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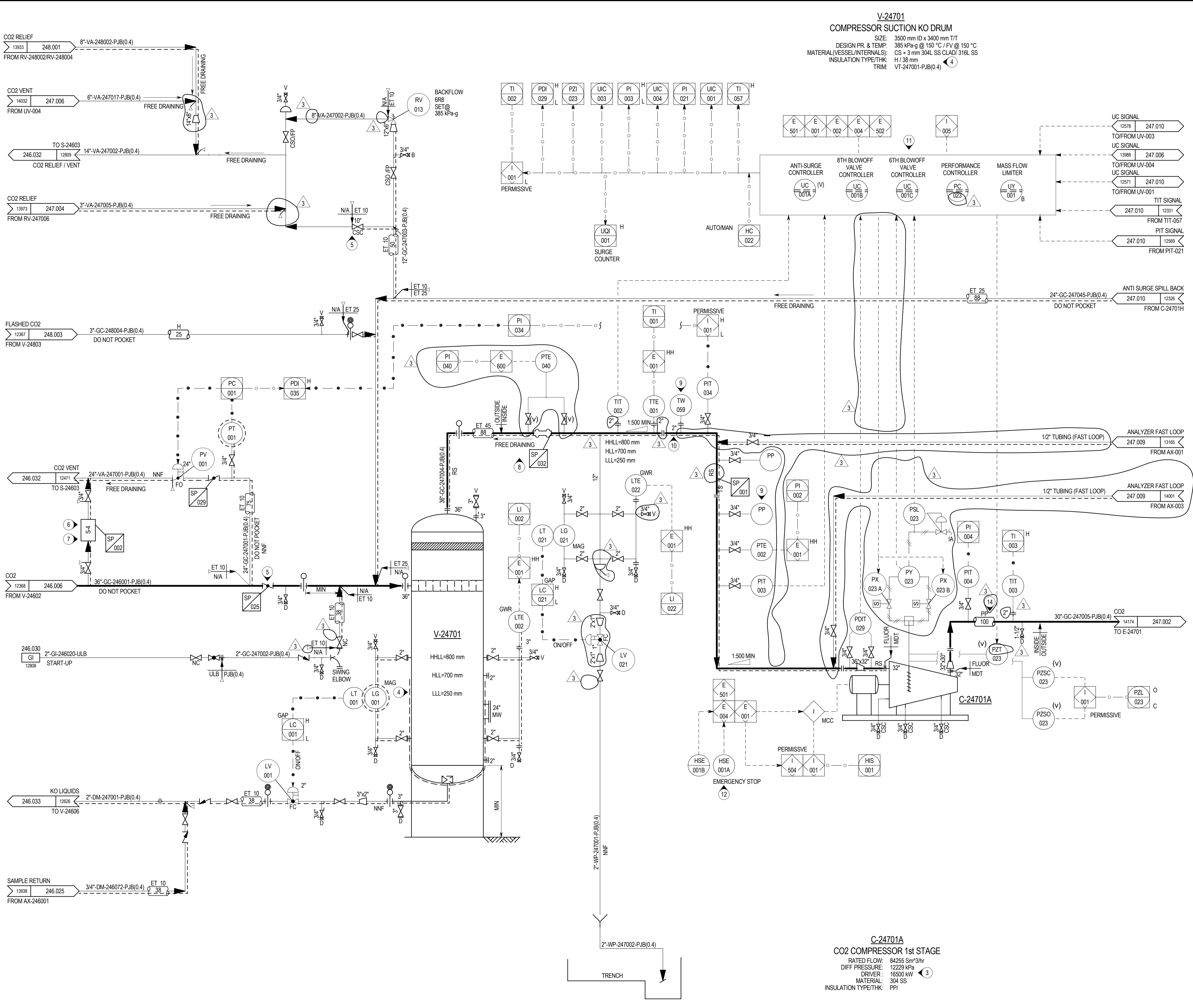
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V-24701
COMPRESSOR SUCTION KO DRUM
 SIZE: 3500 mm ID x 3400 mm T/T
 DESIGN PR. & TEMP: 385 kPa-g @ 150 °C / FV @ 150 °C
 MATERIAL (VESSEL/INTERNAL): CS + 3 mm 304L SS CLAD / 316L SS
 INSULATION TYPE/THK: H / 38 mm
 TRIM: VT-24701-PJB(0.4)

C-24701A
CO2 COMPRESSOR 1st STAGE
 RATED FLOW: 84255 Sm³/hr
 DIFF PRESSURE: 12229 kPa
 DRIVER: 16500 kW
 MATERIAL: 304 SS
 INSULATION TYPE/THK: PP/

- NOTES:**
- SEE DRAWINGS 200.0000.000.041.007 THRU 016 FOR SYMBOL IDENTIFICATION GENERAL NOTES & CONNECTION DETAILS.
 - ALL INSTRUMENT TAG NUMBERS ARE PREFIXED BY "247" UNLESS OTHERWISE STATED.
 - DRIVER POWER AND DIFFERENTIAL PRESSURE DEPICTED ARE THE TOTAL FOR THE COMPRESSOR.
 - ELECTRIC TRACE (ET 10) WITH 50 mm INSULATION THICKNESS TO HILL.
 - VALVE TO BE LOCATED AT SAFE ACCESSIBLE LOCATION.
 - SAMPLE TAKE-OFF POINTS TO BE ACCESSIBLE.
 - FOR PIPING DETAILS OF SAMPLE STATION, SEE DRAWING 200.0000.000.041.012.
 - MAXIMIZE LENGTH OF PIPING THAT FREE DRAINS TO KO DRUM.
 - MEASUREMENT POINTS AVAILABLE FOR ON-SITE COMPRESSOR PERFORMANCE TEST.
 - GTAW ROOT PASS WELD IS MANDATORY ON THIS LINE.
 - FUNCTIONS ARE CONTAINED IN COMMON COMPRESSOR CONTROL PLC.
 - ONE PUSH BUTTON LOCATED IN FIELD IN COMPRESSOR AREA. SECOND PUSH BUTTON LOCATED IN CONTROL ROOM.
 - E-600 IS PART OF THE FIRE AND GAS SYSTEM. A PAH WILL BE TREATED THE SAME AS A CO2 POINT DETECTOR ALARM. REFER TO FIRE AND GAS DETECTION SYSTEM P&ID 246.0000.000.041.040.
 - METAL MESH GUARD FOR PERSONNEL PROTECTION. THE DISTANCE BETWEEN METAL MESH GUARD AND BARE SURFACE, IN mm, IS SPECIFIED IN THE SYMBOL.

FLUOR
IFC – Issued for Construction
 Jul 30, 2013

REV	ISSUED DATE	DESCRIPTION	BY	CHKD	PRS	CS	PDP	MC	APR	PEM	CLIENT APP
3	07/08/13	ISSUED FOR CONSTRUCTION	GB	KB	KH	SL	-	-	-	BB	-
2	02/01/13	ISSUED FOR CONSTRUCTION	GB	KB	KH	SL	-	-	-	EM	-
1	10/31/12	ISSUED FOR CONSTRUCTION	GB	KB	KH	SL	-	-	-	EM	-
0A	07/25/12	RE-ISSUED FOR PHA	-	-	-	-	-	-	-	-	-
0	09/15/11	ISSUED FOR DESIGN	GB	KB	KH	CMF	-	-	-	EM	MD
0	07/11/11	ISSUED FOR PHA III	-	-	-	-	-	-	-	-	-
F	04/20/11	ISSUED FOR ESTIMATE	-	-	-	-	-	-	-	-	-

SHELL CANADA
 QUEST CCS PROJECT

FLUOR

PIPING AND INSTRUMENT DIAGRAM
 QUEST CCS PROJECT
 UNIT 247 - COMPRESSION
 CO2 COMPRESSOR 1ST STAGE

SCALE: NONE
 SHELL DWG NO.: 247.0000.000.041.001
 REV. 3

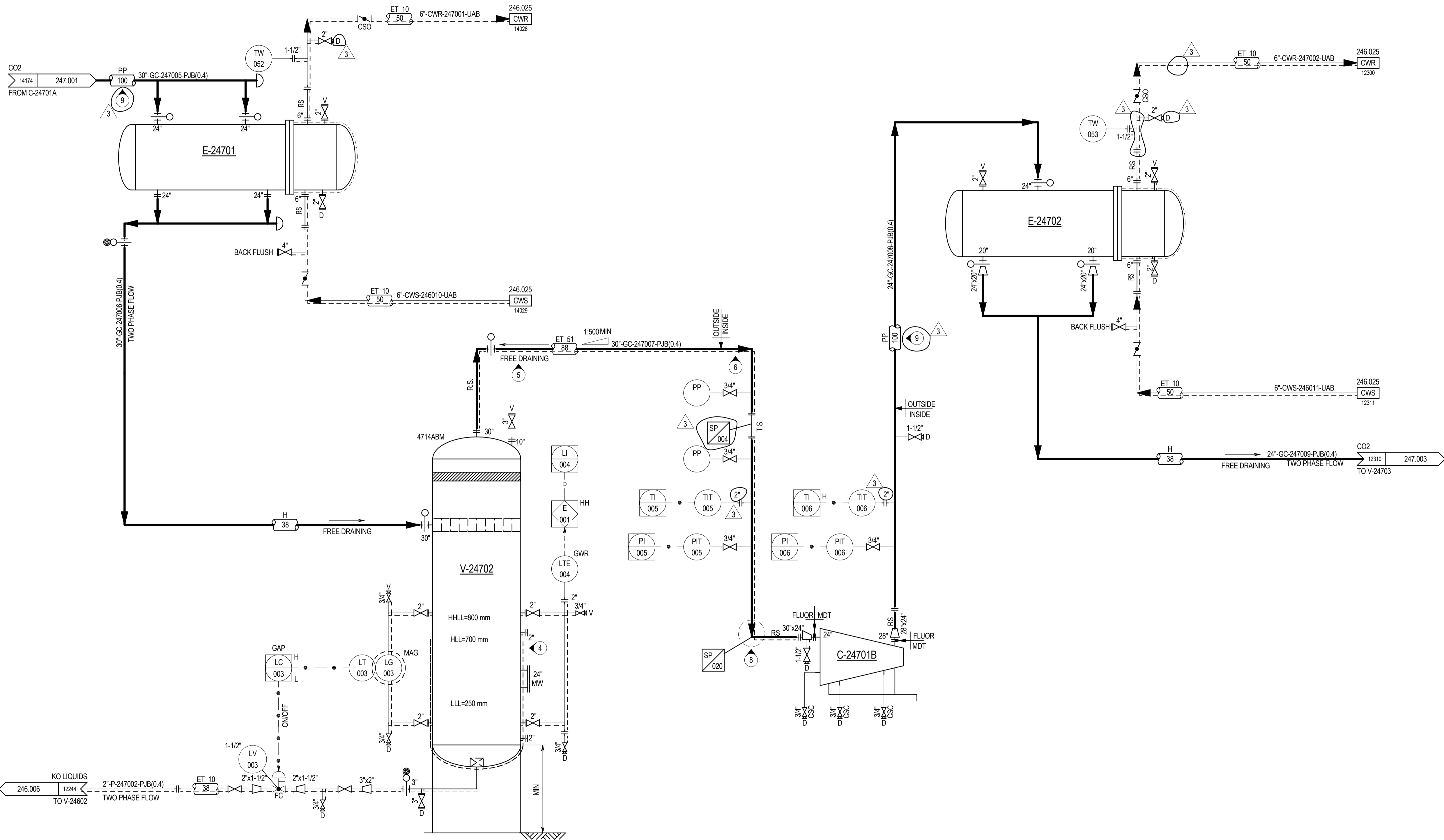
V-24702
COMPRESSOR 2nd STAGE KO DRUM
 SIZE: 2800 mm ID x 3000 mm T/T
 DESIGN PR. & TEMP: 385 kPa-g @ 115 °C / FV @ 150 °C
 MATERIAL (VESSEL/INTERNAL): CS + 3 mm 304L SS CLAD / 316L SS
 INSULATION TYPE/THK: H / 50 mm
 TRIM: VT-247002-PJB(0.4)

