



DEPARTMENT OF THE NAVY  
BOARD OF INSPECTION AND SURVEY  
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NORFOLK, VA 23521-3295

INSURVINST 4730.1D  
Code 00  
30 MAY 03

BOARD OF INSPECTION AND SURVEY INSTRUCTION 4730.1D

From: President, Board of Inspection and Survey

Subj: TRIALS AND INSPECTIONS OF SURFACE SHIPS

Ref: (a) 10 U.S.C. § 7304 Examination of Vessels, Striking of Vessels from Naval Vessel Register  
(b) OPNAVINST 4700.8 (series) U.S Ships Undergoing Construction or Conversion  
(c) OPNAVINST 4730.5 (series) Trials and Material Inspections of Ships Conducted by the Board of Inspection and Survey  
(d) OPNAVINST 4770.5 (series) Instructions for Inactive Ships and Craft  
(e) OPNAVINST C3501.2 (series) Naval Warfare Mission Areas and Required Operational Capabilities (ROC) and Projected Operational Environments (POE) Statements (U)  
(f) OPNAVINST C3501.XXX (for unit) ROC and POE for the XXX Class Ship  
(g) NWP 10-1-11 (series)  
(h) OPNAVINST 4440.19 (series) Cannibalization of Equipment and Diversion of Material at Contractors' Plants to Meet Urgent Operational Requirements; Policies and Priority  
(i) INSURVINST 4730.8 (series) Reports of Trials, Material Inspections and Surveys Conducted by the Board of Inspection and Survey  
(j) INSURVINST 4730.11 (series) Documentation of Deficiencies  
(k) OPNAVINST 9094.1 (series) Full Power and Economy Trial Requirements for Non-Nuclear Surface Ship Classes  
(l) OPNAVINST 9080.3 (series) Procedures for Tests and Trials of Naval Nuclear Powered Ships Under Construction, Modernization, Conversion, Refueling and Overhaul  
(m) INSURVINST 4730.21 (series) Area Anti-Air Warfare and Self Defense Detect-To-Engage Demonstrations and Long Range Air Search Radar Performance Demonstrations

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- (n) INSURVINST 4730.22 (series) Standards for Surface Ship Undersea Warfare
- (o) INSURVINST 4730.23 (series) Standards for Mine Warfare Ship Mine Hunting and Sweeping Equipment Demonstrations
- (p) INSURVINST 4730.24 (series) Standards for Aircraft Carrier Tactical Support Center Demonstration
- (q) INSURVINST 4730.25 (series) Standards for Tomahawk Strike Demonstration
- (r) DON Information Technology Standard Guidance Version 99-1 of 05 Apr 99
- (s) OPNAVINST 9640.1 (series) Shipboard Habitability Program
- (t) OPNAVINST 5090.1 (series) Environmental and Natural Resources Program
- (u) OPNAVINST 5100.19 (series) NAVOSH Program
- (v) CINCLANTFLT/CINCPACFLTINST 4790.3 (series) Joint Fleet Maintenance Manual
- (w) COMDTINST M16672.2 Navigation Rules (COLREGS)
- (x) 33 C.F.R. § 164 Navigation Safety Regulations
- (y) OPNAVINST 3130.6 (series) Naval Search and Rescue (SAR) Standardization Program
- (z) OPNAVINST 3500.39 (series) Operational Risk Management
- (aa) NAVSEAINST 9072.1 (series) Shock Hardening of Surface Ships

Encl: (1) Procedures (list of appendices)

1. Purpose. To provide guidance for conducting Board of Inspection and Survey (INSURV) Trials and Inspections of surface ships. This instruction provides information to assist responsible authorities in preparing surface ships for presentation to the INSURV Trial or Inspection Board. Substantive changes were made in revising this instruction and it became impractical to denote changes with revision markings and change summaries. They have been purposely omitted to preclude confusion.

2. Cancellation. INSURVINST 4730.1C.

3. Discussion. Reference (a) requires a Board of Naval Officers to conduct a material inspection of all naval ships at least once every three years, if practicable. Reference (b) states that every ship, regardless of the manner in which acquired, shall undergo an INSURV Trial prior to acceptance. Reference (c) states procedures for conducting trials and

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inspections shall be specified by the President, Board of Inspection and Survey (PRESINSURV). This instruction provides procedures for surface ship INSURV Trials and Inspections.

4. Action. The inspecting INSURV Board, ships to be inspected and the authorities responsible for presenting ships for a Trial or Inspection to the Board of Inspection and Survey will be guided by enclosure (1).

//s//  
C. A. KEMP

Distribution:

SNDL	A1J	(ASSTSECNAV RD&A)
	A1J1P	(PEO SHIPS (PMS 317, 325, 377, 400C, 400D, 400E, 400F, 500, 501))
	A3	(CNO (N4, N43, N6, N75, N76, N77, N78))
	A2A	(Chief of Naval Research)
	FKA1G	(Systems Command Headquarters) (COMNAVSEASYS COM (SEA 03, SEA 91))
	A151Q	(PEO Carriers (PMS 312, PMS 378))
	A1J1P	(PEO LMW (PMS 317, PMS 325, PMS 333, PMS 377))
	FH1	(BUMED)
	A6	(Commandant of the Marine Corps)
	FA8	(FTSCLANT)
	FB8	(FTSCPAC)
	FD3	(FLENUMMETOCEANCEN)
	FD4	(NAVLANTMETOCCEN only)
	FKP7	(SHIPYARD)
	FKP8	(SUPSHIP)
	FA24	(Base LANT)
	FB28	(Base PAC)
	21A1	(COMLANTFLT)
	21A2	(COMPACFLT)
	21A3	(COMUSNAVEUR)
	24	(TYCOMS) (Less 24J (CGFMFPAC, CGFMFLANT))
	41A	(COMSC)
	C83F	(COMNAVSUPSYSCOM)
	FKM31	(FOSSAC)



PROCEDURES

1. Introduction.

a. This enclosure, with appendices, supplements and amplifies information and procedures in references (a) through (aa), and provides specific guidance on the conduct of a surface ship Trial or Inspection by the Board of Inspection and Survey (INSURV).

b. List of Appendices

APPENDIX A	Trial or Inspection Schedule
APPENDIX B	Minimum Equipment
APPENDIX C	Engineering
APPENDIX D	Combat Systems
APPENDIX E	Habitability
APPENDIX F	Deck
APPENDIX G	Damage Control
APPENDIX H	Aviation - Air Capable Ships
APPENDIX I	Aviation - Aviation Ships (CV/CVN) and Amphibious Assault Ships (LHA/LHD)
APPENDIX J	Supply
APPENDIX K	Medical and Dental
APPENDIX L	Environmental Protection
APPENDIX M	Occupational Safety and Health

2. Background.

a. Mission. The Navy's primary mission, established by Public Law and reiterated in U. S. Navy Regulations, is to conduct prompt and sustained combat operations at sea. Trials and Inspections of ships assist the Navy in determining if the unit's material condition supports this mission.

(1) Trials. As indicated in reference (b), it is a goal of the Navy's shipbuilding and modernization effort to deliver to the Fleet complete ships capable of supporting the Navy's primary mission and which are free from either contractor or government responsible deficiencies. Reference (b) further states it is the responsibility of the President, Board of Inspection and Survey to conduct Trials as an independent verification of a ship's readiness for acceptance/delivery. Trials are also conducted to determine if builder responsible equipment is operating satisfactorily during the guarantee period following acceptance.

(2) Inspections. As indicated in reference (c) the purpose of conducting periodic material inspections is to provide

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assurance of an inspected unit's fitness for further service, identify any conditions that limit their capability to carry out assigned missions, and report statistical information regarding material deficiencies. Surveys are conducted when directed by the Chief of Naval Operations (CNO) to determine and document the ship's material condition in conjunction with the deactivation process discussed in reference (d). A precept is provided by the CNO for the conduct of a Survey.

b. Deficiency Criteria and Categories. In order to evaluate a ship's completeness for acceptance, or readiness to carry out assigned mission requirements, INSURV uses standards contained in documents such as General Specifications for Overhaul (GSO), electronic installation and maintenance books, technical manuals, PMS requirements, Engineering Operational Sequencing System (EOSS), Combat Systems Operational Sequencing System (CSOSS), Reactor Plant Manual (RPM), Steam Plant Manual (SPM), installation control drawings, Coast Guard regulations, American Bureau of Shipping (ABS) regulations, etc. The following criteria for identifying and classifying deficiencies are used:

(1) In general, deficiencies are items requiring corrective action to bring the material condition of the ship into compliance with required standards. These include:

(a) Failure of equipment to meet performance or safety requirements.

(b) Systems or equipment requiring excessive maintenance resources.

(c) Incomplete (or unsatisfactorily completed) installations, equipment, equipage, publications or drawings/plans.

(d) Incomplete (or unsatisfactorily completed) required material inspections, certifications or tests.

(e) Conditions which are in violation of current Navy Occupational Health and Environmental Protection standards.

(f) Deficiencies outstanding from previous INSURV Trials (Acceptance/Final Contract Trials only).

(g) Deficiencies associated with the ship's Integrated Logistics Support (ILS), where material conditions are directly attributable to ILS elements.

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(h) Deficiencies associated with the Planned Maintenance System (PMS) such as:

1. Missing, incomplete or inaccurate Maintenance Requirement Cards (MRC).

2. Inadequate support due to lack of test equipment, repair parts, training, technical manuals, tools, lubricants or special materials required to perform PMS.

(2) A deficiency may exist at the outset, or it may occur as the result of a casualty during the course of an Inspection or Trial. In either case it will be documented as a deficiency. If the deficiency is corrected during an Inspection or Trial and if the Board has the opportunity to witness appropriate re-testing, it will be documented as a deficiency and annotated as "(corrected)."

(3) Deficiencies will be numbered as to their significance as "Part 1", "Part 2", or "Part 3", in order of importance.

(a) Very significant deficiencies are termed "Part 1" deficiencies. A Part 1 deficiency is an important deficiency which is likely to: cause the ship to be unseaworthy; substantially reduce the ability of the ship to carry out an assigned mission (i.e., a system or equipment is inoperative or has major degradations); substantially reduce the effectiveness of personnel or essential material; and/or cause serious injury to personnel or serious damage to important material. This includes significant deficiencies to the ship's safety equipment and devices.

(b) Part 2 deficiencies will document equipment material degradations that are less significant or do not meet the criteria for a Part 1 deficiency, but should be corrected to restore the ship to required specifications.

(c) Part 3 deficiencies will be generally reserved to document demonstration results, information used by INSURV for statistical analysis and documentation, and other information as specified in reference (j).

(d) A Part 1 or 2 deficiency may also be identified as a safety hazard using criteria provided in reference (u). Specifically, the following applies:

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1. A Part 1 Safety is a deficiency which meets the criteria of Risk Assessment Code (RAC) 1 or 2. Within the category of Part 1 Safety, those deficiencies meeting the criteria of RAC 1 are considered to render the associated equipment "unsafe to operate".

2. A Part 2 Safety is a deficiency meeting the criteria of RAC 3 or below.

(4) Certain Trial deficiencies may warrant a single or double star designation which indicates corrective action requirements.

(a) Single Starred Deficiencies are deficiencies which significantly degrade a ship's ability to perform an assigned primary or secondary ROC or operate and maintain ship systems for which the Navy has assumed responsibility, or which represent general safety, navigational safety, security, firefighting, habitability, or maintainability deficiencies which would prevent the crew from living on board safely. Single Starred Deficiencies must be corrected or waived prior to delivery.

(b) Double Starred Deficiencies are applicable only to those ships constructed, converted, or modernized with a separate fitting-out period assigned away from the building site. Such designation represents general safety deficiencies identified by INSURV that include navigational safety, security, firefighting, habitability, or maintainability deficiencies. These deficiencies would prevent the crew from living on board safely and/or operating and maintaining ship systems for which the Navy has assumed responsibility. Incomplete or inoperable equipment or systems, even though significantly affecting the ship's ability to perform her assigned mission, is not, of itself, justification for double stars. Double Starred Deficiencies must be corrected before the ship is moved from the building site.

(5) Those deficiencies that are likely to cause injury to personnel or damage to equipment will be identified as safety deficiencies.

(6) All deficiencies documented during the inspection will be converted to 2-Kilo format and provided to the ship for upload/inclusion in the ship's CSMP.

c. Cannibalization.

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(1) The Commanding Officer, Shipyard Commander or SUPSHIP Supervisor is to identify cannibalization or diversion actions to the senior inspector at the beginning of the Trial or Inspection. Any cannibalization or diversion should be in accordance with the guidelines in reference (h).

(2) In cases where cannibalization or diversion actions are reported, the conditions requiring this action will be documented in the Inspection or Trial Report. This should include specific identification of the level within the chain of command at which the action was approved (e.g., Type Commander staff, Group Commander, Commanding Officer).

(3) If cannibalization or diversion actions are not reported to the Senior Inspector, but such action is identified during the course of the Inspection or Trial, the situation will be documented in the Report.

d. Underway Operations. Normally, trials and material inspections will contain an underway period. During the inspection, the Senior Inspector conducting the Trial or Inspection will allow as much time as possible to correct any problems or deficiencies which would preclude safe continuation of the required evolutions and demonstrations. However, should minimum equipment for underway operations not be successfully achieved within 36 hours of the commencement of the inspection (normally 2000 on Day 2), the Senior Inspector will determine the inspected unit will not conduct underway operations, and the Board shall:

(1) Complete the examination to the best of its ability inport.

(2) Identify those areas of the examination that were not completed and, as necessary, request that the cognizant TYCOM conduct those parts of the MI not completed and report results to PRESINSURV within 60 days of completion of the MI.

(3) Designate the inspection as a "Limited Material Inspection (LMI)" (i.e., limited to an inport assessment).

(Once PRESINSURV and the Senior Inspector determine the inspection to be a LMI, TYCOM and ISIC representatives will be notified.)

e. Retrial, Re-demonstration. A retrial refers to a Trial that must be completely redone because of termination of a prior

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attempt. A re-demonstration refers to some portion of a Trial or Inspection that requires completion. Generally, INSURV Board members will conduct a retrial. In the case of a re-demonstration, the Type Commander or ISIC may be requested to observe and report the results. A retrial or re-demonstration may be recommended if:

(1) The ship's system/equipment cannot be demonstrated due to designation as a Limited Material Inspection, other inoperative equipment, poor weather, or lack of services.

or

(2) The system/equipment represents a significant departure from ship's specifications (Acceptance and Final Contract Trials only).

3. Responsibility. The Board of Inspection and Survey and other Navy authorities have specific responsibilities assigned with regard to Trials and Inspections.

a. The INSURV Board will:

(1) Establish Trial or Inspection dates based on nominations and proposed dates provided by authorities and commanders responsible for presenting ships (policies IAW reference (c)). Issue schedules including the ship's name, the type of Trial or Inspection, the dates, and the location.

(2) Provide the responsible authority (defined in paragraph 3b below), 60 days in advance of the scheduled Trial or Inspection, a package of information, including this instruction. This will facilitate the advance planning for the conduct of the Trial or Inspection.

(3) Review and approve the proposed schedule provided by the responsible authority for conduct of the Trial or Inspection.

(4) Arrange for inspectors and assistants needed to conduct the Trial or Inspection.

(5) Conduct the Trial or Inspection using the approved schedule.

(6) Document findings of deficiencies using reference (j).

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(7) Present a critique, upon completion of the Trial or Inspection, summarizing the results. It is neither intended nor practicable to review all deficiencies identified in the course of the Trial or Inspection at the final critique. Items presented will include only those deficiencies that seriously affect a ship's capability to perform its mission and/or significantly affect the welfare of the crew. For Trials, representatives of the CNO, Systems Command/PEO and Type Commander, as well as the Commanding Officer (CO), Master, or Prospective Commanding Officer (PCO) will be invited to participate. For the critique of Inspections, attendees may include the Type, Group and Squadron Commanders or their representatives as well as the CO or Master.

