



DEVA PRESERVATION SERVICES PTE. LTD.

Unit 04-40, 7 Soon Lee Street, Singapore 627608

Tel: +65-6665-0320 / 0830, +65-6493-2406/2407/2408/2409

Website: www.preservemetals.com CRN & GST No.: 201310446G

QTN-014-18-HTN

For **Maersk**

(Aker Riser Preservation)

M H Wirth

Mobile, AL

USA

07th May 2018

Attn: Mr. Victor Leon, General Manager- M.H Wirth

Preservation of Aker Riser Joints at M.H Wirth

Dear Mr. Victor Leon,

With reference to your requirement and discussion for 158 no.'s of Risers, we are pleased to offer our Technical & Commercial proposal for the preservation of Aker's Riser Joints, as follows:

1.0 Objective:

- To ensure that all bare metal surfaces both internal and external are protected during the stored period without any loss due to corrosion.
- To ensure that cost effective techniques are applied to ensure that cost of preservation is always lower than the cost of non-preservation.
- To provide on-going monitoring such as to ensure that the internal protection remains guaranteed for the desired period of storage.

2.0 Scope:

- Studying and recommending the cost-effective method of preserving the 75" Riser joints using Advanced & rapid VCI technology.
- Supplying preservation procedure, materials and documentation.
- Providing preservation engineers, for the supervisory and training purpose.
- Implementing a low-cost preservation system that would preserve the valuable internal pipes for many years until the Advanced & rapid VCI is mechanically removed.
- The detailed Scope of work and work plan will be provided on awarding the preservation work.



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- Optional: The Hydroblasting for cleaning and rust removal is provided as an optional item, if required after inspection of the internals of the riser joints.

3.0 Technical Proposal

3.1 Guidelines for preservation:

- Application guideline will be based on Outdoor storage and for internal and external protection.
- Low cost of preservation.
- Focus is on ensuring the integrity of the riser joint increasing the ready availability and reliability, and hence extending the riser's life.

3.2 Philosophies of Preservation:

- Implementing an environmental friendly, biodegradable and non-toxic preservation management system to ensure HSE compliance of high order.
- Advanced & rapid VCI based preservation solutions will be used considering their positive demonstration of results and assurance of preservation. The conventional methods demonstrate mainly the actions – not the results, especially in inaccessible locations. VCI solutions also provide durability and cost effectiveness.
- Corrosion coupons can be used to monitor and ensure the effectiveness of corrosion prevention.
- The Preservation Procedures will be issued- internal and external, for Client's approval as required.

3.3 Preservation recommendations:

- **The VCI vapor is non-hazardous and non-toxic, the access to the areas are maintained at all times, as required.** Such VCI hibernation **enables the intermittent monitoring**, if required, **without disrupting the preservation.**
- **Equipment's are preserved in existing conditions, as such, without dismantling into parts, this allows close to zero reactivation time.**
- Non-oil systems', Piping and connected Equipment internals are to be preserved using Dev VCI W-Shield 25. The leakage protection will be achieved using seals with contour end covers, reinforced with corrugated polymer sheets or suitable anti-UV materials.
- External preservation will be carried out using Dev VCI O-Shield 80.
- For cleaning of metal surface, use of degreasers such Dev VCI OD53 for heavy grease or Dev VCI WD20 for milder cleaning is advised.
- The ends are sealed off using Dev VCI UV-resistant shrink film. This will ensure at high windspeed it will stay fused and hold on to the metal.



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3.4 Detailed Technical Proposal:

The following table is to provide the recommendation for the specific areas of the riser for preservation, based on Advanced & rapid VCI preservation process.

