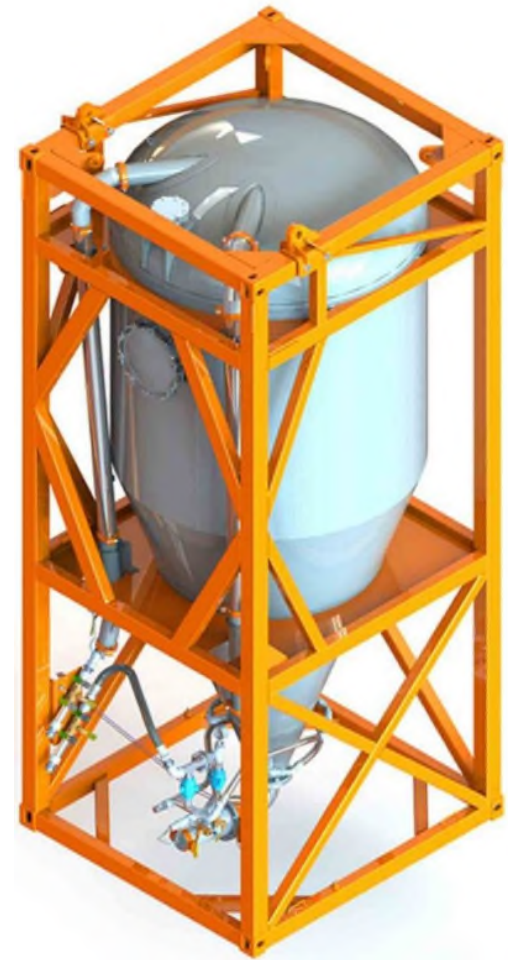


Managing Excess Dry Bulk. An Australian First

Craig Halvorson
SLB Project Engineer
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Challenge

SLB provided a safe solution to discharging of excess bulk barite at the end of a campaign, helping facilitate transport back to land.

Unfortunately, due to the high pressures the PSV's transfer these bulk products at, historically we have not been able to accept the bulk products back.

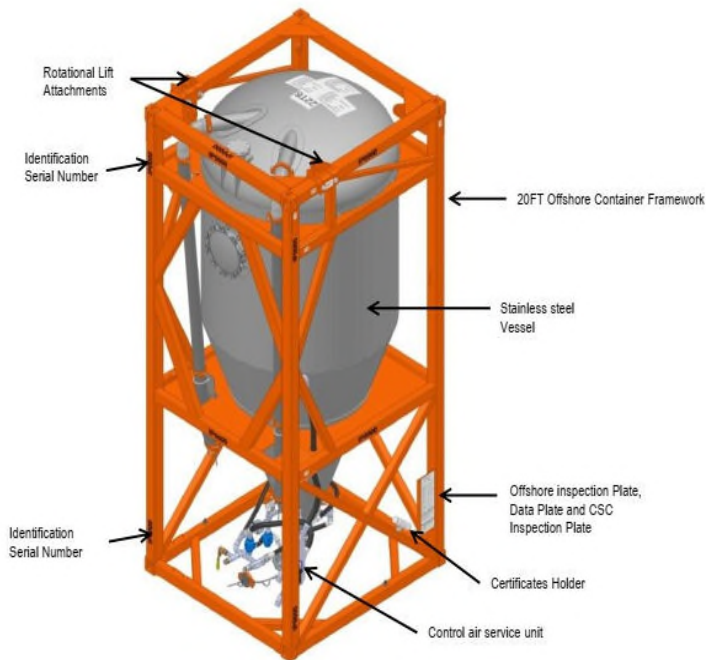
- Road tankers used to transport product have a limit of ~24PSI
- PSV's transfer the product back with pressure in excess of 60PSI.

Solution

Utilising an existing technology designed for storing and transporting drill cuttings using pressurised air, we have customised the equipment to be able to accept bulk powders from the vessels at high pressure and transfer safely at lower pressure to road tankers for disposal or re-use.



ISO Pumps



The ISO-Pump is a 13.5 m³ (90 bbl) working volume tank which provides bulk storage.

Designed to convey drill cuttings, variable particle size distribution and variable moisture content.

