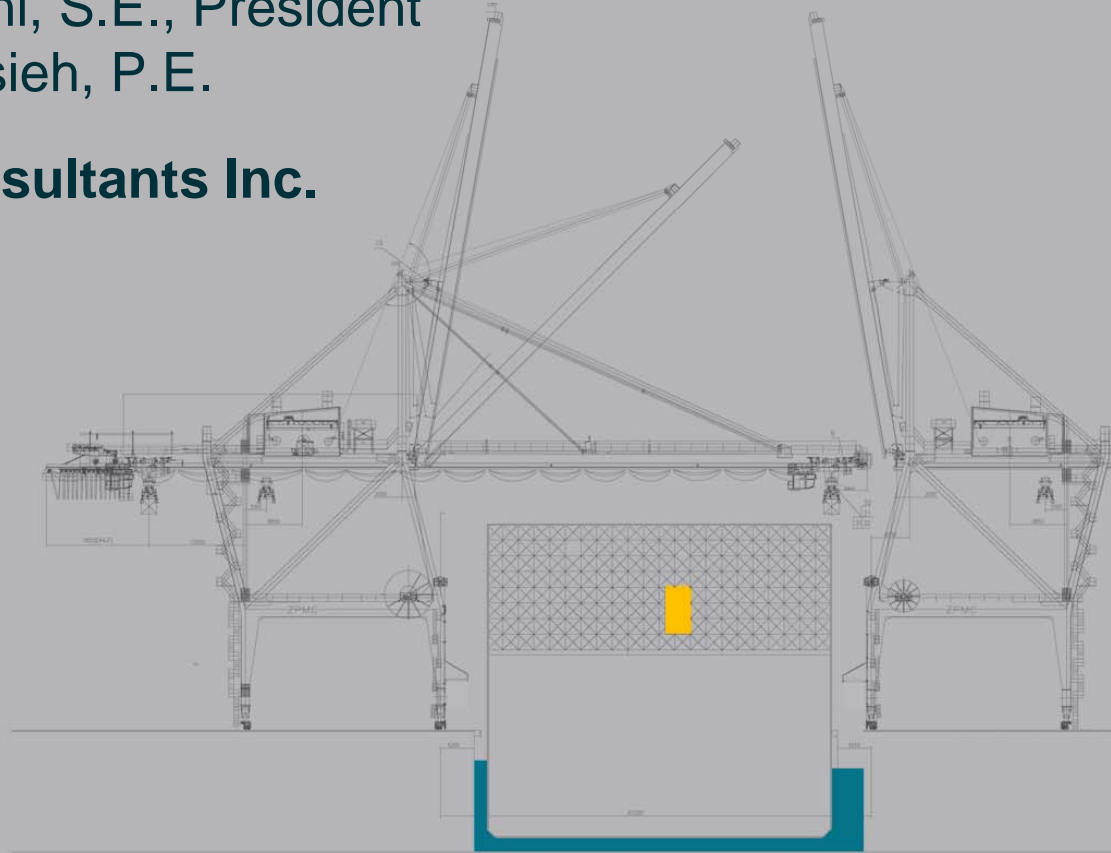


Cranes For Ship in the Slip

Ceres Paragon Terminal, Amsterdam

Arun Bhimani, S.E., President
Jonathan Hsieh, P.E.

Liftech Consultants Inc.



Liftech

Current Status





- ◆ Terminal
- ◆ Crane Particulars
- ◆ Crane Special Features
 - ◆ Collision Protection
 - ◆ Noise Abatement

Vicinity



Terminal



Slip - Crane Configuration

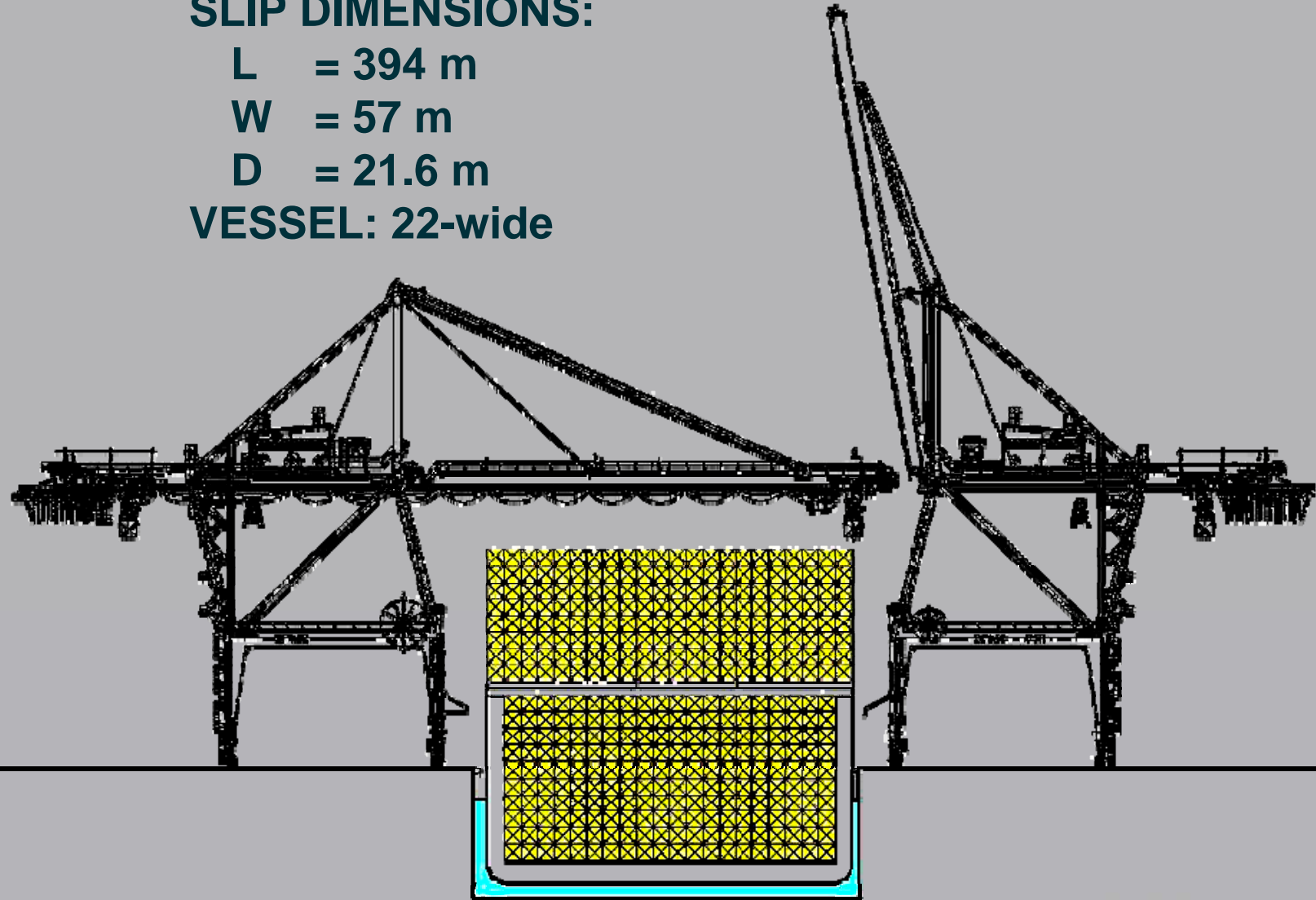
SLIP DIMENSIONS:

