



Machinery Space Firefighting: National Security Cutter (WMSL) Tactics, Techniques, and Procedures (TTP)



Force Readiness Command
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COAST GUARD TACTICS, TECHNIQUES, AND PROCEDURES 3-91.8A

Subj: MACHINERY SPACE FIREFIGHTING: NATIONAL SECURITY CUTTER
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- Ref:
- (a) Naval Ships' Technical Manual (NSTM), Chapter 555, Volume 1: Surface Ship Firefighting, S9086-S3-STM-010 (series)
 - (b) Naval Ships' Technical Manual (NSTM), Chapter 079, Volume 3: Damage Control Engineering Casualty Control, S9086-CN-STM-030 (series)
 - (c) Machinery Space Firefighting Doctrine for Class Bravo Fires, COMDTINST M9555.1 (series)
 - (d) Naval Ships' Technical Manual (NSTM), Chapter 077, Personnel Protection Equipment, S9086-CL-STM-010 (series)
 - (e) Naval Ships' Technical Manual (NSTM), Chapter 074, Volume 3: Gas Free Engineering, S9086-CH-STM-030 (series)

1. PURPOSE. To provide Coast Guard personnel responding to a machinery space fire onboard a National Security Cutter (WMSL-class) with clear tactics, techniques, and procedures (CGTTP).
2. ACTION. This CGTTP publication applies to all WMSL. Internet release authorized.
3. DIRECTIVES/TTP AFFECTED. Machinery Space Firefighting: National Security Cutter (WMSL), Tactics, Techniques, and Procedures CGTTP 3-91.8 is canceled upon release.
4. DISCUSSION. This TTP publication provides specific equipment, systems, and procedures to prevent, control, extinguish, and overhaul fires in WMSL machinery spaces.
5. MINOR CHANGES. This TTP publication uses Adobe Acrobat stamps to indicate revisions. For each revision listed below, there is a stamp in the left margin next to the section with a revision. To display the location of all stamps in the PDF file, select Comments/Comments List. Click anywhere in a comment row to move between revisions, or use the scroll bar to scroll through the revisions. This revision includes the following changes:
 - a. Chapter 2, Fundamental Principles, Section B
 - (1) Updated to conform to the latest information from the USCG Health, Safety and Work-Life Service Center (HSWL SC).
 - b. Chapter 8 Reentry and Firefighting, Section E
 - (1) Reversed responsibilities of Repair 2 and Repair 3.

- c. Chapter 8 Reentry and Firefighting, Section F
 - (1) Reversed responsibilities of Repair 2 and Repair 3.
 - d. Appendix C, List of Spaces Requiring Subsections
 - (1) Changed reentry point door designators for Incinerator Room and JP-5 Pump room.
 - e. Appendix G, SSDG Room Underway Checklists
 - (1) Reversed responsibilities of Repair 2 and Repair 3.
 - f. Appendix H, Incinerator Room Underway Checklists
 - (1) Reversed responsibilities of Repair 2 and Repair 3.
 - g. Appendix I, SSDG Room Underway Checklists
 - (1) Reversed responsibilities of Repair 2 and Repair 3.
 - h. Appendix M, SSDG Room Inport Checklists
 - (1) Reversed responsibilities of Repair 2 and Repair 3.
 - i. Appendix N, Incinerator Room Underway Checklists
 - (1) Reversed responsibilities of Repair 2 and Repair 3.
 - j. Appendix O, JP-5 Pump Room Inport Checklists
 - (1) Reversed responsibilities of Repair 2 and Repair 3.
6. **DISTRIBUTION.** FORCECOM TTP Division posts an electronic version of this TTP publication to the CGTTP Library on CGPortal. In CGPortal, navigate to the CGTTP Library by selecting **References > Tactics, Techniques, and Procedures (TTP)**. FORCECOM TTP Division does not provide paper distribution of this publication.
7. **FORMS/REPORTS.** None.
8. **REQUEST FOR CHANGES.** Submit recommendations for TTP improvements or corrections via email to FORCECOM-PI@uscg.mil or through the TTP Request form on CGPortal. In CGPortal, navigate to the TTP Request form by selecting **References > Tactics, Techniques, and Procedures (TTP) > TTP Request**.

Send lessons learned applicable to this TTP publication via command email to FORCECOM TTP Division at CMD-SMB-CG-FORCECOM.

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By Direction of Commander,
Force Readiness Command

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Chapter 1: Introduction

Introduction

This chapter overviews the contents of this tactics, techniques, and procedures (TTP) publication. It also defines the use of notes, cautions, and warnings in TTP publications.

In This Chapter

This chapter contains the following sections:

| Section | Title | Page |
|---------|-------------------------------|------|
| A | Introduction | 1-2 |
| B | Notes, Cautions, and Warnings | 1-3 |

Section A: Introduction

A.1. Introduction The machinery space class bravo fire is one of the most hazardous shipboard casualties, both to human life and machinery. This TTP addresses fire prevention, firefighting systems capabilities and limitations, considerations for choosing firefighting equipment, and actions necessary inside and outside the affected space, if a major fuel/lube oil leak or a fire occurs.

This TTP provides a basis for proper decisions and actions in response to a machinery space fire or major fuel/lube oil leak. This TTP provides best practices and procedures to prevent, control, extinguish, and overhaul a class bravo fire in a machinery space. This does not replace good judgment, a familiarity with firefighting systems and equipment, and an understanding of which agent or firefighting system to use for different fires.

WHEN A FIRE STARTS, IT IS TOO LATE TO READ THIS TTP!

A.2. Deviations This TTP publication cannot cover every scenario that might arise. Such cases might result in the need to deviate from guidance in this publication. You may deviate from the TTP as necessary to complete the task with greater safety, effectiveness, or efficiency. Do not take such deviations lightly. Temper any decision to deviate with maturity and a complete understanding of the mission, members' capabilities, and equipment. Whenever possible, consult your unit chain of command before deviating. Report TTP adjustment needs per the Request for Changes paragraph located in the letter of promulgation.

Section B: Notes, Cautions, and Warnings

B.1. Overview The following definitions apply to notes, cautions, and warnings found in TTP publications.

NOTE: **An emphasized statement, procedure, or technique.**

CAUTION: **A procedure, technique, or action that, if not followed, carries the risk of equipment damage.**

WARNING: *A procedure, technique, or action that, if not followed, carries the risk of injury or loss of life.*

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Chapter 2: Fundamental Principles

Introduction This chapter discusses general fire hazards and prevention.

In This Chapter This chapter contains the following sections:

| Section | Title | Page |
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| A | Fire Prevention | 2-2 |
| B | Hazards | 2-3 |

Section A: Fire Prevention

A.1. Risk Mitigation

Preventive measures significantly reduce the risk of fire in machinery spaces. Regular and frequent inspections by the fire marshal include, but are not limited to, the items below:

- Properly stow and protect all combustibles.
 - Routinely test and inspect portable and installed fire suppression systems and equipment, including after repairs, as per applicable preventative maintenance requirements and consistent with good engineering practices.
 - Reduce the likelihood of fire by:
 - Minimizing combustibles.
 - Performing frequent and thorough watch standing rounds.
 - Exercising with frequent fire drills.
 - Educating all hands to preclude and eliminate fire hazards.
 - Enforce the following fire prevention policies and practices:
 - Maintain flange shields on required flammable liquid piping.
 - Maintain proper covers on flammable liquid strainers; keep sounding tube caps in place and isolation valves closed.
 - Take immediate action to stop and repair all oil leaks.
 - Clean up oil spills and leaks.
 - Keep ventilation ducts free of oily residue.
 - Keep bilges free of oil and trash.
 - Empty flammable/trash cans daily.
 - Prevent stockpiling excess or unauthorized flammables.
 - Do not use uptake spaces to store combustible materials.
 - Properly maintain all firefighting equipment.
 - Operate and maintain systems and equipment per applicable manuals and consistent with good engineering practice.
 - Properly maintain all machinery space damage control closures and fittings.
 - Follow electrical and mechanical tag out procedures.
-

Section B: Hazards

B.1. Lead Acid Batteries

Lead acid batteries can be a serious hazard during and after a machinery space fire. Hydrogen gas, given off by batteries, is combustible and can be explosive. As the batteries become hotter, they give off more gas, increasing the danger. Battery acid is very corrosive. Battery acid leaks from a meltdown or explosion could be harmful to the ship and/or firefighters. Using water on a battery fire can also cause an explosion. Additionally, salt water mixing with sulfuric acid gives off chlorine gas, which is toxic. The following machinery spaces contain lead acid batteries:

- Auxiliary machinery room (AMR), two 8-D batteries in rear of #1 SSDG (5-36-01-E).
- Forward main machinery room (FMMR), two 8-D batteries in rear of #2 SSDG (5-44-01-E).
- Ship's service diesel generator (SSDG) #3 room, two 8-D batteries in rear of #3 SSDG (2-76-5-Q).

WARNING:

Extinguish lead acid battery fires with carbon dioxide (CO₂) portable extinguishers only. Additional corrective responses are any normal form of firefighting.

WARNING:

Using water (H₂O) on a lead acid battery fire might cause an explosion. Always use self-contained breathing apparatus (SCBA) when combating battery fires due to the hazardous gases given off. If using water, maintain a minimum of 4 feet from the fire and angle spray at 30-60 degrees. After any fire near lead acid batteries, a gas free engineer (GFE) tests for the presence of chlorine gas.

WARNING:

Acid from leaks is very corrosive. Use extreme caution and appropriate personal protection.

**B.2.
Lead-Based
Paint, Asbestos,
and PCBs**

Cutter crews must be aware of potential exposure risks from fires and other emergency events that disturb asbestos, lead, or polychlorinated biphenyls (PCBs). Damage control operations, including access and overhaul activities, can cause significant damage to asbestos-containing material and lead-containing paint.

Cutters do not have the equipment or expertise to certify a space safe for re-occupancy by unprotected personnel after the release of asbestos fibers, lead dust, or after formation of dioxins when PCBs burn.

Therefore, after a fire or other event that might have damaged or disturbed asbestos containing material, lead, or PCBs, do the following:

- Direct exhaust ventilation for smoke clearance downwind, toward unoccupied areas, and restrict access to these locations.
- After firefighting actions, place contaminated clothing (i.e., firefighter's ensemble (FFE) or other exposed items) in trash bags and seal the bags.
- Restrict access to affected compartments.
- Only enter these compartments while wearing SCBAs and protective clothing.
- Contact the Health, Safety, and Work-Life Service Center (HSWL SC) for assistance with air monitoring and surface wipe sampling to certify spaces safe for re-entry.

WARNING:

Air that is exhausted from compartments to clear smoke after a fire has affected these materials probably contains these hazards and increases exposure risks for unprotected personnel near exhaust locations.

Chapter 3: Personnel Actions

Introduction This chapter discusses actions and priorities for various personnel upon discovery of a machinery space leak or fire.

In This Chapter This chapter contains the following sections:

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| A | Underway Actions | 3-2 |
| B | In Port Actions | 3-6 |
| C | Communications | 3-8 |

Section A: Underway Actions

A.1. Person Discovering the Leak/Fire

1. Report the leak/fire, location, source/cause, and actions taken.
 2. Request the officer of the deck (OOD) sound the alarm and make an appropriate pipe.
 3. Secure affected equipment and the source of the leak.
 4. Request negative ventilation.
 5. Take initial action to combat the leak/fire.
 6. If a leak is uncontrollable, fire becomes out of control, or escape is threatened, evacuate the space and activate the water mist system and/or aqueous film forming foam (AFFF) system as applicable.
-

A.2. Engine Room Watchstanders

1. Report the leak/fire, location, source/cause, and actions taken.
 2. Secure affected equipment and the source of the leak.
 3. Request negative ventilation.
 4. As directed by engineer of the watch (EOW), take initial action to combat the leak/fire.
 5. If leak is uncontrollable, fire becomes out of control, or escape is threatened, evacuate the space and activate water mist system and/or AFFF system as applicable.
-

A.3. Engineer of the Watch

- Oversee engineering watchstanders and ensure safe operation of engineering equipment.
- Perform initial actions for a lube/fuel oil leak/fire and subsequent mitigation actions.
 - If leak is uncontrollable or fire is out of control, turn over efforts to damage control assistant (DCA).
 - Brief DCA on firefighting efforts, actions taken to isolate space, plant status, personnel status, status of firefighting equipment, etc.
-

A.4. Officer of the Deck (OOD)

Primary concern is overall safety of the ship and crew.

- Sound general emergency.
 - Retain control of the main circuit (IMC) until damage control central (DCC) comes online.
 - Continue to navigate the ship safely.
 - Slow the ship and maneuver to keep the wind at 30° relative in order to provide the most stable platform to enable firefighters to control damage, fight the fire, and facilitate smoke control.
 - Slow as much as possible to allow for P-100 suction.
 - Notify the EOW of special maneuvering situations that might prohibit normal casualty control procedures or require main propulsion machinery to remain on line (i.e., restricted maneuvering rules in effect).
 - Notify other vessels in the area.
-

A.5. Damage Control Assistant (DCA)

Assist the EOW in any manner possible when general emergency is set.

- Take actions independently in support of EOW firefighting efforts.
 - Assume damage control and firefighting responsibilities from the EOW after a fire is declared out of control, or leak is deemed uncontrollable, and the machinery space evacuated.
-

A.6. Damage control training team (DCTT)/ Rapid Response Personnel (RRT)

Duty damage control training team and rapid response team (DCTT/RRT) provides damage control (DC) training and assists the engineering watchstander in evaluating the situation and taking initial actions.

A.7. Repair Locker Leader (RLL)

- Muster all assigned personnel.
 - Ensure personnel entering the smoke control zone wear an SCBA unless the atmosphere is certified safe for reentry without SCBAs.
 - Man all AFFF and water mist systems and activate all fixed fire-extinguishing systems when appropriate.
 - Pass SCBA activation times and number of personnel to DCC.
 - Repair 2 locker is the primary locker for leak/fire in the aft main machinery room (AMMR), FMMR, AMR, JP-5 pump room, incinerator room, and #3 SSDG room.
-

**A.8.
On-Scene Leader
(OSL)**

- Take charge of damage control efforts at the scene.
 - Verify that fire party members have properly donned required personal protection.
 - Pass SCBA activation times and the number of personnel to the RLL and coordinate relief of firefighters.
 - Repair 2 OSL is primary for leak/fire in AMMR, FMMR, AMR, JP-5 pump room, incinerator room, and #3 SSDG room.
-

**A.9. Repair
Electrician**

- Electrically isolate affected space as per Tab 13 of this TTP.
 - Aft main machinery room, [Tab 13](#) (Appendix D)
 - Forward main machinery room, [Tab 13](#) (Appendix E)
 - Auxiliary machinery room, [Tab 13](#) (Appendix F)
 - Ship service diesel generator room, [Tab 13](#) (Appendix G)
 - Incinerator room, [Tab 13](#) (Appendix H)
 - JP-5 Pump room, [Tab 13](#) (Appendix I)
 - Set ventilation as per Tab 11 of this TTP.
 - Aft main machinery room, [Tab 11](#) (Appendix D)
 - Forward main machinery room, [Tab 11](#) (Appendix E)
 - Auxiliary machinery room, [Tab 11](#) (Appendix F)
 - Ship service diesel generator room, [Tab 11](#) (Appendix G)
 - Incinerator room, [Tab 11](#) (Appendix H)
 - JP-5 Pump room, [Tab 11](#) (Appendix I)
 - When directed, assess damage to electrical and ventilation systems in affected spaces.
 - With EO permission and satisfactory assessment, start the ventilation to de-smoke and test the atmosphere.
-

**A.10. Battle
Dressing Station
(BDS)**

- Maintain onboard medical equipment.
- Provide first aid and medical treatment to injured crewmembers.
 - Update and procure equipment as required.
 - Monitor firefighters for signs of heat stress, injuries, etc.
 - Provide room temperature fluid replacement, snacks, and dry clothing/blankets to personnel.
-

**A.11. Flight
Deck Staging
Area, Person-in-
charge**

Establish communications with DCC and RLLs.

- Muster non-essential (extra) personnel. Provide relief fire party personnel as requested.
 - Investigate/set topside fire/smoke boundaries and make reports to RLL.
-

**A.12. P-100
Pump Team**

Establish communications with DCC and RLLs.

- Rig a minimum of two P-100s in tandem on the fantail and connect via jumper lines to the fire main. Upon notification, energize P-100s to provide emergency firefighting water to the firemain if there is a loss of electrical power.
 - Refill SCBA bottles as directed. Prepare breathing air compressor (BAC) in case MAKO compressor is not available.
-

Section B: In Port Actions

B.1. Person Discovering the Leak/Fire

1. Report the leak/fire, location, source/cause, and actions taken.
 2. Request the Quarterdeck sound the alarm and make an appropriate pipe.
 3. Secure affected equipment and the source of the leak.
 4. Set negative ventilation.
 5. Take initial action to combat the leak/fire.
 6. If leak is uncontrollable, fire becomes out of control, or escape is threatened, evacuate the space and activate Water Mist System and/or AFFF System as applicable.
-

B.2. Quarterdeck Watch

1. Sound the General Alarm and make the appropriate pipe.
 2. Notify other vessels in the area, local fire department, and command.
 3. Carry out memorandum of agreement (MOA) if applicable.
 4. Muster off-duty personnel that are onboard and use them as directed by the RLL.
 5. Provide relief fire party personnel when requested.
-

B.3. Rapid Response Team (RRT)

The EOW and engineering control room (ECR) watchstander make up the RRT. They access the affected space, analyze the situation, and take initial action, if possible.

- If access cannot be made, the leak is uncontrollable, or the fire is out of control, secure the space and activate water mist or AFFF, as applicable.
 - EOW assumes the OSL position.
 - ECR watchstander reports to in port watch quarter station bill (WQSB).
-

B.4. Engineer of the Watch (EOW)

- Upon discovery or notification of a leak/fire, provide rapid response to secure the source of leak and perform initial actions as necessary to minimize casualty.
 - If source of leak is uncontrollable or fire is out of control, evacuate space and activate water mist/AFFF system as applicable.
 - Establish communications with RLL and assume OSL.
-

B.5. Officer of the Day (OOD)

Upon discovery or notification of a leak/fire, sound General Emergency and assume RLL duties.

B.6. Junior Officer of the Day (JOOD)

Upon discovery or notification of a leak/fire, report to the primary repair locker.

B.7. Repair Electrician

- Electrically isolate affected space as per Tab 10 of this TTP.
 - Aft main machinery room, [Tab 10](#) (Appendix J)
 - Forward main machinery room, [Tab 10](#) (Appendix K)
 - Auxiliary machinery room, [Tab 10](#) (Appendix L)
 - Ship service diesel generator room, [Tab 10](#) (Appendix M)
 - Incinerator room, [Tab 10](#) (Appendix N)
 - JP-5 Pump room, [Tab 10](#) (Appendix O)
 - Set ventilation as per Tab 8 of this TTP.
 - Aft main machinery room, [Tab 8](#) (Appendix J)
 - Forward main machinery room, [Tab 8](#) (Appendix K)
 - Auxiliary machinery room, [Tab 8](#) (Appendix L)
 - Ship service diesel generator room, [Tab 8](#) (Appendix M)
 - Incinerator room, [Tab 8](#) (Appendix N)
 - JP-5 Pump room, [Tab 8](#) (Appendix O)
 - When directed, assess damage to electrical and ventilation systems in affected spaces.
 - Upon satisfactory assessment and with EO (or EOW, when in port) permission, reenergize ventilation for de-smoking and atmospheric testing.
-

B.8. Off-Duty Personnel

When general emergency sounds, off-duty personnel muster on the quarterdeck, or place designated by the OOD, and stand by to assist as necessary.

Section C: Communications

C.1. Underway Communications Use standard damage control communications in fighting machinery space fires. Brief the damage control organization on the exact location and cause of the fire, status of plant securing and isolation, and personnel status. If possible, the EOW or space supervisor briefs DCC and they pass the word to others in the damage control organization.

Establish communications as per [Appendix B: Machinery Space Firefighting Communications Plan](#).

NOTE:

Portable radios may be primary communications for all watch stations underway. Portable radios eliminate the need for the OSL and investigators to write messages. Radios provide a fast and accurate way to communicate between stations.

C.2. In port Communications Portable radios are the primary means of communications between the OSL and the repair locker. If portable radios cannot be used, the OSL communicates directly with the repair locker via message blanks. If message traffic cannot be maintained, use any available means to maintain communications between the repair party and the repair locker.

NOTE:

Record all reports received in the repair locker on message blanks for both plotting and maintaining a record of communications. Writing message blanks is a fundamental damage control skill that must not be lost.

Chapter 4: Personnel Protection

Introduction This chapter discusses personnel protective clothing, equipment, and procedures.

In This Chapter This chapter contains the following sections:

| Section | Title | Page |
|---------|----------------------|------|
| A | Personnel Protection | 4-2 |

Section A: Personnel Protection

A.1. General The proper use of personal protective clothing, equipment, and procedures reduces the risk of injury. The attack team members each wear a firefighter's ensemble (FFE). Repair locker leaders rotate personnel to prevent heat exhaustion and monitor self contained breathing apparatus (SCBA) activation times. Rotate firefighters from the fire area after a maximum of 30 minutes, or when the SCBA low air alarm sounds. Recycle FFEs to fresh personnel.

WARNING:

Per reference (a), Surface Ship Firefighting, Naval Ships' Technical Manual, Chapter 555, Volume 1, paragraph 7.5.10, Reliefs, "In a high-heat-stress-environment, personnel endurance in a firefighter's ensemble may be limited to less than 10 minutes. The maximum time for personnel to function in a firefighter's ensemble is 30 minutes."

A.2. Clothing Reentering a machinery space that was evacuated because of a fire requires protective clothing for firefighters.

A.2.a.
Firefighting
Ensembles All members of the attack team wear FFE, which includes:

- SCBA.
- Fire protective gear.
- Firefighter's hood.
- Damage control helmet.
- Firefighter's gloves.
- Firefighter's boots.

A.2.b. Fire
Retardant Utility
Coverall Personnel not exposed to an immediate threat of injury from flash or flame, do not require fire protective equipment.

A.2.c.
Battle Dress All other personnel don proper battle dress and flash gear at a minimum safety protection.

WARNING:

"Corfam" shoes melt and cause severe foot injuries during fires. Since emergencies happen unexpectedly, do not wear "Corfam" shoes aboard ship, except at the commanding officer's discretion for inspections.

A.3. SCBA Management

Personnel entering the smoke control zone wear an SCBA unless the atmosphere is certified safe for reentry without SCBAs. Activate SCBAs when smoke is present or by order of the on-scene leader (OSL). The OSL reports light-off times to the repair locker, which then reports it to DCC. Each WMSL 418' has 33 SCBAs and 66 spare SCBA bottles onboard.

The OSL inspects firefighters for proper donning and functioning of FFEs and SCBAs before ordering personnel to enter a space with an unsafe atmosphere.

Changing SCBA bottles. The DCA determines the change-out location. The P-100 pump team refills depleted SCBA bottles.

Passing SCBA Information. The OSL sends a message to the repair locker stating:

- Number of personnel entering the space.
- SCBA start time.
- Fire party positions filled (i.e., plug man, boundary man, hose team, etc.).

A.4. Reliefs

The RLL manages the relief process, which includes relief SCBA men and firefighters.

The relief process starts with the OSL, then the attack team leader, nozzle man, hose tenders and plug man. Relieved fire party members proceed to a location determined by the DCA (or OOD in port) for doffing of SCBAs and FFEs.

The first relief fire party comes from Repair 3.

Properly manning all fire billets consumes most FFEs/SCBAs in the locker, so first relief party should come from the other locker so that they are properly dressed out with all gear. Subsequent relief parties should continue to pull from alternating repair lockers.

Use additional personnel (Repair 8, etc.) to augment fire parties as needed, based on personnel stress and stamina. Once a relief fire party is properly dressed out, they quietly muster and stand by while the repair locker leader reports to the OSL that a relief fire party is available.

**A.5. Firefighter's
Heat Stress
Prevention**

The OSL monitors the fire team for signs of heat exhaustion, heat stroke, and excessive fatigue. Signs to watch for are:

- Staggering and disorientation.
- Difficulty breathing or hyperventilation.
- Overall lack of responsiveness.

Relieved fire team members muster on the flight deck. If a flight deck muster is impractical, muster on the fantail. The senior fire team member musters or accounts for relieved personnel and ensures they rest, drink plenty of water (not soda), and seek necessary medical attention. When possible, make snacks available to relieved personnel. Allow firefighters to rest for a period equal to the time they spent firefighting.

Relax FFE while resting and while waiting to reenter affected spaces to minimize heat stress caused by sweat flashing off into steam.

Chapter 5: Firefighting Systems

Introduction

This chapter discusses firefighting systems and equipment available on Legend-class cutters. Each has capabilities and limitations that must be understood by firefighting personnel to ensure quick and proper selection of equipment.

In This Chapter

This chapter contains the following sections:

| Section | Title | Page |
|---------|---------------------------------------------|------|
| A | Water (Firemain System) | 5-2 |
| B | Aqueous Film Forming Foam | 5-3 |
| C | Water Mist System | 5-5 |
| D | Carbon Dioxide | 5-7 |
| E | Dry Chemical | 5-8 |
| F | Auxiliary Systems | 5-9 |
| G | Choosing the Correct Firefighting Equipment | 5-10 |

Section A: Water (Firemain System)

A.1. Water

Water is useful for cooling hot bulkheads in spaces adjacent to a fire and for extinguishing ordinary combustible (class alpha) fires. AFFF production requires water. When using water to fight a class charlie fire, avoid a solid stream. A 30-60 degree spray pattern is best.

Five, 1000 gpm, centrifugal fire pumps on board can each be started in local manual, remote pushbutton, automatic when AFFF system is started, or remotely from the machinery monitoring system. Locations and controls are as follows:

- #1 Fire pump is located in bow thruster machinery room 3-10-0-Q, port side.
 - Local controller, 3-14-0 in bow thruster machinery room.
 - Remote pushbutton, 2-16-1 in boatswain shop and storeroom 2-10-0-A
- #2 Fire pump is located in AMR 5-36-01-E, starboard side forward.
 - Local controller, 4-38-1 in aux machinery room.
 - Remote pushbutton, 2-39-7 outside AMR 2-38-1-L.
- #3 Fire pump is located in FMMR 5-44-01-E, forward of #1 SSDG.
 - Local controller, 4-46-1 in fwd main machinery room.
 - Remote pushbutton, 2-47-1 in passage 2-44-0-L, aft of FMMR entrance
- #4 Fire pump is located in AMMR 5-52-01-L, outboard of #2 MDE.
 - Local controller, 4-61-2 in aft main machinery room.
 - Remote pushbutton, 2-63-2 in passage 2-52-01-L, fwd of AMMR entrance.
- #5 fire pump is located in pump room 5-72-01-E, starboard side.
 - Local controller, 4-74-1 in pump room.
 - Remote pushbutton, 2-74-2 in passage 2-70-2-L, at hatch leading down to pump room

A.2. Backup Pressurization

Use two P-100 fire pumps, rigged in tandem, to pressurize the firemain to 100-125 psi when the firemain loses pressure. Man these secondary pumps and establish communications with Repair 3 via portable radio.

Section B: Aqueous Film Forming Foam

B.1. Aqueous Film Forming Foam

AFFF is a surfactant produced by mixing water with AFFF concentrate using either a fixed balanced pressure foam-proportioning unit, or an inline eductor with a hose line and vari-nozzle.

When making a hose line attack to extinguish a flammable liquid fire, use AFFF if available. When a hose line attack is needed to extinguish a flammable liquid fire, and water fog is used as a primary extinguishing agent, the time required to fight the fire is longer, more firefighters are needed, increased fire damage expected, and reflash risk is greater than if using AFFF. If AFFF is expended, use water fog. Apply AFFF from:

- The installed AFFF bilge flooding system in the AMR, AMMR, and the FMMR.
- The installed AFFF sprinkler system in the hanger, incinerator room, JP-5 room, and #3 SSDG room.
- Reentry hose reels located at the starboard side entrance to AMR, and port side entrances of FMMR, AMMR, and a soft hose at #3 SSDG room.
- A separate fireplug and hose with portable inline eductor and vari-nozzle. A good match between flow rate of the vari-nozzle and eductor is required for efficient foam application.

NOTE:

The incinerator room, JP-5 pump room, and #3 SSDG machinery space 2-76-5-E do not have bilges. Dumped AFFF sloshes around on the deck, with whatever liquid originally leaked. This creates a very slippery deck, and a challenging situation to deal with when underway.

Activate the AFFF sprinkling system when there is a major oil leak or class bravo fire.

- Operate AFFF sprinkling no longer than 4 minutes to prevent running the system dry.
- Do not operate the system if the concentrate level is not visible in the tank sight glass.
- Prompt manning of the AFFF proportioner station is essential to speed tank replenishment.

Use AFFF bilge/overhead sprinkling to:

- Vapor-secure the bilge to minimize potential for a fire or reflash during and after a class bravo fire or due to a major oil leak.
- Extinguish bilge fires independently.
- Augment the water mist system for fighting a machinery space fire.

Activate AFFF bilge/overhead sprinkling from the following locations:

- The machinery monitoring system for all machinery spaces.
- For AMMR:
 - Port vestibule 2-60-2-L. (Pushbutton for AFFF reentry hose reel located in vestibule also).
 - Starboard vestibule 2-60-3-L.
 - At the bottom of port escape trunk 4-52-2-T.
- For FMMR:
 - Port vestibule 2-44-2-L.
(Pushbutton for AFFF reentry hose reel located in vestibule also).
 - Starboard vestibule 2-44-1-L.
- For AMR:
 - Vestibule 2-38-1-L.
(Pushbutton for AFFF reentry hose reel located in vestibule also).
 - In VCHT.
 - Lower level AMR, port side.
- #3 SSDG room:
 - In passage 1-76-0-L just aft of QAWTD 1-80-1.
 - In passage 2-76-3-L just aft of QAWTD 2-76-3.
- Incinerator room:
 - In passage 1-44-0-L just aft of QAWTD 1-48-1.
- JP-5 pump room:
 - In pump room 3-64-0-E just forward of FTD 3-66-2.

NOTE:

Firemain pressure of at least 85 psi is needed for foam generation.

B.1.a.
Portable AFFF
Extinguisher

Use portable AFFF extinguishers to extinguish small alpha & bravo fires of less than 20 square feet. One bottle provides approximately 55-65 seconds of continuous discharge. Nitrogen pressurized, the range drops as pressure decreases.

Section C: Water Mist System

C.1. Water Mist The water mist system is a high-pressure (approximately 1000 psi) freshwater firefighting system. Although it operates at 1000 psi, the nozzle discharge does not penetrate skin, even at close range, and does not pose a personnel hazard. It functions by removing heat from the fire triangle. This system is effective on oil pool, oil spray (class bravo fires), and class alpha fires, but does not completely extinguish deep-seated fires. Isolated areas might harbor small bravo fires that a fire team needs to extinguish. This requires timely action by the fire party.

Water mist is not toxic. However, toxic fire gases and reduction of oxygen by the fire require evacuating personnel who do not have breathing protection.

Water mist in air is not electrically conductive and there is no risk from simply coming near an energized conductor. The time for mist to accumulate and create a conductive path depends on the deposition rate of the mist and the configuration of the electrical equipment. Water mist does not create a personnel electrical shock hazard from un-damaged energized electrical equipment for at least 5 minutes.

If water mist discharges into a space without a fire, personnel do not need to evacuate immediately. If discharge continues past 5 minutes, avoid touching electrical equipment.

If water mist discharges into a space with a fire, immediately evacuate and begin isolation actions. Personnel with SCBA, fire protective garment, firefighter's gloves, boots, and flash hoods enter to conduct investigation, isolation, and extinguishing actions.

When a water mist system is controlling the fire, removing the source of heat and cooling the space, check fire boundaries periodically rather than setting a permanently manned hose.

Since water mist cools and maintains a space below the flash-point temperature of common shipboard fuels and lubricants, de-smoking during reentry poses minimal risk of reflash.

NOTE:

To prevent running the system dry, begin refilling water mist tanks from the potable water system as soon as practicable after water mist system activation.

NOTE:

Activating water mist disables ventilation, which must be re-energized to use for de-smoking or other ventilation.

Two high-pressure water mist fire extinguishing pump stations provide fresh water to the water mist distribution main and to branch piping to the protected spaces. Water mist fog nozzle assemblies installed throughout the overheads of the upper and lower levels of protected spaces discharge water mist (fog), which cools and extinguishes the fire. Machinery space water mist systems have local controls and remote actuation stations. Remote indication and status is from the machinery monitoring system. Local controls are located in each water mist pump station. The remote actuation stations provide remote machinery space water mist system start/stop operation throughout the ship. Remote actuation stations are located in the following areas:

- Machinery monitoring system for all machinery spaces.
 - For AMMR:
 - Port Vestibule 2-60-2-L.
 - Starboard Vestibule 2-60-3-L.
 - Adjacent to QAWTD 4-53-2 to port Escape Trunk 4-52-2-T.
 - Adjacent to QAWTD 4-53-1 to starboard Escape Trunk 4-52-1-T.
 - For FMMR:
 - Port Vestibule 2-44-2-L.
 - Starboard Vestibule 2-44-1-L.
 - Adjacent to QAWTD 4-51-1 to Escape Trunk 4-51-1-T.
 - For AMR:
 - Vestibule 2-38-1-L.
 - Adjacent to QAWTD 4-43-1 to Escape Trunk 4-43-1-T.
 - In VCHT
 - Below VCHT, port side lower level AMR.
 - For #3 SSDG room:
 - In passage 1-76-0-L just aft of QAWTD 1-80-1.
 - In passage 2-76-3-L just aft of QAWTD 2-76-3.
-

Section D: Carbon Dioxide

D.1. Carbon Dioxide

Use CO₂ portable extinguishers primarily for small electrical fires (class charlie). These extinguishers have limited effectiveness on small Class alpha and class bravo fires of low heat intensity and an involved surface area of four square feet or less. A successful attack requires a close approach due to an effective range of four to six feet.

CO₂ is normally colorless except that, when discharging, it resembles a cloud of steam. It is a non-conductor of electricity, is non-corrosive, and heavier than air. CO₂ does not contain oxygen in a form available for supporting combustion or human life.

WARNING:

Be careful when using CO₂, especially if using more than one extinguisher. CO₂ is heavier than oxygen and therefore displaces oxygen. If discharging more than one CO₂ extinguisher in a small space, use an SCBA.

D.2. Installed CO₂ System for the Gas Turbine Enclosure

The only space protected by a fixed CO₂ system is the gas turbine enclosure. Use the primary CO₂ system to extinguish the fire and the secondary system to discharge a continuous blanket of CO₂ to prevent a reflash. The system is monitored by a machinery monitoring system and activates remotely from there or locally from either of two stations, one in the FMMR, and one at the port side entrance to the FMMR. Local activation is located as follows:

- Passageway 2-44-0-L at port side entrance to FMMR (aft of QAWTD 2-44-4).
 - Primary CO₂ (aft box 2-45-4).
 - Secondary CO₂ (forward box 2-45-2).
- Third deck, starboard side in FMMR.
 - Primary CO₂ 3-46-1 at the base of the ladder.
 - Secondary CO₂ 3-46-3 at the base of the ladder

Section E: Dry Chemical

E.1. Dry Chemical

PKP is a dry chemical agent (potassium bicarbonate), stored in 18 pound or 27 pound portable extinguishers, that extinguish a fire by interrupting the chemical chain reaction process. PKP is very effective on small, isolated class bravo pool fires less than 10 square feet and on three-dimensional spray fires. The maximum range for the extinguisher is about 20 feet.

PKP is intended for use by unprotected operators who are in the best position to take initial action to extinguish a fire at its onset. Successful use of PKP for initial action is time critical. PKP is not designed for use on a fire that is out of control (unless needed for evacuation) or for reentry. PKP extinguishers are located throughout the vessel.

Simultaneous action to secure the source of fuel is required.

CAUTION:

Discharging into electrical equipment might cause fouling of electrical components.

WARNING:

PKP can cause breathing difficulties and reduced visibility.

WARNING:

PKP has no cooling effect; therefore, carefully watch for reflash.

Section F: Auxiliary Systems

F.1. Machinery Monitoring System

Provides control and monitoring capabilities for the ship's vital machinery and related auxiliary support systems. Operators monitor equipment operation and take action to start or stop equipment, change valve positions, or perform other control functions on automated ship's equipment. The software also has a video surveillance system incorporated to monitor machinery spaces.

- Engineering control room (ECR) contains four workstations:
 - Machinery control console (2).
 - Damage control console.
 - Electrical plant console.
- There is one workstation in each of the following machinery spaces:
 - AMR.
 - AMMR.
 - FMMR.
 - #3 SSDG room.
 - Pump room.
- The pilothouse, Repair 2, and Repair 3 each contain a single workstation.
- In addition, four spaces each contain a local area network (LAN) switch for a standalone laptop, which provides an access point to the network:
 - Repair 2.
 - Repair 3.
 - Quarterdeck.
 - EO's stateroom.

F.2. MAKO Compressor

MAKO compressors, located in Repair 2 and the Repair 3 annex, are the primary compressors for refilling SCBA bottles.

Section G: Choosing the Correct Firefighting Equipment

G.1. General

Base the choice of firefighting equipment on:

- Fire classification.
- Fire location.
- Phase of firefighting action (e.g., action against a lube oil/fuel leak, a class bravo fire, a class bravo fire out of control, or for reentry).
- Flow rate of the flammable liquid released and whether the source can be secured quickly.
- Whether the flow is a spill or spray.
- The extent of the area covered by the spill, spray, or fire.

Use the most effective installed system first.

G.2. Lube Oil Leak

To prevent fire during major lube oil/fuel leak:

- Use portable AFFF extinguisher to wash oil/fuel off machinery and deck plates into the bilge.
 - Use AFFF from bilge sprinkling system to vapor secure the bilge.
 - Use AFFF station wash down hose to wash oil or fuel from deck plates, bulkheads, and machinery into the bilge.
 - Vapor-secure the hazard with foam blanket.
-

**G.3.
Class Bravo Fire**

Action against class bravo fires:

- Use portable AFFF or PKP extinguishers on small, confined, class bravo fires.
- Initial action might not extinguish pool fires that cover an area greater than 10 square feet. However, AFFF or PKP might extinguish or knock down flames of large fires temporarily, allowing added time to secure the oil or fuel source. Use caution because it is difficult getting within the effective range of a portable extinguisher without injury.
- Use the AFFF bilge sprinkling system to fight a class bravo fire larger than 10 square feet and confined to the bilge.
- Initial action is not recommended against large unconfined class bravo fires, spraying oil or fuel fires, or when the oil or fuel source cannot be secured quickly, unless such actions are required to evacuate the space. Normally, consider these fires out of control.
- Simultaneously activate the installed AFFF bilge sprinklers, for 2-minute, to vapor secure the bilge and the water mist system to extinguish and cool the fire.
- If a fire is in the gas turbine enclosure, activate the installed CO₂ system.

NOTE:

In class bravo fires in a machinery space, the EOW has discretion to order activation of the water mist system.

**G.4. Class Bravo
Fire Out of
Control**

- Action against class bravo fires out of control.
 - Extinguish by firefighters using AFFF hose lines in conjunction with the machinery space water mist system. For a main or auxiliary machinery space fire, activate AFFF bilge sprinklers for a second dump of 2-minute, prior to fire party reentry.
 - The bilge must be vapor secured by repair party firefighters after reentry using AFFF hose lines.

NOTE:

Flammable liquid spray fires are automatically considered a class bravo fire out of control.

WARNING:

As soon as firefighting and plant securing efforts allow, personnel in affected spaces obtain and carry an emergency escape breathing device (EEBD). EEBDs are for escape only and not for firefighting.

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Chapter 6: Boundaries

Introduction This chapter discusses setting boundaries to prevent the spread of fire or smoke.

In This Chapter This chapter contains the following sections:

| Section | Title | Page |
|----------------|------------------|-------------|
| A | Space Isolation | 6-2 |
| B | Smoke Boundaries | 6-5 |

Section A: Space Isolation

A.1. General Isolate the affected space to confine the fire and designate bulkheads to check for heat. These boundaries are generally watertight bulkheads and decks immediately adjacent to the affected space. Fume tight is the minimum degree of tightness for a fire boundary. Sound general emergency to establish fire boundaries quickly. Set material condition zebra from the affected space out.

NOTE: **Set condition ZEBRA, from the affected space moving outward.**

Before a class bravo fire gets out of control, completely isolate the machinery space with the exception of firefighting systems, lighting, and ventilation. Once the fire is out of control, secure all systems, except lighting, per reference (b), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3.

A list of local and remote controls (valves, switchboards, and circuit breakers) for space isolation is in Tab 13 (underway) or Tab 10 (in port).

- Underway space isolation as per Tab 13 of this TTP.
 - Aft main machinery room, [Tab 13](#) (Appendix D)
 - Forward main machinery room, [Tab 13](#) (Appendix E)
 - Auxiliary machinery room, [Tab 13](#) (Appendix F)
 - Ship service diesel generator room, [Tab 13](#) (Appendix G)
 - Incinerator room, [Tab 13](#) (Appendix H)
 - JP-5 Pump room, [Tab 13](#) (Appendix I)

 - In port space isolation as per Tab 10 of this TTP.
 - Aft main machinery room, [Tab 10](#) (Appendix J)
 - Forward main machinery room, [Tab 10](#) (Appendix K)
 - Auxiliary machinery room, [Tab 10](#) (Appendix L)
 - Ship service diesel generator room, [Tab 10](#) (Appendix M)
 - Incinerator room, [Tab 10](#) (Appendix N)
 - JP-5 Pump room, [Tab 10](#) (Appendix O)
-

A.2. Fire Boundaries

Establish fire boundaries around the affected space to confine the fire and designate bulkheads to check for heat. These boundaries are generally the watertight bulkheads and decks immediately adjacent to the affected space. Fume tight is the minimum degree of tightness for a fire boundary. Sound general emergency to establish fire boundaries quickly. Set material condition zebra from the affected space out.

Fire Boundaries are in Tab 12 (underway) or Tab 9 (in port) of the applicable appendices.

A.3. Mechanical Isolation

Make every effort to secure and/or isolate systems, machinery, and tanks that have the potential to feed or otherwise contribute to the intensity of the fire. Not all systems have remote securing or isolation capabilities. Along with other concurrent firefighting actions, locally secure those systems without remote securing or isolating capabilities as soon as possible. Engineering watchstander familiarity with location and type of local securing and isolating capabilities in accordance with casualty control procedures is essential.

These capabilities and procedures are in reference (b) and applicable machinery manuals. Establish communications with DCC and exercise care to prevent cascading casualties to equipment necessary to maintain propulsion, electrical power, and firemain pressure in unaffected spaces. Fuel, oil, air systems, and fuel tanks located close to space boundaries are of particular concern.

Systems to secure in order of priority:

- Fuel piping plus transfer, service pumps and centrifugal purifiers.
 - Lube oil piping, pumps, and centrifugal purifiers.
 - Hydraulic systems.
 - Ship's service and diesel start air systems.
 - Air compressors.
 - Fuel (DFM and JP-5) tanks.
 - Lube oil storage tank.
 - Damage control deck cutout valve to AFFF Station.
(Do not isolate AFFF systems unless personnel are evacuated.)
-

A.4. Electrical Isolation

Complete electrical isolation is very difficult due to the number of cables within and transiting the space. To the extent possible, secure all electrical equipment from outside the affected space at the cutter's service, main, and emergency switchboards, load centers, or distribution panels.

Secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

A.5. Mechanical and Electrical Isolation Bills

Tab 13 (underway) or Tab 10 (in port) of applicable appendices has Mechanical and Electrical Isolation Bills. These bills include lists of local and remote control valves, switchboards, breaker and distribution panel locations, etc. for total space isolation.

NOTE:

Ensure mechanical and electrical isolations are in accordance with the restricted maneuvering doctrine.

A.6. Fuel Tanks

Transfer of fuel to a safe location to remove fuel contents puts the empty fuel tank at maximum risk to fire. Therefore, do not transfer fuel from the fire area. The only action necessary to prevent tank contents from contributing to a machinery space fire is to isolate and secure the fuel system.

Section B: Smoke Boundaries

B.1. Establish Boundaries

Set smoke boundaries as per Tab 10 (underway) or Tab 7 (in port) of the applicable appendix, and then set zebra within the secondary boundary.

Establish smoke boundaries around the affected space to prevent the spread of smoke and provide controlled areas for local firefighting. First, establish a smoke control zone by closing hatches and doors immediately adjacent to the access to the affected space. Secure ventilation to make the smoke control zone a dead air space. Only personnel with SCBAs enter the smoke control zone. Activate SCBAs when smoke is present or on orders from the OSL. Set a second boundary around the smoke control zone to check the spread of smoke and provide a safe area for firefighting personnel without SCBAs. Use smoke curtains to control the spread of smoke where accesses must be open for the passage of equipment, hoses, or personnel.

B.2. Set the Boundaries

Machinery space fire and smoke boundaries must be set upon evacuation.

B.3. Primary and Secondary Smoke Boundaries

Primary and Secondary Smoke Boundaries are in Tab 10 (underway) or Tab 7 (in port) of the applicable appendices. Use smoke curtains where hatches and doors remain open for firefighting purposes.

B.4. Ventilation

If a fire is declared out of control, secure ventilation in the affected space after personnel are evacuated. Otherwise, when a machinery space fire is reported, set ventilation as follows:

- In the affected main or auxiliary machinery space, set ventilation on the unaffected side of the space to low and secure ventilation on the affected side while the space is still manned.
- In spaces surrounding the affected machinery space other than smoke control zones.
 - Set positive ventilation supply on high to limit smoke movement to unaffected spaces.
 - Set positive ventilation using the machinery monitoring system.
 - If smoke is ingested into adjacent machinery spaces from the weather decks, maneuver the cutter to clear the vent intakes or secure ventilation.

NOTE:

Establishing positive air pressure on the damage control deck to control smoke by breaking fire and smoke boundaries and opening accesses to unaffected spaces is not recommended. A path for the fire to spread from the affected space to unaffected spaces by way of the damage control deck will exist.

- Smoke control zone ventilation. Secure smoke control zone ventilation to provide a dead air space at the entrance to the affected space as per Tab 10 (underway) or Tab 7 (in port) of the applicable appendix.
- Get permission from the engineering officer, or EOW in port, to de-smoke a machinery space using the installed ventilation system.

B.5. List of Fans and Controllers

A list of all supply intake and exhaust discharge fans and associated controllers affecting machinery spaces and adjoining spaces is in Tab 11 (underway) or Tab 8 (in port) of the applicable appendices. For ready reference, maintain this list separately in DCC and at each repair locker.

Chapter 7: Major Oil Leaks and Firefighting

Introduction This chapter discusses major oil leaks and firefighting.

In This Chapter This chapter contains the following sections:

| Section | Title | Page |
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| A | Flammable Leak | 7-2 |
| B | Class Bravo Fire | 7-5 |

Section A: Flammable Leak

A.1. Scenario A major flammable liquid leak presents an immediate fire hazard that crews must deal with quickly. An oil leak, which forms a spray, can ignite when it encounters any hot surface or equipment capable of electrical arcing. Rapidly securing the oil source and using AFFF to cover liquid surfaces greatly reduces the risk of fire. In addition, small problems (e.g., non-securable drips) might become large problems. Deal with them promptly. Take the following actions when a major oil leak occurs:

A.1.a. Report the Leak At sea, the person discovering the leak reports the leak immediately to the Engineer of the Watch (EOW) to begin concurrent actions. The EOW reports the leak to the Officer Of the Deck (OOD). When in port notify the OOD/Quarterdeck watch. Sound general emergency and pipe as directed by ships policy.

A.1.b. Secure the Source Stop the leak, or isolate it as quickly as possible by locally or remotely closing system cutout valves or shutdown controls. Initiatives, such as rag wraps and collection using a bucket, can control the flow of oil effectively or deflect it away from hot surfaces. When consistent with reference (b), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3, or the cutter's restricted maneuvering doctrine, securing an engine or other piece of equipment might be the quickest, most effective way to reduce or stop the flow of oil.

A.1.c. Apply AFFF Start the fire pumps and activate the installed AFFF systems. Use AFFF to wash oil from deck plates, bulkheads, and machinery into the bilge. Water may be used to flush the oil to the bilge; however, be careful to prevent disturbing AFFF blankets, which provide a vapor barrier covering the bilge and other areas of heavy fuel buildup. Discharge AFFF into the bilge to cover liquid surfaces to prevent ignition of the oil. Reapply AFFF as necessary to maintain blanket coverage.

NOTE: For a leak in #3 SSDG room, use any fire pump.

NOTE: For a leak in AMMR, use any fire pump except #4.

NOTE: For a leak in AMR, use any fire pump except #2.

NOTE: For a leak in FMMR, use any fire pump except #3.

NOTE: For a leak in JP5 Pump Room, use any fire pump.

NOTE: For a leak in the Incinerator Room, use any fire pump.

