

**MAMMOET**

**MAMMOET**

House magazine  
of Mammoet  
Transport B.V.

SPRING 1997 NUMBER 29

lifting unlimited edition

**THE NUCLEUS OF LIFTING  
ALL IMPORTANT MAINTENANCE  
NEWBUILDINGS MAMMOET  
SHIPPING GET SHAPE  
COLD BOXES IN PITTSBURGH**



## THIS ISSUE

- 4 The nucleus of lifting
- 8 The Tokyo function
- 9 Lubex2: two in one
- 12 All important maintenance
- 14 Newbuildings Mammoet Shipping get shape
- 16 Bullet on the run
- 18 Year of the roof
- 20 Cold boxes in Pittsburgh
- 24 Mammoet in Focus



### COLOPHON

Editor-in-chief:  
Aad van Leeuwen

Contributing editors:  
Immie van Kalken  
Aad van Leeuwen

Translation:  
Immie van Kalken

Photography:  
Aad van Leeuwen  
and others

Lay-out:  
Aart Schuddeboom

Printing:  
Beursdrukkerij Costra B.V.

Editorial address:  
Public Relations Department  
Mammoet Decalift International B.V.  
De Ruijterkade 7  
1013 AA Amsterdam (NL)  
Tel. +31-20-6387171  
Fax +31-20-6386949

10.000-04-97

*Twenty-five years of integrated heavy transport: the previous issue of Mammoet Mail focused on that happy event. Twenty five projects were selected — one for every year — and twenty five persons were interviewed. The reactions in response to that publication were quite revealing. One of the most heard remarks was "We did not know that Mammoet is so comprehensive." Another particularly nice one: "Turning the pages, you realise that heavy transport is people's work." Indeed, the people are all important to Mammoet and they have made the Mammoet organisation what it is now.*

*The year 1996 will also be remembered for the merger with Decalift, which beefed up Mammoet's possibilities in the lifting sector. This Mammoet Mail pays particular attention to various lifting operations. Another noticeable fact was the introduction of a new house style which included a radical change in colours, but was well received and appreciated. Further attention is paid to the new ships under construction for a revitalised Mammoet Shipping. M.s. "Happy River" is the first one in a row and she is now on her maiden trip for her first assignments.*

*Didn't somebody mention at the start "Heavy transport is people's work." This issue of Mammoet Mail is another proof of that. It is true: people are a company's greatest asset!*



- 3** **Lifting Unlimited**  
Over the years lifting capabilities within the Mammoet organisation have been extended considerably. Mammoet Mail features some significant and successful lifting and erecting jobs in the United States and the Far East; worldwide unlimited lifting possibilities. Mammoet Mail visits the various sites.



- 12** **Maintenance**  
In the petrochemical industry Mammoet's conceptual approach for transport and crane operations is well received and much appreciated. Mammoet Mail looks around on two different sites, one in the Netherlands and the other in Singapore.



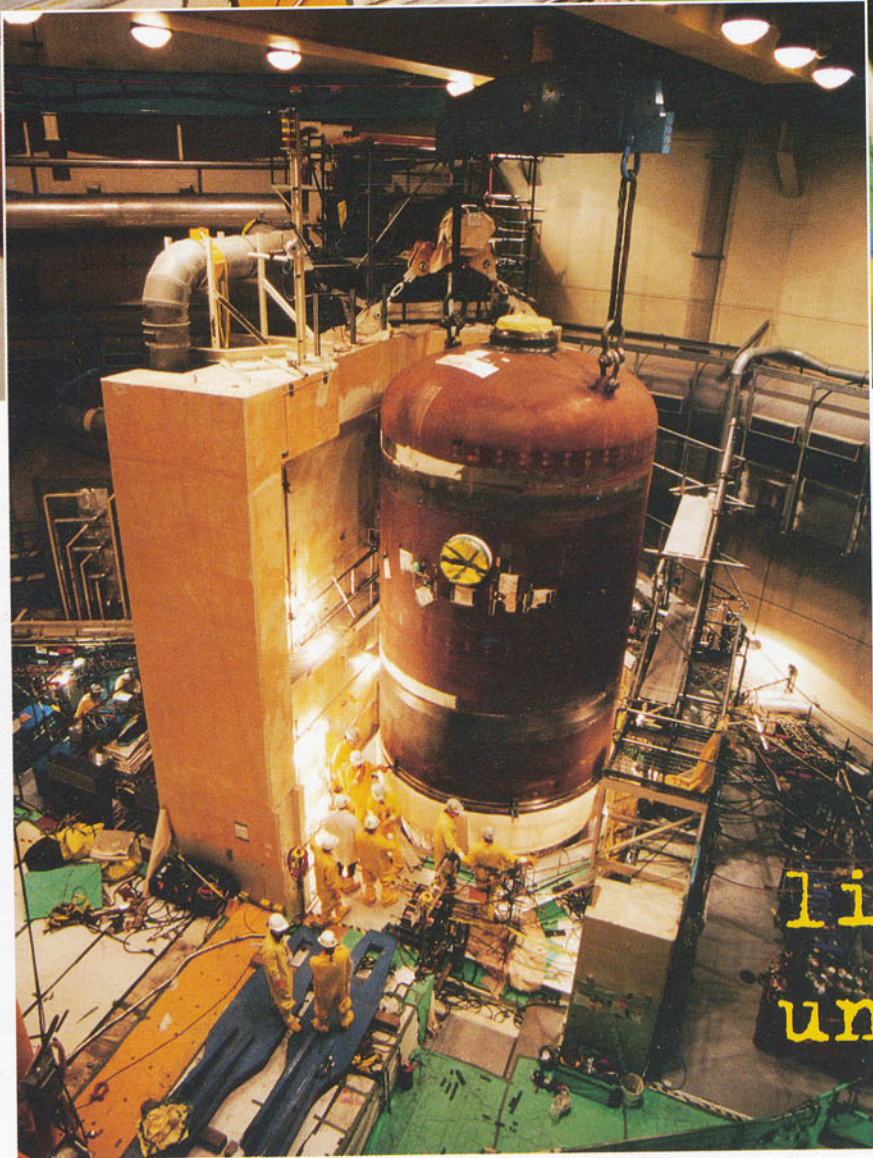
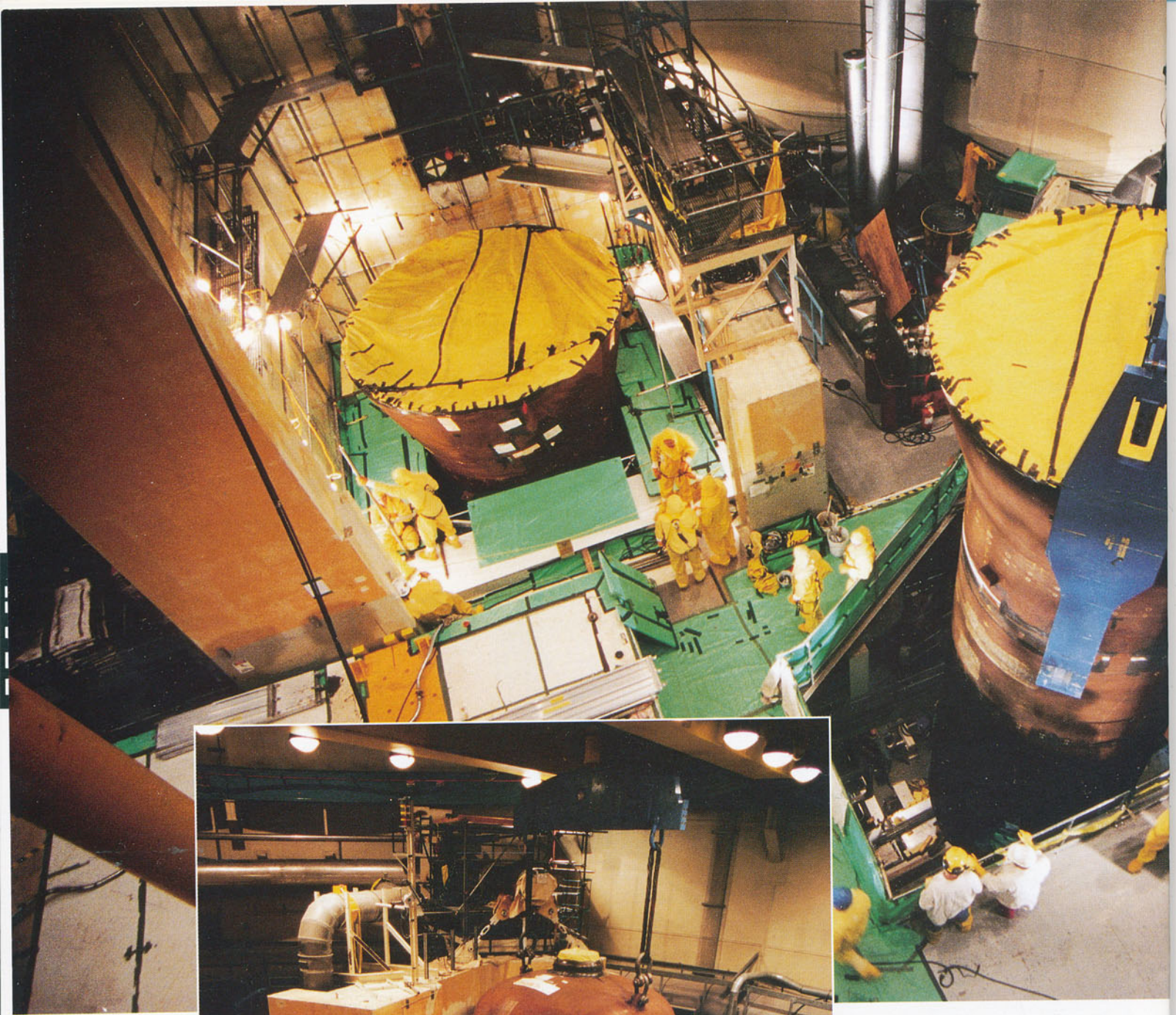
- 14** **Newbuilding Mammoet Shipping**  
At the Merwede Shipyard a lot of activity is going on to meet the scheduled deliveries of the new generation heavy lift vessels of Mammoet Shipping. M.S. "Happy River" was barely launched when the keel was laid for the next one in line m.s. "Happy Rover". A visit to the Shipyard.

