DEPARTMENT OF THE NAVY
BOARD OF INSPECTION AND SURVEY
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INSURVINST 4730.3
Code 00
6 Jun 08

BOARD OF INSPECTION AND SURVEY INSTRUCTION 4730.3

From: President, Board of Inspection and Survey

Subj: TRIALS OF SURFACE SHIPS

Ref:
(a) OPNAVINST 4700.8H U.S. Ships Undergoing Construction or Conversion
(b) OPNAVINST 4730.5P Trials and Material Inspections of Ships Conducted by the Board of Inspection and Survey
(c) INSURVINST 4730.11J Documentation of Deficiencies
(d) OPANAVINST 5100.19E NAVOSH Program
(e) OPNAVINST 4440.19E Cannibalization of Equipment and Diversion of Material at Contractors' Plants to Meet Urgent Operational Requirements; Policies and Priority
(f) INSURVINST 4730.8M Reports of Trials, Material Inspections and Surveys Conducted by the Board of Inspection and Survey
(g) NAVSEAINST 9072.1A (series) Shock Hardening of Surface Ships
(h) OPNAVINST 3500.39B Operational Risk Management
(i) COMDTINST M16672.2F Navigation Rules (COLREGS)
(j) 33 C.F.R. § 164 Navigation Safety Regulations
(k) OPNAVINST 3130.6C Naval Search and Rescue (SAR) Standardization Program
(l) OPNAVINST 9094.1B Full Power and Economy Trial Requirements for Non-Nuclear Surface Ship Classes
(m) INSURVINST 4730.22D Standards for Surface Ship Undersea Warfare (USW) Demonstration
(n) INSURVINST 4730.21G Area Anti-Air Warfare and Self Defense Detect-To-Engage Demonstrations and Long Range Air Search Radar Performance Demonstrations
(o) INSURVINST 4730.23C Standards for Mine Warfare Ship Mine Hunting and Sweeping Equipment Demonstrations
(p) DON Information Technology Standard Guidance Version 99-1 of 05 Apr 99
(q) OPNAVINST 9640.1A Shipboard Habitability Program
(r) NAVSEAINST 9593.2A Inspection and Certification Process for Oil Pollution Abatement (OPA) Systems in U.S. Navy Surface Ships and Craft.
(s) OPNAVINST 5090.1B Environmental and Natural Resources Program Manual

Encl: (1) Procedures (list of appendices)

1. Purpose. To provide guidance for conducting Board of Inspection and Survey (INSURV) Trials of surface ships. This instruction provides information to assist responsible authorities in preparing surface ships for presentation to the INSURV Board.

2. Discussion. Reference (a) states that the readiness of ships for acceptance and recommendation for fleet introduction is INSURV's responsibility. Reference (b) provides responsibilities and procedures for INSURV in the conduct of Trials and this instruction provides procedures for surface ship INSURV Trials.

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

/s/
R. M. KLEIN

Distribution:

SNDL	A1J	(ASSTSECNAV RD&A)
	A1J1P	(PEO SHIPS (PMS 317, 325, 377, 400C, 400D, 400E, 400F, 500, 501))
	A3	(CNO (N4, N43, N6, N86, N87, N88))
	A2A	(Chief of Naval Research)
	FKA1G	(Systems Command Headquarters) (COMNAVSEASYSCOM (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)
	FA24	(MIDLANT RMC) (SOUTHEAST RMC)
	26U	(SOUTHWEST RMC) (SOUTHCENTRAL RMC) (SOUTH TEXAS RMC)
	FD3	(FLENUMMETOCEANCEN)
	FD4	(NAVLANTMETOCCEN only)
	FKP7	(SHIPYARD)
	FKP8	(SUPSHIP)
	FA24	(Base LANT)
	FB28	(Base PAC)
	20A	(COMFLTFORCOM)
	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 (s), and provides specific guidance on the conduct of surface ship Acceptance and Final Contract Trials 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 and C4I
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
APPENDIX N	Ventilation
APPENDIX O	Corrosion

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 of ships assist the Navy in determining if the unit’s material condition supports this mission.

(1) Trials. As indicated in reference (a), 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 (a) further states it is the responsibility of the President, Board of Inspection and Survey to conduct Acceptance Trials (AT) as an independent verification of a ship’s readiness for acceptance and make recommendations for fleet introduction (delivery). Final Contract Trials (FCT) are also conducted to determine if builder responsible equipment is

operating satisfactorily during the guarantee period following acceptance.

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 Builder Specifications, 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, Safety of Life at Sea Standards (SOLAS), American Bureau of Shipping (ABS) Building and Ship Classing Standards, 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 a previous INSURV Acceptance Trial.

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

(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 a Trial. In either case it will be documented as a deficiency. If the deficiency is corrected during a Trial and if the Board has the opportunity to witness appropriate re-testing, it will be documented as a deficiency and annotated as “(corrected)". Regarding whether the first attempt at demonstrating systems or equipment will be classified as a deficiency or not, specifically related to a Combined Trial (Builder’s Trial combined with Acceptance Trial), this is governed by a Memorandum of Understanding between INSURV and the applicable Ship Program Management Office.

(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 (c).

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

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 onboard safely. Single Starred Deficiencies must be corrected or waived by CNO 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 onboard 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 identified during the Trial will be documented using the Electronic Trial Card System.

c. Cannibalization

(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. Any cannibalization or diversion should be in accordance with the guidelines in reference (e).

(2) In cases where cannibalization or diversion actions are reported, the conditions requiring this action will be documented in the Trial Report. This should include specific identification of the level within the chain of command at which the action was approved (e.g. Program Office, 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 Trial, the situation will be documented in the report.

d. Underway Operations. Trials will contain an underway period. To safely conduct underway operations and demonstrations, a ship must achieve and maintain minimum equipment (as defined in Appendix B) during the Trial. The Senior Inspector conducting the Trial will allow as much time as possible to correct any problems or deficiencies which would preclude safe continuation of the required evolutions and demonstrations.

If minimum equipment for underway operations is not successfully achieved normally within 36 hours of the commencement of the inspection, the Senior Inspector will determine the inspected unit will not conduct underway operations, and the Board shall:

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

(2) Determine if the Trial was successful or unsuccessful and if a retrial is required at a later date.

(3) Subsequent to an unsuccessful Trial, complete or partial retrials may be required as recommended by the Board and approved by CNO. Retrials will be limited to situations where deficiencies exist which preclude the Board from providing an independent assessment of compliance with contractural requirements.

To safely conduct demonstrations a ship must maintain minimum equipment during the underway phase of the Trial. In the event of

failure to maintain minimum equipment for safe underway operations, the Senior Inspector will recommend that the inspected unit return to port, 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, reschedule a follow on full or partial AT or a full or partial FCT.

e. Retrial, Re-demonstration. A retrial refers to a Trial that must be completely redone because of termination of a prior attempt. A re-demonstration refers to some portion of a Trial that requires completion. Generally, INSURV Board members will conduct a retrial. In the case of an FCT re-demonstration requirement, the TYCOM 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 an incomplete Trial, other inoperative equipment, poor weather, or lack of services.

or

(2) The system/equipment represents a significant departure from ship's specifications (FCT's only).

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

a. The INSURV Board will:

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

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

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

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

(5) Conduct the Trial using an approved SOE.

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

(7) Present a report, upon completion of the Trial, summarizing the results. It is neither intended nor practicable to review all deficiencies identified in the course of the Trial at the final out-brief. 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 TYCOM, as well as the Commanding Officer (CO), Master, or Prospective Commanding Officer (PCO) will be invited to participate.

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

(9) Document results of the Trial as required by reference (f).

(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 pre and post-delivery demonstrations of equipment or systems as required. The building-block approach 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 critical delivery events in addition to the usual demonstrations during Trials. These events can be observed prior to and/or after the start of the Trial. Pre-Trial events will be documented in the INSURV Report. Additionally, deficiencies identified during post-delivery demonstrations will be reported immediately and investigated in detail during the FCT. Because of the extended time frame over which post-delivery events may take place, particular attention should be paid to ensure the following standard conditions prevail at each event:

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

(b) 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. In the case of an 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 an FCT, the responsible authority to present a ready ship to the Board ultimately lies with the Type Commander, but normally 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.

