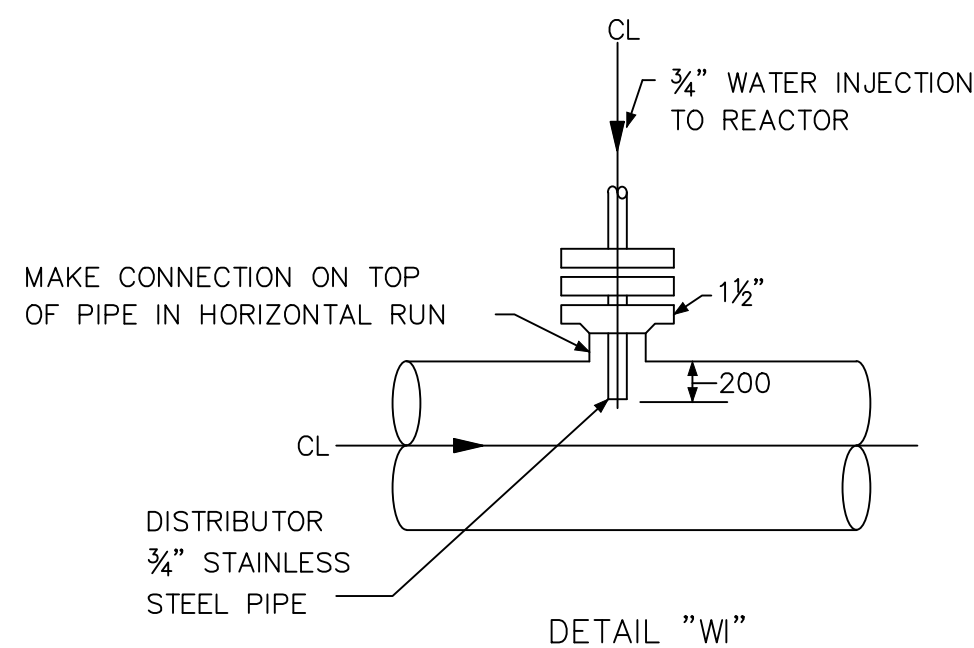
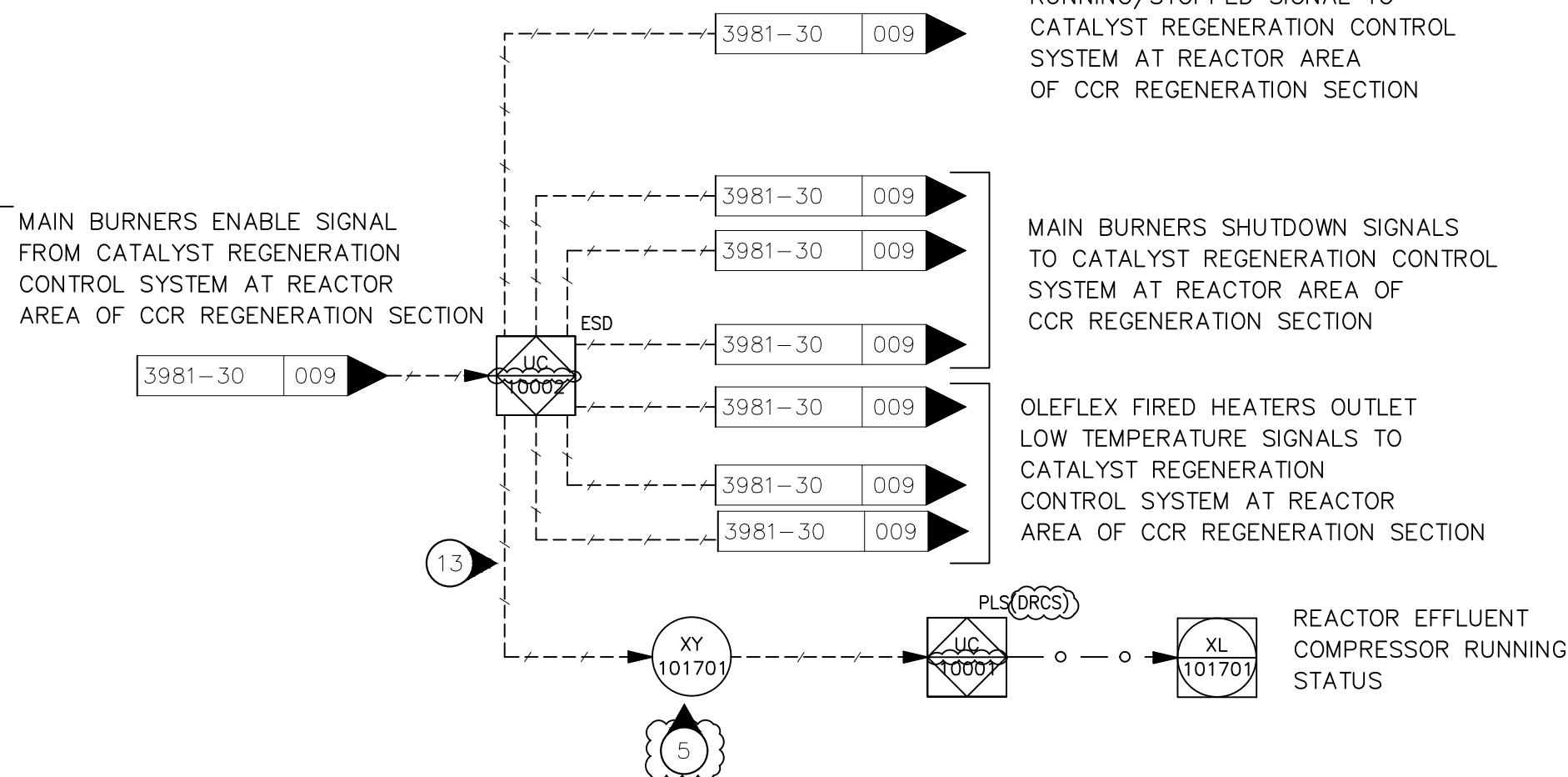
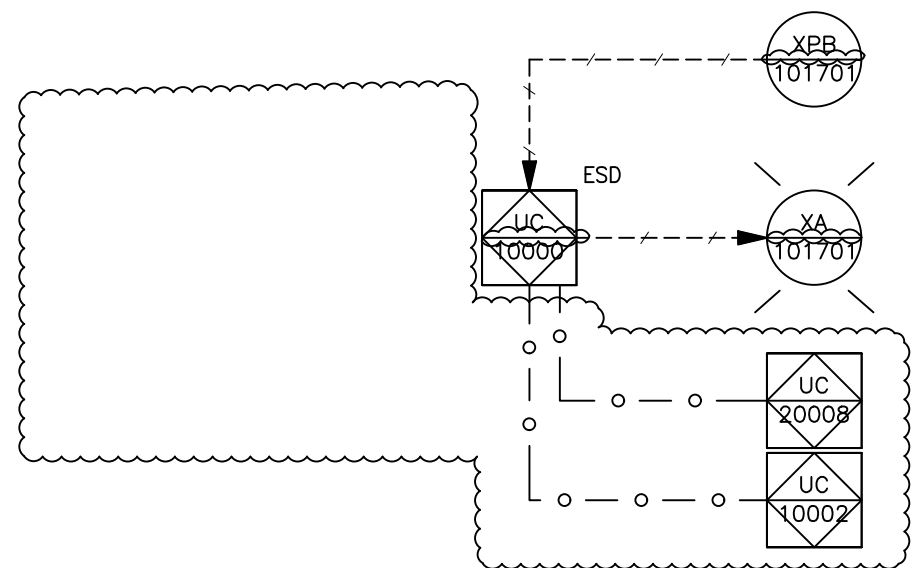


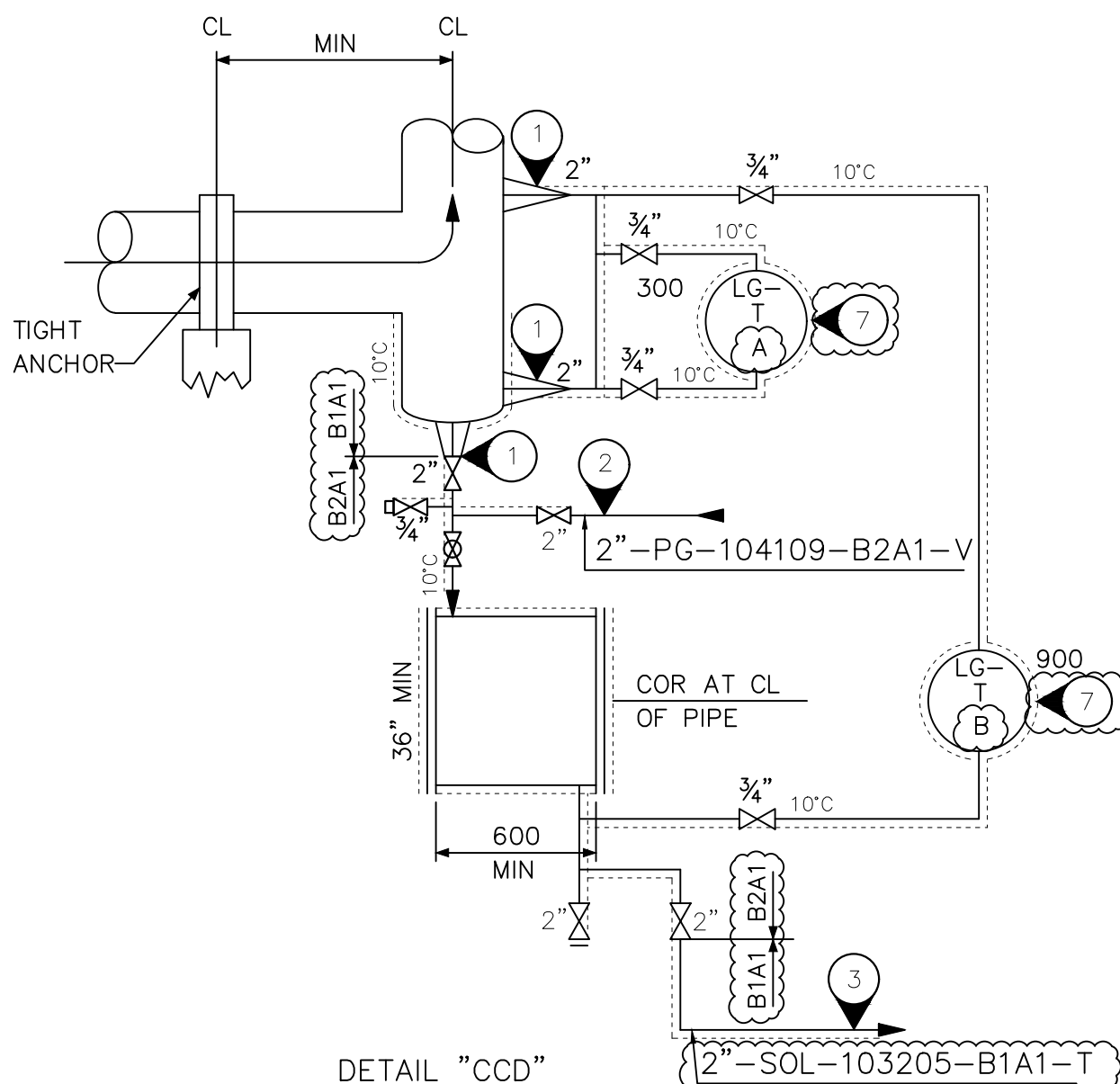
ROW NO.	DWG NO.	TITLE	PUMP	COMPRESSOR	DRUM/TANK	EJECTOR	TOWER	REACTOR	HEATER	H/EX	AIR COOLER	OTHERS	REMARKS
1	3981-10-DE-PR-PID-001	LIST OF P AND I DIAGRAMS AND EQUIPMENT (UNIT 10)											
2	3981-10-DE-PR-PID-017	Unit SPECIFIC DETAILS AND NOTES FOR REACTION UNIT -1											
3	3981-10-DE-PR-PID-018	UNIT SPECIFIC DETAILS AND NOTES											
4	3981-10-DE-PR-PID-019	CHARGE HEATER							81-H-101				
5	3981-10-DE-PR-PID-020	REACTOR NO 1						81-R-101					
6	3981-10-DE-PR-PID-021	NO 1 INTERHEATER							81-H-102				
7	3981-10-DE-PR-PID-022	REACTOR NO 2						81-R-102					
8	3981-10-DE-PR-PID-023	NO 2 INTERHEATER							81-H-103				
9	3981-10-DE-PR-PID-024	REACTOR NO 3						81-R-103					
10	3981-10-DE-PR-PID-025	NO 3 INTERHEATER							81-H-104				
11	3981-10-DE-PR-PID-026	REACTOR NO 4						81-R-104					
12	3981-10-DE-PR-PID-027	DMDS AND NET GAS INJECTION											
13	3981-10-DE-PR-PID-028	HOT COMBINED FEED EXCHANGERS A/B								81-E-101 A/B			
14	3981-10-DE-PR-PID-029	HOT COMBINED FEED EXCHANGERS C/D			81-V-101					81-E-101 C/D			
15	3981-10-DE-PR-PID-030	SULFUR INJECTION DRUM	81-P-116										
16	3981-10-DE-PR-PID-031	SULFUR INJECTION PUMPS	81-P-101 A/B/C/D							81-S-101 A/B/C/D			
17	3981-10-DE-PR-PID-032	REACTOR EFFLUENT CONTACT COOLER					81-T-101						
18	3981-10-DE-PR-PID-033	SOLVENT CIRCULATION PUMPS	81-P-102 A/B										
19	3981-10-DE-PR-PID-034	SOLVENT CIRCULATION FILTERS										81-S-102 A/B	
20	3981-10-DE-PR-PID-035	SOLVENT CIRCULATION COOLER								81-E-102 A/B/C	81-AE-101		
21	3981-10-DE-PR-PID-036	REACTOR EFFLUENT COMPRESSOR (FIRST STAGE)		81-C-101									
22	3981-10-DE-PR-PID-037	COMPRESSOR ANTI-SURGE AND PROCESS CONTROL SYSTEM											
23	3981-10-DE-PR-PID-038	REACTOR EFFLUENT COMPRESSOR (SECOND STAGE)		81-C-101		81-J-101							
24	3981-10-DE-PR-PID-039	REACTOR EFFLUENT INTERSTAGE CONTACT COOLER	81-P-113										
25	3981-10-DE-PR-PID-040	REACTOR EFFLUENT COMPRESSOR DISCHARGE COOLER								81-E-115	81-AE-102		
26	3981-10-DE-PR-PID-041	REACTOR EFFLUENT COMPRESSOR DISCHARGE DRUM			81-V-102								
27	3981-10-DE-PR-PID-044	CHLORIDE TREATER			81-D-101								
28	3981-10-DE-PR-PID-045	REACTOR EFFLUENT DRIER A			81-D-102 A								
29	3981-10-DE-PR-PID-046	REACTOR EFFLUENT DRIER INLET PIPING											
30	3981-10-DE-PR-PID-047	REACTOR EFFLUENT DRIER OUTLET PIPING											
31	3981-10-DE-PR-PID-048	REACTOR EFFLUENT DRIER B			81-D-102 B								
32	3981-10-DE-PR-PID-049	REGENERANT HEATER								81-E-103			
33	3981-10-DE-PR-PID-050	NET GAS											
34	3981-10-DE-PR-PID-051	REGENERANT KNOCKOUT DRUM			81-V-103					81-E-104	81-AE-103		
35	3981-10-DE-PR-PID-052	REACTOR EFFLUENT FILTERS										81-S-103 A/B	
36	3981-10-DE-PR-PID-053	FEED FILTERS										81-S-104 A/B	
37	3981-10-DE-PR-PID-054	SEPARATION SYSTEM A										81-W-104	
38	3981-10-DE-PR-PID-055	SEPARATION SYSTEM B										81-W-104	
39	3981-10-DE-PR-PID-056	SEPARATION SYSTEM C										81-W-104	
40	3981-10-DE-PR-PID-057	SPENT CAUSTIC TRANSFER PUMPS	81-P-106 A/B										
41	3981-10-DE-PR-PID-058	SPENT CAUSTIC DEGASSING DRUM					81-T-104						
42	3981-10-DE-PR-PID-059	WATER INJECTION	81-P-105 A/B		81-V-104								
43	3981-10-DE-PR-PID-060	WASH WATER CIRCULATION PUMPS	81-P-103 A/B									81-W-108	
44	3981-10-DE-PR-PID-061	REGENERANT GAS SCRUBBER					81-T-103						
45	3981-10-DE-PR-PID-062	CAUSTIC CIRCULATION PUMPS	81-P-104 A/B							81-E-105		81-W-107	
46	3981-10-DE-PR-PID-063	NET GAS COMPRESSOR FIRST STAGE SUCTION DRUM			81-V-105								
47	3981-10-DE-PR-PID-064	NET GAS COMPRESSOR SECOND STAGE SUCTION DRUM			81-V-106					81-E-106			
48	3981-10-DE-PR-PID-065	NET GAS COMPRESSOR THIRD STAGE SUCTION DRUM			81-V-107					81-E-107			
49	3981-10-DE-PR-PID-066	HYDROGEN PURIFICATION SYSTEM KNOCKOUT DRUM			81-V-108					81-E-108			
50	3981-10-DE-PR-PID-067	NET GAS COMPRESSOR A		81-C-102 A									
51	3981-10-DE-PR-PID-068	NET GAS COMPRESSOR B		81-C-102 B									
52	3981-10-DE-PR-PID-069	LUBE OIL MIST ELIMINATOR										81-W-109	
53	3981-10-DE-PR-PID-070	HEAVY HYDROCARBON DEGASSING DRUM	81-P-107 A/B				81-T-105						
54	3981-10-DE-PR-PID-071	HYDROGEN PURIFICATION SYSTEM										81-W-106	
55	3981-10-DE-PR-PID-072	SOLVENT RECOVERY COLUMN BOTTOMS PUMPS	81-P-110 A/B							81-E-114 81-E-111			
56	3981-10-DE-PR-PID-073	SOLVENT RECOVERY COLUMN					81-T-106			81-E-112			
57	3981-10-DE-PR-PID-074	SOLVENT RECOVERY OVERHEAD PUMPS	81-P-109 A/B							81-E-110			
58	3981-10-DE-PR-PID-075	DEPROPANIZER BOTTOMS STRIPPER					81-T-107			81-E-109			
59	3981-10-DE-PR-PID-076	DEPROPANIZER BOTTOMS STRIPPER PUMPS	81-P-108 A/B										
60	3981-10-DE-PR-PID-077-1	FUEL GAS PREPARATION SYSTEM			81-V-112 81-V-110							81-S-105	
61	3981-10-DE-PR-PID-077-2	FUEL GAS PREPARATION SYSTEM								81-E-116			
62	3981-10-DE-PR-PID-078	NEUTRALIZATION SYSTEM	81-P-114										
63	3981-10-DE-PR-PID-079	NEUTRALIZATION TANK	81-P-115		81-TK-101							81-MX-111	
64	3981-10-DE-PR-PID-080	STEAM DISENGAGING DRUM			81-V-109 81-V-113					81-E-118		81-W-110	
65	3981-10-DE-PR-PID-081	WATER CIRCULATION PUMPS	81-P-111 A/B										
66	3981-10-DE-PR-PID-082	CONVECTION SECTION CHARGE HEATER							81-H-101				
67	3981-10-DE-PR-PID-083	CONVECTION SECTION NO 1 INTERHEATER							81-H-102			81-W-103	
68	3981-10-DE-PR-PID-084	CONVECTION SECTION NO 2 INTERHEATER							81-H-103				
69	3981-10-DE-PR-PID-085	CONVECTION SECTION NO 3 INTERHEATER							81-H-104				
70	3981-10-DE-PR-PID-086	CAUSE AND EFFECT TABLE											