# lifting unlimited



**Singapore** - For a lube oil plant at the Mobil refinery in Singapore a massive 1,154 tonne reactor vessel was erected and positioned by Walter Wright Mammoet's M1200R. Placed at an outreach of 19.8 metres, it was the heaviest single crane lift ever performed on land. The crane — rigged with a 60 metre main boom — was operated at just over 88% of its capacity for this particular lift. The load was tailed with 12 axle lines of self-propelled modular transporters with a carrying capacity of 720 tonnes. Mammoet's M1200R proved to be ideal for this job at a very compact site. The main contractor was Toyo Engineering Corp and Walter Wright Mammoet Singapore had been contracted by Nippon Express. Mammoet Shipping's "Project Europa" had brought the reactors from Muroran to Singapore.





4

lifting  
unlimited



Exchanging steam generators in a nuclear power plant is a very difficult and complicated operation, especially in terms of accessibility of the containment.

*"The replacement of the generators was critical to Wisconsin Electric and it will permit us to restart the 500 Megawatt plant and continue to provide reliable and safe, low cost energy to the customers"*

## The nucleus of lifting

Mammoet has gained experience in this field in previous jobs at Ringhals in Sweden and quite recently in Belgium at Tihange and at the Doel nuclear power plants. Progressive degradation of the tube bundles in the original steam generators made a similar exchange necessary at the Point Beach Nuclear Power Plant at Two Rivers in Wisconsin. Mammoet Mail reports on an interesting operation in a heavily regulated industry.

"Point Beach Unit 2 began its operation in 1972", explains Dough Johnson of Wisconsin Electric, "so the steam generators are almost 25 years old. In the last three or four years we have experienced accelerated degradation of the steam generator tubes. The Unit 2 generator's effective plugging level was about 22% and had we not replaced them it would have been unlikely that we would have been able to return the plant back into service. The replacement of the generators was critical to Wisconsin Electric and this will permit us to restart the 500 Megawatt plant and continue to provide reliable and safe, low cost energy to the customers we have here in the State of Wisconsin."

Johnson continues, "Wisconsin Electric has a series of power plants. We own obviously the Point Beach Nuclear plant, we also own coal-fired plants throughout the State, some hydro-electric dams and also a number of gas peaking units with an approximate total capacity of 5,400 Megawatt. Wisconsin Electric serves about 800,000 customers throughout the State of Wisconsin and the Upper Peninsula of Michigan."

"I got involved with The Steam Generating Team six years ago when Duke Engineering & Services first started investigating the steam generator replacement industry", says Bill Fox, who goes on to explain how SGT Ltd was formed. "We saw a market growing in the U.S. and we decided that we needed a strong partnership with a good company in order to compete in this market. DE&S is an affiliate of Duke Power Company, a major U.S. electric utility, which is in the business of providing engineering, licensing, and related services to the industry since 1982. We



Dough Johnson is Wisconsin Electric's manager for the Steam Generator Replacement Project. In that capacity he represents the owner of the Point Beach Nuclear Power Plant and he assures that the contract is fully accomplished in accordance with all applicable codes and standards.



Max Bingham comes from Morrison Knudsen and is Director of Projects in the Steam Generating Team (SGT). He is an old hand in the construction business. He has gained wide experience in construction, from highways to chemical plants and from fossil and nuclear power plants to missile sites, throughout the U.S.A. from the West Coast to New England States.

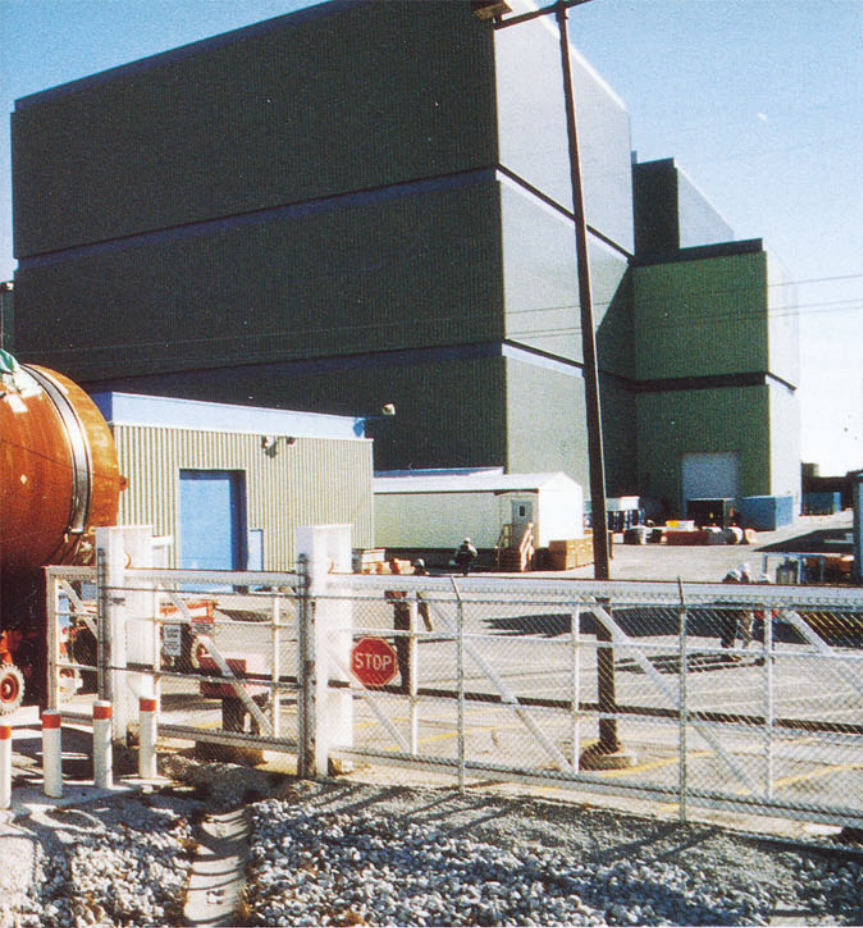
wanted to get in this market and looked for a strong construction company that could provide turn-key replacement services, Morrison Knudsen. DE&S brought engineering and licensing experience to SGT and MK brought the strengths of heavy construction experience with steam generator replacement and construction management experience. We were not very successful on the first proposal we worked on; however, we learned a great deal about each other and in working as a team. The second proposal we submitted as SGT was for steam generator services at St. Lucie Unit 1. In this case we were successful. Shortly thereafter, that we found out about Mammoet and their expertise in the area of heavy rigging and transport."

Max Bingham: "SGT was awarded the Point Beach contract in September 1994 just prior to a scheduled refueling outage of the power station, so we were able to jump in and start taking as-built dimensions and identifying interferences. During another refueling outage last fall we did verification of the dimensions. Basically, what you've got is a 500 Megawatt plant here with two Westinghouse steam generators which we were contracted to exchange. To enable us to change out the steam generators we had to cut and remove sections of the main steam and feedwater pipes and remove other structural, mechanical and electrical interferences. We then mechanically cut the reactor coolant pipe and cut the steam generator in two pieces, the top piece (steam drum) and the lower piece (lower assembly). Once this was accomplished we rigged and removed the steam drum, then placed a three inch steel plate on top of the exposed tube bundle as a radiation shield, we then rigged and removed the lower assembly.

Before Mammoet was selected as the preferred rigging operator, a thorough investigation was made. Bill Fox: "We looked at you guys hard — we did a lot of study on your company — we went out to look at jobs you've done, we also looked at how you do (transport) engineering and what we found was a lot of qualities and characteristics SGT has in terms of professionalism and business and how we work as a team. We liked what we found and when we molded Mammoet into SGT, there was a good complement between the various engineering folks with a real strong commitment and interface. We worked together from day one. It is not just a last minute contract — there are so many critical interfaces between rigging and the permanent plant structure: doing it any other way would be a formulae for failure in my opinion."

Prior to the replacement of the steam generators the power plant had to be withdrawn from service. Dough Johnson of Wisconsin Electric: "It took approximately fourteen days to remove the 121 fuel assemblers from the reactor core inside the reactor vessel and safely store it in our spent-fuel pool. Once that evolution was achieved the steam generator replacement project was to proceed and could we start to sever the reactor coolant piping."





## lifting unlimited

Morrison Knudsen exchanged the generators of Unit 1 at Point Beach in 1983 with a different lifting device. Bingham: "It was a specially designed hoisting unit with wire rope and we did have some problems with it. That's why I was pleased when I saw films of how the HydraJack system works; without a doubt you know it will pick the load. When you are picking 250 tonne with a wire rope hoisting unit it may operate slightly faster, but not that much and the assurance we have that the HydraJack system will work is worth the difference. The chances to fail load test with this system is minimal and there is no question about it, Mammoet is a very good and professional rigging contractor."

