

<b>GENERAL DYNAMICS</b> NASSCO–Norfolk <b>NIMS</b>	<b>FIRE SAFETY PLAN</b> Process Owner — EHS	<b>WI-EHS-2073</b>
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**REVISION October 22, 2019**

## 1.0 PURPOSE

- 1.1 This work instruction (WI) provides fire protection requirements for personal and physical resources (aboard vessels and on land-side operations including, but not limited to Norfolk Naval Shipyard (NNSY), Naval Station (NAVSTA) Norfolk, and Joint Expeditionary Base (JEB) Little Creek/Fort Story).
- 1.2 This WI covers the fire hazards, response activities, and Safety Plan at NASSCO-Norfolk worksites per References (A) through (G) and this WI.

## 2.0 SCOPE

The requirements apply to all Company employees including resource laborers, Ship's Force, customers, and subcontractors performing work at NASSCO-Norfolk work sites (including down river locations).

## 3.0 RESPONSIBILITIES

- 3.1 EHS Department shall:
  - 3.1.1 Review this WI annually and update as necessary or as requirements change.
  - 3.1.2 Communicate the requirements of this WI to company employees, resource laborers and subcontracts management.
  - 3.1.3 Conduct random surveillances and inspections to ensure compliance..
- 3.2 All Departments shall ensure the requirements of this WI are communicated and complied with by the employees.
- 3.3 Subcontracts Management shall ensure the requirements of this WI are communicated to all subcontractors.
- 3.4 Employees, Resource Laborers, and Subcontractors shall comply with the practices and policies described within this WI.

## 4.0 DEFINITIONS

- 4.1 Company – Refers to General Dynamics NASSCO-Norfolk to include all Company-owned facilities.
- 4.2 Fire Department – An emergency response agency charged with combatting fires, conducting technical rescues, and treating and transporting injured personnel.
- 4.3 Fire Resistive (FR) – Resistant to fire for a specified time and under conditions of a standard heat intensity it will not fail structurally or allow the transit of heat and will not permit the side away from the fire to become hotter than a specified temperature.
- 4.4 Flammable (Flam) Locker – A locker or cabinet that has been constructed in accordance with Occupational Safety and Health Administration (OSHA) required flammable cabinet specifications and has been designated as such. Only flammable materials may be stored in a flammable locker.



- 4.5 Hot Work – Any activity involving welding, burning, grinding, riveting, or the use of powder-actuated tools or similar fire-producing operations. Drilling, abrasive blasting, and needle-gunning are also considered hot work except when such operations are isolated physically from any atmosphere containing more than 10 percent of the lower explosive limit of a flammable or combustible substance.
- 4.6 Permit Authorizing Individual (PAI) – The individual designated by management to authorize hot work in accordance with Reference E.
- 4.7 Ship's Force – US Navy personnel assigned to repair the vessel.
- 4.8 Subcontractors – A person or business that has a contract with us, the prime contractor, to provide some portion of the work or services on a project which they have agreed to perform. The subcontractor is responsible for meeting the requirements of the contract, understanding the required practices, procedures and adheres to all safety standards.
- 4.9 TSDO – Technical Support Duty Officer – Government point of contact for notification in case of an incident involving personnel or fire for the repair facility or vessel where the injury or incident occurred.
- 4.10 WI – Work Instruction.

## **5.0 COMPANYWIDE FIRE SAFETY INSTRUCTIONS**

### **5.1 Work Site Fire Hazards and Property Controls**

#### **5.1.1 Shipboard fire hazards include:**

- Hot work such as flame heating, welding, grinding, and any other operation that produces temperatures of 400 degrees Fahrenheit or higher.
- High-energy sparks or slag that can be thrown or dropped at the work site or produce heat that can be transferred through the deck, bulkhead, or structure not visible to the hot worker.

**NOTE: This may occur from flame cutting, shielded metal arc welding, gas metal arc welding, plasma arc cutting, carbon arc cutting, and thermal spraying.**

**NOTE: NASSCO-Norfolk requires LED-type light bulbs for use at our facilities and on all contracts where we are the prime contractor.**

#### **5.1.2 Building Fire Hazards include:**

- Operations such as oxy fuel cutting, carbon arc cutting, shielded metal arc welding, gas metal arc welding, gas tungsten arc welding, brazing, soldering, heat shrinking, and grinding.
- Other common potential sources of ignition in occupied buildings include electrical appliances, motors, fixtures, wiring, as well as non-fixed heating devices (e.g., coffee makers, hot plates, etc.).



