

USER MANUAL – GAS CARRIER

RAPID RESPONSE DAMAGE ASSESSMENT

February 23, 2021



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Revision History

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|-------------------------|--|-----------------|
| September 25, 2019 | Added Copyright reference to front page. | RH |
| | Added note on Page 5 about changes to vessels principal characteristics. | RH |
| February 23, 2021 | Added reference to Isolated Vapor Pockets | RH |

If you need Emergency Stability and Strength Analyses, call RRDA now at +1-(281)-872-6161 and email the most recent loading computer output to rrda@eagle.org.

- All pages of the output should be sent.
- State the voyage number
- State date and time of the condition.
- Note fuel burn and any other significant revisions to the condition.

Note regarding changes to the principal characteristics of the vessel.

Any changes made to the vessel that revises lightship, hydrostatic particulars or hull strength, must be communicated to rrda@eagle.org for consideration. Examples of this are a tanker conversion to FPSO and an added mid-body section to a container ship. Other conversions apply.

SECTION

1

RRDA Program

1.1 General Information

RRDA maintains a website for access to the latest RRDA User Manual and other related documents. The page is found at the following link:

<https://ww2.eagle.org/en/Products-and-Services/rapid-response.html>

RRDA complies with the following regulations and industry guidelines:

- MARPOL Regulation 1/37(4), as circulated by resolution mepc.117(52), all oil tankers of 5,000 tonnes deadweight or more shall have prompt access to computerized shore-based damage stability and residual structural strength calculation programs.
- MARPOL 73/78 Annex I, Regulation 37 requires a shipboard oil pollution emergency plan (SOPEP) for all tankers of 150 gross tons or more and all other vessels of 400 gross tons or more.
- US Coast Guard requirements of OPA 90 in 33 CFR 155.240 for oil tankers and offshore oil barges, in which owners are required to have “prearranged, prompt access to computerized shore-based damage stability and residual structural strength calculations.”
- The ISM Code, Section 8, requires the company to establish procedures to respond to potential emergency shipboard situations, including the use of drills and exercises to prepare for emergencies.
- OCIMF Guidelines on Capabilities of Emergency Response Providers.
- IACS Rec. No. 145 Recommendation for the Operation of Shore-Based Emergency Response Services.

The ABS Rapid Response Damage Assessment (RRDA) Program is administered from ABS Headquarters in Spring, Texas, USA. The facility provides rapid response damage assessment support during an emergency incident affecting an enrolled vessel’s stability and hull strength.

RRDA maintains an agreement with the vessel owner, to provide this service and vessel-specific data for your ship is stored electronically at ABS. This data is provided for responding to an emergency on board. RRDA should be considered an extension of the ship’s own shoreside emergency response team capability.

RRDA is activated when the Master or other owner-authorized person calls the RRDA 24-hour emergency number and requests assistance with a vessel emergency incident.

The time required for RRDA to provide accurate analyses for any given scenario affecting stability and strength is dependent on:

1. Receipt of the vessel load condition and damage reports
2. The complexity of the problem

The RRDA Program does not cover salvage engineering, class surveys, or surveys in connection with repairs, damages, conversions, compliance with outstanding recommendations, extensions, lay-up or reactivation, modifications/alterations, riding ship, change of flag or new installations.

When requested by a flag Administration, ABS is obliged to provide details of its evaluations and files. When a vessel is classed or issued with a Load Line by ABS, the ABS Classification department will be advised that the RRDA team is evaluating damage on an ABS-classed or Load Line-only vessel. The ABS RRDA team will review the most recent available survey status for the vessel and will communicate response activity to the ABS Classification department for consideration. However, a survey by the class surveyor continues to be a requirement for subsequent evaluation of damage and repairs or when a Certificate of Fitness to Proceed¹ is to be issued.

ABS do not act as a principal in the matter of salvage or repairs. ABS can only act in an advisory capacity, leaving it always to the client to accept or reject such recommendations as ABS may make. ABS has no authority to order or contract for repairs, salvage or other matters.

1.2 Instructions for Validating Enrollment Status

This instruction applies to vessels that are ABS classed only.

(Vessel that are not classed with ABS, will be provided an RRDA Certificate valid for 12 months)

This instruction is intended to ensure that Masters, vessel managers and other parties (Port State Control Officers, Vetting Inspectors, etc.), can easily validate whether a vessel is enrolled in the ABS RRDA Program.

There are two means to confirm if a ship is enrolled in RRDA.

