03-248

motivRCS-204

COMPRESSOR CONTROL PANEL

ELECTRICAL DRAWINGS

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BIDELL EQUIPMENT INC.
GAS COMPRESSION

PROJECT No. 70081

2004

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COMPANY: Bidell Equipment Inc.
DATE ISSUED: 05 MAY 2004
ISSUING DEPT.: MOTIV SYSTEMS INC.

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DRAWING LIST

DRAWING NO.	REV.	TITLE	DRAWING NO.	REV.	TITLE
70081-E00001	A	CONTROL PANEL ELECTRICAL STANDARD SYMBOLS			
70081-E02100	A	CONTROL PANEL ENCLOSURE GENERAL ASSEMBLY			
70081-E02200	A	CONTROL PANEL BACKPAN GENERAL ASSEMBLY			
70081-E02810	A	CONTROL PANEL COMMUNICATION BLOCK DIAGRAM			
70081-E03100	A	CONTROL PANEL 24VDC POWER SUPPLY			
70081-E03200	A	CONTROL PANEL 24VDC POWER DISTRIBUTION			
70081-E03300	A	CONTROL PANEL ISOLATED 24VDC POWER DISTRIBUTION			
70081-E03500	A	CONTROL PANEL ESD BACK-UP RELAYS			
70081-E05001	A	CONTROL PANEL PLC I/O SCHEMATIC ANALOG & DIGITAL MIXED OCS STACK 1			
70081-E05002	A	CONTROL PANEL PLC I/O SCHEMATIC ANALOG & DIGITAL MIXED OCS STACK 2			
70081-E05003	A	CONTROL PANEL PLC I/O SCHEMATIC HIGH SPEED COUNTER OCS STACK 3			
70081-E05101	A	CONTROL PANEL PLC I/O SCHEMATIC THERMOCOUPLE RCS 1 STACK 1			
70081-E05102	A	CONTROL PANEL PLC I/O SCHEMATIC THERMOCOUPLE RCS 1 STACK 2			
70081-E05103	A	CONTROL PANEL PLC I/O SCHEMATIC THERMOCOUPLE RCS 1 STACK 3			
70081-E05201	A	CONTROL PANEL PLC I/O SCHEMATIC THERMOCOUPLE RCS 2 STACK 1			
70081-E05202	A	CONTROL PANEL PLC I/O SCHEMATIC ANALOG INPUT RCS 2 STACK 2			
70081-E09000	A	CONTROL PANEL SUGGESTED GROUNDING			

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CONTROL PANEL
DRAWING LIST

DRAWN:	S. YUN	DATE: 03.01.07	CUST./PROJ.:	BIDELL/03-248	
DESIGNED:	B. EBELHER	DATE: 03.01.08	DESCRIPTION:	motivRCS-204	
CHECKED:	B. EBELHER	DATE: 03.01.08	TYPE:		
DRAWING NUMBER:	70081-E00000	SHEET: 1 OF 1	SCALE: NTS	REV: A	

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LINE SYMBOLS

- BUS-BAR
- EXPOSED CONDUIT, OR CABLE, OR CONDUCTOR
- PANEL WIRING (UNLESS OTHERWISE NOTED)
- FIELD WIRING, UNDERGROUND, UNDERSLAB, OR CONCEALED CONDUIT OR CABLE
- EQUIPMENT OUTLINE, OR HEAT TRACING LINE, OR GROUNDING CONDUCTOR
- SWITCHED HOT WIRE
- HOT WIRE
- NEUTRAL WIRE
- CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- LINE BREAK or CONTINUATION LINE
- SPARE, COILED & TAPED
- CONDUIT FITTING
- CONDUIT BREATHER / DRAIN
- CONDUIT SEAL
- CONDUIT DRAIN SEAL
- CONDUIT CAP
- CONDUIT UNION
- CONDUIT EXPANSION JOINT
- FLEXIBLE CONNECTION

SINGLE LINE DIAGRAM SYMBOLS

- HP — ELECTRIC MOTOR C/W KW or HP RATING
- UNFUSED DISCONNECT SWITCH
- FUSED DISCONNECT SWITCH or FUSED ISOLATED SWITCH
- LOAD INTERRUPT NON-ISOLATING
- TRANSFER SWITCH
- CIRCUIT BREAKER
- FUSE
- DISCONNECT DEVICE (DRAW-OUT, STAB, PLUG-IN)
- THERMAL OVERLOAD DEVICE
- MAGNETIC OVERLOAD DEVICE
- 2 — CONTACTOR C/W EEMAC SIZE
- SURGE SUPPRESSOR
- THERMISTOR
- 3 PHASE GENERATOR
- K — KEY INTERLOCK
- CABLE TERMINATION
- WEATHERHEAD
- X — PILOT LIGHT WHERE X: R = RED, G = GREEN, ETC.
- DELTA
- WYE or STAR
- DISCONNECT SWITCH

- LIGHTING or SURGE ARRESTER
- POLARIZED or SURGE CAPACITOR
- VARIABLE CAPACITOR
- DIODE
- SILICON CONTROLLED RECTIFIER
- BRIDGE-TYPE RECTIFIER
- GROUND
- CONTROL TRANSFORMER
- DISTRIBUTION TRANSFORMER
- 2 — POTENTIAL TRANSFORMER C/W VOLTAGE RATIO AND QUALITY
- CURRENT TRANSFORMER C/W RATIO AND QUALITY
- ZERO SEQUENCE CURRENT TRANSFORMER
- RESISTANCE
- RESISTOR
- VARIABLE RESISTOR
- INDUCTOR or REACTOR
- VARIABLE INDUCTOR or REACTOR
- CATHODIC PROTECTION
- XXX — POWER FACTOR CAPACITOR C/W KVAR RATING
- 52 / 800A — POWER CIRCUIT BREAKER C/W FRAME SIZE INDICATION
- MANUAL MOTOR STARTER
- AC/DC CONVERTER
- DC/AC CONVERTER
- X — METER, WHERE X:
  - A – AMP
  - CTR – COUNTER
  - CTM – ELAPSED TIME METER
  - KW – KILOWATT
  - KWH – KILOWATT HOUR
  - PF – POWER FACTOR
  - W – WATTMETER
  - V – VOLT
  - VAR – VARMETER
- # — SWITCHGEAR DEVICE NUMBERS & FUNCTIONS WHERE #:
  - 27 – UNDERVOLTAGE
  - 32 – DIRECTION POWER
  - 37 – UNDERCURRENT
  - 40 – LOSS OF FIELD PROTECTION
  - 41 – FIELD CIRCUIT BREAKER
  - 46 – PHASE BALANCE CURRENT
  - 47 – PHASE SEQUENCE
  - 48 – INCOMPLETE SEQUENCE
  - 49 – AC THERMAL OVERLOAD
  - 50 – INSTANTANEOUS OVERCURRENT
  - 51 – AC TIME DELAY OVERCURRENT
  - 52 – AC CIRCUIT BREAKER
  - 55 – POWER FACTOR
  - 59 – AC OVERVOLTAGE
  - 64 – GROUND PROTECTION
  - 72 – DC CIRCUIT
  - 76 – DC OVERCURRENT
  - 78 – PHASE ANGLE MEASURING
  - 86 – LOCKOUT
  - 87 – DIFFERENTIAL CURRENT
  - SPECIALIZED RELAY FUNCTIONS ARE INDICATED BY A LETTER SUFFIX. e.g.
  - G – GROUND
  - S – STALL
  - T – TEMPERATURE
- #/#/# — MULTIPLE FUNCTION RELAY DESIGNATION

CONTROL SCHEMATIC SYMBOLS

- FLOW SWITCH (NORMALLY OPEN)
- FLOW SWITCH (NORMALLY CLOSE)
- LIMIT SWITCH (NORMALLY OPEN)
- LIMIT SWITCH (NORMALLY CLOSE)
- LEVEL SWITCH (NORMALLY OPEN)
- LEVEL SWITCH (NORMALLY CLOSE)
- PRESSURE SWITCH (NORMALLY OPEN)
- PRESSURE SWITCH (NORMALLY CLOSE)
- TEMPERATURE SWITCH (NORMALLY OPEN)
- TEMPERATURE SWITCH (NORMALLY CLOSE)
- VIBRATION SWITCH (NORMALLY OPEN)
- VIBRATION SWITCH (NORMALLY CLOSE)
- TDCE NORMALLY OPEN (TIME DELAY CLOSE ON ENERGIZATION)
- TDOE NORMALLY CLOSED (TIME DELAY OPEN ON ENERGIZATION)
- TDODE NORMALLY OPEN (TIME DELAY OPENS ON DE-ENERGIZATION)
- TDCDE NORMALLY CLOSED (TIME DELAY CLOSES ON DE-ENERGIZATION)
- PLC INPUT CONTACT
- PLC OUTPUT CONTACT
- FORM "C" CONTACTS
- O/L'S — OVERLOAD'S
- SOLENOID (VALVES ETC.)
- COIL
- TORQUE SWITCH (NORMALLY OPEN)
- TORQUE SWITCH (NORMALLY CLOSE)
- SPST SWITCH (SINGLE POLE SINGLE THROW)
- SPDT SWITCH (SINGLE POLE DOUBLE THROW)
- N.O. PUSHBUTTON WITH SPRING RETURN TO OPEN POSITION
- N.C. PUSHBUTTON WITH SPRING RETURN TO CLOSE POSITION
- PUSHBUTTON WITH N.O. & N.C. CONTACTS WITH SPRING RETURN
- R — RELAY COIL
- C — CONTACTOR COIL
- M — MOTOR CONTROL RELAY COIL
- TD — TIME-DELAY RELAY COIL
- GENERAL RELAY COIL
- * — NORMALLY OPEN CONTACT
- * — NORMALLY CLOSE CONTACT

SWITCH FUNCTION DESCRIPTOR, PLACED BELOW SWITCH SYMBOL.
- 1ST LETTER – "C" (CLOSE) or "O" (OPEN)
- 2ND LETTER – "O" (ON)
- 3RD LETTER – "H" (HIGH) or "L" (LOW) OPTIONAL
- 4TH LETTER – VARIABLE, e.g. "L" (LEVEL), "P" (PRESSURE), ETC.

- TDOE – TIME DELAY ON ENERGIZE } USED IN CONJUNCTION WITH COIL
- TDODE – TIME DELAY ON DE-ENERGIZE } USED IN CONJUNCTION WITH COIL
- T.O. – TIME TO OPEN } USED IN CONJUNCTION WITH CONTACTS
- T.C. – TIME TO CLOSE } USED IN CONJUNCTION WITH CONTACTS
- INST. – INSTANTANEOUS } USED IN CONJUNCTION WITH CONTACTS
- XXX – REFERS TO THE SCHEMATIC GRID THE RELAY IS ON
- * – USER DEFINED (R-RELAY, C-CONTACT, ETC.)

