**Enclosure 3**

# *HQ USINDOPACOM*

## *JTF-Red Hill*

## *Oil Pressure Door*

**13 April 2023**

**This brief is classified:**

**CONTROLLED UNCLASSIFIED INFORMATION**

**Discussion up to:**

**CONTROLLED UNCLASSIFIED INFORMATION**

***Classified by:*** **JTF Red Hill Plans Directorate**
***Derived from:*** **Multiple Sources**
***Declassify on:***



*As of 11 1600 APR 2023*

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# (U) Most Likely Release - Lower Access Tunnel (LAT) Repacking Scenario – Discharge of 144,000 GAL

## REPACKING

•**Scenario:** Only the F-24 and JP-5 RHL Pipelines will be used to transfer the 3 products currently inventoried in RH.

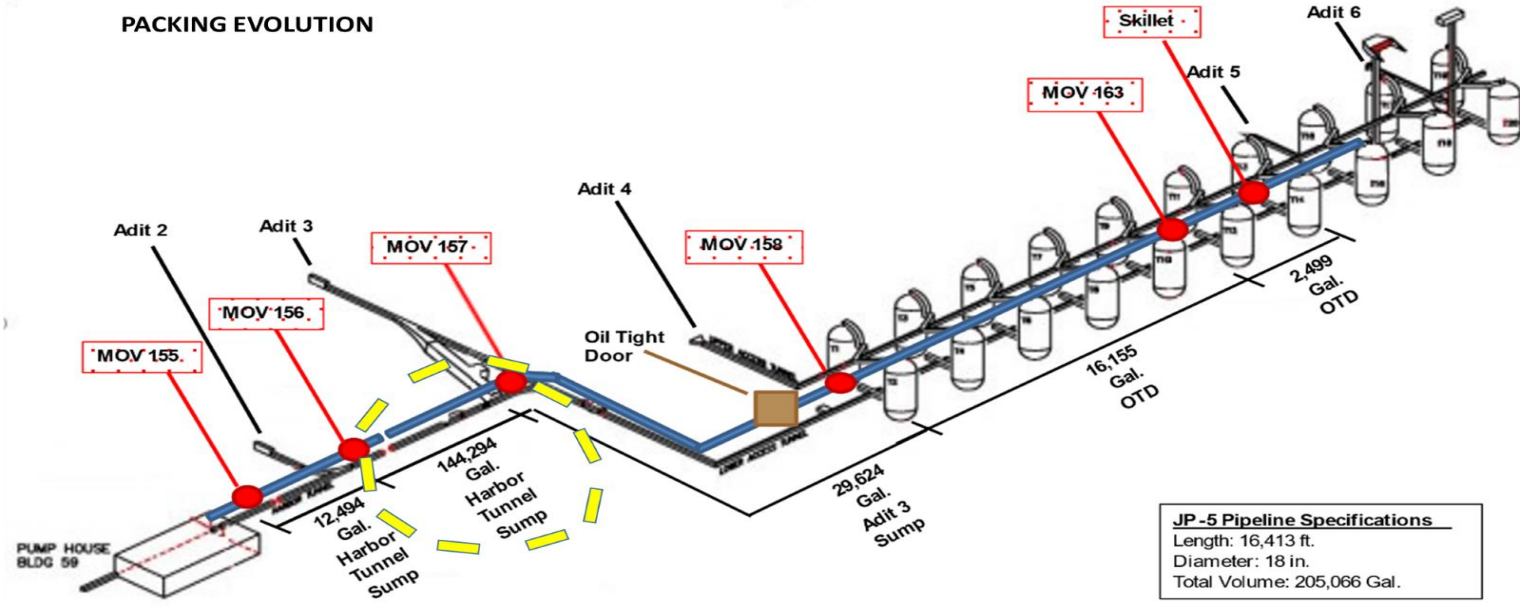
•Vulnerable points are lines in the Lower Access Tunnel (LAT) and remotely operated valves. Approximate line capacities are as follows: F-76 (660k gal, line will not be used), JP-5 (202k gal), F-24 (152k gal). Below is an outline of Red Hill from the tank gallery to pump house with the JP-5 line highlighted along with volumes in between MOVs.

