J. M. BAXI GROUP

# TIDINGS

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### From the

# **Quarter** Deck

ear Friends and Colleagues, nine months have gone by of our centennial year and this message is the concluding message for our milestone year. So let me try and make it special. Next year we shall be stepping into our next century. As a company, we have a foundation that in many ways is unparalleled. We can call ourselves a truly multi-modal logistics and services company. We have also invested in creating, owning and operating infrastructural facilities on a pan-India basis. We have established a relationship of trust and confidence with our principals and clients. And we have our team, J M BAXI GROUP, each and every one of you, all our colleagues, who are the pride of our industry. This is the platform we have to start with.

The first 16 years of this century saw momentous and tumultuous changes. Global trade is larger and much more sophisticated. It is no longer just the movement of raw materials from one place and finished products from another.

With the enhancement of global trade, we have witnessed the changing sizes and sophistication of ships. Following this, ports and terminals have also grown and expanded to accommodate and handle such ships. We have seen this happen across all types of ships, from container ships, gas carriers, bulk carriers to tankers. Hinterland connectivity has, therefore, demanded imperative solutions to ensure the shipment of the cargoes. In many places, industrial and production clusters have developed around ports, leading to new cities and urbanisation. The last two decades also saw a great technological revolution with instant communications, instant computation and real-time live information flows through devices with GPS, RFID etc.

On the shipping side, we are witnessing probably the worst times ever. In a way, a perfect storm has hit the shipping industry. There

are declining global trade volumes, overcapacity, and a steep decline and collapse in the asset values of ships. We are seeing the collapse of large shipping and trading companies, as well as mergers and consolidations.

Amidst this backdrop, let us endeavour to see our future path. In these complex as well as sophisticated times, clearly one will need to be highly intelligent and competitive. Rent-seeking as a business possibility is out. One will need to earn one's living every single day. Thus, one will need to be innovative and add value. To be thus, one will need to learn and relearn constantly. To learn and relearn, one clearly needs humility and courage. Trust will increasingly play a differentiating role, and that can be achieved only with a conduct of integrity, honesty, perseverance and dedication.

We have at the moment our own infrastructure facilities under ICT, the Indian Cargo Terminals Company, with DICT, PICT, HICT, MICT, KICT, VCT CFS and RICT being operational and growing. NICT and LICT will soon follow. Each of these terminals are poised to become composite terminals, i.e. they will handle all types of cargo, including containers, bulk, liquid, reefer and cold storage. All our terminals will have multi-modal linkages and the sea terminals will have all three multi-modal linkages – sea, road and rail.

Our logistics vertical BOXCO today enjoys a position of leadership across almost all types of cargoes, such as fertilisers, agri-products, coal and, of course, containerised cargo. With increasing demands from customers as well as increasing sophistication, we can rightfully expect robust growth in this sector.

Our shipping services vertical with J. M. Baxi & Co. and United Liner Shipping Services LLP is endeavouring to enhance the service offering to remain in a leadership position in the coming years. Our company



Diabos truly is a technology as well as a fintech or financial technology company. Arya Offshore Services is providing ever increasing sophisticated logistics solutions in the oil and gas sector. Arya Communications is fast evolving as a solution provider of wireless communication services across India for various public services, such as the police, fisheries and local communities. One of our new and positive activities is Arya Water, whereby we are engineering clean water solutions for villages and localities. We are working towards making Arya Water into a substantial company with excellence in engineering and service provision. Water is and will increasingly be the crucial and imperative need of our nation.

Whilst we have a physical presence in every single port and the important cities of India with 106 branch offices, we have also expanded our presence into overseas locations such as Yangon in Myanmar, Dhaka in Bangladesh, Singapore and Dubai.

In conclusion, therefore, let me just reiterate the key words that will be our group's mantra at this fabulous and unique stage of our growth: 1) We will work with integrity, honesty and humility. 2) We will add value, be intelligent, be innovative and embrace new technologies. 3) We will be determined, dedicated and persevering in our endeavours. 4) We will pursue excellence and knowledge.

Wishing everyone and your families a Happy Diwali, a Merry Christmas, a great 2017 and a great century ahead 

Krishna B. Kotak

Chairman - J M BAXI GROUP







# Not Too Long Aga

# 2000–2016: The Coming Of Age Of The Three Verticals

he advent of the millennium heralded the stage where the three verticals of the J M BAXI GROUP (namely, infrastructure, logistics and services) came of age and provided collectively a range and depth of customised offerings that was and still remains unparalleled in the country.

This process, though, had actually started evolving historically since 1991, when the government of India announced sweeping reforms and opened up the economy to foreign investment and trade. It dismantled import controls, lowered customs duties, devalued the currency and made the rupee convertible on the trade account. It virtually abolished licensing controls on private investment, dropped tax rates and broke public sector monopolies. In tandem with the reforms, which began gaining momentum, the concept of Public Private Participation (PPP) in Indian seaports had already begun to materialise with the emergence of the Jawaharlal Nehru Port Terminal (JNPT) in Navi Mumbai and Pipavav port in the adjoining state of Gujarat. All of these developments since the beginning of the millennium had a profound effect on J M BAXI GROUP, which not only consolidated its unique position in India in its three chosen verticals of infrastructure, logistics and services but led to a seamless integration of the three verticals.



The Infrastructure ()ertical

J M BAXI GROUP took a more nuanced approach in successfully bidding for niche areas such as seaport-based container terminals, container freight stations and inland cargo terminals. It was amongst the first Indian companies to venture into container terminal operations. The government of India was initially sceptical of Indian companies owning and operating container terminals in India owing to their relative lack of experience. Thus, the container terminals commissioned under public-private partnerships in the 1990s were operated principally by international companies.



Visakha Container Terminal
Private Limited (VCT)

When the Visakha Container Terminal off the east coast of India came up for international bidding, J M BAXI GROUP in partnership with DP World emerged as the successful bidder. The terminal was commissioned in 2003 and J M BAXI GROUP became the first home grown Indian company to operate a container terminal. Today, Visakha Container Terminal has had 13 years of successful pioneering experience. To cater to the growing trade on the east coast, the government of India planned to double container capacity and once again J M BAXI GROUP was the winning bidder for the expansion project, which will be operational in 2018. The emergence of J M BAXI GROUP into the container terminal segment was indeed path-breaking as the successful commissioning and subsequent smooth operations of Visakha Container Terminal provided the necessary confidence to Indian policymakers with the conviction

that Indian companies can indeed successfully operate container terminals. Since then, it is noteworthy that tenders for operating container terminals in India do not insist on the participation of an internationally experienced operator.



