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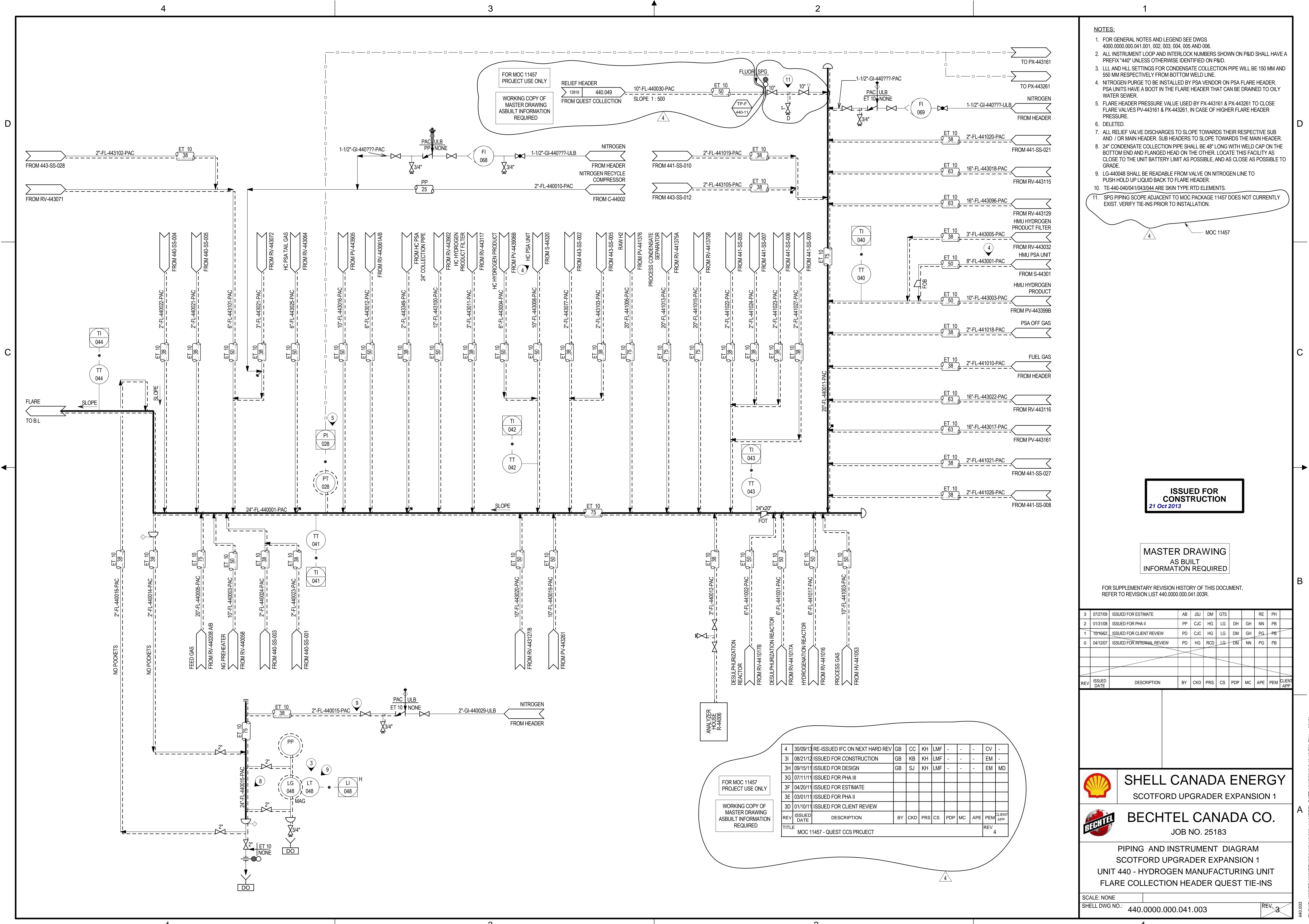
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- NOTES:**
- FOR GENERAL NOTES AND LEGEND SEE DWGS 4000.0000.000.041.001, 002, 003, 004, 005 AND 006.
 - ALL INSTRUMENT LOOP AND INTERLOCK NUMBERS SHOWN ON P&ID SHALL HAVE A PREFIX "440" UNLESS OTHERWISE IDENTIFIED ON P&ID.
 - LLL AND HLL SETTINGS FOR CONDENSATE COLLECTION PIPE WILL BE 150 MM AND 550 MM RESPECTIVELY FROM BOTTOM WELD LINE.
 - NITROGEN PURGE TO BE INSTALLED BY PSA VENDOR ON PSA FLARE HEADER. PSA UNITS HAVE A BOOT IN THE FLARE HEADER THAT CAN BE DRAINED TO OILY WATER SEWER.
 - FLARE HEADER PRESSURE VALUE USED BY PX-443161 & PX-443261 TO CLOSE FLARE VALVES PV-443161 & PX-443261, IN CASE OF HIGHER FLARE HEADER PRESSURE.
 - DELETED.
 - ALL RELIEF VALVE DISCHARGES TO SLOPE TOWARDS THEIR RESPECTIVE SUB AND / OR MAIN HEADER. SUB HEADERS TO SLOPE TOWARDS THE MAIN HEADER.
 - 24" CONDENSATE COLLECTION PIPE SHALL BE 48" LONG WITH WELD CAP ON THE BOTTOM END AND FLANGED HEAD ON THE OTHER. LOCATE THIS FACILITY AS CLOSE TO THE UNIT BATTERY LIMIT AS POSSIBLE, AND AS CLOSE AS POSSIBLE TO GRADE.
 - LG-440048 SHALL BE READABLE FROM VALVE ON NITROGEN LINE TO PUSH HOLD UP LIQUID BACK TO FLARE HEADER.
 - TE-440-040/041/043/044 ARE SKIN TYPE RTD ELEMENTS.
 - SPG PIPING SCOPE ADJACENT TO MOC PACKAGE 11457 DOES NOT CURRENTLY EXIST. VERIFY TIE-INS PRIOR TO INSTALLATION.

ISSUED FOR CONSTRUCTION
21 Oct 2013

MASTER DRAWING
AS BUILT INFORMATION REQUIRED

FOR SUPPLEMENTARY REVISION HISTORY OF THIS DOCUMENT, REFER TO REVISION LIST 440.0000.000.041.003R.

REV	ISSUED DATE	DESCRIPTION	BY	CHKD	PRS	CS	PDP	MC	APE	PEM	CLIENT APP
3	07/27/09	ISSUED FOR ESTIMATE	AB	JSJ	DM	GTS			RE	PH	
2	01/31/08	ISSUED FOR PHA II	PP	CJC	HG	LG	DH	GH	NN	PB	
1	10/16/07	ISSUED FOR CLIENT REVIEW	PD	CJC	HG	LG	DM	GH	PG	PB	
0	04/12/07	ISSUED FOR INTERNAL REVIEW	PD	HG	RCD	LG	DM	NN	PG	PB	

REV	ISSUED DATE	DESCRIPTION	BY	CHKD	PRS	CS	PDP	MC	APE	PEM	CLIENT APP
4	30/09/13	RE-ISSUED IFC ON NEXT HARD REV	GB	CC	KH	LMF			CV		
3I	08/21/12	ISSUED FOR CONSTRUCTION	GB	KB	KH	LMF			EM		
3H	09/15/11	ISSUED FOR DESIGN	GB	SJ	KH	LMF			EM	MD	
3G	07/11/11	ISSUED FOR PHA III									
3F	04/20/11	ISSUED FOR ESTIMATE									
3E	03/01/11	ISSUED FOR PHA II									
3D	01/10/11	ISSUED FOR CLIENT REVIEW									

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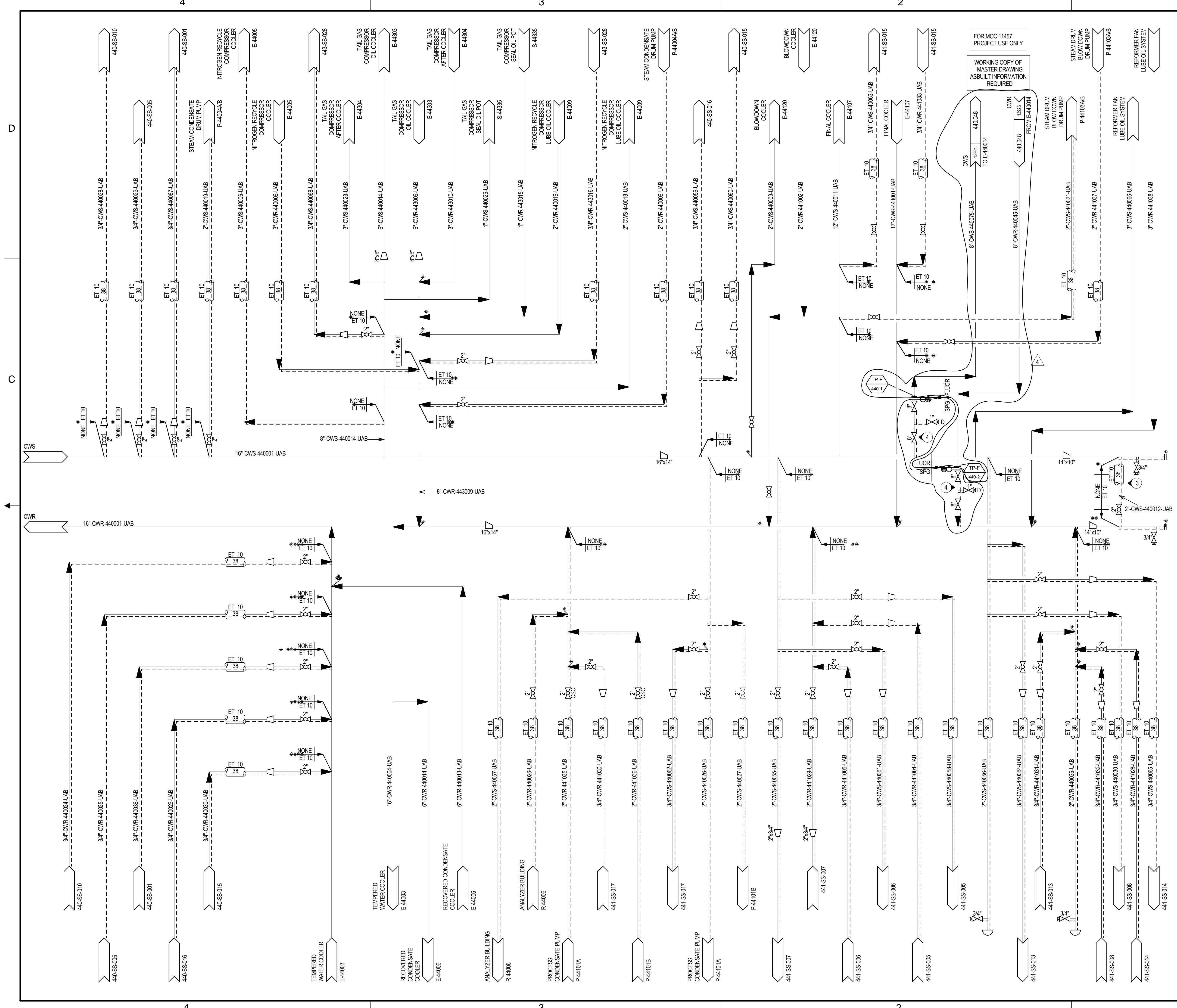
SHELL CANADA ENERGY
SCOTFORD UPGRADER EXPANSION 1

BECHTEL CANADA CO.
JOB NO. 25183

PIPING AND INSTRUMENT DIAGRAM
SCOTFORD UPGRADER EXPANSION 1
UNIT 440 - HYDROGEN MANUFACTURING UNIT
FLARE COLLECTION HEADER QUEST TIE-INS

SCALE: NONE
SHELL DWG NO.: 440.0000.000.041.003

440.003 FILE: \\1103DRAWINGS\SHU\440\403.dwg MODEL DATE: 10/17/2013 5:40:13 PM BY: bac29451



- NOTES:**
- FOR GENERAL NOTES AND LEGEND SEE DWGS 400.000.000.041.001, 002, 003, 004, 005 AND 006.
 - ALL INSTRUMENT LOOP AND INTERLOCK NUMBERS SHOWN ON P&ID SHALL HAVE A PREFIX "440" UNLESS OTHERWISE IDENTIFIED ON P&ID.
 - ELECTRIC TRACE END OF COOLING WATER HEADERS FOR FREEZE PROTECTION.
 - SPG PIPING SCOPE ADJACENT TO MOC PACKAGE 11457 DOES NOT CURRENTLY EXIST. VERIFY TIE-INS PRIOR TO INSTALLATION.

