Underway Ship-To-Ship Operations

May 2018

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AET
IN FIGURES

13,000+
STS over
24
years of
operation

Top **10**
crude tanker owner
in the world

Total asset base of
US$3.6bil

4 of the world's first LNG
duel-fuelled tankers on order,
2 Aframaxes and 2 DPSTs

20 nationalities
Steered by a diverse
international workforce

As of 31 December 2017

A DIVERSE & ADVANCED FLEET

Crude Petroleum Shipping

VLCC	14
SUEZMAX	6
AFRAMAX	43 plus 3 on order
PANAMAX	1
TOTAL	64

Products Shipping

MR2	3
LPG	1
CHEMICAL	13
LR2	5
TOTAL	22

Shuttle Tanker

DP2	4 plus 2 on order

Modular Capture Vessel

Specialist vessels for marine containment services	2

Lightering Support Vessel

USAC	1
US Gulf	6
Uruguay	3
TOTAL	11

As of 31 December 2017

EXCELLENCE & COMPLIANCE IN QAHSSE

1 **Global HSSE**
policies and initiatives

2 **Absolute compliance**
with statutory, industry, customer and vetting criteria

3 **Robust risk assessment & management**
strong safety culture

4 **A greener fleet**
via new tonnage that are more ocean-friendly than vessels they replace

0 fatalities,
pollution or major incidents in 2017

Lost Time Injury Frequency (LTIF) in 2017
= **0**

Total Recordable Case Frequency (TRCF) in 2017
= **0.38**

55 vessels
awarded the Chamber of Shipping of America (CSA)'s Jones F. Devlin Safety Award for accident-free operations

54 ships
further recognized by the CSA for environmental excellence

3.0 current TMSA score
Adherence to the OCIMF Tanker Management Self-Assessment (TMSA) program

As of 31 December 2017

ISO 14001 | **OHSAS 18001** | **ISO 9001** | **IS0 50001** | **ISM Code**

AET GROUP

GLOBAL PRESENCE

As of 31 December 2017

AET IN AMERICAS

Houston
Commercial & Operations

Galveston
Off-Shore STS Operations Support

85 full time US employees

7 US-flagged workboats

26 mooring masters

98 US seafarers

Market Leader

in USG STS operations;
USAC STS reestablished in Delaware & Ambrose

Sustained Market Leadership

600+ STS operations per year

300+mil barrels transferred annually

Largest Aframax Fleet

in USG/USAC

35 **tankers** servicing
STS operations| voyage | contracts

235 **voyages** in 2017

US Gulf | Caribbean | East Coast
US & Canada | Transatlantic

2,130
port calls in USA made per year

As of 31 December 2017

WHAT IS UNDERWAY STS?

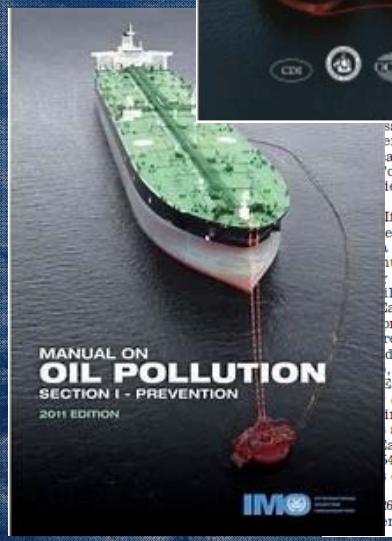
- STS underway is parallel berthing of ships with fenders that cushion the alignment
- STS operations are necessary due to draft restrictions in ports, limited number of ports and receiving facilities, or for cargo consolidation for long distance export

STS REQUIRED ELEMENTS

- POAC (Person in Overall Advisory Control) - qualified Mooring Master who is onboard the SV, performs and coordinates STS operations on behalf of AET
- MMA (Mooring Master Assistant) onboard the STBL
- STBL (Ship To Be Lightered) - ship containing cargo to be transferred to the SV
- SV (Service Vessel) - ship that is receiving the cargo from the STBL
- LSV (Lightering Support Vessel) - vessel used to transport equipment and personnel to the STS location and assist in preparing vessels for the operation
- Lightering equipment - fenders, wire mooring tails, hoses and personnel basket

FOCUS ON OPERATIONAL EXCELLENCE AND HSSE

- All STS operations performed to the requirements and standards of USCG, MARPOL, OCIMF STS Guide, AET Safety Management System and industry best practices
- Joint Plan of Operations, mooring plan, risk assessments for STS operation shared with vessels before each operation
- Stop Work Authority for all STS personnel
- Robust near miss reporting program
- Fully electronic document access for Safety Management System



33 CFR Ch. I (7–1–01 Edition)

t show actual trans- metal- tic liq- e max- re; and ting or a re- level device, on. ıose in oper- vessel cted it c)(1) or e. testing ited to th the ıe hose and in- n must ıot less ransfer ıe date status, ss than 30 days prior to the first er after the facility is removed aretaker status; and or vessels, annually or as part of iennial and mid-period inspec-

If a facility or vessel collects emitted from a vessel cargo tank vapor control system, the sys- ust not be used unless the fol- tests and inspections are satis- ly completed: ach vapor hose, vapor collection pressure or vacuum relief valve, ressure sensor is tested and in- d in accordance with paragraphs , and (f) of this section; ach remote operating or indi- device is tested for proper oper- in accordance with paragraph (f) section; ach detonation arrester required 4.820, §154.826(a), and §154.828(a) chapter or 46 CFR 39.40–3(d), and flame arrester required by 6(a), §154.828 (a) and (c) of this r has been inspected internally within the last year, or sooner if operational experience has shown that frequent clogging or rapid deterioration is likely; and

(4) Each hydrocarbon and oxygen analyzer required by §154.820(a) and §154.824 (d) and (e) of this chapter or 46 CFR 39.40–3(a) is calibrated:

(i) Within the previous two weeks, or

(ii) Within 24 hours prior to operation when the vapor control system is operated less frequently than once a week.

(h) Upon the request of the owner or operator, the COTP may approve alternative methods of compliance to the testing requirements of paragraph (c) of this section if the COTP determines that the alternative methods provide an equal level of protection.