1. Examination of the ABS Class Certificate.
The vessel is enrolled in the RRDA program if the Class Certificate shows “RRDA” in the Additional Notations.
For example:

ADDITIONAL NOTATIONS
RRDA, BWE, CRC(I), TCM, GRAB [20]
2. The Class Record
Details provided in the ABS Record are available via the internet and provide reference to the RRDA notation as follows:
<https://ww2.eagle.org/> > Rules and Resources >ABS Record, Online Database >Search the Database >Enter vessel name or other search criteria >Scroll to Additional Notations.
For example:

| Additional Notations |
|-----------------------------------|
| RRDA, BWE, CRC(I), TCM, GRAB [20] |

¹ Class authorization for the ship to transit, issued after recommendations made by the attending surveyor have be completed.

1.3 Types of Analyses for Response

Using the RRDA HECSALV™ model for the ship, the following useful analyses can be made:

1. Ground reaction and force to free with allowance for tide
2. Deadweight to be lightered or shifted to refloat
3. Effect on stability due to flooding, grounding, wind heeling, cargo loss or shifting, liquefaction (bulk carriers)
4. Oil outflow
5. Bending and shear stresses caused by pinnacle loads with the ship aground
6. Hull girder strength with wave loading
7. Local strength in the damaged area
8. Evaluation of the plans for offloading, ballasting or cargo transfer
9. Other calculations as appropriate for the vessel's condition

1.4 Drills

Knowledge about the RRDA program may be improved with regular drill activity. Drills correctly align mutual expectations and promote a more efficient level of response should an actual incident occur.

Vessel managers usually exercise their response capability annually and invite RRDA to participate at the appropriate level. Drills may connect RRDA and the ship directly, but it is more usual that RRDA communicates with the ship manager DPA/response team ashore, who relay related information to and from the vessel. This relieves the Master of the need to duplicate calls and ensures all parties are using the most current information. (This is most relevant in an actual response)

RRDA's capacity for response may be tested at any time and to the extent the vessel manager deems appropriate. Generally, though, provision of drill activity is contingent on the following:-

1. Notification is given to RRDA by email (rrda@eagle.org), with at least one week notice.
2. Any charges to be incurred by the vessel manager are agreed in advance.
3. RRDA may decline a proposed drill time if the drill activity is in conflict with other scheduled drill activities previously agreed to by RRDA.
4. RRDA may cease drill activities if RRDA is activated for an actual ship incident.

The extent that RRDA is involved in a drill can vary depending on the operator's requirement. Variations are:-

1. Live drill role play. RRDA is activated and provides analyses reports and recommendations according to the scenario and information provided by the operator. This tests RRDA's capacity to respond.
2. Pre-drill analyses. RRDA contributes to a drill scenario developed by the operator, providing accurate input data with respect to how the ship will react to a grounding or collision or another serious event. This is done in advance and allows the operator to script a scenario and use RRDA's reports to inject accurate results. For the operator, this validates that RRDA has an effective model of the ship and that accurate analyses can be completed, and reports generated.

3. Post-drill reporting. RRDA is requested to provide analyses reports after a drill is completed, using data provided by the operator. This will validate that RRDA has an effective model of the ship and can provide analyses of the conditions communicated by the operator.
4. Communication drill. Ship or management office calls RRDA's emergency number for a communication drill. This validates the number is correct and that RRDA can be activated. This is done by speaking with RRDA staff directly or, if after normal office hours, by speaking with an RRDA call center operator.

All drill activity is logged with RRDA.

1.5 Training

RRDA offers short training sessions that can be delivered remotely via the Web or by office visit. Contact rrda@eagle.org for details.

SECTION

2

Communications

2.1 Activating/Notifying RRDA Team

To activate the ABS RRDA team, the client is to establish verbal communication using the phone numbers provided below. RRDA is most commonly contacted by the Designated Person Ashore (DPA) but may also be contacted directly by the vessel Master.

MOST IMPORTANT - Do not attempt to initiate an RRDA response using email only.

24-hour Emergency Numbers

Primary: +1- 281-872-6161

Alternate: +1- 281-820-8697

For Consideration.

1. Do not wait to collect all information before calling. Initiate contact with RRDA immediately and provide additional information when it is available.
2. Always establish verbal communication with RRDA first. RRDA email is monitored during normal office hours only so email communications received after normal office hours will probably not connect to RRDA personnel within the time needed for an effective emergency response.