Haldia International Container Terminal

When the government of India decided to privatise container handling operations at Haldia Port off the east coast of India in 2015, J M BAXI GROUP was once again the successful bidder. Owing to draught restrictions at Kolkata Port, Haldia Port in the state of West Bengal is often perceived to be the ideal gateway to the eastern neighbouring states of Bihar, Odisha, Assam and Jharkhand and other commercial areas. Since the award of the project, J M BAXI GROUP has taken over this terminal and has completely streamlined the operations by overhauling the equipment and introducing modern processes and systems. The result has been a huge improvement in efficiency and container throughput (over 30 per cent in a relatively short time) and productivity is at an all-time high. The emergence of J M BAXI GROUP in Haldia Port has today given the confidence to shipping lines to include Haldia Port as one of their major destinations on their east coast of India itinerary.



Paradip International Cargo Terminal

J M BAXI GROUP, though headquartered in Mumbai on the west coast of India, has always believed that the east coast of India offers tremendous opportunities for building a maritime infrastructure.

# Not Too Long Aga

In addition to the contracts for container terminals in Visakha Port and Haldia Port, J M BAXI GROUP also bagged the contract for building and operating the cargo terminal at Paradip in the eastern coastal state of Odisha. This multi-purpose berth is under construction and is likely to be operational in a year's time. It will have a deep draught enabling modern vessels to call into this new facility, and the road and rail connectivity to the hinterland will mean there is faster and seamless movement of cargoes.



Kandla International Container Terminal

Kandla Port on the west coast of India was the largest governmentoperated port as well as the second largest port overall in India. Though the port handles all types of cargoes, it has been lagging in containerisation as the successful operators from the past round of bidding had abandoned the project. Under this scenario, J M BAXI GROUP was once again selected by the government of India as the successful bidder to restart the container terminal in Kandla. Today, KICT is in the process of overhauling its infrastructure and other facilities, and operations at the terminal should start by the time this issue of Tidings lands on your desk.

The bouquet of port terminals within J M BAXI GROUP today encompasses Haldia, Paradip and Vizag on the east coast and Kandla International Container Terminal and Rozi International Cargo Terminal (in the state of Gujarat, which was covered in the previous issue) on the west coast of India.



Many of the container port terminals in India do not offer enough space in the container yard, hence containers move in and out of what are commonly termed container freight stations (CFSs). Preferably located

near the seaport, these CFSs are customs bonded storage facilities. They enable shippers and consignees to complete all customs formalities at these locations. J M BAXI GROUP was amongst the early movers into this business space and opened its first CFS near Jawaharlal Nehru Port Terminal (JNPT) close to Mumbai. It is, today, amongst the top five ranked CFSs in Mumbai amongst over 30 CFSs and has been a very strategic diversification for J M BAXI GROUP. In addition to offering agency services to its container line principals, the company is able to offer an off-dock CFS facility also, which gives the shipping lines better control of containers along the transport chain. Owing to the high efficiency of operations, the CFS, which operates as Mumbai International Cargo Terminal (MICT-1), has been operating at full capacity for the past few years. Many shipping lines as well as consignees use MICT-1 as their preferred CFS and to cater to the growing needs of the trade, J M BAXI GROUP is setting up its second CFS (MICT-2). This facility is in the process of being commissioned and is likely to be operational in early 2017. J M BAXI GROUP has expanded its CFS portfolio beyond the west coast and has set up a CFS at Visakhapatnam on the east coast. This facility was commissioned in 2016 and will complement its container terminal (VCT CFS) in this strategic eastern hub of India.



Container Train Operations

India has a huge hinterland connected to ports over long distances. The movement of containers into this hinterland was done either by rail by the Indian Railways (owned by the government) or by the road network, which, however, is still comparatively primitive in reach and distribution. With the success of the privatisation of port terminal operations, the government of India decided to privatise container train movements

in the country. Accordingly, private companies were invited to invest in this segment and J M BAXI GROUP once again was one of the 15 companies selected by the government to operate container trains in India. J M BAXI GROUP commenced this service in 2006 after building up its fleet of container trains.



Inland Cargo Terminals

Pursuant to running container trains, J M BAXI GROUP had the vision of developing inland cargo terminals, which are huge facilities offering customs bonded arrangements for clearing cargoes as well as rail and road connectivity. They offer seamless movement from and to the nearby ports. The first such facility of J M BAXI GROUP was inaugurated in 2015 near Delhi, the Delhi International Cargo Terminal (DICT). Located close to the export belt of the National Capital Region, this foray has seen a large jump in cargo throughput within a very short period. In addition to handling containers, the facility also handles bulk cargoes, e.g. food grains, liquid cargoes and high grade chemicals. DICT is also building up a temperature-controlled warehouse, which will be the first such facility of J M BAXI GROUP.





## The Jogistics Vertical

The Indian reforms resulted in a massive requirement for goods and materials to be moved across vast swathes of remote areas and difficult terrain. This saw the emergence of major logistics players in India. By

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the turn of the new millennium, J M BAXI GROUP had already achieved a significant presence in several niche segments of the logistics services market in India as a diversified logistics player. Its active presence for instance, encompassed highly complex and specialised logistics segments.



### Boxco Logistics India Ita

This is a J M BAXI GROUP company that was incorporated this millennium. It soon established itself as the country's leading transporter of heavy-lift and over-dimensional cargo (ODC) movements through specialised material handling equipment and a fleet of custom-built self-propelled modular transporters (SPMTs) for project cargo.



### Boxco Bulk Shipping Services

This division of J M BAXI GROUP specialises in the shore-based handling of bulk commodities, such as coal, iron ore, granite, fertiliser and food grains. The hallmark of these movements is the innovative addition of value to supplement the transportation of bulk cargo, such as the bagging of fertilisers, the use of innovative bulktainers (modified containers) for handling sugar, the integrated handling of granite blocks from the quarries to the loading ports, and using huge gantry and mobile cranes to load and unload granite cargo.



### BoxCold

BoxCold is a division of J M BAXI GROUP that spearheaded the strategic entry into the cold chain and temperature-controlled storage business. It was yet another bold milestone in the value chain along with the handling and warehousing of reefers. The cold chain logistics initiative, in particular, came at a historic moment when India's horticultural production (plagued

by a high degree of transportation and storage-related wastage losses) had surpassed its total agricultural production (including for cereals, pulses, coarse grains and oilseeds) and provided the necessary scale for introducing state-of-the art technology and investment in the required cold chain infrastructure.

These multiple focal points in the evolution of logistics helped J M BAXI GROUP to build a wide range of discrete domain competencies and thereby infuse a synergy of ideas for managing a wide array of independent business models within the group. This has created the necessary momentum for a renewed strategic focus, a new level of consolidation of its business operations, the acquisition of a range of logistics assets and the integration of its diverse business operations and service delivery capabilities and standards.

The last 15 years, since the turn of the millennium, has seen the project logistics engagements of J M BAXI GROUP increasingly take on several industry verticals, most notably in the thermal power, fertiliser, petroleum, refining and chemical sectors, often setting key operational milestones that have veritably become industry benchmarks.

The logistics business also has the advantage of synergies, allowing it to draw from other related infra businesses of the group, such as the string of CFSs, inland cargo terminals, international container terminals at various seaports and a number of multiple cargo warehousing hubs across various inland and coastal locations.