CONTROL STATIONS

- X — WHERE X:
  - A – START-STOP
  - B – ON-OFF
  - C – FAST-SLOW OR FAST-SLOW-STOP
  - D – HAND-OFF-AUTO
  - F – FORWARD
  - R – REVERSE
  - S – ALL OTHERS (SEE BILL OF MATERIAL)
  - AS – AMMETER SWITCH
  - KI – KEY INTERLOCK
  - SP – STOP SWITCH
  - ST – START SWITCH
  - VS – VOLTMETER SWITCH
  - VSD – VARIABLE SPEED DRIVE
- MANUAL STARTER
- MANUAL DISCONNECT
- X — WHERE X:
  - FSR – FORWARD-STOP-REVERSE
  - FSS – FAST-SLOW-STOP
  - HOA – HAND-OFF-AUTO SWITCH
  - HTR – HEATER
  - LOS – LOCKOUT-STOP
  - O/O – ON-OFF
  - RES – RESISTOR
  - RTD – RESISTANCE-TEMP. DETECTOR
  - S/S – START-STOP SWITCH
  - TH – THERMISTOR

TERMINALS

- CONTROL PANEL (FEED TERMINAL)
- CONTROL PANEL (DISCONNECT TERMINAL)
- CONTROL PANEL (NON-INCENDIVE BARRIER)
- VENDOR
- MCC (MOTOR CONTROL CENTRE)
- SKID JUNCTION BOX TERMINAL
- FIELD JUNCTION BOX TERMINAL
- BUS-BAR CONNECTION
- WIRE CONNECTION
- GROUND CONNECTION WELDED, BRAZED OR COMPRESSION TYPE
- GROUND ROD W/O WELL BOLTED OR CLAMPED
- GROUND ROD C/W WELL

MODIFIERS

- SINGLE RECEPTACLE
- DUAL RECEPTACLE
- SPLIT RECEPTACLE
- GROUND FAULT RECEPTACLE
- SPECIAL RECEPTACLE
- TELEPHONE OUTLET
- TELEPHONE JACK
- T — THERMOSTAT
- $X — SWITCHES, WHERE X:
  - 1 – SINGLE-POLE SWITCH
  - 2 – DOUBLE-POLE SWITCH
  - 3 – THREE-WAY SWITCH
  - 4 – FOUR-WAY SWITCH
  - K – KEY-OPERATED SWITCH

LIGHTING

- X — LIGHTING FIXTURE, TYPE "X" (PENDANT/CEILING MOUNTED)
- LIGHTING FIXTURE, TYPE "X" (WALL MOUNTED)
- X — BEACON LIGHT (TYPE "X")
- X — STROBE LIGHT (TYPE "X")
- X — EXIT LIGHT

- X — FLOODLIGHT SHOWING AIMING DIRECTION, TYPE "X" FIRE/GAS ("F"/"G") DETECTOR HEAD
- X — LIGHTING FIXTURE (TYPE "X" FLUORESCENT)
- EMERGENCY LIGHTING UNIT, DUAL HEAD
- X — "F" FOR FIRE ALARM HORN, "T" FOR TELEPHONE HORN
- X — "F" FOR FIRE ALARM BELL, "T" FOR TELEPHONE BELL
- BUZZER
- FS — FIRE SWITCH
- PB — PULL BOX
- DM — DIGITAL METER
- PE — PHOTOELECTRIC CELL

MISCELLANEOUS

- SINGLE PHASE MOTOR
- 3 PHASE MOTOR MOUNTED HORIZONTALLY
- 3 PHASE MOTOR MOUNTED VERTICALLY
- INSTRUMENT TAG NO. (INSIDE OVAL) FOR CONTROL DEVICE BOX
- FIELD CONTROL DEVICE BOX
- HEAT TRACING JUNCTION BOX
- X — BILL OF MATERIAL, ITEM NO. X
- + – BATTERY
- CABLE OR CONDUIT DESIGNATION
- SHIELD
- PS — PRESSURE SWITCH
- ETM — ELAPSED TIME METER
- MPR — MOTOR PROTECTION RELAY
- RECEPTACLE

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CONTROL PANEL ELECTRICAL STANDARD SYMBOLS

DRAWN: S. YUN	DATE: 03.01.07	CUST./PROJ.:	BIDELL/03-248
DESIGNED: B. EBELHER	DATE: 03.01.08	DESCRIPTION:	motivRCS-204
CHECKED: B. EBELHER	DATE: 03.01.08	TYPE:	
DRAWING NUMBER: 70081-E00001	SHEET: 1 OF 1	SCALE: NTS	REV: A

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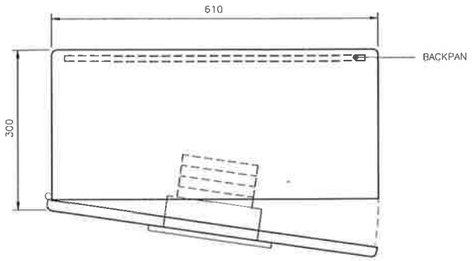
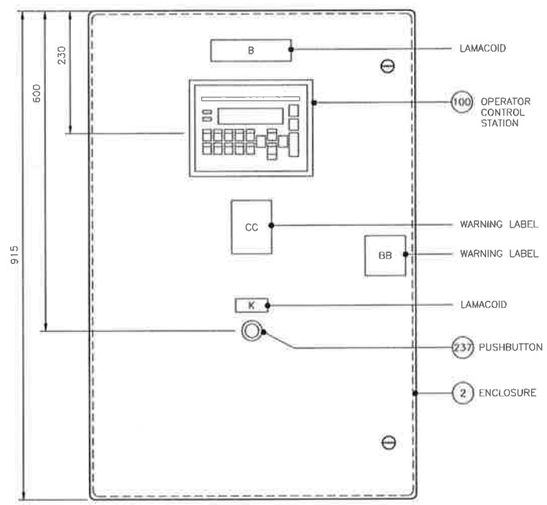
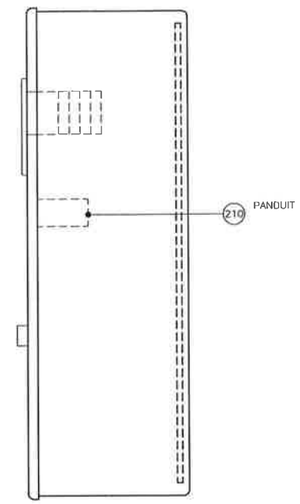


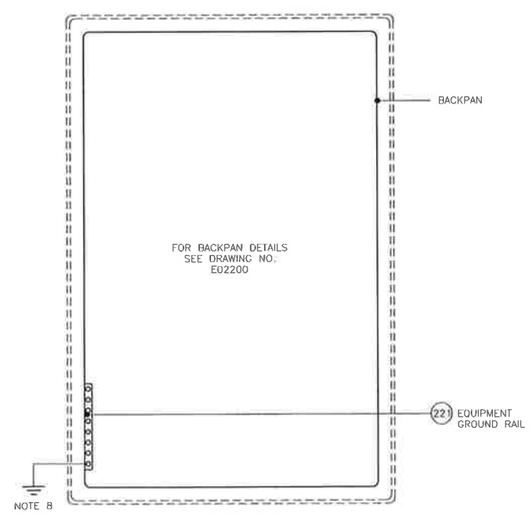
TOP VIEW



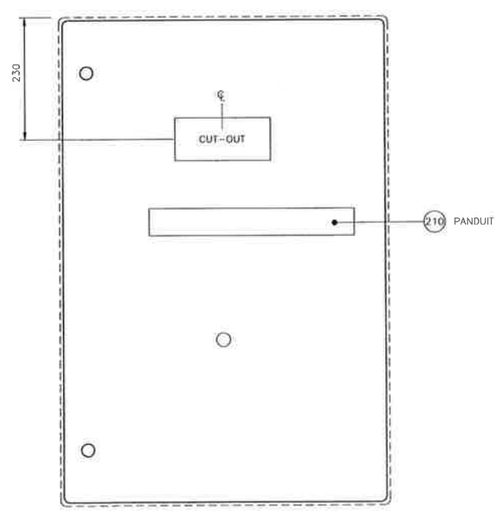
FRONT VIEW



RIGHT SIDE VIEW



FRONT VIEW
(WITHOUT DOOR)



BACK OF DOOR

NOTES:

1. ALL COMPONENTS AND WORKMANSHIP MUST MEET CLASS I, ZONE 2, GROUP C & D SPECIFICATIONS.
2. ALL WIRING TO BE TINNED AND NACE COMPLIANT.
3. ALL WIRING SHALL BE ARRANGED (DRIP LOOP) AS TO REDUCE ANY UNDUE STRESS TO TERMINATION POINTS.
4. ALL NON-INCENDIVE WIRING SHALL COMPLY TO CANADIAN ELECTRICAL CODE APPENDIX F.
5. PANEL TO BE MOUNTED WITH VIBRATION ISOLATORS AND BONDED TO GROUND.
6. ALL CONDUIT ENTRIES SHALL BE FLEXIBLE WERE POSSIBLE TO REDUCE VIBRATIONS.
7. ALL COMPONENTS AND TERMINATIONS MUST BE CHECKED FOR VIBRATION EFFECTS AND DAMAGE DUE TO SHIPPING.
8. CABINET MUST BE GROUNDED.

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CONTROL PANEL
ENCLOSURE
GENERAL ASSEMBLY

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DESIGNED: B. EBELHER	DATE: 03.01.08	DESCRIPTION:	motivRCS-204
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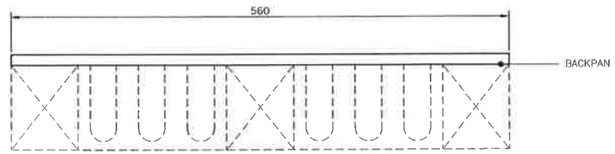
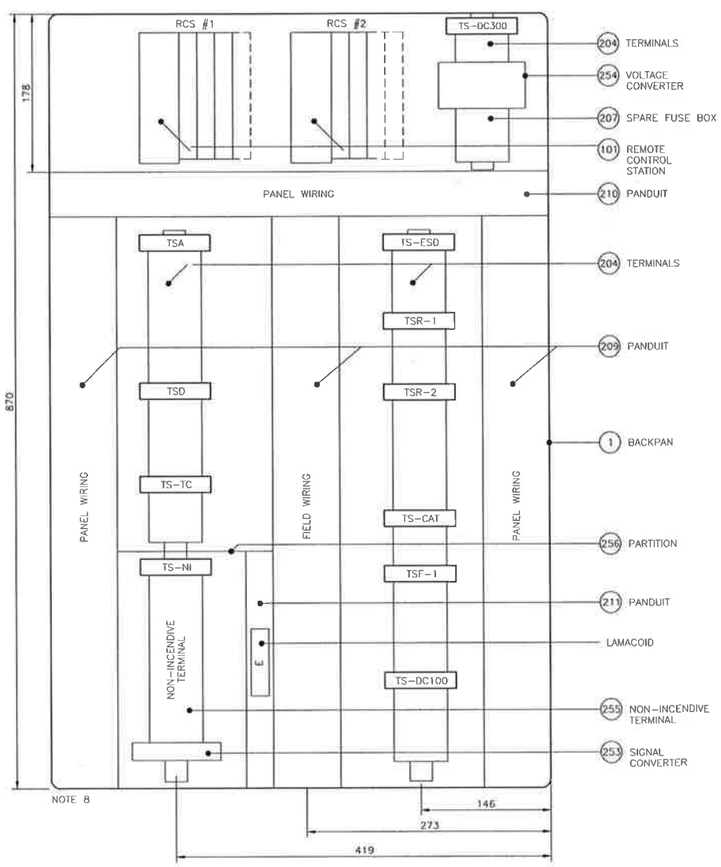
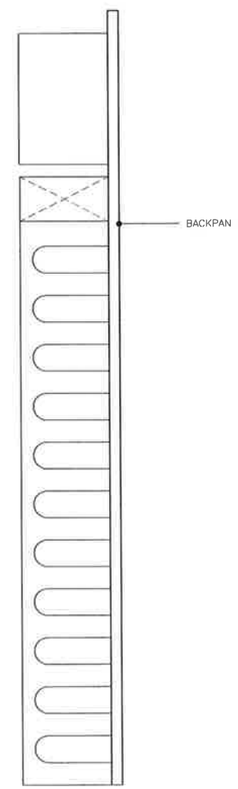