(2) Propose to the INSURV Board a schedule of events for conduct of the Trial using the guidelines of Appendix A and the INSURV website http://www.spawar.navy.mil/fleet/insurv/htmlinstr/surfinst.htm.

(3) Reference (a) delineates multiple requirements for the presentation of a new construction ship for Acceptance Trials. The supervising authority shall ensure that the ship is properly prepared, ready for sea, and should provide certification that the ship is ready for Trials. This means a ship presented for acceptance is complete and the prerequisites of reference (a) have been satisfied. For any significant incomplete items, reference (a) requires a waiver from the Chief of Naval Operations. 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.

(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 SOE, keeping the Board informed of progress. Modifications to the SOE

required by casualties or other circumstances should be made by the responsible authority with the concurrence of the cognizant Board member, keeping the Senior Inspector informed. All compartments, storerooms, gun mounts, handling rooms, magazines, and cabinets should either be unlocked or have a person standing by with necessary keys. The ship shall be clean and properly stowed for sea, excepting equipment laid out for inspection. The bilges should be dry. The full power demonstrations should be scheduled as early in the underway period as possible (after 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 a varying number of inspectors and technical assistants (TA) depending upon the size and complexity of the ship. As a rule, inspectors will range from W-2 to O-6 (military). 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. Technical assistants, assisting INSURV's uniformed inspectors, will normally be an E-6 or Senior (military), GS-7 or Senior (gov't service employees), and civilian contractors.

(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 should be made available for the Board's use.

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

(e) For FCTs, 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 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.

(f) Provide designated inspectors camera passes allowing photography throughout the ship outside of classified spaces.

(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 O 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.

(10) Ensure yard and ship work during the Trial 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.

(12) Provide the following information to the Senior Inspector:

(a) Dates of next scheduled deployment.

(b) Dates of Post Shake-down Availability (PSA).

(c) Copies of outstanding Casualty Reports (CASREPs) on day 1 of the inspection.

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

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

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

(g) List of current Temporary Standing Orders (TSO).

(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 (g)).

(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 logistic problems which they feel are significant or would contribute to the ship’s inability to support prompt, sustained combat operations at sea.

(15) The responsible new construction Program Office should arrange for a pre-brief to PRESINSURV that details the specifics about the upcoming Trial. This brief should occur at least 2 weeks prior to the Trial. For AT’s, the brief should address the status on meeting the prerequisites to take the ship to AT (per paragraph 7.g. of reference (a)).

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

APPENDIX A

TRIAL SCHEDULE

1. General.

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

(1) Pre-Underway

(2) Underway

(3) Post-Underway

(4) Out-brief

b. Normally a Trial should be limited to 5 days. The Board's arrival time and/or the size or type of ship being inspected may necessitate varying this period slightly.

2. Trial Schedule.

a. General

(1) A proposed schedule of events (SOE) for conduct of the Trial 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 sample SOE presented in paragraph 3 below provides a recommended format, sequence, and event time duration to be followed during the Trial. The sample SOE is not necessarily all-inclusive. The actual SOE must take into account applicable conditions, such as INSURV's arrival time, range of tide, distance to deep water, duration of sea detail, services required, as well as particular requirements of the Trial being conducted. The sample SOE shows major or controlling events. Non-controlling events should be scheduled around controlling events on a mutually compatible basis.

(3) SOEs shall include demonstrations of all onboard propulsion, hull, electrical, auxiliary, combat systems, and C4I equipment. Mutually compatible demonstrations may be scheduled simultaneously.

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

(5) It should be understood that the SOE 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 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, C4I (navigation and communications), Deck (anchor and rescue boat), and Damage Control (fire fighting and dewatering) areas.

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

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 should be completed in 1 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 SOE is submitted.

(2) Details of demonstrations and checks to be conducted during the at-sea portion of the Trial 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.

3. Sample SOE.

SAMPLE TRIAL AGENDA

(Basic format - Add or delete items as appropriate to the ship class and type of Trial). For length of evolution see class specific SOE on INSURV website www.spawar.navy.mil/fleet/insurv/htmlinstr/surfinst.htm

FIRST DAY (Pre-Underway)

INSURV Board arrives.

In-brief.

Combat systems demonstration brief.

Review ship input including CO/Master Letter of Concerns, Program Office response to the CO/Master Letter of Concerns, 2Qs, 2Ks, CASREPs, current system configuration documents, and marked up (corrected, outstanding, etc.) copy of last INSURV Trial Report.

Test engineering automatic bus transfers (ABT) (lighting and auxiliaries).

Test/inspect machinery space fire fighting equipment (Halon, AFFF).

General material inspection (Senior Inspector tours ship).

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

Review Full Power Memo.

Anchor operational test/chain locker inspection.

Inspect aviation facilities (AEL equipment flight deck, safety nets, and MK-1 life vests).

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

Demonstrate Stabilized Glide Slope Indicator/Horizontal Reference System (if installed).

Inspect wind measuring and indicating system.

Inspect flight deck lighting and visual landing aid systems.

Inspect the JP-5 fuel system (Fuel station tests normally completed day 3 for LHA/LHD/CV/CVN).

Inspect and test flight deck aircraft electrical service stations (400Hz, 28VDC, and hydraulic service cart receptacles).

Inspect and test hangar/deck edge/divisional door(s) and aircraft elevators.

Inspect catapults, jet blast deflectors, arresting gear, and barricade.

Inspect AIMD and Squadron workspaces (LHA/LHD/CV/CVN).

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

Test controllable pitch propeller.

Inspect main drainage system eductors, cross-connect valves, and remote valve operators.

Electronic NAVAIDS verification and fathometer checks.

Emergency communications equipment (portable, bridge).

CDS/AWS/SSDS/NTDS computer checks.

Missile battery firing readiness (DSOT).

Inspect torpedo tubes, underwater battery fire control system, test firing circuits.

Gun battery transmission checks.

Inspect/test Advanced Digital Networking System.

Inspect/test Global Command and Control System – Maritime (GCCS-M).

Inspect/test Classified and Unclassified networks, application software, and documentation.

HF/UHF/VHF communication equipment checks and demonstrations.

Inspect topside bonding and grounding.

Inspect lifelines, life rings, distress marker lights, ladders, and topside preservation; operate machinery and deck equipment.

Portable davits demonstration.

Demonstrate hangar hoist.

Inspect torpedo/VLA over-the-side handling equipment.

Test P100 series pumps.

Test evaporator/RO unit salinity alarms and dump valve settings.

Inspect/demonstrate navigation light telltale panel.

Inspect piloting and navigation instruments.

Inspect Repair Locker V and other main space repair lockers (as applicable).

Inspect and test fire pumps.

Fin stabilizer checks (if installed).

Demonstrate degaussing quarterly PMS checks for linearity and door interlocks.

MK 6, 7, and/or 8 life rafts inspection (open and inspect, day 4, if required).

Abandon Ship life preserver PMS inspection.

Conduct NAVOSH walk-through (Command Safety Rep).

Gas Free Engineering program review (Gas Free Engineer).

Inspect OWS/OCM Systems (must be completed prior to AFFF demo).

CHT/VCHT system inspection.

Demonstrate solid waste equipment.

Conduct ventilation measurements (CPS zones must be set prior to measurements, if applicable) and fan room inspections.

Inspect HAZMINCEN, paint lockers, and HAZMAT Storerooms (Supply personnel).

Inspect potable water risers and hoses (Command MDR).

Inspect main medical and battle dressing stations and medical waste management (Command MDR).

Inspect supply spaces/demonstrate food service equipment.

Inspect ship’s store spaces and equipment.

Demonstrate laundry equipment.

Open and inspect one JP-5 service and one JP-5 storage tank.

Demonstrate JP-5 service system.

Inspect steering and ship control equipment (rudder, blocking valves, rudder angle indicators, EOT checks, high pressure relief valves, ABTs).

Gyro, gyro repeater, pelorus accuracy/verification checks.

