

# PROJECT RENA



Waikato Crane Services Ltd

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**Photos used in this written submission, power point presentation and slide show were sourced from Waikato Crane Services Ltd and the Maritime NZ website**

**<http://www.maritimenz.govt.nz/rena/>**



### Brief Outline of the Project

I was contacted on the 5<sup>th</sup> of October 2011 by Curly McLeod from McLeod Crane Hire. He enquired whether my company could supply a barge and 180t crane to salvage containers from a ship that had run aground on the Astrolabe Reef off New Zealand's Bay of Plenty coast. I was unaware of the ship running aground until then. I sourced a barge that I thought would be suitable based on a *best guess* theory as to what barge size would be sufficiently big enough for a 180t crane to work from. I supplied costs for this barge and our Kobelco 7150 crane to McLeod Crane Hire. The barge owner insisted that I provide an order number to secure the lease. I went back to Curly who was unable to provide an order number as his services had not yet been confirmed.

After McLeod's initial approach I was also approached by two salvage contractors to supply a 400t crane to work on a barge. A number of crane options were offered including 180t, 280t, 400t, and 600t cranes and also the barge that I had sourced for Curly. I also advised the salvers who our competitors were and the resources that they had (see email). While the potential salvers negotiated with the insurers, the barge owners continued to pressure us for an order. As I was certain that someone would require the crane and barge combination I decided to take a *punt* and lease what I thought was the only suitable barge (in the south pacific basin that was available) for three months and hoped that we would secure a contract.

At 2.00pm on the Sunday the 23<sup>rd</sup> of Oct, 18 days after the RENA ran aground and six hours before the Rugby World Cup final, I signed a contract. We were to supply one Kobelco 7150 and one Liebherr LR1280 crane plus the riggers to remove the containers off the RENA for Svitzer Salvage. They negotiated with me to hire the barge directly from P&B Sea-Tow rather than include it in the crane hire contract. I had deployed the barge from Australia in good faith on a verbal instruction from Svitzer prior to signing the contract to supply cranes and riggers.

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We then had to establish the cranes onto *Sea-Tow 60*. This involved negotiating with the Ports of Tauranga for an area to assemble the Crawler Cranes and a berth to *walk* the cranes onto *Sea-Tow 60*. It also required me to engage a Naval Architect to calculate the stability, buoyancy, and ballasting of the barge. Also an engineer to calculate the deck strength and lashing requirements to hold the cranes on the barge and because of the dynamic amplification factor of the swell, a Naval Heavy Lift Engineer to work out the cranes de-rated capacities. We then had to provide materials and labour for the deck strengthening which included steel pads, and plates, lashings and counterweight stools, plus boom rest towers and fair and foul weather lashing lugs for storing the cranes hooks. The establishment of the cranes onto the barge was done on a fixed price. Once the cranes were secured to the barge it was towed to site and moored at the stern of the RENA where we commenced lifting the containers off the RENA and onto the Tug named the *Go Canopus*.

Svitzer Salvage also engaged the services of the heavy lift crane barge the *Smit Borneo*. Once this barge arrived in New Zealand the Kobelco was transferred to this barge and the Liebherr remained on *Sea-Tow 60*.

We have worked every day (7 days per week, including Christmas & Easter) since the 7th of November removing freight from either the RENA or the ocean; this has also included cutting up the wreck and removing these parts from the site.

Prior to this job we had no previous experiences of putting cranes on a barge, using a crane on a barge, or working out at sea. In doing this job we have learnt a lot and paid full retail price to learn. The learning curve was very steep, expensive, stressful and often frustrating.



## Project Methods

We had to identify the sequence that the containers could be safely removed. This process had to be repeated for every container, because of the effect that its removal would have on the rest of the containers stacked on the ship, due to the list of the ship and the lean of the containers. Prior to lifting each container off we had to add additional lashings to the containers underneath them or beside the container that were going to be removed to restrain them from falling. We also had to determine-

- from the shipping manifest; the weight of the container to be lifted so that we could position the barge to ensure that the crane was within radius.
- the safest route for the riggers to access and egress the container to be lifted.
- the rigging type and leg lengths.
- the weather conditions (this had to be done for every lift) for the effect that the wind and the ocean swell would have on the barge and cranes.
- These steps needed to be followed:
- If the weather gods allowed us to proceed we would then lower the rigging onto the container to be lifted. The riggers would then have to climb onto the container while the crane driver tried to keep his hook steady over the load. The swell would cause the rigging to heave up and down and because of the barges constant movements, the crane driver would have to keep slewing and luffing to minimise the hook from swinging around too much. Sometimes the rigging would be pulled off the container that was to be hooked up. The riggers had to be very alert so that they would not get knocked off the container that they were hooking the crane to.
- Because of the heave caused by the swell, the crane would not take the weight of the load until the container was freed from its container locks. This would be done by either opening the container locks or thermal lancing them.
- Once the riggers were clear of the container to be lifted, the crane driver would *snatch* the load in his own time. Most of the containers weighed about 30 tonne.
- The containers would either be loaded directly onto the *Go Canopus* or stock piled on *Sea-Tow 60*.
- Loading directly onto the *Go Canopus* was extremely hazardous. The swell would cause the barge and tug to rise and fall. The combined effect of the fall of the barge and the rise of the tug would mean one second the container would be 3m from landing on the deck, and then the next second it would hit the deck then lift off again.



### Resources Used

We supplied two Cranes, the Kobelco 7150 and the Liebherr LR1280 plus the riggers and height safety equipment along with gas cutting equipment.

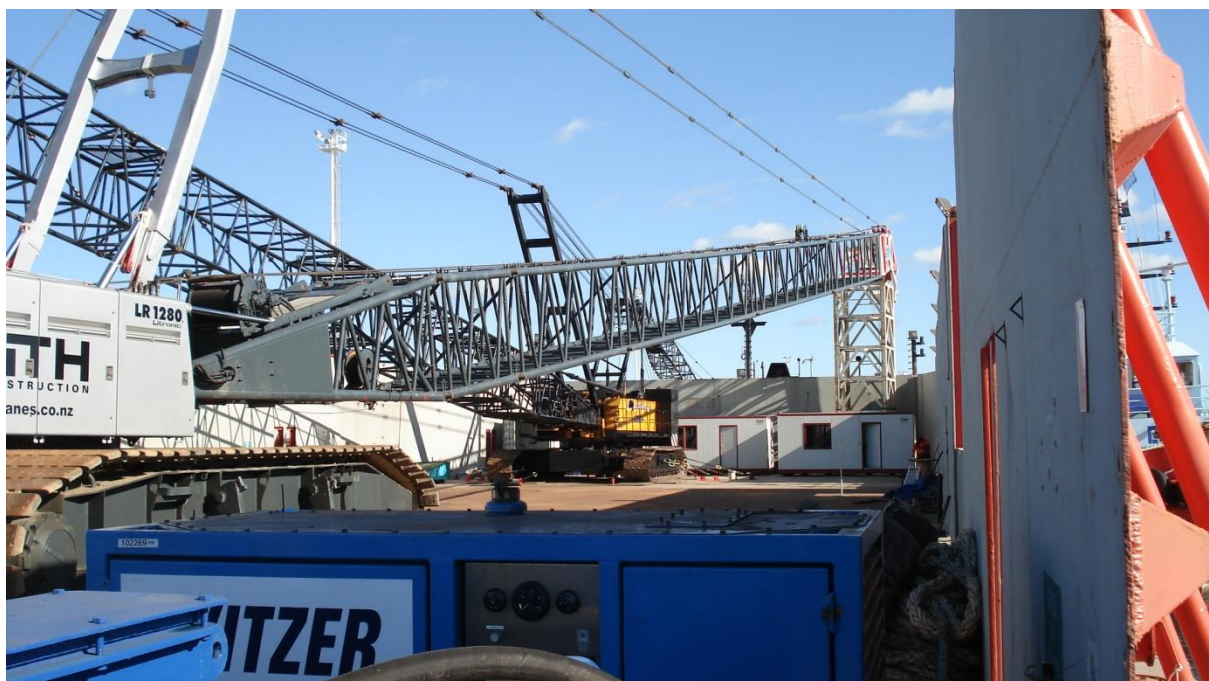
### Efficiency of Operations

We were very aware of the urgency of this project, so we managed and committed sufficient human resources so that they would be able to work safely and at a brisk, efficient pace. We rostered staff so that they had sufficient rest between each shift to ensure that they would not become fatigued and they would be able to keep up with the project's demands. Working on this project is extremely demanding, both physically and mentally.