REFERENCE				DRAWINGS		
NOTES						

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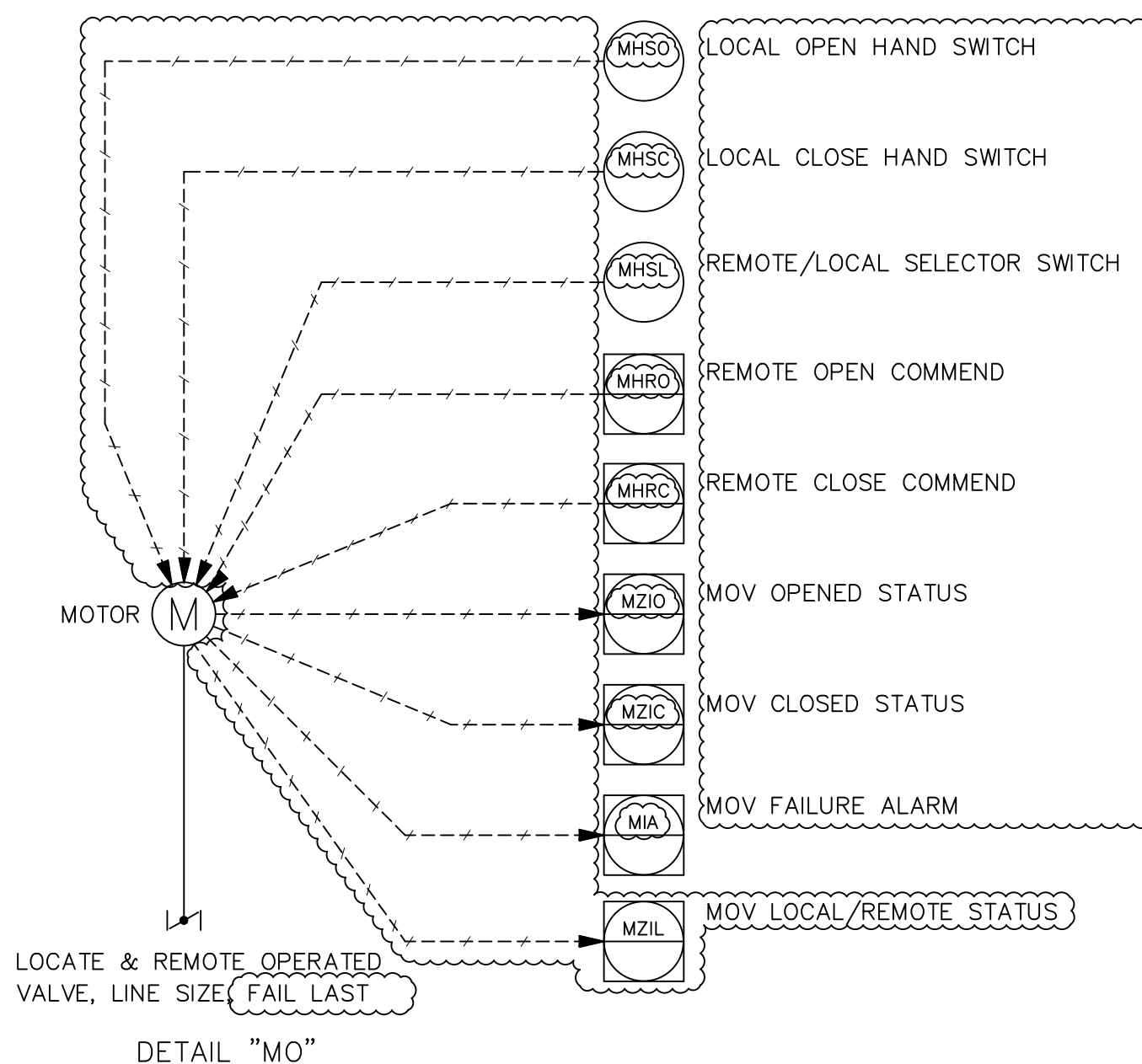
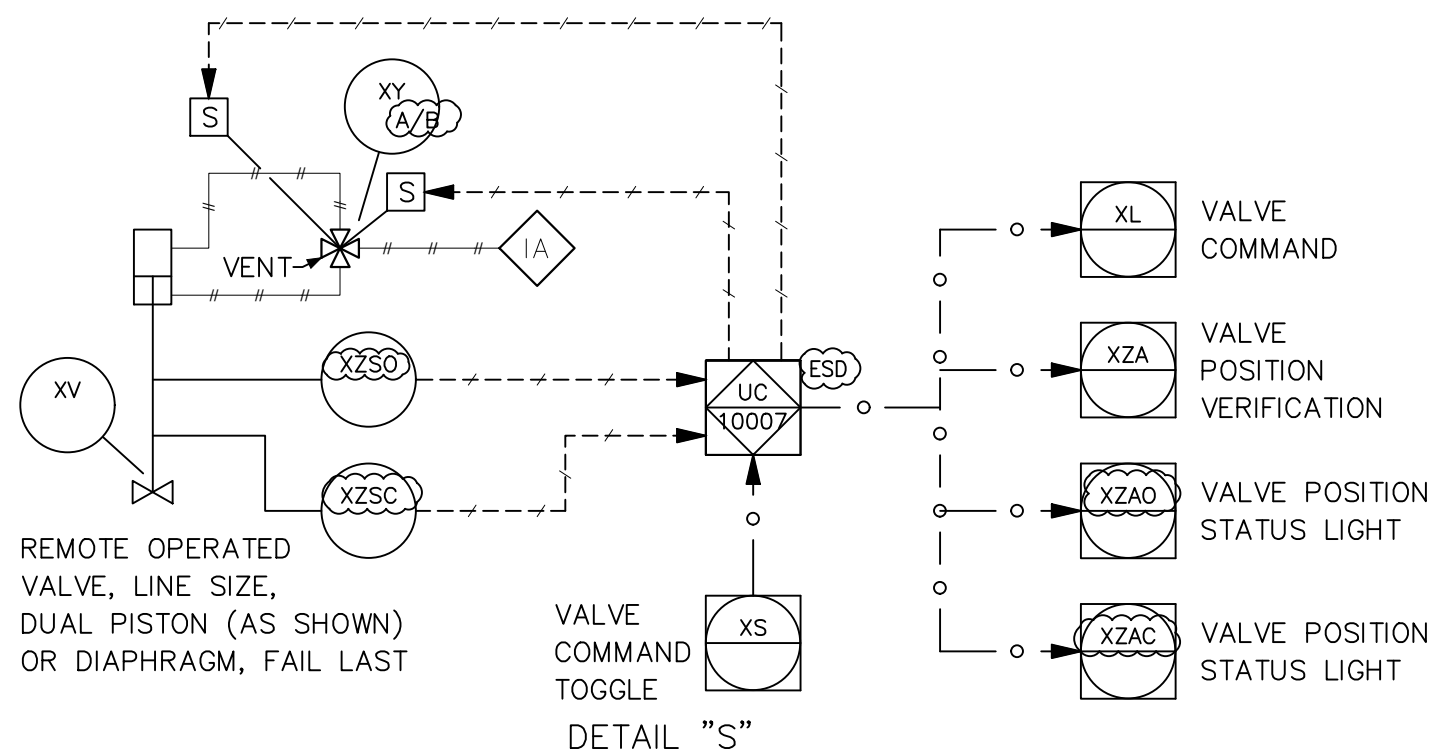
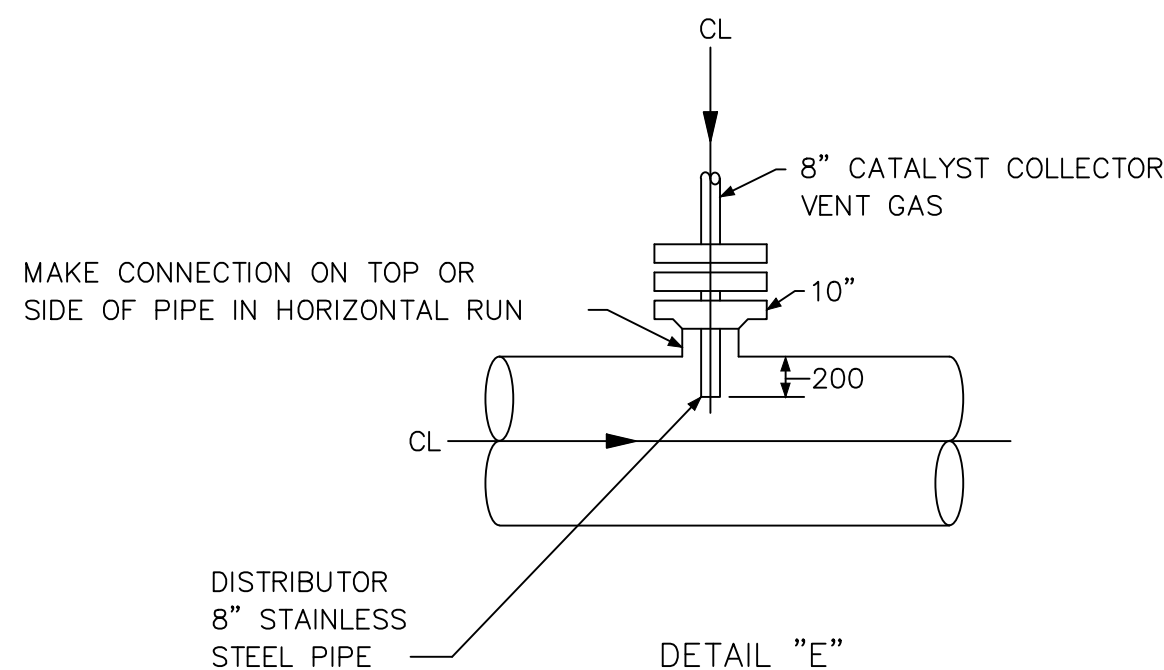
LOCATED DETAIL "CCD"	P&ID NO.	LG-A TAG NO.	LG-B TAG NO.	POT LINE NO.
OUTLET OF 81-E-101A	3981-10-DE-PR-PID-028	102801A	102802A	36"-PG-102801-B1A1-T
OUTLET OF 81-E-101B	3981-10-DE-PR-PID-028	102801B	102802B	36"-PG-102802-B1A1-T
OUTLET OF 81-E-101C	3981-10-DE-PR-PID-029	102901A	102902A	36"-PG-102901-B1A1-T
OUTLET OF 81-E-101D	3981-10-DE-PR-PID-029	102901B	102902B	36"-PG-102902-B1A1-T
INLET OF 81-C-101 STAGE 1	3981-10-DE-PR-PID-036	103601	103602	36"-PG-103601-B1A1-T
INLET OF 81-C-101 STAGE 2	3981-10-DE-PR-PID-038	103801	103802	36"-PG-103801-B1A1-T



DETAIL "CCD" 2"-SOL-103

DETAIL OF DRAIN CONNECTION IN LOW POINTS
BETWEEN CONTACT COOLERS AND COMPRESSOR SUCTION
NOZZLES; AND BETWEEN HCFE TUBESIDE OUTLET AND
REACTOR EFFLUENT CONTACT COOLER.

