

SECTION V

TECHNICAL SPECIFICATIONS

NOTE: The evaluation and award of the tender will be based on the lowest evaluated compliant tenderer in each respective schedule.

1) SCHEDULE 1: DATA LOGGERS Technical

Specifications for Data Loggers

The Data Loggers will be used to monitor pressure, brine flows in both discharging wells & those in production and differential pressures in connected wells via orifice plates. These measurements will be done remotely and data relayed to a central data center. The Data Loggers will comprise of various components which should have the following specifications;

	Description	Specifications
1	Data Logger	<ul style="list-style-type: none">• Configuring the metering utilities via HART protocol• Periodically querying the utilities to perform write operations on the attached memory device• Interface hart protocol with TCP/IP to enable effective transmission of data from the remotely located metering utilities to the central office.• Wireless HART protocol enabled• 4.3-inch color, graphical touch panel• Graphical programming PC software• Intuitive screen layout and menu navigation• Channels, alarms, inputs and outputs must all be tailored to application with user-defined names.• Must comply with regulatory standards with ability to choose encrypted, .CSV or both types of file formats for tamperproof record needs.• Must be able to lock-out security levels for different user groups.• Must be able to simplify record keeping management with ability to archive records to the cloud or a connected PC network.• Must have flexibility to pick which parameters to log from.• Must have ability to log from 1 up to 128 data logging points simultaneously.• Must have the flexibility to choose where you want to store the files - inside the controller, on a connected USB memory device or to a connected PC anywhere in the world.• Must have the recording rate options range from as fast as

		<p>100 milliseconds or once per hour.</p> <ul style="list-style-type: none"> • Immunity to electrical noise
2	Differential pressure transmitter	<ul style="list-style-type: none"> • 10-28v Dc input • IP 66 outer protection • Differential pressure of up to 2000 psi • In-line pressure range from 0 psi to 10,000 psi • Flow in line size from 0.5” to 96” • Can log d/p, upstream and downstream pressures. • Should log equivalent of differential pressure in inches of mercury • 4-20 mA wireless HART protocol enabled • To be of sufficient quality to withstand extreme environmental conditions of the geothermal fluid that is highly corrosive, high temperatures, continuous vibrations and H2S and CO2 dominated environment.
3	Ultrasonic flow meter	<ul style="list-style-type: none"> • 10-24Vdc/240 v ac input • Can perform measurement up to 150 degrees Celsius • 4 -20 mA HART protocol • Rate and total backlit display • Offline logging capabilities • 0.5 to 300in (12.7mm to 7.6m) outside diameter and larger pipe sizes • Up to 3in (76.2mm) pipe wall thickness • Clamp-On flow accuracy (velocity) • ±1 to 2% of reading for pipe ID > 6in (150mm) • ±2 to 5% of reading for pipe ID < 6in (150mm) • ±0.5% of reading achievable with process calibration • ±0.1 to 0.3% of reading repeatability • IP 66 protection
4	Pressure transmitter	<ul style="list-style-type: none"> • 4-20 mA wireless HART protocol enabled • Requires 10 to 24 v DC power • Pressure range must be from 0 psi to 6000 psi • Must be IP66 protection to cater for the highly corrosive environment • Must withstand temperatures above 250 °C
5	Level sensor	<ul style="list-style-type: none"> • 4-20 mA wireless HART protocol enabled • Require 10V to 24V Dc power • Should have a measuring range of 0 to 15 meters • Should have a plastic horn antenna that send radio waves to the medium being monitored which subsequently bounces

		<p>back to the antenna to give the desired parameter under measurement.</p> <ul style="list-style-type: none">• Must be IP68 protection to cater for the corrosive nature of the environment.• Process temperature must be above 250 °C• Accuracy must be ± 5 mm
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NOTE:

- Manufacturer's Authorization MUST be provided
 - Brand or country of origin MUST be indicated
 - Bidders MUST attach a catalogue of the Data Loggers they intend to supply. Highlight the relevant information that meets our specifications.
 - The winning bidder MUST supply the brand that is highlighted in the submitted catalogue failure to which will lead to rejection during inspection of the delivery.
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SECTION VI

SCHEDULE OF REQUIREMENTS

Number	Description	Quantity	Delivery schedule (shipment) Weeks/months
1	Data Logger	3	
2	Pressure Transmitter	9	
3	Differential Pressure Transmitter	3	
4	Level Sensor	6	
5	Ultrasonic flow meter	2	