•CRO immediately ceases defueling operations and shuts all Motor Operated Valves (MOVs), limiting fuel spill to the volume in the pipe upstream of the rupture (144,294gal MAX*).

## Response Actions

- Flood Barriers will be placed at the Adit 3 Wye and the Adit 2 Spur Tunnel to direct flow in event of leak or rupture.
- A Control Room Operator (CRO) and an assistant Control Room Operator will be in the control room throughout the entire operation.
- Rovers and supervisors will be on site to verify valve operations, configurations, and pipeline monitoring.
- Spill kits will be pre-staged at various locations in the tunnel.
- Booms around Yard Oiler Non-Propelled (YON) fuel barges and fuel tanker vessels to contain any releases that could occur during repacking/defueling.

→ Fuel flow reaches the Lower HT** and begins to be collected in the sumps. The 5plex Sump System (1000gpm) in the Lower HT and the UGPH Sump System (280gpm) will pump the fuel directly to B-2 Tanks at FLCPH FORFAC, 377,000gal capacity each.




*UGPH Capacity 377,000 GAL*

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# (U) Most Likely Release - Tank Gallery Defueling – Discharge of ~16,000 GAL to 150,000 GAL

## Defueling

- **Scenario:** Pipe rupture occurs in Lower Tank Gallery on a recently repaired length of pipe downstream of tank skin-valves (Double-Block and Bleed Valves) causing a discharge very similar to 06May21 Incident.
- Control Room Operator (CRO) immediately ceases defueling operations and shuts all Motor Operated Valves (MOVs), limiting fuel spill to the volume in the pipes (16,155gal MAX)*.
- Fuel rapidly spills out of rupture and flows towards nearest sump(s) where it is collected