### Innovative Techniques

We installed foul weather boom rests, (using an old Favco Tower Crane section) to rest the crane booms on when the cranes were out of service, and we also installed *counterweight stools* to prop the cranes counterweights when the cranes were out of service. This helps reduce the *wear and tear* on the cranes caused by the constant swaying motion, (*pitch & roll*) of the barge.

We also fitted *Tugger Hoists* to stop the pendulum effect of the hook (swinging the load out of radius/away from the crane) caused by the ocean swell as it passes under the barge.



## **Customer Satisfaction**

To date we have received no complaints from the customer, public or Maritime NZ. Our contract to supply services can be terminated at any time and without reason; just by giving seven days' notice. Therefore we have had to continually ensure that we meet the customers' demands, expectations and ensure that they are satisfied. At times they have been very demanding. Frequently after doing a 12 or 14 hour day they will demand a night shift crane driver. Often they will make this request at 11.00pm and expect an operator to commence work at midnight. Initially we thought that they were unreasonable but we have had to adapt and meet their demands.

Our client Svitser commented, when we were walking the cranes onto the barge, that in all the salvage operations they have done, that they have never seen a more quick and efficient operator than Waikato Cranes. They were also impressed by the physical ability and agility of the NZ riggers.

A number of other service providers have had either their contracts terminated or have had to terminate certain staff from the project because they have not met the customers' demands or abided by the rules. Two divers (who earn \$2500 each per day) were sacked when they were caught taking Astrolabe wine from a container. This wine can be brought for under \$200 per bottle.

Our client Svitser roster their staff on a; six week on, six week off cycle. They don't always send the same people back and they come from different parts of the world so we have had to adapt to different personalities and management styles. Although our customer is very demanding we have never had an invoice queried or a delayed payment. All our invoices are audited by the P & I Club and are processed in Svitser head office in Holland.



## Human Relations

Reliance on others was of the utmost importance on this job. We relied on the nautical experience of the Marine Engineers, Naval Architect and the Tug and Barge crews to look after the floating marine equipment. We would in turn help them with Anchor handling and mooring the barge. The salvors were also very willing to give us free advice which we gladly took. The best advice they gave us was the addition of counterweight stools and the fitting of the Tugger hoists.

We had three crane drivers (but only two cranes) on-board at all times, as once the booms were raised from the boom rest the driver has to stay in the controls operating the crane even if it was not lifting. The roll and pitch of the barge would cause either the counterweight or the crane hooks to start swaying, and if this was not counteracted by the operator the cranes would start swaying out of control and start shaking themselves to pieces.

The riggers and crane drivers quickly became a team as there was a lot of natural respect of each other abilities and skills. We were lucky enough to have a large number of staff and other people wanting to work on this project so we were able to pick the best. All the team (crane drivers and riggers) were already recognised identities because of their previous performances with significant records of achievements in their own industries. None of the team thought they were better than their mates. All were willing to help. They are rostered to work 8 days on and 4 days off. We have worked 7 days per week including Christmas day and Easter since the 7<sup>th</sup> of November and at the time of writing this, the work still continues, 7 days per week. Everyone stays on-board the barge the *Smit Borneo* therefore not only were they working together but also living together and sleeping two persons per cabin in a confined space. Nobody was allowed to change their shift unless it was agreed by management and the other team members.

Due to the location of the work (on the ports and on-board the ship & barges) the work could have been easily considered to be the exclusive domain of the Waterside Works (Stevedores) and the Maritime Union. In fact it was strongly suggested that only the Stevedores could handle the freight although they did not want to work on the Rena. As we did not want to *upset* the local work force we agreed that we would do all the rigging on the RENA and they would handle the freight on the *shuttle barges*. The first container to be transferred to the *shuttle barge* (the *Go Canopus*) the Stevedores were all ready to unhook the containers as they were placed on the deck of the *Go Canopus*, but as mentioned because of the ocean swell, the containers were not able to be placed nicely in position by the crane driver as a container crane does in port. The Stevedores had no idea how to control the placement of the container onto the moving deck of the *Go Canopus*, and would not touch the container until it had been positioned in the correct spot by the crane driver.



It was impossible to land the container in the correct spot without two or three people controlling the container with tag lines and a good *dogman* that could predict the movements of the load and the shuttle barge, and timing of lowering the hook to suit. The Stevedores decided that due to other commitments and due to a lack of resources, it would be better if we were able to load the barges and they would unload them at the wharf.

### Health & Safety & Training

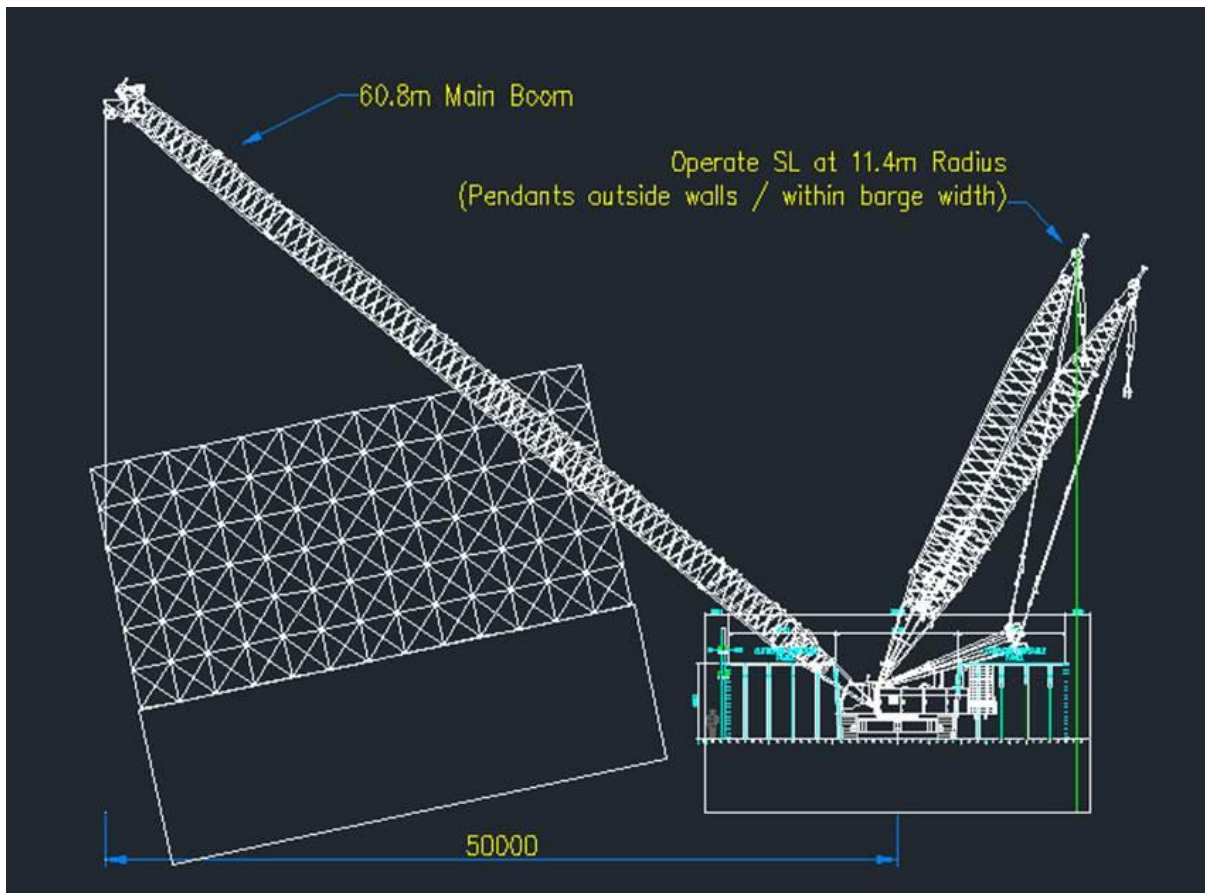
Because of the environment and the extremely difficult task to remove the freight from a ship wreck at sea, we had to develop our own a project specific Health & Safety Manual (see attachment with our submission). There is no *Best Practice Guideline*.