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REV	ISSUED DATE	DESCRIPTION	BY	CKD	PRS	CS	PDP	MC	PEM	CLIENT APP
4	09/30/13	RE-ISSUED IFC ON NEXT HARD REV	GB	CC	KH	LMF	-	-	CV	-
3I	08/21/12	ISSUED FOR CONSTRUCTION	GB	KB	KH	LMF	-	-	EM	-
3H	09/15/11	ISSUED FOR DESIGN	GB	SJ	KH	LMF	-	-	EM	MD
3G	07/11/11	ISSUED FOR PHA III								
3F	04/20/11	ISSUED FOR ESTIMATE								
3E	03/01/11	ISSUED FOR PHA II								
3D	01/10/11	ISSUED FOR CLIENT REVIEW								

TITLE: MOC 11457 - QUEST CCS PROJECT

ISSUED FOR CONSTRUCTION
21 Oct 2013

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REV	ISSUED DATE	DESCRIPTION	BY	CKD	PRS	CS	PDP	MC	APE	PEM	CLIENT APP
3	07/27/09	ISSUED FOR ESTIMATE	AB	JSJ	DM	GTS			RE	PH	
2	01/31/08	ISSUED FOR PHA II	PP	CJC	HG	LG	DM	GH	NN	PB	
1	10/10/07	ISSUED FOR CLIENT REVIEW	PD	CJC	HG	LG	DM	GH	PG	PB	
0	03/20/07	ISSUED FOR INTERNAL REVIEW	PD	HG	RCD	LG	DM	NN	PG	PB	



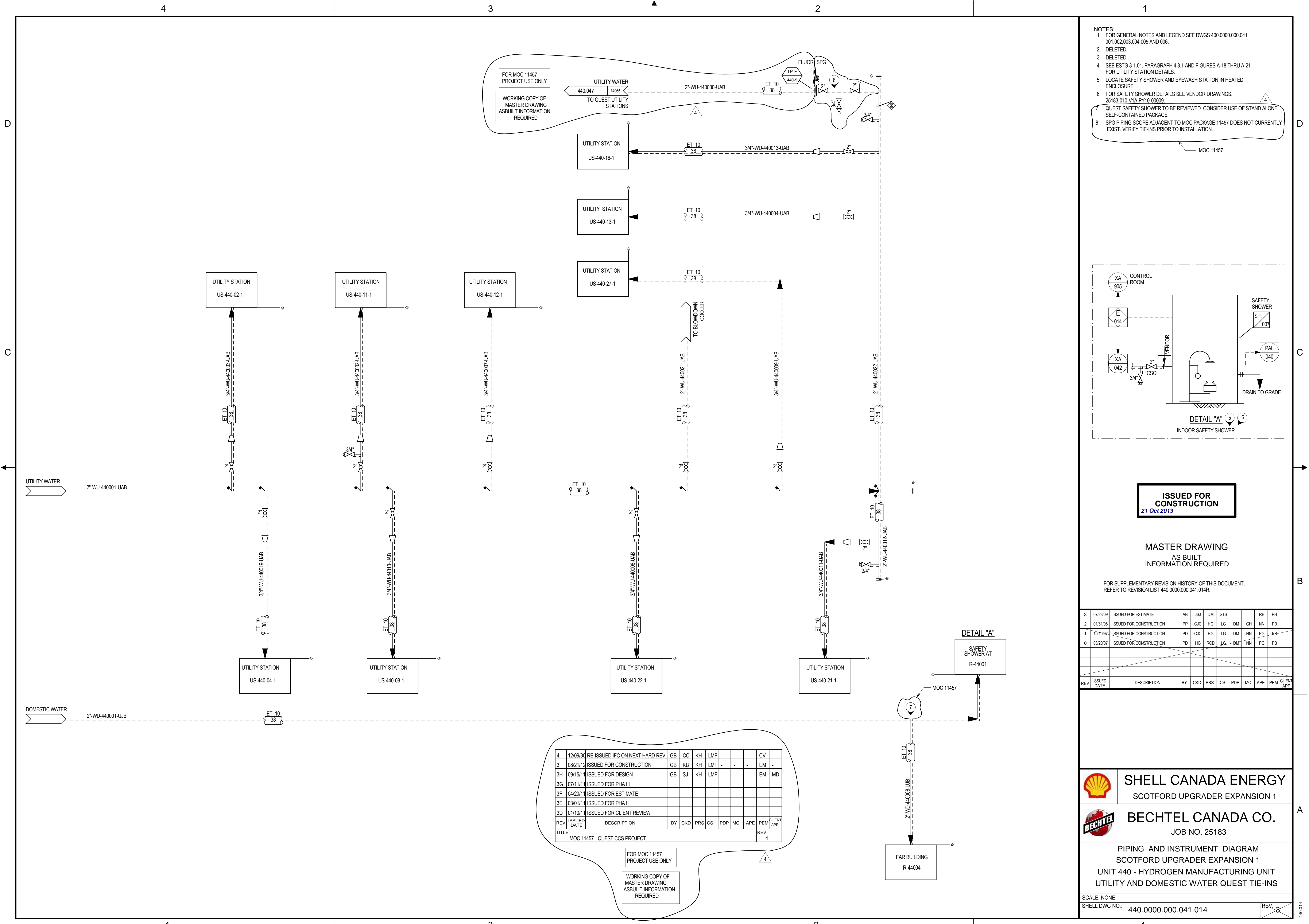
SHELL CANADA ENERGY
SCOTFORD UPGRADER EXPANSION 1



BECHTEL CANADA CO.
JOB NO. 25183

PIPING AND INSTRUMENT DIAGRAM
SCOTFORD UPGRADER EXPANSION 1
UNIT 440 - HYDROGEN MANUFACTURING UNIT
COOLING WATER QUEST TIE-INS

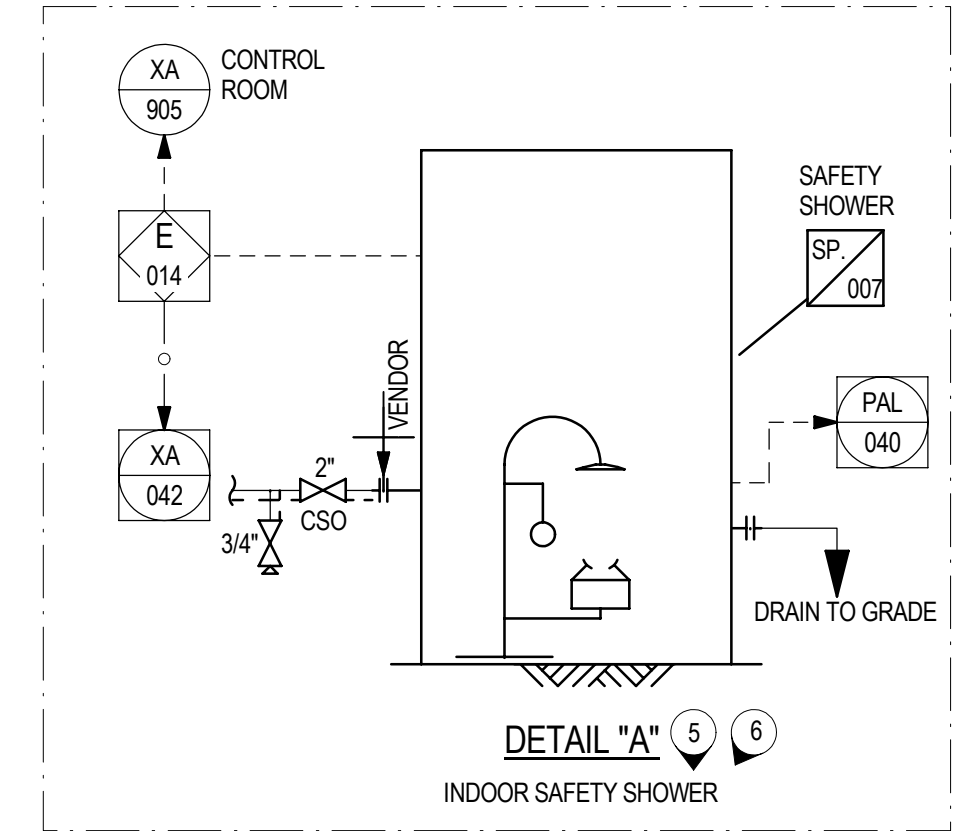
SCALE: NONE
SHELL DWG NO.: 440.000.000.041.012
REV 3



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REQUIRED

- NOTES:
- FOR GENERAL NOTES AND LEGEND SEE DWGS 400.0000.000.041, 001.002.003.004.005 AND 006.
 - DELETED.
 - DELETED.
 - SEE ESTG 3-1.01, PARAGRAPH 4.8.1 AND FIGURES A-18 THRU A-21 FOR UTILITY STATION DETAILS.
 - LOCATE SAFETY SHOWER AND EYEWASH STATION IN HEATED ENCLOSURE.
 - FOR SAFETY SHOWER DETAILS SEE VENDOR DRAWINGS. 25183-010-V1A-PY10-00009.
 - QUEST SAFETY SHOWER TO BE REVIEWED. CONSIDER USE OF STAND ALONE, SELF-CONTAINED PACKAGE.
 - SPG PIPING SCOPE ADJACENT TO MOC PACKAGE 11457 DOES NOT CURRENTLY EXIST. VERIFY TIE-INS PRIOR TO INSTALLATION.



ISSUED FOR CONSTRUCTION
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REFER TO REVISION LIST 440.0000.000.041.014R.