(8) Provide the responsible authority a copy of all deficiencies which are to become a part of the Trial or Inspection report.

(9) Document results of the Trial or Inspection as required by reference (i).

(10) Make recommendations regarding the acceptance/delivery or contract settlement of a new construction or modernized ship, or the readiness of a ship to carry out assigned missions.

(11) Monitor post-delivery demonstrations of equipment or systems as required. The building-block nature of the activities that lead to INSURV's final recommendation on new ships frequently makes it mandatory for individual INSURV members or their designated representatives to monitor selected post delivery events in addition to the usual demonstrations during Trials. These events will be identified at the end of the Trial. Deficiencies identified during these post-delivery demonstrations will be reported immediately and investigated in detail during Final Contract Trials (FCT). Because of the extended time frame over which post-delivery events may take place, particular attention should be paid to ensure that the following standard conditions prevail at each event:

(a) Equipment is operated by Navy personnel normally assigned using the Ship's Manning Document and the ship's doctrine.

(b) Equipment is operated under standard fleet doctrine or approved operating procedures provided by EOSS, CSOSS, PMS or other technical directive.

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(c) Equipment is maintained according to applicable PMS requirements.

b. The responsible authority is defined as the officer or commander designated to prepare and present the ship for a Trial or an Inspection. In the case of an Acceptance Trial (AT), the responsible authority is the Supervising Authority, normally the cognizant Supervisor of Shipbuilding or the Commander of the cognizant Naval Shipyard. In the case of a Final Contract Trial (FCT) or Material Inspection (MI), the responsible authority is ultimately the Type Commander, but many tasks are usually delegated to the Commanding Officer/Master of the ship. The responsible authority will:

(1) Nominate ships and propose dates for the conduct of Trials and Inspections.

(2) Propose to the appropriate INSURV Board a schedule of events for conduct of the Trial or Inspection using the guidelines of Appendix A.

(3) Ensure the ship is properly prepared and ready for sea. This means a ship presented for acceptance is complete. Reference (b) requires a waiver from the Chief of Naval Operations for any significant incomplete items. When presented, a ship should be ready to conduct prompt, sustained combat operations at sea. Ships not meeting these criteria should not be presented for a Trial or Inspection. Ships presented for Survey with deficiencies which reduce its ability to conduct prompt, sustained combat operations at sea should ensure these deficiencies are fully documented and known to the Senior Inspector prior to the inspection team's arrival.

(4) Ensure satisfactory presentation of the ship to the Board. The authority operating the ship shall be responsible for the supervision and operation of all machinery and equipment and for the safety of the ship, equipage, and personnel embarked. Procedures and demonstrations should be conducted as expeditiously as possible and with minimum interference between events. Unless otherwise requested by the Board, the responsible authority should take the initiative and aggressively carry out the approved schedule, keeping the Board informed of progress. Modifications to the schedule required by casualties or other circumstances should be made by the responsible authority with the concurrence of the cognizant Board member. All compartments, storerooms, gun mounts, handling rooms, magazines, and cabinets should either be unlocked or have a person standing by with necessary keys. The

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ship shall be clean and properly stowed for sea, excepting equipment laid out for inspection. Insofar as practicable, the bilges should be dry. The full power demonstrations should be scheduled as early in the underway period as possible (after the boiler flexibility tests, if applicable).

(5) Arrange for services required for hull and combat system demonstrations and provide for coordination of these services.

(6) Provide the Board the following administrative support.

(a) The ship will be required to accommodate 25 to over 100 inspectors depending upon the size and complexity of the ship. As a rule, inspectors will range from W-2 to O-6 (military) and GS-7 and above (civilian). Each inspector will require an area to change clothes, clean up, and write his/her report (care should be taken to ensure adequate changing areas for male and female inspectors). A stateroom is preferred for these purposes. Clothes hangers, soap and towels should be available in each space assigned for the inspectors' use.

(b) A minimum of twenty (20) parking spaces (in Norfolk) and ten (10) parking spaces (all other areas) should be reserved near the ship. These spaces will be required for the entire inspection period.

(c) If possible, a quiet area should be designated and marked as the "INSURV Conference Room." This space is to be used as a central location for INSURV inspectors to confer. Additionally, administrative support items such as a printer/copier available for the Board's use, printer/copier paper (1 ream), black ball point pens, flashlights, and spare batteries (D, C, and AA sizes) should be provided.

(d) Inspectors may require laundering of their coveralls on a daily basis. Pre-determined pick-up and drop points for the coveralls should be established and announced on the first day of the inspection.

(e) During periods of inclement weather, ships will have foul weather jackets available for inspector use.

(f) Provide SEEDS/OCENCO EEBDs to be used by inspectors entering machinery spaces while machinery is in operation.

(g) An electronic copy of the ship's CSMP shall be provided to the Board 5 days prior to the inspection (download from OMMS-NG/SNAP III in "upline report" format - forward to the Board recorder via email). Additionally, one copy of the ship's CSMP separated by work center shall be provided to the Board upon arrival.

(7) For Trials on ships not yet in commission, the responsible authority shall ensure the contractor has made necessary preliminary arrangements and provided adequate equipment, facilities and personnel for communicating with the commercial marine radiotelephone operator. Electronic equipment in the Trial ship may be used for administrative traffic on a not-to-interfere basis with scheduled communications demonstrations.

(8) Ensure the documents, lists, records and data discussed in Appendices B through M are available upon the Board's arrival.

(9) Ensure a sufficient number of responsible authority, building yard, or ship representatives are available to accompany each Board member and their technical assistants during the Trial or Inspection.

(10) Ensure yard and ship work during the Trial or Inspection is held to a minimum to preclude interference or conflict with the conduct of specific evolutions.

(11) Ensure that masking of passageways for cleaning, waxing, or painting is suspended during the Trial or Inspection.

(12) For a Material Inspection, provide the following information to the Senior Inspector:

(a) Commanding Officers/Masters since last INSURV Inspection.

(b) Dates of last and next scheduled deployment.

(c) Dates of last and next major repair availability (ROH, SRA, etc.) and activity conducting the availability.

(d) Copies of outstanding Casualty Reports (CASREPs) on day one of the inspection.

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(e) List of cannibalization or diversion actions with circumstances surrounding each.

(f) List of outstanding ship alterations or class items noting applicable number and brief description.

(g) List of currently outstanding Departures From Specifications (DFS), temporary or permanent, and dates of approval, as documented in the DFS log.

(13) Provide, for an Acceptance Trial, the Shock Deficiency Correction Plan (including shock grade "A" subassembly items), and include the mission impact of those deficiencies within the comments section of the report (reference (aa)).

(14) The Commanding Officer, Master or PCO (in the case of an AT) shall write a Letter of Concerns to the President, Board of Inspection and Survey outlining any material or logistics problems which he feels are significant or would contribute to the ship's inability to support prompt, sustained combat operations at sea.

4. Liaison with the Board. In order to ensure preparations and actual conduct of the Trial or Inspection are orderly and efficient, early liaison with INSURV is strongly recommended. An INSURV Recorder is assigned for each Trial or Inspection as the Board's liaison for the responsible authority. Questions regarding any aspect of the Trial or Inspection may be addressed to the recorder to ensure early resolution of issues or difficulties. The ship should assign an officer as INSURV Coordinator to work directly with the Board's Recorder.

5. Linked Inspections. An INSURV inspection may be designated in advance as "linked" with other existing technical inspections (e.g. C5RA, HAMERA, CAPS, etc.). In those cases, the basis of the INSURV final report will be the material condition of the ship "as found" on day 1 of the linked inspection. Deficiencies generated during assessments linked with the INSURV inspection will be annotated as "corrected", where applicable.



APPENDIX A

TRIAL OR INSPECTION SCHEDULE

1. General.

a. A Trial or Inspection is normally conducted in four phases. These phases are:

- (1) Pre-Underway
- (2) Underway
- (3) Post-Underway
- (4) Critique

b. Normally a Trial or Inspection should be limited to five days. The Board's arrival time and/or the size or type of ship being inspected may necessitate varying this period slightly.

2. Trial or Inspection Schedule.

a. General

(1) A proposed schedule for conduct of the Trial or Inspection should be provided to the INSURV Board for review and approval at least 30 days in advance. Liaison with the INSURV Recorder should be conducted prior to submission of this proposed schedule. Sufficient copies of the approved schedule should be prepared and furnished to all INSURV members and interested parties upon their arrival.

(2) The Trial or Inspection scenario commences at the time the inspection team arrives at the ship. The scenario assumes the ship receives orders to get underway, transits at full power to a location some days distant and conducts its mission. The ship's ability to meet required operational capabilities will be stressed. Upon completion of the mission, the ship will return to port. There is no accompanying tactical scenario.

(3) The sample schedule presented in paragraph 3 below provides a recommended format, sequence, and event time duration to be followed during the Trial or Inspection. The sample schedule is not necessarily all-inclusive. The actual schedule must take into account applicable conditions, such as INSURV's

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arrival time, range of tide, distance to deep water, duration of sea detail, services required, as well as particular requirements of the Trial or Inspection being conducted. The sample schedule shows major or controlling events. Non-controlling events should be scheduled around controlling events on a mutually compatible basis.

(4) Schedules shall include demonstrations of all on board propulsion, hull, electrical, auxiliary, and combat systems equipment. Mutually compatible demonstrations may be scheduled simultaneously.

(5) A combat systems demonstration test package for each ship is provided six weeks prior to the Inspection or Trial. It details the PMS checks and operational demonstrations necessary to adequately test the combat systems. The Trial or Inspection schedule will include these demonstrations (except those tests conducted prior to the arrival of the Board during a linked inspection).

(6) Other appendices to this instruction contain additional events that are normally included in the schedule.

(7) It should be understood that the schedule represents only a fundamental set of demonstrations. Additional tests and demonstrations may be requested by INSURV to pinpoint deficiencies when unsatisfactory or marginal performance is observed. In addition to performance demonstrations, all equipment will be examined to determine if it is installed in a manner permitting its operation for its intended purpose, can be reasonably accessed for required preventative and corrective maintenance, and provides adequate safety protection to the operator.

b. Pre-underway Phase. INSURV will commence Trials and Inspections with a short preliminary conference for the purpose of meeting counterparts and checking documents provided at arrival.

(1) Details regarding safety related demonstrations required for completion prior to underway are provided in the respective departmental appendices of this instruction. "Repair-Before-Operate" (RBO) and "Underway Restrictive" deficiencies are discussed in Appendix B and may involve equipment or systems in Engineering (main propulsion, electrical and auxiliaries), Combat Systems (navigation and communications), Deck (anchor and rescue boat) and Damage Control (fire fighting and dewatering) areas.

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(2) Once all pre-underway tests are successfully completed the ship will be cleared to conduct the underway portion of the inspection.

(3) Should pre-underway tests not be successfully completed, the Senior Inspector will designate the visit as a Limited Material Inspection (LMI) (Procedures, para. 2.d.;page 5).

c. Underway Phase. This phase will consist of operational demonstrations of ship's equipment and systems.

(1) When possible, the at-sea portion of the Trial or Inspection should be completed in one day. Late arrival of INSURV, geography, or significant safety concerns may necessitate staying at sea overnight. Aircraft carriers, large combatants and auxiliary ships may require a longer at-sea period to complete required tests. Liaison with the INSURV Recorder should be conducted before a proposed schedule is submitted.

(2) Details of demonstrations and checks to be conducted during the at-sea portion of the Trial or Inspection are contained in the departmental appendices.

d. Post-Underway Phase. INSURV members will designate the equipment to be opened or disassembled for the post-underway examination. Equipment will be chosen based upon observations during the underway portion of the trial, recommendations of the responsible authority, equipment that has been targeted as suspect due to machinery condition analysis or other tests, as well as PMS required scheduled openings. Equipment operating within established technical parameters will not normally be opened with the exception of filters, strainers, and sump inspection covers. It is not the intent of the INSURV inspection to disable a ship, but rather to accurately ascertain equipment conditions. All bilges, particularly in the area of main propulsion machinery and boiler foundations, should be clean and dry to facilitate a thorough inspection of foundations and vital structural members. Should a situation arise whereby it is impossible for INSURV to conduct this phase of the examination, local agencies will be designated to complete the inspection and report findings to INSURV.

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3. Sample Schedule.

SAMPLE TRIAL/INSPECTION AGENDA

(Basic format - Add or delete items as appropriate to the ship class and type of Inspection/Trial)

FIRST DAY (Pre-Underway)

INSURV Board arrives

In-brief 30 minutes

Combat systems demonstration brief 30 minutes

Review ship input including 2Qs, 2Ks, CASREPs, current system configuration documents and marked up (corrected, outstanding, etc.) copy of last INSURV Inspection Report. to completion

General material inspection (Senior Inspector tours ship) to completion

Propulsion and electric plants hot/cold checks and testing of safety devices to completion

Review Full Power Memo to completion

Anchor operational test/chain locker inspection to completion

Inspect RAST system (if installed - machinery room and flight deck) for pressures/speeds/tensions 1 hour

Operate bow ramp, doors, and/or stern gate (amphibious ships) to completion

Test controllable pitch propeller to completion

Inspection of main drainage system eductors, cross-connect valves, and remote valve operators to completion

Electronic NAVAIDS verification and fathometer checks to completion

Emergency communications equipment (portable, bridge) to completion

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CDS/CND/AWS/SSDS/NTDS computer checks	to completion
Missile battery firing readiness (DSOT)	1.5 hours
Inspection of torpedo tubes, underwater battery fire control system, test firing circuits	to completion
Gun battery transmission checks	1.5 hours
Inspection/testing of Advanced Digital Networking System	to completion
Inspection/testing of Global Command and Control System - Maritime (GCCS-M)	to completion
Inspection/testing of Classified and Unclassified networks, application software and documentation	to completion
HF/UHF/VHF communication equipment checks and demonstrations	3 hours
Inspect topside bonding, grounding	1 hour
Portable davits demonstration	2 hours
Demonstrate hangar hoist	30 minutes
Inspect torpedo/VLA over-the-side handling equipment	to completion
Test P100 series pumps	to completion
Inspection, demonstration of navigation light telltale panel	30 minutes
Inspection of piloting and navigation instruments	to completion
Inspect Repair Locker V and other Main Space repair lockers (as applicable)	30 minutes per locker
Inspect and test fire pumps	2 hours
Fin stabilizer checks (if installed)	1 hour
Demonstration of degaussing quarterly PMS checks for linearity and door interlocks	1 hour

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NAVOSH inspection	to completion
General safety administrative program review (Safety officer)	to completion
Oily waste transfer system demo (must be completed prior to AFFF demo)	to completion
CHT/VCHT system inspection	to completion
Demonstrate solid waste equipment	to completion
Conduct industrial ventilation measurements (CPS zones must be set prior to measurements, if applicable)	to completion
Inspect HAZMINCEN	to completion
EP administrative program review (Command AEPC)	to completion
NAVOSH medical surveillance administrative program review (Command MDR)	to completion
Inspect OWS/OCM systems	to completion
Inspect potable water risers and hoses (Command MDR)	to completion
Inspect main medical and battle dressing stations and medical waste management (Command MDR)	to completion
Inspect supply spaces/demonstrate food service equipment	to completion
Inspect ship's store spaces and equipment	to completion
Demonstrate laundry equipment	to completion
Open and inspect one JP-5 service and one JP-5 storage tank	1 hour
Demonstrate JP-5 service system	to completion
Inspection of steering and ship control equipment (rudder, blocking valves, rudder angle indicators, EOT checks, high pressure relief valves, ABTs)	to completion

Gyro, gyro repeater, pelorus accuracy/verification checks	to completion
Test/inspect machinery space fire fighting equipment (Halon, AFFF)	to completion
Emergency diesel generator test	to completion
Test hangar circuit F high temperature alarm system	1 hour
Air compressor and associated dehydrator demonstration	2.5 hours
Inspection and demonstration of electric submersible pumps	1 hours
Underwater telephone demonstration	30 minutes
Mast and antenna inspection (PM)(primary)	to completion
Inspection of boats and davits (lower and recover boat on outboard side)	2 hours
Ready lifeboat full power run	1 hour
Inspect boat booms, accommodation ladder, and heavy weather lifelines, rig towing gear, RAS/FAS stations, pilot rescue equipment, leadsman platform	to completion
Inspect paint lockers and flammable materials stowage	to completion
Magazine sprinkler and alarm systems test	to completion
Inspection of DECON spaces	to completion
SSTG, GTG, SSDG inspections and tests	to completion
Test engineering automatic bus transfers (lighting & vital auxiliaries)	1 hour
400-Hz power systems tests	to completion
Inspection of main space escape trunks	1 hour

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INSURV Board departs

SECOND DAY (Pre-underway (cont.))