A.2. Concurrent Action

As time and personnel permit, the space supervisor or EOW directs the following:

- Per reference (b), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3, secure operating machinery near the leak to control the casualty.
- Pump out the bilge to the dirty oil/oily waste holding tank or, with the permission of the Commanding Officer, pump overboard. When cleaning up the fuel spill, place cleanup rags in a suitable container.

NOTE: AFFF introduced into the bilge/oily water piping and tanks render the ships oily water separator (OWS) useless until every trace of AFFF is removed from the bilges, associated piping, and tanks.

A.3. Initial Firefighting Actions

Work rapidly because class bravo fires and smoke spread quickly and a fire can grow out of control in seconds. The person discovering the fire should take the following initial actions in conjunction with procedures in reference (b):

- The person discovering the fire reports the fire, as well as its cause and location, immediately to the EOW
- EOW assesses the report and directs watchstanders to extinguish the fire or evacuate the space.

WARNING: *Watchstanders or day workers lacking adequate breathing and flash/burn protection will likely be the ones taking initial action. Therefore, it might be impossible to take initial action without risk of severe personal injuries. However, if the fire is localized and small, attack the fire with appropriate firefighting equipment, listed in [Chapter 5: Firefighting Systems](#), based on the size, anticipated behavior, and travel of the fire. Good judgment must dictate the course to pursue.*

NOTE:

As soon as firefighting and plant securing efforts allow, personnel in the space should obtain and carry an emergency escape breathing device (EEBD). EEBDs are for escape only and are not for firefighting or rescue purposes. When evacuating machinery spaces, don EEBDs.

NOTE:

Do not attack flammable liquid oil spray fires. Experience and fire testing have demonstrated a pressurized release of a flammable liquid can create an unapproachable fire. Extreme heat, smoke and toxic gases can cause life-threatening conditions in less than 60 seconds. Under such conditions, the only prudent action, time permitting, is to secure the affected machinery, don EEBDs, and evacuate. Such fires are commonly fueled by an oil source, which cannot be secured quickly and completely.

Stop or isolate the leak as quickly as possible by locally or remotely closing system cutout valves or shutdown valves. When consistent with reference (b), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3, or the cutter's restricted maneuvering doctrine, securing an engine or other piece of equipment might be the quickest way of reducing or stopping the flow of fuel. Mechanical and electrical isolation bill, Tab 13 (underway) or Tab 10 (in port) of the applicable appendix, lists critical controls to be secured.

Fight the fire using portable AFFF and/or PKP extinguishers and/or installed AFFF systems, if they can be brought to bear quickly. If the fire is localized, use portable AFFF and/or PKP extinguishers to attack the fire. When within 15 feet of the fire use the AFFF and/or PKP as needed to knock down flames. If more than one person on scene takes initial actions, the first person takes initial action with AFFF or PKP extinguishers, while the second sounds the alarm, informs the EOW and breaks out/mans the nearest AFFF hose, (the EOW energizes the fire pumps, the AFFF pump, and opens the firemain to AFFF and AFFF to machinery space valves). The second person advances on the fire behind the AFFF or PKP. Apply AFFF while advancing to ensure the fire does not close in behind the personnel attacking the fire. After knocking the flames down with AFFF or PKP, apply a minimum of 1½ inches of AFFF to the pooled oil. [Chapter 5: Firefighting Systems](#) contains additional information on installed firefighting systems and on choosing the correct firefighting equipment.

Section B: Class Bravo Fire

B.1. Contained Scenario

Take the following actions for a machinery space class bravo fire generated by pooled oil.

- The EOW or person discovering fire informs the OOD of the fire, reports the class of fire (class bravo), its location, and source, if known.
- The EOW notifies the OOD of maximum speed available if needed.
- The OOD sounds general emergency and makes the appropriate pipes as directed by ships policy.
- The EOW provides DCC with progress reports on firefighting and securing checklists so repair personnel can complete checklists in case they must quickly evacuate the machinery space. The EOW is in charge of all firefighting actions until the affected space is evacuated and repair parties are manned and ready.
- The EOW verifies that automated control features of the machinery monitoring system maintain sufficient firemain pressure. If insufficient pressure, manually energize additional fire pumps.
- DCC ensures the AFFF foam proportioning station is manned. Activate installed AFFF bilge sprinklers for 2-minutes. Activate the machinery space water mist system to knock down flames and cool the space. Activating the water mist system automatically secures exhaust ventilation within the affected space.

NOTE:

For a leak in AMMR, ensure #4 fire pump is not energized by the machinery monitoring system.

NOTE:

For a leak in FMMR, ensure #3 fire pump is not energized by the machinery monitoring system.

NOTE:

For a leak in AMR, ensure #2 fire pump is not energized by the machinery monitoring system.

- Repair 3 rigs two P-100s in tandem on the fantail and connects via jumper lines to the fire main. Upon notification that firemain pressure is lost or falls below 85 psi, energize P-100s to provide emergency firefighting water to the firemain.

- Set ventilation per [Chapter 6: Boundaries](#) and Tab 11 (underway) or Tab 8 (in port) of the applicable appendix.
- Set fire and smoke boundaries (as per Tabs 10 and 12 (underway), or Tabs 7 and 9 (in port), of the applicable appendices) around the affected space to prevent the spread of fire and smoke to other parts of the cutter. See [Chapter 6: Boundaries](#) for further information on smoke control. Set material condition zebra to isolate the affected space and establish fire and smoke boundaries throughout the cutter rapidly. Use smoke curtains when boundaries are broken to allow passage of people and firefighting equipment.

**B.2.
Out of Control
Scenario**

A class bravo fire, especially a flammable liquid spray fire, or a fire fueled by an un-securable oil source, can get out of control within seconds. Combat the fire using installed systems and reentry techniques outlined in [Chapter 8: Reentry and Firefighting](#). Take the following actions when faced with an out of control fire:

1. Size up the fire.
 - When the fire covers a large area, is fed by an oil source that cannot be secured, or is threatening firefighting or escape, consider the fire out of control. Evacuate the space.
 - A small fire that is not extinguished rapidly can generate large volumes of smoke and deadly gases thereby forcing evacuation.
 - The EOW is in charge of firefighting efforts until the affected space is evacuated. Control of firefighting then passes to the Damage Control Assistant (DCA).
2. Secure or isolate systems and equipment that are a cause of a fire, have the potential to increase the intensity of a fire, or pose a safety hazard to repair personnel.
3. Mechanically and electrically isolate any space abandoned due to fire, flooding, or other damage to the greatest extent possible, with the exception of lighting. The OSL decides whether to secure lighting.

NOTE:

Do not delay firefighting efforts awaiting complete electrical isolation unless there is a serious risk to personnel.

4. Evacuate unsafe spaces.
 - Don emergency escape breathing devices (EEBDs).
 - Secure access doors, hatches and scuttles when all personnel are out of the space.
 - EOW accounts for all personnel at muster.
 - Report when evacuation of the space is complete to DCC.
 - Reassign un-injured personnel to assist with firefighting.

 5. Establish communications per [Appendix B: Machinery Space Firefighting Communications Plan](#). The EOW briefs the OOD and DCC on the location and cause of the fire, personnel status, plant status, and informs them that the fire is declared out of control.

 6. Take the following actions to contain and fight the fire (report the actions to the Engineering Officer (EO), DCA, or DCC as appropriate):
 - Man, monitor, and replenish AFFF foam stations. For the initial foam blanket, engineering watchstanders apply a blanket of foam in the bilges. For a fire in a main or auxiliary machinery room, activate installed AFFF bilge sprinklers for 2-minutes to extinguish any fire and to vapor secure the bilge. Stop operating the system if the concentrate level in the tank sight glass is not visible. The installed AFFF system tanks provide enough finished foam to cover the bilges many times over, however AFFF station operators continuously replenish the AFFF tanks as the level drops.
 - Spare 5 gallon AFFF cans are located as per ship's drawings.
 - In conjunction with AFFF bilge sprinklers, activate the machinery space water mist system. Water mist aids in extinguishing the fire and in cooling the affected space.
 - Secure the space mechanically and electrically, as per [Section A:Chapter 6: Boundaries](#) and the applicable appendix.
 - Reentry and firefighting are per [Chapter 8: Reentry and Firefighting](#). Prior to reentry for a fire in a main or auxiliary machinery room, perform a second dump of the AFFF bilge sprinklers. Use proper personnel protection as per [Chapter 4: Personnel Protection](#).
 - After extinguishing the fire, take post-fire actions discussed in [Chapter 9: Post-Fire Actions](#).
-

**B.3.
In port/Auxiliary
Steaming/Cold
Iron Class Bravo
Fires**

If an oil fire occurs in a machinery space while in port:

- Watchstanders fight the fire (if possible). Follow underway procedures in this chapter.
- Call the local fire department, senior officer present afloat (SOPA), or port authority. The commanding officer or direct representative (OOD) decides whether to use the fire department. Such decisions are difficult to make under the stress of a major fire.

NOTE:

If adequate cutter firefighting resources are available, the cutter can fight the fire. If cutter is unable to combat the fire, request rescue and assistance requested from nearby afloat or shore units.

- Brief fire department personnel. Give fire and plant status to a fire department supervisor if the fire department is to fight the fire.
- The EOW or OOD stand by to advise and assist the fire department supervisor. Shipboard personnel assist as directed by the EOW or fire department supervisor on scene.

NOTE:

Professional firefighters might have more experience than Legend-class firefighters, but their methods and equipment are different. The EOW and OOD should be aware of these differences and if the decision is made to use the fire department, have them proceed with the EOW as a supervisor or team leader assistant to help with questions or problems that arise.

NOTE:

Invite the fire department to the ship for familiarization tours and drills as per the MOA and reference (c), Machinery Space Firefighting Doctrine for Class Bravo Fires, COMDTINST M9555.1 (series).

Chapter 8: Reentry and Firefighting

Introduction

Reentering a machinery space to fight an out of control fire is the most critical part of the firefighting evolution and the most dangerous to personnel. The primary functions of the reentry team are to attack and extinguish the fire, rescue trapped personnel, secure the source of fuel, and overhaul the affected space (including cooling surfaces and de-smoking).

At the time of reentry, a back draft explosion or an intensifying fire can occur when opening accesses to the affected space, relieving hot fire gases into the smoke control zone, and introducing fresh air into the space. Re-enter from the lowest readily accessible access to the affected space. Position firefighters to the side of the access when the door or hatch is initially opened. Follow standard repair party firefighting procedures.

In This Chapter

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| C | Class Bravo Fire in Auxiliary Machinery Room (5-36-01-E) | 8-4 |
| D | Class Bravo Fire in #3 SSDG Room (2-76-5-Q) | 8-5 |
| E | Class Bravo Fire in the JP5 Pump Room (3-64-2-E) | 8-6 |
| F | Class Bravo Fire in the Incinerator Room (1-47-1-Q) | 8-7 |
| G | Attacking from the Space above the Fire | 8-8 |
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Section A: Class Bravo Fire, Aft Main Machinery Room (5-52-01-E)

A.1. Primary Reentry Point

The primary reentry point is through QAWTD 2-62-2 and WTH 2-61-2 from passageway 2-52-01-L. The secondary reentry point is through QAWTD 2-62-1 and WTH 2-61-1 from passageway 2-52-01-L. Repair 2 is the primary repair party responsible for reentry. Repair 3 provides fire party reliefs and assists as directed.

A.2. Primary Reentry Point Hoses

At a minimum, reentry teams rig two attack AFFF hoses, with vari-nozzles. The #1 hose is supplied from the AFFF hose reel 2-62-2, located in the vestibule 2-60-2-L. The #2 hose is supplied from fireplug 2-62-1, located in passageway 2-52-01-L, which is already equipped with an inline eductor. Four cans of AFFF are in the immediate vicinity of the fireplug.

A.3. Secondary Reentry Point Hoses

At a minimum, reentry teams rig two attack AFFF hoses, with vari-nozzles. The #1 hose is supplied from fireplug 2-62-1 in passageway 2-52-01-L, which is already equipped with an inline eductor. Four cans of AFFF are in the immediate vicinity of the fireplug. The #2 hose is supplied from fireplug 2-53-1, in passageway 2-52-01-L and is equipped with an inline eductor. Supply four cans of AFFF from the stowage racks near the aft AFFF unit.

Section B: Class Bravo Fire, Forward Main Machinery Room (5-44-01-E)

B.1. Reentry Points The primary reentry point is through QAWTD 2-44-4 and WTH 2-45-2 from passageway 2-44-0-L. The secondary reentry point is through QAWTD 2-46-1 and WTH 2-45-1 from passageway 2-44-0-L. Repair 2 is the primary repair party responsible for reentry. Repair 3 provides fire party reliefs and assists as directed.

B.2. Primary Reentry Point Hoses At a minimum, reentry teams rig two attack AFFF hoses, with vari-nozzles. The #1 hose is supplied from the AFFF hose reel 2-44-2 in the vestibule 2-44-2-L. The #2 hose is supplied from fireplug 2-46-2, in passageway 2-44-0-L, which is already equipped with an inline eductor. Four cans of AFFF are in the immediate vicinity of the fireplug.

B.3. Secondary Reentry Point Hoses At a minimum, reentry teams rig two attack AFFF hoses, with vari-nozzles. The #1 hose is supplied from fireplug 2-46-1 in passageway 2-44-0-L, which is already equipped with an inline eductor. The #2 hose is supplied from fireplug 2-46-2, in passageway 2-44-0-L, and is equipped with an inline eductor. Four cans of AFFF are near the fireplugs.

Section C: Class Bravo Fire in Auxiliary Machinery Room (5-36-01-E)

C.1. Reentry Point

The primary reentry point is through QAWTD 2-37-1 and WTH 2-39-1 from passageway 2-36-0-L. There is no secondary reentry point for this space. Repair 2 is the primary repair party responsible for reentry. Repair 3 provides fire party reliefs and assists as directed.

C.2. Primary Reentry Point Hoses

At a minimum, reentry teams rig two attack AFFF hoses, with vari-nozzles. The #1 hose is supplied from the AFFF hose reel 2-36-1 in the vestibule 2-38-1-L. The #2 hose is supplied from fireplug 2-40-2, in passageway 2-36-0-L, which is already equipped with an inline eductor. Four cans of AFFF are near the fireplug.

Section D: Class Bravo Fire in #3 SSDG Room (2-76-5-Q)

D.1. Reentry Points

The primary reentry point is through QAWTD 2-76-3 in passageway 2-76-3-L. The secondary reentry point is through QAWTD 1-80-1 from passageway 1-76-0-L. Repair 2 is the primary repair party responsible for reentry. Repair 3 provides fire party reliefs and assists as directed.

D.2. Primary Reentry Point Hoses

At a minimum, reentry teams rig two attack AFFF hoses with vari-nozzles. AFFF soft hose 2-77-1 in passageway 2-70-1-L is the #1 hose. The #2 hose is from fireplug 2-81-1 in passageway 2-76-3-L and is equipped with an inline eductor. Four refill cans of AFFF are near the fireplugs.

D.3. Secondary Reentry Point Hoses

At a minimum, reentry teams rig two attack AFFF hoses with vari-nozzles. The #1 hose is from AFFF COV 1-82-2 in passageway 1-76-0-L. The #2 hose is from fireplug 1-77-1 in passageway 1-76-0-L, which is already equipped with an inline eductor. Four refill cans of AFFF are near the aft AFFF unit.

Section E: Class Bravo Fire in the JP5 Pump Room (3-64-2-E)

E.1. Reentry Point The only pump room reentry point is through FTD 3-68-2. There is no secondary reentry point for this space. Repair 2 is the primary repair party responsible. Repair 3 provides fire party reliefs and assists as directed.

E.2. Primary Reentry Point Hoses At a minimum, reentry teams rig two attack AFFF hoses, with vari-
nozzles. The #1 hose is supplied from fireplug 2-66-2 in passageway
2-64-2-L, which is already equipped with an inline eductor. The #2 hose is
supplied from fireplug 2-67-2 in passageway 2-64-2-L and is equipped
with an inline eductor. Four cans of AFFF are near the fireplugs.

NOTE: **Keep FTD 3-68-2 closed when not in use.**

Section F: Class Bravo Fire in the Incinerator Room (1-47-1-Q)

F.1. Reentry Points The primary reentry point is through QAWTD 1-46-1 to the trash stowage holding and staging room 1-44-1-Q, then aft through NTD 1-46-3 into the incinerator room. The secondary reentry point is through NTD 1-48-1, from passageway 1-44-0-L, then through NTD 1-48-3 into the incinerator room. Repair 2 is the primary repair party responsible. Repair 3 provides fire party reliefs and assists as directed.

NOTE: **Good housekeeping in the incinerator room helps prevent fires. Poor housekeeping prevents effective access to the space for firefighting.**

NOTE: **Keep FTD 1-48-3 closed when not in use.**

F.2. Primary Reentry Point Hoses At a minimum, reentry teams rig two attack AFFF hoses, with vari-nozzles. The #1 hose is supplied from fireplug 1-45-1 in passageway 1-44-0-L, which is already equipped with an inline eductor. The #2 hose is supplied from fireplug 1-45-2 in passageway 1-44-0-L and is equipped with an inline eductor. Four cans of AFFF are in the immediate vicinity of the fireplugs.

F.3. Secondary Reentry Point Hoses At a minimum, reentry teams rig two attack AFFF hoses, with vari-nozzles. The #1 hose is supplied from fireplug 1-45-1 in passageway 1-44-0-L, which is already equipped with an inline eductor. The #2 hose is supplied from fireplug 1-45-2 in passageway 1-44-0-L and is equipped with an inline eductor. Four cans of AFFF are in the immediate vicinity of the fireplugs.

Section G: Attacking from the Space above the Fire

G.1. Dangers of Attack from Above

Sometimes spaces can be entered only from above, down an inclined or a vertical ladder. Working on the hot deck in the space over a fire is like standing in a frying pan and presents a severe heat challenge even when wearing FFE. Consider the following when conducting either a direct attack or an indirect attack from the deck over a fire space:

- Rotate personnel frequently to avoid heat exhaustion. Endurance on the hot deck over the fire could be less than 10 minutes when wearing FFE.
- Position the OSL just outside the access to the space over the fire, so that the high level of heat stress on the deck does not affect his/her endurance and judgment.
- If practicable, firefighters wear two pairs of socks to improve foot insulation.
- Wear long pants under the FFE and overlap clothing at the ankles to prevent heat and steam from entering the bottom of the FFE coveralls.
- Staying low, kneeling on the deck, or crouching in the space above the fire could expose firefighters to greater heat stress than standing erect.
- Avoid stationing personnel at local hot spots such as the deck immediately above the fire.
- Minimize hose ruptures by cooling the deck with water near the hose and avoiding laying hoses on local hot spots.

G.2. Ingress/Egress

In most situations, opening a hatch for firefighter reentry is safer than entering through a scuttle. If escape becomes necessary, escaping through a scuttle is very difficult.

G.3. Heat Protection

To conduct a direct attack from the space above the fire, firefighters descend through the hot thermal layer in the overhead of the fire space. Firefighters making such an entry must be fully protected in an FFE and make the decent quickly. Avoid touching hot metal surfaces, such as handrails, if possible, particularly in the hot upper region of the fire space. If it is necessary to grab a handrail to enter the fire space, the firefighter's glove alone might not provide adequate protection. Use an extra glove or other material to prevent burning hands.

Section H: Hoses

H.1. Hoses and Hose Teams

AFFF for the lead hose (and all installed AFFF stations) is from a balanced pressure proportioner. AFFF for the backup hose is from 5-gallon cans using an inline eductor and vari-nozzle (rated for 3% AFFF concentrate).

A team leader, in an FFE, should enter the space and coordinate hose team actions. Hose teams must be aggressive, but careful not to be trapped by the fire. Maintain sufficient distance between hose teams to permit maneuverability and prevent firefighting progress from being impaired. Additional hose handlers might be needed to maneuver the hoses. Ensure hose handlers are properly spaced to maintain communications with the OSL.

The backup hose team should keep heat off the lead hose team, and extinguish fires that form behind the lead hose team. If the OSL deems that the second team needs to attack, then the backup hose team attacks the primary blaze by approaching it from a different direction or enters the affected space after the lead attack hose.

All hose team personnel require proper protective equipment, as per reference (d), Personnel Protection Equipment, Naval Ships' Technical Manual, Chapter 077.

H.2. Nozzle Patterns

Repeated efforts may be necessary to gain access to the space. The nozzle man should use the reentry AFFF hose with wide-angle fog to protect the hose team. Use the vari-nozzle 30-degree fog pattern or "narrow fog" to cool metal surfaces, attack the fire, and lay down vapor-securing AFFF blankets. Adjust the nozzle pattern to suit the particular tactical situation.

Section I: Installed AFFF and Water Mist

I.1. AFFF Sprinkling

When AFFF sprinkling is installed, operate the AFFF sprinkling system for 2-minutes to increase the foam blanket in the bilge. The initial foam application might be disturbed by the fuel source.

I.2. Water Mist and AFFF Sprinkling

When using installed water mist and AFFF sprinkling:

- Once DCC (underway) or locker leader/OOD (in port) grants permission, attempt reentry as quickly as possible after mechanically isolating the space and activating the water mist system. Electrical isolation, although ongoing, should not delay space reentry. A 15-minute delay, as provided for space cool down and agent soak time with Halon/CO₂/HFP protected spaces, is not required for water mist protected spaces.
- Reenter through a safe access that is not obstructed by the fire. After receiving plant status and fire location reports, DCC (underway) or the locker leader/OOD (in port) should make choice of access.
- Once inside the space, report when the fire is located, when it is extinguished, when reflash watch is set, and when the fire is overhauled. If the location of the fire is not obvious, due to limited visibility, the attack team leader in an FFE follows the lead attack nozzle man with a thermal imager. This person directs the hose teams until relieved. Extinguish class bravo fires within the space using AFFF. To protect against reflash, replenish AFFF blankets covering flammable liquids that might be disturbed by water.
- Overhaul fire/de-smoke space. Ensure a continuous; unbroken blanket of foam covers all oil-covered bilges and machinery. Use a thermal imager to check for hot spots, hidden pockets of flames and to inspect installed ventilation ducting for hot spots and damage. If undamaged, consider using the installed ventilation for de-smoking [Chapter 9: Post-Fire Actions 11](#). If ducting appears damaged, or if plenums/fans are damaged, use portable de-smoking equipment.

NOTE:

If the water mist system appears effective and maintains tenable space temperatures, crews can expedite space investigation by having independent DC personnel navigate throughout the machinery space, separate from the manned AFFF hose.

Chapter 9: Post-Fire Actions

Introduction

After the fire is out, the EO or DCC can give permission to de-smoke the space and atmospherically test for safe remanning. Post a reflash watch with AFFF hoses to extinguish fires that might reignite. Report when the reflash watch is set and when overhaul is completed. This is accomplished when a foam blanket covers the entire bilge and all hot spot areas located with the thermal imager are cooled.

In This Chapter

This chapter contains the following sections:

| Section | Title | Page |
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| A | De-smoking | 9-2 |
| B | Compartment Overhaul | 9-4 |

Section A: De-smoking

A.1. Ventilation After extinguishing a class bravo fire, combustible gases can be present, and operating damaged electric controllers to start fans could ignite these gases. However, this is a reasonable risk to re-activate ventilation fans during a machinery space casualty to remove heat, smoke, and toxins before verifying electrical integrity.

If operating the ventilation system during space re-entry, maintain de-smoking with installed ventilation until all remaining fire has been extinguished and overhauled, AFFF bilge sprinkling has been operated, the source of oil secured, the space cooled, and all fuel washed into the bilges. Leave circuit breakers and other protective devices that trip automatically during the fire in the tripped position until system damage is assessed.

After extinguishing all remaining fire, and if fans are operational, run all fans on high speed for a minimum of 15 minutes to remove remaining smoke and toxic gases. If the installed system is partially operable or inoperable, de-smoking takes longer, but can be accomplished using portable blowers, operable installed fans, and positive pressure from adjacent spaces. Verify electrical integrity, when practicable, for continued safe use of fans. With permission of the engineering officer, de-smoking using installed ventilation has minimal risk when:

- Water mist and AFFF bilge sprinkling are used to extinguish the fire and the fire has been overhauled.
- The space has been allowed to cool.
- The fuel source has been secured and all fuel has been washed into the bilges or pumped to the dirty oil/oily waste tank, or with the permission of the commanding officer, pumped overboard.
- No damage has been sustained to the electrical distribution system. Water mist and AFFF bilge sprinkling are used to extinguish the fire and the fire has been overhauled.

NOTE:

The safest way to de-smoke machinery spaces is to exhaust with portable blowers or use positive pressure from adjacent spaces. These methods minimize risks associated with igniting flammable liquids that have not been vapor secured with AFFF.

A.2. Water Mist Protected Spaces

If water mist was activated, the ventilation system automatically secured. If the ventilation system has been restarted and operated during space reentry, use installed ventilation for de-smoking.

After extinguishing all remaining fires, and if fans are operational, operate all fans on high speed for a minimum of 15 minutes to remove remaining smoke and toxic gases. If the installed system is partially or fully inoperable, de-smoking will take longer, but is accomplished by using positive pressure in surrounding compartments provided by the ship's ventilation systems.

A.3. Atmospheric Testing

De-smoke first. De-smoking precedes atmospheric testing because oxygen analyzers do not operate reliably if the sensor is exposed to excessive moisture, heat, or particles found in a post-fire atmosphere. When the space is clear of smoke, test for oxygen, combustible gases, and toxic gases per NSTM Chapter 074, Volume 3, Gas Free Engineering. Oxygen shall be between 19.5 – 22 percent, combustible gases shall be less than 10 percent of the lower explosive limit (LEL), and all toxic gases below their threshold limit values indicated on each specific Draeger tube before certifying the space safe for personnel to enter without SCBAs.

Authorized personnel. Shipboard personnel authorized to conduct post-fire atmospheric tests for the purpose of certifying the space safe for personnel are gas free engineers and gas free engineering petty officers (E-5 and above), as defined by NSTM Chapter 074, Volume 3, Gas Free Engineering.

Extent of test. After a flammable liquid fire has been extinguished, toxic gas tests for hydrocarbons, carbon dioxide, carbon monoxide, hydrogen chloride, hydrogen cyanide, and chlorine are required at a minimum. Conduct tests near the center and all four corners on each level, taken high and low, with a minimum of ten test points taken. Obtain a satisfactory test at every location tested.

NOTE:

A compartment is considered “safe” only after a complete round of satisfactory test results. An “unsatisfactory” test result at any test point requires further ventilating, and retesting at all test points.

Section B: Compartment Overhaul

- | | |
|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B.1. De-water | The DCA directs the space to be de-watered per standard operating procedures. Retest the space for toxic gases after de-watering since water can trap toxic gases and release them during de-watering. |
| B.2. Reman | Reman the space once it is certified as safe for reentry without SCBAs. |
| B.3. Investigate Damage | The EO directs the damage investigation and determines what equipment/machinery to restart. |
| B.4. Re-Energize Unaffected Systems and Equipment | The EO directs the lineup, starting, and energizing of mechanical and electrical equipment only after a damage assessment indicates these operations do not endangering personnel or the cutter. This might include retesting affected spaces for explosive gases to ensure it is safe to start machinery or equipment that might produce a spark or provide hot surfaces sufficient to cause a fire or explosion. |
-

Appendix A: Glossary and Acronyms

| | |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Affected Space | A space involved in a major oil spill or fire. |
| AFFF | Aqueous film forming foam. |
| AMMR | Aft main machinery room. |
| AMR | Auxiliary machinery room. |
| ATG | Afloat training group. |
| ATL | Attack team leader. |
| ATO | Afloat Training Organization. |
| Backdraft Explosion | An explosion resulting from combining fresh air with hot flammable fire gases which have reached their auto-ignition temperatures. |
| Class ALPHA Fire | Ordinary combustibles such as wood, paper, fabric, and most kinds of trash. Class A fires leave ash. |
| Class Bravo Fire | Fires whose fuel is flammable or combustible liquid or gas. Class kilo fires (cooking oils and fats) are technically a subclass of the flammable liquid/gas class. The special characteristics of these types of fires, namely the higher flash point, are considered important enough to recognize separately. |
| Class CHARLIE Fire | Fires involving potentially energized electrical equipment. These fires are a hazard to firefighters using conductive agents, as electricity can be conducted from the fire, to the firefighter's body, and then to ground. Once electricity is shut off to the equipment involved, it becomes an ordinary combustible (class alpha) fire. |
| Class DELTA Fire | Class D fires consist of combustible metals such as magnesium, potassium, titanium, and zirconium. |
| CO | Commanding officer. |
| CO₂ | Carbon dioxide. |
| Contained | The oil/fuel leak/spill is controlled and not allowed to spread. |
| COV | Cut-off valve. |

| | |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DC | Damage control. |
| DCA | Damage control assistant. |
| DCC | Damage control central. |
| DCTT | Damage control training team. |
| ECR | Engineering control room. |
| ECRT | Engineering casualty response team (underway only) |
| EEBD | Emergency escape breathing device. |
| Electrical Isolation | Used to describe the de-energizing of all electrical equipment in and to the affected space with the exception of lighting. |
| EO | Engineering officer. |
| EOSS | Engineering operational sequencing systems. |
| EOW | Engineer of the watch. |
| FFE | Firefighter's ensemble. |
| Fire And Smoke Boundaries | Any physical barrier can be a fire boundary. Ideally, primary boundaries are the bulkheads, deck, and overhead surrounding the fire. Secondary fire boundaries are usually at fire zone bulkheads or watertight subdivisions. |
| FMMR | Forward main machinery room. |
| GFE | Gas free engineer. |
| GQ | General quarters. |
| GT | Gas turbine. |
| HF | Hydrogen fluoride. |
| HFP | Heptafluoropropane. |
| HMI | Human machinery interface. |
| HPU | Hydraulic power unit. |
| HYDRA | Hierarchical yet dynamic radio architecture. |
| IVCS | Integrated voice communications system. |

| | |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| JOOD | Junior officer of the day. |
| LAN | Local area network. |
| LEL | Lower explosive limit. |
| Machinery Monitoring System | Whatever machinery monitoring system is installed in the cutter. |
| Machinery Space | A main machinery or auxiliary machinery space that contains any of the following: installed firefighting systems, oil fired boilers, internal combustion engines, gas turbines, or fuel transfer equipment. |
| Major Oil Leak | A flammable liquid leak (lube oil, fuel oil, or hydraulic oil), more than a drip, that cannot be controlled with a rag by a watchstander in a normal round. |
| MAKO compressor | Primary compressors refilling SCBA bottles, located in Repair 2 and the Repair 3 annex. |
| MCMS | Whatever machinery monitoring system is installed in the cutter. |
| Mechanical Isolation | Securing of all machinery and piping systems in and to the affected space. |
| MPDE | Main propulsion diesel engine. |
| MSFD | Machinery space firefighting doctrine. |
| Negative Ventilation | Provides enough air to a compartment with personnel inside without supplied air breathing apparatus, without supplying additional oxygen to the fire: supply on LOW or OFF, exhaust on HIGH. |
| NTD | Non-tight door. |
| OOD | Officer of the deck. |
| OSL | On-scene leader. |
| Out Of Control Fire | A fire that creates conditions due to heat and smoke that forces personnel to abandon the space. Flammable liquid spray fires are automatically considered a class bravo fire out of control. |
| Overhaul | Determine the extent of the fire while extinguishing residual, embedded fires, followed by clean up operations. |

| | |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PKP | Purple K powder. A potassium bicarbonate-based, dry chemical, fire-extinguishing agent. |
| PMCS | See MCMS. |
| Positive Ventilation | Supply on high, exhaust on low or off. Set adjacent to the smoke control zone outside the secondary smoke boundary. Setting positive pressure ventilation in the smoke control zone once fire overhaul is complete is generally an effective way to de-smoke an affected space. |
| QAWTD | Quick-acting watertight door. |
| Recovery/Triage Area | A space designated by DCC for the treatment and recovery of personnel. |
| Reentry | Used to describe when a fire team reenters an affected space after it has been evacuated. |
| RRT | Rapid response team. |
| SCBA | Self-contained breathing apparatus. |
| Smoke Control Zone | An enclosed area immediately adjacent to the entrance to the affected space, between the primary and secondary smoke boundaries. The smoke control zone is monitored by the DC response organization for smoke buildup and removal. |
| SOPA | Senior officer present afloat. |
| SSDG | Ship's service diesel generator. |
| Surfactant | A large group of surface acting compounds that includes detergents, wetting agents, and liquid soaps. |
| TTP | Tactics, techniques, and procedures. |
| Unaffected Space | Any space other than the space involved in a major oil leak/spill or fire. |
| Vapor Secure | Establishing a film or foam blanket over flammable liquids to prevent vaporization thereby isolating the fuel source from oxygen and heat. |
| WMSL | Maritime security cutter, large. |
| WQSB | Watch, quarter, and station bill. |
| WTH | Watertight hatch. |

Appendix B: Machinery Space Firefighting Communications Plan

Machinery Space Firefighting Communications Plan

WMSL-123

ECR (EOW) and Bridge: _____ Net 80

ECR and Machinery: _____ portable radios

DCC, Bridge, BDS, and Repair Lockers: _____ sound-powered phones

DCC and Repair Lockers: _____ portable radios

OSL and Repair Locker Leader: _____ portable radios

ECR and watchstander: _____ portable radios

RPE and Repair Locker Leader: _____ portable radios

INV and Repair Locker Leader: _____ portable radios

The P-100 pump team and Repair 3: _____ portable radios

Notes:

- If portable radios cannot be used, the OSL communicates directly with the repair locker via message blanks.
- If message traffic cannot be maintained, use any available means to maintain communications between the repair party and the repair locker.
- Repair 2/repair 3 do not normally dial into Net 80 on the telephone in the locker unless there is a communications loss on SPP. Dialing into this phone completely ties up the line.

Machinery Space Firefighting Communications Plan

ECR (EOW) and Bridge: _____

ECR and Machinery: _____

DCC, Bridge, BDS, and Repair Lockers: _____

DCC and Repair Lockers: _____

OSL and Repair Locker Leader: _____

ECR and watchstander: _____

RPE and Repair Locker Leader: _____

INV and Repair Locker Leader: _____

The P-100 pump team and Repair 3: _____

Notes:

- If portable radios cannot be used, the OSL communicates directly with the repair locker via message blanks.
- If message traffic cannot be maintained, use any available means to maintain communications between the repair party and the repair locker.
- Repair 2/Repair 3 do not normally dial into Net 80 on the telephone in the locker unless there is a communications loss on SPP. Dialing into this phone completely ties up the line.

Appendix C: List of Spaces Requiring Subsections

Due to the unique configuration and responses to fire or major oil leaks in these spaces, each is addressed separately.

- Aft Main Machinery Room (5-52-01-E).
 - For a class bravo fire, secure ventilation on the affected side of the AMMR and shift ventilation to slow on the unaffected side. DO NOT totally secure ventilation until all personnel are evacuated from the space.
 - Activate Water Mist System to extinguish fire and cool space.
 - Activate AFFF bilge sprinkling for 2-minutes to vapor secure bilge.
 - Primary reentry point is WTH 2-61-2.
- Forward Main Machinery Room (5-44-01-E).
 - For a class bravo fire, secure ventilation on the affected side of the FMMR and shift ventilation to slow on the unaffected side. DO NOT totally secure ventilation until all personnel are evacuated from the space.
 - Activate Water Mist System to extinguish fire and cool space.
 - Activate AFFF bilge sprinkling for 2-minutes to vapor secure bilge.
 - For fire within gas turbine enclosure, activate installed CO₂ flooding system.
 - Primary reentry point is WTH 2-45-2.
 - SSDG batteries are stored at the rear of the generator set. Firefight around batteries as per [Chapter 2: Fundamental Principles](#).
- Auxiliary Machinery Room (5-36-01-E).
 - For a class bravo fire, secure ventilation on the affected side of the AMR and shift ventilation to slow on the unaffected side. DO NOT totally secure the ventilation until all personnel are evacuated from the space.
 - Activate Water Mist System to extinguish fire and cool space.
 - Activate AFFF bilge sprinkling for 2-minutes to vapor secure bilge.
 - Primary reentry point is WTH 2-39-1.
 - SSDG batteries are stored at the rear of the generator set. Firefight around batteries as per [Chapter 2: Fundamental Principles](#).

- #3 Ship Service Diesel Generator Room (2-76-5-E).
 - For a class bravo fire, evacuate space and secure ventilation.
 - Activate Water Mist System to extinguish fire and cool space.
 - Activate AFFF overhead sprinkling for 2-minutes to vapor secure fuel/oil.
 - Primary reentry point is QAWTD 2-76-1.
 - SSDG batteries are stored at the rear of the generator set. Firefight around batteries as per [Chapter 2: Fundamental Principles](#).

- Incinerator Room (1-47-1-Q).
 - For a class bravo fire, evacuate space and secure ventilation.
 - Activate AFFF overhead sprinkling for 2-minutes to vapor secure fuel.
 - Primary reentry point is QAWTD 1-46-1.

- JP-5 Pump Room (3-64-2-E).
 - For a class bravo fire, evacuate space and secure ventilation.
 - Activate AFFF overhead sprinkling for 2-minute to vapor secure fuel.
 - Primary reentry point is NTD 3-66-2.

Appendix D: Aft Main Machinery Room (5-52-01-E) Underway Checklists

[Tab 1, Machinery Watchstander Checklist for Leak/Fire in AMMR](#)

[Tab 2, Engineering Control Room \(EOW\) Checklist](#)

[Tab 3, OOD Checklist](#)

[Tab 4, DCA Checklist](#)

[Tab 5, Repair Locker Leader Checklist](#)

[Tab 6, Hangar Person-in-Charge-Of-Extras Checklist](#)

[Tab 7, Water MIST/AFFF Operator Checklist](#)

[Tab 8, Repair Locker Electrician Checklist](#)

[Tab 9, Medical Personnel Checklist](#)

[Tab 10, Smoke Boundaries/Smoke Control Zone](#)

[Tab 11 Ventilation](#)

[Tab 12, Fire Boundaries](#)

[Tab 13, Mechanical and Electrical Isolation](#)

[Tab 14, Reentry Points](#)

[Tab 15 De-smoking/Gas-Freeing](#)

Section A: Tab 1, Machinery Watchstander Checklist for Leak/Fire in AMMR

A. Major oil leak/fire in AMMR

- _____ Notify EOW of casualty.
- _____ Secure affected equipment: secure the source of the leak/fire immediately, consistent with the restricted maneuvering doctrine and commanding officer's battle orders as applicable. If source cannot be secured, deflect oil to bilge.
- _____ Shoulder EEBDs.
- _____ Breakout portable AFFF and PKP extinguishers on scene. Wash oil to bilge using AFFF extinguisher. Fight small, contained fires with PKP/AFFF extinguishers. If there is no immediate danger of a fire, wash large oil leaks into the bilge using the AFFF hose reel located in the second deck vestibule.

B. Class Bravo Fire Out of Control in AMMR

- _____ Complete checklist for leak/fire.
- _____ Notify EOW that the fire is out of control.
- _____ Don and activate EEBDs.
- _____ Evacuate through the nearest safe exit.
- _____ Activate water mist system for AMMR.
- _____ Notify EOW of personnel, machinery, firefighting equipment status, and water mist activation time.

Note: This is a reduced checklist. See reference (b), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3, for more detail.

Section B: Tab 2, Engineering Control Room (EOW) Checklist

A. Major Oil Leak/Fire in AMMR.

_____ Secure the source of the leak/fire immediately, consistent with the restricted maneuvering doctrine and co's battle orders as applicable.

_____ Notify OOD.

- Casualty location.
- Equipment affected.
- Action taken and max speed available – On GT and MDEs.
- Recommend setting general emergency.

Pipe: “Conn – EOW: There is a [class A/B/C fire or a major fuel/lube oil leak] in the aft main machinery room, compartment 5-52-01-E, [upper/lower level], [port side/stbd side/centerline] at frame [#]. I have secured the following equipment [list]. Max speed available is [#] knots. Recommend setting general emergency.”

_____ Energize fire pumps as required.

_____ Check firemain pressure. Verify that machinery monitoring system automated control features maintain sufficient firemain pressure. If insufficient pressure, manually energize additional fire pumps.

_____ If initial actions are insufficient to vapor secure bilge, energize AFFF bilge sprinkling for initial 2-minute dump.

_____ In the event of a fire in AMMR:

- Direct watchstanders to take initial action to combat fire.

— or —

- Activate water mist system for AMMR.

_____ Set negative ventilation within AMMR as per [Tab 11 Ventilation](#) (supply fans on low; exhaust fans on high).

_____ Set positive ventilation outside AMMR as per [Tab 11 Ventilation](#) (smoke control zone).

_____ Mechanically isolate space further by securing other equipment near the casualty.

_____ Electrically isolate space further by securing other equipment near the casualty.

B. Class Bravo Fire Out of Control in AMMR.

- _____ Complete checklist for leak/fire.
- _____ Shoulder EEBD if leaving your space.
- _____ Notify OOD fire is out of control and AMMR and ECR are being evacuated.
- _____ If not done previously, activate AFFF bilge sprinkling in AMMR for 2-minute initial dump.
start time: _____ end time: _____.
- _____ If not done previously, activate water mist system for AMMR.
start time: _____ end time: _____.
- _____ Mechanically isolate space as per [Tab 13, Mechanical and Electrical Isolation](#).
- _____ Electrically isolate space as per [Tab 13, Mechanical and Electrical Isolation](#).
- _____ Evacuate ECR and make report to DCA in EO's stateroom regarding machinery plant, personnel, and casualty status. Report AFFF bilge sprinkling and water mist system activation times. Ensure propulsion control has been shifted to bridge prior to evacuation.
- _____ Verify AMMR fuel oil remote COVs are closed.
- _____ Verify AMMR fire station COVs are closed.
- _____ Lay to WQSB, after complete status of casualty has been passed on and having been properly relieved by the general emergency watch section.

Section C: Tab 3, OOD Checklist

A. Major oil leak/fire in AMMR.

- _____ Receive report from EOW.
- Casualty – location of leak/fire.
 - Equipment affected.
 - Action and max speed available – on GT and MDEs.
 - Set general emergency as per the machinery space fire doctrine.
- _____ Sound general alarm.

Pipe: “[*Fire, fire, fire*] or [*major oil leak*] in the aft main machinery room, compartment 5-52-01-E, [*upper/lower*] level, [*port side/stbd side/ centerline*], at frame [#]. All hands set general emergency per the machinery space fire doctrine. Set modified zebra. Do not set zebra on the firemain.”

Note: Once DCC is manned and ready, make all further pipes associated with the MSFD from DCC. In the event the DCA is unable to make pipes, the OOD pipes as necessary.

- _____ Establish communications with DCC.
- _____ Report manned and ready to DCC.
- _____ Slow ship to 5 knots or less (if propulsion is still available).
- _____ Maneuver ship to maintain as smooth a ride as possible during response.
- _____ Ensure DCA reports all stations manned and ready, modified zebra set.

Pipe: “All stations manned and ready. Modified zebra is set.”

- _____ When EOW reports AFFF was applied to AMMR bilges.

Pipe: “AFFF bilge flooding was activated in aft main machinery room at time _____.”

- _____ If EOW reports water mist system activated in AMMR.

Pipe: “Water mist system activated in aft main machinery room at time _____.”

B. Class Bravo Fire Out of Control in AMMR.

_____ Ensure checklist for leak/fire is complete.

_____ When EOW reports fire is out of control and ECR and AMMR are evacuating.

Pipe (if directed by DCA): *“The fire in the aft main machinery room is out of control. The aft main machinery room and ECR are being evacuated. DC Central has relocated to EO’s stateroom. The EOW has relocated to the bridge.”*

_____ Ensure DCA reports AMMR is mechanically and electrically isolated.

Pipe (if directed by DCA): *“The aft main machinery room is mechanically and electrically isolated.”*

_____ If not activated previously, ensure DCA reports AMMR water mist system activation.

Pipe (if directed by DCA): *“Water mist system has been activated in the aft main machinery room at time _____.”*

_____ Ensure DCA reports 2-minute Reentry AFFF bilge flooding for AMMR at time _____.

Pipe: (if directed by DCA) *“2-minute reentry AFFF bilge flooding to aft main machinery room activated at time _____.”*

_____ Ensure DCA reports fire team ordered to reenter AMMR.

Pipe (if directed by DCA): *“The fire team has reentered the aft main machinery room at time _____.”*

_____ Ensure DCA reports class bravo fire is OUT.

Pipe (if directed by DCA): *“Class bravo fire is out in the aft main machinery room, reflash watch is set.”*

Section D: Tab 4, DCA Checklist

A. Major Oil Leak/Fire in AMMR.

_____ Relocate DC Central to EO's stateroom.

_____ Establish communications.

_____ Conn.

_____ Repair 2.

_____ Repair 3.

_____ AFFF/water mist system operator (fwd/aft).

_____ Hangar person-in-charge-of-extras.

_____ Manned and ready.

_____ Conn.

_____ Repair 2.

_____ Repair 3.

_____ AFFF/water mist system operator (fwd/aft).

_____ Report all stations manned and ready to OOD.

Pipe: *"All stations manned and ready."*

_____ Verify firemain pressure.

_____ Start plot.

_____ Report initial 2-minute AFFF bilge flooding times to OOD.

start time: _____ end time: _____.

Pipe: *"AFFF bilge flooding was activated in aft main machinery room at time _____."*

_____ If EOW reports, water mist system activated in AMMR.

start time: _____ end time: _____.

Pipe: *"Water mist system has been activated in the aft main machinery room at time _____."*

- _____ Receive and plot reports from repair lockers.
- _____ Modified zebra set.
- _____ Fire boundaries set as per [Tab 12, Fire Boundaries](#).
- _____ Smoke boundaries/smoke control zone set as per [Tab 10, Smoke Boundaries/Smoke Control Zone](#).
- _____ Ventilation secured as per [Tab 11 Ventilation](#).
- _____ Two P-100s rigged/jumpered.
- _____ SCBA change out station established.
- _____ Report modified zebra set to OOD.

Pipe: *“Modified zebra is set.”*

Class Bravo Fire Out of Control in AMMR.

_____ Ensure completion of checklist for leak/fire.

_____ Receive report from EOW ECR/AMMR evacuated.

Pipe: *“Aft main machinery room is evacuated. Make all reports to DCC.”*

_____ Order AFFF station operator to conduct 2-minute AFFF bilge flooding (if not accomplished by EOW).

start time: _____ end time: _____.

_____ If not previously reported, EOW to report, water mist system activated in AMMR.

Pipe: *“Water mist system has been activated in the aft main machinery room at time _____.”*

_____ Receive reports from EOW.

_____ Closed AMMR fuel oil remote COVs.

_____ Closed AMMR fire station COVs.

_____ Account for all personnel in watch section.

_____ AFFF bilge flooding times.

_____ Location of firefighting equipment in AMMR.

_____ Mechanical and electrical isolations completed.

_____ Receive reports of electrical Isolation complete.

Repair 2 _____ Repair 3 _____

_____ Receive reports of mechanical isolation complete.

Repair 2 _____ Repair 3 _____

_____ Report AMMR is mechanically and electrically isolated.

Pipe: *“The aft main machinery room is mechanically and electrically isolated.”*

_____ Verify fire team ready for reentry.

_____ Ensure backup hose is manned prior to re-entry.

_____ Order 2-minute AMMR bilge flooding _____ (time).

_____ Report times to OOD.

Pipe: *“2-minute reentry AFFF bilge flooding to aft main machinery room activated at time _____.”*

_____ Order fire team to reenter AMMR.

_____ Receive reentry time from RLL.

_____ Report fire team has entered AMMR at (time) _____ to OOD.

Pipe: *“The fire team has reentered the aft main machinery room at time _____.”*

_____ Verify fire team reliefs are manned and ready.

_____ Receive ‘fire is out’ Report.

_____ Report fire is out to OOD.

Pipe: *“Class bravo fire is out in the aft main machinery room, reflash watch is set.”*

_____ Order fire compartment overhaul.

_____ Order repair locker electrician to investigate for electrical damage.

_____ Order de-smoking.

_____ Order conduct gas free tests ([Tab 15 De-smoking/Gas-Freeing](#)).

_____ Order de-watering.

_____ Conduct gas free toxic tests ([Tab 15 De-smoking/Gas-Freeing](#)).

Section E: Tab 5, Repair Locker Leader Checklist

A. Major Oil Leak/Fire in AMMR.

- _____ Establish communications with DC Central (both).
- _____ Make reports to DC Central (both).
 - _____ Manned and ready.
 - _____ Set modified Zebra.
 - _____ Set fire boundaries as per [Tab 12, Fire Boundaries](#).
 - _____ Set smoke boundaries/smoke control zone as per [Tab 10, Smoke Boundaries/Smoke Control Zone](#).
 - _____ Set ventilation as per [Tab 11 Ventilation](#).
 - _____ Rig two P-100s and connect to firemain.
 - _____ Establish SCBA primary change out station in Repair 3.
(Secondary change out station is passage 2-16-1-L, near Repair 2).
- _____ Check firemain pressure. Verify that automated control features of the machinery monitoring system maintain sufficient firemain pressure. If insufficient pressure, energize additional fire pumps manually (both).
- _____ Ensure following positions are filled prior to re-entry: (Repair 2).
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary Plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.
- _____ Dispatch investigators to verify sufficient fire pumps on line and not overheating, status of smoke/fire boundaries. Report existing conditions to DCA (Repair 2).
- _____ Dispatch Fire party to Repair 2 (Repair 3).
- _____ Ensure investigators verify water mist/AFFF stations manned, status of smoke/fire boundaries. Report existing conditions to DCA (Repair 3).
- _____ Ensure firemain isolation valve 2-43-2FM (in crew stateroom 2-36-8-L) is open (Repair 2).