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0	03/20/07	ISSUED FOR CONSTRUCTION	PD	HG	RCD	LG	DM	NN	PG	PB	

REV	ISSUED DATE	DESCRIPTION	BY	CKD	PRS	CS	PDP	MC	APE	PEM	CLIENT APP
4	12/09/30	RE-ISSUED IFC ON NEXT HARD REV	GB	CC	KH	LMF	-	-	-	CV	-
3I	08/21/12	ISSUED FOR CONSTRUCTION	GB	KB	KH	LMF	-	-	-	EM	-
3H	09/15/11	ISSUED FOR DESIGN	GB	SJ	KH	LMF	-	-	-	EM	MD
3G	07/11/11	ISSUED FOR PHA III									
3F	04/20/11	ISSUED FOR ESTIMATE									
3E	03/01/11	ISSUED FOR PHA II									
3D	01/10/11	ISSUED FOR CLIENT REVIEW									

FOR MOC 11457
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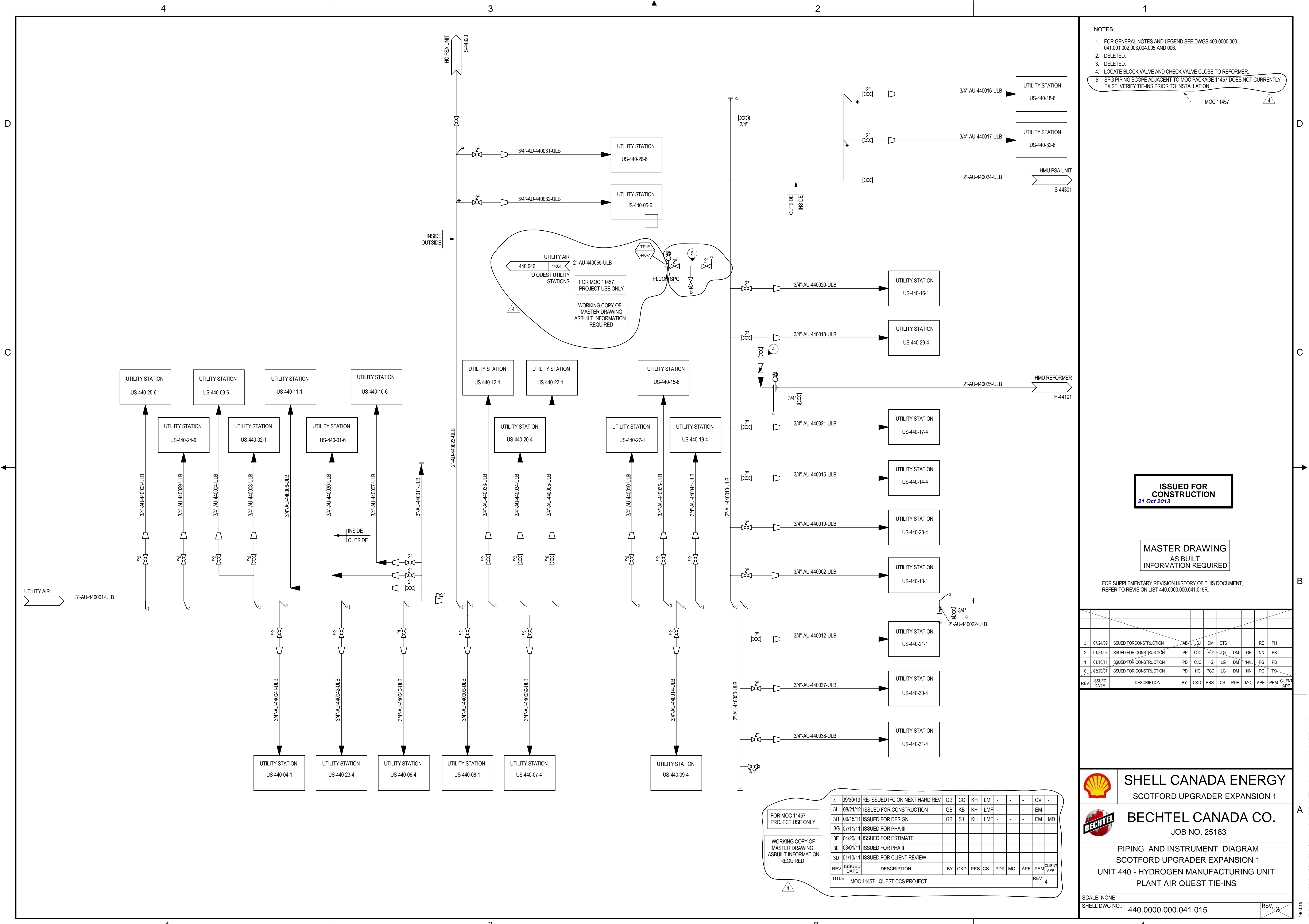
SHELL CANADA ENERGY
SCOTFORD UPGRADER EXPANSION 1

BECHTEL CANADA CO.
JOB NO. 25183

PIPING AND INSTRUMENT DIAGRAM
SCOTFORD UPGRADER EXPANSION 1
UNIT 440 - HYDROGEN MANUFACTURING UNIT
UTILITY AND DOMESTIC WATER QUEST TIE-INS

SCALE: NONE
SHELL DWG NO.: 440.0000.000.041.014

440.014
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- NOTES:**
1. FOR GENERAL NOTES AND LEGEND SEE DWGS 400.0000.000, 041.001.002, 003, 004, 005 AND 006.
 2. DELETED.
 3. DELETED.
 4. LOCATE BLOCK VALVE AND CHECK VALVE CLOSE TO REFORMER.
 5. SPG PIPING SCOPE ADJACENT TO MOC PACKAGE 11457 DOES NOT CURRENTLY EXIST. VERIFY TIE-INS PRIOR TO INSTALLATION.

ISSUED FOR CONSTRUCTION
21 Oct 2013

MASTER DRAWING
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FOR SUPPLEMENTARY REVISION HISTORY OF THIS DOCUMENT, REFER TO REVISION LIST 440.0000.000.041.015R.

REV	ISSUED DATE	DESCRIPTION	BY	CHK	PRS	CS	PDP	MC	APE	PEM	CLIENT APP
3	07/24/09	ISSUED FOR CONSTRUCTION	AB	JSJ	DM	GTS				RE	PH
2	01/31/08	ISSUED FOR CONSTRUCTION	PP	CJC	HG	LG	DM	GH	NN	PB	
1	01/10/11	ISSUED FOR CONSTRUCTION	PD	CJC	HG	LG	DM	NN	PG	PB	
0	09/20/07	ISSUED FOR CONSTRUCTION	PD	HG	PCD	LG	DM	NN	PG	PB	

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REV	ISSUED DATE	DESCRIPTION	BY	CHK	PRS	CS	PDP	MC	APE	PEM	CLIENT APP
4	09/30/13	RE-ISSUED IFC ON NEXT HARD REV	GB	CC	KH	LMF	-	-	-	CV	-
3I	08/21/12	ISSUED FOR CONSTRUCTION	GB	KB	KH	LMF	-	-	-	EM	-
3H	09/15/11	ISSUED FOR DESIGN	GB	SJ	KH	LMF	-	-	-	EM	MD
3G	07/11/11	ISSUED FOR PHA III									
3F	04/20/11	ISSUED FOR ESTIMATE									
3E	03/01/11	ISSUED FOR PHA II									
3D	01/10/11	ISSUED FOR CLIENT REVIEW									
TITLE	MOC 11457 - QUEST CCS PROJECT										REV 4

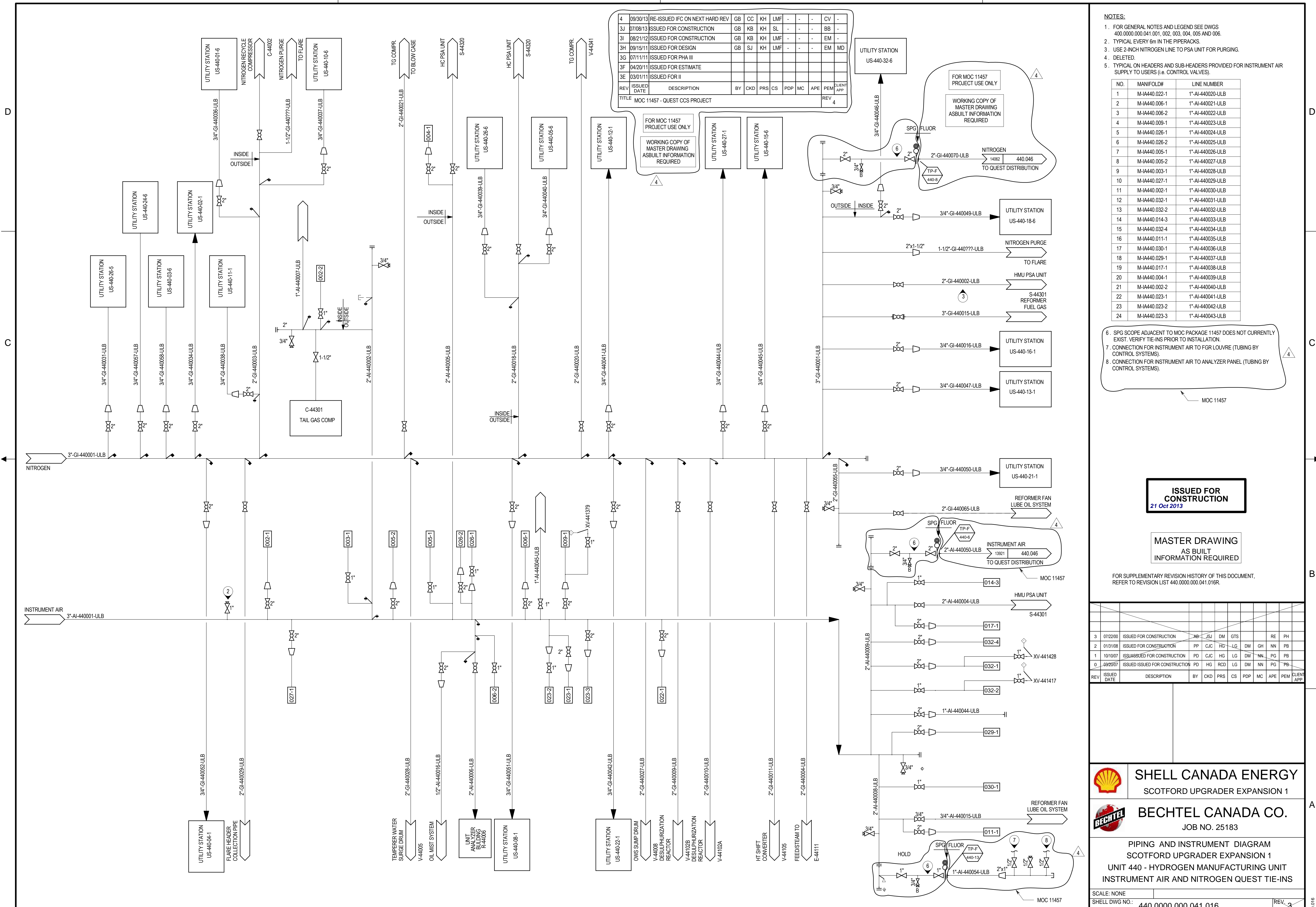
SHELL CANADA ENERGY
SCOTFORD UPGRADER EXPANSION 1

BECHTEL CANADA CO.
JOB NO. 25183

PIPING AND INSTRUMENT DIAGRAM
SCOTFORD UPGRADER EXPANSION 1
UNIT 40 - HYDROGEN MANUFACTURING UNIT
PLANT AIR QUEST TIE-INS

SCALE: NONE
SHELL DWG NO.: 440.0000.000.041.015

440.015
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REV	DATE	DESCRIPTION	BY	CHKD	PRS	CS	PDP	MC	APE	PEM	CLIENT APP
4	09/30/13	RE-ISSUED IFC ON NEXT HARD REV	GB	CC	KH	LMF	-	-	-	CV	-
3J	07/08/13	ISSUED FOR CONSTRUCTION	GB	KB	KH	SL	-	-	-	BB	-
3I	08/21/12	ISSUED FOR CONSTRUCTION	GB	KB	KH	LMF	-	-	-	EM	-
3H	09/15/11	ISSUED FOR DESIGN	GB	SJ	KH	LMF	-	-	-	EM	MD
3G	07/11/11	ISSUED FOR PHA III									
3F	04/20/11	ISSUED FOR ESTIMATE									
3E	03/01/11	ISSUED FOR II									

TITLE: MOC 11457 - QUEST CCS PROJECT

- NOTES:
- FOR GENERAL NOTES AND LEGEND SEE DWGS 400.0000.000.041.001, 002, 003, 004, 005 AND 006.
 - TYPICAL EVERY 6m IN THE PIPERACKS.
 - USE 2-INCH NITROGEN LINE TO PSA UNIT FOR PURGING.
 - DELETED.
 - TYPICAL ON HEADERS AND SUB-HEADERS PROVIDED FOR INSTRUMENT AIR SUPPLY TO USERS (i.e. CONTROL VALVES).