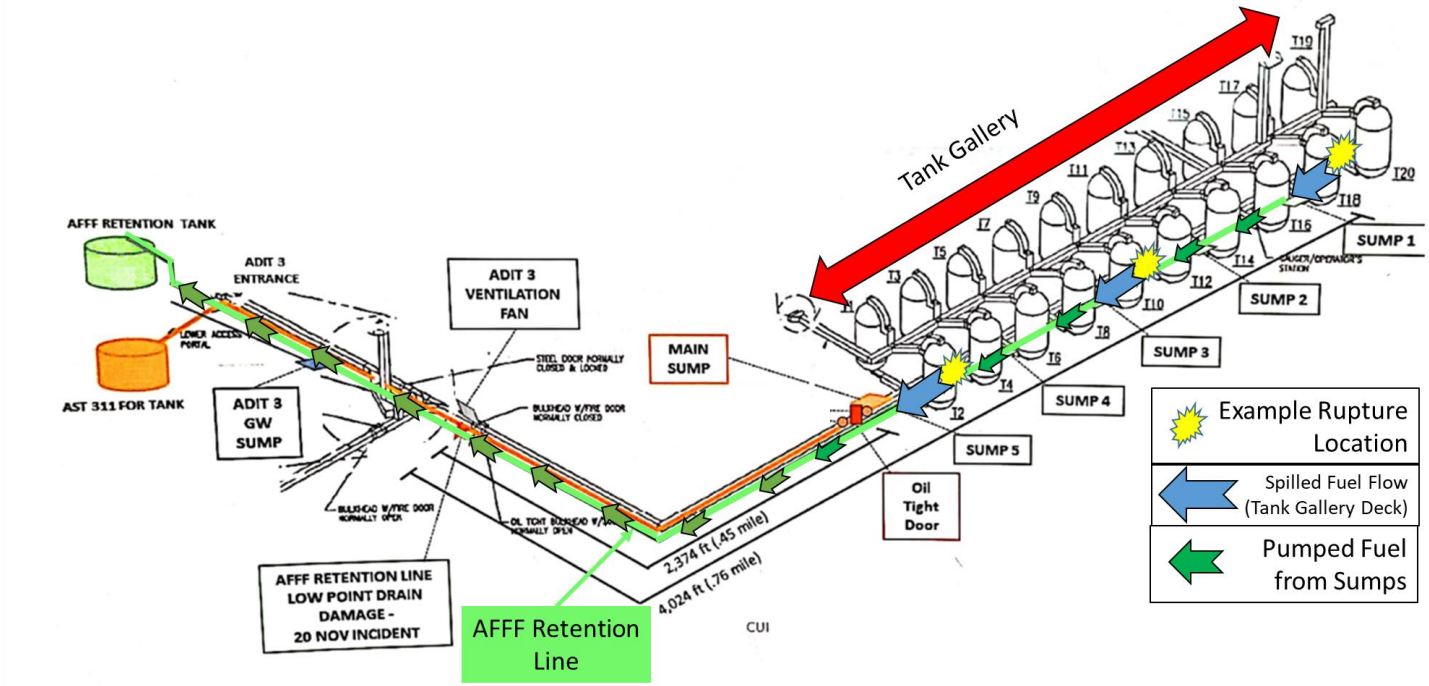
## Response Actions

### AFFF Retention Line (Data)

- 5 Sumps (4 Pumps Each) rated at 1,000 GPM
- Max flow rate if more than one sump engaged ~5,000 GPM
- AFFF Retention Tank Capacity: 153,000 GAL
- AFFF Retention Line Capacity: 41,583 GAL

### Time to extract Fuel utilizing the AFFF Retention Line

- Most Likely (similar to 6 MAY 21)
  - 16,155 GAL ➔ ~6 minutes w/ three pumps engaged
- Maximum Volume able to be extracted
  - 150,000 GAL → ~30 minutes



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# (U) Most Dangerous Least Likely Release
# (U) Defueling – Discharge of 4.3M GAL

## Defueling

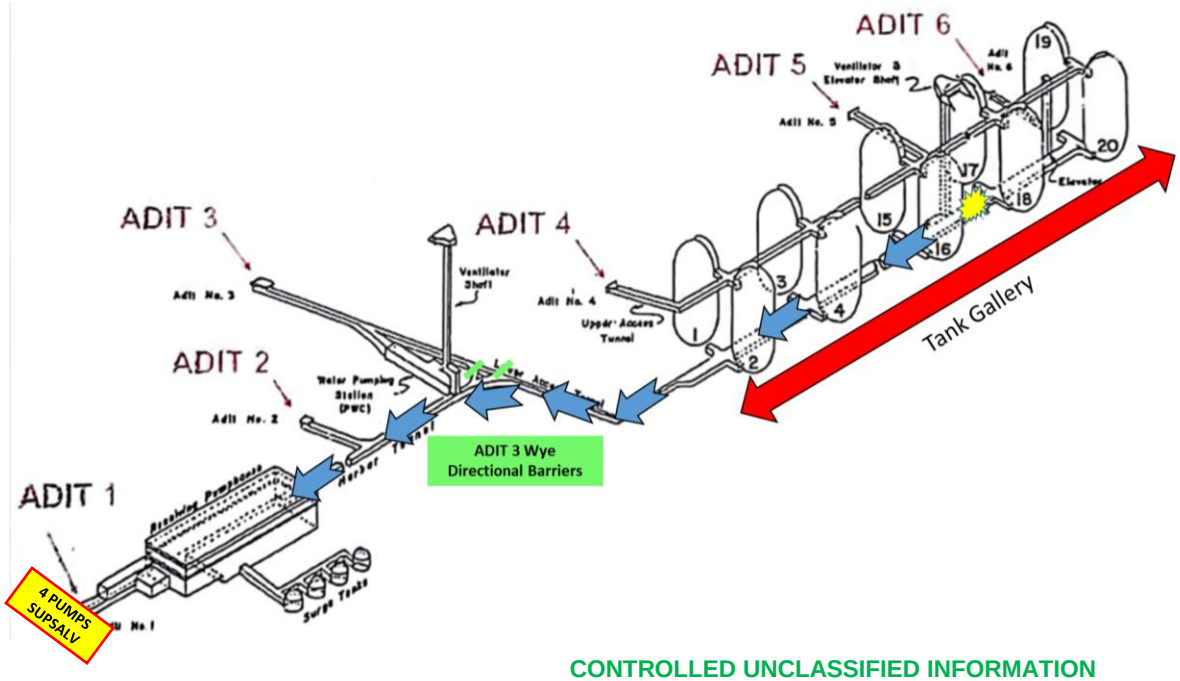
- **Scenario:** A fuel hammer and vacuum caused a 5-inch fracture to the section of piping just North of the Double Block and Bleed Valve.
  - Fuel begins flowing down the Lower Tank Gallery and into the LAT at a rate of **13,800 gpm**.
  - Fuel Flow reaches Adit 3 "Wye" after 18min and is directed down the Harbor Tunnel (HT) by pre-installed flood barriers.
  - A total capacity of 4.3 (6hr mark) million gallons is discharged. Below is a schematic of the major mitigation efforts to include expected fuel recovery/spillage for a full tank, 10.8M gal spill.