Test/inspect machinery space fire fighting equipment (Halon, AFFF).

Emergency diesel generator test.

Test hangar circuit F high temperature alarm system.

Air compressor and associated dehydrator demonstration.

Inspect and demonstrate electric submersible pumps.

Underwater telephone demonstration.

Mast and antenna inspection (afternoon Day 1, primary time).

Inspect boats and davits (lower and recover boat on outboard side).

Ready lifeboat underway demonstration.

Inspect boat booms, accommodation ladder, H-frames, heavy weather lifelines, rig towing gear, RAS/FAS stations, pilot rescue equipment, and leadsman platform.

Magazine sprinkler and alarm systems test.

Inspect of DECON spaces.

SSTG, GTG, SSDG inspections and tests.

Test engineering automatic bus transfers (lighting & vital auxiliaries).

400-Hz power systems tests.

Inspect of main space escape trunks.

INSURV Board Departs.

SECOND DAY (Pre-underway (cont.))

INSURV Board arrives.

Inspect hangar(s) and all associated aviation equipment and facilities (HP/LP air,400HZ 28VDC electrical stations, maintenance hoists, CONFLAG stations, etc.).

Conduct inport ballast checks.

Mast and antenna inspection (alternate time).

Conduct ballast/de-ballast demonstration brief.

Drop and inspect firemain valve (can be accomplished earlier).

Tank and void inspection.

Test high temp/flooding/smoke detectors and fire alarms.

Inspect DC overboard fittings.

Inspect explosion proof lighting.

Test bilge flooding alarms.

Test IPDS/CAPDS.

Inspect/test fire zone doors.

Inspect/test CPS system.

Inspect fire-fighting equipment (Fire stations/PKP/AFFF/CO_2).

Inspect/test fresh water hose reels.

HF antenna resistance test.

Time domain reflectometry test (TDR).

CDS/AWS/SSDS/NTDS display Programmed Operational Functional Appraisals (POFAs).

Test APC systems.

Inspect watertight closures (doors, hatches, scuttles).

Habitability and sanitary space inspection.

Inspect machinery spaces.

Weapons handling equipment/systems (remainder from Day 1).

Elevator, conveyor, and dumbwaiter inspection.

FZ Alarm system checks.

IC switchboard checks.

Test combat systems ABTs.

Test all ABTs not tested on Day 1.

400-Hz power systems tests (if not previously completed).

Administrative review of NAVOSH program elements including Tag-Out and Electrical Safety programs.

Continue NAVOSH walk-through (Command Safety Rep) and EP administration program review (Command AEPC).

Inspect remaining repair lockers.

Inspect/test saltwater sprinkler system(s) (other than magazines).

Test secondary drainage systems.

Test remotely operated fire main valves.

Test all fixed CO_2 flooding systems.

Inspect CBR equipment and decontamination stations.

Administrative review of Ozone-Depleting Substance (ODS) program (Ships AC&R rep).

INSURV Board Departs.

THIRD DAY (Underway)

Station special sea and anchor detail.

INSURV Board arrives - verify ready for sea.
Check navigation lights, AN/KAS-1 and infrared/night vision devices.

Inspect flight deck lighting.

Underway.

Commence distilling plant test.

Demonstrate JP-5 fuel transfer/station checks.

Conduct catapult no-load tests and jet blast deflector operational tests.

Run degaussing range.

ULM-4 range (active system only, if required).

Weapons system DSOT.

Piloting fix accuracy checks (visual, radar, electronic NAVAIDS, GPS) and fathometer checks.

Combat system DL intrusion alarm demonstration.

Link 4A, 11, 14, 16 demonstrations (as applicable).

Operate ballast system (amphibious and SWATH ships).

Search and fire control radar, EW, IFF, and TACAN parameter checks.

HF/UHF SATCOM communication equipment checks and demonstrations.

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

Inspect/demonstrate IC systems.

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

Crypto equipment test and demonstration.

Information Systems on-air checks (chat/web browsing/e-mail/FOTC Track Data Exchange).

Surface search radar demonstration.

Detailed electrical walk-through.

Anchor windlass demonstration.

VLS deluge system and alarm systems test.

Measure main shaft thrust.

HF longhaul demonstration with appropriate SESEF.

Test AFFF system and analyze foam concentration at high and low rates from each AFFF station.

Boiler flexibility test (all boilers on steam ships).

Build-up for full power (1/2 hour for gas turbine ships).

Demonstrate fuel oil purifier operation and emergency stops.

Demonstrate masker/prairie air flow rates and check valve operations.

Demonstrate soot blower systems on all steaming boilers.

Demonstrate air conditioning, refrigeration, brominators.

Heating, ventilation and air conditioning (HVAC) system test.

Continue NAVOSH walk-through (Command Safety Rep).

Air search radar/IFF/TACAN demonstration with aircraft.

Area Anti-Air Warfare demonstration (if applicable).

Self Defense Detect-to-Engage demonstration.

Check IC circuits.

Full Power demonstration.

Stabilized Glide Slope Indicator demonstration.

Inspect wind measuring and indicating system.

Fin Stabilizer demonstration.

Ahead steering demonstration.

Quick-reversal to full power astern.

Astern steering demonstration.

Quick-reversal to full power ahead.

Gun fire control system(s) static and dynamic computer checks.

Hangar and all associated aviation equipment and facilities inspection (HP/LP air, hoist, 400HZ 28VDC, etc.).

EMI/IMI/RADHAZ testing (comms, radars, EW).

Demonstrate shore power shunt trip interlocks and measure insulation resistance of system.

Conduct tests on collective protection systems where applicable.

Nixie launch and recovery/test operational modes.

Undersea Warfare Demonstration.

Shift to and operate all propulsion and auxiliary equipment that has not been in operation.

Back-up aircraft service demonstrations.

Integrated bridge system/Voyage management system or autopilot steering demonstration.

Countermeasures washdown system demonstration.

Debrief of inspection to date by Senior Inspector to responsible authority.

Station special sea and anchor detail.

Return to port/INSURV Board departs.

Commence post-underway phase.

FOURTH DAY (Post-underway)

Select INSURV Board members arrive.

Continue inspection of designated engineering equipment (open and inspect).

Inspect Rescheduled items.

Counterpart debriefs.

FIFTH DAY

Senior Inspector(s) arrive.

Out-brief with responsible authority/ship's force.

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 (reference (b)). A fundamental element of INSURV's overall verification of ship-wide material condition is the 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. Minimum equipment must be achieved for the underway phase, and must be maintained during underway operations. Based on a detailed review of all applicable laws, regulations and directives, and a thorough consideration of Operational Risk Management (ORM) (reference (h)) for a peacetime, non-emergent inspection, the below minimum equipment criteria applies in determining readiness for underway operations during an INSURV Trial.

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) deficiency exists when continued operation of a system or equipment could result in danger to personnel and/or serious damage to the system or equipment. Those deficiencies include, but are not limited to: equipment operating out of parameters; safety or control devices misadjusted, missing, or damaged; or installation configurations not meeting the standards established in technical documentation (e.g. EOSS, CSOSS, PMS, NSTM, NAVSEA drawing, MILSPECs, USCG or ABS Standards) or by a technical authority. The equipment may not be operated until the RBO deficiency is corrected and re-inspected by an INSURV Inspector.

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 Trial 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. The following equipment must be in commission:

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

Installed	In Commission
2	2
3	2
4	2
8	4

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

Number of Engines Installed	In Commission
1	1
2	2
4	2

(3) In gas turbine ships the following applies:

(a) /DDG 51/USCG NSC Class - At least one engine per shaft.

(b) LCS CODOG – At least one engine per propulsor.

(4) Non-steam propulsion ships, one safe-to-steam auxiliary boiler (if so equipped).

(5) All main propulsion steam turbines must be in commission in single shaft ships. Multi-shaft ships must have one half of all main propulsion steam turbines in commission.

(6) Installed automatic boiler controls for required in-commission boilers.

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

(8) Half of each type of air compressor (LP, MP, and HP) 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).

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

(10) Half of the auxiliary components in each plant.

