Caught between results in LTI crush injury

26th June 2008

HIGH ARCTIC ENERGY SERVICES INC.

Drillsafe Perth – 4th Sept 2008

What happened

- Under the direction of the Supervisor the crane operator was moving the crown to pin it to the top section of the mast. Both crown and mast section were on the ground.
- Two roustabouts (one was the IP) were standing on each side of the mast with a sledge hammer ready to drive the pins home.
- On the second attempt they aligned the pins and with slight movement lowered the lugs into the socket.
- As the crown was still be lowered the weight was being taken up by the section of the mast.
- There was a sudden movement of the mast and crown moved sidewards toward the IP and the Supervisor
- The lug joining the crown and mast came out and the crown still suspended continued to move towards the IP
- The IP was caught between the crown block handrail and the second section of the mast.

Events leading up to the incident

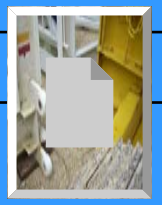
Event Description	Time Period (hours and seconds are approximate times)
The Leap Frog Rig components had previously been broken down to "Fly" size and transported to the fly lay down area.	Prior to 12th June
The intended well pad was changed and the rig now had to be loaded back on to trucks and transported to another location to rig up.	12th – 19th June
There was still civil works being undertaken at the new location and the civil department need full access to the lease. To accommodate Civil works the rig components were moved from one side of the lease to the other to allow their work to continue	19th – 26th June
Because of the moving from one side to the other the rig was not laid down in its normal rigging up sequence.	
As the rig up was on hold waiting on civil works it was decided that some rig components could be put together to save time later. **There was ample manpower and no rush to complete this.**	**26th June 08**