(Approved by the Office of Management and Budget under control number 2115–0096)

[CGD 75–124, 45 FR 7177, Jan. 31, 1980, as amended by CGD 88–102, 55 FR 25445, June 21, 1990; CGD 86–034, 55 FR 36256, Sept. 4, 1990; CGD 93–056, 61 FR 41461, Aug. 8, 1996]

Subpart B—Special Requirements for Lightering of Oil and Hazardous Material Cargoes

SOURCE: CGD 78–180, 49 FR 11172, Mar. 26, 1984, unless otherwise noted.

§ 156.200 Applicability.

This subpart applies to each vessel to be lightered and each service vessel engaged in a lightering operation in the marine environment beyond the baseline from which the territorial sea is measured when the oil or hazardous material lightered is destined for a port or place subject to the jurisdiction of the U.S. This subpart does not apply to lightering operations involving public vessels, or to the dedicated response vessels and vessels of opportunity in accordance with the National Contingency Plan (40 CFR parts 9 and 300) when conducting response activities. These rules are in addition to the rules of subpart A of this part, as well as the rules in the applicable sections of parts 151, 153, 155, 156, and 157 of this chapter.

[CGD 93–081, 60 FR 45017, Aug. 29, 1995]

§ 156.205 Definitions.

(a) In addition to the terms defined in this section, the definitions in

*Our policy is to strive for excellence in all activities under the control of the organization including Health, Safety, Quality, and Environment matters to achieve our objective of **"ZERO HARM TO PEOPLE, ZERO INCIDENT, AND ZERO SPILL"** in promoting safety at sea, prevention of human injury or loss of life, and avoidance of damage to the environment.*

LIGHTERING AREA SELECTION

- Conduct risk assessment
- Evaluate weather data
- Identify area resources
- Water depth and bottom type suitable for anchoring
- Position just outside the shipping lanes prevents traffic interference

HSSE Operations

Detailed Risk Assessment
STS Atlantic Coast

DRA-HS-20
Rev. No.: 0.0
Rev. Date: 02.24.17
Approved By: GM

Hazard or Scenario	Cause	Consequence	S	L	R	Control Measure	S	L	R
Local Legislative Requirements	VRP/OSRO non-compliance, Geographic restrictions, operating in restricted areas, Notification non-compliance, Operating without a COC, Delays to COC due to unavailability of inspectors	Reputation with authorities may be harmed. Additional regulations may be imposed on STS. Regulatory penalties against ship owners. Operational delays	2	2	High Risk	STS operations manual and JPO address USCG requirements. Ships suitability screening. Vessels have approved VRP. Stay out of prohibited areas.	2	1	Low Risk
Prevailing Environmental Conditions	Tidal currents, Tropical cyclones, Seasonal frontal passages (nor'easters), Squalls with lightning, Occasional long period swell	Potential for unintended, separation during cargo transfer, Potential hard contact between vessels, Potential for fire/explosion	4	4	Medium Risk	Mooring master demonstrated competency, Subscribed to weather and ocean current forecasting service, Weather parameters established for operation to minimize likelihood of unacceptable vessel motion, Use of wire tails with grommets, Hurricane action plan	4	1	Low Risk
Traffic Density	Transiting vessel traffic in safety fairways and traffic separation schemes, Local Fishing Vessels, Seasonal Recreational traffic	Collision-damage to vessels, oil spill, injury to personnel	5	3	Medium Risk	Mooring master demonstrated competency, LSV escorts Lightering vessels, Remain clear of traffic separation schemes, Bridge and VHF Radio watch maintained on both vessels during STS operations, Pre-planning to avoid congested areas, No prescribed lightering zone leaves adequate sea room.	5	1	Medium Risk
Navigational Hazards	Poor Visibility/Fog, Underwater cables	Collision and allisions-damage to vessels, oil spill, injury to personnel, Anchoring over a pipeline.	1	1	High Risk	Mooring master demonstrated competency, Abort criteria established for operation in event that visibility is unacceptable, Continuous bridge watch on all vessels involved in STS, Subscribed to weather and Ocean Current forecasting service, Established CPA for anchoring over cables	4	1	Low Risk
Oil Spill	Environmental Impact of drifting oil	Impacts to people, environment, reputation and assets	4	2	Medium Risk	Local regulations ensure adequate offshore spill response capabilities, Spill dispersion modelling.	3	1	Low Risk
Security threats	Terrorism	Loss or damage to vessel or equipment, adverse impacts to people and the environment	1	1	Medium Risk	Local area has minimal security threats, Strong local capacity to address security threats, LSVs and equipment docked/stored in secured facility, Vessels follow ISPS	4	1	Low Risk

USE OF SPECIALIZED STS EQUIPMENT

- Portable Piloting Unit (docking aid) for STS
- Wire mooring tails to prevent chafing in chocks
- Endless sling grommets
- High elasticity mooring grommets
- Fender stretcher assembly
- Portable chocks
- Quick release toggle pins
- Quick release cam-locks on hoses