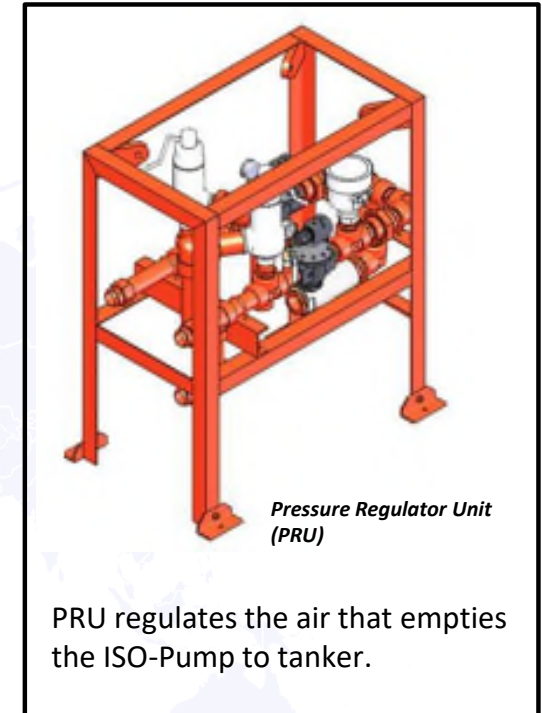
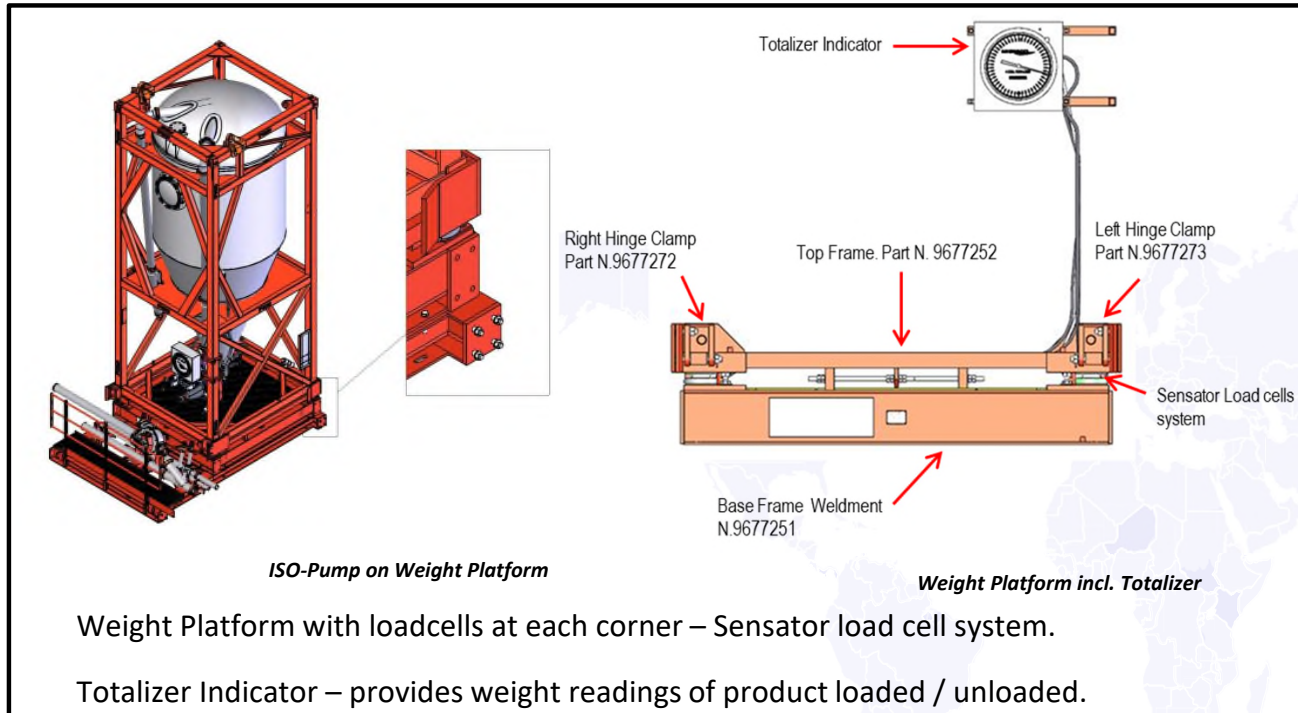
With low moisture and a close and consistent PSD and low moisture content, barite is much easier to convey at lower pressures.

Once situated, the ISO-Pump can be filled via the PSV bulk tanks and compressor and discharged to road tankers using compressed air provided by a portable compressor.