(11) Half of the installed fire pumps and their associated sea suction/discharge valves and remote operators.

(12) Half of the seawater service pumps and their associated sea suction/discharge valves and remote operators.

(13) Half of the distilling units. The ship must be capable of providing distributed potable water service.

(14) 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.

(15) Half of the installed ship's service generators and associated waste heat boilers.

(16) Half of the ship's emergency generators.

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

Installed	In Commission
2	2
3	2
4	2

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

(18) All steering machinery and control units. Each steering ram shall have at least two in commission sources of hydraulic power, excluding emergency hand pumps and emergency HPU's.

b. Navigation. Navigation/vital ship control equipment must be fully operable as follows (references (i) and (j)):

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

(2) Engine RPM/Pitch Indicators. Must be fully operational in the pilot house (readable from the centerline conning position).

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

(4) Gyrocompass. Must be fully operational.

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

(6) Surface Search Radar. At least one program of record, surface search radar capable of radar navigation must be fully operational.

(7) Magnetic Compass. Must have an operational magnetic compass (binnacle or digital flux gate) 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. Applicable day-shapes for vessel not-under-command, restricted maneuvering, and anchoring must be available on-board.

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

(13) Satellite Navigation/Global Positioning System (GPS) must be operational.

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_2, Portable CO_2, Portable PKP, EEBD's, installed emergency lighting, etc.) installed in engineering spaces required for underway operations must be fully operable. The amount of spare AFFF concentrate shall, at a minimum, be adequate to compensate for the underway demonstrations.

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

(3) Life Support Equipment (OBAs, SCBAs, EEBDs and SEEDs) must be fully functional.

(4) Half of the installed SCBA compressors must be fully operational.

(5) Half of the ship's P-100s 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.

(8) Required quantities of AFFF concentrate must be maintained throughout the inspection.

(9) Required minimum equipment for ballast/de-ballast IAW BOSS.

d. Deck. The following deck equipment must by fully operable (references (i) through (k)):

(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 (if authorized in accordance with TYCOM and/or numbered fleet commander regulations) 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. General Requirements.

a. Preparation.

(1) The INSURV Engineering Directorate is organized into three inspection areas: Auxiliaries (AX), Electrical (EL), and Main Propulsion (MP). For nuclear-powered ships, the Reactor (RX) inspection area will be included. Checklists of the systems and machinery inspected in 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 and delineate equipment inspected by the Engineering Inspectors during each of the three phases of the Trial (Pre-Underway, Underway, Post-Underway). INSURV Engineers shall be informed of differences between the equipment reflected in the ship class checklist and that installed in the ship. INSURV Engineers will provide specific testing requirements for equipment not reflected on the ship class checklist.

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

(3) Qualified Builder Test and Trial or ship's force personnel will typically operate all equipment for checks and demonstrations during Trials. For FCTs, INSURV Engineers shall be informed in advance if Sailors other than those attached to the ship being inspected, will operate equipment.

(4) For FCTs, the Engineering Officer shall ensure the following correspondence, documentation, records, and logs are available for review (varies with type of propulsion plant):

(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
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)

Note: Ships achieving satisfactory degaussing range results in both directions within 60 days of the FCT will not normally be required to re-demonstrate the system during the underway phase.

(n) Ground resistance readings for all 60Hz ship service generators and 400Hz 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) The results of the Thermal Imaging Survey.

Note: Ships should complete the Thermal Imaging Survey within 90 days of the FCT and have all three- and four-star deficiencies resolved.

(t) If desired, a list of equipment the ship would like to open and inspect with INSURV's assistance during the post-underway phase.

(5) Recommended Plant Alignment.

The ship's electrical load should be supplied by shore power. If shore power capacity is insufficient to support equipment demonstrations during the inport phase, the initial plant alignment and plan for shifting equipment shall be proposed to the Senior Engineer 30 days prior to the inspection.

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 indicated on the INSURV checklists. Sufficient test equipment

(e.g. tachometers, flow meters, comparators, signal generators, multi-meters, voltage testers, meggers), in calibration and safety-checked, should be available to support the simultaneous conduct of demonstrations of multiple components.

(2) Testing and correction of RBO deficiencies for fire fighting systems (AFFF and Halon) and ABTs within the engineering spaces should receive priority in the early part of the pre-underway phase. Flammable liquid systems may not be pressurized in engineering spaces (except as required to support the initial plant alignment as discussed above) until fire fighting capability and continuity of power are sufficiently demonstrated.

(3) Specific system and equipment checks are delineated under the Pre-Underway portion of the checklists for each Engineering inspection area (AX, EL, MP). The following general precautions will be taken by inspectors to ensure that it is safe and practicable to continue the Trial:

(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.

(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 technical specifications to determine the adequacy of ship's systems to support required mission areas. The Engineering demonstrations will include: anchor windlass (see Appendix F for additional details); boiler flexibility tests on all propulsion boilers (prerequisite is Level III or better for full power demonstration and Level II for quick reversal demonstrations); full power ahead; steering test ahead; quick reversal to full power astern; steering test astern; and quick reversal to full power ahead. Additional information and requirements for underway Engineering demonstrations is contained in paragraph 2 of this appendix.

(2) Engineering Inspectors will require additional underway testing/demonstrations such as soot blower operation, fuel oil transfer system operability, water testing, distilling unit capacity, Prairie/Masker operation, operation of amphibious mission equipment, degaussing system operations on the degaussing range, etc. The underway portions of the INSURV Engineering checklists delineate required demonstrations and specific requirements and references.

Note: Ships achieving satisfactory degaussing range results in both directions within 60 days of the FCT will not normally be required to re-demonstrate the system during the underway phase.

d. Post-Underway Phase.

(1) The ship may provide a recommended post-underway inspection list of machinery. Prior to returning to port, INSURV Engineering Inspectors will provide the Engineering Officer/Reactor Officer a specific list of machinery to be disassembled and inspected. This list will take into consideration the ship's recommendations, machinery condition analysis information, upcoming maintenance requirements, the Board's observations of operating conditions of the machinery, and recent outside-agency inspections where the reports were provided to the Senior Inspector prior to the Trial and the results accepted by the Senior Inspector as part of the inspection.

(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 may be working simultaneously.

(3) By agreement between the Builder/Supervisor of Shipbuilding or ship's force and the Board, some equipment may be secured and opened for inspection prior to 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.

(4) 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.

2. Full Power, Quick Reversal, and Steering Demonstration Requirements.

a. General.

(1) An Engineering demonstration memorandum (example available for download from the INSURV web site) shall be prepared by the ship and provided to the inspection team's Senior Engineer.

(2) INSURV Inspectors will not act as official observers for any demonstrations for competitive purposes.

(3) Machinery with RBO deficiencies will be considered inoperative and shall not be used during underway demonstrations.

(4) Deficiencies in propulsion equipment, operation of equipment outside limiting plant parameters, failure to meet technical criteria established by applicable technical documentation, and/or equipment casualties during demonstrations will result in point deductions. Demonstration grading sheets are posted and available for download on the INSURV web site.

b. Specific Requirements.

(1) Full or High Power.

(a) Prerequisites and requirements for the full power demonstration are found in documentation including this instruction, reference (l), PMS, and EOP. All propulsion train equipment shall be operational (in commission) to proceed to the full power demonstration.

NOTE: A Level III or better boiler flexibility test on all propulsion boilers is prerequisite for the full power demonstration.

(b) For FCTs, ships that can not achieve required equipment to commence the full power demonstration, the propulsion plant will be aligned in the most effective EOSS approved configuration and a one hour high power demonstration (full power score: 0.00) will be attempted at the best possible speed in that configuration. The Board will inspect the plant during the high power demonstration.

(c) The Engineering Officer will inform the INSURV Senior Engineer when the full power or high power demonstration

is ready to begin. The Senior Engineer will notify the Engineering Officer when the event has formally commenced.

(d) The full power demonstration will be conducted for a period of four hours for Acceptance Trials and one hour for Final Contract Trials. For Trials, Builder or ship's force shall collect data at least every 15 minutes during the demonstration period. A copy of the demonstration data sheets shall be provided to the Senior Engineer for evaluation as soon as possible upon completion of propulsion demonstrations.