TOP VIEW



FRONT VIEW



RIGHT SIDE VIEW

NOTES:

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CONTROL PANEL
BACKPAN
GENERAL ASSEMBLY

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70081-E02200	1 OF 1	1:3	A

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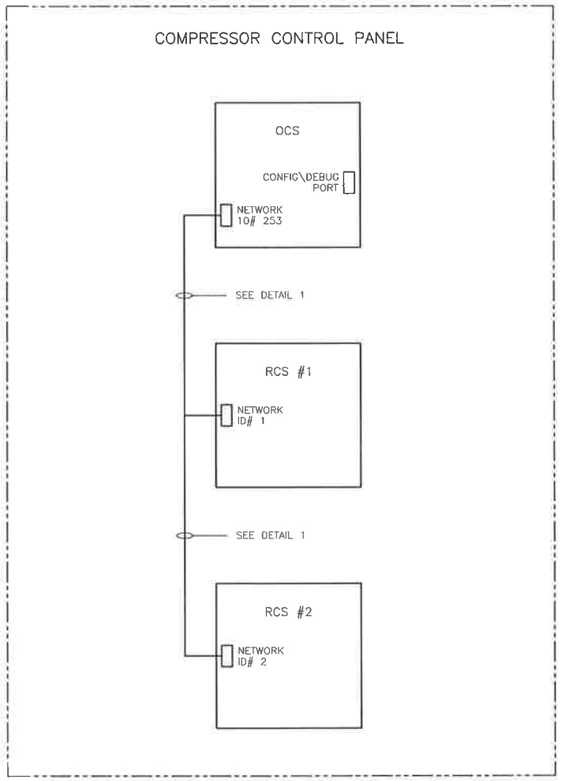
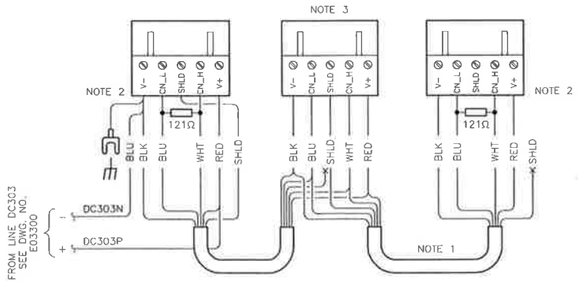


OVERALL LAYOUT



BUS COMMUNICATION CABLE

DETAIL 1
NTS

LEGEND:

- MOTIV CONTROL PANEL (FEED TERMINAL)
- MOTIV CONTROL PANEL (DISCONNECT TERMINAL)
- VENDOR TERMINAL
- MCC TERMINAL
- SKID JUNCTION BOX TERMINAL
- FIELD JUNCTION BOX TERMINAL
- FUSE TERMINAL
- CUSTOMER PANEL
- CUSTOMER JUNCTION BOX
- IN4934 DIODE
- PANEL/VENDOR WIRING
- FIELD WIRING
- MOTIV CONTROL PANEL DUAL LEVEL FEED THROUGH WDK 2.5
- MOTIV CONTROL PANEL NON INCENDIVE BARRIER
- MOTIV CONTROL PANEL DUAL LEVEL FUSED AND FEED THROUGH
- MOTIV CONTROL PANEL DUAL LEVEL FEED THROUGH WITH SHIELD

NOTES:

1. BUS WIRING MUST BE BELDEN 3084A OR EQUIVALENT.
2. BUS MUST BE TERMINATED AT BOTH ENDS WITH 121 OHMS, 1% TERMINATING RESISTORS.
3. ONLY IF SECOND RCS IS REQUIRED.

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CONTROL PANEL
COMMUNICATION
BLOCK DIAGRAM

DRAWN:	D. TIVADAR	DATE: 03.01.07	CUST./PROJ.:	BIDELL/03-248	
DESIGNED:	B. EBELHER	DATE: 03.01.08	DESCRIPTION:	motivRCS-204	
CHECKED:	B. EBELHER	DATE: 03.01.08	TYPE:		
DRAWING NUMBER:	70081-E02810	SHEET: 1 OF 1	SCALE: NTS	REV: A	

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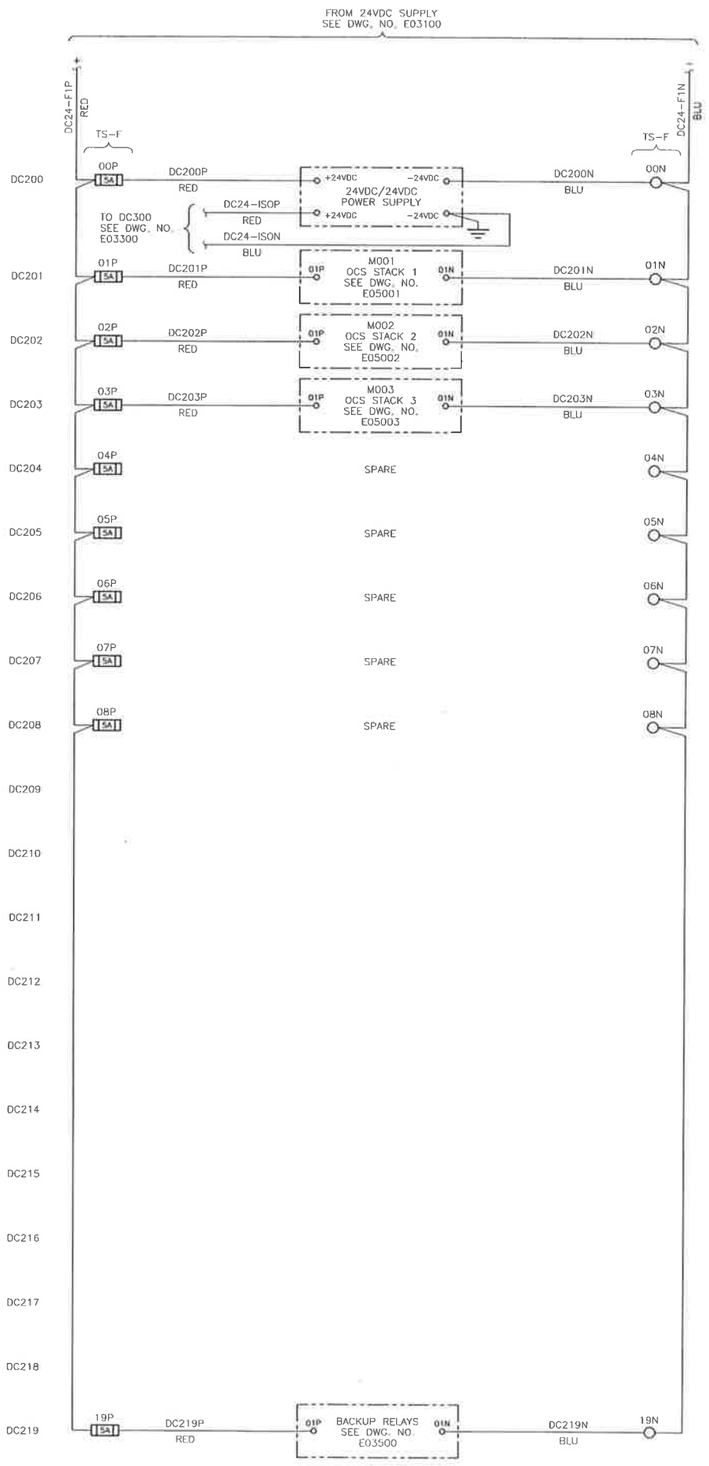
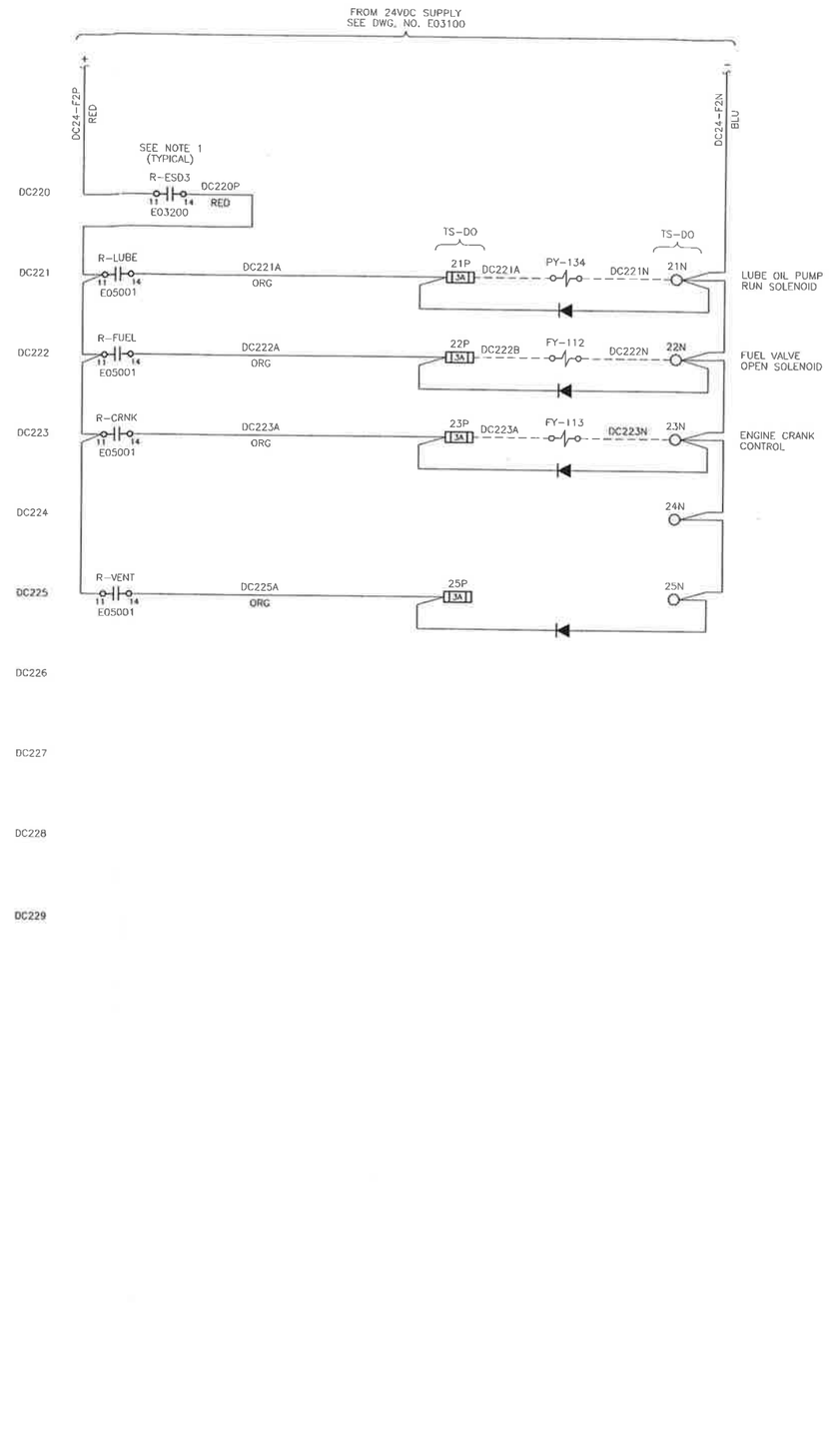
04.05.05-1 Mpw/JZH
70081-E2810.DWG





LEGEND:

- MOTIV CONTROL PANEL (FEED TERMINAL)
- MOTIV CONTROL PANEL (DISCONNECT TERMINAL)
- VENDOR TERMINAL
- MCC TERMINAL
- SKID JUNCTION BOX TERMINAL
- FIELD JUNCTION BOX TERMINAL
- FUSE TERMINAL
- CUSTOMER PANEL
- CUSTOMER JUNCTION BOX
- IN4934 DIODE
- PANEL/VENDOR WIRING
- FIELD WIRING

NOTES:

1. ALL FIELD WIRING TO BE WIRED FOR CLASS 1 ZONE 2, UNLESS SPECIFIED.
2. PANEL IS RATED FOR CLASS 1 ZONE 2.
3. TO PROVIDE MAX NOISE IMMUNITY AND MINIMUM EMI RADIATION, NEGATIVE MUST BE CONNECTED TO EARTH GROUND AT POWER SUPPLY. ENSURE THAT POWER SUPPLY IS COMPATIBLE WITH THIS METHOD OF GROUNDING.
4. SEPARATE POWER SUPPLY TO BE USED IN ORDER TO MINIMIZE LINE NOISE AND CURRENT SPIKES.
5. CAT IGNITION PIN-OUTS TO BE AS-BUILT BY ELECTRICAL CONTRACTOR.