2.2 Time to Respond.

The RRDA team will respond immediately for calls received during office hours. After office hours and during weekends or holidays, your call will be taken by a call center representative who will then alert RRDA and relay message details. That process is expected to take about 30 minutes. It may be less. An RRDA Team Leader will call you back using the contact details given, and when it is confirmed that the RRDA team is required, the Team Lead and other staff will immediately travel to the RRDA facility. It is expected that RRDA will be in attendance at the office within two (2) hours after the initial call is made. It may be less.

2.3 Office Hours

The normal office hours are as listed below. During these normal office hours, a member of the ABS RRDA team can be expected to answer the incoming call directly. If personnel are temporarily unavailable, the line will automatically transfer to a call center operator who will take note of critical details and then relay that information to RRDA personnel directly.

Monday through Friday 7:30 a.m. to 4:30 p.m. (0730 to 1630) – Central US Time

Note:

Non-emergency inquiries relating to RRDA are welcomed by phone or email. Such inquiries should be made by email (rrda@eagle.org) or using the ABS main number (+1-281-877-6000).

2.4 After Office Hours

After office hours and during holidays, any emergency call directed to RRDA using the +1 281 872 6161 and the +1 281-820-8697 numbers, will be answered by the ABS RRDA call center. The caller will be asked for a contact name, vessel name and IMO number, call back number and nature of the incident. The call center operator will then connect directly with RRDA personnel to initiate the RRDA response and you will be called by the RRDA Team Leader directly thereafter.

2.5 Action After Voice Notification

After the initial phone contacts have been established and you know RRDA is activated, an email confirmation of the vessel status should be sent to RRDA.

FOR INFORMATION THAT RRDA NEEDS - GOTO Section 4.

Email:[**rrda@eagle.org**](mailto:rrda@eagle.org)
Fax:**+1-(281)-877-5964**

SECTION

3

Information Sharing

3.1 Information Requirements

Emergency incidents are not prescriptive. In an emergency, phone conversations and email exchanges with RRDA will develop the mutual communications and information requirement that is relevant to the incident. Priority will be discussed with respect to the incident and what information is most important for RRDA to receive. Effort will always be made to ensure that information requested from the vessel is important and relevant to the requirement. Early and transparent sharing of information is key.

INFORMATION THAT RRDA NEEDS - GOTO Section 4.

3.2 Load Condition Before the Incident.

MOST IMPORTANT!

The vessel's loaded condition must be provided to RRDA; without it, analysis results will not be reliable.

The load condition should be sent to RRDA as output from your loading computer with corrections offered as appropriate for bunkers or other significant changes like ballast conditions, boil-off rate, boil-off consumption, etc. If your system includes CARGOMAX software (a brand of loading computer), the exported load-case (.LC) file should be sent to RRDA. If the loading computer is other than CARGOMAX, a full .pdf of the output is preferred.

3.2.1 Departure Load Condition

You are encouraged to routinely send RRDA the departure load condition report so that it can be used by RRDA in an emergency. This will do away with the need for the condition to be sent by the vessel or manager during an emergency incident but, to ensure that no error occurs, the Voyage Number and departure port with date must be clearly identified on the report.

3.3 Isolated Vapor Pockets (IVP) in Membrane Type Tanks

Consideration is made to cargo levels and venting systems in the membrane type tank, with higher measures of list and trim. The subject is addressed in the SIGTTO Information Paper entitled Awareness of Isolated Vapour Pockets in Membrane Type LNG Cargo Tanks. It details vulnerability to the cargo tank relief valve system if two-phase flow passes through the valve rather than pure vapour and for the subsequent increasing likelihood of liquid cargo entering the pressure relief exhausts.

RRDA acknowledges the potential for IVP. It is most important that the subject be tabled for discussion at the onset of the response process. In this way, RRDA will review the vessel's reaction to load changes (ground reaction, ballasting, cargo transfer) and any potential for limiting the likelihood of IVP.

3.4 Collision/Damage/Flooding (Not a Grounding Event)

The goal of RRDA is to identify the resulting damaged state, to maintain stability, monitor hull stress and to limit pollution. The focus during a significant collision event is the monitoring of hull stresses and prevention or reduction of cargo loss and oil outflow from fuel oil tanks.

FOR INFORMATION THAT RRDA NEEDS GO TO Section 4.