36" BLOWCASE PIPING SHOULD BE MINIMUM 600 LONG.
REQUIRED ONLY WHEN LOW POINT POCKETS ARE PRESENT.



19	20	21	22	23
REFERENCE			DRAWINGS	

1. PROVIDE ADEQUATE STIFFENING.
2. 2" FROM REACTOR EFFLUENT COMPRESSOR DISCHARGE DRUM SEE DWG. 3981-10-DE-PR-PID-041
3. 2" TO REACTOR EFFLUENT CONTACT COOLER
SEE DWG 3981-10-DE-PR-PID-032
4. REACTOR EFFLUENT COMPRESSOR RUNNING/STOPPED SIGNAL
5. RELAY (PROVIDED BY SUPPLIER OF THE DRIER REGENERATION CONTROL SYSTEM)
6. DELETED.
7. DETAIL "LVD" SEE DWG 3981-00-DE-PR-PID-054.

1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055

2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER (PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.

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01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI

REV.	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED
OWNER:		MC:	CONTRACTOR /CONSULTANT:		

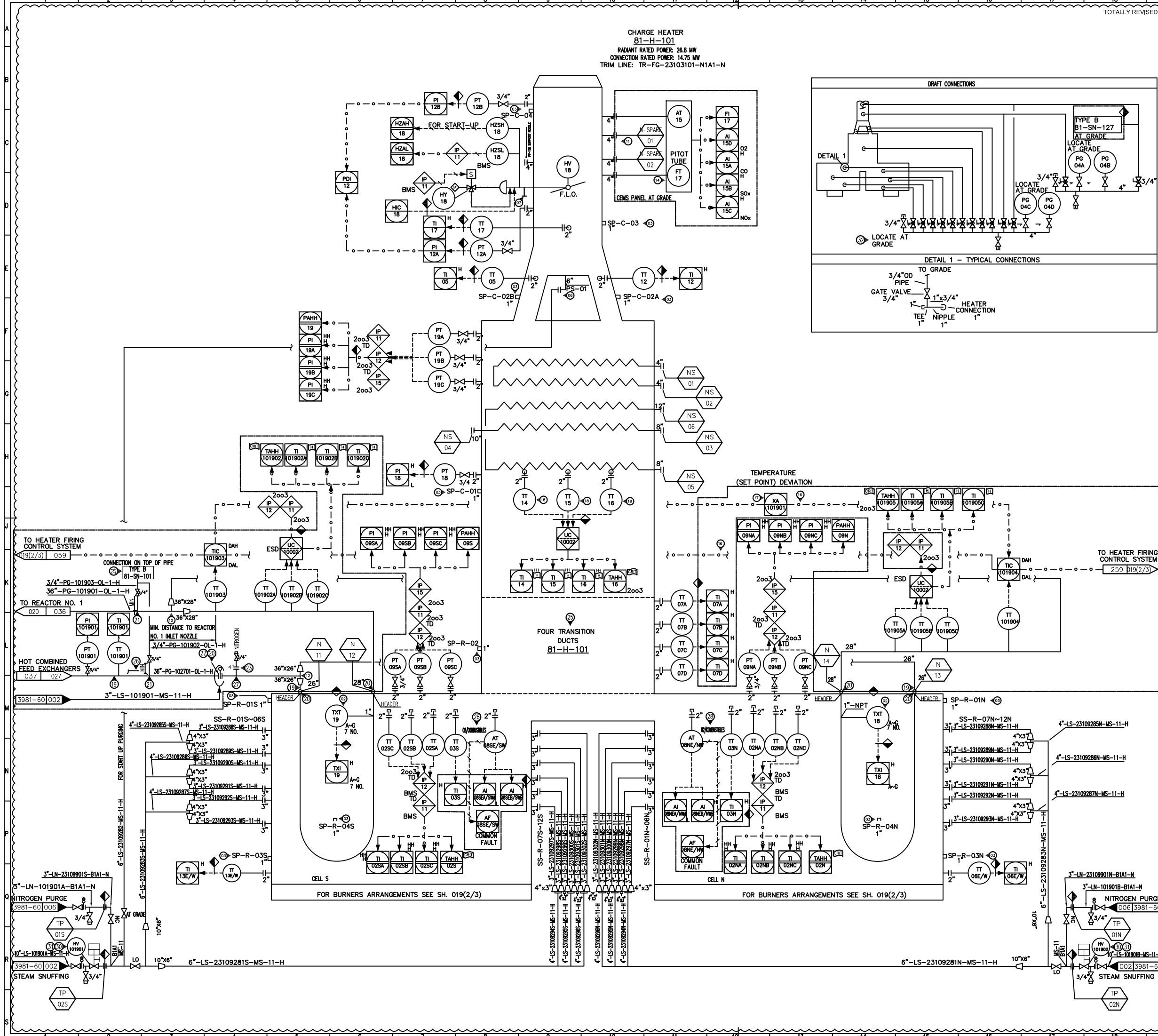
PROPANE DEHYDROGENATION (PDH) PROJECT

PIPING AND INSTRUMENT DIAGRAM
Unit Specific Details And Notes for Reaction Unit -1

DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC. TYPE	SERIAL NO.
	3981	10	DE	PR	PID	017

SCALE:	SIZE: A1	SHEET NO: 1 OF 1	REVISION: 00	CLASS: 1
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REFERENCE

DRAWINGS

NOTES

1. TERMINAL POINT INSIDE VENDOR BATTERY LIMIT: - INTERCONNECTING PIPING BETWEEN COMMON FUELS SKID & EACH HEATER FUEL SHUT UP TO EACH HEATER.
2. DUAL TUBE SKID THERMOCOUPLE.
3. TAP CONNECTION FOR MANUAL SAMPLING, SEE DETAIL 1.
4. FOR SUFFIX INDICATIONS REFER TO LEGEND.
5. INTERCONNECTING CABLES (MULTICOILES) FROM FIELD TO CONTROL ROOM ARE NOT IN VENDOR SCOPE.
6. STEAM PURGE CONNECTION 6".
7. HANDWHEEL FOR STACK DAMPER.
8. STEAM SHUTTING VALVE ARE CONSIDERED LO AS THERE WILL BE ANOTHER VALVE UPSTREAM AT SAFE LOCATION.
9. FOR ALARM & TRIP SETS REFER TO DEDICATED DOCUMENT INSTRUMENT LIST/ALARM & TRIP SETS.
10. ALL INSTRUMENT TAG NUMBERS START WITH 81 AND TO INCLUDE 9506 BETWEEN TYPE AND SEQUENCE NUMBER. FOR EXAMPLE: 81-A-950621 WILL BE MARKED AS A-21.
11. TWO SPARE NOZZLES FOR CEMS.
12. PIPING MUST BE SYMMETRICAL AS PRACTICAL AS POSSIBLE.
13. SOFTWARE VALUE DISCREPANCY ALARM FOR LIMIT SWITCHES TO BE CONSIDERED.
14. TT AND PT COMPENSATION ARE INTEGRATED WITH FT. FLOW ELEMENT NOZZLE WILL BE UPDATED BASED ON FLOW METER SUB-VENDOR DATA.
15. ALL ALARMS AND INDICATORS IN BMS SYSTEM WILL BE DUPLICATED IN DCS.
16. COMMON REACTOR INLET TEMPERATURE SETPOINT.
17. DEVIATION FROM COMMON REACTOR INLET TEMPERATURE SETPOINT.
18. CORRESPONDING TO TT-101908 AND TT-101909.
19. FOR PIPING REQUIREMENTS AND REACTOR ELEVATIONS SEE PROJECT SPECIFICATION 3981100-840.
20. WEATHERSHIELD ALL FLANGES 18" AND LARGER IN PIPING SEGMENT INDICATED, INCLUDING EQUIPMENT CONNECTIONS AND HEADER DEAD ENDS. SEE PROJECT SPECIFICATION 3981100-907 FOR REQUIREMENTS.
21. MAKE CONNECTION ON TOP OF PIPE.
22. PROVIDE BLIND FOR ISOLATION DURING NEUTRALIZATION. BOTH SIDES MUST BE SEALED.
23. NEUTRALIZATION VENT.
24. WITH DETECTOR TUBE SAMPLE. SEE DETAIL "DT", SEE DWG 3981-00-DE-PR-PID-050.
25. FLUE GAS TO CONNECTION SECTION, SEE DWG 3981-10-DE-PR-PID-077.
26. MINIMUM TO HEATER.
27. MAKE CONNECTION ON TOP OF PIPE AT HIGH POINT.
28. MINIMUM OF TWO OXYGEN/ COMBUSTIBLES ANALYZERS REQUIRED WHEN ULTRA AND LATEST GENERATION LOW NO BURNERS ARE SPECIFIED.
29. VENDOR PROVIDE FLAME DETECTORS, COMBUSTIBLE GAS DETECTORS, AND INTERLOCKS.
30. SEE DETAIL "M".

GENERAL NOTES:

1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-054

HOLD

01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAIGHI
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAIGHI

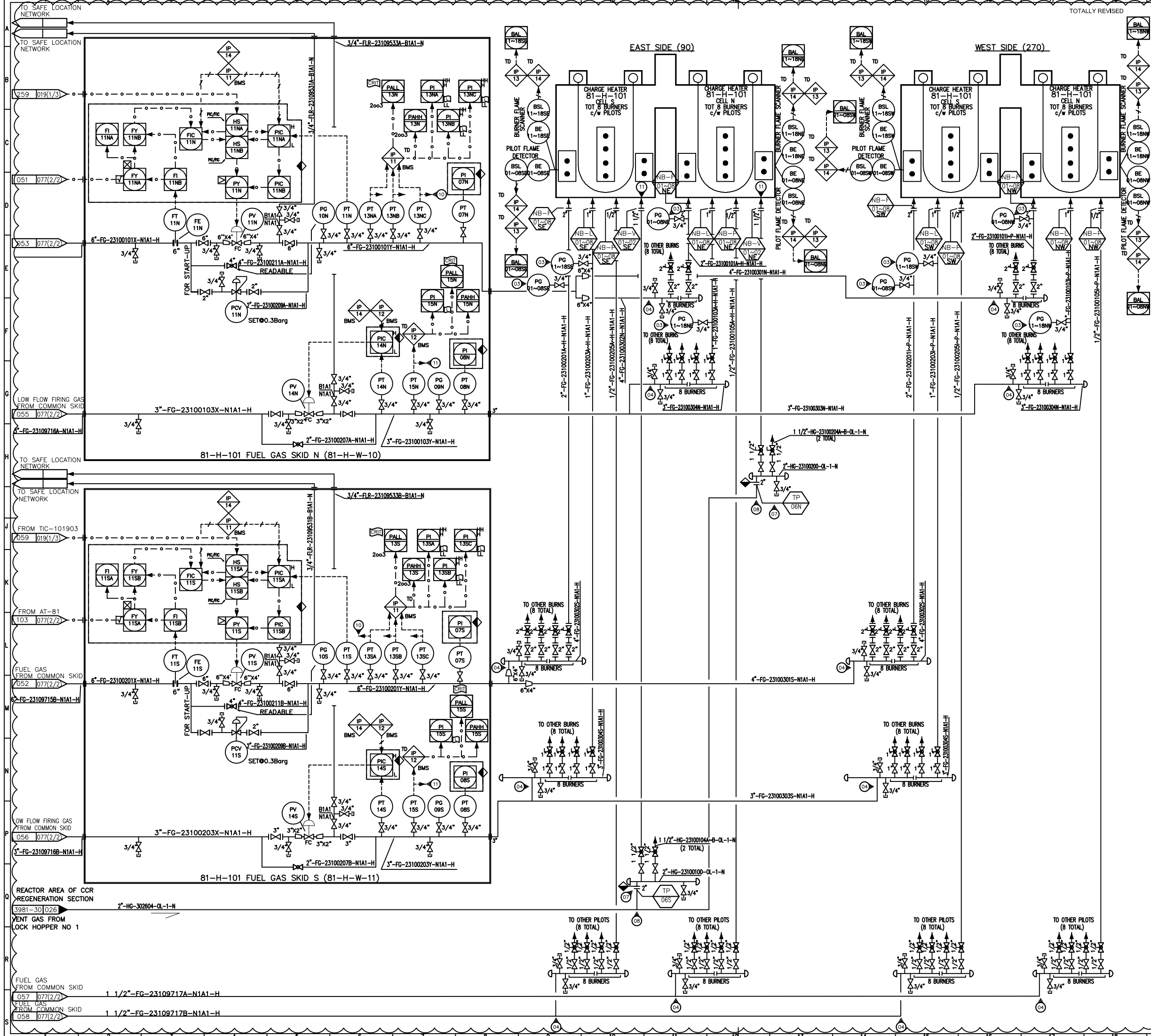
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OWNER:		MC:			

PROJECT TITLE:		PROpane DEHYDROGENATION (PDH) PROJECT	
DOCUMENT TITLE:		PIPING AND INSTRUMENT DIAGRAM Charge Heater	

DOC NO.:	PROJ.CODE	PHASE	DEP.	DOC. TYPE	SERIAL NO.
3981	10	DE	PR	PID	019

SCALE:	SIZE: A1	SHEET NO: 1 OF 3	REVISION: 01	CLASS: 1
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REFERENCE

DRAWINGS

NOTES

- INTERCONNECTING CABLES (MULTICABLES) FROM FIELD TO CONTROL ROOM ARE NOT IN VENDOR SCOPE.
- ALL INSTRUMENT TAG NUMBERS START WITH 81 AND TO INCLUDE 9506 BETWEEN TYPE AND SEQUENCE NUMBER. FOR EXAMPLE: 81-AI-950621 WILL BE MARKED AS AI-21.
- FOR EACH BURNER/PILOT
- MAKE CONNECTION ON TOP OR SIDE OF HEADER.
- FOR ALARM & TRIP SETS REFER TO DEDICATED DOCUMENT INSTRUMENT LIST/ALARM & TRIP SETS.
- VENT GAS ROOT IS DESIGNED BASED ON 0.5 BARG STREAM PRESSURES.
- FOR TWO LOWER BURNERS AT CENTER, FOR BOTH CELLS ONLY AT EAST SIDE.
- LOCATE CLOSE TO BURNER.
- SOFTWARE VALVE DISCREPANCY ALARM FOR LIMIT SWITCHES TO BE CONSIDERED.
- DUPLICATOR FOR PI-101903A/B/C AND 101909A/B/C.SEE DETAIL C.
- DUPLICATOR FOR PI-101906 AND 101911.SEE DETAIL D.