E-24701
COMPRESSOR 1st STAGE COOLER
 RATED DUTY: 2.8 MW
 SURFACE AREA: 420.0 m²
 TEMA TYPE: BKU
 SHELL
 DESIGN PRESS: 385 kPa-g / HV
 DESIGN TEMP: 130 °C / 150 °C
 MATERIAL: CS + 3 mm 304L SS CLAD
 INSULATION TYPE/THK: H / 50 mm
 TRIM: ET-247001-PJB(0.4)

E-24702
COMPRESSOR 2nd STAGE COOLER
 RATED DUTY: 2.5 MW
 SURFACE AREA: 502.0 m²
 TEMA TYPE: BKU
 SHELL
 DESIGN PRESS: 530 kPa-g / HV
 DESIGN TEMP: 130 °C / 150 °C
 MATERIAL: CS + 3 mm 304L SS CLAD
 INSULATION TYPE/THK: PP / 25 mm
 TRIM: ET-247016-PJB(0.4)

TUBE
 1200 kPa-g /
 58 °C /
 DUPLEX 2205 + (0.5)mm CA
 ET-247022-UAB

- NOTES:**
- SEE DRAWINGS 200.0000.000.041.007 THRU 016 FOR SYMBOL IDENTIFICATION GENERAL NOTES & CONNECTION DETAILS.
 - ALL INSTRUMENT TAG NUMBERS ARE PREFIXED BY "247" UNLESS OTHERWISE STATED.
 - DRIVER POWER AND DIFFERENTIAL PRESSURE DEPICTED ARE THE TOTAL FOR THE COMPRESSOR.
 - ELECTRIC TRACE (ET 10) WITH 50 mm INSULATION THICKNESS TO HLL.
 - MAXIMIZE LENGTH OF PIPING THAT FREE DRAINS TO KO DRUM.
 - GTAW ROOT PASS WELD IS MANDATORY ON THIS LINE.
 - ELECTRIC TRACE (ET 10) WITH 50 mm INSULATION THICKNESS.
 - VANED ELBOW.
 - METAL MESH GUARD FOR PERSONNEL PROTECTION. THE DISTANCE BETWEEN METAL MESH GUARD AND BARE SURFACE, IN mm, IS SPECIFIED IN THE SYMBOL.



C-24701B
CO2 COMPRESSOR 2nd STAGE
 RATED FLOW: 84255 Sm³/hr
 DIFF PRESSURE: 12229 kPa
 DRIVER: 16500 kW
 MATERIAL: 304 SS
 INSULATION TYPE/THK: PP

FLUOR
IFC – Issued for Construction
 Jul 30, 2013

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2	02/01/13	ISSUED FOR CONSTRUCTION	GB	KB	KH	SL	-	-	-	EM	-
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0A	07/25/12	RE-ISSUED FOR PHA	-	-	-	-	-	-	-	-	-
0	09/15/11	ISSUED FOR DESIGN	GB	KB	KH	SD	-	-	-	EM	MD
G	07/11/11	ISSUED FOR PHA III	-	-	-	-	-	-	-	-	-
F	04/20/11	ISSUED FOR ESTIMATE	-	-	-	-	-	-	-	-	-
REV	ISSUED DATE	DESCRIPTION	BY	CKD	PRS	CS	PDP	MC	APE	PEM	CLIENT APP

SHELL CANADA
 QUEST CCS PROJECT

FLUOR

PIPING AND INSTRUMENT DIAGRAM
 QUEST CCS PROJECT
 UNIT 247 - COMPRESSION
 CO2 COMPRESSOR 2ND STAGE

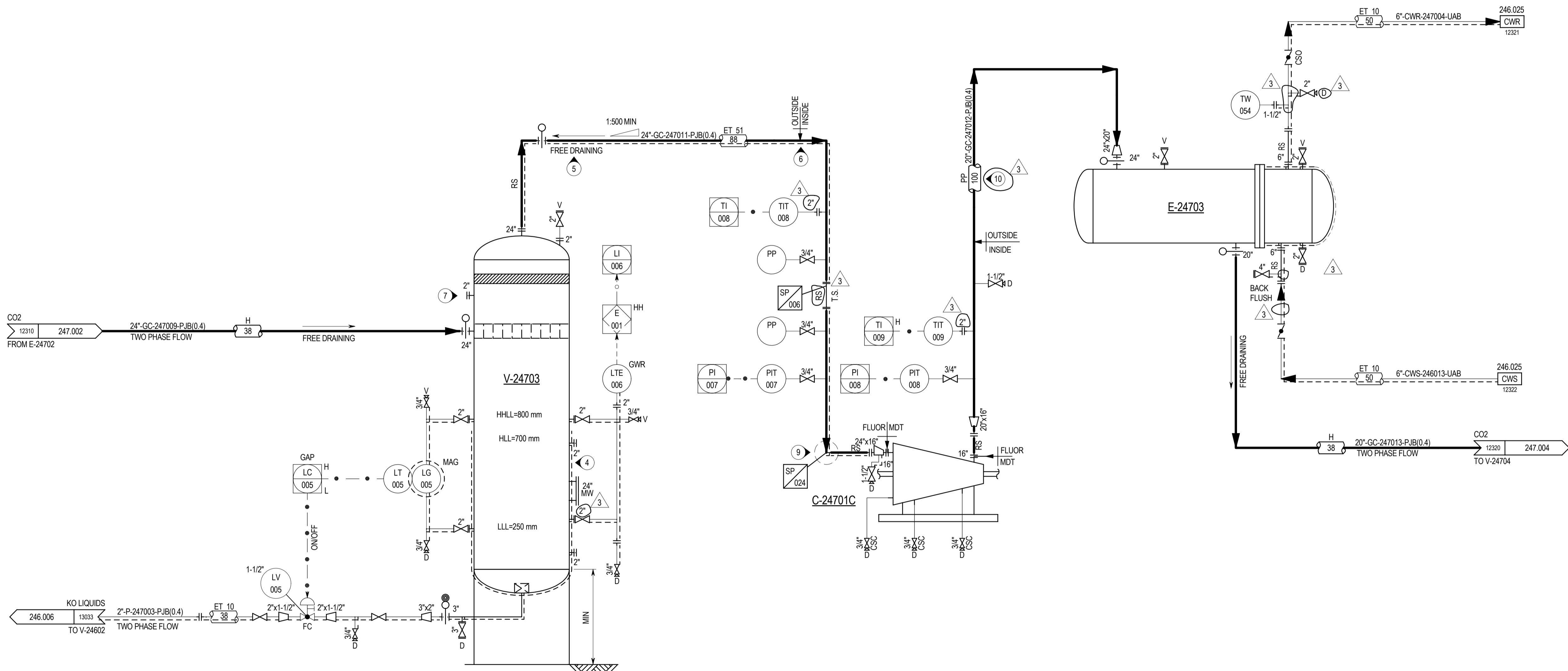
SCALE: NONE
 SHELL DWG NO.: 247.0000.000.041.002
 REV. 3

V-24703
COMPRESSOR 3rd STAGE KO DRUM
 SIZE: 2500 mm ID x 2600 mm T/T
 DESIGN PR. & TEMP: 530 kPa-g @ 100 °C / FV @ 150 °C
 MATERIAL(VESSEL/INTERNAL): CS + 3 mm 304L SS CLAD / 316L SS
 INSULATION TYPE/THK: H / 38 mm
 TRIM: VT-247003-PJB(0.4)

E-24703
COMPRESSOR 3rd STAGE COOLER
 RATED DUTY: 3.1 MW
 SURFACE AREA: 434.0 m²
 TEMA TYPE: BEU
 SHELL: 1200 kPa-g / HV
 DESIGN PRESS: 1200 kPa-g / HV
 DESIGN TEMP: 130 °C / 150 °C
 MATERIAL: CS + 3 mm 304L SS CLAD
 INSULATION TYPE/THK: PP / 25 mm
 TRIM: ET-247003-PJB(0.4)

TUBE: 1200 kPa-g / 58 °C / DUPLEX 2205 - 0.5mm CA
 ET-247017-UAB

- NOTES:**
- SEE DRAWINGS 200.0000.000.041.007 THRU 016 FOR SYMBOL IDENTIFICATION GENERAL NOTES & CONNECTION DETAILS.
 - ALL INSTRUMENT TAG NUMBERS ARE PREFIXED BY "247" UNLESS OTHERWISE STATED.
 - DRIVER POWER AND DIFFERENTIAL PRESSURE DEPICTED ARE THE TOTAL FOR THE COMPRESSOR.
 - ELECTRIC TRACE (ET 10) WITH 50 mm INSULATION THICKNESS TO HLL.
 - MAXIMIZE LENGTH OF PIPING THAT FREE DRAINS TO KO DRUM.
 - G.TAW ROOT PASS WELD IS MANDATORY ON THIS LINE.
 - RELIEF VALVE NOZZLE. RELIEF VALVE NO LONGER REQUIRED AS SYSTEM IS PROTECTED BY OPPSD (REFERENCE DOCUMENT A6GT-R-1071-OPPSD TECHNICAL JUSTIFICATION AND BASIS).
 - ELECTRIC TRACE (ET 10) WITH 50 mm INSULATION THICKNESS.
 - VANED ELBOW.
 - METAL MESH GUARD FOR PERSONNEL PROTECTION. THE DISTANCE BETWEEN METAL MESH GUARD AND BARE SURFACE, IN mm, IS SPECIFIED IN THE SYMBOL.



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0	09/15/11	ISSUED FOR DESIGN	GB	KB	KH	SD	-	-	-	EM	MD
G	07/11/11	ISSUED FOR PHA III									
F	04/20/11	ISSUED FOR ESTIMATE									
REV	ISSUED DATE	DESCRIPTION	BY	CHKD	PRS	CS	PDP	MC	APE	PEM	CLIENT APP