INSURV Board arrives

MK 6 life rafts - inflate and inspect	1 hour
Conduct inport ballast checks	to completion
Mast and antenna inspection (alternate)	to completion
Strike warfare demonstration	to completion
Conduct ballast/de-ballast demonstration brief	30 minutes
Drop and inspect firemain valve	15 minutes
Tank and void inspection	1 hour
Test high temp/flooding/smoke detectors and fire alarms	to completion
Inspect DC overboard fittings	to completion
Inspect explosion proof lighting	to completion
Test bilge flooding alarms	to completion
Test IPDS/CAPDS	to completion
Inspect/test fire zone doors	1 hour
Inspect/test CPS system	to completion
Inspect fire-fighting equipment (Fire stations/PKP/AFFF/CO <sub>2</sub> )	3 hours
Inspect/test fresh water hose reels	1 hour
HF antenna resistance test	1 hour
Time domain reflectometry test (TDR)	2 hours
CDS/CND/AWS/SSDS/NTDS display Programmed Operational Functional Appraisals (POFAs)	3 hours

Test APC systems	1 hour
Inspect watertight closures (doors, hatches, scuttles)	4 hours
Habitability and sanitary space inspection	to completion
Inspect machinery spaces	to completion
Weapons handling equipment/systems (remainder from Day 1)	2 hours
Elevator, conveyor and dumbwaiter inspection	2 hours
FZ Alarm system checks	to completion
IC switchboard checks	30 minutes
Test combat systems ABTs	to completion
400-Hz power systems tests (if not previously completed)	to completion
Administrative review of Tag-Out, Gas-Free Engineering and Electrical Safety programs	to completion
Conduct NAVOSH walk-through (Command Safety Rep)	to completion
Inspect repair locker equipment	2 hours
Inspect/test saltwater sprinkler system(s) (other than magazines)	3 hours
Inspect lifelines, life rings, distress marker lights, ladders, and topside preservation; operate machinery and deck equipment	to completion
Test secondary drainage systems	2 hours
Test remotely operated fire main valves	1 hour
Test all fixed CO <sub>2</sub> flooding systems	2 hours
Inspect CBR equipment and decontamination stations	1 hour
Administrative review of Ozone-Depleting Substance (ODS) program (Ships AC&R rep)	to completion

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INSURV Board departs

THIRD DAY (Underway)

Station special sea and anchor detail

INSURV Board arrives - verify ready for sea 30 minutes

Check navigation lights, AN/KAS-1 and infrared/  
night vision devices to completion

Inspect flight deck lighting 30 minutes

Underway 16 hours (approximately)

Commence distilling plant test 4 hours each plant

Gig davit test (if not accomplished first day) when  
ship is clear of pier or within the inner harbor 30 minutes

Run degaussing range to completion

ULM-4 range (active system only)/weapons system DSOT 1.5 hours

Piloting fix accuracy checks (visual, radar,  
electronic nav aids, GPS), fathometer checks to completion

Combat system DL intrusion alarm demonstration 1 hour

Link 4A, 11, 14, 16 demonstration (as applicable) to completion

Operate ballast system (amphibious and SWATH ships) 4 hours

Search and fire control radar, EW, IFF and  
TACAN parameter checks 2.5 hours

HF/UHF SATCOM communication equipment checks and  
demonstrations 3.5 hours

Inspection of aviation facilities  
(AEL equip., flight deck, MK-1 life vests) to completion

Inspection/demonstration of IC systems to completion

Interface checks of combat systems  
(sonars, search and fire control radars,  
DRT, wind indicating systems) to completion

Crypto equipment test and demonstration	2 hours
Information Systems on-air checks (chat/web browsing/ e-mail/FOTC Track Data Exchange)	to completion
Surface search radar demonstration	to completion
Detailed electrical walk-through	to completion
Anchor windlass test	45 minutes
CO <sub>2</sub> inflatable life preserver PMS inspection	to completion
VLS deluge system and alarm systems test	to completion
Measure main shaft thrust	1 hour
HF longhaul demonstration with appropriate SESEF	2 hours
Test AFFF system and analyze foam concentration at high and low rates from each AFFF station	4 hours
Boiler flexibility test (all boilers on steam ships, prior to full power)	2 hours
Buildup for full power (1/2 hour for gas turbine ships)	1 hour
Demonstrate soot blower systems on all steaming boilers	30 minutes
Demonstrate air conditioning, refrigeration, brominators	4 hours
Heating, ventilation and air conditioning (HVAC) system test	to completion
Air search radar/IFF/TACAN demonstration with aircraft	2 hours
Aircraft detection and designation/FC radar demo and target acquisition/self- defense system demo/detect-to-engage sequence	to completion
Check IC circuits	to completion
Full power demonstration	1 hour (FCT/MI)

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	4 hours (AT)
Stabilized Glide Slope Indicator Demonstration	1 hour
Inspect wind measuring and indicating system	1 hour
Fin stabilizer demonstration	to completion
Ahead steering and steering gear demonstration	30 minutes
Quick-reversal astern to full power demonstration	to completion
Astern steering demonstration	30 minutes
Quick-reversal ahead to full power demonstration	to completion
ASW/CV-TSC demonstration with ship launched target	45 minutes
Gun fire control system(s) static and dynamic computer checks	1 hour
Hangar and all associated aviation equipment and facilities inspection (HP/LP air, hoist, 400 HZ 28 VDC, etc.)	to completion
EMI/IMI/RADHAZ testing (comms, radars, EW)	6 hours
Demonstrate shore power shunt trip interlocks and measure insulation resistance of system	30 minutes
Conduct tests on collective protection systems where applicable	6 hours
Nixie launch and recovery/test operational modes	1.5 hours
Shift to and operate all propulsion and auxiliary equipment that has not been in operation	to completion
Backup aircraft service demonstrations	to completion
Countermeasures washdown system demonstration	1 hour
Debrief of inspection to date by Senior Inspector to responsible authority	1 hour
Station special sea and anchor detail	1 hour

Return to port/INSURV Board departs

Commence post-underway phase to completion

FOURTH DAY (Post-underway)

INSURV Board arrives

Continue inspection of designated engineering equipment to completion

Rescheduled items to completion

Counterpart debriefs to completion

FIFTH DAY

Senior Inspector(s) arrive

Critique with responsible authority/ship's force 1 hour

Senior Inspector(s) depart

NOTE: Ships should provide the senior inspector information (e.g. equipment name, CASREP category, and CASREP reason) on CASREPs that will be or have been generated as a result of the trial or inspection.



APPENDIX B

MINIMUM EQUIPMENT

1. Minimum Equipment Definition. The President, Board of Inspection and Survey is designated as the CNO's agent for development of policy and procedures for Trials, Material Inspections and Surveys of ships (reference (c)). A fundamental element of INSURV's overall assessment of ship-wide material condition is demonstration of the ship's material readiness to safely take the ship to sea for sustained operations. Proper at-sea operations must be focused on maintaining navigation, propulsion, electrical power and associated auxiliaries, including hotel services, while ensuring the safety of operating personnel. Based on a detailed review of all applicable laws, regulations and directives, and a thorough consideration of Operational Risk Management (ORM) (reference (z)) for a peacetime, non-emergent inspection, the below minimum equipment criteria applies in determining readiness for underway operations during an INSURV material inspection. For nuclear-powered vessels (CVNs) minimum equipment requirements are per reference (v) (Joint Fleet Maintenance Manual).

2. Minimum Equipment Criteria. For inspection purposes, "in commission" means equipment or systems are fully operational, in normal alignment, with all safety, control and primary monitoring devices set within prescribed calibration/test periodicity. In cases where "half" of installed equipment is required to be operational, "half" is determined by rounding up when an odd number of components exists.

3. Repair-Before-Operate Deficiency. A "Repair-Before-Operate" (RBO) finding is where a condition exists that with continued operation of a system or equipment could result in danger to personnel and/or serious damage to the system or equipment. Those conditions include, but are not limited to: equipment operating out of parameters, missing or damaged safety or control devices, or installation configurations that do not meet the standards established in technical documentation (e.g., EOSS, CSOSS, PMS, NSTM, NAVSEA drawing, MILSPECS) or by a technical authority. The equipment may not be operated until the RBO deficiency is corrected and re-inspected by an INSURV inspector.

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4. Underway Restrictive Deficiency. A finding of "Underway Restrictive" is made when sufficient RBO deficiencies exist to reduce available equipment or systems below the minimum equipment criteria. Underway operations during the Material Inspection will not be conducted until minimum equipment can be corrected and re-inspected by an INSURV inspector. In addition to minimum equipment, there must be no other condition, which in the opinion of the Senior Inspector, would preclude safe operation of the ship, or present a hazard to personnel and/or equipment. The Senior Inspector will provide a list of deficiencies considered by INSURV as restricting safe underway operations to the responsible authority.

5. Minimum Equipment.

a. Engineering.

(1) In steam ships, one boiler in each fireroom/combined machinery space must be in commission. Specifically the following numbers of boilers are required:

<u>Installed</u>	<u>In Commission</u>
2	2
3	2
4	2
8	4

(2) In diesel ships, the following criteria apply: All single shaft ship main propulsion diesel engines must be operational. Multi-shaft ships must have at least one main propulsion diesel engine operational per shaft.

<u>Number of Engines Installed</u>	<u>In Commission</u>
1	1
2	2
4	2

(3) In gas turbine ships the following applies:

(a) CG 47/DDG 51/DD 963/AOE 6 Class - At least one engine per shaft.

(b) FFG 7 Class - Both engines in commission.

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(4) Non-steam propulsion ships are required to have a minimum of one safe-to-steam auxiliary boiler (if so equipped) before getting underway.

(5) In electrically propelled ships all main motors and generators must be operational and propulsion machinery megohmmeter readings must meet required criteria for safe operation.

(6) All single shaft ship main propulsion steam turbines must be operational. Multi-shaft ships must have one half of all main propulsion steam turbines operational.

(7) Installed automatic boiler controls for required in-commission boilers must be operational.

(8) Two different pumps (main feed pump(s) with associated feed booster pump(s) or emergency feed pump(s)) must be capable of feeding the boilers in each plant.

(9) Half of each type of air compressor (LP, MP, and HP) must be in commission when the system supplies air to support main propulsion, auxiliary machinery or navigational radar. Reduced HP air is not a qualifying source to supplement less than minimum equipment for MP/LPACS.

(10) Main lube oil systems must be capable of complete sequential automatic operation.

(11) Half of the auxiliary components must be operational in each plant.

(12) Half of the installed fire pumps, sea suction/discharge valves and remote operators must be operational.

(13) Half of the seawater service pumps, sea suction/discharge valves and remote operators must be operational.

(14) Half of the distilling units must be in commission, and the ship must be capable of providing distributed potable water service.

(15) Half of the air conditioning units, associated chill water pumps and seawater pumps, or sufficient quantities of that equipment to fully support all engineering and combat systems functions, must be operational.

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(16) All fin stabilizers must be either in commission or placed in the locked position.

(17) Bow thrusters must be either in commission, or not used during underway operations.

(18) To conduct the ballast demonstration, the number of deballast air compressors and hydraulic power units specified in the Ballast Operational Sequencing System must be operational. The stern gate, and half of the stern gate hydraulic power units must be operational.

(19) Half of the installed ship's service generators and associated waste heat boilers must be operational.

(20) Half of the ship's emergency generators must be operational.

(21) The following numbers of 400 HZ motor generator sets or static frequency converters are required:

<u>Installed</u>	<u>In Commission</u>
2	2
3	2
4	2

Note: If one 400 HZ MG/Converter can fully support the entire ship's combat systems as confirmed by ship's technical documentation, underway portion of the inspection may be conducted at the discretion of the ship's Commanding Officer and Senior INSURV Inspector.

(22) Steering machinery and control units must be in commission for each rudder, with relief valves properly set. Half of the steering hydraulic power units for each rudder must be operational.

b. Navigation. Navigation/vital ship control equipment must be fully operable as follows (references (w) through (y)):

(1) Rudder Order/Angle Indicators. Must be fully operational in the pilot house (centerline, ship's control console (SCC)/helm, and bridge wings) and in after steering.

(2) Engine RPM/Pitch Indicators. Must be fully operational in the pilot house (observable from the centerline conning position). If fitted with lateral thrust propellers/APUs,

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must have an operational indicator for direction and amount of thrust observable from the centerline conning position.

(3) Integrated Throttle/Engine Order Telegraph. Sat operational test, all indicator lights must illuminate.

(4) Gyrocompass/WSN. Must be fully operational.

(5) Gyrocompass Repeaters. Must be fully operational at the helm, after steering, centerline and bridge wing positions.

(6) Surface Search Radar. At least one surface search radar capable of radar navigation must be fully operational (bridge-mounted/stand-alone piloting radars are not considered acceptable for radar navigation).

(7) Magnetic Compass. Must have an operational magnetic compass (binnacle or flux gate digital) observable from the helm. A current variation/deviation table should be available for use.

(8) Ship's Whistle. Must be operational when tested from the pilot house. Manual, electronic and timer modes are tested (if applicable).

(9) Fathometer. Must be operational, including the chart recorder.

(10) Ship's Bell and Gong (if required). Must be in place and operational.

(11) Navigation Lights. Primary navigation lights (Port/Starboard running lights, forward and aft (if required) masthead lights, stern light) must be operational, including secondary filaments. Associated navigation light telltale panel must pass applicable PMS.

(12) Bridge-to-Bridge VHF. Must be operational (tested with assist unit).

c. Damage Control. Damage control/safety equipment must be fully operable as follows:

(1) All main engineering firefighting systems and equipment (Halon, AFFF, Fixed CO<sub>2</sub>, Portable CO<sub>2</sub>, Portable PKP, EEBD's, installed emergency lighting, etc.) installed in engineering spaces required for underway operations must be fully operable.

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(2) Engineering Emergency Escape Trunks, (balanced joiner doors (Ellison doors), emergency lighting, and escape hatches/scuttles) fully functional.

(3) Life Support Equipment (OBA's, SCBA's, EEED's and SEED's) fully functional.

(4) Half of the installed/portable SCBA compressors fully operational.

(5) Half of the ship's P-100's must be fully operational.

(6) The ship must be capable of de-watering all main spaces remotely through installed space capability, or via other spaces through main drainage system cross-connects or bulkhead stops.

(7) Designated main space repair locker/s must be sufficiently equipped to properly respond to an emergency.

d. Deck. The following deck equipment must be fully operable (references (w) through (y)):

(1) The ship must be capable of safely raising and lowering at least one anchor. Half of the anchor windlass machinery must be operational.

(2) One ready lifeboat and its associated davit (preferred). Ships that opt to get underway without an operational boat shall ensure that all shipboard SAR equipment, including rescue swimmer equipment and qualified rescue swimmers, are onboard, have been inspected by the appropriate INSURV inspector and are ready for use. The ship should review ship-alongside recovery challenges and ORM with the Senior Inspector prior to underway operations.