STS PREPARATION

Risk Assessment

Pre- arrival communication

Joint plan between STBL/SS/mooring master

Review Operational Parameter Guidelines

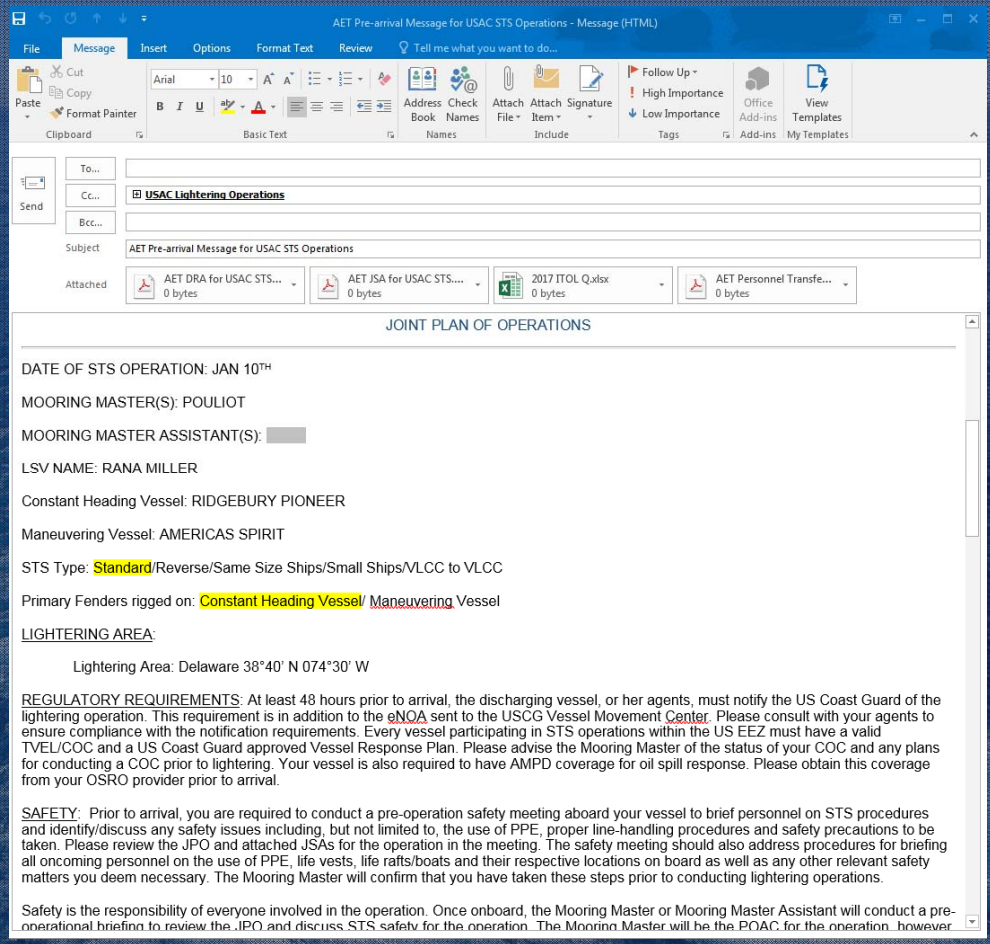
PRE-ARRIVAL MESSAGES SENT TO SHIP

To obtain screening documents:

ITOL Q (can be completed in Q88)
GA Plan Showing Mooring Arrangement
Mooring Diagram
Q88
IOPP Certificate
UPDATED CLASS STATUS
P&I CERT
CLC
BCLC
CERTIFICATE OF CLASS
STS APPROVAL LETTER (FROM CLASS)
USCG COC
OFFICER MATRIX

To provide instructions to the ship:

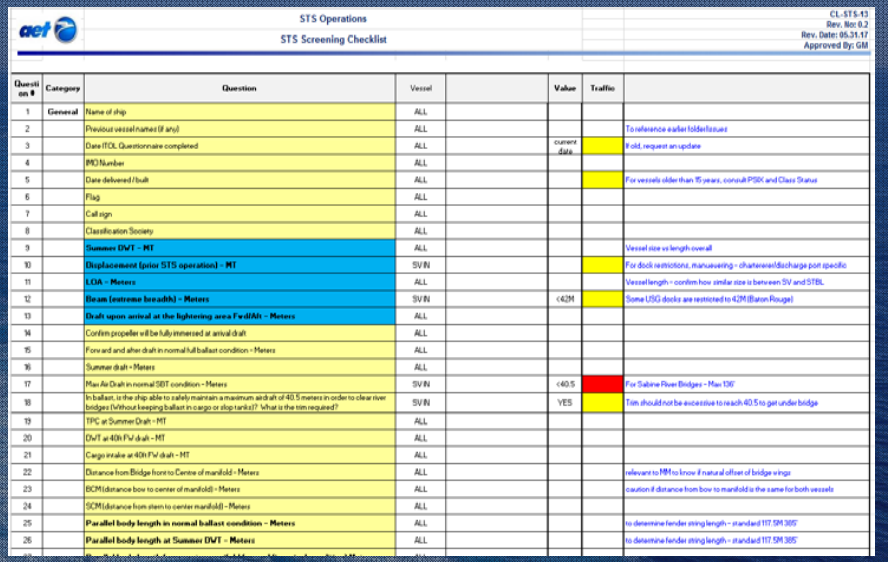
- *AET contact information and communications requirements*
- *Local regulatory requirements*
- *Risk assessments and JSAs for the STS operation and location*
- *Personnel transfer procedures*
- *Maximum weather parameters*
- *A complete description of the planned operation and an initial Joint Plan of Operations*
- *Detail of fenders, hoses and logistical support for the operation*
- *Instructions for preparing moorings, manifolds, cranes and associated equipment*
- *Details for contacting the LSV and Mooring Master in advance of the operation*



STS VESSELS SCREENING TO ENSURE SAFETY & COMPATIBILITY

Review for STS suitability and mooring compatibility with other ship:

- Screening checklist based on ITOL Q
- Mooring arrangement review and preliminary mooring plan
- AET STS performance history and past records (kept since 2010)
- Fender size requirements and lightering parameters
- Crane outreach calculator



STS Operations
STS Screening Checklist
CL-STS-13
Rev. No: 0.2
Rev. Date: 05.31.17
Approved By: GM

Question #	Category	Question	Vessel		Value	Traffic	
1	General	Name of ship	ALL				
2		Previous vessel named (if any)	ALL				To reference earlier folder/issues
3		Date ITOL Questionnaire completed	ALL		current date		If old, request an update
4		IMO Number	ALL				
5		Date delivered / built	ALL				For vessels older than 15 years, consult PSBK and Class Status
6		Flag	ALL				
7		Call sign	ALL				
8		Classification Society	ALL				
9		**Summer DWT - MT**	ALL				Vessel size vs length overall
10		**Displacement (prior STS operation) - MT**	SVN				For dock restrictions, manuevering - charterer/discharge port specific
11		**LOA - Meters**	ALL				Vessel length - confirm how similar size is between SV and STBL
12		**Beam (extreme breadth) - Meters**	SVN		<42M		Some USG docks are restricted to 42M (Baton Rouge)
13		**Draft upon arrival at the lightering area Fwd/Aft - Meters**	ALL				
14		Confirm propeller will be fully immersed at arrival draft	ALL				
15		Forward and after draft in normal full ballast condition - Meters	ALL				
16		Summer draft - Meters	ALL				
17		Max Air Draft in normal SBT condition - Meters	SVN		<40.5		For Sabine River Bridges - Max 136'
18		In ballast, is the ship able to safely maintain a maximum airdraft of 40.5 meters in order to clear river bridges (Without keeping ballast in cargo or slop tanks)? What is the trim required?	SVN		YES		Trim should not be excessive to reach 40.5 to get under bridge
19		TPC at Summer Draft - MT	ALL				
20		DWT at 40ft FW draft - MT	ALL				
21		Cargo intake at 40ft FW draft - MT	ALL				
22		Distance from Bridge front to Centre of manifold - Meters	ALL				relevant to NM to know if natural offset of bridge wings
23		BCM (distance bow to center of manifold) - Meters	ALL				caution if distance from bow to manifold is the same for both vessels
24		SCM (distance from stern to center manifold) - Meters	ALL				
25		**Parallel body length in normal ballast condition - Meters**	ALL				to determine fender string length - standard 117.5M 385'
26		**Parallel body length at Summer DWT - Meters**	ALL				to determine fender string length - standard 117.5M 385'