To complement its onshore logistics with an offshore capability and to provide a total international endto-end turnkey offering, Boxco took delivery of its first ever custom-built vessel Vir Varenya, which is operated

by group company Vir Special Ships Private Ltd. This vessel provides J M BAXI GROUP with the unique capability of sea transportation of over-dimensional and project cargo and complements Boxco Logistics impressive onshore array of heavyduty handling equipment, which includes today 56 SPMTs, 14 prime movers, 30 heavy-duty cranes of varying lifting capacities (including a 160-ton telescopic crane), more than 100 mechanical trailers, a 400-MT capacity girder bridge (sole owner in India), a 250-ton special railway wagon, a 500-ton four-point lifting system, 400-ton road bolsters, fork lifts, top lifters and a hydraulic jacking system.





# The Services Vertical

The services sector of J M BAXI GROUP (which put its first tentative foot forward in 1916 as a small shipping agency house) saw it evolve by the turn of the century into one of India's most admired and diversified service providers of its kind.

J M BAXI GROUP had already established itself as India's leading shipping agent by providing a diversified range of customised services, which included a shipping agency, bulk and break-bulk cargo handling and stevedoring, customs clearance, warehousing, tanker support operations, project transport support, chartering brokers, offshore and onshore oil exploration support services, international freight

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forwarding, labour recruitment and ship management, support services for dredging companies and a host of customised agency and related support services.

The 2000s, however, saw J M BAXI GROUP planting its feet and making its presence widely felt in many more diverse areas, such as providing support services to port development and terminal management operators, container freight stations, container transport management operations, handling cruise ships and providing support services to foreign naval ships.

Also during this period, the J M BAXI GROUP companies began to provide some hitherto path-breaking initiatives.



Sale and Purchase of Offshore
Drilling Rigs and Vessels
and Chartering of Offshore
Support Vessels

Arya Offshore Services in J M BAXI GROUP, for instance, enhanced its value offerings during 2006–2011 by successfully entering into the market and concluding the sale and purchase of five new offshore jack-up drilling rigs (for Indian customers) built at the Keppel FELS Shipyard in Singapore and four anchor-handling towing vessels built at the Keppel Singmarine Shipyard also in Singapore. It followed this up this year with synergising J M BAXI GROUP's support strengths by undertaking and successfully implementing a complete turnkey project, which involved the chartering of offshore platform supply vessels for the transportation of a dismantled platform-mounted drilling rig. After storing it in the port of Mumbai, it successfully transported the entire dismantled drilling rig to the Middle East.(This unique project, which required tremendous coordination and project management skills, is described more fully in this edition of Tidings.)



### Advanced Port Call Management Services

Another J M BAXI GROUP company Diabos, which came into existence in the new millennium in 2008, has become the trusted partner today to major ship-owning and operating companies worldwide in providing advanced port call management services.

Diabos basically leverages the digital revolution currently sweeping India and the world to provide international ship owners diligently with end-to-end port cost management services using webbased applications to streamline disbursement accounting, cash management, towage contract management and port cost estimation.

Additionally, it provides a wide range of non-core, value-added services such as document management, port and agency data management, agency audits and port supplier management. Diabos's ability to adapt in a continuously evolving industry has made it today one of the most sought after port cost management service providers.



### Water Treatment Technologies

Water, as we know, is inextricably linked with each facet of human life. Thus, its availability, storage, treatment and proper usage is paramount to our very existence. Keeping this in mind, Arya Water Technology (AWT) was incorporated in 2014 to cater to the vast business potential of India's water industry and symbolises the J M BAXI GROUP's contribution to environmental causes. In pursuit of its vision to be one of the trusted and renowned players in this segment, AWT has become one of the most respected names in total water treatment. The capacity of AWT today is in designing, process engineering, and using I&C and O&M for water and waste water treatment, including air/fume treatment. AWT

has built a capability to offer endto-end treatment solutions across all industries.

# Overseas Offices

The period since 2000 has been noteworthy in the history and annals of J M BAXI GROUP in reaching out to its customers and clients by opening strategic offices outside India. Here again (as in J M BAXI GROUP's foray into the infrastructure, logistics and service segments), this has been done in a progressive and need-based manner. Office infrastructure was set up during the 2000s in countries such as Bangladesh, Dubai, Myanmar, Singapore and Sri Lanka. Plans are now being laid on a case-by-case basis to establish offices in other relevant international locations to complement its three verticals in India and abroad.

"We shall not cease from exploration. And the end of all our exploring will be to arrive where we started and know the place for the first time." (T.S.Eliot)

J M BAXI GROUP has come a long way since its early humble beginnings a century ago. Today it is an integrated company delivering a unique and unparalleled offering through its three verticals of infrastructure, logistics and services.

The passion for reinventing, reenergising and redefining constantly embodies the approach of J M BAXI GROUP in every sector it is involved in. A vibrant spirit of innovation and entrepreneurship encompassing digital technologies, respect for the environment and ethical governance practices are the guiding principles of J M BAXI GROUP. Add to this J. M. Baxi's underlying conviction to its mission statement of 'Innovation, Commitment and Performance' and one can understand why J M BAXI GROUP stands poised today to herald this century with even more excitement, anticipation and confidence



# **Agency & Services**

# ARYA OFFSHORE Moves Up The Value Chain To Provide Integrated Offshore Logistics Solutions

rya Offshore, which was established in 1976, has grown from a six-person team to 170 highly skilled and motivated personnel. It has progressively moved up the value chain on its journey over 35 years, from providing basic ship agency services to the enviable bouquet of customised and integrated services it provides today, while keeping in sync with the dynamics posed by the Indian offshore industry.

Hitherto, Arya Offshore has provided individual services in almost all the components of a conventional supply chain. Recently, it executed for the first time a truly integrated logistic solution for Sundowner Offshore (a group company of the globally renowned Nabors Offshore of USA). The activity involved a seemingly simple demobilisation of a modular work-over rig, namely P-16, from an offshore site, after which it was to be transported to Bahrain. However, the challenge was daunting as the rain gods had been working overtime over Mumbai and there seemed no respite from the continuous torrential rain during the entire operation.

The supply chain commenced with Arya Offshore chartering two supply vessels. These vessels were chartered after stringent in-house technical checks and were finally given security clearance by the naval authorities prior to being permitted to enter the oil development area. The modular rig was dismantled and the packages were loaded onto the two vessels over a number of voyages. A designated

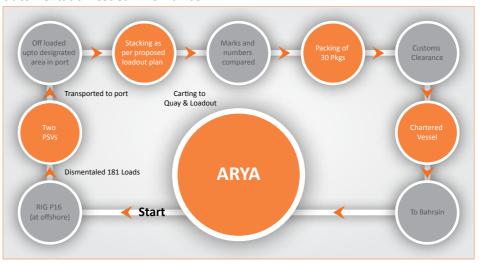
area in the port was used to stack and stow the material as and when it was received from the supply vessels.