B. Class Bravo Fire Out of Control in AMMR.

- _____ Complete checklist for leak/fire (both).
- _____ Verify from DCA mechanical and electrical isolation is complete as per [Tab 13, Mechanical and Electrical Isolation](#) (both).
- _____ Report fire team ready for reentry (Repair 2).
- _____ Order fire team to reenter AMMR when ordered by DCA.
- _____ Report reentry time to DCC. (Repair 2).
- _____ Verify SCBA start time from OSL (Repair 2).
- _____ Locker leader monitors and records light-off times (Repair 3).
- _____ Send first set of SCBA reliefs to passage 2-44-0-L (Repair 2).
- _____ First set of reliefs light-off SCBAs when directed (Repair 2).
- _____ Locker leader monitors and records light-off times (Repair 3).
- _____ Change out the following:
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary Plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.

- _____ Second set of reliefs light-off SCBAs when directed (Repair 2).
- _____ Locker leader monitors and records light-off times (Repair 3).
- _____ Change out the following:
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary Plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.
- _____ Third set of reliefs light-off SCBAs when directed (Repair 2).
- _____ Locker leader monitors and records light-off times (Repair 3).
- _____ Change out the boundary men.
- Note: Personnel being relieved muster in Repair 2. Once Repair 2 LL accounts for everyone, reliefs doff FFEs and SCBAs for use by the next set of reliefs. Relieved personnel then report to the HSC or his representative for cool down.**
- _____ Pass word to DCC when the fire is out and a reflash watch is set (Repair 2).
- _____ Initiate post-fire actions when ordered by DCA (Repair 2).
- _____ Ensure post-fire personnel don and activate SCBA before reentry (Repair 2).
- _____ Overhaul fire.
- _____ Repair locker electrician investigate for electrical damage.
- _____ De-smoke.
- _____ De-water.
- _____ Test atmosphere.

Section F: Tab 6, Hangar Person-in-Charge-Of-Extras Checklist

A. Major Oil Leak/Fire in AMMR.

- _____ Establish communications with DCC.
- _____ Muster all extra personnel.
- _____ Make reports to dc central.
 - _____ Number of personnel available.
 - _____ Set Modified Zebra – main deck and above.
- _____ Set fire boundaries as needed or as directed – main deck and above.
- _____ Set smoke boundaries/smoke control zone – main deck and above.
- _____ Investigate topside fire boundaries. Report conditions to dc central.

B. Class Bravo Fire Out of Control in AMMR.

- _____ Complete checklist for leak/fire.
- _____ Coordinate SCBA relief process with Repair 3 locker leader.

Section G: Tab 7, Water MIST/AFFF Operator Checklist

A. Major Oil Leak/Fire in AMMR.

- _____ Don battle dress and SCBA.
- _____ Establish communications with DC Central.
- _____ Report manned and ready to DC Central.
- _____ Verify fire pumps on line and AFFF pump on line.
(120 psi showing at local gauge).
- _____ Verify that AMMR AFFF and water mist supply valves are open.
- _____ Continually monitor water mist/AFFF tank levels and replenish as necessary.

B. Class Bravo Fire Out of Control in AMMR.

- _____ Complete checklist for leak/fire.
- _____ Activate AMMR water mist system when ordered by DCA.
- _____ Activate AMMR AFFF bilge flooding when ordered by DCA.
- _____ Close AFFF COV when ordered by DCA.
- _____ Secure water mist system when ordered by DCA.

Section H: Tab 8, Repair Locker Electrician Checklist

A. Major Oil Leak/Fire in AMMR.

_____ Don battle dress and SCBA (both).

_____ Electrical isolation as per [Tab 13, Mechanical and Electrical Isolation](#): Maintain the current source of power until evacuation. Do not secure lighting and power to firefighting equipment or ventilation.

B. Class Bravo Fire Out of Control in AMMR.

_____ Complete checklist for leak/fire (Repair 2).

_____ Perform electrical isolation as per [Tab 13, Mechanical and Electrical Isolation](#). (both).

Note: After evacuating the AMMR, secure supply fans. Do not secure exhaust ventilation until directed to do so by the RLL. (Activation of the water mist system automatically secures exhaust ventilation within the affected space.)

Note: After evacuating the AMMR, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

_____ When ordered by RLL, report to AMMR (Repair 2).

_____ Investigate electrical damage to AMMR ventilation and other systems as directed.

Section I: Tab 9, Medical Personnel Checklist

A. Major Oil Leak/Fire in AMMR.

- _____ Establish recovery area in sickbay (1-73-2-L).
- _____ Establish communications with Repair 2.
- _____ Provide food, liquids, and dry clothing for personnel.

B. Class Bravo Fire Out of Control in AMMR.

- _____ Complete checklist for leak/fire.
- _____ Standby to assist with personnel casualties.

Section J: Tab 10, Smoke Boundaries/Smoke Control Zone

A. Major Oil Leak/Fire in AMMR.

1. Primary smoke boundaries.
 - Forward - frame 52.
 - Aft - frame 64.
2. Secondary smoke boundaries.
 - Forward - frame 44.
 - Aft - frame 70.
3. List of Smoke Curtain Locations.
 - QAWTD 2-52-1.
 - QAWTD 2-52-2.
 - QAWTD 2-64-1.
 - QAWTD 2-64-4.
4. For smoke control zone ventilation, see [Tab 11 Ventilation](#).
 - a. Compartments below DC deck from FR 44-70.
 - Fuel oil contaminated settling tank (3-50-2-F).
 - Escape trunk (4-51-1-T).
 - FMMR (5-44-01-E).
 - JP-5 pump room (3-64-2-E).
 - Pump room (3-64-0-E).
 - Shaft alley (5-64-1-Q and 5-64-2-Q).
 - Fuel oil service tanks (4-64-1-F and 4-64-2-F).

- b. Compartments on DC deck and above from FR 44-70.
- ECR (2-52-1-E).
 - Escape trunk (4-52-1-T).
 - Passageway (2-52-01-L).
 - AMMR access (2-60-2-L and 2-60-3-L).
 - Fan room (2-60-4-Q and 2-60-5-Q).
 - Deck toilet (2-60-1-L).
 - #2 AFFF station (2-61-0-Q).
 - Electric/computer repair (2-59-0-Q).
 - Mechanical/damage control shop (2-55-2-Q).
 - #2 laundry (2-52-2-Q).
 - FMMR uptake space (2-45-0-Q).
 - AMMR uptake space (2-52-0-Q).
 - Crew messroom (1-52-0-L).
 - GT exhaust (01-49-0-Q).
 - Helicopter spares storeroom area (01-52-1-Q).
 - Vertical take-off and landing UAV spares storeroom area (01-52-2-Q).
 - Deck gear locker (01-59-1-Q).
 - Aviation workshop (01-59-0-Q).
 - GT exhaust (02-49-0-Q).
 - Fan rooms (02-52-1-Q and 02-52-2-Q).
 - AMMR uptake space (02-54-0-Q).
 - #2 SSDG intake filter room (02-48-0-Q).
 - AMMR exhaust (03-58-0-Q).
 - #1 main propulsion diesel engine intake filter room (03-54-1-Q).
 - #2 main propulsion diesel engine intake filter room (03-54-2-Q).
 - GT exhaust (02-49-01-Q).

B. Class Bravo Fire Out of Control in AMMR.

Same as above.

Section K: Tab 11 Ventilation

A. Major Oil Leak/Fire in AMMR.

_____ Set ventilation (both).

1. Set negative ventilation in AMMR; place supply fans on low, exhaust fans on high.

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-66 (vital) | 01-53-1 | MCMS | yes | EOW |
| SS-67 (vital) | 01-53-2 | MCMS | yes | EOW |
| ES-122 (vital) | 2-59-1 | MCMS | yes | EOW |
| ES-123 (vital) | 2-62-2 | MCMS | yes | EOW |

2. Set positive ventilation outside AMMR (smoke control zone) as follows.

- a. Place supply fans outside AMMR on high.

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|-------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-56 (vital) | 1-70-1 | MCMS | yes | EOW |
| SS-58 (non-vital) | 01-65-1 | MCMS | yes | EOW |
| SS-59 (non-vital) | 01-64-4 | MCMS | yes | EOW |

b. Exhaust fans and recirculation fans outside AMMR (secure).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| ES-106 (non-vital) | 1-64-1 | MCMS | yes | EOW |
| ES-108 (non-vital) | 01-64-1 | MCMS | yes | EOW |
| ES-109 (non-vital) | 01-63-2 | MCMS | yes | EOW |
| ES-119 (non-vital) | 1-63-2 | N/A | No | Rep Elect |
| RS-8 (non-vital) | 2-63-1 | MCMS | yes | EOW |
| RS-9 (non-vital) | 1-62-2 | N/A | No | Rep Elect |
| RS-10 (vital) | 2-62-1 | MCMS | yes | EOW |
| RS-12(non-vital) | 2-45-1 | MCMS | yes | EOW |
| FCA-29 (vital) | 02-63-0 | MCMS | yes | EOW |

B. Class Bravo Fire Out of Control in AMMR.

Exhaust ventilation in AMMR remains on while the water mist system is activated. Secure all other ventilation when the fire is out of control.

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-66 (vital) | 01-53-1 | MCMS | yes | EOW |
| SS-67 (vital) | 01-53-2 | MCMS | yes | EOW |
| ES-122 (vital) | 2-59-1 | MCMS | yes | EOW |
| ES-123 (vital) | 2-62-2 | MCMS | yes | EOW |

Section L: Tab 12, Fire Boundaries

A. Major Oil Leak/Fire in AMMR.

- Primary fire boundaries.
 - Forward - bulkhead 52, 4th deck and above.
 - Aft - bulkhead 64, 4th deck and above.
 - Above - second deck from frame 52 to 64.
 - Above - bulkheads surrounding AMMR uptake space, second deck and above.

- Secondary fire boundaries.
 - Forward - bulkhead 44, 4th deck and above.
 - Aft - bulkhead 70, 4th deck and above.
 - Above - 01 deck from frame 44 to 70.

B. Class Bravo Fire Out of Control in AMMR.

Same as above.

Section M: Tab 13, Mechanical and Electrical Isolation

A. Major Oil Leak/Fire in AMMR.

1. Mechanical isolation - secure propulsion machinery as per standard procedures in reference (b), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3.
2. Electrical isolation - maintain the current source of power until evacuation. Do not secure lighting and power to firefighting equipment or ventilation. Each watch station listed below ensures that the following systems are secured/de-energized:
 - a. Main switchboard operator (personnel in ECR) ensure that the following breakers are opened:

(Move applicable breakers from below to this section.).

b. Repair locker electrician:

| | | |
|-------|------------------|--------------------------------|
| _____ | 2S-4P-(3-61-2) | non-vital power panel (3-61-2) |
| _____ | 3S-4P-(3-63-1) | non-vital power panel (3-63-1) |
| _____ | 3S-4P-(3-63-4) | (normal) ABT (3-63-2) |
| _____ | 2S-4P-(3-63-4) | (alt) ABT (3-63-2) |
| _____ | 3S-4P-E (Normal) | #1 CRP HPU |
| _____ | 2S-4P-P (Alt) | #1 CRP HPU |
| _____ | 3S-4P-F (Normal) | #2 CRP HPU |
| _____ | 1S-4P-E (Alt) | #2 CRP HPU |
| _____ | 2S-4P-B (Normal) | #4 fire pump |
| _____ | 3S-4P-B (Alt) | #4 fire pump |
| _____ | 2S-4P-J | #1 MRG LO service pump |
| _____ | 1S-4P-F | #2 MRG LO service pump |
| _____ | 1S-4P-H | CCG LO service pump |
| _____ | (3-63-4)-4P-C | #2 start air compressor |
| _____ | (2-41-1)-4P-D | #1 MTU UPS |
| _____ | (1-70-4)-1P-J | AMMR HMI workstation |
| _____ | (1-70-4)-1P-R | stbd torsion meter |
| _____ | (1-70-4)-1P-T | CCG controls |
| _____ | (1-70-4)-1P-U | #1 MRG controls |
| _____ | (1-81-1)-1P-C | ESD relay panel |
| _____ | (1-81-1)-1P-E | MRG vent fog precipitator |
| _____ | (1-81-1)-1P-H | port torsion meter |
| _____ | (1-81-1)-1P-K | #2 MRG controls |

B. Class Bravo Fire Out of Control in AMMR

1. Mechanically isolate the following when there is a class bravo fire out of control in AMMR:

| | |
|------------------------------|--------------------------------|
| _____ #1 MDE | _____ #2 MDE. |
| _____ #1 CRP HPU | _____ #2 CRP HPU. |
| _____ #4 fire pump | _____ #2 start air compressor. |
| _____ #1 MRG LO service pump | _____ #2 MRG LO service pump. |
| _____ CCG LO service pump | _____ start air COV |
| _____ fuel oil COV 2-42-1 | _____ fuel oil COV 2-42-3. |

2. Electrical isolation - electrically secure these items to secure all power present in AMMR. They include the power to firefighting equipment and ventilation. Watch stations listed ensure that the following systems are secured/de-energized:
 - a. Main switchboard operator (personnel in ECR): (*List electrical isolations for EOW).
 - b. Repair locker electrician:

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-66 (vital) | 01-53-1 | MCMS | yes | EOW |
| SS-67 (vital) | 01-53-2 | MCMS | yes | EOW |
| ES-122 (vital) | 2-59-1 | MCMS | yes | EOW |
| ES-123 (vital) | 2-62-2 | MCMS | yes | EOW |

Note: Secure supply fans after AMMR is evacuated. Do not secure exhaust ventilation until directed to do so by the RLL. (Activation of the water mist system automatically secures exhaust ventilation within the affected space.)

Note: After evacuating the AMMR, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

- _____ LC3-1VL-(3-63-1), vital lighting panel (located in passageway, 1-29-0-L).
- _____ LC1-1L-(3-63-1), lighting panel (located in AMR, 5-36-01-E).

Section N: Tab 14, Reentry Points

A. Major Oil Leak/Fire in AMMR.

Reentry point for a major oil leak or class bravo fire contained in AMMR is at the discretion of the DCA. If possible, the primary reentry point is WTH 2-61-2.

B. Class Bravo Fire Out of Control in AMMR.

1. The primary reentry point for AMMR is through WTH 2-61-2.
 - a. #1 hose supplied from AFFF hose reel 2-62-2.
 - b. #2 hose supplied from fireplug 2-62-1.
2. The secondary reentry point for AMMR is through WTH 2-61-1.
 - a. #1 hose supplied from fireplug 2-62-1.
 - b. #2 hose supplied from fireplug 2-53-1.

Section O: Tab 15, De-smoking/Gas-Freeing

A. Procedures for de-smoking AMMR (installed ventilation system operable).

The installed ventilation system is preferred for de-smoking AMMR after a fire because of its high volume capacity. However, do not energize AMMR ventilation until its condition is investigated and permission for use granted by the engineering officer. This procedure assumes that the installed AMMR ventilation system has been inspected and found to be safe to operate.

1. The engineering officer, with the repair electrician, determines the condition of the ventilation electrical system and declares the system operational.
2. Once inspected, request the engineering officer's permission and wait for permission before energizing the blowers. To energize and restart the blowers, the repair electrician:
 - a. Inspects the condition of the cables and transformers near ABT 2-53-2 and 02-61-1. These ABTs supply control voltage to AMMR ventilation systems. If satisfactory, direct switchboard operator to close breaker. Normal power is from 3S-4P-(2-54-2) and 3S-4P-(01-61-1) and alternate is from 2S-4P-(2-54-2) and 2S-4P-(01-61-1).
 - b. Restarts AMMR ventilation using controllers in passage (2-64-1-L and 2-52-01-L), helo spare storeroom (01-52-1-Q), and VUAV spare storeroom (01-52-2-Q). Start exhaust ventilation on SLOW, working up to fast as load limits on SSDGs allow. Start supply blowers on SLOW.
 - c. Continues until AMMR is de-smoked, de-watered, and atmospheric tests are satisfactory.

B. Procedures for De-smoking AMMR (installed ventilation system not operable).

Use this procedure for de-smoking AMMR if the ventilation system has been damaged. The basic idea is to create a positive pressure outside of AMMR to force smoke out the uptake space. Accomplish this without allowing smoke to enter the interior of the ship.

De-smoking by opening doors and breaking smoke boundaries is not advised unless careful consideration is given to the path smoke might take. However, if necessary, use the following procedure: Open QAWTDs and WTHs to AMMR. Anyone within this area is required to wear SCBAs.

1. Set up natural convection by opening the following fittings:
 - QAWTD 2-52-2.
 - QAWTD 2-52-1.
 - QAWTD 2-62-1.
 - QAWTD 2-62-4.
 - WTH 2-61-1.
 - WTH 2-61-2.
2. Set positive ventilation on surrounding spaces to pressurize AMMR to force smoke up through the uptake space. However, since all ventilation is powered from the main switchboard, these switchboards need to be re-energized.
3. Continue until AMMR is de-smoked, space de-watered, and atmospheric tests are satisfactory.

C. Procedures for De-smoking AMMR (Ship's ventilation system inoperable or no ship's power available).

Use this procedure if there is no ship's power available to operate installed ventilation. De-smoking by opening doors/hatches and breaking smoke boundaries is not advised unless careful consideration is given to the path smoke might take.

1. Rig ram fans on the flight deck and run the portable trunk as follows:
 - Through QAWTD 01-61-1.
 - Down through WTH 01-63-1.
 - Forward through QAWTD 1-57-2 into AMMR Uptake Space (2-52-0-Q).
2. Continue until AMMR is de-smoked, space de-watered, and atmospheric tests are satisfactory.

D. Gas Free Engineer Post-Fire Tests.

1. When the space is clear of smoke, test for oxygen between 19.5-22 percent, combustible gases less than 10 percent of the lower explosive limit, and any toxic gases below their threshold limit values, as per reference (e), Gas Free Engineering, NSTM Chapter 074, Volume 3, before certifying the space safe for personnel to enter without SCBAs.
2. After a flammable liquid fire has been extinguished, toxic gas tests for hydrocarbons, carbon dioxide, carbon monoxide, hydrogen chloride, hydrogen cyanide, and chlorine are required. The following are the threshold limit values for each test:

| | |
|-------------------------------------|----------|
| Hydrocarbons | none |
| Hydrogen Chloride/Hydrochloric Acid | 5 ppm |
| Carbon Dioxide | 5000 ppm |
| Hydrogen Cyanide/Hydrocyanic Acid | 10 ppm |
| Hydrogen Fluoride | 3 ppm |
| Chlorine | 1 ppm |
| Carbon Monoxide | 50 ppm |

3. Conduct tests near the center and all four-corners on each level, high and low, with a minimum of ten test points taken. Obtain at least one satisfactory test result at each test location.

Note: A compartment is considered “safe” only after satisfactory test results at all test locations are obtained. An unsatisfactory test result at any test point requires further ventilating and re-testing at all test points.

Appendix E: Forward Main Machinery Room (5-44-01-E) Underway Checklists

[Tab 1, Machinery Watchstander Checklist for Leak/Fire in FMMR](#)

[Tab 2, Engineering Control Room \(EOW\) Checklist](#)

[Tab 3, OOD Checklist](#)

[Tab 4, DCA Checklist](#)

[Tab 5, RLL Checklist](#)

[Tab 6, Hangar Person-in-Charge-of-Extras Checklist](#)

[Tab 7, Water Mist/AFFF Operator Checklist](#)

[Tab 8, Repair Locker Electrician Checklist](#)

[Tab 9, Medical Personnel Checklist](#)

[Tab 10, Smoke Boundaries/Smoke Control Zone](#)

[Tab 11, Ventilation](#)

[Tab 12, Fire Boundaries](#)

[Tab 13, Mechanical and Electrical Isolation](#)

[Tab 14, Reentry Points](#)

[Tab 15, De-smoking/Gas Freeing](#)

Section A: Tab 1, Machinery Watchstander Checklist for Leak/Fire in FMMR

A. Major Oil Leak/Fire in FMMR.

- _____ Notify EOW of casualty. If leak/fire is in gas turbine enclosure, activate CO2 flooding immediately.
- _____ Secure affected equipment: Secure the source of the leak/fire immediately, consistent with the restricted maneuvering doctrine and commanding officer's battle orders as applicable. If source cannot be secured, deflect oil to bilge.
- _____ Shoulder EEBDs.
- _____ Break out portable AFFF and PKP extinguishers on scene. Wash oil to bilge using AFFF extinguisher. Fight small, contained fires with PKP/AFFF extinguishers. If needed, use fire hose stations with AFFF pick-up tubes to wash oil to the bilge. If there is no immediate danger of a fire, wash large oil leaks to the bilge using the AFFF hose reel located in the 2nd deck vestibule.

B. Class Bravo Fire Out of Control in FMMR.

- _____ Complete checklist for leak/fire.
- _____ Notify EOW that the fire is Out of Control.
- _____ Don and activate EEBDs.
- _____ Evacuate through nearest safe exit.
- _____ Activate water mist system for FMMR.
- _____ Notify EOW of personnel, machinery, firefighting equipment status, and water mist activation time.
- _____ Lay to WQSB after being relieved by the general emergency watch section.

Note: This is a reduced checklist. See reference (b), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3.

Section B: Tab 2, Engineering Control Room (EOW) Checklist

A. Major Oil Leak/Fire in FMMR.

- _____ Secure the source of the leak/fire immediately, consistent with the restricted maneuvering doctrine and commanding officer's battle orders as applicable. If source cannot be secured, deflect oil to bilge.
- _____ If leak/fire is in the gas turbine enclosure, activate CO2 flooding immediately.
- _____ Notify OOD.
- Casualty location.
 - Equipment affected.
 - Action taken and max speed available - On GT and MDEs.
 - Recommend setting General Emergency per the Machinery Space Fire Doctrine.
- “Conn — EOW: There is a [class A/B/C fire] or a [major fuel/lube oil leak] in the forward main machinery room, compartment 5-44-01-E, [upper/lower level], [port side/ stbd side/centerline] at frame [#]. I have secured the following equipment [list]. Max speed available is [#] knots. Recommend setting general emergency per the machinery space fire doctrine.”*
- _____ Shoulder EEBD if leaving the space.
- _____ Energize fire pumps as required.
- _____ Check firemain pressure. Verify that automated control features of the machinery monitoring system maintain sufficient firemain pressure. If insufficient pressure, energize additional fire pumps manually.
- _____ If initial actions are insufficient to vapor secure bilge, energize AFFF bilge sprinkling for initial 2-minute dump.
- _____ In the event of a fire in FMMR.
- Direct watchstander to take initial action to combat fire.
- or —
- Activate water mist system for FMMR.
- _____ Set negative ventilation in FMMR as per [Tab 11, Ventilation](#) (supply fans on LOW; exhaust fans on HIGH).
- _____ Set positive ventilation outside FMMR as per [Tab 11, Ventilation](#) (smoke control zone).
- _____ Mechanically isolate space further by securing other equipment near the casualty.
- _____ Electrically isolate space further by securing other equipment near the casualty.

B. Class Bravo Fire Out of Control in FMMR.

_____ Complete checklist for leak/fire.

_____ Notify OOD fire is out of control and FMMR is being evacuated.

_____ If not done previously, activate AFFF bilge sprinkling in FMMR for 2-minute initial dump.

start time: _____ end time: _____.

_____ If not done previously, activate water mist system for FMMR.

start time: _____ end time: _____.

_____ Mechanically isolate space as per [Tab 13, Mechanical and Electrical Isolation](#).

_____ Electrically isolate space as per [Tab 13, Mechanical and Electrical Isolation](#).

_____ Verify FMMR fuel oil remote COVs are closed.

Note: First, start SSDG #3, closing the AMR fuel oil remote COVs secures fuel to SSDG #1 and SSDG #2.

_____ Verify FMMR fire station COVs are closed.

_____ Lay to WQSB, after complete status of casualty has been passed on and having been properly relieved by the general emergency watch section.

Section C: Tab 3, OOD Checklist

A. Major Oil Leak/Fire in FMMR.

- _____ Receive report from EOW
- Casualty – location of leak/fire.
 - Equipment affected.
 - Action and max speed available – on GT and MDEs.
 - Set general emergency as per the machinery space fire doctrine.

_____ Sound general alarm.

Pipe: *“[Fire, fire, fire] or [major oil leak] in the forward main machinery room, compartment 5-44-01-E, [upper/lower] level, [port side/stbd side/centerline], at frame [#]. All hands set general emergency per the machinery space fire doctrine. Set modified zebra. Do not set zebra on the firemain.”*

Note: **Once DCC is manned and ready, make all further pipes associated with the MSFD from DCC. In the event the DCA is unable to make pipes, the OOD pipes as necessary.**

_____ Establish communications with DCC. Report manned and ready to DCC.

_____ Slow ship to 5 knots or less (if propulsion is still available).

_____ Maneuver ship to maintain as smooth a ride as possible during response.

_____ Ensure DCA reports all stations manned and ready and modified zebra set.

Pipe: *“All stations manned and ready, modified zebra set.”*

_____ When EOW reports AFFF applied to FMMR bilges.

Pipe: *“AFFF bilge flooding activated in forward main machinery room at time ____.”*

_____ If EOW reports water mist system activated in FMMR.

Pipe: *“Water mist system activated in forward main machinery room at time ____.”*

B. Class Bravo Fire Out of Control in FMMR.

_____ Ensure checklist for leak/fire is complete.

_____ When EOW reports fire is out of control and FMMR is being evacuated.

Pipe (if directed by DCA): “*The fire in the forward main machinery room is out of control. The forward main machinery room is being evacuated.*”

_____ Ensure DCA reports FMMR is mechanically and electrically isolated.

Pipe (if directed by DCA): “*The forward main machinery room is mechanically and electrically isolated.*”

_____ If not activated previously, ensure DCA reports water mist system activation time.

Pipe (if directed by DCA): “*Water mist system has been activated in the forward main machinery room at time. _____.*”

_____ Ensure DCA reports 2-minute reentry AFFF bilge flooding for FMMR at _____.

Pipe (if directed by DCA): “*2-minute Reentry AFFF bilge flooding to forward main machinery room activated at time _____.*”

_____ Ensure DCA reports fire team ordered to reenter FMMR.

Pipe (if directed by DCA): “*The fire team has reentered the forward main machinery room at time _____.*”

_____ Ensure DCA reports class bravo fire is out.

Pipe (if directed by DCA): “*Class bravo fire is out in the forward main machinery room, reflash watch is set.*”

Section D: Tab 4, DCA Checklist

A. Major Oil Leak/Fire in FMMR.

- _____ Establish communications.
 - _____ Conn.
 - _____ Repair 2.
 - _____ Repair 3.
 - _____ AFFF/water mist system operator (fwd/aft).
 - _____ Hangar person-in-charge-of-extras.

- _____ Manned and ready.
 - _____ Conn.
 - _____ Repair 2.
 - _____ Repair 3.
 - _____ AFFF/water mist system operator (fwd/aft).

- _____ Report all stations manned and ready to OOD.

Pipe: *“All stations manned and ready.”*

- _____ Verify firemain pressure.

- _____ Start plot.

- _____ Report initial 2-minute AFFF bilge flooding times to OOD.

start time: _____ end time: _____.

Pipe: *“AFFF bilge flooding was activated in Forward Main Machinery Room at time ____.”*

- _____ If EOW reports water mist system activated in FMMR.

start time: _____ end time: _____.

Pipe: *“Water mist system has been activated in the forward main machinery room at time. _____.”*

- _____ Receive and plot reports from repair lockers.
- _____ Modified zebra set.
- _____ Fire boundaries set as per [Tab 12, Fire Boundaries](#).
- _____ Smoke boundaries/smoke control zone set as per [Tab 10, Smoke Boundaries/Smoke Control Zone](#)
- _____ Ventilation secured as per [Tab 11, Ventilation](#).
- _____ Two P-100s rigged/jumpered.
- _____ SCBA change out station established.

- _____ Report modified zebra set to OOD.

Pipe: *“Modified zebra is set.”*

B. Class Bravo Fire Out of Control in FMMR.

_____ Ensure completion of checklist for leak/fire.

_____ Receive report from EOW FMMR evacuated.

Pipe: *“Forward main machinery room is evacuated. Make all reports to DCC.”*

_____ Order AFFF station operator to conduct 2-minute AFFF bilge flooding (if not accomplished by EOW).

start time: _____ end time: _____.

_____ If not previously reported, EOW to report water mist system activated in FMMR.

Pipe: *“Water mist system has been activated in the forward main machinery room at time. _____.”*

_____ Receive reports from EOW.

_____ Closed FMMR fuel oil remote COVs.

_____ Closed FMMR fire station COVs.

_____ Account for all personnel in watch section.

_____ AFFF bilge flooding times.

_____ Location of firefighting equipment in FMMR.

_____ Mechanical and electrical isolations completed.

_____ Receive reports of electrical isolation complete.

Repair 2 _____ Repair 3 _____ ECR _____

_____ Receive reports of mechanical isolation complete.

Repair 2 _____ Repair 3 _____ ECR _____

_____ Report FMMR is mechanically and electrically isolated.

Pipe: *“The forward main machinery room is mechanically and electrically isolated.”*

_____ Verify fire team ready for reentry.

_____ Ensure backup hose is manned prior to re-entry.

_____ Order 2-minute FMMR bilge flooding _____ (time).

_____ Report times to OOD.

Pipe: *“2-minute reentry AFFF bilge flooding to forward main machinery room activated at time. _____.”*

_____ Order fire team to reenter FMMR.

_____ Receive reentry time from Repair 2 LL.

_____ Report fire team has entered FMMR at (time) _____ to OOD.

Pipe: *“The fire team has reentered the forward main machinery room at time _____.”*

_____ Verify fire team reliefs are manned and ready.

_____ Receive ‘fire is out’ report.

_____ Report fire is out to OOD.

Pipe: *“Class bravo fire is out in the forward main machinery room, reflash watch is set.”*

_____ Order compartment overhaul.

_____ Order repair locker electrician to investigate for electrical damage.

_____ Order de-smoking.

_____ Conduct gas free tests as per [Tab 15, De-smoking/Gas Freeing](#).

_____ Order de-watering.

_____ Conduct gas free toxic tests as per [Tab 15, De-smoking/Gas Freeing](#).

Section E: Tab 5, RLL Checklist

A. Major Oil Leak/Fire in FMMR.

- _____ Establish communications with DC Central (both).
- _____ Make reports to DC Central (both).
 - _____ Manned and ready.
 - _____ Set modified zebra.
 - _____ Set fire boundaries as per [Tab 12, Fire Boundaries](#).
 - _____ Set smoke boundaries/smoke control zone as per [Tab 10, Smoke Boundaries/Smoke Control Zone](#).
 - _____ Set ventilation as per [Tab 11, Ventilation](#).
 - _____ Rig two P-100s and connect to firemain.
 - _____ Establish SCBA primary change out station in Repair 3.
(Secondary change out station is in passage 2-16-1-L, near RII.)
- _____ Check firemain pressure. Verify that automated control features of the machinery monitoring system maintain sufficient firemain pressure. If insufficient pressure, energize additional fire pumps manually. (both).
- _____ Ensure following positions are filled prior to re-entry: (Repair 2).
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary Plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.
- _____ Dispatch investigators/verify sufficient fire pumps on-line and not overheating/status of smoke/fire boundaries.
- _____ Report existing conditions to DCA (Repair 2).
- _____ Dispatch fire party to Repair 2 (Repair 3).
- _____ Ensure investigators verify water mist/AFFF stations manned/status of smoke/fire boundaries.
- _____ Report existing conditions to DCA (Repair 3).
- _____ Ensure firemain isolation valve 2-43-2FM (in crew stateroom 2-36-8-L) is OPEN (Repair 2).

B. Class Bravo Fire Out of Control in FMMR.

- _____ Complete checklist for leak/fire (both).
- _____ Verify from DCA mechanical and electrical isolation is complete as per [Tab 13, Mechanical and Electrical Isolation](#) (both).
- _____ Report fire team ready for reentry (Repair 2).
- _____ Order fire team to reenter FMMR when ordered by DCA.
- _____ Report reentry time to DCC. (Repair 2).
- _____ Verify SCBA start time from OSL (Repair 2).
- _____ Locker leader monitors and records light-off times (Repair 3).
- _____ Send first set of SCBA reliefs to passage 2-36-0-L (Repair 2).
- _____ First set of reliefs light-off SCBAs when directed (Repair 2).
- _____ Locker leader monitors and records light-off times (Repair 3).
- _____ Change out the following:
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary Plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.

_____ Second set of reliefs light-off SCBAs when directed (Repair 2).

_____ Locker leader monitors and records light-off times (Repair 3).

_____ Change out the following:

_____ OSL.

_____ ATL.

_____ Primary nozzleman.

_____ Primary hoseman.

_____ Primary plugman.

_____ Backup hose nozzleman.

_____ Backup hose hoseman.

_____ Backup hose plugman.

_____ Third set of reliefs light-off SCBAs when directed (Repair 2).

_____ Locker leader monitors and records light-off times (Repair 3).

_____ Change out the boundarymen.

Note: Personnel being relieved muster in Repair 2. Once Repair 2 LL accounts for everyone, reliefs doff FFEs and SCBAs for use by the next set of reliefs. Relieved personnel then report to the HSC or his representative for cool down.

_____ Pass word to DCC when the fire is out and reflash watch is set (Repair 2).

_____ Initiate post-fire actions when ordered by DCA (Repair 2).

_____ Ensure post-fire personnel don and activate SCBA before reentry (Repair 2).

_____ Overhaul fire.

_____ Repair locker electrician investigate for electrical damage.

_____ De-smoke.

_____ De-water.

_____ Atmospheric testing.

Section F: Tab 6, Hangar Person-in-Charge-of-Extras Checklist

A. Major Oil Leak/Fire in FMMR.

- _____ Establish communications with DCC.
- _____ Muster all extra personnel.
- _____ Make reports to DC Central.
 - _____ Number of personnel available.
 - _____ Set modified zebra – main deck and above.
 - _____ Set fire boundaries as needed or as directed – main deck and above.
 - _____ Set smoke boundaries/smoke control zone – main deck and above.
- _____ Investigate topside fire boundaries. Report conditions to DC Central.

B. Class Bravo Fire Out of Control in FMMR.

- _____ Complete checklist for leak/fire.
- _____ Coordinate SCBA relief process with Repair 3 locker leader.

Section G: Tab 7, Water Mist/AFFF Operator Checklist

A. Major Oil Leak/Fire in FMMR.

- _____ Don battle dress and SCBA.
- _____ Establish communications with DC Central.
- _____ Report manned and ready to DC Central.
- _____ Verify fire pumps on line and AFFF pump on line.
(120 psi showing at local gauge).
- _____ Verify that FMMR AFFF and water mist supply valves are open.
- _____ Continually monitor water mist/AFFF tank levels and replenish as necessary.

B. Class Bravo Fire Out of Control in FMMR.

- _____ Complete checklist for leak/fire.
- _____ Activate FMMR water mist system when ordered by DCA.
- _____ Activate FMMR AFFF bilge flooding when ordered by DCA.
- _____ Close AFFF COV when ordered by DCA.
- _____ Secure water mist system when ordered by DCA.

Section H: Tab 8, Repair Locker Electrician Checklist

A. Major Oil Leak/Fire in FMMR.

_____ Don battle dress and SCBA (both).

_____ Electrical isolation as per [Tab 13, Mechanical and Electrical Isolation](#). The intent is to maintain the current source of power until evacuation. Do not secure lighting and power to firefighting equipment and ventilation.

B. Class Bravo Fire Out of Control in FMMR.

_____ Complete checklist for leak/fire (Repair 2).

_____ Perform electrical isolation as per [Tab 13, Mechanical and Electrical Isolation](#) (both).

Note: After FMMR is evacuated, secure supply fans. Do not secure exhaust ventilation until directed to do so by the RLL. (Activation of the water mist system automatically secures exhaust ventilation within the affected space.)

Note: After evacuating the FMMR, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

_____ When ordered by RLL, report to FMMR (Repair 2).

_____ Investigate electrical damage to FMMR ventilation and other systems as directed.

Section I: Tab 9, Medical Personnel Checklist

A. Major Oil Leak/Fire in FMMR.

- _____ Establish recovery area in sickbay (1-73-2-1).
- _____ Establish communications with Repair 2.
- _____ Provide food, liquids, and dry clothing for personnel.

B. Class Bravo Fire Out of Control in FMMR.

- _____ Complete checklist for leak/fire.
- _____ Standby to assist with personnel casualties.

Section J: Tab 10, Smoke Boundaries/Smoke Control Zone

A. Major Oil Leak/Fire in FMMR.

- Primary smoke boundaries.
 - Forward - frame 44.
 - Aft - frame 52.
- Secondary smoke boundaries.
 - Forward - frame 36.
 - Aft - frame 64.
- List of smoke curtain locations.
 - QAWTD 2-44-1.
 - QAWTD 2-44-2.
 - QAWTD 2-52-1.
 - QAWTD 2-52-2.
- Smoke control zone: for smoke control zone ventilation as per [Tab 11, Ventilation](#).
 - Compartments below DC deck from FR 36-64.
 - AMR (5-36-01-E).
 - Fuel oil service tanks (5-45-2-F and 5-45-3-F).
 - AMMR (5-52-01-E).
 - Escape trunks (4-52-1-T, 4-52-2-T, and 4-43-1-T).
 - Reduction gear lube oil tanks (3-52-1-F and 3-52-2-F).
 - Oily water collection tank (5-41-1-F).
 - Waste oil tank (5-42-2-F).
 - Fuel oil tank (5-52-0-F).

- Compartments on DC deck and above from FR 36-58.
 - Passageways (2-36-0-L and 2-52-01-L).
 - Crew staterooms (2-41-3-L and 2-36-8-L).
 - ECR (2-52-1-E).
 - AMR intake/exhaust (2-42-0-Q).
 - Crew lounge (2-47-2-L).
 - FMMR uptake space (2-45-0-Q).
 - Passageway (1-44-0-L).
 - Incinerator room (1-47-1-Q).
 - Trash stowage holding and staging room (1-44-1-Q).
 - Officer wardroom/lounge (1-44-2-L).
 - AMMR uptake space (2-52-0-Q).
 - Helicopter Spares storerooms (01-47-1-Q and 01-52-1-Q).
 - GT air inlet louvers, anti-icing manifold, and moisture separators (01-44-1-Q and 01-44-2-Q).
 - GT exhaust (01-49-0-Q).
 - GT intake (01-44-0-Q).
 - Fueling at sea locker (01-47-2-Q).
 - Fueling at sea area (01-48-2-Q).
 - Vertical take-off and landing UAV spares storeroom area (01-52-2-Q).
 - FMMR intake (02-46-1-Q).
 - FMMR exhaust (02-46-2-Q).
 - #2 SSDG intake filter room (02-48-0-Q).
 - Fan room (02-52-1-Q and 02-52-2-Q).
 - FMMR ventilation exhaust fan room (03-46-2-Q).
 - #1 Main propulsion diesel engine intake filter room (03-54-1-Q).
 - #2 Main propulsion diesel engine intake filter room (03-54-2-Q).

B. Class Bravo Fire Out of Control in FMMR.
Same as above.

Section K: Tab 11, Ventilation

A. Major Oil Leak/Fire in FMMR.

1. Set negative ventilation in FMMR as follows:

Place supply fans on (LOW), exhaust fans on (HIGH).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-64 (vital) | 2-44-1 | MCMS | yes | EOW |
| ES-120 (vital) | 2-45-1 | MCMS | yes | EOW |

2. Set positive ventilation outside FMMR (smoke control zone) as follows:

- a. Place supply fans outside FMMR on (HIGH).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|-------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-68 (vital) | 1-44-1 | MCMS | yes | EOW |
| TPSS-70 (vital) | 02-41-2 | MCMS | yes | EOW |
| SS-54 (non-vital) | 2-32-1 | MCMS | yes | EOW |
| SS-55 (non-vital) | 1-50-1 | MCMS | yes | EOW |
| SS-69 (non-vital) | 2-46-1 | MCMS | yes | EOW |

b. Secure exhaust fans and recirculation fans outside FMMR.

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| TPES-125 (vital) | 02-38-2 | MCMS | yes | EOW |
| ES-104 (non-vital) | 2-32-1 | MCMS | yes | EOW |
| ES-105 (non-vital) | 1-46-1 | MCMS | yes | EOW |
| ES-116 (non-vital) | 1-45-1 | MCMS | yes | EOW |
| ES-124 (vital) | 2-41-2 | MCMS | yes | EOW |
| RS-32 (vital) | 02-39-2 | MCMS | yes | EOW |
| RS-1 (vital) | 02-29-3 | MCMS | yes | EOW |
| RS-2 (vital) | 02-30-1 | MCMS | yes | EOW |
| RS-3 (vital) | 02-42-2 | MCMS | yes | EOW |
| RS-4 (non-vital) | 02-38-4 | MCMS | yes | EOW |
| RS-6 (non-vital) | 1-41-2 | MCMS | yes | EOW |
| RS-14 (non-vital) | 2-45-1 | MCMS | yes | EOW |
| RS-16 (non-vital) | 1-43-2 | MCMS | yes | EOW |
| RS-31 (non-vital) | 2-37-1 | MCMS | yes | EOW |
| RS-33 (non-vital) | 1-37-1 | MCMS | yes | EOW |
| FCA-26 (non-vital) | 1-50-2 | MCMS | yes | EOW |
| FCA-28 (non-vital) | 2-49-2 | MCMS | yes | EOW |

B. Class Bravo Fire Out of Control in FMMR.

Exhaust ventilation in FMMR remains on while the water mist system is activated. Secure all other ventilation when the fire is out of control.

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-64 (vital) | 2-44-1 | MCMS | yes | EOW |
| ES-120 (vital) | 2-45-1 | MCMS | yes | EOW |

Section L: Tab 12, Fire Boundaries

A. Major Oil Leak/Fire in FMMR.

- Primary fire boundaries.
 - Forward - bulkhead 44, 4th deck and above.
 - Aft - bulkhead 52, 4th deck and above.
 - Above - second deck from frame 44 to 52.
 - Above - bulkheads surrounding FMMR uptake space, second deck and above.

- Secondary fire boundaries.
 - Forward - bulkhead 36, 4th deck and above.
 - Aft - bulkhead 64, 4th deck and above.
 - Above - 01 deck from frame 36 to 64.

B. Class Bravo Fire Out of Control in FMMR.

Same as above.

Section M: Tab 13, Mechanical and Electrical Isolation

A. Major Oil Leak/Fire in FMMR.

1. Mechanical isolation - Secure propulsion machinery as per standard procedures in reference (b), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3.
2. Electrical isolation - Maintain the current source of power until evacuation. Do not secure lighting and power to firefighting equipment and ventilation. Each watch station listed below ensure that the following systems are secured/de-energized:
 - a. Main switchboard operator (personnel in ECR): ensure that the following breakers are opened:

_____ 2S-4P-2G 2S to #2 SSDG (MCMS or open locally).

_____ 1S-4P-2S #1 stbd bus-tie breaker.

_____ 2S-4p-3S #3 stbd bus-tie breaker.

- b. Repair Locker Electrician:

_____ 3S-4P-(3-51-1) power panel, 3-51-1.

_____ (2-41-1)-4P-G #2 sea water cooling pump.

_____ 2S-4P-L (Normal) #3 fire pump.

_____ 3S-4P-L (Alt) #3 fire pump.

_____ (2-41-1)-4P-M GT blow-in door control.

_____ (2-54-2)-4P-F #3 MTU UPS.

_____ (2-48-1)-1P-K GT governor supply.

_____ (1-39-2)-1P-D FMMR HMI workstation.

_____ (1-39-2)-1P-K #2 SSDG battery charger.

_____ (2-48-1)-1P-A FMMR ESD relay panel.

B. Class Bravo Fire Out of Control in FMMR.

1. Mechanical isolation - The following is to be performed when there is a class bravo fire Out of Control in FMMR. Secure/de-energize the following systems:

- _____ #2 SSDG.
- _____ GT.
- _____ #3 Fire pump.
- _____ #2 Sea water cooling pump.
- _____ Fuel oil COV 2-43-2.
- _____ Fuel oil COV 2-43-4.

2. Electrical isolation - electrically secure these items to secure all power in the FMMR. They include the remaining power to firefighting equipment and ventilation. Secure/de-energize the following systems:

- a. Main switchboard operator (personnel in ECR):
 (*List electrical isolations for EOW).

- b. Repair locker electrician:

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible. Watch. Station |
|----------------|---------------------------------|----------------------------------|------------------------------|-----------------------------------|
| SS-64 (vital) | 2-44-1 | MCMS | yes | EOW |
| ES-120 (vital) | 2-45-1 | MCMS | yes | EOW |

Note: After FMMR is evacuated, secure the supply fans. Do not secure the exhaust ventilation until directed to do so by the RLL. (Activation of the water mist system automatically secures exhaust ventilation within the affected space.)

_____ LC3-1VL-(3-44-2) Vital Ltg panel (frame 36 in passage 1-29-0-L).

Note: After evacuating the FMMR, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

Section N: Tab 14, Reentry Points

A. Major Oil Leak/Fire in FMMR.

Reentry point for a major oil leak or class bravo fire contained in FMMR is at the discretion of the DCA. If possible, the primary reentry point is WTH 2-45-2.

B. Class Bravo Fire Out of Control in FMMR.

- The primary reentry point for FMMR is through WTH 2-45-2.
 - #1 hose supplied from AFFF hose reel 2-44-2.
 - #2 hose supplied from fireplug 2-46-2.
- The secondary reentry point for FMMR is through WTH 2-44-1.
 - #1 hose supplied from fireplug 2-46-1.
 - #2 hose supplied from fireplug 2-46-2.

Section O: Tab 15, De-smoking/Gas Freeing

A. De-smoking FMMR (installed ventilation system operable).

Installed ventilation is preferred for de-smoking FMMR after a fire due to its high volume. However, do not energize FMMR ventilation until its condition is thoroughly investigated and permission for use granted by the engineering officer. This procedure assumes the installed FMMR ventilation system has been inspected and found safe to operate.

1. The engineering officer with the repair electrician determines the condition of the ventilation electrical system and declares the system operational.
2. Once inspected, request the engineering officer's permission to energize the blowers. When permission is granted, repair electrician energizes and restarts blowers as follows:
 - a. Inspect the cables and transformers near ABT 01-39-1. This ABT supplies control voltage to FMMR ventilation. If satisfactory, direct switchboard operator to close breaker. Normal power is from 1S-4P-(01-39-1) and alternate is 3S-4P-(01-39-1).
 - b. Restart FMMR ventilation using controllers in passage 2-44-0-L. Start exhaust ventilation on SLOW, working up to FAST as load limits on SSDGs allow. Start supply blowers on SLOW.
 - c. Continue until FMMR is de-smoked, space de-watered, and atmospheric tests pass.

B. De-smoking FMMR (FMMR ventilation system not operable).

Use this procedure to de-smoke FMMR if the ventilation system has been damaged by the fire. The basic idea is to create a positive pressure outside of FMMR to force smoke out the uptake space, without allowing smoke to enter the interior of the ship.

De-smoking by opening doors and breaking smoke boundaries is not advised unless careful consideration is given to the path smoke might take. However, if necessary, open QAWTDs and WTHs to FMMR. Anyone within this area wears SCBAs until atmospheric tests pass.

1. Set up natural convection by opening the following fittings:
 - QAWTD 2-52-2.
 - QAWTD 2-52-1.
 - QAWTD 2-44-4.
 - QAWTD 2-44-3.
 - WTH 2-45-1.
 - WTH 2-45-2.
2. Set positive ventilation on surrounding spaces to pressurize FMMR and force smoke up through the uptake space. However, since all ventilation is powered off at the main switchboard, these switchboards need energized.
3. Continue until FMMR is de-smoked, space de-watered, and atmospheric tests satisfactory.

C. De-smoking FMMR (Ship’s ventilation system inoperable or no ship’s power available).

Use this procedure when there is no ship’s power available to operate installed ventilation. De-smoking by opening doors/hatches and breaking smoke boundaries is not advised unless careful consideration is given to the path smoke might take.

1. Rig ram fans on the flight deck and run the portable trunk as follows:
 - Through QAWTD 01-61-1.
 - Down through WTH 01-63-1.
 - Aft and down through WTH 1-67-2.
 - Forward through QAWTD 2-64-4.
 - Continue forward through QAWTD 2-52-2.
 - Through QAWTD 2-48-2 into FMMR uptake space (2-45-0-Q).
2. Continue until FMMR is de-smoked, space de-watered, and atmospheric tests satisfactory.