Vessel Name	Vessel Type	Rating	SS/STBL	Location	Issue Type	Issue Date	Reported BY	
Advantage Solar	SUEZ		STBL	USG	Mooring arrangement Basket transfer HMPE	5/12/16 8/1/2017	DBoudreaux CLivingston	Daylight restricted and does n limited for the tie up arrangem risk crossing wires over their s
Advantage Spring	SUEZ		STBL	USG	Mooring arrangement Basket transfer HMPE	8/15/16	GUO	there is no suitable chock and suppose within 35 meters; so chock) of after spring paid out
Advantage Sun	SUEZ		SS	URU	Basket transfer HMPE	2/24/16	Khood	Has HMPE lines. Agreed to ta
Amore Mio II	SUEZ		STBL	USG	Management	1/13/16	Boudreaux	Crane issues that were not re
Cape Bellavista	SUEZ		SS	URU	Speed	8/14/15		Cannot reduce DSA below 6.2
Front ULL	SUEZ		STBL	USG	Equipment	1/2/18	Le Goubin	FRONT ULL has a system on t into a slow cycle ahead for 2 m prior to berthing and I asked h
GC Fuzhou	VLCC		STBL	USG	Equipment	5/8/18	Mignano	At 08:23SLT, during initial mo cooling line was disassembled further incident
New Century	VLCC		STBL	URU	Crane Outreach	10/3/17	Khood	Crane is too short (4.39 meter
Ridgebury Pioneer	VLCC		STBL	USAC USG	Management Equipment	1/25/18	Khood	Multiple issues. Full blackou fuel. Lost on steering pump p Need to address manageme
United Kalavrita	SUEZ		STBL	USG	Management Incident	4/19/18	B Baldwin	Requires LOM approval for inc facts for lightering to customer

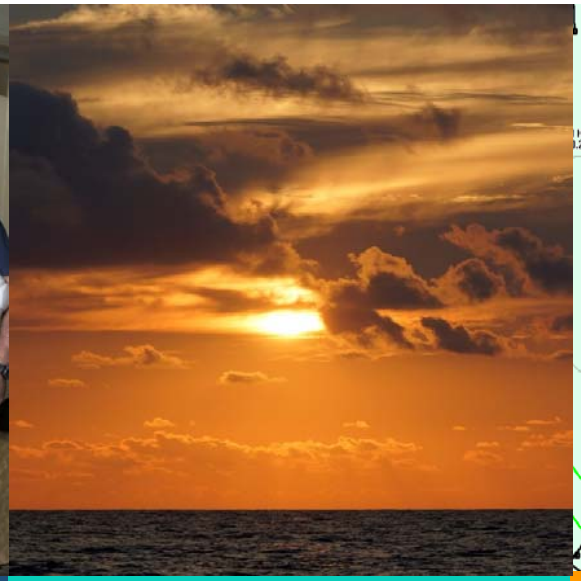
MOORING MASTER PRE-ARRIVAL COMMUNICATIONS

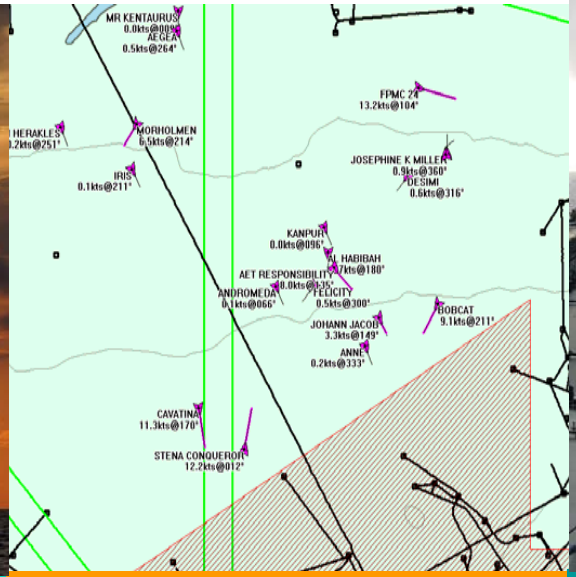
- Estimated time to start operations
- Rendezvous arrangements
- Weather report
- Preliminary mooring plan

