



ECSCA

European Community Shipowners' Associations

ECSCA FACT-FINDING VISIT TO INDIAN SHIP RECYCLING YARDS

ALANG-SOSIYA, 29-30 APRIL 2016

ECSCA TECHNICAL REPORT



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List of abbreviations

ACM	Asbestos Containing Materials
AERB	Atomic Energy Research Board for radioactive substance (India)
ClassNK	Nippon Kaiji Kyokai (Classification society – Japan)
CSR	Corporate Social Responsibility
DISH	Director of Industrial Safety, training and Health (India)
ECSA	European Community Shipowners' Associations
EPFO	Employee's Provident Fund Organisation (India)
ESIC	Employees State Insurance Corporation (India)
EU SRR	European Regulation on ship recycling (No. 1257/2013)
GEPIL	Gujarat Environment Protection & Infrastructure Ltd (India)
GMB	Gujarat Maritime Board (India)
GPCB	Gujarat Pollution Control Board (India)
HKC	International Convention for the Safe and Environmentally Sound Recycling of Ships (2009)
HSE	Health, Safety and Environment
ICS	International Chamber of Shipping
PCB	Polychlorinated Biphenyl
PPE	Personal Protective Equipment
RFMP	Recycling Facility Management Plan
RINA	Registro Italiano Navale (Classification society - Italy)
SRC	Indian Ship Recycling Code (2013)
SRIA	Ship Recycling Industries Association (India)
TSDF	Hazardous waste Treatment, Storage and Disposal Facilities

ECSA FACT-FINDING VISIT TO INDIAN SHIP RECYCLING YARDS

ALANG-SOSIYA, 29-30 APRIL 2016

ECSA TECHNICAL REPORT

1. Executive summary

The aim of the visit was to understand how safe and environmentally sound recycling operations can take place sustainably in intertidal zones in India, and can thus be potentially compliant with the provisions of the European Regulation on ship recycling 1257/2013 (EU SRR) with a view at facilitating prompt ratification of the Hong Kong Convention (HKC).

The entire visit was unquestionably marked by the willingness of the side of the recycling yards, SRIA and the authorities (GMB) to transparently demonstrate and critically discuss the actual state of play towards healthy, safe and environmentally sound recycling operations in Alang-Sosiya.

All the yards that have received statements of compliance with HKC by Classification Societies have clearly expressed their intention to apply for inclusion in the EU list of approved facilities. With this aim, those yards are assessing the establishment of new procedures and management systems that would overcome and offset anticipated temporary financial losses. The latter could however be mitigated by the steady flow of end of life ships, and responsible involvement of both shipowners and cash buyers must therefore be part of the solution.

2. Background information

The 2009 International Convention for the Safe and Environmentally Sound Recycling of Ships, also known as the 'Hong Kong Convention' (HKC), was adopted in 2009. It provides a meaningful system of workable and enforceable regulations with the ultimate goal of lifting the level of sustainability of recycling facilities on a global scale to the benefit of all parties involved. The HKC places clear and pertinent obligations on all parties concerned – shipowners, recycling facilities, flag states as well as recycling states – to ensure that end-of-life ships do not pose any unnecessary risks to human health, safety and the environment when being recycled.

To date four countries have ratified the Convention (Norway, France, Congo and Belgium), none of them being major recycling states. For the Convention to enter into force, ratification by fifteen States is necessary, representing 40 per cent of world merchant shipping by gross tonnage and a combined maximum annual ship recycling volume not less than three per cent of their combined tonnage. This means that HKC will face a prolonged entry into force period.

In 2013, the European Union adopted the EU SRR, which broadly reflects the main provisions of the HKC. The EU SRR foresees in an EU approved list of recycling

facilities where EU-flagged vessels will have to be scrapped. The EU list could play a strategic role in motivating recycling yards all over the world to become compliant with the HKC requirements, ahead of the entry into force of the HKC.

In order to incentivise each and every dismantling facility situated outside the European Union to be compliant with the EU SRR and, therefore, the Hong Kong Convention, an open and inclusive process is required.

3. Sustainable ship dismantling operations in intertidal zones

The European Commission has developed a series of 'frequently asked questions' (FAQ) that are intended to serve as a guidance for yards located in third countries wishing to apply for inclusion on the EU list of approved facilities. The FAQ document was published on 12 April 2016 in the [Official Journal of the European Union](#). With the [template for applications](#) published in last December, ship recyclers outside the EU can now submit their formal applications for inclusion on the European List to the European Commission¹.

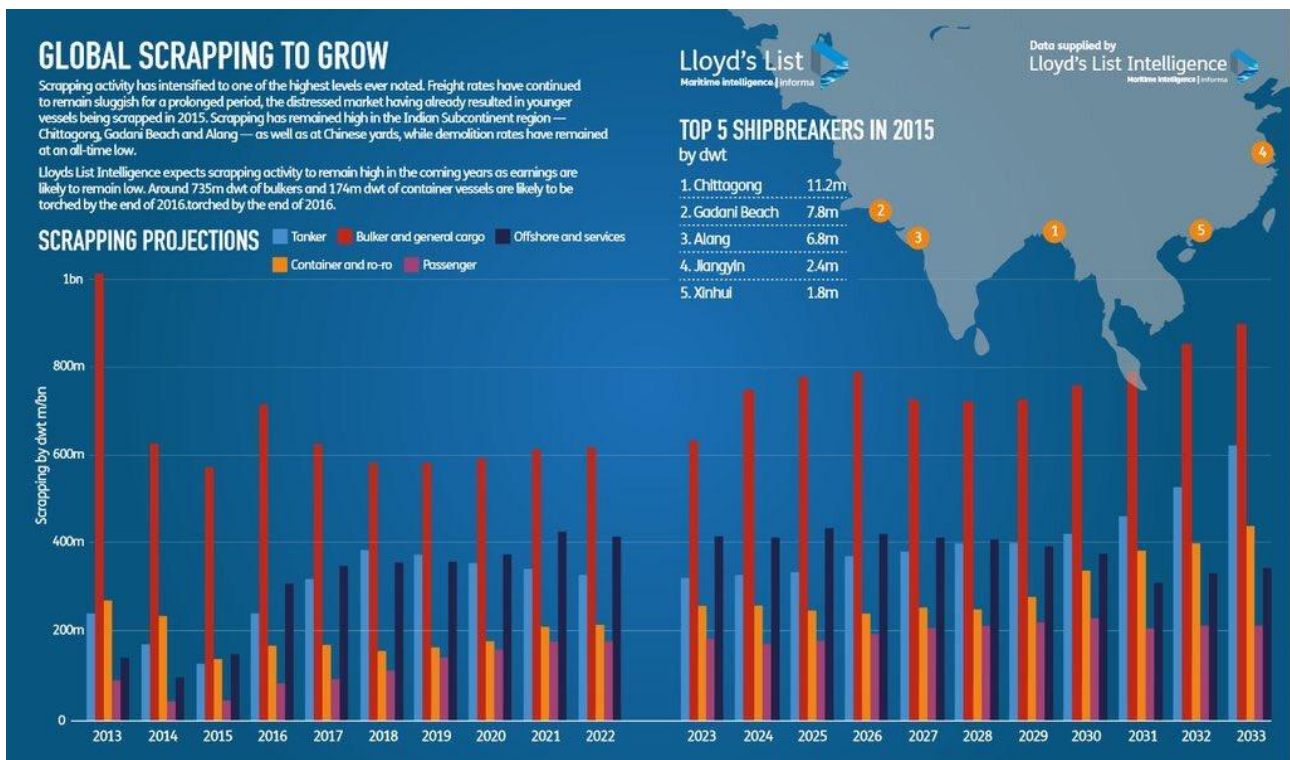
The EU SRR itself does not a priori preclude yards that operate in intertidal zones from being eligible for inclusion on the EU list of approved facilities.

This interpretation under the FAQ document makes any sustainable ship's dismantling operations in intertidal zones technically challenging. One could also question whether these technical requirements can be followed by recycling yards using the so-called 'alongside method' or the 'landing method' in non intertidal zones. Reference can here be made e.g. to the question on *What is meant by 'impermeable floors' and 'effective drainage systems'?* under 2.2.2. of this FAQ document.

The non legally-binding FAQ document interprets the EU SRR in a far-reaching manner which may discourage application for inclusion in the EU List by ship recycling yards located in third countries, and especially by those in India that have engaged in establishing standards equivalent to HKC and are receiving statements of compliance from classification societies. However, a pragmatic approach to the FAQ during the auditing process under the EU SRR would give those yards certified by classification societies a fair opportunity to be included in the European List.

This restrictive interpretation may eventually make it very difficult for EU flagged vessels to comply with the European Regulation, as adequate capacity may not be available on the EU list not only in terms of volume, but also in terms of the size of ships enabled to be dismantled. The graph below shows the ship recycling scrapping projections with a reference to the share of the recycling capacity in Alang.

¹ As per article 16(2) of the EU SRR, a first version of the European List must be published before 31 December 2016. As several procedural steps are required to approve the European List, ship recyclers outside the EU wishing to be considered for inclusion in the first batch of the List should submit their applications by Friday 1st July 2016.



Source: Lloyd's List

4. ECSA fact-finding visit to Indian ship recycling yards: purpose and outcome

4.1. Visit purpose

The aim of the visit was to understand how ship recycling operations can take place sustainably in intertidal zones, and can thus be potentially compliant with the provisions of the European Regulation on ship recycling 1257/2013 (Hereafter 'EU SRR').

Individual ECSA members who undertook in recent months similar visits on their own initiative, in particular to yards in Alang, brought home encouraging reports that has justified a full-scale European visit with invited participation of officials from the EU Commission. The invitation was also extended to representatives from European Member States.

The list of participants is enclosed in **Annex A**.

The following main elements were considered by the shipping industry representatives during the visit at Alang ship recycling yards:

- To take stock of the progresses made by the most sustainable recycling yards towards health, safe and environmentally sound recycling operations in comparison to conventional yards.

- To further encourage the most progressive recycling yards to apply for inclusion in the European List of approved facilities.
- Promote the early ratification of the International Hong Kong Convention and therefore seek Indian Authorities and SRIA (Indian Ship Recycling Association) to support development of sustainable ship recycling operations towards ratification by India.
- To foster a constructive dialogue between the EU Commission, the Indian Authorities and the most progressive yards towards inclusion in the EU list of approved facilities.
- To understand the social welfare instruments put in place for the workers.

4.2. Overall appreciation of the visit

The entire visit was unquestionably marked by the willingness of the side of the recycling yards, SRIA and the authorities (GMB) to transparently demonstrate and critically discuss the actual state of play towards healthy, safe and environmentally sound recycling operations in Alang-Sosiya.

So as to compare yards, the ECSA delegation selected and visited recycling facilities² that have received statements of compliance with HKC or are in the process of upgrading their installations towards HKC requirements, as well as recycling facilities that are solely governed by the Indian Ship Recycling Code (2013). An unannounced visit of one of these regular yards was also requested and performed at the time the delegation was present on site.