SHELL CANADA
 QUEST CCS PROJECT

FLUOR

PIPING AND INSTRUMENT DIAGRAM
 QUEST CCS PROJECT
 UNIT 247 - COMPRESSION
 CO2 COMPRESSOR 3RD STAGE

SCALE: NONE
 SHELL DWG NO.: 247.0000.000.041.003
 REV. 3

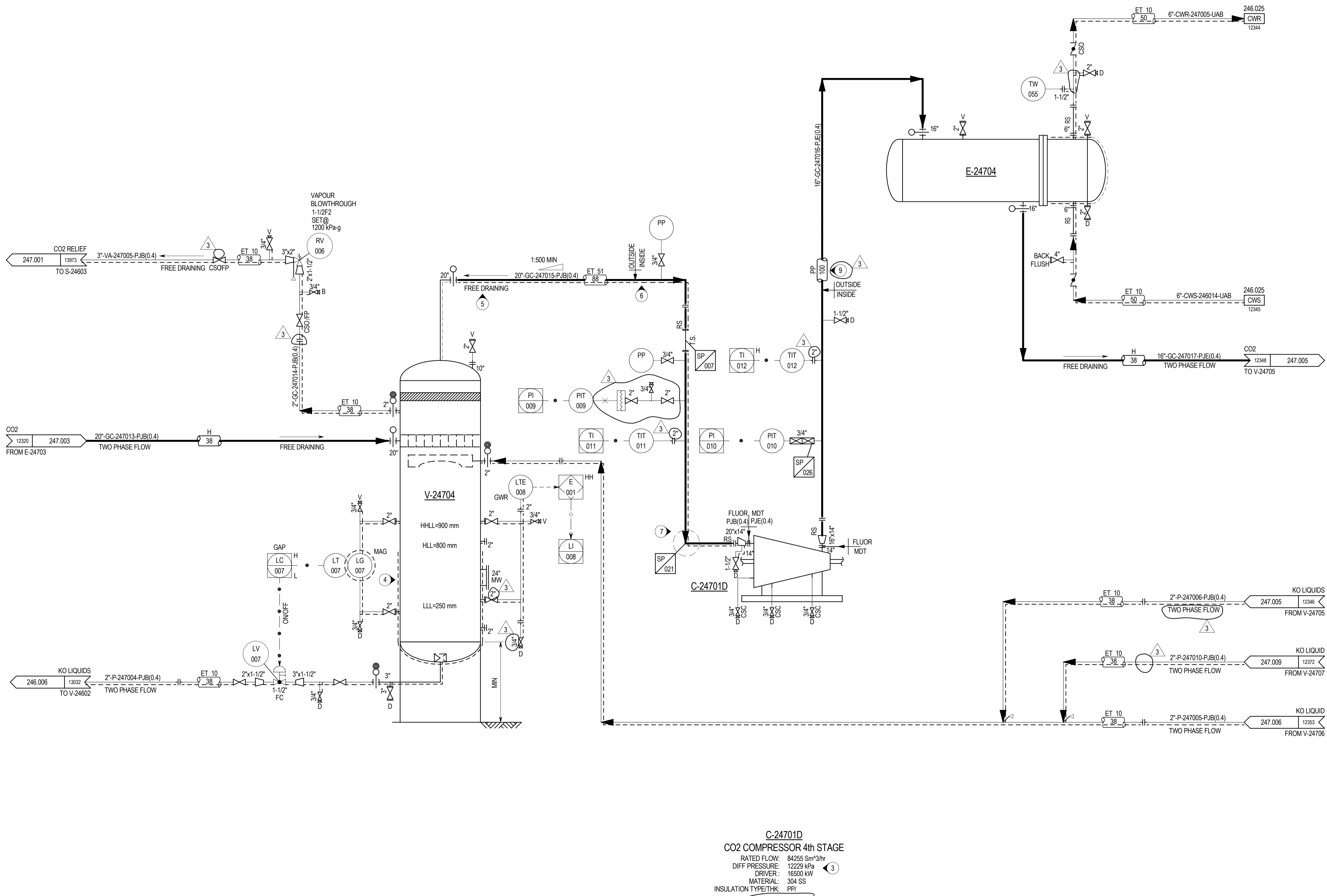
C-24701C
CO2 COMPRESSOR 3rd STAGE
 RATED FLOW: 84255 Sm³/hr
 DIFF PRESSURE: 12229 kPa
 DRIVER: 16500 kW
 MATERIAL: 304 SS
 INSULATION TYPE/THK: PP/

V-24704
COMPRESSOR 4th STAGE KO DRUM
 SIZE: 2100 mm ID x 3300 mm T/T
 DESIGN PR. & TEMP: 1200 kPa-g @ 110 °C / FV @ 150 °C
 MATERIAL (VESSEL/INTERNAL): CS + 3 mm 304L SS CLAD / 316L SS
 INSULATION TYPE/THK: H / 38 mm
 TRIM: VT-247004-PJB(0.4)

E-24704
COMPRESSOR 4th STAGE COOLER
 RATED DUTY: 2.3 MW
 SURFACE AREA: 311.0 m²
 TEMA TYPE: BELU
 SHELL
 DESIGN PRESS: 2200 kPa-g / HV
 DESIGN TEMP: 130 °C / 150 °C
 MATERIAL: CS + 3 mm 304L SS CLAD
 INSULATION TYPE/THK: PP / 25 mm
 TRIM: ET-247004-PJE(0.4)

TUBE
 1700 kPa-g /
 58 °C /
 DUPLEX 2205 + 0.5 mm CA
 ET-247018-UAB

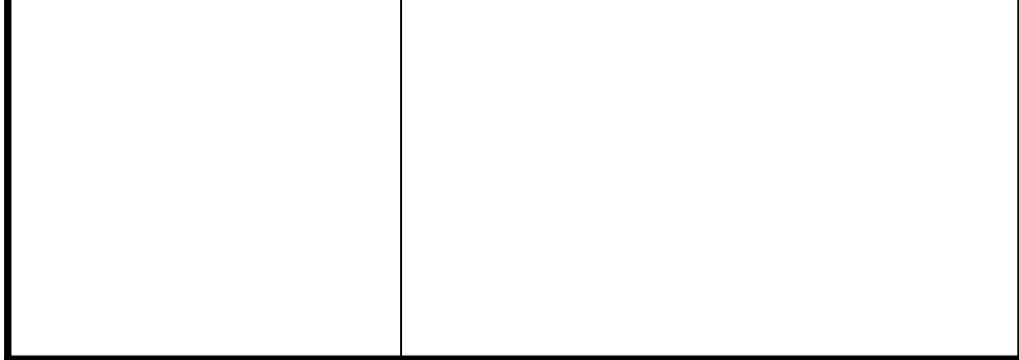
- NOTES:**
- SEE DRAWINGS 200.0000.000.041.007 THRU 016 FOR SYMBOL IDENTIFICATION GENERAL NOTES & CONNECTION DETAILS.
 - ALL INSTRUMENT TAG NUMBERS ARE PREFIXED BY "247" UNLESS OTHERWISE STATED.
 - DRIVER POWER AND DIFFERENTIAL PRESSURE DEPICTED ARE THE TOTAL FOR THE COMPRESSOR.
 - ELECTRIC TRACE (ET 10) WITH 50 mm INSULATION THICKNESS TO HLL.
 - MAXIMIZE LENGTH OF PIPING THAT FREE DRAINS TO KO DRUM.
 - GTAW ROOT PASS WELD IS MANDATORY ON THIS LINE.
 - VANED ELBOW.
 - ELECTRIC TRACE (ET10) WITH 50 mm INSULATION THICKNESS.
 - METAL MESH GUARD FOR PERSONNEL PROTECTION. THE DISTANCE BETWEEN METAL MESH GUARD AND BARE SURFACE, IN mm, IS SPECIFIED IN THE SYMBOL.



C-24701D
CO2 COMPRESSOR 4th STAGE
 RATED FLOW: 84255 Sm³/hr
 DIFF PRESSURE: 12229 kPa
 DRIVER: 16500 kW
 MATERIAL: 304 SS
 INSULATION TYPE/THK: PPI

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Jul 30, 2013

3	07/08/13	ISSUED FOR CONSTRUCTION	GB	KB	KH	SL	-	-	-	BB	-
2	02/01/13	ISSUED FOR CONSTRUCTION	GB	KB	KH	SL	-	-	-	EM	-
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G	07/11/11	ISSUED FOR PHA III	-	-	-	-	-	-	-	-	-
F	04/20/11	ISSUED FOR ESTIMATE	-	-	-	-	-	-	-	-	-
REV	ISSUED DATE	DESCRIPTION	BY	CHK	PRS	CS	PDP	MC	APE	PEM	CLIENT APP



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QUEST CCS PROJECT

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PIPING AND INSTRUMENT DIAGRAM
 QUEST CCS PROJECT
 UNIT 247 - COMPRESSION
 CO2 COMPRESSOR 4TH STAGE

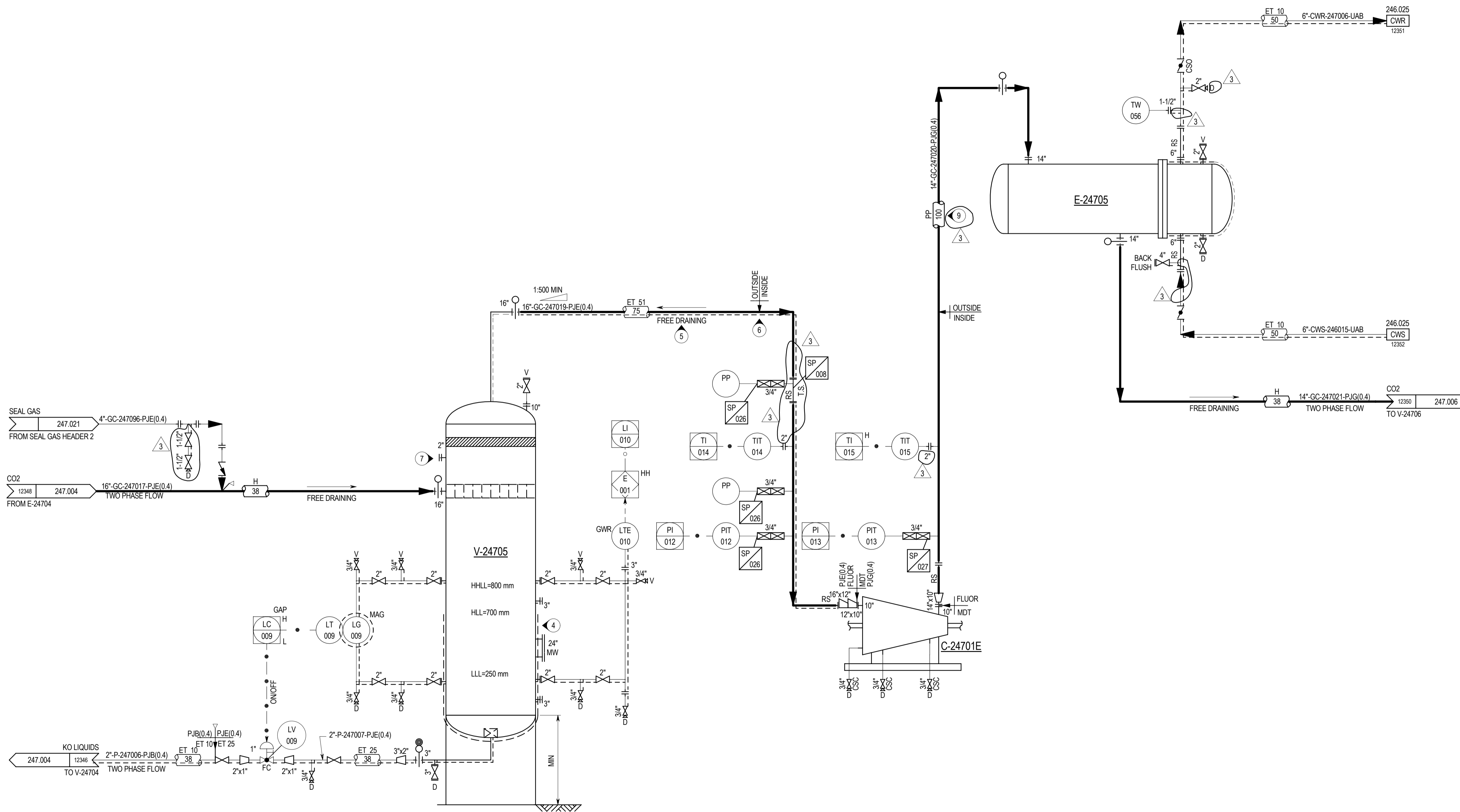
SCALE: NONE
 SHELL DWG NO.: 247.0000.000.041.004
 REV. 3

V-24705
COMPRESSOR 5th STAGE KO DRUM
 SIZE: 1900 mm ID x 2200 mm T/T
 DESIGN PR. & TEMP: 2200 kPa-g @ 100 °C / V @ 150 °C
 MATERIAL (VESSEL/INTERNAL): CS + 3 mm 304L SS CLAD / 316L SS
 INSULATION TYPE/THK: H / 38 mm
 TRIM: VT-247005-PJE(0.4)