Arya Offshore established a virtual war room, where inputs were received and collated from the rig personnel, the master of the vessel, the weather bureau and the on-shore owner's representatives. These were used for the coordination at the port with the port and custom authorities and stevedores for material movement and stacking. The demobilisation of the 15,620 CBM volume modular rig was completed in 32 days covering 18 voyages by the supply vessels.

The stored material was jet-sprayed to clean off the mud and grease and each item was identified and marked individually. This exercise is unique to the offshore industry, as the rig, which was imported on a re-exportable basis, was required to be inspected by Indian customs with respect to the documentation issued when it was

imported. The documentation for the re-export was handled in-house by the Arya Offshore Documentation Centre. Even the smallest discrepancy in markings, dimensions, weights or commercial values would have resulted in huge losses in time and costs to both Arya Offshore and Sundowner Offshore.

The material was packed by a portapproved vendor to avoid damage while in transit. On completion of the marks and numbers exercise for identification, customs inspected the rig and its equipment in its entirety. Finally, a suitable vessel was chartered by Arya Offshore and was loaded with 391 packages of various dimensions and weights. It set sail from Mumbai to Bahrain on 3 September 2016. The disembarkation of the shipments at ASRY Yard in Bahrain was handled by the appointed agent. The sequence of events involved in the complete operation is depicted in the figure





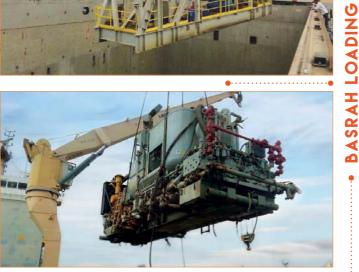


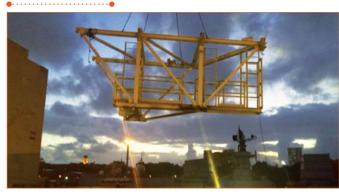
# Agency & Services

## **Visual Integrated Offshore Logistics Solutions**



















# In Conversation

# **Heavy Lift: A Perspective**

# Q: How do you see the Indian heavy lift market going forward?

Ans: With the overall growth of the Indian economy, we will without a doubt see a similar growth in most shipping segments in India, including the H/L market. For the economy to continue to expand, there will be a necessity to continue to improve the infrastructure, including roads and railways, but also more fundamental things such as power and water. All of these are key for a healthy H/L market.

Currently, we do see a trend that more and more heavy equipment will be produced in India. This will somewhat change the focus for H/L operators, from what used to be mainly an import market, to becoming more and more of an export trade. Despite the current difficulties, we do, therefore, continue to have a positive outlook for the opportunities in India as a whole!

# Q: How is Rickmers-Linie planning its services in and out of India?

Ans: The Indian markets for Rickmers-Linie, which is primarily imports from Europe and the Med, remain a little slow. This has resulted in us adjusting our services to match the demand. We will continue to serve the majority of the Indian ports with our Europe - Middle East - India - South East Asia service; however, to ensure we have an adequate frequency, we will continue to look for additional opportunities to make calls in Indian ports with our Pearl String service (from USA and Europe) as well as with our Far East to South America service whenever a requirement is there.

# Q: Can you tell us a little more about Rickmers-Linie services globally?

**Ans:** I have effectively touched on our three current services above, namely



Mr Michael Nielsen / Owner's Representative Middle East & India / Rickmers-Linie GmbH Cie. KG / United Arab Emirates

He started his shipping career back in 1993, as an apprentice with Scan Shipping A/S in Copenhagen, Denmark. He then worked with United Arab Shipping Co for a decade and then Swire Shipping owned Tasman Orient Line.

In 2014, he joined Rickmers-Linie as the owner's representative, Middle East and India. In his current role, he is responsible for all Rickmers-Linie commercial and operational activities in the region and furthermore, he oversees the agency network, representing Rickmers-Linie in the region and he is a member of the Rickmers-Linie management team.

the Pearl String service (East Bound round the world), which remains our core service, operated with nine owned 30,000 DWT vessels with H/L capacity of up to 640 tonnes. This service runs from the US Gulf through Europe, the Med, the Middle East, India (as necessary), the Far East and back to the US Gulf. This service offers a 17-18 day frequency and is indeed the service that put Rickmers-Linie on the map.

Secondly, but more important for India, we run the Europe - Med -Middle East - India - South East Asia service with chartered 12,000 DWT vessels. This service runs monthly and it has the ability to serve the vast majority of ports in India on both the east and the west coasts. We have the ability to increase or decrease the frequency of this service, based on market demands, as we can pick up either an additional or a reduced number of vessels in the charter market.

# Q: What changes do you see in port productivity out of Indian ports?

**Ans:** Our focus in India remains on import cargo. I must sadly admit that Indian ports remain the ports where we spend the most amount of time on our vessels for the volume we either discharge or load. It is not purely an issue of the actual productivity in the ports, it is, of course, also closely related to the infrastructure behind the port, such as road access, storage facilities and other components. When on top of that you add the high costs for calling at some of the ports in India, it does take quite a lot of cargo movements to make a call financially viable, hence there is most definitely still a large scope to improve that going forward.

# Q: What is your working experience with the J M BAXI GROUP?

**Ans:** It goes without saying that the Rickmers Group and the family behind J. M. Baxi have a very close and long historical relationship. This is not only because the families are long-term friends but also a reflection of the good working experience as well as the trust we have built up with the J M BAXI GROUP over the years. In a large country like India, it is imperative that our representatives have a superior network of contacts and for J M BAXI GROUP, an involvement in almost all segments of the transportation industry, including port operation, logistics, vessel handling etc ■







# Logistics

# **Partners In Progress:**

## **Boxco Provided End-To-End Logistics for De-Inking Plant Machinery for Paper Mill**

epa Limited is a pioneering newsprint company in India, which is centrally located at Nepanagar, Burhanpur District, in Madhya Pradesh (MP), with an initial installed capacity of 30,000 TPA. It was the first indigenous newsprint manufacturing unit in the country and originally floated by a private entrepreneur in 1947. Its management was taken over by the MP government in 1949 and it became a central government company in 1959. The company has a long history and makes a significant impact on the economy of the area around Nepanagar. With such a long history, the company has faced many ups and downs and has stood against the vagaries of economic onslaughts. As the company fell under the BIFR, it was offered a revival package by the government of India in 2012. With the revival package in hand, Nepa Ltd

Nepa Limited, Nepanagai

went ahead with the renovation and upgrading of its existing plants and machinery, replacing them with a new plant and machinery importing them from all over the world. Under this revival scheme, Nepa Ltd placed one of the first orders for a de-inking plant (DIP) to be imported from China and Europe on FOB basis. Nepa Ltd invited tenders for the complete logistics for the import of the DIP, plus other import packages needed for its revival and mill development plan(RMDP).