The detailed list of visited yards and infrastructures is enclosed in **Annex B**.

Members of the ECSA delegation with previous experience of Alang recycling facilities, identified a clear shift in mentality and willingness to be transparent on the part of the Alang recyclers. Furthermore, the most progressive yard owners clearly see a business case for offering sustainable ship recycling conditions to shipowners. Remarkably, the HKC has already a profound impact on the ground whilst not yet in force.

All the yards that have received statements of compliance with HKC have clearly expressed their intention to apply for inclusion in the EU list of approved facilities. Some yard owners were confident of meeting the technical requirements under the EU SRR in accordance with the recently published European Commission FAQ document.

With this aim, those yards are assessing the establishment of new procedures and management systems that would overcome and offset anticipated temporary financial losses. The latter could however be mitigated by the steady flow of end of life ships, and responsible involvement of both shipowners and cash buyers must therefore be part of the solution.

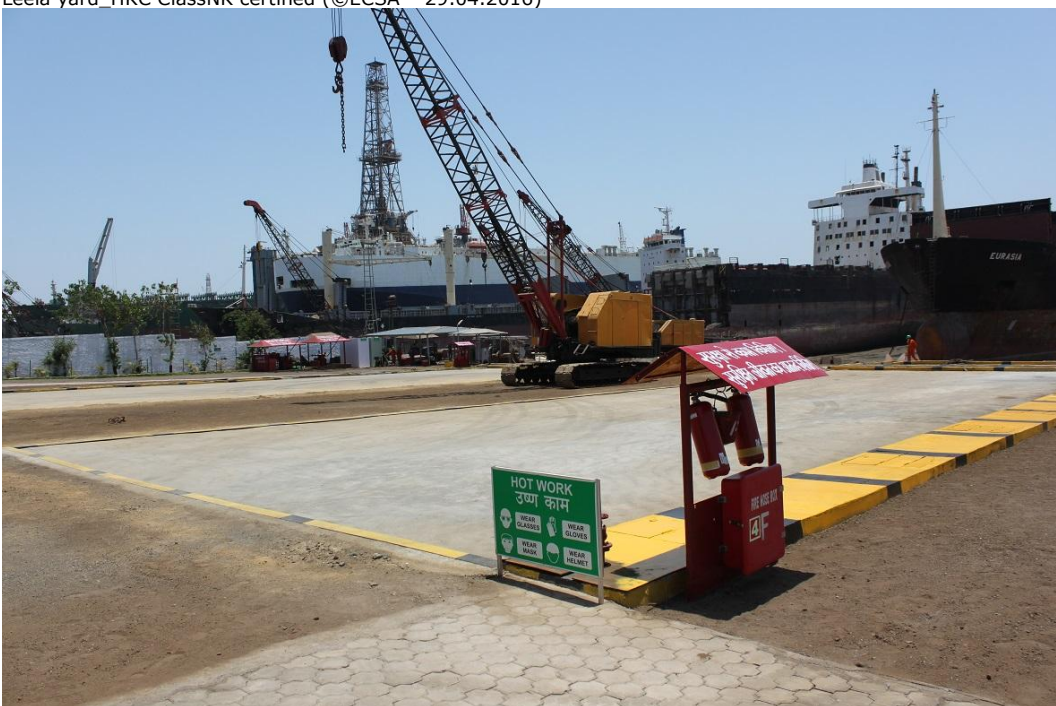
² Out of the 170 yards in Alang-Sosiya, 130 were in operations at the time of the visit – Only 25 yards were in activity six months earlier.

In addition, the overall enforcement process of a safety/training and environment protection system at ship recycling yards by the Authorities represented by the Gujarat Maritime Board, as well as the establishment of a social welfare system, represent a major step ensuring workers to work in healthier and safer conditions. The fact that an industry as a whole which was criticised on account of all these aspects has imposed on itself such procedures is worth and must be encouraged.

Pictures – General views of certified yards by Classification societies:



Leela yard_HKC ClassNK certified (©ECSA – 29.04.2016)



Arya yard_HKC RINA certified (©ECSA – 29.04.2016)

European Community Shipowners' Associations



Priya Blue yard_HKC ClassNK certified (©ECSA – 29.04.2016)

Picture – General view of a yard under certification process by ClassNK:



JRD yard_HKC ClassNK certification in progress (©ECSA 29.04.2016)

Pictures – General views of conventional/regular yards in Alang-Sosiya:



Regular/Conventional yard (©ECSA 29.04.2016)

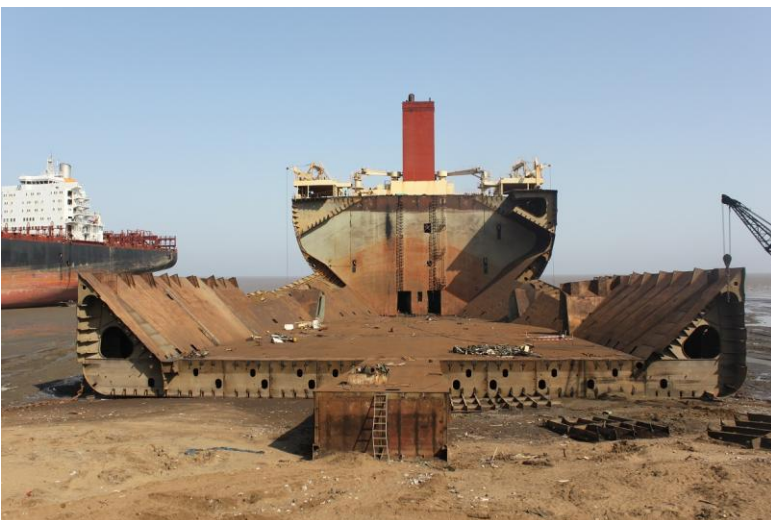
European Community Shipowners' Associations



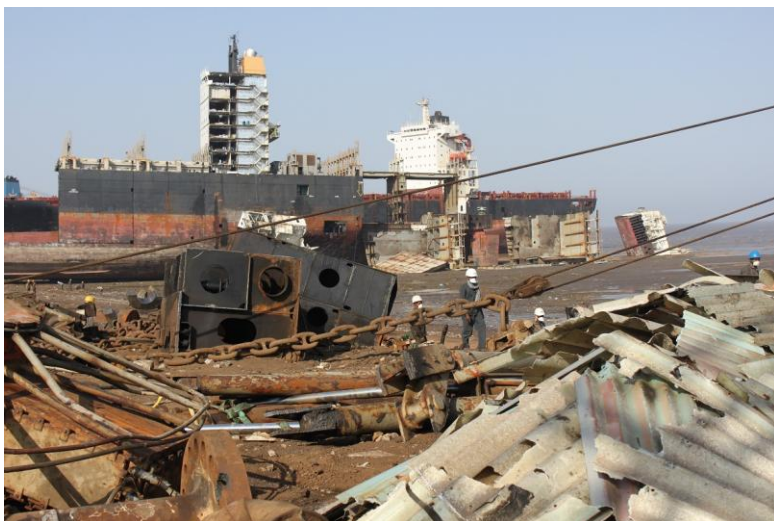
Regular/Conventional yard (©ECSA 29.04.2016)



Regular/Conventional yard (©ECSA 29.04.2016)



Regular/Conventional yard (©ECSA 29.04.2016)



Regular/Conventional yard (©ECSA 29.04.2016)

4.3. Indian Ship Recycling Code (2013) vs Hong Kong Convention

India implemented the Ship Recycling Code in 2013, which requires undertakings in relation to the environment and the working environment – especially handling of hazardous waste, sampling of water and soil, training of workers and health care.

It is unmistakably true that some yards in intertidal zones apply operational practices remain incompatible with the HKC and the spirit of the EU SRR. The Indian authorities represented by GMB indicated that all yards are required to comply with the 2013 Indian Ship Recycling Code (2013 SRC). SRIA primary goal is to ensure that all yards in Alang comply with 2013 SRC. This process could be further supported by the establishment of guidelines for all the regular yards in Alang-Sosiya. The 2013 SRC is according to SRIA/GMB almost equivalent to 2009 HKC.

SRIA recognises that self-improvement in management systems, monitoring³, procedures and training is important for the recycling yards. The GMB and SRIA encourage yards to improve their dismantling operations towards HKC requirements on the basis of the 2013 SRC. In this context, the use of the EU list as a driver towards the highest standards was much welcomed by SRIA.

The Gujarat Maritime Board also clearly indicated that they are liaising with numerous social and environmental NGOs to not allow any substandard recycling operations in the foreseeable future. SRIA indicated that Unions are present in Alang. According to SRIA, the ship recycling industry, which is highly regulated when compared to other sectors in India, does not face major issues with Unions.

The ECSA delegation was advised by SRIA and GMB authorities that they support the Hong Kong Convention. GMB has given their nod to the Central Government in New

³ Asbestos removal, near-misses, accident cuts, minor injuries, hospitalisation, fatalities, compensation paid, fire accidents, gas leakages, falling from heights, electrical shocks, road accidents, pipe bursts, oil spillages, ballast water spillage, biological and radio active contaminations, statutory complaints, shipowner complaints.

Delhi and India intends to complete the ratification of the Hong Kong Convention by 2017.

4.4. Certification of compliance with HKC by classification societies

Class NK (Japan) has already certified 4 yards in Alang-Sosiya⁴ and four additional yards are in the process of upgrading towards HKC. The HKC certification of compliance process undertaken by Class NK has been emulated by another classification society (i.e. RINA, Italy). RINA has certified one yard (Plot # 5 – Shubh Arya Steel) and has announced that nine additional yards could apply for RINA certification. Both classification societies intend to limit the amount of yard certification respectively to 8 for ClassNK and 10 yards for RINA with the aim at monitoring how those yards can hold and keep improving over time.

The level of the HKC certification may however vary depending of the certifying entities: whilst the entire ClassNK process duration takes up to 1.5 year, the RINA process took 3-4 months with a price difference ranging from 5 to 7 time less. The reason for such a difference can be found in the fact that RINA certified the first yard for the area located in the secondary cutting zone and waste disposal facilities; the entire procedure including the dismantling of the ship itself could not be performed because no 'sample' ship was available at the yard at the time of the certification.

In turn, varying levels of certification with HKC from this emerging market for classification societies create competition issues between HKC certified yards. Inclusion in the EU list of approved facilities represent therefore for the most advanced Alang yards an opportunity to be recognized as a genuine effort to upgrade towards EU standards.