Bill Fox says that scheduling the replacement of steam generators for a nuclear power plant depends on various factors. "Some utilities may begin the engineering work early in anticipation of a replacement down the road; while another utilities may find themselves in a critical situation where the steam generators have gotten so bad so quickly that they have to replace them as soon as possible. The decision on when to start the engineering and replace the components is a key. The optimum replacement schedule is to time the replacement so that you are ready to go about the time the unit begins to lose efficiency and power procuring capacity and thus, becoming uneconomical to operate. Wisconsin Electric timed the Point Beach Unit II steam generator project very well."

Max Bingham emphasizes the fact that the operating deck level in the containment stands at a 66 foot elevation and the equipment hatch at 21 foot. "So there is some

interesting and challenging rigging that was accomplished here, in particular when you lower the components that far, while at the same time laying it in a horizontal position and taking it out through the equipment hatch. The existing polar crane inside the facility is rated for 100 ton, while the lower assemblies are approximately 230 tonnes, so we had to upgrade the polar crane by stiffening the existing girders, installing a temporary center post and a temporary jacking system."

"Another important point is that we integrated our engineering and construction", says Fox. "We had a design site engineer assigned on-site at the Point Beach Plant from day one. When you go into the construction phase of a project, it is very critical that you have the same engineers, who did the original design work, move to the field to support the construction. On-site we have the same people who performed the analysis on the transportation and rigging, the same people that did the engineering on the hatch transfer system, the main steam line, feedwater, and reactor coolant piping supports, and all other engineering and licensing work. These same people make the design change calls that inevitably come up in the field during construction. A lot of other companies may only have engineering representatives on-site. This requires these representatives to call back to the home office to get a resolution to the field problems that arise. SGT does all of our engineering during the construction phase of the replacement on-site. We have full engineering infrastructure capabilities through computer links to the home office; we can make design changes rapidly, have the construction problem resolved and the



Bill Fox (left) is with DE&S and Vice President of Engineering and Licensing for the Steam Generating Team. He has extensive nuclear experience in the utility industry having worked on original plant designs and operating plant modifications for nearly twenty years. Bill has been working in the SG replacement business with SGT Ltd. for the past six years.

# lifting unlimited

work package changed very quickly. During the replacement outage, this can happen 24 hours a day and is a big advantage that SGT brings to clients."

Nearing the completion of the project — the last upper part of the steam generator has been positioned — Johnson has a good feeling about the operation. "This has been a very successful replacement project; we knew from the beginning that it would be extremely difficult, but the engineering, planning and team building that we conducted over the last year and a half has served us well in an orderly, efficient and safe fashion. The preparation was critical to the success of the project. As you are well aware, this is an aggressively regulated industry in the United States. The Nuclear Regulatory Commission will scrutinize a project like this very diligently. We have always made safety, both nuclear and industrial safety, the primary emphasis of the project. This has paid off, because we had few injuries and our radiation exposure is extensively less than we had projected it to be."

Johnson about Mammoet: "One of the critical aspects of the steam generator replacement project was to successfully complete

all of the heavy lifts and heavy transport requirements. Mammoet Engineering has done a very good job, your equipment has worked very well, your engineering staff did a very good job and Wisconsin Electric has been totally satisfied with the performance of Mammoet in general. We feel very fortunate to have had Mammoet as part of our replacement project team."

The U.S. market for the exchange of steam generators is booming. A trade publication mentioned that before the year 2000 over sixty generators have to be replaced. SGT is aiming to obtain its share after dealing successfully with the project at the Point Beach nuclear power facility. Bill Fox refers to the next steam generator exchange mission, which will take place at St. Lucie in the second half of 1997. "We're going to Florida with the same people that have made this project successful. The big difference at St. Lucie is that we are going in there, way ahead on the game. With SGT and Mammoet we know how to work together. We consider this co-operation as a good marriage, which will be even more solid on future projects. I think what that does is posture us in the industry as a force to be reckoned with." 🐘

## The Tokyo function



At the Palace hotel in Tokyo the traditional bi-annual Mammoet party was held last year. It was attended by over two hundred Japanese clients from different trades and companies. The function was connected with the 25th anniversary of the Mammoet organisation (1971 to 1996) and the retirement of Mammoet President Jan Ijmker. Successor Rolf de Ruijter de Wildt was introduced at the occasion.

A large mammoth, carved from natural ice was on display at the function, together with a Mammoet "hall of fame" exhibition featuring several important Mammoet projects executed in the last few years. 🐘



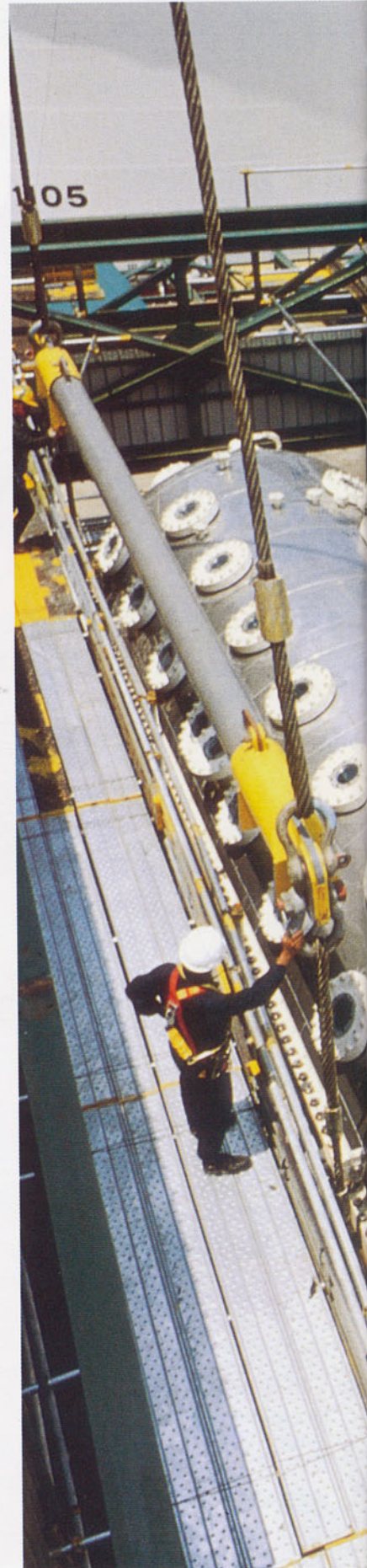
# LUBEX2: two in one.



Singapore — At the Esso refinery on Pulau Ayer Chawan a lube oil plant was subject to major expansion. At the same time elaborate maintenance had to be carried out on the existing plant and everything had to be carried out in a very confined area. Mammoet Mail reports on a successfully completed Lubex2 project and talks with Stefano Lupi, project manager.

# LUBEX2: two in one.

The five "Pulaus" for the coast of Singapore are reclaimed islands and are being used for industrial purposes. A fixed road link with Singapore is planned for 1999, then all five islands will be interconnected with the main land.



10

We meet Stefano Lupi in the Foster Wheeler Eastern office, one of the few original office buildings left in the centre of Singapore. "The lube oil production plant was already 23 years old. After a number of studies it came out that it was possible to increase the capacity by exchanging certain parts. After this feasibility study done by our specialists, we consulted Mammoet in an early stage to see how it had to be done. The proper solution was found in using the right crane. It was in fact the only way we could do the project. This is because the area is very congested and surrounded by other plants, so it was very complicated to install the new equipment."

Lupi explains that the plant was originally built in 1973. "In subsequent expansions over twenty years the capacity was doubled. Lubex1 happened four years ago and I was involved in that upgrading as well. In Lubex2 the capacity was increased by a further 25%. We assisted Esso in a preliminary study and engineering. The contract for the execution of the project was signed with Esso in the middle of

1994. This project was very tight in schedule: the turnaround was already planned for the beginning of 1996 and the necessary equipment still had to be ordered."

A considerable amount of engineering work had to be done on the new equipment: "The design of the chillers is very complicated. This is so-called cyclic operating equipment, temperatures and pressures are changing continuously: 2,400 times a year from minus 40 degrees Fahrenheit to plus 100! Another problem was that we had to utilise the existing space and the same foundations for still bigger equipment. For the legs on the spheres a special design was made and it took three months to analyse the stresses caused by the continuous change in temperature. We had to do this job — exchanging the chillers — in thirty days and we actually succeeded in keeping this time schedule."