DETAIL C

DETAIL D

HOLD

01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAIGHI
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAIGHI
REV.	PURPOSE OF ISSUE	ISSUE DATE	PREPARED	CHECKED	APPROVED
OWNER:		MC:			CONTRACTOR/CONSULTANT:

PROJECT TITLE:

PROPANE DEHYDROGENATION (PDH) PROJECT

DOCUMENT TITLE:

PIPING AND INSTRUMENT DIAGRAM
Charge Heater

DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC. TYPE	SERIAL NO.
	3981	10	DE	PR	PID	019

SCALE:

SIZE: A1

SHEET NO: 2 OF 3

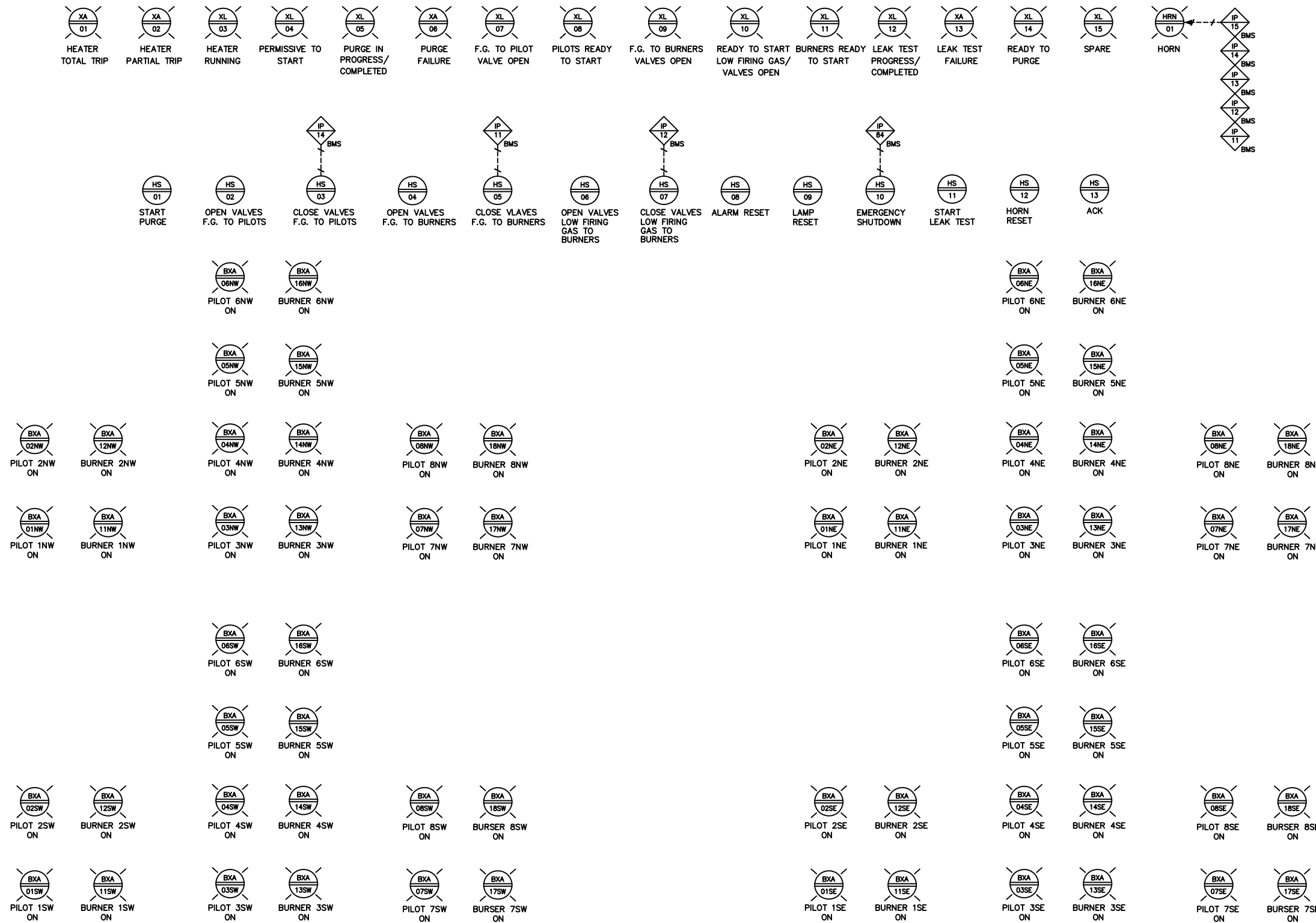
REVISION: 01

CLASS: 1

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TOTALLY REVISED

LOCAL CONTROL PANEL -LCP (81-L-U01-F)



REFERENCE

DRAWINGS

NOTES

LEGEND

SUFFIX "N" INDICATES NORTH CELL
SUFFIX "S" INDICATES SOUTH CELL
SUFFIX "E" INDICATES EAST SIDE
SUFFIX "W" INDICATES WEST SIDE

HOLD

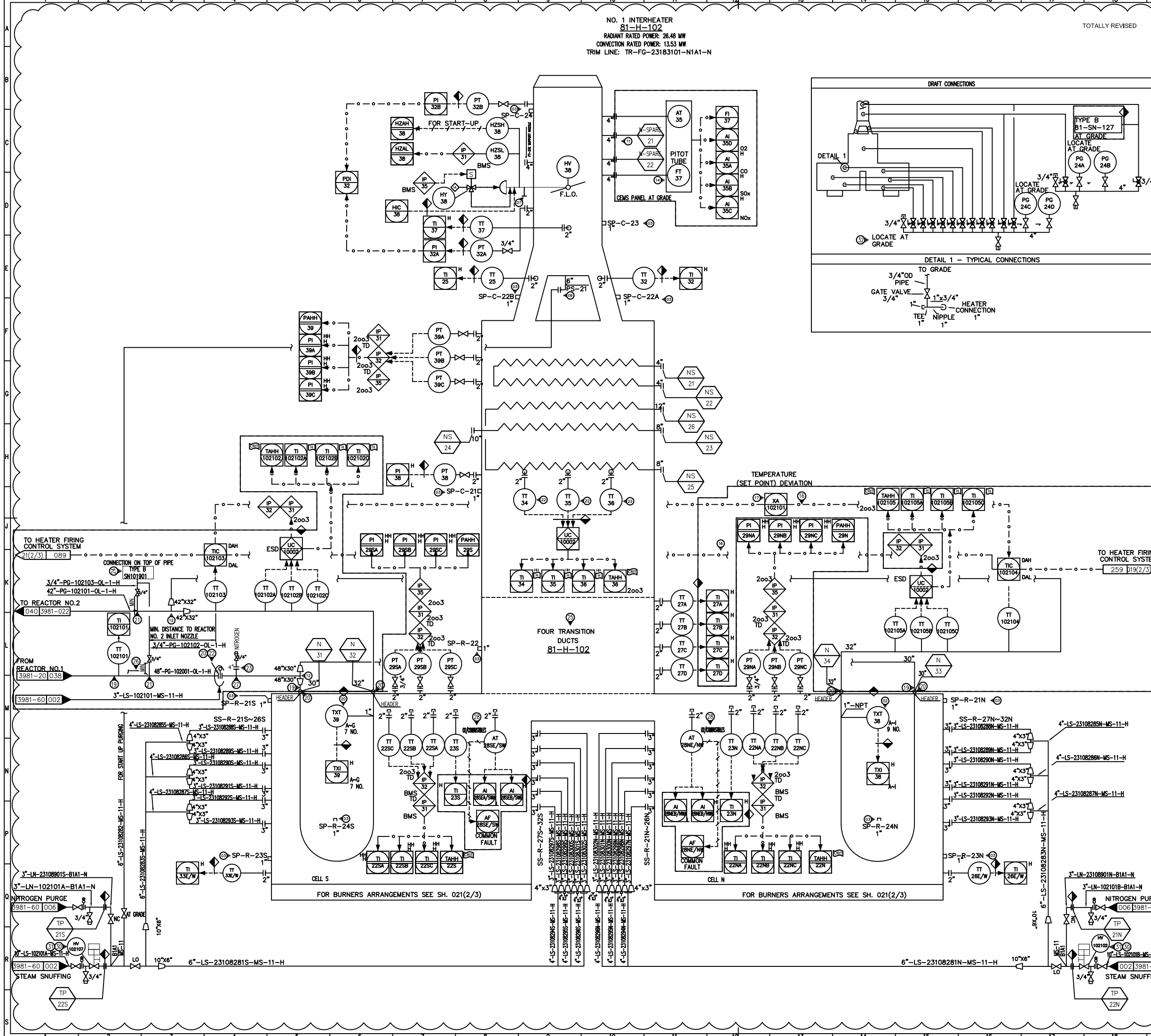
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
REV.	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVE
OWNER:		MC:	CONTRACTOR/CONSULTANT:		
		 A.P.G	 شرکت ملی پتروشیمی National Petrochemical Co. پارس ساند پارت Pars Sanad Part		

PROPANE DEHYDROGENATION (PDH) PROJECT

DOCUMENT TITLE:
PIPING AND INSTRUMENT DIAGRAM
Charge Heater

DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC. TYPE	SERIAL NO.
	3981	10	DE	PR	PID	019

SCALE:	SIZE: A1	SHEET NO: 3 OF 3	REVISION: 01	CLASS: 1
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REFERENCE

DRAWINGS

NOTES

1. TERMINAL POINT INSIDE VENDOR BATTERY LIMIT: - INTERCONNECTING PIPING BETWEEN COMMON FUELS SKID & EACH HEATER FUEL SKID UP TO EACH HEATER.
2. DUAL TUBE SKIN THERMOCOUPLE.
3. TAP CONNECTION FOR MANUAL SAMPLING. SEE DETAIL 1.
4. FOR SUFFIX INDICATIONS REFER TO LEGEND.
5. INTERCONNECTING CABLES (MULTICABLES) FROM FIELD TO CONTROL ROOM ARE NOT IN VENDOR SCOPE.
6. STEAM PURGE CONNECTION 6".
7. HANDWHEEL FOR STACK DAMPER.
8. STEAM SHUTTING VALVE ARE CONSIDERED LO AS THERE WILL BE ANOTHER VALVE UPSTREAM AT SAFE LOCATION.
9. FOR ALARM & TRIP SETS REFER TO DEDICATED DOCUMENT INSTRUMENT LIST/ALARM & TRIP SETS.
10. ALL INSTRUMENT TAG NUMBERS START WITH 81 AND TO INCLUDE 9506 BETWEEN TYPE AND SEQUENCE NUMBER. FOR EXAMPLE: 81-AI-950621 WILL BE MARKED AS AI-21.
11. TWO SPARE NOZZLES FOR CEMS.
12. PIPING MUST BE SYMMETRICAL AS PRACTICAL AS POSSIBLE.
13. SOFTWARE VALVE DISCREPANCY ALARM FOR LIMIT SWITCHES TO BE CONSIDERED.
14. TT AND PT COMPENSATION ARE INTEGRATED WITH FT. FLOW ELEMENT NOZZLE WILL BE UPDATED BASED ON FLOW METER SUB-VENDOR DATA.
15. ALL ALARMS AND INDICATIONS IN BMS SYSTEM WILL BE DUPLICATED IN DCS.
16. COMMON REACTOR INLET TEMPERATURE SETPOINT.
17. DEVIATION FROM COMMON REACTOR INLET TEMPERATURE SETPOINT.
18. CORRESPONDING TO TT-101908 AND TT-101906.
19. FOR PIPING REQUIREMENTS AND REACTOR ELEVATIONS SEE PROJECT SPECIFICATION 3981100-840.
20. WEATHERSHIELD ALL FLANGES 18" AND LARGER IN PIPING SEGMENT INDICATED, INCLUDING EQUIPMENT CONNECTIONS AND HEADER DEAD ENDS.
21. SEE PROJECT SPECIFICATION 3981100-907 FOR REQUIREMENTS.
22. MAKE CONNECTION ON TOP OF PIPE.
23. PROVIDE BLIND FOR ISOLATION DURING NEUTRALIZATION. BOTH SIDES MUST BE SEALED.
24. NEUTRALIZATION VENT.
25. WITH DETECTOR TUBE SAMPLE. SEE DETAIL "DT", SEE DWG 3981-00-DE-PR-PID-050.
26. FLUE GAS TO CONNECTION SECTION, SEE DWG 3981-10-DE-PR-PID-077.
27. MINIMUM TO HEATER.
28. MAKE CONNECTION ON TOP OF PIPE AT HIGH POINT.
29. MINIMUM OF TWO OXYGEN/ COMBUSTIBLES ANALYZERS REQUIRED WHEN ULTRA AND LATEST GENERATION LOW NO BURNERS ARE SPECIFIED.
30. VENDOR PROVIDE FLAME DETECTORS, COMBUSTIBLE GAS DETECTORS, AND INTERLOCKS.
31. SHUT-OFF VALVE TO BE AT GRADE, A MINIMUM OF 15 METER FROM THE HEATER.
32. LOCATE AT GRADE.

GENERAL NOTES:

1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-054

HOLD

01 ISSUED FOR APPROVAL 10-Jan-2026 M.KHERADKAR M.JAMSHIDI M.H.ESHRAIGHI
00 ISSUED FOR COMMENT 06-Aug-2025 M.KHERADKAR M.JAMSHIDI M.H.ESHRAIGHI
REV. PURPOSE OF ISSUE ISSUE DATE PREPARE CHECKED APPROVED
OWNER: MC: CONTRACTOR/CONSULTANT:

PROJECT TITLE:

PROPANE DEHYDROGENATION (PDH) PROJECT

DOCUMENT TITLE:

PIPING AND INSTRUMENT DIAGRAM
NO.1 Interheater

DOC NO.:

3981

10

DE

PR

PID

021

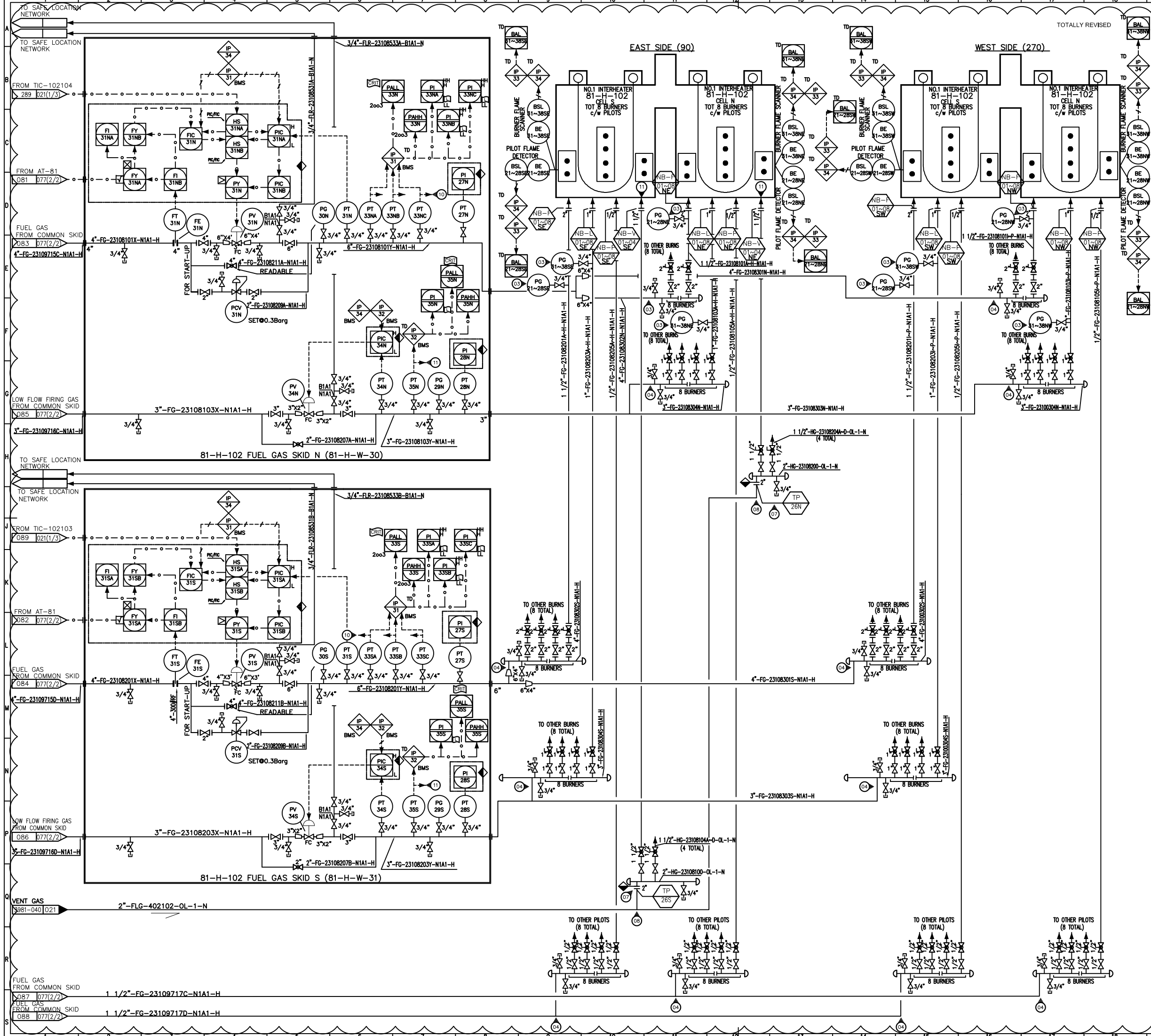
SCALE:

SIZE: A1

SHEET NO: 1 OF 3

REVISION: 01

CLASS: 1



REFERENCE

DRAWINGS

NOTES

- INTERCONNECTING CABLES (MULTICABLES) FROM FIELD TO CONTROL ROOM ARE NOT IN VENDOR SCOPE.
- ALL INSTRUMENT TAG NUMBERS START WITH 81 AND TO INCLUDE 9506 BETWEEN TYPE AND SEQUENCE NUMBER. FOR EXAMPLE: 81-AI-950621 WILL BE MARKED AS AI-21.
- FOR EACH BURNER/PILOT
- MAKE CONNECTION ON TOP OR SIDE OF HEADER.
- FOR ALARM & TRIP SETS REFER TO DEDICATED DOCUMENT INSTRUMENT LIST/ALARM & TRIP SETS.
- VENT GAS ROOT IS DESIGNED BASED ON 0.5 BARG STREAM PRESSURES.
- FOR TWO LOWER BURNERS AT CENTER, FOR BOTH CELLS ONLY AT EAST SIDE.
- LOCATE CLOSE TO BURNER.
- SOFTWARE VALVE DISCREPANCY ALARM FOR LIMIT SWITCHES TO BE CONSIDERED.
- DUPLICATOR FOR PI-102103A/B/C AND 102109A/B/C. SEE DETAIL C.
- DUPLICATOR FOR PI-102106 AND 102111. SEE DETAIL D.

DETAIL C

DETAIL D

HOLD

01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAIGHI
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAIGHI
REV.	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED
OWNER:	MC:		CONTRACTOR/CONSULTANT:		

PROJECT TITLE:

PROPANE DEHYDROGENATION (PDH) PROJECT

DOCUMENT TITLE:

PIPING AND INSTRUMENT DIAGRAM
NO.1 INTERHEATER

DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC. TYPE	SERIAL NO.
	3981	10	DE	PR	PID	021

SCALE:

SIZE: A1

SHEET NO: 2 OF 3

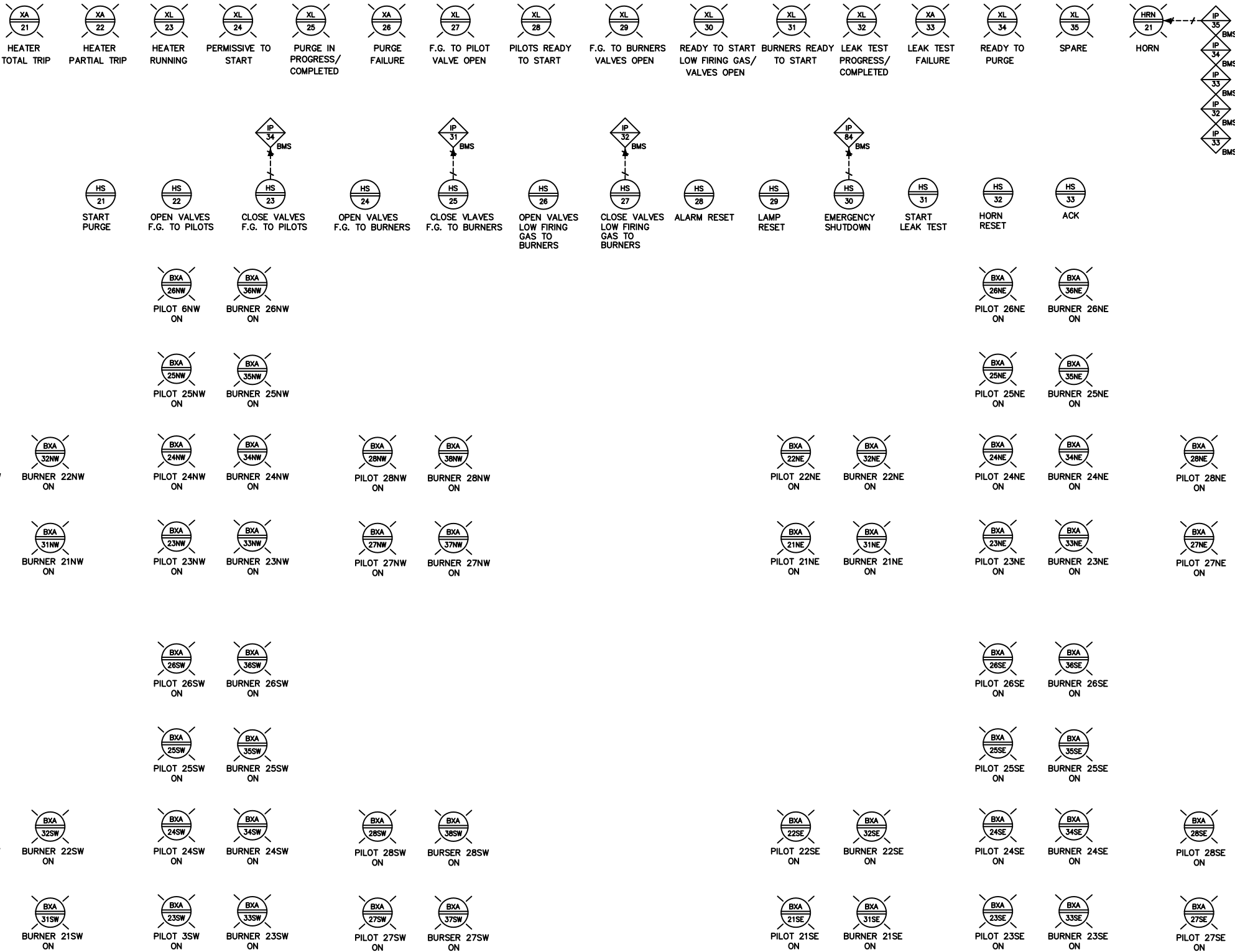
REVISION: 01





CLASS: 1

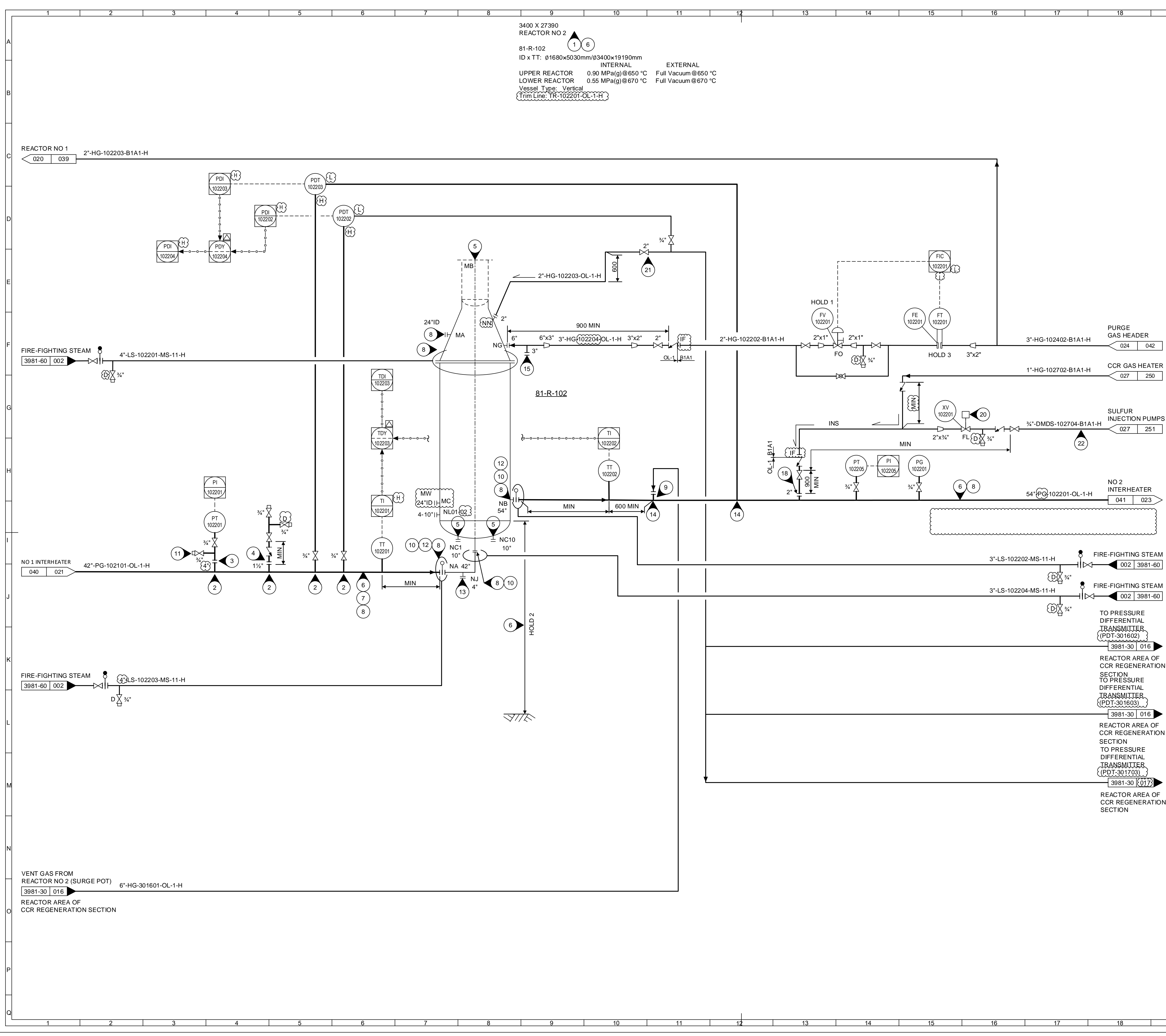
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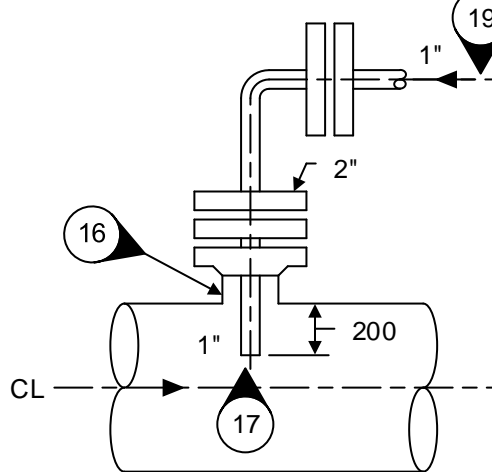


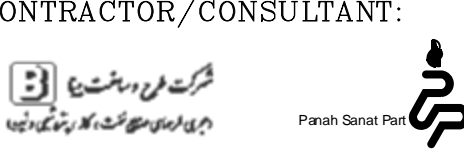
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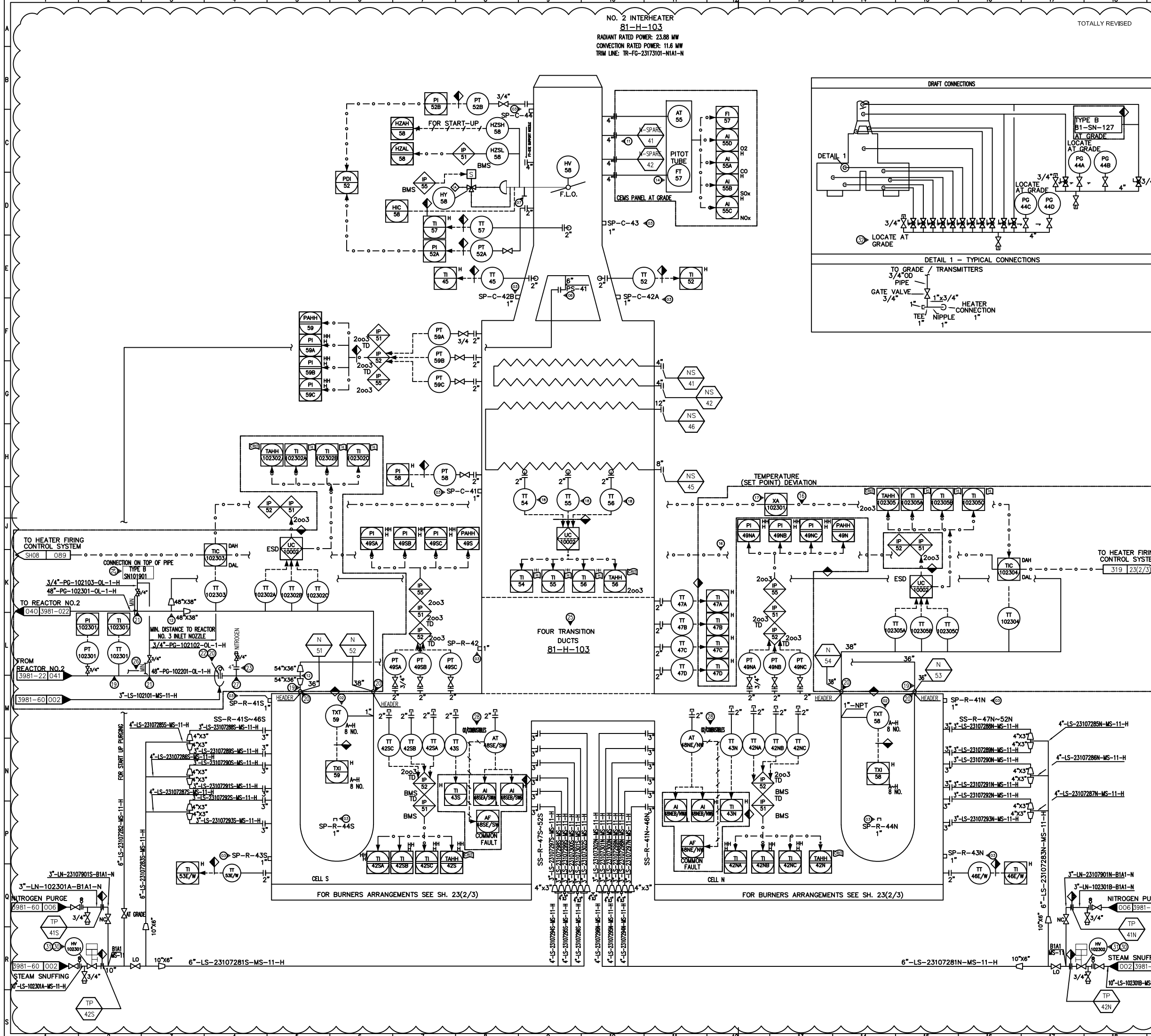
TOTALLY REVISED