NO.	MANIFOLD#	LINE NUMBER
1	M-IA440.022-1	1"-AI-440020-ULB
2	M-IA440.006-1	1"-AI-440021-ULB
3	M-IA440.006-2	1"-AI-440022-ULB
4	M-IA440.009-1	1"-AI-440023-ULB
5	M-IA440.026-1	1"-AI-440024-ULB
6	M-IA440.026-2	1"-AI-440025-ULB
7	M-IA440.005-1	1"-AI-440026-ULB
8	M-IA440.005-2	1"-AI-440027-ULB
9	M-IA440.003-1	1"-AI-440028-ULB
10	M-IA440.027-1	1"-AI-440029-ULB
11	M-IA440.002-1	1"-AI-440030-ULB
12	M-IA440.032-1	1"-AI-440031-ULB
13	M-IA440.032-2	1"-AI-440032-ULB
14	M-IA440.014-3	1"-AI-440033-ULB
15	M-IA440.032-4	1"-AI-440034-ULB
16	M-IA440.011-1	1"-AI-440035-ULB
17	M-IA440.030-1	1"-AI-440036-ULB
18	M-IA440.029-1	1"-AI-440037-ULB
19	M-IA440.017-1	1"-AI-440038-ULB
20	M-IA440.004-1	1"-AI-440039-ULB
21	M-IA440.002-2	1"-AI-440040-ULB
22	M-IA440.023-1	1"-AI-440041-ULB
23	M-IA440.023-2	1"-AI-440042-ULB
24	M-IA440.023-3	1"-AI-440043-ULB

- SPG SCOPE ADJACENT TO MOC PACKAGE 11457 DOES NOT CURRENTLY EXIST. VERIFY TIE-INS PRIOR TO INSTALLATION.
- CONNECTION FOR INSTRUMENT AIR TO FGR LOUVRE (TUBING BY CONTROL SYSTEMS).
- CONNECTION FOR INSTRUMENT AIR TO ANALYZER PANEL (TUBING BY CONTROL SYSTEMS).

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21 Oct 2013

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REV	ISSUE DATE	DESCRIPTION	BY	CHKD	PRS	CS	PDP	MC	APE	PEM	CLIENT APP
3	07/22/00	ISSUED FOR CONSTRUCTION	AB	JSJ	DM	GTS				RE	PH
2	01/31/08	ISSUED FOR CONSTRUCTION	PP	CJC	HG	LG	DM	GH	NN	PB	
1	10/10/07	ISSUED FOR CONSTRUCTION	PD	CJC	HG	LG	DM	NN	PG	PB	
0	09/20/07	ISSUED FOR CONSTRUCTION	PD	HG	RCD	LG	DM	NN	PG	PB	

SHELL CANADA ENERGY
SCOTFORD UPGRADER EXPANSION 1

BECHTEL
BECHTEL CANADA CO.
JOB NO. 25183

PIPING AND INSTRUMENT DIAGRAM
SCOTFORD UPGRADER EXPANSION 1
UNIT 440 - HYDROGEN MANUFACTURING UNIT
INSTRUMENT AIR AND NITROGEN QUEST TIE-INS

SCALE: NONE
SHELL DWG NO.: 440.0000.000.041.016

BUILDING NO. R-44001

ITEM NUMBER	LP STEAM HEADER / BRANCH NO.	LP STEAM LINE FROM	CONDENSATE HEADER NO.
SUB-HEADER 1	4"-SL-440078-SAB	-	2"-SCL-440079-SAB
SUB-HEADER 2	3"-SL-440014-SAB	-	2"-SCL-440006-SAB
E-44010A	2"-SL-440014-SAB	1 1/2"-SL-440082-SAB	2"-SCL-440006-SAB
E-44010B	2"-SL-440014-SAB	1 1/2"-SL-440083-SAB	2"-SCL-440006-SAB
E-44010C	2"-SL-440014-SAB	1 1/2"-SL-440084-SAB	2"-SCL-440006-SAB
E-44010D	2"-SL-440014-SAB	1 1/2"-SL-440085-SAB	2"-SCL-440006-SAB
E-44010E	2"-SL-440078-SAB	1 1/2"-SL-440086-SAB	2"-SCL-440079-SAB
E-44010F	2"-SL-440078-SAB	1 1/2"-SL-440087-SAB	2"-SCL-440079-SAB
E-44010G	2"-SL-440078-SAB	1 1/2"-SL-440088-SAB	2"-SCL-440079-SAB
E-44010H	2"-SL-440078-SAB	1 1/2"-SL-440089-SAB	2"-SCL-440079-SAB
TV-440181	4"-SL-440093-SAB	2"-SL-440081-SAB	2"-SCL-440078-SAB

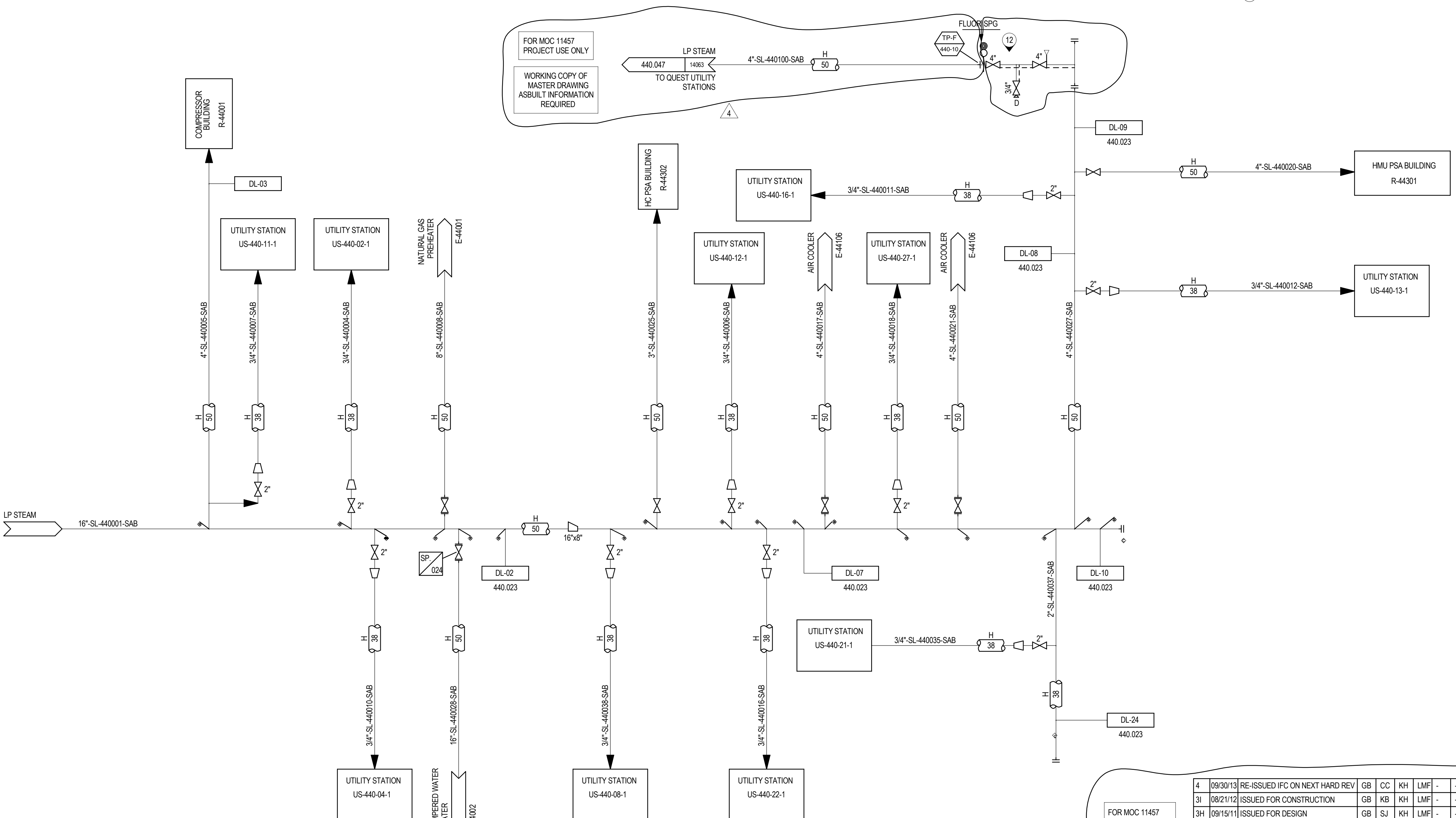
BUILDING NO. R-44302

ITEM NUMBER	LP STEAM HEADER / BRANCH NO.	LP STEAM LINE FROM	CONDENSATE HEADER NO.
SUB-HEADER	3"-SL-440080-SAB	-	2"-SCL-443006-SAB
E-44308A	2"-SL-440080-SAB	1 1/2"-SL-443017-SAB	2"-SCL-443006-SAB
E-44308B	2"-SL-440080-SAB	1 1/2"-SL-443018-SAB	2"-SCL-443006-SAB
E-44308C	2"-SL-440080-SAB	1 1/2"-SL-443019-SAB	2"-SCL-443006-SAB
E-44308D	2"-SL-440080-SAB	1 1/2"-SL-443020-SAB	2"-SCL-443006-SAB
E-44308E	2"-SL-440080-SAB	1 1/2"-SL-443021-SAB	2"-SCL-443006-SAB
E-44308F	2"-SL-440080-SAB	1 1/2"-SL-443022-SAB	2"-SCL-443006-SAB
E-44308G	2"-SL-440080-SAB	1 1/2"-SL-440023-SAB	2"-SCL-443006-SAB
E-44308H	2"-SL-440080-SAB	1 1/2"-SL-440024-SAB	2"-SCL-443006-SAB
TV-443281	3"-SL-440080-SAB	2"-SL-443016-SAB	2"-SCL-443005-SAB