In their RMDP, in addition to the installation of the new DIP, rewinder, reel wrapping, DCS-QCS and HVAC,

Nepa Ltd is going to refurbish both of its existing paper machines, a 12.27 MW captive power plant, one rewinder, a fire protection system and other balance of plant.

In the post-RMDP scenario, the company has a plan to produce not only different grades of newsprint but writing and printing paper also and it will start exporting newsprint and WPP. To meet the raw material requirement, the company will import a large quantity of waste paper, like old newspapers, coated book stock, sorted office waste, old magazines and other grades of waste paper.

For the DIP imports, the scope of the entire logistics included load port handling, ocean freighting for containerised and break-bulk cargo, port handling at discharge port JNPT, customs clearance at JNPT and finally inland transportation from the port



Port to Nepanagar

to the plant site at Nepa Ltd including unloading. The scope also covered EPCG facilitation and documentation for capital goods, under which the imports were carried out under nil custom duty. For this work, M/s Boxco Logistics India Pvt Ltd (BLIP), Mumbai, was shortlisted. Finally, after exercising the due diligence and strict procedures, as per the rules of the government of India, the order was awarded to BLIP. BLIP is a part of the renowned J M BAXI GROUP, which is one of the oldest and most diversified groups with a presence in various verticals like project logistics, freight forwarding, infrastructure (like port

terminals, CFS, ICD etc.) and oil and gas field logistics services etc.

During the execution of the project, it is always an integral part for any service contractor to liaise with various agencies, including the government. On this front also, BLIP completed this liaison with various government agencies with full dexterity, keeping the interest of the project as supreme. During the execution of the project, much of the ODC equipment was over-height. This required the handling and removal of overhead obstructions en-route. This also involved the shutdown of railway electricity very near to the project gate. In all cases, the obstacles were crossed with complete efficiency after liaising with and receiving permission from the concerned Divisional Railway Manager Office of the Indian Railway. It is very important to note here that for all the critical movements of the ODC, the proper and technically correct methodology was adopted. Further, for any ODC movement, a proper route survey was carried out by the experts at BLIP.

The safe movement of the drum pulper, 45 MT in weight, 3.5 metres in diameter and 21 metres long, and a bleaching tube, 13 MT in weight, 2.5 metres in diameter and 18.5 metres long, from Shanghai and Guonghou, China, to the site will be memorable for ever in the history of Nepa.

"We will always feel pleasure in expressing our gratitude to BLIP for this association with Nepa Ltd. BLIP completed one of the biggest projects undertaken by Nepa with complete professional efficiency and always took on the challenge of handling any crisis. We will always look forwards to various opportunities in the future for mutually beneficial associations"



# **Logistics**

# BOXCO Is Trusted By Clients To Move The Heart Of A Power Plant

stator is the heart of a generator and the stationary part of the rotary system. In logistics, it is the heaviest single piece of a power plant. Boxco pioneered the girder bridge methodology in India to transport this most challenging and heaviest piece of cargo for NTPC Sipat Power Project. It has unarguably moved the most number of generator stators in India weighing upto 420 MT.

Stator transport necessitates very detailed methodology and planning because of its concentrated load. Boxco was the first in the industry to use Stadpro – software to calculate bridge strengths and feasibility. With "safety first" as its motto, Boxco has continuously ensured the safe delivery of the most critical part of a power plant and thus strengthened its trust with its customers.

Boxco has managed various stator movements at the same time, which requires resources and a high level of executional, financial and management bandwidth. The movements covered the length and breadth of India and involved almost all modes of transport services like barging, roll-on roll-off, surface transport, double banking operations, self-geared heavy-lift vessel etc.



NTPC KUDGI SUPER THERMAL POWER PROJECT: 800 MW TOSHIBA (TJPS) STATOR (UNIT 1)

# STATOR DIMENSIONS: 10,360MM L $\times$ 5,926MM W $\times$ 4,900MM H, GROSS WEIGHT 409 MT

Boxco was awarded the logistics of this prestigious UMPP involving three 800 MW units. The stator for the first unit was received on a barge directly under the hook of the vessel at Mumbai Port and transported by sea to Belekari Jetty in Karnataka. The stator was then rolled off and further movement was done with a combination of conventional and SPMT axles to the NTPC Kudgi site and covered a distance of 500+ km over one of the most challenging terrains.



NTPC KUDGI SUPER THERMAL POWER PROJECT: 800 MW TOSHIBA (TJPS) STATOR (UNIT 2)

# STATOR DIMENSIONS: 10,360MM L $\times$ 5,926MM W $\times$ 4,900MM H, GROSS WEIGHT 409 MT

The second unit was the maiden stator manufactured in the Toshiba factory. Boxco arranged a suitable

combination of hydraulic axles to receive, inter-cart and transport the cargo along the approved route to Ennore Port. A heavy-lift self-geared vessel was arranged from Ennore Port to Mumbai Port. After careful planning and tide calculations, the stator was safely received at Mumbai Port and transported by sea to Belekeri, where it was rolled off using a suitable combination of SPMTs and hydraulic axles. Boxco lined up further activities, such as permissions from various authorities, construction of bypasses en-route, other civil works required en-route and suitable labour and equipment for timely delivery of the stator to site.



NTPC KUDGI SUPER THERMAL POWER PROJECT: 800 MW TOSHIBA (TJPS) STATOR (UNIT 3)

# STATOR DIMENSIONS: 10,360MM L × 5,926MM W × 4,900MM H, GROSS WEIGHT 409 MT

The third unit required a similar operation to Unit 1 by Boxco. The stator was safely received at Mumbai Port and transported by sea to Belekeri, where it was rolled off using a suitable combination of SPMTs and hydraulic axles.

# Logistics



### LANCO AMARKANTAK: 2 × 660 MW Thermal power plant project

### STATOR DIMENSIONS: 10.73M L × 4.0M W × 4.38M H, GROSS WEIGHT 310 MT

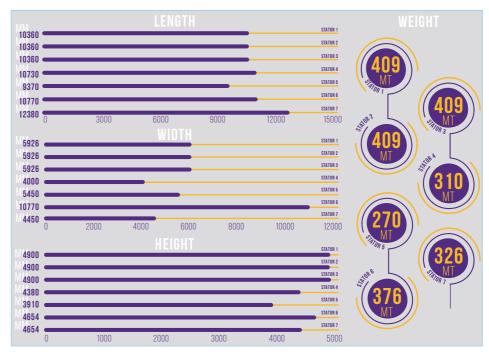
Boxco, being an old and trusted partner for Lanco, was once again entrusted with the task of delivering the imported stator. The stator, which arrived at Vishakhapatnam Port, was loaded on a girder bridge and transported by road to the project site in Korba, Chattisgarh, covering a total distance of 1800 km. The movement was over many long-span bridges over the Godavari River, which Boxco passed safely and securely using the girder bridge methodology. A set of 32 conventional hydraulic axles was used for this movement. The movement was carried out at the peak of the monsoon season and over came all obstacles and hurdles.