UTC StormGeo	Dec-31 12z	15z	18z	21z	Jan-01 00z	03z	06z	09z	12z	15z	18z	21z	Jan-02 00z	03z	06z	09z	12z	15z	18z	21z	Jan-03 00z	03z	06z	09z	12z	15z	18z	21z	Jan-04 00z	03z	06z	09z	12z	15z	18z	21z
Air Temperature																																				
Air Temperature (°C)	-3.6	-4.5	-4.5	-4.5	-4.5	-5.8	-5.8	-6.7	-6.7	-5.2	-5.2	-3.5	-3.5	-3.8	-3.8	-3.8	-3.8	-3.4	-3.4	-1.7	-1.7	-1.3	-1.3	-1.1	-1.1	1.5	1.5	4.0	4.0	4.1	4.1	2.1	2.1	0.2	0.2	-1.5
Sea Surface Temperature																																				
SST (°C)	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4
Visibility																																				
Visibility (nm)	9.8	9.0	9.0	9.0	9.0	8.6	8.6	7.8	7.8	7.8	7.8	9.0	9.0	8.3	8.3	9.0	9.0	9.0	9.0	10.1	10.1	10.8	10.8	10.8	10.8	10.8	10.8	10.7	10.7	9.2	9.2	7.6	7.6	7.8	7.8	9.4
Humidity																																				
Humidity (%)	74	69	69	75	75	78	78	81	81	75	75	67	67	74	74	70	70	73	73	63	63	60	60	53	53	54	54	61	61	65	65	86	86	69	69	72
Wind																																				
Wind Direction	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NW	NW	NW	NW	NNW	NNW	NW	NW	WNW	WNW	WNW	WNW	W	W	SSW	SSW	S	S	N	N	NNW	NNW	NW	NW	NW
Wind Speed (kts)	25	22	22	25	25	27	27	29	29	31	31	27	27	30	30	29	29	24	24	21	21	20	20	11	11	12	12	17	17	15	15	28	28	30	30	35
Wind Gusts (kts)	33	30	30	33	33	35	35	38	38	42	42	36	36	40	40	38	38	33	33	28	28	26	26	15	15	16	16	23	23	20	20	38	38	41	41	47
Seas																																				
Sea Direction	NW	NNW	NNW	NW	NW	NNW	NNW	NNW	NNW	NNW	NNW	NW	NW	NW	NW	NW	NW	NW	NW	WNW	WNW	WNW	WNW	WNW	WNW	SSW	SSW	S	S	NNW	NNW	N	N	NW	NW	NW
Sea Height (m)	1.6	1.1	1.1	1.3	1.3	1.5	1.5	1.5	1.5	1.6	1.6	1.4	1.4	1.6	1.6	1.6	1.6	1.2	1.2	1.1	1.1	1.0	1.0	0.5	0.5	0.5	0.5	1.1	1.1	0.6	0.6	1.9	1.9	1.5	1.5	2.1
Sea Period (sec)	4.0	3.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	3.0	3.0	2.0	2.0	4.0	4.0	4.0	4.0	4.0
Swell																																				
Swell Direction	NW	NNW	NNW	NNE	NNE	NNE	NNE	WNW	WNW	NNW	NNW	NW	NNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	ESE	ESE	WNW	WNW	WNW	WNW	WNW	WNW	ESE	ESE	WNW	WNW	NNE	NNE	NNE
Swell Height (m)	2.0	1.5	1.5	0.5	0.5	0.5	0.5	0.7	0.7	1.8	1.8	1.7	1.7	1.8	1.8	1.9	1.9	1.6	1.6	1.1	1.1	0.5	0.5	0.8	0.8	0.4	0.4	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.4
Swell Period (sec)	6.9	6.3	6.3	6.9	6.9	6.9	6.9	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	12.3	12.3	5.2	5.2	5.2	5.2	4.7	4.7	12.3	12.3	5.2	5.2	6.3	6.3	6.9
Significant / Maximum Waves																																				
Sig. Wave Height (m)	2.6	1.9	1.9	1.4	1.4	1.6	1.6	1.7	1.7	2.4	2.4	2.2	2.2	2.4	2.4	2.5	2.5	2.0	2.0	1.6	1.6	1.1	1.1	1.0	1.0	0.7	0.7	1.2	1.2	0.6	0.6	1.9	1.9	1.6	1.6	2.2
Max Wave Height (m)	4.8	3.5	3.5	2.6	2.6	2.9	2.9	3.1	3.1	4.4	4.4	4.2	4.2	4.4	4.4	4.6	4.6	3.8	3.8	2.9	2.9	2.1	2.1	1.8	1.8	1.2	1.2	2.1	2.1	1.1	1.1	3.6	3.6	3.0	3.0	4.0
Current																																				
Current Direction	SSE	S	SW	W	SSE	SSE	SW	WNW	ESE	SSE	S	SW	S	SSE	S	W	E	SE	SSE	WSW	NNE	NNE	NNE	NNE	NNE	E	E	E	E	E	E	E	E	E	E	E
Current Speed (kts)	0.6	0.8	0.5	0.3	0.3	0.7	0.5	0.4	0.2	0.7	0.7	0.4	0.3	0.7	0.5	0.2	0.1	0.7	0.6	0.3	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

Wind alerts in red for values >= 34 knots
Wave alerts in red for values >= 3 meters

STS CHALLENGES





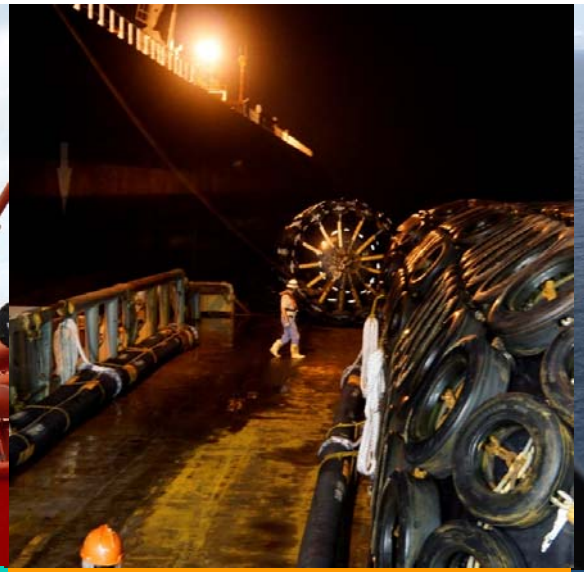
Transfer of personnel

Weather

Traffic

Safe approach in a controlled manner

STS CHALLENGES (CONT'D)



Rigging of STS equipment safely

Safe cargo transfer

Crew safety and fatigue management

Emergency Preparedness

WEATHER

Approach and mooring shall not be undertaken if either of the following conditions exist:

- The wind velocity is 30 knots or more
- The wave height is 3 meters (10 feet) or more

Cargo transfer operations shall cease and transfer hoses shall be drained when either of the following conditions exist:

- The wind velocity exceeds 40 knots
- Wave heights exceed 4 meters (13 feet)

If conditions have resulted in cargo stoppage, the MM should separate the vessels unless the weather is expected to improve quickly (i.e. a passing squall) or if it is unsafe to do so.

These are maximum limits. For specific parameters based on the type of operation, refer to Operational Parameters Guidelines (Appendix STS02).

Notwithstanding the above criteria, if the MM or either vessel Masters deem the conditions unsafe for remaining alongside, the vessels shall cease all operations and unmoor accordingly.