D. Gas Free Engineer Post-fire Tests.

1. When the space is clear of smoke, test for oxygen between 19.5-22 percent, combustible gases less than 10 percent of the lower explosive limit, and any toxic gases below their threshold limit values, as per reference (e), Gas Free Engineering, NSTM Chapter 074, Volume 3, before certifying the space safe for personnel to enter without SCBAs.
2. After a flammable liquid fire has been extinguished, toxic gas tests for hydrocarbons, carbon dioxide, carbon monoxide, hydrogen chloride, hydrogen cyanide, and chlorine are required. The following are the threshold limit values for each test:

| | |
|-------------------------------------|----------|
| Hydrocarbons | none |
| Hydrogen Chloride/Hydrochloric Acid | 5 ppm |
| Carbon Dioxide | 5000 ppm |
| Hydrogen Cyanide/Hydrocyanic Acid | 10 ppm |
| Hydrogen Fluoride | 3 ppm |
| Chlorine | 1 ppm |
| Carbon Monoxide | 50 ppm |

3. Conduct tests near the center and all four-corners on each level, high and low, with a minimum of ten test points taken. Obtain at least one satisfactory test result at each test location.

Note: A compartment is considered “safe” only after satisfactory test results at all test locations are obtained. An unsatisfactory test result at any test point requires further ventilating and re-testing at all test points.

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Appendix F: Auxiliary Machinery Room (5-36-01-E) Underway Checklists

[Tab 1, Machinery Watchstander Checklist for Leak/Fire in AMR](#)

[Tab 2, Engineering Control Room \(EOW\) Checklist](#)

[Tab 3, OOD Checklist](#)

[Tab 4, DCA Checklist](#)

[Tab 5, RLL Checklist](#)

[Tab 6, Hangar Person-in-Charge-of-Extras Checklist](#)

[Tab 7, Water Mist/AFFF Operator Checklist](#)

[Tab 8, Repair Locker Electrician Checklist](#)

[Tab 9, Medical Personnel Checklist](#)

[Tab 10, Smoke Boundaries/Smoke Control Zone](#)

[Tab 11, Ventilation](#)

[Tab 12, Fire Boundaries](#)

[Tab 13, Mechanical and Electrical Isolation](#)

[Tab 14, Reentry Points](#)

[Tab 15, De-smoking/Gas Freeing](#)

Section A: Tab 1, Machinery Watchstander Checklist for Leak/Fire in AMR

A. Major Oil Leak/Fire in AMR.

- _____ Notify EOW of casualty.
- _____ Secure the source of the leak/fire immediately, consistent with the restricted maneuvering doctrine and commanding officer's battle orders as applicable. If source cannot be secured, deflect oil to bilge.
- _____ Shoulder EEBDs.
- _____ Break out portable AFFF and PKP extinguishers on scene. Wash oil to bilge using AFFF extinguisher. Fight small, contained fires with PKP/AFFF extinguishers. If needed, fire hose stations with AFFF pick-up tubes may also be used to wash oil to the bilge. If there is no immediate danger of a fire, large oil leaks may also be washed to the bilge using AFFF hose reel located in the 2nd deck vestibule.

B. Class Bravo Fire Out of Control in AMR.

- _____ Complete checklist for leak/fire.
- _____ Notify EOW that the fire is out of control.
- _____ Don and activate EEBDs.
- _____ Evacuate through nearest safe exit.
- _____ Activate water mist system for AMR.
- _____ Notify EOW of personnel, machinery, firefighting equipment status, and water mist activation time.
- _____ Lay to WQSB after being relieved by the general emergency watch section.

Note: This is a reduced checklist. See reference (b), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3 for more detail.

Section B: Tab 2, Engineering Control Room (EOW) Checklist

A. Major Oil Leak/Fire in AMR.

_____ Secure the source of the leak/fire immediately, consistent with the restricted maneuvering doctrine and commanding officer's battle orders as applicable. If source cannot be secured, deflect oil to bilge.

_____ Notify OOD.

- Casualty location.
- Equipment affected.
- Action taken and max speed available - On GT and MDEs.
- Recommend setting general emergency per the machinery space fire doctrine.

"Conn — EOW: There is a [class A/B/C fire] or a [major fuel/lube oil leak] in the auxiliary machinery room, compartment 5-36-01-E, [upper/lower level], [port side/stbd side/centerline] at frame [#]. I have secured the following equipment [list]. Max speed available is [#] knots. Recommend setting general emergency per the machinery space fire doctrine."

_____ Shoulder EEBD if leaving the space.

_____ Energize fire pumps as required.

_____ Check firemain pressure. Verify that machinery-monitoring system maintains sufficient firemain pressure. If pressure is insufficient, manually energize additional fire pumps.

_____ If initial actions are insufficient to vapor secure bilge, energize AFFF bilge sprinkling for initial 2-minute dump.

_____ In the event of a fire in AMR.

- Direct watchstanders to take initial action to combat fire.

— or —

- Activate water mist system for AMR.

_____ Set negative ventilation in AMR as per [Tab 11, Ventilation](#) as per [Tab 11, Ventilation](#) (supply fans on LOW; exhaust fans on HIGH).

_____ Set positive ventilation outside AMR as per [Tab 11, Ventilation](#) (smoke control zone).

_____ Mechanically isolate space further by securing other equipment near the casualty.

_____ Electrically isolate space further by securing other equipment near the casualty.

B. Class Bravo Fire Out of Control in AMR.

- _____ Complete checklist for leak/fire.
- _____ Notify OOD that fire is out of control and AMR is being evacuated.
- _____ If not done previously, activate AFFF bilge sprinkling in AMR for 2-minute initial dump.
start time: _____ end time: _____.
- _____ If not done previously, activate water mist system for AMR.
start time: _____ end time: _____.
- _____ Mechanically isolate space as per [Tab 13, Mechanical and Electrical Isolation](#).
- _____ Electrically isolate space as per [Tab 13, Mechanical and Electrical Isolation](#).
- _____ Verify AMR fuel oil remote COVs are closed.
Note: First, start SSDG #3, closing the AMR fuel oil remote COVs secures fuel to SSDG #1 and SSDG #2.
- _____ Verify AMR fire station COVs are closed.
- _____ Lay to WQSB, after complete status of casualty has been passed on and having been properly relieved by the general emergency watch section.

Section C: Tab 3, OOD Checklist

A. Major Oil Leak/Fire in AMR.

_____ Receive report from EOW

- Casualty - location of leak/fire.
- Equipment affected.
- Action and max speed available - On GT and MDEs.
- Set general emergency as per the machinery space fire doctrine.

_____ Sound general alarm.

Pipe: *“[Fire, fire, fire] or [major oil leak] in the auxiliary machinery room, compartment 5-36-01-E, [upper/lower] level, [port side/stbd side/centerline], at frame [#]. All hands set general emergency per the machinery space fire doctrine. Set modified zebra. Do not set zebra on the firemain.”*

Note: Once DCC is manned and ready, make all further pipes associated with the MSFD from DCC. In the event the DCA is unable to make pipes, the OOD pipes as necessary.

_____ Establish communications with DCC. Report manned and ready to DCC.

_____ Slow ship to 5 knots or less (if propulsion is still available).

_____ Maneuver ship to maintain as smooth a ride as possible during response.

_____ Ensure DCA reports all stations manned and ready and modified zebra set.

Pipe: *“All stations manned and ready, modified zebra is set.”*

_____ When EOW reports AFFF was applied to AMR bilges.

Pipe: *“AFFF bilge flooding was activated in the auxiliary machinery room at time ____.”*

_____ If EOW reports water mist system activated in AMR.

Pipe: *“Water mist system activated in auxiliary machinery room at time _____.”*

B. Class Bravo Fire Out of Control in AMR.

_____ Ensure checklist for leak/fire is complete.

_____ When EOW reports fire is out of control, AMR is being evacuated.

Pipe (if directed by DCA): “*The fire in the auxiliary machinery room is out of control. The auxiliary machinery room is being evacuated.*”

_____ Ensure DCA reports AMR is mechanically and electrically isolated.

Pipe (if directed by DCA): “*The auxiliary machinery room is mechanically and electrically isolated.*”

_____ If not activated previously, ensure DCA reports AMR water mist system activation time.

Pipe (if directed by DCA): “*Water mist system has been activated in the auxiliary machinery room at time _____.*”

_____ Ensure DCA reports 2-minute *Reentry* AFFF bilge flooding for AMR.

Pipe (if directed by DCA): “*2-minute Reentry AFFF bilge flooding to auxiliary machinery room activated at time _____.*”

_____ Ensure DCA reports fire team ordered to reenter AMR.

Pipe (if directed by DCA): “*The fire team has reentered the auxiliary machinery room at time _____.*”

_____ Ensure DCA reports class bravo fire is out.

Pipe (if directed by DCA): “*Class bravo fire is out in the auxiliary machinery room, reflash watch is set.*”

Section D: Tab 4, DCA Checklist

A. Major Oil Leak/Fire in AMR.

_____ Establish communications.

_____ Conn.

_____ Repair 2.

_____ Repair 3.

_____ AFFF/water mist system operator (fwd/aft).

_____ Hangar person-in-charge-of-extras.

_____ Manned and ready.

_____ Conn.

_____ Repair 2.

_____ Repair 3.

_____ AFFF/water mist system operator (fwd/aft).

_____ Report all stations manned and ready to OOD.

Pipe: *“All stations manned and ready.”*

_____ Verify firemain pressure.

_____ Start plot.

_____ Report initial 2-minute AFFF bilge flooding times to OOD.

start time: _____ end time: _____.

Pipe: *“AFFF bilge flooding was activated in auxiliary machinery room at time _____.”*

_____ If EOW reports water mist system activated in AMR.

start time: _____ end time: _____.

Pipe: *“Water mist system activated in auxiliary machinery room at time _____.”*

_____ Receive and plot reports from repair lockers.

_____ Modified zebra set.

_____ Fire boundaries set as per [Tab 12, Fire Boundaries](#).

_____ Smoke boundaries/smoke control zone set as per [Tab 10, Smoke Boundaries/Smoke Control Zone](#).

_____ Ventilation secured as per [Tab 11, Ventilation](#).

_____ Two P-100s rigged/jumpered.

_____ SCBA change out station established.

_____ Report modified zebra set to OOD.

Pipe: *“Modified zebra is set.”*

Class Bravo Fire Out of Control in AMR.

_____ Ensure completion of checklist for leak/fire.

_____ Receive report from EOW AMR evacuated.

Pipe: *“Auxiliary machinery room is evacuated. Make all reports to DCC.”*

_____ Order AFFF station operator to conduct 2-minute AFFF bilge flooding (if not accomplished by EOW).

start time: _____ end time: _____.

_____ If not previously reported, EOW to report water mist system has been activated in AMR.

Pipe: *“Water mist system has been activated in the auxiliary machinery room at time _____.”*

_____ Receive reports from EOW.

_____ Closed AMR fuel oil remote COVs.

_____ Closed AMR fire station COVs.

_____ Account for all personnel in watch section.

_____ AFFF bilge flooding times.

_____ Location of firefighting equipment in AMR.

_____ Mechanical and electrical isolations completed.

_____ Receive reports of electrical isolation complete.

Repair 2 _____ Repair 3 _____ ECR _____

_____ Receive reports of mechanical isolation complete.

Repair 2 _____ Repair 3 _____ ECR _____

_____ Report AMR is mechanically and electrically isolated.

Pipe: *“The auxiliary machinery room is mechanically and electrically isolated.”*

_____ Verify fire team ready for reentry.

_____ Ensure backup hose is manned prior to re-entry.

_____ Order 2-minute AMR bilge flooding _____ (time).

_____ Report times to OOD.

Pipe: *“2-minute reentry AFFF bilge flooding to auxiliary machinery room activated at time _____.”*

_____ Order fire team to reenter AMR.

_____ Receive reentry time from Repair 2 LL.

_____ Report fire team has entered AMR at (time) _____ to OOD.

Pipe: *“The fire team has reentered the auxiliary machinery room at time _____.”*

_____ Verify fire team reliefs are manned and ready.

_____ Receive ‘fire is out’ report.

_____ Report fire is out to OOD.

Pipe: *“Class bravo fire is out in the auxiliary machinery room, reflash watch is set.”*

_____ Order compartment overhaul.

_____ Order repair locker electrician to investigate for electrical damage.

_____ Order de-smoking.

_____ Conduct gas free tests as per [Tab 15, De-smoking/Gas Freeing](#).

_____ Order de-watering.

_____ Conduct gas free toxic tests as per [Tab 15, De-smoking/Gas Freeing](#).

Section E: Tab 5, RLL Checklist

A. Major Oil Leak/Fire in AMR.

- _____ Establish communications with DC Central (both).
- _____ Make reports to DC Central (both).
 - _____ Manned and ready.
 - _____ Set modified zebra.
 - _____ Set fire boundaries as per [Tab 12, Fire Boundaries](#).
 - _____ Set smoke boundaries/smoke control zone as per [Tab 10, Smoke Boundaries/Smoke Control Zone](#).
 - _____ Set ventilation as per [Tab 11, Ventilation](#).
 - _____ Rig two P-100s and connect to firemain.
 - _____ Establish SCBA primary change out station in Repair 3.
(Secondary change out station will be in passage 2-16-1-L, near RII).
- _____ Check firemain pressure. Verify that automated control features of the machinery monitoring system maintain sufficient firemain pressure. If insufficient pressure, energize additional fire pumps manually. (both).
- _____ Ensure following positions are filled prior to re-entry: (Repair 2).
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary Plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.
- _____ Dispatch investigators/verify sufficient fire pumps on line and not overheating/status of smoke/fire boundaries.
- _____ Report existing conditions to DCA (Repair 2).
- _____ Dispatch fire party to Repair 2 (Repair 3).
- _____ Ensure investigators verify water mist/AFFF stations manned/status of smoke/fire boundaries.
- _____ Report existing conditions to DCA (Repair 3).
- _____ Ensure firemain isolation valve 2-43-2FM (in crew stateroom 2-36-8-L) is OPEN (Repair 2).

B. Class Bravo Fire Out of Control in AMR.

- _____ Complete checklist for leak/fire (both).
- _____ Verify from DCA mechanical and electrical isolation is complete as per [Tab 13, Mechanical and Electrical Isolation](#) (both).
- _____ Report fire team ready for reentry (Repair 2).
- _____ Order fire team to reenter AMR when ordered by DCA.
- _____ Report reentry time to DCC (Repair 2).
- _____ Verify SCBA start time from OSL (Repair 2).
- _____ Locker leader monitors and records light-off times (Repair 3).
- _____ Send first set of SCBA reliefs to passage 2-28-0-L (Repair 2).
- _____ First set of reliefs light-off SCBAs when directed (Repair 2).
- _____ Locker leader monitors and records light-off times (Repair 3).
- _____ Change out the following:
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary Plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.

_____ Second set of reliefs light-off SCBAs when directed (Repair 2).

_____ Locker leader monitors and records light-off times (Repair 3).

_____ Change out the following:

_____ OSL.

_____ ATL.

_____ Primary nozzleman.

_____ Primary hoseman.

_____ Primary Plugman.

_____ Backup hose nozzleman.

_____ Backup hose hoseman.

_____ Backup hose plugman.

_____ Third set of reliefs light-off SCBAs when directed (Repair 2).

_____ Locker leader monitors and records light-off times (Repair 3).

_____ Change out the boundarymen.

Note: Personnel being relieved muster in Repair 2. Once Repair 2 LL accounts for everyone, reliefs doff FFEs and SCBAs for use by the next set of reliefs. Relieved personnel then report to the HSC or his representative for cool down.

_____ Pass word to DCC when the fire is out and reflash watch is set (Repair 2).

_____ Initiate post-fire actions when ordered by DCA (Repair 2).

_____ Ensure post-fire personnel don and activate SCBA before reentry (Repair 2).

_____ Overhaul fire.

_____ Repair locker electrician investigate for electrical damage.

_____ De-smoking.

_____ De-watering.

_____ Atmospheric testing.

Section F: Tab 6, Hangar Person-in-Charge-of-Extras Checklist

A. Major Oil Leak/Fire in AMR.

- _____ Establish communications with DCC.
- _____ Muster all extra personnel.
- _____ Make reports to DC Central.
 - _____ Number of personnel available.
 - _____ Set modified zebra – main deck and above.
 - _____ Set fire boundaries as needed or as directed – main deck and above.
 - _____ Set smoke boundaries/smoke control zone – main deck and above.
- _____ Investigate topside fire boundaries. Report conditions to DC Central.

B. Class Bravo Fire Out of Control in AMR.

- _____ Complete checklist for leak/fire.
- _____ Coordinate SCBA relief process with Repair 3 locker leader.

Section G: Tab 7, Water Mist/AFFF Operator Checklist

A. Major Oil Leak/Fire in AMR.

- _____ Don battle dress and SCBA.
- _____ Establish communications with DC Central.
- _____ Report manned and ready to DC Central.
- _____ Verify fire pumps on line and AFFF pump on line.
(120 psi showing at local gauge).
- _____ Verify that AMR AFFF and water mist supply valves are open.
- _____ Continually monitor water mist/AFFF tank levels and replenish as necessary.

B. Class Bravo Fire Out of Control in AMR.

- _____ Complete checklist for leak/fire.
- _____ Activate AMR water mist system when ordered by DCA.
- _____ Activate AMR AFFF bilge flooding when ordered by DCA.
- _____ Close AFFF COV when ordered by DCA.
- _____ Secure water mist system when ordered by DCA.

Section H: Tab 8, Repair Locker Electrician Checklist

A. Major Oil Leak/Fire in AMR.

_____ Don battle dress and SCBA (both).

_____ Electrical isolation as per [Tab 13, Mechanical and Electrical Isolation](#). The intent is to maintain the current source of power until evacuation. Do not secure lighting and power to firefighting equipment and ventilation.

B. Class Bravo Fire Out of Control in AMR.

_____ Complete checklist for leak/fire (Repair 2).

_____ Perform electrical isolation as per [Tab 13, Mechanical and Electrical Isolation](#) (both).

Note: After evacuating the AMR, secure the supply fans. Do not secure exhaust ventilation until directed to do so by the RLL. (Activation of the water mist system automatically secures exhaust ventilation within the affected space.)

Note: After evacuating the AMR, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

_____ When ordered by RLL, report to AMR (Repair 2).

_____ Investigate electrical damage to AMR ventilation and other systems as directed.

Section I: Tab 9, Medical Personnel Checklist

A. Major Oil Leak/Fire in AMR.

- _____ Establish recovery area in sickbay (1-73-2-L).
- _____ Establish communications with Repair 2.
- _____ Provide food, liquids, and dry clothing for personnel.

B. Class Bravo Fire Out of Control in AMR.

- _____ Complete checklist for leak/fire.
- _____ Standby to assist with personnel casualties.

Section J: Tab 10, Smoke Boundaries/Smoke Control Zone

A. Major Oil Leak/Fire in AMR

Primary smoke boundaries:

- Forward - frame 36.
- Aft - frame 44.

Secondary smoke boundaries:

- Forward - frame 28.
- Aft - frame 52.

List of Smoke Curtain Locations:

- QAWTD 2-36-0.
- QAWTD 2-44-1.
- QAWTD 2-44-2.

Smoke Control Zone: For Smoke Control zone ventilation, see [Tab 11, Ventilation](#).

- a. Compartments below DC deck from FR 28-52:
 - Vacuum Collection Holding and Transfer Room (3-38-2-E).
 - Vacuum Collection Holding and Transfer Tank (3-36-2-W).
 - Escape Trunk (4-52-2-T).
 - FMMR (5-44-01-E).
 - Void (3-44-01-V).
 - Gray Water Tank (3-34-0-W).
 - Fuel Oil Service Tanks (5-36-2-F and 5-36-3-F).
 - Overflow Fuel Tanks (5-32-1-F and 5-32-2-F).
 - Fuel Oil Service Tank (5-28-0-F).

- b. Compartments on DC deck and above from FR 29-52:
- Passageways (2-36-0-L, 2-44-0-L, 1-44-0-L, and 1-29-0-L).
 - Crew Staterooms (2-36-2-L, 2-36-3-L, 2-36-8-L, and 2-41-3-L).
 - Toilet/Showers (2-36-4-L, 2-36-6-L, 2-40-1-L, and 2-41-1-L).
 - Fan Room (2-36-1-Q).
 - AMR Access (2-38-1-L).
 - AMR Intake/Exhaust (2-42-0-Q).
 - Training Center (1-37-0-Q).
 - Pressure Locks (1-43-1-L and 1-43-2-L).
 - GT Intake (01-44-0-Q).
 - Ship's Office (01-37-4-Q).
 - Communications Center/Mission Essential Electronics Space (02-38-0-C).
 - AMR Discharge Plenum (03-41-1-Q).
 - AMR Intake Plenum (03-41-2-Q).
 - SSDG intake filter room (03-38-0-Q).

B. Class Bravo Fire Out of Control in AMR.
Same as above.

Section K: Tab 11, Ventilation

A. Major Oil Leak/Fire in AMR.

1. Set negative ventilation in AMR by placing supply fans on (LOW), exhaust fans on (HIGH).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-68 (vital) | 1-44-1 | MCMS | yes | EOW |
| ES-124 (vital) | 2-41-2 | MCMS | yes | EOW |

2. Set positive ventilation outside AMR (smoke control zone) as follows:

- a. Place supply fans outside AMR on (HIGH).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|-------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-64 (vital) | 2-44-1 | MCMS | yes | EOW |
| TPSS-70 (vital) | 02-41-2 | MCMS | yes | EOW |
| SS-54 (non-vital) | 2-32-1 | MCMS | yes | EOW |
| SS-55 (non-vital) | 1-50-1 | MCMS | yes | EOW |
| SS-69 (non-vital) | 2-46-1 | MCMS | yes | EOW |

b. Exhaust fans and recirculation fans outside AMR (secure).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| ES-120 (vital) | 2-45-1 | MCMS | yes | EOW |
| TPES-125 (vital) | 02-38-2 | MCMS | yes | EOW |
| ES-104 (non-vital) | 2-32-1 | MCMS | yes | EOW |
| ES-105 (non-vital) | 1-46-1 | MCMS | yes | EOW |
| ES-116 (non-vital) | 1-45-1 | MCMS | yes | EOW |
| RS-32 (vital) | 02-39-2 | MCMS | yes | EOW |
| RS-1 (vital) | 02-29-3 | MCMS | yes | EOW |
| RS-2 (vital) | 02-30-1 | MCMS | yes | EOW |
| RS-3 (vital) | 02-42-2 | MCMS | yes | EOW |
| RS-4 (non-vital) | 02-38-4 | MCMS | yes | EOW |
| RS-6 (non-vital) | 1-41-2 | MCMS | yes | EOW |
| RS-14 (non-vital) | 2-45-1 | MCMS | yes | EOW |
| RS-16 (non-vital) | 1-43-2 | MCMS | yes | EOW |
| RS-31 (non-vital) | 2-37-1 | MCMS | yes | EOW |
| RS-33 (non-vital) | 1-37-1 | MCMS | yes | EOW |
| FCA-26 (non-vital) | 1-50-2 | MCMS | yes | EOW |
| FCA-28 (non-vital) | 2-49-2 | MCMS | yes | EOW |

B. Class Bravo Fire Out of Control in AMR.

Exhaust ventilation in AMR remains on while the water mist system is activated. Secure all other ventilation while the fire is out of control.

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-68 (vital) | 1-44-1 | MCMS | yes | EOW |
| ES-124 (vital) | 2-41-2 | MCMS | yes | EOW |

Section L: Tab 12, Fire Boundaries

A. Major Oil Leak/Fire in AMR.

- Primary fire boundaries.
 - Forward - bulkhead 36, 4th deck and above.
 - Aft - bulkhead 44, 4th deck and above.
 - Above - second deck from frame 36 to 44.
 - Above - bulkheads surrounding AMR uptake space, second deck and above.

- Secondary fire boundaries.
 - Forward - bulkhead 28, 4th deck and above.
 - Aft - bulkhead 52, 4th deck and above.
 - Above - 01 deck from frame 28 to 52.

B. Class Bravo Fire Out of Control in AMR.

Same as above.

Section M: Tab 13, Mechanical and Electrical Isolation

A. Major Oil Leak/Fire in AMR.

1. Mechanical Isolation - Securing propulsion machinery as per standard procedures in reference (b), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3.
2. Electrical Isolation - Maintain the current source of power until evacuation. Do not secure lighting and power to firefighting equipment and ventilation. Each watch station listed below ensure that the following systems are secured/de-energized:

- a. Main switchboard operator (personnel in ECR): Ensure the following breakers are open:

| | | |
|-------|-----------|---------------------------------------|
| _____ | 1SG-4P-1S | 1S to #1 SSDG (MMCS or open locally). |
| _____ | 1S-4P-2S | #2 stbd, bus-tie breaker. |
| _____ | 1S-4P-3S | #3 stbd, bus-tie breaker. |
| _____ | 1S-4P-A | #2 fire pump (normal). |
| _____ | 2S-4P-A | #2 fire pump (alt). |

- b. Repair Locker Electrician:

| | | |
|-------|---------------|----------------------------|
| _____ | (1-39-2)-1P-H | #1 SSDG battery charger. |
| _____ | (1-39-2)-1P-B | AMR HMI workstation. |
| _____ | (2-41-1)-4P-C | #1 sea water cooling pump. |
| _____ | (2-41-1)-4P-F | #1 start air compressor. |
| _____ | (3-44-1)-1P-M | Sewage lift station #2. |
| _____ | (2-48-1)-1P-B | ESD relay panel. |

B. Class Bravo Fire Out of Control in AMR.

1. Mechanical isolation - EOW (personnel in ECR). Ensure the following systems are secured/de-energized:

- _____ #1 SSDG.
- _____ #2 Fire pump.
- _____ #1 Start air compressor.
- _____ #1 Sea water cooling pump.
- _____ Fuel oil COV 2-42-1.
- _____ Fuel oil COV 2-42-3.
- _____ Start air COV 3-43-1.

2. Electrical Isolation - These items completely secure all power present in AMR. They include the remaining power to firefighting equipment and ventilation. Watch stations listed below ensure the following systems are secured/de-energized:

- a. Main switchboard operator (personnel in ECR):
(*List electrical isolations for EOW.)

- b. Repair Locker Electrician:

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| Supply Fan (SS-68) | 1-44-1 | MCMS | yes | EOW |
| Exhaust Fan (ES-124) | 2-41-2 | MCMS | yes | EOW |

Note: After evacuating the AMR, secure the supply fans. Do not secure exhaust ventilation until directed to do so by the RLL. (Activation of the water mist system automatically secures exhaust ventilation within the affected space.)

Note: After evacuating the AMR, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

- _____ LC3-1VL-(3-36-2) Vital lgt panel (located in passage 1-29-0-L)

Section N: Tab 14, Reentry Points

A. Major Oil Leak/Fire in AMR.

Reentry Point for a Major Oil Leak or class bravo fire contained in AMR is at the discretion of the DCA. If possible, the primary reentry point is WTH 2-39-1.

B. Class Bravo Fire Out of Control in AMR.

- The primary reentry point for AMR is through WTH 2-39-1.
 - #1 hose supplied from AFFF hose reel 2-36-1.
 - #2 hose supplied from fireplug 2-40-2.
- There is no secondary reentry point for AMR. The only other access is the escape trunk (4-43-1-T), which is not a viable reentry point for a class bravo fire out of control.

Section O: Tab 15, De-smoking/Gas Freeing

A. Procedures for De-smoking AMR (installed ventilation system operable).

Installed ventilation is preferred for de-smoking AMR after a fire because of its high-volume capacity. However, do not energize AMR ventilation until its condition has been thoroughly investigated and permission for use granted by the engineering officer.

1. The engineering officer, with the repair electrician, determines the condition of the ventilation electrical system and declares the system operational.
2. Once inspected, request the engineering officer's permission to energize the blowers.
3. When authorized to energize and restart the blowers, repair electrician:
 - a. Inspect the cables and transformers near ABT 2-41-2. This ABT supplies control voltage to the AMR ventilation.
 - b. If satisfactory, direct switchboard operator to close breaker. Normal power is from 1S-4P-(2-41-1) and alternative from 2S-4P-(2-41-1).
 - c. Restart AMR ventilation using the controllers in passage (2-44-0-L). Start exhaust ventilation on SLOW, working up to fast as load limits on SSDGs allow. Start supply blowers on SLOW.
 - d. Continue until AMR is de-smoked, space de-watered, and atmospheric tests pass.

B. Procedures for De-smoking AMR (installed ventilation system not operable).

Use this procedure to de-smoke the AMR if the ventilation system has been damaged by the fire. The basic idea is to create a positive pressure outside of AMR to force smoke out the uptake space without allowing smoke to enter the interior of the ship.

De-smoking by opening doors and breaking smoke boundaries is not advised unless careful consideration is given to the path smoke might take. However, if necessary, open QAWTDs and WTHs to AMR. Anyone within this area is required to wear SCBAs.

1. Set up natural convection by opening the following fittings:
 - QAWTD 2-37-1.
 - QAWTD 2-44-1.
 - QAWTD 2-44-2.
 - WTH 2-39-1.
2. Set positive ventilation on surrounding spaces to pressurize AMR and to force smoke up through the uptake space. However, since all ventilation is powered from the main switchboard, it has to be energized.
3. Continue until AMR is de-smoked, space de-watered, and atmospheric tests satisfactory.

C. Procedures for De-smoking AMR (ship's ventilation system inoperable or not available).

Use this procedure when there is no ship's power available to operate installed ventilation. De-smoking by opening doors/hatches and breaking smoke boundaries is not advised unless careful consideration is given to the path smoke might take.

1. Rig ram fans on the fo'c'sle and run the portable trunk as follows:
 - a. Through QAWTD 01-28-1.
 - b. Aft through QAWTD 01-29-1.
 - c. Continue aft through NTD 01-38-1.
 - d. Down through WTH 01-38-3.
 - e. Forward and through QAWTD 1-37-1.
 - f. Through QAWTD 1-37-3.
 - g. Down through WTH 1-39-1.
 - h. Through QAWTD 2-37-1.
 - i. Down through WTH 2-39-1 into AMR (5-36-01-E).
2. Continue until AMR is de-smoked, space de-watered, and atmospheric tests are satisfactory.

D. Gas Free Engineer Post-fire Tests.

1. When the space is clear of smoke, test for oxygen between 19.5-22 percent, combustible gases less than 10 percent of the lower explosive limit, and any toxic gases below their threshold limit values, as per reference (e), Gas Free Engineering, NSTM Chapter 074, Volume 3, before certifying the space safe for personnel to enter without SCBAs.
2. After a flammable liquid fire has been extinguished, toxic gas tests for hydrocarbons, carbon dioxide, carbon monoxide, hydrogen chloride, hydrogen cyanide, and chlorine are required. The following are the threshold limit values for each test:

| | |
|-------------------------------------|----------|
| Hydrocarbons | none |
| Hydrogen Chloride/Hydrochloric Acid | 5 ppm |
| Carbon Dioxide | 5000 ppm |
| Hydrogen Cyanide/Hydrocyanic Acid | 10 ppm |
| Hydrogen Fluoride | 3 ppm |
| Chlorine | 1 ppm |
| Carbon Monoxide | 50 ppm |

3. Conduct tests near the center and all four-corners on each level, high and low, with a minimum of ten test points taken. Obtain at least one satisfactory test result at each test location.

Note: A compartment is considered “safe” only after satisfactory test results at all test locations are obtained. An unsatisfactory test result at any test point requires further ventilating and re-testing at all test points.

Appendix G: Ship Service Diesel Generator Room (2-76-5-E) Underway Checklists

[Tab 1, Machinery Watchstander Checklist for SSDG Room Leak/Fire](#)

[Tab 2, Engineering Control Room \(EOW\) Checklist](#)

[Tab 3, OOD Checklist](#)

[Tab 4, DCA Checklist](#)

[Tab 5, RLL Checklist](#)

[Tab 6, Hangar Person-in-Charge-of-Extras Checklist](#)

[Tab 7, Water Mist/AFFF Operator Checklist](#)

[Tab 8, Repair Locker Electrician Checklist](#)

[Tab 9, Medical Personnel Checklist](#)

[Tab 10, Smoke Boundaries/Smoke Control Zone](#)

[Tab 11, Ventilation](#)

[Tab 12, Fire Boundaries](#)

[Tab 13, Mechanical and Electrical Isolation](#)

[Tab 14, Reentry Points](#)

[Tab 15, De-smoking/Gas Freeing](#)

Section A: Tab 1, Machinery Watchstander Checklist for SSDG Room Leak/Fire

A. Major Oil Leak/Fire in SSDG Room.

- _____ Notify EOW of casualty.

- _____ Secure affected equipment: Secure the source of the leak/fire immediately, consistent with the restricted maneuvering doctrine and commanding officer's battle orders as applicable. If source cannot be secured, deflect oil to the deck.

- _____ Shoulder EEBDs.

- _____ Break out portable AFFF and PKP extinguishers on scene. Wash oil to the deck using AFFF extinguisher. Fight small, contained fires with PKP/AFFF extinguishers. If needed, fire hose stations with AFFF pick-up tubes may also be used to wash oil to the deck.

B. Class Bravo Fire Out Of Control In SSDG Room.

- _____ Complete checklist for leak/fire.

- _____ Notify EOW that the fire is out of control.

- _____ Don and activate EEBDs.

- _____ Evacuate through nearest safe exit.

- _____ Activate water mist system for SSDG room.

- _____ Notify EOW of personnel, machinery, firefighting equipment status, and water mist activation time.

- _____ Lay to WQSB after being relieved by the general emergency watch section.

Note: This is a reduced checklist. See reference (b), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3 for more detail.

Section B: Tab 2, Engineering Control Room (EOW) Checklist

A. Major Oil Leak/Fire in SSDG room.

_____ Secure the source of the leak/fire immediately, consistent with the restricted maneuvering doctrine and commanding officer's battle orders as applicable. If source cannot be secured, deflect oil to the deck.

_____ Notify OOD.

- Casualty location.
- Equipment affected.
- Action taken and max speed available - On GT and MDEs.
- Recommend setting general emergency per the machinery space fire doctrine.

Pipe: ***“Conn — EOW: There is a [class A/B/C fire] or a [major fuel/lube oil leak] in the ship service diesel generator room, compartment 2-76-5-E, [upper/lower level], [port side/stbd side/centerline] at frame [#]. I have secured the following equipment [list]. Max speed available is [#] knots. Recommend setting general emergency per the machinery space fire doctrine.”***

_____ Shoulder EEBD if leaving the space.

_____ Energize fire pumps as required.

_____ Check firemain pressure. Verify that automated control features of the machinery monitoring system maintain sufficient firemain pressure. If insufficient pressure, energize additional fire pumps manually.

_____ If initial actions are insufficient to vapor secure the fuel/oil, energize AFFF overhead sprinkling for initial 2-minute dump.

_____ In the event of a fire in SSDG room.

- Direct watchstanders to take initial action to combat fire.

— or —

- Activate water mist system for SSDG room.

_____ Set negative ventilation within SSDG room as per [Tab 11, Ventilation](#) (supply fans on LOW; exhaust fans on HIGH).

_____ Set positive ventilation outside SSDG room as per [Tab 11, Ventilation](#) (smoke control zone).

_____ Mechanically isolate space further by securing other equipment near the casualty.

_____ Electrically isolate space further by securing other equipment near the casualty.

B. Class Bravo Fire Out of Control in SSDG Room.

- _____ Complete checklist for leak/fire.
- _____ Notify OOD fire is out of control and SSDG room is being evacuated.
- _____ If not done previously, activate AFFF overhead sprinkling in SSDG room for 2-minute initial dump.
start time: _____ end time: _____.
- _____ If not done previously, activate water mist system for SSDG room.
start time: _____ end time: _____.
- _____ Mechanically isolate space as per [Tab 13, Mechanical and Electrical Isolation](#).
- _____ Electrically isolate space as per [Tab 13, Mechanical and Electrical Isolation](#).
- _____ Make report to DCA regarding machinery plant, personnel, and casualty status.
Report AFFF overhead sprinkling and water mist system activation times.
- _____ Verify SSDG room fuel oil remote COVs are closed.
- _____ Verify SSDG room fire station COVs are closed.
- _____ Lay to WQSB, after complete status of casualty has been passed on and having been properly relieved by the general emergency watch section.

Section C: Tab 3, OOD Checklist

A. Major Oil Leak/Fire in SSDG Room.

_____ Receive report from EOW

- Casualty - location of leak/fire.
- Equipment affected.
- Action and max speed available - On GT and MDEs.
- Set general emergency as per the machinery space fire doctrine.

_____ Sound general alarm.

Pipe: *“[Fire, fire, fire] or [major oil leak] in the ship service diesel generator room, compartment 2-76-5-E, [upper/lower] level, [port side/stbd side/ centerline], at frame [#]. All hands set general emergency per the machinery space fire doctrine. Set modified zebra. Do not set zebra on the firemain.”*

Note: Once DCC is manned and ready, make all further pipes associated with the MSFD from DCC. In the event the DCA is unable to make pipes, the OOD pipes as necessary.

_____ Establish communications with DCC. Report manned and ready to DCC.

_____ Slow ship to 5 knots or less (if propulsion is still available).

_____ Maneuver ship to maintain as smooth a ride as possible during response.

_____ Ensure DCA reports all stations manned and ready, modified zebra set.

Pipe: *“All stations manned and ready. modified zebra is set.”*

_____ When EOW reports AFFF was applied to SSDG room.

Pipe: *“AFFF overhead sprinkling was activated in ship service diesel generator room at time _____.”*

_____ If EOW reports water mist system activated in SSDG room.

Pipe: *“Water mist system activated in ship service diesel generator room at time _____.”*

B. Class Bravo Fire Out of Control in SSDG Room.

_____ Ensure checklist for leak/fire is complete.

_____ When EOW reports fire is out of control, SSDG room is evacuating.

Pipe (if directed by DCA): *“The fire in the ship service diesel generator room is out of control. The ship service diesel generator room is being evacuated.”*

_____ Ensure DCA reports SSDG room is mechanically and electrically isolated.

Pipe (if directed by DCA): *“The ship service diesel generator room is mechanically and electrically isolated.”*

_____ If not activated previously, ensure DCA reports SSDG room water mist system activation.

Pipe (if directed by DCA): *“Water mist system has been activated in the ship service diesel generator room at time _____.”*

_____ Ensure DCA reports 2-minute reentry AFFF overhead sprinkling for SSDG room at time _____.

Pipe (if directed by DCA): *“2-minute reentry AFFF overhead sprinkling to ship service diesel generator room activated at time _____.”*

_____ Ensure DCA reports fire team ordered to reenter SSDG room.

Pipe (if directed by DCA): *“The fire team has reentered the ship service diesel generator room at time _____.”*

_____ Ensure DCA reports class bravo Fire is out.

Pipe (if directed by DCA): *“Class bravo fire is out in the ship service diesel generator room, reflash watch is set.”*

Section D: Tab 4, DCA Checklist

A. Major Oil Leak/Fire in SSDG Room.

_____ Establish communications.

_____ Conn.

_____ Repair 2.

_____ Repair 3.

_____ AFFF/water mist system operator (fwd/aft).

_____ Hangar person-in-charge-of-extras.

_____ Manned and ready.

_____ Conn.

_____ Repair 2.

_____ Repair 3.

_____ AFFF/water mist system operator (fwd/aft).

_____ Report all stations manned and ready to OOD.

Pipe: *“All stations manned and ready.”*

_____ Verify firemain pressure.

_____ Start plot.

_____ Report initial 2-minute AFFF overhead sprinkling times to OOD.

start time: _____ end time: _____.

Pipe: *“AFFF overhead sprinkling was activated in ship service diesel generator room at time _____.”*

_____ If EOW reports, water mist system activated in SSDG room.

start time: _____ end time: _____.

Pipe: *“Water mist system has been activated in the ship service diesel generator room at time _____.”*

- _____ Receive and plot reports from repair lockers.
- _____ Modified zebra set.
- _____ Fire boundaries set as per [Tab 12, Fire Boundaries](#).
- _____ Smoke boundaries/smoke control zone set as per [Tab 10, Smoke Boundaries/Smoke Control Zone](#).
- _____ Ventilation secured as per [Tab 11, Ventilation](#).
- _____ Two P-100s rigged/jumpered.
- _____ SCBA change out station established.

- _____ Report modified zebra set to OOD.

Pipe: *“Modified zebra is Set.”*

B. Class Bravo Fire Out of Control in SSDG Room.

_____ Ensure completion of checklist for leak/fire.

_____ Receive report from EOW SSDG room evacuated.

Pipe: *“Ship service diesel generator room is evacuated. Make all reports to DCC.”*

_____ Order AFFF station operator to conduct 2-minute AFFF overhead sprinkling (if not accomplished by EOW).

start time: _____ end time: _____.

_____ If not previously reported, EOW reports water mist system has been activated in SSDG room.

Pipe: *“Water mist system has been activated in the ship service diesel generator room at time _____.”*

_____ Receive reports from EOW

_____ Closed SSDG room fuel oil remote COVs.

_____ Closed SSDG room fire station COVs.

_____ Account for all personnel in watch section.

_____ AFFF overhead sprinkling times.

_____ Location of firefighting equipment in SSDG room.

_____ Mechanical and electrical isolations completed.

_____ Receive reports of electrical isolation complete.

Repair 2 _____ Repair 3 _____

_____ Receive reports of mechanical isolation complete.

Repair 2 _____ Repair 3 _____

_____ Report SSDG room is mechanically and electrically isolated.

Pipe: *“The ship service diesel generator room is mechanically and electrically isolated.”*

_____ Verify fire team ready for reentry.

_____ Ensure backup hose is manned prior to re-entry.

_____ Order 2-minute SSDG room overhead sprinkling _____. (time).

_____ Report times to OOD.

Pipe: *“2-minute reentry AFFF overhead sprinkling to ship service diesel generator room activated at time _____.”*

_____ Order fire team to reenter SSDG room.

_____ Receive reentry time from locker leader.

_____ Report fire team has entered SSDG room at (time) _____ to OOD.

Pipe: *“The fire team has reentered the ship service diesel generator room at time _____.”*

_____ Verify fire team reliefs are manned and ready.

_____ Receive ‘Fire is Out’ report.

_____ Report fire is out to OOD.

Pipe: *“Class bravo fire is out in the ship service diesel generator room, reflash watch is set.”*

_____ Order compartment overhaul.

_____ Order repair locker electrician to investigate for electrical damage.

_____ Order de-smoking.

_____ Conduct gas free tests as per [Tab 15, De-smoking/Gas Freeing](#).

_____ Order de-watering.

_____ Conduct gas free toxic tests as per [Tab 15, De-smoking/Gas Freeing](#).

Section E: Tab 5, RLL Checklist

A. Major Oil Leak/Fire in SSDG Room.

- _____ Establish communications with DC Central (both).
- _____ Make reports to DC Central (both).
 - _____ Manned and ready.
 - _____ Set modified zebra.
 - _____ Set fire boundaries as per [Tab 12, Fire Boundaries](#).
 - _____ Set smoke boundaries/smoke control zone as per [Tab 10, Smoke Boundaries/Smoke Control Zone](#).
 - _____ Set ventilation as per [Tab 11, Ventilation](#).
 - _____ Rig 2 P-100s and connect to firemain.
 - _____ Establish SCBA primary change out station in Repair 3.
(secondary change out station will be Repair 2).
- _____ Check firemain pressure. Verify that automated control features of the machinery monitoring system maintain sufficient firemain pressure. If insufficient pressure, energize additional fire pumps manually. (both).
- _____ Ensure following positions are filled prior to re-entry: (Repair 3).
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary Plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.
- _____ Dispatch investigators to verify.
 - _____ sufficient fire pumps on line and not overheating.
 - _____ status of smoke/fire boundaries.
 - _____ water mist/AFFF stations manned.
- _____ Report existing conditions to DCA (Repair 2).
- _____ Dispatch fire party to Repair 2 (Repair 3).
- _____ Report existing conditions to DCA (Repair 3).
- _____ Ensure firemain isolation valve 2-43-2FM (in crew stateroom 2-36-8-L) is OPEN (Repair 2).

B. Class Bravo Fire Out of Control in SSDG Room.

- _____ Complete checklist for leak/fire (both).
- _____ Verify from DCA mechanical and electrical isolation is complete as per [Tab 13, Mechanical and Electrical Isolation](#) (both).
- _____ Report fire team ready for reentry (Repair 2).
- _____ Order fire team to reenter SSDG room when ordered by DCA.
- _____ Report reentry time to DCC. (Repair 2).
- _____ Verify SCBA start time from OSL (Repair 2).
- _____ Locker leader monitors and records light-off times (Repair 3).
- _____ Send first set of SCBA reliefs to passage 2-70-1-L (Repair 2).
- _____ First set of reliefs light-off SCBAs when directed (Repair 2).
- _____ Locker leader monitors and records light-off times (Repair 3).
- _____ Change out the following:.
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.

_____ Second set of reliefs light-off SCBAs when directed (Repair 2).

_____ Locker leader monitors and records light-off times (Repair 3).

_____ Change out the following:

_____ OSL.

_____ ATL.

_____ Primary nozzleman.

_____ Primary hoseman.

_____ Primary Plugman.

_____ Backup hose nozzleman.

_____ Backup hose hoseman.

_____ Backup hose plugman.

_____ Third set of reliefs light-off SCBAs when directed (Repair 2).

_____ Locker leader monitors and records light-off times (Repair 3).

_____ Change out the boundarymen.

Note: Personnel being relieved muster in Repair 3. Once Repair 3 LL accounts for everyone, reliefs doff FFEs and SCBAs for use by the next set of reliefs. Relieved personnel then report to the HSC or his representative for cool down.

_____ Pass word to DCC when the fire is out and reflash watch is set (Repair 2).

_____ Initiate post-fire actions when ordered by DCA (Repair 2).

_____ Ensure post-fire personnel don and activate SCBA before reentry (Repair 2).

_____ Overhaul fire.

_____ Repair locker electrician investigate for electrical damage.

_____ De-smoking.

_____ De-watering.

_____ Atmospheric testing.

Section F: Tab 6, Hangar Person-in-Charge-of-Extras Checklist

A. Major Oil Leak/Fire in SSDG Room.

- _____ Establish communications with DCC.
- _____ Muster all extra personnel.
- _____ Make reports to DC Central.
 - _____ Number of personnel available.
 - _____ Set modified zebra – main deck and above.
 - _____ Set fire boundaries as needed or as directed – main deck and above.
 - _____ Set smoke boundaries/smoke control zone – main deck and above.
- _____ Investigate topside fire boundaries. Report conditions to DC Central.

B. Class Bravo Fire Out of Control in SSDG Room.

- _____ Complete checklist for leak/fire.
- _____ Coordinate SCBA relief process with Repair 3 locker leader.

Section G: Tab 7, Water Mist/AFFF Operator Checklist

A. Major Oil Leak/Fire in SSDG Room.

- _____ Don battle dress and SCBA.
- _____ Establish communications with DC Central.
- _____ Report manned and ready to DC Central.
- _____ Verify fire pumps on line and AFFF pump on line.
(120 psi showing at local gauge).
- _____ Verify that SSDG room AFFF and water mist supply valves are open.
- _____ Continually monitor water mist/AFFF tank levels and replenish as necessary.

B. Class Bravo Fire Out of Control in SSDG Room.

- _____ Complete checklist for leak/fire.
- _____ Activate SSDG room water mist system when ordered by DCA.
- _____ Activate SSDG room AFFF overhead sprinkling when ordered by DCA.
- _____ Close AFFF COV when ordered by DCA.
- _____ Secure water mist system when ordered by DCA.

Section H: Tab 8, Repair Locker Electrician Checklist

A. Major Oil Leak/Fire in SSDG Room.

_____ Don battle dress and SCBA (both).

_____ Electrical isolation as per [Tab 13, Mechanical and Electrical Isolation](#). The intent is to maintain the current source of power until evacuation. Do not secure lighting and power to firefighting equipment and ventilation.

B. Class Bravo Fire Out of Control in SSDG Room.

_____ Complete checklist for leak/fire (Repair 3).

_____ Perform electrical isolation as per [Tab 13, Mechanical and Electrical Isolation](#) (both).

Note: After evacuating the SSDG room, secure ventilation supply fans. Do not secure exhaust ventilation until directed to do so by the RLL. (Activation of the water mist system automatically secures exhaust ventilation within the affected space.)