(e) For ships that commence the full power demonstration but have to terminate because of a major plant casualty, full power will be graded as unsatisfactory.

(f) The INSURV Senior Engineer will inform the Engineering Officer when the full or high power demonstration is complete and ahead steering checks may commence.

(2) Ahead Steering.

(a) Ahead rudder swing tests shall be accomplished with the propulsion plant developing full power and the ship at maximum ahead speed. Stop watch times are to be measured in the steering gear compartment beginning at the time the rudder begins to move from 35 degrees and ending when the rudder position passes 30 degrees (with some exceptions as noted by PMS) on the opposite side from where timing started. At the completion of ahead rudder swing checks, blocking valve checks will occur by securing power to the on-line unit to verify the rudder holds 25 degrees left and right without drift in accordance with NSTM 562 requirements. Tests will be conducted in each normal (EOSS approved) alignment of hydraulic power units (HPUs) associated with the rudder(s) (e.g. "A" HPU(s) then "B" HPU(s)).

(b) Steering tests will be graded when the propulsion plant achieves at least 80% of full power. When 80% of full power cannot be achieved, but steering demonstration prerequisites are otherwise met, steering demonstrations will be conducted at the maximum speed available, observed by the Board, and graded as "No Score Assigned".

(c) If external conditions such as wind and sea state prevent conducting steering demonstrations, they will be graded as "Not Demonstrated".

(d) If a steering casualty prevents commencement or causes termination of steering demonstrations, or a significant or major discrepancy is noted, steering will be graded as unsatisfactory or degraded.

(e) The Senior Engineer will inform the Engineering Officer when the ahead steering checks are complete and the quick reversal astern may commence.

(3) Quick Reversal Astern.

(a) After completion of full power ahead steering tests, the quick reversal astern will be executed, bringing the shaft speed to rated astern full power RPM/Pitch. On steam ships the ahead and astern throttles will be opened and closed in a quick manner (the maximum rate allowed by applicable technical and operating documentation) while maintaining boiler drum pressure below max or above min limiting parameters. A Level II or better boiler flexibility test on all propulsion boilers is prerequisite for the quick reversal demonstrations.

(b) The quick reversal astern will be graded when the evolution can be conducted from at least 80% of full power ahead to at least 80% full power astern. For ships that can not achieve required 80% power to conduct a traditional quick reversal astern, the reversal will be conducted at the maximum speed possible in both the ahead and astern directions, will be observed by the Board, and a score of 0.00 will be assigned.

(c) For ships that commence the quick reversal astern but have to terminate because of a major plant casualty, the quick reversal will be graded as unsatisfactory.

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

(4) Astern Steering.

(a) Rated continuous astern full power RPM/Pitch shall be established prior to commencement of the full power astern steering test. Astern rudder swing tests shall be accomplished in the same manner as ahead rudder swing tests with the propulsion plant at full power and the ship at maximum allowed astern speed. At the completion of astern rudder swing checks, blocking valve checks will occur by securing power to the on-line unit to verify the rudder holds 25 degrees left and right without drift in excess of NSTM 562 limits. Tests will be

conducted in each normal (EOSS approved) alignment of hydraulic power units (HPUs) associated with the rudder(s) (e.g. “A” HPU(s) then “B” HPU(s)).

(b) Grading criteria for astern steering are the same as criteria for ahead steering. The grades for ahead and astern are averaged for a single steering score.

(c) The Senior Engineer will inform the Engineering Officer when the astern steering checks are complete and the quick reversal ahead may commence.

(5) Quick Reversal Ahead.

(a) 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 in the same rapid manner as the quick reversal astern.

(b) Grading criteria for the quick reversal ahead are the same as criteria for the quick reversal astern. Each quick reversal is scored independently and assigned its own grade.

(c) The Senior Inspector will inform the ship when all propulsion demonstrations are complete.

APPENDIX D

COMBAT SYSTEMS and C4I

1. Combat Systems and C4I Definition. The INSURV Combat Systems and C4I Directorate is organized into seven inspection areas: Anti-Submarine Warfare (AS), Communications (CC), Command, Control and Information Systems (IS), Mine Warfare (MN), Navigation (NV), Operations (OP), and Weapons (WP). Included within each inspection area are the equipment and spaces required for the maintenance and support of these systems, e.g. air, water and power. Checklists and pre-inspection materials are available for download from the INSURV web site (http://www.spawar.navy.mil/fleet/insurv).

(a) Anti-Submarine Warfare systems include hull-mounted and towed array sonars, underwater fire control systems, torpedo launching systems and torpedo handling equipment, sonar dome and sonar dome pressurization systems, fathometer, etc.

(b) Communications systems include installed and portable communications systems (HF, VHF, UHF, EHF and SHF) and associated antenna systems, NAVMACS, terminal and application equipment, switching and distribution equipment (including cryptographic equipment), and EMI and IMI checks.

(c) Command, Control, and Information systems include classified and unclassified networks and command and control applications, SCI networks, communications and applications, and meteorology systems, if installed.

(d) Mine warfare systems include associated sonars, precise navigation systems, the mine neutralization system and vehicle, multipurpose and deck cranes, minesweeping gear and winches and the on-board trainer.

(e) Navigation systems include the equipage associated with navigation, navigation lights, gyrocompasses, magnetic compasses, integrated bridge systems, and signal bridge equipment.

(f) Operations systems include surface search and air search radars, electronic warfare and decoy launching systems, air traffic control systems, combat direction systems, display systems, and tactical trainers.

(g) Weapons systems include installed gun systems and gun weapons control systems, missile launchers, fire control systems, magazines and sprinklers, crew-served weapons, ammunition hoists and elevators, weapons handling systems and equipment.

2. General Inspection Criteria. The Board uses standards set forth in governing technical documentation (PMS, Builder Specifications, General Specifications for Overhaul (GSO), technical manuals, related OPNAV and NAVSEA publications and instructions, 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 systems and C4I 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.

f. Check adequacy of test equipment allowance to support maintenance of installed systems. Ensure the test equipment onboard 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.

h. Check the overall operational and material condition of electronic cooling water and electronic dry air systems to include minimum safe conductivity requirements and proper operation of all associated monitoring devices (e.g. flow, pressure, temperature, conductivity, and visual/audible local and remote alarms).

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, and external communications). Scheduling aircraft services is the presenting authority/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 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, C4I, operations, and weapons workcenters, workcenter points of contact, and spaces is also required for the inspectors.

c. For FCTs, qualified ship's force personnel will typically operate all equipment for checks and demonstrations, except during Acceptance Trials/Contractor Trials of conventionally-powered ships when contractor personnel may operate the equipment. INSURV inspectors shall be informed in advance if Sailors, other than those attached to the ship being inspected, will operate equipment during FCTs.

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

e. Prepare a communications plan to execute during the Trial. 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.

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

g. Have the following information and documentation available for use by the INSURV combat systems and C4I inspectors on arrival:

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

(a) Latest 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) Latest 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/bore report (if applicable).

(2) List of inoperative combat systems and C4I equipment, alarms, and a copy of the most recent eight o'clock report for combat systems, operations, C4I, and weapons, as applicable.

(3) Provide the following information concerning test equipment:

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

(b) Current percentage of Test Equipment Readiness from the most recent Special Purpose Electronic Test Equipment Readiness List (SPETERL).

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

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

(6) Annotated deficiency list from previous INSURV Trials.

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

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

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

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

(11) A list of outstanding SOVTs.

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, 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, OCSOT, ASW SCOT, etc.) should be conducted at the conclusion of the pre-underway phase to ensure systems are ready for underway demonstrations. These tests may be observed by INSURV Inspectors.