L = 394 m

W = 57 m

D = 21.6 m

VESSEL: 22-wide



GAGE	30.48 m
OUTREACH	61 m
BACKREACH	15.24 m
LIFT HEIGHT	36 m



Major Component Suppliers

Crane Supplier	ZPMC, PRC
Drives, motors Sweden	Full AC by ABB,
Spreader	Stinis, Holland
Motor Brakes	
Gantry	Pintsch Demag
Others	Sibre, Germany
Reducers	
Gantry	ZPMC, PRC
Others	Flender, Germany
Cable Reels	Cavotec, Italy

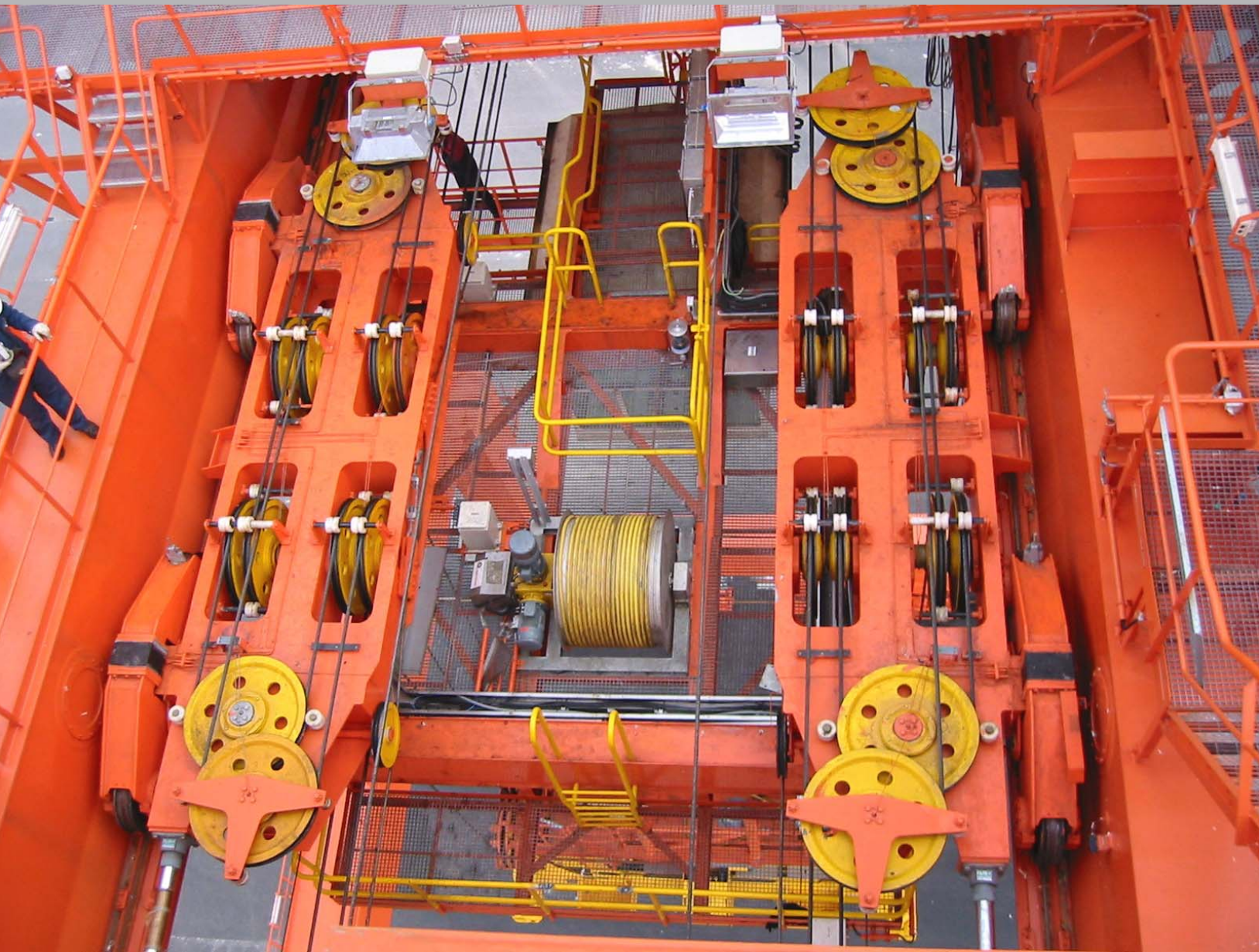
Rope Supports



Rope Supports



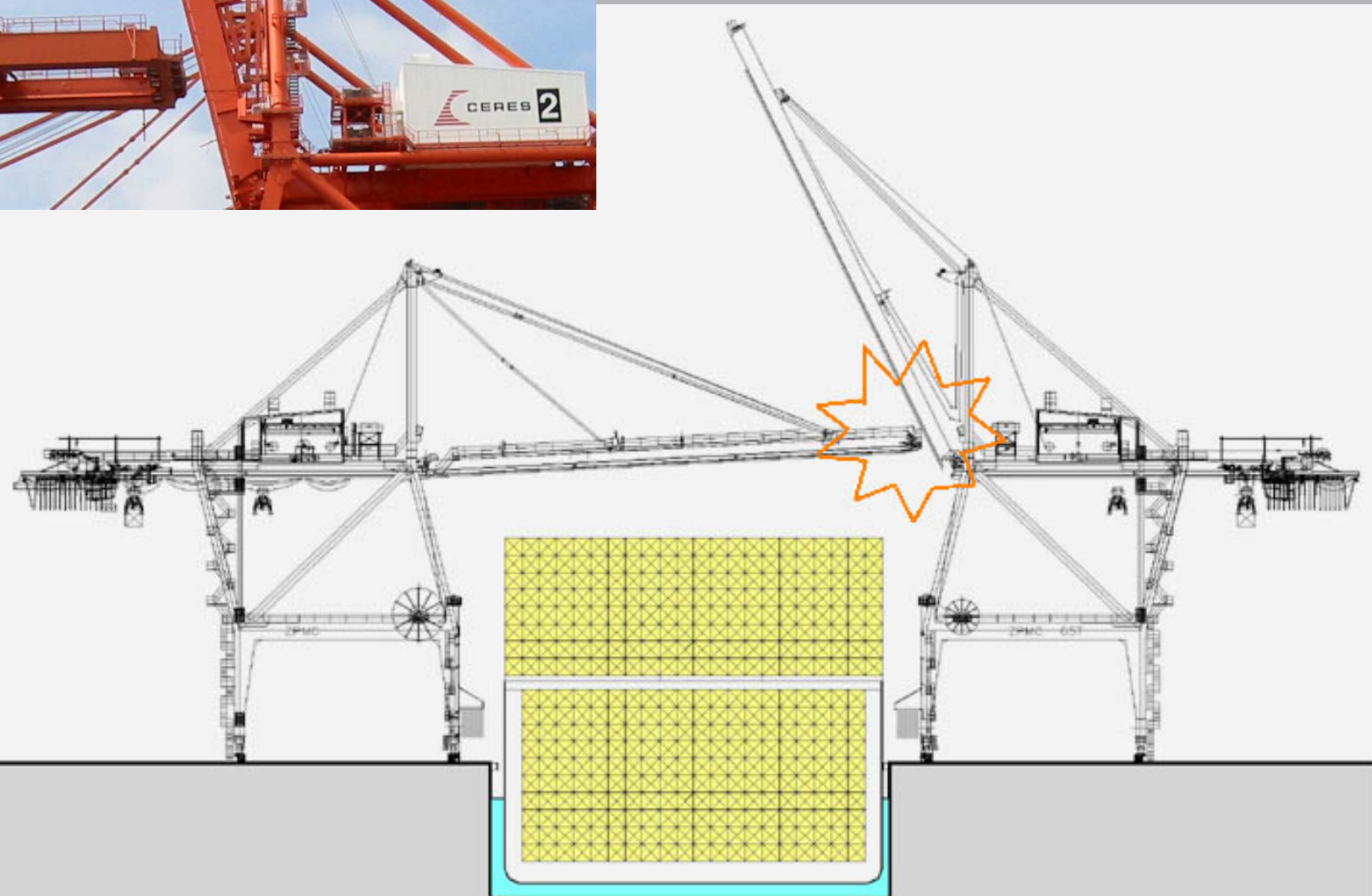
Trolley



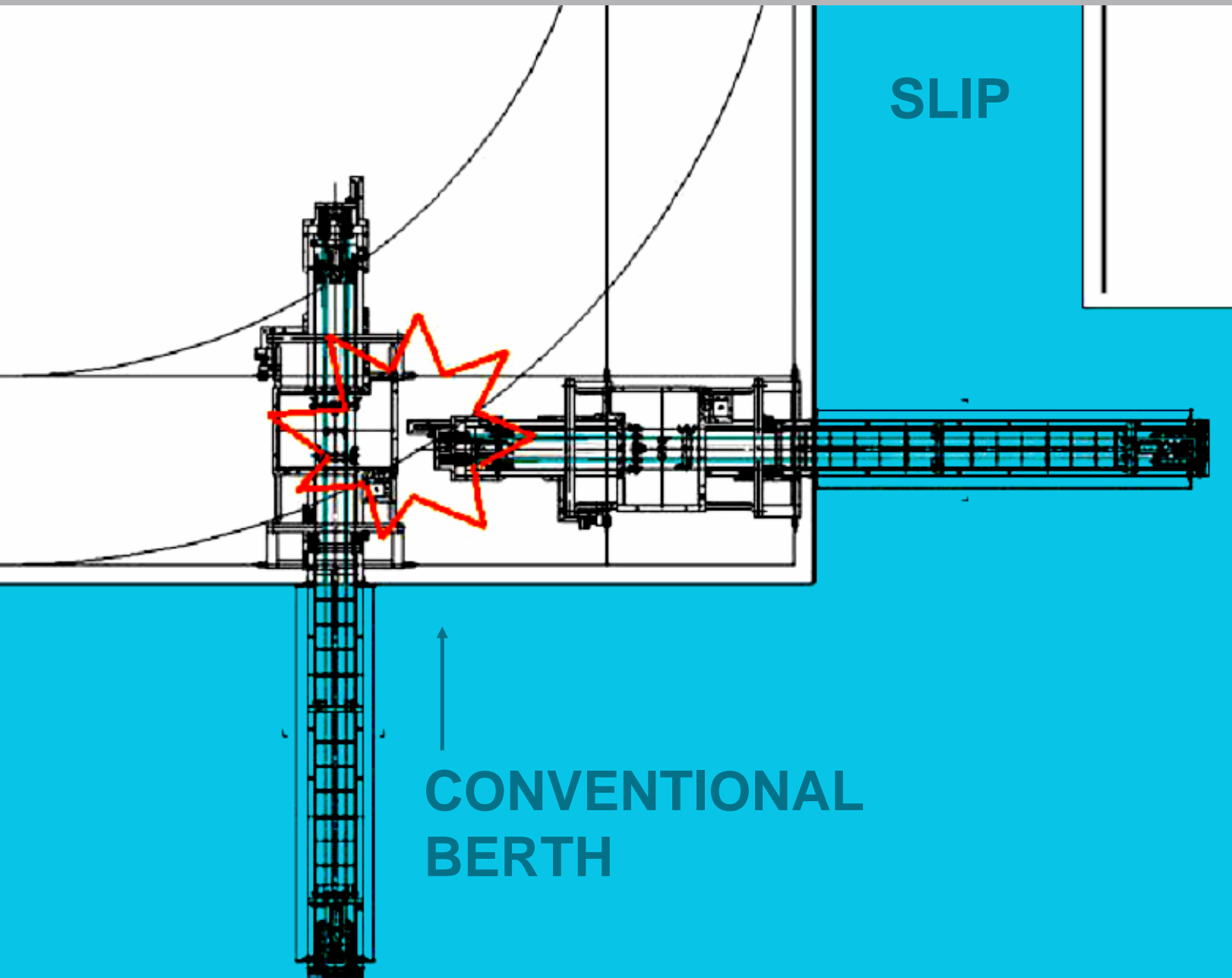