The team would have to identify the next container to be removed, then identify the hazards with removing that particular container, then develop a safe work method to remove it. Sometimes, some members of the team would require additional training and this was done on the job by the more experienced team members.

Some staff members suffered health issues (extremely bad abscesses and skin ulcers). Two staff members were hospitalised to receive high doses of antibiotics by intravenous drips to kill the infections. In both cases they were treated in their rostered days off (because of their strong desire not to be removed from the project). We believe that these health issues were related to the environment that they were working in and diet choices (lots of sea food) and personal hygiene. Through training and education we are now no longer suffering these health issues. There is no alcohol on-board or consumed on any of the seagoing vessels.

### Partnering

We have engaged the services of Smith Crane & Construction to supply the Liebherr LR1280. We also have contracted a Crane Operator with marine experience from Universal Cranes in Brisbane.



## Planning & Control

Once our services had been engaged we then had to arrange -

- with the Ports of Tauranga a berth for *Sea-Tow 60*.
- a time to berth *Sea-Tow 60 Mediterranean style* on a rising tide to load both cranes.
- and co-ordinate *Sea-Tow 60* Crew & Tugs and the Ports of Tauranga Tugs, to moor *Sea-Tow 60 Mediterranean style*.
- an assembly area for the two cranes on the Ports of Tauranga and an access route so that the assembled cranes could *walk* to the moored barge.
- to check the capacity of the wharf to ensure that the assembled cranes could *walk* across the wharf onto the barge.
- a temporary bridge to *walk* the cranes across (from the wharf onto the barge).
- Corrosion protection for working in the marine environment. We sprayed the cranes with an environmentally friendly preservative

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- engage an engineer to check the deck strength of the barge. *The barge deck had insufficient capacity to take the weight of the cranes, so we had to arrange the supply of steel plate and steel mats to disburse the load of the tracks over a greater area of the barge deck.*
- engage a Naval Architect to calculate the stability, buoyancy, and ballasting of the barge and the lashings of the cranes to the barge. *Note: I lost confidence in the naval architect when I questioned him about his calculations. After he checked his calculation 4 times and changed his mind 3 times (and each time, telling me that he now had them right) I politely told him that even though I had no qualifications to determine that he was inept, I certainly thought he was, and we no longer had any confidence in him therefore no longer required his services. (Actually, not quite the words I used) We also had to pay for him to make his mistakes and pay for him to work out what he was doing wrong and to fix them. We then had to find a replacement. The replacement was competent and when checking the calculations of the first Architect found mistakes in his work. Unfortunately there is always a twist in life and the first Architect returned to haunt me and had a chance to seek his revenge when he was engaged by our insurance company Loss Adjuster to peer review the lashing design, and certify the as built lashings for our insurers, so that they would insure the cranes while they were working on the barge. He found two lashing lugs out of position (one by 6mm and the other by 22mm) and insufficient depth in some fillet weld. He also demanded NDT testing of the welds.*

### Quality of Work, Assurances & Engineering Control

Before we could commence the container recovery we had to establish the cranes on the barge and ensure their compatibility. We did this as described above but we had to take the following measures to ensure their compatibility and safety.

We engaged -

1. a Naval Architect to calculate the stability, buoyancy, and ballasting of the barge.
2. a Naval Heavy Lift Engineer to calculate the de-rated lifting capacity of the cranes due to the Dynamic Amplification factor caused by the swell.
3. a Naval Architect and an Engineer to calculate the deck strength of the barge and the lashings required to restrain the cranes on the barges.
4. an Engineer to calculate the deck strength of the wharf to ensure that it had sufficient capacity to walk the cranes over.

All nautical engineering was based on the Noble Denton Guidelines and peer reviewed by our client's Naval Architects. We had to notify our insurers and satisfy them that the risk of working on a barge was being managed.

### Financial Controls

We had to make a competitive bid for the services we have supplied and were on a fixed price to establish the cranes on the barge and be alongside the RENA *Ready to Lift*. All our invoices are audited by the P&I Club.

## Risk

Due to the location of the site and the logistics of supporting both the human and mechanical resources (everything that you need has to be either flown or shipped to site). We have to minimise the risk of a failure by eliminating as many *single point of failure situations* as possible by either the duplication of resources or carrying a full range of spares. Because we are working on a barge on the ocean and not in a sheltered water way such as a harbour or a river the risk of the barge being damaged by getting either blown or washed onto the reef and sinking is high. It could also be flipped over by a rouge wave.

## Design & Technical Complexity

The key to this project was matching the barge to the cranes. We based our offer on being able to lift a 30 tonne container (see drawings included in our submission) but we needed to find a barge that would support the crane both structurally and stability wise. Once we made our initial *best guess* at the combination, we then needed to meet the Noble Denton Guidelines and we engaged the appropriately skilled experts.

## Contract Period and Conditions

We were on a fixed price to establish the barge and cranes alongside the RENA in a ready to lift state. The contract had a *no cure/no pay clause* in it, in regards to getting ready to lift. It also states in the contract that the contract can be terminated within seven days. The risk of being terminated from the contract is reasonably high because there are so many things that can change such as the weather etc.

The contract conditions state that we must be available 24hours per day 7 days per week regardless of circumstances.

## Previous Experiences

Prior to this job we had no previous experiences of putting cranes on a barge, or using a crane on a barge, or working out at sea. In doing this job we have learnt a lot and paid full retail price for our learning. The learning curve was very steep, expensive, stressful and often frustrating.

## Site Conditions

*Environmental factors, climate and conditions*

Due to the location of the site (22 kilometres off shore) the environmental conditions are extreme. It is very uncommon to work crawler cranes lashed to a barge so far from shore. There is no protection from the ocean swell, waves or wind. We are also under constant pollution surveillance and need to take extra precautions when handling fuel and oil etc.

### **Location and Logistics**

Due to the nature of the location of the site, planning is the key to avoiding expensive mishaps. Preparation and planning and looking ahead are paramount. You need to be able to foresee potential problems and put in place measures to ensure that they will not become problems, as the logistics of getting help is not easy and very expensive.

### **Physical Difficulties**

The environment and location of the RENA on the Astrolabe reef makes this a very difficult site to work on. The wreck was on a 22 degree list making standing and walking difficult. Getting access onto the containers from the man cage as planned was impossible because of the pitching and rolling of the barge caused by the ocean swell. The man cage would swing wildly out of control, therefore the riggers had to be lowered onto the containers with a helicopter and set up rope climbing equipment. The effect of the ocean, wind, sunburn, dehydration factors and the physically demanding nature of the job plus the mentally demanding nature of working at sea, it is a very fatiguing job.

## Supporting Information

### Copy of the contents of the first email in response to the initially telephone enquiry from Svitzer Salvage

Thank you for your phone call regarding the salvage of the RENA off Tauranga. I understand you got our details from my friend Rob Westra of Q-Port Marine Services in Brisbane.

We have also been contacted in regard to this salvage by our friends from PB Seatow in Auckland- Mr Ian Coombridge.

Firstly I will introduce ourselves. Waikato Cranes and Universal Cranes are part of the Smithbridge Group with a common shareholder Mr Albert Smith. Our organisation consists of a group of crane hire business's and a construction business specialist in marine- waterfront type construction in Ports. We have operations in New Zealand, Eastern Australia, New Caledonia & Guam in the North Pacific. We have a combined fleet of approx. 300 cranes up to 600t capacity, a work force of approx. 600 people, and a substantial fleet of barges and general water front construction equipment. Our annual gross revenue is approx. A\$200mil- split 50-50 between crane hire and construction. For details of our organization on the web see [WaikatoCranes.co.nz](http://WaikatoCranes.co.nz) or [AucklandCranes.co.nz](http://AucklandCranes.co.nz) re crane hire in the North of New Zealand [Smithbridge.net](http://Smithbridge.net) regarding construction, [universalcranes.com](http://universalcranes.com) re crane hire in Australia, , and [SmithCranes.co.nz](http://SmithCranes.co.nz) re Crane hire and construction in the South Island.