## Response Actions

NAVSUPFLC - The following information is the primary response to the WCD of fuel:

- Utilize existing ground water sump pumps at end of the harbor tunnel and in the Adit 1 fan building to pump as much oil as possible to FORFAC.
- Install SUPSALV (NAVSEA Contract) supplemental pumps (4 x 2,200 gpm = **8,800gpm**) to move oil to Maersk Peary at Hotel Pier and YON's/barges at Sierra Pier. Line the sides of the ramp with sandbags or other barricades that direct any oil that exits Adit 1 into the lower yard tunnel. This oil will be recovered up by the pumps.

| Tanks | Inventory GALS | Tanks | Inventory GALS |
|---|---|---|---|
| RH11 | **2,526,648** | RH7 | **8,231,960** |
| RH10 | **3,434,447** | RH12 | **8,930,844** |
| RH8 | **4,725,234** | RH3 | **9,730,447** |
| RH16 | **5,847,562** | RH2 | **10,016,650** |
| RH15 | **5,854,273** | RH5 | **10,055,375** |
| RH6 | **6,053,742** | RH9 | **11,230,231** |
| RH4 | **6,273,805** | RH20 | **11,326,505** |




**Probability:**
**1 in 6,858,711**

**Causes**
- Vacuum
- Over Pressure
- Joint Failure
- Valve Failure
- Pipe Failure
- Operator error

**Mitigations**
- PITs
- Pipe Repairs
- Tank Equalization Lines
- Updated OPS Plan
- Zone Watch Standers
- Gravity Drain/No Pumps

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# (U) Oil Pressure Door

## Description

- The Oil Pressure Door (OPD) at the bottom of the tank gallery is designed to automatically seal off the tank gallery from the rest of the facility in the event of an oil spill.
- Once activated the oil that is trapped must be removed manually prior to reopening the door.
- The door is not configured for manual/mechanical operation
- **DOH/EPA support the option that is least likely to impact groundwater**

## Assessment of Maintaining Oil Pressure Door Operation

**Pros:**

- Increased safety of personnel in Harbor Tunnel
- The bulk of the fuel contained in the Lower Tank Gallery vice spread throughout the facility during a spill

**Cons:**

- Difficult to protect elevator shafts (critical fire response egress) from large discharge.
- Lack of access to Lower Tank Gallery will significantly reduce pumping capability leading to prolonged clean-up efforts for any large-scale spill
- CNRH better prepared to combat a fuel spill on the water than on the land
- Trapped oil seeps through porous tunnel base to aquifer
- Immediately Dangerous to Life or Health (IDLH) environment created in the Lower Tank Gallery for responders