4.5. Ship dismantling operations – Procedures

4.5.1. Inspections and controls fulfilment

The obligations pertaining to inspections and controls to be fulfilled by recycling yards can be divided in four parts from the time the ship is awaiting off the coast prior to beaching until the last piece of the ship left the yard:

- Pre-arrival of ship
- Arrival of ship
- Cutting operations
- Closing of the dismantling operations

⁴ ClassNK certified yards:

- Plot # 19 – Kalathia Ship Breaking Yard
- Plot # V-1 – Priya Blue Industries
- Plot # 78 – Shree Ram Group Yard
- Plot # 2 – Leela Ship Recycling

Pre-Arrival of ship (Ship waiting off Alang-Sosiya)

- Inspection by Custom Department on board
- Desk review by Gujarat Pollution Control Board (GPCB, Atomic Energy Research Board for radioactive substance (AERB), surveyor for IHM part II and Gujarat Maritime Board (GMB)

Radioactive substances are removed before the ship is authorized to be beached. The Gujarat Maritime Board (GMB) mentioned that in cases where materials found onboard cannot be handled in India then the ship would not be authorized for beaching. In such case the ship would be requested to call a port of a country that is able to handle the concerned material (for treatment or export under the Basel Convention). GMB however indicated that in such instances this only concerns large volume of such hazardous materials that India would not be allowed to export as a non-party to the Basel Convention.

Arrival of ship

- Inspection by GMB prior to oil removal (safety and fire pump)
- Inspection by Gujarat Pollution Control Board (GPCB) during oil removal operations - e.g. all pipes are open for visual inspection (Pollution prevention – Website: <http://www.gpcb.gov.in/>)
- Inspection by GPCB for decontamination certificate
- Inspection by GMB – e.g. safe entry gas free/hot entrance control (Recycling yard safety audit)
- Cutting permission by GMB

In some case the IHM is finalized only once the ship has arrived at Alang-Sosiya. The most progressive yards have IHM experts (certified by ClassNK).

The entire process may last 2-5 weeks before the start of cutting operations is authorized by the Gujarat Maritime Board. All procedures are recorded.

Cutting operations

- Inspections by GPCB
- Inspections by GMB
- Inspection by Director of Industrial Safety, training and Health (DISH – website: <https://dish.gujarat.gov.in/>)
- Labour Inspector on workers wages and Labour law
- ESIC Inspector (Employees State Insurance scheme)
- Provident Fund Inspector (Social security scheme – Website: http://www.epfindia.com/site_en/)

Closing of the dismantling operations

- Inspection and certification by Gujarat Maritime Board

Inspections are carried out by State level authorities (State of Gujarat in the case of Alang-Sosiya) – State level departments are supervised by the central Authorities. Government agencies organize various safety drills, fire drills, and emergency medical help related drills for workers. Training institutes provides various training involved in recycling of ship (See summary content of a Training Plan in **Annex C**). Ship recycling yards are required to maintain records which are auditable.

4.5.2. Dismantling in primary and secondary cutting zones



Priya Blue yard_HKC ClassNK certified (©ECSA – 29.04.2016)



Arya yard_HKC RINA certified (©ECSA – 29.04.2016)



Regular/Conventional yard (©ECSA - 29.04.2016)

According to normal practice in the most progressive yards, blocks cut from the ship are dropped into the hull which serves as a containment system (Double bottom part of the ship). In case blocks cannot be laid down in the ship's hull (because of the ship structure or for the bow/stern part of the ship), current practice is to clean these blocks before being grounded on the beach. Each block is then immediately safely pulled onto the secondary (impermeable) cutting area using winches and cranes. Some yards have a back-up yard for enhanced safety and temporary storage of metal scrap (e.g. at Plot # V-1 - Priya Blue Industries).



Kalathia yard_HKC ClassNK certified (©ECSA - 29.04.2016)



Kalathia yard_HKC ClassNK certified (©ECSA - 29.04.2016)



Kalathia yard_HKC ClassNK certified (©ECSA - 29.04.2016)



Kalathia yard_HKC ClassNK certified (©ECSA - 29.04.2016)

The procedure currently followed for double bottom breaking from the forepeak to after peak in the most progressive yards in order to limit the impact on environment can be described as follows:

- As a preliminary remark, it should be understood that a ship is compartmentalized right up to its hull structure with use of bulkheads (watertight compartments). The double bottom structure of a ship has bulkheads which allow the entire ship to remain floating when the water tide rises.
- Cutting operation of forepeak⁵. The forepeak is then immediately safely pulled onto the secondary (impermeable) cutting area using winches and cranes.
- After cutting forepeak, the ship is pulled further up on to the shore during high tide when it is floating (Use of hydraulic power of the tide). When tide recedes (negative draft), front portion of ship is outside water. Only front portion of double bottom is cut. Since this portion is outside water, there is no possibility of water washing into double bottom, which for all double hull merchant vessels comprises of clean water ballast tanks.
- Same process is followed for the next 3/5 double bottom compartments (depending on ship size).
- The accommodation block is then cut and removed
- Then, the stern of the ship which is well above high tide water line is cut and removed.
- The remaining ship portion, which is very short in length (engine room double bottom) and lesser in weight, is pulled close to the impermeable secondary cutting zone using high tensile wire rope, where no high tide water comes. The inside portion of remaining bottom is firstly dismantled and small blocks are shifted to impermeable secondary cutting zone.

Enclosed in **Annex D** is a plan layout for a recycling yard under HKC certification of compliance process.

⁵ Forepeak: extreme forward lower compartment or tank usually used for trimming or storage in a ship



Kalathia yard_HKC ClassNK certified (©ECSA - 29.04.2016)



Leela yard_HKC ClassNK certified (©ECSA - 29.04.2016)



Regular/Conventional yard (©ECSA - 29.04.2016)



Priya Blue yard_HKC ClassNK certified (©ECSA - 29.04.2016)



ShreeRam yard_HKC Class NK certified (©ECSA - 29.04.2016)



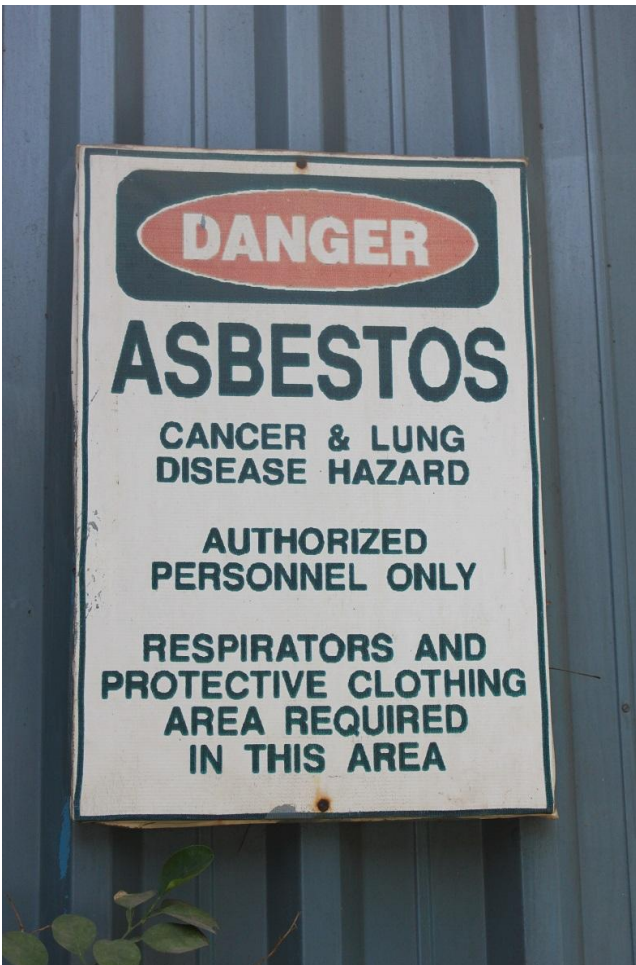
Kalathia yard_HKC ClassNK certified (©ECSA - 29.04.2016)

4.6. Waste management and waste downstream management

All yards in Alang-Sosiya are registered under the [Indian Factories Act](#) as Hazardous Industries. All yards have a Recycling Facility Management Plan (RFMP) approved by Factory, Pollution and Port authorities.

Enclosed in **Annex C** is a summary of RFMP content.

Recycling yards in Alang-Sosiya have intermediate facilities for temporary storage of hazardous and non-hazardous waste. The most organized intermediate storage facilities were found in HKC certified yards. All yards are members of a common centralized hazardous waste Treatment, Storage and Disposal Facilities (TSDF - GMB Solid and Hazardous Waste Management Plant).



Leela yard_HKC ClassNK certified (@ECSA - 29.04.2016)



ShreeRam yard_HKC Class NK certified (@ECSA - 29.04.2016)



Arya yard_HKC RINA certified (@ECSA - 29.04.2016)



ShreeRam yard_HKC Class NK certified (@ECSA - 29.04.2016)

GEPIL (Gujarat Environment Protection & Infrastructure Ltd – Website: <http://www.gepil.in/>) operates, maintains and develops treatment facilities on behalf of Gujarat Maritime Board (GMB) for facilitating the collection, transport, treatment and disposal of hazardous wastes and municipal solid waste generated from the ship dismantling yards located at Alang-Sosiya Ship Breaking Yard.

GEPIL provides expert services to sellers and buyers of ships destined for dismantling, like: detailed assessment of ships with respect to hazardous wastes for getting beaching permission. Safe Removal of Asbestos Containing Materials (ACM) from ship structures before and during dismantling. GEPIL also operates at the GMB TSDF a secured landfill dedicated for burying asbestos, glass wool and other hazardous wastes), effluent treatment plant (bilge and waste water) and incineration facilities.



GMB TSDF (©ECSA – 29.04.2016)



GMB TSDF (©ECSA – 29.04.2016)



GMB TSDF_Landfill (©ECSA – 29.04.2016)



GMB TSDF_Incineration facilities (©C.Wohrer – 29.04.2016)

A list of hazardous materials that can be handled by GEPIL at the GMB TSDF is enclosed in **Annex E**.

The waste handling management of Asbestos Containing Materials (ACM) should be clarified as it is unclear whether ACM are considered and handled as asbestos in all cases. It appears that some parts like gaskets are ACM that are reused in India. The

shipowner representatives considered that ACM must be treated as asbestos to be in line with HKC and EU SRR requirements. Nevertheless, current practices make that such materials are marked as ACM, and are consequently kept out of the marine parts supply chain and prevents breaches of SOLAS. A similar situation arises from the handling of polychlorinated biphenyl (PCB) which cannot be handled in India and should be temporarily stored before being exported. It was however mentioned that an Institute for Industrial Research located in Bangalore (Website: <http://www.shriraminstitute.org/profile.html>) could provide solution for PCB waste treatment.

4.7. Health, Safety and Environment (HSE)

SRIA and/or GMB coordinates all these activities through a general board centralizing all the procedures.