Note: After evacuating the SSDG room, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

_____ When ordered by RLL, report to SSDG room (Repair 3).

_____ Investigate electrical damage to SSDG room ventilation and other systems as directed.

Section I: Tab 9, Medical Personnel Checklist

A. Major Oil Leak/Fire in SSDG Room.

_____ Establish recovery area in crew messroom (1-52-01-L).

_____ Establish communications with Repair 2.

_____ Provide food, liquids, and dry clothing for personnel.

B. Class Bravo Fire Out of Control in SSDG Room.

_____ Complete checklist for leak/fire.

_____ Standby to assist with personnel casualties.

Section J: Tab 10, Smoke Boundaries/Smoke Control Zone

A. Major Oil Leak/Fire in SSDG Room.

1. Primary smoke boundaries:
 - Forward - frame 76.
 - Aft - frame 82.
2. Secondary smoke boundaries:
 - Forward - frame 70 (2nd deck)/frame 52 (main deck).
 - Aft - frame 88 (2nd deck)/frame (no aft secondary boundary on main deck).
3. List of Smoke Curtain Locations:
 - QAWTD 2-76-1.
 - QAWTD 2-82-1.
 - QAWTD 1-76-0.
 - QAWTD 1-82-0.
 - Archway at FR 70 in passageway (1-64-0-L).
 - Archway at FR 67 in passageway (1-64-0-L).
4. Smoke Control Zone: For Smoke Control zone ventilation, see [Tab 11, Ventilation](#).
 - a. Compartments on Main Deck from FR 64-86.
 - Passageways (1-76-0-L and 1-64-0-L).
 - Ship Service Intake Filter (1-82-1-Q).
 - Vent Trunk (1-82-3-Q).
 - Freeze Storeroom (1-71-1-A).
 - b. Compartments on 2nd Deck from FR 70-88.
 - Passageways (2-76-3-L, 2-70-1-L, and 2-82-01-L).
 - Crew Staterooms (2-70-5-L and 2-82-3-L).
 - Fan Room (2-82-1-Q).
 - c. Compartments below affected space from FR 76-82.
 - Central Engineering Storeroom (3-76-0-Q).
 - d. Compartments above affected space from FR 76-82.
 - Flight Deck.

B. Class Bravo Fire Out of Control in SSDG Room.

Same as above.

Section K: Tab 11, Ventilation

A. Major Oil Leak/Fire in SSDG Room.

_____ Set ventilation (both).

1. Set negative ventilation in SSDG room as follows:

a. Place Supply fans on (LOW), Exhaust fans on (HIGH).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-65 (vital) | 1-81-1 | MCMS | yes | EOW |
| ES-121 (vital) | 1-80-5 | MCMS | yes | EOW |

2. Set positive ventilation outside SSDG room (smoke control zone) as follows:

a. Place supply fans outside SSDG room on (HIGH).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-61(non-vital) | 2-84-1 | MCMS | yes | EOW |

b. Exhaust fans and recirculation fans outside SSDG room (SECURE).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| ES-111 (non-vital) | 1-81-1 | MCMS | yes | EOW |
| RS-13 (non-vital) | 2-83-1 | MCMS | yes | EOW |
| FCA-20 (vital) | 2-95-2 | MCMS | yes | EOW |
| FCA-21 (vital) | 2-95-1 | MCMS | yes | EOW |
| FCA-27 (non-vital) | 2-81-2 | MCMS | yes | EOW |

B. Class Bravo Fire Out of Control in SSDG Room.

Exhaust ventilation in SSDG room remains on while the Water Mist System is activated. All other ventilation shall be secured when the fire is out of control.

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-65 (vital) | 1-81-1 | MCMS | yes | EOW |
| ES-121 (vital) | 1-80-5 | MCMS | yes | EOW |

Section L: Tab 12, Fire Boundaries

A. Major Oil Leak/Fire in SSDG Room.

- Primary fire boundaries.
 - Forward - bulkhead 76.
 - Aft - bulkhead 82.
 - Above - flight deck from frame 76 to 82.
 - Below - central engineering storeroom (3-76-0-Q).

- Secondary fire boundaries.
 - Forward - bulkhead 52, main deck and above.
 - Forward - bulkhead 70, 2nd deck and below.
 - Aft - none, main deck and above.
 - Aft - bulkhead 88, 2nd deck and below.
 - Below - fuel oil tanks (5-76-0-F AND 5-76-1-F).

B. Class Bravo Fire Out of Control in SSDG Room.

Same as above.

Section M: Tab 13, Mechanical and Electrical Isolation

A. Major Oil Leak/Fire in SSDG Room.

1. Mechanical Isolation - Securing methods for propulsion machinery will be as per standard procedures in reference (b), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3.
2. Electrical Isolation - Maintain power until evacuation. Do not secure lighting and power to firefighting equipment and ventilation. Secure/de-energize the following systems:

- Main Switchboard Operator (Personnel in ECR): Ensure that the following breakers are opened: (Move applicable breakers from below to this section).

_____ 3S-4P-3G 3S to #3 SSDG (MCMS or open locally).

_____ 1S-4P-3S #1 stbd bus tie breaker.

_____ 2S-4P-3S #2 stbd bus tie breaker.

- Repair Locker Electrician:

_____ (1-79-1)-1L-A ovhd ltg, main deck passage, FR 76-82.

_____ (1-79-1)-1L-C haz lkrs, main deck, FR 76-82.

_____ (1-79-1)-1VL-B vital lighting.

_____ (1-79-1)-1VL-F ltg main and 2nd deck.

_____ (1-79-1)-1VL-D haz lkrs, main deck, FR 76-82.

_____ (1-79-1)-1L-D receptacles.

B. Class Bravo Fire Out of Control in SSDG Room.

1. Mechanical isolation - The following is to be performed when there is a class bravo fire Out of Control in SSDG room:

- _____ #3 SSDG.
- _____ Start air COV 3-57-1.
- _____ Fuel oil COV 1-81-1.

2. Electrical isolation - These are items that are to be electrically secured that will completely secure all available power that may be present in SSDG room. They include the remaining power to firefighting equipment and ventilation. Secure/de-energize the following systems:

- a. Main switchboard operator (personnel in ECR): (*List electrical isolations for EOW)
- b. Repair locker electrician:

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-65 (vital) | 1-81-1 | MCMS | yes | EOW |
| ES-121 (vital) | 1-80-5 | MCMS | yes | EOW |

Note: After evacuating the SSDG room, secure the supply fans. Do not secure exhaust ventilation until directed to do so by the RLL. (Activation of the water mist system automatically secures exhaust ventilation within the affected space.)

Note: After evacuating the SSDG room, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

- _____ LC3-1VL-(1-79-1) vital ltg panel (1-76-0-L).
- _____ LC2-1L-(1-79-1) ltg panel (1-76-0-L).

Section N: Tab 14, Reentry Points

A. Major Oil Leak/Fire in SSDG Room

Reentry point for a major oil leak or class bravo fire contained in SSDG room is at the discretion of the DCA. If possible, the primary reentry point is QAWTD 2-76-3.

B. Class Bravo Fire Out of Control in SSDG Room

1. The primary reentry point for SSDG room is through QAWTD 2-76-3.
 - a. #1 hose supplied from fireplug 2-76-1.
 - b. #2 hose supplied from fireplug 2-84-1.
2. The secondary reentry point for SSDG room is through QAWTD 1-80-1.
 - a. #1 hose supplied from AFFF hose reel 1-80-1.
 - b. #2 hose supplied from fireplug 1-77-1.

Section O: Tab 15, De-smoking/Gas Freeing

A. Procedures for de-smoking SSDG room (installed ventilation system operable)

The installed ventilation system is preferred for de-smoking the SSDG room after a fire because of its high volume capacity. However, SSDG room ventilation must not be energized until its condition has been thoroughly investigated and permission for use granted by the engineering officer.

1. The engineering officer with the repair electrician determines the condition of the ventilation electrical system and declares the system operational.
2. Request and receive the engineering officer's permission before energizing the blowers. To energize and restart the blowers, the repair electrician:
 - a. Inspect the condition of the cables and transformers near ABT 2-80-2. This ABT supplies control voltage to SSDG room ventilation system.
 - b. If satisfactory, direct switchboard operator to close breaker. Normal power is from 3S-4P-(2-79-2) and alternative from 1S-4P-(2-79-2).
 - c. Restart SSDG room ventilation using the controllers in the SSDG room (2-76-5-Q). Start the exhaust ventilation on SLOW, working up to fast as load limits on SSDGs allow. Start supply blowers on SLOW.
 - d. Continue until SSDG room is de-smoked, space de-watered, and atmospheric tests are satisfactory.

B. Procedures for de-smoking SSDG room (installed ventilation system not operable)

Use this procedure for de-smoking the SSDG room if the ventilation system is inoperable. Run a ram fan with portable trunk from the affected space to the fantail.

De-smoking by opening doors and breaking smoke boundaries is not advised unless careful consideration is given to the potential smoke paths. However, if necessary, use the following procedure: Anyone within this area will be required to wear SCBAs.

1. Set up a ram fan on the fantail and run the portable trunk as follows:
 - a. Forward through QAWTD 1-82-0.
 - b. Continue forward through QAWTD 1-80-1 into SSDG room (2-76-5-E).
2. Set positive ventilation on surrounding spaces to help prevent the spread of smoke. However, since all ventilation is powered from the Main Switchboard, ensure they are energized. For smoke control zone ventilation, see [Tab 11, Ventilation](#).
3. Continue until SSDG room is de-smoked, space de-watered, and atmospheric tests are satisfactory.

C. Gas Free Engineer Post-fire Tests.

1. When the space is clear of smoke, test for oxygen between 19.5-22 percent, combustible gases less than 10 percent of the lower explosive limit, and any toxic gases below their threshold limit values, as per reference (e), Gas Free Engineering, NSTM Chapter 074, Volume 3, before certifying the space safe for personnel to enter without SCBAs.
2. After a flammable liquid fire has been extinguished, toxic gas tests for hydrocarbons, carbon dioxide, carbon monoxide, hydrogen chloride, hydrogen cyanide, and chlorine are required. The following are the threshold limit values for each test:

| | |
|-------------------------------------|----------|
| Hydrocarbons | none |
| Hydrogen Chloride/Hydrochloric Acid | 5 ppm |
| Carbon Dioxide | 5000 ppm |
| Hydrogen Cyanide/Hydrocyanic Acid | 10 ppm |
| Hydrogen Fluoride | 3 ppm |
| Chlorine | 1 ppm |
| Carbon Monoxide | 50 ppm |

3. Conduct tests near the center and all four-corners on each level, high and low, with a minimum of ten test points taken. Obtain at least one satisfactory test result at each test location.

Note: A compartment is considered “safe” only after satisfactory test results at all test locations are obtained. An unsatisfactory test result at any test point requires further ventilating and re-testing at all test points.

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Appendix H: Incinerator Room (1-47-1-Q) Underway Checklists

[Tab 1, Machinery Watchstander Checklist for Leak/Fire in Incinerator Room](#)

[Tab 2, Engineering Control Room \(EOW\) Checklist](#)

[Tab 3, OOD Checklist](#)

[Tab 4, DCA Checklist](#)

[Tab 5, RLL Checklist](#)

[Tab 6, Hangar Person-in-Charge-of-Extras Checklist](#)

[Tab 7, AFFF Operator Checklist](#)

[Tab 8, Repair Locker Electrician Checklist](#)

[Tab 9, Medical Personnel Checklist](#)

[Tab 10, Smoke Boundaries/Smoke Control Zone](#)

[Tab 11, Ventilation](#)

[Tab 12, Fire Boundaries](#)

[Tab 13, Mechanical and Electrical Isolation](#)

[Tab 14, Reentry Points](#)

[Tab 15, De-smoking/Gas Freeing](#)

Section A: Tab 1, Machinery Watchstander Checklist for Leak/Fire in Incinerator Room

A. Major Oil Leak/Fire in Incinerator Room.

- _____ Notify EOW of casualty.
- _____ Secure affected equipment: Secure the source of the leak/fire immediately, consistent with the restricted maneuvering doctrine and commanding officer's battle orders as applicable. If source cannot be secured, deflect oil to the deck.
- _____ Shoulder EEBDs.
- _____ Break out portable AFFF and PKP extinguishers on scene. Cover fuel oil with a layer of AFFF from portable extinguisher. Fight small, contained fires with PKP/AFFF extinguishers. If needed, fire hose stations with AFFF pick-up tubes may also be used to wash oil to the deck.

B. Class Bravo Fire Out of Control in Incinerator Room.

- _____ Complete checklist for leak/fire.
- _____ Notify EOW that the fire is out of control.
- _____ Don and activate EEBDs.
- _____ Evacuate through nearest safe exit.
- _____ Activate AFFF overhead sprinklers in incinerator room for 2-minute.
- _____ Notify EOW of personnel, machinery, firefighting equipment status, and AFFF overhead sprinkling activation time.
- _____ Lay to WQSB after being relieved by general emergency watch section.

Note: This is a reduced checklist. See reference (b), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3 for more detail.

Section B: Tab 2, Engineering Control Room (EOW) Checklist

A. Major Oil Leak/Fire in Incinerator Room.

_____ Secure the source of the leak/fire immediately, consistent with the restricted maneuvering doctrine and commanding officer's battle orders as applicable. If source cannot be secured, deflect oil to the deck.

_____ Notify OOD.

- Casualty location.
- Equipment affected.
- Action taken and max speed available - on GT and MDES.
- Recommend setting general emergency per the machinery space fire doctrine.

“Conn – EOW: There is a [class A/B/C fire] or a [major fuel/lube oil leak] in the incinerator room, compartment 1-47-1-Q. I have secured the following equipment [list]. Max speed available is [#] knots. Recommend setting general emergency per the machinery space fire doctrine.”

_____ Shoulder EEBD if leaving the space.

_____ Energize fire pumps as required.

_____ Check firemain pressure. Verify that automated control features of the machinery monitoring system maintain sufficient firemain pressure. If insufficient pressure, energize additional fire pumps manually.

_____ If initial actions are insufficient to vapor secure space, energize AFFF overhead sprinkling for initial 2-minute dump.

_____ Set negative ventilation in incinerator room as per [Tab 11, Ventilation](#) (supply fans on LOW; exhaust fans on HIGH).

_____ Set positive ventilation outside incinerator room as per [Tab 11, Ventilation](#) (smoke control zone).

_____ Mechanically isolate space further by securing other equipment near the casualty.

_____ Electrically isolate space further by securing other equipment near the casualty.

B. Class Bravo Fire Out of Control in Incinerator Room.

- _____ Complete checklist for leak/fire.
- _____ Notify OOD fire is out of control and incinerator room is being evacuated.
- _____ If not done previously, activate AFFF overhead sprinkling in incinerator room for 2-minute initial dump.
start time: _____ end time: _____.
- _____ Mechanically isolate space as per [Tab 13, Mechanical and Electrical Isolation](#).
- _____ Electrically isolate space as per [Tab 13, Mechanical and Electrical Isolation](#).
- _____ Verify incinerator room fuel oil remote COVs are closed.
- _____ Lay to WQSB, after complete status of casualty has been passed on and having been properly relieved by the general emergency watch section.

Section C: Tab 3, OOD Checklist

A. Major Oil Leak/Fire in Incinerator Room.

_____ Receive report from EOW.

- Casualty – location of leak/fire.
- Equipment affected.
- Action and max speed available – on GT and MDEs.
- Set general emergency as per the machinery space fire doctrine.

_____ Sound general alarm.

Pipe: *“[Fire, fire, fire] or [major oil leak] in the incinerator room, compartment 1-47-1-Q. All hands set general emergency per the machinery space fire doctrine. Set modified zebra. Do not set zebra on the firemain.”*

Note: **Once DCC is manned and ready, make all further pipes associated with the MSFD from DCC. In the event the DCA is unable to make pipes, the OOD pipes as necessary.**

_____ Establish communications with DCC. Report manned and ready to DCC.

_____ Slow ship to 5 knots or less (if propulsion is still available).

_____ Maneuver ship to maintain as smooth a ride as possible during response.

_____ Ensure DCA reports all stations manned and ready and modified zebra set.

Pipe: *“All stations Manned and Ready, modified zebra is Set.”*

_____ When EOW reports AFFF was applied to incinerator room.

Pipe: *“AFFF overhead sprinkling was activated in incinerator room at time _____.”*

B. Class Bravo Fire Out of Control in Incinerator Room.

_____ Ensure checklist for leak/fire is complete.

_____ When EOW reports fire is out of control and incinerator room is being evacuated.

Pipe (if directed by DCA): “*The fire in the incinerator room is out of control. The incinerator room is being evacuated.*”

_____ Ensure DCA reports incinerator room is mechanically and electrically isolated.

Pipe (if directed by DCA): “*The incinerator room is mechanically and electrically isolated.*”

_____ Ensure DCA reports 2-minute reentry AFFF overhead sprinkling for incinerator room at _____.

Pipe (if directed by DCA): “*2-minute reentry AFFF overhead sprinkling to incinerator room activated at time _____.*”

_____ Ensure DCA reports fire team ordered to reenter incinerator room.

Pipe (if directed by DCA): “*The fire team has reentered the incinerator room at time _____.*”

_____ Ensure DCA reports class bravo fire is out.

Pipe (if directed by DCA): “*Class bravo fire is out in the incinerator room, reflash watch is set.*”

Section D: Tab 4, DCA Checklist

A. Major Oil Leak/Fire in Incinerator Room.

- _____ Establish communications.
 - _____ Conn.
 - _____ Repair 2.
 - _____ Repair 3.
 - _____ AFFF/water mist system operator (fwd/aft).
 - _____ Hangar person-in-charge-of-extras.
- _____ Manned and ready.
 - _____ Conn.
 - _____ Repair 2.
 - _____ Repair 3.
 - _____ AFFF/water mist system operator (fwd/aft).
- _____ Report all stations manned and ready to OOD.
Pipe: *“All stations manned and ready.”*
- _____ Verify firemain pressure.
- _____ Start plot.
- _____ Report initial 2-minute AFFF overhead sprinkling times to OOD.
start time: _____ end time: _____.
- _____ **Pipe:** *“AFFF bilge flooding was activated in incinerator room at time _____.”*
- _____ Receive and plot reports from repair lockers;
 - _____ Modified zebra set.
 - _____ Fire boundaries set as per [Tab 12, Fire Boundaries](#).
 - _____ Smoke boundaries/smoke control zone set as per [Tab 10, Smoke Boundaries/Smoke Control Zone](#).
 - _____ Ventilation secured as per [Tab 11, Ventilation](#).
 - _____ Two P-100s rigged/jumpered.
 - _____ SCBA change out station established.
- _____ Report modified zebra set to OOD.
Pipe: *“Modified zebra is set.”*

B. Class Bravo Fire Out of Control in Incinerator Room.

_____ Ensure completion of checklist for leak/fire.

_____ Receive report from EOW incinerator room evacuated.

Pipe: “Incinerator room is evacuated. Make all reports to DCC.”

_____ Order AFFF station operator to conduct 2-minute AFFF overhead sprinkling (if not accomplished by EOW).

start time: _____ end time: _____.

_____ Receive reports from EOW.

_____ Closed incinerator room fuel oil remote COVS.

_____ Account for all personnel in watch section.

_____ AFFF overhead sprinkling times.

_____ Location of firefighting equipment in incinerator room.

_____ Mechanical and electrical isolations completed.

_____ Receive reports of electrical isolation complete.

Repair 2 _____ Repair 3 _____ ECR _____

_____ Receive reports of mechanical isolation complete.

Repair 2 _____ Repair 3 _____ ECR _____

_____ Report incinerator room is mechanically and electrically isolated.

Pipe: “The incinerator room is mechanically and electrically isolated.”

_____ Verify fire team ready for reentry.

_____ Ensure backup hose is manned prior to re-entry.

_____ Order second 2-minute AFFF overhead sprinkling for incinerator room _____.
(time)

_____ Report times to OOD.

Pipe: “2-minute reentry AFFF overhead sprinkling for incinerator room activated at time _____.”

_____ Order fire team to reenter incinerator room.

_____ Receive reentry time from R2LL.

_____ Report fire team has entered incinerator room at (time) _____ to OOD.

Pipe: *“The fire team has reentered the incinerator room at time. _____.”*

_____ Verify fire team reliefs are manned and ready.

_____ Receive ‘fire is out’ report.

_____ Report fire is out to OOD.

Pipe: *“Class bravo fire is out in the incinerator room, reflash watch is set.”*

_____ ORDER compartment overhaul.

_____ Order repair locker electrician to investigate for electrical damage.

_____ Order de-smoking.

_____ Conduct gas free tests as per [Tab 15, De-smoking/Gas Freeing](#).

_____ Order de-watering.

_____ Conduct gas free toxic tests as per [Tab 15, De-smoking/Gas Freeing](#).

Section E: Tab 5, RLL Checklist

A. Major Oil Leak/Fire in Incinerator Room.

- _____ Establish communications with DC Central (both).
- _____ Make reports to DC Central (both).
 - _____ Manned and ready.
 - _____ Set modified zebra.
 - _____ Fire boundaries set as per [Tab 12, Fire Boundaries](#).
 - _____ Smoke boundaries/smoke control zone set as per [Tab 10, Smoke Boundaries/Smoke Control Zone](#).
 - _____ Ventilation secured as per [Tab 11, Ventilation](#).
 - _____ Rig 2 P-100s and connect to firemain.
 - _____ Establish SCBA primary change out station in Repair 3. (Secondary change out station is in Repair 2).
- _____ Check firemain pressure. Verify that automated control features of the machinery monitoring system maintain sufficient firemain pressure. If insufficient pressure, energize additional fire pumps manually. (both).
- _____ Ensure following positions are filled prior to re-entry: (Repair 2).
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary Plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.
- _____ Dispatch investigators to verify.
 - _____ Sufficient fire pumps on-line and not overheating.
 - _____ Status of smoke/fire boundaries.
 - _____ AFFF stations manned.
- _____ Report existing conditions to DCA (Repair 2).
- _____ Dispatch fire party to Repair 3 (Repair 3).
- _____ Report existing conditions to DCA (Repair 3).
- _____ Ensure firemain isolation valve 2-43-2FM (in crew stateroom 2-36-8-L) is OPEN (Repair 2).

B. Class Bravo Fire Out of Control in Incinerator Room.

- _____ Complete checklist for leak/fire.(both).
- _____ Verify from DCA mechanical and electrical isolation is complete as per [Tab 13, Mechanical and Electrical Isolation](#) (both).
- _____ Report fire team ready for reentry (Repair 2).
- _____ Order fire team to reenter incinerator room when ordered by DCA.
- _____ Report reentry time to DCC. (Repair 2).
- _____ Verify SCBA start time from OSL (Repair 2).
- _____ Locker leader monitors and records light-off times (Repair 3).
- _____ Send first set of SCBA reliefs to crews mess 1-52-01-L (Repair 2).
- _____ First set of reliefs light-off SCBAs when directed (Repair 2).
- _____ Locker leader monitors and records light-off times (Repair 3).
- _____ Change out the following:
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary Plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.
- _____ Second set of Reliefs Light-off SCBAs when directed (Repair 2).
- _____ Locker leader monitors and records light-off times (Repair 3).

_____ Change out the following:

_____ OSL.

_____ ATL.

_____ Primary nozzleman.

_____ Primary hoseman.

_____ Primary Plugman.

_____ Backup hose nozzleman.

_____ Backup hose hoseman.

_____ Backup hose plugman.

_____ Third set of reliefs light-off SCBAs when directed (Repair 2).

_____ Locker leader monitors and records light-off times (Repair 3).

_____ Change out the boundarymen.

Note: Personnel being relieved muster in Repair 3. Once Repair 3 LL accounts for everyone, reliefs doff FFEs and SCBAs for use by the next set of reliefs. Relieved personnel then report to the HSC or his representative for cool down.

_____ Pass word to DCC when the fire is out and reflash watch is set (Repair 2).

_____ Initiate post-fire actions when ordered by DCA (Repair 2).

_____ Ensure post-fire personnel don and activate SCBA before reentry (Repair 2).

_____ Overhaul fire.

_____ Repair locker electrician investigate for electrical damage.

_____ De-smoking.

_____ De-watering.

_____ Atmospheric testing.

Section F: Tab 6, Hangar Person-in-Charge-of-Extras Checklist

A. Major Oil Leak/Fire in Incinerator Room.

- _____ Establish communications with DCC.
- _____ Muster all extra personnel.
- _____ Make reports to DC Central.
 - _____ Number of personnel available.
 - _____ Set modified zebra – main deck and above.
 - _____ Set fire boundaries as needed or as directed – main deck and above.
 - _____ Set smoke boundaries/smoke control zone – main deck and above.
- _____ Investigate topside fire boundaries. Report conditions to DC Central.

B. Class Bravo Fire Out of Control in Incinerator Room.

- _____ Complete checklist for leak/fire.
- _____ Coordinate SCBA relief process with Repair 3 locker leader.

Section G: Tab 7, AFFF Operator Checklist

A. Major Oil Leak/Fire in Incinerator Room.

- _____ Don battle dress and SCBA.
- _____ Establish communications with DC Central.
- _____ Report manned and ready to DC Central.
- _____ Verify fire pumps on line and AFFF pump on line.
(120 psi showing at local gauge).
- _____ Verify that incinerator room AFFF supply valves are open.
- _____ Continually monitor AFFF tank level and replenish as necessary.

B. Class Bravo Fire Out of Control in Incinerator Room.

- _____ Complete checklist for leak/fire.
- _____ Activate incinerator room AFFF overhead sprinkling when ordered by DCA.
- _____ Close AFFF COV when ordered by DCA.

Section H: Tab 8, Repair Locker Electrician Checklist

A. Major Oil Leak/Fire in Incinerator Room.

_____ Don battle dress and SCBA (both).

_____ Electrical isolation as per [Tab 13, Mechanical and Electrical Isolation](#); maintain the current source of power until evacuation. Do not secure lighting and power to firefighting equipment or ventilation.

B. Class Bravo Fire Out of Control in Incinerator Room.

_____ Complete checklist for leak/fire (Repair 3).

_____ Perform electrical isolation as per [Tab 13, Mechanical and Electrical Isolation](#) (both).

Note: After evacuating the incinerator room, secure ventilation.

Note: After evacuating the incinerator room, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

_____ When ordered by RLL, report to incinerator room (Repair 3).

_____ Investigate electrical damage to incinerator room ventilation and other systems as directed.

Section I: Tab 9, Medical Personnel Checklist

A. Major Oil Leak/Fire in Incinerator Room.

- _____ Establish recovery area in sickbay (1-73-2-L).
- _____ Establish communications with Repair 2.
- _____ Provide food, liquids, and dry clothing for personnel.

B. Class Bravo Fire Out of Control in Incinerator Room.

- _____ Complete checklist for leak/fire.
- _____ Standby to assist with personnel casualties.

Section J: Tab 10, Smoke Boundaries/Smoke Control Zone

A. Major Oil Leak/Fire in Incinerator Room

1. Primary smoke boundaries:
 - Forward - frame 47.
 - Aft - frame 52.
2. Secondary smoke boundaries:
 - Forward - frame 44.
 - Aft - frame 64.
3. List of smoke curtain locations:
 - QAWTD 1-52-1.
 - QAWTD 1-52-2.
 - Archway, frame 64, crew messroom (1-52-01-L).
 - Archway in athwartships passageway (1-44-0-L), frame 44 starboard.
 - Archway in athwartships passageway (1-44-0-L), frame 44 port.
4. Smoke control zone: for smoke control zone ventilation, see [Tab 11, Ventilation](#).
 - Compartments on main deck from frame 44-55:
 - Scullery (1-52-1-Q).
 - Trash stowage holding and staging room (1-44-1-Q).
 - Compartments on 01 deck from frame 47-52:
 - None – weather deck (will require cooling from closest fireplug).
 - Compartments on 2nd deck from frame 47-52:
 - Rescue Station (2-48-1-Q).
 - Fan room (2-44-3-Q).

B. Class Bravo Fire Out of Control in Incinerator Room *Same as above.*

Section K: Tab 11, Ventilation

A. Major Oil Leak/Fire in Incinerator Room.

_____ Set ventilation (both).

1. Set negative ventilation in incinerator room as follows:

a. Place Supply fans on (**LOW**), Exhaust fans on (**HIGH**).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-55 (non-vital) | 1-50-1 | MCMS | yes | EOW |
| ES-105 (non-vital) | 1-46-1 | MCMS | yes | EOW |

2. Set positive ventilation outside incinerator room (smoke control zone) as follows:

a. Place supply fans outside incinerator room on (**HIGH**).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|-------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-64 (vital) | 2-44-1 | MCMS | yes | EOW |
| SS-68 (vital) | 1-44-1 | MCMS | yes | EOW |
| SS-54 (non-vital) | 2-32-1 | MCMS | yes | EOW |
| SS-69 (non-vital) | 2-46-1 | MCMS | yes | EOW |
| SS-71 (non-vital) | 03-39-0 | MCMS | yes | EOW |
| TPSS-70 (vital) | 02-41-2 | MCMS | yes | EOW |

b. Exhaust fans and recirculation fans outside incinerator room (secure).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------|----------------------------|------------------------|---------------------------|
| ES-120 (vital) | 2-45-1 | MCMS | yes | EOW |
| ES-124 (vital) | 2-41-2 | MCMS | yes | EOW |
| ES-104 (non-vital) | 2-32-1 | MCMS | yes | EOW |
| ES-116 (non-vital) | 1-45-1 | MCMS | yes | EOW |
| TPES-125 (vital) | 02-38-2 | MCMS | yes | EOW |
| RS-1 (vital) | 02-29-3 | MCMS | yes | EOW |
| RS-2(vital) | 02-30-1 | MCMS | yes | EOW |
| RS-3 (vital) | 02-42-2 | MCMS | yes | EOW |
| RS-32 (vital) | 02-39-2 | MCMS | yes | EOW |
| RS-4 (non-vital) | 02-38-4 | MCMS | yes | EOW |
| RS-6 (non-vital) | 1-41-2 | MCMS | yes | EOW |
| RS-14 (non-vital) | 2-45-1 | MCMS | yes | EOW |
| RS-16 (non-vital) | 1-43-2 | MCMS | yes | EOW |
| RS-31 (non-vital) | 2-37-1 | MCMS | yes | EOW |
| RS-33 (non-vital) | 1-37-1 | MCMS | yes | EOW |
| FCA-26 (non-vital) | 1-50-2 | MCMS | yes | EOW |
| FCA-28 (non-vital) | 2-49-2 | MCMS | yes | EOW |

B. Class Bravo Fire Out of Control in Incinerator Room.

Secure ventilation when the fire is out of control and space has been evacuated.

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------|----------------------------|------------------------|---------------------------|
| SS-55 (non-vital) | 1-50-1 | MCMS | yes | EOW |
| ES-105 (non-vital) | 1-46-1 | MCMS | yes | EOW |

Section L: Tab 12, Fire Boundaries

A. Major Oil Leak/Fire in Incinerator Room.

- Primary fire boundaries.
 - Forward - bulkhead 47, 2nd deck to 01 deck.
 - Aft. - bulkhead 52, 2nd deck to 01 deck.
 - Above. - main deck from frame 47 to 52.

- Secondary fire boundaries.
 - Forward - bulkhead 44, 3rd deck and above.
 - Aft - bulkhead 64, 3rd deck and above.
 - Above - 01 deck from frame 44 to 64.

B. Class Bravo Fire Out of Control in Incinerator Room.

Same as above.

Section M: Tab 13, Mechanical and Electrical Isolation

A. Major Oil Leak/Fire in Incinerator Room.

1. Mechanical Isolation - Securing methods for propulsion machinery will be in accordance with standard procedures in reference (b), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3. In the event of a fuel leak/fire in the Incinerator Room, secure the following:

_____ Incinerator.
_____ Preheater #78.
_____ Unit Heater #11.
_____ Mid-ship Capstan.

2. Electrical Isolation - Maintain power until evacuation. Do not secure lighting and power to firefighting equipment and ventilation. Secure/de-energize the following systems:

- a. Main Switchboard Operator (Personnel in ECR): Ensure that the following breakers are opened:

* add any electrical isolations to be made from ECR.

- b. Repair Locker Electrician:

_____ (1-40-1)-4P-D incinerator.
_____ (1-40-1)-4P-F preheater #78.
_____ (1-40-1)-4P-K unit heater #11.
_____ (1-40-1)-4P-M mid-ship capstan.
_____ (1-36-1)-4P-B receptacles.
_____ (1-36-1)-4P-C receptacles.

B. Class Bravo Fire Out of Control in Incinerator Room.

1. Perform mechanical isolation when there is a class bravo fire out of control in incinerator room. Each watch station listed below ensures that the following systems are secured/de-energized:

- _____ Incinerator.
- _____ Preheater #78.
- _____ Unit heater #11.
- _____ Mid-ship capstan.
- _____ Fuel oil COV 1-47-1.
- _____ Fuel oil COV 1-47-5.

2. Electrically isolate the incinerator room by securing all power in the incinerator room. Include the remaining power to firefighting equipment and ventilation. Each watch station listed below ensure that the following systems are secured/de-energized:

- a. Main switchboard operator (personnel in ECR):

(*list electrical isolations for EOW)

- b. Repair locker electrician:

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-55 (vital) | 1-50-1 | MCMS | yes | EOW |
| ES-105 (non-vital) | 1-46-1 | MCMS | yes | EOW |

Note: After evacuating the incinerator room, secure the supply fans.

- _____ (1-36-1)-1VL-D ovhd lgt, mn dk passage, FR 44-52.
- _____ (1-36-1)-1L-H ovhd lgt, mn dk passage, FR 44-52.
- _____ (1-36-1)-1VL-H incinerator room lgt.
- _____ (1-36-1)-1L-K incinerator room lgt.
- _____ (1-36-1)-1L-M table lamps, officer SR.

Note: After evacuating the incinerator room, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

Section N: Tab 14, Reentry Points

A. Major Oil Leak/Fire in Incinerator Room.

Reentry point for a major oil leak or class bravo fire contained in incinerator room is at the discretion of the DCA. If possible, the primary reentry point is QAWTD 1-46-1.

B. Class Bravo Fire Out of Control in Incinerator Room.

1. The primary reentry point for incinerator room is through QAWTD 1-46-1 to the trash stowage holding and staging room (1-44-1-Q), then aft through NTD 1-46-3 into the incinerator room.
 - #1 hose supplied from fireplug 1-45-1.
 - #2 hose supplied from fireplug 1-45-2.

2. The secondary reentry point for incinerator room is through NTD 1-48-1, from passageway (1-44-0-L), then through NTD 1-48-3 into the incinerator room.
 - #1 hose supplied from fireplug 1-45-1.
 - #2 hose supplied from fireplug 1-45-2.

Section O: Tab 15, De-smoking/Gas Freeing

A. Procedures for De-smoking Incinerator Room (installed ventilation system operable)

Use the installed ventilation system for de-smoking the incinerator room after a fire because of its high volume capacity. However, do not energize incinerator room ventilation until its condition is thoroughly investigated and the engineering officer grants permission for use.

1. The engineering officer, with the repair electrician, determines the ventilation electrical system condition and declares the system operational.
2. After the inspection, request and receive the engineering officer's permission before energizing the blowers. To energize and restart the blowers, the repair electrician:
 - a. Inspects cables and transformers near the incinerator room ventilation system. If satisfactory, direct switchboard operator to close breaker.
 - b. Restart incinerator room ventilation using controllers in passageway (1-47-1-Q) and trash holding and stowage room (1-44-1-Q). Start the exhaust ventilation on SLOW, working up to fast as load limits on SSDGs allow. Start supply blowers on SLOW.
 - c. Continue until the incinerator room is de-smoked, space de-watered, and atmospheric tests are satisfactory.

B. Procedures for De-smoking Incinerator Room (installed ventilation system not operable).

The basic idea is to open the incinerator room to the atmosphere as much as possible without allowing smoke to enter interior of the ship.

De-smoking by opening doors and breaking smoke boundaries is not advised unless careful consideration is given to the path smoke will take. However, if necessary, use the following procedure: (Anyone within this area will be required to wear SCBAs.)

1. Set up a box fan on the weather deck.
2. Set positive ventilation on surrounding spaces to help prevent the spread of smoke. However, since all ventilation is powered from the main switchboard, energize these switchboards. See [Tab 11, Ventilation](#) for smoke control zone ventilation.
3. Continue until incinerator room is de-smoked, space de-watered, and atmospheric tests are satisfactory.

C. Gas Free Engineer Post-fire Tests.

1. When the space is clear of smoke, test for oxygen between 19.5-22 percent, combustible gases less than 10 percent of the lower explosive limit, and any toxic gases below their threshold limit values, as per reference (e), Gas Free Engineering, NSTM Chapter 074, Volume 3, before certifying the space safe for personnel to enter without SCBAs.
2. After a flammable liquid fire has been extinguished, toxic gas tests for hydrocarbons, carbon dioxide, carbon monoxide, hydrogen chloride, hydrogen cyanide, and chlorine are required. The following are the threshold limit values for each test:

| | |
|-------------------------------------|----------|
| Hydrocarbons | none |
| Hydrogen Chloride/Hydrochloric Acid | 5 ppm |
| Carbon Dioxide | 5000 ppm |
| Hydrogen Cyanide/Hydrocyanic Acid | 10 ppm |
| Hydrogen Fluoride | 3 ppm |
| Chlorine | 1 ppm |
| Carbon Monoxide | 50 ppm |

3. Conduct tests near the center and all four-corners on each level, high and low, with a minimum of ten test points taken. Obtain at least one satisfactory test result at each test location.

Note: A compartment is considered “safe” only after satisfactory test results at all test locations are obtained. An unsatisfactory test result at any test point requires further ventilating and re-testing at all test points.

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Appendix I: JP-5 Pump Room (3-64-2-E) Underway Checklists

[Tab 1, Machinery Watchstander Checklist for Leak/Fire in JP-5 Pump Room](#)

[Tab 2, Engineering Control Room \(EOW\) Checklist](#)

[Tab 3, OOD Checklist](#)

[Tab 4, DCA Checklist](#)

[Tab 5, RLL Checklist](#)

[Tab 6, Hangar Person-in-Charge-of-extras Checklist](#)

[Tab 7, AFFF Operator Checklist](#)

[Tab 8, Repair Locker Electrician Checklist](#)

[Tab 9, Medical Personnel Checklist](#)

[Tab 10, Smoke Boundaries/Smoke Control Zone](#)

[Tab 11, Ventilation](#)

[Tab 12, Fire Boundaries](#)

[Tab 13, Mechanical and Electrical Isolation](#)

[Tab 14, Reentry Points](#)

[Tab 15, De-smoking/Gas Freeing](#)

Section A: Tab 1, Machinery Watchstander Checklist for Leak/Fire in JP-5 Pump Room

A. Major Oil Leak/Fire in JP-5 Pump Room.

- _____ Notify EOW of casualty.
- _____ Secure affected equipment: Secure the source of the leak/fire immediately, consistent with the restricted maneuvering doctrine and commanding officer's battle orders as applicable. If source cannot be secured, deflect oil to the deck.
- _____ Shoulder EEBDs.
- _____ Break out portable AFFF and PKP extinguishers on scene. Cover fuel oil with a layer of AFFF from portable extinguisher. Fight small, contained fires with PKP/AFFF extinguishers. If needed, fire hose stations with AFFF pick-up tubes may also be used to wash oil to the deck.

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

- _____ Complete checklist for leak/fire.
- _____ Notify EOW that the fire is out of control.
- _____ Don and activate EEBDs.
- _____ Evacuate through nearest safe exit.
- _____ Activate AFFF overhead sprinklers in JP-5 pump room for 2-minute.
- _____ Notify EOW of personnel, machinery, firefighting equipment status, and AFFF overhead sprinkling activation time.
- _____ Lay to WQSB after being relieved by general emergency watch section.

Note: This is a reduced checklist. See reference (b), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3 for more detail.

Section B: Tab 2, Engineering Control Room (EOW) Checklist

A. Major Oil Leak/Fire in JP-5 Pump Room.

_____ Secure the source of the leak/fire immediately, consistent with the restricted maneuvering doctrine and commanding officer's battle orders as applicable. If source cannot be secured, deflect oil to the deck.

_____ Notify OOD.

- Casualty location.
- Equipment affected.
- Action taken and max speed available - on GT and MDES.
- Recommend setting general emergency per the machinery space fire doctrine.

“Conn – EOW: There is a [class A/B/C fire] or a [major fuel/lube oil leak] in the JP-5 pump room, compartment 3-64-2-E. I have secured the following equipment [list]. Max speed available is [#] knots. Recommend setting general emergency per the machinery space fire doctrine.”

_____ Shoulder EEBD if leaving the space.

_____ Energize fire pumps as required.

_____ Check firemain pressure. Verify that automated control features of the machinery monitoring system maintain sufficient firemain pressure. If insufficient pressure, energize additional fire pumps manually.

_____ If initial actions are insufficient to vapor secure space, energize AFFF overhead sprinkling for initial 2-minute dump.

_____ Set negative ventilation in JP-5 pump room as per [Tab 11, Ventilation](#) (supply fans on LOW; exhaust fans on HIGH).

_____ Set positive ventilation outside JP-5 pump room as per [Tab 11, Ventilation](#) (smoke control zone).

_____ Mechanically isolate space further by securing other equipment near the casualty.

_____ Electrically isolate space further by securing other equipment near the casualty.

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

- _____ Complete checklist for leak/fire.
- _____ Notify OOD fire is out of control and JP-5 pump room is being evacuated.
- _____ If not done previously, activate AFFF overhead sprinkling in JP-5 pump room for 2-minute initial dump.
start time: _____ end time: _____.
- _____ Mechanically isolate space as per [Tab 13, Mechanical and Electrical Isolation](#).
- _____ Electrically isolate space as per [Tab 13, Mechanical and Electrical Isolation](#).
- _____ Verify JP-5 pump room fuel oil remote COVs are closed.
- _____ Lay to WQSB, after complete status of casualty has been passed on and having been properly relieved by the general emergency watch section.

Section C: Tab 3, OOD Checklist

A. Major Oil Leak/Fire in JP-5 Pump Room.

- _____ Receive report from EOW
- Casualty - location of leak/fire.
 - Equipment affected.
 - Action - and max speed available - on GT and MDEs.
 - Set general emergency as per the machinery space fire doctrine.

_____ Sound general alarm.

Pipe: *“[Fire, fire, fire] or [major oil leak] in the JP-5 pump room, compartment 3-64-2-E. All hands set general emergency per the machinery space fire doctrine. Set modified zebra. Do not set zebra on the firemain.”*

Note: **Once DCC is manned and ready, make all further pipes associated with the MSFD from DCC. In the event the DCA is unable to make pipes, the OOD pipes as necessary.**

_____ Establish communications with DCC. Report manned and ready to DCC.

_____ Slow ship to 5 knots or less (if propulsion is still available).

_____ Maneuver ship to maintain as smooth a ride as possible during response.

_____ Ensure DCA reports all stations manned and ready and modified zebra set.

Pipe: *“All stations manned and ready, modified zebra is set.”*

_____ When EOW reports AFFF was applied to JP-5 pump room.

Pipe: *“AFFF overhead sprinkling was activated in JP-5 pump room at time _____.”*

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

_____ Ensure checklist for leak/fire is complete.

_____ When EOW reports fire is out of control and JP-5 pump room is being evacuated.

Pipe (if directed by DCA): *“The fire in the JP-5 pump room is out of control. The jp-5 pump room is being evacuated.”*

_____ Ensure DCA reports JP-5 pump room is mechanically and electrically Isolated.

Pipe (if directed by DCA): *“The JP-5 pump room is mechanically and electrically isolated.”*

_____ Ensure DCA reports 2-minute reentry AFFF overhead sprinkling for JP-5 pump room at _____.

Pipe (if directed by DCA): *“2-minute reentry AFFF overhead sprinkling to JP-5 pump room activated at time. _____.”*

_____ Ensure DCA reports fire team ordered to reenter JP-5 pump room.

Pipe (if directed by DCA): *“The fire team has reentered the JP-5 pump room at time. _____.”*

_____ Ensure DCA reports class bravo fire is out.

Pipe (if directed by DCA): *“Class bravo fire is out in the JP-5 pump room, reflash watch is set.”*

Section D: Tab 4, DCA Checklist

A. Major Oil Leak/Fire in JP-5 Pump Room.

- _____ Establish communications.
 - _____ Conn.
 - _____ Repair 2.
 - _____ Repair 3.
 - _____ AFFF/water mist system operator (fwd/aft).
 - _____ Hangar person-in-charge-of-extras.
- _____ Manned and ready.
 - _____ Conn.
 - _____ Repair 2.
 - _____ Repair 3.
 - _____ AFFF/water mist system operator (fwd/aft).
- _____ Report all stations manned and ready to OOD.
Pipe: *“All stations manned and ready.”*
- _____ Verify firemain pressure.
- _____ Start plot.
- _____ Report initial 2-minute AFFF overhead sprinkling times to OOD.
start time: _____ end time: _____.
- _____ **Pipe:** *“AFFF bilge flooding was activated in JP-5 pump room at time. _____.”*
- _____ Receive and plot reports from repair lockers.
 - _____ Modified zebra set.
 - _____ Fire boundaries set as per [Tab 12, Fire Boundaries](#).
 - _____ Smoke boundaries/smoke control zone set as per [Tab 10, Smoke Boundaries/Smoke Control Zone](#).
 - _____ Ventilation secured as per [Tab 11, Ventilation](#).
 - _____ Two P-100s rigged/jumpered.
 - _____ SCBA change out station established.
- _____ Report modified zebra set to OOD.
Pipe: *“Modified zebra is set.”*

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

_____ Ensure completion of checklist for leak/fire.

_____ Receive report from EOW JP-5 pump room evacuated.

Pipe: “JP-5 pump room is evacuated. Make all reports to DCC.”

_____ Order AFFF station operator to conduct 2-minute AFFF overhead sprinkling (if not accomplished by EOW).

start time: _____ end time: _____.

_____ Receive reports from EOW

_____ Closed JP-5 pump room fuel oil remote COVs.

_____ Account for all personnel in watch section.

_____ AFFF overhead sprinkling times.

_____ Location of firefighting equipment in JP-5 pump room.

_____ Mechanical and electrical isolations completed.

_____ Receive reports of electrical isolation complete.

Repair 2 _____ Repair 3 _____ ECR _____

_____ Receive reports of mechanical isolation complete.

Repair 2 _____ Repair 3 _____ ECR _____

_____ Report JP-5 pump room is mechanically and electrically isolated.

Pipe: “The JP-5 pump room is mechanically and electrically isolated.”

_____ Verify fire team ready for reentry.

_____ Ensure backup hose is manned prior to re-entry.

_____ Order second 2-minute AFFF overhead sprinkling for JP-5 pump room _____
(time).

_____ Report times to OOD.

**Pipe: “2-minute reentry AFFF overhead sprinkling for JP-5 pump room activated at
time. _____.”**

_____ Order fire team to reenter JP-5 pump room.

_____ Receive reentry time from R2LL.

_____ Report fire team has entered JP-5 pump room at (time) _____ to OOD.

Pipe: *“The fire team has reentered the JP-5 pump room at time. _____.”*

_____ Verify fire team reliefs are manned and ready.

_____ Receive ‘fire is out’ report.

_____ Report fire is out to OOD.

Pipe: *“Class bravo fire is out in the JP-5 pump room, reflash watch is set.”*

_____ Order compartment overhaul.

_____ Order repair locker electrician to investigate for electrical damage.

_____ Order de-smoking.

_____ Conduct gas free tests as per [Tab 15, De-smoking/Gas Freeing](#).

_____ Order de-watering.

_____ Conduct gas free toxic tests as per [Tab 15, De-smoking/Gas Freeing](#).

Section E: Tab 5, RLL Checklist

A. Major Oil Leak/Fire in JP-5 Pump Room.

- _____ Establish communications with DC Central (both).
- _____ Make reports to DC Central (both).
 - _____ Manned and ready.
 - _____ Set modified zebra.
 - _____ Set fire boundaries as per [Tab 12, Fire Boundaries](#).
 - _____ Set smoke boundaries/smoke control zone as per [Tab 10, Smoke Boundaries/Smoke Control Zone](#).
 - _____ Set ventilation as per [Tab 11, Ventilation](#).
 - _____ Rig 2 P-100s and connect to firemain.
 - _____ Establish SCBA primary change out station in Repair 3 (Secondary change out station is in Repair 2).
- _____ Check firemain pressure. Verify that automated control features of the machinery monitoring system maintain sufficient firemain pressure. If insufficient pressure, energize additional fire pumps manually. (both).
- _____ Ensure following positions are filled prior to re-entry: (Repair 2).
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary Plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.
- _____ Dispatch investigators to verify:
 - _____ Sufficient fire pumps on-line and not overheating.
 - _____ Status of smoke/fire boundaries.
 - _____ AFFF stations manned.
- _____ Report existing conditions to DCA (Repair 2).
- _____ Dispatch fire party to Repair 3 (Repair 3).
- _____ Report existing conditions to DCA (Repair 3).
- _____ Ensure firemain isolation valve 2-43-2FM (in crew stateroom 2-36-8-L) is OPEN (Repair 2).

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

- _____ Complete checklist for leak/fire (both).
- _____ Verify from DCA mechanical and electrical isolation is complete as per [Tab 13, Mechanical and Electrical Isolation](#) (both).
- _____ Report fire team ready for reentry (Repair 2).
- _____ Order fire team to reenter JP-5 pump room when ordered by DCA.
- _____ Report reentry time to DCC. (Repair 2).
- _____ Verify SCBA start time from OSL (Repair 2).
- _____ Locker leader monitors and records light-off times (Repair 3).
- _____ Send first set of SCBA reliefs to passage 2-52-01-L (Repair 2).
- _____ First set of reliefs light-off SCBAs when directed (Repair 2).
- _____ Locker leader monitors and records light-off times (Repair 3).
- _____ Change out the following:
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary Plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.

