit a letter requesting certification extension to the appropriate program manager via the inspector's chain of command or government activity that contracted the inspector's services with copy to the appropriate program manager. The letter must include a brief description of the inspector's duties during the certification period, specify the date of the latest seminar attended and provide as enclosures a copy of each of the two most recent inspection reports performed by the inspector.

d. Revoking Certification. All inspectors must maintain knowledge of approved inspection practices and policies. The program manager shall revoke the certification of all inspectors who fail to comply with paragraph 7.b.

e. Reinstatement of an Expired/Revoked Certification. The inspector must submit a letter requesting reinstatement to the program manager via the inspector's chain of command or government activity that contracted the inspector's services. The letter must include a brief description of the inspector's duties during and following the certification period, and provide as enclosures a copy of each of the two most recent inspections performed by the inspector. If the certification has been expired for more than 6 months, the two inspections submitted with the reinstatement letter shall be completed under the instruction of a certified inspector.

f. Inspector Transition Between Military /Civilian Status. Inspectors may transition from military to civilian status without losing their certification. For those inspectors in transition, the certification expiration date remains as established. In all cases the requirements for maintaining certification, extending certification, and reinstatement of an expired/revoked certification are as specified in paragraphs 7.b. through 7.e.

g. SGPI Transition Between Military/Civilian Status. Steam generating plant inspectors may transition from military to civilian status without losing certification. Inspectors in

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transition will have 2 years from date of separation in which to successfully achieve a passing grade on the National Board of Boiler and Pressure Vessel Inspectors (NBBI) exam and provide proof of accomplishment in lieu of a state license. NBBI requirement waiver for senior level SGPI will be considered on a case-by-case basis. All other requirements of paragraph 7.b. must continue to be met.

8. Action

a. Commander, Naval Sea System Command (COMNAVSEASYSYSCOM) has assigned Naval Surface Warfare Center, Carderock Division - Ship Systems Engineering Station (NSWCCD SSES) codes as SGPI (Code 922), DEI (Code 932), and MGTI (Code 933) program managers. COMNAVSEASYSYSCOM and associated platform Program Executive Offices (PEO)/Program Managers Ships (PMS) shall provide funding to NSWCCD SSES for responsibilities listed in paragraph 8.b.

b. NSWCCD SSES program managers shall:

(1) Provide overall management of the DEI, SGPI and MGTI programs.

(2) Provide technical support to the semi-annual seminars. Seminars allow for technical interface among Fleet units, COMNAVSEASYSYSCOM and field activities, FTSCs and other activities with inspection responsibilities, and are to include discussion of current inspection criteria, procedures, and problems.

(3) Conduct periodic technical audits of the inspector training courses to ensure technical accuracy and adequacy.

(4) Provide technical management of the inspector programs. Ensure that the required technical documentation to support the program is maintained current. Establish and monitor the requirements and standards for all diesel engine, steam generating plant, steam catapult accumulator and marine gas turbine engine inspections required by this instruction.

(5) Provide program management of the inspection and associated repair management information database system.

(6) Maintain the primary database of all certified inspectors by name, rating, duty station or place of employment, date of certification, and expiration date of certification.

(7) Revoke inspector certification and initiate action to decertify inspectors who fail to comply with the requirements in paragraph 7.b.

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(8) Ensure that the requirements for inspector certification, re-certification, and certification extensions are met prior to final approval.

c. Fleet Commanders/TYCOM's shall:

(1) Identify and designate those fleet activities that have inspection responsibilities and maintain a base of certified inspectors within those activities.

(2) Review the guidelines and inspection requirements for all diesel engine, steam generating plant and marine gas turbine engine inspections required by this instruction.

(3) Schedule and coordinate inspections required by this instruction with the appropriate technical activities.

(4) For the SGPI program, ensure the availability of an appropriate school ship with a "D" type boiler with full automatic boiler controls system to support training.

(5) Ensure administration and control of the TYCOM-administered pretest, as specified in paragraph 6.d.(2).

(6) Host semi-annual inspector seminars on an alternating coast basis.

(7) Provide and maintain for all inspections to be documented in the applicable inspection and repair management information database system.

d. Naval Education and Training Command (NETC) shall:

(1) Be responsible for the overall training of inspectors including designation of activities authorized to conduct training.

(2) Provide final approval of the inspector training course plans, course materials, and training aids.

(3) Develop, maintain and control pre-tests as required by paragraph 6.d.(2).

(4) Issue initial certifications and submit the appropriate documentation to assign the NEC (for military inspectors) to those inspector candidates that successfully complete the requirements in paragraph 6. Copies of the appropriate paperwork shall be forwarded to the appropriate TYCOM, FTSC and program manager.

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(5) Ensure the instructor school provides requested copies of the pre-test to the designated representatives for administration, grades the returned tests and provides the test results to the designated representatives.

e. Commander, Naval Personnel Command shall:

(1) Ensure that all enlisted personnel assigned to inspector certification instruction course billets hold the proper Navy Enlisted Classification (NEC), are currently certified, and have at least 3 years prior experience as an inspector.

(2) Assign sufficient numbers of qualified personnel to the inspector training courses to fulfill billet requirements.

(3) Maintain billet requisitions to current Fleet manning requirements.

f. Fleet Technical Support Centers (FTSC) shall:

(1) Screen and endorse candidates for entry into the inspector certification programs.

(2) Conduct field on-the-job training (OJT) portion of the MGTI and DEI training course.

(3) Maintain the database of all local inspectors, ensuring that the appropriate program managers are forwarded this data semi-annually.

(4) Ensure that certified inspectors maintain their qualification as listed in paragraph 7.b.

g. Steam Generating Plant, Marine Gas Turbine, Diesel Engine Inspectors shall:

(1) Perform periodic standardized routine inspections as required by the Fleet, TYCOM, and COMNAVSEASYSYSCOM directives.

(2) Provide troubleshooting and technical assistance to the fleet.

(3) Document inspections in the applicable inspection management information system.

h. Commanding Officers shall:

(1) Nominate motivated and qualified technicians for entry into the inspector programs to their respective TYCOM.

(2) Ensure assigned inspectors are afforded the opportunity to attend applicable seminars.

9. Changes. Recommended changes to this instruction shall be submitted to the cognizant program manager, Naval Surface Warfare Center, Carderock Division, Ship Systems Engineering Station, Philadelphia PA 19112-5083 - Code 922 (SGPI), Code 932 (DEI), and Code 933 (MGTI).

10. Reports. The reporting requirements contained in this directive are exempt from reports controlled by SECNAVINST 5214.2B.



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