BUILDING NO. R-44301

ITEM NUMBER	LP STEAM HEADER / BRANCH NO.	LP STEAM LINE FROM	CONDENSATE HEADER NO.
SUB-HEADER	4"-SL-440079-SAB	-	3"-SCL-443004-SAB
E-44307A	2"-SL-440079-SAB	1 1/2"-SL-443002-SAB	2"-SCL-443004-SAB
E-44307B	2"-SL-440079-SAB	1 1/2"-SL-443003-SAB	2"-SCL-443004-SAB
E-44307C	2"-SL-440079-SAB	1 1/2"-SL-443004-SAB	2"-SCL-443004-SAB
E-44307D	2"-SL-440079-SAB	1 1/2"-SL-443005-SAB	2"-SCL-443004-SAB
E-44307E	2"-SL-440079-SAB	1 1/2"-SL-443006-SAB	2"-SCL-443004-SAB
E-44307F	2"-SL-440079-SAB	1 1/2"-SL-443007-SAB	2"-SCL-443004-SAB
E-44307G	2"-SL-440079-SAB	1 1/2"-SL-443008-SAB	2"-SCL-443004-SAB
E-44307H	2"-SL-440079-SAB	1 1/2"-SL-443009-SAB	2"-SCL-443004-SAB
E-44307I	2"-SL-440079-SAB	1 1/2"-SL-443010-SAB	2"-SCL-443004-SAB
E-44307J	2"-SL-440079-SAB	1 1/2"-SL-443011-SAB	2"-SCL-443004-SAB
E-44307K	2"-SL-440079-SAB	1 1/2"-SL-443012-SAB	2"-SCL-443004-SAB
E-44307L	2"-SL-440079-SAB	1 1/2"-SL-443013-SAB	2"-SCL-443004-SAB
E-44307M	2"-SL-440079-SAB	1 1/2"-SL-443014-SAB	2"-SCL-443004-SAB
E-44307N	2"-SL-440079-SAB	1 1/2"-SL-443015-SAB	2"-SCL-443004-SAB
TV-443181	4"-SL-440079-SAB	2"-SL-443001-SAB	2"-SCL-443003-SAB

- NOTES:**
- FOR GENERAL NOTES AND LEGEND SEE DWGS 400.000.000.041.001, 002, 003, 004, 005, and 006.
 - SEE ESTG 3-1.01, PARAGRAPH 4.8.1 AND FIGURES A-18 THRU A-21 FOR UTILITY STATION DETAILS.
 - SATURATED STEAM TRAP AT ALL LOW POINTS AND IN HEADERS PER ESTG, INCLUDING END OF RUNS.
 - DELETED.
 - DELETED.
 - DELETED.
 - DELETED.
 - DELETED.
 - DELETED.
 - DELETED.
 - REFER TO LDT# 443.0311.000.031.027 FOR MORE INFORMATION FOR LINES WITH # A 443 AREA PREFIX.
 - SPG PIPING SCOPE ADJACENT TO MOC PACKAGE 11457 DOES NOT CURRENTLY EXIST. VERIFY TIE-INS PRIOR TO INSTALLATION.



ISSUED FOR CONSTRUCTION
21 Oct 2013

MASTER DRAWING
AS BUILT
INFORMATION REQUIRED

FOR SUPPLEMENTARY REVISION HISTORY OF THIS DOCUMENT,
REFER TO REVISION LIST 440.000.000.041.018R.

REV	ISSUED DATE	DESCRIPTION	BY	CHKD	PRSR	CS	PDP	MC	APE	PEM	CLIENT APP
3	01/01/08	ISSUED FOR CONSTRUCTION	PP	CJC	HG	LG	DM	GH	NN	PB	
2	11/02/07	ISSUED FOR CONSTRUCTION	PD	CJC	HG	LG	DM	GH	HV	PB	
1	10/10/07	ISSUED FOR CONSTRUCTION	PD	CJC	HG	LG	DM	NN	PG	PB	
0	09/20/07	ISSUED FOR CONSTRUCTION	PD	HG	RCD	LG	DM	NN	PG	PB	

FOR MOC 11457 PROJECT USE ONLY

WORKING COPY OF MASTER DRAWING ASBUILT INFORMATION REQUIRED

REV	ISSUED DATE	DESCRIPTION	BY	CKD	PRSR	CS	PDP	MC	APE	PEM	CLIENT APP
4	09/30/13	RE-ISSUED IFC ON NEXT HARD REV	GB	CC	KH	LMF	-	-	-	CV	-
3I	08/21/12	ISSUED FOR CONSTRUCTION	GB	KB	KH	LMF	-	-	-	EM	-
3H	09/15/11	ISSUED FOR DESIGN	GB	SJ	KH	LMF	-	-	-	EM	MD
3G	07/11/11	ISSUED FOR PHA III									
3F	04/20/11	ISSUED FOR ESTIMATE									
3E	03/01/11	ISSUED FOR PHA II									
3D	01/10/11	ISSUED FOR CLIENT REVIEW									

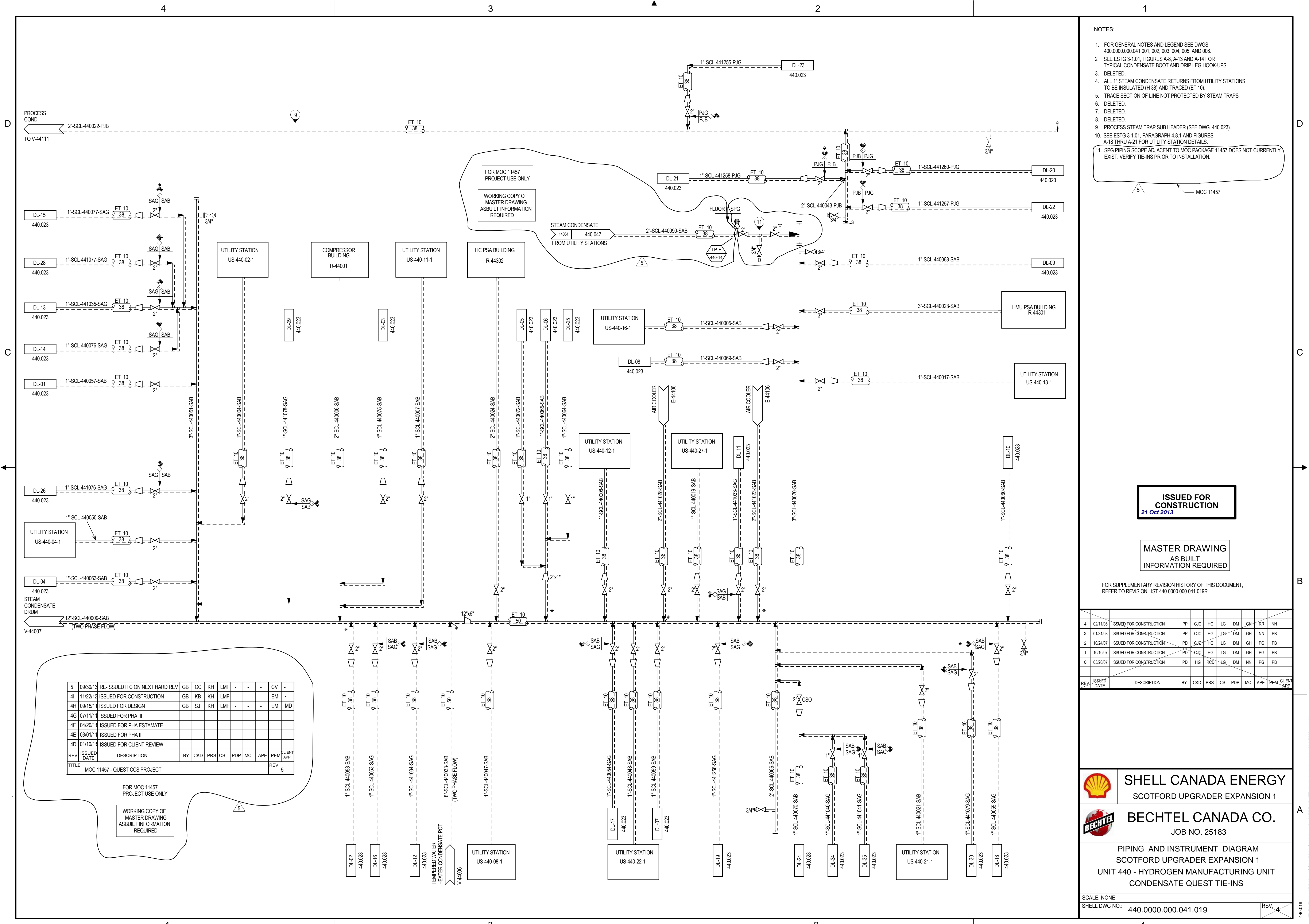
TITLE MOC 11457 - QUEST CCS PROJECT

SHELL CANADA ENERGY
SCOTFORD UPGRADER EXPANSION 1

BECHTEL CANADA CO.
JOB NO. 25183

PIPING AND INSTRUMENT DIAGRAM
SCOTFORD UPGRADER EXPANSION 1
UNIT 440 - HYDROGEN MANUFACTURING UNIT
LP STEAM QUEST TIE-INS

SCALE: NONE
SHELL DWG NO.: 440.000.000.041.018



- NOTES:**
- FOR GENERAL NOTES AND LEGEND SEE DWGS 400.0000.000.041.001, 002, 003, 004, 005 AND 006.
 - SEE ESTG 3-1.01, FIGURES A-8, A-13 AND A-14 FOR TYPICAL CONDENSATE BOOT AND DRIP LEG HOOK-UPS.
 - DELETED.
 - ALL 1" STEAM CONDENSATE RETURNS FROM UTILITY STATIONS TO BE INSULATED (H 38) AND TRACED (ET 10).
 - TRACE SECTION OF LINE NOT PROTECTED BY STEAM TRAPS.
 - DELETED.
 - DELETED.
 - DELETED.
 - DELETED.
 - PROCESS STEAM TRAP SUB HEADER (SEE DWG. 440.023).
 - SEE ESTG 3-1.01, PARAGRAPH 4.8.1 AND FIGURES A-18 THRU A-21 FOR UTILITY STATION DETAILS.
 - SPG PIPING SCOPE ADJACENT TO MOC PACKAGE 11457 DOES NOT CURRENTLY EXIST. VERIFY TIE-INS PRIOR TO INSTALLATION.

ISSUED FOR CONSTRUCTION
21 Oct 2013

MASTER DRAWING
AS BUILT
INFORMATION REQUIRED

FOR SUPPLEMENTARY REVISION HISTORY OF THIS DOCUMENT, REFER TO REVISION LIST 440.0000.000.041.019R.