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CONTROL PANEL
24VDC POWER DISTRIBUTION

DRAWN: D. TIVADAR	DATE: 03.01.07	CUST./PROJ.:	BIDELL/03-248
DESIGNED: B. EBELHER	DATE: 03.01.08	DESCRIPTION:	motivRCS-204
CHECKED: B. EBELHER	DATE: 03.01.08	TYPE:	

DRAWING NUMBER:	SHEET:	SCALE:	REV:
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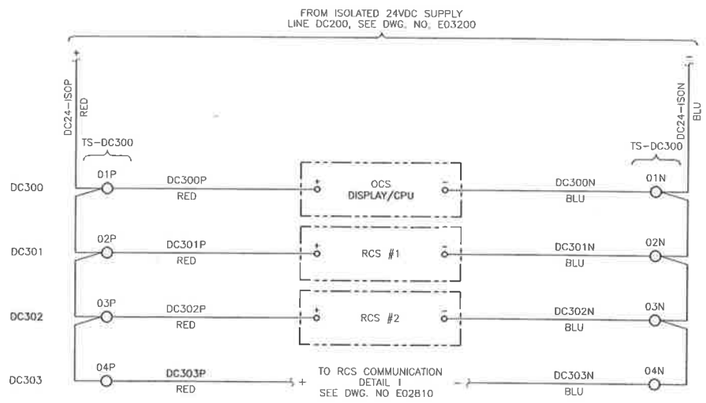

LEGEND:

- MOTIV CONTROL PANEL (FEED TERMINAL)
- MOTIV CONTROL PANEL (DISCONNECT TERMINAL)
- VENDOR TERMINAL
- MCC TERMINAL
- SKID JUNCTION BOX TERMINAL
- FIELD JUNCTION BOX TERMINAL
- FUSE TERMINAL
- CUSTOMER PANEL
- CUSTOMER JUNCTION BOX
- IN4934 DIODE
- PANEL/VENDOR WIRING
- FIELD WIRING

NOTES:

1. ALL FIELD WIRING TO BE WIRED FOR CLASS 1 ZONE 2, UNLESS SPECIFIED.
2. PANEL IS RATED FOR CLASS 1 ZONE 2.

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CONTROL PANEL
ISOLATED 24VDC POWER DISTRIBUTION

DRAWN: D. TIVADAR	DATE: 03.01.07	CUST./PROJ.:	BIDELL/03-248	
DESIGNED: B. EBELHER	DATE: 03.01.08	DESCRIPTION:	motivRCS-204	
CHECKED: B. EBELHER	DATE: 03.01.08	TYPE:		
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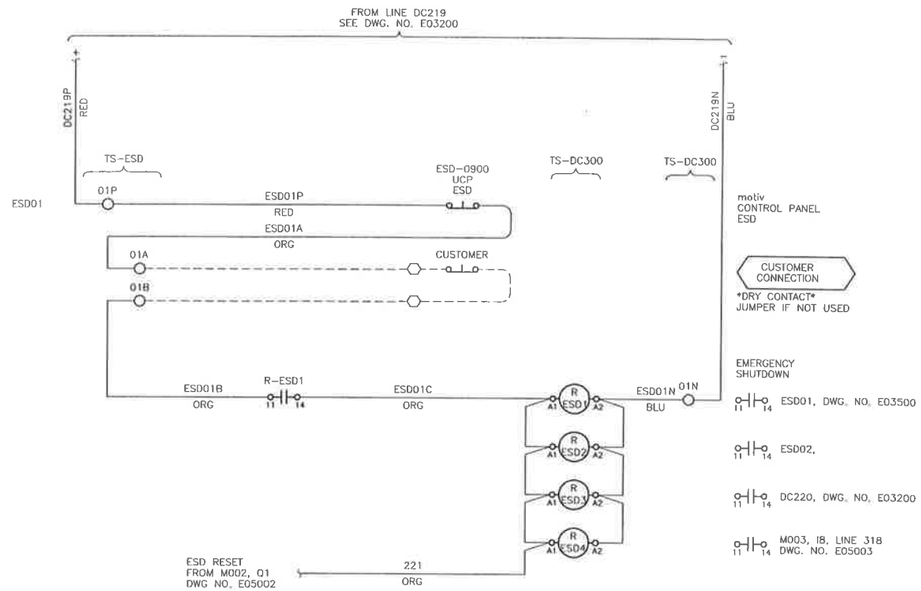

LEGEND:

- MOTIV CONTROL PANEL (FEED TERMINAL)
- MOTIV CONTROL PANEL (DISCONNECT TERMINAL)
- VENDOR TERMINAL
- MCC TERMINAL
- SKID JUNCTION BOX TERMINAL
- FIELD JUNCTION BOX TERMINAL
- FUSE TERMINAL
- CUSTOMER PANEL
- CUSTOMER JUNCTION BOX
- IN4934 DIODE
- PANEL/VENDOR WIRING
- FIELD WIRING

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CONTROL PANEL
ESD
BACK-UP RELAYS

DRAWN: D. TIVADAR	DATE: 03.01.07	CUST./PROJ.:	BIDELL/03-248	
DESIGNED: B. EBELHER	DATE: 03.01.08	DESCRIPTION:	motivRCS-204	
CHECKED: B. EBELHER	DATE: 03.01.08	TYPE:		
DRAWING NUMBER: 70081-E03500		SHEET: 1 OF 1	SCALE: NTS	REV: A

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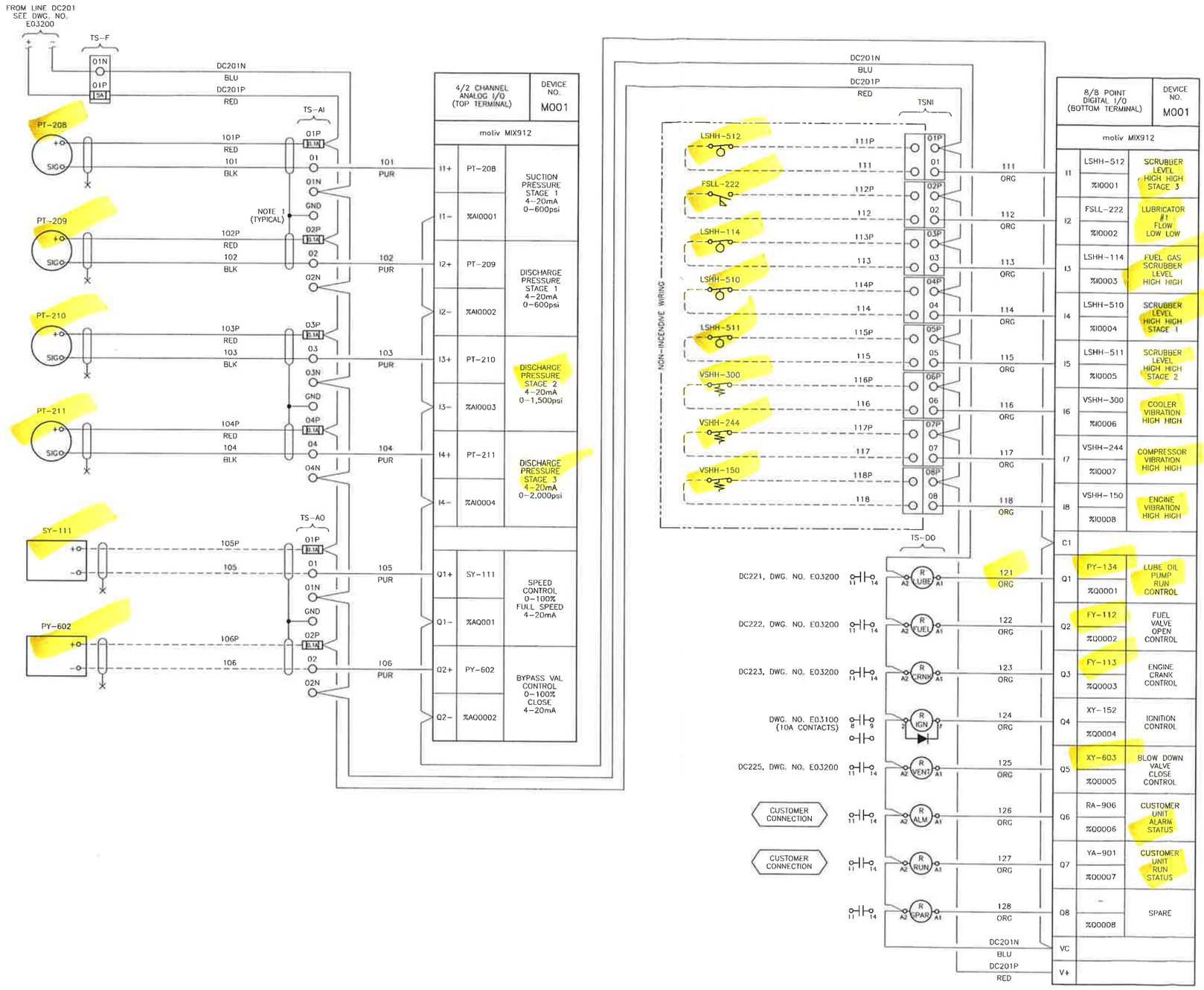
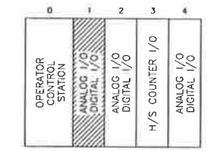


LEGEND:

- MOTIV CONTROL PANEL (FEED TERMINAL)
- MOTIV CONTROL PANEL (DISCONNECT TERMINAL)
- VENDOR TERMINAL
- MCC TERMINAL
- SKID JUNCTION BOX TERMINAL
- FIELD JUNCTION BOX TERMINAL
- FUSE TERMINAL
- CUSTOMER PANEL
- CUSTOMER JUNCTION BOX
- IN4934 DIODE
- PANEL/VENDOR WIRING
- FIELD WIRING
- MOTIV CONTROL PANEL NON INCENDIVE BARRIER



NOTES:

1. ALL SHIELD WIRES TO BE TERMINATED AT SHIELD GROUND BUS.
2. ALL FIELD WIRING TO BE WIRED FOR CLASS 1 ZONE 2, UNLESS SPECIFIED.
3. PANEL IS RATED FOR CLASS 1 ZONE 2 ONLY.