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- With the exception of the permitted hot work areas listed above, open-flame devices, candles, oil lamps, etc., are prohibited.

## 5.2 Controlling Fire Hazards

5.2.1 Combustible materials must be removed so they are NOT within 35 feet of hot work in the horizontal and vertical directions. If the materials cannot be removed they must be protected with Fire-Resistant (FR) materials.

5.2.2 Flammable and dust collector operations, must be separated from hot work by 50 feet (minimum), and further for more restrictive operations (e.g., 200 feet for gasoline transfer).

5.2.3 Flammable materials must be stored in a Flammable (Flam) Locker which meet the following requirements:

- Labelled with “Flammable – Keep Fire Away.”
- Used to store flammable materials only

**NOTE:** Any materials or liquids that are not flammable are considered to be combustible, and include items such as non-flammable petroleum products, cardboard, rags, paper, and plastic. These items cannot be stored in a flam locker.

**NOTE** The Flam Locker’s total storage capacity (as noted on the Flam Locker or manufacturer’s website) shall not be exceeded.

5.2.4 All items shall be stored neatly in the upright position with all lids and caps secured in place.

5.2.5 No items may be stored in the bottom containment area of the Flam Locker as this area is for spill collection.

5.2.6 Shop personnel shall properly maintain their Flam Locker in accordance with this WI, and lockers shall be inspected weekly using the Shop Safety Checklist (F-368).

5.2.7 The EHS Department will maintain a Company-wide list of Flam Lockers and conduct periodic checks of compliance to this WI.

5.2.8 Paint, surface coatings, insulation, etc., must be stripped back a minimum of 4 inches in all directions from welding and cutting operations.

5.2.9 Hot Work Permits must be used and a Permit Authorized Individual (PAI) must approve hot work prior to working on a vessel.

5.2.10 Protective Fire Resistive (FR) containments, guards, curtains, or metal must be used to isolate hot work products such as sparks, slag, dross, weld spatter, or grinding dust.

5.2.11 Use of incandescent light bulbs in light stringers is prohibited on NASSCO-Norfolk facilities and contracts in order to abate the creation of excessive heat and fire.

5.2.12 Maintain combustibles a sufficient distance away from electrically powered items.

5.2.13 Fire watches must be posted for situations described below:

- Combustible materials are closer than 35 feet to the hot work in either the horizontal or vertical direction that cannot be removed, protected with flameproof covers, or otherwise shielded with metal or fire-resistant guards or curtains.
- The hot work is carried out on or near insulation, combustible coatings, or sandwich-type construction that cannot be inerted.
- Combustible materials are adjacent to the opposite sides of bulkheads, decks, overheads, metal partitions, or sandwich-type construction that may be ignited by conduction or radiation.
- The hot work is close enough to cause ignition through heat radiation or conduction on insulated pipes, bulkheads, decks, partitions, overheads, or combustible materials and/or coatings.
- The work is close enough to unprotected combustible pipe or cable runs to cause ignition.
- There is a gas-free certificate that requires a fire watch be posted.
- Fire Watches must be posted for carbon arc cutting, plasma arc cutting, gas metal or flux core arc welding, shielded metal arc welding, oxy fuel cutting, and thermal spraying or slag, weld spatter, or sparks might pass through an opening and cause a fire.
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5.2.14 In buildings the following general fire safety precautions must be taken:

- All electrical appliances, fixtures, and wiring are installed and maintained by qualified personnel per References (B) and (C).
- Defective electrical cords, light fixtures, appliances, and switches are either repaired or removed immediately. Missing or damaged electrical faceplate covers are replaced.
- Electrical motors are maintained in manner free from accumulation of oil, dirt, waste, and other debris that may create a fire hazard.
- Extension cords are not used as substitute for permanent wiring, only for temporary use as with portable appliances. They must be plugged directly into approved receptacles, power taps, or multi-plug adapters; serve only one appliance; be properly grounded; be



properly UL-rated for the appliance they are servicing; and be maintained in good condition.

- Power panels have a clear and unobstructed means of access, with a minimum width of 36 inches, and are closed at all times.
- Small appliances are located with adequate clearance from combustible materials or thermal-limiting controls or shields, and enclosures are used for protection. Automatic timers are prohibited.

### 5.3 Fire Protection Training

5.3.1 Company employees and subcontractors acting as Fire Watches are trained using the Virginia Ship Repair Association (VSRA) fire watch training program.