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. Combat Systems computer suite endurance run. On completion of required individual equipment/system checks and before the end of the second day of inspection, the SSDS/CDS/ACDS/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 onboard) must be notified prior to restart or reboot. If no inspectors are onboard, notify the cognizant ship's maintenance personnel and document the problem (e.g., type of fault, symptoms, any printout of memory, etc.) 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

comprehensive material and safety inspection will be conducted. The condition of all navigation lighting, radar/communications antennas, waveguides, antenna weatherproofing, grounding and topside connectors, antenna cutout switches, RF hazard labeling, cable standoffs, platform non-skid, preservation, climber safety rails, ladders, and life rails/ropes 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, to include complete handling paths, will be demonstrated during ATs only. 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. All ordnance handling equipment (OHE) and material handling equipment (MHE) will be inspected in accordance with NSTM and PMS standards during FCTs.

l. Magazine protective systems, to include magazine sprinkling systems, VLS Hazards, toxic gas dampers, associated alarms and visual/audio indicators (F, FD, FH, and DL circuits) will be demonstrated.

m. An integrated training scenario should be scheduled pre-underway to evaluate any embedded training system such as BFTT, BEWT, etc.

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 (m), (n) and (o). Emphasis should be on ensuring the ship's primary mission areas are fully demonstrated.

b. Execution of the schedule remains the responsibility of the Builder (ATs) and the ship (FCTs). Schedules will not be changed without approval of the responsible authority and the INSURV Senior Combat Systems Inspector.

c. Integrated Bridge Systems, Voyage Management Systems, steering by autopilot, and secondary conning station will be demonstrated (if equipped).

d. 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. Specific guidance for each mission area demonstration to be conducted is as follows:

a. Anti-Air Warfare.

(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 (n)).

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

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

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

(i) Establish a Link 11 net. The Link should be demonstrated on both UHF and HF frequencies.

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

(k) Demonstrate TACAN operation. Note ranges for DME/ bearing as reported by the aircraft on outbound and inbound legs.

(l) Demonstrate individual CDS/SSDS/ACDS/ADS displays in their primary functional mode of operation.

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

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

(o) Verify AN/SRQ-4 Hawklink operation with test set or live aircraft.

b. Undersea Warfare.

(1) Outside Assistance. None required. A ship-launched target (EMATT) will be tracked using both active and passive sensors.

(2) Functions Verified.

(a) Demonstrate underwater telephone (WQC-2) transmit and receive functions, all modes.

(b) Demonstrate Prairie-Masker system operation (included in graded ASW demonstration).

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

(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, as demonstrated by most recent ASW SCOT results.

(e) Demonstrate launch/retrieval capability of TACTASS.

(f) Demonstrate fathometer range accuracy on all scales, and proper operation of the chart recorder.

(g) Demonstrate expendable bathythermograph (XBT) and proper operation of the recorder.

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

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

(j) Verify AN/SRQ-4 HAWKLINK operation with test set or live aircraft.

(k) Inspect the sonar dome pressurization system.

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

c. Anti-Surface Warfare.

(1) Outside Assistance. Targets of opportunity will be used or the ASU portion of OCSOT may be conducted at INSURV’s 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) Crew-served weapons and their associated mounts will be demonstrated to verify firing areas, cutouts, cease-fire alarms, communications and safety devices.

d. Strike Warfare.

(1) Outside assistance. Assist ship for transmission of Op-Note.

(2) Functions Verified.

(a) Tomahawk capable ships will demonstrate the ability to establish required communications and conduct Tomahawk missile engagements.

(b) Demonstrate the ability to process a 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 onboard to conduct PMS checks.

(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 standards and using a calibrated meter.

(g) Conduct operational checks of crypto, secure voice, and terminal equipment with the assist ship or SESEF. Ensure 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 Meteorology.

(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 Countermeasures Exploitation System. Perform loop test of all 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 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 (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 SESEF ULM-4 range. (Ships achieving a satisfactory Quick-look Report within 60 days of the inspection will not be required to re-demonstrate active ECM systems during the underway phase – pre-coordination with INSURV is required.)

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

(c) Verify operation of each barrel of each chaff launcher from each firing position (CIC, Bridge, etc.) using a test round (decoys will not be fired). Check salvo warning alarms, test night loading lights. Check ready-service lockers.

(d) Conduct AN/SLQ-32 diagnostics tests and PMS checks.

(e) Conduct ESM sensitivity checks.

(f) Verify ESM bearing correlation with CDS/radar. Using services or targets of opportunity, the ship will demonstrate the ability to correlate ESM information with CDS/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 all installed Passive Countermeasures (PCMS) (tiles and blankets) if applicable.

(i) Verify operation of AN/SSQ-82 Mute and AN/SLA-10 blanking systems, including any required radar pre-triggers.

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

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 the inspector will:

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

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

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

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

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

vi. Determine if a waiver due to "special construction or purpose" appears warranted or is already documented and on hand.

(b) Demonstrate accuracy of electronic aids to navigation. At least four fixes shall be obtained and plotted using all installed navigational aids (GPS, RADAR, and 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.

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

(d) Verify visibility from pilothouse, flag bridge, open bridge and look-out stations. Verify signal searchlight operation and 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, Bow thruster/APU Indicators (if applicable), 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 bridge night vision devices (AN/PVS-8, etc.).

(h) Verify condition/operation of signal bridge installed (AN/SAT-2, yardarm blinkers, etc.) and portable (multi-purpose lights, etc.) equipment, halyards, and flag bags.

(i) Verify the availability and status of the following required documentation:

i. Suez Canal Tonnage Certificate (all ships).

ii. Panama Canal Tonnage Certificate (cargo/ passenger ships only).

iii. Navigation Certification.

iv. Magnetic Compass Record Book.

v. Profile Light Plan.

vi. Navigation Timepiece Record Book.

vii. Navigation Light Certificate.

viii. Azimuth Work Book.

(j) Verify condition/operation of installed electronic charting and/or voyage management systems (e.g. NAVSSI, ECDIS).

(k) Verify condition/operation of the EM Log/DSVL/ DEML.

(l) Verify condition/operation of the DRA/DRT/CADRT.

(m) Verify condition/operation of the bridge window washers, window wipers and window heaters.

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.

(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 GCCS-M environment.

(2) Functions verified.

(a) Demonstrate reliable network functionality (reference (p) 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 (p) 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.

(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).

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 (q) (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. For FCTs, 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. 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 should be grouped together. The space itinerary should include the following spaces:

(1) Berthing - staterooms, sea cabins, CPO, crew, and 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, and 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. 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, NWP 4-1.04 and NWP 3-50).

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

d. List of boats allowed/onboard with boat serial number, hoisting weight, age, and condition, and 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 the most recent test (NSTM 077, 583). Provide list of life raft serial numbers.

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 the FCT and in 60 to 65 fathoms of water during the AT, 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. Open and inspect (inflate) the installed inflatable life rafts on day 4 (if required) designated by the Deck Inspector on day 1. Verify total life raft capacity is 110% of accommodations (for CVs 100% plus 12 life rafts).

NOTE: The ship is responsible for making arrangements for the 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 the life rafts.

d. Pre-stage 10% of the onboard CO_2 abandon ship life preservers and inflate as designated by the Deck Inspector. Other deck life preserver types (MK-1, Inherently Buoyant) will be randomly inspected.

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 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, retractable bitts/chocks as applicable.

g. Demonstrate operation of vehicle ramps and side port/plenum door 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 a copy of the latest Fuel and Water Report.

(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) Copy of most recent underwater hull inspection.

(7) Radiac Policies and Procedures Manual.

(8) Hydrostatic test data for all CO_2, AFFF, and nitrogen cylinders.

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

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

2. Demonstrations.

a. Inport demonstrate operation of AFFF station relief valves, all main and auxiliary machinery space AFFF hose reel stations, and bilge sprinkling (stations with AFFF in recirc) prior to getting underway. Underway demonstrate all AFFF

systems including flight deck, hangar bay and bilge sprinkling systems. Samples will be taken to determine AFFF concentrations in accordance with PMS. 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. 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.

NOTE: Ship's speed shall not exceed 15 knots across the deck during AFFF flight deck or CMWD demonstrations. Appropriate foul weather gear will be made available, including rain suits, goggles and boots. Waterproof diagrams of the CMWD nozzles (including number and location) shall be available.

c. Test all fixed CO2, HALON and Aqueous Potassium Carbonate (APC) system controls, alarms, indicators and cutouts, including HALON and CO2 system time delays as well as ventilation shutdown and toxic gas damper interlocks.