SEPCO1/KMPCL PROJECT: 4×660 MW UMPP

### STATOR DIMENSIONS: 9.37M L × 5.45M W × 3.91M H, GROSS WEIGHT 270 MT

Boxco delivered yet another stator for the KMPCL UMPP project. This imported stator was received under hook at Paradip Port on hydraulic conventional axles and then transported overland to the KMPCL project site in Champa district,



Chattisgarh. All the permissions and civil works en-route were completed well in advance, which assisted in the swift movement and timely delivery. Boxco carried out multiple route surveys, bridge inspections and detailed calculations before arriving at the route to be taken, as the movement involved long-span bridges over the Mahanadi River. The successful movement was achieved by careful planning and compliance with the highest safety norms.



LARA STPP PROJECT: 2 × 800 MW

### STATOR DIMENSIONS: 10.77M L × 6.02M W × 4.654M H, GROSS WEIGHT 376.5 MT

The stator for this project was rolled off the barge at the Kasheli Jetty in Thane. The stator was further secured on land at Padgha, Maharashtra. Boxco utilised its precious resource of a self-propelled modular trailer for the roll-off.

# NORTH KARANPURA STATOR 3 × 660 MW

### STATOR DIMENSIONS: 12.38M L × 4.45M W × 4.38M H, GROSS WEIGHT 326.5 MT

BHEL recently awarded a contract for ocean transportation and port handling for the Karanpura project. This project involved ocean freight from Rotterdam Port to Haldia, WB and handling at Haldia port, including customs clearance at the discharge port. This project included a stator with a weight of 326.5MT.

Generator stator movements involve meticulous planning and a high level of competence. Boxco, with its professional workforce and equipment, ensures movement in the most effective and efficient way. All major challenges, like bridges, toll plazas, railway shutdowns, HT/LT line shutdowns and various permissions, are carefully planned and considered before the start of the movement. A stator, being the very core of a power plant, requires stringent delivery lines and EHSE standards. We can say with immense pride that in India, Boxco has handled the most stators and this quarter was especially remarkable as we simultaneously handled multiple stators |





# Infrastructure

# ICTRIPL And DICT Become The First To Handle Live Reefer Imports For North India

elhi International Cargo Terminal (DICT) achieved yet another feat by bringing refrigerated cargo movements out of deep freeze when the International Cargo Terminals and Rail Infrastructure Pvt. Ltd. (ICTRIPL) became the first train operator in North India to transport inbound (import) live reefer containers on its trains. Special arrangements were made by ICTRIPL to handle a delicate consignment of small apple trees (shrubs), which required the temperature to be maintained at +2 degrees centigrade. The shrubs were shipped by the horticulture department of Jammu and Kashmir from Italy. The consignment of eight 40-foot containers was handed to



ICTRIPL at Mundra on 12 July 2016 and it reached the J M BAXI GROUP's DICT on 15 July 2016. Throughout the journey, power was supplied to the containers by a specialised modular power pack developed by DICT. An in-house plant and quarantine facility was already available at DICT and this led to a very fast customs clearance.

The achievement is a significant one, since for a long time the



trade had been demanding a costeffective and viable solution for transporting temperature-controlled import consignments from ports to NCR. In the absence of such a logistics service, cargo was being moved by road, which is not only costly but risky. ICTRIPL and DICT, therefore, took the initiative to solve this mammoth problem for their customers. ICTRIPL has developed special infrastructure to handle temperature-controlled cargo. It has 86 reefer points and 36 tractor trailers with gensets to support the last- and first-mile transport. DICT also has a nonparallel reefer infrastructure with 108 plug points, in-house power backup of 1500 kVA apart from grid connectivity, over 35 genset-fitted trailers and more than six power packs to support

live reefers on trains. DICT also has an experienced team of reefer technicians. Very soon DICT will usher in another paradigm shift in the industry: it will become the only ICD in North India to have its own cold storage facility. A green field cold chain unit of 8000 metric tonnes capacity is being built adjoining the ICD. The development will give a big boost to North India's logistics industry



# We Connect

# DICT Organises Trade Meeting To Focus On Customer Needs













eiterating its commitment towards key commodities, DICT organised a trade meeting at Solitaire Inn, Muzaffarnagar, for various entities involved in the wastepaper business.

The trade meeting was well attended by wastepaper importers,

indenting agents and prominent CHAs of wastepaper trade shipping companies. They appreciated the efforts of DICT in understanding the logistics requirements and its focus on eliminating all bottlenecks while transporting goods in the most optimal manner.

Mr Pankaj Aggarwal, chairman of the Paper Mill Association and who is also the mayor of Muzaffarnagar, appreciated DICT's efforts in reducing the overall logistics cost of wastepaper importers through innovative and time-bound solutions to their needs

# In Focus

# ARYA COMMUNICATIONS Preferred Partner For Digital Communication Solutions For Keeping The Country Safe

# AP POLICE GO DIGITAL FOR PUSHKARALU

ndhra Pradesh Police played a pivotal role in the success of the important Hindu festival of Godavari Maha Pushkaralu during July 2016. The police department was in search of a digital communication solution that was robust with highly reliable radios.

Arya Communications has been designing, supplying and managing

Committee, Revenue Department, Health, Disaster Management Teams etc., through a central command and control system, also designed and technically managed by the Arya Communications support team. While the digital TDMA technology helped AP Police to maximise the frequency channel usage, the IPSC (Internet Protocol Site Connect) feature helped them to connect more sites over IP.

Arya Communications designed the AP Police Pushkaralu network with about 2000+ units (a mix

## MAHARASHTRA POLICE: AN ICON IN POLICE DIGITISATION

Arya Communications has been chosen as the most competitive, reliable and the best technology partner to digitise radio communications in the entire Maharashtra Police district with a Motorola DMR Solution. Arya Communications worked hand-inhand with police teams across the state to set up this state-of-the-art digital communication network.

Following the Ministry of Home Affairs guidelines backed by a solution designed jointly by the Arya Communications technical team and Maharashtra Police technical officials, the project went through a tough technical and open tender bid process. Maharashtra Police finally awarded the coveted digital communication network order to Arya Communications for about 3000+ units (digital portable, mobile

Maharashtra Police
today appreciates the
engagement and the
robust solution provided
by Arya Communications
in completely digitising
the Maharashtra State

# Arya Communications has been designing, supplying and managing communications products and solutions for AP Police for nearly 18 years.

communication products and solutions for AP Police for nearly 18 years. Accordingly, AP Police chose a Digital Motorola Mototrbo solution as their natural, preferred and undisputed answer for the month-long Pushkaralu festival. This latest state-of-art technology is based on digital mobile and portable radios along with repeaters, and it helped the police force to access common wide area channels for the entire state with last mile portable connectivity. It also helped the police to communicate with different government departments, like the Pushkaralu Management Core

of portable, mobile and digital repeaters), placed strategically across districts hosting events. These radios are capable of transmitting data and most interestingly they are compatible with interface data applications like TRBOnet, for AVLS/GPS tracking, voice dispatch, voice recording, telephone calling, route management, geo-fencing and network management.