We have researched options for providing assistance to you for the RENA salvage in Tauranga, and in particular with the provision of a barge mounted crane to allow the unloading of the container cargo. Nick Morris- our Melbourne based heavy lift engineer has prepared some outline drawings of some of the options available. These will be sent to you by separate E-mail.

In summary our findings are as follows:-

1. If you can get a barge to both sides of the ship with a crane on deck then the containers can be unloaded with a 250-280t size crawler crane. We can offer a Liebherr LR1280 280 tonne crawler ex Palmerston North from the Smith Cranes fleet and there are several other machines of this size within New Zealand which are likely to be available. This size crane would require a minimum of an 18m wide barge. The only barge we know of in New Zealand of this size is the Mesenge- owned by Heron Construction and currently working in Auckland on a mud crete project and I understand not available. Our understanding is that the next largest barges available and suitable on the NZ coast are 13m wide or less. These may be suitable as a transport barge to get the cargo to the Port but they are too small to take this crane.
2. If you can only get to one side of the RENA then we believe that you require a 400t crawler crane. This size crane would need a 24m wide barge. The best option we know of is the SEATOW 60 which is an 85m x 24m barge owned by PB Seatow and currently available ex Gladstone in Australia. There are 2 x 400t cranes in New Zealand. One is a Manitowoc M16000 owned by Concrete Structures and currently working near Napier, and the other is a Liebherr LR1400 owned by Daniel Smith Industries Ltd and currently working in Lyttelton near Christchurch. I understand that the Concrete Structures M16000 can be made



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available for this salvage if required. Alternatively there is also a M16000 400t Manitowoc Crawler available in Gladstone from Walz construction which could be loaded onto the Sea Tow 60, and be mobilized to New Zealand if with the barge if this is your preferred solution.

3. A third alternative is to load the LR1280- NZ based 280 tonne crane onto the SeaTow 60 barge.

We can offer other options for cranes and barges using our own equipment or other externally procured sources for the required unloading work if for some reason the suggestions above are not suitable. We can also offer hydraulic mobile cranes up to 300 tonnes capacity, and logistical support and skilled people - some based in Tauranga if this is any assistance to you. We also have capacity to provide stability calculations, lift studies, mooring plans and any other engineering required to ensure the safety and viability of any proposed crane barge operations, and are familiar with the local statutory requirements for the use of barges and cranes.

We are happy to help put a suitable package of resources together for you for the barge crane combination to assist with this salvage work if required. I will be in Tauranga on other business this week end and would be happy to meet with you or your people there if you would like any assistance from us. We are happy to provide our services to you via PB Seatow if you would like to procure a crane-barge combination from them.

Alternatively we are also happy to introduce you to the owners of the equipment options listed above if your preference is to deal with them directly and to do the required engineering and planning yourselves.

Please feel free to phone me any time on a 24-7 basis if you require assistance from us.

I look forward to hearing from you and hope we can help.

Regards

**Tony Gibson**

**Managing Director**

**Waikato & Auckland Cranes**

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### Copy of the contents of an email with the preliminary concept of the LR1280 on Sea-Tow 60