REV	ISSUED DATE	DESCRIPTION	BY	CKD	PRS	CS	PDP	MC	APE	PEM	CLIENT APP
4	02/11/08	ISSUED FOR CONSTRUCTION	PP	CJC	HG	LG	DM	GH	RR	NN	
3	01/31/08	ISSUED FOR CONSTRUCTION	PP	CJC	HG	LG	DM	GH	NN	PB	
2	10/24/07	ISSUED FOR CONSTRUCTION	PD	CJC	HG	LG	DM	GH	PG	PB	
1	10/10/07	ISSUED FOR CONSTRUCTION	PD	CJC	HG	LG	DM	GH	PG	PB	
0	03/20/07	ISSUED FOR CONSTRUCTION	PD	HG	RCD	LG	DM	NN	PG	PB	

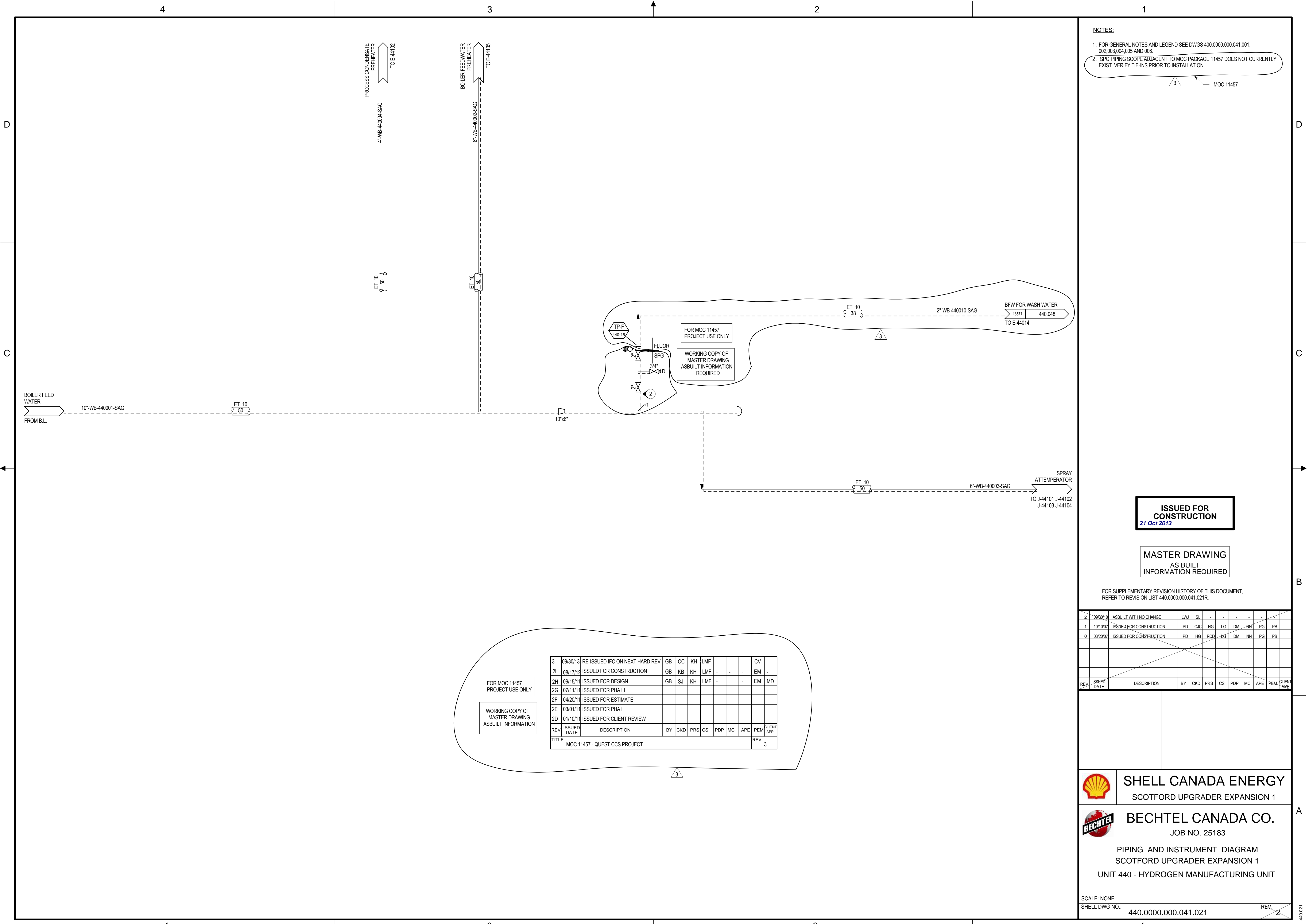
REV	ISSUED DATE	DESCRIPTION	BY	CKD	PRS	CS	PDP	MC	APE	PEM	CLIENT APP
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4I	11/22/12	ISSUED FOR CONSTRUCTION	GB	KB	KH	LMF	-	-	-	EM	-
4H	09/15/11	ISSUED FOR DESIGN	GB	SJ	KH	LMF	-	-	-	EM	MD
4G	07/11/11	ISSUED FOR PHA III									
4F	04/20/11	ISSUED FOR PHA ESTIMATE									
4E	03/01/11	ISSUED FOR PHA II									
4D	01/10/11	ISSUED FOR CLIENT REVIEW									

SHELL CANADA ENERGY
SCOTFORD UPGRADE EXPANSION 1

BECHTEL CANADA CO.
JOB NO. 25183

PIPING AND INSTRUMENT DIAGRAM
SCOTFORD UPGRADE EXPANSION 1
UNIT 400 - HYDROGEN MANUFACTURING UNIT
CONDENSATE QUEST TIE-INS

SCALE: NONE
SHELL DWG NO.: 440.0000.000.041.019



- NOTES:**
- FOR GENERAL NOTES AND LEGEND SEE DWGS 400.0000.000.041.001, 002.003.004.005 AND 006.
 - SPG PIPING SCOPE ADJACENT TO MOC PACKAGE 11457 DOES NOT CURRENTLY EXIST. VERIFY TIE-INS PRIOR TO INSTALLATION.

ISSUED FOR CONSTRUCTION
21 Oct 2013

MASTER DRAWING
AS BUILT INFORMATION REQUIRED

FOR SUPPLEMENTARY REVISION HISTORY OF THIS DOCUMENT, REFER TO REVISION LIST 440.0000.000.041.021R.

REV	ISSUED DATE	DESCRIPTION	BY	CKD	PRS	CS	PDP	MC	APE	PEM	CLIENT APP
2	09/30/10	ASBUILT WITH NO CHANGE	LWJ	SL	-	-	-	-	-	-	-
1	10/10/07	ISSUED FOR CONSTRUCTION	PD	CJC	HG	LG	DM	NN	PG	PB	
0	03/20/07	ISSUED FOR CONSTRUCTION	PD	HG	RCD	LG	DM	NN	PG	PB	


FOR MOC 11457 PROJECT USE ONLY


WORKING COPY OF MASTER DRAWING ASBUILT INFORMATION REQUIRED

REV	ISSUED DATE	DESCRIPTION	BY	CKD	PRS	CS	PDP	MC	APE	PEM	CLIENT APP
3	09/30/13	RE-ISSUED IFC ON NEXT HARD REV	GB	CC	KH	LMF	-	-	-	CV	-
2I	08/17/12	ISSUED FOR CONSTRUCTION	GB	KB	KH	LMF	-	-	-	EM	-
2H	09/15/11	ISSUED FOR DESIGN	GB	SJ	KH	LMF	-	-	-	EM	MD
2G	07/11/11	ISSUED FOR PHA III									
2F	04/20/11	ISSUED FOR ESTIMATE									
2E	03/01/11	ISSUED FOR PHA II									
2D	01/10/11	ISSUED FOR CLIENT REVIEW									

TITLE: MOC 11457 - QUEST CCS PROJECT

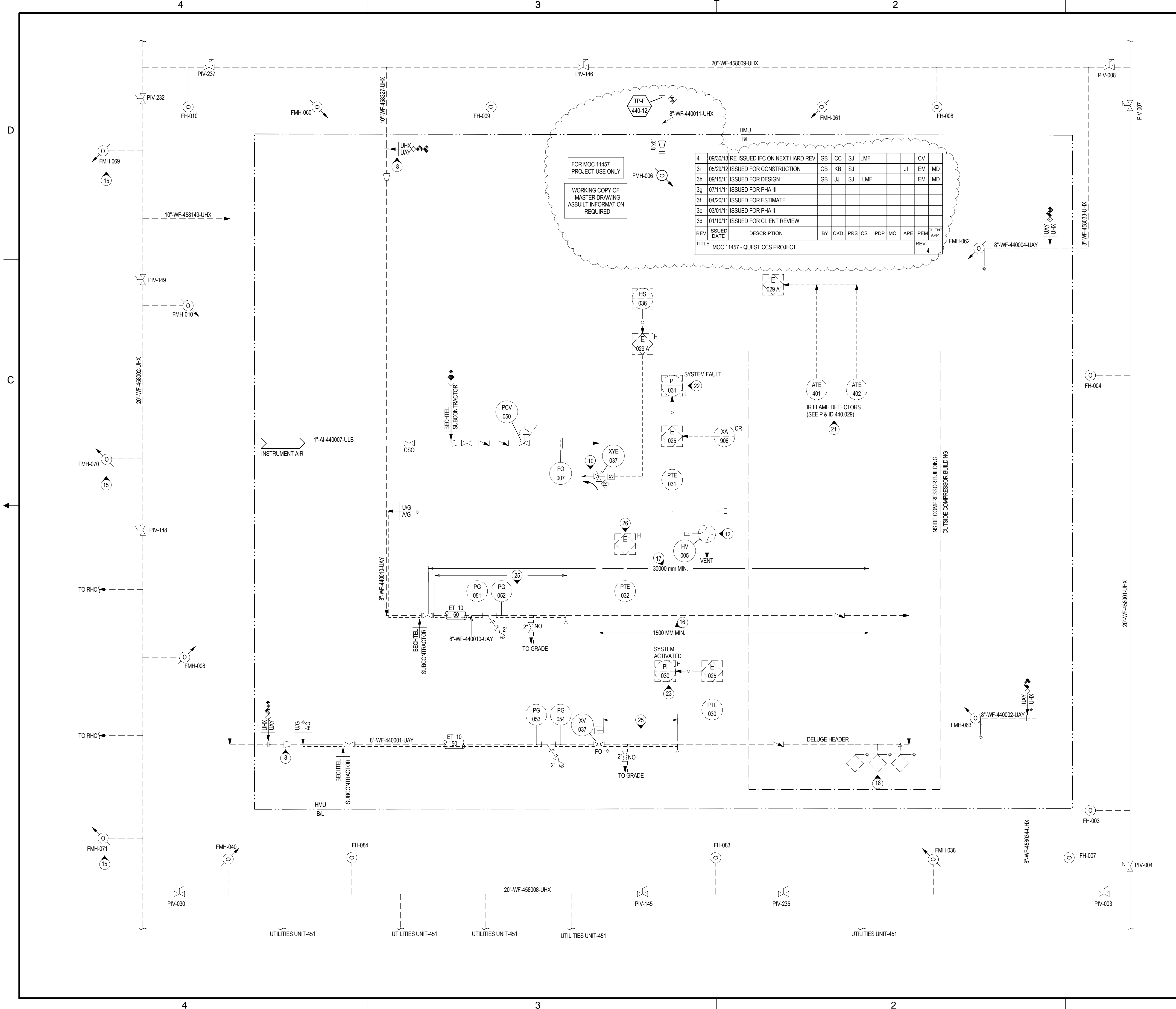
REV: 3

 **SHELL CANADA ENERGY**
SCOTFORD UPGRADE EXPANSION 1

 **BECHTEL CANADA CO.**
JOB NO. 25183

PIPING AND INSTRUMENT DIAGRAM
SCOTFORD UPGRADE EXPANSION 1
UNIT 440 - HYDROGEN MANUFACTURING UNIT

SCALE: NONE
SHELL DWG NO.: 440.0000.000.041.021



FOR MOC 11457 PROJECT USE ONLY

WORKING COPY OF MASTER DRAWING AS BUILT INFORMATION REQUIRED

REV	ISSUED DATE	DESCRIPTION	BY	CKD	PRS	CS	PDP	MC	APE	PEM	CLIENT APP
4	09/30/13	RE-ISSUED IFC ON NEXT HARD REV	GB	CC	SJ	LMF	-	-	-	CV	-
3i	05/29/12	ISSUED FOR CONSTRUCTION	GB	KB	SJ	-	-	-	JI	EM	MD
3h	09/15/11	ISSUED FOR DESIGN	GB	JJ	SJ	LMF	-	-	-	EM	MD
3g	07/11/11	ISSUED FOR PHA III	-	-	-	-	-	-	-	-	-
3f	04/20/11	ISSUED FOR ESTIMATE	-	-	-	-	-	-	-	-	-
3e	03/01/11	ISSUED FOR PHA II	-	-	-	-	-	-	-	-	-
3d	01/10/11	ISSUED FOR CLIENT REVIEW	-	-	-	-	-	-	-	-	-
TITLE	MOC 11457 - QUEST CCS PROJECT										

