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Date: **June 1st, 2021**
Project: **MCWC EROS Valve SCADA Package with instrumentation**

Estimator: Chris Cote, Sales engineer

TERMS:

1. Does not include bonding. Proposal will be good for 60 days.
2. Equipment supplied does not include anchor bolts, fasteners, supports, antenna towers, or masts unless specifically listed in this quotation.
3. This control system provides PILOT DUTY signals to control panels and devices by others. Primary devices, i.e. motor starters, circuit breakers, control valves, and flow meters are not included unless specifically listed in this quotation
4. **This proposal DOES NOT include installation of equipment by Micro-Comm, Inc.**
5. Equipment will ship 30 days from receipt of approved drawing submittals.

Material and Labor Specification Information .

(1) EROS Control Valve panel with Instrumentation (RTU-100)

Micro-Comm to supply Fiberglass RTU Panel fully programmed with M1650 PLC controller and expansion I/O. Includes all front panel listed items, fully factory tested UL 508A listed panel. Includes all listed instrumentation as noted proposed
Reuse existing Valve 2 Radio.

Control panel to include:

Qty	Description (Panel Items)	
1	Hoffman A30H2410GQRLP Fiberglass Nema 4X Enclosure	NEMA 4X Enclosure Size: 30"x24"x10"
1	Panel Sub-Panel and PS assembly	
1	UL508 Panel Listing	
1	20amp Circuit Breaker	
1	Duplex Receptacle	
1	EDCO 120VAC line protection TVSS	
1	Mean Well DR-240 120Vac/24Vdc 10amp power supply	
1	M3 Battery Dropout Relay	
1	24 Hour Battery Back-up	
1	MDS TNC to Type-N Patch Cord	
1	MDS data radio interface cable for above	
1	Type-N Coax Lightning Arrestor, & Bracket	

Existing Parts from customer panel relocated to this panel

1	MDS SD-1 173MHz, 5W, 6.25KHz, 4800baud dataradio

Qty	PRIMARY PLC Components
1	M1650 Modular RTU Assembly w/PM & modem
1	Micro-Comm Expansion 8-point Analog Input Card L45
1	Micro-Comm Expansion 4-point Analog Output Card L46
2	Micro-Comm Expansion 16-point Discrete Input Card L47
1	Micro-Comm Expansion 6-point Relay Output Card L59

tag	I/O DESCRIPTION	REQUIRED	PROVIDED	SPARE
DI	DISCRETE IN	34	40	6
DO	DISCRETE OUT	8	10	2
AI	ANALOG IN	9	16	7
AO	ANALOG OUT	3	8	5

		(10) Relay Outputs Physical I/O as follows:	Tag:	Signal provided by (MC, GC, EC)
1	DO1	Pump #1 CALL to RUN	BP-101	signal from VFD by EC
1	DO2	Pump #2 CALL to RUN	BP-102	" " "
1	DO3	Gravity Feed Valve CALL to OPEN	BFV-103	signal from BFV by GC/EC
1	DO4	Pump #1 Valve CALL to OPEN	BFV-101	signal from BFV by GC/EC
1	DO5	Pump #2 Valve CALL to OPEN	BFV-102	signal from BFV by GC/EC
1	DO6			
1	DO7	Telemetry Control	RLY-102	
1	DO8	Pump VFD #1 Fault Reset Output	VFD-1	signal from VFD by EC
1	DO9	Pump VFD #2 Fault Reset Output	VFD-2	" " "
1	DO10			
2		Spare Physical Outputs listed above		

		(40) Discrete Inputs Physical I/O as follows:	Tag:	Signal provided by (MC, GC, EC)
1	DI1	Pump #1 RUN	BP-101	signal from VFD by EC
1	DI2	Pump #2 RUN	BP-102	" " "
1	DI3	Gravity Feed Valve OPEN	ZS-103	signal from BFV by GC/EC
1	DI4	Pump #1 Valve OPEN	ZS-101	" " "
1	DI5	Pump #2 Valve OPEN	ZS-102	" " "
1	DI6	Operator Down Alarm	PB-101	new contact by MC
1	DI7	Wet Floor Alarm	FS-101	new contact by MC
1	DI8	FORWARD Flow Total from pulse input of flow meter	FIT-101	new contact by MC
1	DI9	PLC AC Power FAIL	RTU-100	internal software input
1	DI10	RAM Battery FAIL	RTU-100	internal software input
1	DI11	Memory Module FAIL	RTU-100	internal software input
1	DI12	RTU 12Vdc Power Failure	RTU-100	internal software input
1	DI13	VFD Speed Mode-Manual	RTU-100	internal software input
1	DI14	VFD Speed Mode-Flow Rate	RTU-100	internal software input
1	DI15	VFD Speed Mode-PSI	RTU-100	internal software input

EROS Control Valve panel with Instrumentation (RTU-100) (Continued)

(40) Discrete Inputs Physical I/O as follows:			Tag:	Signal provided by (MC, GC, EC)
1	DI16	Station Control mode - Pressure-Flow/Tank level	RTU-100	internal software input
1	DI17	Pump #1 HOA-HAND	HS-101	Front MC-Panel HOA
1	DI18	Pump #1 HOA-AUTO	HS-101	" " "
1	DI19	Pump #2 HOA-HAND	HS-102	" " "
1	DI20	Pump #2 HOA-AUTO	HS-102	" " "
1	DI21	Gravity Feed Valve HOA-HAND	BFV-103	" " "
1	DI22	Gravity Feed Valve HOA-AUTO	BFV-103	" " "
1	DI23	Pump #1 Valve HOA-HAND	BFV-101	" " "
1	DI24	Pump #1 Valve HOA-AUTO	BFV-101	" " "
1	DI25	Pump #2 Valve HOA-HAND	BFV-102	" " "
1	DI26	Pump #2 Valve HOA-AUTO	BFV-102	" " "
1	DI27	VFD #1 FAULT	VFD-1	signal from VFD by EC
1	DI28	VFD #2 FAULT	VFD-2	" " "
1	DI29	Low Suction Pressure Switch	PS-101	new contact by MC
1	DI30	ATS Switch in Utility Power Mode	ATS-100	contact by others
1	DI31	ATS Switch in Generator Power Mode	ATS-100	contact by others
1	DI32	Generator RUN	GEN-100	contact by others
1	DI33	Generator ALARM	GEN-100	contact by others
1	DI34	Entry Alarm	RTU-100	internal software input
1	DI35	Entry Alarm Door #1 switch	LS-101	new sensor by MC
1	DI36			
1	DI37			
1	DI38			
1	DI39			
1	DI40			
13		Spare Physical Inputs listed above		