_____ Second set of reliefs light-off SCBAs when directed (Repair 2).

_____ Locker leader monitors and records light-off times (Repair 3).

_____ Change out the following:

_____ OSL.

_____ ATL.

_____ Primary nozzleman.

_____ Primary hoseman.

_____ Primary Plugman.

_____ Backup hose nozzleman.

_____ Backup hose hoseman.

_____ Backup hose plugman.

_____ Third set of reliefs light-off SCBAs when directed (Repair 2).

_____ Locker leader monitors and records light-off times (Repair 3).

_____ Change out the boundarymen.

Note: Personnel being relieved muster in Repair 3. Once Repair 3 LL accounts for everyone, reliefs doff FFEs and SCBAs for use by the next set of reliefs. Relieved personnel then report to the HSC or his representative for cool down.

_____ Pass word to DCC when the fire is out and reflash watch is set (Repair 2).

_____ Initiate post-fire actions when ordered by DCA (Repair 2).

_____ Ensure post-fire personnel don and activate SCBA before reentry (Repair 2).

_____ Overhaul fire.

_____ Repair locker electrician investigate for electrical damage.

_____ De-smoking.

_____ De-watering.

_____ Atmospheric testing.

Section F: Tab 6, Hangar Person-in-Charge-of-extras Checklist

A. Major Oil Leak/Fire in JP-5 Pump Room.

- _____ Establish communications with DCC.
- _____ Muster all extra personnel.
- _____ Make reports to DC Central.
 - _____ Number of personnel available.
 - _____ Set modified zebra – main deck and above.
 - _____ Set fire boundaries as needed or as directed – main deck and above.
 - _____ Set smoke boundaries/smoke control zone – main deck and above.
- _____ Investigate topside fire boundaries. Report conditions to DC Central.

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

- _____ Complete checklist for leak/fire.
- _____ Coordinate SCBA relief process with Repair 3 locker leader.

Section G: Tab 7, AFFF Operator Checklist

A. Major Oil Leak/Fire in JP-5 Pump Room.

- _____ Don battle dress and SCBA.
- _____ Establish communications with DC Central.
- _____ Report manned and ready to DC Central.
- _____ Verify fire pumps on line and AFFF pump on line.
(120 psi showing at local gauge).
- _____ Verify that JP-5 pump room AFFF supply valves are open.
- _____ Continually monitor AFFF tank level and replenish as necessary.

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

- _____ Complete checklist for leak/fire.
- _____ Activate JP-5 pump room AFFF overhead sprinkling when ordered by DCA.
- _____ Close AFFF COV when ordered by DCA.

Section H: Tab 8, Repair Locker Electrician Checklist

A. Major Oil Leak/Fire in JP-5 Pump Room.

_____ DON Battle Dress and SCBA (both).

_____ Perform electrical isolation as per [Tab 13, Mechanical and Electrical Isolation](#); maintain power until evacuation. Do not secure lighting and power to firefighting equipment and ventilation.

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

_____ Complete checklist for leak/fire (Repair 3).

_____ Perform electrical isolation as per [Tab 13, Mechanical and Electrical Isolation](#) (both).

Note: After evacuating the JP-5 pump room, secure ventilation.

Note: After evacuating the JP-5 pump room, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

_____ When ordered by RLL, report to JP-5 pump room (Repair 3).

_____ Investigate electrical damage to JP-5 pump room ventilation and other systems as directed.

Section I: Tab 9, Medical Personnel Checklist

A. Major Oil Leak/Fire in JP-5 Pump Room.

- _____ Establish recovery area in sickbay (1-73-2-L).
- _____ Establish communications with Repair 3.
- _____ Provide food, liquids, and dry clothing for personnel.

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

- _____ Complete checklist for leak/fire.
- _____ Standby to assist with personnel casualties.

Section J: Tab 10, Smoke Boundaries/Smoke Control Zone

A. Major Oil Leak/Fire in JP-5 Pump Room.

1. Primary smoke boundaries:
 - Forward - frame 64.
 - Aft - frame 68.
2. Secondary smoke boundaries:
 - Forward - frame 52.
 - Aft - frame 70.
3. List of smoke curtain locations:
 - WTH 2-67-2.
 - QAWTD 2-64-4.
 - QAWTD 2-70-2.
4. Smoke control zone: for smoke control zone ventilation, see [Tab 11, Ventilation](#).
 - Compartments on 3rd deck from FR 52-70:
 - AMMR (5-52-01-E).
 - JP-5 service tanks (3-68-6-J and 3-68-8-J).
 - Potable water tank (3-68-4-W).
 - Cofferdam (3-68-2-V).
 - Pump room (3-64-0-E).
 - Compartments on 2nd deck from FR 64-76:
 - Passageway (2-64-2-L).
 - Water mist pump station (2-64-4-Q).
 - Refrigerate machinery room (2-64-0-E).
 - Crew stateroom (2-64-5-L).
 - Toilet/shower (2-64-3-L).
 - Passage (2-64-1-L).
 - Crew stateroom (2-67-01-L).
 - Toilet/shower (2-67-0-L).
 - Fan room (2-68-2-Q).
 - Linen locker (2-69-2-Q).
 - Crew stateroom (2-70-0-L).
 - Crew stateroom (2-70-5-L).
 - Crew stateroom (2-70-6-L).
 - Passage (2-70-1-L).
 - Passage (2-70-2-L).
 - Toilet/shower (2-70-4-L).
 - Toilet/shower (2-70-3-L).
 - Cleaning gear locker (2-72-2-A).
 - Toilet/shower (2-75-0-L).
 - Compartments below affected space from FR 64-68:
 - Shaft alley (5-64-2-Q).

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Machinery Space Firefighting: National Security Cutter (WMSL)

- B. Class Bravo Fire Out of Control in JP-5 Pump Room.
Same as above.

Section K: Tab 11, Ventilation

A. Major Oil Leak/Fire in JP-5 Pump Room.

1. Set negative ventilation in JP-5 pump room as follows:

a. Place supply fans on (LOW), exhaust fans on (HIGH).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-56 (vital) | 1-70-1 | MCMS | yes | EOW |
| ES-106 (non-vital) | 1-64-1 | MCMS | yes | EOW |

2. Set positive ventilation outside JP-5 pump room (smoke control zone) as follows:

a. Place Supply fans outside JP-5 pump room on (HIGH).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|-------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-66 (vital) | 01-53-1 | MCMS | yes | EOW |
| SS-67 (vital) | 01-53-2 | MCMS | yes | EOW |
| SS-58 (non-vital) | 01-65-1 | MCMS | yes | EOW |
| SS-59 (non-vital) | 01-64-4 | MCMS | yes | EOW |

b. Exhaust fans and recirculation fans outside JP-5 pump room (secure).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| ES-122 (vital) | 2-59-1 | MCMS | yes | EOW |
| ES-123 (vital) | 2-62-2 | MCMS | yes | EOW |
| ES-107 (non-vital) | 1-75-3 | MCMS | yes | EOW |
| ES-108 (non-vital) | 01-64-1 | MCMS | yes | EOW |
| ES-109 (non-vital) | 01-63-2 | MCMS | yes | EOW |
| ES-118 (non-vital) | 1-70-2 | MCMS | yes | EOW |
| ES-119 (non-vital) | 1-63-2 | N/A | No | Rep Elect. |
| RS-10 (vital) | 2-62-1 | MCMS | yes | EOW |
| RS-8 (non-vital) | 2-63-1 | MCMS | yes | EOW |
| RS-9 (non-vital) | 1-62-2 | N/A | No | Rep Elect. |
| RS-11 (non-vital) | 1-72-1 | MCMS | yes | EOW |
| RS-12 (non-vital) | 2-45-1 | MCMS | yes | EOW |
| RS-30 (non-vital) | 1-71-2 | MCMS | yes | EOW |
| FCA-29 (vital) | 02-63-0 | MCMS | yes | EOW |

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

Secure ventilation when the fire is out of control and space has been evacuated.

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-56 (vital) | 1-70-1 | MCMS | yes | EOW |
| ES-106 (non-vital) | 1-64-1 | MCMS | yes | EOW |

Section L: Tab 12, Fire Boundaries

A. Major Oil Leak/Fire in JP-5 Pump Room.

- Primary fire boundaries.
 - Forward - bulkhead 64, 4th deck to 2nd deck.
 - Aft. - bulkhead 68, 4th deck to 2nd deck.
 - Above. - second deck from frame 64 to 68.
- Secondary fire boundaries.
 - Forward - bulkhead 52, 4th deck and above.
 - Aft - bulkhead 70, 4th deck and above.
 - Above - main deck from frame 52 to 70.

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

Same as above.

Section M: Tab 13, Mechanical and Electrical Isolation

A. Major Oil Leak/Fire in JP-5 Pump Room.

1. Mechanical Isolation - Securing methods for propulsion machinery will be in accordance with standard procedures in reference (b), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3. In the event of a fuel leak/fire in the JP-5 pump room, secure the following:

_____ JP-5 service pump.

_____ JP-5 transfer pump.

_____ JP-5 stripping pump.

2. Electrical isolation - Maintain power until evacuation. Do not secure lighting and power to firefighting equipment and ventilation. Secure/de-energize the following systems:

- a. Qualified engine room watchstander in ECR: Ensure the following breakers are opened:

(* add any electrical isolations to be made from ECR.)

- b. Repair locker electrician:

_____ (2-65-2)-4P-D JP-5 service pump.

_____ (2-65-2)-4P-C JP-5 transfer pump.

_____ (2-65-2)-4P-E JP-5 stripping pump.

_____ (2-63-1)-1L-V receptacles.

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

1. Mechanical isolation - The following is to be performed when there is a class bravo fire out of control in JP-5 pump room. Secure/de-energize the following systems:

- _____ JP-5 service pump.
- _____ JP-5 transfer pump.
- _____ JP-5 stripping pump.

2. Electrical isolation – secure these items to secure all power present in the JP-5 pump room. They include the remaining power to firefighting equipment and ventilation. Secure/de-energize the following systems:

a. Main switchboard operator (personnel in ECR):
(*List electrical isolations for EOW).

b. Repair locker electrician:

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-56 (vital) | 1-70-1 | MCMS | yes | EOW |
| ES-106 (non-vital) | 1-64-1 | MCMS | yes | EOW |

Note: After evacuating the JP-5 pump room, secure all ventilation.

Note: After evacuating the JP-5 pump room, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

- _____ (2-63-1)-1L-B lighting.
- _____ (2-63-2)-1VL-G lighting.
- _____ (2-63-2)-1VL-J lighting.

Section N: Tab 14, Reentry Points

A. Major Oil Leak/Fire in JP-5 Pump Room.

There is only one point of entry for JP-5 pump room.

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

- The primary reentry point for the JP-5 pump room is through WTH 2-67-2 into the pump room (3-64-0-E) and then through NTD 3-66-2 into JP-5 pump room.
 - #1 hose supplied from fireplug 2-66-2.
 - #2 hose supplied from fireplug 2-67-2.
- Secondary reentry point: none.

Section O: Tab 15, De-smoking/Gas Freeing

A. Procedures for De-smoking JP-5 Pump Room (installed ventilation system operable)

Use the installed ventilation system for de-smoking JP-5 pump room after a fire because of its high volume capacity. However, JP-5 pump room ventilation must not be energized until it has been thoroughly investigated and permission for use granted by the engineering officer.

1. The engineering officer, with the repair electrician, determines the condition of the ventilation electrical system and declares the system operational.
2. Once inspected, request and receive the engineering officer's permission before energizing blowers. To energize and restart blowers, the repair electrician:
 - a. Inspects the cables and transformers near JP-5 pump room ventilation system. If satisfactory, direct the switchboard operator to close the breaker.
 - b. Restart JP-5 pump room ventilation using controllers in passage (1-64-0-L). Start exhaust ventilation on SLOW, working up to fast as load limits on SSDGs allow. Start supply blowers on SLOW.
 - c. Continue until JP-5 pump room is de-smoked, space de-watered, and atmospheric tests are satisfactory.

B. Procedures for De-smoking JP-5 Pump Room (installed ventilation system not operable).

If the ventilation system is damaged, de-smoke the JP-5 pump room with a ram fan with a portable trunk from the affected space to the fantail.

De-smoking by opening doors and breaking smoke boundaries is not advised unless careful consideration is given to the path smoke will take. However, if necessary, use the following procedure: Anyone within this area will be required to wear SCBAs.

1. Set up a ram fan on the fantail and run the portable trunk as follows:
 - a. Forward through QAWTD 1-82-0.
 - b. Down through WTH 1-81-2.
 - c. Forward through QAWTD 2-76-2.
 - d. Continue forward through QAWTD 2-70-2.
 - e. Down through WTH 2-67-2 to JP-5 pump room.
2. Set positive ventilation on surrounding spaces to help prevent the spread of smoke. However, since all ventilation is powered from the main switchboard, re-energize these switchboards. For smoke control zone ventilation, see [Tab 11, Ventilation](#).
3. Continue until JP-5 pump room is de-smoked, space de-watered, and atmospheric tests are satisfactory.

C. Gas Free Engineer Post-fire Tests

1. When the space is clear of smoke, test for oxygen between 19.5-22 percent, combustible gases less than 10 percent of the lower explosive limit, and any toxic gases below their threshold limit values, as per reference (b), Gas Free Engineering, NSTM Chapter 074, Volume 3, before certifying the space safe for personnel to enter without SCBAs.
2. After a flammable liquid fire has been extinguished, toxic gas tests for hydrocarbons, carbon dioxide, carbon monoxide, hydrogen chloride, hydrogen cyanide, and chlorine are required. The following are the threshold limit values for each test:

| | |
|-------------------------------------|----------|
| Hydrocarbons | none |
| Hydrogen Chloride/Hydrochloric Acid | 5 ppm |
| Carbon Dioxide | 5000 ppm |
| Hydrogen Cyanide/Hydrocyanic Acid | 10 ppm |
| Hydrogen Fluoride | 3 ppm |
| Chlorine | 1 ppm |
| Carbon Monoxide | 50 ppm |

3. Conduct tests near the center and all four-corners on each level, high and low, with a minimum of ten test points taken. Obtain at least one satisfactory test result at each test location.

Note: A compartment is considered “safe” only after satisfactory test results at all test locations are obtained. An unsatisfactory test result at any test point requires further ventilating and re-testing at all test points.

Appendix J: Aft Main Machinery Room (5-52-01-E) In port Checklist

[Tab 1, Machinery Watchstander Checklist for Leak/Fire in AMMR](#)

[Tab 2, Quarterdeck Watchstander Checklist](#)

[Tab 3, RLL/OOD Checklist](#)

[Tab 4, Water Mist/AFFF Operator Checklist](#)

[Tab 5, Repair Locker Electrician Checklist](#)

[Tab 6, Medical Personnel Checklist](#)

[Tab 7, Smoke Boundaries/Smoke Control Zone](#)

[Tab 8, Ventilation](#)

[Tab 9, Fire Boundaries](#)

[Tab 10, Mechanical and Electrical Isolation](#)

[Tab 11, Reentry Points](#)

[Tab 12, De-smoking/Gas Freeing](#)

Section A: Tab 1, Machinery Watchstander Checklist for Leak/Fire in AMMR

A. Major Oil Leak/Fire in AMMR.

_____ Secure affected equipment: Secure the source of the leak/fire immediately. If source cannot be secured, deflect oil to bilge.

_____ Notify quarterdeck of casualty. Pass:

- Casualty location.
- Equipment affected.
- Action taken.
- Recommend setting general emergency per the machinery space fire doctrine.

_____ Shoulder EEBD.

_____ Break out portable AFFF and PKP extinguishers on scene. Wash oil to bilge using AFFF extinguisher. Fight small, contained fires with PKP/AFFF extinguishers. If needed, fire hose stations with AFFF pick-up tubes may also be used to wash oil to the bilge. If there is no immediate danger of a fire, large oil leaks may also be washed to the bilge using the AFFF hose reel located in the 2nd deck vestibule.

_____ If initial actions are insufficient to vapor secure bilge, energize AFFF bilge sprinkling for initial 2-minute dump.

B. Class Bravo Fire Out of Control in AMMR.

- _____ Complete checklist for leak/fire.
- _____ Notify quarterdeck that the fire is out of control.
- _____ Don and activate EEBDs.
- _____ Evacuate through nearest safe exit.
- _____ Activate AFFF bilge sprinkling in AMMR for 2-minute initial dump.
start time: _____ end time: _____.
- _____ Activate water mist system for AMMR.
start time: _____ end time: _____.
- _____ Mechanically and electrically isolate AMMR as per [Tab 10, Mechanical and Electrical Isolation](#).
- _____ Secure ventilation in AMMR as per [Tab 8, Ventilation](#).
- _____ Lay to Repair 2 LL. Pass personnel, machinery, firefighting equipment status, and water mist/AFFF bilge sprinkling activation time.
- _____ Lay to in port WQSB. If billet is in ECR, report to quarterdeck and assist as directed.

Section B: Tab 2, Quarterdeck Watchstander Checklist

A. Major Oil Leak/Fire in AMMR.

- _____ Receive report from engineering watchstander.
- Casualty location.
 - Equipment affected.
 - Action taken.
 - Recommend setting general emergency as per the machinery space fire doctrine.

_____ Sound general alarm.

Pipe: *“[Fire, fire, fire] or [major oil leak] in the aft main machinery room, compartment 5-52-01-E, [upper/lower] level, [port side/stbd side/centerline], at frame [#]. All hands set general emergency per the machinery space fire doctrine, provide from Repair 2. All those not in today’s duty section, muster on the quarterdeck. Set modified zebra. Do not set zebra on the firemain.”*

_____ Establish communications.

_____ Take charge of quarterdeck.

_____ Request assistance from adjacent vessels.

_____ Contact local fire department and request assistance.

_____ Notify CO with nature and status of leak/fire.

_____ Muster off duty members on the quarterdeck.

_____ Order 2 P-100s rigged and connected to firemain.

_____ Provide RLL all necessary SCBA relief personnel and support.

_____ Receive report of initial 2-minute AFFF dump.

Pipe: *“Initial 2-minute AFFF bilge flooding activated in the aft main machinery room at time._____.”*

_____ Brief fire department personnel and other ship’s personnel when they arrive. Non-crew members are to be used for support only. They shall not take over firefighting efforts.

B. Class Bravo Fire Out of Control in AMMR.

_____ Ensure checklist for leak/fire is complete.

_____ When watchstander reports fire is out of control, AMMR is evacuated, and the water mist system has been activated.

Pipe: *“Fire in the aft main machinery room is out of control. The aft main machinery room is being evacuated. The water mist system has been activated at time _____.”*

_____ When RLL reports: Second AFFF bilge flooding activated.

Pipe: *“2-minute reentry AFFF bilge flooding to the aft main machinery room activated at time _____.”*

_____ When RLL reports: The fire team has reentered AMMR.

Pipe: *“The fire team has reentered the aft main machinery room at time _____.”*

_____ When RLL reports: class bravo fire is out.

Pipe: *“Class bravo fire is out in the aft main machinery room.”*

_____ Pipe reports as received from RLL.

_____ Monitor post-fire actions.

Section C: Tab 3, RLL/OOD Checklist

A. Major Oil Leak/Fire in AMMR.

- _____ Establish communications with quarterdeck and OSL.
- _____ Make reports to quarterdeck.
- _____ Manned and ready.
- _____ Set modified zebra.
- _____ Set fire boundaries as per [Tab 9, Fire Boundaries](#).
- _____ Set smoke boundaries/smoke control zone as per [Tab 7, Smoke Boundaries/Smoke Control Zone](#).
- _____ Set ventilation as per [Tab 8, Ventilation](#).
- _____ Establish SCBA primary change out station in passage 2-16-1-L, near Repair 2.
- _____ Check firemain pressure. Verify that automated control features of the machinery monitoring system maintain sufficient firemain pressure. If insufficient pressure, energize additional fire pumps manually.
- _____ Ensure following positions are filled prior to re-entry:
 - _____ OSL.
 - _____ ATL.
 - _____ #1 nozzleman.
 - _____ #1 hoseman.
 - _____ Plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
- _____ Dispatch investigators to verify.
 - _____ Sufficient fire pumps on-line and not overheating.
 - _____ Status of smoke/fire boundaries.
 - _____ Water mist/AFFF stations manned.
- _____ Dispatch fire party to passage 2-52-01-L for reentry.
- _____ Ensure firemain isolation valve 2-43-2FM (in crew stateroom 2-36-8-L) is OPEN.

B. Class Bravo Fire Out of Control in AMMR.

- _____ Complete checklist for leak/fire.
- _____ Order a second 2-minute AFFF bilge flooding in AMMR prior to reentry.
- _____ If not reported, order activation of the water mist system in AMMR.
- _____ Verify mechanical and electrical isolation is complete.
- _____ Order fire team to reenter AMMR. Report reentry time to quarterdeck.
- _____ Verify SCBA start time from OSL.
- _____ Pass light-off times to quarterdeck.

Note: Upon reentry of AMMR, the OSL, team leader, hose teams, boundarymen, and plugmen light-off their SCBAs. OSL passes light-off times of these personnel to the RLL who is tracking this on the SCBA change-out schedule.

- _____ Send first set of SCBA reliefs to passage 2-44-0-L.
- _____ First set of reliefs light-off SCBAs when directed.
- _____ Pass light-off times to RLL.
- _____ Change out the following:
 - _____ OSL.
 - _____ ATL.
 - _____ #1 nozzleman.
 - _____ #1 hoseman.
 - _____ Plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
- _____ Second set of reliefs light-off SCBAs when directed.
- _____ Pass light-off times to RLL.

_____ Change out the following:

_____ OSL.

_____ ATL.

_____ #1 nozzleman.

_____ #1 hoseman.

_____ Plugman.

_____ Backup hose nozzleman.

_____ Backup hose hoseman.

_____ Third set of reliefs light-off SCBAs when directed.

_____ Pass light-off times to RLL.

_____ Change out the boundarymen.

Note: Personnel being relieved muster in Repair 2. Once the RLL accounts for everyone, relieved personnel doff their FFEs and SCBAs, to be used by the next set of reliefs. Relieved personnel then report to the corpsman or his representative to cool down.

_____ Pass word to the quarterdeck when the fire is out and reflash watch is set.

_____ Initiate post-fire actions when requested by OSL.

_____ Ensure post-fire personnel don and activate SCBA before reentry.

_____ Overhaul fire.

_____ Repair locker electrician investigate for electrical damage.

_____ De-smoking.

_____ De-watering.

_____ Atmospheric testing.

Section D: Tab 4, Water Mist/AFFF Operator Checklist

A. Major Oil Leak/Fire in AMMR.

- _____ Don battle dress and SCBA.
- _____ Establish communications with RLL.
- _____ Report manned and ready to RLL.
- _____ Verify fire pumps on line and AFFF pump on line.
(120 psi showing at local gauge).
- _____ Verify that AMMR AFFF and water mist supply valves are open.
- _____ Continually monitor water mist/AFFF tank levels and replenish as necessary.

B. Class Bravo Fire Out of Control in AMMR.

- _____ Complete checklist for leak/fire.
- _____ Activate AMMR water mist system when ordered by RLL.
- _____ Activate AMMR AFFF bilge flooding when ordered by RLL.
- _____ Close AFFF COV when ordered by RLL.
- _____ Secure water mist system when ordered by RLL.

Section E: Tab 5, Repair Locker Electrician Checklist

A. Major Oil Leak/Fire in AMMR.

_____ Don battle dress and SCBA.

_____ Perform electrical isolation as per [Tab 10, Mechanical and Electrical Isolation](#).
Maintain the current source of power until the space is evacuated. Do not secure lighting and power to firefighting equipment and ventilation.

B. Class Bravo Fire Out of Control in AMMR.

_____ Complete checklist for leak/fire.

_____ Perform electrical isolation as per [Tab 10, Mechanical and Electrical Isolation](#).

Note: After evacuating the AMMR, secure the supply fans. Do not secure exhaust ventilation until directed by the RLL. Activation of the water mist system automatically secures exhaust ventilation within the affected space.)

Note: After evacuating the AMMR, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

_____ When ordered by RLL, report to AMMR; investigate electrical damage to AMMR ventilation and other systems as directed.

Section F: Tab 6, Medical Personnel Checklist

A. Major Oil Leak/Fire in AMMR.

- _____ Establish recovery area in sickbay (1-73-2-L).
- _____ Establish communications with Repair 2 and quarterdeck.
- _____ Provide food, liquids, and dry clothing for personnel.

B. Class Bravo Fire Out of Control in AMMR.

- _____ Complete checklist for leak/fire.
- _____ Standby to assist with personnel casualties.

Section G: Tab 7, Smoke Boundaries/Smoke Control Zone

A. Major Oil Leak/Fire in AMMR.

- Primary smoke boundaries:
 - Forward - frame 52.
 - Aft - frame 64.

- Secondary smoke boundaries:
 - Forward - frame 44.
 - Aft - frame 70.

- List of Smoke Curtain Locations:
 - QAWTD 2-52-1.
 - QAWTD 2-52-2.
 - QAWTD 2-64-1.
 - QAWTD 2-64-4.

- Smoke control zone: for smoke control zone ventilation.
 - Compartments below DC deck from FR 44-70.
 - Fuel oil contaminated settling tank (3-50-2-F).
 - Escape trunk (4-51-1-T).
 - FMMR (5-44-01-E).
 - JP-5 pump room (3-64-2-E).
 - Pump room (3-64-0-E).
 - Shaft alley (5-64-1-Q and 5-64-2-Q).
 - Fuel oil service tanks (4-64-1-F and 4-64-2-F).

- Compartments on DC deck and above from FR 44-70.
 - ECR (2-52-1-E).
 - Escape trunk (4-52-1-T).
 - Passageway (2-52-01-L).
 - AMMR access (2-60-2-L and 2-60-3-L).
 - Fan room (2-60-4-Q and 2-60-5-Q).
 - Deck toilet (2-60-1-L).
 - #2 AFFF station (2-61-0-Q).
 - Electric/computer repair (2-59-0-Q).
 - Mechanical/damage control shop (2-55-2-Q).
 - #2 laundry (2-52-2-Q).
 - FMMR uptake space (2-45-0-Q).
 - AMMR uptake space (2-52-0-Q).
 - Crew messroom (1-52-0-L).
 - GT exhaust (01-49-0-Q).
 - Helicopter spares storeroom area (01-52-1-Q).
 - Vertical take-off and landing UAV spares storeroom area (01-52-2-Q).
 - Deck gear locker (01-59-1-Q).
 - Aviation workshop (01-59-0-Q).
 - GT exhaust (02-49-0-Q).
 - Fan rooms (02-52-1-Q and 02-52-2-Q).
 - AMMR uptake space (02-54-0-Q).
 - #2 SSDG intake filter room (02-48-0-Q).
 - AMMR exhaust (03-58-0-Q).
 - #1 main propulsion diesel engine intake filter room (03-54-1-Q).
 - #2 main propulsion diesel engine intake filter room (03-54-2-Q).
 - GT exhaust (02-49-01-Q).

B. Class Bravo Fire Out of Control in AMMR.
Same as above.

Section H: Tab 8, Ventilation

A. Major Oil Leak/Fire in AMMR.

1. Set negative ventilation in AMMR by placing supply fans on (LOW), exhaust fans on (HIGH).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------|----------------------------|------------------------|---------------------------|
| SS-66 (vital) | 01-53-1 | MCMS | yes | ECR watch |
| SS-67 (vital) | 01-53-2 | MCMS | yes | ECR watch |
| ES-122 (vital) | 2-59-1 | MCMS | yes | ECR watch |
| ES-123 (vital) | 2-62-2 | MCMS | yes | ECR watch |

2. Set positive ventilation outside AMMR (smoke control zone) as follows:

- a. Place supply fans outside AMMR on (HIGH).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|-------------------|---------------------------|----------------------------|------------------------|---------------------------|
| SS-56 (vital) | 1-70-1 | MCMS | yes | ECR watch |
| SS-58 (non-vital) | 01-65-1 | MCMS | yes | ECR watch |
| SS-59 (non-vital) | 01-64-4 | MCMS | yes | ECR watch |

- b. Exhaust fans and recirculation fans outside AMMR (secure).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------|----------------------------|------------------------|---------------------------|
| ES-106 (non-vital) | 1-64-1 | MCMS | yes | ECR watch |
| ES-108 (non-vital) | 01-64-1 | MCMS | yes | ECR watch |
| ES-109 (non-vital) | 01-63-2 | MCMS | yes | ECR watch |
| ES-119 (non-vital) | 1-63-2 | N/A | No | Rep Elect |
| RS-8 (non-vital) | 2-63-1 | MCMS | yes | ECR watch |
| RS-9 (non-vital) | 1-62-2 | N/A | No | Rep Elect |
| RS-10 (vital) | 2-62-1 | MCMS | yes | ECR watch |
| RS-12(non-vital) | 2-45-1 | MCMS | yes | ECR watch |
| FCA-29 (vital) | 02-63-0 | MCMS | yes | ECR watch |

B. Class Bravo Fire Out of Control in AMMR.

Exhaust ventilation in AMMR remains on while the Water Mist System is activated.
All other ventilation shall be secured when the fire is out of control.

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-66 (vital) | 01-53-1 | MCMS | yes | ECR watch |
| SS-67 (vital) | 01-53-2 | MCMS | yes | ECR watch |
| ES-122 (vital) | 2-59-1 | MCMS | yes | ECR watch |
| ES-123 (vital) | 2-62-2 | MCMS | yes | ECR watch |

Section I: Tab 9, Fire Boundaries

A. Major Oil Leak/Fire in AMMR.

- Primary fire boundaries.
 - Forward - bulkhead 52, 4th deck and above.
 - Aft. - bulkhead 64, 4th deck and above.
 - Above. - second deck from frame 52 to 64.
 - Above - bulkheads surrounding AMMR uptake space, second deck and above.
- Secondary fire boundaries.
 - Forward - bulkhead 44, 4th deck and above.
 - Aft - bulkhead 70, 4th deck and above.
 - Above - 01 deck from frame 44 to 70.

B. Class Bravo Fire Out of Control in AMMR.

Same as above.

Section J: Tab 10, Mechanical and Electrical Isolation

A. Major Oil Leak/Fire in AMMR.

1. Mechanical isolation - Securing methods for propulsion machinery will be in accordance with standard procedures in reference (c), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3.
2. Electrical isolation - Maintain power until evacuation. Do not secure lighting and power to firefighting equipment and ventilation. Secure/de-energize the following systems:
 - a. Main switchboard operator (personnel in ECR): Ensure that the following breakers are opened: (Move applicable breakers from below to this section).

b. Repair locker electrician:

| | | |
|-------|-------------------------|-----------------------------|
| _____ | 2S-4P-(3-61-2) | non-vital pwr pnl (3-61-2). |
| _____ | 3S-4P-(3-63-1) | non-vital pwr pnl (3-63-1). |
| _____ | 3S-4P-(3-63-4) (Normal) | ABT (3-63-2). |
| _____ | 2S-4P-(3-63-4) (Alt) | ABT (3-63-2). |
| _____ | 3S-4P-E (Normal) | #1 CRP HPU. |
| _____ | 2S-4P-P (Alt) | #1 CRP HPU. |
| _____ | 3S-4P-F (Normal) | #2 CRP HPU. |
| _____ | 1S-4P-E (Alt) | #2 CRP HPU. |
| _____ | 2S-4P-B (Normal) | #4 fire pump. |
| _____ | 3S-4P-B (Alt) | #4 fire pump. |
| _____ | 2S-4P-J | #1 MRG LO service pump. |
| _____ | 1S-4P-F | #2 MRG LO service pump. |
| _____ | 1S-4P-H | CCG LO service pump. |
| _____ | (3-63-4)-4P-C | #2 start air compressor. |
| _____ | (2-41-1)-4P-D | #1 MTU UPS. |
| _____ | (1-70-4)-1P-J | AMMR HMI workstation. |
| _____ | (1-70-4)-1P-R | stbd torsion meter. |
| _____ | (1-70-4)-1P-T | CCG controls. |
| _____ | (1-70-4)-1P-U | #1 MRG controls. |
| _____ | (1-81-1)-1P-C | ESD relay panel. |
| _____ | (1-81-1)-1P-E | MRG vent fog precipitator. |
| _____ | (1-81-1)-1P-H | port torsion meter. |
| _____ | (1-81-1)-1P-K | #2 MRG controls. |

B. Class Bravo Fire Out of Control in AMMR.

1. Mechanical isolation - The following is to be performed when there is a class bravo fire out of control in AMMR:

- _____ #1 MDE.
- _____ #2 MDE.
- _____ #1 CRP HPU.
- _____ #2 CRP HPU.
- _____ #4 fire pump.
- _____ #2 start air compressor.
- _____ #1 MRG LO service pump.
- _____ #2 MRG LO service pump.
- _____ CCG LO service pump.
- _____ Start air COV 3-60-2.
- _____ Fuel oil COV 2-64-1.
- _____ Fuel oil COV 2-64-3.

2. Electrical isolation – Secure these items to secure all power in the AMMR. They include remaining power to firefighting equipment and ventilation. Secure/de-energize the following systems:

- a. Main switchboard operator (personnel in ECR): (* List electrical isolations for EOW).
- b. Repair locker electrician:

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-66 (vital) | 01-53-1 | MCMS | yes | ECR watch. |
| SS-67 (vital) | 01-53-2 | MCMS | yes | ECR watch. |
| ES-122 (vital) | 2-59-1 | MCMS | yes | ECR watch. |
| ES-123 (vital) | 2-62-2 | MCMS | yes | ECR watch. |

Note: After evacuating the AMMR, secure the supply fans. Do not secure exhaust ventilation until directed to do so by the RLL. (Activation of the water mist system automatically secures exhaust ventilation within the affected space.)

- _____ LC3-1VL-(3-63-1) vital ltg panel (located in passage, 1-29-0-L).
- _____ LC1-1L-(3-63-1) ltg panel (located in AMR, 5-36-01-E).

Note: After evacuating the AMMR, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

Section K: Tab 11, Reentry Points

A. Major Oil Leak/Fire in AMMR.

Reentry point for a major oil leak or class bravo fire contained in AMMR is at the discretion of the RLL. If possible, the primary reentry point is WTH 2-61-2.

B. Class Bravo Fire Out of Control in AMMR.

The primary reentry point for AMMR is through WTH 2-61-2.

- #1 hose supplied from AFFF hose reel 2-62-2.
- #2 hose supplied from fireplug 2-62-1.

The secondary reentry point for AMMR is through WTH 2-61-1.

- #1 hose supplied from fireplug 2-62-1.
- #2 hose supplied from fireplug 2-53-1.

Section L: Tab 12, De-smoking/Gas Freeing

A. Procedures for De-smoking AMMR (installed ventilation system operable).

Use installed ventilation system for de-smoking AMMR after a fire because of its high volume capacity. However, AMMR ventilation must not be energized until the engineering officer, with the repair electrician, determines the condition of the ventilation electrical system and declares the system operational.

- Once inspected, request and receive the engineering officer's permission before energizing the blowers. To energize and restart the blowers, the repair electrician:
 - Inspect the cables and transformers near ABT 2-53-2 and 02-61-1. These ABTs supply control voltage to AMMR ventilation systems. If satisfactory, direct switchboard operator to close breaker. Normal power is from 3S-4P-(2-54-2) and 3S-4P-(01-61-1) and alternate power is from 2S-4P-(2-54-2) and 2S-4P-(01-61-1).
 - Restart AMMR ventilation using the controllers in passage (2-64-1-L and 2-52-01-L), helo spare storeroom (01-52-1-Q), and VUAV spare storeroom (01-52-2-Q). start the exhaust ventilation on SLOW, working up to fast as load limits on SSDGs allow. Start supply blowers on SLOW.
 - Continue until AMMR is de-smoked, space de-watered, and atmospheric tests are satisfactory.

B. Procedures for De-smoking AMMR (installed ventilation system not operable).

To de-smoke AMMR if the ventilation system has been damaged, create a positive pressure outside of AMMR that forces the smoke out the uptake space. De-smoking by opening doors and breaking smoke boundaries is not advised unless careful consideration is given to the path smoke will take.

To accomplish this without allowing smoke to enter interior of the ship, open QAWTDs and WTHs to AMMR. Anyone within this area requires an SCBA.

- Set up natural convection by opening the following fittings:
 - QAWTD 2-52-2.
 - QAWTD 2-52-1.
 - QAWTD 2-62-1.
 - QAWTD 2-62-2.
 - WTH 2-61-1.
 - WTH 2-61-2.
- Set positive ventilation on surrounding spaces to pressurize AMMR and to force smoke up through the uptake space. However, since all ventilation is powered from the main switchboard, these switchboards will have to be energized.
- Continue until AMMR is de-smoked, space de-watered, and atmospheric tests are satisfactory.

C. Procedures for De-smoking AMMR (Ship's ventilation system inoperable or no ship's power available).

To de-smoke AMMR if there is no ship's power available to operate installed ventilation. De-smoking by opening doors/hatches and breaking smoke boundaries is not advised unless careful consideration is given to the path smoke will take.

- Rig ram fans on the flight deck and run the portable trunk as follows:
 - Through QAWTD 01-61-1.
 - Down through WTH 01-63-1.
 - Forward through QAWTD 1-57-2 into AMMR uptake space (2-52-0-Q).
- Continue until AMMR is de-smoked, space de-watered, and atmospheric tests are satisfactory.

D. Gas Free Engineer Post-fire Tests

When the space is clear of smoke, test for oxygen between 19.5-22 percent, combustible gases less than 10 percent of the lower explosive limit, and any toxic gases below their threshold limit values, as per reference (e), Gas Free Engineering, NSTM Chapter 074, Volume 3, before certifying the space safe for personnel to enter without SCBAs.

After a flammable liquid fire has been extinguished, toxic gas tests for hydrocarbons, carbon dioxide, carbon monoxide, hydrogen chloride, hydrogen cyanide, and chlorine are required. The following are the threshold limit values for each test:

| | |
|-------------------------------------|----------|
| Hydrocarbons | none |
| Hydrogen Chloride/Hydrochloric Acid | 5 ppm |
| Carbon Dioxide | 5000 ppm |
| Hydrogen Cyanide/Hydrocyanic Acid | 10 ppm |
| Hydrogen Fluoride | 3 ppm |
| Chlorine | 1 ppm |
| Carbon Monoxide | 50 ppm |

Conduct tests near the center and all four-corners on each level, high and low, with a minimum of ten test points taken. Obtain at least one satisfactory test result at each test location.

Note: A compartment is considered “safe” only after satisfactory test results at all test locations are obtained. An unsatisfactory test result at any test point requires further ventilating and re-testing at all test points.

Appendix K: Forward Main Machinery Room (5-44-01-E) In port Checklists

[Tab 1, Machinery Watchstander Checklist for Leak/Fire in FMMR](#)

[Tab 2, Quarterdeck Watchstander Checklist](#)

[Tab 3, RLL/OOD Checklist](#)

[Tab 4, Water Mist/AFFF Operator Checklist](#)

[Tab 5, Repair Locker Electrician Checklist](#)

[Tab 6, Medical Personnel Checklist](#)

[Tab 7, Smoke Boundaries/Smoke Control Zone](#)

[Tab 8, Ventilation](#)

[Tab 9, Fire Boundaries](#)

[Tab 10, Mechanical and Electrical Isolation](#)

[Tab 11, Reentry Points](#)

[Tab 12, De-smoking/Gas Freeing](#)

Section A: Tab 1, Machinery Watchstander Checklist for Leak/Fire in FMMR

A. Major Oil Leak/Fire in FMMR.

- _____ Secure affected equipment: Secure the source of the leak/fire immediately. If source cannot be secured, deflect oil to bilge. If leak/fire is in gas turbine enclosure, activate CO2 flooding immediately.

- _____ Notify quarterdeck of casualty. Pass:
 - Casualty location.
 - Equipment affected.
 - Action taken.
 - Recommend setting general emergency per the machinery space fire doctrine.

- _____ Shoulder EEBD.

- _____ Set negative ventilation in FMMR as per [Tab 8, Ventilation](#).

- _____ Set positive ventilation outside FMMR (smoke control zone) as per [Tab 8, Ventilation](#).

- _____ Break out portable AFFF and PKP extinguishers on scene. Wash oil to bilge using AFFF extinguisher. Fight small, contained fires with PKP/AFFF extinguishers. If needed, fire hose stations with AFFF pick-up tubes may also be used to wash oil to the bilge. If there is no immediate danger of a fire, large oil leaks may also be washed to the bilge using the AFFF hose reel located in the 2nd deck vestibule.

- _____ If initial actions are insufficient to vapor secure bilge, energize AFFF bilge sprinkling for initial 2-minute dump.

B. Class Bravo Fire Out of Control in FMMR.

- _____ Complete checklist for leak/fire.
- _____ Notify quarterdeck that the fire is out of control.
- _____ Don and activate EEBDs.
- _____ Evacuate through nearest safe exit and return to ECR.
- _____ Activate AFFF bilge sprinkling in FMMR for 2-minute initial dump.
start time: _____ end time: _____.
- _____ Activate water mist system for FMMR.
start time: _____ end time: _____.
- _____ Mechanically and electrically isolate FMMR as per [Tab 10, Mechanical and Electrical Isolation](#).
- _____ Secure ventilation in FMMR as per [Tab 8, Ventilation](#).
- _____ Lay to Repair 2 LL. Pass personnel, machinery, firefighting equipment status, and water mist/AFFF bilge sprinkling activation time.
- _____ Lay to in port WQSB once relieved by in port WQSB machinery watchstander.

Section B: Tab 2, Quarterdeck Watchstander Checklist

A. Major Oil Leak/Fire in FMMR.

- _____ Receive report from engineering watchstander.
- Casualty location.
 - Equipment affected.
 - Action taken.
 - Recommend setting general emergency as per the machinery space fire doctrine.

_____ Sound general alarm.

Pipe: *“[Fire, fire, fire] or [major oil leak] in the forward main machinery room, compartment 5-44-01-E, [upper/lower] level, [port side/stbd side/centerline], at frame [#]. All hands set general emergency per the machinery space fire doctrine, provide from Repair 2. All those not in today’s duty section, muster on the quarterdeck. Set modified zebra. Do not set zebra on the firemain.”*

_____ Establish communications.

_____ Take charge of quarterdeck.

_____ Request assistance from adjacent vessels.

_____ Contact local fire department and request assistance.

_____ Notify co with nature and status of leak/fire.

_____ Muster off duty members on the quarterdeck.

_____ Order 2 P-100s rigged and connected to firemain.

_____ Provide RLL all necessary SCBA relief personnel and support.

_____ Receive report of initial 2-minute AFFF dump.

Pipe: *“Initial 2-minute AFFF bilge flooding activated in the forward main machinery room at time _____.”*

_____ Brief fire department personnel and other ship’s personnel when they arrive. Non-crew members are to be used for support only. They shall not take over firefighting efforts.

B. Class Bravo Fire Out of Control in FMMR.

_____ Ensure checklist for leak/fire is complete.

_____ When watchstander reports fire is out of control, FMMR is evacuated, and the water mist system has been activated.

Pipe: *“Fire in the forward main machinery room is out of control. The forward main machinery room is being evacuated. The water mist system has been activated.”*

_____ When RLL reports second AFFF bilge flooding activated.

Pipe: *“2-minute reentry AFFF bilge flooding to the forward main machinery room activated at time _____.”*

_____ When RLL reports the fire team has reentered FMMR.

Pipe: *“The fire team has reentered the forward main machinery room at time _____.”*

_____ When RLL reports class bravo fire is out.

Pipe: *“Class bravo fire is out in the forward main machinery room.”*

_____ Pipe reports as received from RLL.

_____ Monitor post-fire actions.

Section C: Tab 3, RLL/OOD Checklist

A. Major Oil Leak/Fire in FMMR.

- _____ Establish communications with quarterdeck and OSL.
- _____ Make reports to quarterdeck.
- _____ Manned and ready.
- _____ Set modified zebra.
- _____ Set fire boundaries as per [Tab 9, Fire Boundaries](#).
- _____ Set smoke boundaries/smoke control zone as per [Tab 7, Smoke Boundaries/Smoke Control Zone](#).
- _____ Set ventilation as per [Tab 8, Ventilation](#).
- _____ Establish SCBA primary change out station in passage 2-16-1-L, near Repair 2.
- _____ Check firemain pressure. Verify that automated control features of the machinery monitoring system maintain sufficient firemain pressure. If insufficient pressure, energize additional fire pumps manually.
- _____ Ensure following positions are filled prior to re-entry:
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.
- _____ Dispatch investigators to verify:
 - _____ Sufficient fire pumps on-line and not overheating.
 - _____ Status of smoke/fire boundaries.
 - _____ Water mist/AFFF stations manned
- _____ Dispatch fire party to passage 2-44-0-L for reentry.
- _____ Ensure firemain isolation valve 2-43-2FM (in crew stateroom 2-36-8-L) is OPEN.

B. Class Bravo Fire Out of Control in FMMR.

- _____ Complete checklist for leak/fire.
- _____ Order a second 2-minute AFFF bilge flooding in FMMR prior to reentry.
- _____ If not reported, order activation of the FMMR water mist system.
- _____ Verify mechanical and electrical isolation is complete.
- _____ Order fire team to reenter FMMR. Report reentry time to quarterdeck.
- _____ Verify SCBA start time from OSL.
- _____ Pass light-off times to quarterdeck.

Note: Upon reentry of FMMR, the OSL, team leader, hose teams, boundarymen, and plugmen light-off their SCBAs. OSL passes light-off times of these personnel to the RLL who is tracking this on the SCBA change-out schedule.

- _____ Send first set of SCBA reliefs to passage 2-36-0-L.
- _____ First set of reliefs light-off SCBAs when directed.
- _____ Pass light-off times to RLL.
- _____ Change out the following:
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.
- _____ Second set of reliefs light-off SCBAs when directed.
- _____ Pass light-off times to RLL.

- _____ Change out the following:
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.
- _____ Third set of reliefs light-off SCBAs when directed.
- _____ Pass light-off times to RLL.
- _____ Change out boundarymen.

Note: Personnel being relieved muster in Repair 2. Once the RLL accounts for everyone, relieved personnel doff their FFEs and SCBAs, to be used by the next set of reliefs. Relieved personnel then report to the corpsman or his representative to cool down.

- _____ Pass word to the quarterdeck when the fire is out and reflash watch is set.
- _____ Initiate post-fire actions when requested by OSL.
- _____ Ensure post-fire personnel don and activate SCBA before reentry.
- _____ Overhaul fire.
- _____ Repair locker electrician investigate for electrical damage.
- _____ De-smoking.
- _____ De-watering.
- _____ Atmospheric testing.

Section D: Tab 4, Water Mist/AFFF Operator Checklist

A. Major Oil Leak/Fire in FMMR.

- _____ Don battle dress and SCBA.
- _____ Establish communications with RLL.
- _____ Report manned and ready to RLL.
- _____ Verify fire pumps on line and AFFF pump on line.
(120 psi showing at local gauge).
- _____ Verify that FMMR AFFF and water mist supply valves are open.
- _____ Continually monitor water mist/AFFF tank levels and replenish as necessary.

B. Class Bravo Fire Out of Control in FMMR.

- _____ Complete checklist for leak/fire.
- _____ Activate FMMR water mist system when ordered by RLL.
- _____ Activate FMMR AFFF bilge flooding when ordered by RLL.
- _____ Close AFFF COV when ordered by RLL.
- _____ Secure water mist system when ordered by RLL.

Section E: Tab 5, Repair Locker Electrician Checklist

A. Major Oil Leak/Fire in FMMR.

_____ Don battle dress and SCBA.

_____ Perform electrical isolation as per [Tab 10, Mechanical and Electrical Isolation](#).
Maintain the current source of power until the space is evacuated. Do not secure lighting and power to firefighting equipment and ventilation.

B. Class Bravo Fire Out of Control in FMMR.

_____ Complete checklist for leak/fire.

_____ Perform electrical isolation as per [Tab 10, Mechanical and Electrical Isolation](#).

**Note: After evacuating the FMMR, secure the supply fans.
Do not secure exhaust ventilation until directed by the RLL.
(Activation of the water mist system automatically secures
exhaust ventilation within the affected space.)**

**Note: After evacuating the FMMR, secure lighting if the OSL
determines that an actual hazard to firefighters, such as arcing
or sparking, exists. Normally firefighters benefit from
improved visibility when lighting is left energized.**

_____ When ordered by RLL, report to FMMR; investigate electrical damage to FMMR ventilation and other systems as directed.

Section F: Tab 6, Medical Personnel Checklist

A. Major Oil Leak/Fire in FMMR.

- _____ Establish recovery area in sickbay (1-73-2-L).
- _____ Establish communications with Repair 2 and quarterdeck.
- _____ Provide food, liquids, and dry clothing for personnel.

B. Class Bravo Fire Out of Control in FMMR.

- _____ Complete checklist for leak/fire.
- _____ Standby to assist with personnel casualties.

Section G: Tab 7, Smoke Boundaries/Smoke Control Zone

A. Major Oil Leak/Fire in FMMR.

- Primary smoke boundaries:
 - Forward - frame 44.
 - Aft - frame 52.

