

GREEN BRIEFING

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"Cost to Workers: ZERO. Benefit: LIFETIME"
Courtesy: GMS

Till Date

911	14,609	70
Training Sessions	Workers Trained	Topics Covered

SSORP
Sustainable Ship and Offshore Recycling Program

LRQA VERIFIED

SAFETY PRECAUTIONS FOR FIRST CUTTING OF ENCLOSED SPACES IN SHIP RECYCLING

First cutting of an enclosed space is one of the stages in ship recycling where a worker may be exposed to a hazard that cannot be seen from outside the steel. A tank, void, cofferdam or double-bottom space may appear ordinary from the outside, yet the conditions inside can be very different. Liquid may remain in the compartment. Sludge and sediment may have collected at the bottom. Oxygen levels may have changed while the space remained closed. Toxic or flammable gases may also be present.

The first opening into a previously sealed compartment is often referred to as the first breach. Until this opening is safely made and the actual condition inside is established, workers should not depend on appearance, previous experience or vessel records alone.

This is especially relevant for water ballast tanks. A tank that carried seawater may be viewed as less hazardous than a fuel, cargo or sludge tank. Stagnant ballast water and sediment can still create dangerous conditions. Hydrogen sulphide, H_2S, may be generated through biological activity and can remain dissolved in the water. Disturbing the liquid during cutting or drainage can release this gas into the work area.

The first breach therefore needs careful planning. The opening location, cutting method, atmospheric testing, drainage arrangements, access control and rescue readiness should all be established before the plate is penetrated.

Dr. Anand Hiremath, CEO of the Sustainable Ship and Offshore Recycling Program, SSORP, explains:

“Fire prevention in ship recycling begins before hot work starts. If workers understand the fuel, the heat source, and the surrounding spaces, most fire incidents can be stopped before they begin.”

The same preventive thinking applies to first cutting. The safest time to control the hazard is before the tank is opened, while the team still has time to inspect, test, prepare the work area and decide how the first breach will be made.

This month’s Green Briefing focuses on practical precautions for first cutting of enclosed spaces and the actions workers, supervisors, gas testers, HSE personnel and rescue teams should follow before, during and immediately after the first opening.

TRAINING REACH AND PRACTICAL FOCUS

First-cutting safety is not only the responsibility of the cutter.



The training therefore focuses on questions that can be answered at the worksite. Has the correct tank been identified? Is liquid still inside? Has the tank been sounded? Is sediment present? Where is the safest point for the first opening? Has the approved cold-cutting equipment been prepared? How will the atmosphere, liquid and sediment be assessed? If liquid needs to be removed, how will this be done under control? Is the rescue team positioned close enough to respond immediately?

The objective is to make these decisions before the job becomes time-sensitive.

WHY FIRST CUTTING REQUIRES DIFFERENT CONTROLS

Routine enclosed-space entry normally takes place after the space has been opened, tested, ventilated and prepared for entry.

First cutting takes place before this condition has been established.

The steel boundary is still closed. The atmosphere inside may not have been directly accessed. Water may be trapped behind the plate. Sediment may remain at the bottom. Gas may be present above the liquid or dissolved within it. The space may also contain pressure.

When the boundary is opened, these conditions can change quickly

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A low opening can allow liquid to discharge directly through the cut. Pressure can increase the force of release. Disturbance of stagnant water can release dissolved H_2S. If workers are standing close to the opening, exposure may occur before they have time to move away.

The location and method of the first cut are therefore important controls, not simply operational choices.

Before work begins, the team should know what is behind the plate, what could be released when the opening is made, where that material could travel and where workers will be positioned.

UNDERSTANDING THE HIDDEN H_2S HAZARD

Hydrogen sulphide requires particular attention in tanks containing stagnant water, sludge and sediment.

When ballast water remains undisturbed for long periods, biological activity can consume oxygen. Conditions inside the water and sediment may become anoxic. Under these conditions, hydrogen sulphide can be generated.

Part of this gas can remain dissolved in the liquid.

This creates a hazard that may not be detected by checking only the air above the water. A headspace reading can appear acceptable while H_2S remains in the liquid below. Once that liquid is disturbed, moved or discharged, gas can be released.

Cutting, movement of the vessel, changes in temperature and disturbance of sediment can all affect the condition of the tank.

Workers should also never depend on smell to decide whether H_2S is present. Gas-detection instruments are required because smell cannot provide a reliable measurement of the atmosphere.





CLOSED TANK = POTENTIAL HIDDEN HAZARD

- Do not assume ballast water is harmless
- Do not rely on smell
- Do not cut low to drain a sealed tank
- Make the first opening at the high point
- Use cold-cutting methods
- Test the headspace, liquid and sediment
- Keep unnecessary personnel away from the workface
- If someone collapses, do not enter without protection

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WHY LOW-POINT CUTTING FOR DRAINAGE IS UNSAFE

Cutting through the lower boundary of a tank to allow its contents to drain may appear to be a quick way of emptying the compartment.