Regular yard_Panchavati Ship Breakers (©ECSA - 29.04.2016)

Kalathia yard_HKC ClassNK certified (©ECSA - 29.04.2016)

The following HSE aspects were presented during the visit:

- Regular medical check-up for all workers in the recycling yards (Biannual). Special medical check-up for workers involved in removal and handling of hazardous materials (asbestos, glass wool and hydrocarbons)

- HSE awareness trainings incl. technical trainings for the different phases of ship dismantling operations and for specific tasks (Training plan). Mock drills for emergency preparedness. Promotion campaign for mandatory use of adequate PPEs
- Proper and approved methods for removal of hazardous materials by from the ship by expert teams
- Certified safety officer permanently on site
- Emergency preparedness and rescue plan (See summary content in **Annex C**)
- Key facility equipment includes firefighting installation and water storage, breathing sets for emergency situations, 4G meter for explosive gases, CO2, H2S and oxygen meter for work in confined places
- Emergency Oil Spill Contingency Plan (See summary content in **Annex C**)
- Environment impact analysis: Regular monitoring of gas emission, sea water and soil around the entire yard area by independent agencies. All pollution (air, water and soil) control analysis reports are uploaded on the Gujarat Pollution Control Board (website: <http://www.gpcb.gov.in/projects.htm>)

Remark on impermeable floors: Whilst the 2013 SRC prescribes the use of impermeable geotextile on the secondary cutting area, the most progressive yards opted for impermeable concrete floors with effective drainage systems (the RINA certified yard reportedly opted for both geotextile and concrete floor). Due to handling of heavy ship's steel blocks on the secondary cutting zone, cracks may appear in the concrete structure and render the surface permeable (Similarly tears may occur in the geotextile). In order to protect the concrete surface, yards lay covering steel plates which absorb shocks more effectively. In order to restore the impermeability of the concrete surface, cracks are repaired on a regular basis. Thicker concrete layer (up to 1m) are also envisaged in order to prevent further cracks formation. The GMB also envisages undertaking soil decontamination for those yards using geotextile as an impermeable barriers.



Arya yard_HKC RINA certified (©ECSA - 29.04.2016)



JRD yard_HKC ClassNK certification in progress (©ECSA - 29.04.2016)



JRD yard_HKC ClassNK certification in progress (©ECSA - 29.04.2016)



GMB Labor Training and Welfare Center (©ECSA - 29.04.2016)

4.8. Social welfare

4.8.1. Contract of employment

A yard in activity employs on average 50 workers. About 20% of the workers are permanently enrolled by the recycling yard. According to the level of economic activity, additional work force is enrolled on a daily basis. Non-permanent workforce is part of a ship recycling worker pool in Alang-Sosiya which ensures that certified trained workers are remain connected to the ship recycling activities. Normal working hours are from 8am to 6pm but can be modified according to the type of operation to be performed (e.g. depending on the hours and heights of the tides).

4.8.2. Employees Provident Fund

The Employees Provident Fund scheme is under the administrative control of Indian Ministry of Labour and Employment. The benefits for the employees are is comparable to an pension scheme which also allows partial withdrawals for specifics expenses such as house building and access to higher education (EPFO – Website: <http://www.epfindia.com/>).

4.8.3. Employees State Insurance (ESI)

All workers are covered by the Employees State Insurance scheme which has been established by the Indian Government under the Employees State Insurance Corporation (ESIC – Website: <http://www.esic.nic.in/index.php>).

ESIC Scheme is mandatory, and like most of the Social Security Schemes over the world, is a self-financing health insurance scheme. Contributions are raised from covered employees and their employers as a fixed percentage of wages⁶. The State Governments, as per provisions of the Act, contribute 1/8th of the expenditure of medical benefit within a per capita ceiling of 1500 INR per Insured Person per annum.

⁶ As of now, covered employees contribute 1.75% of the wages, whereas, the employers contribute 4.75% of the wages, payable to their employees. Employees earning upto Rs.100/- a day are exempted from payment of their share of contribution.

Any additional expenditure incurred by the State Governments, over and above the ceiling and not falling within the shareable pool, is borne by the State Governments concerned.

ESIC covers accidental and medical treatment costs incurring to the insured worker and his/her family. The table below provides a summary of the benefits for the workers:

ESI Scheme - a total social security for workmen:		
1.	Medical Care	Primary, Secondary and Tertiary medical care with no cap on individual expenditure.
2.	Sickness Benefit	91 days
3.	Extended Sickness Benefit	730 days (upto 2 years) for specified 34 diseases.
4.	Maternity Benefit	84 days + 1 month (due to complications arising out of pregnancy, confinement, premature birth of child etc.)
5.	Permanent Disablement Benefit / Temporary Disablement Benefit	Based on loss of earning capacity/ as long as the disability lasts.
6.	Dependants' Benefit	On the death of IP to the wife till she is alive/remarried and to family members as per conditions w.r.t. age/marriage.
7.	Rajiv Gandhi Shramik Kalyan Yojna (Unemployment Allowance)	50% of daily average wages upto 12 months unemployment on account of closure of factories, retrenchment or permanent invalidity of not less than 40% arising out of non employment injury.
8.	Incentive Scheme to employers for employing persons with disabilities	The employers' share of contribution is paid by government for 3 years for providing employment to persons with disabilities drawing monthly wages upto ₹ 25,000/-
*9.	Medical Care to Retired IPs	Medical facility available within ESIC on payment of ₹ 120/- per annum

Source: ESIC Website - <http://www.esic.nic.in/benefits.php>

Prior to the ESI Scheme, the Workmen's Compensation Scheme used to be in place but was limited only to workers and for accidental issues. The regular health issues were not covered and nor the worker's family were involved for benefit.

4.8.4. Accident Statistics

Enclosed in **Annex F** are the accident statistics in Alang over the last 5 years indicating the years and the ships involved, the names of the victims and description of the accidents. Reportedly, yards have also established internal reporting system for issues related to dismantling operations and accidents, including near-misses.

4.8.5. Medical infrastructure / SRIA Welfare Center & Labour Housing Colony



Alang hospital (©ECSA - 29.04.2016)

Alang hospital (©ECSA - 29.04.2016)

The existing hospital in Alang can accommodate ca. 20 patients and is equipped with rudimentary services and facilities incl. medical analysis laboratory, surgery room and radiology room. Two ambulances are available. The closest more advanced hospital is located in Bhavnagar (<http://www.hcghospitals.in/hcgbhavnagar.php?id=3>) which is at about 1 hour drive from Alang-Sosiya.

There is an additional medical facility in Bhavnagar run by the Red Cross (<http://www.redcrossgujarat.org/redcrossnetwork.html>).

New infrastructure including a welfare center is under construction in Alang which will be able to accommodate 6000 workers. The 1st phase of the labour housing colony for workers of Alang-Sosiya ship recycling yard is due to be completed by December 2016. Most of the workers from the ship recycling yards. This advanced infrastructure is meant to promote CSR and will integrate safety, health and waste handling services, incl. e.g. emergency response center, health care center and Removal and Storage Center.



Labour Housing Colony (©ECSA - 29.04.2016)

European Community Shipowners' Associations

Annex A

ECSA fact-finding visit to Indian ship recycling yards - 29-30 April 2016

PARTICIPANT LIST

	<i>First name</i>	<i>Last name</i>	<i>Position</i>	<i>Organisation</i>	<i>Country</i>
Dr	Patrick	VERHOEVEN	Secretary General	ECSA - European Community Shipowners' Associations	BELGIUM
Mr	Benoît	LOICQ	Director Safety and Environment	ECSA - European Community Shipowners' Associations	BELGIUM
Mr	Emilien	GASC	Policy Officer for ship recycling (ENV.A.2)	European Commission DG Environment	BELGIUM
Dr	Martin	KRÖGER	Managing Director	German Shipowners' Association (VDR)	GERMANY
Mr	Prabhat	KUMAR JHA	Group Managing Director	MSC Ship Management Limited	CYPRUS
Mr	John	STAWPERT	Manager (Environment and Trade)	ICS - International Chamber of Shipping	UK
Capt.	Prashant	S. WIDGE	Head of Ship Recycling, Group Sustainability	A.P. Moller-Maersk A/S	INDIA
Mr	Tor Christian	SLETNER	Director - Head of Environment	Norwegian Shipowners Association	NORWAY
Ms	Gudrun	JANSSENS	-	OVAM - Public Waste Agency of Flanders	BELGIUM
Mr	John	TONER	Managing Director	Maritime management	IRELAND
Mr	Horst	BECK	-	Federal Ministry of Transport and Digital Infrastructure (Division WS24) / Environmental and Climate Change Matters in Maritime Shipping, Federal Maritime and Hydrographic Agency	GERMANY
Mr	Gunther	ZEITZMANN	Adviser	GSR Services GmbH	GERMANY
Mr	Georgios	NIKOLAOS GABRIEL	-	Golden Union Shipping Company S.A.	GREECE
Mr	John	KORNERUP BANG	Head of Positioning & Strategic Risk Management / Lead, Climate Change at Group Sustainability	A.P. Moller-Maersk A/S	DENMARK
Ms	Claude	WOHRER	Chargée de mission	Secretariat general for the Sea	France

Annex B

ECSA fact-finding visit to Indian ship recycling yards - 29-30 April 2016

VISITED YARDS AND INFRASTRUCTURES

Plot # 78 – Shree Ram Group Yard (ClassNK)
GMB Labor Training and Welfare Center
Plot # 20 – Panchavati Ship Breakers (Regular yard)
Plot # 19 – Kalathia Ship Breaking Yard (ClassNK)
Alang Hospital
Plot # 5 – Shubh Arya Steel (RINA)
Plot # 2 – Leela Ship Recycling (ClassNK)
Plot # 30 – JRD Industries (ClassNK in progress)
Plot # V-1 – Priya Blue Industries (ClassNK)
Plot # V-2 – Hooghly Ship Breaking (Regular yard)
Plot # 23 – Triveni Ship Breakers (Regular yard)
Plot # 65(24-L) – Sachdeva Steel Products (Regular yard – unannounced visit)
GMB Solid and Hazardous Waste Management Plant

Annex C

**SUMMARY CONTENT OF RECYCLING FACILITY MANAGEMENT PLAN (RFMP);
EMERGENCY PREPAREDNESS AND RESCUE PLAN; TRAINING PLAN**

1. Ship Recycling Management Plan:

Ships destined for recycling are handled according to the following process:



Explanations for the steps shown above:

1. Review of ship specific documents by SRF for:

- Ensuring acceptability of ship by comparing:
 - ships dimensions and type
 - IHM / hazardous materials
 - 1. covered by existing permits and DASR (once available)
 - 2. manageable by SRF equipment
 - a. if not planning for additional capacities
 - Restrictions specified by authorities or in IRRC (if applicable)
- Preparation of ship specific SRP acc. to applicable IMO Guidelines including but not limited to:
 - 1. Preparation of cutting plan
 - 2. Consideration of IHM for planning of HazMat removal and disposal.

In case no IMO-conform IHM is provided by shipowner IHM is prepared after landing (see section below) by HazMat Expert.

Before landing the vessel is prepared for arrival at Bhavnagar anchorage for further clearance.