PERSONNEL TRANSFER

- Transfer Basket – safest and preferred method
- Helo – may be delayed by weather conditions ashore or at the STS area
- Pilot Ladder – requires clam sea conditions

TRANSFER BASKET

HELO

PILOT LADDER

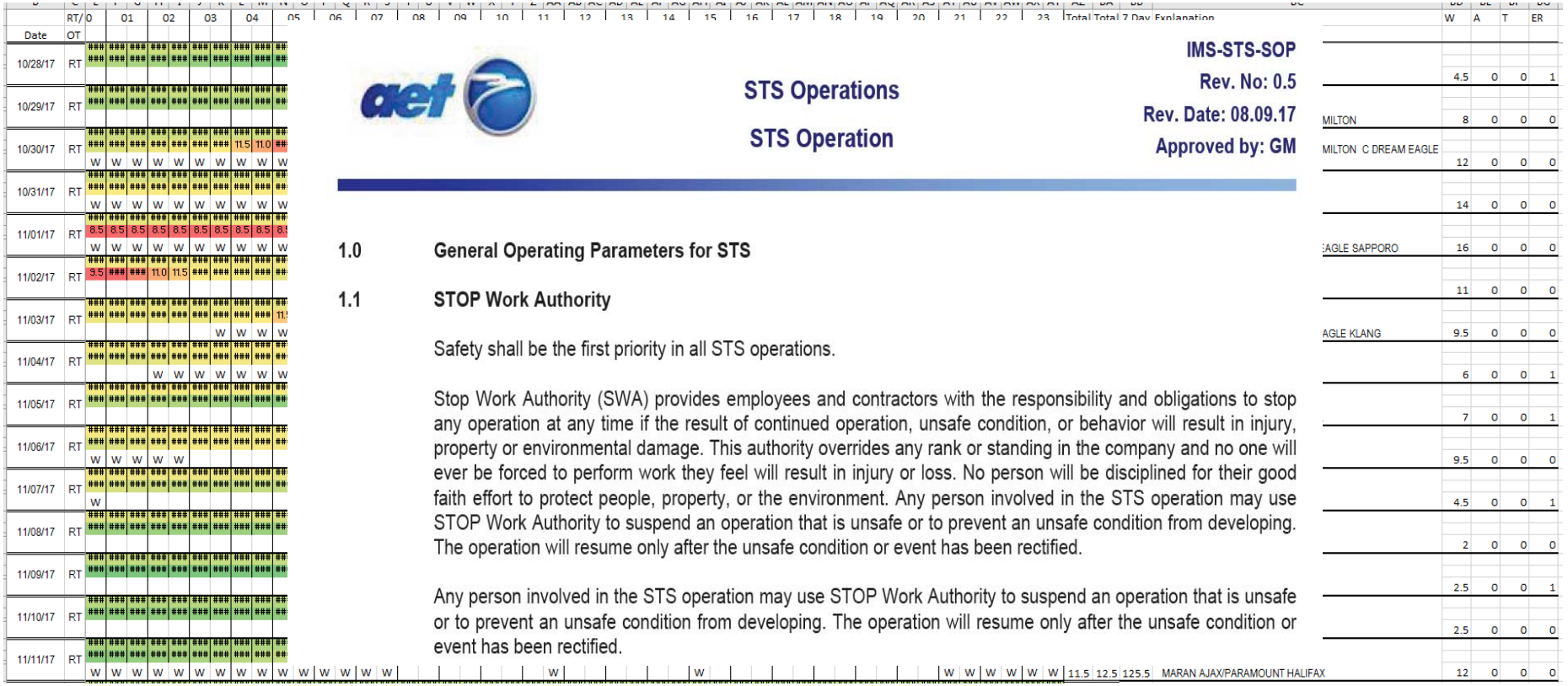
DEPLOYMENT AND RETRIEVAL OF EQUIPMENT

WIRES

FENDERS

HOSES

CREW SAFETY AND FATIGUE MANAGEMENT



IMS-STS-SOP
Rev. No: 0.5
Rev. Date: 08.09.17
Approved by: GM

STS Operations

STS Operation

1.0 General Operating Parameters for STS

1.1 STOP Work Authority

Safety shall be the first priority in all STS operations.

Stop Work Authority (SWA) provides employees and contractors with the responsibility and obligations to stop any operation at any time if the result of continued operation, unsafe condition, or behavior will result in injury, property or environmental damage. This authority overrides any rank or standing in the company and no one will ever be forced to perform work they feel will result in injury or loss. No person will be disciplined for their good faith effort to protect people, property, or the environment. Any person involved in the STS operation may use STOP Work Authority to suspend an operation that is unsafe or to prevent an unsafe condition from developing. The operation will resume only after the unsafe condition or event has been rectified.