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 the nozzle in solid stream position.

(e) One pump will be rigged and tested for deep suction (greater than 20 ft suction lift).

(2) Prior to INSURV arrival, lay out the electrical submersible pumps to facilitate the inspection of tending lines, electrical safety checks of the pumps, and verification of pump rotation. Leave the switch box open

for inspection (equipment is not to be energized until directed by the inspector).

e. 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.)

f. Demonstrate all remote operators which control main drain, secondary drain, sprinkler, and firemain isolation valves.

g. 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.

h. Demonstrate the main and secondary drainage systems, including eductors and remotely operated valves.

i. Test all Collective Protection System (CPS) zones to evaluate zone pressure, alarm set points, ventilation interlocks and air flow.

j. Test a representative number of high temperature, smoke, bilge flooding, and heat detection alarms.

k. Test decontamination station showers.

l. Test portable DC equipment (de-smoking fans, rescue equipment, emergency generator, etc.).

m. Test all breathing apparatus systems, including OBA or SCBA units, installed and portable cylinder charging systems and supplied air respirators. Demonstrate ability to determine air quality.

n. Test freshwater firefighting system and hosereels.

3. Inspections.

a. All damage control repair stations and decontamination stations.

b. A representative number of fire stations.

c. A representative number of portable CO2, AFFF, and PKP cylinders.

d. A representative number of accessible compartments, hull and superstructure. Examine structure for marked distortion, buckling or dishing, or evidence of weakness such as cracked welds.

e. Labeling on ventilation and piping systems.

f. Chemical warfare defense storeroom and personnel protective clothing.

g. Flammable storage locker.

h. Rescue and assistance chest/locker.

i. Representative number of watertight closures and firezone doors.

j. Representative number of EEBDs.

k. 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" (safety precautions apply for all tanks to be inspected).

l. Drop a firemain valve in the main firemain loop for inspection of firemain piping integrity and fouling. Ship’s force may provide digital photographs of the main firemain loop and the removed valve if accomplished within 90 days of the inspection. Photographs should capture the sealing surface of the valve and cross sectional view of the upstream and downstream piping. Photographs should include a scale or ruler. A copy of the tagout for the removal should also be provided.

APPENDIX H

AVIATION - AIR CAPABLE SHIPS

1. Inspection Criteria. The Aviation portion of an INSURV Trial 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 3700.1A.

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).

d. Pneumatic servicing systems.

e. Recovery Assist, Securing, and Traversing (RAST) system.

f. JP-5 fuel system and associated piping.

g. Hangar bay doors.

h. Flight deck and hangar bay markings, non-skid, lighting, and tie-downs.

i. Stabilized Glide Slope Indicator (SGSI) and Horizontal Reference System (HRS).

j. Helicopter control station.

k. Helicopter detachment workspaces.

4. Information Required Upon Arrival.

a. Aviation Facility Coordinator notebook, per Appendix H, paragraph 1. h.

b. For FCTs, CSMP from all associated divisions for aviation facility equipment.

5. Sequence of Events for Air Capable Ships.

a. Flight operations will not normally be conducted in conjunction with Acceptance Trials and are not required for any facet of the Aviation FCT. Normally all Aviation inspections can be completed within the first 2 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.

(1) Obtain and review the following:

(a) For FCTs, 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) Certification for flight operations.

(d) TACAN certification letter.

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

(f) Helicopter Operations bill.

(g) Wind system certification.

(h) Safety net weight test certificate.

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

(j) Hoist weight test results.

(k) Tie-down pull test results.

(l) 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 a small percentage of them will be chosen at random and inflated.

(c) Aircraft support equipment.

(3) Safety Net System. An inspection of the flight deck safety net system in both the up and down positions will be conducted.

(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 a level where the bottom of the tank can be seen clearly with a flashlight. 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 flaked 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.

(5) RAST System. The RAST system will be operated without aircraft and tested to the fullest extent using the RAST technical manual and PMS. A pull calibration test on the Rapid Securing Device (RSD) will also be accomplished. The RAST track plates may be lifted at the turnaround, tensioning deflector and the takedown sleeves for inspection.

(6) Hangar Bay.

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

(b) Hangar maintenance hoist(s).

(c) Pneumatic and electrical servicing (400Hz AC and 28VDC).

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

(e) Blade stowage demonstration may be required during Trials.

(f) Maintenance spaces.

(7) Control Tower

(a) Window wipers/washers.

(b) Ready deck status system.

(c) 5 MC and all MC boxes.

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

(e) Crash alarms.

(f) Lighting panels and motor driven rheostats.

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

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

(9) The Horizontal Reference System (HRS) will be operationally tested and inspected.

(10) Captain's Ready Deck Lighting System (Flight Deck Status Lights) will be tested at all stations.

(11) Stabilized Glide Slope Indicator (SGSI). The unit will be inspected with boot dropped and the pole check will be conducted.

(12) NAVAIR certified HOSS Camera will be inspected and tested.

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

c. Underway Phase. If any flight operations are conducted during a Trial, 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 (normally conducted in pre-underway phase).

(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 flight operations 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 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.

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 3700.1A.

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.

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, 400Hz, Hydraulic Service Cart Receptacles).

d. Pneumatic and aircraft air-start servicing stations.

e. AV-8 de-mineralized 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.

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 (VLA) to include the Fresnel lens (CVs/CVNs) and Stabilized Glide Slope Indicator (SGSI) (LHAs/LHDs).

n. Flight deck camera systems.

o. Squadron ready-rooms.

p. Primary flight control (PRI-Fly).

q. Airwing/Squadron workspaces.

r. Conflagration (CONFLAG) stations.

s. The Aircraft Intermediate Maintenance Department (AIMD) departmental workspaces and installed equipment.

4. Information Required Upon Arrival.

a. Copy of the Trial agenda/SOE.

b. Departmental coordinators and applicable phone or IVCS numbers.

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

d. The Aviation Facility Coordinator notebook and a copy of the following applicable certifications, letters, memorandums, and messages:

(1) Aviation Certification.

(2) JP-5 Fuel System.

(3) Arresting gear.

(4) Lighting and markings.

(5) Stabilized Glide Slope Indicator.

(6) Nose tow.

(7) Flight Deck Optical Landing System (FDOLS).

(8) Jet Blast Deflectors.

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

(10) Movable Optical Landing System (MOVLAS).

(11) Plat camera system.

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

(13) Hover Position Indicator (HPI) system.

(14) Wave-off light/cut systems.

(15) TACAN.

(16) Wind system.

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. AV-8 de-mineralized water system test data.

j. Helicopter Operations Bill.

k. A copy of those sections of the Commanding Officer's Letter of Concerns that apply to aviation systems.

l. For FCTs, copies of the ship’s CASREPS and items relating to aviation facilities or support equipment.

5. Sequence of Events.

a. Flight operations are not normally conducted in conjunction with Trials. 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 all applicable documents and certifications listed in Appendix I, paragraph 4 above.

(2) AEL Inventory and Inspection.

(a) 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 a small percentage from each division will be chosen at random for inflation.

(b) Aircraft support equipment.

(3) Safety Net/rail System and Catwalks. Inspection of the flight deck and catwalks safety net system in the down position.

(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. The service and transfer system will be operated and fuel samples taken and analyzed. The entire system will be inspected and tested. Normally all static checks will be accomplished prior to the underway phase and the fuel station pump-up checks to the flight deck and hangar(s) will be accomplished underway. The inspection of JP-5 tanks will be contingent upon tank refinishing history and previous inspection reports. Normally, at least one service and one storage tank will be inspected by visual examination through the tank top with fuel pumped down to a level where the bottom of the tank can be seen with a flashlight. Fuel tanks with satisfactory inspection results reported by a U. S. Navy tank inspector (TYCOM, PERA, ASIR, etc.) within the past 60 days may not be required to be inspected. Where JP-5 fuel tanks do not meet these requirements, the Aviation Inspector will normally inspect the tank(s) that 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.