NOTES:

- FIRE WATER AND FIRE PROTECTION SYSTEM SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH ESTG 21-1.03 "FIRE WATER SYSTEMS" AND ESTG 21-1.02 "FIRE PROTECTION AND PERSONNEL SAFETY".
- ALL LATERALS TO FIRE HYDRANTS AND FIRE MONITORS SHALL COMPLY WITH ESTG 3-1.01 "PIPING DESIGN" AND ESTG 3-1.03 "PIPE, VALVES AND FITTINGS-PIPING CLASSES".
- HYDRANTS SHALL BE DESIGNED FOR FREEZE PROTECTION DUE TO THE HIGH WATER TABLE.
- FIRE HYDRANTS AND FIRE MONITORS SHALL BE IDEALLY LOCATED 1 TO 3 METERS FROM THE CURB OR EDGE OF THE ROAD AND AT LEAST 10 METRES FROM INTERSECTIONS OR BUILDINGS.
- FIRE MONITORS ARE TO BE SPOTTED APPROXIMATELY 20 METRES FROM THE EQUIPMENT TO BE PROTECTED AND OUTSIDE THE EXPECTED DRAINAGE ROUTES.
- MONITOR COVERAGE IS THROW LENGTH. HYDRANT COVERAGE IS 100 METRES HOSE LENGTH PLUS THROW LENGTH.
- OUTSIDE BATTERY LIMIT INSTALLATION BY OTHERS.
- RISER INSTALLED SEPARATELY SHALL BE INSULATED AND ELECTRIC TRACED U/G TO THE FROST LINE. 38 MM INSULATION ON TRACED LINES 4" AND SMALLER, 50 MM 6" AND LARGER.
- DELETED.
- NORMALLY ENERGIZED SOLENOID VALVE.
- DELETED.
- PNEUMATIC DUMP VALVE TO BE LOCATED NEAR DELUGE VALVE.
- DELETED.
- DELETED.
- THIS FMH IS PART OF RHC FIRE WATER SYSTEM.
- VALVE XV-440037 SHALL BE MINIMUM OF 15 M FROM THE CENTRELINE OF THE PROTECTED EQUIPMENT.
- MANUAL VALVE SHALL BE MINIMUM OF 30 M FROM THE CENTRELINE OF THE PROTECTED EQUIPMENT.
- DELUGE CONCEPTUAL DESIGN PROVIDES FOR PRE-AIMED MONITORS FOR EQUIPMENT COVERAGE. HYDRAULIC ANALYSIS DURING DETAILED DESIGN BY THE VENDOR MAY INDICATE HYDRAULIC LIMITATIONS THAT MAY REQUIRE THE USE OF NORMAL NFPA-15 TYPE HEADS.
- FOR GENERAL NOTES AND LEGEND SEE DWGS 400.0000.000.041.001, 002, 003, 004, 005 AND 006.
- ALL INSTRUMENT LOOP AND INTERLOCK NUMBERS SHOWN ON P&ID SHALL HAVE A PREFIX "440" UNLESS OTHERWISE IDENTIFIED ON P&ID.
- ALL INSTRUMENT CABLE SYSTEMS & OPTICAL FIRE DETECTION SUPPLIED BY BECTEL.
- LOW PRESSURE TO IDENTIFY SYSTEM FAULT PRIOR TO ACTIVATING FAULT.
- HIGH PRESSURE TO IDENTIFY SYSTEM ACTIVATION.
- DELETED.
- TRACING DOWNSTREAM OF THE MANUAL & ACTUATED DELUGE VALVES SHALL TERMINATE AT A MINIMUM DISTANCE OF 1 m IN THE VERTICAL PORTION OF PIPE.
- SALVAGE FMH-006 AND RISER AND RELOCATE INSIDE BATTERY LIMITS.

LEGEND

- FIRE HYDRANT WITH MONITOR REQUIRES AN 8" HDPE FEED FROM HEADER (FMH)
- FIRE HYDRANT REQUIRES AN 8" HDPE FEED FROM HEADER (FH)
- POST INDICATOR GATE VALVE (PIV)
- FLUSH CONNECTION
- OPEN SPRAY HEAD

MASTER DRAWING AS BUILT INFORMATION REQUIRED

ISSUED FOR CONSTRUCTION
21 Oct 2013

FOR SUPPLEMENTARY REVISION HISTORY OF THIS DOCUMENT, REFER TO REVISION LIST 440.0000.000.041.025R.

REV	ISSUED DATE	DESCRIPTION	BY	CKD	PRS	CS	PDP	MC	APE	PEM	CLIENT APP
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2	04/02/08	ISSUED FOR CONSTRUCTION	HG	CJC	CJC	LG	DM	GH	NN	PB	-
1	01/25/08	ISSUED FOR CONSTRUCTION	PP	CHC	HG	LG	DM	GH	PG	PB	-
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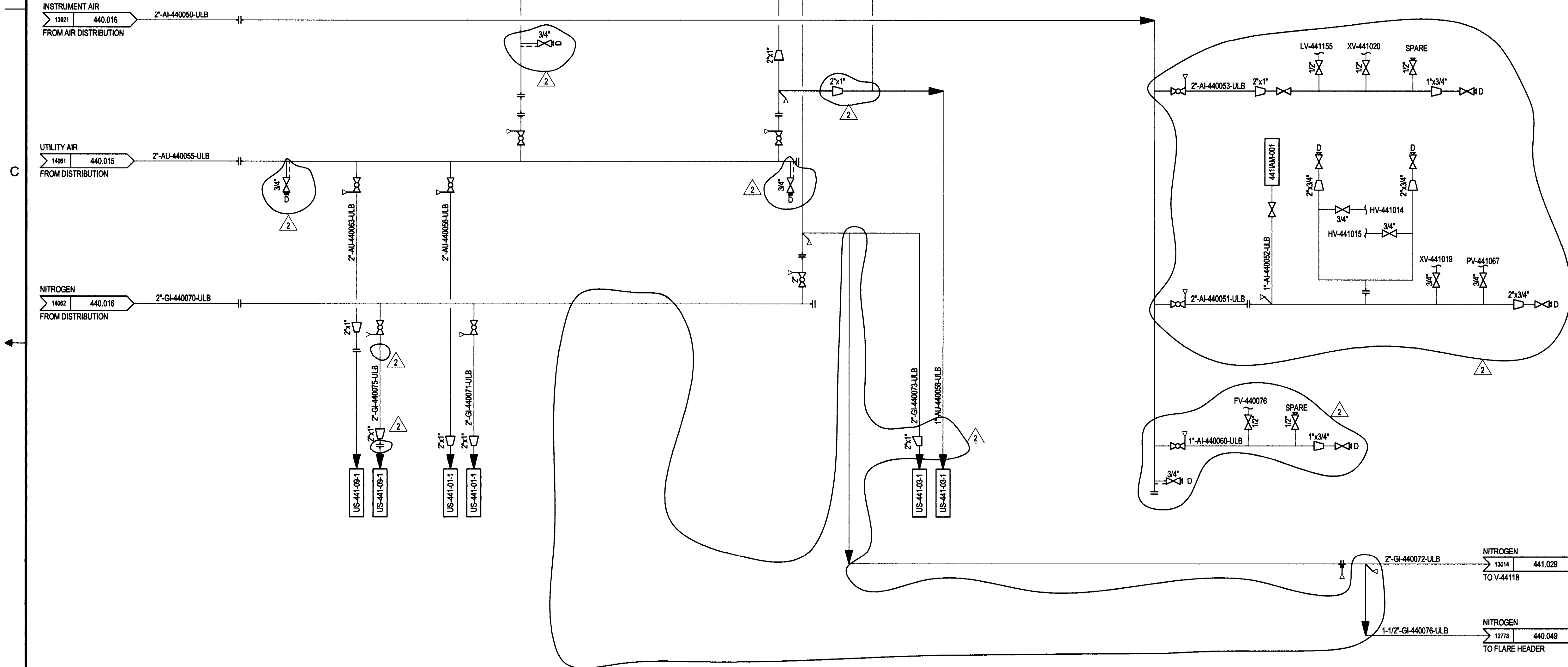
SHELL CANADA ENERGY
SCOTFORD UPGRADER EXPANSION 1

BECTEL CANADA CO.
JOB NO. 25183

PIPING AND INSTRUMENT DIAGRAM
SCOTFORD UPGRADER EXPANSION 1
UNIT 440 - HYDROGEN MANUFACTURING UNIT
FIRE WATER QUEST TIE-INS

SCALE: NONE
SHELL DWG NO.: 440.0000.000.041.025

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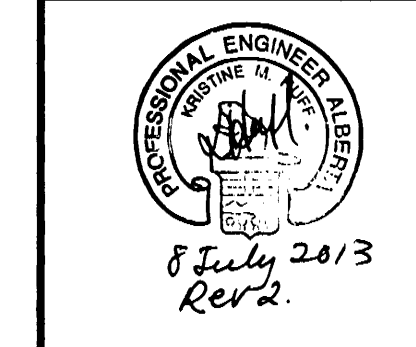


NOTES:

- 1. SEE DRAWINGS 200.0000.000.041.007 THRU 016 FOR SYMBOL IDENTIFICATION GENERAL NOTES & CONNECTION DETAILS.
- 2. REFER TO DEP 31.38.01.11 PIPING DESIGN GENERAL REQUIREMENTS SECTION 5.8 AND FIGURE 18-2 TO 18-5 FOR UTILITY STATION DETAILS.
- 3. PIPING HEADER BRANCH CONNECTIONS SHALL BE MADE ON TOP OF PIPE AND BE VALVED.

