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**TENDER DOCUMENT NO.IGL/ETZ/CP/CP18759**  
**Mitigation of AC interference and prevention against AC-induced corrosion on steel pipeline**

**REPLY TO PREBID QUERIES**

| S.NO | Section       | Page No. | Tender Clause | Description   | Bidder Query   | IGL Reply   |
|------|---------------|----------|---------------|---|--|---|
| 1    | Scope of Work | 66       | 5.0           | <p>Supply, Installation, Testing and Commissioning of Solid State Decoupler (SSD) 5kA. (a) SSD shall be a Solid-State Device as specified in specification / data sheets, designed to simultaneously provide isolation for DC current and low resistance path for AC current. The device shall require minimum maintenance. The solid-state device shall have weatherproof enclosure and shall be suitable for mounting inside a test station with suitable clamps/ hardware. Termination of cable ends, testing and commissioning of Solid State Decoupler including required terminal lugs, clamps and hard wares as per below specifications:</p> <ol style="list-style-type: none"> <li>AC Fault Current/Duration: 5,000 Amperes @ 30 cycles.</li> <li>Impulse (Lightning) Current: 100kA crest (8x20 μs waveform)</li> <li>Blocking Threshold Voltage: -2/+2 V</li> <li>Steady State AC Current: 50Arms (50/60 Hz) @ 20°C ambient, 40A @ 65°C ambient</li> <li>Ambient Operating Temperature: -45°C to +65°C (-49°F to +149°F)</li> <li>Enclosure Environmental Rating: NEMA 4X / IP68</li> <li>Hazardous Location Rating: Zone 2, Group IIC, Increased Safety "ec"</li> </ol> <p>The device shall have the following performance features:</p> <ol style="list-style-type: none"> <li>Maximum DC Leakage Current at Threshold Voltage Limits: 10mA @ 20°C, 100mA @ 65°C</li> <li>Electrical Impedance at 50 Hz: &lt; 0.020 ohm</li> <li>Certifications: The device shall be certified by independent testing laboratories to be compliant with ATEX, IECEx and UKEX hazardous location requirements per the following standards and conditions: <ul style="list-style-type: none"> <li>Zone 2, Group IIC, Increased Safety "ec"</li> <li>EN IEC 60079-0: 2018</li> <li>EN IEC 60079-7: 2015+A1:2018</li> <li>IEC 60079-0: 2017</li> <li>IEC 60079-7: 2017</li> </ul> </li> <li>Overvoltage Protection from Impulse (Lightning) Current: 100kA (4x10μs) (8x20μs), 50kA (10x350μs for 5kA rating only)</li> <li>Temperature Range: -45°C to +65°C</li> <li>Enclosure Rating: IP68</li> </ol> <p>Required resources, handling, transportation of materials, consumables, tools &amp; tackles are in the scope of contractor.</p> | <p>Party with over 60+years of manufacturing experience has developed over 100+ Cathodic Protection and Corrosion Monitoring import substitute products under leadership of Late Prof. M.M. Pathan.</p> <p>Party has developed ZSSD@ Solid State Decoupling Device in year 2000 for Earthing of Mounded Storage Bullets in Hazardous Area.<br/> ZSSD@ are rated for 5000A@30 Cycle RMS<br/> ZSSD@ are rated for 100KA@8-20usec waveform however as Govt Test Laboratories CPRI Bangalore India have test facility up to 80KA@8 20usec.<br/> ZSSD@ complies to Blocking Threshold Voltage: -2/+2 V<br/> ZSSD@ complies to Steady State AC Current: 50Arms (50/60 Hz) @ 20°C ambient, 40A @ 65°C ambient<br/> ZSSD@ complies to Ambient Operating Temperature: -45°C to +65°C (-49°F to +149°F)<br/> ZSSD@ thermoplastic enclosure complies to environmental rating of IP68 type tested by TPIA ERDA<br/> ZSSD@ thermoplastic enclosure are installed in Aluminium die cast classified enclosure duly certified by PESO for installation in Hazardous location Rating: Zone 2, Group IIC, Increased Safety "ec"</p> <p>The device shall have the