- Secondary smoke boundaries:
 - Forward - frame 36.
 - Aft - frame 64.

- List of Smoke Curtain Locations:
 - QAWTD 2-44-1.
 - QAWTD 2-44-2.
 - QAWTD 2-52-1.
 - QAWTD 2-52-2.

- Smoke Control Zone: For Smoke Control zone ventilation.
 - a. Compartments below DC deck from FR 36-64.
 - AMR (5-36-01-E).
 - Fuel oil service tanks (5-45-2-F and 5-45-3-F).
 - AMMR (5-52-01-E).
 - Escape trunks (4-52-1-T, 4-52-2-T, and 4-43-1-T).
 - Reduction gear lube oil tanks (3-52-1-F and 3-52-2-F).
 - Oily water collection tank (5-41-1-F).
 - Waste oil tank (5-42-2-F).
 - Fuel oil tank (5-52-0-F).

- b. Compartments on DC deck and above from FR 36-52.
 - Passageways (2-36-0-L and 2-52-01-L).
 - Crew staterooms (2-41-3-L and 2-36-8-L).
 - ECR (2-52-1-E).
 - AMR intake/exhaust (2-42-0-Q).
 - Crew lounge (2-47-2-L).
 - FMMR uptake space (2-45-0-Q).
 - Passageway (1-44-0-L).
 - Incinerator room (1-47-1-Q).
 - Trash stowage holding and staging room (1-44-1-Q).
 - Officer wardroom/lounge (1-44-2-L).
 - AMMR uptake space (2-52-0-Q).
 - Helicopter spares storerooms (01-47-1-Q and 01-52-1-Q).
 - GT air inlet louvers, anti-icing manifold, and moisture separators (01-44-1-Q and 01-44-2-Q).
 - GT exhaust (01-49-0-Q).
 - GT intake (01-44-0-Q).
 - Fueling at sea locker (01-47-2-Q).
 - Fueling at sea area (01-48-2-Q).
 - Vertical take off and landing unmanned aerial vehicle spares storeroom area (01-52-2-Q).
 - FMMR intake (02-46-1-Q).
 - FMMR exhaust (02-46-2-Q).
 - #2 SSDG intake filter room (02-48-0-Q).
 - Fan room (02-52-1-Q and 02-52-2-Q).
 - FMMR ventilation exhaust fan room (03-46-2-Q).
 - #1 main propulsion diesel engine intake filter room (03-54-1-Q).
 - #2 main propulsion diesel engine intake filter room (03-54-2-Q).

B. Class Bravo Fire Out of Control in FMMR.
Same as above.

Section H: Tab 8, Ventilation

A. Major Oil Leak/Fire in FMMR.

1. Set negative ventilation in FMMR by placing supply fans on (LOW), exhaust fans on (HIGH).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-64 (vital) | 2-44-1 | MCMS | yes | ECR watch |
| ES-120 (vital) | 2-45-1 | MCMS | yes | ECR watch |

2. Set positive ventilation outside FMMR (smoke control zone) by placing supply fans on outside FMMR on (**HIGH**).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|-------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-68 (vital) | 1-44-1 | MCMS | yes | ECR watch |
| TPSS-70 (vital) | 02-41-2 | MCMS | yes | ECR watch |
| SS-54 (non-vital) | 2-32-1 | MCMS | yes | ECR watch |
| SS-55 (non-vital) | 1-50-1 | MCMS | yes | ECR watch |
| SS-69 (non-vital) | 2-46-1 | MCMS | yes | ECR watch |

3. Exhaust fans and Recirculation fans outside FMMR (SECURE).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| TPES-125 (vital) | 02-38-2 | MCMS | yes | ECR watch |
| ES-104 (non-vital) | 2-32-1 | MCMS | yes | ECR watch |
| ES-105 (non-vital) | 1-46-1 | MCMS | yes | ECR watch |
| ES-116 (non-vital) | 1-45-1 | MCMS | yes | ECR watch |
| ES-124 (vital) | 2-41-2 | MCMS | yes | ECR watch |
| RS-32 (vital) | 02-39-2 | MCMS | yes | ECR watch |
| RS-1 (vital) | 02-29-3 | MCMS | yes | ECR watch |
| RS-2 (vital) | 02-30-1 | MCMS | yes | ECR watch |
| RS-3 (vital) | 02-42-2 | MCMS | yes | ECR watch |
| RS-4 (non-vital) | 02-38-4 | MCMS | yes | ECR watch |
| RS-6 (non-vital) | 1-41-2 | MCMS | yes | ECR watch |
| RS-14 (non-vital) | 2-45-1 | MCMS | yes | ECR watch |
| RS-16 (non-vital) | 1-43-2 | MCMS | yes | ECR watch |
| RS-31 (non-vital) | 2-37-1 | MCMS | yes | ECR watch |
| RS-33 (non-vital) | 1-37-1 | MCMS | yes | ECR watch |
| FCA-26 (non-vital) | 1-50-2 | MCMS | yes | ECR watch |
| FCA-28 (non-vital) | 2-49-2 | MCMS | yes | ECR watch |

B. Class Bravo Fire Out of Control in FMMR

Exhaust ventilation in FMMR remains on while the water mist system is activated All other ventilation shall be secured when the fire is out of control.

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-64 (vital) | 2-44-1 | MCMS | yes | ECR watch |
| ES-120 (vital) | 2-45-1 | MCMS | yes | ECR watch |

Section I: Tab 9, Fire Boundaries

A. Major Oil Leak/Fire in FMMR.

- Primary fire boundaries.
 - Forward - bulkhead 44, 4th deck and above.
 - Aft. - bulkhead 52, 4th deck and above.
 - Above. - second deck from frame 44 to 52.
 - Above - bulkheads surrounding FMMR uptake space, second deck and above.
- Secondary fire boundaries.
 - Forward - bulkhead 36, 4th deck and above.
 - Aft - bulkhead 64, 4th deck and above.
 - Above - 01 deck from frame 36 to 64.

B. Class Bravo Fire Out of Control in FMMR.

Same as above.

Section J: Tab 10, Mechanical and Electrical Isolation

A. Major Oil Leak/Fire in FMMR

Mechanical isolation - Secure propulsion machinery as per standard procedures in reference (b), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3.

Electrical isolation - Maintain the current source of power until evacuation. Do not secure lighting or power to firefighting equipment and ventilation. Secure/de-energize the following systems:

- a. Main switchboard operator (personnel in ECR): Ensure that the following breakers are opened:

_____ 2S-4P-2G 2S to #2 SSDG
(machinery monitoring system or mechanical shutdown).

_____ 1S-4P-2S #1 stbd bus-tie breaker.

_____ 2S-4p-3S #3 stbd bus-tie breaker.

- b. Repair locker electrician:

_____ 3S-4P-(3-51-1) power panel, 3-51-1.

_____ (2-41-1)-4P-G #2 sea water cooling pump.

_____ 2S-4P-L (Normal) #3 fire pump.

_____ 3S-4P-L (Alt) #3 fire pump.

_____ (2-41-1)-4P-M GT blow-in door control.

_____ (2-54-2)-4P-F #3 MTU UPS.

_____ (2-48-1)-1P-K GT governor supply.

_____ (1-39-2)-1P-D FMMR HMI workstation.

_____ (1-39-2)-1P-K #2 SSDG battery charger.

_____ (2-48-1)-1P-A FMMR ESD relay panel.

B. Class Bravo Fire Out of Control in FMMR.

Mechanical isolation - The following is to be performed when there is a class bravo fire out of control in FMMR. Ensure the following systems are secured/de-energized:

a. ECR watchstander ensures the following are secured:

- _____ #2 SSDG.
- _____ GT.
- _____ #3 fire pump.
- _____ #2 sea water cooling pump.
- _____ Fuel oil COV 2-43-2.
- _____ Fuel oil COV 2-43-4.

b. Electrical isolation - Secure all power in the FMMR. Include power to firefighting equipment and ventilation Secure/de-energize the following

- a. Main switchboard operator (personnel in ECR):
 (* List electrical isolations for EOW).
- b. Repair locker electrician:

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-64 (vital) | 2-44-1 | MCMS | yes | ECR watch. |
| ES-120 (vital) | 2-45-1 | MCMS | yes | ECR watch. |

Note: After evacuating FMMR, secure the supply fans. Do not secure exhaust ventilation until directed to do so by the RLL. (Activation of the water mist system automatically secures exhaust ventilation within the affected space.).

Note: After evacuating the FMMR, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

_____ LC3-1VL-(3-44-2) vital lgt panel (frame 36 in passage, 1-29-0-L).

Section K: Tab 11, Reentry Points

A. Major Oil Leak/Fire in FMMR.

Reentry point for a major oil leak or class bravo fire contained in FMMR is at the discretion of the RLL. If reentry is possible, the primary reentry point is WTH 2-45-2.

B. Class Bravo Fire Out of Control in FMMR.

- The primary reentry point for FMMR is through WTH 2-45-2.
 - #1 hose supplied from AFFF hose reel 2-44-2.
 - #2 hose supplied from fireplug 2-46-2.
- The secondary reentry point for FMMR is through WTH 2-44-1.
 - #1 hose supplied from fireplug 2-46-1.
 - #2 hose supplied from fireplug 2-46-2.

Section L: Tab 12, De-smoking/Gas Freeing

A. Procedures for De-smoking FMMR (installed ventilation system operable).

Use installed ventilation system de-smoking FMMR after a fire because of its high volume capacity. However, do not energize FMMR ventilation until its condition is investigated and permission for use granted by the engineering officer.

- The engineering officer, with the repair electrician, determines the condition of the ventilation electrical system and declares the system operational.
- Once inspected, request and receive the engineering officer's permission before energizing the blowers.
- To energize and restart the blowers, the repair electrician:
 - Inspects cables and transformers near ABT 01-39-1. This ABT supplies control voltage to the FMMR ventilation system. If satisfactory, direct switchboard operator to close breaker. Normal power is from 1S-4P-(01-39-1) and alternative is from 3S-4P-(01-39-1).
 - Restart FMMR ventilation using the controllers in passage (2-44-0-L). Start exhaust ventilation on SLOW, working up to fast as load limits on SSDGs allow. Start supply blowers on SLOW.
 - Continue until FMMR is de-smoked, space de-watered, and atmospheric tests satisfactory.

B. Procedures for De-smoking FMMR (installed ventilation system not operable).

To de-smoke the FMMR if the ventilation system is damaged, create a positive pressure outside of FMMR to force the smoke out the uptake space. Do this without allowing smoke to enter the interior of the ship.

De-smoking by opening doors and breaking smoke boundaries is not advised unless careful consideration is given to the path smoke will take. However, if necessary, open QAWTDs and WTHs to FMMR. Anyone within this area requires an SCBA.

- Set up natural convection by opening the following fittings:
 - QAWTD 2-52-2.
 - QAWTD 2-52-1.
 - QAWTD 2-44-4.
 - QAWTD 2-44-3.
 - WTH 2-45-1.
 - WTH 2-45-2.
- Set positive ventilation on surrounding spaces to pressurize FMMR and force smoke up through the uptake space. However, since all ventilation is powered from the main switchboard, these switchboards need energized.
- Continue until FMMR is de-smoked, space de-watered, and atmospheric tests satisfactory.

C. Procedures for De-smoking FMMR (Ship’s ventilation system inoperable or no ship’s power available).

De-smoking by opening doors and breaking smoke boundaries is not advised unless careful consideration is given to the path smoke will take. However, if necessary, rig ram fans on the Flight Deck and run the portable trunk as follows:

- Through QAWTD 01-61-1.
- Down through WTH 01-63-1.
- Aft and down through WTH 1-67-2.
- Forward through QAWTD 2-64-4.
- Continue forward through QAWTD 2-52-2.
- Through QAWTD 2-48-2 into FMMR Uptake Space (2-45-0-Q).

Continue until FMMR is de-smoked, space de-watered, and atmospheric tests are satisfactory.

D. Gas Free Engineer Post-fire Tests.

1. When the space is clear of smoke, test for oxygen between 19.5-22 percent, combustible gases less than 10 percent of the lower explosive limit, and any toxic gases below their threshold limit values, as per reference (e), Gas Free Engineering, NSTM Chapter 074, Volume 3, before certifying the space safe for personnel to enter without SCBAs.
2. After a flammable liquid fire has been extinguished, toxic gas tests for hydrocarbons, carbon dioxide, carbon monoxide, hydrogen chloride, hydrogen cyanide, and chlorine are required. The following are the threshold limit values for each test:

| | |
|-------------------------------------|----------|
| Hydrocarbons | none |
| Hydrogen Chloride/Hydrochloric Acid | 5 ppm |
| Carbon Dioxide | 5000 ppm |
| Hydrogen Cyanide/Hydrocyanic Acid | 10 ppm |
| Hydrogen Fluoride | 3 ppm |
| Chlorine | 1 ppm |
| Carbon Monoxide | 50 ppm |

3. Conduct tests near the center and all four-corners on each level, high and low, with a minimum of ten test points taken. Obtain at least one satisfactory test result at each test location.

Note: A compartment is considered “safe” only after satisfactory test results at all test locations are obtained. An unsatisfactory test result at any test point requires further ventilating and re-testing at all test points.

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Appendix L: Auxiliary Machinery Room (5-36-01-E) In port Checklist

[Tab 1, Machinery Watchstander Checklist for Leak/Fire in AMR](#)

[Tab 2, Quarterdeck Watchstander Checklist](#)

[Tab 3, RLL/OOD Checklist](#)

[Tab 4, Water Mist/AFFF Operator Checklist](#)

[Tab 5, Repair Locker Electrician Checklist](#)

[Tab 6, Medical Personnel Checklist](#)

[Tab 7, Smoke Boundaries/Smoke Control Zone](#)

[Tab 8, Ventilation](#)

[Tab 9, Fire Boundaries](#)

[Tab 10, Mechanical and Electrical Isolation](#)

[Tab 11, Reentry Points](#)

[Tab 12, De-smoking/Gas Freeing](#)

Section A: Tab 1, Machinery Watchstander Checklist for Leak/Fire in AMR

A. Major Oil Leak/Fire in AMR.

- _____ Secure affected equipment: Secure the source of the leak/fire immediately. If source cannot be secured, deflect oil to bilge.
- _____ Notify quarterdeck of casualty. Pass:
- Casualty location.
 - Equipment affected.
 - Action taken.
 - Recommend setting general emergency per the machinery space fire doctrine.
- _____ Shoulder EEBD.
- _____ Set negative ventilation in AMR as per [Tab 8, Ventilation](#).
- _____ Set positive ventilation outside AMR (smoke control zone) as per [Tab 8, Ventilation](#).
- _____ Break out portable AFFF and PKP extinguishers on scene. Wash oil to bilge using AFFF extinguisher. Fight small, contained fires with PKP/AFFF extinguishers. If needed, fire hose stations with AFFF pick-up tubes may also be used to wash oil to the bilge. If there is no immediate danger of a fire, large oil leaks may also be washed to the bilge using the AFFF hose reel located in the 2nd deck vestibule.
- _____ If initial actions are insufficient to vapor secure bilge, energize AFFF bilge sprinkling for initial 2-minute dump.

B. Class Bravo Fire Out of Control in AMR.

- _____ Complete checklist for leak/fire.
- _____ Notify quarterdeck that the fire is out of control.
- _____ Don and activate EEBDs.
- _____ Evacuate through nearest safe exit and return to ECR.
- _____ Activate AFFF bilge sprinkling in AMR for 2-minute initial dump.
start time: _____ end time: _____.
- _____ Activate water mist system for AMR.
start time: _____ end time: _____.
- _____ Mechanically and electrically isolate AMR as per [Tab 10, Mechanical and Electrical Isolation](#).
- _____ Secure ventilation in AMR as per [Tab 8, Ventilation](#).
- _____ Lay to Repair 2 LL: Pass personnel, machinery, firefighting equipment status, and water mist/AFFF bilge sprinkling activation time.
- _____ Lay to in port WQSB once relieved by in port WQSB Machinery Watchstander.

Section B: Tab 2, Quarterdeck Watchstander Checklist

A. Major Oil Leak/Fire in AMR.

- _____ Receive report from engineering watchstander.
- Casualty location.
 - Equipment affected.
 - Action taken.
 - Recommend setting general emergency as per the machinery space fire doctrine.

_____ Sound general alarm.

Pipe: *“[Fire, fire, fire] or [major oil leak] in the auxiliary machinery room, compartment 5-36-01-E. [upper/lower] level, [port side/stbd side/centerline], at frame [#]. All hands set general emergency per the machinery space fire doctrine, provide from Repair 2. All those not in today’s duty section muster on the quarterdeck. Set modified zebra. Do not set zebra on the firemain.”*

_____ Establish communications.

_____ Take charge of quarterdeck.

_____ Request assistance from adjacent vessels.

_____ Contact local fire department and request assistance.

_____ Notify CO with nature and status of leak/fire.

_____ Muster off duty members on the quarterdeck.

_____ Order two P-100s rigged and connected to firemain.

_____ Provide RLL all necessary SCBA relief personnel and support.

_____ Receive report of initial 2-minute AFFF dump.

Pipe: *“Initial 2-minute AFFF bilge flooding activated in the auxiliary machinery room at time _____.”*

_____ Brief fire department personnel and other ship’s personnel when they arrive. Non-crew members are to be used for support only. They shall not take over firefighting efforts.

B. Class Bravo Fire Out of Control in AMR.

_____ Ensure checklist for leak/fire is complete.

_____ When watchstander reports fire is out of control, AMR is evacuated, and the water mist system has been activated.

Pipe: *“Fire in the auxiliary machinery room is out of control. The Auxiliary machinery room is being evacuated. The water mist system has been activated.”*

_____ When RLL reports: Second AFFF bilge flooding activated.

Pipe: *“2-minute reentry AFFF bilge flooding to the auxiliary machinery room activated at time _____.”*

_____ When RLL reports: The fire team has reentered AMR.

Pipe: *“The fire team has reentered the auxiliary machinery room at time _____.”*

_____ When RLL reports: class bravo fire is out.

Pipe: *“Class bravo fire is out in the auxiliary machinery room.”*

_____ Pipe reports as received from RLL.

_____ Monitor post-fire actions.

Section C: Tab 3, RLL/OOD Checklist

A. Major Oil Leak/Fire in AMR.

- _____ Establish communications with quarterdeck and OSL.
- _____ Make reports to quarterdeck.
- _____ Manned and ready.
- _____ Set modified zebra.
- _____ Set fire boundaries as per [Tab 9, Fire Boundaries](#).
- _____ Set smoke boundaries/smoke control zone as per [Tab 7, Smoke Boundaries/Smoke Control Zone](#).
- _____ Set ventilation as per [Tab 8, Ventilation](#).
- _____ Establish SCBA primary change out station in passage 2-16-1-L, near Repair 2.
- _____ Check firemain pressure. Verify that automated control features of the machinery monitoring system maintain sufficient firemain pressure. If insufficient pressure, energize additional fire pumps manually.
- _____ Ensure following positions are filled prior to re-entry:
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.
- _____ Dispatch investigators to verify:
 - _____ Sufficient fire pumps on-line and not overheating.
 - _____ Status of smoke/fire boundaries.
 - _____ AFFF stations manned.
- _____ Dispatch fire party to passage 2-28-0-L for reentry.
- _____ Ensure firemain isolation valve 2-43-2FM (in crew stateroom 2-36-8-L) is OPEN.

B. Class Bravo Fire Out of Control in AMR.

- _____ Complete checklist for leak/fire.
- _____ Order a second 2-minute AFFF bilge flooding in AMR prior to reentry.
- _____ Verify mechanical and electrical isolation is complete.
- _____ Order fire team to reenter AMR. Report reentry time to quarterdeck.
- _____ Verify SCBA start time from OSL.
- _____ Pass light-off times to quarterdeck.

Note: Upon reentry of AMR, the OSL, team leader, hose teams, boundarymen, and plugmen light-off their SCBAs. OSL passes light-off times of these personnel to the RLL who is tracking this on the SCBA change-out schedule.

- _____ Send first set of SCBA reliefs to passage 2-28-0-L.
- _____ First set of reliefs light-off SCBAs when directed.
- _____ Pass light-off times to RLL.
- _____ Change out the following:
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.
- _____ Second set of reliefs light-off SCBAs when directed.
- _____ Pass light-off times to RLL.

- _____ Change out the following:
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.

- _____ Third set of reliefs light-off SCBAs when directed.

- _____ Pass light-off times to RLL.

- _____ Change out boundarymen.

- Note: Personnel being relieved muster in Repair 2. Once the RLL accounts for everyone, relieved personnel doff their FFEs and SCBAs, to be used by the next set of reliefs. Relieved personnel then report to the corpsman or his representative to cool down.**

- _____ Pass word to the quarterdeck when the fire is out and reflash watch is set.

- _____ Initiate post-fire actions when requested by OSL.

- _____ Ensure post-fire personnel don and activate SCBA before reentry.

- _____ Overhaul fire.

- _____ Repair locker electrician investigate for electrical damage.

- _____ De-smoking.

- _____ De-watering.

- _____ Atmospheric testing.

Section D: Tab 4, Water Mist/AFFF Operator Checklist

A. Major Oil Leak/Fire in AMR.

- _____ Don battle dress and SCBA.
- _____ Establish communications with RLL.
- _____ Report manned and ready to RLL.
- _____ Verify fire pumps on line and AFFF pump on line.
(120 psi showing at local gauge).
- _____ Verify that AMR AFFF and water mist supply valves are open.
- _____ Continually monitor water mist/AFFF tank levels and replenish as necessary.

B. Class Bravo Fire Out of Control in AMR.

- _____ Complete checklist for leak/fire.
- _____ Activate AMR water mist system when ordered by RLL.
- _____ Activate AMR AFFF bilge flooding when ordered by RLL.
- _____ Close AFFF COV when ordered by RLL.
- _____ Secure water mist system when ordered by RLL.

Section E: Tab 5, Repair Locker Electrician Checklist

A. Major Oil Leak/Fire in AMR.

_____ Don battle dress and SCBA.

_____ Perform electrical isolation as per [Tab 10, Mechanical and Electrical Isolation](#).
Maintain the current source of power until the space is evacuated. Do not secure lighting and power to firefighting equipment and ventilation.

B. Class Bravo Fire Out of Control in AMR.

_____ Complete checklist for leak/fire.

_____ Perform electrical isolation as per [Tab 10, Mechanical and Electrical Isolation](#).

**Note: After evacuating the AMR, secure the supply fans.
Do not secure exhaust ventilation until directed by the RLL.
(Activation of the water mist system automatically secures
exhaust ventilation within the affected space.)**

**Note: After evacuating the AMR, secure lighting if the OSL
determines that an actual hazard to firefighters, such as arcing
or sparking, exists. Normally firefighters benefit from
improved visibility when lighting is left energized.**

_____ When ordered by RLL, report to AMR; investigate electrical damage to AMR ventilation and other systems as directed.

Section F: Tab 6, Medical Personnel Checklist

A. Major Oil Leak/Fire in AMR.

- _____ Establish recovery area in sickbay (1-73-2-L).
- _____ Establish communications with Repair 2 and quarterdeck.
- _____ Provide food, liquids, and dry clothing for personnel.

B. Class Bravo Fire Out of Control in AMR.

- _____ Complete checklist for leak/fire.
- _____ Standby to assist with personnel casualties.

Section G: Tab 7, Smoke Boundaries/Smoke Control Zone

A. Major Oil Leak/Fire in AMR.

1. Primary smoke boundaries:
 - Forward - frame 36.
 - Aft - frame 44.
2. Secondary smoke boundaries:
 - Forward - frame 28.
 - Aft - frame 52.
3. List of Smoke Curtain Locations:
 - QAWTD 2-36-0.
 - QAWTD 2-44-1.
 - QAWTD 2-44-2.
4. Smoke Control Zone: For Smoke Control zone ventilation, see [Tab 11, Reentry Points](#).
 - Compartments below DC deck from FR 28-52:
 - Vacuum Collection Holding and Transfer Room (3-38-2-E).
 - Vacuum Collection Holding and Transfer Tank (3-36-2-W).
 - Escape Trunk (4-52-2-T).
 - FMMR (5-44-01-E).
 - Void (3-44-01-V).
 - Gray Water Tank (3-34-0-W).
 - Fuel Oil Service Tanks (5-36-2-F and 5-36-3-F).
 - Overflow Fuel Tanks (5-32-1-F and 5-32-2-F).
 - Fuel Oil Service Tank (5-28-0-F).
 - Compartments on DC deck and above from FR 29-52:
 - Passageways (2-36-0-L, 2-44-0-L, 1-44-0-L, and 1-29-0-L).
 - Crew Staterooms (2-36-2-L, 2-36-3-L, 2-36-8-L, and 2-41-3-L).
 - Toilet/Shower (2-36-4-L, 2-36-6-L, 2-40-1-L, and 2-41-1-L).
 - Fan Room (2-36-1-Q).
 - AMR Access (2-38-1-L).
 - AMR Intake/Exhaust (2-42-0-Q).
 - Training Center (1-37-0-Q).
 - Pressure Locks (1-43-1-L and 1-43-2-L).
 - GT Intake (01-44-0-Q).
 - Ship's Office (01-37-4-Q).
 - Communications Center/Mission Essential Electronics Space (02-38-0-C).
 - AMR Discharge Plenum (03-41-1-Q).
 - AMR Intake Plenum (03-41-2-Q).
 - SSDG Intake Filter Room (03-38-0-Q).

B. Class Bravo Fire Out of Control in AMR.

Same as above.

Section H: Tab 8, Ventilation

A. Major Oil Leak/Fire in AMR.

1. Set negative ventilation in AMR as follows:

a. Place Supply fans on (LOW), Exhaust fans on (HIGH).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-68 (vital) | 1-41-1 | MCMS | yes | ECR watch |
| ES-124 (vital) | 2-41-2 | MCMS | yes | ECR watch |

2. Set positive ventilation outside AMR (smoke control zone) as follows:

a. Place supply fans outside AMR on (HIGH).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|-------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-64 (vital) | 2-44-1 | MCMS | yes | ECR watch |
| TPSS-70 (vital) | 02-41-2 | MCMS | yes | ECR watch |
| SS-54 (non-vital) | 2-32-1 | MCMS | yes | ECR watch |
| SS-55 (non-vital) | 1-50-1 | MCMS | yes | ECR watch |
| SS-69 (non-vital) | 2-46-1 | MCMS | yes | ECR watch |

b. Exhaust fans and recirculation fans outside AMR (secure).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| ES-120 (vital) | 2-45-1 | MCMS | yes | ECR watch |
| TPES-125 (vital) | 02-38-2 | MCMS | yes | ECR watch |
| ES-104 (non-vital) | 2-32-1 | MCMS | yes | ECR watch |
| ES-105 (non-vital) | 1-46-1 | MCMS | yes | ECR watch |
| ES-116 (non-vital) | 1-45-1 | MCMS | yes | ECR watch |
| RS-32 (vital) | 02-39-2 | MCMS | yes | ECR watch |
| RS-1 (vital) | 02-29-3 | MCMS | yes | ECR watch |
| RS-2 (vital) | 02-30-1 | MCMS | yes | ECR watch |
| RS-3 (vital) | 02-42-2 | MCMS | yes | ECR watch |
| RS-4 (non-vital) | 02-38-4 | MCMS | yes | ECR watch |
| RS-6 (non-vital) | 1-41-2 | MCMS | yes | ECR watch |
| RS-14 (non-vital) | 2-45-1 | MCMS | yes | ECR watch |
| RS-16 (non-vital) | 1-43-2 | MCMS | yes | ECR watch |
| RS-31 (non-vital) | 2-37-1 | MCMS | yes | ECR watch |
| RS-33 (non-vital) | 1-37-1 | MCMS | yes | ECR watch |
| FCA-26 (non-vital) | 1-50-2 | MCMS | yes | ECR watch |
| FCA-28 (non-vital) | 2-49-2 | MCMS | yes | ECR watch |

B. Class Bravo Fire Out of Control in AMR.

Exhaust ventilation in AMR remains on while the water mist system is activated. Secure all other ventilation when the fire is out of control.

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-68 (vital) | 1-44-1 | MCMS | yes | ECR watch |
| ES-124 (vital) | 2-41-2 | MCMS | yes | ECR watch |

Section I: Tab 9, Fire Boundaries

A. Major Oil Leak/Fire in AMR.

- Primary fire boundaries.
 - Forward - bulkhead 36, 4th deck and above.
 - Aft. - bulkhead 44, 4th deck and above.
 - Above. - second deck from frame 36 to 44.
 - Above - bulkheads surrounding AMR uptake space, second deck and above.
- Secondary fire boundaries.
 - Forward - bulkhead 28, 4th deck and above.
 - Aft - bulkhead 52, 4th deck and above.
 - Above - 01 deck from frame 28 to 52.

B. Class Bravo Fire Out of Control in AMR.

Same as above.

Section J: Tab 10, Mechanical and Electrical Isolation

A. Major Oil Leak/Fire in AMR.

1. Mechanical isolation - Secure propulsion machinery as per reference (b), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3.
2. Electrical isolation - Maintain the current source of power until evacuation. Do not secure lighting and power to firefighting equipment and ventilation. Watch stations listed below ensure the following systems are secured/de-energized:

- a. Main switchboard operator (personnel in ECR): Ensure the following breakers are open:

_____ 1SG-4P-1S 1S to #1 SSDG
(the machinery monitoring system or open locally).

_____ 1S-4P-2S #2 stbd, bus-tie breaker.

_____ 1S-4P-3S #3 stbd, bus-tie breaker.

_____ 3S-4P-SP #3 stbd, bus-tie breaker to shore power stbd.

_____ 1S-4P-A #2 fire pump (normal).

_____ 2S-4P-A #2 fire pump (alt).

- b. Repair locker electrician:

_____ (1-39-2) -1P-H #1 SSDG battery charger.

_____ (1-39-2)-1P-B AMR HMI workstation.

_____ (2-41-1)-4P-C #1 sea water cooling pump.

_____ (2-41-1)-4P-F #1 start air compressor.

_____ (3-44-1)-1P-M sewage lift station #2.

_____ (2-48-1)-1P-B ESD relay panel.

B. Class Bravo Fire Out of Control in AMR

1. Mechanical isolation - When a class bravo fire is out of control in the AMR, ECR watchstander secure/de-energize the following systems:

- _____ #1 SSDG.
- _____ #2 fire pump.
- _____ #1 start air compressor.
- _____ #1 sea water cooling pump.
- _____ Fuel oil COV 2-42-1.
- _____ Fuel oil COV 2-42-3.
- _____ Start air COV 3-43-1.

2. Electrical isolation - Electrically securing these items secures all power in the AMR. This includes remaining power to firefighting equipment and ventilation. Each watch station listed below secured/de-energize the following systems:

- a. Main switchboard operator (personnel in ECR):
(*list electrical isolations for ECR watch.)
- b. Repair locker electrician:

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-68 (vital) | 1-44-1 | MCMS | yes | ECR watch |
| ES-124 (vital) | 2-41-2 | MCMS | yes | ECR watch |

Note: After evacuating the AMMR, secure the supply fans. Do not secure exhaust ventilation until directed to do so by the RLL. (Activation of the water mist system automatically secures exhaust ventilation within the affected space.)

Note: After evacuating the AMMR, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

- _____ LC3-1VL-(3-36-2) vital lgt panel (located in passage, 1-29-0-L).

Section K: Tab 11, Reentry Points

A. Major Oil Leak/Fire in AMR.

The reentry point for a major oil leak or class bravo fire contained in AMR is at the discretion of the RLL. If possible, the primary reentry point is WTH 2-39-1.

B. Class Bravo Fire Out of Control in AMR.

The primary reentry point for AMR is through WTH 2-39-1.

- #1 hose supplied from AFFF hose reel 2-36-1.
- #2 hose supplied from fireplug 2-40-2.

There is no secondary reentry point for AMR. The only other access is the escape trunk (4-43-1-T), which is not a viable reentry point for a class bravo fire out of control.

Section L: Tab 12, De-smoking/Gas Freeing

A. Procedures for De-smoking AMR (installed ventilation system operable)

Use installed ventilation system for de-smoking AMR because of its high volume capacity. However, do not energize AMR ventilation until the engineering officer, with the repair electrician, assesses the condition of the ventilation electrical system and grants permission for its use.

Once the engineering officer grants permission to energize and restart the blowers, the repair electrician:

- Inspect the condition of the cables and transformers near ABT 2-41-2. This ABT supplies control voltage to AMR ventilation system. If satisfactory, direct switchboard operator to close breaker. Normal power is from 1S-4P-(2-41-1) and alternate is from 2S-4P-(2-41-1).
- Restart AMR ventilation using the controllers in passage (2-44-0-L). Start the exhaust ventilation on SLOW, working up to fast as load limits on SSDGs allow. Start supply blowers on SLOW.
- Continue until AMR is de-smoked, space de-watered, and atmospheric tests are satisfactory.

B. Procedures for De-smoking AMR (installed ventilation system not operable).

If the ventilation system is damaged, create a positive pressure outside of AMR to force smoke out the uptake space. Do this without allowing smoke to enter the interior of the ship.

De-smoking by opening doors and breaking smoke boundaries is not advised unless careful consideration is given to the path smoke might take. However, if necessary, open QAWTDs and WTHs to AMR. Anyone within this area requires an SCBA.

1. Set up natural convection by opening the following fittings:
 - QAWTD 2-37-1.
 - QAWTD 2-44-1.
 - QAWTD 2-44-2.
 - WTH 2-39-1.
2. Set positive ventilation on surrounding spaces to pressurize AMR and to force smoke up through the uptake space. However, since all ventilation is powered from the main switchboard, these switchboards will have to be energized.
3. Continue until AMR is de-smoked, space de-watered, and atmospheric tests are satisfactory.

B. Procedures for De-smoking AMR (Ship's ventilation system inoperable or no ship's power available).

De-smoking by opening doors/hatches and breaking smoke boundaries is not advised unless careful consideration is given to the path smoke will take. If ship's power is not available to operate installed ventilation, rig ram fans on the fo'c'sle and run the portable trunk as follows:

- a. Through QAWTD 01-28-1.
- b. Aft through QAWTD 01-29-1.
- c. Continue aft through NTD 01-38-1.
- d. Down through WTH 01-38-3.
- e. Forward and through QAWTD 1-37-1.
- f. Through QAWTD 1-37-3.
- g. Down through WTH 1-39-1.
- h. Through QAWTD 2-37-1.
- i. Down through WTH 2-39-1 into AMR (5-36-01-E).

Continue until AMR is de-smoked, space de-watered, and atmospheric tests are satisfactory.

C. Gas Free Engineer Post-fire Tests.

1. When the space is clear of smoke, test for oxygen between 19.5-22 percent, combustible gases less than 10 percent of the lower explosive limit, and any toxic gases below their threshold limit values, as per reference (b), Gas Free Engineering, NSTM Chapter 074, Volume 3, before certifying the space safe for personnel to enter without SCBAs.
2. After a flammable liquid fire has been extinguished, toxic gas tests for hydrocarbons, carbon dioxide, carbon monoxide, hydrogen chloride, hydrogen cyanide, and chlorine are required. The following are the threshold limit values for each test:

| | |
|-------------------------------------|----------|
| Hydrocarbons | none |
| Hydrogen Chloride/Hydrochloric Acid | 5 ppm |
| Carbon Dioxide | 5000 ppm |
| Hydrogen Cyanide/Hydrocyanic Acid | 10 ppm |
| Hydrogen Fluoride | 3 ppm |
| Chlorine | 1 ppm |
| Carbon Monoxide | 50 ppm |

3. Conduct tests near the center and all four-corners on each level, high and low, with a minimum of ten test points taken. Obtain at least one satisfactory test result at each test location.

Note: A compartment is considered "safe" only after satisfactory test results at all test locations are obtained. An unsatisfactory test result at any test point requires further ventilating and re-testing at all test points.

Appendix M: Ship Service Diesel Generator Room (2-76-5-E) In port Checklists

[Tab 1, Machinery Watchstander Checklist for Leak/Fire in SSDG Room](#)

[Tab 2, Quarterdeck Watchstander Checklist](#)

[Tab 3, RLL/OOD Checklist](#)

[Tab 4, Water Mist/AFFF Operator Checklist](#)

[Tab 5, Repair Locker Electrician Checklist](#)

[Tab 6, Medical Personnel Checklist](#)

[Tab 7, Smoke Boundaries/Smoke Control Zone](#)

[Tab 8, Ventilation](#)

[Tab 9, Fire Boundaries](#)

[Tab 10, Mechanical and Electrical Isolation](#)

[Tab 11, Reentry Points](#)

[Tab 12, De-smoking/Gas Freeing](#)

Section A: Tab 1, Machinery Watchstander Checklist for Leak/Fire in SSDG Room

A. Major Oil Leak/Fire in SSDG Room.

- _____ Secure affected equipment: Secure the source of the leak/fire immediately. If source cannot be secured, deflect oil to the deck.

- _____ Notify quarterdeck of casualty. Pass:
 - Casualty location.
 - Equipment affected.
 - Action taken.
 - Recommend setting general emergency per the machinery space fire doctrine.

- _____ Shoulder EEBD.

- _____ Set negative ventilation in SSDG room as per [Tab 8, Ventilation](#).

- _____ Set positive ventilation outside SSDG room (smoke control zone) as per [Tab 8, Ventilation](#).

- _____ Break out portable AFFF and PKP extinguishers on scene. Wash oil to the deck using AFFF extinguisher. Fight small, contained fires with PKP/AFFF extinguishers. If needed, fire hose stations with AFFF pick-up tubes may also be used to wash oil to the deck.

- _____ If initial actions are insufficient to vapor secure fuel/oil, energize AFFF overhead sprinkling for initial 2-minute dump.

Class Bravo Fire Out of Control in SSDG Room.

- _____ Complete checklist for leak/fire.
- _____ Notify quarterdeck that the fire is out of control.
- _____ Don and activate EEBDs.
- _____ Evacuate through nearest safe exit and return to ECR.
- _____ Activate AFFF overhead sprinkling in SSDG room for 2-minute initial dump.
start time: _____ end time: _____.
- _____ Activate water mist system for SSDG room.
start time: _____ end time: _____.
- _____ Mechanically and electrically isolate SSDG room as per [Tab 10, Mechanical and Electrical Isolation](#).
- _____ Secure ventilation in SSDG room as per [Tab 8, Ventilation](#).
- _____ Lay to Repair 2. Pass personnel, machinery, firefighting equipment status, and water mist/AFFF overhead sprinkling activation time.
- _____ Lay to in port WQSB once relieved by in port WQSB Machinery Watchstander.

Section B: Tab 2, Quarterdeck Watchstander Checklist

A. Major Oil Leak/Fire in SSDG Room.

- _____ Receive report from engineering watchstander.
- Casualty location.
 - Equipment affected.
 - Action taken.
 - Recommend setting general emergency as per the machinery space fire doctrine.

_____ Sound general alarm.

Pipe: *“[Fire, fire, fire] or [major oil leak] in the ship service diesel generator room, compartment 2-76-5-E, [upper/lower] level, [port side/stbd side/centerline], at frame [#]. All hands set general emergency per the machinery space fire doctrine, provide from Repair 2. All those not in today’s duty section muster on the quarterdeck. Set modified zebra. Do not set zebra on the firemain.”*

_____ Establish communications.

_____ Take charge of quarterdeck.

_____ Request assistance from adjacent vessels.

_____ Contact local fire department and request assistance.

_____ Notify co with nature and status of leak/fire.

_____ Muster off duty members on the quarterdeck.

_____ Order 2 P-100s rigged and connected to firemain.

_____ Provide RLL all necessary SCBA relief personnel and support.

_____ Receive report of initial 2-minute AFFF dump.

Pipe: *“Initial 2-minute AFFF overhead sprinkling activated in the ship service diesel generator room at time _____.”*

_____ Brief fire department personnel and other ship’s personnel when they arrive. Non-crew members are to be used for support only. They shall not take over firefighting efforts.

B. Class Bravo Fire Out of Control in SSDG Room.

_____ Ensure checklist for leak/fire is complete.

_____ When watchstander reports fire is out of control, SSDG room is evacuated, and the water mist system has been activated.

Pipe: *“Fire in the ship service diesel generator room is out of control. The ship service diesel generator room is being evacuated. The water mist system has been activated.”*

_____ When RLL reports second AFFF overhead sprinkling activated.

Pipe: *“2-minute reentry AFFF overhead sprinkling to the ship service diesel generator room activated at time _____.”*

_____ When RLL reports the fire team has reentered SSDG room.

Pipe: *“The fire team has reentered the ship service diesel generator room at time ____.”*

_____ When RLL reports class bravo fire is out.

Pipe: *“Class bravo fire is out in the ship service diesel generator room.”*

_____ Pipe reports as received from RLL.

_____ Monitor post-fire actions.

Section C: Tab 3, RLL/OOD Checklist

A. Major Oil Leak/Fire in SSDG Room.

- _____ Establish communications with quarterdeck and OSL.
- _____ Make reports to quarterdeck.
- _____ Manned and ready.
- _____ Set modified zebra.
- _____ Set fire boundaries as per [Tab 9, Fire Boundaries](#).
- _____ Set smoke boundaries/smoke control zone as per [Tab 7, Smoke Boundaries/Smoke Control Zone](#).
- _____ Set ventilation as per [Tab 8, Ventilation](#).
- _____ Establish SCBA primary change out station in Repair 2.
- _____ Check firemain pressure. Verify that automated control features of the machinery monitoring system maintain sufficient firemain pressure. If insufficient pressure, energize additional fire pumps manually.
- _____ Ensure following positions are filled prior to re-entry:
 - _____ OSL.
 - _____ ATL.
 - _____ #1 nozzleman.
 - _____ #1 hoseman.
 - _____ Plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
- _____ Dispatch investigators to verify:
 - _____ Sufficient fire pumps on-line and not overheating.
 - _____ Status of smoke/fire boundaries.
 - _____ Water mist/AFFF stations manned.
- _____ Dispatch fire party to passage 2-73-0-L for reentry.
- _____ Ensure firemain isolation valve 2-43-2FM (in crew stateroom 2-36-8-L) is OPEN.

B. Class Bravo fire Out of Control in SSDG Room.

- _____ Complete checklist for leak/fire.
- _____ Order a second 2-minute AFFF overhead sprinkling in SSDG room prior to reentry.
- _____ If not reported, order activation of the SSDG room water mist system.
- _____ Verify mechanical and electrical isolation is complete.
- _____ Order fire team to reenter SSDG room. Report reentry time to quarterdeck.
- _____ Verify SCBA start time from OSL.
- _____ Pass light-off times to quarterdeck.

Note: Upon reentry of SSDG room, the OSL, team leader, hose teams, boundarymen, and plugmen light-off their SCBAs. The OSL passes light-off times of these personnel to the RLL, who tracks this on the SCBA change-out schedule.

- _____ Send first set of SCBA reliefs to passage 2-70-1-L.
- _____ First set of reliefs light-off SCBAs when directed.
- _____ Pass light-off times to RLL.
- _____ Change out the following:
 - Team leader.
 - #1 nozzleman.
 - #1 hoseman.
- _____ Second set of reliefs light-off SCBAs when directed.
- _____ Pass light-off times to RLL.
- _____ Change out the following:
 - OSL.
 - #2 nozzleman.
 - #2A hoseman.
 - Plugmen.
- _____ Third set of reliefs light-off SCBAs when directed.
- _____ Pass light-off times to RLL.
- _____ Change out the boundarymen.

Note: Relieved personnel muster in Repair 2. Once RLL accounts for everyone, relieved personnel doff their FFEs and SCBAs, to be used by the next set of reliefs. Relieved personnel then report to the corpsman or his representative to cool down.

- _____ Pass word to the quarterdeck when the fire is out and reflash watch is set.
- _____ Initiate post-fire actions when requested by OSL.
- _____ Ensure post-fire personnel don and activate SCBA before reentry.
- _____ Overhaul fire.
- _____ Repair locker electrician investigate for electrical damage.
- _____ De-smoking.
- _____ De-watering.
- _____ Atmospheric testing.

Section D: Tab 4, Water Mist/AFFF Operator Checklist

A. Major Oil Leak/Fire in SSDG Room.

- _____ Don battle dress and SCBA.
- _____ Establish communications with RLL.
- _____ Report manned and ready to RLL.
- _____ Verify fire pumps on line and AFFF pump on line.
(120 psi showing at local gauge).
- _____ Verify that SSDG room AFFF and water mist supply valves are open.
- _____ Continually monitor water mist/AFFF tank levels and replenish as necessary.

B. Class Bravo Fire Out of Control in SSDG Room.

- _____ Complete checklist for leak/fire.
- _____ Activate SSDG room water mist system when ordered by RLL.
- _____ Activate SSDG room AFFF overhead sprinkling when ordered by RLL.
- _____ Close AFFF COV when ordered by RLL.
- _____ Secure water mist system when ordered by RLL.

Section E: Tab 5, Repair Locker Electrician Checklist

A. Major Oil Leak/Fire in SSDG Room.

_____ Don battle dress and SCBA.

_____ Perform electrical isolation as per [Tab 10, Mechanical and Electrical Isolation](#).
Maintain the current source of power until the space is evacuated. Do not secure lighting and power to firefighting equipment and ventilation.

B. Class Bravo Fire Out of Control in SSDG Room.

_____ Complete checklist for leak/fire.

_____ Perform electrical isolation as per [Tab 10, Mechanical and Electrical Isolation](#).

**Note: After evacuating the SSDG room, secure the supply fans.
Do not secure exhaust ventilation until directed by the RLL.
(Activation of the water mist system automatically secures exhaust ventilation within the affected space.)**

Note: After evacuating the SSDG room, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

_____ When ordered by RLL, report to SSDG room; investigate electrical damage to SSDG room ventilation and other systems as directed.

Section F: Tab 6, Medical Personnel Checklist

A. Major Oil Leak/Fire in SSDG Room.

- _____ Establish recovery area in crew messroom (1-52-01-L).
- _____ Establish communications with Repair 2 and quarterdeck.
- _____ Provide food, liquids, and dry clothing for personnel.

B. Class Bravo Fire Out of Control in SSDG Room.

- _____ Complete checklist for leak/fire.
- _____ Standby to assist with personnel casualties.

Section G: Tab 7, Smoke Boundaries/Smoke Control Zone

A. Major Oil Leak/Fire in SSDG Room.

1. Primary smoke boundaries:
2. Primary smoke boundaries:
 - Forward - frame 76.
 - Aft - frame 82.
3. Secondary smoke boundaries:
 - Forward - frame 70 (2nd deck)/frame 64 (main deck).
 - Aft - frame 88 (2nd deck)/frame (no secondary on main deck).
4. List of Smoke Curtain Locations:
 - QAWTD 2-76-1.
 - QAWTD 2-82-1.
 - QAWTD 1-76-0.
 - QAWTD 1-82-0.
 - Archway at FR 70 in passageway (1-64-0-L).
 - Archway at FR 67 in passageway (1-64-0-L).
5. Smoke control zone: for smoke control zone ventilation, see [Tab 11, Reentry Points](#).
 - Compartments on main deck from FR 64-86.
 - Passageways (1-76-0-L and 1-64-0-L).
 - Ship service intake filter (1-82-1-Q).
 - Vent trunk (1-82-3-Q).
 - Freeze storeroom (1-71-1-A).
 - Compartments on 2nd deck from FR 70-88.
 - Passageways (2-76-3-L, 2-70-1-L, and 2-82-01-L).
 - Crew staterooms (2-70-5-L and 2-82-3-L).
 - Fan room (2-82-1-Q).
 - Compartments below affected space from FR 76-82.
 - Central engineering storeroom (3-76-0-Q).
 - Compartments above affected space from FR 76-82.
 - Flight deck.

B. Class Bravo Fire Out of Control in SSDG Room.

Same as above.

Section H: Tab 8, Ventilation

C. Major Oil Leak/Fire in SSDG Room.

1. Set negative ventilation in SSDG room by placing supply fans on (LOW), exhaust fans on (HIGH).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-65 (vital) | 1-81-1 | MCMS | yes | ECR watch |
| ES-121 (vital) | 1-80-5 | MCMS | yes | ECR watch |

2. Set positive ventilation outside SSDG room (smoke control zone) as follows:

- a. Place supply fans outside SSDG room on (HIGH).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-61(non-vital) | 2-84-1 | MCMS | yes | ECR watch |

- b. Exhaust fans and Recirculation fans outside SSDG room (SECURE).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| ES-111 (non-vital) | 1-81-1 | MCMS | yes | ECR watch |
| RS-13 (non-vital) | 2-83-1 | MCMS | yes | ECR watch |
| FCA-20 (vital) | 2-95-2 | MCMS | yes | ECR watch |
| FCA-21 (vital) | 2-95-1 | MCMS | yes | ECR watch |
| FCA-27 (non-vital) | 2-81-2 | MCMS | yes | ECR watch |

D. Class Bravo Fire Out of Control in SSDG Room.

Exhaust ventilation in SSDG room remains on while the water mist system is activated. All other ventilation shall be secured when the fire is out of control.