Collision Protection – Cranes



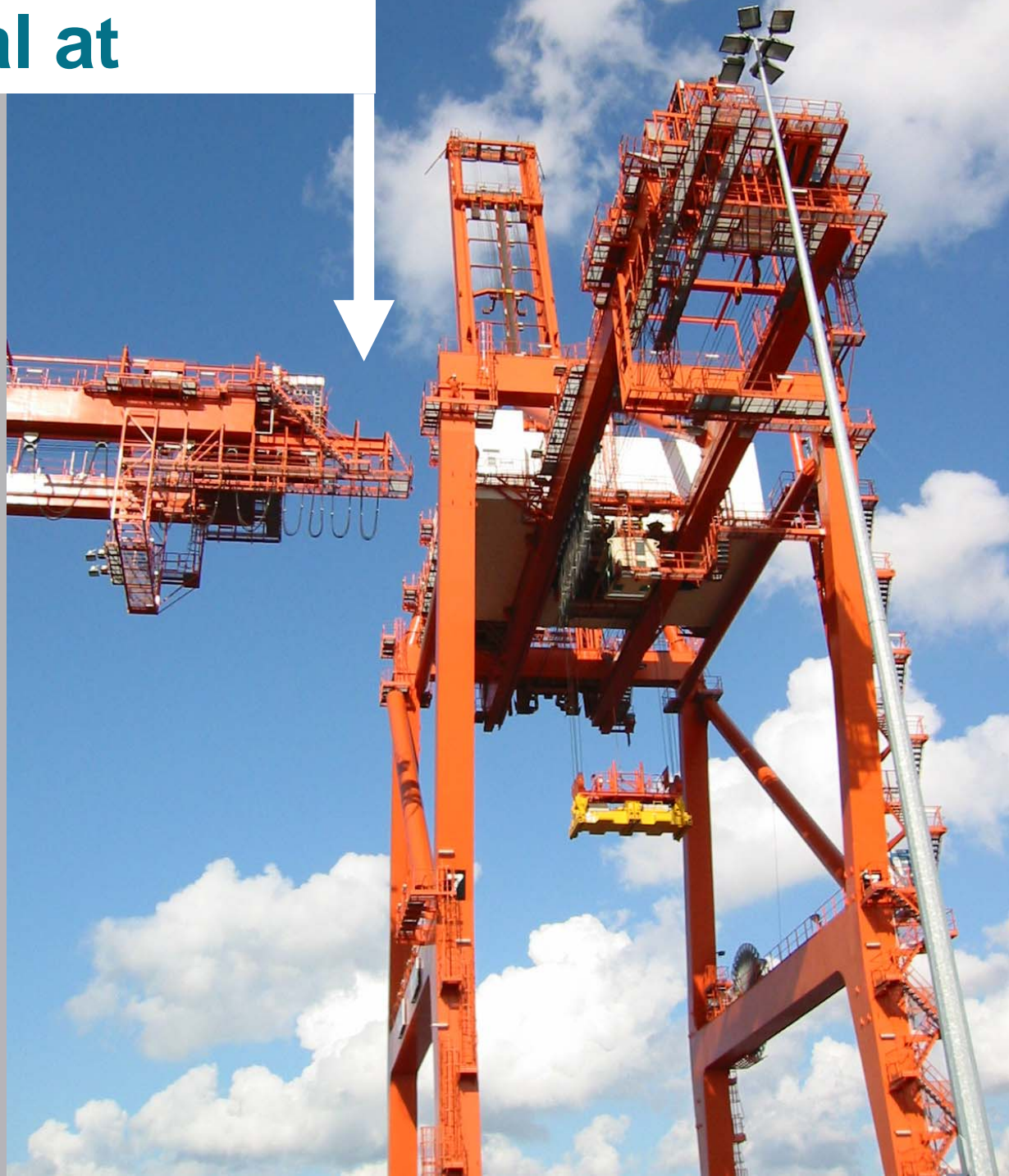
Collision Potential – Booms



Collision Potential at Corner



Collision Potential at Corner



Collision Avoidance Methods

- Central Computer
- On Board Scanners
- Corner Switches