APPENDIX C

ENGINEERING

1. Engineering Group Inspection General Requirements.

a. Preparation.

(1) The INSURV Engineering Group is organized into three inspection areas: Auxiliaries (AX), Electrical (EL), and Main Propulsion (MP) (For nuclear-powered ships, the Reactor Plant (RX) will be included). Checklists of the systems and machinery inspected by each of these areas are available for download from the INSURV web site (<http://www.spawar.navy.mil/fleet/insurv>). These INSURV Engineering checklists are ship class specific (i.e., tailored) and delineate equipment inspected by the Engineering Group during each of the three phases of the inspection (Pre-Underway, Underway, Post-Underway).

(2) In support of the overall inspection, the INSURV Engineering checklists encompass more than what the ship typically performs during a routine plant light off. It is imperative that Engineering Department leadership review these checklists well in advance of the Inspection/Trial/Survey in order to formulate a plan to ensure timely completion. It is the responsibility of the ship to prepare and coordinate the sequencing of all checks and demonstrations.

(3) Qualified ship's force personnel will operate all equipment for checks and demonstrations, except during Acceptance Trials/Contractor Trials of conventional-powered ships, when contractor personnel will operate the equipment.

(4) The INSURV Engineering Group shall be provided with a consolidated list of the procedures that the ship intends to use to accomplish the INSURV Engineering equipment checks and demonstrations. These procedures are typically drawn from PMS, EOSS/RPM/SPM, or tech manuals. It is the ship's responsibility to determine the most appropriate procedure. The Engineer Officer shall annotate a copy of the INSURV Engineering Checklist with the title/number of the procedure that will be used. In addition to the consolidated list of procedures, the Engineer Officer shall ensure that essential correspondence, documentation, records, and logs are available for review (varies with type of propulsion

plant). As a minimum, the ship shall have the following available for inspector review (as applicable):

- (a) Engineering Eight O'clock Reports
- (b) Casualty Report (CASREP) Summary
- (c) List of Out-Of-Commission (OOC) equipment

NOTE: CASREP Summary and OOC Equipment List may be combined with the Eight o'clock reports and included as part of the package provided to the Senior Engineer during the in-brief.

(d) Engineering CSMP (may be provided as part of the CSMP for the entire ship provided to INSURV)

- (e) Departure From Specifications (DFS) log
- (f) Temporary Standing Orders
- (g) Class advisories in effect for the ship
- (h) Updated SHIPALT status
- (i) Propulsion Operating Guide/Ship Information Book
- (j) Critical Instruments List/Calibration Requirements

List

(k) List of all machinery equipment safety devices (including required and actual settings and dates tested).

Examples:

- Speed limiting governors
- Overspeed trips
- Pressure/temperature alarms
- Safety/relief valves

(l) Most current material and equipment inspection/assessment reports. Examples:

- Boiler inspection
- Diesel inspection
- Gas turbine inspection
- Main reduction gear
- Material assists/assessments  
(e.g., HAMERA, AEC, PMT)

ATG underway assessment  
Internal hull structure assessment

(m) Equipment documents and records/logs. Examples:

Boiler water and feed water  
LOQM/NOAP  
Degaussing folder  
Cathodic protection  
Bearings (e.g., main engine, generator,  
reduction gear, shaft, thrust)

(n) Ground resistance readings for all 60 Hz ship service generators and 400 Hz motor generators

(o) Number and rated capacity of each of the ship's evaporators in gallons per day

(p) Capacity in gallons of each of the ship's fresh water tanks by tank number

(q) List of water heaters and location

(r) List of fan rooms by compartment number

(s) A proposed list of equipment to be presented during the post-underway phase.

(5) Recommended Plant Alignment.

(a) Gas Turbine and Diesel Platforms. One gas-turbine generator (GTG) or ship service diesel generator (SSDG) should be supplying the electrical load, or operating in standby if shore power will support equipment testing. All other equipment should be standing by in support of cold checks.

(b) Steam platforms. Minimum equipment should be utilized to support auxiliary steaming. All other equipment should be standing by to support cold checks.

b. Pre-Underway Phase.

(1) Safety devices and monitoring systems will be demonstrated for inspectors during the pre-underway phase. All checks will be conducted using the applicable PMS, EOSS/RPM/SPM, or other authorized (tech manual-based) procedural instructions. Sufficient test equipment (e.g., tachometers, flow meters,

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comparators, signal generators, multi-meters, voltage testers, megohmmeters) should be provided to allow simultaneous testing by each work center (as much as practical, the ship should have multiple units). Test equipment shall be presented to individual inspectors prior to use for verification of calibration and safety requirements.

(2) Specific checks are delineated under the Pre-Underway portion of the checklists for each Engineering inspection area (AX, EL, MP). The following general items will be checked to ensure that it is safe to continue the Inspection/Trial/Survey:

(a) Check for the presence of any significant fire hazards.

(b) Check for the presence of any obvious personnel safety hazards.

(c) Check availability of sufficient quantities and quality of fuel oil, feed water, potable water, and lube oil.

(d) Check operability of propulsion plant and ship control IC and general alarm systems.

(e) Test overspeed/speed-limiting devices on gas turbine, steam, diesel, and electrical driven machinery.

(f) Review the arrangement and operation of the main propulsion plant and principal auxiliaries to ensure the installation will support the ship's mission and that reliability, reasonable economy, and accessibility for maintenance and operation are provided.

(g) Check to ensure labeling is correct and complete on major safety components and damage control items, that insulation and lagging are clean and intact, and operating instructions and safety precautions are posted and adequate.

(h) Inspect bilges and engineering spaces for dryness, cleanliness, preservation, corrosion, stowage adequacy, and freedom from fire and safety hazards.

(i) Inspect adequacy of access, ventilation, lighting, and freedom of passageways and working or operating spaces from overcrowding and obstruction.

(j) Check heat stress conditions.

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(k) Check critical gauges, thermometers, and meters for proper installation, calibration and operability.

(l) Check integrity of piping systems and components.

c. Underway Phase.

(1) During the underway phase, the ship's propulsion and control equipment will be tested to design specifications to determine the adequacy of ship's systems to support required mission areas. The demonstrations will include: boiler flexibility tests on all propulsion boilers on steam propelled ships (the boiler flexibility test(s) must be conducted prior to full power and be accomplished at or above Level III criteria for operations at full power to proceed); full power ahead; steering test ahead; quick reversal to full power astern; steering test astern; and quick reversal to full power ahead.

(2) Demonstrate satisfactory degaussing system operations (two reciprocal courses) against the degaussing range (ships achieving satisfactory degaussing runs on two reciprocal courses within 90 days of the inspection will not be required to re-demonstrate the system during the underway phase).

(3) Other underway demonstrations will be required by cognizant inspectors such as soot blower operation, fuel oil transfer system operability, water testing, distilling unit capacity, Prairie/Masker operation, operation of amphibious mission equipment, etc. The Underway portion of the INSURV Engineering checklists delineate required demonstration-specific requirements for each of the Engineering inspection areas.

d. General information pertaining to full power requirements for all propulsion plants.

(1) Inability to operate within limiting plant parameters or to achieve required full power SRPM/SHP/torque established by applicable technical documentation (technical manuals, heat balance diagrams, propulsion operating guides, NAVSEA technical manuals, reference (k), EOSS, PMS, etc.) will normally result in a degraded or an unsatisfactory full power demonstration.

(2) A propulsion demonstration test memorandum should be prepared by the ship and provided to the senior INSURV engineering inspector.

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(3) INSURV inspectors will not act as official observers for any demonstrations for competitive purposes.

(4) Machinery with inoperative or improperly set safety devices will be considered inoperative and will not be used during underway demonstrations.

(5) Full power data shall be collected at least every 15 minutes during the demonstration period.

(6) The full power demonstration will be conducted for a period of four hours for Acceptance Trials and one hour for all Material Inspections, Final Contractor Trials, and Surveys.

(7) The need to continue beyond the normal full power demonstration period will be determined by the Board's senior engineering inspector prior to commencing the next event.

(8) The Senior Engineer will notify the ship when the full power ahead demonstration is complete prior to the commencement of full power ahead steering tests. NOTE: Inability to conduct ahead steering tests while at full power ahead will normally result in an unsatisfactory steering test.

(9) After completion of full power ahead steering tests, quick reversal astern will be executed, bringing the shaft speed to rated astern full power RPM/Pitch.

(10) Rated continuous astern full power RPM/Pitch shall be established prior to commencement of full power astern steering test.

(11) The Senior Engineer will advise the ship prior to commencement of full power astern steering tests.

(12) Upon completion of astern steering tests, a quick reversal ahead will be executed, bringing the shaft(s) to the previously computed full power RPM/SHP.

(13) The Senior Engineer will advise the Senior Inspector who will advise the ship when all propulsion demonstrations are complete.

(14) A rough copy of the demonstration data sheets shall be provided to the Senior Engineer for evaluation as soon as possible upon completion of propulsion demonstrations.

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(15) A smooth copy of the demonstration report shall be furnished to the Senior Engineer prior to inspection completion.

e. Post-Underway Phase.

(1) The ship will provide a recommended post-underway inspection list of machinery based on requirements set forth in the following paragraphs. A specific list of machinery to be disassembled and inspected will be provided to the Engineer Officer/Reactor Officer at the end of day 1 and prior to returning to port, if required. This list will take into consideration the ship's recommendations, upcoming maintenance requirements, the observation of operating conditions of the machinery, and recent outside-agency inspections where the reports were provided to the Senior Inspector prior to the inspection and the results accepted by the Senior Inspector as part of the inspection. In addition, machinery condition analysis information will be used as appropriate to determine the list of post-underway inspection items.

(2) Preparation is critical for the efficient conduct of the post-underway phase. This preparation should include:

(a) Review of manufacturers' technical manuals and maintenance requirement cards.

(b) Assembling the correct equipment for each post-underway inspection item including special tools, chain falls, hydraulic jacks, etc.

(c) Staging sufficient measuring tools for fulfilling data-taking requirements of the procedure, taking into consideration that all work centers will be working simultaneously.

(3) Conduct of the post-underway phase will normally commence upon the inspectors' arrival the day after return to port. With the ship's concurrence, some equipment may be presented for post-underway inspection prior to ship's return to port, or where feasible, during day 2 of the inspection. Where equipment cool-down requirements dictate (e.g., boilers, main engines), post-underway inspection of these items may not be conducted until the day after the ship's return to port. The goal of the ship's management of the post-underway phase should be to provide a continuous flow of equipment ready for inspection.

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(5) Internal components should be drained, laid out - BUT NOT CLEANED - and ready for observation by the cognizant inspector. The applicable technical manual and maintenance procedure shall be on station for reference. Required measurement data will be presented to the inspector along with tolerances. Boiler firesides and watersides will normally not be inspected.

APPENDIX D

COMBAT SYSTEMS

1. Combat Systems Definition. The ship's combat systems include the equipment and spaces associated with command and control (NTDS, IFF, TACAN, etc.), computers and displays, sensors, navigation, communications, classified and unclassified networks, intelligence (SESS, outboard, CVIC, etc.), weapons, weapons direction system, weapons delivery, weapons handling and stowage, and aircraft control functions. Included are the equipment and spaces required for the maintenance and support of these systems, e.g. air, water and power.

2. General Inspection Criteria. The Board uses standards set forth in governing technical documentation (PMS, General Specifications for Overhaul (GSO), technical manuals, related OPNAV and NAVSEA publications and instructions, the Combat Systems Demonstration Test Package (CSDTP), etc.) to evaluate the readiness of a ship for acceptance or evaluate a ship's readiness to carry out assigned mission requirements. The Board will:

a. Determine the capability of the integrated combat systems to successfully detect, track and engage targets while maintaining effective internal/external command and control. Inter-operability of all associated subsystems will be checked.

b. Determine the condition of combat system spaces with regard to human engineering, man-machine interfaces, maintenance and operational requirements, stowage, ventilation, air conditioning, lighting, and safety.

c. Check installation workmanship including cabling, mounting, bracing, and grounding.

d. Check for items that may present a clear and immediate safety hazard to personnel or equipment.

e. Check the overall material condition of equipment and spaces, using standards set forth in the general specifications for overhaul of surface ships (GSOs), electronic installation and maintenance books, specific equipment installation standards (technical manuals, installation control drawings, etc.), NAVSEA/SPAWAR technical manuals, electronic information bulletins and PMS standards.

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f. Check adequacy of test equipment allowance to support maintenance of installed systems. Ensure the test equipment on board is operational and calibrated, and proper stowage facilities are provided. Test equipment used during trials should normally include the ship's allowance equipment.

g. Evaluate reliability and maintainability problems based on the documented history of applicable equipment's performance.

### 3. Pre-Arrival Requirements.

a. Prepare a detailed plan and schedule a briefing for all combat systems personnel with particular emphasis on those demonstrations requiring outside assistance; e.g., search, height-finding, fire control and ACLS radars, IFF (interrogator and transponder), ECM, ESM, TACAN, NTDS, external communications. Scheduling aircraft services is the ship's responsibility and will, if possible, include back-up services to minimize effects of bad weather and/or equipment failure. The demonstration plan will be integrated with the Trial/Inspection for the ship. Emphasis should be placed on scheduling critical demonstrations which may only be accomplished at sea. Individual PMS checks do not need to be specifically scheduled unless they require coordination with, or impact, other activities. Demonstrations should be grouped together as much as possible for each service (e.g., one airplane on one run can do the long-range detection demonstration, IFF interrogator checks, TACAN checks, etc.).

b. Establish an organization to operate the combat systems and coordinate all demonstrations, including aircraft control, establishing necessary communications, and documenting event results and data collection. INSURV personnel will not operate any equipment, and may not act as a second person when "two-man rules" are dictated. A counterpart listing should be made of INSURV inspectors, ship's force, contractors, and SUPSHIP personnel as appropriate. A list of combat systems work centers is also useful for the inspectors.

c. Make arrangements with an assist ship, station, and aircraft for the demonstration of equipment requiring outside assistance.

d. Prepare a communications plan to execute the Trial/Inspection. To minimize confusion concerning the status of outside services, a coordination circuit with the providing agency and Fleet Area Control and Surveillance Facility should be established.

e. For those ships with an air search radar, using on board capability (if applicable), obtain a prediction (IREPS/AREPS) of atmospheric conditions affecting radar propagation for the time and area of the underway demonstration.

f. Have the following information and documentation available for use by the INSURV combat systems inspectors on arrival:

(1) Combat Systems smooth logs. Data required includes, but is not limited to:

(a) Sonar source level, self-noise and receiver sensitivity measurements.

(b) Surface Ship Radiated Noise Measurements (SSRNM).

(c) Sonar Dome/SDPS inspection report (external and internal (if required)), completed within 60 days if feasible.

(d) ASW SCOT results.

(e) Latest certifications and inspection reports (IFF, TCM, TACAN, 2M, HARPOON, TOMAHAWK, TEMPEST, etc.).

(f) Antenna radiation patterns, EMI/RADHAZ surveys, HF antenna installation/impedance report, HF Smith charts and antenna photos.

(g) Radiation cutout diagrams for all fire control radar and firing cutout diagrams for all gun mounts and missile launchers. Roller path data, tram readings and other battery alignment data.

(h) Major caliber gun star gage readings (if applicable).

(2) Suez Canal Tonnage Certificate (all ships), and Panama Canal Tonnage Certificate (for cargo or passenger carrying ships only).

(3) List of inoperative combat systems equipment, alarms, and a copy of the most recent eight o'clock report for combat systems.

(4) Oil analysis report records for ordnance equipment.

(5) Provide the following information concerning test equipment:

(a) Total number of test equipment allowed by SPETERL (as per the latest available "Measure 310" report).

(b) Total number of inoperative items.

(c) Total number of pieces out of calibration.

(d) Total number calibrated and on board.

(e) Date of current SPETERL.

(f) Number of items in excess of SPETERL.