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CONTROL PANEL
PLC I/O SCHEMATIC
ANALOG & DIGITAL MIXED OCS STACK 1

DRAWN: D. TIVADAR	DATE: 03.01.07	CUST./PROJ.:	BIDELL/03-248
DESIGNED: B. EBELHER	DATE: 03.01.08	DESCRIPTION:	motivRCS-204
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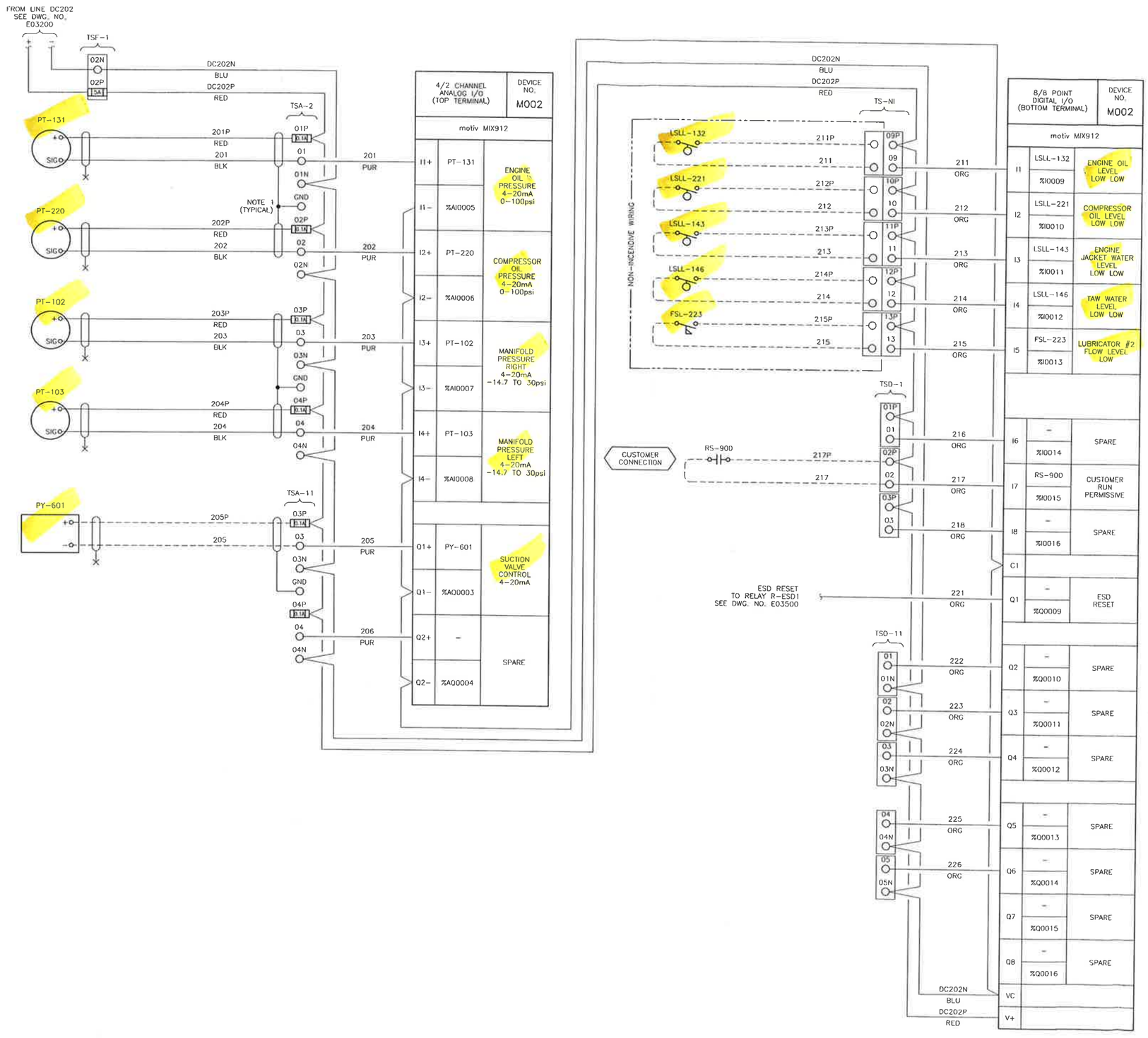

LEGEND:

- MOTIV CONTROL PANEL (FEED TERMINAL)
- MOTIV CONTROL PANEL (DISCONNECT TERMINAL)
- VENDOR TERMINAL
- MCC TERMINAL
- SKID JUNCTION BOX TERMINAL
- FIELD JUNCTION BOX TERMINAL
- FUSE TERMINAL
- CUSTOMER PANEL
- CUSTOMER JUNCTION BOX
- IN4934 DIODE
- PANEL/VENDOR WIRING
- FIELD WIRING
- MOTIV CONTROL PANEL DUAL LEVEL FEED THROUGH WDK 2.5
- MOTIV CONTROL PANEL NON INCENDIVE BARRIER
- MOTIV CONTROL PANEL DUAL LEVEL FUSED AND FEED THROUGH
- MOTIV CONTROL PANEL DUAL LEVEL FEED THROUGH WITH SHIELD

0	1	2	3	4
OPERATOR CONTROL STATION	ANALOG I/O DIGITAL I/O	ANALOG I/O DIGITAL I/O	H/S COUNTER I/O	ANALOG I/O DIGITAL I/O

NOTES:

1. ALL SHIELD WIRES TO BE TERMINATED AT SHIELD GROUND BUS.
2. ALL FIELD WIRING TO BE WIRED FOR CLASS 1 ZONE 2, UNLESS SPECIFIED.
3. PANEL IS RATED FOR CLASS 1 ZONE 2 ONLY.
4. SETTINGS FOR CONVERTER ARE AS FOLLOWS:

INPUT 1 2 3 4 5 6 7 8 GAIN - 0

OUTPUT 1 2 3 4 5 6

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CONTROL PANEL
PLC I/O SCHEMATIC
ANALOG & DIGITAL MIXED OCS STACK 2

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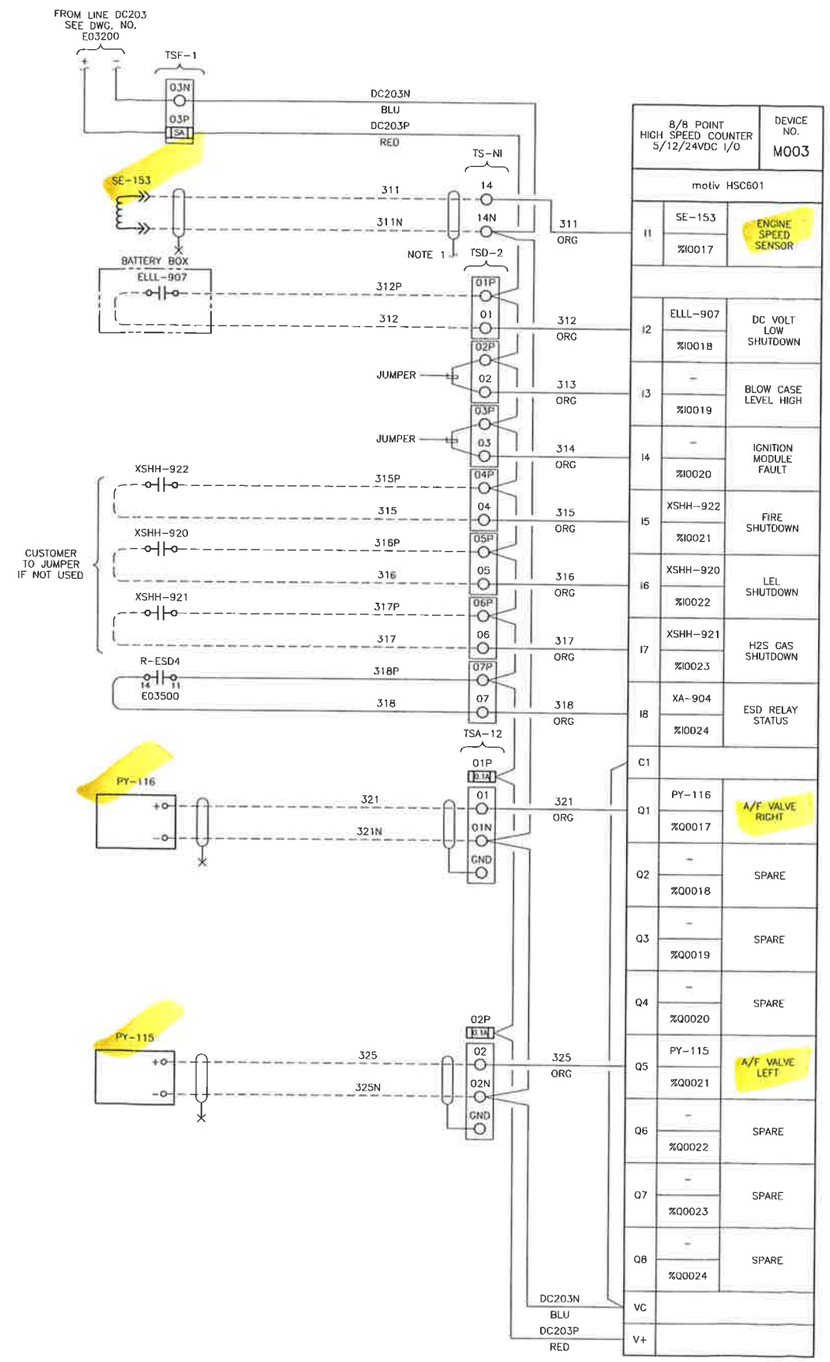

LEGEND:

- MOTIV CONTROL PANEL (FEED TERMINAL)
- MOTIV CONTROL PANEL (DISCONNECT TERMINAL)
- VENDOR TERMINAL
- MCC TERMINAL
- SKID JUNCTION BOX TERMINAL
- FIELD JUNCTION BOX TERMINAL
- FUSE TERMINAL
- CUSTOMER PANEL
- CUSTOMER JUNCTION BOX
- IN4934 DIODE
- PANEL/VENDOR WIRING
- FIELD WIRING
- MOTIV CONTROL PANEL DUAL LEVEL FEED THROUGH WDK 2.5
- MOTIV CONTROL PANEL NON INCENDIVE BARRIER
- MOTIV CONTROL PANEL DUAL LEVEL FUSED AND FEED THROUGH
- MOTIV CONTROL PANEL DUAL LEVEL FEED THROUGH WITH SHIELD

0	1	2	3	4
OPERATOR CONTROL STATION	ANALOG I/O DIGITAL I/O	ANALOG I/O DIGITAL I/O	H/S COUNTER I/O	ANALOG I/O DIGITAL I/O

NOTES:

1. ALL SHIELD WIRES TO BE TERMINATED AT SHIELD GROUND BUS.
2. ALL FIELD WIRING TO BE WIRED FOR CLASS 1 ZONE 2, UNLESS SPECIFIED.
3. PANEL IS RATED FOR CLASS 1 ZONE 2 ONLY.