FLUOR.
 IFC – Issued for Construction
 Jul 29, 2013

2	07/09/13	ISSUED FOR CONSTRUCTION	AS	KB	KL	LF	EM	MD			
1	06/16/12	ISSUED FOR CONSTRUCTION	GB	KB	KH	LWF	EM	MD			
0	09/15/11	ISSUED FOR DESIGN	GB	SJ	KH	LWF	EM	MD			
G	07/11/11	ISSUED FOR PHA III									
F	04/20/11	ISSUED FOR ESTIMATE									
E	03/01/11	ISSUED FOR PHA II									
D	01/10/11	ISSUED FOR CLIENT REVIEW									
REV	DATE	DESCRIPTION	BY	CKD	PRS	GS	POP	MC	APF	PEM	CLIENT APP



PERMIT TO PRACTICE
FLUOR CANADA LTD.
 Signature: *[Signature]*
 Date: 29 July 2013
 PERMIT NUMBER: P 0778
 The Association of Professional Engineers, Geologists and Geophysicists of Alberta

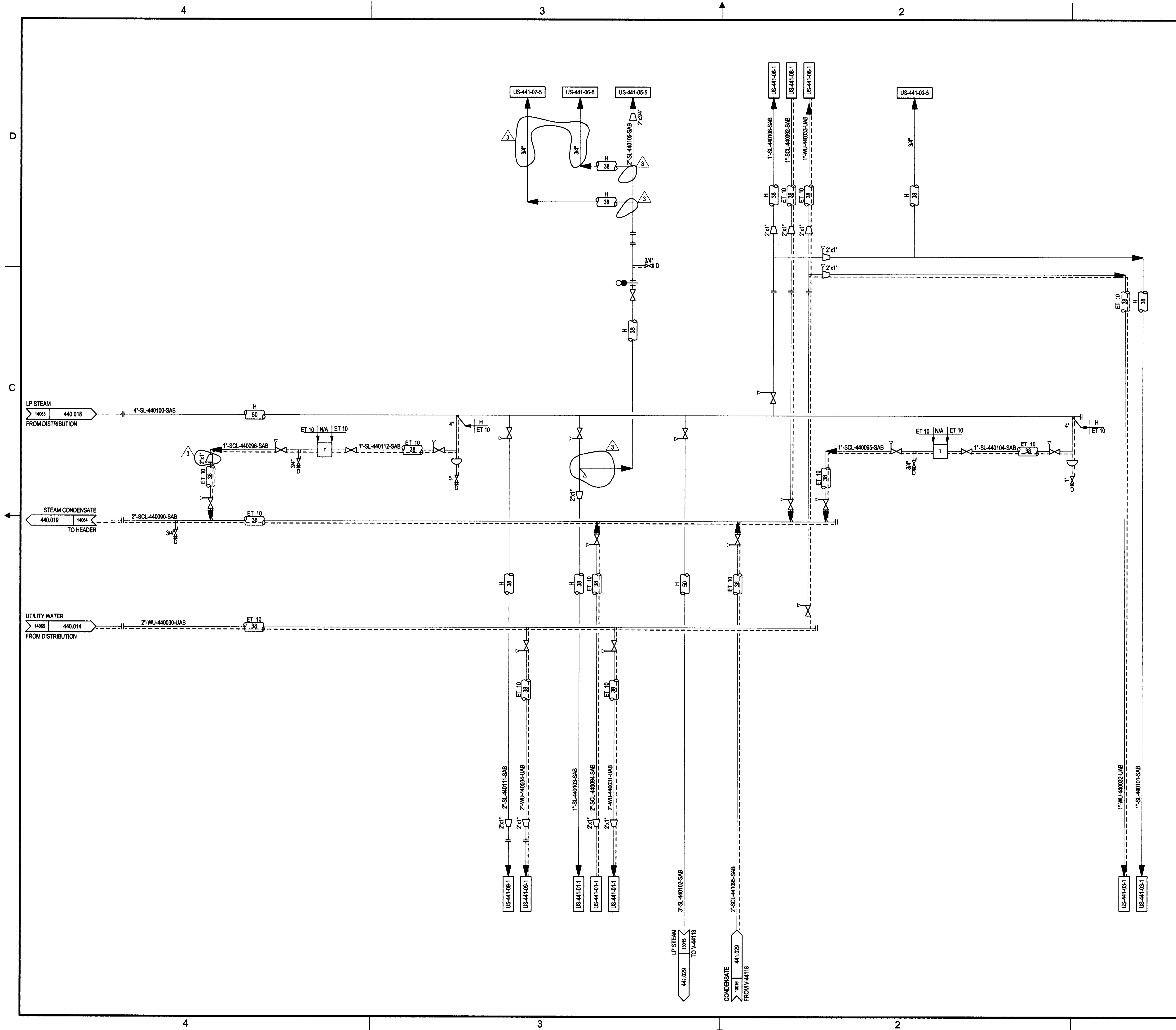


SHELL CANADA
 QUEST CCS PROJECT

FLUOR

PIPING AND INSTRUMENT DIAGRAM
 QUEST CCS PROJECT
 UNIT 440 - HYDROGEN MANUFACTURING UNIT
 INST. AIR, UTILITY AIR, AND NITROGEN DISTRIBUTION

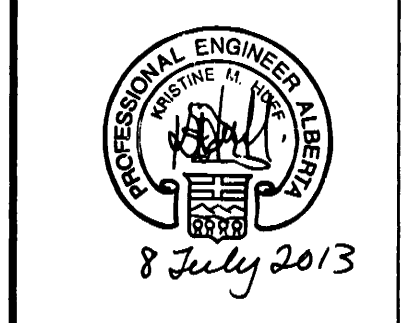
SCALE: NONE
 SHELL DWG NO.: 440.0000.000.041.046
 REV. 2



- NOTES:
- SEE DRAWINGS 200.0000.000.041.007 THRU 018 FOR SYMBOL IDENTIFICATION GENERAL NOTES & CONNECTION DETAILS.
 - PIPING HEADER BRANCH CONNECTIONS SHALL BE MADE ON TOP OF PIPE AND BE VALVED.
 - REFER TO DEP 31.38.01.11 PIPING DESIGN GENERAL REQUIREMENTS SECTION 5.8 AND FIGURE 18-2 TO 18-5 FOR UTILITY STATION DETAILS.
 - DELETED.

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Jul 29, 2013

REV	ISSUED DATE	DESCRIPTION	BY	CHKD	PRS	CS	POP	MC	APE	PEM	CLIENT APP
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1	08/16/12	ISSUED FOR CONSTRUCTION	GB	NB	KH	LWF					EM
0	08/15/11	ISSUED FOR DESIGN	GB	SJ	KH	LWF					EM MD
G	07/11/11	ISSUED FOR PHA III									
F	04/20/11	ISSUED FOR ESTIMATE									
E	03/01/11	ISSUED FOR PHA II									



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SHELL CANADA
QUEST CCS PROJECT

FLUOR

PIPING AND INSTRUMENT DIAGRAM
QUEST CCS PROJECT
UNIT 440 - HYDROGEN MANUFACTURING UNIT
LP STEAM, COND., AND UTILITY WATER DISTRIBUTION

SCALE: NONE
SHELL DWG NO.: 440.0000.000.041.047
REV. 3

440.047
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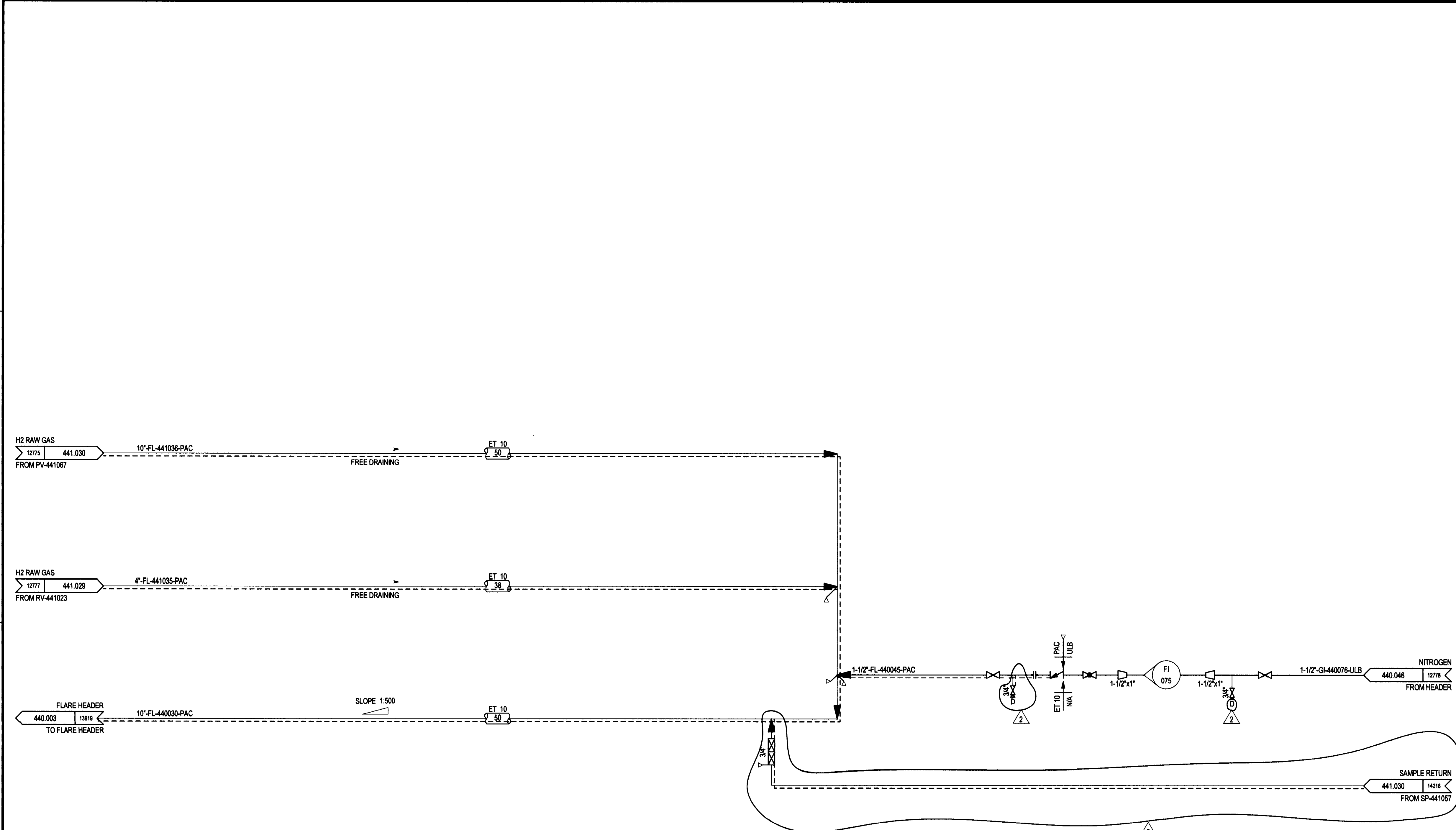
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4

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2

1



NOTES:
 1. SEE DRAWINGS 200.0000.000.041.007 THRU 016 FOR SYMBOL IDENTIFICATION GENERAL NOTES & CONNECTION DETAILS.
 2. ALL INSTRUMENT TAG NUMBERS ARE PREFIXED BY "440" UNLESS OTHERWISE STATED.

FLUOR
 IFC – Issued for Construction
 Jul 29, 2013

2	07/09/13	ISSUED FOR CONSTRUCTION	AS	SB	KH	LMF	BR										
1	06/16/12	ISSUED FOR CONSTRUCTION	GB	KB	KH	LMF											
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G	07/11/11	ISSUED FOR PHA III															
F	04/20/11	ISSUED FOR ESTIMATE															
E	03/01/11	ISSUED FOR PHA II															
D	01/10/11	ISSUED FOR CLIENT REVIEW															
REV	ISSUED DATE	DESCRIPTION	BY	CKD	PRS	CS	PDP	MC	APE	PEM	CLIENT APP						

PERMIT TO PRACTICE
 FLUOR CANADA LTD.
 Signature: *[Signature]*
 Date: 29 JUL 13
 PERMIT NUMBER: P 0778
 The Association of Professional Engineers, Geologists and Geophysicists of Alberta

SHELL CANADA
 QUEST CCS PROJECT

FLUOR
 PIPING AND INSTRUMENT DIAGRAM
 QUEST CCS PROJECT
 UNIT 440 - HYDROGEN MANUFACTURING UNIT
 ABSORBER AREA RELIEF COLLECTION

SCALE: NONE
 SHELL DWG NO.: 440.0000.000.041.049
 REV: 2

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