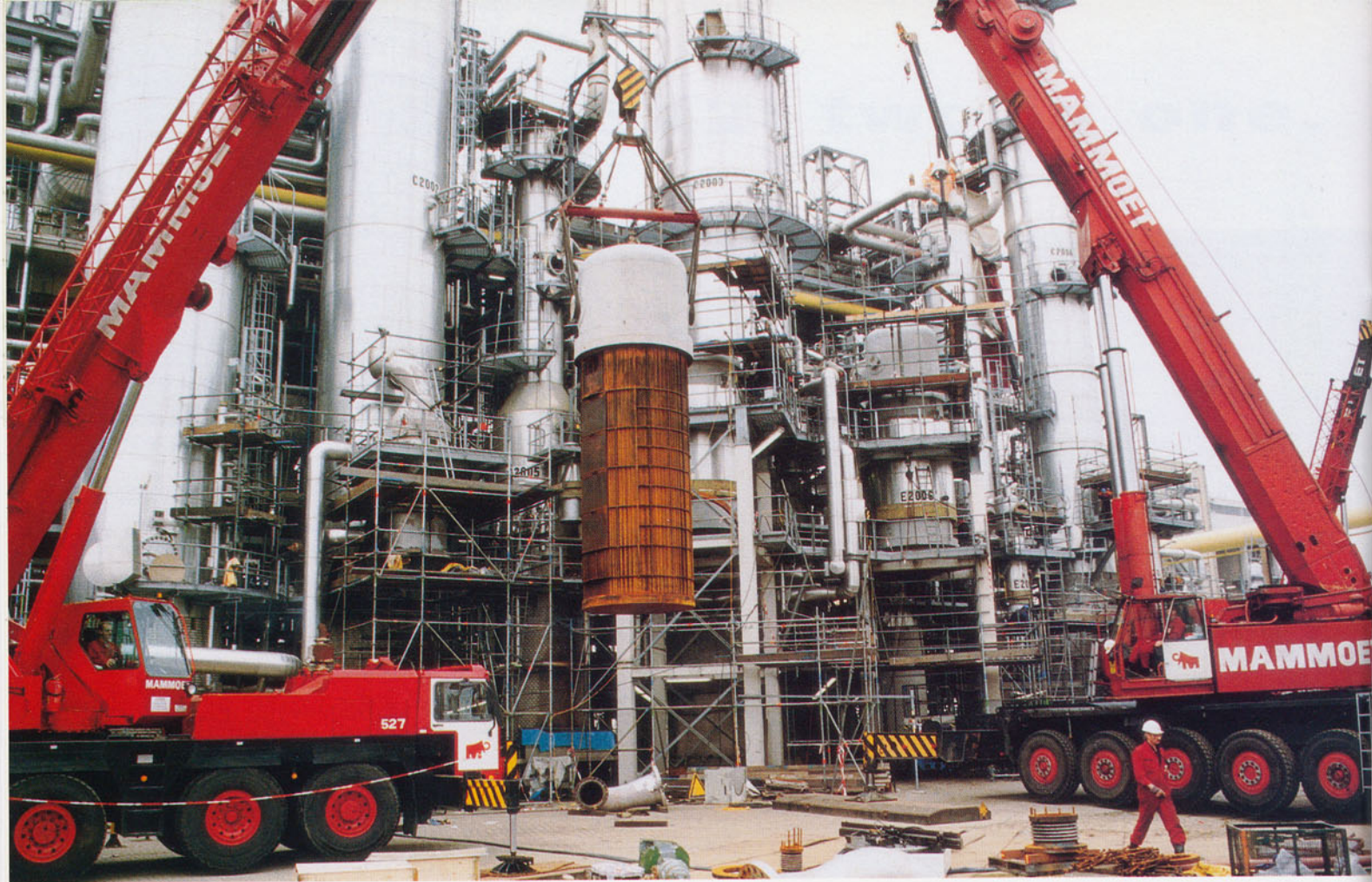
In general; increasing production capacities means installing bigger apparatus, quite a problem when the available space stays the same. Lupi: "That was also the



case when enlarging the capacity of the compressor. In the end we found a suitable compressor with double capacity which fitted in the existing space. A similar problem turned up with the installation of an extra filter. The ingenuity that was found in executing this project was the use of the Mammoet crane in a ringer configuration. Without the M4600R we could not have done the project within the planned time schedule. It gave us the advantage of executing a great number of lifting operations in a very short period from one fixed position."

At the peak of Lubex2 and the turnaround operations a thousand workers were in the area. Stefano Lupi states "Safety was the main concern for all parties involved. You must realise that you are working in the environment of a live plant. And then the lifting operations: some had to be done at night and it was all happening in a very limited area. During each major lift the workers had to move out. We had to plan all these things very carefully, hour by hour — activity by activity. But it paid off: in 500,000 man hours we had zero accidents." For Stefano Lupi a feat to be proud of. 🐘





# All important maintenance

**Regular maintenance of a chemical plant is work for specialists. During a so-called stop of an installation the utmost amount of work must be done in the shortest possible time, for time is money, especially in the petrochemical industry. Mammoet Mail visits the installation at Moerdijk of Shell Nederland Chemie B.V. on a grey and misty day in January.**

12

"For Shell Moerdijk, the stop of the MSPO installation was a major operation. Two years earlier we had started with the preparations and we targeted to perform in the shortest possible time", says Engineer Cees Kuystermans (43), Section manager Maintenance services at Shell Nederland Chemie B.V. In that quality he is responsible for the co-ordination of all activities that had to be carried out during the stop. "Every day that a plant is out of operation costs money and the whole preparation is directed to keeping that period as short as possible. Beforehand, the number of cranes to be used and their positions are discussed with the mechanical contractor. In close consultation a crane plan is made. Where smaller cranes were selected in the past for individual jobs, larger cranes are now chosen in a stationary arrangement with a wider outreach. That choice was also influenced by the fact that we had to lift a large part of a column.

Kuystermans describes that a distinction must be made between a crane plan and a lifting plan. "A lifting plan is made especially for those jobs where larger cranes are required. It gives in writing that such a crane, of that size must be secured with outriggers. Knowledge of the sub-soil is very important: sub-surface ducts and cables must be avoided and one must beware of foundation constructions. The concrete slabs that cover them appear very sturdy, but are not suitable to carry the outriggers. We have a special department looking into this which co-ordinates these affairs with Mammoet. Besides, there is a lifting plan made for all lifting activities that must be carried out in such a stop period. This plan states the choice and planning in a certain time span, whereby a minimum of cranes is used. Mammoet contributed in an important way as they, with their knowledge and experience, can say 'with tonnage like that and such a reach

*At the height of the stop some 900 people were involved in the activities. In the last years the safety aspect has been developed considerably. Industries must have the VCA certificate and employees must have followed a particular safety course. This results in considerably increased safety awareness.*



the best crane to use is that one'.  
Thus the necessity of certain crane activities is looked into and they are then planned accordingly."

According to Kuystermans things were arranged differently in the past. "The mechanical contractor was also the main contractor. He subcontracted the crane. As the contractor was responsible for the planning of the job, he was inclined to cover his position and plan too many cranes. That could then work out the wrong way, for even if you reserved three cranes, only one could be placed. And in practice that often was the wrong crane as well. It is much cleverer to look at what you really need and continuously station a slightly heavier crane with a larger outreach. That is better than shifting continuously — taking a smaller crane and having to replace it by a larger one — and in the end it is more cost effective.

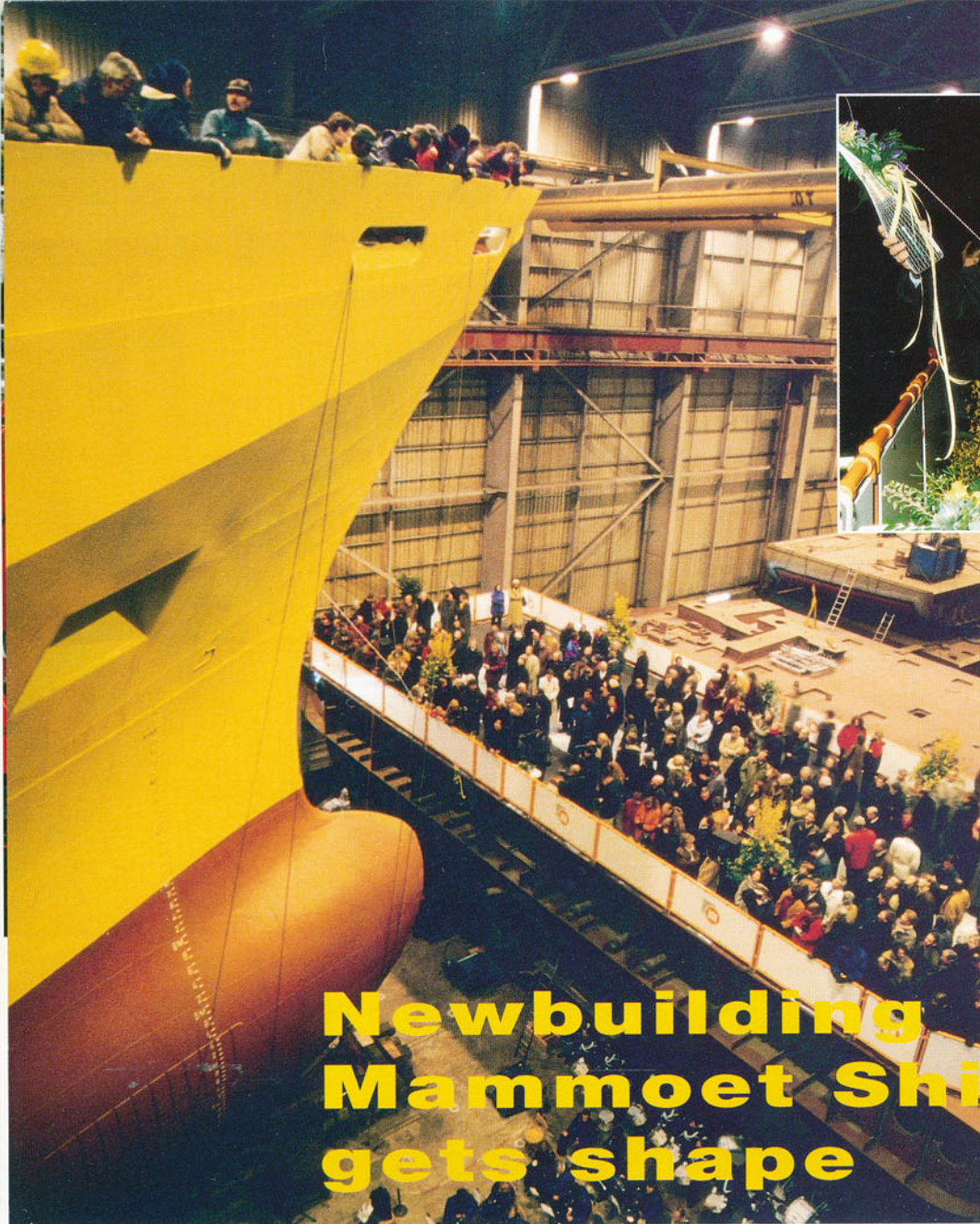
Every four or five years an installation must be presented for checks under the steam-engineering laws. "Since the factory works continuously these checks provide the moment to carry out some necessary inspections as well. Such a stop period provides an opportunity for repairs and modifications. It requires all equipment to be opened up: columns, vessels, heat exchangers are being cleaned and then inspected. Cleaning is an important aspect to enable the visual inspections. Measuring wall thicknesses and inspecting columns on possible erosions is only feasible when the items are clean. The various disciplines involved make a stop a complex matter. It requi-