E-24705
COMPRESSOR 5th STAGE COOLER
 RATED DUTY: 2.7 MW
 SURFACE AREA: 255.0 m²
 TEMA TYPE: BELU
 SHELL: 316L
 DESIGN PRESS: 4200 kPa-g / HV
 DESIGN TEMP: 130 °C / 150 °C
 MATERIAL: CS + 3 mm 304L SS CLAD
 INSULATION TYPE/THK: PP / 25 mm
 TRIM: ET-247005-PJG(0.4)

TUBE: 3300 kPa-g / 58 °C / DUPLX 2205 + 0.5mm CA
 TRIM: ET-247019-UAB

- NOTES:**
- SEE DRAWINGS 200.0000.000.041.007 THRU 016 FOR SYMBOL IDENTIFICATION GENERAL NOTES & CONNECTION DETAILS.
 - ALL INSTRUMENT TAG NUMBERS ARE PREFIXED BY "247" UNLESS OTHERWISE STATED.
 - DRIVER POWER AND DIFFERENTIAL PRESSURE DEPICTED ARE THE TOTAL FOR THE COMPRESSOR.
 - ELECTRIC TRACE (ET 25) WITH 75 mm INSULATION THICKNESS TO HLL.
 - MAXIMIZE LENGTH OF PIPING THAT FREE DRAINS TO KO DRUM.
 - GTAW ROOT PASS WELD IS MANDATORY ON THIS LINE.
 - RELIEF VALVE NOZZLE. RELIEF VALVE NO LONGER REQUIRED AS SYSTEM IS PROTECTED BY OPPSD (REFERENCE DOCUMENT: A6GT-R-1071 - OPPSD TECHNICAL JUSTIFICATION AND BASIS).
 - ELECTRIC TRACE (ET 10) WITH 50 mm INSULATION THICKNESS.
 - METAL MESH GUARD FOR PERSONNEL PROTECTION. THE DISTANCE BETWEEN METAL MESH GUARD AND BARE SURFACE, IN mm, IS SPECIFIED IN THE SYMBOL.



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 Jul 30, 2013

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1	10/31/12	ISSUED FOR CONSTRUCTION	GB	KB	KH	SL	-	-	-	EM	-
0A	07/25/12	RE-ISSUED FOR PHA	-	-	-	-	-	-	-	-	-
0	09/15/11	ISSUED FOR DESIGN	GB	QC	KH	SD	-	-	-	EM	MD
G	07/11/11	ISSUED FOR PHA III	-	-	-	-	-	-	-	-	-
F	04/20/11	ISSUED FOR ESTIMATE	-	-	-	-	-	-	-	-	-
REV	ISSUED DATE	DESCRIPTION	BY	CHK	PRS	CS	PDP	MC	APE	PEM	CLIENT APP

SHELL CANADA
 QUEST CCS PROJECT

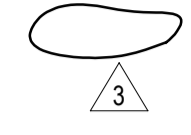
FLUOR

PIPING AND INSTRUMENT DIAGRAM
 QUEST CCS PROJECT
 UNIT 247 - COMPRESSION
 CO2 COMPRESSOR 5th STAGE

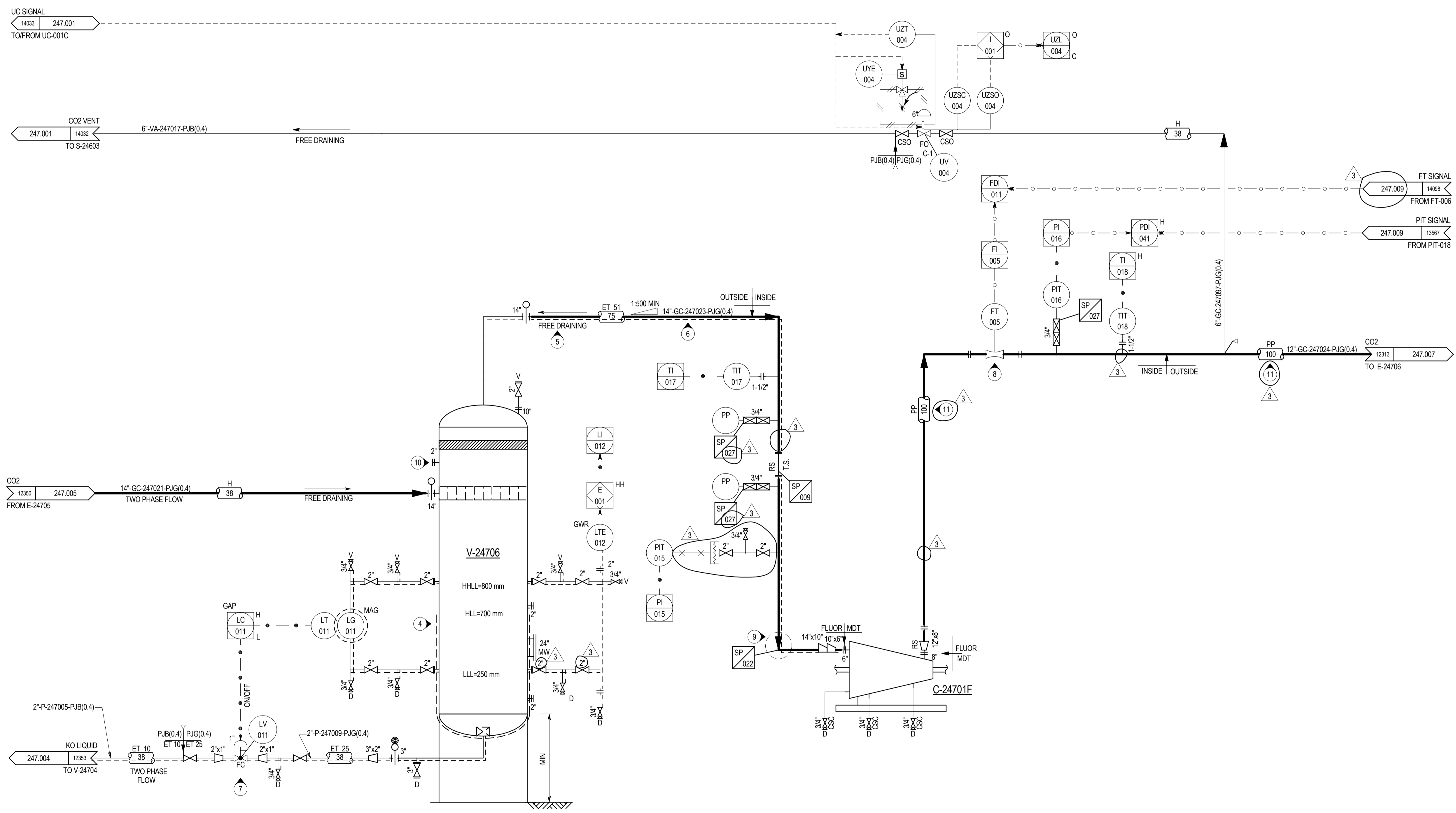
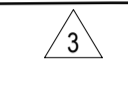
SCALE: NONE
 SHELL DWG NO.: 247.0000.000.041.005
 REV. 3

C-24701E
CO2 COMPRESSOR 5th STAGE
 RATED FLOW: 84255 Sm³/hr
 DIFF PRESSURE: 12229 kPa
 DRIVER: 16500 kW
 MATERIAL: 304 SS
 INSULATION TYPE/THK: PP/

V-24706
COMPRESSOR 6th STAGE KO DRUM
 SIZE: 1700 mm ID x 2000 mm T/T
 DESIGN PR. & TEMP: 4200 kPa-g @ 105 °C / FV @ 150 °C
 MATERIAL (VESSEL/INTERNAL): CS + 3 mm 304L SS CLAD / 316L SS
 INSULATION TYPE/THK: H / 38 mm
 TRIM: VT-247006-PJG(0.4)




- NOTES:**
- SEE DRAWINGS 200.0000.000.041.007 THRU 016 FOR SYMBOL IDENTIFICATION GENERAL NOTES & CONNECTION DETAILS.
 - ALL INSTRUMENT TAG NUMBERS ARE PREFIXED BY "247" UNLESS OTHERWISE STATED.
 - DRIVER POWER AND DIFFERENTIAL PRESSURE DEPICTED ARE THE TOTAL FOR THE COMPRESSOR.
 - ELECTRIC TRACE (ET 25) WITH 75 mm INSULATION THICKNESS TO HLL.
 - MAXIMIZE LENGTH OF PIPING THAT FREE DRAINS TO KO DRUM.
 - GTAW ROOT PASS WELD IS MANDATORY ON THIS LINE.
 - THE CV OF LV-011 AFFECTS THE SIZING OF RV-006 FOR THE VAPOUR BLOWTHROUGH CASE.
 - FLOW MEASUREMENT AND ADDITIONAL INSTRUMENTS ARE REQUIRED FOR ON-SITE COMPRESSOR PERFORMANCE TESTING.
 - VANED ELBOW.
 - RELIEF VALVE NOZZLE. RELIEF VALVE NO LONGER REQUIRED AS SYSTEM IS PROTECTED BY OPPSD (REFERENCE DOCUMENT: A6GT-R-1071 - OPPSD TECHNICAL JUSTIFICATION AND BASIS).
 - METAL MESH GUARD FOR PERSONNEL PROTECTION. THE DISTANCE BETWEEN METAL MESH GUARD AND BARE SURFACE, IN mm, IS SPECIFIED IN THE SYMBOL.



C-24701F
CO2 COMPRESSOR 6th STAGE
 RATED FLOW: 84255 Sm³/hr
 DIFF PRESSURE: 12229 kPa
 DRIVER: 16500 kW
 MATERIAL: 304 SS
 INSULATION TYPE/THK: PP/

FLUOR
IFC – Issued for Construction
Jul 30, 2013

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2	02/01/13	ISSUED FOR CONSTRUCTION	GB	KB	KH	SL	-	-	-	EM	-
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0	09/15/11	ISSUED FOR DESIGN	BG	QC	KH	SD	-	-	-	EM	MD
G	07/11/11	ISSUED FOR PHA III									
F	04/20/11	ISSUED FOR ESTIMATE									
REV	ISSUED DATE	DESCRIPTION	BY	CHK	PRS	CS	PDP	MC	APL	PEM	CLIENT APP