**Recommendation:**
**Approve Disabling of the Oil Pressure Door throughout defueling.**

## Fuel Removal Times

- **Door Open**: 4.3 MGAL ~ **9 hours**; 10.7 MGAL ~**16 hours**
- **Door Closed**: 4.3 MGAL ~ **4-6 months**; 10.7 MGAL ~ **12-18 months**

| Maintaining Operability of OPD (door able to close) | | | |
|---|---|---|---|
| **RISK** | **LH** | **SEV** | **Total** |
| Fuel in Tanl Gallery above aquifer seps through porous base and elevator shafts | Likely (4) | Severe (5) | Extreme (20) |
| Limited access to tank gallery/reduced pumping ability | Severe (5) | Severe (5) | Extreme (25) |
| LIDLH environment for responders in tank gallery | Severe (5) | Severe (5) | Extreme (25) |
| Increased safety risk to personnel in HT | Unlikely (2) | Minor (2) | Medium (4) |
| Fuel will flow through HT/Dispersed throughout | Unlikely (2) | Unlikely (2) | Medium (4) |
| Potential for discharge to waterway | Unlikely (2) | Unlikely (2) | Medium (4) |

| Disabling Operability of OPD (OPEN) | | | |
|---|---|---|---|
| **RISK** | **LH** | **SEV** | **Total** |
| Fuel in Tanl Gallery above aquifer seps through porous base and elevator shafts | Unlikely (2) | Minor (2) | Medium (4) |
| Limited access to tank gallery/reduced pumping ability | Unlikely (2) | Minor (2) | Medium (4) |
| LIDLH environment for responders in tank gallery | Likely (4) | Minor (2) | High (8) |
| Increased safety risk to personnel in HT | Likely (4) | Severe (5) | Extreme (20) |
| Fuel will flow through HT/Dispersed throughout | Likely (4) | Minor (2) | High (8) |
| Potential for discharge to waterway | Unlikely (2) | Minor (2) | Medium (4) |

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# *Backups*

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# Pump Calculations (4.3M Gallon Scenario) Most Dangerous Least Likely

The total discharge after 6hrs from the tank will be 4,305,787 gallons based on engineering analysis conducted by PCCI.

Without supplemental pumps from Navy SUPSALV:

- The only method for removing fuel from the tunnels will be the UGPH Sump Pumps (Single capacity - 280 gpm; Total capacity - 560 gpm)
  - These are further limited the ullage available in the B-1 and B-2 FORFAC tanks (378,000gal/each), of which only B-2 is expected to be available.
- The product will reach Adit 1 in approximately 1 hour and begin to fill the entire space. The UGPH sump will send fuel to the B-1 and/or B-2 FORFAC tanks.
- Approximately 6 hours after the initiation of the rupture the fuel will overflow into the UGPH and begin spilling out of Adit 1.
- Over the next 18 hours:
  - 1,049,187 gallons will spill out Adit 1 into the drainage swale and potentially impact Halawa Stream.
  - UGPH sump will pump 378,000 gallons to B-2 FORFAC tank.
  - 2,878,600 gallons will accumulate in the UGPH/Lower HT.
    - This volume will reach approx. 2.6 miles up the HT, topping off just below the Adit 3 “Wye”

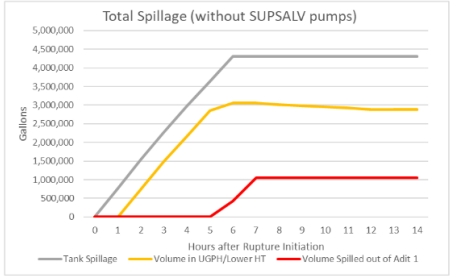
With supplemental pumps from Navy SUPSALV (4 x 2,200 gpm = 8,800gpm):