- Operator

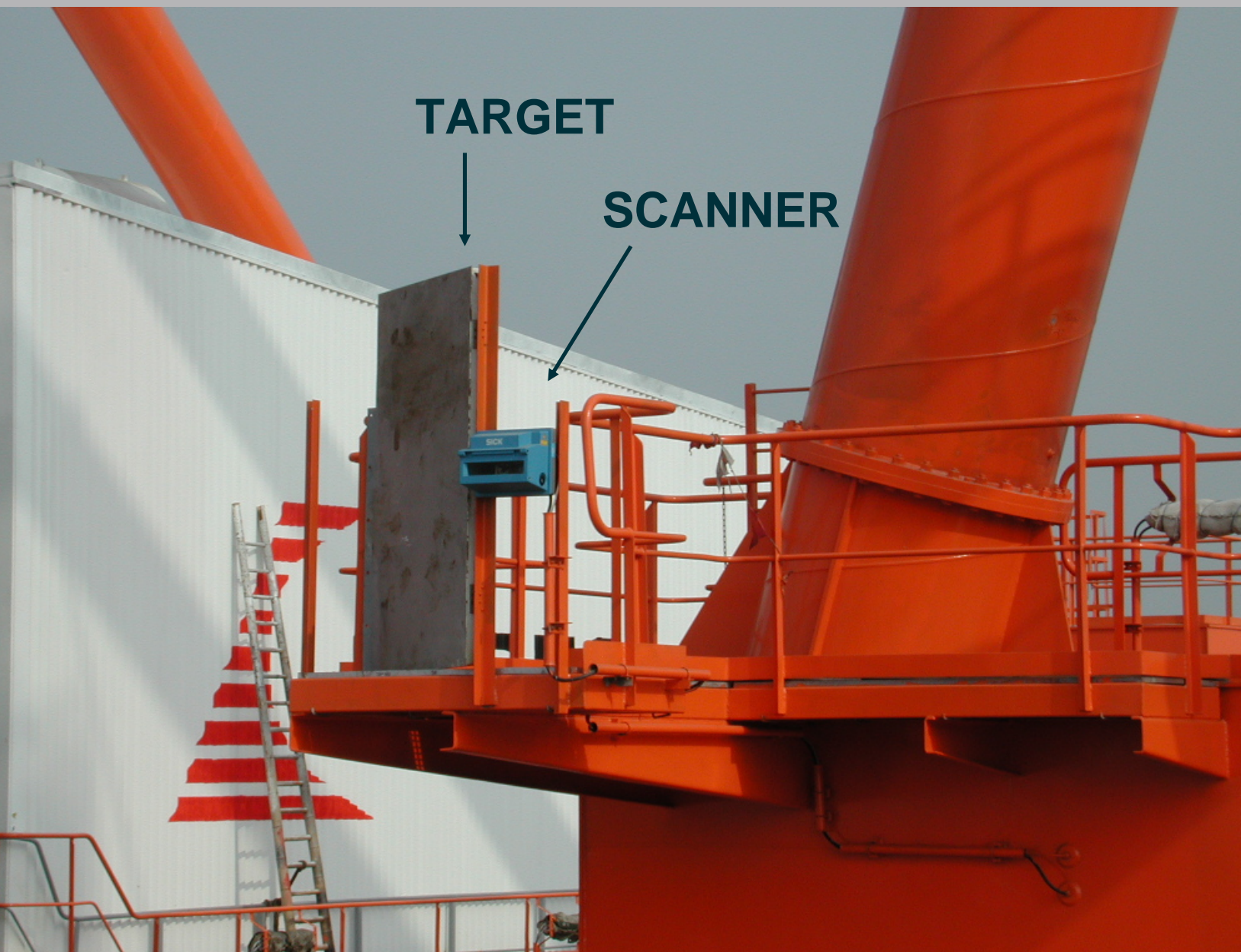


**TARGET
SCANNER**

TARGET

TARGET

SCANNER



Noise Level Requirements

Terminal
away

50 dBA 488 m

Dockside Crane 100 dBA Source
Power



Terminal Progress



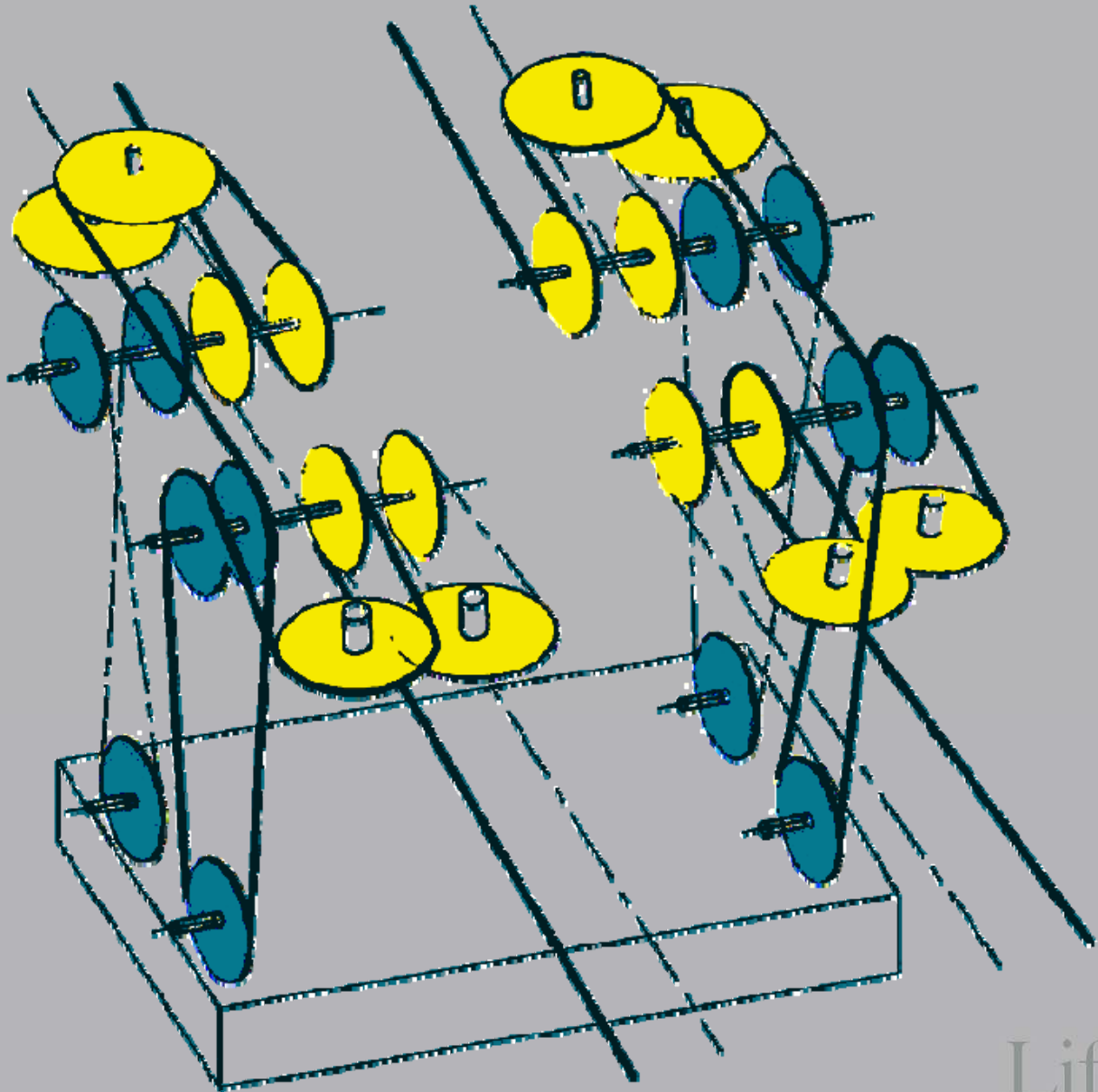