(g) Total number of missing items and items obtained from outside sources to support INSURV demonstrations.

(6) A copy of the latest technical manual inventory and a list of missing technical manuals.

(7) A list of systems/equipment not covered adequately by PMS which identifies specific problems and associated feedback reports previously submitted.

(8) A list of special tools missing and affected systems/equipment.

(9) Annotated deficiency list from previous INSURV Trials or Inspections.

(10) A list of missing minesweeping equipment, if applicable.

(11) A copy of the latest Mine Readiness Certification Inspection (MRCI) report, if applicable.

(12) Classified/Unclassified Local Area Network (LAN) accreditation documentation, data back-up/auditing records and current network schematics/topology diagrams.

(13) The most recent Communications Equipment Population Summary (CEPS) message.

4. Pre-Underway Phase.

a. After the INSURV arrival conference, a combat systems demonstration brief will be scheduled. Attendees will include INSURV inspectors and assistants, cognizant ship's force personnel, including technicians, contractor, and SUPSHIP personnel. The inspection schedule will be reviewed with emphasis on those aspects involving outside services. Aircraft schedules and flight plans will be discussed. Finally, the senior combat systems inspector will provide guidance on the general conduct of the inspection including the DTEs, USW, Strike and MIW demonstrations.

b. Safety checks of combat systems equipment will be accomplished. Safety checks will be limited to those most likely to cause serious injury to personnel or damage to equipment.

c. Emergency/portable and bridge-to-bridge communications equipment will be checked for satisfactory operation.

d. A check is made of combat systems equipment/spaces to ensure they are secured for sea and properly stowed.

e. Equipment checks will be conducted with emphasis on equipment required for integrated systems testing and subsequent underway operational demonstrations.

f. Integrated systems tests (DSOTS, CSOTS, OCSOT, ASW SCOT, etc.) should be conducted at the conclusion of the pre-underway phase to ensure systems are ready for underway demonstrations.

g. Communications necessary for outside assistance (e.g., ULM-4 range, aircraft service, etc.) should be checked with assist ship or other activity prior to getting underway to avoid lost services due to lack of communications.

h. NTDS endurance run. On completion of required individual equipment/system checks and before the end of the second day of inspection, the NTDS/AWS system will be brought on-line with all interfaces active (e.g., gunfire, ASW, etc.). The system should remain operational without restart or reboot until completion of the underway portion of the inspection. If the system faults at any time during this endurance run or requires restart or reboot (warm or cold), INSURV (if on board) must be notified prior to restart or reboot. If no inspectors are on board, notify the cognizant ship's maintenance personnel and document the problem (e.g., type of fault, symptoms, any printout of memory, etc.)

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prior to restart or reboot. For AEGIS-equipped ships, the endurance run shall commence upon loading of "at-sea" packs prior to underway.

i. A mast inspection should be scheduled during the pre-underway phase, for 1300 Day 1 (primary) or 0800 Day 2 (alternate). All radars and HF communications should be tagged out for the mast inspection. Communications antennas designated by the INSURV inspector will be inspected and tested for insulation resistance (meggered). Tilting antenna platforms designated by the INSURV inspector will be demonstrated. A general safety inspection will be conducted. The condition of all topside connectors will be inspected.

j. Power verification and combat systems ABT demonstrations will be scheduled by the electrical inspector and the senior combat systems inspector during the pre-underway phase, usually coinciding with mast inspections.

k. Ordnance handling and stowage capabilities will be demonstrated. Handling demonstrations may require use of dummy shapes, which should be obtained as an item of outside assistance if not normally held onboard. Verify with INSURV prior to the inspection what training/dummy shapes will be required.

## 5. Underway Phase.

a. This phase will consist of integrated systems testing and operational demonstrations which verify the ship's capability to perform its primary and secondary missions, identified in references (e) and (f). Emphasis should be on ensuring the ship's primary mission areas are fully demonstrated.

b. Execution of the schedule remains the responsibility of the ship. Schedules will not be changed without approval of the responsible authority and the INSURV senior combat systems inspector.

c. Portions of OCSOT may be specified for demonstration following the AAW/SD Detect-to-Engage (DTE) demonstration in order to verify operation of equipment/interfaces not checked during the DTE.

## 6. Mission Area Demonstrations. Specific guidance for each mission area demonstration to be conducted is as follows:

### a. Anti-Air Warfare.

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(1) Outside Assistance. Aircraft support for this phase will vary according to the operational capabilities of the ship. Schedules and profiles should be planned to combine as many demonstrations possible to minimize both the time and the services required.

(2) Aircraft for the long range air tracking should have the following minimum capabilities: as close as possible to a one square meter cross section at the frequency of the radar, altitude capability to 30 thousand (30K) feet, UHF radio (secure voice not required), TACAN, IFF system with at least mode 3 and mode 3C, radar system, and sufficient on station time for one run at 30K feet to 225 NM and back, as well as one run for each close-in self defense system, consisting of a low elevation inbound run from 40 NM. An aircraft with extended on station time should be requested.

(3) Functions Verified

(a) Demonstrate maximum detection ranges of each radar system using controlled air services with aircraft profiles at various altitudes to fully demonstrate the system (reference (m)).

(b) Verify applicable range, bearing, and elevation alignment accuracy between each surveillance radar system and fire control system using available relative alignment test program/procedures.

(c) Verify performance of all IFF systems, both the interrogators and transponder, to all modes and at maximum range. Use of SESEF services is encouraged.

(d) Verify all operational modes of each radar system (e.g., ADT, MTI, etc.). Jamming services will not be required unless specifically asked for by INSURV.

(e) Verify maximum acquisition and track ranges of fire control radar systems at high, medium, and low altitudes.

(f) Demonstrate a successful surface-to-air engagement using missile weapons systems (non-firing demonstration). This should include integrated functions such as automatic detection and track, orders for engagement, weapons directions system (WDS/WCS) assignment of FCS and launcher, target scheduling, launcher loading, recommended fire and completion of the firing sequence (where applicable). The objective is to demonstrate the

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complete detection-track-engage sequence including proper function of NTDS/CDS, WDS and AWS programs (reference (m)).

(g) Demonstrate a successful surface-to-air engagement using all close-in self-defense systems including guns. See reference (m).

(h) Verify and record BLIP/SCAN data for rotating air-search radars.

(i) Verify Link 4/4A connectivity (shore-based services may be used if air services are not available).

(j) Establish a Link 11 net with at least two other stations. Link should be demonstrated on both UHF and HF frequencies.

(k) Verify Link 16 connectivity with another Link 16 capable unit.

(l) Demonstrate TACAN operation.

(m) Demonstrate individual NTDS/CDS/ADS displays in their primary functional mode of operation.

(n) Conduct radar output power, VSWR, and receiver sensitivity/MDS measurements on all radars. Perform all readiness PMS checks on radars.

(o) Conduct UHF plain voice checks with aircraft at 200 NM.

(p) Demonstrate weapons handling equipment and magazine sprinkler/alarms systems.

b. Undersea Warfare.

(1) Outside Assistance. A ship-launched target (EMATT) or targets of opportunity will be tracked using both active and passive sonars.

(2) Functions Verified

(a) Demonstrate underwater telephone transmit and receive functions, all modes.

(b) Demonstrate Prairie-Masker system operation.

(c) Demonstrate correlation of range and bearing between multiple sensors, when applicable, and accuracy of fire control solutions.

(d) Demonstrate accuracy of range and bearing transmissions to displays and fire control sub-system, and accuracy of fire control data transmissions to launching systems.

(e) Demonstrate launch/retrieval capability of TACTASS.

(f) Demonstrate fathometer range accuracy on all scales.

(g) Demonstrate expendable bathythermograph (XBT).

(h) Demonstrate torpedo countermeasures by streaming and retrieving in accordance with applicable PMS, and verifying amplifier outputs.

(i) Conduct USW demonstration specified in reference (n).

(j) Demonstrate at-sea, or through trainers, verification of helo links and displays.

(k) Demonstrate sonar dome pressurization system on all domes.

(l) Demonstrate VLA/SVTT over-the-side handling equipment.

(m) Demonstrate weapons handling equipment and magazine sprinkler/alarm systems.

c. Anti-Surface Warfare.

(1) Outside Assistance. Targets of opportunity will be used, or the ASU portion of OCSOT may be conducted at INSURV discretion.

(2) Functions Verified

(a) Demonstrate ability to conduct Harpoon engagements (non-firing demonstration).

(b) Demonstrate ability to track surface targets and engage with guns and missiles (non-firing demonstration).

(c) Demonstrate ability to detect, track, and identify surface targets with radar, ESM, SSES/RDF (coordinate with electronic warfare).

(d) Conduct output power, VSWR, receiver sensitivity/MDS measurements of surface search/navigation radars.

(e) Demonstrate weapons handling equipment, magazines, topside ordnance lockers and magazine sprinkler/alarm systems.

(f) Small arms and their mountings will be demonstrated to verify firing areas, cutouts, cease-fire alarms and safety devices.

d. Strike Warfare.

(1) Outside assistance. TACTRAGRULANT/PAC for SLAMEX scenario/database, CMSALANT/PAC for Mission Data Update (MDU).

(2) Functions Verified.

(a) Tomahawk capable ships will demonstrate the ability to establish required communications and conduct Tomahawk missile engagements in accordance with reference (q).

(b) Demonstrate the ability to receive and process an MDU, including an Automated Mission Data Transmit order (AMDTO).

(c) Demonstrate the ability to update current GPS almanac data from an external source.

(d) Demonstrate operability of both WSN-5/7 interface configurations.

(e) Demonstrate the ability to plan and execute TOA, TOL, TOT missions using X-LAC, LAC-C, and LAC-D missile variants from each launcher (non-firing demonstrations).

(f) Demonstrate the ability to plan and execute a "GPS Required" mission using a LAC-C or LAC-D missile variant.

(g) Verify operation of the salvo warning alarm and toxic gas vent dampers/combat systems recirculation dampers (if applicable).

e. Communications.

(1) Outside Assistance

(a) Shipboard Electronic System Evaluation Facility (SESEF) for HF transmitter/receiver mode checks and for cryptographic system checks will be used.

(b) An assist ship for secure voice, teletype and SATCOM demonstrations.

(2) Functions Verified

(a) Demonstrate emergency/portable communications equipment. Ensure emergency transmissions are not transmitted outside the ship, which violates international law.

(b) Demonstrate all terminal equipment. A distortion analyzer test set should be on board to conduct PMS check.

(c) Demonstrate each HF transmitter/receiver with SESEF. Modes checked will include USB voice, LSB voice, ISB voice, AM voice, CW and FSK. Voice checks will consist of a short count. CW will consist of 10-15 seconds of "V" followed by the ship's international call sign and "AR" (out). FSK will consist of ten seconds of FOX test message. A test set should be used for the FSK test; i.e., UGM-8 or UGM-11. This demonstration should be scheduled during the underway portion of the trial. Current SESEF information is available in the SESEF Combat Systems Test Procedures Manual (NAVSEA 50300-A1-MAN-010).

(d) Demonstrate all receiver sensitivities using PMS standards.

(e) Check transmitter power outputs and VSWR checks using PMS standards. Power output will be determined using a calibrated RF voltmeter for HF transmitters and UHF/VHF transceivers (instead of internal meters).

(f) Measure coupler insertion losses using PMS/RCM standards using a calibrated meter.

(g) Conduct operational checks of crypto, secure voice, and terminal equipment with the assist ship or SESEF. Ensure that crypto keymat is available to test all crypto systems.

(h) Operationally demonstrate all Signal Bridge and visual signaling equipment.

(i) Demonstrate HF-to-UHF communications relay.

(j) Conduct operational demonstration of message processing equipment and NAVMACS equipment. Diagnostics and PMS checks will also be conducted.

(k) Conduct reliability checks on all antennas through transmission line time domain reflectometry (TDR) checks and antenna meggering.

(l) Demonstrate all functions of Quality Control Monitoring System.

(m) Demonstrate operability of bridge-to-bridge radios.

f. Intelligence, Signals Exploitation and Oceanography.

(1) Outside Assistance. Tactical Intelligence (TACINTEL) Link Control Facility (TLCF) for communications checks of the TACINTEL system.

(2) Functions Verified

(a) Demonstrate the functional capabilities of the OUTBOARD Countermeasures Exploitation System. Perform loop test of all OUTBOARD antennas and equipment performance checks.

(b) Demonstrate the functional capabilities of the TACINTEL system. Send and receive test messages with the TLCF and obtain system response rate statistics. Perform equipment performance checks.

(c) Conduct functional demonstrations of the Cryptologic Combat Support System (CCSS) to include demonstration of the SCI network (SCI ADNS) and data transfer capability with CIC. Perform equipment performance checks.

(d) Intelligence centers perform functional demonstrations of satellite communications, data collection systems, secure television system, tactical mission planning system (TAMPS), photographic processing and interpretation systems, flag data display system (FDDS), Global Command and Control System - Maritime (GCCS-M) and security systems. Conduct

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equipment performance checks and inspect the tactical flag command center (TFCC) and Sub plot spaces.

(e) Demonstrate weather satellite receive systems, atmospheric analysis systems, communications systems and weather balloon launching equipment. Inspect weather sensors such as barometers, anemometers, etc. Conduct equipment performance checks.

g. Electronic Warfare.

(1) Outside Assistance. ULM-4 range for active ECM systems only.

(2) Functions Verified

(a) Demonstrate ability of active ECM systems to function against the ULM-4 range. (Ships achieving a satisfactory Quick-look Report within 30 days of the inspection will not be required to re-demonstrate active ECM systems during the underway phase).

(b) Demonstrate ability of the ESM system to detect emissions.

(c) Verify operation of each barrel of each chaff launcher from each firing position using a test round (Decoys will not be fired). Test night loading lights. Check ready-service lockers.

(d) Conduct AN/SLQ-32 diagnostics tests and PMS/RCM tests as outlined in the Combat Systems Demonstration Package.

(e) Conduct ESM sensitivity checks.

(f) Verify ESM bearing correlation with NTDS/radar. Using services or targets of opportunity, the ship will demonstrate the ability to correlate ESM information with NTDS/radar information to identify contacts.

(g) Verify transmission line TDR measurements and sensitivity and noise balance data for AN/SLQ-32 units.

(h) Conduct a visual inspection of Passive Countermeasures (PCMS) if applicable.

(i) Verify operation of AN/SSQ-82 mute and AN/SLA-10 blanking systems.

(j) Verify operation of the MK 53 NULKA launchers, if applicable.

h. Navigation.

(1) Outside Assistance. None required.

(2) Functions Verified

(a) The inspector will review the operation and location of each navigation light for full compliance with the navigation rules. Findings of these inspections will be documented. Specific comments will be made on any light not operating or not in compliance with the rules, and whether repair or a waiver is required prior to underway operations. Comments summarizing these results should be included in the report for each ship. At a minimum he will:

1. Verify all navigation lights meet the visibility requirements of the navigation rules.

2. Verify the location of task light array (i.e. below, above, or between the masthead lights).

3. Verify the required vertical and horizontal separation between all navigation lights exists.

4. Verify all navigation lights are in accordance with any previously issued waivers.

5. Determine if "closest possible compliance" has been achieved.

6. Determine if a waiver due to "special construction or purpose" appears warranted.

(b) Demonstrate accuracy of electronic aids to navigation. At least four fixes shall be obtained and plotted using all installed navigational aids (including visual). A visual fix, determination of gyro error and gyro repeater error, and demonstration of fathometer operation, will be required prior to getting underway for comparison. All electronic NAVAIDS should be operated throughout the underway period. While piloting, gyro checks on a navigational range should be scheduled.

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(c) Verify adequacy, arrangement, operation, alignment and conformance with applicable specifications of magnetic compasses and navigational fixtures including bells, gongs, whistles, portable lights, equipage, emergency equipment, etc.

(d) Verify visibility from pilothouse, Flag Bridge, open bridge and look out stations. Verify signal searchlight arc of visibility.