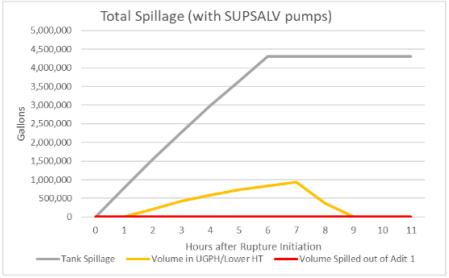
- The UGPH sump will send fuel to the B-2 FORFAC tanks as before.
- Once the flow reaches their suctions, the SUPSALV pumps will direct flow to tanker vessels at Hotel Pier or the barges at Sierra Pier (both located on Joint Base Pearl Harbor.
- Roughly 7 hours after the rupture, a peak accumulation of 936,187 gallons is expected in the UGPH/Lower Harbor Tunnel.
  - Due to the small gradient of the Harbor Tunnel the oil volume will cover the deck of the Lower Harbor Tunnel a few hundred feet past Adit 2 (sealed).
  - It will not be discharged to the environment through Adit 1. See graphs below for comparison:

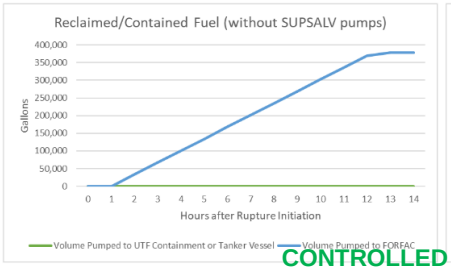
**W/o SUPSALV Pumps**

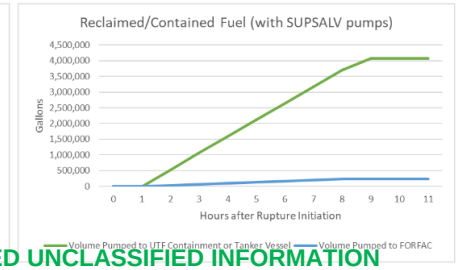
**ADIT 1 Release:**
**~1 Million GAL**

**Accumulation in Lower HT**
**~2.9 Million Gallons**




**W/ SUPSALV Pumps**

**Minimal release to the environment**

**Accumulation in Lower HT**
**A few hundred feet past ADIT 2**

**~9 hours, pumped to Hotel Pier via four 2,200 GPM SUPSALV pumps**

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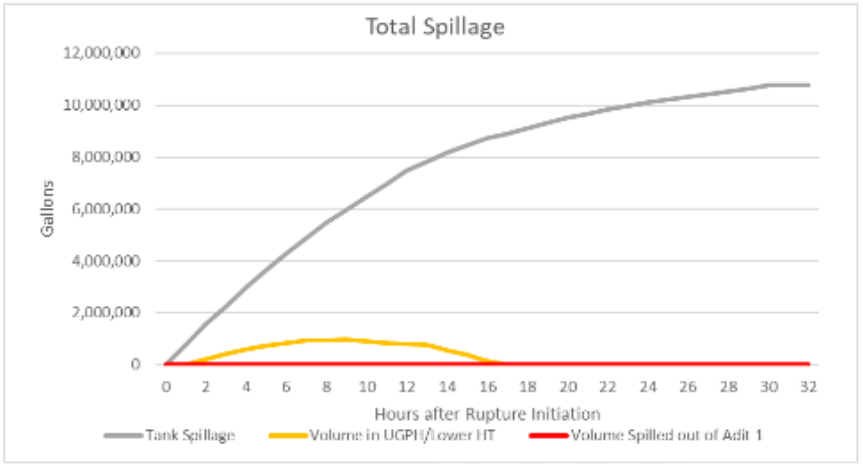
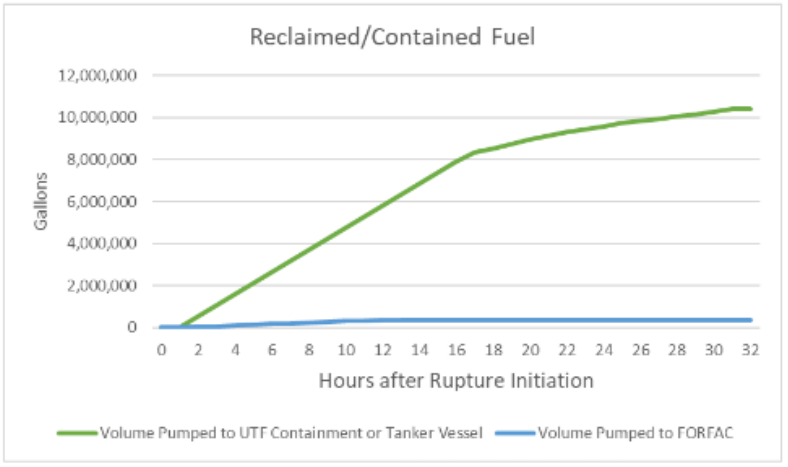
# Pump Calculations (10.7M Gallon Scenario) Most Dangerous Least Likely – Catastrophic failure