Thank You



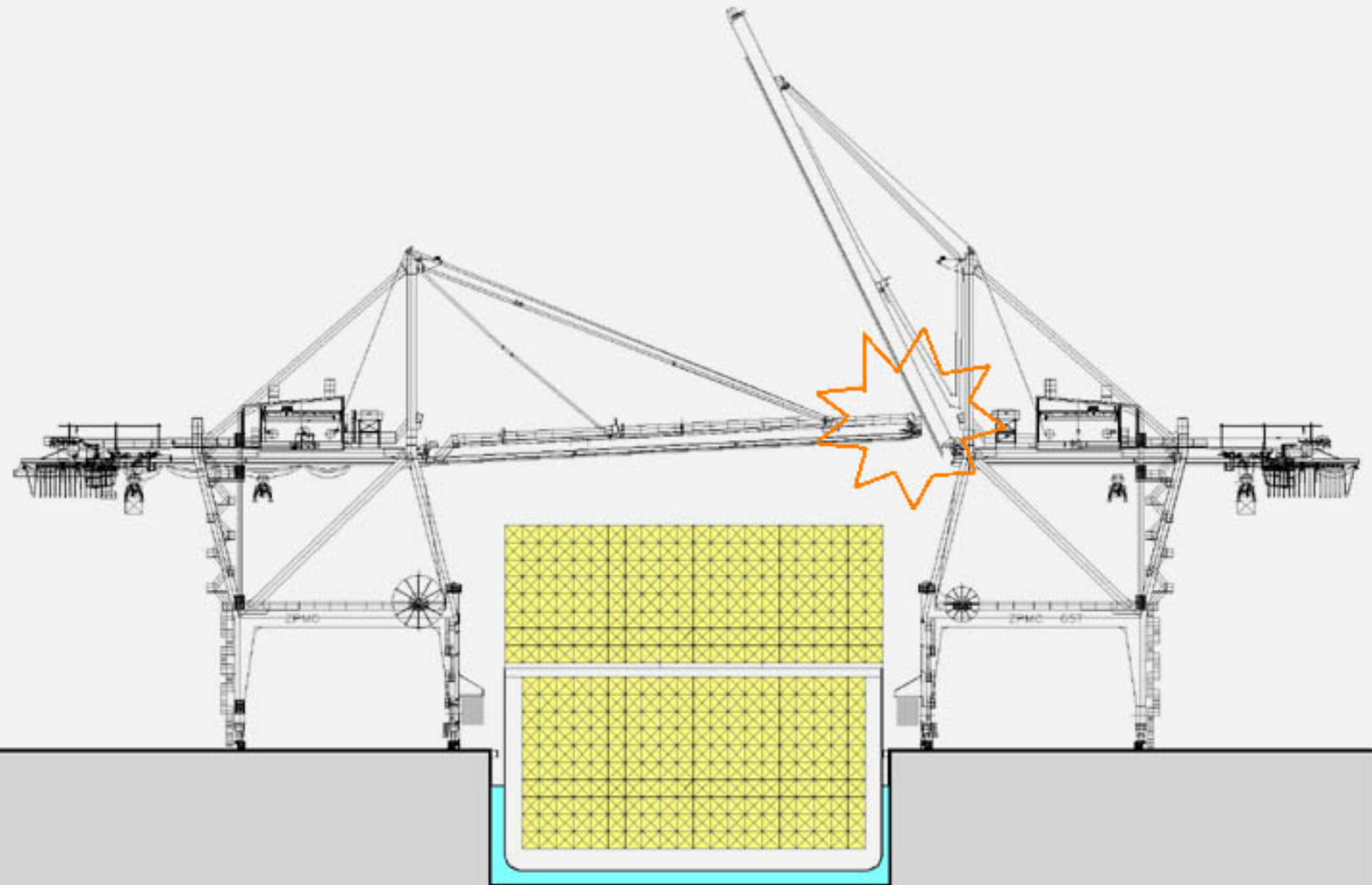
Main Hoist Rope Switch Over



Capacity & Speeds

Rated Load	65 t under spreader 100 t under cargo beam
Main Hoist Speed With Rated Load Empty Spreader	230 feet/min 590 feet/min
Trolley Speed	820 feet/min