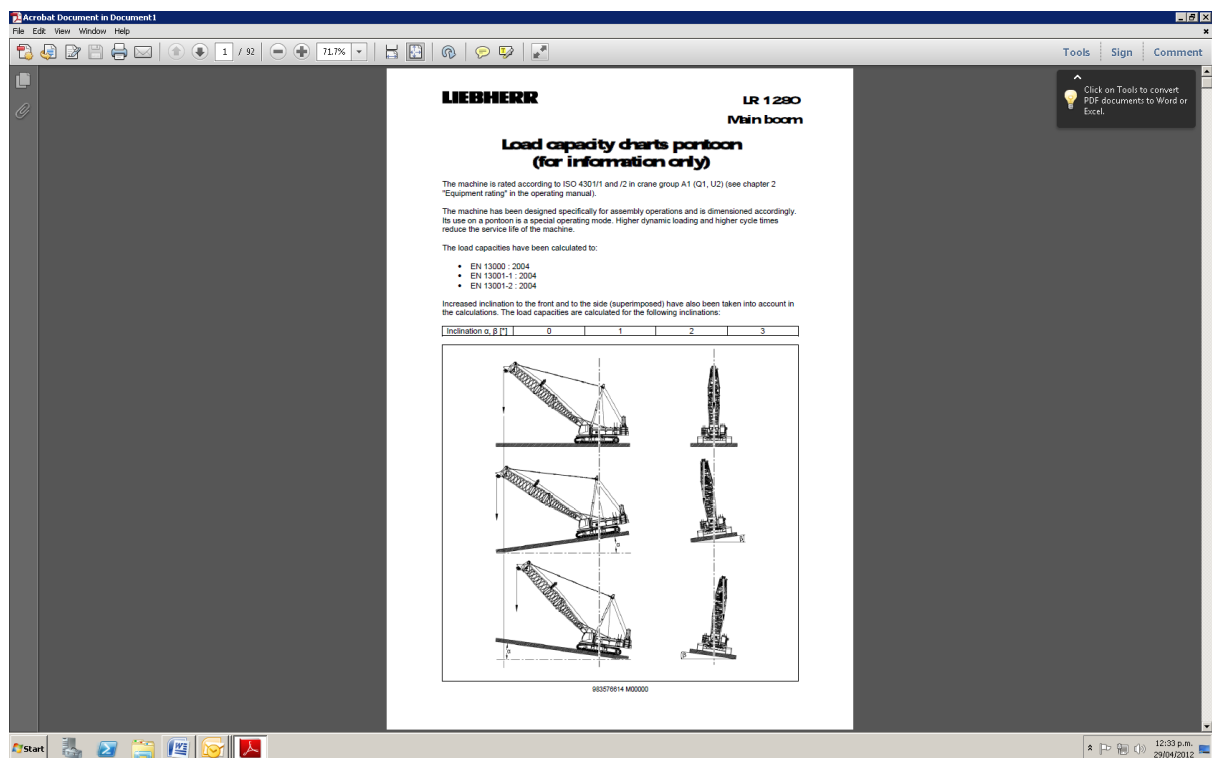
Rena

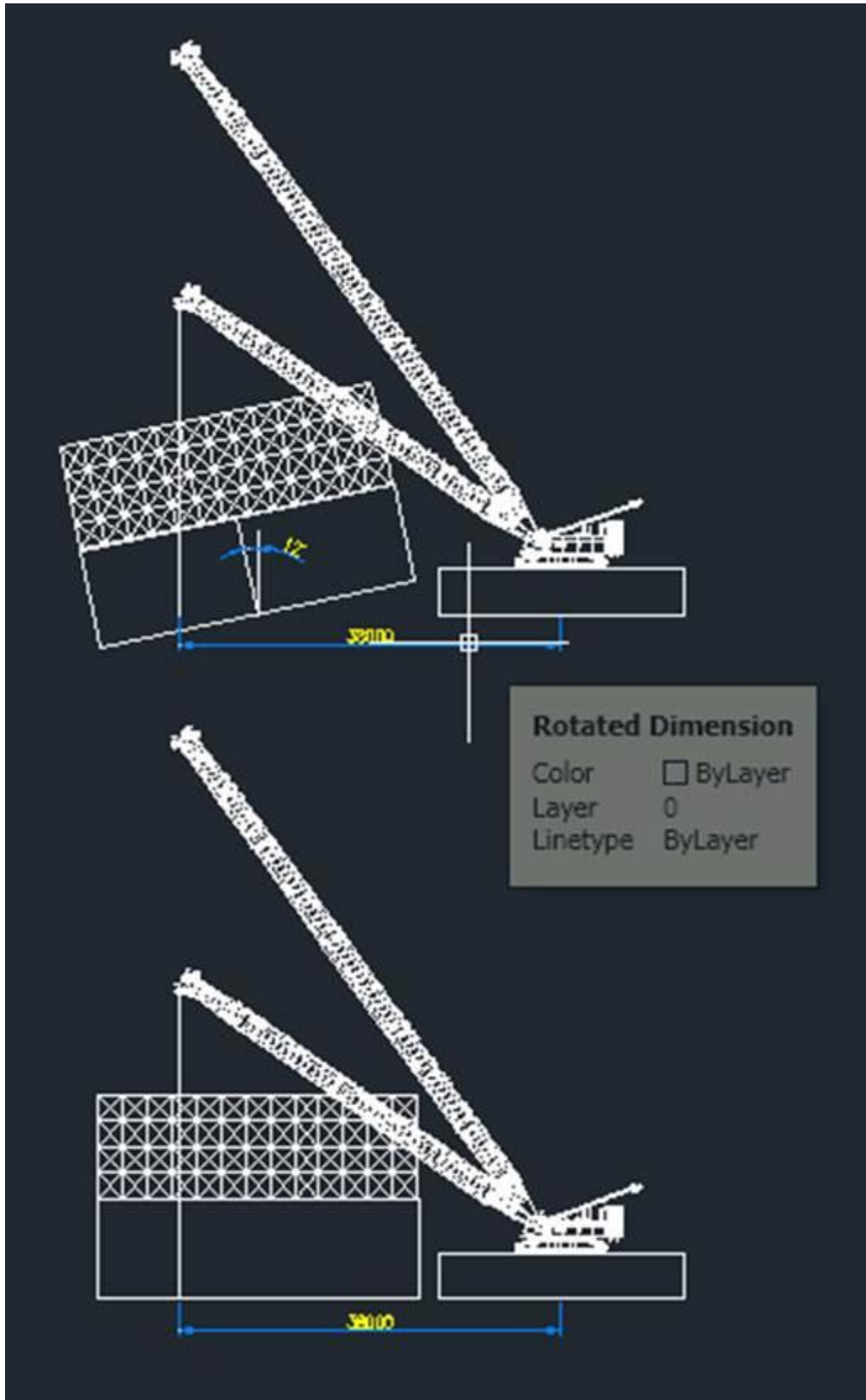
Length x Breadth: 235 m X 32 m

Best you will get is 38m Radius – ~18 to 20t overall including hook / rigging. Based on crane sitting in centre of Seatow 60.

I do however have barge charts for 1280, detailing deduction for list.

Note news said Rena was listed at 12 degrees, hence drawing. Plus looked like containers will are 3 to 6 high dependent on location





### **Contents of another email with a more detailed offer of assistance**

For the names above who do not know us one of Waikato Cranes 50% shareholder Mr Albert Smith was the original Sulphur Point Wharf constructors, and have been involved in many projects in the Tauranga port including the installation of the buoy the RENA did not go around. Our operations cover Eastern Australia, the French Pacific, (New Caledonia), North Western Pacific (Guam) and New Zealand. Our Group activities include marine & waterfront construction, and crane rental- totalling approx. \$200mil per annum. Our Group Crane fleet exceeds 300 units of up to 600 tonnes capacity spread over all the locations where we work and our full time field work force exceeds 600 people.

We have now looked carefully at the crane requirements to remove the containers from the RENA using a crane barge combination.

We have considered the following parameters and assumptions:-

1. We understand 2200TEU - 1700 box's approx. so our guess 1200 20ft and 500 40ft. Max weight dry 36 tonnes but some box's are with wet cargo- timber and milk powder inside- say 15t extra?.
2. The crane barge needs to moor on the RENA low side = leeward side in 80+% of wind conditions= side with safe water depth and clearance for positioning and manoeuvring transport barge for delivery of cargo to shore. No crane access is available from the high side.
3. Cargo must be delivered to Sulphur Point Wharves for dry undamaged cargo and to Mt Maunganui wharf for wet or damaged cargo.
4. The RENA is on an 11 degree lean but is currently stable.
5. She will require most if not all of the cargo to be removed before any attempt to refloat her.

We have identified the following equipment options which we believe will be suitable for the unloading task:-

A Barge Options. Crane Barges suitable for this activity will require a minimum of 24m wide. There are no such barges currently on the New Zealand coast. We have been closely following this type of barge availability on the Australia East Coast for one of our projects which is due to commence late 2011 or early 2012. Our research indicates that the current best (and only) available option for this type size of flat top barge on the Australia East Coast is SeaTow60. The data sheet is attached. This barge is currently in Gladstone and is immediately available for towing to Tauranga. She has suitable deck strength for the required loads, ample deck area to store some of the unloaded box's, and suitable winch's and mooring equipment to tie up alongside the RENA.

B Crane Options. We believe that the most suitable size crane for this work is a 600t lattice boom crawler or mobile. Lattice boom is important because telescopic boom crane is too dangerous under potential side loading situations on the barge. Either Crawler or truck cranes can be made viable with slight modification to the design of the deck load spread pad systems.

Available 600t Cranes include:-

- a) KR Wind owned Demag TC2800- 600t lattice boom truck crane. This machine is currently at the Port of Wellington due for shipment to Melbourne loading this Wednesday 12 October to commence work on the McArthur Wind farm

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in February 2012. She is available for release and road transport to Tauranga provided a confirmation is provided Tuesday 11 October. This crane has very similar capacity to the CC2800 crawler options shown on the attached cross sections- but slightly less tare weight and wider outrigger spread than the tracks.

b) Suzlon Energy Australia owned Demag CC2800- 600t crawler crane. This machine is currently at Hallet in South Australia and is immediately available for road transport to Adelaide and shipment to New Zealand.

c) Universal Cranes owned Demag CC2800 - 600t crawler crane. This machine is currently at Cadia Mine in NSW near Orange and will be released and available by the end of October for Shipment to New Zealand.

Other possible options include a Manitowoc M18000 crawler owned by Lampson , or a Demag CC2800 owned by Tutt Bryant which have not yet confirmed current location or availability. There are other 600t size crawlers available in Australia but our understanding is that these are not available in the immediate future.

We have completed lift studies with the Demag CC2800 and the TC2800 on the barge SEATOW 60. We can confirm that the deck strength is suitable for the Demag CC2800 or TC2800 with suitable mats under the tracks or outriggers with the proposed lifting configuration. We have the required mats available. SeaTow60 has suitable size/ stability for the cranes to work safely on the deck.

She is a relatively deep hull so ballasting her down in the water will significantly improve her stability, and reduce the liveliness whilst maintaining ample free board and providing a level work platform.

However we can also supply crawler cranes 200t, 280t, or 400t capacity, or if required bigger- 750 tonne capacity if we have not correctly understood the weights, dimensions, and operating parameters of this unusual job.

C Cargo Delivery to Port. We believe that the most suitable cargo delivery vessel is a flat top barge around 50m- 60m long x 16m- 18m wide. (180- 200ft x 50- 60ft). This will allow a working deck area of approx. 45m x 12m suitable for a load on one layer of 18 x 40ft box's per layer stacked transversely x 2 layers = 36 x 40ft = 72 TEU. The most suitable barge in NZ for this is the McCullum owned POHONUI- GA drawings attached. This barge has a bin size of only 27m 12m- 2 box's long x 4 wide = 8 x 40ft units per layer = 16 x 40ft = 32 TEU for a double layered load. Several alternative barges - the suggested 60m x 18m size are available ex Australia or New Caledonia.

Examples include the Pacific Marine Group Barges ex Townsville, the Steel Trader or the Leanora ex Smithbridge Brisbane or the TAMA ex ENDEL New Caledonia. It may also be advantageous to have 2 x transport barges. This would allow one to be loaded while the other was being towed to port, unloaded and returned to site. The requirement for additional barge capacity will be driven by the rate of cargo unloading compared to the port delivery and unloading. A good low mobilization 2 transport barge option would be to tandem tow one transport barge from Australia with the SeaTow60, and to use the smaller McCullum barge as the second transport barge.

## Project RENA 2011-2012

D. Unloading in Port. Where cargo is undamaged then it can go directly to Sulphur Point and be unloaded using the Port Container Cranes. Our understanding is that damaged cargo will need to go to the Mount Maunganui wharves to avoid congestion at Sulphur Point. This will need unloading using mobile Cranes- in the 200t – 300t capacity range depending on the transport barge load plan and the container weights. These can be procured locally from Pollock & Sons Crane Hire, or McLeod Cranes alternatively if necessary they can come from Waikato Cranes.