The project was successfully executed by Arya Communications and fully appreciated by Andhra Pradesh Police and the community.

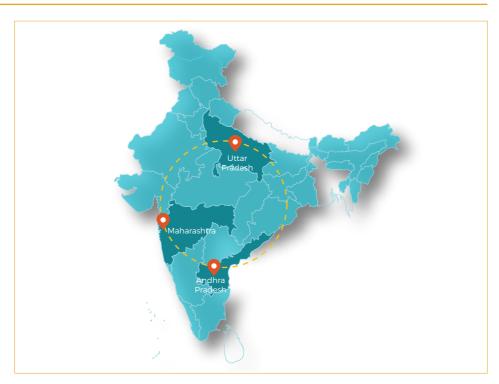
# In Focus

and repeaters) with microwave connectivity to digitise 11 districts falling under Nagpur and Nasik covering Nagpur rural, Chandrapur, Gondia, Nasik rural, Dhule, Ahmadnagar, to name a few.

Maharashtra Police chose an advanced, revolutionary, flexible, reliable, cost-effective and robust digital communications network, compatible with their existing VHF band analogue radios, to cover a wide range and to integrate rural remote stations with urban connectivity networks. Arya Communications helped in integrating the Motorola Digital Radios with reliable TRBOnet third-party software, which enables the police to transfer data through the file transfer protocol from control rooms to stations and viceversa. Incorporating the link capacity plus (LCP) dynamic trunking facility, as designed by the Arya Communications technical team. helps Maharashtra Police officials to achieve higher talk groups for maximising channel utilisation, which is best suited for semi-urban and urban communication environments.

The Maharashtra Police tech team helped Arya Communications to achieve and share the state-of-theart digital communication network over IP, which also incorporates a solution from third-party software provider TRBOnet, whose network management solution is integrated with a central Dell server backed with an Alvarion Breeze net for wireless backbone microwave connection between remote repeater sites.

Maharashtra Police today appreciates the engagement and the robust solution provided by Arya Communications in completely digitising the Maharashtra State



Police Force, thereby becoming a role model for other state police departments when replicating similar solutions.

# UTTAR PRADESH POLICE MDS DIAL 100 PROJECT

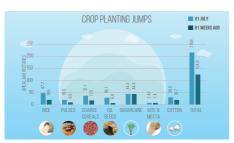
UP Police has always trusted Arya Communications as a communication consultant. Arya has been offering Motorola communication solutions for over two decades. In the digital migration, Arya Communications has been the most reliable, trusted and a value-adding engagement partner for UP Police. Arya Communications helped to design and supply a stateof-the-art digital communication system for the prestigious Dial 100 Project of the UP government. The Dial 100 Project has been challenging, as it virtually needs to interconnect the different networks. like radios, mobile GSM/CDMA network, conventional landlines along with an overriding communication feature, while group calls are still in progress. Arya Communications designed the district radio system with wide range coverage to connect and integrate rural remote stations and to track mobile field radios in the district control room with the compatibility to communicate with their existing analogue distributed network radios. This solution also entails static radio connectivity using radio over IP (ROIP). Arya Communications suggested and provided the radios, which are encrypted with the Advanced Encryption Standard (AES) to ensure the utmost secrecy of their operational communications. The UP Police Dial 100 system presently has over 3500+ mobile radios along with software to cater to their fully digitised Dial 100 solution needs. This again reflects the trust reposed by UP Police in Arya Communications as their public safety communications solution partner

The UP Police Dial 100 system presently has over 3500+ mobile radios along with software to cater to their fully digitised Dial 100 solution needs.

# Weights & Measures

# Agriculture: Facing New Challenges Yet Optimistic





he Southwest Monsoon had failed successively - in both 2014 and 2015 and this had severely constricted India's agro commodity export volumes, while increasing the pressure for agri-related imports, especially in edible oils and pulses. India also had experienced unseasonal rains and hailstorms over the last two years that damaged good deal of crops, resulting in poorer overall yield per acre of cropped area and other market-related losses.

The adverse natural conditions not only curtailed the output but further aggravated with continuous fall in the global agricultural commodity prices, which led to shrinkage in export volumes, dramatically witnessed in respect of India's oilmeal exports. Over the last two decades, India has however, seen through a notable surge in its farm exports, which went up six fold in value terms from \$7.5 billion to \$43.25 billion between 2003 to 2015. But by the end of last year, the decadal long term commodity boom had been reversed with exports diminishing from \$39 billion in 201415 to 32.5 billion by the end of the fiscal year. A drastic decline of \$10.5 billion from the peak level has been a notable one.

While the government had tried to give some incentives in terms of Minimum Support Prices (MSP), it could not effectively result in any increase in exports with depressed global pricing. India during this period, exported grains at an average price of \$310 and \$275 per tonne respectively, but due to the domestic and global situation, it could not realise the price it had expected. The price of wheat at the load port for instance, was Rs. 1,197 (\$175-180) far too below the MSP of Rs. 1,525. The market downtrend also affected across-the-board agricultural commodities including Basmati rice, Guar Gum and other agro products, which in turn depressed India export performance.

### Good monsoon in 2016

The ongoing monsoon season in 2016 has already recorded a satisfactory precipitation across the states and extensive sowing operations and increase in area under cultivation has picked up the pace. It has helped the farmer in meeting the targets set for major crops such as paddy and pulses. The only worrying factor is the deficit of 11% rainfall that has affected certain regions out of total 25% deficiency that was predicted. However, this problem can be mitigated through measures to supply irrigated water from water reservoirs .

## KEY HIGHLIGHTS OF

### **GOVERNMENT INITIATIVES**

Crop Insurance: The Central government has unveiled the (continued from issue XIV)
operational guidelines for the
Pradhan Mantri Fasal Bima
Yojana, which aim to provide
farmers with crop insurance

- Irrigation Schemes: Ministry of Power, Coal, New and Renewable Energy, Mines has announced government's plans to invest Rs 75,000 crore (US\$ 11.08 billion) in an energy-efficient irrigation scheme over the next three to four years.
- Digitising APMCs: Gujarat Government has planned to connect 26 Agricultural Produce Market Committees (APMCs) via electronic market platform, under the National Agriculture Market (NAM) initiative.
- Dairy Development: The National Dairy Development Board (NDDB) announced 42 dairy projects with a financial outlay of Rs 221 crore (US\$ 32.42 million) to boost milk output and increase per animal production of milk.