3.4.1 Comments and Considerations on Collision

- i. **Ingress** - Uncontrolled ingress should be prevented or otherwise managed to the extent possible. This is particularly true for machinery spaces which have to remain operational for the vessel to function. Even so, there are circumstances, as with flooding of a ballast tank for example, that seawater ingress may not put the ship at a higher measure of vulnerability to failure and depending on design and loads, might actually reduce global or local stress about the damage.
- ii. **Pumping** - The above comment notwithstanding, unless it is clear that pumps are incapable of bettering the ingress rate, the default condition should be to keep pumping. At least until adequate assessment has been made and alternate recommendations have been considered.
- iii. **Ingress** - The rate of seawater ingress will decrease as water depth in the space increases because the pressure differential reduces as balance occurs. Therefore, initially, the pumping capacity to discharge a flooded space may not be adequate to prevent flooding but the same capacity might prevent the space from becoming fully flooded as the ingress rate slows. This may be of no concern or advantage for tank spaces that can be allowed to flood completely but, managing ingress to the lowest possible height in machinery spaces will be critical and this could provide a measure of advantage that makes the difference. Also, depending on pump type, pump efficiency may increase as the water level in a space adds pressure at the pumps inlet.
- iv. **Hull shape** - For spaces well outside the parallel mid-body and with significant flare in the hull shape such as an aft engine room, internal volume changes considerably with height above the tank top. Therefore, for a steady ingress flow rate, there will be a decrease in the rate at which water depth in the space rises as flooding progresses. Use this to be aware that you should not estimate the time it will take to flood the compartment, on the rate at which the water level rises initially, unless the space is wall-sided.
- v. **Engine room flooding** - If the engine room is located toward the aft end and is flooding, immediate consideration must be given to trimming the ship using ballast to the extent possible. This can reduce draft at the engine room and thereby also reduce ingress. RRDA will pay particular attention to hull stresses in this case.

- vi. **Nature of collision** - Was this a T-bone or side-swiping contact? This will be indicative of structural damage extent.
- vii. **Other vessel** - What is the other vessel name and IMO number? (RRDA will do a search for more details about the ship)
- viii. **Other vessel draft** - Other vessel draft at the bow. This information is useful when considering location and extent of damage. For example, damage sustained from contacting a cruise ship with an enormous bulbous bow and extensive bow flare is expected to be different to that of a more ordinary shaped bulk carrier.
- ix. **Listing** - Did your ship take a list? How much? Why? Is the ship still settling?
- x. **Ingress** - Are damaged ballast tanks taking water or not? Take soundings.
- xi. **Damage location** - If the tank is dry, damage may be isolated to above the waterline. It is critical that damage isolated above the waterline remains above the waterline. If, for whatever reason, the ship is listing to the damaged side, the condition should be checked and options weighed.
- xii. **Containment** - When the bow of another vessel contacts heavily, causing significant damage, it is more likely that the cargo tank boundary will be breached. For containment Types A and B, and the Membrane System, ingress of seawater will flash off cargo it contacts with. This will create a vapor cloud that may be explosive depending on the mixture with the surrounding air. If vapor remains in the cargo tank, it may increase the tank pressure beyond the system design and damage the tank.
- xiii. **Vapor** - Vapor accumulation in surrounding spaces is a possibility. The nature of the cargo may cause vapor to be lighter than air above a certain temperature and accumulate under deck head plating.
- xiv. **Jettison** - Jettisoning of the cargo may be considered for the safety of the vessel, when transfer of cargo within the ship is not possible due to capacity of the remaining cargo tanks.
- xv. **Strength** - When steel structure is contacted by cryogenic LNG, it is caused to become brittle and therefore its vulnerability to failure is increased.

3.5 Grounding

INFORMATION THAT RRDA NEEDS GO TO Section 4.

Ships are robust structurally and often capable of recovering well from the conditions presented by grounding. The RRDA team's first goal in a grounding situation is to accurately determine the ground reaction. This lends to determining if the ship can be refloated without lightering or the extent to which lightering arrangements must be planned. Reported flooding and the effect of tide will be considered, as well as whether there is internal capacity to change load distribution by transferring cargo, fuel or changing ballast. Consideration for the measure of stress in the hull will be made based on bottom contact details provided to RRDA or/and as provided in the diver's report.