### Mobilization & Operation:-

Our suggested methodology for the mobilization and operation of this equipment is as follows:-

1. Immediately tow the SeaTow 60 from Gladstone to Tauranga. Carry the required deck mats for the crane on the SeaTow 60. These will need to be delivered to Gladstone from Brisbane.
2. If possible tandem tow the nearest available suitable transport barge to New Zealand behind the SeaTow60. Use the closest available barge to Gladstone.
3. At the same time road transport the Demag TC2800 600 tonne crane ex Wellington to Tauranga.
4. Load the TC2800 onto the SeaTow 60 at the Mount Maunganui Roll on Roll off Ramp.
5. Moor the SeaTow 60 barge on the leeward – low side of the RENA against floating fenders. Retain the ability to take her off in bad weather. Use the PB SeaTow tug for this work.
6. Use the PB SeaTow tug to bring the Transport Barge- Steel trader or equivalent to moor beside SeaTow 60.
7. Remove cargo onto the Steel trader or equivalent until loaded. Then either load to alternative- Pohonui or similar locally available while steel trader is taken to shore for unloading.
8. If necessary unload from the RENA to short term storage on the SeaTow 60 deck while the transport barge is delivered to shore. Alternative use the Pohonui - being the smaller capacity locally available transport barge.

It may be feasible to provide sufficient lighting to allow the RENA unloading work too be undertaken at night, but this will require careful planning. Alternatively if the risk assessment prove that the additional risks of night work cannot be mitigated then the container removal activities should only proceed during daylight hours. If this is the plan then the deliveries to shore can happen during the night.

We can supply the following resources and services- most likely via Waikato Cranes business :-

1. The 600t crane - be it the TC600 ex Wellington, or one of the CC2800 machines ex Australia. This would be on a daily rental basis including the operator, running costs and rigging gear. The rental rate will be approx. A\$10k per single shift day with additional hours on a pro rata basis.
2. Provision of 2<sup>nd</sup> shift crane drivers, riggers and any other required field supervision or skilled labour including gas cutters if necessary to release the containers. These would be from within our Waikato Cranes or with assistance as required from our Universal Cranes Brisbane work crews. They would be provided with usual PPE plus travel, accommodation, vehicles, hand tools, etc as required for the task, and would be charged at hourly rates measured on site including for all travel, accommodation and the like. Normal site rate will be approx. \$100- per on site hour for these people if required.



## Project RENA 2011-2012

3. Mobilization of this crane ex Wellington. We have not yet priced this option, but we have the required transport and logistics resources within our group to mobilize her quickly. We will provide a detailed estimate if you would like us to further consider this plan. We can also provide equally rapid mobilization of the available Australian 600t cranes using our resources there if these prove to be a better option.
4. Design and certification of the crane mats, and fixings to the barge, the certification of the deck strength in the barge, and the barge stability. This would be done internally by our own engineering team, and would then be independently checked and verified by a suitable registered engineer, and naval architect. This work would be chargeable at our direct cost plus over head and margin. We can confirm rates, estimates of the required quantities, and a price for this work as soon as our scope is defined.
5. Lift Studies for all critical lifts. We can complete these as soon as the barge configuration and position are finalized, and the details of the cargo weights and locations are available. This work would be done in house using our lifting engineers, and if required would be independently checked and certified by an external professional checking engineers. Note that we have manufacturer approved crane charts for the above machines when subjected to barge movements.
6. Stability calculations and certification for the barge with this crane and configuration, or if preferred we can also provide input data regarding the crane dimensions, weights, and centre of gravity position in the various required loading conditions for analysis by others.
7. Project specific risk assessments, provision of SWMS documents for all our activities, and management of a site safety plan. This service is included within our labour and equipment rental rates.
8. Transport barge (the Steel trader) if no other local or closer options are available. This would be at a daily bare dry charter rate of A\$2,500- per day.
9. On shore unloading, handling etc- if required using local mobile cranes and crews.
10. Insurance to cover all our activities and resources.

Note that:-

- It is our suggestion that Waikato Cranes are employed by PB SeaTow to provide the cranes and related resources so that Waikato Cranes- SeaTow can provide a combined crane barge, cargo removal service to the salvage team. However we are glad to offer our services via a commercial arrangement with any organization involved in the project salvage team where we can add value.
- I am happy to meet with any of the salvage team as required to further refine our offer of Crane services for this project. **I am available on mobile phone +64 274 820 173 at any time 24-7 basis.**
- We are able to provide a firm detailed commercial offer as soon our scope is defined.
- We have investigated several different options to those above and are glad to re open them for further discussion if the above does not exactly cover the current needs.
- If you would like to proceed with the TC2800 truck crane then this needs to be confirmed tomorrow- Tuesday 11 October before commencement of the loading out for her shipment to Australia.

I look forward to hearing from you and hope we can help.

### Contents of another email (and a little bit of frustration)

Albert

I have just left Svitzer office. They are still trying to drive the price down and not commit. I have told them that we are at our bottom dollar and we will not be able to respond in time without a commitment from them today. They acknowledged that our offer was the best by far. Now that they are convinced that they can't get anything more from us they are going to recommend to their Holland office that they engage our services via PB-Sea Tow. They know that they need to commit today to ensure crane availability next week but can not promise an answer today.

My guess is we will have confirmation in the morning.

### Contents of another e mail

Dear Tony,

My apologies for the late reply but Europe is still crunching numbers on this quote. Can we get a Right of First Refusal on the cranes?

We will try to come back on your offer tomorrow.

With kind regards,

Dirk de Jong

Verstuurd vanaf mijn iPhone

### Contents of another email. Finally some good news.

Dear Tony,

In regard to two cranes 280t / 180t - we hereby confirm that these are required and can you please have these mobilized to coincide with the arrival of the ST60 - as per your proposed conditions. As discussed yesterday, we are still in the process of looking through the terms. As promised I will come back to you shortly (tomorrow) with our comments on the proposed terms and also come up with a proposal for an alternative standard marine contract.

Regarding the 600T crane we would like to continue the Right of First Refusal and we will come back with a more detailed planning soonest.

Finally will review the C/P of the KATEA&ST60 tonight and revert.

Kind regards,

Dirk de Jong

Commercial Manager - Commercial



SVITZER Salvage B.V., Westerduinweg 3, 1976 BV IJmuiden, Netherlands

## Project RENA 2011-2012

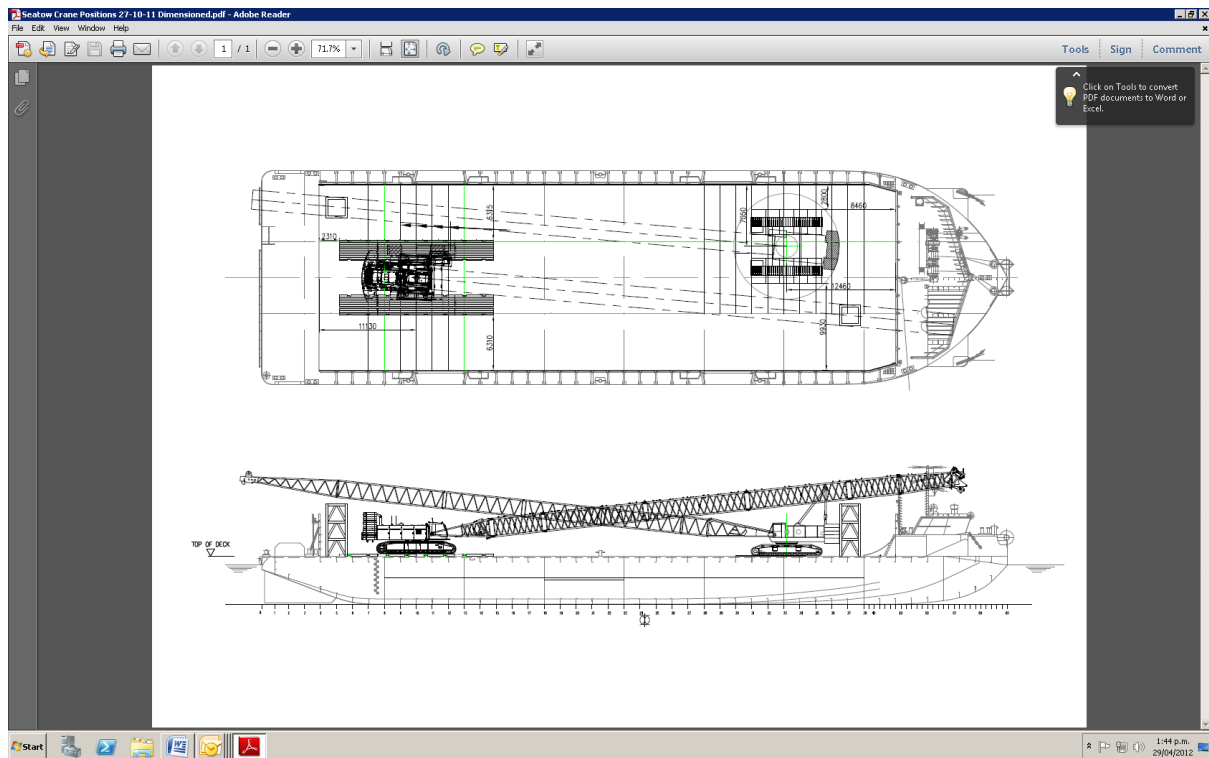
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### Drawing of crane positions on Sea-Tow 60