Collision Potential - Booms

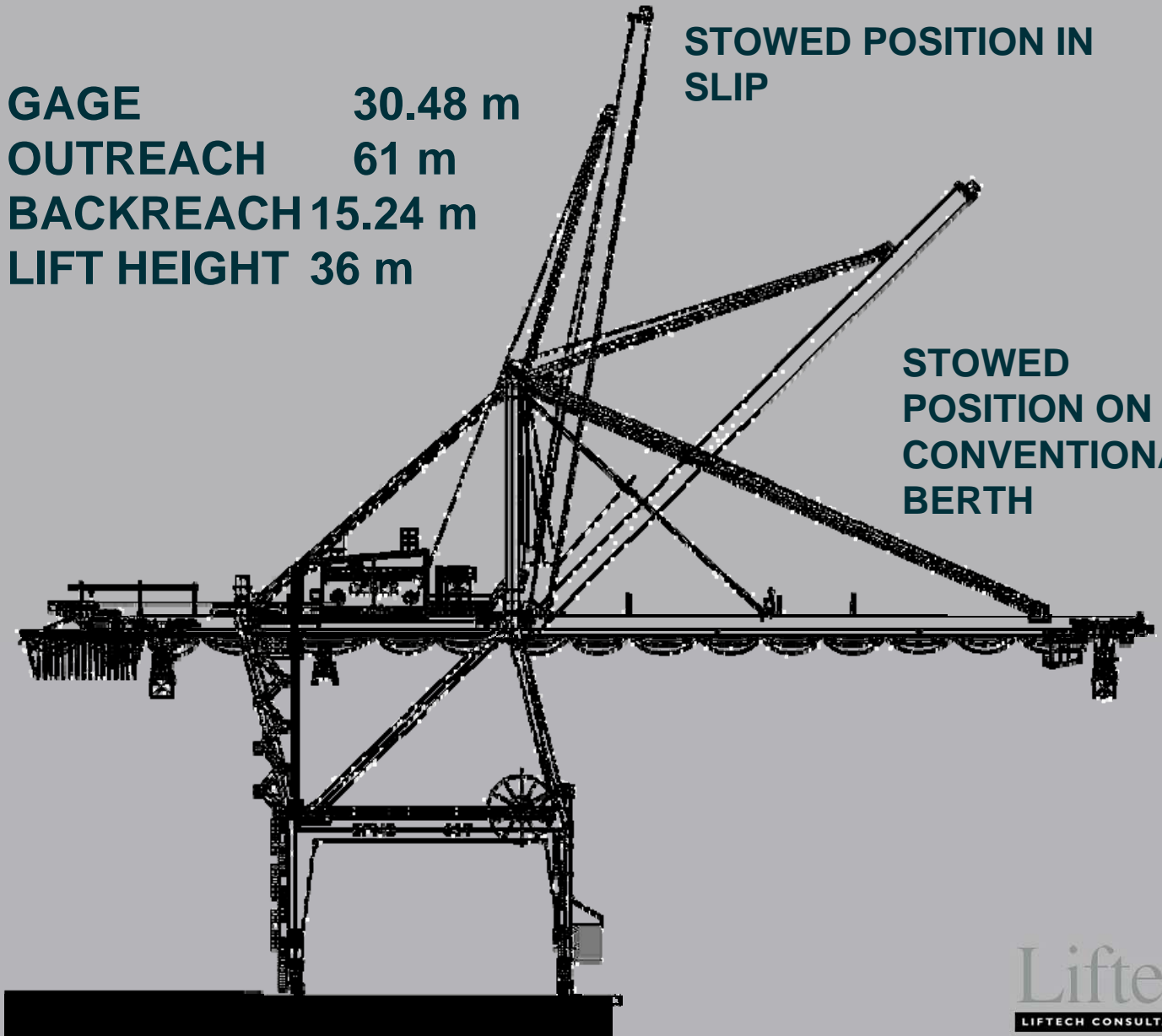


Crane Geometry

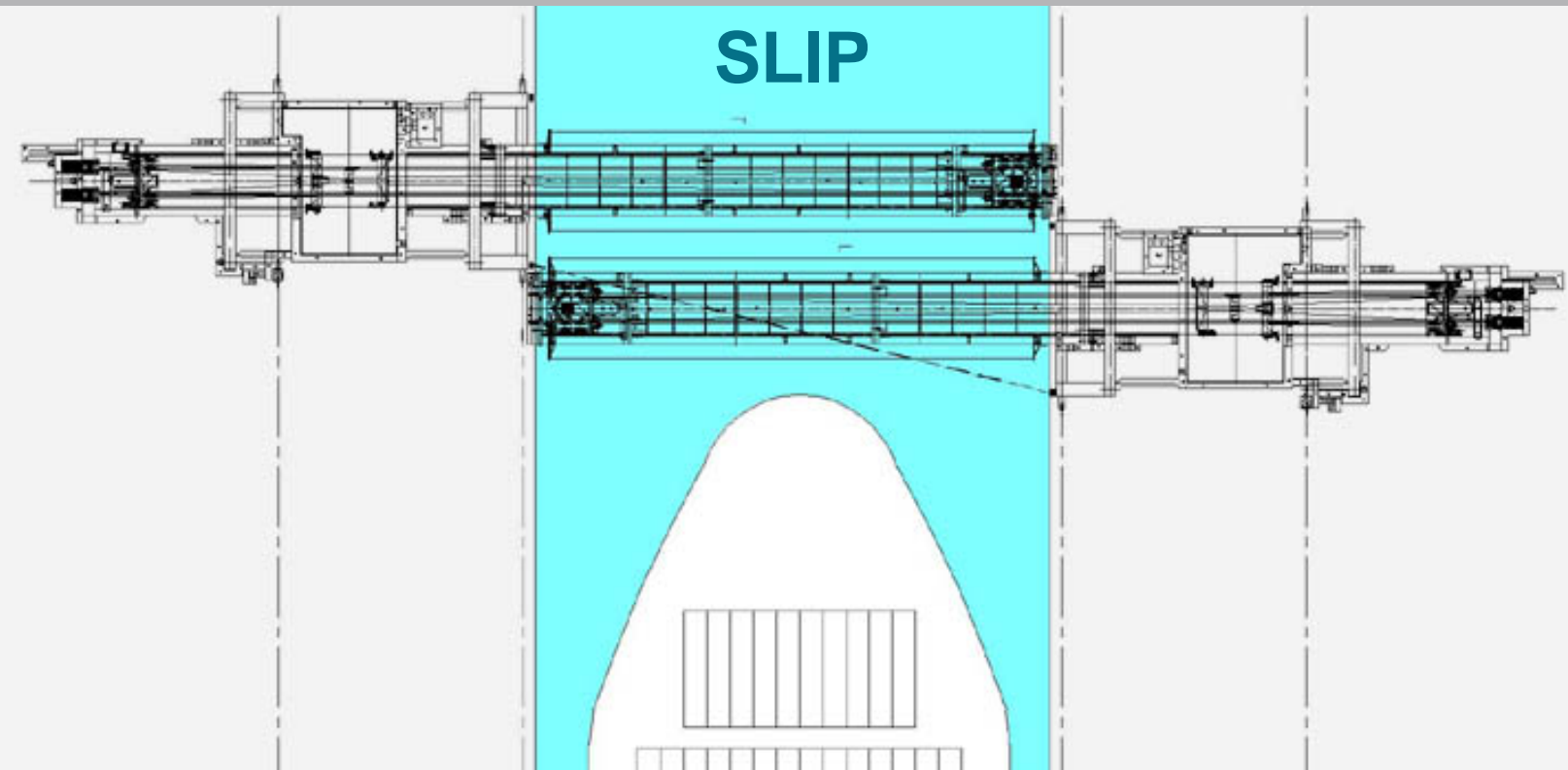
GAGE 30.48 m
OUTREACH 61 m
BACKREACH 15.24 m
LIFT HEIGHT 36 m