- Collection of documents required for cleaning the vessel.
- In case of Oil / Chemical Tankers, OBO, Gas Carriers all cargo spaces are cleaned dry and gas freed with related certificates. Cargo sludge is disposed of as hazardous waste. Exceptions are bunkers required for remaining ship operations.
- On arrival at Bhavnagar anchorage, Customs and Immigration board the vessel with ship's agent. Verifying communication equipment, ROB Bunkers, Crew list, Last port clearance and other formalities.
- GPCB boards the vessel and verifies hazardous material declared by master in cargo spaces, deck, accommodation & engine room.
- Inspection of cargo tanks for cleanliness.
- Inspector from HSE department checks tanks for gas free for hot work.
- Customs and GPCB gives permission for arrival at SRF
- Ship is re-located to Alang anchorage for:
 - Waiting for next appropriate tide.
 - starting HSE procedure phase 1
 - 1. Putting ropes along superstructure for allowing oil boom procedure directly after landing in case of a spill
 - 2. Oil spill kit to be kept onboard (if available) and at SRF on stand-by (continued with throughout whole recycling process)

3. Firefighting equipment on stand-by (continued with throughout whole recycling process)

Master lands the vessel at the High tide allotted by Port Officer under the guidance of the Pilot.

- Master stops the engines and closes the fuel tank lines and leaves with crew
- Ship is secured in its position
 - Ship is fastened with chains and wires to the anchors on the shore and especially during high tides and when the draft of the vessel is too less or it afloats during high-tide (pull so that the vessel comes closer)
 - No worker enters slot during or pulling operation. The area is closed off by warning signs
- Continuing with HSE procedure phase 2
 1. Bringing emergency kit onboard (pilot ladder, life raft, vests, fire extinguisher, oil booms, etc.)
 2. Establishing ventilation and lighting by cutting holes into ship's hull at strategic points
 3. HazMat investigation (if IHM not acc. to current IHM Guidelines (today: MEPC. 197(62)) it is prepared by HSE Department)
 4. Labeling and removal of loose HazMats
 - All in IHMs identified HazMats and other suspicious / potential hazardous materials are located and marked for later removal
 - All loose HazMats are securely packed onboard and shifted to Storage rooms as early as possible
 - Fire Sensors and other radioactive materials are delivered to Atomic Energy Regulatory Board
 - Batteries are delivered to approved recyclers
 - Oily residues incl. engine room bilges, used oil from engines and gear box are removed by approved sub-contractor
 - Paint, chemical and consumable stores are removed and stored in SRF or directly sold to traders
 - Furniture and other domestic consumable electronics are stored in SRF or directly sold to traders

Decontamination and recycling of the vessel (all activities may happen in parallel or/and subsequently) including HSE measures

- Decontamination and removal of remaining HazMats incl.
 - Gas freeing and tank cleaning, removal of oil

- Inspection and issuance of cutting permission by GPCB inspector after checking of tank cleaning
- Cutting of ship
 1. Primary cutting
 2. Secondary cutting
 3. Third cutting
- Removal of equipment and components
- Successive decontamination
- Pulling of vessel with winches when needed for ensuring safe access and material transport

Material Management

- Sorting of material
- Overhauling
- Waste segregation, labeling and storage
- Disposal of waste
- Trading of valuables incl. components and equipment

Clean up of SRF and preparation of incident reports after finalization of ship recycling

2. Emergency Preparedness & Response Plan

This plan is implemented by HSE Manager in cooperation with the top management of the recycling yard. It provides guidance for different types of emergencies in ship recycling industry, including fire and explosion, storm, monsoon, falling of blocks, falling from heights, pollution incidents (gaseous, liquid and solid), etc.

Any dangerous zone or area for specific activities in the SRF is marked in the facility plan. Potential risks and preventive measures as well as related equipment are considered in the layout.

- 1) Evacuation
- 2) Fire & Explosion
- 3) Pollution incident: solid, chemical or oil spill
- 4) Falling from height
- 5) Falling of blocks
- 6) Monsoon and storms Storage of plates
- 7) Loading area

Generally, every employee keeps an eye on safe working conditions and its surrounding as well as warns colleagues in case unsafe conditions are identified. Nobody is taking great care to not pose risks to themselves or others.

1.1 Evacuation

If alarm bell rings, every worker leaves his working place and goes straight to the assembly point.

Alarm sound is 3 sounds of 10 seconds each in an interval of 30 seconds.

When a fire or gas / oil leakage is detected, workers stop work and close the valves from the cutting torch immediately. Other workers in vicinity who might not recognize the situation or who are not directly exposed are informed and go to assembly point depending on location of emergency situation. The General Manager is informed or a supervisor for starting the evacuation and coordinate further actions.

1.2 Fire& Explosion

During ship recycling, smoking in explosive areas (as well as storage of gases or inflammable solids) and their vicinity either on the SRF or onboard the ship is forbidden for preventing fire and explosion.

All flammable liquids and materials are removed from ship before hot works are conducted.

If storage of flammable liquids onshore is required, these areas are controlled against leakage and fire impacts. Also a wall around these areas is necessary, to protected tanks and pressure vessels etc. against accidents and spills. The container has a size bigger than the biggest vessel or container stored inside.

During cutting onshore, only residues of seals, insulation or paint might burn. Sand and/or water can be used to extinguish fires. If a gas bottle catches fire foam and water spray is used as extinguishing agent and for cooling the bottles to protect them against overheating and explosion. Generally, extinguishing fires and related handling is task of the fire team and in case of bigger emergencies of the local fire brigade.

1.3 Emergency plans for: Solid, chemical, or oil spills (Emergency Oil Spill Contingency Plan)

Any possible incident is avoided. In case of a spill incident the contamination is minimized as much as possible and cleaned-up as early as possible.

Chemical spill might happen while moving materials out of the storages or from the ship.

A tin or container is always closed for safe transport to storage/further processing onshore.

Areas of spilled oil or any other chemical liquids are cleaned up immediately. Items used for cleaning which directly come into contact with medium are correctly disposed of.

In case of direct contact with aggressive chemicals it is of utmost importance to provide first aid and to consult a doctor for competent care.

Treatment in case of leakages:

- Spills are not touched
- Closure of nearest and relevant valves or containers
- Use of binding agent for catching liquid contaminants
- All workers leave the affected area towards assembly point
- In case of bigger incidents or when own activities don't lead to a quick relaxation of the situation the local fire brigade is called in
- Group of workers is trained in handling of "small" emergency cases e.g. manageable fires and spills, prior fire brigade arrives at SRF. This group is coordinated and under supervision of the HSE Manager.

1.4 Debris prevention and control

Attention is paid not to release materials like mineral wool, insulation, plastic foils and other small parts which might be distributed by wind into the environment.

Onboard

- Removed and loose materials from the ship are securely packed in bags immediately
- careful handling of bags and containers as well as materials reduces risk of spills

Onshore

- Loose materials are collected and packed in bags immediately
- They are safely transported to the storage area for treatment, disposal or selling

Control

- Housekeepers collect the wastes and debris throughout the day
 - They are supervised by HSE Manager or others on his behalf, e.g. supervisors
- When cutting of blocks is finished and plates are collected, the work area is cleaned immediately.

1.5 Falling from height

Falling from heights has the potential to cause severe injuries or casualties and is to be prevented.

Offshore: First cutting zone

To protect falling from height workers wear a waist belt which is connected to a safety rope and fixed to the structure of the ship. Any item which is in vicinity of heights are secured against falling or lead down in a controlled manner. Work places at heights on edges are properly illuminated and marked.

Onshore: Second cutting zone

Same preventive measures apply as for First cutting zone for all working areas with a height above 2 meters. Up to 2 meters a ladder can be used but generally protection measures depends on working and surrounding conditions like safe stand of ladders as well as national requirements with regards to securing materials and application of PPE.

1.6 Falling of blocks

Generally it is preferred to let blocks fall to inside of the ship.

Blocks which fall inside ship

Dangerous areas onboard are signed with warning signs such as barriers or pylons. The cutting operations and area where the block or material might fall to is under special surveillance of a supervisor nominated during the morning meetings and oversees the entire preparation and operation.

Block which fall into sea

The procedure for communication as described in chapter **Error! Reference source not found.** is followed. The area between the ships is a restricted area and a barrier is placed towards to the shoreline for avoiding access of any worker. During low tide a barrier is also placed towards the aft of the ship to inform workers coming from the seaside to not enter this area.

Winching of blocks

During winch operation or pulling of blocks towards onshore it is not allowed to work in this area, neither in falling area nor in vicinity of stressed ropes. During winching of big blocks, no worker is permitted to enter the area between winch and ship / pulled block due to high risks. An example of a barrier is shown in the following photo:



1.7 Monsoon and Storms

Weather forecasts are monitored and taken into account for taking of preventive measures against adverse effects which could be caused by natural phenomenon. The actions to be taken are different for onshore and onboard situations.

Onshore

- The SRF is cleaned prior to storms or rainfalls
- All parts which may blow away by storms are secured
- The drainage system is cleaned from oil and sediments, also the grease trap
- Water is channeled from the road around the SRF / working areas, if required temporary water barriers in form of sandbags are put into place
- Winches are protected against flooding with sandbags and tarpaulins
- The oil spill kit is kept on standby
- Waste water stored in storage tank is disposed of for having available maximum tank capacity
- Oily areas and oily equipment is covered
- If required potential water coming from the road is channeled around / prevented from entering the SRF

For cases of heavy rains the HSE Manager is responsible that no uncontrolled outflow or overflow of the tanks can happen. Therefore he or an instructed person has to survey the tank levels within a safe period of time for ensuring that tanks levels are maintained in a safe range. In case a discharge via 3 way valve is not permissible, due to contamination or other circumstances require it, from the relevant sub-suppliers' tank trucks are to be ordered and tanks pumped out to them until a safe operation is guaranteed and no overflow or uncontrolled situation likely.

Offshore

- All doors or openings are closed
- Oily areas are cleaned up and covered if possible, e.g. tarpaulins
- If openings in the hull are nearly on sea water level, they are closed to avoid incoming sea water
- Whenever possible, ship is pulled nearer to the shore line to avoid sea water entering into the ship front
- The ship is to be secured against drifting

1.8 Storage of plates

- All plates are clean and tidy from oil and chemicals if stored on sand
- Oily or contaminated plates are to be stored on top of an impermeable layer to protect the soil
- Care is taken against slipping of plates during stacking or unloading
- Tubes, pipes and molded parts are stored separately
- Stacks are made in a way that they are stable, too many plates in a stack are avoided
- The traffic roads are kept free from stored parts or steel plates
- No plates reach into traffic areas
- Roads are kept in a drivable condition
- An instructor guides the crane driver on how to handle and load / unload plates or other materials stored
- No worker enters the storage or loading / unloading areas when it doesn't belong to his job

1.9 Loading area

- The traffic roads are kept in good and safe conditions
- Traffic roads are marked and signed
- The storage instructor checks trucks before they are loaded regarding their technical conditions (condition of all wheels, function of lights, trucks' structure/chassis is capable to carry heavy loads)
- The storage instructor is responsible for the right loading
- Securing of cargo by the driver is checked
- Speed limit on the yard is 5 Km/h

3. Training Plan

Training Plan includes following trainings for the employees.