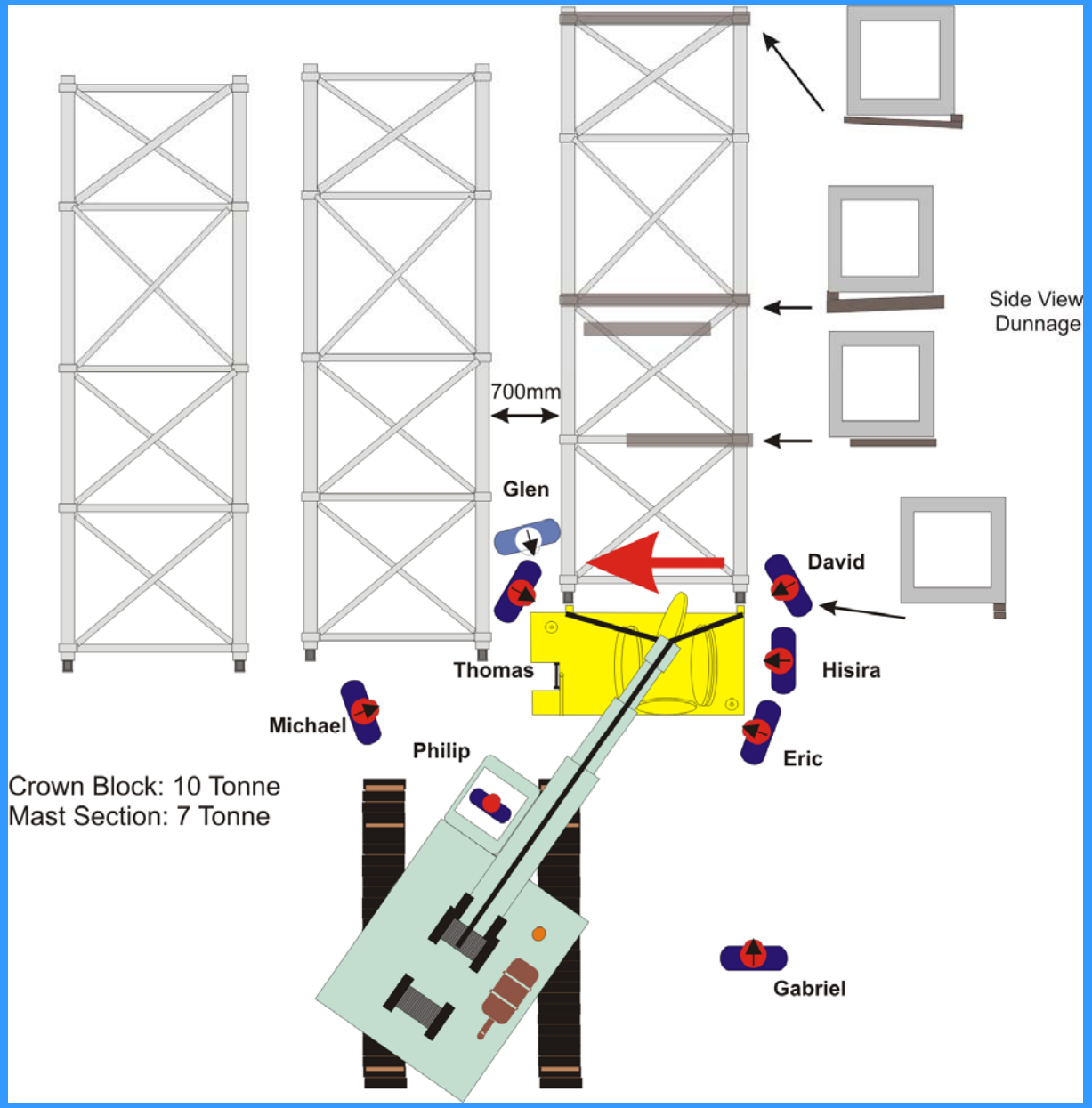
Events leading up to the incident

Event Description	Time Period (hours and seconds are approximate times)
A task specific pre job meeting was held where the equipment was resting. There were two main tasks. 1.Rotate the crown block from the standing position to the laying down position. 2.Pin the crown section to the top section of the mast.	26th June 0600
Job 1 laying crown over ready to pin was started and completed without incident. This job was supervised by the LF Toolpusher as it was seen as the most critical task of the two.	0630 - 0930
LF Toolpusher left after Job 1 was completed and went to the office. Driller supervised Job 2 – pinning crown to mast section	0930 – 0950
Crown section was moved within centimetres of the mast section	
Driller directed crane operator to position the lugs into the sockets and pin them.	

Events leading up to the incident

Event Description	Time Period (hours and seconds are approximate times)
Roustabouts stood by on either side with sledge hammers to drive pins in.	0930
On the first attempt the lugs and sockets did not line up. Backed off with crane by minimal movement.	
Second attempt made – better alignment. Driller signalled slow movement down	
Lugs were lowered into the sockets	
As the crown was lowered the weight of the mast was now being taken up by the mast.	
Mast and crown moved sideways toward Supervisor and IP	
Lug came out of their sockets and crane section continue to move towards IP	
INCIDENT – IP CAUGHT BETWEEN CROWN HANDRAIL AND OTHER SECTION ALONGSIDE THAT ONE BEING PINNED.	0950




Side View
Dunnage
700mm
Glen
David
Thomas
Hisira
Michael
Philip
Eric
Crown Block: 10 Tonne
Mast Section: 7 Tonne
Gabriel

Post incident events

Event Description	Time Period (hours and seconds are approximate times)
Supervisor order crane to move away	26th June 0950
Two employees rushed to IP assistance. IP right lower leg and thigh injuries. Also had a small puncture wound to he right inner calf from a protusion on the handrail	0950
IP taken to OSL Ridge Clinic for further assessment and treatment.	1015
Transported to Moro Medical Clinic for overnight observation	1330
Follow up examination and kept in clinic for second night for observation	27th June 0900
Discharge from hospital – proceeded on normal field break	28th June 0800

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Resultant injury

- Small penetrating wound (2cm in length, 3cm deep) to his thigh. This was sutured.
- Laceration to his ankle joint (4cm in length x 2cm depth). Also sutured.
- Some degree of soft tissue injury to his right lower limb.


Loss of control of the load
Why?
Dunnage boards under the mast failed and moved
Why?
Weight of crown applied down on the mast section
Why?
Inadequate size and placement
Why?
Inadequate Planning
Caught in between to pinch points
Why?
Why?
Lack of situation awareness
close positioning of other equipment
Why?
Why?
Hazard not identified
Loads repeatedly moved to accomodate construction
Why?
Why?
Why?
No risk assessment
Poor Supervision
Site not ready to rig up
Why?
Why?
Poor Pre Job Meeting
Part of work crew
Why?
Why?
Why?
Why?
Inadequate Training
Lack of Supervision

Causes

- Dunnage boards under the mast failed
  - Dunnage under the mast section were of poor size and inadequate.
  - Size and placement showed little thought when stacking
  - Inadequate dunnage not recognised in pre job
- Weight applied down on the mast
  - Dunnage were not consistent and no boards under the mast end where the incident happened. The load bearing down on the socket without dunnage moved the combined load sideways.

Causes

- Restricted work space.
  - Supervisor and IP stood in the restricted area.
  - No escape route.
  - Other equipment too closed
  - Overall lease space limited because of Civil works ongoing work
- Insufficient Planning
  - Pre job did not address the hazards. Focus on the job at hand
  - No JSA in place
  - Pre job was verbal and not recorded

Handrail that trapped IP

Causes

- Lack of supervision
  - Supervisor stood in the restricted area.
  - Supervisor acted as dogman which took him away from supervising overall task.
  - Supervisor did not ask others for comments i.e. hazards.

How do we stop it from happening again

No.	Action	By whom	By when	Remarks
1	A set of purpose built stands to be fabricated for supporting the mast off the ground during the rig up activity and storage.	Field Supt	31Aug	Two prototypes complete. A total of 8 required.
2	Develop a procedure and dedicated JSA for assembling the mast sections	LF Toolpusher	31Jul	Two different procedures available with rig from China. Both conflict.
3	Drillers and above to received supervisory safety training in • JSA production and implementation • Use of procedures • Roles and responsibilities of supervisors • Job planning and leadership	Training Manager	To be completed by 31Dec08	Initial meetings held with EDN. Plan is to start in September.
4	All HAES personnel to participate in training of lifting and rigging by a certified training establishment to Aust Standards.	Training Manager	To be completed by 31Dec08	