

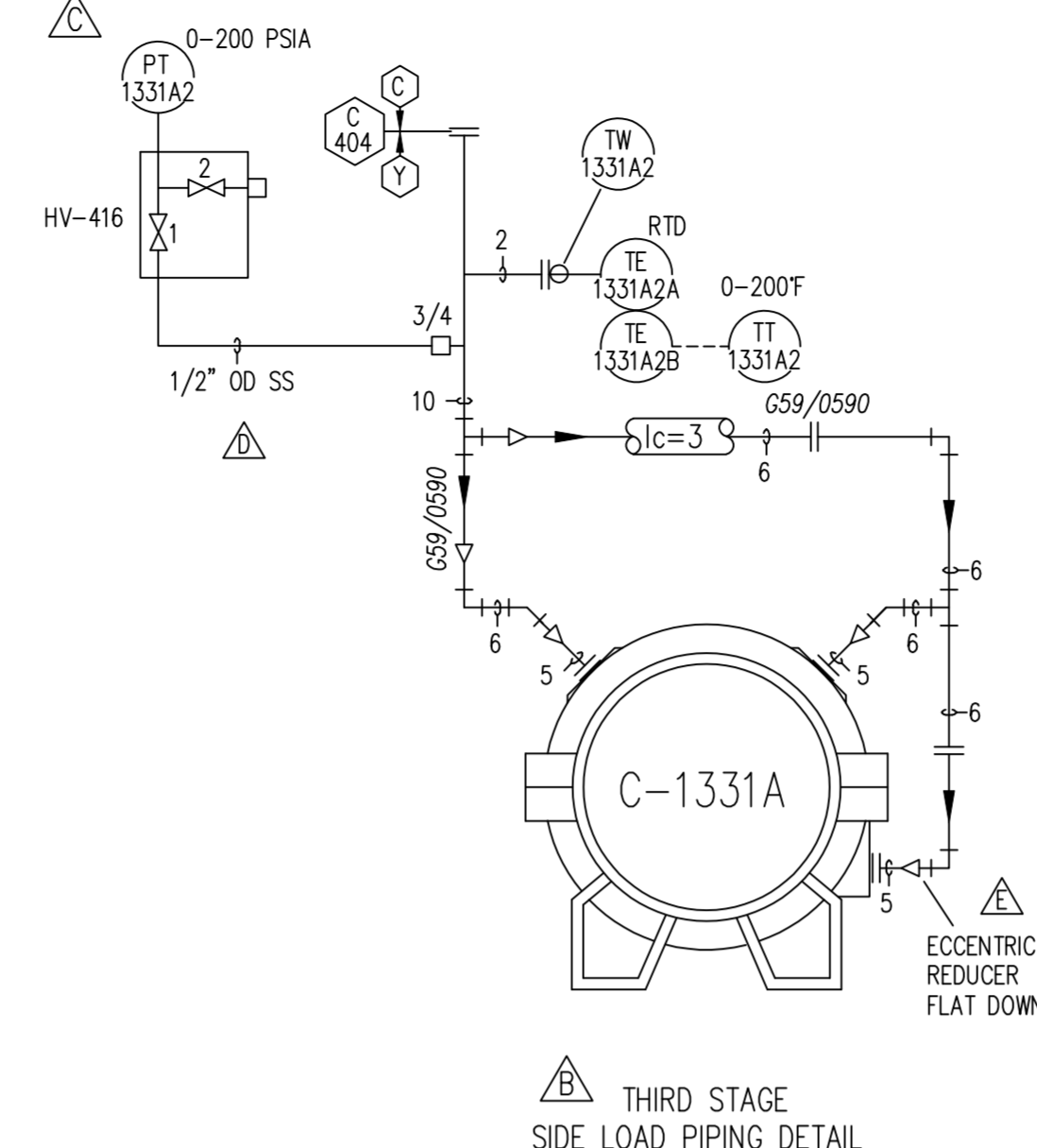
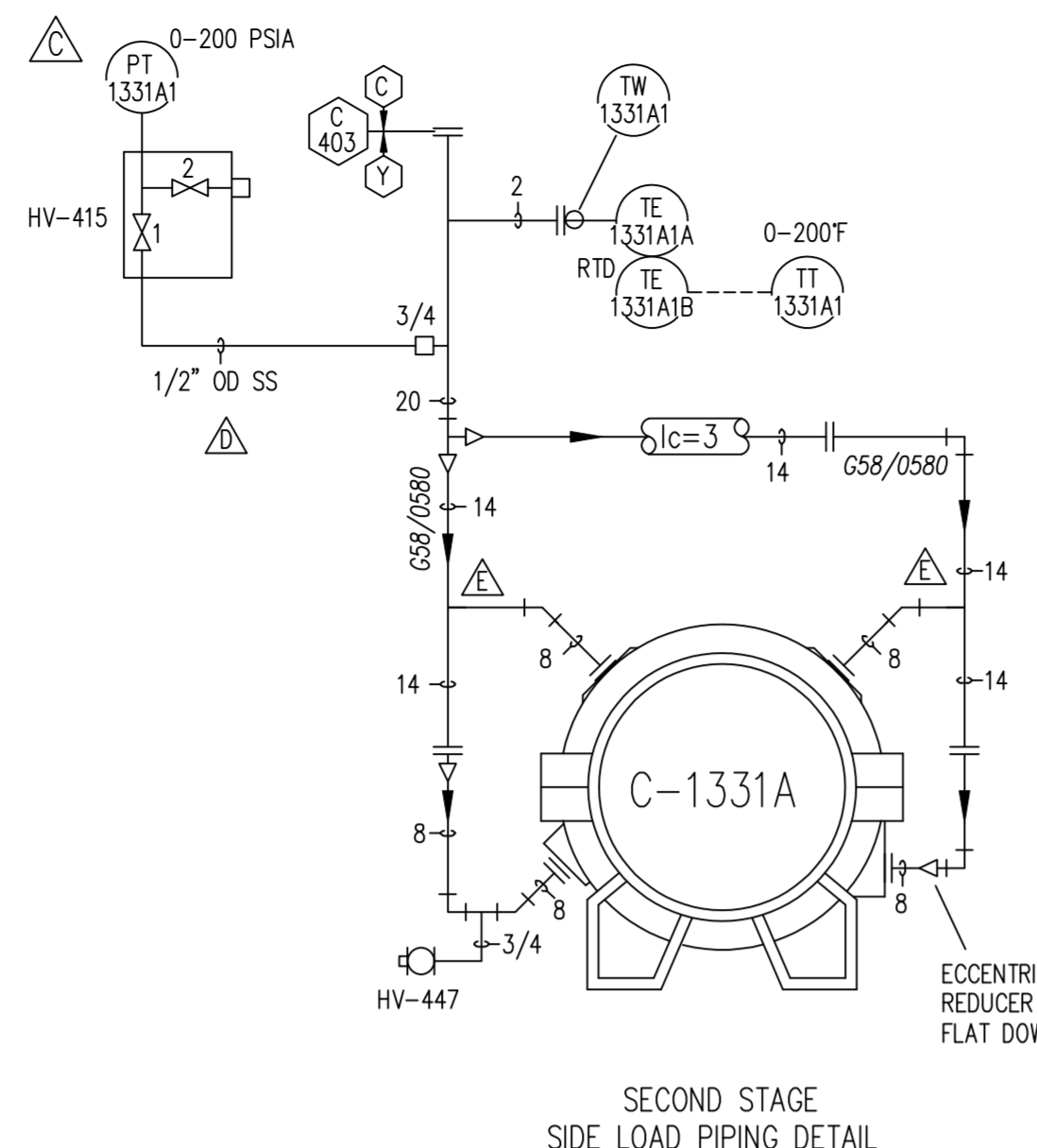
THIS DRAWING CERTIFIED  
 FOR SANDRIDGE ENERGY  
 ORDER NO. 294100  
 YORK REFRIGERATION  
 Waynesboro, PA  
 PER T. PALMER DATE 3/4/09