Groundings range from soft/low impact bottom contact with no damage to fully stranded conditions and total loss. The severity of the grounding event depends on vessel velocity and inertia as the ship takes the bottom, hull shape, how much vertical reaction is developed as the ship takes the ground, sea bottom characteristics, buoyancy loss due to breaches in the hull, tidal details and subsequent exposure to the environment. For obvious reasons, an exposed and

isolated rocky shoreline in higher latitudes during the winter with contact made at High Water spring tides, introduces much higher risk to the vessel than a low impact grounding onto a muddy bottom in a river environment. Fortunately, most groundings tend to occur in the restricted maneuvering environment of port approach channels and fairways, which limits exposure and provides improved access to tugs and other resources.

3.5.1 Comments and Considerations on Grounding

- a. **Own propulsion** - (Upper seawater cooling intakes should be used where possible) In the stress and urgency of a grounding situation, there is a likely optimism that the ship can be moved using its own propulsion. Generally though, the amount of thrust generated by the propeller, especially when running astern, is relatively small compared to ground reactions likely to develop and little or no change is expected. There are exceptions. If the ship is grounded on a hard isolated pinnacle and has deeper water about the stern, immediate action to trim the ship by the stern, if available, may well allow the vessel to come off. Another example is a low reaction event with no loss of buoyancy and with the advantage of favorable tide. Even so, unless adequate heading and position control can be achieved immediately after refloat, influences of wind, current and propeller induced side forces will increase the likelihood of subsequent grounding, including damage about the stern. A proper measure of tug capacity is highly recommended any time a vessel is refloated.
- b. **Anchors**
Consideration should be made to the deployment of anchors in order to arrest movement onto the lee shore or obstruction. Clearing anchors from the hawse in a controlled condition is preferred and then either walking the chain or letting-go, depending on the water depth close-in and whether the seafloor is rising gently or shelving rapidly.
- c. **Drafts** - Your initial report to RRDA should include a best estimate of the drafts aground *and the time that the drafts were taken*. RRDA's analyses result is contingent on the accuracy of drafts and the change that occurred when the ship grounded. We fully acknowledge that drafts may not be easy to obtain and with wave action on the hull, confidence in the accuracy of draft readings may not be high. Even so, the data is critical. Best efforts are needed to establish a baseline and tuning for improvement can always be done as the situation settles, as daylight comes and as support arrives.
 - An attending boat or tug is probably the best way to acquire good drafts and soundings about the hull.
 - If boats are not available, depending on conditions and equipment on board, the drafts may best be determined by observing the freeboard or height from the waterline to the deck or another feature such as a gunwale top. In this case, the location of each reading has to be carefully notated, preferably by frame number but other notable feature or structure on the deck will also be good, so that the hull depth dimension for the ship at these locations can be found by the RRDA team using their model, the general arrangement or other plans.
- d. **Ground definition** - An accurate ground definition must be provided when possible. When known, the shape of the contact area can be applied to the model by the RRDA team. This allows for a more detailed assessment of how the ship will react to changes in loads. It is also important in determining a more complete assessment for

- hull stresses that may be greatly influenced by bottom support and is essential for planning and monitoring purposes.
- Contact area can also be reported by sounding around the ship using a lead line or other device. Use the form provided in this manual for reporting values. Sketches are greatly encouraged. Measuring the distance from the deck edge for example, to the bottom, will be fine provided the list (in degrees) is also noted and can be allowed for by RRDA.
 - Divers may be used for reporting the contact area. Divers are essential for determining the location of single or multi pinnacle contact areas.
 - Use an attending pilot boat, tug or FRC to obtain soundings about the ship.
 - Be aware that softer bottom materials like mud and clay tend to mound and rise against the bow and will create what appear to be odd or doubtful depth readings. Trust what you have and report same.
 - Be aware that sand may be moved about the hull by strong currents with resulting changes in the sounding due to scouring and deposit.
- e. **Damage** - Structural bottom damage frequently occurs during grounding. This can be local buckling causing hull plate cracks and tearing, having little effect on longitudinal strength. Alternatively, it can be as gross deformation over large areas of the bottom with impact to the inner bottom structure and internal bulkheads. Identifying the extent of damage under these circumstances will undoubtedly be hindered due to limited or zero access. Tank and void space soundings will indicate where the hull is breached but not the extent to which longitudinal strength is lost.
- f. **Divers** - Diver support though very useful, also has significant access limitations under these circumstances. Reports can detail only the damage observed and visible. Underwater visibility may be poor, currents about the ship can be high and, in some cases, the hull can be moving making work in proximity of the hull especially dangerous.
- g. **What if?** - Consideration must be made to the potential for conditions on board deteriorating, specifically with respect to the integrity of ship systems that are intact and operational initially, but which fail later.
- h. **Salvors** - If the vessel's equipment is unavailable to remove cargo from the vessel, salvors may need specialized equipment, i.e.: Cryogenic submersible pumps, compressors to handle vapors, cryogenic hoses rated for the discharge of the cryogenic liquid, specialized receiving tanks if a suitable Gas Carrier is unavailable to receive the cargo.
- i. **Engine failure and a Lee Shore** - The case of a ship losing propulsion whilst being set down onto a lee shore can be dire, particularly when a high sea state and rocky shoreline complicate the situation. Under such circumstances, the Master will likely attempt to arrest the ship using anchors.
When weighing options, consideration may be made to determine if the ship can be ballasted to increase draft so that it takes the ground in deeper water and further from the shore than it would otherwise. This of course is contingent on loading and ballast capacity and varies with vessel design and load plan. Ideally, the resulting condition would allow the ship to be refloated after removing ballast and with suitable tug support in attendance.
- j. **Ballasting down** - If lightering or jettisoning of cargo is required to refloat, ballasting the ship to ensure it remains hard aground may be recommended. This allows for the