res the building of scaffolding to be able to reach certain parts of the plant, the removal of insulation material so that inspections can be carried out, uncoupling pumps and regulating valves and installing blind plates, which close off all connections in the piping. Thus a broad range of activities must take place all at the same time involving in the busiest period some 900 people.

Environment and safety, according to Kuystermans, are the most important issues during a stop. "During the preparations we establish how we can shut the plant down with as little inconvenience to the outside world as possible. All fluids still inside the service-pipes are pressed out to storage systems. What remains is flushed and collected in a closed system, where it is cleaned. The remaining gasses must be burned by way of a flare system: as this burning is a nuisance for the surrounding area it is reduced to a minimum and it is published beforehand. Basically, the flare is an emergency system; if something happens within the plant, the products must be burned for security's sake and then there is in fact more inconvenience for the neighbourhood. Safety stands out as the most important subject. In this organisation, every man and woman who had a task during the stop — our own operators, maintenance people, contractors — was given specific safety instructions. Knowledge of the products present in the factory; what to do in case of certain alarm calls; and what to do when touching specific products — awareness of safety in general: that was given a lot of attention."

*MSPO is short for Moerdijk Styrene Propylene Oxide. It is a bulk chemical plant where base and half products are manufactured in large quantities for the synthetic materials and plastics industry.*





M.s. "Happy River" was launched on 10 January 1997 and named by Mrs Gail Toni Brown, spouse of Mr Christopher Michael Brown, Managing Director Strategic Development B.H.P. Iron Ore, Australia. Left: Mr Jan Houweling of Merwede Shipyard.

## Newbuilding Mammoet Shipping gets shape

The first heavy lift vessel of Mammoet Shipping's newbuilding programme was delivered in April and the brand new ship is on her way to Batangas in the Philippines for her first major project. M.s. "Happy River" was built at Merwede Shipyard in Hardinxveld-Giessendam in the Netherlands. Mammoet Mail was there earlier this year and spoke with the Merwede's project manager Teus van Nordennen.

"It is always an exciting time when a ship is launched. It is the riskiest moment in the construction of a vessel." For a moment Van Nordennen loses his down-to-earth attitude and explains that when the ship slides down he mainly listens to the sound. "Generally, the sound gives away more information than whatever one can see. Then we're glad when the ship is in the water and nothing untoward has happened. The very next thing is then to have a thorough inspection of the whole vessel. A group of people surveys the whole ship and looks at the state

of the tanks, checks on leakages, etc." Van Nordennen continues smiling, "and then the keel is laid for the next yard number."

Van Nordennen is project leader for the building of the heavy lift ships. He is responsible for the coordination of financial and technical matters and for the actual implementation. Also budget control, any possible exceedings, especially the coordination thereof with the customer, falls under his scope. "The Merwede builds any kind of vessel; in the past we have built dredgers, fishing ships, ferries, tankers, cruise

vessels etc. Principally anything that floats and is no wider than 28 metres. For Spliethoff we built two vessels, the "Elandsgracht" and the "Egmondgracht", yard numbers 665 and 666. But the construction of these heavy lift ships is a first for us. Special aspects are the combinations of hatches and cranes in relation to the strength of the ship. This is a complex matter and to translate the forces into an actual construction requires much engineering time. In a way this is also true for dredgers because of erosion and the like, but the simple presence of the heavy cranes on this newbuilding is an important issue with respect to the deformation of the ship. She must be sufficiently rigid and that has its consequences for the use of steel qualities as well as her construction."

A total of four heavy-cargo ships have been ordered at the Merwede with yard numbers 671, 672, 673 and 680, three of which are being built in Hardinxveld-Giessendam and the fourth at the Schelde Yard in Flushing. All vessels will comply with the highest regulations of Lloyd's Register and Finnish/Swedish ice class 1A. Thus the ships can sail the extreme winter conditions in the Baltic, Saint Lawrence as well as the arctic areas of the Former Soviet Union. Van Norden: "While building a ship, Ice class influences certain machines such as the screw and gear boxes. And of course it affects the quantity of steel in a ship."

Mammoet Mail's visit to the Merwede coincided with an important moment in the completion of the "Happy River". A floating crane of Smit Tak, the "Taklift I" was positioned beside the ship and was placing one of the 400 tonne capacity heavy lift cranes. Van Norden: "A number of parts will be placed today and tomorrow, such as for instance the cranes and three layers of the super structure. They were too tall to be built up in the construction hall. Then there are a number of MacGregor patent hatches, presently on their way from France. The ship carrying the hatches had been stuck on the river Moselle and could only leave last Friday; we expect them to arrive tomorrow. These hatches should have been placed in an earlier stage, but such are the circumstances we have to deal with."

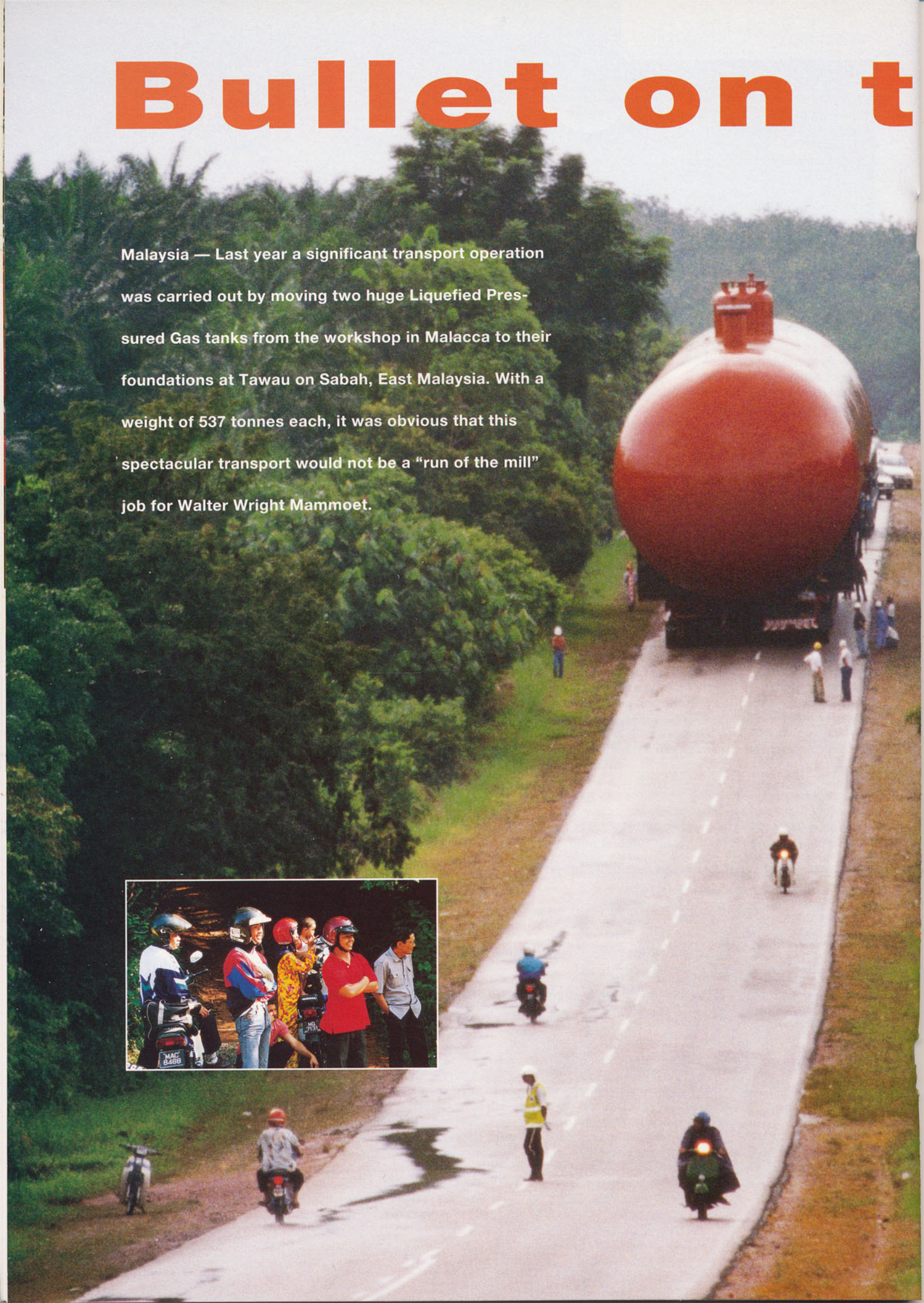
On tour across the newbuilding which is scattered with hoses, wires and pipelines, it becomes clear that a lot still has to be done. Nevertheless Van Norden is already discussing the construction of a sand and gravel hopperdredger after the heavy lift vessels. "Ship building is a continuous process. Preparation is extremely important in this business. It has to do with the optimum occupation of the yard. The moment building starts, everything must be clear and every part must be there and everything must be engineered. That is why our engineering department is one of the most important departments; it is important to be able to build without having to ask 'how and what are we to do'. And lets be fair, the first ship poses the most problems, the next vessels are somewhat easier."