Iso Pumps – Additional Equipment

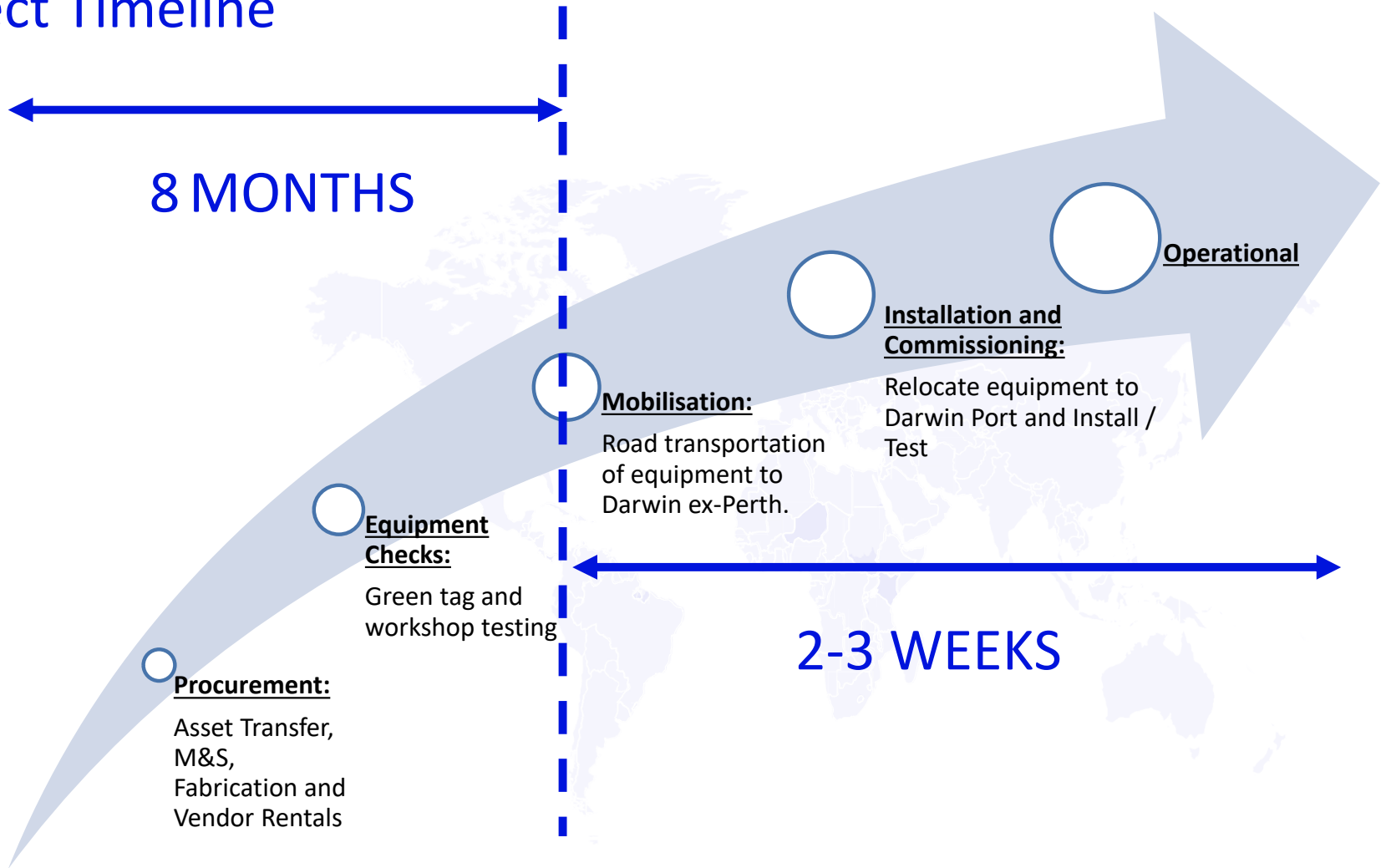
OS



Additional equipment not depicted: Trailer mounted air dryer / compressor for transfer of product to road bulk tankers. Vent line with dust collector / suppression. Hoses and connections.



Project Timeline



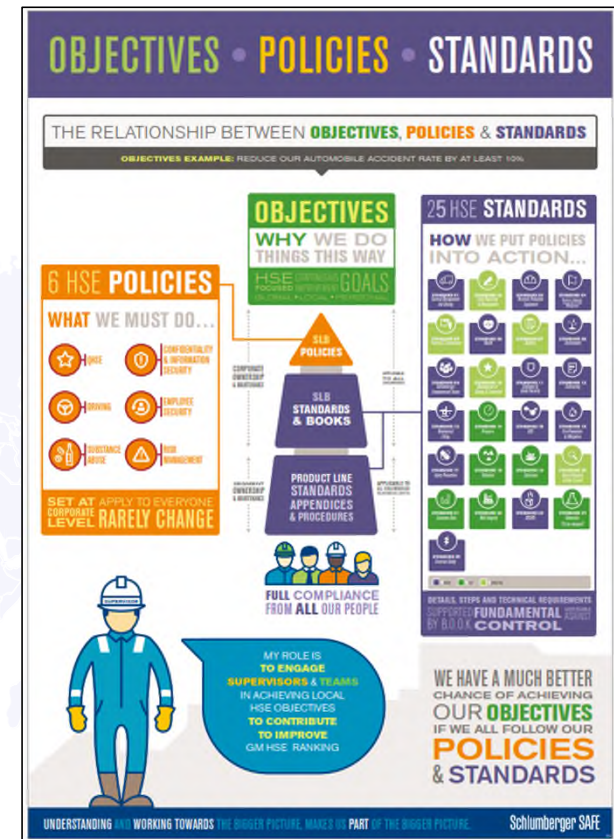
Process Safety

To ensure an operation that effectively managed personnel safety and potential environmental damage, several procedural and equipment controls were put in place prior to the start of the operation. These included:

- HARC (Hazard and Risk Control)
- Operation and Commissioning Procedures
- Permit to Work (ASCO Managed)
- PMITP Compliance
- WorkSafe Compliance and Registration
- Regulatory Certification
- Third Party Inspection and Verification
- Mechanical Safety Devices (PRV, Whip checks, Rated Hoses)
- Dust Suppression and Collection
- Venting Capabilities (Vessel, ISO and Tankers)



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Key Project Interfaces



- Provision of Assets
- Project Management
- Contractor Management
- Procurement
- TLM
- QHSE and SQ Controls



- Client
- Environmental Compliance
- Project Oversight



- Port Management
- Permit to Work
- Vessel Liaison
- Stevedore Liaison
- East Arm Security and Access



- Port Ownership
- QHSE Oversight
- Port Access and Inductions



- Road Tanker Supply
- Product Transportation
- Product Transfer and Disposal



- Vessel Ownership
- Product Transportation from Offshore
- Product Transfer to ISO



- Stevedoring
- Lifting and Forklift Operations



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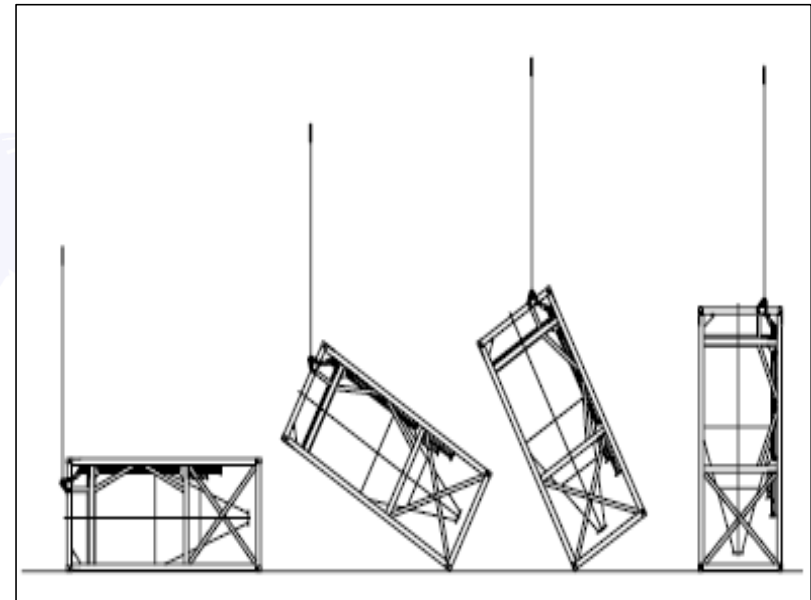
- Quality Inspections
- Certification Verification
- Testing and Commissioning Witness



ISO Pump Transportation and Uprighting



- ISO-Pump suitable for road and rail transport.
- To prevent the possibility of material (debris) escaping, the ISO-Pump inlets and outlets blanked off during transportation.



- Once at location ISO-Pump lifted off trailer and positioned using a crane.
- Weigh platform will be incorporated.



ISO-Bulk – Darwin Port Operation



ISO-Bulk – Darwin Port Operation



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ISO-Bulk – Darwin Port Operation



ISO-Bulk – Darwin Port Operation



ISO-Bulk – Darwin Port Operation



ISO-Bulk – Darwin Port Operation



ISO-Bulk – Final Clean-Up



ISO-Bulk – Transport to Dampier



ISO-Bulk – Darwin Port Wrap-Up

The operation at East Arm Wharf was considered a successful one and fulfilled all objectives and was completed within the agreed timeline.

In just 11 hours we successfully unloaded 212 MT from the vessel and transferred all product within the ISO pumps to the bulk trailers. The entire operation was completed smoothly with zero incidents and no environmental issues.

We also received very positive feedback from the port operator, ASCO, on the way we communicated and executed the project and also from the client's management and logistics on our professionalism and efficiency.



Fate of Returned Dry Bulk Options

Return to vendor silos:

=> Pass QAQC

=> use for ongoing operations

=> no ongoing operations at location then rebag for redistribution

=> Fail QAQC

=> low tech consumption in ongoing operations

=> not suitable for use then dispose. May require rebagging first.



Questions?



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