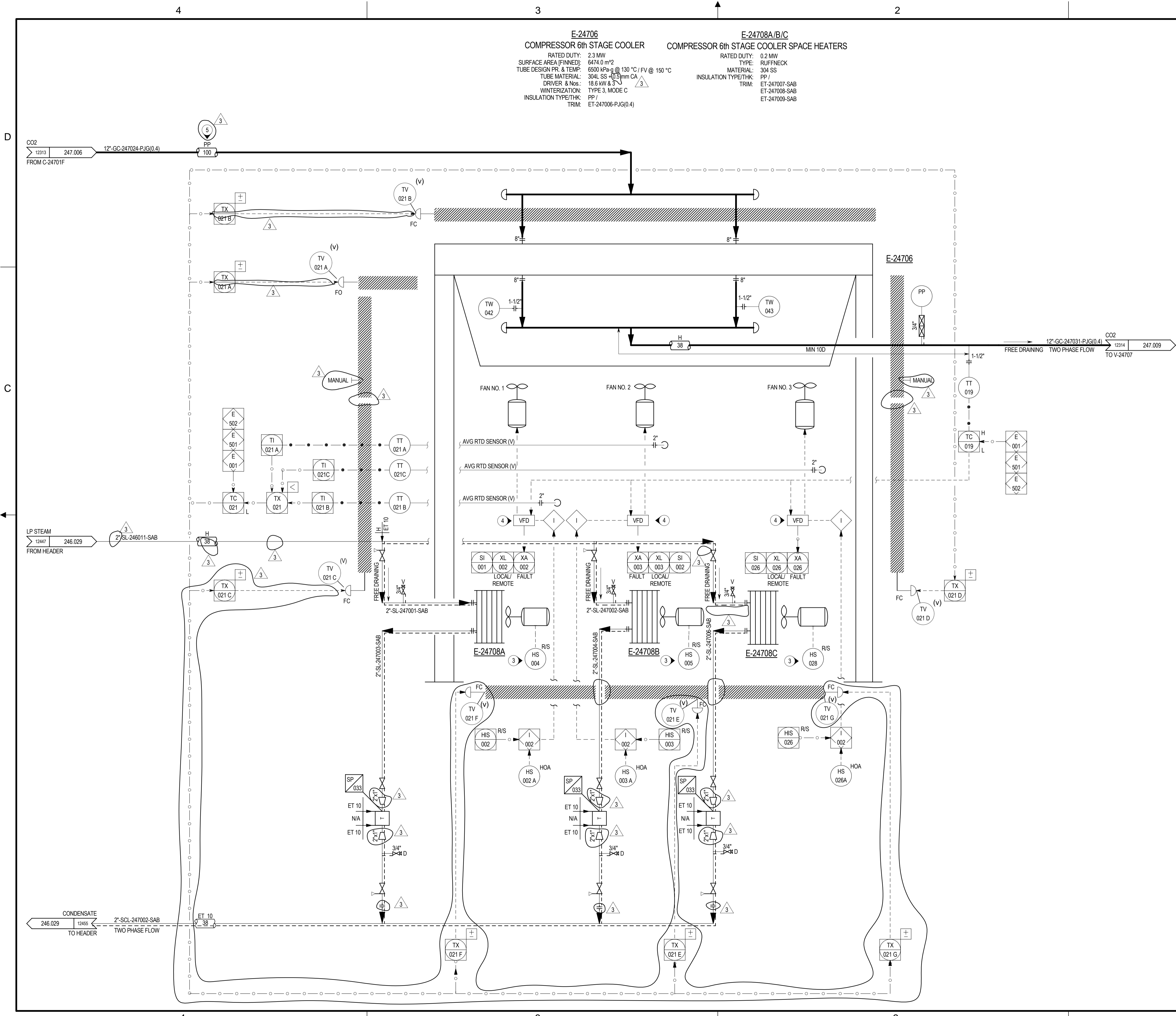
 **SHELL CANADA**
 QUEST CCS PROJECT

FLUOR

PIPING AND INSTRUMENT DIAGRAM
 QUEST CCS PROJECT
 UNIT 247 - COMPRESSION
 CO2 COMPRESSOR 6TH STAGE

SCALE: NONE
 SHELL DWG NO.: 247.0000.000.041.006
 REV. 3

FILE: \\F:\025\DRAWINGS\CO2\247.006.pid MODEL DATE: 7/17/2013 11:53:46 AM BY: bbs2451



E-24706
 COMPRESSOR 6th STAGE COOLER
 RATED DUTY: 2.3 MW
 SURFACE AREA (FINNED): 6474.0 m²
 TUBE DESIGN PR. & TEMP: 6500 kPa-g @ 130 °C / FV @ 150 °C
 TUBE MATERIAL: 304L SS - 0.5mm CA
 DRIVER & Nos.: 18.6 kW & 3
 WINTERIZATION: TYPE 3, MODE C
 INSULATION TYPE/THK: PP /
 TRIM: ET-247006-PJG(0.4)

E-24708A/B/C
 COMPRESSOR 6th STAGE COOLER SPACE HEATERS
 RATED DUTY: 0.2 MW
 TYPE: RUFFNECK
 MATERIAL: 304 SS
 INSULATION TYPE/THK: PP /
 TRIM: ET-247007-SAB
 ET-247008-SAB
 ET-247009-SAB

- NOTES:**
- SEE DRAWINGS 200.0000.000.041.007 THRU 016 FOR SYMBOL IDENTIFICATION GENERAL NOTES & CONNECTION DETAILS.
 - ALL INSTRUMENT TAG NUMBERS ARE PREFIXED BY "247" UNLESS OTHERWISE STATED.
 - SWITCH LOCATED AT PLATFORM LEVEL.
 - MINIMUM VFD SETTING IS 30% SPEED.
 - METAL MESH GUARD FOR PERSONNEL PROTECTION. THE DISTANCE BETWEEN METAL MESH GUARD AND BARE SURFACE, IN mm, IS SPECIFIED IN THE SYMBOL.

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3	07/08/13	ISSUED FOR CONSTRUCTION	GB	KB	KH	SL	-	-	-	BB	-
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1	10/30/12	ISSUED FOR CONSTRUCTION	GB	KB	KH	SL	-	-	-	EM	-
0A	07/25/12	RE-ISSUED FOR PHA	-	-	-	-	-	-	-	-	-
0	09/15/11	ISSUED FOR DESIGN	GB	QC	KH	SD	-	-	-	EM	MD
G	07/11/11	ISSUED FOR PHA II	-	-	-	-	-	-	-	-	-
F	04/20/11	ISSUED FOR ESTIMATE	-	-	-	-	-	-	-	-	-
REV	ISSUED DATE	DESCRIPTION	BY	CHKD	PRD	CS	PDP	MC	APD	PEM	CLIENT APP

SHELL CANADA
 QUEST CCS PROJECT

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PIPING AND INSTRUMENT DIAGRAM
 QUEST CCS PROJECT
 UNIT 247 - COMPRESSION
 COMPRESSOR 6TH STAGE COOLER

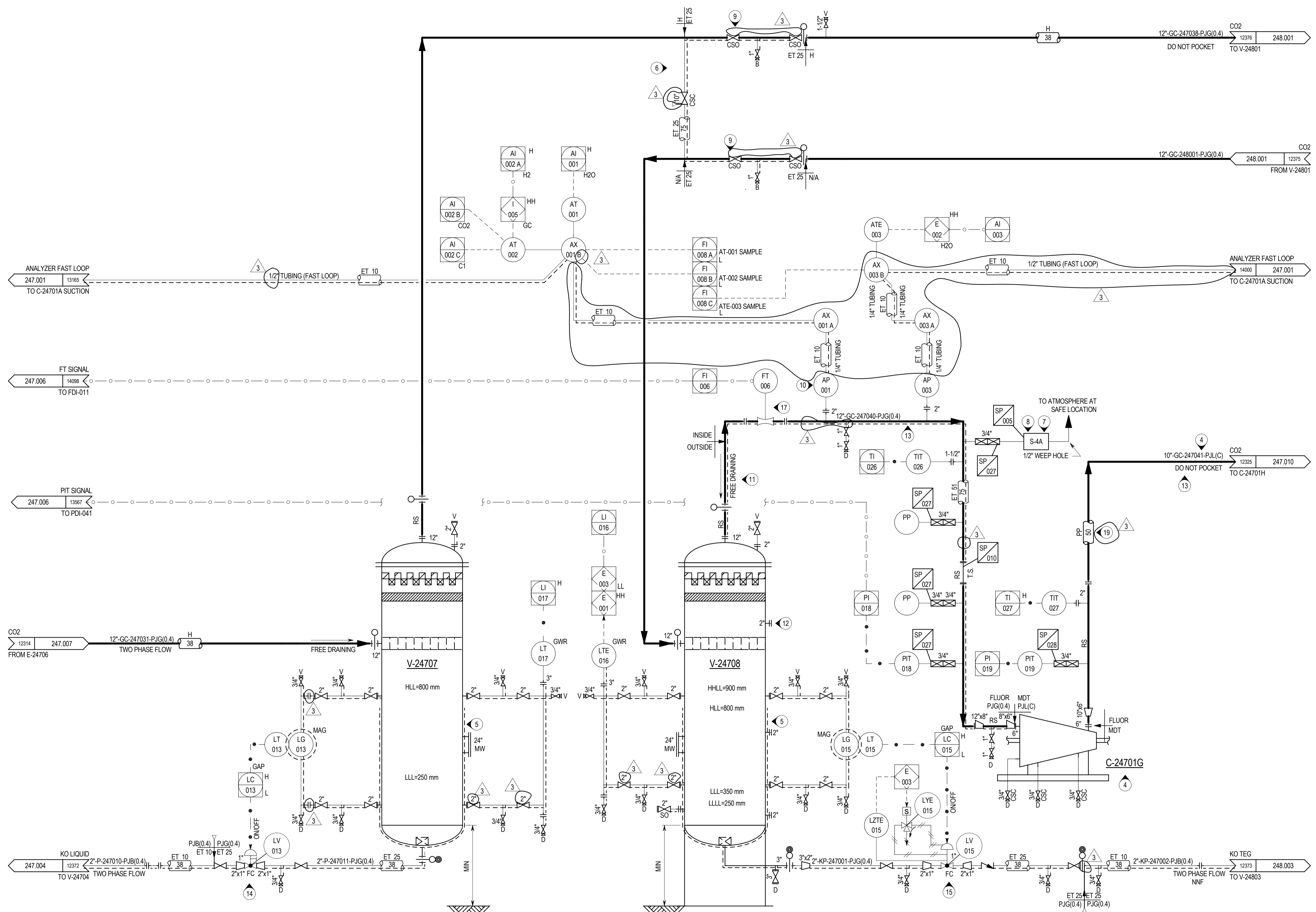
SCALE: NONE
 SHELL DWG NO.: 247.0000.000.041.007
 REV. 3

247.007 FILE:11025DRAWINGS\CO2\247\007.dwg MODEL DATE:7/18/2013 10:59:12 AM BY:14823451

V-24707
TEG INLET SCRUBBER
 SIZE: 959 mm ID x 3300 mm T/F
 DESIGN PR. & TEMP: 6500 kPa-g @ 105 °C / FV @ 150 °C
 MATERIAL (VESSEL/INTERNAL): CS + 3 mm 304L SS CLAD / 316L SS
 INSULATION TYPE/THK: H / 38 mm
 TRIM: VT-247007-PJG(0.4)

V-24708
COMPRESSOR 7th STAGE KO DRUM
 SIZE: 959 mm ID x 3400 mm T/F
 DESIGN PR. & TEMP: 6500 kPa-g @ 105 °C / FV @ 150 °C
 MATERIAL (VESSEL/INTERNAL): CS + 3 mm 304L SS CLAD / 316L SS
 INSULATION TYPE/THK: H / 38 mm
 TRIM: VT-247008-PJG(0.4)

- NOTES:**
- SEE DRAWINGS 200.0000.000.041.007 THRU 016 FOR SYMBOL IDENTIFICATION GENERAL NOTES & CONNECTION DETAILS.
 - ALL INSTRUMENT TAG NUMBERS ARE PREFIXED BY "247" UNLESS OTHERWISE STATED.
 - DRIVER POWER AND DIFFERENTIAL PRESSURE DEPICTED ARE THE TOTAL FOR THE COMPRESSOR.
 - ELASTOMERS SHALL NOT BE USED FOR DENSE PHASE CO2 SERVICE.
 - ELECTRIC TRACE (ET 25) WITH 75 mm INSULATION THICKNESS TO HLL.
 - DEHYDRATION UNIT BYPASS.
 - SAMPLE TAKE-OFF POINT TO BE ACCESSIBLE.
 - FOR PIPING DETAILS OF SAMPLE STATION, SEE DRAWING 200.0000.000.041.012.
 - VALVES ARE FOR BATTERY LIMIT ISOLATION OF UNIT. CSO ON THE BLOCK VALVES ARE REQUIRED TO ENSURE AN OPEN FLOW PATH TO THE COMPRESSOR AND PROTECT THE MACHINE AGAINST SURGE AND PROVIDE OVER-PRESSURE PROTECTION OF V-24707.
 - SAMPLE PROBE INCLUDES A DOUBLE BLOCK AND BLEED VALVE ASSEMBLY.
 - MAXIMIZE LENGTH OF PIPING THAT FREE DRAINS TO KO DRUM.
 - RELIEF VALVE NOZZLE. RELIEF VALVE NO LONGER REQUIRED AS SYSTEM IS PROTECTED BY OPPSD (REFERENCE DOCUMENT: A6GT-R-1071 - OPPSD TECHNICAL JUSTIFICATION AND BASIS).
 - GTAW ROOT PASS WELD IS MANDATORY ON THIS LINE.
 - THE CV OF LV-013 AFFECTS THE SIZING OF RV-248002 FOR THE VAPOUR BLOWTHROUGH CASE.
 - THE CV OF LV-015 AFFECTS THE SIZING OF RV-248002 FOR THE VAPOUR BLOWTHROUGH CASE.
 - FLOW MEASUREMENT AND ADDITIONAL INSTRUMENTS ARE REQUIRED FOR ON-SITE COMPRESSOR PERFORMANCE TESTING.
 - ELECTRIC TRACE (ET 52) UP TO ISOLATION VALVE.
 - REFER TO P&ID 246.0000.000.041.053 FOR ANALYZER DETAILS.
 - METAL MESH GUARD FOR PERSONNEL PROTECTION. THE DISTANCE BETWEEN METAL MESH GUARD AND BARE SURFACE, IN mm, IS SPECIFIED IN THE SYMBOL.