### **ROAD AHEAD**

Agriculture sector in India is expected to accelerate the growth momentum over the next few years with increased investments in agricultural infrastructure, including in irrigation facilities, agro warehousing and cold chain and storage facilities. Factors such as reduced transaction costs and lead times, varied policies and packages, improved port gate management and better fiscal incentives are likely to contribute to the sector





# **Port** Statistics

### **SHIPPING & CARGO PERFORMANCE**

QUARTERLY UPDATES ON INDIAN MAJOR & MINOR PORTS (QTY IN MILLION TONNES)

APRIL - JUNE 2016 (Ist QUARTER) 2016 -2017 / APRIL - JUNE 2015 (Ist QUARTER) 2015 - 2016 (QTY IN MT)

### AGRICULTURAL PRODUCTS

	SUGAR  Ist Qtr'16   I Qtr'15		SOYAMEAL		WH	WHEAT		RICE		IZE
			Ist Qtr'16	Ist Qtr'15	Ist Qtr'16	Ist Qtr'15	Ist Qtr'16	Ist Qtr'15	IV <sup>th</sup> Qtr'16	IV <sup>th</sup> Qtr'15
No. of Ships called	17	5	2	0	1	7	25	5	0	1
Total Cargo Handled	0.394	0.117	0.059	0.000	0.024	0.159	0.629	0.099	0.000	0.026
Import	0.141	0.000	0.050	0.000	0.024	0.019	0.000	0.000	0.000	0.000
Export	0.253	0.117	0.009	0.000	0.000	0.140	0.629	0.099	0.000	0.026

### **FINISHED FERTILIZERS & FERTILIZER RAW MATERIALS**

	UREA		SULF	SULPHUR		ROCK PHOSPHATE		DAP		MOP	
	Ist Qtr'16	I <sup>st</sup> Qtr'15	Ist Qtr'16	Ist Qtr'15	Ist Qtr'16	Ist Qtr'15	Ist Qtr'16	Ist Qtr'15	Ist Qtr'16	Ist Qtr'15	
No. of Ships called	37	30	18	20	32	49	38	35	10	19	
Total Cargo Handled	1.526	1.698	0.409	0.424	1.430	1.834	1.470	1.477	0.230	0.497	
Import	1.526	1.698	0.252	0.141	1.430	1.834	1.470	1.477	0.230	0.497	
Export	0.000	0.000	0.157	0.283	0.000	0.000	0.000	0.000	0.000	0.000	

### COAL

	THERMAL COAL		COKING COAL		MEI	MET COKE		PET COKE		ANTHRACITE COAL	
	Ist Qtr'16	Ist Qtr'15	Ist Qtr'16	Ist Qtr'15	Ist Qtr'16	Ist Qtr'15	Ist Qtr'16	Ist Qtr'15	I <sup>st</sup> Qtr'16	Ist Qtr'15	
No. of Ships called	248	194	165	175	22	14	57	34	10	5	
Total Cargo Handled	13.144	9.927	9.834	10.061	0.720	0.403	20.679	1.416	0.230	0.084	
Import	6.455	2.886	9.786	9.843	0.720	0.403	20.494	1.317	0.230	0.084	
Export	6.689	7.041	0.048	0.218	0.000	0.000	0.185	0.099	0.000	0.000	

### **STEEL & RELATED ORES**

	STEEL PRODUCTS		S SCRAP METAL		CHROME		MAGNESIUM ORE		IRON ORE		
	Ist Qtr'16	I <sup>st</sup> Qtr'15	I <sup>st</sup> Qtr'16	Ist Qtr'15	Ist Qtr'16	Ist Qtr'15	Ist Qtr'16	Ist Qtr'15	Ist Qtr'16	I <sup>st</sup> Qtr'15	Π
No. of Ships called	169	250	6	7	4	4	24	7	142	97	
Total Cargo Handled	2.558	2.927	0.153	0.218	0.103	0.009	0.500	0.139	7.793	4.789	
Import	1.559	2.032	0.153	0.218	0.022	0.005	0.500	0.139	2.353	2.763	
Export	0.999	0.895	0.000	0.000	0.081	0.004	0.000	0.000	5.440	2.026	

### **INDIAN PORT PERFORMANCE - Q1 & FY 2016 - 17 THROUGHPUT (QTY IN METRIC TONNES)**

APRIL - JUNE 2016 (I<sup>st</sup> QUARTER) 2016 - 2017 / APRIL - JUNE 2016 (I<sup>st</sup> QUARTER) 2015 - 2016 (OTY IN MT

Ports	Types of Ports	NO. OF		LIQUID		BULK (		CONTAIN		TOTAL C	
		I <sup>st</sup> Qtr'16	Ist Qtr'15	Ist Qtr'16	Ist Qtr'15	I <sup>st</sup> Qtr'16	Ist Qtr'15	I <sup>st</sup> Qtr'16	Ist Qtr'15	I <sup>st</sup> Qtr'16	Ist Qtr'15
Kandla		372	286	3.056	2.576	4.888	2.082	-	-	8.211	4.925
Mumbai		485	535	6.421	4.800	1.797	3.448	11,060	11,069	8.297	8.327
Nhava Sheva		191	103	1.661	1.310	0.256	0.224	1,027,052	1,108,315	1.917	1.534
Mormugao		181	131	0.323	0.246	6.379	3.422	-	-	6.948	3.914
Mangalore		345	275	6.053	6.276	2.607	2.482	279,499	12,927	8.683	8.781
Cochin		169	165	3.877	4.149	0.404	0.458	119,871	93,507	4.349	4.675
Tuticorin		277	246	0.406	0.369	5.941	5.886	161,986	129,095	6.718	6.626
Chennai		269	279	3.777	3.763	2.252	1.552	373,948	388,073	6.291	5.577
Ennore		225	198	1.176	0.999	6.427	6.242	-	-	7.651	7.289
Vishakhapatnam		205	401	2.102	4.033	3.150	8.057	87,448	53,839	5.380	12.218
Paradip		426	426	7.370	5.214	15.383	14.316	-	-	22.758	19.535
Haldia		432	88	2.495	0.611	4.157	0.728	22,595	24,884	6.677	1.364
Kolkata		68	84	0.232	0.297	0.001	0.056	164,689	137,383	0.262	0.382
Gangavaram		18	42	0.000	0.000	1.564	2.931	-	-	1.564	2.931
Pipavav		122	201	0.143	0.010	1.488	1.863	171,742	201,023	1.674	1.916
Mundra		760	692	6.589	6.319	10.649	13.096	837,765	672,514	17.290	19.467
Dahej		158	149	6.395	4.926	1.776	2.943	-	-	8.213	7.911
Hazira		22	59	0.123	0.365	0.313	0.946	88,086	43,255	0.439	1.314
Navlakhi		33	44	0.000	0.000	1.716	2.277	-	-	1.716	2.277
Kakinada		179	57	0.586	0.369	2.689	0.161	-	-	3.616	0.871
Total Ve		4937	4461	52.785	46.632	73.837	73.170	3,345,741	2,875,884	128.654	122.413

Major Port Non-Major Port





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