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CONTROL PANEL
PLC I/O SCHEMATIC
HIGH SPEED COUNTER OCS STACK 3

DRAWN: D. TIVADAR	DATE: 03.01.07	CUST./PROJ.:	BIDELL/03-248
DESIGNED: B. EBELHER	DATE: 03.01.08	DESCRIPTION:	motivRCS-204
CHECKED: B. EBELHER	DATE: 03.01.08	TYPE:	

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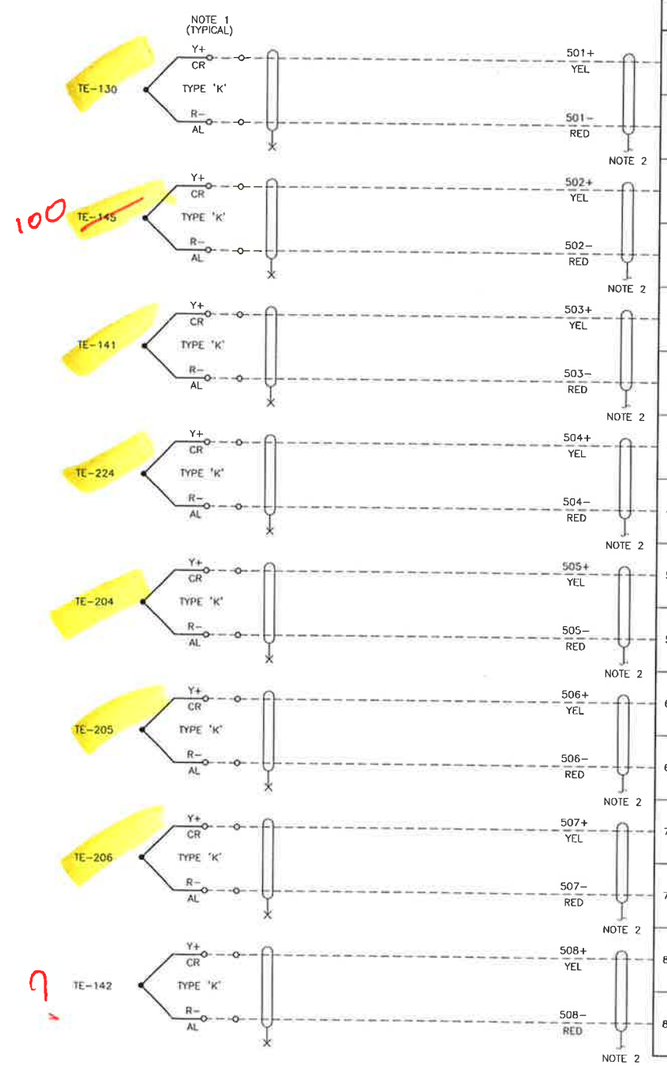

8 CHANNEL THERMOCOUPLE INPUT		DEVICE NO. M101
motiv THM200		
1+	TE-130	ENGINE OIL TEMPERATURE
1–	%AIC0001	
2+	TE-145	AIR MANIFOLD RIGHT BANK TEMPERATURE
2–	%AIG0002	
3+	TE-141	ENGINE JACKET WATER RIGHT BANK TEMPERATURE
3–	%AIG0003	
4+	TE-224	COMPRESSOR OIL TEMPERATURE
4–	%AIG0004	
5+	TE-204	COMPRESSOR GAS DISCHARGE TEMPERATURE 1
5–	%AIG0005	
6+	TE-205	COMPRESSOR GAS DISCHARGE TEMPERATURE 2
6–	%AIG0006	
7+	TE-206	COMPRESSOR GAS DISCHARGE TEMPERATURE 3
7–	%AIG0007	
8+	TE-142	ENGINE JACKET WATER LEFT BANK TEMPERATURE
8–	%AIG0008	

LEGEND:

- MOTIV CONTROL PANEL (FEED TERMINAL)
- MOTIV CONTROL PANEL (DISCONNECT TERMINAL)
- VENDOR TERMINAL
- MCC TERMINAL
- SKID JUNCTION BOX TERMINAL
- FIELD JUNCTION BOX TERMINAL
- FUSE TERMINAL
- CUSTOMER PANEL
- CUSTOMER JUNCTION BOX
- IN4934 DIODE
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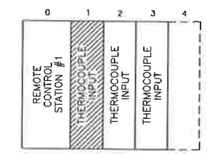
- MOTIV CONTROL PANEL DUAL LEVEL FUSED AND FEED THROUGH
- MOTIV CONTROL PANEL DUAL LEVEL FEED THROUGH WITH SHIELD



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2. ALL SHIELD WIRES TO BE TERMINATED AT SHIELD GROUND BUS.
3. ALL FIELD WIRING TO BE WIRED FOR CLASS 1 ZONE 2, UNLESS SPECIFIED.
4. PANEL IS RATED FOR CLASS 1 ZONE 2 ONLY.

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COMPANY: Bidell Equipment Inc.
DATE ISSUED: 05 MAY 2004
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CONTROL PANEL
PLC I/O SCHEMATIC
THERMOCOUPLE RCS 1 STACK 1

DRAWN: D. TIVADAR	DATE: 03.01.07	CUST./PROJ.:	BIDELL/03-248
DESIGNED: B. EBELHER	DATE: 03.01.08	DESCRIPTION:	motivRCS-204
CHECKED: B. EBELHER	DATE: 03.01.08	TYPE:	
DRAWING NUMBER: 70081-E05101	SHEET: 1 OF 1	SCALE: NTS	REV: A

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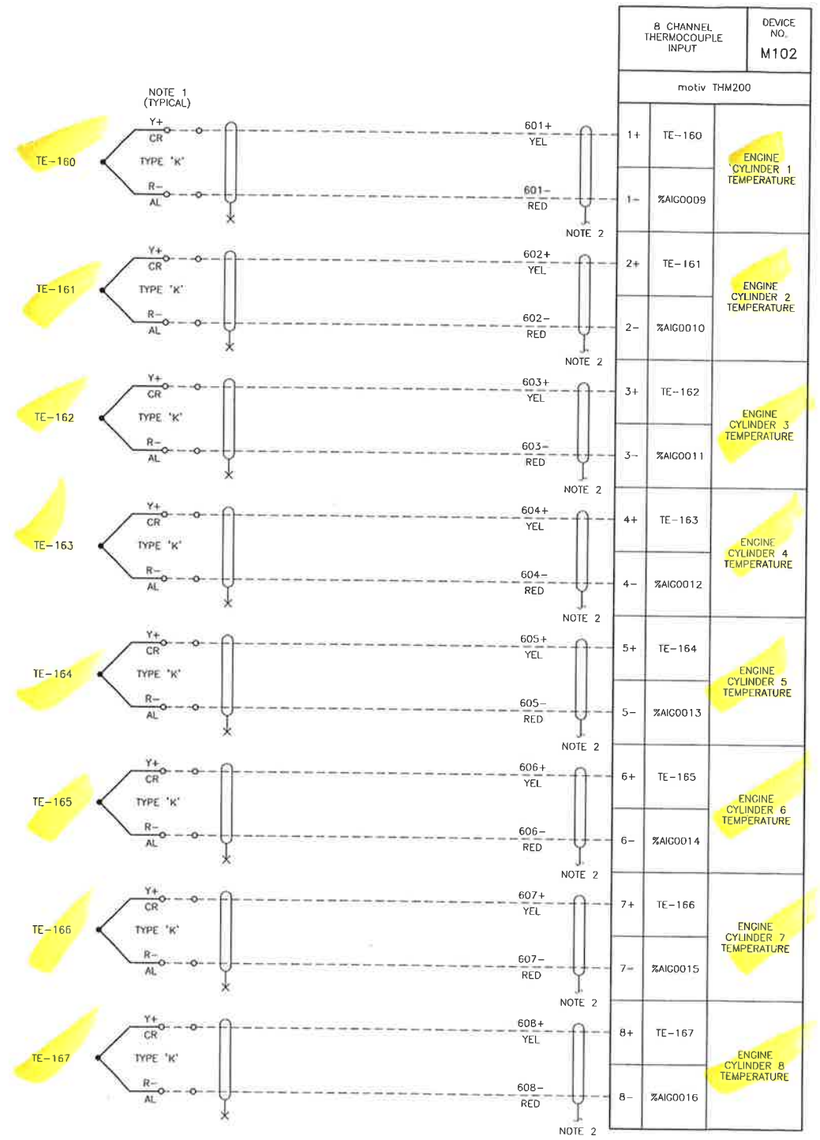

LEGEND:

- MOTIV CONTROL PANEL (FEED TERMINAL)
- MOTIV CONTROL PANEL (DISCONNECT TERMINAL)
- VENDOR TERMINAL
- MCC TERMINAL
- SKID JUNCTION BOX TERMINAL
- FIELD JUNCTION BOX TERMINAL
- FUSE TERMINAL
- CUSTOMER PANEL
- CUSTOMER JUNCTION BOX
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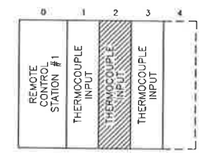
- MOTIV CONTROL PANEL DUAL LEVEL FUSED AND FEED THROUGH
- MOTIV CONTROL PANEL DUAL LEVEL FEED THROUGH WITH SHIELD



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4. PANEL IS RATED FOR CLASS 1 ZONE 2 ONLY.

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CONTROL PANEL
PLC I/O SCHEMATIC
THERMOCOUPLE RCS 1 STACK 2

DRAWN:	D. TIVADAR	DATE: 03.01.07	CUST./PROJ.:	BIDELL/03-248	
DESIGNED:	B. EBELHER	DATE: 03.01.08	DESCRIPTION:	motivRCS-204	
CHECKED:	B. EBELHER	DATE: 03.01.08	TYPE:		
DRAWING NUMBER:	70081-E05102	SHEET: 1 OF 1	SCALE: NTS	REV: A	

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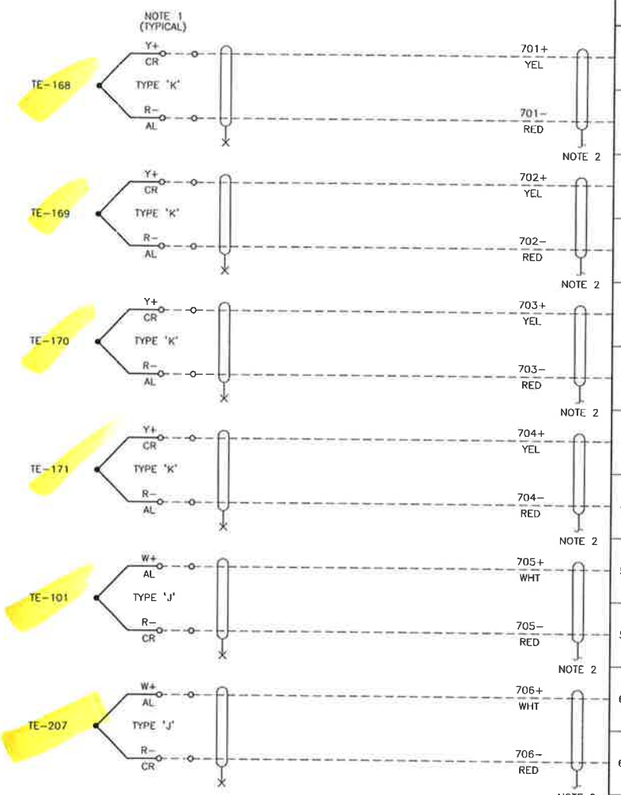
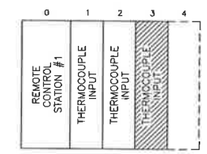


8 CHANNEL THERMOCOUPLE INPUT		DEVICE NO. M103
motiv THM200		
1+	TE-168	ENGINE CYLINDER 9 TEMPERATURE
1-	%AIG0017	
2+	TE-169	ENGINE CYLINDER 10 TEMPERATURE
2-	%AIG0018	
3+	TE-170	ENGINE CYLINDER 11 TEMPERATURE
3-	%AIG0019	
4+	TE-171	ENGINE CYLINDER 12 TEMPERATURE
4-	%AIG0020	
5+	TE-101	AIR MANIFOLD LEFT BANK TEMPRATURE
5-	%AIG0021	
6+	TE-207	COMPRESSOR GAS DISCHARGE TEMPERATURE 4
6-	%AIG0022	
7+	-	SPARE
7-	%AIG0023	
8+	-	SPARE
8-	%AIG0024	

LEGEND:

- MOTIV CONTROL PANEL (FEED TERMINAL)
- MOTIV CONTROL PANEL (DISCONNECT TERMINAL)
- VENDOR TERMINAL
- MCC TERMINAL
- SKID JUNCTION BOX TERMINAL
- FIELD JUNCTION BOX TERMINAL
- FUSE TERMINAL
- CUSTOMER PANEL
- CUSTOMER JUNCTION BOX
- IN4934 DIODE
- PANEL/VENDOR WIRING
- FIELD WIRING
- MOTIV CONTROL PANEL DUAL LEVEL FEED THROUGH WDK 2.5
- MOTIV CONTROL PANEL NON INCENDIVE BARRIER
- MOTIV CONTROL PANEL DUAL LEVEL FUSED AND FEED THROUGH
- MOTIV CONTROL PANEL DUAL LEVEL FEED THROUGH WITH SHIELD



NOTES:

1. ALL WIRING SHOWN ON THIS DRAWING MUST BE 'J' TYPE OR 'K' TYPE AS SPECIFIED ON THE DEVICE. THERMOCOUPLE. COPPER WIRE IS NOT ACCEPTABLE.
2. ALL SHIELD WIRES TO BE TERMINATED AT SHIELD GROUND BUS.
3. ALL FIELD WIRING TO BE WIRED FOR CLASS 1 ZONE 2, UNLESS SPECIFIED.
4. PANEL IS RATED FOR CLASS 1 ZONE 2 ONLY.