**STOWED POSITION IN
SLIP**

**STOWED
POSITION ON
CONVENTIONAL
BERTH**



Collision Protection





On to Amsterdam







Weight and Wheel Loads

Crane Weight	1,352 t
Trolley, HB, Spreader	48 t
Total Weight	1,400 t

Factored Wheel Loads (ACI), t		
	LS	WS
Operating	78	130
Stowed	90	98

8 Wheels per corner

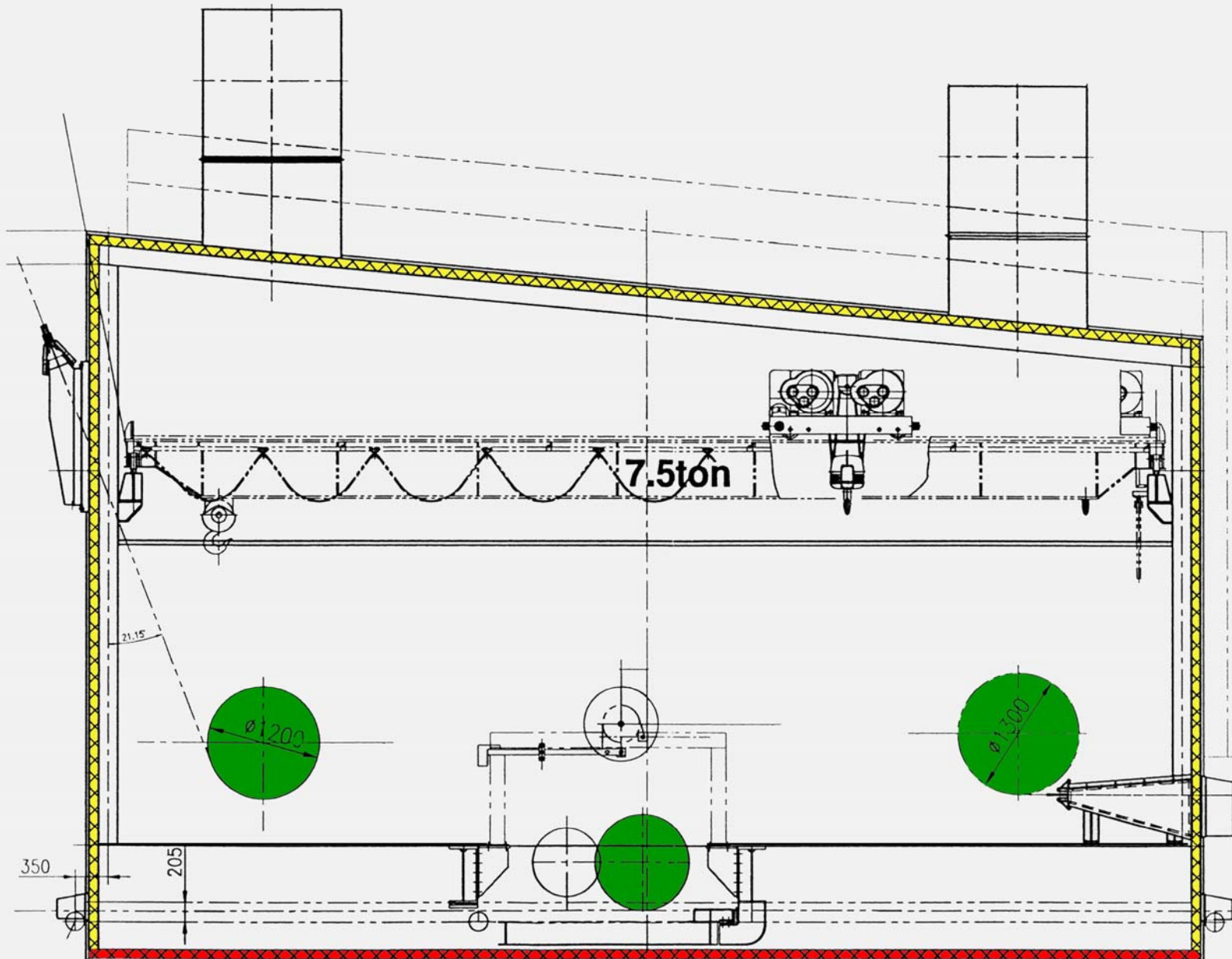
**Boom
Position
Target
Up**



Noise Abatement Strategy

- Insulated Machinery House
- 8 Wheel Cushioned Trolley
- Smooth Trolley Rail Joint
- Trolley Wheel Dry Lubrication
- Merford Cab; 72 dBA
- Festoon Trolley; 78 dBA

Machinery House



Rail Joint at Boom Hinge

**RAIL
JOINT**



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Crane Noise Sources and Levels

Source	Noise Level (dBA)	
	Typical	Ceres
Machinery House	110	95
Running Trolley	110	95
Total Per Crane	113	98

Limit per Crane - 100

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