**Contents of another email.**

Dear SVITZER contractors (Rena operation),

Please be reminded that you are not permitted to take photographs or footage of the Rena or any part of your involvement in the Rena operation without first obtaining approval from SVITZER, or the Maritime New Zealand Media team. You are also not permitted to provide images of any kind to the media, or engage in on-record or off-record discussions with media outlets, or provide commentary of any sort (e.g. on social media).

We are working under a structured media protocol in conjunction with Maritime New Zealand, and it is important that only approved (and accurate) information and images are released in a timely and coordinated manner.

If you have any questions in relation to the media, please contact SVITZER media adviser Matthew Watson at [mwatson@reputecommunications.com.au](mailto:mwatson@reputecommunications.com.au) or on +61 417 691 884 for direction.

On behalf of SVITZER Project Manager Paul van het Hof

Best regards,

Dirk de Jong

Commercial Manager - Commercial



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## Minutes of the Tool Box meeting held on Sea-Tow 60

Tuesday 15<sup>th</sup> November

### Attended By

Jim Blair > Sea Tow

Dick Mogridge > Sea Tow

Andrew Steward > Sea Tow

Scott Forsyth > Rigger

Kerry Mince > Rigger

Daryl Erickson > Rigger

Lester Piggott > WCS

Brett Price > WCS

Snapper > WCS

Neville Pattinson > Sea Tow

Steve Morrow > Sea Tow

Russell Bannan > Rigger

Aaron Grant > Rigger

Jimmy Stevens > Rigger

Adam Rogerson > Rigger

Chris Perehio > Rigger

Piet Nauta > Svitzer

Tony Gibson > WCS

## Project RENA 2011-2012

Spoken by Tony Gibson

I would like to welcome everybody to Project Rena. Steve has now inducted everybody onto the Seatow 60 Barge. Our client is Svitzer, Piet is the Svitzer representative on the barge today. Piet is with us about another 10 days. From Seatow we have Dick Mogridge and Jim and Neville and Steve. Neville and Steve will be on this week and then there will be a crew change next week. Steve is the Barge Supervisor.

From the Rigging Crew we have Scott, and seven others. Scott is the Rig Supervisor. Crane Drivers is Pricey with the Smith Hat on driving the Liebherr and Snapper driving the Kobelco and I am Tony Gibson.

Who is the most important people on the barge? You are!! This job has a lot of hazards on it and it is your responsibility to work safely and ensure the safety of everybody else. It is not a race. We want everybody to go home at the end of every day. We all need to work safe and we need to stop and take 5 to identify the hazards and work through them. There are no newbies on this site, there is a couple of hundred years of combined experience here but sometimes you don't see the small things so you need to watch out for everybody. Identify our hazards and either eliminate them or isolate them or minimise them. Your biggest responsibility while working on this job is your safety and the safety of others. We are going to identify the container or containers that we are going to lift off, every time that we do it, and then we are going to hold a very mini toolbox meeting about the methodology of removing them. We are not going through identifying the slip and trip hazards every time. We are going to identify whether we are picking off the blue or red or third yellow one, or whatever it is. We are going to identify it, we are going to have a tool box meeting so the crane drivers know what the riggers are doing and the riggers know what the crane drivers need to do. The barge people will be here looking after and monitoring the barge.

Assembly point – Jim?

*Spoken by Jim Blair*

*That sign you see laying over there will be stuck up today. The assembly point will be over in the corner by the office. The assembly point will be used in any emergency.*

There is a solenoid stop/go button by the door which sounds an alarm. My suggestion is that we have a head count board. Do we have a sign in out board or book?

Spoken by Dick Mogridge.

We will get one.

What will you get?

We will get a white board. Steve will look after it.



## Project RENA 2011-2012

Steve will sort out a head count board in the morning which will be whiteboard, so when you come on board we want your name written on there. When you leave we want your name taken off there.

Man Overboard procedure – Have we got one?

Will talk about that shortly

In the worst case scenario if the barge flips. Do we have a procedure?

We have an emergency evacuation procedure, but the flipping over of the barge won't happen.

We will do some emergency assembly drills.

Yes, we will do that and we will have to decide how often we do them.

First aid. All our people have attended First Aid Courses and hold their First Aid Certificates. Who are First Aiders?

Steve is a First Aider.

Everybody has a basic First Aid.

Spoken by Jim Bliar

*So the first thing we do in an emergency is hit the alarm which is over by the door and there is a red flashing light on the corner, one on the mast (Steve is sent to sound the alarm) When that alarm is sounded it is up to the Master of the Katea?? which is the primary tow vehicle, and is sitting off the bow out there, because she is constantly connected to the tow wire to the barge, and so the Master Magnus will make the decision whether to call the Tauranga Customer Service Centre (the shipping co-ordinators, and it will also be to his discretion whether to put out a mayday. Once the alarm is sounded, container recovery is to cease, the situation is to be assessed by the barge master, the salvage engineer, ourselves and decide if it is safe or unsafe to transfer riggers back to the barge or to leave them on the Rena. Obviously if the emergency is on the barge it may not be the best place to come back to. Once it is safe to do so the crane booms will be lowered back into their cradles, the mooring wires will be brought aboard, only if it is safe to do so, if not they will be cut. The winch brakes for the two lines will be released and we will either pull ourselves out on the two anchors laying out that way or pull off to the assist vessel. While this is all happening everybody is to stand over in the corner by the assembly point, unless you are required as part of that process. Once away from the vessel, the Katea will tow this away out of the hazard, (that is if the vessel is turning, rolling or whatever and if it is necessary to actually evacuate the barge, everyone is to put on their life vests, and there is two escape ladders by that hole in the wall, that door. So they are two aluminium ladders which are down the side there. There is also a scrambling net which is coming to go over the side and there is a ladder here on the stern which we came across today. And when it is safe to do so the attending tug will pick up the anchors, however if we are all in the water hopefully he will recover us first.*

So Jim you will have a tug hooked on the front of the Seatow 60 and there is an attending tug always here.

*Yes, There are standby vehicles all around us. How Many, Well, we've got one of the inflatable's out and the Koraki, the one you came out on and the Go Canopus as well. So will there always will be minimum of two plus the one hooked on the front. That has not been set, that is not our call. So we do need to decide that with Svitzer, but there will always be somebody around.*

Spoken by Piet

*Sea Three will always be over there and Go Canopus will be around and the Katea as well.*

*I mean worst case scenario There may also be the helicopter.*

*That is the emergency procedure over. This will be typed up and placed in a few places around the barge. There are also other procedures that we have got which has been taken out of the Tugs manual, Fire, Flooding etc. There is also a copy of all the emergency equipment on board. So this will be posted up today, however once Tony has finished we will pass it around and have a quick look.*

While I am finishing, has someone got a pen here, while we continue on with the meeting we will pass around the ToolBox meeting attendee board, so could you write your name and signature on that and pass onto the next bloke.

So we have also got the normal hazards, slips and trips.

So if you are climbing always try and maintain three points of contact. On the slips and trips there is oil and other bits and pieces around on the Rena and it may get transported across here by bringing containers across. Seatow are pretty good at keeping the deck clean and will continue to keep the deck clean. We do have to refuel the cranes so there is diesel to be manoeuvred around as well, but around the cranes are the lashings and these lugs and also lugs on the deck for weather stowing of the crane hooks, so you need to be aware of them and watch out that you don't trip.