- lightering to be completed with no chance that the ship will unexpectedly move and create an unsafe condition. In this way, after the lightering is completed and all associated equipment and personnel are cleared away, the ship can be deballasted and refloated at an agreed most suitable time.
- k. **Stability** - Like dry-docking, when ground reaction occurs, there is a virtual rise of the center of gravity that reduces stability and influences heel, perhaps significantly when stranded on a pinnacle with falling tide. Vulnerability to excessive heel and possible deck edge immersion will be mitigated if the contact area with the bottom increases laterally and the ship becomes supported by the sea floor thereby preventing further heel.
 - l. **Refloating** - Before the ship is allowed to refloat, particularly when flooding and structural damage are identified, RRDA will analyze the refloat condition to ensure the vessel has sufficient stability and strength margin.
 - m. **Loss of Buoyancy** - When a significant measure of buoyancy is lost due to hull breaches, with flooding in several spaces, salvors may deem it necessary to induce buoyancy using low pressure compressed air inside the damaged spaces. This forces sea water back out of the hull, reduces ground reaction and improves the afloat condition. With the ship afloat, temporary patches can be applied and the vessel dewatered to the extent needed to meet the requirements of the recovery plan.
 - n. **Unaccountable list after refloating** - The drafts, list and trim will be determined by RRDA prior to the refloat, with results based on the reported loads. If there is good confidence regarding weight distribution on board and extent of flooding, but the ship refloats with a “mystery list”, consideration should be made to the possible taking-on of heavy sea floor material into damaged spaces. The extent to which such unintended loading affect list (and trim), depends on the heeling moment and the measure of the ship’s initial stability.

3.6 Lightering

Lightering the vessel may be required for refloating after a grounding event or to mitigate risks associated with hull stresses and stability. It is the vessel or salvor that will develop the plan for lightering and RRDA may assist in the plan development by providing supporting analyses that considers the effects of damage and the vessels condition.

3.7 Moving a Damaged Ship

Authorization for a damaged ship to be moved is contingent on reviews by flag, the Classification Society, Coastal State and Port Authority. Other stakeholders also contribute to the process of recovery. Decisions made will relate to the original voyage plan and whether that plan must be revised to mitigate the risks associated with the vessel’s condition. Many of these considerations remain outside of RRDA’s scope; however, when damage has been sustained to a ship that affects hull strength and stability, RRDA will continue to provide analyses that determines the margin of strength and stability for the proposed transit route. This work relies on review of accurate damage assessment reports that are usually provided by the attending class surveyor.

SECTION

4

Useful Forms

The following forms and illustrations are intended to be used for efficiently communicating important information to RRDA. The expectation is that these can be quickly completed by hand and copied to .pdf for emailing to rrda@eagle.org.

These forms are available as an editable document. Contact rrda@eagle.org for a copy.