REFERENCE			DRAWINGS		
NOTES					
LEGEND					
SUFFIX "N" INDICATES NORTH CELL					
SUFFIX "S" INDICATES SOUTH CELL					
SUFFIX "E" INDICATES EAST SIDE					
SUFFIX "W" INDICATES WEST SIDE					
HOLD					
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
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PROPANE DEHYDROGENATION (PDH) PROJECT					
DOCUMENT TITLE:					
PIPING AND INSTRUMENT DIAGRAM Charge Heater					
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	SERIAL NO.
	3981	10	DE	PR	021
SCALE:	SIZE: A1	SHEET NO: 3 OF 3		REVISION: 01	CLASS: 1



19	20	21	22	23	
REFERENCE			DRAWINGS		
NOTES					
1. PROVIDE CLEARANCE FOR REMOVAL OF CONE, UPPER REACTOR AND REACTOR INTERNALS					
2. MAKE CONNECTION ON TOP OF PIPE.					
3. FLANGED CONNECTION FOR HEATER NEUTRALIZATION.					
4. DETAIL "WI", SEE DWG 3981-10-DE-PR-PID-017					
5. SEE REACTOR AREA AND REGENERATOR AREA OF CCR REGENERATION SECTION					
6. FOR PIPING REQUIREMENTS AND REACTOR ELEVATIONS SEE PROJECT SPECIFICATION 3981100-840					
7. PIPING FROM HEATER OUTLET HEADER TO REACTOR INLET ELBOW MUST BE HORIZONTAL RUN WITH NO BENDS					
8. WEATHERSHIELD ALL FLANGES 18" AND LARGER IN PIPING SEGMENT INDICATED, INCLUDING EQUIPMENT CONNECTIONS, REACTOR BODY FLANGES, AND HEADER DEAD ENDS. SEE PROJECT SPECIFICATION 3981100-907 FOR REQUIREMENTS.					
9. DETAIL "H", SEE DWG 3981-10-DE-PR-PID-017.					
10. FOR BOLTING AND GASKET REQUIREMENTS OF THIS FLANGE SEE PROJECT SPECIFICATION 3981100-304.					
11.NITROGEN PURGE CONNECTION					
12. PROVIDE BLIND FOR ISOLATION DURING NEUTRALIZATION. BOTH SIDES MUST BE SEALED. (CONTRACTOR TO PROVIDE FACILITIES FOR INSTALLATION, REMOVAL, HANDLING AND STORAGE OF BLIND).					
13. NEUTRALIZATION DRAIN					
14. MAKE CONNECTION ON TOP OR SIDE OF PIPE.					
15. NEUTRALIZATION FILLING AND DRAIN					
16.MAKE CONNECTION ON TOP OF PIPE IN HORIZONTAL RUN. LOCATE MAXIMUM DISTANCE FROM NO 2 INTERHEATER TO IMPROVE MIXING					
17. DISTRIBUTOR: STAINLESS STEEL OF PIPE.					
18. DETAIL "G3"					
19. SULFUR (DMDS) AND NET GAS INJECTION					
20. DETAIL "S", SEE DWG 3981-10-DE-PR-PID-017					
21. LOCATE OUTSIDE RADIUS OF THE LOWER REACTOR SECTION TO NOT INTERFERE WITH REACTOR SCREEN REMOVAL					
22. THE THICKNESS OF THE PIPE IS XXS.					
			DETAIL "G"		
GENERAL NOTES:					
1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055					
2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER (PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.					
HOLDS					
1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/REDUCER					
2. ELEVATION					
3. FLOWMETER CONNECTION SIZE					
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAHGH
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAHGH
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED
OWNER:		MC:	CONTRACTOR/CONSULTANT:		
					
PROJECT TITLE:					
PROPANE DEHYDROGENATION (PDH) PROJECT					
DOCUMENT TITLE:					
PIPING AND INSTRUMENT DIAGRAM					
REACTION SECTION – REACTOR NO 2					
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	SERIAL NO.
	3981	10	DE	PR	022
SCALE:	SIZE: A1	SHEET NO. 1 OF 1		REVISION 01	CLASS: 1
19	20	21	22	23	



REFERENCE

DRAWINGS

TOTALLY REVISED

NOTES

1. TERMINAL POINT INSIDE VENDOR BATTERY LIMIT: - INTERCONNECTING PIPING BETWEEN COMMON FUELS SKID & EACH HEATER FUEL SHUT UP TO EACH HEATER.

2. DUAL TUBE SKIN THERMOCOUPLE.

3. TAP CONNECTION FOR MANUAL SAMPLING. SEE DETAIL 1.

4. FOR SUFFIX INDICATIONS REFER TO LEGEND.

5. INTERCONNECTING CABLES (MULTICOLES) FROM FIELD TO CONTROL ROOM ARE NOT IN VENDOR SCOPE.

6. STEAM PURGE CONNECTION 6".

7. HANDWHEEL FOR STACK DAMPER.

8. STEAM SHUTTING VALVE ARE CONSIDERED LO AS THERE WILL BE ANOTHER VALVE UPSTREAM AT SAFE LOCATION.

9. FOR ALARM & TRIP SETS REFER TO DEDICATED DOCUMENT INSTRUMENT LIST/ALARM & TRIP SETS.

10. ALL INSTRUMENT TAG NUMBERS START WITH 81 AND TO INCLUDE 9506 BETWEEN TYPE AND SEQUENCE NUMBER. FOR EXAMPLE: 81-A-950621 WILL BE MARKED AS A-21.

11. TWO SPARE NOZZLES FOR CEMS.

12. PIPING MUST BE SYMMETRICAL AS PRACTICAL AS POSSIBLE.

13. SOFTWARE VALUE DISCREPANCY ALARM FOR LIMIT SWITCHES TO BE CONSIDERED.

14. TT AND PT COMPENSATION ARE INTEGRATED WITH FT. FLOW ELEMENT NOZZLE WILL BE UPDATED BASED ON FLOW METER SUB-VENDOR DATA.

15. ALL ALARMS AND INDICATORS IN BMS SYSTEM WILL BE DUPLICATED IN DCS.

16. COMMON REACTOR INLET TEMPERATURE SETPOINT.

17. DEVIATION FROM COMMON REACTOR INLET TEMPERATURE SETPOINT.

18. CORRESPONDING TO TT-101908 AND TT-101906.

19. FOR PIPING REQUIREMENTS AND REACTOR ELEVATIONS SEE PROJECT SPECIFICATION 3981100-840.

20. WEATHERSHIELD ALL FLANGES 18" AND LARGER IN PIPING SEGMENT INDICATED, INCLUDING EQUIPMENT CONNECTIONS AND HEADER DEAD ENDS. SEE PROJECT SPECIFICATION 3981100-907 FOR REQUIREMENTS.

21. MAKE CONNECTION ON TOP OF PIPE.

22. PROVIDE BLIND FOR ISOLATION DURING NEUTRALIZATION. BOTH SIDES MUST BE SEALED.

23. NEUTRALIZATION VENT.

24. WITH DETECTOR TUBE SAMPLE. SEE DETAIL "DT", SEE DWG 3981-00-DE-PR-PID-050.

25. FLUE GAS TO CONNECTION SECTION, SEE DWG 3981-10-DE-PR-PID-077.

26. MINIMUM TO HEATER.

27. MAKE CONNECTION ON TOP OF PIPE AT HIGH POINT.

28. MINIMUM OF TWO OXYGEN/ COMBUSTIBLE ANALYZERS REQUIRED WHEN ULTRA AND LATEST GENERATION LOW NO BURNERS ARE SPECIFIED.

29. VENDOR PROVIDE FLAME DETECTORS, COMBUSTIBLE GAS DETECTORS, AND INTERLOCKS.

30. SEE DETAIL "M".

31. SHUT-OFF VALVE TO BE AT GRADE, A MINIMUM OF 15 METER FROM THE HEATER.

32. LOCATE AT GRADE.

GENERAL NOTES:

1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-054

HOLD

REV. PURPOSE OF ISSUE

ISSUE DATE

PREPARED

CHECKED

APPROVED

OWNER:

MC:

CONTRACTOR/CONSULTANT:

PROJECT TITLE:

PROPANE DEHYDROGENATION (PDH) PROJECT

DOCUMENT TITLE:

PIPING & INSTRUMENT DIAGRAM NO.2 INTERHEATER

DOC NO.:

PROJ.CODE

Sec.

PHASE

DEP.

DOC. TYPE

SERIAL NO.

3981

10

DE

PR

PID

023

SCALE:

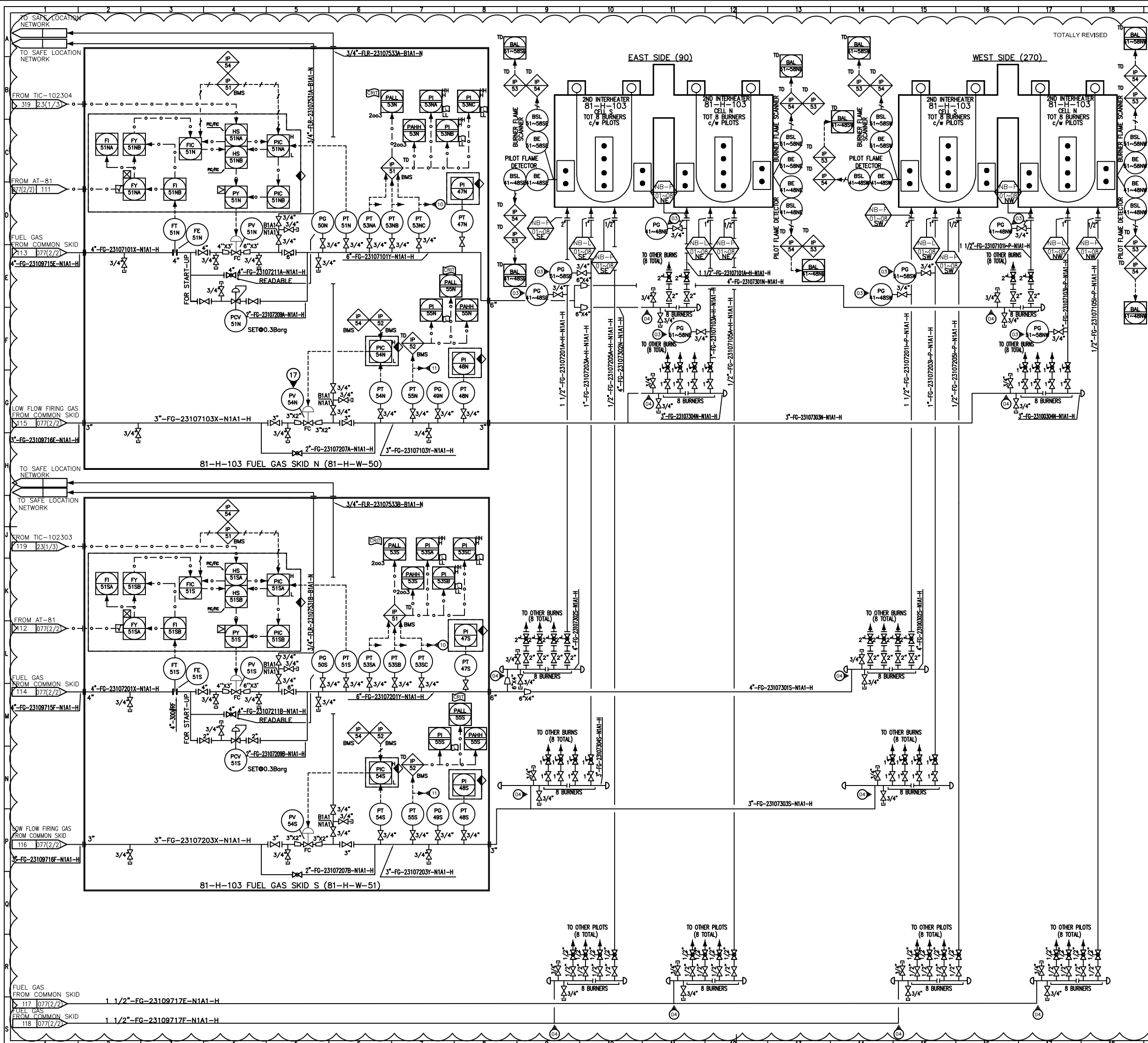
SIZE: A1

SHEET NO: 1 OF 3

REVISION: 01

CLASS: 1

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REFERENCE

DRAWINGS

NOTES

- INTERCONNECTING CABLES (MULTICABLES) FROM FIELD TO CONTROL ROOM ARE NOT IN VENDOR SCOPE.
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- VENT GAS ROOT IS DESIGNED BASED ON 0.5 BARG STREAM PRESSURES.
- FOR TWO LOWER BURNERS AT CENTER, FOR BOTH CELLS ONLY AT EAST SIDE.
- LOCATE CLOSE TO BURNER.
- SOFTWARE VALVE DISCREPANCY ALARM FOR LIMIT SWITCHES TO BE CONSIDERED.
- DUPLICATOR FOR PI-101903A/B/C AND 101909A/B/C.SEE DETAIL C.
- DUPLICATOR FOR PI-101906 AND 101911.SEE DETAIL D.