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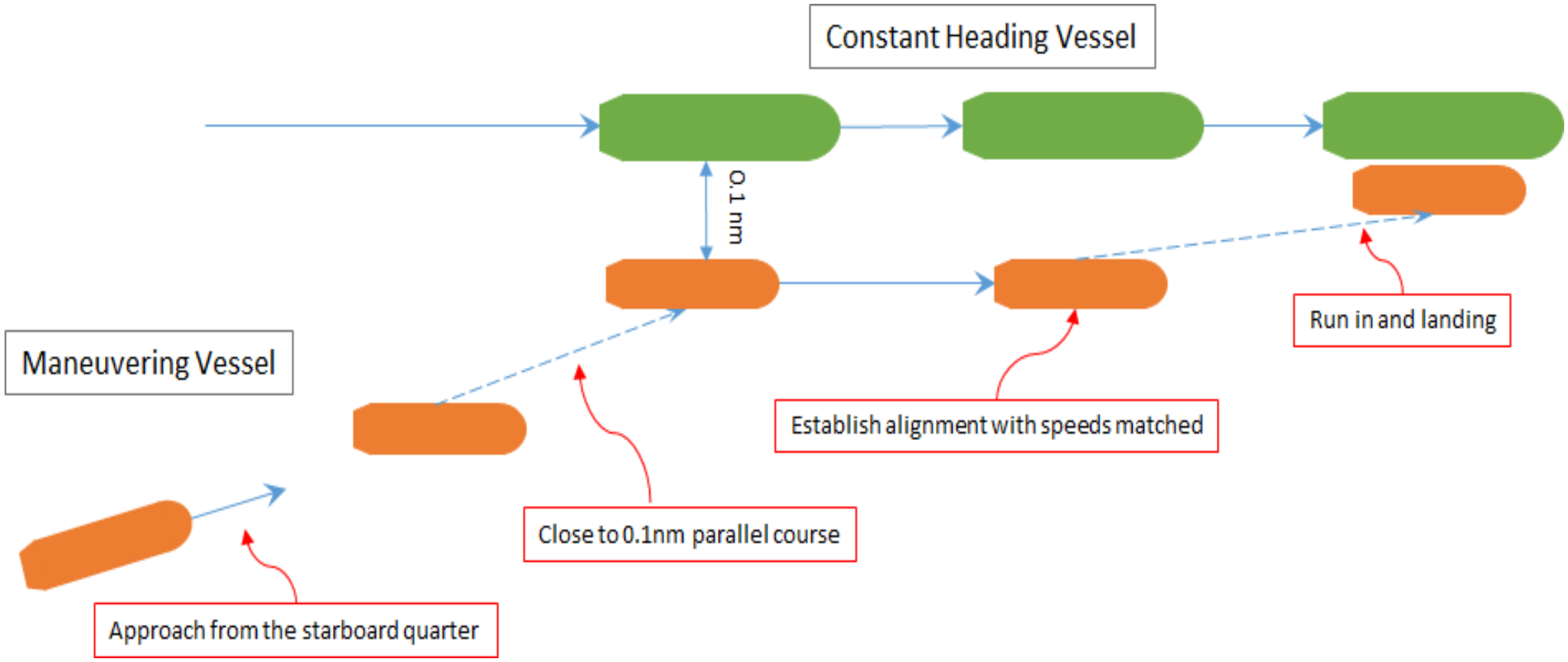
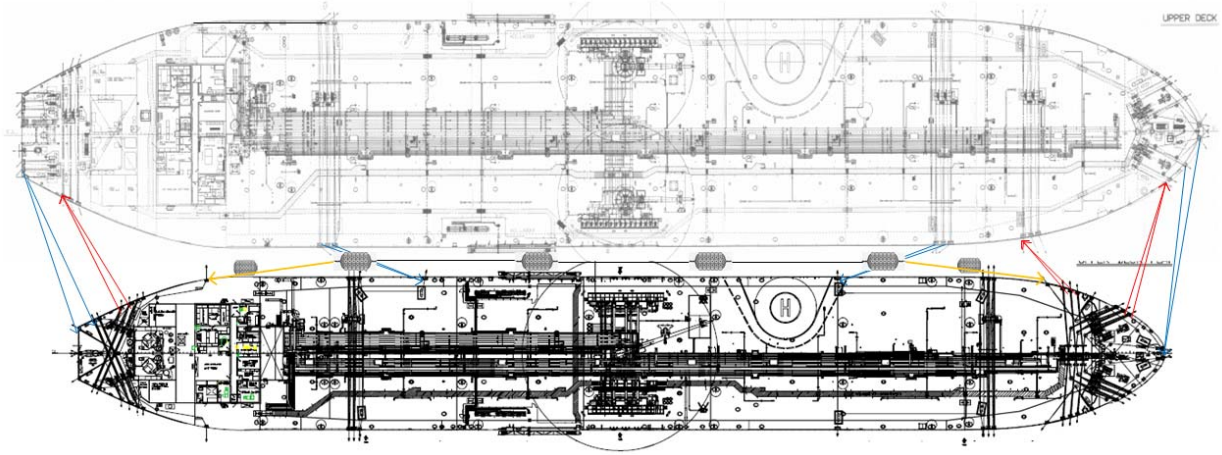
MOORING MASTER - MASTER INFORMATION EXCHANGE AND SAFETY BRIEFING

- Review Joint Plan of Operations
- Discuss vessel maneuvering characteristics
- Discuss operational safety and Stop Work Authority
- PPU Docking Aid Setup

APPROACH


Constant Heading Vessel
0.1 nm
Maneuvering Vessel
Run in and landing
Establish alignment with speeds matched
Close to 0.1nm parallel course
Approach from the starboard quarter

MOORING



CARGO TRANSFER

STS Operations
Standing Orders for STS Operations

FR-STS-07
Rev. No: 0.0
Rev. Date: 08.15.16
Approved By: GM

CARGO OPERATIONS

Maintain hourly exchange of cargo rate and quantity transferred with other vessel. Ensure deck watch is at the manifold at all times. Inform the Mooring Master if:

- There is a significant unresolved difference in cargo figures
- There is any unplanned stoppage or delay in cargo transfer

EMERGENCY SITUATIONS

In the event of an emergency condition arising, immediately notify the Mooring Master and implement the STS Contingency Plan and appropriate vessel contingency plans.

MOORING MASTER SPECIFIC INSTRUCTIONS

Master Signature	Mooring Master Signature

STS Operations
Standing Orders for STS Operations

FR-STS-07
Rev. No: 0.0
Rev. Date: 08.15.16
Approved By: GM

The STS transfer operation is under the advisory control of the Mooring Master, however the Master of each vessel remains responsible for the safety of his own ship, its crew, cargo and equipment at all times. The Officer on Watch will follow these Standing Orders. Do not hesitate to contact the Mooring Master at any time if in doubt.

WEATHER AND NAVIGATION

Notify the Mooring Master if:

- Wind speed is increasing unexpectedly or is consistently gusting above 25kts
- Vessel does not appear to be holding position
- Squalls, thunderstorms or lightening are tracking toward the vessel
- Vessels approaching with CPA of less than 1.0 NM and you can't contact them

COMMUNICATIONS

During cargo operations, essential personnel on both ships should have a reliable, common means of communication at all times, including a back-up system.

During cargo operations, in the event of complete loss of communications between ships, the emergency signal should be sounded and all operations in progress should be suspended immediately. Operations should not be resumed until satisfactory communications have been re-established.

MOORINGS

Moorings should be inspected frequently. Mooring wires should be greased where they pass through the chocks. Adjustments to moorings should only be made under direction of the Mooring Master or Mooring Master Assistant. Call the Mooring Master if:

- Any winch brakes render or mooring lines parted
- Vessels are experiencing increased movement and mooring lines are shock loading
- If there is any doubt about the condition of the moorings

FENDERS

Fenders must be inspected regularly during the cargo transfer operation. The primary fender wire should be greased regularly where it passes through the chocks and tended under direction of the Mooring Master Assistant as required. Inform Mooring Master or Mooring Master Assistant if the following is observed:

- Damage to fenders, fender moorings or associated equipment
- There is excessive movement of fenders
- If there is any doubt about the condition or position of the fenders

HOSES

Hoses and their securing should be inspected frequently during cargo operations. Inform the Mooring Master if:

- Hoses connections are leaking
- There is excessive movement of the hoses
- If there is any doubt about the positioning of the hoses

STS CONTINGENCY PLANS AND SPILL RESPONSE

STS Operations

Contingency Plan for STS Operations

FR-STS-08
Rev. No: 0.1
Rev. Date: 04.04.17
Approved By: GM

GENERAL PRINCIPLES

The STS transfer operation is under the advisory control of the Mooring Master. The Master of each vessel remains responsible for the safety of his own ship, its crew, cargo and equipment at all times. All emergencies or potential emergencies MUST be immediately reported to the Mooring Master. In the event of an actual emergency, the Master will communicate the emergency by all available means, including:

- Sound the **EMERGENCY SIGNAL: FIVE OR MORE SHORT BLASTS ON EITHER SHIP'S WHISTLE**
- Via VHF or UHF radio: The nature of the emergency and action being taken to address it
- Continue to communicate on a regular basis on the status of the emergency and additional actions taken

The sections below provide guidance for addressing emergencies or potential emergencies that may occur.