### TRAIN 2

PURCHASER SANDRIDGE ENERGY 1601 N.W. EXPRESSWAY SUITE 1600 OKLAHOMA CITY, OK 73118		NOTICE TO PURCHASER REFER TO CONTRACT FOR MATERIAL TO BE SUPPLIED BY YORK REFRIGERATION. THE AMOUNT OF SUCH MATERIAL IS NOT INCREASED BY ANYTHING SHOWN UPON THIS DRAWING.	
YORK ORD NO. 294100		PURCH ORD NO. 27607-P-13-012JCI	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DO NOT SCALE		JOHNSON <b>YORK</b> Process Systems Waynesboro, PA 17268	
TITLE P & I DIAGRAM COMPRESSOR LUBE OIL YORK M555BA CENTRIFUGAL COMPRESSOR			
DR. D. HUFF	12/12/2008	SIZE D	CAGE CODE 23587
CHK. L. ALEXANDER	12/22/08	DWG NO. 659D2146	REV. H
APPD. T. PALMER	12/22/08	SCALE NONE	SHEET 1 OF 2

NOTES:

- REFERENCE DRAWINGS:  
 P & I DIAGRAM, (6) REFRIGERATION COMPRESSOR UNITS: 659D2149  
 GENERAL ARRANGEMENT, COMPRESSOR DRIVE LINE: 659D2540  
 P & I DIAGRAM, COMPRESSOR LUBE OIL: 659D2146  
 GENERAL ARRANGEMENT, COMPRESSOR LUBE OIL MODULE: 659D2560  
 P & I DIAGRAM, GEAR/MOTOR LUBE OIL: 659D2147  
 GENERAL ARRANGEMENT, GEAR/MOTOR LUBE OIL MODULE: 659D2561  
 P & I DIAGRAM, REFRIGERANT OIL COOLERS: 659D2148  
 PNEUMATIC/ELECTRIC DIAGRAM: 669D0124  
 LOGIC DIAGRAM: 669D0127  
 PLC PANEL: 645D1279  
 COMPRESSOR PROXIMITY BOX: 648D2383  
 GEAR PROXIMITY BOX: 648D2384  
 P & ID LEGEND: 650D0020
- AREA CLASSIFICATION:  
 OUTDOOR UNDER ROOF, HAZARDOUS, NEMA 4X, CL I, GR C&D, DIV 2
- PRESSURE TRANSMITTERS INDICATE:  
 PDT-1331A10 AOP OIL PRESSURE DIFFERENTIAL  
 PDT-1331A11 OIL FILTER PRESSURE DIFFERENTIAL  
 PDT-1331A12 SUPPLY OIL PRESSURE DIFFERENTIAL  
 PT-1331A0 COMPR SUCTION PRESSURE  
 PT-1331A3 COMPR DISCHARGE PRESSURE
- TEMPERATURE PROBES INDICATE:  
 TE-1331A14 SUPPLY OIL TEMPERATURE  
 TE-1331A13 THRUST BEARING OIL DRAIN TEMPERATURE  
 TE-1331A15 SUMP OIL TEMPERATURE  
 TE-1331A27 BEARING TEMPERATURE - DISCHARGE END  
 TE-1331A26 BEARING TEMPERATURE - SUCTION END  
 TE-1331A0 COMPR SUCTION TEMPERATURE  
 TE-1331A3 COMPR DISCHARGE TEMPERATURE
- ALL MANUAL VALVES ARE NORMALLY OPEN (NO), UNLESS NOTED NORMALLY CLOSED (NC), EXCEPT VENT AND DRAIN VALVES WHICH ARE NORMALLY CLOSED.
- ALL CUSTOMER CONNECTIONS ARE FURNISHED WITH EITHER PIPE PLUGS OR SEALING DISKS.
- MAJOR PIPING CUSTOMER CONNECTIONS ARE LISTED IN CHART. AUXILIARY CONNECTIONS (E.G. PNEUMATIC, ELECTRIC, RELIEF VENT, ETC.) ARE NOT LOCATED. REFER TO GA, WIRING DIAGRAM AND JUNCTION BOX DRAWINGS, ETC., FOR ADDITIONAL INFORMATION.
- INSULATION AND HEAT TRACING "BY OTHERS", (REFER TO LEGEND). CONSULT WITH YORK ENGINEERING FOR SPECIAL LUBE SYSTEM HEAT TRACING AND INSULATION WHEN THE AVERAGE AMBIENT TEMPERATURE AT START-UP WILL BE LESS THAN 40° F.
- CAUTION: DO NOT CLOSE SERVICE VALVES IN LIQUID PIPING UNLESS THE ISOLATED PIPING IS OPENED IMMEDIATELY FOR SERVICE. EXCESSIVE PRESSURE CAN DEVELOP FROM THERMAL EXPANSION.
- DELETE ---
- INTERCONNECTING PIPING IS "BY OTHERS". PIPE HANGERS SHOULD BE USED AS NECESSARY TO AVOID EXCESS STRESS ON PIPING AND COMPONENTS. SUPPORTS ARE SUPPLIED AND INSTALLED "BY OTHERS". (PIPING FLEXIBILITY ANALYSIS FOR EXTERNAL PIPING IS "BY OTHERS".)
- DESIGN WORKING PRESSURE 200 PSIG. CODE RELIEF REQUIRED "BY OTHERS".
- TOTAL AIR SUPPLY REQUIRED: 4000 SCFH, 80 - 100 PSIG. AIR QUALITY REQUIRED IN ACCORDANCE WITH ISA S7.0.01.
- REFRIGERANT: R-134A
- COMPRESSOR OIL TYPE: YORK 'J'.
- TAG NUMBERS SHOWN ARE FOR TRAIN 2 ITEM 8000, LETTER "A" IN TAG NUMBER SHALL BE SEQUENCED "1331B" THRU "1331E" FOR ITEMS 9000 THRU 12000.
- DELETED -