The problem is that the team loses control of the release as soon as the opening is made.

If the tank contains water, the liquid can begin flowing directly through the cut. If pressure is present, the initial discharge can be forceful. If H_2S is dissolved in the liquid, gas can be released close to the workers as the water moves and becomes disturbed.

There may be no practical way to reduce or stop the flow once the steel has been opened.

Workers also tend to stand close to a low cutting point, which places them close to the area where liquid and gas may be released.

Previous success with this method does not prove that the next tank is safe. Conditions can differ significantly between tanks and can change over time in the same tank.



One compartment may contain relatively clean water. Another may contain heavy sediment and stagnant water. One may have no pressure. Another may release its contents immediately after the first penetration.

Mr. Rahul Singh, SSORP Coordinator in Alang, explained a related principle during fire-prevention training:

"In ship recycling, the worker may be cutting one place, but the fire may start somewhere else. That is why nearby, lower, and hidden spaces must be checked before and during hot work."

First cutting requires the same wider view. The worker must consider not only the steel being cut, but also what is behind it, below it and connected to it.

FIRST BREACH AT THE HIGH POINT

The first opening into a previously sealed space should be made at the highest practical point.

The purpose of the initial opening is to create controlled access for venting and assessment. It is not intended to begin full dismantling or provide a drainage opening.

Making the opening high reduces the chance of intentionally releasing the tank's liquid contents directly through the first cut.

The opening should be limited to what is required for the planned assessment and should be made only at the location approved by the responsible supervisor or HSE personnel.

Workers should not move the opening to a lower or easier location simply because access is more convenient.

The cutting location is part of the safety plan.

COLD CUTTING FOR THE FIRST OPENING

Cold-cutting methods should be used for the first breach.

Flame cutting and other methods that introduce heat or sparks should not be used to make the initial opening into a space whose atmosphere and contents have not yet been fully assessed.

At this stage, the team may still be dealing with an unknown atmosphere. Introducing an ignition source before the condition is established can create another hazard.

Hot work should begin only after the space has been assessed, drained where required, cleaned, desludged, ventilated and tested in line with the yard procedure.

Mr. Amrish Pandey, SSORP Coordinator in Alang, explains:

“Fire prevention depends on small controls being followed every time. A clean work area, checked hose, active fire watch, and clear communication can prevent a major incident.”

This approach also applies to first cutting. Small checks carried out before the job starts can prevent a serious exposure once the steel is opened.

SOUND THE TANK BEFORE CUTTING

Before cutting on the boundary of a tank, the team needs to know whether liquid remains inside.

Tank sounding should be carried out according to the yard’s approved method.

A vessel record stating that the tank was discharged should not replace this check. Water may remain in low areas. Internal structures can trap liquid. Sediment may also retain water.

The vessel’s position after beaching can affect where liquid collects inside the compartment.



If the information remains unclear, cutting should not begin until the condition has been checked.

TEST MORE THAN THE HEADSPACE

Atmospheric testing needs to represent the condition of the space, not only the easiest location to sample.

For first-breach work, attention should be given to the headspace, remaining liquid and sediment.

The headspace should be checked at representative locations and depths where this can be done safely.

The liquid requires separate attention because gas dissolved in water may not appear in a reading taken only above the liquid.

Sediment and sludge at the bottom also need to be considered because biological activity can continue in these materials. .

SEVEN PARAMETERS

- O_2
- LEL
- H_2S
- CO
- CO_2
- CH_4
- NH_3

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Testing should be carried out using suitable instruments by the designated competent person.

Equipment should be checked and maintained in accordance with the required testing and calibration programme.

Muhammad Usman, Coordinator in Pakistan, explains:

“Workers should not guess whether a tank, pipe, or bilge is safe. If there is doubt, stop and call the supervisor. A few minutes of checking can prevent a serious fire.”

The same rule applies when there is uncertainty about gas, oxygen level, liquid, sludge or pressure.

Guessing should never decide whether a sealed compartment is safe to open.

CONTROLLED DRAINAGE AFTER THE FIRST BREACH

When liquid remains inside the tank, it should be removed through a controlled arrangement.

The first opening should be made at the high point by cold means. The space should then be assessed and tested. Only after this should remaining liquid be removed through an approved low-point connection fitted with a valve or another controlled arrangement provided under the yard procedure.

The difference is control.

A valved connection allows the discharge rate to be managed. The flow can be reduced or stopped. The discharge location can be selected in advance. Workers can be kept away from the release point and atmospheric monitoring can continue during drainage.