APPROACH AND MOORING

Both vessels must at all times be ready to abort berthing operations if necessary. In the event of a propulsion or steering failure, or any other problem which adversely affects the maneuvering of your vessel:

- The Master must immediately inform the Mooring Master the failure or problem
- The Mooring Master will abort the approach and inform both vessels of this action
- Both vessels must keep each other informed of any actions taken and status of the situation
- If the approach is aborted, the stand-on vessel should, if possible, maintain constant course and speed unless instructed to do otherwise by the Mooring Master

CARGO OPERATIONS

In the event of any emergency during cargo transfer, the transfer must be immediately stopped and manifold valves closed.

In the event of, **FIRE OR EXPLOSION,** each vessel will activate their emergency response procedures. The Mooring Master may initiate emergency separation of the vessels.

In the event of **GAS ACCUMULATION ON DECK:**

- Cargo transfer should be immediately stopped if excessive gas vapors are detected around decks and manifolds or in either vessel's interior spaces.
- If necessary, to control gas accumulation, the Mooring Master may maneuver the vessels to mitigate the situation
- Transfer should not be resumed until it has been determined that no risk to personnel or vessels exists.

In the event of **ACCIDENTAL CARGO RELEASE**

- The Mooring Master will confirm that the vessel Master has made proper notifications and initiated response procedures as per their vessel's SOPEP/VRP.
- The cargo transfer will not be resumed until it is agreed between both vessels that it is safe to do so.

EMERGENCY SEPARATION

An emergency separation may be initiated by the Mooring Master if one of the STS vessels has become disabled and it is deemed prudent to separate OR if unintended separation is occurring due to environmental conditions or fo any other reason he deems warrants it. In an emergency separation the following steps will be taken:

- Sound the emergency signal and call all available personnel to mooring stations
- Stop cargo transfer, close manifold valves, open drain lines
- Disconnect hoses using the quick release couplings
- Ascertain if propulsion is available and advise the Mooring Master
- If the anchored vessel has propulsion, the Mooring Master may give the order to heave the anchor
- Moorings will be released at the direction of the Mooring Master, by any means available. In some cases, it may be necessary to disengage the winch drums and release the brakes and let the wires run off the drums.
- If propulsion is unavailable on one of the ships, the moorings may be used along with wind and current to assist in separation

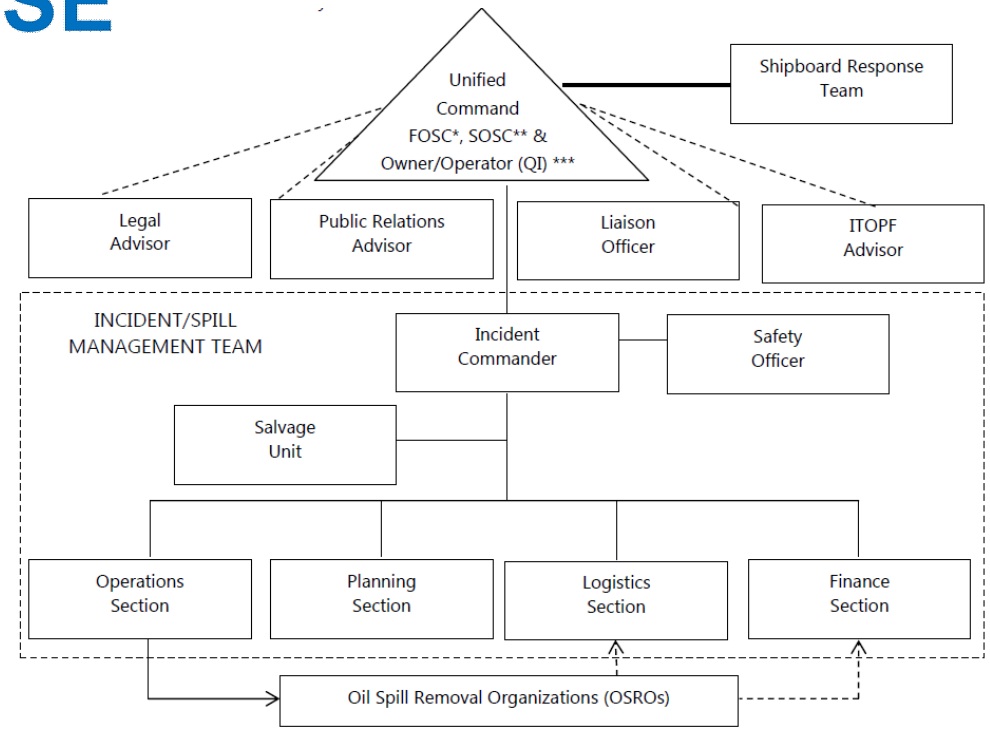
Any action taken by either vessel should be clearly conveyed to the other vessel and Mooring Master until the vessels are clear of each other.

MEDICAL EMERGENCY

Medical emergencies involving shipboard personnel should be handled by the ship's Master following the ship's plans. The Mooring Master may provide guidance on local resources. In the event of a medical emergency involving the Mooring Master or Mooring Master Assistant, the Master should notify the LSV Captain who will initiate local medical emergency response as outlined in the JPO.

Master Signature	Mooring Master Signature

SHORESIDE CONTINGENCY PLANS AND SPILL RESPONSE



UNIFIED COMMAND SYSTEM

*FOSC: Federal On-Scene Coordinator
**SOSC State On-Scene Coordinator
***QI: Qualified Individual

ENSURING A SUSTAINABLE FUTURE TOGETHER

Embracing responsibility

- Defining industry standards
- Pioneering and innovating

Investing in partnerships

Creating long-term strategic relationships with our key stakeholders

Empowering our people

Nurturing an empowered and passionate workforce to achieve corporate ambitions


aet
Moving Energy
to Build a Better World