Initial Incident Report

| | | | |
|--|-----|-----------|-----|
| Vessel Name | | | |
| IMO Number | | | |
| Type of Ship | | | |
| Incident Type | | | |
| Voyage No. | | | |
| Last Departure Port | | Dep. Date | |
| Destination | | | |
| Average Daily Fuel Burn | | | |
| Current Position | | | |
| Managing Company | | | |
| Preferred Contact Name | | | |
| Preferred Telephone | | | |
| Preferred Email | | | |
| CC. Email(s)? | | | |
| Last Departure Condition has been sent to rrd@eagle.org? (Most important) | YES | NO | |
| Correction for bunkers, BOG and consumables has been made? | YES | NO | N/A |
| Departure Conditions are sent routinely on this ship and RRDA has the condition? | YES | NO | N/A |
| Detailed stowage information has been sent to rrd@eagle.org? | YES | NO | N/A |
| ENTER COMMENTS RELATING TO THE ABOVE OR OTHER USEFUL INFORMATION HERE: | | | |

Follow-up Incident Report

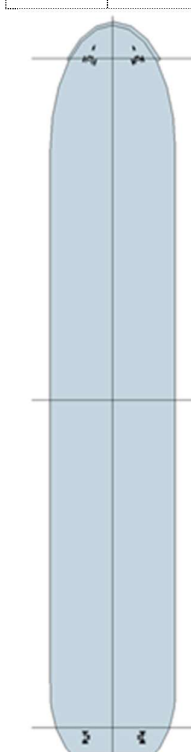
| | | | | |
|---------------------------------|--|-----------|-------|--------------------|
| Ref. Date and Time | | | | (Local/GMT) |
| Vessel Name | | | | |
| Position | Latitude | Longitude | | |
| Nature of Incident | | | | |
| Contributing Information | Hull spaces are breached | Y | N | (write note below) |
| | Pollution to the sea | Y | N | (write note below) |
| | Hull structure is known to be damaged | Y | N | (write note below) |
| | Is cargo containment impacted | Y | N | (write note below) |
| | Density of water body | kg/m3 | | |
| | Ballast system is operational | Y - @ | about | m3/hr. N |
| | Cargo pumps operational | Y - @ | about | m3/hr. N |
| | E.R. bilge system is operational | Y - @ | about | m3/hr. N |
| | Propulsion is available | Y | N | |
| | Steering is available | Y | N | |
| | Anchors are available | Y | N | |
| | Swell height (m) and period (sec) | | | |
| | Wind speed (knots) and direction | | | |
| | Photos of damage or associated subject | Y | N | |
| Vessel is Afloat | Under keel clearance | (m or ft) | | |
| | Heel/list (°) | P or S | | |
| | Trim | (m or ft) | | |
| | Isolated Vapour Pockets - Monitoring | Y | N | |
| | Max. roll angle (°) and period (sec) | | | |
| | Approx. steady heading | | | |
| | Seas breaking on deck | Y | N | |
| | Main deck openings secure | Y | N | (write note below) |
| | Deck edge immersed | Y | N | |
| | Other vessel I.D. (if collision) Name and ship type | | | |

| | | |
|--|---|----------------------------------|
| Vessel is Aground | Time of grounding (very important) | (Local/GMT) |
| | Accurate drafts (very important) | Notate to vessel sketch below |
| | Time drafts taken (very important) | Notate to vessel sketch below |
| | Tides: times and range | If requested by RRDA |
| | Heel | Y N (Add note below) |
| | Heading | |
| | Where is bottom contact | Notate to vessel sketch below |
| | Soundings about the ship | Notate to vessel sketch below |
| | Nature of the seafloor | |
| | Diver's underwater survey of contact area and damage report | Y N (write note below) |
| ENTER COMMENTS RELATING TO THE ABOVE OR OTHER USEFUL INFORMATION HERE: | | |

Additional Details About a Grounding Incident

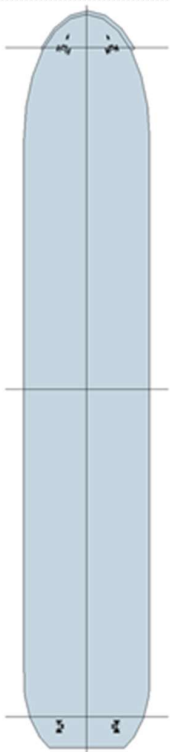
| | | | |
|---|---------|-----------|-----|
| Vessel Name: | | | |
| Date: | | | |
| 1. Drafts - Aground | | | |
| Units | Meters | Feet | |
| Time | -hrs. | Local | UTC |
| -- | Forward | Amidships | Aft |
| Port | | | |
| Starboard | | | |
| List or Heel | | Degrees | P S |
| | | | |
| 2. Approximate Area of Ground Contact | | | |
| Outline the approx. contact area on the hull outline. | | | |
| | | | |
| 3. Provide water depths (W.D.) | | | |
| Water depth values to the extent needed. | | | |
| Measured by a boat or tug? | | | |
| Measured from ship's deck? | | | |
| | | | |
| 4. Vessel Heading | | | |
| -Degrees (T) | | | |

| | | | |
|-------------|--|-------------|--|
| W.D. | | W.D. | |
| FR# | | FR# | |
| W.D. | | W.D. | |
| FR# | | FR# | |
| W.D. | | W.D. | |
| FR# | | FR# | |
| W.D. | | W.D. | |
| FR# | | FR# | |
| W.D. | | W.D. | |
| FR# | | FR# | |