(e) Demonstrate the ability to employ surface search/navigational radar to conduct radar navigation prior to underway operations. Compare CIC and bridge piloting chart fixes (outbound) on the underway day.

(f) Verify operation and performance of steering systems (all units and cables), ship control indications (Rudder Order Angle Indicator, Rudder Angle Indicator, and Integrated Throttle/Engine Order Telegraph) and communications (voice and alarm circuits) within standards set in the applicable PMS/NSTM/GSO prior to underway operations.

(g) Verify operation of night vision devices.

(h) Verify condition/operation of signal bridge installed and portable equipment, halyards and flag bags.

i. Mine Warfare.

(1) Outside Assistance. Standard practice shapes for the mine-hunting sonar will be used. If not available, targets of opportunity will be used.

(2) Functions verified

(a) Conduct MIW operational demonstration. This will consist of using the mine-hunting sonar and mine neutralization system to search for, detect, classify and neutralize a mine-like object IAW reference (o). Mechanical/influence sweep gear will also be demonstrated (if applicable) IAW reference (o).

(b) Demonstrate correlation of range and bearing between search and classification sonars.

(c) Demonstrate accuracy of range and bearing transmissions to displays.

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(d) Demonstrate launch/retrieval capability of sonar towed body.

(e) Demonstrate fathometer range accuracy on all scales.

(f) Demonstrate the Battle Space Profiler (BSP) and expendable bathythermograph (XBT).

(g) Demonstrate weapons handling equipment and magazine sprinkler/alarm systems.

(h) Demonstrate all MIW winches, cranes and hoists, including associated hydraulic power units.

(i) Demonstrate all precise navigation systems.

(j) Demonstrate the ability to employ the AN/SLQ-48(V) Mine Neutralization System (MNS).

i. Information Systems.

(1) Outside Assistance. Any available shore or afloat unit participating in a JMCIS/GCCS environment.

(2) Functions verified

(a) Demonstrate reliable network functionality (reference (r) pertains) on all classified and unclassified networks, including coalition and special purpose networks (CENTRIX, BFEM, ICAN, SWAN, etc.) by exchanging data.

(b) Demonstrate compliance with security measures discussed in reference (r) for network operations.

(c) Demonstrate compliance with DOD, Fleet and Type Commander network certification and accreditation requirements.

(d) Assess the adequacy of the installation of shipboard network systems. The physical hardware shall be examined for proper cable installation, shock-mounting of hardware devices, and physical security. Additionally, software installation/configuration shall be assessed in accordance with the current software configuration baseline for the ship.

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(e) Demonstrate capability to maintain networks, including performance of a system data back-up/restoration procedure.

(f) Demonstrate the proper functionality of network server and client application software (GOTS-D, NTCSS, etc.) including diagnostics.

(g) Perform operational tests/demonstrations of all major installed network hardware components, including uninterrupted power supplies (UPS), file and mail servers, primary and back-up domain controllers, proxy servers, backbone and edge switches, routers, and hub devices.

(h) Conduct an inspection of 25 (or at least a 10% sample, which ever is greater) of all installed shipboard workstations and peripheral devices (printers, tape drives, external disk drives, etc.) for proper operation and configuration.

(i) Demonstrate the proper functionality of the Global Command and Control System - Maritime (GCCS-M), including the ability to pass track data to assist ship/shore facility via the FOTC Net utilizing OTCIXS/TADIXS/NETPREC.

(j) Demonstrate the proper functionality of the Advanced Digital Networking System (ADNS), including associated UPS, routers, and Network Encryption System (NES)/TACLANE, and all associated RF communications interfaces.

(k) Demonstrate the following capabilities via pier connection and satellite; e-mail, web browsing and chat (via ADNS).

j. Protective Systems.

(1) Outside Assistance. None Required.

(2) Functions verified

(a) Demonstrate protective systems (e.g. magazine sprinkler, missile suppression operation, toxic vent dampers, etc.).

(b) Elements which require cycling of hydraulic components, such as sprinkler valves, will generally be exercised at sea in clean water.

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7. Post-underway Phase.

a. Equipment designated by the senior combat systems inspector will be opened for inspection.

APPENDIX E

HABITABILITY

1. Habitability Inspections. Spaces will be inspected for general cleanliness and sanitation; adequacy of lighting and heating, ventilation and air conditioning (HVAC); potable water supply; drainage; electrical safety; general safety; missile hazards; overhead, bulkhead and deck preservation and treatment (e.g., carpet, tile, sheathing); adequacy of general stowage; and compliance with the flammable removal program.

2. General Inspection Criteria. All ships are inspected to the design standards of reference (s) (implemented in the Shipboard Habitability Design Criteria Manual), General Specifications for Ships of the U. S. Navy (GENSPECS), Coast Guard and/or American Bureau of Shipping (ABS) standards, as appropriate.

3. Except for Acceptance Trials (AT), the Executive Officer or designated representative should be the primary habitability contact. All office and common use spaces should be open and ready for inspection, and at least one knowledgeable escort should be provided for each habitability inspector. On large ships the CMAA or his representative should accompany the inspecting party. The ship's force or SUPSHIP representative accompanying each inspector should be prepared to provide to the inspector the deficiencies applicable to each space.

4. INSURV recommends the Executive Officer, Command Master Chief, or designated representative (or SUPSHIP representative in the case of an AT) make personal telephone contact with the INSURV senior habitability inspector well in advance of the Trial/Inspection to ensure proper coordination of all aspects of the habitability inspection.

5. The following information is to be provided to the senior habitability inspector upon arrival:

a. A list of all habitability spaces, by name and number, the number of bunks in each space and the number of personnel assigned. A proposed itinerary for each habitability inspector which will ensure all habitability spaces are inspected. Generally, the itinerary should group spaces in top down, fore to aft order, but other groupings are acceptable if they facilitate the inspection. For ships which embark Marines, all Marine spaces

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should be grouped together. The space itinerary should include the following spaces:

(1) Berthing - staterooms, sea cabins, CPO, crew, troop.

(2) Lounges - Officer, CPO, PO1, crew, troop, and staff (when not used for messing and when physically separated from mess by a bulkhead or door).

(3) Sanitary Spaces - Officer, CPO, crew, troop, all communal heads (bridge, off flight deck and hangar, in support of workspaces such as offices, and manned engineering machinery spaces).

(4) The following additional habitability spaces may be inspected as time allows (excluding supply and medical spaces):

(a) Cleaning gear lockers

(b) Engineering Log Room

(c) DC Central

(d) Technical Library

(e) Training rooms

(f) Ready rooms

(g) Brig

(h) CCTV

(i) 3M Coordinator's Office

(j) PAO Office

(k) Navy Relief Office

(l) MWR/Special Services Office

(m) CMAA Office

(n) Career Counselor Office

(o) Chapel

- (p) Library
- (q) Athletic Gear Locker
- (r) Weight/Exercise room
- (s) Religious Material storage
- (t) Officer, CPO, crew, and troop baggage storage

b. A location list, by space name and number, of all water coolers and bubblers in non-messing spaces.

c. Copies of all applicable habitability related SHIPALTS and AERs.

d. List of all crew sanitary spaces and the number of lavatories, urinals, water closets and showers in each space. Identify whether the space is a male or female sanitary space.

6. Keys to habitability spaces, cleaning gear lockers, linen lockers, baggage storage, offices, etc., should be readily available and presented when requested by the inspector.

7. A lack of DEEP CLEANING is the most detrimental deficiency and can overwhelm an otherwise "high state of material readiness", especially in officer staterooms, CPO berthing and crew berthing. Field days, especially waxing, painting and laying deck tile or non-skid should not be conducted during the week of INSURV.

8. Be prepared to show proof of compliance with MIL-STD 1623D (SH) (fire performance requirements) for items such as chairs, carpets, draperies and bulkhead sheathing that might be questionable.



APPENDIX F

DECK

1. The following data will be available for review upon arrival of the INSURV deck inspector(s):

a. Current index and inventory of equipment instruction books and selected plans carried onboard including RAS, fueling, towing arrangements, boat booms and accommodation ladders.

b. List of weight handling tests and date last completed (rigging and weight test log), (NSTMs 77, 571, 573, 580, 581, 582, 583, 584, 589, 611, 613, 631 (V1, V2, V3), and 634, and NWP 4-1.04).

c. List of standing and running rigging with a statement of condition and age.

d. List of boats allowed/on board with boat serial number, hoisting weight, age and condition, date when slings and hoisting pads were last tested.

e. A copy of the most current boat report (should be updated prior to the ship getting underway).

f. Allowance/inventory by individual location of life jackets, lifeboats, inflatable lifeboats, hydrostatic release devices, life rings, float lights, lashing gear, etc., with age, condition and date of most recent test (NSTM 077, 583).

g. Lists of all defective components of lifelines, stanchions, nets, etc.

h. Inventory of mooring lines with statement of size, material, age and condition.

i. Ship's Loading Characteristics Pamphlet (SLCP) for amphibious ships.

2. The following will be demonstrated, opened, or rigged for inspection:

a. All installed anchors with a dedicated anchor windlass, with the exception of stern anchors, will be dropped in 30 to 35 fathoms of water during Final Contract Trials and Material

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Inspections, and in 60 to 65 fathoms of water during Acceptance Trials, in accordance with prescribed test procedures. Both the mechanical and electrical brakes will be tested during the demonstration. Applicable PMS will be referenced for brake tests and the anchor windlass load/no-load tests.

b. The ship's ready lifeboat (outboard boat) will be lowered, operated for one hour, and then recovered prior to the ship getting underway for sea trials.

c. Test inflate the installed inflatable life rafts designated by the deck inspector on day 1 or 2. Verify that total life raft capacity is 110% of accommodations (for CVs 100% plus 12 life rafts). Inspect and inventory life raft supplies.

NOTE: The ship is responsible for making arrangements for removal and transportation of all life rafts to be tested. Life rafts will be tested at a designated Navy life raft repair facility. If inflation cannot be performed in the life raft repair facility then a tarp and protective padding should be used to avoid damage to life rafts.

d. Test inflate 10% of the onboard CO<sub>2</sub> abandon ship life preservers as designated by the deck inspector, drawn at random from throughout the ship.

e. Accommodation ladders, boat booms, leadsman platforms, fueling/replenishment stations, heavy weather lifelines (if applicable), and towing rigs shall be rigged for inspection. The scheduling of these inspections will be provided in advance of the Inspection or Trial. Applicable technical drawings for each rig demonstrated should be provided to the inspector on station.

f. Demonstrate operation of cranes, booms, deck winches, capstans, retractable king posts, cargo/vehicle ramps and hatches.

g. Demonstrate operation of bow doors, bow ramp, stern gate, vehicle ramps and turntables as applicable.

APPENDIX G

DAMAGE CONTROL

1. General.

a. Data Required Upon Arrival.

(1) Results of last AFFF concentration test for all stations.

(2) Master DC Book, General Information Book, Docking Plans and Reports, Booklet of General Plans, recent draft readings and stability data, damage control diagrams, and Master Compartment Check Off List.

(3) List of equipment out of commission that is critical for damage control functions.

(4) Current repair locker inventories versus allowance equipage list (AEL) displayed in all repair lockers, including shortages of portable DC and CBR equipment.

(5) Documented shortages of damage control equipment (list what is COSAL/AEL required and what is on hand).

(6) List by serial number all defective/missing P-100 pumps and portable submersible pumps.

(7) Copy of most recent underwater hull inspection.

(8) Copy of recent PMS structural survey (if applicable).

(9) Hydrostatic test data for all CO<sub>2</sub> and nitrogen cylinders.

(10) Date ship was last dry-docked.

(11) Safety Settings List for damage control equipment (AFFF relief valves, relief valves for portable/installed SCBA compressors, etc.).

(12) Provide the below data for each category of tanks/voids as follows: Ballast Tanks, Fuel/Oil Tanks, Feed/Potable Water Tanks, Dry Voids below the DC Deck, Dry Voids above the DC Deck. You may require assistance from your Port

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Engineer or TYCOM to obtain this data. Also provide a listing of any tanks/voids with known major structural discrepancies, including the most recent inspection date.

Total Number of (category tanks/voids) Onboard= \_\_\_\_\_.  
 Number of (category tanks/voids) with Inspection Data=\_\_\_\_\_.

Breakdown of Number of (category tanks/voids) with Inspection Data, based on age of Inspection Data and Condition Code:

	Data<= 2yrs old	Data<= 4yrs old	Data<= 8yrs old	Data<= 12yrs old	Data> 12yrs old
Condition 1					
Condition 2					
Condition 3					
Condition 4					

NOTE: Condition Codes listed above refer to the Coating Conditions as outlined in the TYCOM Tank and Void Inspection Programs.

b. Post-underway Inspections. Open for inspection any equipment identified during system demonstrations.

2. Demonstrations.

a. Demonstrate operation of AFFF station relief valves, ABTs, all main and auxiliary machinery space AFFF hose reel stations and bilge sprinkling (stations with AFFF in recirc) prior to getting underway. Demonstrate all AFFF systems underway including flight deck and bilge sprinkling systems. Samples will be taken to determine AFFF concentrations (high and low flow conditions) and chloride levels in the AFFF concentrate. All AFFF stations will be evaluated.

NOTE: Testing of AFFF bilge sprinkling in machinery spaces of nuclear-powered ships is conducted in accordance with INSURV letter 4790/03/SB376, serial 9C11040, dated 09Nov1990, which utilizes test cast fittings to prevent any discharge of AFFF.

b. Test all fixed CO<sub>2</sub>, HALON and Aqueous Potassium Carbonate (APC) system controls, alarms, indicators and cutouts, (including HALON and CO<sub>2</sub> system time delays as well as ventilation shutdown and toxic gas damper interlocks).

c. Demonstrate firemain capacity. Set condition Zebra on the firemain system to demonstrate the ability to maintain minimum firemain pressure during the countermeasure washdown (CMWD) demonstration. Demonstrate sequencing of fire pumps where applicable.

d. Demonstrate all portable P100 fire pumps and portable electric submersible pumps as follows:

(1) Each P100 pump will be completely rigged in a position that allows self-priming. This includes:

(a) Suction hoses (2) with foot valve.

(b) JP-5 cans.

(c) Exhaust hoses.

(d) One 50-foot length of 2 1/2-inch hose with nozzle in solid stream position.

(2) Prior to INSURV arrival, layout the electrical submersible pumps to facilitate the inspection of tending lines, electrical safety checks of the pumps, and checks of the phase rotation of the 440V multipurpose outlet. Leave the switch box open for inspection (equipment is not to be energized until directed by inspector).

e. Demonstrate countermeasure washdown and flight deck AFFF sprinkling system (if installed) during underway phase. Ship's speed shall not exceed 15 knots for topside personnel safety.

(1) Formulate a plan for testing this system which will include (full system activation required during inspection):

(a) Familiarization with system.

(b) Location of group control valves (ensure root valves are operational).

(c) Location of all remote actuation stations.

(d) Number of control valves.

(e) Fire pumps necessary to maintain adequate fire main pressure with all groups energized at the same time.

(2) The following equipment will be made available:

(a) Rain suits, boots, goggles and gloves.

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(b) A section of Plexiglas with outline of ship showing the location of all CMWD nozzles, broken out by zone/group.

(c) Grease pencils.

f. Demonstrate all installed sprinkler systems outside of the weapons magazines; i.e., hangar bay, incinerator compartment, plastic waste processor rooms, tire storage, berthing spaces, weapons elevators and pump rooms. (NOTE: AFFF will be discharged during the demonstration from all AFFF firefighting systems, including in-line eductors with pickup tubes during the underway portion of the inspection.)

g. Demonstrate miscellaneous valve hydraulic controllers (MVHC) which control main drain, secondary drain, and firemain isolation valves.

h. Conduct a ballast/de-ballast demonstration (amphibious and SWATH ships so equipped).

i. Demonstrate main and secondary drainage systems including eductors and remotely operated valves.

j. Test all collective protection system (CPS) zones to evaluate zone pressure, alarm set points, ventilation interlocks and air flow.

k. Test a representative number (nominally 10%) of high temperature/smoke alarms.

l. Test a representative number (nominally 10%) of bilge flooding alarms.