5.3.2 Fire Watches receive initial and annual refresher training.

### 5.4 Types of Fire Protection Equipment and Systems for Controlling Fires

5.4.1 Shipboard systems used by fire watches include pressurized water hoses equipped with ¾-inch pistol grip spray nozzles, portable CO<sub>2</sub> fire extinguishers, and portable dry chemical fire extinguishers. These are taken directly to the job site for protection against fire for hot work operation(s). On surface vessels, the installed damage control equipment is retained onboard and maintained by Ship's Force damage control personnel during the availability.

5.4.2 Building (permitted) hot work areas have CO<sub>2</sub> or ABC fire extinguishers for fire watches protecting hot work operations. Buildings also contain installed portable CO<sub>2</sub> or ABC fire extinguishers, distributed so that the travel distance to any extinguisher is 75 feet or less.

5.4.3 Permanently installed building fire protection systems include automatic sprinkler systems (primarily wet pipe systems), CO<sub>2</sub> extinguishing systems, and dry chemical extinguishing systems designed to discharge after elevated ceiling temperatures are reached.

5.4.4 Systems used by the Fire Department for fire protection include fire hydrants, water mains, standpipes, engine fire pumps, and Class I dry-pipe standpipe systems. Dry-pipe standpipe systems provide 2½-inch hose connections designed for use by the Fire Department.

### 5.5 Level of Firefighting Capabilities

5.5.1 The Company uses the City Fire Department as the responder. The City Fire Department staffs an ambulance, an engine company, and a ladder company.

5.5.2 The ship's fire main system shall be maintained in a ready-for-use condition during availabilities. When a ship's fire main system is not



operational, temporary fire main racks with two 100' hoses and three outlets will be placed onboard to allow full coverage of the vessel.

## 6.0 **SPECIFIC LIGON FIRE SAFETY INSTRUCTIONS**

### 6.1 General Fire Protection Equipment

- 6.1.1 The shipyard fire protection equipment consists of three (3) 3,000-GPM capacity electrically-driven fire pumps supplying a common 20" diameter header located between Piers 2 and 3.
- 6.1.2 The pumps are controlled using Variable Frequency Drive Controllers and remote system pressure sensors to ensure adequate system pressure at all times.
- 6.1.3 From the common discharge header, piping branches out to provide fire-main to Slip No. 2 (Wet Slip), Pier No. 1 (The Machine Shop Pier), Pier No. 3 (Finger Pier), and the 40,000 LT Dry Dock "SPEEDE".
- 6.1.4 In the event of loss of main power (supplied by Dominion Virginia Power), the fire pumps will be automatically powered from a 725 KW diesel generator connected to the pump controllers by an automatic bus tie (ABT). This will ensure restoration of fire-main pressure, if lost, within three (3) minutes.

### 6.2 Fire Protection Equipment Slip No. 2 (Wet Slip) and Pier No. 1 (Machine Shop Pier)

- 6.2.1 Slip No. 2 is provided fire-main by a twelve (12) inch diameter main pipe branching off from the common fire pump discharge header that runs down the west side of Slip No. 2.
- 6.2.2 There are eight (8) risers located at approximately sixty (60) foot intervals along the west side of Slip No. 2.
- 6.2.3 At the southwest corner of the slip, the fire-main pipe diameter reduces to 6-inches and proceeds along the south wharf and down the entire east side of Slip No. 2.
- 6.2.4 There are 2½-inch risers located at approximately fifty (50) foot intervals along the east side of Slip No. 2.
- 6.2.5 At the end of the east side of Slip No. 2, the fire main is connected to Pier No. 1 (Machine Shop Pier) using a hose.
- 6.2.6 The floating barge pier has a 6-inch fire main installed with 2½-inch risers located at approximately fifty (50) foot intervals along the length of the pier. Shipboard fire protection systems are connected to the pier fire main using 2 ½-inch hoses connected to the pier risers as required.

### 6.3 Fire Protection Equipment Pier No. 3 (Finger Pier)

- 6.3.1 Pier No. 3 is provided with two 5-inch diameter fire main headers on each side of the pier.