(12) Analog Inputs Physical I/O as Follows:			Tag:	Signal provided by (MC, GC, EC)
1	AI1	Discharge Pressure	PIT-103	new sensor by MC
1	AI2	Suction Pressure	PIT-102	new sensor by MC
1	AI3	Forward/Reverse Flow Rate	FIT-101	new sensor by MC
1	AI4	Station Building Temperature	TT-101	new sensor by MC
1	AI5	Pump VFD #1 Speed Feedback	VFD-1	signal from VFD by EC
1	AI6	Pump VFD #2 Speed Feedback	VFD-2	signal from VFD by EC
1	AI7	Gravity Feed Valve Position Feedback	BFV-103	signal from BFV by GC/EC
1	AI8			
1	AI9			
1	AI10			
1	AI11	Generator Fuel Level	GEN-101	signal by others
1	AI12	Generator Phase	GEN-101	signal by others
1	AI13	RTU Battery Voltage	RTU-100	internal software input
1	AI14	RTU Internal Temperature	RTU-100	internal software input
3		Spare Physical Inputs listed above		

(6) Analog Outputs Physical I/O as Follows:			Tag:	Signal provided by (MC, GC, EC)
1	AO1	Pump #1 VFD Command Speed	VFD-1	signal to VFD by others
1	AO2	Pump #2 VFD Command Speed	VFD-2	" " "
1	AO3	Gravity Feed Valve Position Feedback	BFV-103	signal from BFV by GC/EC
1	AO4			
1	AO5			
1	AO6			
3		Spare Physical Outputs listed above		

EROS Control Valve panel with Instrumentation (RTU-100) (Continued)

Qty	MISC CONTROL & FRONT PANEL ITEMS:
1	Micro-Comm Keypad & Display unit w/cable
1	3-Position Pump #1 HOA Selector Switch
1	3-Position Pump #2 HOA Selector Switch
1	3-Position Pump #1 Valve HOA Selector Switch
1	3-Position Pump #2 Valve HOA Selector Switch
1	3-Position Gavity Valve HOA Selector Switch

	Instrumentation provided by Micro-Comm	Tag:
1	Amesco magnetic Door Switch	LS-101
2	Pressure Transducer w/cable & polyflow	PIT-102, PIT-103
7	Pressure Guages	PI-101, PI-102, PI-103, PI-104, PI-105, PI-106, PI-107
1	United Electric Pressure Switch H402-S156B-M446 with S/S Connection	PS-101
1	Station Flood Switch	FS-101
1	Station Temp. Transmitter 0-200degF	TT-101
1	Operator Man-Down P/B Enclosure	PB-101
1	Yagi Antenna with mounting U-bolts	
1	lot of coaxial cable & conn. as needed	

	Lightning Protection equipment
1	1210 Ground Rod
3	230 Clamp
1	660E Copper Air Terminal
100	29X Century 3/8" Dia Coppper Wire
1	690M Base
3	240X Bonding Clamp

	Labor Items included:
1	Factory Start-up & Adjustment Service
1	Engineering, Programming, & Testing
1	Freight to Jobsite (FOB Factory)
1	Existing Equipment buy-back from Valve #2 RTU

(1) E&H 6" Flow Meter Promag W 400 integral mount (FIT-101)

To Include:

Qty	Description	
1	6" Electromagnetic flow meter with integral transmitter E&H 5W4C1F-AAELHA0DHA1KGA+L4	**5W4C1F-11A94/0**
2	6" Electromagnetic flow meter grounding rings	**DK5GD-1FAEL**
1	6" Electromagnetic flow meter grounding ring wiring harness	**DK5GC-1FL**
1	On-Site certified start-up of meter (3-hrs time for setup and engineering)	
1	3-Year Warranty on E&H Flow Meter from date of Factory Shipment	
1	Freight to jobsite (FOB Factory)	

(1) CENTRAL SOFTWARE MODIFICATIONS AND START-UP LISTED BELOW:

NORTH & SOUTH HMI Software Modifications:

Qty	**Description:**
1	Add New Site information to existing M1650 polling master
1	Add new Site information to existing NWTP SCADAview HMI
1	Add new site alarms to NWTP SCADAdial
1	Add new site information to NWTP SCADAweb server
1	Add new site information to SWTP client HMI and Webserver HMI computer(s)
1	Factory programming and software verification
1	On-Site commissioning of new site with complete turn-key functionality
1	On-site start-up costs and travel included

MISCELLANEOUS ITEMS TO INCLUDE:

Qty	Description	
1	Engineering and Design drawings and submittal	**Included**
3	Operation and Maintenance Manuals per Specifications	**Included**
1	Freight to Job Site (FOB Factory, Freight allowed)	**Included**
1	**FIVE Year Parts and Labor Warranty on Micro-Comm Parts only**	**Included**
1	**THREE Year Parts and Labor Warranty on E&H Meter**	**Included**