*The first major project for the "Happy River" this Summer will run from Batangas on the Philippines to Port Hedland in Australia. She will carry modules for the construction of a gas separation plant. This plant is part of a large BHP Iron Ore investment programme for a so-called Direct Reduced Iron plant, where in a special process iron is formed in to pellets.*

# Bullet on t

Malaysia — Last year a significant transport operation was carried out by moving two huge Liquefied Pressured Gas tanks from the workshop in Malacca to their foundations at Tawau on Sabah, East Malaysia. With a weight of 537 tonnes each, it was obvious that this spectacular transport would not be a “run of the mill” job for Walter Wright Mammoet.





# he run

Turnkey contractor KNM Steel Construction Sdn Bhd built the 51 metre long gas storage tanks in 12 months at their premises at the Bukit Rambai Industrial estate. From there the LPG tanks had to be moved in two subsequent transport operations to the shore. The 20 km road to the coast represented quite a challenge for Walter Wright Mammoet and the transport operation was carefully prepared by their office in Kuala Lumpur. State-of-the-art equipment, Mammoet's self-propelled modular transporters (SPMTs) were mobilised in



a double 22-axle line configuration. It was the best way to deal with the demanding road conditions. Along the route, which mainly consisted of narrow grade B and C roads, ample road furniture had to be removed temporarily. In total ninety telephone and electricity cables and 144 lamp-posts, traffic lights and traffic signs were nominated to be removed.

The ocean-going barge "Eastern Province" was mobilised from Singapore for the connecting sea transportation to East Malaysia. It carried all the auxiliary equipment such as steel ro/ro ramps, ballast pumps, jacks, steel plates and supports. After a beach landing by the barge a temporary ro/ro sand ramp was created for the roll-on operation. It took a full day to transport each tank from the workshop to the barge. The Malaysian police were extremely busy separating the heavy transport from the traffic flow. Extreme care had to be taken while crossing a crowded kampong with a highly curious audience. As expected, the SPMTs attracted much attention throughout the journey. After a safe twelve-hour ride the LPG tanks reached the waiting barge. Within two weeks — severe weather conditions hampered the crossing — the barge arrived unharmed at the Petronas site in Tawau on Sabah. After the roll-off operation, it took the LPG tanks only a short SPMT trip to reach the ready-prepared foundations.

A Mammoet film crew covered the entire transport operation from beginning to end. The approximate ten hours of footage were comprised into a 15 minute video production called "Bullet on the run".



# Year of the roof

Hong Kong — Only a few months remain before Prince Charles will hand over the city's keys to the Peoples' Republic of China. Included in the transfer is the new Chek Lap Kok airport which is now well under way to be ready for the planned opening in April 1998.

Without a doubt the most impressive and visually distinctive feature of Hong Kong's new airport terminal is its roof. Built in modules it is of a striking architecture and it forms a significant landmark. Last year Walter Wright Mammoet (Hong Kong) was busy moving and lifting a total of 129 roof modules by means of 16 axle lines Self-Propelled Modular Transporters and lattice boom cranes of the types CC2600, CC4000 and CC4800. Client Watson Nippon Steel built the modules on location; the largest measured 51 x 36 x 6 metres and weighed approximately 200 tonnes. The other modules varied in weight between 40 and 160 tonnes. More than 12,500 tonnes of steel were required for the roof sections. The roof steelwork comprises 129 barrel vault modules, most of which are square with a span of 36 metres and a rise of 6. These vaults were formed from a lattice of diagonal and longitudinal steel elements that were constructed in Singapore and the United Kingdom.



This steelwork, in combination with the roof covering, forms the roof structure with the vaults supported by circular cantilever reinforced columns on 36 x 36 m or 36 x 18 m grids. As mentioned before, the assembly of the steelwork into modules and the final painting were carried out on-site on Chek Lap Kok. Every module was closely checked on quality and dimensions before the final painting was permitted. Once assembled, a module was lifted from its jig to a painting area where it received a protective undercoating and then was finished in white paint formulated to last more than 25 years.

After welding, painting, tests and inspection the modules were lifted onto the SPMTs and moved at a two mile per hour pace across the terminal site with route lengths varying from 450 metres at the northern concourse to 3,200 metres on the southern. In some areas around the terminal building, such as over the passenger processing area, crane accessibility was restricted. There the modules were lifted on to the building's northern and southern edges and skidded inward until they touched at their permanent positions. (Source: Airport Authority Hong Kong News).



# MAMMOET NEWS

Mammoet Stoof had a good start this year when they received the certificate "Qualified Company" from the European Foundation for Business Qualification (EFBQ). Elaborate examination of Mammoet Stoof's business plan had taken place before in terms of the European Classification Standard, the European standard of excellent management. Mammoet Stoof is among the first companies to receive this certification.



Walter Wright Mammoet's new office address in the Philippines is as follows:

Walter Wright Mammoet (PH) Inc.  
Unit no. 10  
BSA Commercial Building  
239 Shaw Boulevard,  
Mandaluyong City, Manila  
P.O. Box 12561,  
Ortigas Center Post Office  
tel: +63-2-5339640-43,  
fax: 5339644



Last year Mammoet Transport U.S.A. LLC moved house to the new premises of Davenport Mammoet LLC in Rosharon (Texas). We changed their address accordingly to 20525 Farm Road 521 as we thought that that was what the abbreviation FM meant. Apparently, it does not. The official state designation is "Farm to Market road", identifying the major roads that were used in the old days by farmers travelling to the market to sell their produce. These "FMs" have meanwhile often turned into highways. A proposal to change FM into a more legible name was vetoed and that is why Mammoet Mail will follow tradition and stick to FM as well.



The Mammoet Canada office in Nisku, Alberta, was closed at 31 December 1996. For further business and enquiries, Mammoet Canada Inc. in Etobicoke, representative for Mammoet Shipping, will be glad to receive your questions and enquiries, whereas you may also contact Davenport Mammoet LLC in Rosharon (Texas).



*"The Mammoet lifting system has many advantages and built-in flexibility when compared to mobile cranes. Using large cranes would prohibit building the plant until the boxes were set."*



## Cold

Another interesting lifting operation was performed in Pittsburgh, Pennsylvania. It was carried out with a straddle lifting system. Davenport Mammoet executed this transport and lifting project for client BOC. Mammoet Mail visits the site and asks Ed Carlson to give the details of the operation.



## boxes in Pittsburgh

"What we are constructing in Braddock is a 2400 ton per day oxygen plant. It will be the biggest for BOC in the United States. The plant is being built to serve the requirements of our customer US Steel, but will also serve the area with liquid merchant products. We have a very aggressive construction schedule with the cold box fabrication, transport and erection being on the critical path. Any time that can be saved there will improve the schedule." Ed Carlson is a mechanical engineer by trade and has been working for BOC for twenty years. Being the senior project manager on this job he has a lot of experience in this business. Concerning the choice of Davenport Mammoet: "There are very

few organisations in the US with the expertise in transporting and erecting such large equipment. I must say I felt very comfortable with Mammoet."

From his desk Carlson keeps one eye on the project and his coat hangs nearby, ready for the next examining round on the cold and windy site. Daily meetings are held with Carlson's Construction Site Manager Harry Metcalf. Carlson: "But don't think Mammoet got the contract overnight. I spent months with Mammoet's Albert Slikker reviewing the many possibilities. Just prior to the contract award I visited Lake Charles, LA to witness a similar Mammoet lifting operation. In addition I was able to see the SPMT trailers at

*The name cold box refers to the cryogenic temperatures (- 300° Fahrenheit) that the equipment operates at. All vessels and piping inside the cold box are made of aluminium. The boxes are insulated with perlite.*

The BOC Group is an international organisation based in the U.K.

BOC Process Plants is the engineering and construction division of the BOC Group.



work. Once I was able to see the equipment in operation I was ready to shake hands and award the contract to Mammoet."

Carlson explains that the cold boxes are getting bigger and heavier and therefore usually are not transportable over the road. "We had to start looking at a water move and therefore we had to find a workshop on the water. Ivor J Lee in Ambridge, PA was a perfect solution."

The cold boxes were barged from Ambridge, PA to Braddock, PA on the Ohio and Monongahela rivers. Since there were no existing docks, two offloading ramps were constructed for the subsequent ro-ro operations. Davenport Mammoet's SPMT's were a perfect match for this and after a spectacular crossing of a railroad the boxes were positioned under the freestanding gantry of the lifting system.

Carlson: "The Mammoet lifting system has many advantages and built-in flexibility when compared to mobile cranes. Using large cranes would prohibit building the plant until the boxes were set."

The cold box(es) consisted of three components namely the heat exchanger box, the argon column box and the column box, with weights from 350 - 450 tons.