C-24701G
CO2 COMPRESSOR 7th STAGE
 RATED FLOW: 84255 Sm³/3hr
 DIFF PRESSURE: 12229 kPa
 DRIVER: 16500 kW
 MATERIAL: 304 SS
 INSULATION TYPE/THK: PP/

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REV	ISSUED DATE	DESCRIPTION	BY	CHK	PRS	CS	PDP	MC	APL	PEM	CLIENT APP
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0	09/15/11	ISSUED FOR DESIGN	GB	QC	KH	SD	-	-	-	EM	MD
G	07/11/11	ISSUED FOR PHA III	-	-	-	-	-	-	-	-	-
F	04/20/11	ISSUED FOR ESTIMATE	-	-	-	-	-	-	-	-	-

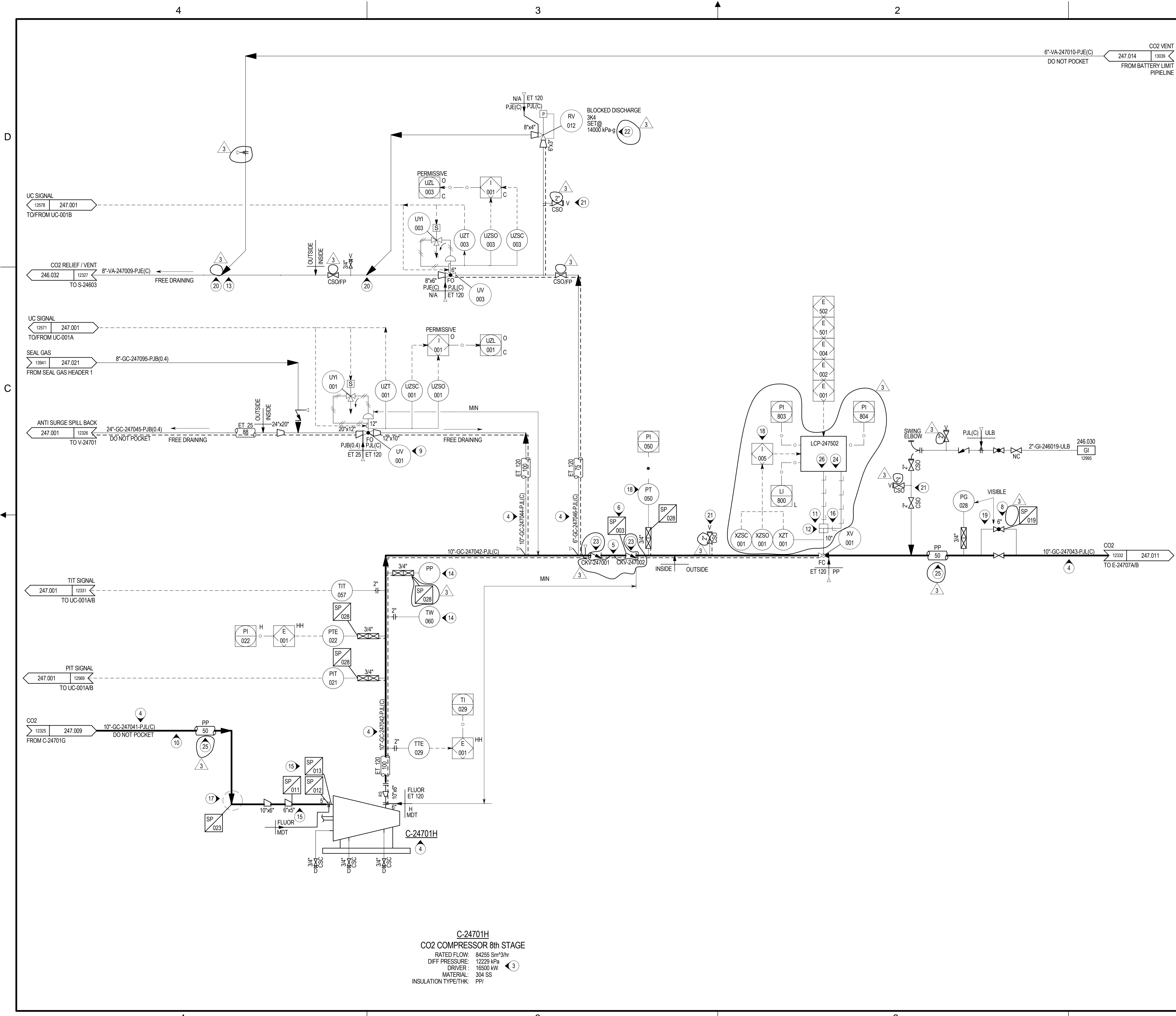
SHELL CANADA
QUEST CCS PROJECT

FLUOR

PIPING AND INSTRUMENT DIAGRAM
 QUEST CCS PROJECT
 UNIT 247 - COMPRESSION
 TEG INLET SCRUBBER & CO2 COMP. 7TH STAGE

SCALE: NONE
 SHELL DWG NO.: 247.0000.000.041.009
 REV. 3

247.009 FILE:W:\025DRAWINGS\CO2\247.009.pid MODEL DATE:7/17/2013 11:28:57 AM BY:bbs2451



- NOTES:**
- SEE DRAWINGS 200.0000.000.041.007 THRU 016 FOR SYMBOL IDENTIFICATION GENERAL NOTES & CONNECTION DETAILS.
 - ALL INSTRUMENT TAG NUMBERS ARE PREFIXED BY "247" UNLESS OTHERWISE STATED.
 - DRIVER POWER AND DIFFERENTIAL PRESSURE DEPICTED ARE THE TOTAL FOR THE COMPRESSOR.
 - ELASTOMERS SHALL NOT BE USED FOR DENSE PHASE CO2 SERVICE.
 - TWO CHECK VALVES IN SERIES SEPARATED BY AT LEAST 500MM.
 - NON-SLAM CHECK VALVE.
 - DELETED.
 - VALVE TO BE LOCATED AT SAFE ACCESSIBLE LOCATION.
 - ANTI-SURGE SPILLBACK VALVE UV-247001 TO BE LOCATED AT PIPING HIGH POINT WITH PIPING FREE DRAINING INTO THE MAIN PIPING.
 - GTAW ROOT PASS WELD IS MANDATORY ON THIS LINE.
 - XV-001 IS SLOW CLOSING OVER A PERIOD OF 30 SECONDS.
 - HIGH PRESSURE SIDE IS DOWNSTREAM SIDE OF VALVE.
 - FIRST 10m OF PIPE REQUIRE 5D ELBOWS TO ACCOMMODATE VIBRATION, HIGH VELOCITIES, AND SOLID CO2 PARTICLES.
 - MEASUREMENT POINTS AVAILABLE FOR ON-SITE COMPRESSOR PERFORMANCE TEST.
 - REDUCER, FLANGE AND GASKET CLASSIFIED AS SPECIALTY (SP) ITEMS DUE TO UNCOMMON 5" SIZE.
 - XV-247001 IS A HYDRAULICALLY OPERATED VALVE. OPEN AND CLOSE OUTPUT FROM I BLOCK AND AN EMERGENCY CLOSE OUTPUT FROM 'E' BLOCKS ARE INTERFACED WITH A SEPARATE HYDRAULIC POWER PACK.
 - VANED ELBOW.
 - PT-247050 IN CONJUNCTION WITH PT-247025 ARE USED TO MEASURE RATE OF CHANGE OF PRESSURE IN PIPELINE TO MONITOR FOR PIPELINE LEAK UPSTREAM OF FIRST LINE BREAK VALVE. THEY WILL BE PART OF I-005 WHICH WILL ALSO TRIP PIPELINE LBV.
 - GEAR OPERATED VALVE.
 - 45" INLET.
 - VALVE IS CSO TO PREVENT TRAPPING OF DENSE PHASE CO2. BLIND FLANGE ON VALVE PROVIDES POSITIVE ISOLATION.
 - RV SET PRESSURE IS 14000 kPa-g TO ENSURE PIPELINE PRESSURE DOES NOT EXCEED 14790 kPa-g AT LOWEST POINT.
 - CLASS 1 CHECK VALVE.
 - REFER TO 247.0000.000.041.024 FOR XV-247001 DETAILS.
 - METAL MESH GUARD FOR PERSONNEL PROTECTION. THE DISTANCE BETWEEN METAL MESH GUARD AND BARE SURFACE, IN mm, IS SPECIFIED IN THE SYMBOL.
 - LCP-247502 IS PART OF SKID S-24702.