Number	Training Title
1	General Safety Introduction
	a) personal protective equipment
	b) General hazard awareness
	c) Emergency and evacuation
2	Handling and management of hazardous materials
	a) awareness and communication of information about hazardous materials
	b) job hazard awareness
	c) identification of HazMats (IHM Professional)
3	fire protection and prevention
	a) emergency response and evacuation
	b) evacuation coordinator
	c) fire fighting
4	First aid
	a) safety and health training
	b) first aid awareness
	c) first aid and rescue
5	Oil spillage on sea and plot
	a) environmental and safety monitoring
	b) environmental awareness
6	Gas cutting operation
	a) safe for entry
	b) safe for hot work
	c) welding, cutting, grinding and heating
7	Working at height
8	Confined space entry, SCBA
	a) working in oxygen deficient areas
	b) working in a flammable environment
	c) working with toxic residues
9	Removal of ACM
10	Crane and forklift operation, truck drivers*
11	Batteries handling procedure
12	Mock drills like: Firefighting, Evacuation drill, 1st Aid, Oil or Chemical Spill Drill in water / on land

*For employment requirement of drivers, they have to possess license given by the Regional Transport Office, and should be valid as it has expiry date and have to be renewed timely before expiry date.

Annex D

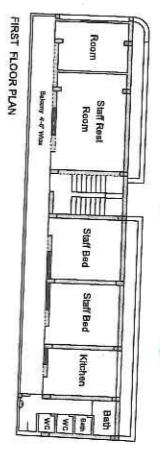
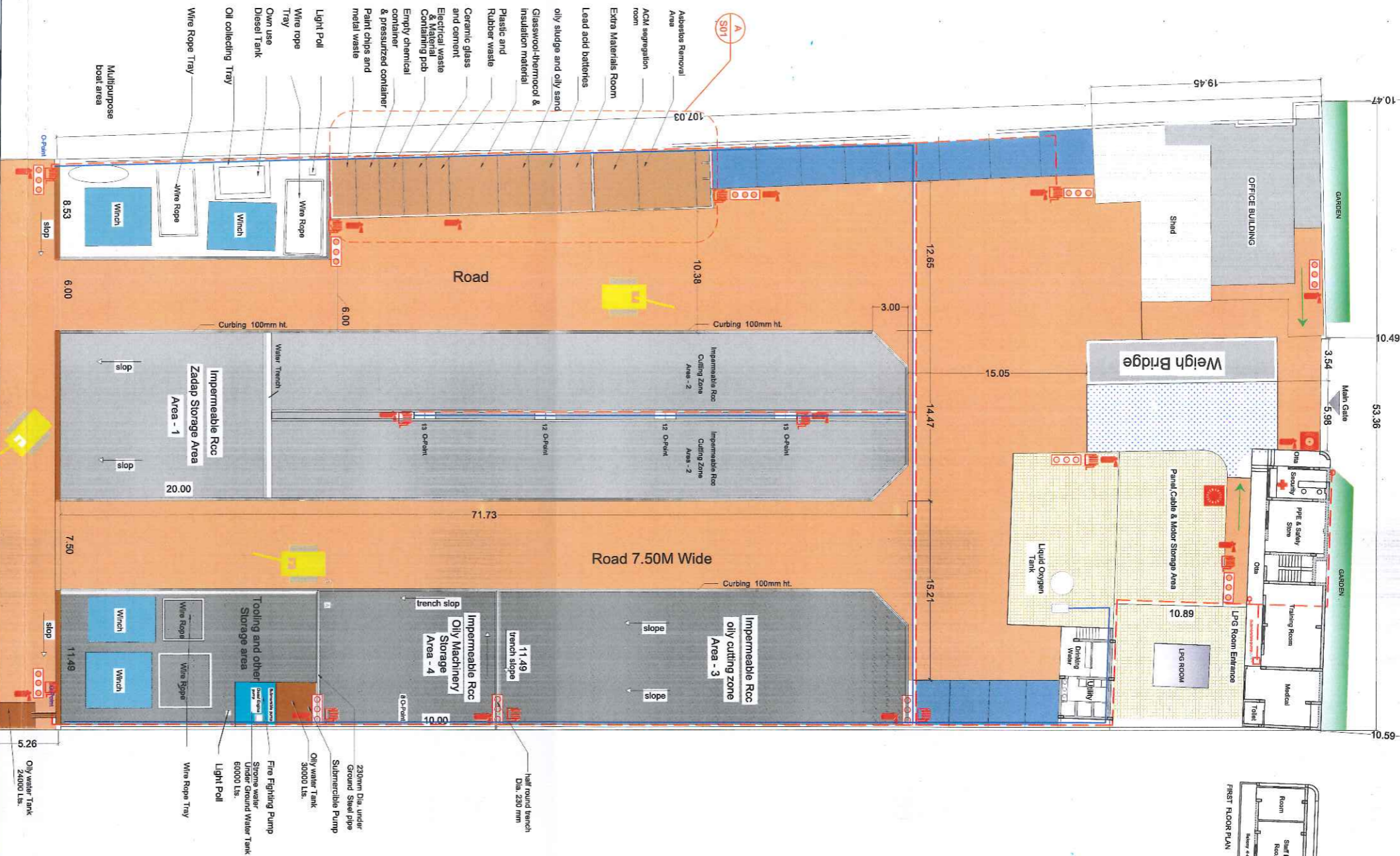
PLAN LAYOUT FOR A RECYCLING YARD UNDER HKC CERTIFICATION OF COMPLIANCE PROCESS

JRD INDUSTRIES PLOT NO. 30

ALANG

ROAD CENTER LINE

SOSIYA

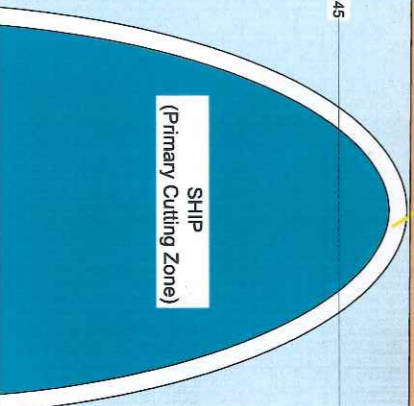


LEGEND

	Hose Reel with Box & Fire Hydrant Valve
	Sand Buckets
	Fire Extinguishers Point
	First Aid Box
	Yard Evacuation Path
	Ship Evacuation Path
	Assembly Junction
	Ambulance
	Crane
	Contact Information
	Fire Alarm

LAYOUT PLAN

INTER TIDAL LANDING AREA



Dr.No./15
DATE : 22.02.2016
SCALE : 1 : 100

Owner
JRD INDUSTRIES
PLOT NO. 30, ALANG, TALUKA
TALAJA, DIST. : BHAVNAGAR.

Architect
P. C. Pitroda & Co.
134, First Floor, Geelanjal Complex,
Near Municipal Corporation,
Bhavnagar
Mob. 9426918480
Email: rampitroda@gmail.com

Annex E

**LIST OF HAZARDOUS MATERIALS THAT CAN BE HANDLED BY GMB
HAZARDOUS WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES,
ALANG**

Sr. No.	D. No.	Waste Name	Category
1	1	CERAMIC	LANDFILL
2	2	GARBAGE	LANDFILL
3	3	GLASS	LANDFILL
4	4	FIRE ASH	LANDFILL
5	1	ACM WASTE	S/S
6	2	ASBESTOS	S/S
7	3	ASBESTOS (SOLIDIFIED)	S/S
8	4	CEMENTING MATERIALS & TILES/SOLIDIFIED CEMENT/AC SHEETS	S/S
9	5	CEMENTING WITH ASBESTOS	S/S
10	6	COOLING POWDER	S/S
11	7	DAMAGED FIBER	S/S
12	8	GLASSWOOL	S/S
13	9	INCINERATOR ASH	S/S
14	10	PAINT CHIPS (SOLIDIFIED)	S/S
15	11	RUSTED IRON SCALES	S/S
16	12	WHITE CEMENT POWDER	S/S
17	1	BILGE WATER	ETP
18	2	WASTE WATER	ETP
19	1	PAINTS & COATINGS	INCINERABLE
20	2	BOOCH	INCINERABLE
21	3	CANVASS WITH CHEMICAL COATING/CHIKEN MESH/REXIN/CARD BOARD	INCINERABLE
22	4	CARGO RESIDUE	INCINERABLE
23	5	CHEMICAL WASTE	INCINERABLE
24	6	CHEMICAL WASTE (SOLID)	INCINERABLE
25	7	CONTAMINATED SAND	INCINERABLE
26	8	CONTAMINATED SOIL	INCINERABLE
27	9	FIBER WASTE	INCINERABLE
28	10	FILTER WASTE	INCINERABLE
29	11	OIL SLUDGE	INCINERABLE
30	12	OIL SOIL	INCINERABLE
31	13	OILY CLOTHS & PAPER	INCINERABLE
32	14	OILY RAGS	INCINERABLE
33	15	OILY SAND	INCINERABLE
34	16	OILY SORBANT	INCINERABLE

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35	17	PAPER	INCINERABLE
36	18	PUFF	INCINERABLE
37	19	PVC & PLASTIC WASTE	INCINERABLE
38	20	RUBBER GASKETS & ISOLATION MOUNTINGS	INCINERABLE
39	21	SEDIMENTATION	INCINERABLE
40	22	TARRY WASTE	INCINERABLE
41	23	THERMOCOL	INCINERABLE
42	24	USED OIL/WASTE OIL & SPENT LUBRICANTS	INCINERABLE
43	25	WOOD POWDER WITH OIL	INCINERABLE
44	26	RESIDUE	INCINERABLE

ETP = EFFLUENT TREATMENT PLANT

S/S = STABILIZATION & SOLIDIFICATION

Annex F

ACCIDENT STATISTICS (2011-2016)

Accident Data for the year 2011-12

Sr. No.	Date & Time of Accident	Plot No.	Plot Name	Name of the Ship	Plot suspension period	No. of Fatal	Victim name	No of person injured	Victim name	Description of accident
1	02-09-2011, 08:30am	91	K.P.G. Enterprises	In plot	02/09/2011 to 07/09/2011	1	Mr. Shankar Gaud (Begari)	0	---	While carrying oxygen cylinder, victim tripped with wire rope. Cylinder fell down on his chest.
2	06-09-11	107	Unique Ship Breaking Corporation	V Canterbu	6/9/2011 to 12/09/2011	1	Kumar Giri Gandhraj	0	---	While cutting a bottom piece of ship on seashore, as a seawave dragged the same piece towards ship and victim got trapped between bottom piece and ship
3	30/01/2012	20	Panchvati ship breakers	MV ST Anna.	30/01/2012 to 04/02/2012	1	Pradhan Hina Khetra.	0	---	During coming down through a ladder, he was slipped from ladder and felt down.
4	22-03-12	25	Bansal Ship Breakers Pvt. Ltd.	M.V.KING PIONEER	22/03/12 TO 23/03/12	1	Arvind Prajapati	0	---	During recycling activity on ship, Gas cutter was cutting a section of ship. Due to backfire in gas cutting set, he got burn injury. During treatment, victim died on date 24/03/12.