MAJOR EQUIPMENT LIST

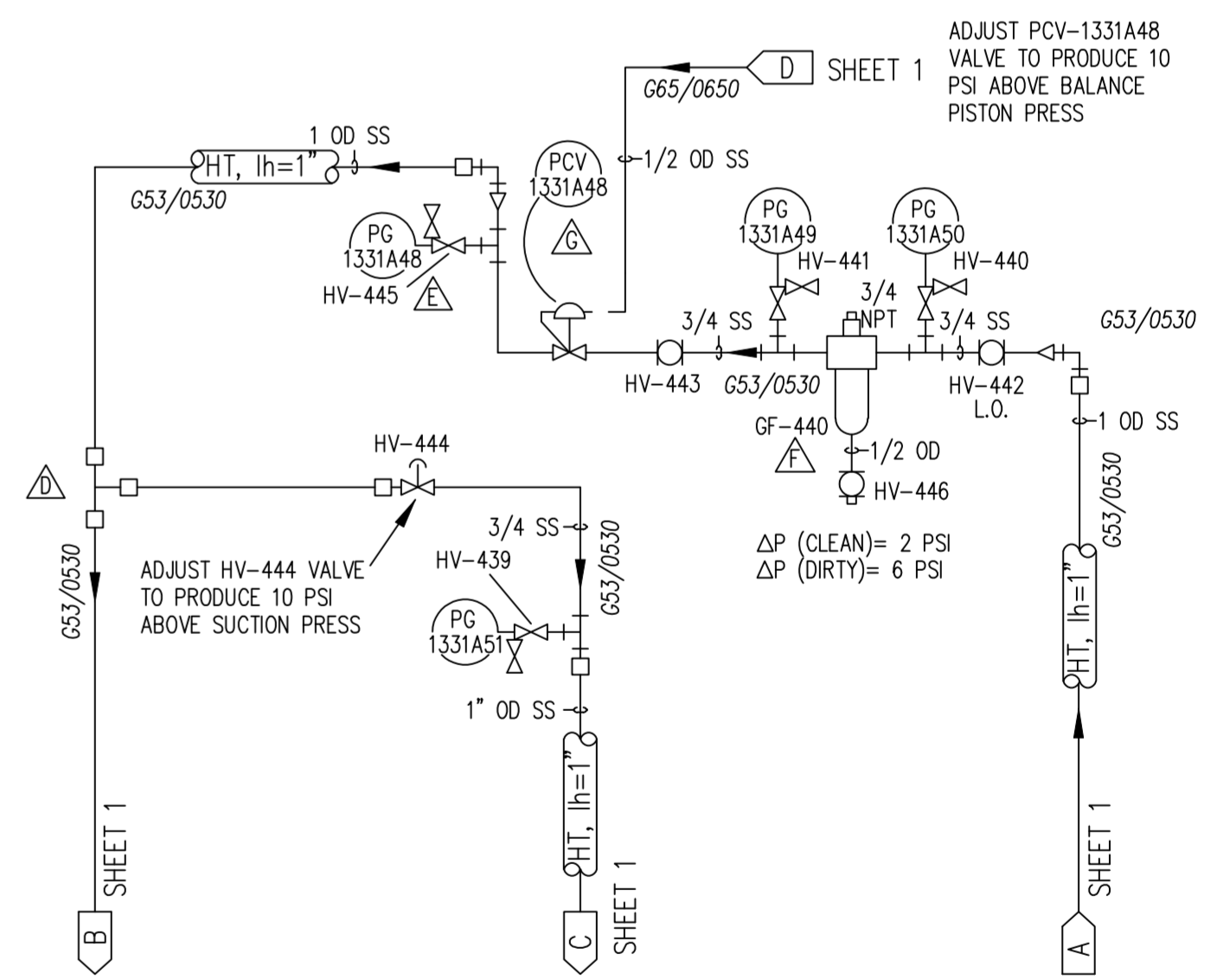
C-1331	COMPRESSOR, CENTRIFUGAL; YORK; MODEL NUMBER: M555BA; CAST IRON; 3217 RPM, 3557 SHP, TO COMPRESS R-134A FROM 17.30 PSIA AND -5.5°F SUCTION TO 128.14 PSIA AND 136°F EST; SUCTION LOAD: 18889.2 LB/HR; SECOND STAGE SIDE LOAD: 73,875.6 LB/HR; THIRD STAGE SIDE LOAD: 94,111.2 LB/HR; WITH RIVERHAWK COUPLING.
P-401 PM-401	OIL PUMP; VIKING; MODEL NUMBER: HL493M; CARBON STEEL; 33 GPM CAPACITY AT 1750 RPM; 1 1/2" CL300 ANSI FF FLANGED PORTS; LESS RELIEF VALVE; 300 PSIG DWP; NEOPRENE MECHANICAL SHAFT SEAL; DRIVER WILL BE A MANUFACTURER STD. 3 HP, 1750 RPM, TEFC, 460-3-60, 1.15 SF, 182 TC FRAME, SUITABLE FOR USE IN A CLASS I, DIVISION 2 OUTDOOR LOCATION.
PV-401	RESERVOIR TANK, 12 3/4 OD x 16 HIGH, TO OPERATE AT ATMOSPHERIC PRESSURE CAPACITY APPROX. 8 GALLONS, BY JCI/YORK.
OF-401 OF-402	OIL FILTER; SS, WITH ONE 5 MICRON FILTER ELEMENT; 200 PSIG DWP; -20°F/250°F DWT; WITH 1 1/2" INLET & OUTLET CONNECTIONS; ASME B31.3; BY JCI/YORK.
GF-440	GAS FILTER, A-4 SEAL; WITH ELEMENT S397-8SS INSTALLED; 10 MICRON @ 98% EFF WOVEN GLASS; 600 PSIG MAMP @ 300 F; 1/2" FPT VENT & DRAIN; DESIGNED & CONSTR TO ASME SECT VIII, DIV 1