DETAIL C

DETAIL D

HOLD

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00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAIGHI
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OWNER:		MC:		CONTRACTOR/CONSULTANT:	

PROJECT TITLE:

PROPANE DEHYDROGENATION (PDH) PROJECT

DOCUMENT TITLE:

PIPING & INSTRUMENT DIAGRAM
NO.2 INTERHEATER

DOC NO.:

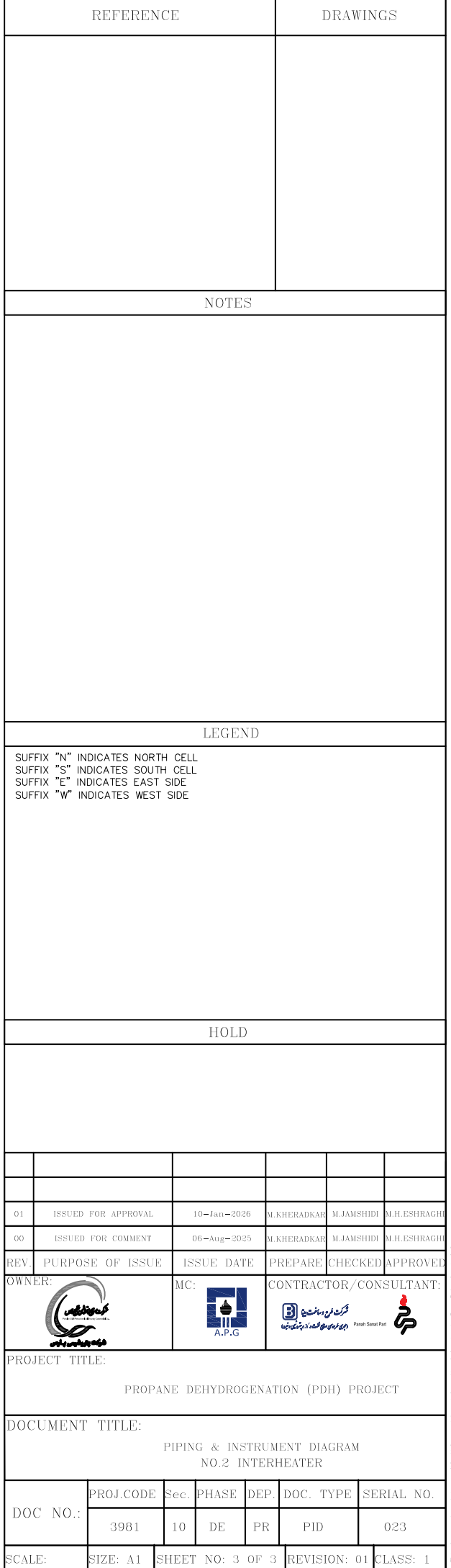
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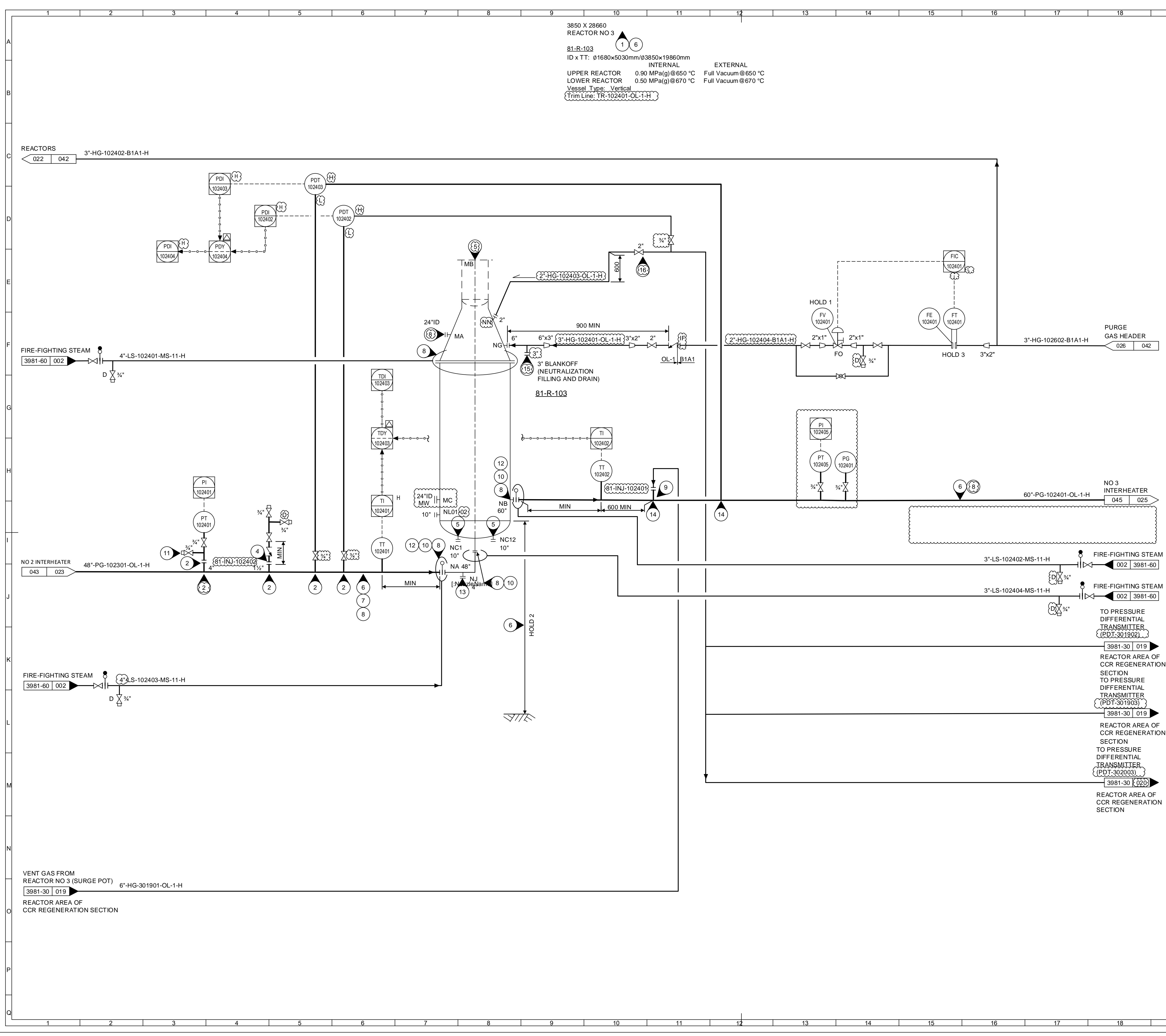
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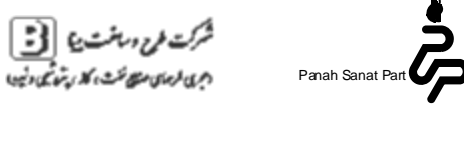


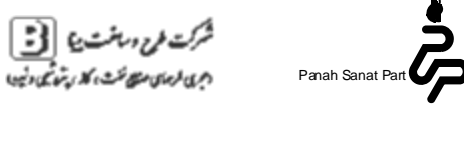


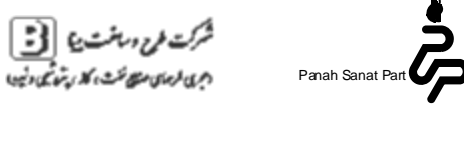
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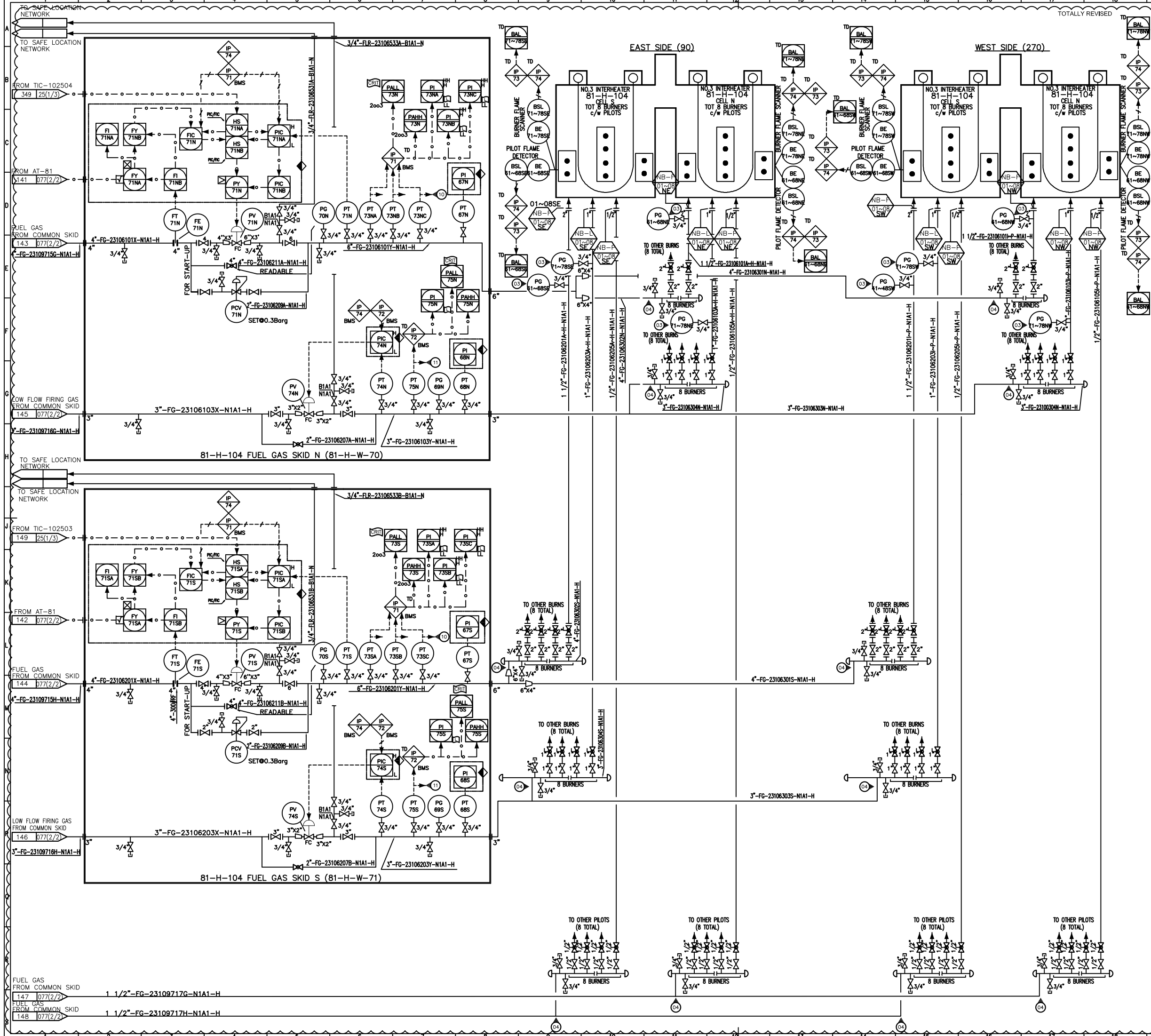
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19	20	21	22	23																																																												
REFERENCE			DRAWINGS																																																													
<div>NOTES</div> <div>1. PROVIDE CLEARANCE FOR REMOVAL OF CONE, UPPER REACTOR AND REACTOR INTERNALS</div> <div>2. MAKE CONNECTION ON TOP OF PIPE.</div> <div>3. FLANGED CONNECTION FOR HEATER NEUTRALIZATION.</div> <div>4. DETAIL "WI", SEE DWG 3981-10-DE-PR-PID-017</div> <div>5. SEE REACTOR AREA AND REGENERATOR AREA OF CCR REGENERATION SECTION</div> <div>6. FOR PIPING REQUIREMENTS AND REACTOR ELEVATIONS SEE PROJECT SPECIFICATION 3981 100-840</div> <div>7. PIPING FROM HEATER OUTLET HEADER TO REACTOR INLET ELBOW MUST BE HORIZONTAL RUN WITH NO BENDS</div> <div>8. WEATHERSHIELD ALL FLANGES 18" AND LARGER IN PIPING SEGMENT INDICATED, INCLUDING EQUIPMENT CONNECTIONS, REACTOR BODY FLANGES, AND HEADER DEAD ENDS. SEE PROJECT SPECIFICATION 3981100-907 FOR REQUIREMENTS.</div> <div>9. DETAIL "H", SEE DWG 3981-10-DE-PR-PID-017.</div> <div>10. FOR BOLTING AND GASKET REQUIREMENTS OF THIS FLANGE SEE PROJECT SPECIFICATION 3981100-304.</div> <div>11.NITROGEN PURGE CONNECTION</div> <div>12. PROVIDE BLIND FOR ISOLATION DURING NEUTRALIZATION. BOTH SIDES MUST BE SEALED. (CONTRACTOR TO PROVIDE FACILITIES FOR INSTALLATION, REMOVAL, HANDLING AND STORAGE OF BLIND).</div> <div>13. NEUTRALIZATION DRAIN</div> <div>14. MAKE CONNECTION ON TOP OR SIDE OF PIPE.</div> <div>15. NEUTRALIZATION FILLING AND DRAIN</div> <div>16. LOCATE OUTSIDE RADIUS OF THE LOWER REACTOR SECTION TO NOT INTERFERE WITH REACTOR SCREEN REMOVAL</div> <div>GENERAL NOTES:</div> <div>1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055</div> <div>2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER(PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.</div> <div>HOLDS</div> <div>1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/REDUCER</div> <div>2. ELEVATION</div> <div>3. FLOWMETER CONNECTION SIZE</div> <table><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td>01</td><td>ISSUED FOR APPROVAL</td><td>10-Jan-2026</td><td>M.KHERADKAR</td><td>M.JAMSHIDI</td></tr><tr><td>00</td><td>ISSUED FOR COMMENT</td><td>06-Aug-2025</td><td>M.KHERADKAR</td><td>M.JAMSHIDI</td></tr><tr><td>REV</td><td>PURPOSE OF ISSUE</td><td>ISSUE DATE</td><td>PREPARE</td><td>CHECKED</td></tr><tr><td>OWNER:</td><td colspan="2">MC:</td><td colspan="2">CONTRACTOR/CONSULTANT:</td></tr><tr><td colspan="2"></td><td colspan="2"></td><td></td></tr></table> <div>PROJECT TITLE:</div> <div>PROPANE DEHYDROGENATION (PDH) PROJECT</div> <div>DOCUMENT TITLE:</div> <div>PIPING AND INSTRUMENT DIAGRAM</div> <div>REACTION SECTION – REACTOR NO 3</div> <table><tr><td rowspan="2">DOC NO.:</td><td>PROJ.CODE</td><td>Sec.</td><td>PHASE</td><td>DEP.</td><td>DOC.TYPE</td><td>SERIAL NO.</td></tr><tr><td>3981</td><td>10</td><td>DE</td><td>PR</td><td>PID</td><td>024</td></tr><tr><td>SCALE:</td><td>SIZE: A1</td><td>SHEET NO.</td><td>1 OF 1</td><td>REVISION 01</td><td colspan="2">CLASS: 1</td></tr></table> <tr><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td></tr>															01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	OWNER:	MC:		CONTRACTOR/CONSULTANT:							DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.	3981	10	DE	PR	PID	024	SCALE:	SIZE: A1	SHEET NO.	1 OF 1	REVISION 01	CLASS: 1		19	20	21	22	23
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- DUPLICATOR FOR PI-101906 AND 101911.SEE DETAIL D.