TOTAL 4

Accident Data for the year 2012-13

Sr. No.	Date & Time of Accident	Plot No.	Plot Name	Name of the Ship	Plot suspension period	No. of Fatal	Victim name	No of person injured	Victim name	Description of accident
1	25-06-12	30	J.R.D Industries	In plot	25-06-2012 to 28-06-2012	1	Bhaskar Gura Gaud	3	1. Sanicharsingh 2. Tuleshwarsingh 3. Lakhansingh	Pulling ship and jharap two activities same time, so wire rope tense because jharap fell down on wire rope, thus wire rope tense and accident occurred.
2	21-08-12	25	Bansal Ship Breakers Pvt. Ltd.	In plot (beach)	21/08/12 to 24/08/12	1	Nishad Joginder Rammagina	0	---	After lunch break, victim was sitting under shade of tilted bottom piece of ship (towards plot side). Suddenly piece which was ready to cut (towards sea side) fell down itself & tilted bottom piece came down & victim was entrapped below it.
3	22-08-12	72	Bohra Exports Pvt. Ltd.	In plot	22/08/2012 to 26/08/2012	1	Raju Shiv Prasad Sharma	0	---	During daily cutting process, Segregation of scrap metal pieces was being carried out on plot using crane. Victim was cutting a metal plate using gas cutting set near that place. During material shifting through crane, a heavy duty metal valve was shifted and stacked. The same valve slipped from that stack of scrap and fell down on victim's left leg. His thigh was badly struck between plate and valve.
4	07-09-12	41	Shanti Ship Breakers Pvt. Ltd.	M.T. LINA	07-09-2012 to 14-09-2012	1	Prajapati Ramesh Molai	0		During shifting process of machinery from ship to field, motor shifted to field and wire of winch. During tensioning, wire rope was entangled with a metal plate and it hurled by wire rope. The same plate travelled through the air and hit the victim. His helmet was broken and he suffered injury on his head and chest.

5	12-09-12	10	Shree Saibaba Ship Breaking Co.	In Plot	14/09/12 TO 20/09/12	1	Raju Rank Shetty	0	---	During the daily operation of ship recycling in plot, victim was transferring the plate from one location to another. Simultaneously shifting activity of big plate called "JHADAP" was going on by the crane from sea shore to field. While crane was swinging, suddenly the JHADAP was hit to the victim. Victim got serious head injury and immediately he was shifted to a hospital near plot no. 16. After the primary treatment he was referred to Bhavnagar hospital for further treatment. Doctor declared him dead at Bhavnagar hospital.
6	19-09-12	111M	Shiv Corporation	In Plot	19-09-2011 to 24-09-2012	1	Singh Ajay Ramsamuj	2	1..Singh Baijnath Shriramjee 2. Yadav Tapeshwar Komal	During hauling activity of ship toward plot, single sheave pulley which is used to guide wire rope in winch drum was came out due to shearing of nut and pin from the winch. The same pulley was travelled in air and hit the victim Mr. Singh Ajay Ramsamuj(Mukadam) and other two person who were working near the winch.
7	06-10-2012	82	Kiran Ship Breaking Co.	MT UNION BRAVE (Oil Tanker)	06/10/2012 to 23/11/2012	7	1. Bharti Rammilan munnar 2. Chaudhary Harilal Ramkumar 3. Chaudhary Ajaykumar satendar 4. Yadav Sanjay Devki 5. Yadav Subhash Ramdas 6. Chaudhary Dharmendra Ramkumar 7. Sahni RamAshish Chandrawali	0	---	Fire broke out after the blast in the pump room of the oil tanker vessel. During Lunch break, Seven workers were stayed for cutting oil pipelines in the pump room to pull down ZARAP to the plot or Somebody of them lit bidi or cigarette and due to continuous work from morning in the pump room, hydrocarbon vapour might have accumulated. In presence of heat source, it exploded and fire erupted. Five of them lost their life on the spot and others two critically burnt person were taken to bhavnagar hospital through 108 Life Saving Ambulance. They both succumbed to their injury later on during their treatment.

8	11-01-13	27	Shantamani Enterprise	M.V.CARRARA CASTLE	11/01/13 TO 16/01/13	1	Lalu Ramavatar Chauhan	2	1)Rajbhar Parmanand Ramkewal - Leg Injury (2)Paswan Ram Pratap Sriram	During ship recycling activity on ship ,gas cutting activity was going on & all three victims were working on partition wall of cargo hold 1 & 2.Due to sudden vibration ,partition wall vibrated & big size of iron piece which was tied on top of partition wall with rope & chain pulley block,moved towards cargo hold no. 2 & hit all three victims.Immediately victims were sent to Bhavnagar hospital.
9	29-01-13	86	Kathiawar Steels	M V FRONTIER 51	30/01/2013 to 04/02/2013	1	Bharat Teju Gupta	---		During daily recycling activities on plot, a team of workers with Mukadam were pulling ZARAP towards plot through winch of nearby plot. ZARAP was fallen down on the ground and wire rope which was tied with the ZARAP was swing in the air. As ZARAP was fallen on the ground, hole from where D-shackle & wire rope were tied, was torn out. Wire rope was wrapped on the boom of crane and hit the victim.
10	23-03-2013	41	Shanti Ship Breakers Pvt. Ltd	M.V.OCEAN-1	23/03/2013 to 30/03/2013	1	Pradhan Mithul Bijali	0	---	During daily recycling work, victim Pradhan Mithul Bijali (Begari) had allotted fitting of gas cutting torch of LPG cylinder on ship. Unfortunately from coming down by fixed ladder he slipped and fell to the bottom of the hatch.
						TOTAL	16			

Accident Data for the year 2013-14

Sr. No.	Date & Time of Accident	Plot No.	Plot Name	Name of the Ship	Plot suspension period	No. of Fatal	Victim name	No of person injured	Victim name	Description of accident
1	22-05-2013	84	Diamond Industries (SBD)	In Plot	22/05/2013 to 29/05/2013	1	Bogha bhai Ramji Makwana	0	---	During daily recycling activities on plot, a team of Jodi workers with Mukadam were pulling cabin ZARAP towards plot using their winch. Cabin ZARAP had fallen down in sea towards starboard side of the vessel. Wire rope was sheared from the ZARAP end and it swung in the air. Wire rope hit the boom of crane which was kept on the plot and then to the victim.
2	01-06-2013	121	M.K.Shipping & Allied Industries Ltd.	In Plot	01/06/2013 to 07/06/2013	1	kedari sinh	0	---	During daily recycling activities on plot, material shifting process was being done by a crane driver from sea shore to plot during tea break. After tea break, victim was passing near to that area where ZARAP was kept on sea shore. As crane lifted that ZARAP, another small metal piece which was kept near to that ZARAP was slid from that location and fell on to the victim. He was taken to the local hospital and he died.
3	07-09-2013	16	Bhikkamal Chhotelal Pvt.Ltd.	M V ELMAS	07/09/2013 to 11/09/2013	1	Jahid Iqbal Nusrat Hafis Ansari	0	---	During daily recycling activities, victim was descending through portable alluminium ladder from third deck to second deck of ship (Height between second and third deck 18ft. Approx.) He slipped from ladder and fell down on the second deck of ship, other co workers immediately shifted him on plot and then shifted to Bhavnagar hospital through ambulance. Doctor declared him dead at Bhavnagar hospital.
4	02-10-14	73	Pure Enterprises Pvt Ltd	On plot	03/10/2013 to	1	Goswami Ramlal Rambharose	5	1. Dangi Rajkumar Bandhan 2. Bahera Jayram Markand 3. Nahak Trinath Vrundavan 4. Singh Ashok Dhrunarayan 5. Vishwakarma Shivpujan Shyamial	Just after finishing cutting operation on ship at 07:00 pm, Plate loading and shifting activities were being carried out on plot. Mukadam has found a number of Jharap pieces were lying on sea shore piled up on each other. He thought to correct it using winch by pulling it towards plot. He along with 6 workers started winch and they got involved in wire pulling and wrapping it behind winch drum. During this activity, shaft which connects winch drum to gear box, came out of gear box and drum started rolling in reverse direction due to load on it. All the workers who were working behind winch got pulled towards winch drum since wire rope was wrapped onto the drum. They got injury on different parts of their body. Victims were taken to local hospital at Alang and then referred to Bhavnagar. One (1) of them has succumbed to his injury during treatment in hospital and others have injury and they are under medical treatment.

5	06-12-2013	2	Leela Ship Recycling Pvt. Ltd	on plot	06/12/2013 to 9/12/2013	1	Shambhuram Dukhiram Bansi	0	---	During recycling activities in field(plot), victim was cutting vertical piece of JHADAP. After cutting cut piece fell towards nearby JHADAP & rebounded towards victim & he was trapped under it. Immediately coworkers shifted him to Alang hospital & then after to Bhavnagar hospital where he succumbed to his injury.
6	25-12-2013	54	Rushil Industries Ltd	MV MSC ACCRA	25/12/2013 to 29/12/2013	1	Rudal Rajdev Yadav	0	---	During routine cutting activities on ship, Victim (Trade-Gas cutter) was cutting base of the davit crane of ship. When this cutting operation was in progress, crane started leaning and victim got entrapped between crane and floor. He was taken to local hospital at Alang and then referred to Bhavnagar. He expired at the hospital.
7	03-01-2014	158	Bansal Shipping Pvt. Ltd	MV SKY 11	03/01/2014 to	1	Ramashankar Seumal Prasad	0	---	During routine cutting activities on ship, victim was cutting a column of a ship at height. When this cutting operation was in progress at height at same time victim fell down on bottom of ship from height. The victim got head injury. He was taken to local hospital at alang & then referred to Bhavnagar. He expired at hospital
8	25-01-2014	2	Leela Ship Recycling Pvt. Ltd	M.V.SOLAR WING	27/01/2014 TO 04/02/2014	1	Hraday Radheshyam Tiwari	0	---	During ship recycling activities on ship, victim was descending from pilot ladder. Due to breaking of pilot ladder, victim fell down with pilot ladder in mud. Immediately he was shifted to Alang hospital & then to Bhavnagar hospital where doctor declared him dead.
9	21/02/2014	9	Siree Ram Steel & Rolling Industries (Unit-2)	On plot	21/02/2014 to 24/02/2014	1	Kedar Prasad Kailu	0	---	During ship recycling activities in field, victim was cutting ZARAP (piece of iron). A vertical plate (Dimension-16 ft length X 4 ft height) was attached perpendicularly with a horizontal plate of dimension 16 ft length and 6 ft width. After completion of cutting of vertical piece, victim went around at perpendicular cut piece to verify whether it is separated from attached horizontal plate. Unfortunately, vertical cut piece fell towards victim and he was trapped under it. Immediately he was shifted to Talaja Hospital, where doctors declared him dead.
10	11-03-2014	20	Panchvati ship breakers	On Plot	12/03/2014 to 24/03/2014	2	1. Pradhan Panchu B 2. Gaud Vishwanath Bhalla	3	1. Pradhan Balram Nakul 2. Nahak Babula Kantha 3. Dangi Ajay Kishun	During daily recycling on plot, five workers (Trade: Loading waia) were passing through the plot after their work. A plate was being shifted by a crane simultaneously. Suddenly, crane malfunctioned and swung freely with plate in the air and hit the victims. Victim got entrapped. They were taken to local hospital at alang and then three workers referred to bhavnagar. Two of them were expired and others are under doctor's treatment.
TOTAL									11	