TAG	DESCRIPTION	SIZE
C1	JOURNAL BEARING OIL SUPPLY COMBINED	1 1/2
C2	THRUST BEARING OIL DISCHARGE	1
C3	SHAFT PUMP DISCHARGE	1
C4	PRESSURE DIFF CONTROL VALVE RETURN	3/4
C5	AUX OIL PUMP SUCTION	2
C6	JET PUMP INLET	1 1/4
C7	SUMP OIL DRAIN	1/2
C8	SUMP LOW OIL LEVEL SWITCH	1 1/2
C9	SUMP TEMPERATURE SENSOR	3/4
C10	SUMP PRESSURE GAUGE	3/4
C11	SEAL OIL RESERVOIR DRAIN	1/2
C12	BALANCE PISTON PRESSURE GAUGE	3/4
C13	SUMP VENT OUTLET	1
C14	COMMON SEAL GAS SUPPLY TO A-4 SEALS	3/4
C15	TEMPERATURE DEVICE IN DISCHARGE	3/4
C16	PRESSURE DEVICE IN DISCHARGE	3/4
C17	A-4 SEAL GAS SUPPLY FROM COMPRESSOR STAGE	3/4
C18	SUMP VENT GAS RETURN TO COMPRESSOR	1
C19	TEMPERATURE DEVICE IN SUCTION	3/4
C20	SHAFT END BEARING OIL RETURN THERMOMETER	3/4
C21	ATMOSPHERIC SEAL OIL DRAIN TO RESERVOIR	3/4
C22-C27	CASING STAGE DRAINS	3/4
C31	PRV ACTUATOR AIR SUPPLY	1/4
C32		3/4
C33	PRESSURE DEVICE IN SUCTION	3/4
C34	SUMP END A-4 SEAL GAS FEED	3/4
C35	SHAFT END A-4 SEAL GAS FEED	3/4

CONN	SIZE	DESCRIPTION	QTY
C-401	20"-CL 300 ANSI FLANGE	1st STAGE SUCTION	1
C-402	14"-CL 300 ANSI FLANGE	DISCHARGE	1
C-403	20"-CL 300 ANSI FLANGE	2nd STAGE SUCTION	1
C-404	10"-CL 300 ANSI FLANGE	3RD STAGE SUCTION	1
C-405	3/4"-CL 300 ANSI FLANGE	STAGE DRAINS	1

ZONE	REV	ECN	DESCRIPTION	DATE	DR	CHK	APPD
	A		REVISIONS PER CUSTOMER AND ENGINEERING REVIEW REFER TO REVISION TRIANGLE	3/4/09	JES	TTP	TTP
	B		REVISIONS PER CUSTOMER MARK-UPS, TAG NUMBER CHANGES	4/14/09	JES	TTP	TTP
	C		REVISED NOTES 3 AND 4 AND REVISED TAGS AT THE SECOND AND THIRD STAGE. REFER TO REVISION TRIANGLE	5/27/09	JES	TTP	TTP
	D		REVISIONS PER BILL OF MATERIAL REVIEW.	6/8/09	JES	TTP	TTP
	E		REVISED STAGE DRAIN RUN. REMOVED TEE'S (14") AND REDUCERS (14" X 8") AT SECOND STAGE SIDE LOAD. DELETED HV-427 AT PT-1231A3 AND REVISED TAG PG-1231A37 TO READ PG-1231A47 AND REVISED PG-1231A47 TO READ PG-1231A48 SEAL GAS FILTER DETAIL. ALSO ADDED FLANGES AT HV-406.	9/25/09	JES	TTP	TTP
	F		REVISIONS PER FAT AND ENGINEERING REVIEW REFER TO REVISION TRIANGLE	12/22/09	TTP	TTP	TTP
	G		AS-BUILT CHANGES FOR TRAIN 1 REFER TO REVISION TRIANGLE	2/22/10	JES	TTP	TTP
	H		REVISED TAG NUMBERS "1231" TO READ "1331" AND ADDED "TRAIN 2" ABOVE TITLE BLOCK. ALSO REVISED NOTE 16 AND DELETED NOTE 17.	3/19/10	JES	TTP	TTP

DETAIL A-A (FROM SHEET 1)  
A-4 SEAL GAS FILTER DUAL FEED



TRAIN 2

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