In a similar scenario (least probable) where the tank discharge is not secured, and the full tank is emptied in approximately 30hrs but the SUPSALV pumps are available:

- The total discharge from the tank will be **10,770,455gal** based on engineering analysis conducted by PCCI.
- As before, product will reach Adit 1 in approximately 1 hour and begin to fill the entire space and the UGPH sump will send fuel to the B-2 FORFAC tanks.
- Once the flow reaches their suctions, the SUPSALV pumps will direct flow to the Hotel/Sierra piers.
- Roughly 9 hours after the rupture, a peak accumulation of 973,584 gallons will be in the UGPH/Lower Harbor Tunnel.
  - Due to the small gradient of the Harbor Tunnel the oil volume will cover the deck of the Lower Harbor Tunnel a few hundred feet past Adit 2 (sealed).
  - It will not be discharged to the environment through Adit 1.
- As can be seen in the graphs below approximately 9hours after the initiation of the rupture the flowrate out of the tank will diminish (due to loss of pressure head) to the point that it will be overcome by the flowrate of the SUPSALV pumps, causing the volume contained in the UGPH/Lower HT to decrease.
- Residual fuel will remain on the deck from the Tank gallery to the UGPH and will require remediation.




Four SUPSALV Augment Pumps will extract the Fuel to Hotel Pier in ~16 Hours

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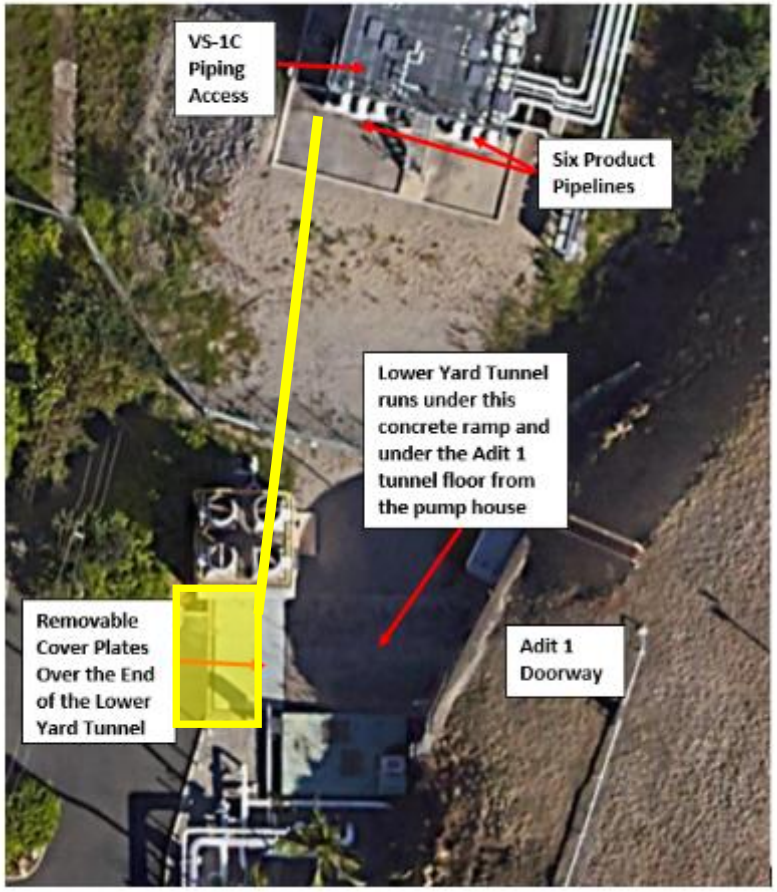
# (U) Four SUPSALV Augment Pumps