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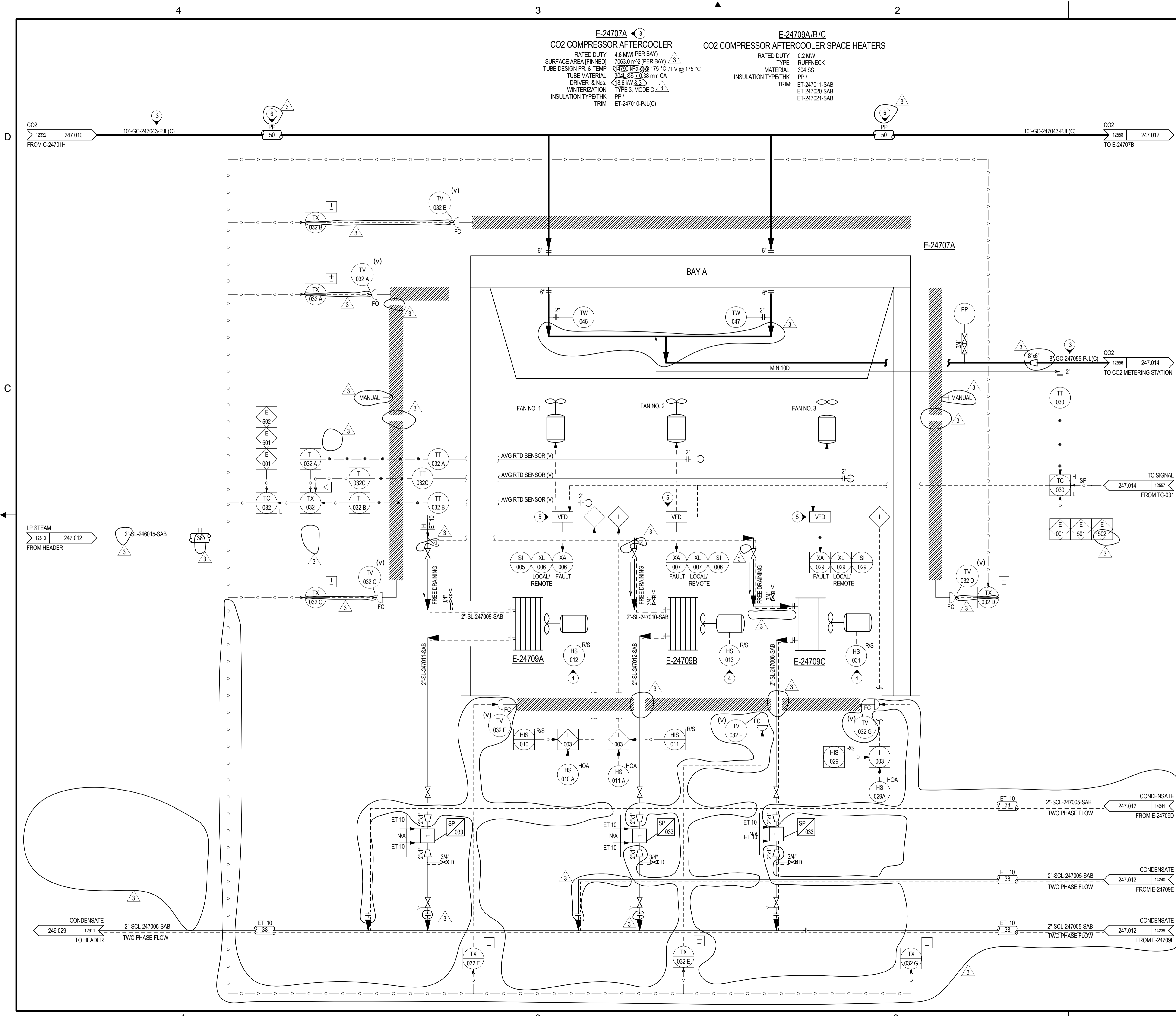
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0	09/15/11	ISSUED FOR DESIGN	GB	QC	KH	SD	-	-	-	EM	MD
G	07/11/11	ISSUED FOR PHA III									
F	04/20/11	ISSUED FOR ESTIMATE									
REV	ISSUED DATE	DESCRIPTION	BY	CHK	PRS	CS	PDP	MC	APL	PEM	CLIENT APP

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FLUOR
 PIPING AND INSTRUMENT DIAGRAM
 QUEST CCS PROJECT
 UNIT 247 - COMPRESSION
 CO2 COMPRESSOR 8TH STAGE

SCALE: NONE
SHELL DWG NO.: 247.0000.000.041.010 REV. 3

247.010 FILE:W:\025DRAWINGS\025247247_010.pid MODEL DATE: 7/16/2013 11:00:39 AM BY: bsh2451



E-24707A CO2 COMPRESSOR AFTERCOOLER
 RATED DUTY: 4.8 MW (PER BAY)
 SURFACE AREA (FINNED): 7063.0 m² (PER BAY)
 TUBE DESIGN PR. & TEMP: 14790 kPa @ 175 °C / FV @ 175 °C
 TUBE MATERIAL: 304L SS + 0.38 mm CA
 DRIVER & Nos.: 18.6 kW @ 3
 WINTERIZATION: TYPE 3, MODE C
 INSULATION TYPE/THK: PP /
 TRIM: ET-247010-PJL(C)

E-24709A/B/C CO2 COMPRESSOR AFTERCOOLER SPACE HEATERS
 RATED DUTY: 0.2 MW
 TYPE: RUFFNECK
 MATERIAL: 304 SS
 INSULATION TYPE/THK: PP /
 TRIM: ET-247011-SAB
 ET-247020-SAB
 ET-247021-SAB

- NOTES:**
- SEE DRAWINGS 200.0000.000.041.007 THRU 016 FOR SYMBOL IDENTIFICATION GENERAL NOTES & CONNECTION DETAILS.
 - ALL INSTRUMENT TAG NUMBERS ARE PREFIXED BY "247" UNLESS OTHERWISE STATED.
 - ELASTOMERS SHALL NOT BE USED FOR DENSE PHASE CO2 SERVICE.
 - SWITCH LOCATED AT PLATFORM LEVEL.
 - MINIMUM VFD SETTING IS 30% SPEED.
 - METAL MESH GUARD FOR PERSONNEL PROTECTION. THE DISTANCE BETWEEN METAL MESH GUARD AND BARE SURFACE, IN mm, IS SPECIFIED IN THE SYMBOL.

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 Jul 30, 2013

REV	ISSUE DATE	DESCRIPTION	BY	CHK	PRS	CS	PDP	MC	APE	PEM	CLIENT APP
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SHELL CANADA
 QUEST CCS PROJECT

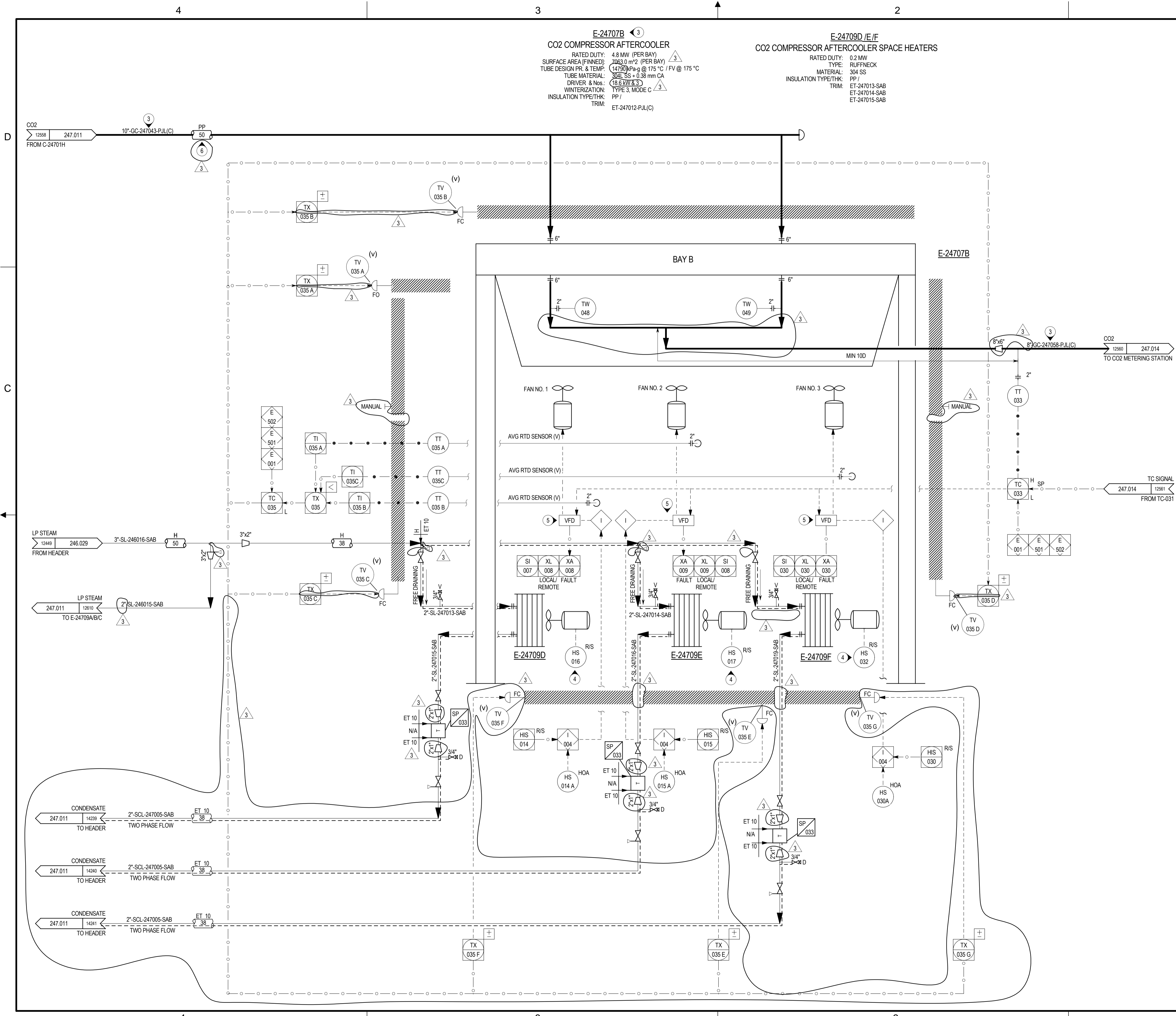
FLUOR

PIPING AND INSTRUMENT DIAGRAM
 QUEST CCS PROJECT
 UNIT 247 - COMPRESSION
 CO2 COMPRESSOR AFTERCOOLER-BAY A

SCALE: NONE
 SHELL DWG NO.: 247.0000.000.041.011

REV: 3

FILE:W:\025DRAWINGS\CO2\247.011.dwg MODEL DATE:7/25/2013 12:17:38 PM BY:hs2451



- NOTES:**
- SEE DRAWINGS 200.0000.000.041.007 THRU 016 FOR SYMBOL IDENTIFICATION GENERAL NOTES & CONNECTION DETAILS.
 - ALL INSTRUMENT TAG NUMBERS ARE PREFIXED BY "247" UNLESS OTHERWISE STATED.
 - ELASTOMERS SHALL NOT BE USED FOR DENSE PHASE CO2 SERVICE.
 - SWITCH LOCATED AT PLATFORM LEVEL.
 - MINIMUM VFD SETTING IS 30% SPEED.
 - METAL MESH GUARD FOR PERSONNEL PROTECTION. THE DISTANCE BETWEEN METAL MESH GUARD AND BARE SURFACE, IN mm, IS SPECIFIED IN THE SYMBOL.