### 3. Inspections.

a. All damage control repair stations and decontamination stations. Test damage control equipment as specified by the inspector.

b. A representative number (nominally 10%) of fire stations.

c. A representative number (nominally 10%) of CO<sub>2</sub> and PKP bottles and systems.

d. A representative number (nominally 10%) of accessible compartments, hull and superstructure. Examine structure for

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marked distortion, buckling or dishing, or evidence of weakness such as cracked welds.

e. Remotely operated fire main, main drainage and sprinkler valves.

f. Labeling on ventilation and piping systems.

g. Incinerator room and sprinkling system.

h. Chemical warfare defense storeroom.

i. Flammable storage locker.

j. Rescue and assistance chest/locker.

k. Representative number (nominally 10%) of watertight closures.

l. Representative tanks (including ballast tanks, feedwater tanks, potable water tanks) and voids will be opened. The number of tanks to be opened will be determined by ship size. Specific tanks to be opened will be determined by the inspectors and ship's force.

NOTE: These spaces shall be made safe for entry using procedures detailed in NAVSHIPS Technical Manual 090 and 074 Volume 3. Just prior to the inspector's entry, each space shall again be verified to ensure it is still "Safe for Entry." (These safety precautions apply for all tanks to be inspected).

m. Drop a firemain valve in the main firemain loop agreed to by the Board for inspection of firemain piping integrity and fouling. Optional: S/F may provide digital photographs of the main firemain loop and the removed valve if accomplished within 90 days of the inspection or S/F may provide a borescope to inspect firemain piping through a low point drain or other suitable opening.



APPENDIX H

AVIATION - AIR CAPABLE SHIPS

1. Inspection Criteria. The aviation portion of an INSURV Trial or Inspection is based on the following references:

- a. General Specifications for Ships of the U. S. Navy (NAVSEA S9AA0-AA-SPN-010).
- b. Applicable technical manuals.
- c. Aviation Facilities Bulletin No. 1. (Series)
- d. NWP-3-04.1 (formerly NWP-42).
- e. Applicable PMS.
- f. Ship Safety Review Guide (NAVSAFECEN 9077CL).
- g. Shipboard Aviation Facilities Resume (NAEC-ENG-7576).
- h. COMNAVSURFORINST 3700.1

2. General Demonstration Procedures. The proficiency of personnel in operating equipment will not be assessed, nor will departmental training. However, personnel must be available who can safely demonstrate equipment using posted operating procedures, maintenance requirement cards (MRCs), and technical manuals for installed equipment. INSURV inspectors do not operate equipment. Each installation varies and ship's company, or in the case of Acceptance Trials, shipyard personnel, may be required to support several simultaneous demonstrations. Aviation demonstrations must be coordinated and integrated into the overall ship schedule to expedite the inspection and avoid conflicts.

3. Areas of Responsibility. The focus of the aviation inspection is on the material and maintenance condition of equipment, systems, and spaces in the following areas:

- a. An inspection and an inventory of aviation items in the Allowance Equipage List (AEL).
- b. Flight deck safety nets and stanchions.
- c. Electrical servicing systems (28 VDC, 400 Hz).

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- d. Pneumatic servicing systems.
- e. Ground support equipment (GSE).
- f. Recovery assist, securing, and traversing (RAST) system.
- g. JP-5 fuel system and associated piping.
- h. Hangar bay doors.
- i. Flight deck and hangar bay markings, nonskid, lighting, and tie-downs.
- j. Stabilized Glide Slope Indicator (SGSI) and Horizontal Reference System (HRS).
- k. Helicopter control station.
- l. Helicopter detachment workspaces.

4. Information Required Upon Arrival.

- a. Aviation Facility Coordinator notebook, per Appendix H, reference (h).
- b. CSMP from all associated divisions for aviation facility equipment.

5. Sequence of Events for Air Capable Ships.

a. Flight operations are normally conducted in conjunction with Acceptance or Builder's Trials and are not normally required for any facet of the aviation material inspection (MI). Normally all aviation inspections can be completed within the first two days and will not generally require an underway phase. In order to expedite the aviation inspections, plan the events on a not-to-interfere basis with other departmental inspections. The following sequence of events is a general guide that can be used to avoid conflicts with other departmental inspections. Coordinate with the assigned aviation inspector prior to the inspection to determine specific areas to be inspected and adjustments to the SOE which will enhance the timely execution of the inspection checklist.

b. Pre-Underway Phase.

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## (1) Obtain and review the following:

(a) Copies of the ship's CASREP and CSMP items relating to aviation facilities or support equipment.

(b) Copy of those sections of the Commanding Officer's Letter of Concerns that apply to aviation systems.

(c) Copy of previous INSURV inspection.

(d) Certification for flight operations.

(e) TACAN certification letter.

(f) Stabilized Glide Scope indicator (SGSI) certification.

(g) Helicopter Operations bill.

(h) Wind system certification.

(i) Safety net weight test certificate.

(j) Helo electrical servicing (28VDC/400Hz) load bank test.

(k) Hoist weight test results.

(l) Tie-down pull test results.

(m) JP-5 tank inspection/overhaul documentation.

## (2) AEL inventory and inspection.

(a) Aircraft crash and salvage equipment.

(b) MK-1 life preservers and personal protective equipment (to include testing of the Man Overboard Identification (MOBI) system, if installed). All life preservers will be visually inspected and approximately ten will be chosen at random and inflated.

(c) Aircraft support equipment.

(3) Safety Net System. Inspection of the flight deck safety net system in both the up and down positions (mooring

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lines, brows or mooring location may necessitate postponement of this to day three (underway)).

(4) JP-5 Fuel System. The inspection of JP-5 storage tanks will be contingent upon tank refinishing history and previous inspection reports. One of the service tanks shall be inspected by visual examination through the tank top with fuel pumped down to the bottom of the suction tailpipe. Storage tanks which have satisfactory inspection results reported by a U.S. Navy tank inspector (TYCOM, PERA, ASIR, etc.) within the past 60 days generally will not require inspection. Where JP-5 storage tanks do not meet these requirements, the aviation inspector will normally inspect the tank with the oldest full coating. Normally, physical entry into a JP-5 fuel tank is not required, but if there is a requirement to enter a tank, all safety requirements shall be complied with.

NOTE: These spaces shall be made safe for entry using procedures detailed in NAVSHIPS Technical Manual 090 and 074 Volume 3. Just prior to the inspector's entry, each space shall again be verified to ensure it is still "Safe for Entry." (These safety precautions apply for all tanks to be inspected).

The service and transfer systems will be operated, and fuel samples taken and analyzed. The entire system will be inspected including:

- (a) All topside fittings.
- (b) Vent risers.
- (c) Operating instructions.
- (d) Fueling nozzles (over-wing and under-wing).
- (e) Continuity of fuel hoses.
- (f) HIFR rig.
- (g) Stripping system.
- (h) JP-5 service and transfer pump including bypass pressures.
- (i) Pressure regulator valve.
- (j) Flow rates of the under-wing nozzle with the hose fully faked out on the deck.

(k) Differential pressures across the filter/separators.

(l) JP-5 piping and verify proper color coding, labels and flow arrows.

(m) All overflows and vents will be inspected for flash screens and operable one-way check valves.

(n) Defueling pump.

(o) Cross-connect ability to pump JP-5 to diesel day tanks and boiler fronts.

(p) Tank level indicators and associated alarms.

(q) Bilge condition, bilge eductors, bilge foundations and deck grating.

(r) JP-5 Filter/Separator. One of the filters/separators will be opened to inspect the filter elements.

(5) RAST System. The RAST system will be operated without aircraft and tested to the fullest extent using the RAST technical manual prior to flight operations. A pull calibration test on the rapid securing device (RSD) will also be accomplished. The RAST track plates will be lifted at the turnaround, tensioning deflector and the takedown sleeves will be inspected.

(6) Hangar Bay.

(a) Operation of telescoping hangar electrically and manually.

(b) Operation in all modes of the hangar doors.

(c) Maintenance hoist(s).

(d) Pneumatic and electrical servicing (400 Hz Ac and 28VDC).

(e) Hangar bay ventilation, lighting and darken ship capability.

(f) Blade stowage will be disassembled, lowered, then reassembled during trails.

(g) Support equipment.

(h) Maintenance spaces.

(i) Circuit "F" alarm system will be tested.

(7) Control Tower

(a) Window wipers/washers.

(b) Ready deck status system.

(c) 5 MC and all MC boxes.

(d) Tower radio communications to include sound powered phones.

(e) Crash alarms.

(f) Lighting panels and motor driven rheostats.

(g) Wind System. System will be operationally tested and inspected.

(8) Flight/Hangar Deck and Lighting. All associated lighting will be inspected for sufficient and accurate markings and deck covering. All lighting fixtures will be visually inspected. The Horizontal Reference System will be operationally tested and inspected.

(9) Captain's Ready Deck Lighting System (Flight Deck Status Lights). Will be tested at all stations for "ready deck" (green) and "wave off" (flashing red).

(10) SGSI. The unit will be inspected with boot dropped and the pole check will be conducted.

(11) HOSS Camera will be visually inspected.

(12) Aviation Workshops. A general workspace inspection will be conducted. Compliance with all NAVOSH requirements will be checked for all installed equipment.

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c. Underway Phase. If any flight operations are required during the Trial/Inspection, the senior aviation inspector should be available in the helo control tower or the RAST control station. The following aviation equipment will be demonstrated:

(1) Flight Deck Lighting

(a) The rotary beacon and all flight deck lighting shall be tested prior to commencing flight operations.

(b) SGSI and HRS installations. Both should be energized throughout the entire underway phase.

(2) RAST. (During Trials, if a helicopter is recovered, it will be placed in the hangar bay with the RAST system).

(a) Machinery room.

(b) LSO station.

(c) Recovery Securing Devices (RSD).

(d) Tracks, cables and winches.

(e) Calibration gear.

(3) Communications. A flight deck and tower communications check will be accomplished prior to flight operations.

d. Post-Underway Phase. The aviation inspector will provide the ship (responsible authority) with a post-underway inspection list prior to returning to port after any underway portion of the inspection.

(1) All open and inspect items for the JP-5, RAST, and SGSI systems will be completed if not completed prior to underway phase.

(2) Debrief applicable department heads or SUPSHIP representative.



APPENDIX I

AVIATION - AVIATION SHIPS (CV/CVN) AND  
AMPHIBIOUS ASSAULT SHIPS (LHA/LHD)

1. Inspection Criteria. The aviation portion of INSURV Trials and Inspections is based on the following references:

- a. General Specifications for Ships of the U. S. Navy (NAVSEA S9AA0-AA-SPN-010).
- b. Applicable technical manuals.
- c. Aviation Facilities Bulletin No. 1 (series).
- d. Amphibious Assault Ship Aviation Facilities Bulletin (No. 2).
- e. NWP-3-04.1 (formerly NWP-42).
- f. CV/CVN NATOPS.
- g. LHA/LHD NATOPS.
- h. Applicable PMS.
- i. Ship Safety Review Guide (NAVSAFECEN 9077CL).
- j. Shipboard Aviation Facilities Resume (NAEC-ENG-7576).
- k. COMNAVSURFORINST 3700.1 (LHA/LHD only).

2. General Demonstration Procedures. The proficiency of personnel in operating equipment will not be assessed, nor will departmental training. However, personnel must be available who can safely demonstrate equipment using posted operating procedures, Maintenance Requirement Cards (MRCs), and technical manuals for the installed equipment. INSURV inspectors do not operate equipment. Each installation varies and ship's company personnel may be required to support several simultaneous demonstrations. Aviation demonstrations must be coordinated and integrated into the overall ship schedule to expedite the inspection and avoid conflicts.

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3. Areas of Responsibility. The focus of the aviation inspection is on the material and maintenance condition of equipment, systems, and spaces in the following areas:

- a. An inspection and an inventory of aviation items in the Allowance Equipage List (AEL).
- b. Flight deck safety nets and stanchions.
- c. Electrical servicing stations (28VDC, 400 Hz).
- d. Pneumatic and aircraft air-start servicing stations.
- e. AV-8 demineralized water system (LHAs/LHDs only).
- f. JP-5 fuel system and associated piping.
- g. Lube oil system for catapults (CVs/CVNs only).
- h. Catapults and associated Jet Blast Deflectors (JBD) (CVs/CVNs).
- i. Arresting gear and barricade (CVs/CVNs).
- j. Crash and salvage equipment including the P-60/P-70 crash cranes (Tilley).
- k. Aircraft elevators, elevator doors and hangar bay divisional doors.
- l. Flight deck and hangar bay markings, non-skid, lighting and tie-downs.
- m. Visual landing aids to include the Fresnel lens (CVs/CVNs) and Stabilized Glide Slope Indicator (SGSI) (amphibious).
- n. Flight deck camera system.
- o. Squadron ready-rooms.
- p. Primary flight control (PRI-Fly).
- q. Airwing/Squadron workspaces.
- r. Conflagration stations.

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s. The Aircraft Intermediate Maintenance Department (AIMD) including all Ground Support Equipment (GSE).

4. Information Required Upon Arrival.

a. Copy of the trial agenda/SOE.

b. Departmental coordinators and applicable phone or IVCS numbers.

c. Load test results for 400 Hz and 28VDC aircraft servicing stations.

d. The Aviation Facility Coordinator notebook and a copy of the following certifications:

(1) Aviation (LHA/LHD only).

(2) JP-5 (CVs/CVNs only).

(3) Arresting gear (CVs/CVNs only).

(4) Lighting and markings.

(5) Stabilized Glide Slope Indicator (SGSI) certification (LHA/LHD only).

(6) Nose tow (CVs/CVNs only).

(7) Flight Deck Optical Landing System (FDOLS) (CVs/CVNs only).

(8) Jet blast deflector (CVs/CVNs only).

(9) Landing Signal Officer's Heads-Up Display (HUD).

(10) Movable Optical Landing System (MOVLAS) (CVs/CVNs only).

(11) Plat camera system.

(12) Horizontal Approach Path Indicator (HAPI) system.

(13) Hover Position Indicator (HPI) system.

(14) Wave-off light/cut systems.

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- e. Load test data for all winches and chain hoists.
- f. Pull test data for all tie-downs.
- g. Load test data for all safety nets.
- h. Current catapult test data.
- i. A copy of those sections of the Commanding Officer's Letter of Concerns that apply to aviation systems.
- j. Copies of the ship's CASREPS and items relating to aviation facilities or support equipment.

5. Sequence of Events.

a. Flight operations are normally conducted in conjunction with Acceptance or Builder's Trials and are not normally required for any facet of the aviation inspection material inspection (MI). The following is a general guide to expedite the aviation inspection and avoid conflicts with other departmental inspections. Coordinate with the aviation inspector prior to the inspection to determine specific areas to be inspected and adjustments to the SOE which will enhance the timely execution of the inspection checklist.

b. Pre-Underway Phase.

(1) Obtain and review the following:

(a) Aviation discrepancy documentation (CASREPS and CSMP items).

(b) Copy of previous INSURV inspection.

(c) All applicable aviation certification documentation or messages.

(d) TACAN certification letter.

(e) Helicopter Operations Bill.

(f) Wind system certification.

(g) Safety net weight test certificate.

(h) 400HZ and 28VDC aircraft servicing stations.

- (i) Hoist weight test results.
- (j) Tie-down pull test results.
- (k) Catapult engineering test memos/certification.
- (l) AV-8 optical landing aids certifications (HAPI, HPI).
- (m) JP-5 tank inspection/overhaul documentation.
- (n) AV-8 demineralized water system test data (LHA/LHD only).