following performance features:<br/> ZSSD@ complies to Maximum DC Leakage Current at Threshold Voltage Limits: 10mA @ 20°C, 100mA @ 65°C<br/> ZSSD@ complies to Electrical Impedance at 50 Hz: &lt; 0.020 ohm<br/> ZSSD@ Enclosure complies to PESO Certifications duly type tested at CPRI Bangalore for installation in hazardous location requirements per the following standards and conditions:<br/> • Ex'd Zone 2, Group IIC<br/> ZSSD@ are rated for 100KA@8-20usec waveform however as Govt Test Laboratories CPRI Bangalore India have test facility up to 80KA@8-20usec.</p> <p>ZSSD@ are type tested for 100KA@4-10usec waveform at Govt Test Laboratories CPRI Bangalore.<br/> ZSSD@ of 5kA rating are rated 50KA 10x350usec Overvoltage Protection from Impulse (Lightning) Current. However, as Govt Test Laboratories CPRI Bangalore India have test facility up to 80KA@8-20usec.<br/> ZSSD@ Enclosure complies to Temperature Range: -45°C to +65°C<br/> ZSSD@ thermoplastic enclosure complies to environmental rating of IP68 type tested by TPIA ERDA<br/> Enclosure Rating: IP68</p> <p>Required resources, handling, transportation of materials, consumables, tools &amp; tackles are in the scope of contractor.</p> | <b>Tender Condition Prevails</b>  |
| 2    | Scope of Work | 68       | 5.3           | <p>Supply, Installation of AC MITIGATOR AWG6</p> <p>Supply, Installation, Testing and Commissioning of Copper AWG6 (AC MITIGATOR) cable termination, end sealing, including Liaisoning with the land owner, transportation, excavation, laying , spreading of backfill material all around 100 mm, watering , back filling of trench and restoration , labour, consumables, tools and tackles as per specifications and as per SOW, SCC &amp; Drawings and as per the directions of EIC.</p> <p>SPECIFICATIONS OF AC MITIGATOR (AWG6) Grounding Assembly: There will be a continuous, flexible multi stranded copper conductor inside the fabric tube with the following properties: i) The primary conductor will be a flexible stranded copper conductor ii) The conductor will meet applicable ASTM and National Electric Code standards. Outer fabric:<br/> Sealed, Porous, non-degrading acid reducing fabric. Low resistance backfills with corrosion inhibitor machine packed inside the fabric housing at manufacturer's factory. An outer heavy duty braiding with colour coding for easy identification of the product.<br/> Internal Copper conductor (continuous Copper cable): Single core, 16sq.mm. (Equivalent to #6AWG) Overall Diameter (With backfill): 35mm +/-3 (min.) Resistance to earth of 150 m. (500-ft.) segment: 0.10hm / 1000 Ohm-cm in soil. Backfill: Low resistance, corrosion-inhibiting backfill. The MITIGATOR utilizes a multi-strand copper cable, encased in low resistance backfill with corrosion M 5000 inhibitors. Required resources, handling, transportation of materials, consumables, backfilling material, tools &amp; tackles are in the scope of contractor.</p>   | <p>Party has developed ZGND@ Longline Continuous Copper Grounding Conductor factory prepaced in acid resistance inorganic fabric with calcined petroleum Coke Backfill with Corrosion Inhibitor in year 2015 for GAIL VSPL AC interference Mitigation Project. ZGND@ was jointly type tested at TPIA laboratory ERDA with GAIL in year 2015~2016 Party has manufactured and supplied over 500kms of ZGND@ with various copper cross sections in past 10 years. AC Mitigator is registered proprietary trademark product of MATCOR USA. We request IGL to remove the proprietary product name of MATCOR or include ZGND@.