**SUPSALV Augment Pump Info**:

- Contracted through NAVSEA
- SUPSALV is one of the Navy's main oil spill response organizations
- Scope of work & estimate complete (~500K)
- Upon approval, pumps will be installed in the area depicted in yellow with a manifold tying directly into Hotel Pier product lines

- **SCHEDULE**:
  - 14 April: DLA shall MIPR funds to NAVSEA
  - Allowing ~12 weeks for contracting & fabrication
  - 9 July: Pumps & manifold installed prior to 13 July defueling exercise
  - On-call (24/7) mechanic & pumps will remain in place through completion of defueling ~ March

Figure 1: Adit 1 Entrance Ramp and Valve Station 1C (VS-1C)



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# (U) Most Likely Release Hotel Pier - Pipe Rupture (AUG Drill)

## SCENARIO #3

- **Scenario:** A pressure drop is detected by the Automated Fuel Handling Equipment (AFHE) system in the Under Ground Pump House (UGPH) and a pipe rupture is visually confirmed by operators on the pier.

## Response Actions

- IAW 33 CFR 154, Facilities Transferring Oil or Hazardous Material in Bulk. Facility Response Plan (FRP) for CNRH (Spill Checklist/ Actions for pipe rupture):


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# (U) Most Likely Release - Hotel Pier Overfill of Maersk Peary (ON:1235135)

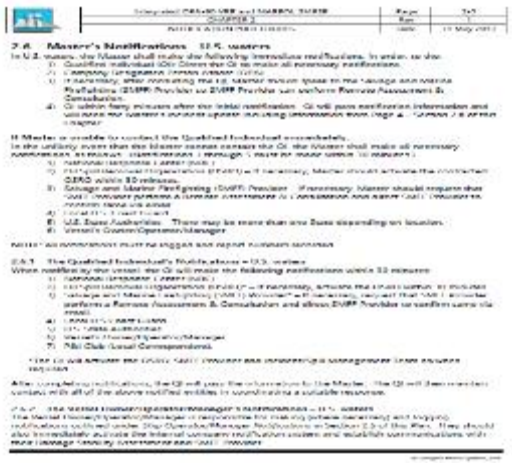
(Official Number)

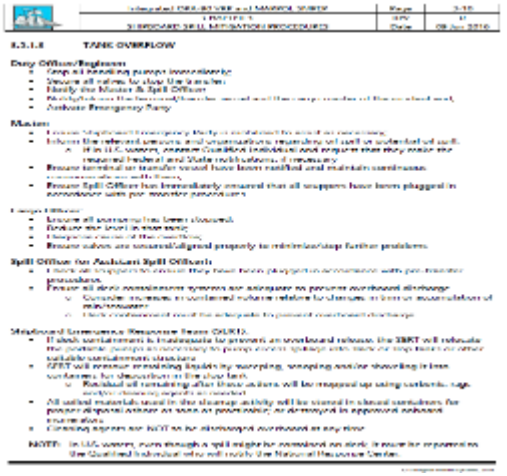
## SCENARIO #4

- **Scenario:** When defueling operations commence the product is reaching tank capacity on the Maersk Peary. A tank overfill occurs spilling 500 gal. fuel onto the deck and into the water surrounding the vessel.

## Response Actions

- IAW 33 CFR 155, Oil and Hazardous material Pollution Prevention Regulations for Vessels. Vessel Response Plan (VRP) for Maersk Peary below (Master Notification/ Tank Overflow Procedures):






0.4% chance of overfilling a Tanker

Amount of fuel historically < 264 gallons