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" (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) 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 flaked 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.

(5) 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 deck and equipment status lighting and communication system.

(h) Wind System. Visually inspect and test all displays/repeaters.

(6) Hangar(s).

(a) Proper stowage.

(b) Maintenance hoist(s).

(c) Electrical servicing stations (400Hz AC, 28 VDC and Hydraulic Service Cart Receptacles).

(d) Indoor lighting and darken ship circuitry.

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

(f) CONFLAG stations (check visibility and alarm systems).

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

(7) Flight Deck Visual Landing Aid (VLA) markings and non-skid deck covering will be inspected.

(8) Flight Deck Lighting

(a) The rotary beacon(s) and all flight deck lighting systems.

(b) SGSI installation. The system should remain on until completion of the system checks. The SGSI will be checked in gyro stabilized mode and ship's gyro mode, including the wave-off lights. A pole check alignment will be conducted.

(c) Inspect and test the Fresnel lens, associated lights, computer and landing signal officer's (LSO) HUD/ Platform, ILARTS, IFLOLS, etc.

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

(9) Captain's Ready Deck Lighting System will be tested at all stations.

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

(11) AV-8 de-mineralized water system test.

(12) 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 a functional test of the stanchions.

(13) Crash and Salvage.

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

(b) An inventory and check of aircraft slings.

(14) AIMD.

(a) Shop-to-shop equipment installation.

(b) Industrial shops.

(c) Squadron maintenance spaces and ready rooms.

c. Underway Phase. If flight operations are conducted during a Trial, the Senior Aviation Inspector will be available in primary, flight deck control or in catapult and arresting gear machinery rooms during flight operations as applicable. The following aviation equipment will be demonstrated/inspected underway:

(1) Flight Deck Lighting (when flight operations are conducted).

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

(b) The SGSI will remain on during flight operations.

(2) JP-5 Fuel System. The service and transfer system will be operated and fuel samples taken and analyzed. The entire system will be inspected and tested. Normally, the fuel station pump-up checks to the flight deck and hangar(s) will be accomplished underway. However, when authorized by ship's CO, all or a portion of the checks will be conducted prior to underway.

(3) Catapults. A full static inspection of equipment will be completed prior to any dynamic tests.

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

(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 carriers.

(g) JBDs and JBD pump rooms (if not completed prior to underway).

(h) Water brake voids.

(i) The catapult lube oil system.

(4) Arresting Gear. A full static inspection of equipment will be conducted prior to any dynamic tests.

(a) An operational check by 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.

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.

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. For FCTs, 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.

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 1 of the inspection. An electrician may be required to demonstrate the deep fat fryer over-temperature shunt trips, if there is no “test” button provided on the equipment.

d. All laundry equipment will be demonstrated.

APPENDIX K

MEDICAL AND DENTAL

1. Definition. The Medical inspection includes medical and dental material condition, water purification, and medical waste management.

2. Inspection Criteria.

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

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

d. Review medical/dental personnel medical waste management training.

e. Check installation workmanship and accessibility.

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

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).

(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 references (r) and (s), 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 performance of all pollution control equipment using PMS, NSTMs, system drawings, and operating procedures.

e. Inventory the oil and CHT spill response and clean-up kits.

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

g. 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.

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

e. Ensure oil spill and CHT response and containment kits are complete with all AEL items.

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

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

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

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

j. Provide Environmental Protection Council minutes. Personnel on council should be designated in the ship’s collateral duty list.

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. Inspection.

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

(1) A walkthrough of all spaces focusing on occupational safety and health conditions.

(2) Inspection of hazardous noise data and heat stress surveys of appropriate spaces.

(3) Inventory of Hazardous Material spill kits.

(4) Review of Gas Free Engineering and an inventory of Gas Free Engineering equipment and detector tubes.

(5) Review Tag Out Log(s).

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

(7) Review of all NAVOSH programs and training.

3. Preparation. The ship should have a working knowledge of reference (d). 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, sight, CHT, etc.

c. Copy of the ship's CSMP, option "D" (block 15 "Safety") printout that was reviewed 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. If the Web-Enabled Safety System (WESS) is being used, Mishap reports will be reviewed using that system.

f. File of Accident and Injury reports (Safety Officer’s copies) for the last five years. This will be compared to the SAMS medical sick call log. If the Web-Enabled Safety System (WESS) is being used the Log of Work-Related Injuries and Illnesses will be reviewed.

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

h. Lead control plan, if required by the Industrial Hygiene Survey.

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 NAVOSH required safety topics are conducted. Annual required NAVOSH training (such as electrical safety) will be reviewed based on how the ship documents this training (training plan, listing, schedule, or muster sheets, etc.). Traffic Safety and Off-Duty Safety training will also be reviewed.

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 Coordinator (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 that identifies the location of all flammable lockers.

APPENDIX N

VENTILATION

1. Definition. The ventilation inspection includes material condition of fan rooms and air flow alarms; design air flow will also be measured in sanitary spaces (heads, showers, and water closets) and occupational health spaces (Hazmat storerooms/issue rooms, battery charging areas, oil labs, pump rooms (JP-5, CHT, MOGAS), workshops, etc.).

2. Inspection Criteria.

a. Check fan rooms are in good material condition and are not used for unauthorized storage.

b. Inspect air flow alarms for proper operation and correct alarm set point.

c. Check for proper exhaust ventilation rates in sanitary spaces.

d. Check for proper exhaust ventilation rates in occupational health spaces.

3. Preparation.

a. The Builder/Ship should provide the following items to the ventilation inspector(s) prior to arrival:

(1) A space listing that identifies the location of all fan rooms.

(2) A space listing (such as an EGL) that identifies the location of all installed air flow alarms and their associated sensors.

(3) A space listing that identifies the location of all occupational health spaces (HM storerooms/issue rooms, battery charging areas, oil lab, JP-5 pump rooms, CHT pump rooms, welding shops, etc.).

(4) A space listing that identifies the location of all heads, showers, and water closets.

b. The Builder/Ship is to provide a knowledgeable IC person/technician to demonstrate the air flow alarms.

APPENDIX O

CORROSION/STRUCTURAL

1. The two principle corrosion control processes are preservation coatings (e.g. paint) and protective systems (e.g. cathodic protection, grounding strap applications throughout the ship).

2. Corrosion inspections will focus on, but will not be limited to, the status of preservation, structural wastage, cathodic protection, and vapor corrosion inhibitors.

3. The following areas will be assessed by INSURV during the Corrosion inspection:

a. Top side exterior areas: bulkheads, cable ways, topside machinery/equipment and foundations, antenna systems and foundations, fanrooms, uptakes, exterior doors, and non-skid.

b. Interior: fan rooms, bilges, machinery/equipment and foundations, AFFF stations, aft steering, magazines, berthing and sanitary spaces, food service spaces, cross flooding ducts, chain locker, tanks, and voids.

4. Preservation conditions will be defined according to the American Society for Testing and Materials (ASTM) D610 standard test methods for evaluating the degree of rust on painted steel surfaces.

5. Thirty to Sixty days prior to the Trial the following correspondence is to be forwarded to INSURV via Email:

a. Trial corrosion control POC and CSMP, per MIP 6300 series maintenance index page, for preservatives and coverings.

b. History of hull surface painting, per NSTM 631 preservation of ships in service Vol II.

c. Long/short term painting and preservation plan (paint schedule), per NSTM 631 preservation of ships in service Vol I and II.

d. Previous two years cathodic protection logs, per JFFM Vol VI chapter XVII.

e. All dive reports since last dry docking.

f. List of all VCI emitter locations onboard ship IAW PMS contained in MIP 6300 series.

6. Structural inspection.

a. Provide all Hull inspection reports required by class advisory (e.g. DDG rudder/bow structure CLADS) or TYCOM/NAVSEA direction (e.g. thin hull surveys on FFGs and Structural surveys on CGs). Include PMS results (e.g. aluminum superstructure cracking inspections on CGs).

b. Provide all DFS that pertain to hull/deck/bulkhead/ducting/piping repairs.

c. Provide status of tank inspections.