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-65 (vital) | 1-81-1 | MCMS | yes | ECR watch |
| ES-121 (vital) | 1-80-5 | MCMS | yes | ECR watch |

Section I: Tab 9, Fire Boundaries

A. Major Oil Leak/Fire in SSDG Room.

- Primary fire boundaries.
 - Forward - bulkhead 76.
 - Aft. - bulkhead 82.
 - Above. - flight deck from frame 76 to 82.
 - Below - central engineering storeroom (3-76-0-Q).

- Secondary fire boundaries.
 - Forward - bulkhead 52, main deck and above.
 - Forward - bulkhead 70, 2nd deck and below.
 - Aft - none, main deck and above.
 - Aft - bulkhead 88, 2nd deck and below.
 - Below - fuel oil tanks (5-76-0-F And 5-76-1-F).

B. Class Bravo Fire Out of Control in SSDG Room.

Same as above.

Section J: Tab 10, Mechanical and Electrical Isolation

A. Major Oil Leak/Fire in SSDG Room.

Mechanical isolation – Secure propulsion machinery as per reference (b), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3.

Electrical isolation - Maintain power until evacuation. Do not secure lighting and power to firefighting equipment and ventilation. Watch stations listed below secure/de-energize the following systems:

- a. Main switchboard operator (personnel in ECR): Ensure that the following breakers are opened:

| | | |
|-------|----------------------|---------------------------------------------------------------|
| _____ | 3S-4P-3G | 3S to #3 SSDG (machinery monitoring system. or open locally). |
| _____ | 1S-4P-3S | #1 stbd bus tie breaker. |
| _____ | 2S-4P-3S | #2 stbd bus tie breaker. |
| _____ | SP(1)-4PS-1SP | shore power breaker. |
| _____ | SP(2)-4PS-1SP | shore power breaker. |
| _____ | SP(Repair 3)-4PS-1SP | shore power breaker. |
| _____ | SP(4)-4PS-1SP | shore power breaker. |
| _____ | SP(5)-4PS-1SP | shore power breaker. |
| _____ | SP(6)-4PS-1SP | shore power breaker. |
| _____ | SP(7)-4PS-1SP | shore power breaker. |

- b. Repair Locker Electrician:

| | | |
|-------|----------------|----------------------------------------|
| _____ | (1-79-1)-1L-A | ovhd ltg, main deck passage, FR 76-82. |
| _____ | (1-79-1)-1L-C | haz lkrs, main deck, FR 76-82. |
| _____ | (1-79-1)-1VL-B | vital lighting. |
| _____ | (1-79-1)-1VL-F | ltg main and 2 nd deck. |
| _____ | (1-79-1)-1VL-D | haz lkrs, main deck, FR 76-82. |
| _____ | (1-79-1)-1L-D | receptacles. |

B. Class Bravo Fire Out of Control in SSDG Room.

1. Mechanical isolation - The following is to be performed when there is a class bravo fire out of control in SSDG room:

- _____ #3 SSDG.
- _____ Fuel oil COV 1-81-1.
- _____ Start air COV 3-57-1.

2. Electrical isolation – Secure these items to secure all power in the SSDG room. They include the remaining power to firefighting equipment and ventilation. Secure/de-energize the following systems:

- a. Main switchboard operator (personnel in ECR):
 (* List electrical isolations for EOW).

- b. Repair locker electrician:

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|----------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-65 (vital) | 1-81-1 | MCMS | yes | ECR watch. |
| ES-121 (vital) | 1-80-5 | MCMS | yes | ECR watch. |

Note: After evacuating the SSDG room, secure the supply fans. Do not secure exhaust ventilation until directed to do so by the RLL. (Activation of the water mist system automatically secures exhaust ventilation within the affected space.)

Note: After evacuating the SSDG room, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

- _____ LC3-1VL-(1-79-1) vital ltg panel (1-76-0-L).
- _____ LC2-1L-(1-79-1) ltg panel (1-76-0-L).

Section K: Tab 11, Reentry Points

A. Major Oil Leak/Fire in SSDG Room.

Reentry point for a major oil leak or class bravo fire contained in SSDG room is at the discretion of the RLL. If possible, the primary reentry point is QAWTD 2-76-3.

B. Class Bravo Fire Out of Control in SSDG Room.

- The primary reentry point for the SSDG room is through QAWTD 2-76-3.
 - #1 hose supplied from fireplug 2-76-1.
 - #2 hose supplied from fireplug 2-84-1.
- The secondary reentry point for the SSDG room is through QAWTD 1-80-1.
 - #1 hose supplied from AFFF hose reel 1-80-1.
 - #2 hose supplied from fireplug 1-77-1.

Section L: Tab 12, De-smoking/Gas Freeing

A. Procedures for De-smoking SSDG Room (installed ventilation system operable)

Use the installed ventilation system for de-smoking SSDG room after a fire because of its high volume capacity. However, do not energize SSDG room ventilation until its condition is assessed by the engineering officer, with the repair electrician, to determine the condition of the ventilation electrical system and declare the system operational. The Repair Electrician:

1. Inspects the cables and transformers near ABT 2-80-2. This ABT supplies control voltage to SSDG room ventilation system. If satisfactory, direct switchboard operator to close breaker. Normal power is from 3S-4P-(2-79-2) and alternative is from 1S-4P-(2-79-2).
2. Once inspected, request and receive the engineering officer's permission to energize the blowers. To energize and restart the blowers:
 - a. Restart SSDG room ventilation using the controllers in SSDG room (2-76-5-Q). Start exhaust ventilation on SLOW, working up to fast as load limits on SSDGs allow. Start supply blowers on SLOW.
 - b. Continue until SSDG room is de-smoked, space de-watered, and atmospheric tests are satisfactory.

B. Procedures for De-smoking SSDG Room (installed ventilation system not operable).

De-smoking by opening doors and breaking smoke boundaries is not advised unless careful consideration is given to the path smoke will take. However, to de-smoke the SSDG room when the ventilation system is damaged, run a ram fan with a portable trunk from the SSDG room to the fantail. Anyone within this area must wear an SCBA.

1. Set up a ram fan on the fantail and run the portable trunk as follows:
 - a. Forward through QAWTD 1-82-0.
 - b. Continue forward through QAWTD 1-80-1 into SSDG room (2-76-5-E).
2. Set positive ventilation on surrounding spaces to help prevent the spread of smoke. However, since all ventilation is powered from the main switchboard, these switchboards will have to be energized. For smoke control zone ventilation, see [Tab 11, Reentry Points](#).
3. Continue until SSDG room is de-smoked, space de-watered, and atmospheric tests are satisfactory.

C. Gas Free Engineer Post-fire Tests.

1. When the space is clear of smoke, test for oxygen between 19.5-22 percent, combustible gases less than 10 percent of the lower explosive limit, and toxic gases below their threshold limit values, as per reference (e), Gas Free Engineering, NSTM Chapter 074, Volume 3, before certifying the space safe for personnel to enter without SCBAs.
2. After a flammable liquid fire is extinguished, perform toxic gas tests for hydrocarbons, carbon dioxide, carbon monoxide, hydrogen chloride, hydrogen cyanide, and chlorine. The following are threshold limit values for each test:

| | |
|-------------------------------------|----------|
| Hydrocarbons | none |
| Hydrogen Chloride/Hydrochloric Acid | 5 ppm |
| Carbon Dioxide | 5000 ppm |
| Hydrogen Cyanide/Hydrocyanic Acid | 10 ppm |
| Hydrogen Fluoride | 3 ppm |
| Chlorine | 1 ppm |
| Carbon Monoxide | 50 ppm |

3. Conduct tests near the center and all four-corners on each level, high and low, with a minimum of ten test points taken. Obtain at least one satisfactory test result at each test location.

Note: A compartment is considered “safe” only after satisfactory test results at all test locations are obtained. An unsatisfactory test result at any test point requires further ventilating and re-testing at all test points.

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Appendix N: Incinerator Room (1-47-1-Q) In port Checklist

[Tab 1, Machinery Watchstander Checklist for Leak/Fire in Incinerator Room](#)

[Tab 2, Quarterdeck Watchstander Checklist](#)

[Tab 3, RLL/OOD Checklist](#)

[Tab 4, AFFF Operator Checklist](#)

[Tab 5, Repair Locker Electrician Checklist](#)

[Tab 6, Medical Personnel Checklist](#)

[Tab 7, Smoke Boundaries/Smoke Control Zone](#)

[Tab 8, Ventilation](#)

[Tab 9, Fire Boundaries](#)

[Tab 10, Mechanical and Electrical Isolation](#)

[Tab 11, Reentry Points](#)

[Tab 12, De-smoking/Gas Freeing](#)

Section A: Tab 1, Machinery Watchstander Checklist for Leak/Fire in Incinerator Room

A. Major Oil Leak/Fire in Incinerator Room.

- _____ Secure affected equipment: Secure the source of the leak/fire immediately. If source cannot be secured, deflect oil to the deck.

- _____ Notify quarterdeck of casualty. Pass:
 - Casualty location.
 - Equipment affected.
 - Action taken.
 - Recommend setting general emergency per the machinery space fire doctrine.

- _____ Shoulder EEBD.

- _____ Set negative ventilation in incinerator room as per [Tab 8, Ventilation](#).

- _____ Set positive ventilation outside incinerator room (smoke control zone) as per [Tab 8, Ventilation](#).

- _____ Break out portable AFFF and PKP extinguishers on scene. Cover fuel oil with a layer of AFFF from portable extinguisher. Fight small, contained fires with PKP/AFFF extinguishers. If needed, fire hose stations with AFFF pick-up tubes may also be used to wash oil to the deck.

- _____ If initial actions are insufficient to vapor secure space, energize AFFF overhead sprinkling for initial 2-minute dump.

B. Class Bravo Fire Out of Control in Incinerator Room.

- _____ Complete checklist for leak/fire.
- _____ Notify quarterdeck that the fire is out of control.
- _____ Don and activate EEBDs.
- _____ Evacuate through nearest safe exit and return to ECR.
- _____ Activate AFFF overhead sprinkling in incinerator room for 2-minute initial dump.
start time: _____ end time: _____.
- _____ Mechanically and electrically isolate incinerator room as per [Tab 10, Mechanical and Electrical Isolation](#).
- _____ Secure ventilation in incinerator room as per [Tab 8, Ventilation](#).
- _____ Lay to Repair 2. Pass personnel, machinery, firefighting equipment status, and AFFF overhead sprinkling activation time.
- _____ Lay to in port WQSB once relieved by in port WQSB machinery watchstander.

Section B: Tab 2, Quarterdeck Watchstander Checklist

A. Major Oil Leak/Fire in Incinerator Room.

- _____ Receive report from engineering watchstander.
- Casualty location.
 - Equipment affected.
 - Action taken.
 - Recommend setting general emergency as per the machinery space fire doctrine.
- _____ Sound general alarm.
- Pipe:** *“[Fire, fire, fire] or [major oil leak] in the incinerator room, compartment 1-47-1-Q. All hands set general emergency per the machinery space fire doctrine, provide from Repair 2. All those not in today’s duty section muster on the quarterdeck. Set modified zebra. Do not set zebra on the firemain.”*
- _____ Establish communications.
- _____ Take charge of quarterdeck.
- _____ Request assistance from adjacent vessels.
- _____ Contact local fire department and request assistance.
- _____ Notify CO with nature and status of leak/fire.
- _____ Muster off duty members on the quarterdeck.
- _____ Order 2 P-100s rigged and connected to firemain.
- _____ Provide RLL all necessary SCBA relief personnel and support.
- _____ Receive report of initial 2-minute AFFF dump.
- Pipe:** *“Initial 2-minute AFFF overhead sprinkling activated in the incinerator room at time. _____.”*
- _____ Brief fire department personnel and other ship’s personnel when they arrive. Non-crew members are to be used for support only. They shall not take over firefighting efforts.

B. Class bravo Fire Out of Control in Incinerator Room.

_____ Ensure checklist for leak/fire is complete.

_____ When watchstander reports fire is out of control, incinerator room is evacuated.

Pipe: *“Fire in the incinerator room is out of control. The incinerator room is being evacuated.”*

_____ When RLL reports second AFFF overhead sprinkling activated.

Pipe: *“2-minute reentry AFFF overhead sprinkling to the incinerator room activated at time _____.”*

_____ When RLL reports the fire team has reentered incinerator room.

Pipe: *“The fire team has reentered the incinerator room at time _____.”*

_____ When RLL reports class bravo fire is out.

Pipe: *“Class bravo fire is out in the incinerator room.”*

_____ Pipe reports as received from RLL.

_____ Monitor post-fire actions.

Section C: Tab 3, RLL/OOD Checklist

A. Major Oil Leak/Fire in Incinerator Room.

- _____ Establish communications with quarterdeck and OSL.
- _____ Make reports to quarterdeck.
- _____ Manned and ready.
- _____ Set modified zebra.
- _____ Set fire boundaries as per [Tab 9, Fire Boundaries](#).
- _____ Set smoke boundaries/smoke control zone as per [Tab 7, Smoke Boundaries/Smoke Control Zone](#).
- _____ Set ventilation as per [Tab 8, Ventilation](#).
- _____ Establish SCBA primary change out station in Repair 2.
- _____ Check firemain pressure. Verify that automated control features of the machinery monitoring system maintain sufficient firemain pressure. If insufficient pressure, energize additional fire pumps manually.
- _____ Ensure following positions are filled prior to re-entry:
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.
- _____ Dispatch investigators to verify
 - _____ Sufficient fire pumps on-line and not overheating.
 - _____ Status of smoke/fire boundaries.
 - _____ AFFF stations manned.
- _____ Dispatch fire party to crew messroom 1-52-01-L for reentry.
- _____ Ensure firemain isolation valve 2-43-2FM (in crew stateroom 2-36-8-L) is OPEN.

B. Class Bravo Fire Out of Control in Incinerator Room.

- _____ Complete checklist for leak/fire.
- _____ Order a second 2-minute AFFF overhead sprinkling in incinerator room prior to reentry.
- _____ Verify mechanical and electrical isolation is complete.
- _____ Order fire team to reenter incinerator room. Report reentry time to quarterdeck.
- _____ Verify SCBA start time from OSL.
- _____ Pass light-off times to quarterdeck.

Note: Upon reentry of incinerator room, the OSL, team leader, hose teams, boundarymen, and plugmen light-off their SCBAs. OSL passes light-off times of these personnel to the RLL who is tracking this on the SCBA change-out schedule.

- _____ Send first set of SCBA Reliefs to crew messroom 1-52-01-L.
- _____ First set of reliefs light-off SCBAs when directed.
- _____ Pass light-off times to RLL.
- _____ Change out the following:
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary Plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.

_____ Second set of reliefs light-off SCBAs when directed.

_____ Pass light-off times to RLL.

_____ Change out the following:

_____ OSL.

_____ ATL.

_____ Primary nozzleman.

_____ Primary hoseman.

_____ Primary Plugman.

_____ Backup hose nozzleman.

_____ Backup hose hoseman.

_____ Backup hose plugman.

_____ Third set of reliefs light-off SCBAs when directed.

_____ Pass light-off times to RLL.

_____ Change out the boundarymen.

Note: Personnel being relieved muster in Repair 2. Once the RLL accounts for everyone, relieved personnel doff their FFEs and SCBAs, to be used by the next set of reliefs. Relieved personnel then report to the corpsman or his representative to cool down.

_____ Pass word to the quarterdeck when the fire is out and reflash watch is set.

_____ Initiate post-fire actions when requested by OSL.

_____ Ensure post-fire personnel don and activate SCBA before reentry.

_____ Overhaul fire.

_____ Repair locker electrician investigate for electrical damage.

_____ De-smoking.

_____ De-watering.

_____ Atmospheric testing.

Section D: Tab 4, AFFF Operator Checklist

A. Major Oil Leak/Fire in Incinerator Room.

- _____ Don battle dress and SCBA.
- _____ Establish communications with RLL.
- _____ Report manned and ready to RLL.
- _____ Verify fire pumps on line and AFFF pump on line.
(120 psi showing at local gauge).
- _____ Verify that incinerator room AFFF supply valves are open.
- _____ Continually monitor AFFF tank level and replenish as necessary.

B. Class Bravo Fire Out of Control in Incinerator Room.

- _____ Complete checklist for leak/fire.
- _____ Activate incinerator room AFFF overhead sprinkling when ordered by RLL.
- _____ Close AFFF COV when ordered by RLL.

Section E: Tab 5, Repair Locker Electrician Checklist

A. Major Oil Leak/Fire in Incinerator Room.

_____ Don battle dress and SCBA.

_____ Perform electrical isolation as per [Tab 10, Mechanical and Electrical Isolation](#).
Maintain the current source of power until the space is evacuated. Do not secure lighting and power to firefighting equipment and ventilation.

B. Class Bravo Fire Out of Control in Incinerator Room.

_____ Complete checklist for leak/fire.

_____ Perform electrical isolation as per [Tab 10, Mechanical and Electrical Isolation](#).

Note: After evacuating the SSDG room, secure the supply fans.

Note: After evacuating the SSDG room, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

_____ When ordered by RLL, report to incinerator room; investigate electrical damage to incinerator room ventilation and other systems as directed.

Section F: Tab 6, Medical Personnel Checklist

A. Major Oil Leak/Fire in Incinerator Room.

- _____ Establish recovery area in sickbay (1-73-2-L).
- _____ Establish communications with Repair 2 and quarterdeck.
- _____ Provide food, liquids, and dry clothing for personnel.

B. Class Bravo Fire Out of Control in Incinerator Room.

- _____ Complete checklist for leak/fire.
- _____ Standby to assist with personnel casualties.

Section G: Tab 7, Smoke Boundaries/Smoke Control Zone

A. Major Oil Leak/Fire in Incinerator Room.

- Primary smoke boundaries:
 - Forward - frame 47.
 - Aft - frame 52.
- Secondary smoke boundaries:
 - Forward - frame 44.
 - Aft - frame 64.
- List of smoke curtain locations:
 - QAWTD 1-52-1.
 - QAWTD 1-52-2.
 - Archway, FR 64, crew messroom (1-52-01-L).
 - Archway in athwartships passageway (1-44-0-L), FR 44 starboard.
 - Archway in athwartships passageway (1-44-0-L), FR 44 port.
- Smoke control zone ventilation.
 - Compartments on main deck from FR 44-55:
 - Scullery (1-52-1-Q).
 - Trash stowage holding and staging room (1-44-1-Q).
 - Compartments on 01 deck from FR 47-52:
 - None – weather deck (will require cooling from closest fireplug).
 - Compartments on 2nd deck from FR 47-52:
 - Rescue station (2-48-1-Q).
 - Fan room (2-44-3-Q).

B. Class Bravo Fire Out of Control in Incinerator Room.

Same as above.

Section H: Tab 8, Ventilation

A. Major Oil Leak/Fire in Incinerator Room.

1. Set negative ventilation in incinerator room by placing supply fans on (LOW), exhaust fans on (HIGH).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-55 (non-vital) | 1-50-1 | MCMS | yes | ECR watch. |
| ES-105 (non-vital) | 1-46-1 | MCMS | yes | ECR watch. |

2. Set positive ventilation outside incinerator room (smoke control zone) as follows:

- a. Place supply fans outside incinerator room on (HIGH).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|-------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-64 (vital) | 2-44-1 | MCMS | yes | ECR watch. |
| SS-68 (vital) | 1-44-1 | MCMS | yes | ECR watch. |
| SS-54 (non-vital) | 2-32-1 | MCMS | yes | ECR watch. |
| SS-69 (non-vital) | 2-46-1 | MCMS | yes | ECR watch. |
| SS-71 (non-vital) | 03-39-0 | MCMS | yes | ECR watch. |
| TPSS-70 (vital) | 02-41-2 | MCMS | yes | ECR watch. |

- b. Exhaust fans and recirculation fans outside incinerator room (secure).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| ES-120 (vital) | 2-45-1 | MCMS | yes | ECR watch. |
| ES-124 (vital) | 2-41-2 | MCMS | yes | ECR watch. |
| ES-104 (non-vital) | 2-32-1 | MCMS | yes | ECR watch. |
| ES-116 (non-vital) | 1-45-1 | MCMS | yes | ECR watch. |
| TPES-125 (vital) | 02-38-2 | MCMS | yes | ECR watch. |
| RS-1 (vital) | 02-29-3 | MCMS | yes | ECR watch. |
| RS-2(vital) | 02-30-1 | MCMS | yes | ECR watch. |
| RS-3 (vital) | 02-42-2 | MCMS | yes | ECR watch. |
| RS-32 (vital) | 02-39-2 | MCMS | yes | ECR watch. |
| RS-4 (non-vital) | 02-38-4 | MCMS | yes | ECR watch. |
| RS-6 (non-vital) | 1-41-2 | MCMS | yes | ECR watch. |
| RS-14 (non-vital) | 2-45-1 | MCMS | yes | ECR watch. |
| RS-16 (non-vital) | 1-43-2 | MCMS | yes | ECR watch. |
| RS-31 (non-vital) | 2-37-1 | MCMS | yes | ECR watch. |
| RS-33 (non-vital) | 1-37-1 | MCMS | yes | ECR watch. |
| FCA-26 (non-vital) | 1-50-2 | MCMS | yes | ECR watch. |
| FCA-28 (non-vital) | 2-49-2 | MCMS | yes | ECR watch. |

B. Class Bravo Fire Out of Control in Incinerator Room.

All ventilation shall be secured when the fire is out of control and space has been evacuated.

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-55 (non-vital) | 1-50-1 | MCMS | yes | ECR watch. |
| ES-105 (non-vital) | 1-46-1 | MCMS | yes | ECR watch. |

Section I: Tab 9, Fire Boundaries

A. Major Oil Leak/Fire in Incinerator Room.

- Primary fire boundaries.
 - Forward - bulkhead 47, 2nd deck to 01 deck.
 - Aft. - bulkhead 52, 2nd deck to 01 deck.
 - Above - main deck from frame 47 to 52.
- Secondary fire boundaries.
 - Forward - bulkhead 44, 3rd deck and above.
 - Aft - bulkhead 64, 3rd deck and above.
 - Above - 01 deck from frame 44 to 64.

B. Class Bravo Fire Out of Control in Incinerator Room.

Same as above.

Section J: Tab 10, Mechanical and Electrical Isolation

A. Major Oil Leak/Fire in Incinerator Room.

1. Mechanical isolation - Secure propulsion machinery as per standard procedures in reference (c), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3. In the event of a fuel leak/fire in the incinerator room, secure the following:

_____ Incinerator.
_____ Preheater #78.
_____ Unit heater #11.
_____ Mid-ship capstan.

2. Electrical isolation - Maintain power until evacuation. Do not secure lighting and power to firefighting equipment and ventilation. Watch stations listed below secure/de-energize the following systems:

- Main switchboard operator (personnel in ECR): Ensure that the following breakers are open:
 - * add any electrical isolations to be made from ECR.

- Repair locker electrician:

_____ (1-40-1)-4P-D incinerator.
_____ (1-40-1)-4P-F preheater #78.
_____ (1-40-1)-4P-K unit heater #11.
_____ (1-40-1)-4P-M mid-ship capstan.
_____ (1-36-1)-4P-B receptacles.
_____ (1-36-1)-4P-C receptacles.

B. Class Bravo Fire Out of Control in Incinerator Room.

1. Mechanical isolation - Watch stations listed below secure/de-energize the following systems are when there is a class bravo fire out of control in incinerator room.

_____ Incinerator preheater #78.

_____ Unit heater #11.

_____ Mid-ship capstan.

_____ Fuel oil COV 1-47-1.

_____ Fuel oil COV 1-47-5.

2. Electrical isolation – Secure these items to secure all power in the incinerator room. They include the remaining power to firefighting equipment and ventilation. Secure/de-energize the following systems:

- Main switchboard operator (personnel in ECR):
(* List electrical isolations for EOW).
- Repair locker electrician:

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-55 (non-vital) | 1-50-1 | MCMS | yes | ECR watch. |
| SS-55 (vital) | 1-50-1 | MCMS | yes | ECR watch. |
| ES-105 (non-vital) | 1-46-1 | MCMS | yes | ECR watch. |

Note: After evacuating the incinerator room, secure ventilation.

Note: After evacuating the incinerator room, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

_____ (1-36-1)-1VL-D ovhd lgt, mn dk passage, FR 44-52.

_____ (1-36-1)-1L-H ovhd lgt, mn dk passage, FR 44-52.

_____ (1-36-1)-1VL-H incinerator room lgt.

_____ (1-36-1)-1L-K incinerator room lgt.

_____ (1-36-1)-1L-M table lamps, officer SR.

Section K: Tab 11, Reentry Points

A. Major Oil Leak/Fire in Incinerator Room

Reentry point for a major oil leak or class bravo fire contained in incinerator room is at the discretion of the RLL. If possible, the primary reentry point is NTD 1-46-3.

B. Class Bravo Fire Out of Control in Incinerator Room

- The primary reentry point for the incinerator room is through QAWTD 1-46-1 to the trash stowage holding and staging room (1-44-1-Q), then aft through NTD 1-46-3 into the incinerator room.
 - #1 hose supplied from fireplug 1-45-1.
 - #2 hose supplied from fireplug 1-45-2.
- The secondary reentry point for the incinerator room is through QAWTD 1-48-1, from passageway (1-44-0-L), then through NTD 1-48-3 into the incinerator room.
 - #1 hose supplied from fireplug 1-45-1.
 - #2 hose supplied from fireplug 1-45-2.

Section L: Tab 12, De-smoking/Gas Freeing

A. Procedures for De-smoking Incinerator Room (installed ventilation system operable)

Use the installed ventilation for de-smoking the incinerator room after a fire because of its high volume capacity. However, do not energize incinerator room ventilation until its condition is assessed by the engineering officer, with the repair electrician, to determine the condition of the ventilation electrical system and declare the system operational.

The repair electrician:

1. Inspects the cables and transformers near the incinerator room ventilation system. If satisfactory, direct the switchboard operator to close the breaker.
2. Once inspected, request and receive the engineering officer's permission to energize the blowers. To energize and restart the blowers:
 - a. Restart incinerator room ventilation using controllers in passage (1-47-1-Q) and trash holding and staging room (1-44-1-Q). Start exhaust ventilation on SLOW, working up to fast as load limits on SSDGs allow. Start supply blowers on SLOW.
 - b. Continue until incinerator room is de-smoked, space de-watered, and atmospheric tests are satisfactory.

B. Procedures for De-smoking Incinerator Room (installed ventilation system not operable).

De-smoking by opening doors and breaking smoke boundaries is not advised unless careful consideration is given to the path smoke will take. Anyone within this area requires an SCBA. However, to de-smoke the incinerator room if the ventilation system has been damaged, open the incinerator room to the atmosphere as much as possible without allowing smoke to enter interior of the ship.

1. Remove a section of the incinerator exhaust ducting in the trash stowage holding and staging room. Set up a ram fan at the exhaust duct opening and run the portable trunk through NTD 1-46-3 into the incinerator room.
2. Set positive ventilation on surrounding spaces to help prevent the spread of smoke. However, since all ventilation is powered from the main switchboard, energize this switchboard. See [Tab 8, Ventilation](#) for smoke control zone ventilation.
3. Continue until the incinerator room is de-smoked, space de-watered, and atmospheric tests are satisfactory.

C. Gas Free Engineer Post-fire Tests.

1. When the space is clear of smoke, test for oxygen between 19.5-22 percent, combustible gases less than 10 percent of the lower explosive limit, and any toxic gases below their threshold limit values, as per reference (e), Gas Free Engineering, NSTM Chapter 074, Volume 3, before certifying the space safe for personnel to enter without SCBAs.
2. After a flammable liquid fire is extinguished, toxic gas tests for hydrocarbons, carbon dioxide, carbon monoxide, hydrogen chloride, hydrogen cyanide, and chlorine are required. The following are the threshold limit values for each test:

| | |
|-------------------------------------|----------|
| Hydrocarbons | none |
| Hydrogen Chloride/Hydrochloric Acid | 5 ppm |
| Carbon Dioxide | 5000 ppm |
| Hydrogen Cyanide/Hydrocyanic Acid | 10 ppm |
| Hydrogen Fluoride | 3 ppm |
| Chlorine | 1 ppm |
| Carbon Monoxide | 50 ppm |

3. Conduct tests near the center and all four-corners on each level, high and low, with a minimum of ten test points taken. Obtain at least one satisfactory test result at each test location.

Note: A compartment is considered “safe” only after obtaining satisfactory test results at all test locations. An unsatisfactory test result at any test point requires further ventilating and re-testing at all test points.

Appendix O: JP-5 Pump Room (3-64-2-E) In port Checklists

[Tab 1, Machinery Watchstander Checklist for Leak/Fire in JP-5 Pump Room](#)

[Tab 2, Quarterdeck Watchstander Checklist](#)

[Tab 3, RLL/OOD Checklist](#)

[Tab 4, AFFF Operator Checklist](#)

[Tab 5, Repair Locker Electrician Checklist](#)

[Tab 6, Medical Personnel Checklist](#)

[Tab 7, Smoke Boundaries/Smoke Control Zone](#)

[Tab 8, Ventilation](#)

[Tab 9, Fire Boundaries](#)

[Tab 10, Mechanical and Electrical Isolation](#)

[Tab 11, Reentry Points](#)

[Tab 12, De-smoking/Gas Freeing](#)

Section A: Tab 1, Machinery Watchstander Checklist for Leak/Fire in JP-5 Pump Room

A. Major Oil Leak/Fire in JP-5 Pump Room.

- _____ Secure affected equipment: secure the source of the leak/fire immediately. If source cannot be secured, deflect oil to the deck.
- _____ Notify quarterdeck of casualty. Pass:
- Casualty location.
 - Equipment affected.
 - Action taken.
 - Recommend setting general emergency per the machinery space fire doctrine.
- _____ Shoulder EEBD.
- _____ Set negative ventilation in JP-5 pump room as per [Tab 8, Ventilation](#).
- _____ Set positive ventilation outside JP-5 pump room (smoke control zone) as per [Tab 8, Ventilation](#).
- _____ Break out portable AFFF and PKP extinguishers on scene. Cover fuel oil with a layer of AFFF from portable extinguisher. Fight small, contained fires with PKP/AFFF extinguishers. If needed, fire hose stations with AFFF pick-up tubes may also be used to wash oil to the deck.
- _____ If initial actions are insufficient to vapor secure space, energize AFFF overhead sprinkling for initial 2-minute dump.

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

- _____ Complete checklist for leak/fire.
- _____ Notify quarterdeck that the fire is out of control.
- _____ Don and activate EEBDs.
- _____ Evacuate through nearest safe exit and return to ECR.
- _____ Activate AFFF overhead sprinkling in JP-5 pump room for 2-minute initial dump.
start time: _____ end time: _____.
- _____ Mechanically and electrically isolate JP-5 pump room as per [Tab 10, Mechanical and Electrical Isolation](#).
- _____ Secure ventilation in JP-5 pump room as per [Tab 8, Ventilation](#).
- _____ Lay to Repair 2. Pass personnel, machinery, firefighting equipment status, and AFFF overhead sprinkling activation time.
- _____ Lay to in port WQSB once relieved by in port WQSB machinery watchstander.

Section B: Tab 2, Quarterdeck Watchstander Checklist

A. Major Oil Leak/Fire in JP-5 Pump Room.

- _____ Receive report from engineering watchstander.
- Casualty location.
 - Equipment affected.
 - Action taken.
 - Recommend setting general emergency as per the machinery space fire doctrine.

_____ Sound general alarm.

Pipe: *“[FIRE, FIRE, FIRE] or [MAJOR OIL LEAK] in the JP-5 pump room, compartment 3-64-2-E. All hands set general emergency per the machinery space fire doctrine, provide from Repair 2. All those not in today’s duty section muster on the quarterdeck. Set modified zebra. Do not set zebra on the firemain.”*

_____ Establish communications.

_____ Take charge of quarterdeck.

_____ Request assistance from adjacent vessels.

_____ Contact local fire department and request assistance.

_____ Notify CO with nature and status of leak/fire.

_____ Muster off duty members on the quarterdeck.

_____ Order 2 P-100s rigged and connected to firemain.

_____ Provide RLL all necessary SCBA relief personnel and support.

_____ Receive report of initial 2-minute AFFF dump.

Pipe: *“Initial 2-minute AFFF overhead sprinkling activated in the JP-5 pump room at time. _____.”*

_____ Brief fire department personnel and other ship’s personnel when they arrive. Non-crew members are to be used for support only. They shall not take over firefighting efforts.

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

_____ Ensure checklist for leak/fire is complete.

_____ When watchstander reports fire is out of control, JP-5 pump room is evacuated.

Pipe: *“Fire in the JP-5 pump room is out of control. The JP-5 pump room is being evacuated.”*

_____ When RLL reports: Second AFFF overhead sprinkling activated.

Pipe: *“2-minute reentry AFFF overhead sprinkling to the JP-5 pump room activated at time. _____.”*

_____ When RLL reports: The fire team has reentered JP-5 pump room.

Pipe: *“The fire team has reentered the JP-5 pump room at time. _____.”*

_____ When RLL reports: class bravo fire is out.

Pipe: *“class bravo Fire is out in the JP-5 pump room.”*

_____ Pipe reports as received from RLL.

_____ Monitor post-fire actions.

Section C: Tab 3, RLL/OOD Checklist

A. Major Oil Leak/Fire in JP-5 Pump Room.

- _____ Establish communications with quarterdeck and OSL.
- _____ Make reports to quarterdeck.
- _____ Manned and ready.
- _____ Set modified zebra.
- _____ Set fire boundaries as per [Tab 9, Fire Boundaries](#).
- _____ Set smoke boundaries/smoke control zone as per [Tab 7, Smoke Boundaries/Smoke Control Zone](#).
- _____ Set ventilation as per [Tab 8, Ventilation](#).
- _____ Establish SCBA primary change out station in Repair 2.
- _____ Check firemain pressure. Verify that automated control features of the machinery monitoring system maintain sufficient firemain pressure. If insufficient pressure, energize additional fire pumps manually.
- _____ Ensure the following positions are filled prior to re-entry:
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.
- _____ Dispatch investigators to verify:
 - _____ Sufficient fire pumps on-line and not overheating.
 - _____ Status of smoke/fire boundaries.
 - _____ AFFF stations manned.
- _____ Dispatch fire party to passageway 2-70-2-L for reentry.
- _____ Ensure firemain isolation valve 2-43-2FM (in crew stateroom 2-36-8-L) is OPEN.

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

- _____ Complete checklist for leak/fire.
- _____ Order a second 2-minute AFFF overhead sprinkling in JP-5 pump room prior to reentry.
- _____ Verify mechanical and electrical isolation is complete.
- _____ Order fire team to reenter JP-5 pump room. Report reentry time to quarterdeck.
- _____ Verify SCBA start time from OSL.
- _____ Pass light-off times to quarterdeck.

Note: Upon reentry of AMMR, the OSL, team leader, hose teams, boundarymen, and plugmen light-off their SCBAs. OSL passes light-off times of these personnel to the RLL who is tracking this on the SCBA change-out schedule.

- _____ Send first set of SCBA reliefs to passage 2-70-2-L.
- _____ First set of reliefs light-off SCBAs when directed.
- _____ Pass light-off times to RLL.
- _____ Change out the following:
 - _____ OSL.
 - _____ ATL.
 - _____ Primary nozzleman.
 - _____ Primary hoseman.
 - _____ Primary plugman.
 - _____ Backup hose nozzleman.
 - _____ Backup hose hoseman.
 - _____ Backup hose plugman.

_____ Second set of reliefs light-off SCBAs when directed.

_____ Pass light-off times to RLL.

_____ Change out the following:

_____ OSL.

_____ ATL.

_____ Primary nozzleman.

_____ Primary hoseman.

_____ Primary plugman.

_____ Backup hose nozzleman.

_____ Backup hose hoseman.

_____ Backup hose plugman.

_____ Third set of reliefs light-off SCBAs when directed.

_____ Pass light-off times to RLL.

_____ Change out the following boundarymen.

Note: Personnel being relieved muster in Repair 2. Once the RLL accounts for everyone, relieved personnel doff their FFEs and SCBAs, to be used by the next set of reliefs. Relieved personnel then report to the corpsman or his representative to cool down.

_____ Pass word to the quarterdeck when the fire is out and reflash watch is set.

_____ Initiate post-fire actions when requested by OSL.

_____ Ensure post-fire personnel don and activate SCBA before reentry.

_____ Overhaul fire.

_____ Repair locker electrician investigate for electrical damage.

_____ De-smoking.

_____ De-watering.

_____ Atmospheric testing.

Section D: Tab 4, AFFF Operator Checklist

A. Major Oil Leak/Fire in JP-5 Pump Room.

- _____ Don battle dress and SCBA.
- _____ Establish communications with RLL.
- _____ Report manned and ready to RLL.
- _____ Verify fire pumps on line and AFFF pump on line (120 psi showing at local gauge).
- _____ Verify that JP-5 pump room AFFF supply valves are open.
- _____ Continually monitor AFFF tank level and replenish as necessary.

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

- _____ Complete checklist for leak/fire.
- _____ Activate JP-5 pump room AFFF overhead sprinkling when ordered by RLL.
- _____ Close AFFF COV when ordered by RLL.

Section E: Tab 5, Repair Locker Electrician Checklist

A. Major Oil Leak/Fire in JP-5 Pump Room.

_____ Don battle dress and SCBA.

_____ Perform electrical isolation as per [Tab 10, Mechanical and Electrical Isolation](#).
Maintain the current source of power until the space is evacuated. Do not secure lighting and power to firefighting equipment and ventilation.

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

_____ Complete checklist for leak/fire.

_____ Perform electrical isolation as per [Tab 10, Mechanical and Electrical Isolation](#).

Note: After evacuating the JP-5 pump room, secure the ventilation fans.

Note: After evacuating the JP-5 pump room, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

_____ When ordered by RLL, report to JP-5 pump room; investigate electrical damage to JP-5 pump room ventilation and other systems as directed.

Section F: Tab 6, Medical Personnel Checklist

A. Major Oil Leak/Fire in JP-5 Pump Room.

- _____ Establish recovery area in sickbay (1-73-2-L).
- _____ Establish communications with Repair 2 and quarterdeck.
- _____ Provide food, liquids, and dry clothing for personnel.

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

- _____ Complete checklist for leak/fire.
- _____ Standby to assist with personnel casualties.

Section G: Tab 7, Smoke Boundaries/Smoke Control Zone

A. Major Oil Leak/Fire in JP-5 Pump Room.

- Primary smoke boundaries.
 - Forward - frame 64.
 - Aft - frame 68.
- Secondary smoke boundaries.
 - Forward - frame 52.
 - Aft - frame 70.
- List of smoke curtain locations.
 - WTH 2-67-2.
 - QAWTD 2-64-4.
 - QAWTD 2-70-2.
- Smoke control zone for smoke control zone ventilation see [Tab 8, Ventilation](#).
 - Compartments on 3rd deck from FR 52-70.
 - AMMR (5-52-01-E).
 - JP-5 service tanks (3-68-6-J and 3-68-8-J).
 - Potable water tank (3-68-4-W).
 - Cofferdam (3-68-2-V).
 - Pump room (3-64-0-E).

- Compartments on 2nd deck from FR 64-76.
 - Passageway (2-64-2-L).
 - Water mist pump station (2-64-4-Q).
 - Refrigerate machinery room (2-64-0-E).
 - Crew stateroom (2-64-5-L).
 - Toilet/shower (2-64-3-L).
 - Passage (2-64-1-L).
 - Crew stateroom (2-67-01-L).
 - Toilet/shower (2-67-0-L).
 - Fan room (2-68-2-Q).
 - Linen locker (2-69-2-Q).
 - Crew stateroom (2-70-0-L).
 - Crew stateroom (2-70-5-L).
 - Crew stateroom (2-70-6-L).
 - Passage (2-70-1-L).
 - Passage (2-70-2-L).
 - Toilet/shower (2-70-4-L).
 - Toilet/shower (2-70-3-L).
 - Cleaning gear locker (2-72-2-A).
 - Toilet/shower (2-75-0-L).

- Compartments below affected space from FR 64-68.
 - Shaft alley (5-64-2-Q).

B. Class Bravo Fire Out of Control in JP-5 Pump Room.
Same as above.

Section H: Tab 8, Ventilation

A. Major Oil Leak/Fire in JP-5 Pump Room.

1. Set negative ventilation in JP-5 pump room as follows:

a. Place supply fans on (LOW), exhaust fans on (HIGH).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-56 (vital) | 1-70-1 | MCMS | yes | ECR watch |
| ES-106 (non-vital) | 1-64-1 | MCMS | yes | ECR watch |

2. Set positive ventilation outside JP-5 pump room (smoke control zone) as follows:

a. Place supply fans outside JP-5 pump room on (HIGH).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|-------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| S-66 (vital) | 01-53-1 | MCMS | yes | ECR watch |
| SS-67 (vital) | 01-53-2 | MCMS | yes | ECR watch |
| SS-58 (non-vital) | 01-65-1 | MCMS | yes | ECR watch |
| SS-59 (non-vital) | 01-64-4 | MCMS | yes | ECR watch |

b. Exhaust fans and recirculation fans outside JP-5 pump room (secure).

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| ES-122 (vital) | 2-59-1 | MCMS | yes | ECR watch |
| ES-123 (vital) | 2-62-2 | MCMS | yes | ECR watch |
| ES-107 (non-vital) | 1-75-3 | MCMS | yes | ECR watch |
| ES-108 (non-vital) | 01-64-1 | MCMS | yes | ECR watch |
| ES-109 (non-vital) | 01-63-2 | MCMS | yes | ECR watch |
| ES-118 (non-vital) | 1-70-2 | MCMS | yes | ECR watch |
| ES-119 (non-vital) | 1-63-2 | N/A | No | Rep Elect |
| RS-10 (vital) | 2-62-1 | MCMS | yes | ECR watch |
| RS-8 (non-vital) | 2-63-1 | MCMS | yes | ECR watch |
| RS-9 (non-vital) | 1-62-2 | N/A | No | Rep Elect |
| RS-11 (non-vital) | 1-72-1 | MCMS | yes | ECR watch |
| RS-12 (non-vital) | 2-45-1 | MCMS | yes | ECR watch |
| RS-30 (non-vital) | 1-71-2 | MCMS | yes | ECR watch |
| FCA-29 (vital) | 02-63-0 | MCMS | yes | ECR watch |

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

1. Secure all ventilation when the fire is out of control and space is evacuated.

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-56 (vital) | 1-70-1 | MCMS | yes | ECR watch |
| ES-106 (non-vital) | 1-64-1 | MCMS | yes | ECR watch |

Section I: Tab 9, Fire Boundaries

A. Major Oil Leak/Fire in JP-5 Pump Room.

- Primary fire boundaries.
 - Forward - bulkhead 64, 4th deck to 2nd deck.
 - Aft. - bulkhead 68, 4th deck to 2nd deck.
 - Above. - second deck from frame 64 to 68.
- Secondary fire boundaries.
 - Forward - bulkhead 52, 4th deck and above.
 - Aft - bulkhead 70, 4th deck and above.
 - Above - main deck from frame 52 to 70.

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

Same as above.

Section J: Tab 10, Mechanical and Electrical Isolation

A. Major Oil Leak/Fire in JP-5 Pump Room.

1. Mechanical isolation - Secure machinery in accordance with standard procedures in reference (c), Damage Control-Engineering Casualty Control, Naval Ships' Technical Manual, Chapter 079, Volume 3. In the event of a fuel leak/fire in the JP-5 Pump Room, secure the following:

_____ JP-5 service pump.

_____ JP-5 transfer pump.

_____ JP-5 stripping pump.

2. Electrical isolation - Maintain power until evacuation. Do not secure lighting and power to firefighting equipment and ventilation. Watch stations listed below secure/de-energize the following systems:

- Main switchboard operator (personnel in ECR): Ensure that the following breakers are opened:

(add any electrical isolations to be made from ECR.)

- Repair locker electrician:

_____ (2-65-2)-4P-D JP-5 service pump.

_____ (2-65-2)-4P-C JP-5 transfer pump.

_____ (2-65-2)-4P-E JP-5 stripping pump.

_____ (2-63-1)-1L-V receptacles.

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

1. Mechanical isolation - secure/de-energize the following systems:

_____ JP-5 service pump.

_____ JP-5 transfer pump.

_____ JP-5 stripping pump.

2. Electrical isolation - These items are to be electrically secured that will completely secure all available power that may be present in JP-5 pump room. They include the remaining power to firefighting equipment and ventilation. Secure/de-energize the following systems:

- Main switchboard operator (personnel in ECR):
(*List electrical isolations for EOW.)
- Repair locker electrician:

| System | Local Controller Location | Remote Controller Location | MCMS Control Available | Responsible Watch Station |
|--------------------|---------------------------------|----------------------------------|------------------------------|---------------------------------|
| SS-56 (vital) | 1-70-1 | MCMS | yes | ECR watch |
| ES-106 (non-vital) | 1-64-1 | MCMS | yes | ECR watch |

Note: After evacuating the JP-5 pump room, secure ventilation.

Note: After evacuating the JP-5 pump room, secure lighting if the OSL determines that an actual hazard to firefighters, such as arcing or sparking, exists. Normally firefighters benefit from improved visibility when lighting is left energized.

_____ (2-63-1)-1L-B lighting.

_____ (2-63-2)-1VL-G lighting.

_____ (2-63-2)-1VL-J lighting.

Section K: Tab 11, Reentry Points

A. Major Oil Leak/Fire in JP-5 Pump Room.

There is only one point of entry for JP-5 pump room.

B. Class Bravo Fire Out of Control in JP-5 Pump Room.

1. Primary reentry point: The primary reentry point for JP-5 pump room is through WTH 2-67-2 into the pump room (3-64-0-E) and then through NTD 3-66-2 into the JP-5 pump room.
 - #1 hose supplied from fireplug 2-66-2.
 - #2 hose supplied from fireplug 2-67-2.
2. Secondary reentry point: none.

Section L: Tab 12, De-smoking/Gas Freeing

A. Procedures for De-smoking JP-5 Pump Room (installed ventilation system operable).

Use the installed ventilation for de-smoking the JP-5 pump room after a fire because of its high volume capacity. However, do not energize JP-5 pump room ventilation until its condition is assessed by the engineering officer, with the repair electrician, to determine the condition of the ventilation electrical system and declare the system operational.

The repair electrician:

1. Inspects cables and transformers near the JP-5 pump room ventilation system. If satisfactory, direct the switchboard operator to close the breaker.
2. Once inspected, request and receive the engineering officer's permission to energize the blowers. To energize and restart the blowers:
 - a. Restart JP-5 pump room ventilation using controllers in passage (1-64-0-L). Start exhaust ventilation on SLOW, working up to fast as load limits on SSDGs allow. Start supply blowers on SLOW.
 - b. Continue until JP-5 pump room is de-smoked, space de-watered, and atmospheric tests are satisfactory.

B. Procedures for De-smoking JP-5 Pump Room (installed ventilation system not operable).

To de-smoke the JP-5 pump room if the ventilation system has been damaged by the fire, run a ram fan with portable trunk from the affected space to the fantail.

De-smoking by opening doors and breaking smoke boundaries is not advised unless careful consideration is given to the path smoke will take. However, if necessary, use the following procedure:

1. Set up a ram fan on the fantail and run the portable trunk as follows:
 - Forward through QAWTD 1-82-0.
 - Down through WTH 1-81-2.
 - Forward through QAWTD 2-76-2.
 - Continue forward through QAWTD 2-70-2.
 - Down through WTH 2-67-2 to JP-5 pump room.
2. Set positive ventilation on surrounding spaces to help prevent the spread of smoke. However, since all ventilation is powered from the main switchboard, these switchboards will have to be energized. For smoke control zone ventilation, see [Tab 8, Ventilation](#).

C. Continue until JP-5 pump room is de-smoked, space de-watered, and atmospheric tests are satisfactory.

D. Gas Free Engineer Post-fire Tests.

1. When the space is clear of smoke, test for oxygen between 19.5-22 percent, combustible gases less than 10 percent of the lower explosive limit, and any toxic gases below their threshold limit values, as per reference (e), Gas Free Engineering, NSTM Chapter 074, Volume 3, before certifying the space safe for personnel to enter without SCBAs.
2. After a flammable liquid fire has been extinguished, toxic gas tests for hydrocarbons, carbon dioxide, carbon monoxide, hydrogen chloride, hydrogen cyanide, and chlorine are required. The following are the threshold limit values for each test:

| | |
|-------------------------------------|----------|
| Hydrocarbons | none |
| Hydrogen Chloride/Hydrochloric Acid | 5 ppm |
| Carbon Dioxide | 5000 ppm |
| Hydrogen Cyanide/Hydrocyanic Acid | 10 ppm |
| Hydrogen Fluoride | 3 ppm |
| Chlorine | 1 ppm |
| Carbon Monoxide | 50 ppm |

3. Conduct tests near the center and all four-corners on each level, high and low, with a minimum of ten test points taken. Obtain at least one satisfactory test result at each test location.

Note: A compartment is considered “safe” only after satisfactory test results at all test locations are obtained. An unsatisfactory test result at any test point requires further ventilating and re-testing at all test points.