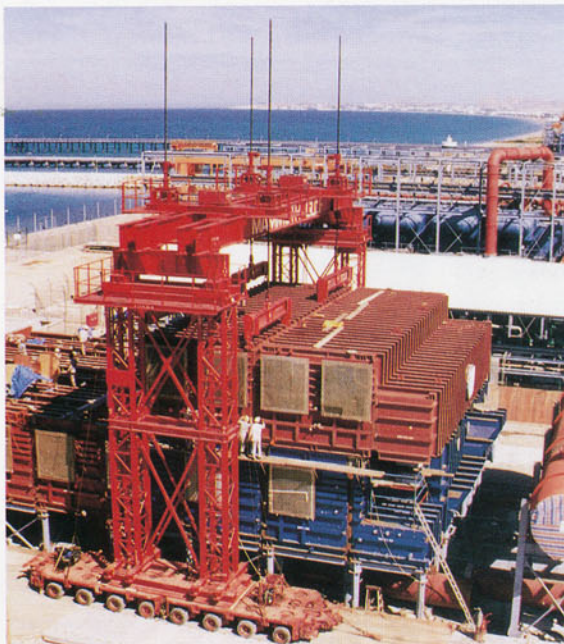




# Mammoet in Focus



**Leiden** — Mammoet Stof and Gerlach Art Packers & Shipping have jointly carried out a removal for the National anthropological Museum in Leiden. The movement concerned an extensive collection of large objects such as canoos from New Zealand, large African cooking pots and models of pile dwellings from Indonesia. With a telescope crane in the new house style colours the voluminous articles were brought outside with a make-shift container elevator, where air suspended trucks of Gerlach Art Packers brought them to the warehouses for storage.



**Muscat** — Client Hitachi Zosen awarded Mammoth Gulf with the customs clearance, transport, lifting and positioning of various heavy units for an extension of the Gubrah power station & water desalination plant. In total 13 evaporator blocks, a brine heater, a brine inlet box and a steam boiler — varying in weight from 98 tonnes to 166 tonnes — were shipped from the Philippines to port Sultan Qaboos in the Sultanate of Oman. For the transportation from port to site Mammoth Gulf used Cometto hydraulic platform trailers in an 18-axle line configuration. In the picture Mammoth Gulf's Hydralift system — lifting capacity 200 tonnes, 19.5 metre span and 15 metre lifting height — is installing one of the evaporator boxes.



**Rilland** — A lot of media attention was given in the Netherlands last year to Mammoet moving an entire brick house on their SPMTs. Since our house style is on all our equipment, the name Mammoet was in all the papers. Nothing wrong so far, he who does the job deserves the credit. Our surprise came later, however, when the Dutch postal services (PTT Post) used one of the pictures for a publicity campaign, but not before they had carefully blotted out our company name. Well, that's how it goes sometimes; a small company like Mammoet making large moves and a large company like PTT post doing little things.



BEN WIND





**Zwijndrecht** — Mammoet's electronic weighing system certified the weight of the Harald West A Topsides facilities module, built at Grootint in Zwijndrecht. Exactly 4,787 tonnes were rolled out of the workshop on SPMTs and moved onto an ocean-going barge.

**Langelo** — To ensure a reliable supply of natural gas in the Netherlands for the coming years, old gas fields are being converted for the storage of an extra supply of natural gas under high pressure. This additional capacity will be used during peak periods on cold winter days to keep sufficient pressure on the national grid. Mammoet Stoof moved and installed three compressor units. Each unit contained a 76 tonne compressor, an 80 tonne electric motor, a 32 tonne luboil skid and a 68 tonne transformer. The picture shows Mammoet's 300 tonne telescope crane positioning one of the compressors on a temporary transport frame.



**London** — Mammoet Transport (UK) Ltd exchanged an old bridge section for a new one at Finsbury Park in two consecutive night shifts. The picture shows the old bridge being carouselled from its foundations by self-propelled modular transporters. Afterwards it would be jacked down and driven off the site.

**Budel** — At the zinc company Budelco a 700 tonne contact boiler was exchanged with Mammoet's push and pull skidding system. Thereafter, the new boiler was lifted over a piperack with a CC 2600 crane and positioned on its foundation.



# Mammoet in Focus



**Hong Kong** — A huge bird-shaped steel and glass structure is built at the Wan Chai waterfront which is part of an extension to the Hong Kong Convention and Exhibition Centre. One of the last roof trusses was delivered by Mammoet Shipping's "Thor Scan". The extension will double the size of the centre.



**Etten Leur** — StoTra B.V. is a joint venture between Mammoet Decalift International and DrieS Invest B.V. They are the specialists for skidding, jacking, lifting and weighing operations. A recent development is the StoTra crane, a unique lifting system incorporating a sliding/lifting gantry with extraordinary features. The crane is at present under construction and will be tested in the Summer of 1997. Through the nature of its modular set-up and container-size design, mobilisation and demobilisation of the crane will be very fast and cost-effective. The configuration as pictured on the artist's impression has a 2,300 tonne lifting capacity and the crane can be used on land as well as on ships and barges afloat.



**Sluiskil** — Mammoet Stoof Terneuzen co-ordinated a large quantity of cranaage for the revamp and shut-down of an ammonia plant at Hydro Agri at Sluiskil. One of the highlights of the job was the installation of a reactor vessel which had been shipped from Japan by Mammoet Shipping. The ammonia plant, originally built in 1971, is now up to date again in terms of energy efficiency and environmental demands.



**Penang** — Walter Wright Mammoet's self-propelled modular transporters were used for several load-out operations for the offshore industrie at Penang in Malaysia. The picture shows a 1,100 tonne riser deck rolled on to an ocean going barge.

## Mammoet Shipping's agency network



**Rotterdam** — Mammoet Shipping's m.v. "Enlivener" is pictured with on her deck nine empty reels of some eight metres diameter as well as a single-point mooring buoy. Below deck the ship was loaded with a 534 tonne reactor, loaded with ship's own gear. The various destinations were Houston for the reactor, Panama City in Florida for the reels and the port of Honolulu for the single point mooring buoy.

**Cape Town** — Mammoet Shipping's m.v. "Project Orient" carried three mooring buoys from Singapore and Abu Dhabi to Takoradi and from Abu Dhabi to Port Harcourt. They weighed 250, 300 and 200 tonnes respectively. At both ends, the buoys were lifted out of and into the water by the ship's own gear. Their delivery to the vessel and to their final destination was performed by tugs. Quite a different way from what we are used to for the positioning of cargoes.



BLUWATER HOOFDDORP

Nedlloyd Schiffsmakler GmbH  
Gertigstraße 24, 22303 Hamburg  
(GERMANY)  
tel. +49-40-270941-0, fax 2794633  
tlx 215004

Mammoet Canada Inc.  
3300 Bloor Street West,  
Suite 700 - West Tower  
Etobicoke, Ontario, M8X 2X2  
(CANADA)  
tel. +1-416-2375415, fax 2392163

Mammoet Shipping  
Branch Office Korea  
Baeknam Bldg. 5th fl,  
188-3, Eulchi-Ro,  
1-Ka, Chung-ku, Seoul (KOREA)  
tel. +82-2-7551666, fax 7794710

P&O Nedlloyd  
133 Mary st., Brisbane  
P.O. Box 133, Brisbane 4001  
(AUSTRALIA)  
tel. +61-7-32291222, fax 32295796

WLB Shipping Pty. Ltd  
11-17 Cliff Street, Fremantle  
P.O. Box 497, Fremantle 6160  
(AUSTRALIA)  
tel. +61-9-4300400, fax 4300423  
tlx 92205

Arcadia Shipping Pvt Ltd  
222, Tulsiani Chambers, 2nd fl.  
Nariman Point, Bombay 400021  
(INDIA)  
tel. +91-22-2831549, fax 2872664  
tlx 113059

Ultrachart  
Moneda 970, 20 floor  
P.O. Box 193-D  
Santiago de Chile (CHILI)  
tel. +562-6301000, fax 6989205  
tlx 240666

Aquarius Shipping  
Mr Eduardo Malburg  
Av. Rio Branco, 45 / Room 2005  
Rio de Janeiro (BRASIL)  
tel. +55-21-5161442, fax 5161768

Aquarius Shipping  
Mr Douglas Ortiz  
Av. Av. Ibirapuera, 2033 -Cj. 91  
São Paulo - SP  
CEP 04029-100, (BRASIL)  
tel. +55-11-5738125, fax 5716883

Supermar S.A.  
Mr Fernando Cors  
Av. Julio A. Roca 672 - 9th floor  
(1067) Buenos Aires (ARGENTINA)  
tel. +54-1-3431437 / 1929 / 2265,  
3344563, fax 3344558

Frank A.G.  
Uferstrasse 90, Postbox, CH-4002  
Basel (SWITZERLAND)  
tel. +41-61-6315030, fax 6315023

Ms K. Sidorova  
Nab. Shevchenko 1/2, KV 204,  
121059 Moscow (RUSSIA)  
tel/fax +7-095-2433391

Mammoet Shipping B.V.  
Mr D. Andreani  
c/o Siamar S.r.l.  
Via XII Ottobre, 2, 16121 Genoa  
(ITALY)  
tel. +39-10-5710352, fax 566570



**Johannesburg** — A critical load recently moved for Dorbyl Heavy Industries to Saldanha Bay was possibly the longest load ever travelling a distance of 2000 km. The load, two main crane beams, weighed 179 tonnes and measured 42 m long, 4.25 m wide and 3.9 m high. The overall length of the two -vehicle -and -trailer combination was 70 m. The vehicles were two 750 HP prime movers and a Nicholas trailer. The convoy with the addition of support vehicles made up of 4 escort vans, 2 caravans to provide mess facilities and accommodation and a 2 tonne Mercedes fully equipped

mobile workshop maintained a constant speed of 25 km per hour. The convoy made radio contact every hour with Johannesburg head quarters and the convoy was backed up by two mechanics on 24-hour stand-by throughout. The trip was planned to take 10 days and was completed with half a day to spare. The return journey took 6 days. The crew consisted of a supervisor, four drivers, one mechanic and two trades assistants. The vehicles were under police escort for the duration of the trip.