Accident Data for the year 2014-15

Sr. No.	Date & Time of Accident	Plot No.	Plot Name	Name of the Ship	Plot suspension period	No. of Fatal	Victim name	No of person injured	Victim name	Description of accident
1	15-04-2014	5	Shubh Arya Steel Pvt Ltd.	MV HARMONY 1	17/04/2014 to 21/04/2014	1	Munib Rambabran Chauhan	1	Ashok Amaraji Vanzara	During ship recycling activities on ship dated 15/04/2014, Victim Munib Rambabran Chauhan (Gas Cutter) was doing gas cutting activity at bottom part of ship behind engine area & Ashok Amaraji Vanzara (Helper) was helping him. Suddenly a flash fire occurred & both victims got burn injury. Immediately they were shifted to bhavnagar hospital for better treatment through 108 ambulance. During treatment, Munib Rambaran Chauhan succumbed to his injury & died at Bhavnagar Hospital dated 17/04/2014.
2	25-05-2014	32	Samudra Alloys Pvt. Ltd.	M.T. MOTILAL NEHRU	26/05/2014 to 28/05/2014	1	Rajbher Ambika S.(08.06.2014)	2	1..Nayak Bhaskar Kartik 2.Thakur Prakash Kishtu	In morning approx. 8:30 am, four workers came in plot and went on to the ship. They started filling water in bottom of the tank near pump room by using fire pump. Exhaust of fire pump was passing near to the oil pipelines of pump room, which were dismantled earlier. Oil residue was spread on the pipelines and surrounding area. At the same time, spark started to generate from the exhaust of the fire pump. Oil residue caught fire and fire spread rapidly in nearby area. Three out of four workers rushed to that area and started extinguishing fire. Victims got burn injury and they were shifted to Bhavnagar hospital for treatment immediately.
3	23-06-2014	V-7	R.K. Industries (Unit-2)	M.V. GATO	23/06/2014 to 26/06/2014	1	Chauhan Shree Bhagwt Gyanchand	0	---	During daily recycling activities, around 13: 15 hrs victim was going on ship to perform his duty. While walking on bottom of ship to go inside engine room, he fell down inside manhole opening on bottom. Immediately, victim shifted to Talaja Hospital, where doctor on duty declared him dead.

4	28-06-2014	140	Paras Steel Corporation	D.V. PERIN	28/06/2014 to	5	<ol style="list-style-type: none"> 1. Rajkishore Ramparikan 2. Chedi Ramsajan 3. Indrasan Ramsamuj 4. Jangbahadur Choithai 5. Avinash Harishchandra 	8	<ol style="list-style-type: none"> 1. Velji Damjibhai 2. Hakai sheikh Hussain 3. Laljibhai Narayanbhai 4. Pramod Rajkumar singh 5. Omprakash Lalai 6. Firozkhan Mustaffa 7. Sanjaysingh Adharsingh 8. Ravi shivsaran 	During routine recycling activities on field, Victim was passing near the Zarap of field. At that time suddenly the piece of Zarap fell down and victim got entrapped under Zarap. He was injured and other workers rush out and take out him from the Zarap and they take the victim to the local hospital at Alang and then referred to Talaja. Doctors declared him dead at the hospital.
5	28-06-2014	41	Shanti Ship breakers Pvt. Ltd.	On Plot	28/06/2014 to	1	<ol style="list-style-type: none"> Suryamani Hareeram Sahani 	0	---	At beach area ship securing activity was going on with help of crawler crane. Crane was facing sea side & Mukadam was supervising the activity standing behind the crane. Crane driver moved the crane in reverse direction (plot side), to adjust hook for multiple sheave fitted on wire rope. Right leg of mukadam standing behind the crane entrapped under crawler of crane. Immediately he was shifted to Alang Red Cross Hospital. After primary treatment, he was shifted to Bhavnagar for further treatment, where doctor declared him dead
6	16/08/2014	115	Kumar Steel (India)	on plot	19/08/2014 to 26/08/2014	1	<ol style="list-style-type: none"> Sundar Meva Nishad 	0	---	

7	05/09/20114	84-A	Lucky Steel Industries	on Plot	05/09/2014 To 09/09/2014	1	Sheetal G. Pal	0	—	Mukadam along with six workers started their activities. Piece of Jhadap which was being pulled with the help of winch. This Part was lying approximately 150 Mtrs. from the Plot. This is a normal practice. During the operation the shaft of winch which is not visible to naked eye gave way this resulted in the free movement of the drum on which the wire rope was been heaved. when this process goes on, there are 4 to 5 workers to guide the wire as it is being heaved in. The loose part of the wire rope has to be coiled neatly. when the shaft started rotating freely, one of the worker got entangled in the wire rope. this resulted in fatal injury to him.
8	22/09/2014	58	Malwi ship Breaking co.	On ship	23/09/2014 to 30/09/2014	1	Prashant Dakua	1	Ravindra Prajapati	During routine oil removal process after beaching of ship named MV JUSTUS was being carried out by workers since morning. At approx 06:15pm, after completion of their work from other areas of ship, Prashant dakua (victim) went through monkey ladder (fixed) of ship to open manhole of the tank, which was situated at adjacent to the void space of the cargo hold no. 01 and 02 under the vertical crane. He started to unscrew nut of the manhole of the tank. Suddenly a mixture of oil and water came out rapidly from manhole and started spreading on the floor where he was standing. He shocked and escaped from that area through monkey ladder (length 8 feet. approx) and he slipped and fell down on the bottom. As he fell down, his co-worker ravindra prajapati rushed at the spot to save him and got minor injury. and Prashant dakua declared dead by the doctor.
9	22/10/2014	11	Shree Gautam shipbreaking Ind,Pvt.Ltd.	On ship	---	1	1. Mr. PATRA KORA NITAY	0		During daily recycling activities, on 22/10/2014 at around 08:30hrs victim (Mr. Patra Kora Nitray) was throwing of loose material from top deck to inside cargo hold no 2 on ship M. V. BALTIC MERCUR. While throwing of material suddenly he fell down on first deck of cargo hold no. 2. Immediately victim shifted Sterling hospital, Bhavnagar after primary treatment at Alang hospital, Alang. For further treatment he was shifted to hospital of Dr. Dilesh Shah on 23/10/2014. During treatment at hospital on 25/11/2014 at around 05:30hrs he died.
TOTAL						13				

Accident Data for the year 2015-16

Sr. No.	Date & Time of Accident	Plot No.	Plot Name	Name of the Ship	Plot suspension period	No. of Fatal	Victim name	No of person Injured	Victim name	Description of accident
1	21-05-2015	1	Banzai International Pvt.Ltd.	MV DIMISTRI Y	21/05/2015 to 27/05/2015	1	Ramdhani Ramdatt Sing	0	-----	During the routine recycling activity of plot, cutting operation was going in jhadap which was near sea bed area. victim was cutting a piece of jharap on sea shore area. Unfortunately when during cutting a piece of jharap he fallen down and he was entrapped under the same piece of jhadap. He was taken out from that entrapped condition and taken to local hospital at Alang and then referred to Talaja. He expired at the hospital.
2	06-07-2015	135	Shree Salbaba Ispat (India) Pvt.Ltd.	On Plot	07-07-2015 to 13-07-2015	1	Ravindra Vishnu Kewat	0	-----	During daily routine activities on plot, Victim (Trade-Gas Cutter) was cutting a block of ship engine foundation. While cutting the same block into smaller pieces, the whole block got misbalanced and one of the piece fallen down on the victim due to weakening of 'Havalidar' (left out cutting space). Unfortunately, he got entrapped under that iron piece. He was taken out by co-workers using crane hydra. They rushed to local hospital at Alang and then referred to Talaja Hospital. He expired at the hospital.
3	06-07-2015	45	Inducto Steel limited	On Sea bed	07-07-2015 to 13-07-2015	1	Prasad Sanjay Ramvedh	0	-----	During daily recycling activities on plot, activity of piece cutting was being carried out. Victim along with helper was cutting in hull piece (Tukda) lying on the shore. Suddenly a lot of high tide of water entered into piece of hull piece (cut part of ship) which was lying on sea bed area. Victim was misbalanced and fallen toward the bottom part of the hull piece into just 1.5 feet of water. This resulted unconscious. By the help of other workers taken him out from the hull piece and shifted to hospital. Doctor declared him dead.
4	05-08-2015	124	United Ship Breaking Co	M V ATLANTIC O	06-08-2015 to 11-08-2015	1	Bishweshwar Budhan Mahato	0	-----	At evening approx 18:00 hrs on 05/08/2015, Plot Mukadam called off all the activities on the ship due to high tide in evening for safety of the workers (As ship floats in high tide). Victim was coming out of the ship along with his colleagues. He chose short route in hurry and tried to climb through a vertical channel through tukda (iron piece) in spite of going through ladder. While attempting to climb this way, tukda got misbalanced and his leg got entrapped under that piece. He was taken out by co-workers. They rushed to local hospital at Alang and then referred to Bhavnagar. Doctors advised plot holder to take victim to Ahmedabad hospital. He expired at Ahmedabad hospital on 06/08/2015 at approx. 09:45 hrs.
5	13-01-2016	29	kasturi Commodities Pvt.Ltd.	On Plot	13-01-2016 to 18-01-2016	1	Chaudhry Baliram Indrajit	0	-----	Victim was standing near a piece of hatch cover on plot. Crane started moving and while in rotation of crane (swing mode), victim got entrapped between hatch cover and counter weight of crane. They rushed to local hospital at Alang and then referred to Bhavnagar. He expired during treatment at hospital.

TOTAL

5

European Community Shipowners' Associations

The European Community Shipowners' Associations (ECSA), formed in 1965, comprises the national shipowners' associations of the EU and Norway. ECSA aims at promoting the interests of European shipping so that industry can best serve European and international trade and commerce in a competitive and free business environment, to the benefit of both shippers and consumers. The European Economic Area maintains its very prominent position with a controlled fleet of 40% of the global commercial fleet.

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