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ISSUED TO: Long To
COMPANY: Bidell Equipment Inc.
DATE ISSUED: 05 MAY 2004
ISSUING DEPT.: MOTIV SYSTEMS INC.

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A	04.05.05	ISSUED FOR REVIEW	JZH	DBG	DBG	LT	LT

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CONTROL PANEL
PLC I/O SCHEMATIC
THERMOCOUPLE RCS 1 STACK 3

DRAWN: D. TIVADAR	DATE: 03.01.07	CUST./PROJ.:	BIDELL/03-248	
DESIGNED: B. EBELHER	DATE: 03.01.08	DESCRIPTION:	motivRCS-204	
CHECKED: B. EBELHER	DATE: 03.01.08	TYPE:		
DRAWING NUMBER: 70081-E05103	SHEET: 1 OF 1	SCALE: NTS	REV: A	

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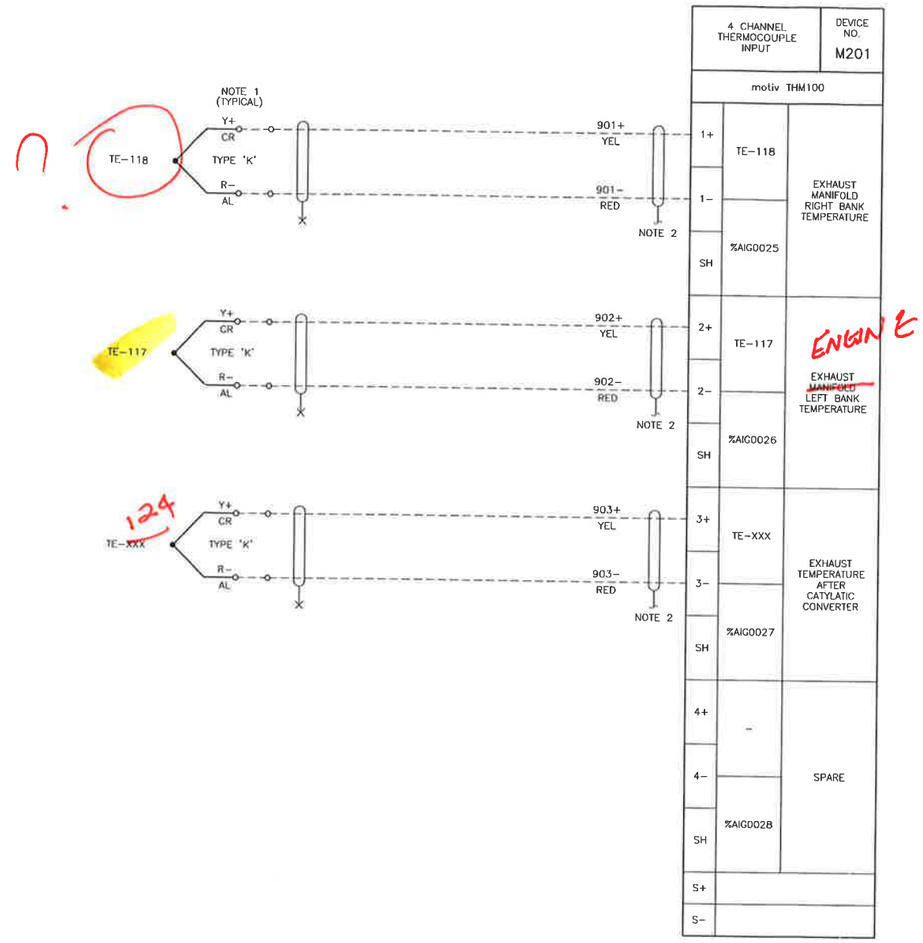
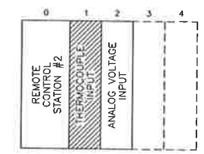


LEGEND:

- MOTIV CONTROL PANEL (FEED TERMINAL)
- MOTIV CONTROL PANEL (DISCONNECT TERMINAL)
- VENDOR TERMINAL
- MCC TERMINAL
- SKID JUNCTION BOX TERMINAL
- FIELD JUNCTION BOX TERMINAL
- FUSE TERMINAL
- CUSTOMER PANEL
- CUSTOMER JUNCTION BOX
- IN4934 DIODE
- PANEL/VENDOR WIRING
- FIELD WIRING
- MOTIV CONTROL PANEL DUAL LEVEL FEED THROUGH WDK 2.5
- MOTIV CONTROL PANEL NON INCENDIVE BARRIER
- MOTIV CONTROL PANEL DUAL LEVEL FUSED AND FEED THROUGH
- MOTIV CONTROL PANEL DUAL LEVEL FEED THROUGH WITH SHIELD



NOTES:

1. ALL WIRING SHOWN ON THIS DRAWING MUST BE 'J' TYPE OR 'K' TYPE AS SPECIFIED ON THE DEVICE. THERMOCOUPLE. COPPER WIRE IS NOT ACCEPTABLE.
2. ALL SHIELD WIRES TO BE TERMINATED AT SHIELD GROUND BUS.
3. ALL FIELD WIRING TO BE WIRED FOR CLASS 1 ZONE 2, UNLESS SPECIFIED.

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COMPANY: Bidell Equipment Inc.

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A	04.05.05	ISSUED FOR REVIEW	JZH	DBG	DBG	LT	LT

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CONTROL PANEL
PLC I/O SCHEMATIC
THERMOCOUPLE RCS 2 STACK 1

DRAWN:	D. TIVADAR	DATE: 03.01.07	CUST./PROJ.:	BIDELL/03-248	
DESIGNED:	B. EBELHER	DATE: 03.01.08	DESCRIPTION:	motivRCS-204	
CHECKED:	B. EBELHER	DATE: 03.01.08	TYPE:		
DRAWING NUMBER:	70081-E05201	SHEET: 1 OF 1	SCALE: NTS	REV: A	

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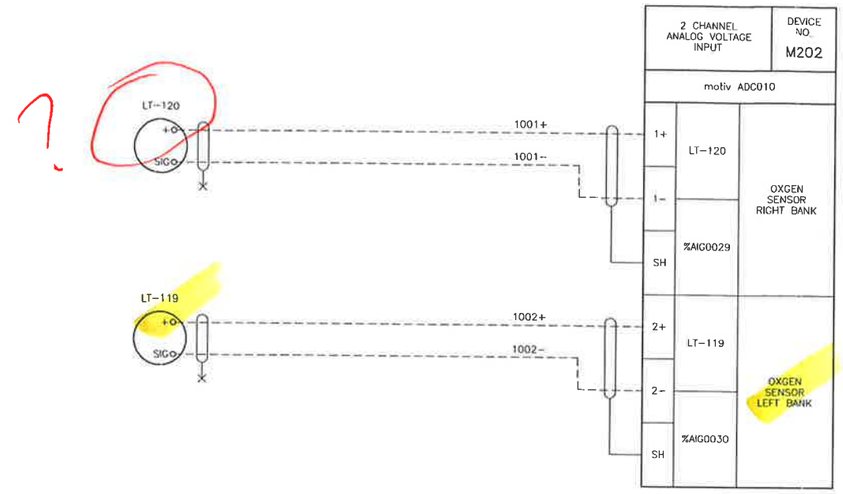
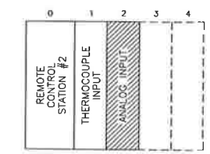


LEGEND:

- MOTIV CONTROL PANEL (FEED TERMINAL)
- MOTIV CONTROL PANEL (DISCONNECT TERMINAL)
- VENDOR TERMINAL
- MCC TERMINAL
- SKID JUNCTION BOX TERMINAL
- FIELD JUNCTION BOX TERMINAL
- FUSE TERMINAL
- CUSTOMER PANEL
- CUSTOMER JUNCTION BOX
- IN4934 DIODE
- PANEL/VENDOR WIRING
- FIELD WIRING
- MOTIV CONTROL PANEL DUAL LEVEL FEED THROUGH WDK 2.5
- MOTIV CONTROL PANEL NON INCENDIVE BARRIER
- MOTIV CONTROL PANEL DUAL LEVEL FUSED AND FEED THROUGH
- MOTIV CONTROL PANEL DUAL LEVEL FEED THROUGH WITH SHIELD



NOTES:

1. ALL FIELD WIRING TO BE WIRED FOR CLASS 1 ZONE 2, UNLESS SPECIFIED.
2. PANEL IS RATED FOR CLASS 1 ZONE 2 ONLY.

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CONTROL PANEL
PLC I/O SCHEMATIC
ANALOG INPUT RCS 2 STACK 2

DRAWN: D. TIVADAR	DATE: 03.01.07	CUST./PROJ.:	BIDELL/03-248	
DESIGNED: B. EBELHER	DATE: 03.01.08	DESCRIPTION:	motivRCS-204	
CHECKED: B. EBELHER	DATE: 03.01.08	TYPE:		
DRAWING NUMBER: 70081-E05202		SHEET: 1 OF 1	SCALE: NTS	REV: A