EUROPE

**Mammoet Transport B.V.**  
"Het Havengebouw" De Ruijterkade 7  
1013 AA Amsterdam (NL)  
tel. +31-20-6387171, fax 6386949

**Mammoet Decalift International B.V.**  
"Het Havengebouw" De Ruijterkade 7  
1013 AA Amsterdam (NL)  
tel. +31-20-6387171, fax 6386949

**Mammoet Decalift International B.V.**  
Via O. Vigliani 123  
10127 Turin (Italy)  
tel. +39-11-6192112, fax 6192902

**Mammoet Shipping B.V.**  
Radarweg 36, 1042 AA Amsterdam  
P.O. Box 2599, 1000 CN Amsterdam (NL)  
tel. +31-20-4488300, fax 4488333

**Mammoet Shipping B.V.**  
3rd floor, 5 St. Helen's Place  
London EC3A 6AU (U.K.)  
tel. +44-171-6281967, fax 6281972

**Mammoet Shipping B.V.**  
c/o Siamar S.r.l.  
Via XII Ottobre, 2, 16121 Genoa (Italy)  
tel. +39-10-5710352, fax 566570

**Mammoet Stoof V.O.F.**  
Veilingkade 15, 4815 HC Breda (NL)  
P.O. Box 3469, 4800 DL Breda (NL)  
tel. +31-76-5724444, fax 5712164

**Mammoet Stoof V.O.F.**  
P.O. Box 1114, 4530 GC Terneuzen (NL)  
tel. +31-115-648050, fax 630724

**Mammoet Stoof V.O.F.**  
Moezelweg 230, 3198 LS Europoort rt (NL)  
tel. +31-181-282898, fax 282829

**Mammoet Stoof V.O.F.**  
Wethouder Sangersstraat 15  
6191 NA Beek (NL)  
tel. +31-46-4280066, fax 4376640

**StoTra B.V.**  
P.O. Box 656, 4870 AR Etten Leur (NL)  
tel. +31-76-5041717, fax 5041653

**Mammoet Transport N.V. (België)**  
Nieuwelandenweg 9, B-2030 Antwerp 3  
tel. +32-3-5416610, fax 5416664

**Mammoet Transport (U.K.) Ltd**  
Tees Offshore Base,  
Dockside Road, Middlesbrough  
Cleveland TS6 6UZ (U.K.)  
tel. +44-1642-440400, fax 440494

**Mammoet Transport Norge A/S**  
Strandgatan 15, Bergen  
P.O. Box 332, 5001 Bergen (Norway)  
tel. +47-55-322380, fax 231676

**Mammouth Transport France S.à.r.l.**  
3, rue du Maréchal De Lattre De Tassigny  
78150 Le Chesnay (France)  
tel. +33-1-39633737 fax 39558149

**Mammoet Ferry Transport B.V.**  
Moezelweg 230, 3198 LS Europoort rt (NL)  
tel. +31-181-282828, fax 282829

**Mammoet Ferry Transport België B.V.B.A**  
Karveelstraat 6, 8380 Zeebrugge (Belgium)  
tel. +32-50-559640, fax 559650

**Mammoet Ferry Transport (UK) Ltd**  
North Side, King George Dock  
Hull HU9 5PR (U.K.)  
tel. +44-1482-791465, fax 791474

**Mammoet Ferry Transport UK Ltd**  
New Tech. Square, Deeside Industrial Park  
Deeside, Flintshire, CH5 2NT (U.K.)  
tel. +44-1244-280700, fax 280148

**Mammoet Ferry Transport UK Ltd**  
Nedlloyd House, Parker Avenue  
Felixstowe, Suffolk IP11 8HF (U.K.)  
tel. +44-1394-673202, fax 673207  
tlx 988781

**Mammoet Ferry Transport UK Ltd**  
Old Inns, Cumbernauld  
Glasgow G68 OLB (U.K.)  
tel. +44-1236-727272, fax 727072

ASIA

**Mammoet Transport B.V.**  
Branch Office Japan  
AS Nanbuzaka 4th fl, 2-22-21 Akasaka  
Minato-ku, Tokyo 107 (Japan)  
tel. +81-3-55630274, fax 55639641

**Mammoet Shipping**  
Branch Office Korea  
Baekham Bldg. 5th fl. 188-3, Eulchi-Ro 1-Ka  
Chung-ku, Seoul (Korea)  
tel. +82-2-7551666, fax 7794710

**Walter Wright Mammoet (S) Pte Ltd**  
19 Tuas Crescent, Jurong  
Singapore 638713  
tel. +65-8611638, fax 8612718  
e-mail: mammoet@signet.com.sg

**Walter Wright Mammoet (HK) Ltd**  
Guangdong Textile Centre, 4/f, Room 402  
22-26 Minden Avenue, Kowloon  
G.P.O. Box 9398, Hong Kong  
tel. +852-27221622, fax 23661155

**Walter Wright Mammoet (Thailand) Ltd**  
12/555 Kulab Building 10th floor, Suite A-1  
Bang Na-Trad Rd., K.m. 5.5. Bang Kaew  
Bangphlee, Samut Prakarn 10540  
tel. +66-2-3161291, fax 3161290

**Walter Wright Mammoet (M) Sdn Bhd**  
Lot 3427, 3rd Mile, Klang-Kuala Lumpur  
Federal Highway, 41300 Klang  
Selangor Darul Ehsan (Malaysia)  
tel. +60-3-5599300, fax 5595300

**Syarikat Walter Wright (B) Sdn Bhd**  
Bandar Seri Begawan  
Negara Brunei Darussalam  
tel. +673-2-444326, fax 420070

**Walter Wright Mammoet (PH) Inc.**  
Unit no. 10 BSA Commercial Building  
239 Shaw Boulevard  
Mandaluyong City, Manila (Philippines)  
tel. +63-2-5339640, fax 5339644

**Vermerk Limited**  
House No.8, Sonargoan Janapath  
Sector 9, Uttara, Dhaka1230 (Bangladesh)  
tel. +880-2-895862, fax 895863

**Vermerk Limited**  
Osman Court, 70 Agrabad C/A  
Chittagong (Bangladesh)  
tel/ fax +880-31-710132

MIDDLE EAST

**Alatas Mammoet Co. Ltd**  
P.O. Box 4, Jeddah 21411  
(Saudi Arabia)  
tel. +966-2-6570458, fax 6534537

**Alatas Mammoet Co. Ltd**  
P.O. Box 737, Al Jubail 31951  
(Saudi Arabia)  
tel. +966-3-3418133, fax 3415728

**Mammoth Gulf**  
P.O. Box 2297, Dubai (U.A.E.)  
tel. +971-4-331252, fax 331366  
e-mail: mamgulf@emirates.net.ae

**Navigation Mammoth Gulf**  
P.O. Box 153, Doha (Qatar)  
tel. +974-4686666, fax 468777

**Pecon Transport Division**  
P.O. Box 3262, Abu Dhabi (U.A.E.)  
tel. +971-2-331140, fax 327730  
e-mail: alrubaya@emirates.net.ae

**Abdullatif Trading & Transport Co.**  
P.O. Box 97, Muscat (Sultanate of Oman)  
tel. +968-714221, fax 711785  
e-mail: alt-mct@gto.net.om

**Mammoth MTL**  
P.O. Box 775, Bell Village, Mauritius  
tel. +230-2344936, fax 2345866  
e-mail: ftlbs@intnet.mu

U.S.A.

**Mammoet Transport U.S.A. LLC**  
20525 FM 521, Rosharon, TX 77583  
tel. +1-281-3693900, fax 3693822  
e-mail: info@dav-mammoet.com

**Mammoet Western Inc.**  
1419 Potrero Avenue  
South El Monte, CA 91733-3014  
tel. +1-818-4425542, fax 4420841  
e-mail: mammoet@mammoetw.com

**Davenport Mammoet LLC**  
20525 FM 521, Rosharon, TX 77583  
tel. +1-281-3692200, fax 3692178  
e-mail: info@dav-mammoet.com

CANADA

**Mammoet Canada Inc. (Toronto)**  
3300 Bloor Street West  
Suite 700 - West Tower  
Etobicoke, Ontario M8X 2X2  
tel. +1-416-2375415, fax 2392163  
e-mail: mammoet@netcom.ca

AFRICA

**Mammoet Kew**  
P.O. Box 392090  
Bramley 2018 (South Africa)  
tel. +27-11-8873000, fax 8873063

SOUTH AMERICA

**Mamut de Colombia S.A.**  
Carrera 7, 32-33, Piso 24, Of. 2401  
Apartado Aéreo 10029  
Bogota, D.E. (Colombia)  
tel. +57-1-2324425, fax 2859736

**Mamut de Colombia S.A.**  
Apartado Aéreo 3110  
Barranquilla (Colombia)  
tel. +57-53-422647, fax 423568