Any water or liquid released from a space suspected of containing H_2S should continue to be treated as a possible gas source until it has been removed and the area has been confirmed safe.

Uncontrolled draining through a cut in the shell does not provide the same control.

FIRST-BREACH SAFETY CHECKS

The first penetration of a sealed space should be treated as a high-hazard activity requiring documented safety checks and approval before work begins.

A normal Safe for Entry permit alone does not cover every risk created during the first opening. Entry permits generally address the controls required when people enter a space that has already been opened and assessed.

First breaching occurs before that stage.

The first-breach safety checks should confirm the identity of the space, the opening location, known or expected contents, tank sounding, gas-testing arrangement, cold-cutting method, exclusion zone, rescue standby, communication and emergency transport.

The permit should match the actual worksite.

If unexpected liquid appears, the gas monitor alarms, the opening point changes, equipment fails or any other condition differs from what was approved, the work should stop and be reassessed.

The purpose of the permit is to confirm the controls before the first cut, not simply provide a signature for the file.







EXCLUSION ZONE AND WORKER POSITIONING

Only personnel with an assigned role should be close to the breaching operation.

A physical exclusion zone should be established around the work area with controlled access.

The size and position of this area should consider more than the cutter's immediate location. Supervisors need to think about possible liquid discharge, the direction in which gas may travel, nearby low areas where gas could collect, access for rescue personnel and the cutting team's escape route.

Nearby work may also need to stop temporarily if workers could be affected by an unexpected release.

PPE remains necessary, but normal PPE cannot protect a person from a toxic atmosphere.

Keeping people away from the potential release area is a stronger control than placing unnecessary personnel close to the operation.

PERSONAL GAS MONITORING

Workers involved in or positioned around tank operations should carry the required personal H_2S monitor.

The device should be switched on and working before the task begins. It should be bump-tested as required before the shift and calibrated in line with the manufacturer's instructions.

Workers need to understand what the alarm means and what they are expected to do.

If the monitor alarms, the worker should not remain in position to complete the cut.

The work must stop and the person should move away according to the yard procedure.

Cartridge or air-purifying respirators should not be treated as protection for a potentially lethal H_2S atmosphere or an oxygen-deficient atmosphere. Rescue conditions may require SCBA or another approved supplied-air system.

RESCUE READINESS BEFORE THE FIRST CUT

Rescue arrangements should be ready before the work begins.

The rescue team should not be at another part of the yard waiting for somebody to collect equipment after an alarm.

Breathing apparatus and retrieval equipment should be ready close to the workface. Communication should be checked. The casualty-removal route should remain clear. Emergency transport should also be confirmed before high-hazard work begins.

Rescue planning needs to consider where a casualty could be located and how that person will be removed without exposing the rescue team to the same hazard.

This preparation becomes particularly important when toxic gas is suspected because an unprotected person can become unconscious very quickly after entering the affected area.

IF SOMEONE COLLAPSES

A collapse near an enclosed space creates an immediate pressure to act.

Co-workers may instinctively move towards the casualty.

In a suspected gas incident, this response can place additional people in danger.

Mr. Zamil Uddin, SSORP Coordinator in Bangladesh, explains:

"When somebody collapses, the natural reaction is to go towards that person. In a gas or confined space emergency, that reaction has to be controlled. Workers should raise the alarm and allow properly protected responders to carry out the rescue."

The first worker who sees the incident should raise the alarm and warn others.

Unprotected personnel should remain outside the affected area.

Only trained and authorised rescuers using the required respiratory protection and rescue equipment should enter a gas-affected location.

IF SOMEONE COLLAPSES

- Stop the work and raise the alarm
- Warn nearby workers
- Keep unprotected people away
- Activate the trained rescue team
- Use approved breathing protection for rescue entry
- Recover the casualty using the planned method
- Provide first aid or CPR after removal to a safe atmosphere
- Arrange medical transfer
- Keep the area isolated until it has been assessed

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LEARNING FROM A SERIOUS FIRST-BREACH ACCIDENT

The SSORP training material uses a serious accident in Chattogram to demonstrate what can happen when a sealed ballast tank is opened from the bottom.

The training case records that a cutting team penetrated the bottom shell of a double-bottom water ballast tank containing seawater. The contents were released under pressure, and dissolved hydrogen sulphide was released close to the work area. Ten fatalities were recorded in the training material.

Several lessons come from the case.
The tank was treated as less hazardous because it contained ballast water rather than fuel or cargo residue. Bottom-shell cutting was being used as a drainage method. Previous use of the same approach without an incident created confidence in the method. The hazard contained within the water and sediment had not been recognised before the tank was opened.

The case also shows why rescue discipline matters. When workers enter a gas-affected area without the correct breathing protection to assist a colleague, they can be overcome by the same atmosphere.