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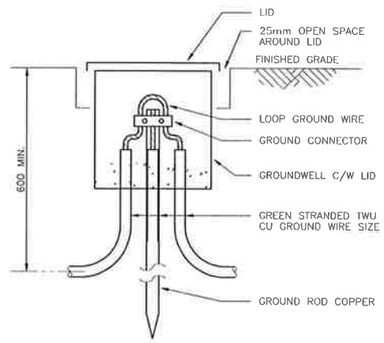
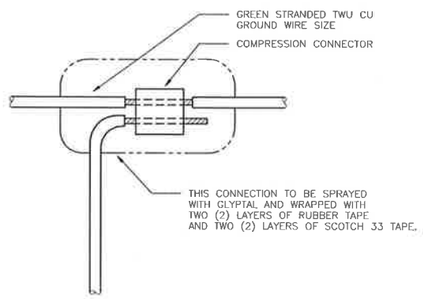
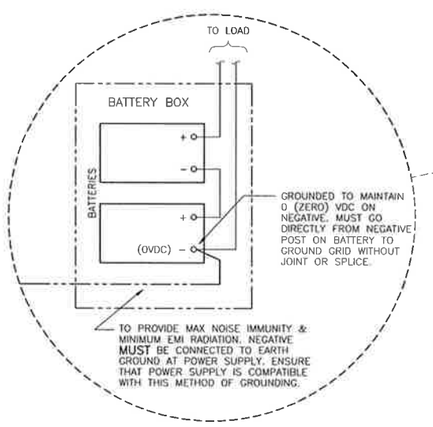
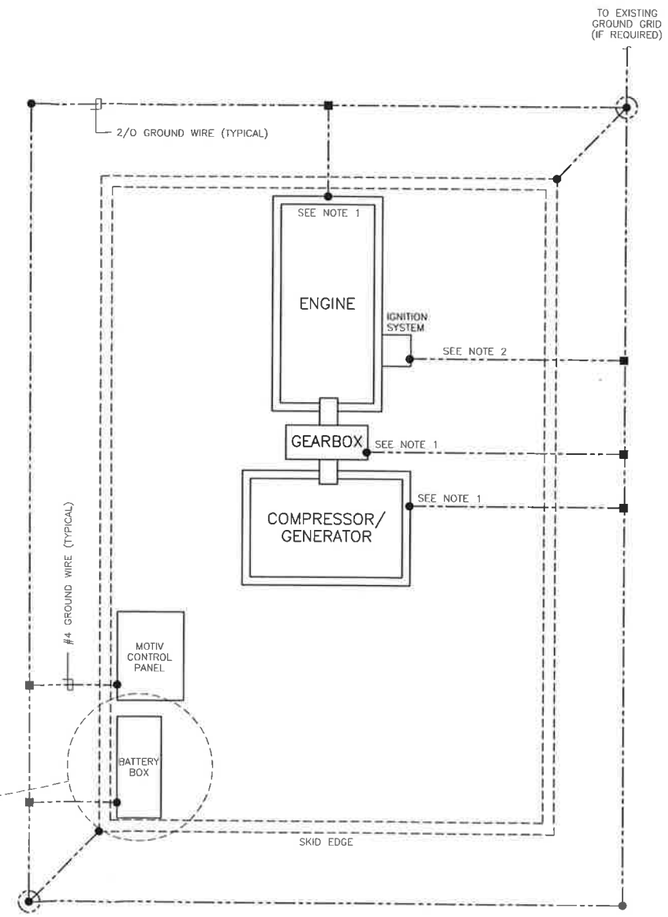


GROUNDWELL



GROUND CONNECTION





SKID GROUNDING LAYOUT

(GENERAL ONLY)

LEGEND:

- ■ GROUND CONNECTION WELDED, BRAZED OR COMPRESSION TYPE
- ● GROUND ROD W/O WELL BOLTED OR CLAMPED
- ⊙ GROUND ROD C/W WELL
- — — — GROUNDING CONDUCTOR

NOTES:

1. DRILL AND TAP – 5/16" DRILL 3/8" N. C. TAP FOR SERVIT POST.
2. THE DEDICATED ENGINE GROUND TERMINAL SHOULD BE CONNECTED TO PACKAGE SKID AND THEN OUT TO GROUND ROD WITH 4AWG WIRE. DO NOT USE PACKAGE IRON FOR GROUND PATH AND DO NOT DAISY CHAIN GROUND CONNECTIONS WITH OTHER DEVICES AS PER ENGINE/ IGNITION MANUFACTURERS SPECIFICATION.

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CONTROL PANEL
SUGGESTED GROUNDING

DRAWN: W. CEMOTO	DATE: 04.01.06	CUST./PROJ.:	BIDELL/03-248
DESIGNED: D. GREEN	DATE: 04.01.06	DESCRIPTION:	motivRCS-204
CHECKED: D. GREEN	DATE: 04.01.06	TYPE:	

DRAWING NUMBER:	SHEET:	SCALE:	REV:
70081-E09000	1 OF 1	NTS	A

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70081-E09000.DWG

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REMARKS: X -Issued For Review

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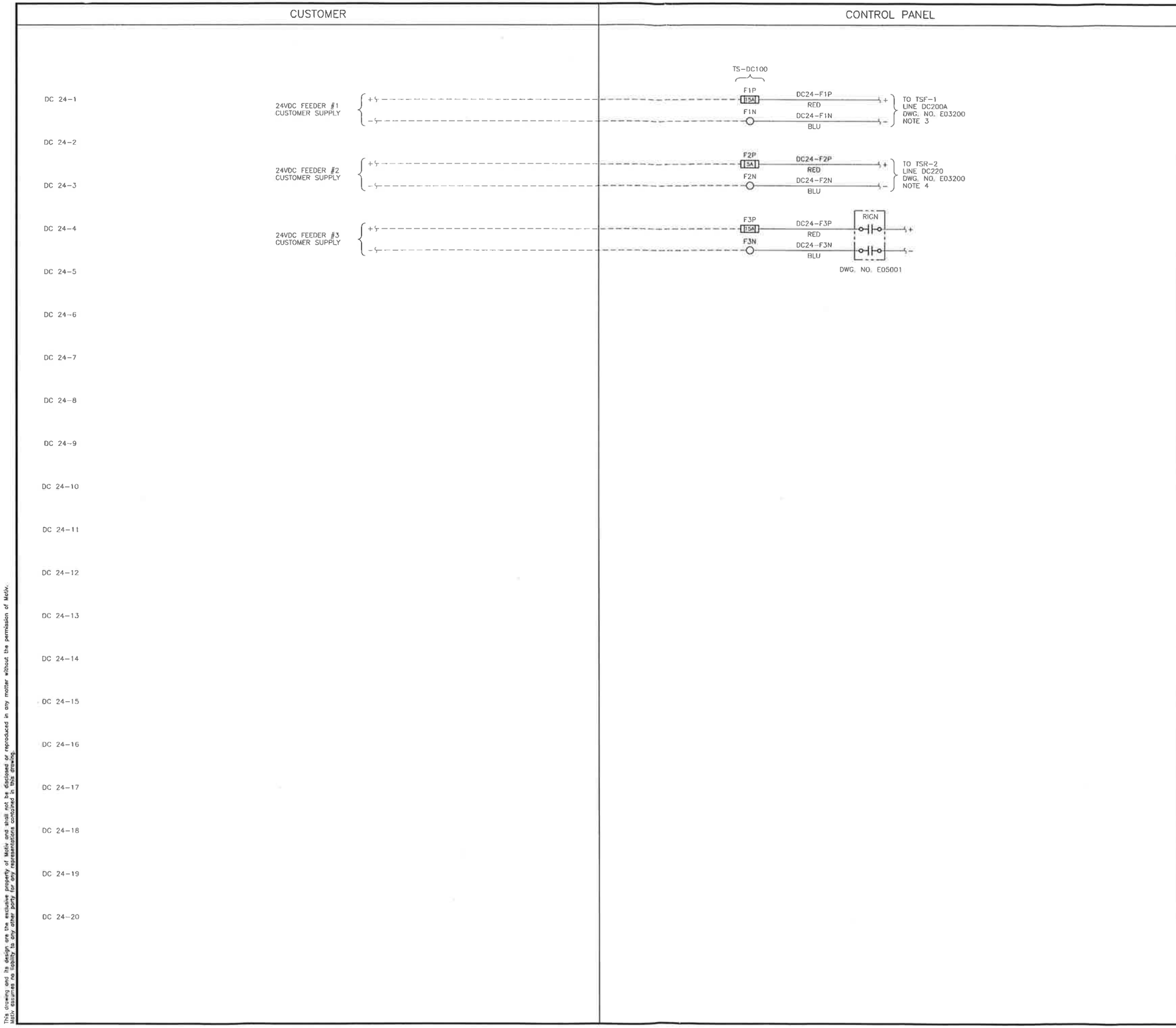
Calgary, Alberta T2C 4Z1
Attn: Long Ta

☑ Motiv, Records

DATE:	6-May-04
TOTAL PAGE:	1
MOTIV JOB No.:	70081
CLIENT JOB No.:	03-248
SEND BY:	E-Mail

SUBJECT: Stock Unit Drawings (11"x17",PDF)

ITEM No.	REMARK	DOCUMENT No.	REV.	DESCRIPTION or DRAWING TITLE
1	X	70081-E00000	A	CONTROL PANEL DRAWING LIST
2	X	70081-E00001	A	CONTROL PANEL ELECTRICAL STANDARD SYMBOLS
3	X	70081-E02100	A	CONTROL PANEL ENCLOSURE GENERAL ASSEMBLY
4	X	70081-E02200	A	CONTROL PANEL BACKPAN GENERAL ASSEMBLY
5	X	70081-E03100	A	CONTROL PANEL 24VDC POWER SUPPLY
6	X	70081-E03200	A	CONTROL PANEL 24VDC POWER DISTRIBUTION
7	X	70081-E03300	A	CONTROL PANEL ISOLATED 24VDC POWER DISTRIBUTION
8	X	70081-E03500	A	CONTROL PANEL ESD BACK-UP RELAYS
9	X	70081-E05001	A	CONTROL PANEL PLC I/O SCHEMATIC ANALOG & DIGITAL MIXED OCS STACK 1
10	X	70081-E05002	A	CONTROL PANEL PLC I/O SCHEMATIC ANALOG & DIGITAL MIXED OCS STACK 2
11	X	70081-E05003	A	CONTROL PANEL PLC I/O SCHEMATIC HIGH SPEED COUNTER OCS STACK 3
12	X	70081-E05101	A	CONTROL PANEL PLC I/O SCHEMATIC THERMOCOUPLE RCS 1 STACK 1
13	X	70081-E05102	A	CONTROL PANEL PLC I/O SCHEMATIC THERMOCOUPLE RCS 1 STACK 2
14	X	70081-E05103	A	CONTROL PANEL PLC I/O SCHEMATIC THERMOCOUPLE RCS 1 STACK 3
15	X	70081-E05201	A	CONTROL PANEL PLC I/O SCHEMATIC THERMOCOUPLE RCS 2 STACK 1
16	X	70081-E05202	A	CONTROL PANEL PLC I/O SCHEMATIC THERMOCOUPLE RCS 2 STACK 2
17	X	70081-E09000	A	CONTROL PANEL SUGGESTED GROUNDING



LEGEND:

- MOTIV CONTROL PANEL (FEED TERMINAL)
- MOTIV CONTROL PANEL (DISCONNECT TERMINAL)
- VENDOR TERMINAL
- MCC TERMINAL
- SKID JUNCTION BOX TERMINAL
- FIELD JUNCTION BOX TERMINAL
- FUSE TERMINAL
- CUSTOMER PANEL
- CUSTOMER JUNCTION BOX
- IN4934 DIODE
- PANEL/VENDOR WIRING
- FIELD WIRING

NOTES:

1. ALL FIELD WIRING TO BE WIRED FOR CLASS 1 ZONE 2, UNLESS SPECIFIED.
2. PANEL IS RATED FOR CLASS 1 ZONE 2.
3. TO PROVIDE MAX NOISE IMMUNITY AND MINIMUM EMI RADIATION, NEGATIVE MUST BE CONNECTED TO EARTH GROUND AT POWER SUPPLY. ENSURE THAT POWER SUPPLY IS COMPATIBLE WITH THIS METHOD OF GROUNDING.
4. SEPARATE POWER SUPPLY TO BE USED IN ORDER TO MINIMIZE LINE NOISE AND VOLTAGE SPIKES.

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CONTROL PANEL
24VDC POWER SUPPLY

DRAWN:	D. TIVADAR	DATE: 03.01.07	CUST./PROJ.:	BIDELL/03-248	
DESIGNED:	B. EBELHER	DATE: 03.01.08	DESCRIPTION:	motivRCS-204	
CHECKED:	B. EBELHER	DATE: 03.01.08	TYPE:		
DRAWING NUMBER:	70081-E03100	SHEET: 1 OF 1	SCALE: NTS	REV: A	

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