FLUOR
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 Jul 30, 2013

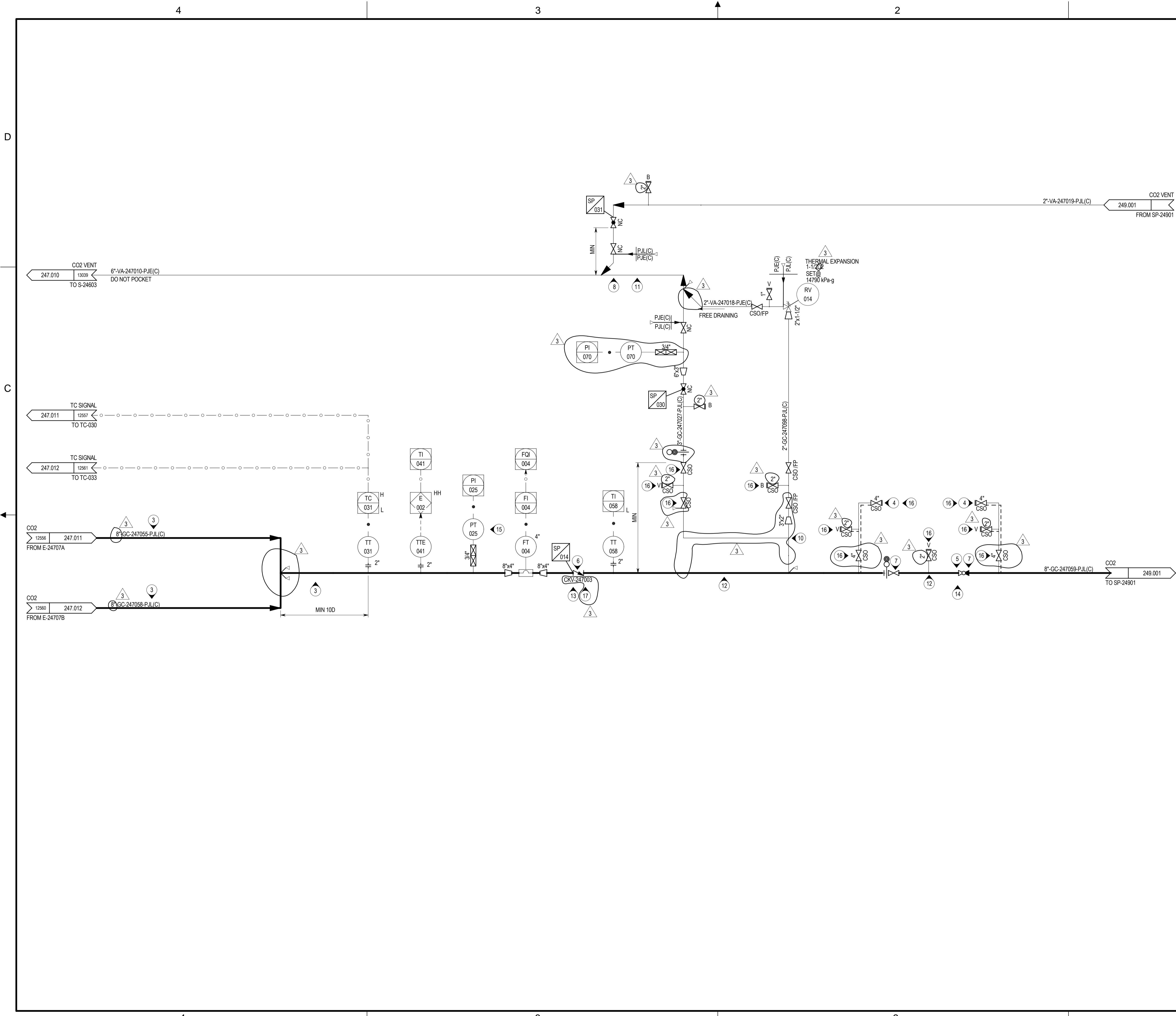
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G	07/11/11	ISSUED FOR PHA III	-	-	-	-	-	-	-	-	-
F	04/20/11	ISSUED FOR ESTIMATE	-	-	-	-	-	-	-	-	-

SHELL CANADA
 QUEST CCS PROJECT

FLUOR
 PIPING AND INSTRUMENT DIAGRAM
 QUEST CCS PROJECT
 UNIT 247 - COMPRESSION
 CO2 COMPRESSOR AFTERCOOLER-BAY B

SCALE: NONE
 SHELL DWG NO.: 247.0000.000.041.012
 REV. 3


247.012
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- NOTES:**
- SEE DRAWINGS 200.0000.000.041.007 THRU 016 FOR SYMBOL IDENTIFICATION GENERAL NOTES & CONNECTION DETAILS.
 - ALL INSTRUMENT TAG NUMBERS ARE PREFIXED BY "247" UNLESS OTHERWISE STATED.
 - ELASTOMERS SHALL NOT BE USED FOR DENSE PHASE CO2 SERVICE.
 - CONNECTIONS FOR METER PROVING AT SAFE ACCESSIBLE LOCATION.
 - VALVE TO BE LOCATED AT A MINIMUM DISTANCE AWAY FROM THE SCOPE BREAK WITH PIPELINE FACILITIES.
 - CHECK VALVE TO REDUCE CONSEQUENCES OF POTENTIAL AIR COOLER TUBE RUPTURE.
 - VALVES ARE FOR BATTERY LIMIT ISOLATION OF UNIT.
 - VENT LINE FROM PIG LAUNCHER TO TIE IN ON TOP OR SIDE OF PIPE AT 45°.
 - REFER TO THE SGSI "QUEST CCS FLOW ASSURANCE" REPORT FOR SIZING BASIS.
 - PIPELINE VENT TAKE-OFF TO BE AT A HIGH POINT AND THE TOP OF THE PIPE.
 - FIRST 10m OF PIPE REQUIRE 5D ELBOWS TO ACCOMMODATE VIBRATION, HIGH VELOCITIES, AND SOLID CO2 PARTICLES.
 - PIPING TO BE VENTED FOLLOWING ISOLATION OF LINE.
 - NON-SLAM CHECK VALVE.
 - DELETED.
 - PT-247025 IN CONJUNCTION WITH PT-247050 ARE USED TO MEASURE RATE OF CHANGE OF PRESSURE IN PIPELINE TO MONITOR FOR PIPELINE LEAK UPSTREAM OF FIRST LINE BREAK VALVE. THEY WILL BE PART OF I-005 WHICH WILL ALSO TRIP PIPELINE LBV.
 - VALVE IS CSO TO PREVENT TRAPPING OF DENSE PHASE CO2. BLIND FLANGE ON VALVE PROVIDES POSITIVE ISOLATION.
 - CLASS 1 CHECK VALVE

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 Jul 30, 2013

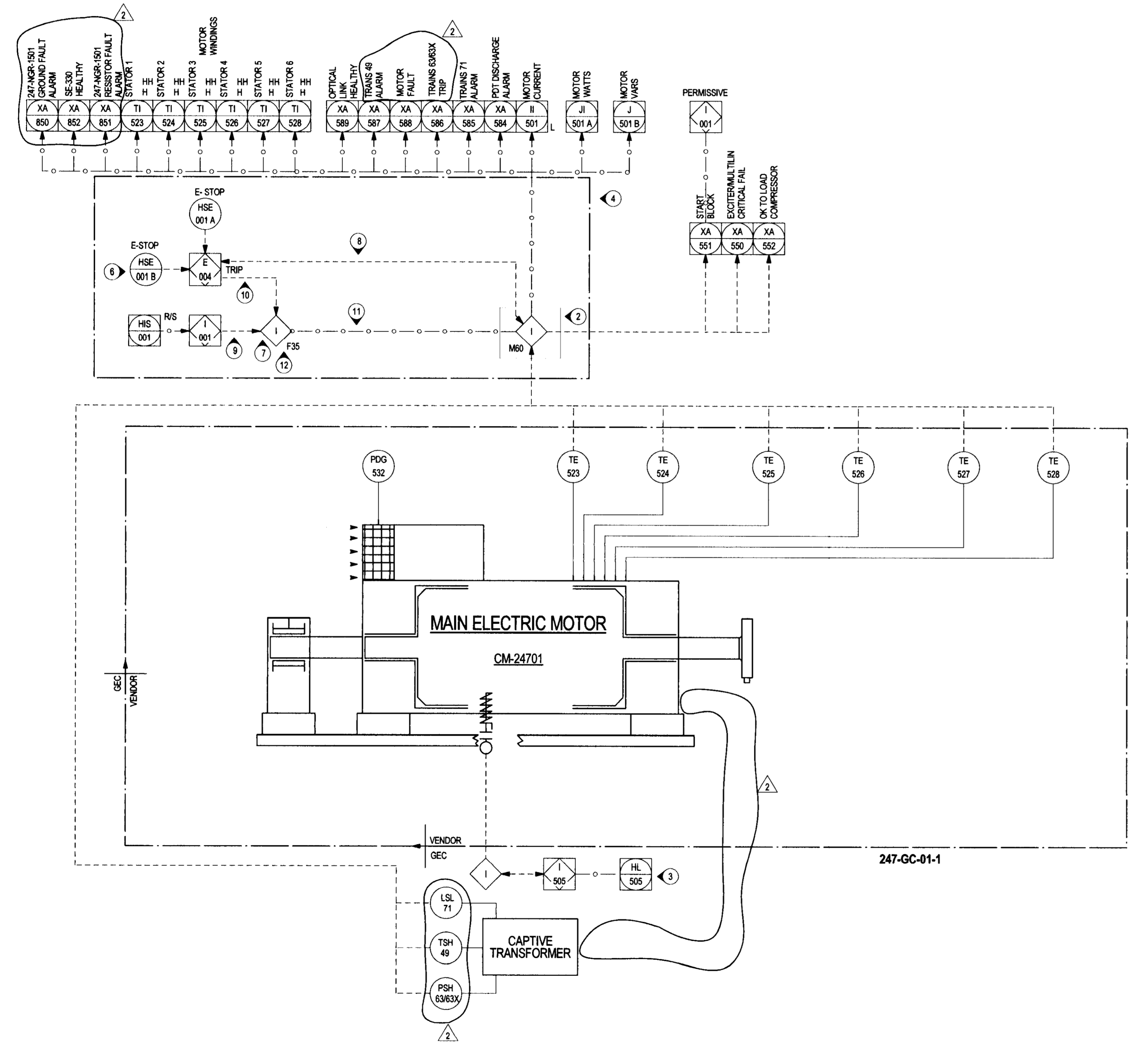
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F	04/20/11	ISSUED FOR ESTIMATE									
REV	ISSUED DATE	DESCRIPTION	BY	CKD	PRS	CS	PDP	MC	APE	PEM	CLIENT APP


SHELL CANADA
 QUEST CCS PROJECT


FLUOR
 PIPING AND INSTRUMENT DIAGRAM
 QUEST CCS PROJECT
 UNIT 247 - COMPRESSION
 CO2 METERING STATION

SCALE: NONE
 SHELL DWG NO.: 247.0000.000.041.014
 REV. 3

CM-24701



- NOTES:
- ALL INSTRUMENT LOOP AND INTERLOCK NUMBERS SHOWN ON P&ID SHALL HAVE A PREFIX '247' UNLESS OTHERWISE IDENTIFIED.
 - SYNCHRONOUS MOTOR EXCITER PANEL, 247ECP001.
 - ENERGIZE SPACE HEATER WHEN COMPRESSOR NOT RUNNING. HL-247505 INDICATES THAT HEATER IS ON.
 - INFORMATION WITHIN THE DOTTED LINE BOX PROVIDES GREATER DETAIL OF THE INTERLOCK REPRESENTED ON P&ID 247.0000.000.041.001 (CO2 COMPRESSOR 1ST STAGE).
 - FOR DETAILS OF THE SYNCHRONOUS MOTOR MACHINE MONITORING REFER TO P&ID 247.0000.000.041.001.022.
 - HSE-247001B IS LOCATED IN CONTROL ROOM R-20501.
 - THE F35 MULTILIN RELAY IS LOCATED IN MAIN SUBSTATION R-24801, SWITCH GEAR 52-168.
 - BREAKER STATUS SIGNAL TAG TO SIS IS HE-247001-H.
 - DCS HARDWIRED SIGNAL TO OPEN BREAKER IS HE-247001-O. DCS HARDWIRED SIGNAL TO CLOSE BREAKER IS HS-247001-C.
 - SIS HARDWIRED SIGNAL TO TRIP THE COMPRESSOR IS HE-247001-S.
 - THE CONNECTION BETWEEN THE F35 RELAY AND THE MOTOR EXCITER PANEL IS VIA FIBER.
 - REFER TO 284.0000.000.041.004 FOR F35 SWGR PROTECTION RELAY TAGS.

ISSUED FOR CONSTRUCTION
09 Sep 2013

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SHELL CANADA
QUEST CCS PROJECT

FLUOR
PIPING AND INSTRUMENT DIAGRAM
QUEST CCS PROJECT
UNIT 247 - COMPRESSION
C-24701 SYNCHRONOUS MOTOR INSTRUMENTATION

SCALE: NONE
SHELL DWG NO.: 247.0000.000.041.023
REV: 2

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