- 6.3.2 These headers are supplied from the fire pump common discharge header by a 10-inch diameter line through a pressure-regulating valve.
- 6.3.3 There are three (3) 2½-inch risers located at approximately ninety (90) foot intervals on each side of Pier No. 3.
- 6.4 Fire Protection Equipment 40,000 LT Dry Dock “SPEEDE”
- 6.4.1 The dry dock fire main can be supplied either from the two (2) electrically-driven main fire pumps (installed on the dry dock), or from the 12-inch fire main from the shore. The shore fire main is supplied from the common main fire pump discharge header adjacent to Pier No. 1 (Finger Pier).
- 6.4.2 The installed dry dock system consists of two (2) main lines, one each port and starboard. The two lines are cross-connected through the utilities tunnel under the pontoon deck. Each main header is 250 mm pipe and the cross connect is 300 mm.
- 6.4.3 Each wing wall has seven (7) hose stations and six (6) ship service stations. The outlet lines at the hose stations are 1½-inch hose connections. In addition, there are two (2) separate stations, one on each outboard wing wall for the service of accommodation barges.
- 6.4.4 At the pontoon deck level there are twelve (12) stations on each wing wall that consist of two (2) 40 mm outlet lines fitted with 1½-inch hose connections.
- 6.4.5 The dock is supplied by two (2) electrical motor driven pumps; each rated at 3500 GPM at 170 psi. In addition, there is a jockey pump (123 GPM) that maintains the system pressure until the system is needed.
- 6.4.6 The jockey pump is capable of supplying between two (2) and three (3) fire hoses (depending on their locations).
- 6.4.7 Each wing wall is equipped with sixteen (16) 30-lb. portable fire extinguishers. The type and locations of the portable extinguishers are as follows:
- CO<sub>2</sub> —Storerooms
  - FE-36 —Switchboards and engines
  - Dry Chemical —Engines

## **7.0 HARPER-SPECIFIC FIRE SAFETY INSTRUCTIONS**

- 7.1 Pier 1 fire protection equipment consists of two (2) 1200-GPM capacity and one (1) 500-GPM capacity electrically-driven fire pumps supplying an eight (8) inch closed loop system with a ten (10) inch cross-over at each end of the pier.
- 7.2 In the event of loss of main power the fire pumps will be provided power from a 500 KW diesel generator connected to the pump controllers by a manual bus tie





(MBT). This will ensure restoration of fire-main pressure, if lost, within three (3) minutes.

- 7.3 In the event of loss of electrical power or system demand, a portable diesel driven pump, connected in the direction of flow in the seaward end cross-over, will start automatically and supply up to 3000 GPM to the fire main system. This pump is sized to meet the requirements based on the class of ship and is only in place during ship availability.

## 8.0 COMPANYWIDE EMERGENCY RESPONSE

### 8.1 Alarm System and Fire Reporting

8.1.1 Any person hearing an alarm or in the presence of a fire in a building should take the following actions:

- Warn others
- Shout the words: “FIRE, FIRE, FIRE”.
- Call (757) 966-3600 and report type of fire and location.
- Evacuate the building as expeditiously as possible. Do not use elevators.
- Do not endanger yourself or others in this effort. Help any personnel who may be in need.

8.1.2 All personnel shall muster in a predetermined location to ensure that everyone has been evacuated and all are accounted for. Supervisors are responsible for communicating predetermined mustering location to their employees.

8.1.3 Any person hearing an alarm onboard a commissioned surface ship should take the following actions:

- Stop work in progress and listen for announcements, which will follow all alarms.
- Follow directions given by Ship’s Force or Watch Standers.
- Localize the affected compartments/fire zone boundaries and area that require evacuation.

8.1.4 If directed to leave a space:

- Exit by the nearest route or as directed by the general announcing system or Ship’s Force personnel.
- Leave tool bags, equipment, etc., and exit the ship.
- Welders shall secure oxy fuel torches at the torch, and if possible, at the cylinders if it is safe to do so.

### 8.2 Alarm Systems on Ships



8.2.1 A fire phone is installed on the vessel's quarterdeck as soon as it is moored to the pier. The alarm is non-dial type phone connected directly to a Central Station Signaling System. Subject to MARMC approval, additional fire phones shall be installed in each engine room as directed by the specification or standard item which generally includes each Main Machinery Room.

8.2.2 The requirements for using the fire phone are as follows:

- Pick up the phone and you will be connected to Security.
- Give the following information. Ship, location of fire, and class of fire if known.
- The guard will then notify the appropriate City Fire Department as a follow-up to the alarm circuit.
- The guard will remain at their post to direct the City Fire Department to the site of the fire.
- When shipboard, after using the alarm/phone, also inform Ship's Force/Quarterdeck.
- All fires aboard a Naval Vessel, no matter how minor, shall be reported to the MARMC Technical Support Duty Officer (TSDO) at (757) 400-0000 and in writing as specified by NAVSEA Standard Item 009-74 (Reference F).

### 8.3 Notifying Employees of a Fire Emergency

8.3.1 Early discovery of fire is important to limiting injuries and loss of life and property. However, the responsibility of personnel to report a fire immediately will not be accomplished at the risk of personal injury.