</p> <p>We recommend IGL to consider all Prepacked Backfill Diameter of 50mm instead of specified Grounding Conductor of 40mm Dia as it will give better grounding resistance performance compared to price per linear meter of continuous grounding anode. We recommend IGL to use chemical backfill of gypsum + bentonite over the prepaced grounding conductor to enhance ground performance. The chemical backfill is cheap in price and 10kgs / linear meter can enhance the ground performance by retaining moisture around the Grounding Conductor.</p>   | <p>IGL has reviewed &amp; increase the acceptable makes for AC MITIGATOR AWG6 as:</p> <p>MATCOR Inc, USA/Seal For Life Industries/The Platt Brothers and Company, USA</p> |



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| 3    | Make of Item/material | 70       | 5.4           | Solid State Decoupler (SSD) 5kA - Dairyland Electrical Industries, USA  | <p>Tender specifies makes for Solid State Decoupler (SSD) 5kA single bidders from USA based companies. We request IGL to add experienced indigenous MSME manufacturers of Solid State Decoupler (SSD) / Polarization Cell / AC Decoupling Devices like M/s Party, India &amp; M/s Party.</p> <p>All products manufactured by indigenous manufacturers are type tested at leading Govt approved laboratories under TPIA supervision. Company profile, Track Record, Type Test Report under TPIA inspection carried out at Govt Laboratories / NABL Certified Laboratories for your kind consideration.</p> | <p>IGL has reviewed &amp; increase the acceptable makes for Solid State Decoupler (SSD) 5kA as:</p> <p>Dairyland Electrical Industries USA/<br/>Dehn/<br/>Rustrol USA</p> <p>Bidder has to submit the requisite documents as per tender clause no. 5.1(e,f &amp; g) under Scope of Work (SOW) at the time of bid submission for evaluation purpose</p> |
| 4    | Make of Item/material | 70       | 5.4           | Zinc (Zn) Grounding Electrode (20kg) - Scientific metal / Sakti Anode / Sargam Metal /Titanor / Platt Bros. and Company,USA | <p>We request IGL to add experienced indigenous MSME manufacturers of Sacrificial Anode like Party, India &amp; Party. All products manufactured by indigenous manufacturers are type tested at leading Govt approved laboratories under TPIA supervision. Company profile, Track Record, Type Test Report under TPIA inspection carried out at Govt Laboratories / NABL Certified Laboratories for your kind consideration.</p> <p>Platt Brothers USA and Titanor – Denora does not manufacture zinc grounding electrodes.</p>   | <b>Tender Condition Prevails</b>   |
| 5    | Make of Item/material | 70       | 5.4           | AC MITIGATOR AWG6 MATCOR Inc, USA/Seal for Life Industries  | <p>Tender specifies makes for AC MITIGATOR only two bidders from USA based companies We request IGL to add experienced indigenous MSME manufacturers of Longline Continuous Copper Grounding Conductor factory prepacked like M/s Party &amp; M/s Party. All products manufactured by indigenous manufacturers are type tested at leading Govt approved laboratories under TPIA supervision. Company profile, Track Record, Type Test Report under TPIA inspection carried out at Govt Laboratories / NABL Certified Laboratories for your kind consideration.</p>  | <p>IGL has reviewed &amp; increase the acceptable makes for AC MITIGATOR AWG6 as:</p> <p>MATCOR Inc, USA/Seal For Life Industries/The Platt Brothers and Company, USA</p>  |
| 6    | Make of Item/material | 70       | 5.4           | KEI / Polycab / Netco / Torrent   | <p>We request IGL to add more indigenous cable manufacturers like Suyog Cables Pvt Ltd, Ravin Cables, Macrotherm Cables, Finolex Cables.</p>  | <p>IGL has reviewed &amp; increase the acceptable makes as:</p> <p>KEI/Polycab/Netco/Torrent/NICCO/Universal Cables/Asian Cables (RPG Cables)/Finolex cables/Radian Cables</p>   |