A procedure that worked previously should not be accepted simply because nothing went wrong last time.

The tank being opened today needs to be assessed based on its condition today.

FIELD OBSERVATIONS AND REGIONAL COORDINATOR INSIGHTS

Training on first cutting works best when workers can connect each control to what they see at the workface.

In Alang, this can include physically marking the high-point opening on the tank boundary and discussing why a lower point is not acceptable for the first breach. Workers can also be shown where the exclusion zone begins and where the rescue team should stand.

Mr. Rahul Singh's focus on nearby, lower and hidden spaces helps workers look beyond the exact cutting point.

Mr. Amrish Pandey's emphasis on following small controls every time is equally relevant. The permit, gas detector, barricade, cutting method and rescue arrangement should all be visible before work begins.

In Pakistan, the discussion can focus on why checking only the air above ballast water does not provide a complete picture of conditions inside the tank. Muhammad Usman's message on stopping when there is doubt gives workers a clear action when something is uncertain.

In Bangladesh, rescue training can concentrate on the first moments after a collapse. Mr. Zamil Uddin's guidance makes the response simple. Raise the alarm, stop others from entering and allow the properly protected rescue team to act. These are practical behaviours that workers can apply directly rather than rules that remain only in a procedure.

PRACTICAL FIRST-CUTTING CHECKLIST

Before the first breach, the work team should confirm:

- The correct enclosed space has been identified
- The tank has been sounded and remaining liquid considered
- The high-point opening has been marked
- The first-breach safety checks have been authorised
- Cold-cutting equipment is ready
- The testing arrangement is confirmed
- The exclusion zone and controlled access are in place
- Personal H_2S monitors are working and have been checked
- Rescue personnel are positioned at the workface
- SCBA or approved supplied-air equipment is ready
- Communication is working
- Emergency transport has been confirmed

After the first controlled opening, the headspace, liquid and sediment should be assessed as required. Remaining liquid should be drained through a controlled connection. The space should then be cleaned, desludged and ventilated where required, followed by further testing before hot work is authorised.

If any condition is different from what was expected, the work should stop until the task has been reviewed.

SAFER FIRST CUTTING THROUGH PREPARATION AND CONTROL

The first opening into an enclosed space may take only a short time, but the safety of that opening depends on preparation carried out beforehand.

A ballast tank should not be considered harmless because it contains water.

A gas reading from one location should not be treated as proof that every part of the space is safe.

A drainage method should not be continued simply because it has been used before without an accident.

A rescue plan should not begin after a worker has collapsed.

The work team needs a clear sequence. Identify the compartment. Sound it. Plan the breach. Establish the exclusion zone. Make the first opening high and by cold means. Test the actual condition inside. Drain liquid under control. Keep monitoring. Clean and ventilate before later hot work. Maintain rescue readiness throughout the operation.

The main life-saving messages should remain easy for every worker to remember.

CLOSED TANK = POTENTIAL HIDDEN HAZARD

NEVER CUT LOW TO DRAIN

NEVER TRUST SMELL

IF SOMEONE COLLAPSES, DO NOT ENTER WITHOUT PROTECTION

A sealed tank is never “just ballast.”

Every first cut should be high, cold, tested and controlled.

“The safest workplace is built on awareness, discipline and the courage to stop when something is uncertain.”

Dr. Anand Hiremath at: anand@ssorp.net

Telephone: +91 99794 75454

This training is provided FREE of cost to workers, proudly sponsored by GMS under the Sustainable Ship & Offshore Recycling Program (SSORP).

ROUND-UP OF MONTHLY TRAINING ACTIVITIES - SAFETY PRECAUTIONS FOR FIRST CUTTING OF ENCLOSED SPACES

Country	Training No.	Yard	Course Date	No. of Trainees
Bangladesh	897	Master Steel & Oxygen Ltd.	03-09-2026	22
	898	MAK Corporation	09-09-2026	18
	899	Jamuna Ship Breakers	14-09-2026	30
	900	Janata Steels Ltd.	17-09-2026	14
	907	Mehreen Ship Recycling	23-09-2026	23
	908	Z. H. Steel Ltd.	28-09-2026	14
India	901	Leela Ship Recycling Pvt. Ltd.	21-09-2026	21
	902	Madhav Industrial Corporation	21-09-2026	22
	903	Shree Ram Shipping Industries Pvt. Ltd.	21-09-2026	21
	904	Inducto Steel Ltd.	22-09-2026	14
	905	Leela Responsible Recycling LLP	22-09-2026	19
	906	Leela Greenship Recycling Pvt. Ltd.	22-09-2026	17
Pakistan	909	Jamaluddin & Co	28/9/2026	28
	910	Prime Green Recyclers	28/9/2026	15
	911	Sap Green Recycling	28/9/2026	10

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