8.3.2 Personnel are required to immediately operate the nearest fire alarm box or red phone, or dial (757) 966-3600.

### 8.4 Evaluation of Different Emergency Situations

8.4.1 Upon activation of an evacuation alarm, or ordered to do so, personnel will evacuate in an orderly manner and will muster with their supervisor at the pre-designated muster point.

8.4.2 Personnel shall be familiar with the building or area in which they work and be able to identify an alternative means of escape.

8.4.3 In the event of a fire or other emergency where the evacuation of the building is not required, elevators are programmed to return to the ground floor to be available. The means of escape shall be by a stairway. Occupants of buildings equipped with elevators will use stairways to exit the building.

8.4.4 In the event of a fire or other emergency that necessitates evacuation of the ship or dry dock, evacuation should be done in an orderly manner.



Voice announcements will follow the evacuation alarm. Personnel should follow directions given by Ship's Force or Fire Department personnel and proceed to the muster point. Personnel not assigned to the project or contractor personnel should report to the onsite management team and provide names and shop/code or company, and remain until released.

8.4.5 Supervisors will account for all personnel and report to the Company's onsite management team.

8.4.6 The onsite management team will notify the Fire Command Officer(s)/Incident Commander of any personnel that are missing.

8.4.7 Supervisors will ensure that once employees have evacuated the building, ship, and/or dry dock, that re-entry is prohibited until approved by the EHS Department.

8.4.8 The supervisor(s) will report any missing personnel and when evacuation is completed to Security.

#### 8.5 Evacuation Mobility-Impaired Employees

8.5.1 Those requiring special assistance during building evacuations shall be provided with a safe means of escape.

8.5.2 EHS Point of Contact: EHS Admin – 757-966-3977 or 757-966-3907.

## 9.0 FORMS

FORMS	
Document No.	Document Title
N/A	

## 10.0 ENCLOSURES

ENCLOSURES		
Encl.	Document No.	Document Title
N/A		

## 11.0 RELATED DOCUMENTS

RELATED DOCUMENTS	
Document No.	Document Title
WI-EHS-2071	Precautions for Hot work
F-368	Shop Safety Checklist

## 12.0 REFERENCES



<b>GENERAL DYNAMICS</b> NASSCO-Norfolk <b>NIMS</b>	<b>FIRE SAFETY PLAN</b> Process Owner — EHS	<b>WI-EHS-2073</b>
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REFERENCES		
Ref.	Document No.	Document Title
A	N/A	29 CFR 1915, Subpart P, Fire Protection in Shipyard Employment
B	N/A	National Fire Protection Association (NFPA) 70, National Electrical Code
C	N/A	29 CFR 1910.301-399, Subpart S, Electrical
D	009-07	NAVSEA Standard Item No. 009-07, Confined Space Entry, Certification, Fire Prevention and Housekeeping
E		PAI Requirements
F	009-74	NAVSEA Standard Item No. 009-74, Occupational Safety and Health Requirements, accomplish
G	009-08	NAVSEA Standard Item No. 009-08, Shipboard Fire Protection and Fire Prevention; accomplish.

### 13.0 REVISIONS

REVISION RECORD	
Rev. Date	Summary of Change
04/09/2015	Consolidation of NASSCO Norfolk Fire Safety Plan 009-08-01 and NASSCO Earl Fire Safety Plan EIPS-04-209.
06/02/2016	Added Section 5.2.3 which describes Flammable Locker requirements. Added References G, H, and I.
	8/2/2017 – Revised document to new NIMS format, changed reviewers, changed attachments to enclosures, renamed document from “WI-433-HS-912” to “WI-EHS-2073. These changes fall within the scope of the General Manager’s transition memo (2/20/2017), so they do not require additional review and signature.
10/03/2018	Updated signatories, updated Section 1.1 by adding “government” before the word customers, and at the end of the statement, added “including, but not limited to NNSY, NAVSTA Norfolk, and JEB Little Creek/Fort Story” Updated Section 5.12 by adding “MARMC” in front of TSDO and changed the phone number to “(757) 400-0000”.
6/14/2019	Updated Section 5.1.1. and added Sections 5.2.8 and 5.2.9. Changes reflected the use of only LED light bulbs in NASSCO-Norfolk facilities. and on NASSCO-Norfolk Contracts.
10/22/19	Updated the document in several locations to address missing requirements found during a gap analysis. Updated the section titles and numbering system to reflect different locations that the Company manages.