(2) AEL Inventory and Inspection

- (a) Aircraft crash and salvage equipment.
- (b) MK-1 life preservers and personal protective equipment (to include testing of the Man Overboard Identification (MOBI) system, if installed). All life preservers will be visually inspected and at least ten percent from each division will be chosen at random for inflation.
- (c) Aircraft support equipment.

(3) Safety Net/rail System and Catwalks. Inspection of the flight deck and catwalks safety net system in the down position (mooring lines, brows or mooring location may necessitate postponement of this to day three).

(a) Condition of catwalk decks, lighting, labeling on all installed equipment, communications connections including sound power phones, electrical connections and cable runs.

(4) JP-5 Fuel System. Commence the JP-5 system inspection as discussed in paragraph 5.c.2. below. This inspection will normally be completed during the underway phase.

(5) Communications. Flight deck and tower communications checks will be accomplished.

(6) Flight and Hangar Deck markings and deck covering will be inspected.

(7) Captain's Ready Deck Lighting System tested at all stations for "ready deck" (green) and "wave off" (flashing red).

(8) Conduct Fresnel lens pole check.

(9) Movable Landing Aid System (MOVLAS) rigged and functionally checked in both port and starboard locations.

(10) AV-8 demineralized water system test (LHA/LHD only).

c. Underway Phase. If flight operations are required during the Trial/Inspection, the senior aviation inspector will be available in primary, flight deck control or in catapult and arresting gear machinery rooms during flight operations. The following aviation equipment will be demonstrated/inspected.

(1) Flight Deck and Flight Deck Lighting

(a) The rotary beacon and all flight deck lighting shall be tested prior to commencing flight operations.

(b) SGSI installation (LHA/LHD only). The system should remain on throughout the underway phase.

(c) SGSI in gyro stabilized mode and ship's gyro mode including the wave-off lights (LHA/LHD only).

(d) Observe a pole check of the SGSI.

(e) Complete demonstration of the Fresnel lens, associated lights, computer and landing signal officer's (LSO) HUD/Platform, ILARTS, and IFLOLS.

(f) Flight deck drains.

(g) Flight deck nonskid.

(h) Optical landing aids for AV-8 aircraft (HAPI, HPI).

(i) Electrical servicing (400HZ AC and 28VDC). AIMD provide operable mobile load bank.

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(2) JP-5 System. The service and transfer system will be operated and fuel samples taken and analyzed. The entire system will be inspected including:

- (a) All topside fittings.
- (b) Vent risers.
- (c) Operating instructions.
- (d) Fueling nozzles (over-wing and under-wing).
- (e) Continuity of fuel hoses.
- (f) Fuel station megamps.
- (g) Stripping system.
- (h) JP-5 service and transfer pumps including bypass pressures.
- (i) Pressure regulator valve.
- (j) Flow rates of the under-wing nozzle with the hose fully faked out on the deck.
- (k) Differential pressures across the coalescer/filters.
- (l) Fuel purifiers.
- (m) JP-5 piping and verify proper color coding, labels and flow arrows.
- (n) All overflows and vents will be inspected for flash screens and operable one-way check valves.
- (o) Defueling pump.
- (p) Cross-connect ability to pump JP-5 to diesel day tanks and boiler fronts.
- (q) Tank level indicators and associated alarms.
- (r) Bilge condition, bilge eductors, bilge foundations and deck gratings.

(s) Lubricating oil system for catapults.

(3) Control Tower

(a) Window wipers/washers.

(b) Ready deck status system.

(c) 5 MC and all MC boxes.

(d) Tower radio communications to include sound powered phones.

(e) Crash alarms.

(f) Lighting panels and motor driven rheostats.

(g) Air Boss's deck and equipment status lighting and communication system.

(h) Wind System. Visually inspect all components and operationally test all components.

(4) Hangar Bay

(a) Proper stowage.

(b) Maintenance hoist(s).

(c) Electrical servicing (400 Hz AC and 28VDC). AIMD provide operable mobile load bank.

(d) Indoor lighting and darken ship circuitry.

(e) Divisional doors (including operational checks) and associated machinery rooms.

(f) Conflagration stations and alarm systems.

(g) Markings, deck covering and tie-downs.

(5) Catapults

(a) A thorough grounds check will be performed prior to operating the catapults.

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(b) A test of steam smothering will be performed prior to operating the catapults.

(c) The catapults will be tested with no load shots or when operationally feasible, with aircraft.

(d) All catapult maintenance and storage spaces, and catapult voids.

(e) All catapult engine rooms and control consoles.

(f) Launch bubble on CVNs.

(g) Jet Blast Deflectors (JBD) and JBD pump rooms.

(h) Water brake voids.

(i) The catapult lube oil system.

(6) Arresting Gear

(a) An operational check with either aircraft or pulling the gear with tow tractors.

(b) An operational check of the barricade.

(c) Sheave dampers and protective screens.

(d) Socket pouring rooms.

(e) All arresting gear maintenance and storage spaces.

(f) Arresting gear and barricade engine rooms.

(g) Barricade storage room.

(7) Aircraft Elevators

(a) An operational check of all aircraft elevators in all modes.

(b) Aircraft elevator machinery rooms.

(c) Elevator safety interlocks.

(d) Stanchion rooms and operation and stanchions.

(8) Crash and Salvage

(a) All fire fighting vehicles, portable aircraft fire fighting equipment and an AEL inventory and condition.

(b) An operational check of the P-60/P-70 aircraft crane.

(c) An inventory and check of aircraft slings.

(9) Air Intermediate Maintenance Department (AIMD)

(a) Inventory and inspection of all support equipment.

(b) Shop-to-shop equipment installation.

(c) Industrial shops.

(d) Maintenance hoists.

(10) Squadron maintenance spaces and ready rooms.

(11) Fueling at sea stations.

d. Post-Underway Phase. The aviation inspector will provide the ship (responsible authority) with a comprehensive post-underway inspection list prior to returning to port after the underway portion of the inspection. The following guidance will be used in formulating the post-underway inspection list.

(1) JP-5 Tanks. The inspection of JP-5 storage tanks will be contingent upon tank refinishing history and previous inspection reports. At least one service tank shall normally be inspected by visual examination through the tank top with fuel pumped down to the bottom of the suction tailpipe. Storage tanks which have satisfactory inspection results reported by a U. S. Navy tank inspector (TYCOM, PERA, ASIR, etc.) within the past 60 days do not require inspection. Where JP-5 storage tanks do not meet these requirements, the aviation inspector will normally inspect the tank/tanks which has/have the oldest full coating. Normally, physical entry into a JP-5 fuel tank is not required, but if there is a requirement to enter a tank, all safety requirements shall be complied with.

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NOTE: These spaces shall be made safe for entry using procedures detailed in NAVSHIPS Technical Manual 090 and 074 Volume 3. Just prior to the inspector's entry, each space shall again be verified to ensure it is still "Safe for Entry." (These safety precautions apply for all tanks to be inspected).

(2) JP-5 Fuel Purifier. One purifier in each pump room will normally be disassembled.

(3) JP-5 Filter/Separator. At least one filter/separator will normally be opened to inspect the filter elements.

(4) JP-5 Overflow Valves and Air Escapes. A selected sample (nominally 50%) of overflow valves and air escapes will be opened to ensure the flapper valves are not frozen and flash screens with ball check valves are installed and not corroded.

(5) Catapults. Steam will be secured so the engineering inspectors can inspect the catapult steam voids. Selected catapult track plates will be removed.

(6) Debrief applicable department heads or SUPSHIP representative.



APPENDIX J

SUPPLY

1. General. The INSURV Supply inspector(s) will review the adequacy, material condition and storage aids of supply storerooms and spaces to ensure they support the ship's assigned missions and tasks. They will also inspect food service and laundry equipment for proper maintenance and operation.

2. Preparation Prior to Inspection.

a. The following information will be provided to the INSURV supply inspector(s) upon arrival:

(1) A complete list of all supply spaces by name and space number.

(2) A complete list of all supply equipment (food preparation, service, scullery, pantry, laundry, etc.) with the following information: nomenclature and space location

(3) A list of all messing spaces and the number of seats per space. Provide the number of Officers, CPO's and E6 and below who utilize the space (i.e., Wardroom: 23 Officers, 18 seats).

(4) Supply Department's most recent Eight O'clock Report listing out-of-commission equipment.

b. The ship's Supply Officer, when appropriate, should review all PMS requirements on food service and laundry equipment and be able to discuss shortfalls and inadequate coverage.

c. The Supply Officer should be prepared to discuss adequacy of parts and provisions stowage.

3. Conduct of Demonstrations.

a. The senior Supply inspector will observe the Supply department spaces with respect to cleanliness, preservation, stowage, and material condition.

b. All supply department spaces should be prepared for inspection.

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c. All food service equipment will be demonstrated. Deep fat fryers, ovens and griddles must be preheated to 350 degrees F and available for inspection immediately following the in-brief on day one of the inspection. An electrician should be available to demonstrate the deep fat fryer over-temperature shunt trips.

d. All laundry equipment will be demonstrated.

APPENDIX K

MEDICAL AND DENTAL

1. General. The medical inspection includes medical and dental material condition, water purification, and medical waste management. The inspection is designed to:

a. Ensure medical/dental equipment and spaces are in adequate material condition to provide care to the crew and others that may be embarked in the ship.

b. Ensure water purification systems (chlorine/bromine) adequacy to supply the level of halogen required by NAVMED P-5010-6 and NSTM 533.

c. Ensure sanitation of potable water hoses, hose lockers, and distribution system.

d. Ensure medical/dental department personnel are trained in, and have the required references for, medical waste management.

2. Inspection Criteria.

a. Check the operation and arrangement of all medical/dental and water purification equipment and spaces to ensure they can be operated to design capability, be adequately maintained, and reliably operated by assigned personnel.

b. Check installation workmanship and accessibility.

c. Check for items that may present a clear and immediate danger to personnel or equipment.

d. Check adequacy of PMS assigned.

3. Preparation.

a. Provide the medical inspector(s) upon arrival the following items:

(1) Certification of bacteriological testing of potable water tanks and system (AT only).

(2) Potable water and ice machine testing log (FCT, MI/Survey).

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(3) Certification of bacteriological testing of ice samples from each ice machine (AT, CT).

(4) JSNs of all current Medical/Dental work requests in the CSMP.

(5) Medical waste handling training records and log.

b. Be prepared to demonstrate all functions and capabilities of installed equipment.

c. Be prepared to operate all emergency potable water tanks, and open tanks for inspection if required by the inspector.

APPENDIX L

ENVIRONMENTAL PROTECTION

1. Definition. The INSURV environmental protection inspector(s) are responsible for inspecting compliance with the Navy's environmental protection program. This includes not only equipment, but training and procedures that preclude contamination of air and navigable waters due to oil, sewage, or gray water drains, ozone depleting substances, solid waste, incineration, and noise pollution.

2. Inspection Criteria.

a. Check the operation and arrangement of all pollution control equipment to ensure full compliance with the requirements of reference (q), and to ensure installed equipment can operate to designed capability and may be adequately maintained by assigned crews.

b. Check installation workmanship and accessibility.

c. Check for items that may present a clear and immediate danger to personnel or equipment.

d. Check adequacy of PMS assigned and accuracy of system drawings and operating procedures.

e. Check performance of all pollution control equipment using PMS, NSTMs, and General Specifications.

f. Inventory the oil and hazardous substance spill response and clean-up kit.

g. Review documentation of sewage system, solid waste processing, and oil pollution abatement (OPA) equipment certifications.

h. Review the ship's training and procedures that support the environmental protection program. This includes oil and hazardous substance spill response plans, procedures, training and qualifications.

3. Preparation.

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a. Prepare to demonstrate all functions and capabilities of installed equipment's automatic operation, level sensors, alarms, and valve operation (local and remote).

b. Ensure all protective clothing and required sanitation gear is available for inspection and use.

c. Ensure sewage system is leak-free throughout. If a particular leak cannot be corrected, ensure adequate sanitation practices are enforced.

d. Ensure influent and effluent sampling of Oil Water Separator Systems is conducted during the inspection.

e. Prepare to demonstrate the solid waste processing equipment, including plastic waste processors, shredders, pulpers and incinerators.

f. Demonstrate availability of oil spill response and containment kits.

g. Ensure the sewage system plant operating guide accurately corresponds to the actual installation.

h. Prepare to provide training documentation required by the Navy's environmental protection program.

i. Prepare to provide ship's documentation that supports the Navy's environmental protection program.

j. Prepare to demonstrate any Pollution Prevention (P2) equipment, such as paint dispensers, parts washers, or similar equipment.

APPENDIX M

OCCUPATIONAL SAFETY AND HEALTH

1. General. The INSURV occupational safety and health inspector(s) are responsible for inspecting compliance with the Navy Occupational Safety and Health (NAVOSH) program. This includes equipment, training and procedures required for implementation and management of the Navy Occupational Safety and Health (NAVOSH) program.

2. Preparation. The ship should have a working knowledge of reference (u). The ship shall provide the following items to the INSURV NAVOSH inspector(s) upon arrival:

a. A copy of the ship's Baseline Industrial Hygiene Survey and any follow-on survey reports.

b. A list of all personnel in occupational health medical surveillance for Hearing, Asbestos, etc.

c. Copy of the ship's CSMP, option "D" (block 15 "Safety") printout that was reviewed (corrected or annotated) by the safety officer.

d. A list from the command Hazard Abatement Plan that identifies occupational safety and health matters requiring special attention and/or assistance for resolution. The ship should note those items that are suspected of being design related. Also, the ship should provide any known references relative to contradictory matters as well as those matters that were not within ship's force capability to correct.

e. File of Mishap reports for the last five years (or whatever is available).

f. File of Accident and Injury reports (Safety Officer's copies) for the last five years.

g. A copy of the applicable asbestos control plan (protocol as required by reference (u)).

h. Lead control plan, if applicable.

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i. Hazard reports for the past year, zone inspection results (ZIDLs/Division in Spotlight) annotated with corrected items or status, or log of safety hazards tracked to correction.

j. Safety Council minutes and mishap statistics.

k. Safety Committee minutes.

l. Training plan for I-Division showing safety topics, muster sheets and any other routine training plan, listing, or schedule for annual required NAVOSH topics (such as electrical safety).

m. PQS records/training records/EPA certification documents for all personnel qualified in:

Safety Programs Afloat PQS (43460-4A/4B)

Watchstation 301 - Safety Petty Officer

Watchstation 302 - Electrical Tool Issue Petty Officer

Watchstation 303 - Heat Stress Monitor

Watchstation 304 - Electrical Safety Officer

Afloat Environmental Protection Coord. (AEPC) PQS 43528

HMC&M Technician (SNEC 9595)

Oil Spill Response Scene Leader

Ozone Depleting Substance (ODS) Maintenance Personnel

n. Collateral duty list designating at least the Safety Officer, HM Coordinator & HM Supervisor, Traffic Safety Coordinator, RAHS Coordinator, Safety Petty Officers, members of Safety Council and Committee, Respiratory Protection Manager, LSSO, GFE, and Electrical Officer (as applicable).

o. A space listing identifying the location of in-use flammable lockers.

### 3. Inspection.

a. The NAVOSH oversight inspection will include, but may not be limited to:

(1) Occupational safety and health conditions in all workshops and work spaces or decks, hazardous material storage/dispensing/usage areas, and those occupational safety and health factors in other areas upon consultation and recommendation by other INSURV inspectors.

(2) Inspection and demonstration of those occupational safety and health items required by the Board and higher

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authority. A primary aspect will be hazardous noise and heat stress inspections of appropriate spaces normally conducted during the full power portion of the at sea phase.

(3) Inventory of Hazardous Material spill kits.

(4) Inventory of Gas Free Engineering equipment and all detector tubes.

(5) Review Tag Out Log(s).

(6) Examine the occupational health medical surveillance program within the command.