S.No	Recommended Advanced VCI Solution	Preservation Classification	Unit Application	Applicable Areas and Systems
1	Dev VCI W-Shield 25	Internal Preservation (non-oil based systems)	0.3Litre/m ³	Internal of the main Riser tube, choke / kill, Booster lines, Hydraulic lines.
2	Dev VCI O-Shield 80	Outdoor (UV resistant); External Preservation	8m ² /Litre	Bare metal areas of the end flanges and sealing locations.
3	Dev VCI OD53	Oil- based degreaser	As required	Used to degrease external surface prior to preservation.
4	Dev VCI WD20	Water-based degreaser	As required	Used to degrease both internal and external. Can be used with hydrojet washing.
5	Dev Rust Remover	Complementary: Rust Removal	(Based on corrosion)	If rust is seen externally on the flange sealing areas, where rust removal is used to remove it.
6	Dev VCI W-Shield+	Rust Removal Neutralizer	(Based on corrosion)	Used to neutralize the rust remover has been applied.

4.0 Commercial Proposal

4.1 Preservation Cost

4.1.1 Preservation Material Cost

Sr. No	Product	Unit	Unit Price- EXW USD	Package Availability	Estimated Quantity	Total Price EXW USD
1.	Dev VCI W-Shield 25 Concentrate – Internal Preservation of non- oil equipment	Litre (L)	68.52	20L/ 200L	320	21,926.40
2.	Dev VCI O-Shield 80 – External preservation of ferrous, non-ferrous parts – outdoor	Litre (L)	20.27	20L/ 200L	100	2,027.00
3.	Dev Rust Remover	Litre (L)	24.36	20L/ 200L	60	1,461.60
4.	Dev VCI W-Shield+ - Neutralizer and temporary protection against flash rust.	Litre (L)	33.40	20L/ 200L	40	1,336.00
5.	Corrosion Monitoring Coupons	Unit	15.00	per unit	30	450.00
8.	Miscellaneous – 3M tapes, sealants, etc			-		1500.00
Estimated Material Cost for 200#’s of Aker Riser Preservation					USD 28,701.00	



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4.1.2 Preservation Manpower Cost

	Day rate for preservation crew of 1 engineer	USD 1,500.00/day
	Estimated no. of days for the preservation works	2 days
	Estimated Manpower Cost for 158#s of Aker Riser Preservation	USD 3000.00

ESTIMATED TOTAL COST OF PRESERVATION of 158#s of Aker Risers USD 31,701.00

On-going Monitoring every 6-monthly	USD 3000.00
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5.0 Payment Terms

1. Validity of the Quote:

- 30-day period.

2. Materials:

- Delivery Terms – Ex-works.
- Shipment, import and Transport services as required, will be arranged by Merton Riser. If required to be done by Deva PS will be charged at cost+ 10% and an invoice will be issued on DDP terms.

3. Manpower:

- Monthly billing based on Client approved timesheets.
- Mob-demob costs to be will be charged at cost+ 10%.

4. Equipment & Facilities:

- Onshore facilities like crane, power, water, compressed air, etc. are to be provided by the client.
- Craneage to assist offloading and transport of all equipment & materials and necessary assistance during preservation to be provided by the client.
- Scaffolding access/cherry picker/ work basket to be provided by client when risers have to be preserved in stacking condition.
- Safe and secure access to work locations, are to be provided by the client.

5. Payment:

- For Materials, 50% on order confirmation and 50% on shipment.
- For Manpower, based on client approved timesheet after completion of work as per day rate stated in the quote.
- For Monitoring, as per agreed by client on completion of monitoring works.
- All payments shall be made within 30days from date of invoice.

6. Coverage: The above prices cover only those items specified.



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- 7. Warranty:** The preservation works will be warranted for 1-3 years, with a 6- monthly inspection and reporting done.

Related technical datasheets and MSDS for your information has been attached.

We thank you for the opportunity given to protect and preserve the life of your assets and are looking forward to commencing the services to you.

Thanking You,

Yours Sincerely,

Christina Arambur

For Deva Preservation Services Pte. Ltd.

Ms. Christina Arambur

Senior Sales & Proposals Engineer

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Corrosion Never Sleeps Except with V-Active VCI.