Additional Details About a Grounding Incident

| | | | |
|---|---------|-----------|-----|
| Vessel Name: | | | |
| Date: | | | |
| 5. Drafts - Aground | | | |
| Units | Meters | Feet | |
| Time | -hrs. | Local | UTC |
| -- | Forward | Amidships | Aft |
| Port | | | |
| Starboard | | | |
| List or Heel | | Degrees | P S |
| 6. Approximate Area of Ground Contact | | | |
| Outline the approx. contact area on the hull outline. | | | |
| 7. Provide water depths (W.D.) | | | |
| Water depth values to the extent needed. | | | |
| Measured by a boat or tug? | | | |
| Measured from ship's deck? | | | |
| 8. Vessel Heading | | | |
| -Degrees (T) | | | |

| | | | |
|------|--|--|------|
| W.D. | |  | |
| FR# | | | |
| W.D. | | | W.D. |
| FR# | | | FR# |
| W.D. | | | W.D. |
| FR# | | | FR# |
| W.D. | | | W.D. |
| FR# | | | FR# |
| W.D. | | | W.D. |
| FR# | | | FR# |
| W.D. | | | W.D. |
| FR# | | | FR# |

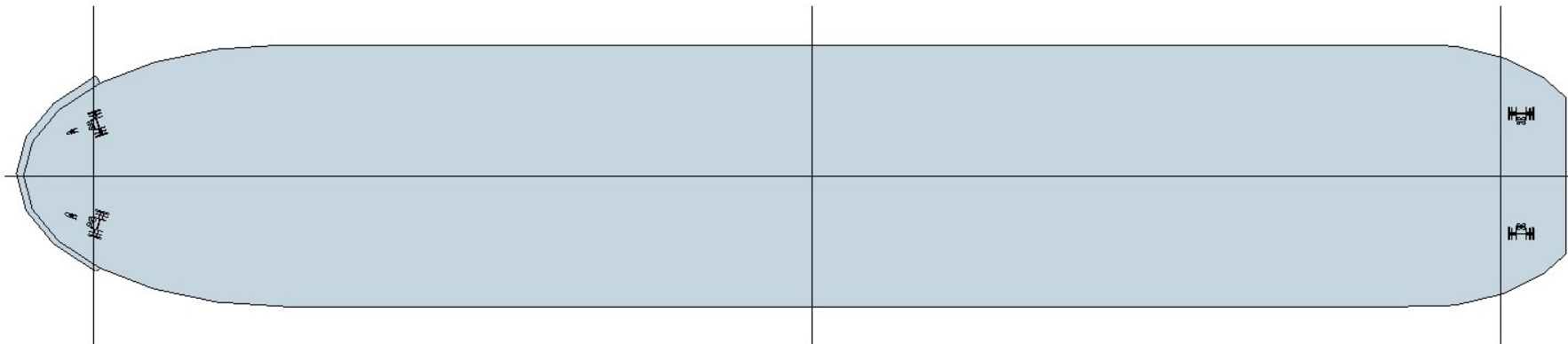
Handy Sketch for Any Incident

VESSEL NAME:

DATE and TIME:

UTC/LOCAL

USE THIS DIAGRAM TO ILLUSTRATE ANY ADDITIONAL PERTINENT INFORMATION LIKE GROUND CONTACT AREA, PINNICLES, AREA DAMAGED, BUCKLING or CRACKS, HULL BREACH, WATER DEPTHS, FREEBOARDS, DRAFTS, OBSTRUCTIONS, ETC.



VESSEL NAME:

DATE AND TIME:

UTC/LOCAL

USE THIS DIAGRAM TO ILLUSTRATE ANY ADDITIONAL PERTINENT INFORMATION LIKE GROUND CONTACT AREA, PINNACLES, AREA DAMAGED, BUCKLING or CRACKS, HULL BREACH, WATER DEPTHS, FREEBOARDS, DRAFTS, OBSTRUCTIONS, ETC.