Fatigue – Make sure that if you are fatigued that you pick your feet up and we will need to address your fatigue.

Manual lifting, obviously the normal stuff. All of you have done a lot of it in the past, keep your back straight and bend your legs.

Working at heights – Again you guys are specialists but make sure you stick to your own Codes of Practice for your own industries and like I stress – everyone is going home every night, so take 5 and think about the working at heights and think about your lanyards and your points of contact and your escape procedures.

Cranes – We have got lifting parameters with the cranes. Lifting parameters can change depending on the barge and the wind. You are also going to have loads overhead so if you are on the barge there may be loads overhead, they may be small loads, they may be just the man box, they may be just the gas set, but 100kgs from a metre will still kill you, so identify the loads, use tag lines.

Somebody is going to give us a laydown plan for the boxes we are going to bring on board? **Yep**, Do we have a restraint plan for that?, We have. Also be aware of the tail swing of the cranes. The counterweights swing outside the track area, so if you are walking through or around them be aware that the tail swing can come around and crush you. When the loads come to the deck, because of

the nature of the environment with the barge moving and wind, even coming down in the man box, the loads will be swinging, so the crane drivers and the people on the deck need to work together to try and land it smoothly, particularly when you are landing people in the box. We don't want any jarred backs, so we need to move in and try and eliminate some of the swing if it is a man box, if it is containers we will just land them on the deck.

Hot Works – There is going to be hot works, we are going to be cutting stuff. We have got normal hazards with that. What have we got in place for the molten steel falling and gas and other things?

I talk with Piet We are going to have a fire watch on board the Rena.

We are going to have a fire watch?

We look after it

Later on we are going to have containers with flammable goods and some gases

Everything is empty.

What is there no gases?

Except the Reef containers.

So do we have any written procedure to follow for cutting or are we good to go?

Yes, we are good to go.

Dangerous gases. Are there any containers with dangerous gases in them?

Only in the forward hull.

Only in the forward hull, so for the next few weeks we won't have to watch for this. But we will be bringing dangerous gases onto the barge, which is the refrigerants in the reefer containers..

Chemical discharge in the containers, any leakages?

No, No.

Are there any other points about the lifting of the containers, or not the procedure of lifting or questions about the hazards or anything that are in the containers?

Are we going to put up a hazard board?

Dick Says "yep"

So Sea Tow are going to put up a hazard board, so if you identify a hazard talk to Jim or Steve, Steve so talk to Steve.

Accident Register. Have you got one or would you like us to provide one?

Dick says "Can you provide that"

So we will provide one.

Radios. Responsibility of Radios. Who is going to be responsible for ensuring that they are charged? This is the crane radios. Scott can you appoint one of your permanent barge people to collect the radios off your height safety crew and get them in chargers? Pricey has got the chargers and you probably need another one. You have got three chargers in there at the moment. So we are going to be on the Open Channel No.2. Is that what we are working on?. So number of radios will be both crane drivers and two riggers in the box with radios and one rigger on the ground with radios. 5 radios

Now starting plan for today if the swell lets us is we are going up to the highest bunk. The two yellow containers, two red containers, then that yellow container. We are going to take up how many people in the man box Scott? three people in the box. So we are going to the far side and we are going to cut the top lock between the yellow and red box on the far side. So I think the best crane to use would be Pricey. Then we are going to come to this side and we are going to cut the lock between the yellow and red box and that front will fall down onto the next layer. We are going to come back down and talk through that methodology as that will be the first time that we have been up there, and then we are going to go up there and separate the yellow ones from the red ones, or do you want to separate it into a single yellow one?

Spoken by Scott

*It doesn't matter, but there was some concern that container locks wouldn't hold, but we are quite happy to lift two down at a time. So we will have a go. We will have a go at it.*

So we will have a go. When it is laid down we will have a go at separating the two yellow containers and we will lift that top yellow container off on its side. We will bring it down to the barge deck and then roll up with two cranes or roll it up with one crane on one side?

One crane on one side

One crane on one side. So when we are rolling up a box on the deck it is going to flop over so make sure you are not between the container and the wall. Like I said, landing the container it is going to be swinging around. So I think Scott if you could take up a tag line please.

Yeah no problems, but when they are on their side like that and laying on top of those other containers we can take them on two slings, and it will come up quite good. It will come away. We will cut the bottom lugs and it will pull away, so those longer ones, how they'll hang, you might be able to land them, I don't know whether they'll flop. It's hard to say how there centre of gravity.

## Project RENA 2011-2012

So like I said we are going to hold a mini toolbox meeting for every container removal because every one of these containers is going to be a slightly different methodology. Are we picking up on two slings? Are we picking up on four slings? Are we picking up horizontally? Are we picking up on the left hand side or are we picking up on the right hand side? Are we undoing the locks or are we cutting the locks? We are going to talk about it before we doing it. So that everybody knows what the plan is. The plan can be changed, but we need to take 5 and make everyone aware that there is a plan change.

There will be a few unknowns up there. We might be able to undo them by hand or pull them out. We got stuff here we can hook them onto those toggles and pull them.

Piet says “ we can go onboard with the boat. First we do the cutting and we supply the gas equipment for the cutting, with the long hose it is much easier.

So we will come back to the specifics of the first lift, once we get through the rest of this. So on our ongoing logistics our daily start time and location is 6am, same place, same people, same Vessel, but when you get aboard Seatow 60 you are going to write your name on the sign on board. So the transport plan is the same and the hours of work are that we are going to start at 6am and Work through until 5.30 and transport back to Mount Maunganui by 7pm. 5.30 leaving here.

We have enjoyed the hospitality of Seatow for the last couple of days that we have been at sea, but We probably need to formalise something up that we need to fund or share the cost of this.

We do need to talk about it.

OK, so other than the windows of work will adjust because of where we are during a lift, are we have a break, two breaks, three breaks a day, what are we doing?

You guys decide. We can sort ourselves out. I don't mind. We will work around you guys, so it's up to Scott probably.

So what are we working? We will be out here about 8am until 5.30. So let's say two half hour breaks.

So long as everyone is happy the time will vary, but we will have two half hour breaks a day aiming for 10am or 2pm. Those times will move by 10 or 20 minutes or even an hour some days. It is not a whistle blowing exercise, but our target is ½ hour at 10am and ½ hour one at 2pm. This will depend on where we are with containers but thereabouts.

General talk about getting a gurney or stretcher to site. Jim said they had talked about it and would organise that. Scott said they have one in Hamilton, and Jim said we are going to have to work out how to deal with it on here, as it is obviously difficult. Also general discussion about weather conditions and daily weather reports.

## Project RENA 2011-2012

Spoken by Jim

Jim will get daily weather reports.

There is a smoko shed behind the yellow crane with coffee & tea facilities, microwave, running hot water. Two toilets flush with salt water and one urinal. It may pay check if you are using the toilet to check no one is standing on the outboard side, as it has a pump which will discharge it straight overboard and there may be a chance of blowback. Handwashing basin by the grey container. Two taps. One is salt and one is fresh water. If you are really grubby and you have a bit to wash off first use the salt. There is soap and hand towels. Please conserve the fresh water. We have a supply of fresh drinking water. There is a whiteboard inside the smoko hut if you want to draw anything up and First aid is inside the office and fire extinguishers.

Copy of front page of the contract.

### AGREEMENT

This Agreement is between:

SVITZER Salvage B.V.;

and

Waikato Crane Services Limited

#### WHEREAS:

- A. SVITZER Salvage B.V. ("SVITZER") entered into a LOF Contract dated 6<sup>th</sup> October 2011 to salvage the vessel "RENA", her cargo of containers, freight, bunkers and stores.
- B. SVITZER requires the supply of crane and rigging services for the removal of the containers from the "RENA" which is aground on the Astrolabe Reef.
- C. Waikato Crane Services Limited ("Owner") have offered to supply crane hire and rigging services. All business undertaken with Waikato Crane is subject to the following terms and conditions.

#### 1. Equipment

The Owner will supply:

- 1.1. A Kobelco 7150 (180 tonne capacity crawler crane) rigged with 60m main boom and 84T counterweight to work off the Sea-Tow 60 or substitute ("the Barge") to work as an auxiliary crane predominately for lifting workmen in man cages to access containers for rigging, and also to remove the lighter containers.

1

5. H-S