DETAIL C

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OWNER:	MC:		CONTRACTOR/CONSULTANT:		

PROJECT TITLE:

PROPANE DEHYDROGENATION (PDH) PROJECT

DOCUMENT TITLE:

PIPING & INSTRUMENT DIAGRAM
NO.3 INTERHEATER

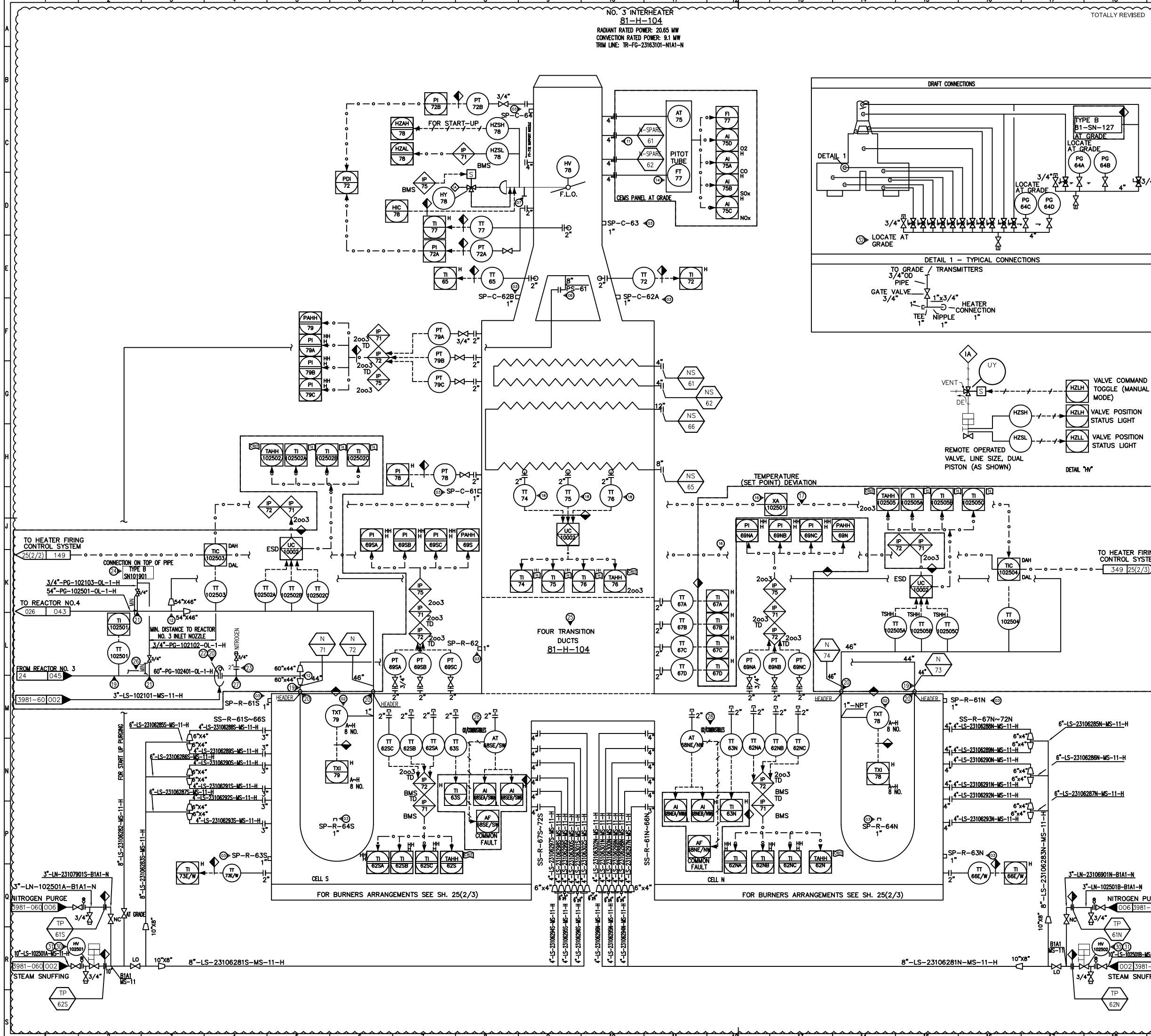
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PROJ.CODE	Sec.	PHASE	DEP.	DOC. TYPE	SERIAL NO.
3981	10	DE	PR	PID	025

SCALE:

SIZE: A1	SHEET NO: 2 OF 3	REVISION: 01	CLASS: 1
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REFERENCE

DRAWINGS

NOTES

1. TERMINAL POINT INSIDE VENDOR BATTERY LIMIT: - INTERCONNECTING PIPING BETWEEN COMMON FUELS SKID & EACH HEATER FUEL SKID UP TO EACH HEATER.
2. DUAL TUBE SKID THERMOCOUPLE.
3. TAP CONNECTION FOR MANUAL SAMPLING. SEE DETAIL 1.
4. FOR SUFFIX INDICATIONS REFER TO LEGEND.
5. INTERCONNECTING CABLES (MULTICOLES) FROM FIELD TO CONTROL ROOM ARE NOT IN VENDOR SCOPE.
6. STEAM PURGE CONNECTION 6".
7. HANDWHEEL FOR STACK DAMPER.
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14. TI AND PT COMPENSATION ARE INTEGRATED WITH FT. FLOW ELEMENT NOZZLE WILL BE UPDATED BASED ON FLOW METER SUB-VENDOR DATA.
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18. CORRESPONDING TO TI-101908 AND TI-101906.
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23. NEUTRALIZATION VENT.
24. WITH DETECTOR TUBE SAMPLE. SEE DETAIL "DT", SEE DWG 3981-00-DE-PR-PID-050.
25. FLUE GAS TO CONNECTION SECTION, SEE DWG 3981-10-DE-PR-PID-077.
26. MINIMUM TO HEATER.
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28. MINIMUM OF TWO OXYGEN/ COMBUSTIBLES ANALYZERS REQUIRED WHEN ULTRA AND LATEST GENERATION LOW NO BURNERS ARE SPECIFIED.
29. VENDOR PROVIDE FLAME DETECTORS, COMBUSTIBLE GAS DETECTORS, AND INTERLOCKS.
30. SEE DETAIL "M".

GENERAL NOTES:

1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLS AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-054

HOLD

01 ISSUED FOR APPROVAL 10-Jan-2026 M.KHERADKAR M.JAMSHIDI M.H.ESHRAIGHI
00 ISSUED FOR COMMENT 06-Aug-2025 M.KHERADKAR M.JAMSHIDI M.H.ESHRAIGHI
REV. PURPOSE OF ISSUE ISSUE DATE PREPARE CHECKED APPROVED
OWNER: MC: CONTRACTOR/CONSULTANT:

PROJECT TITLE:

PROPANE DEHYDROGENATION (PDH) PROJECT

DOCUMENT TITLE:

PIPING & INSTRUMENT DIAGRAM
NO.3 INTERHEATER

DOC NO.:

3981

Sec.

10

PHASE

DE

DOC. TYPE

PID

SERIAL NO.

025

SCALE:

SIZE: A1

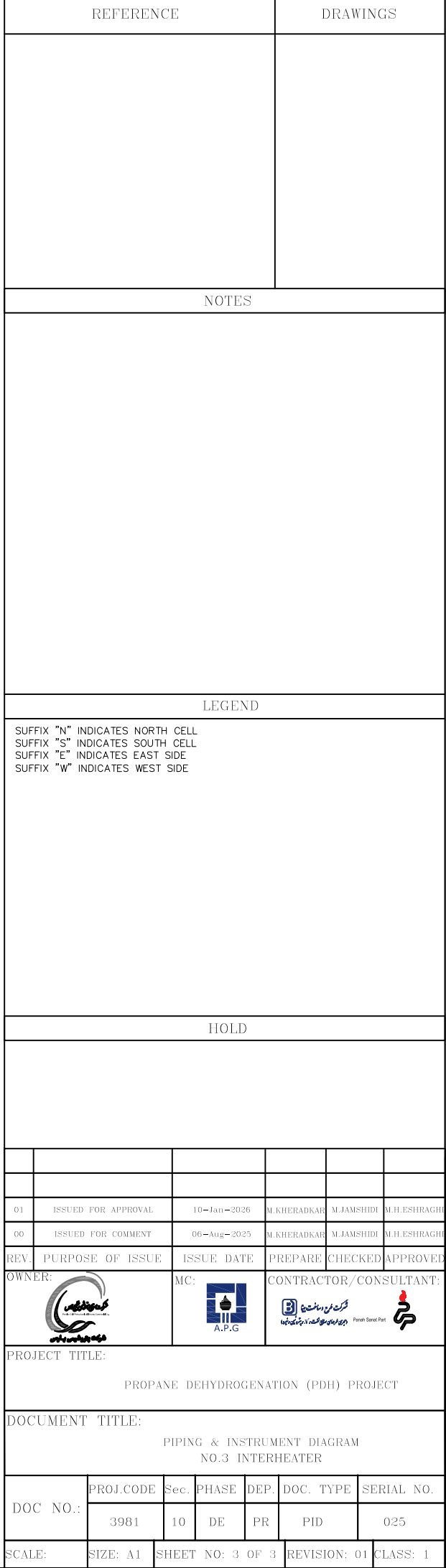
SHEET NO: 1 OF 3

REVISION: 01

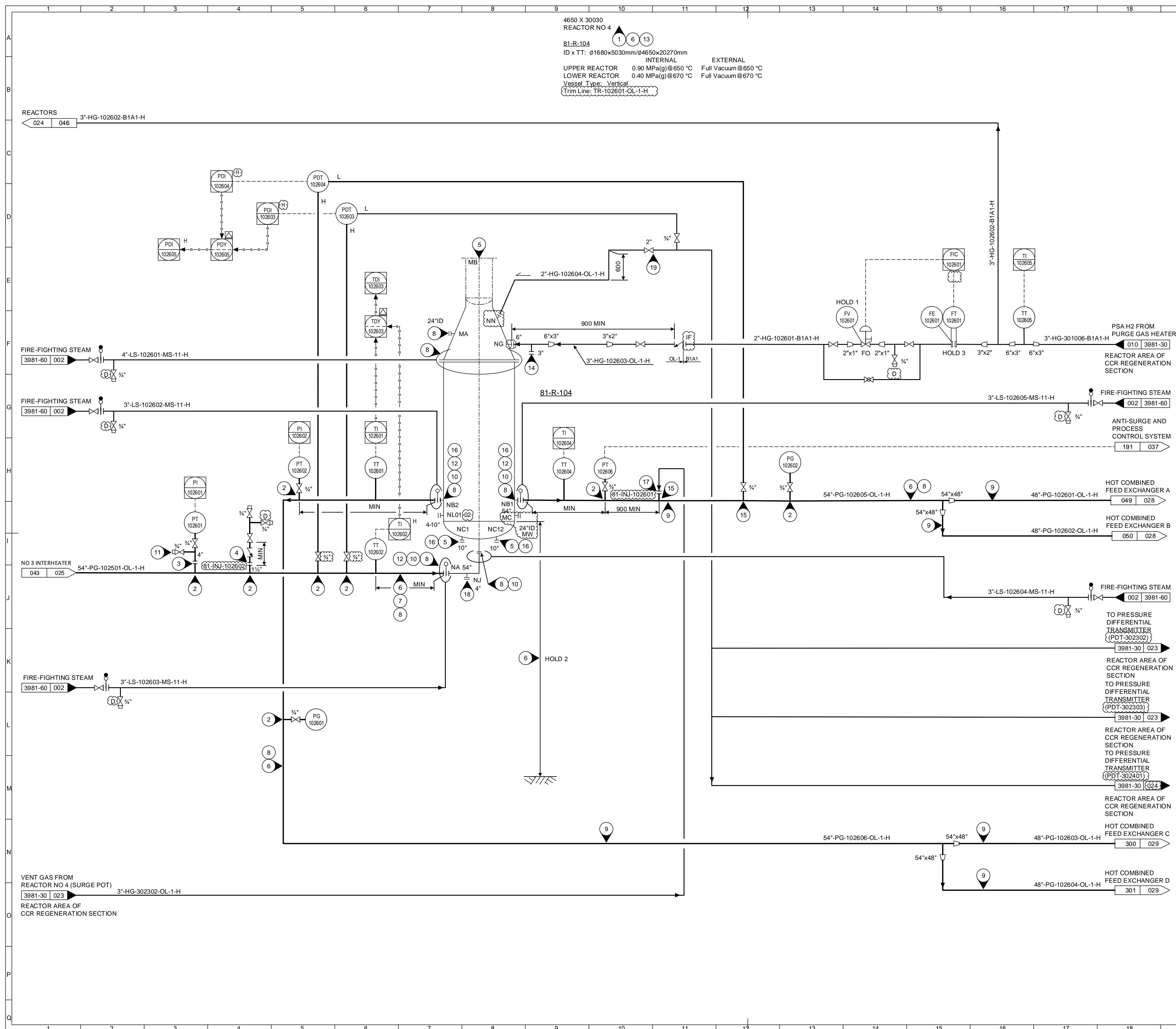
CLASS: 1

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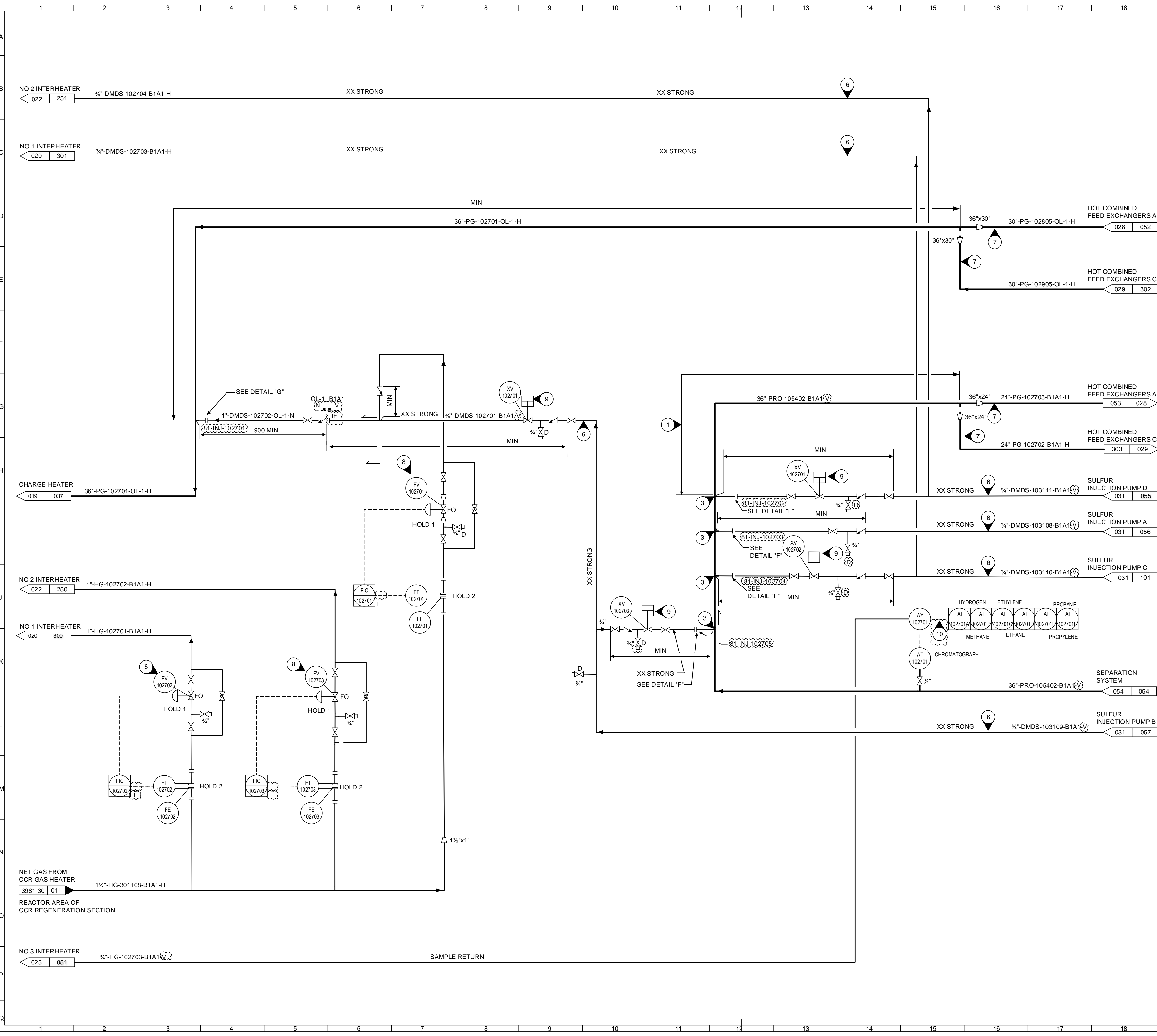
TOTALLY REVISED



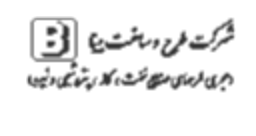



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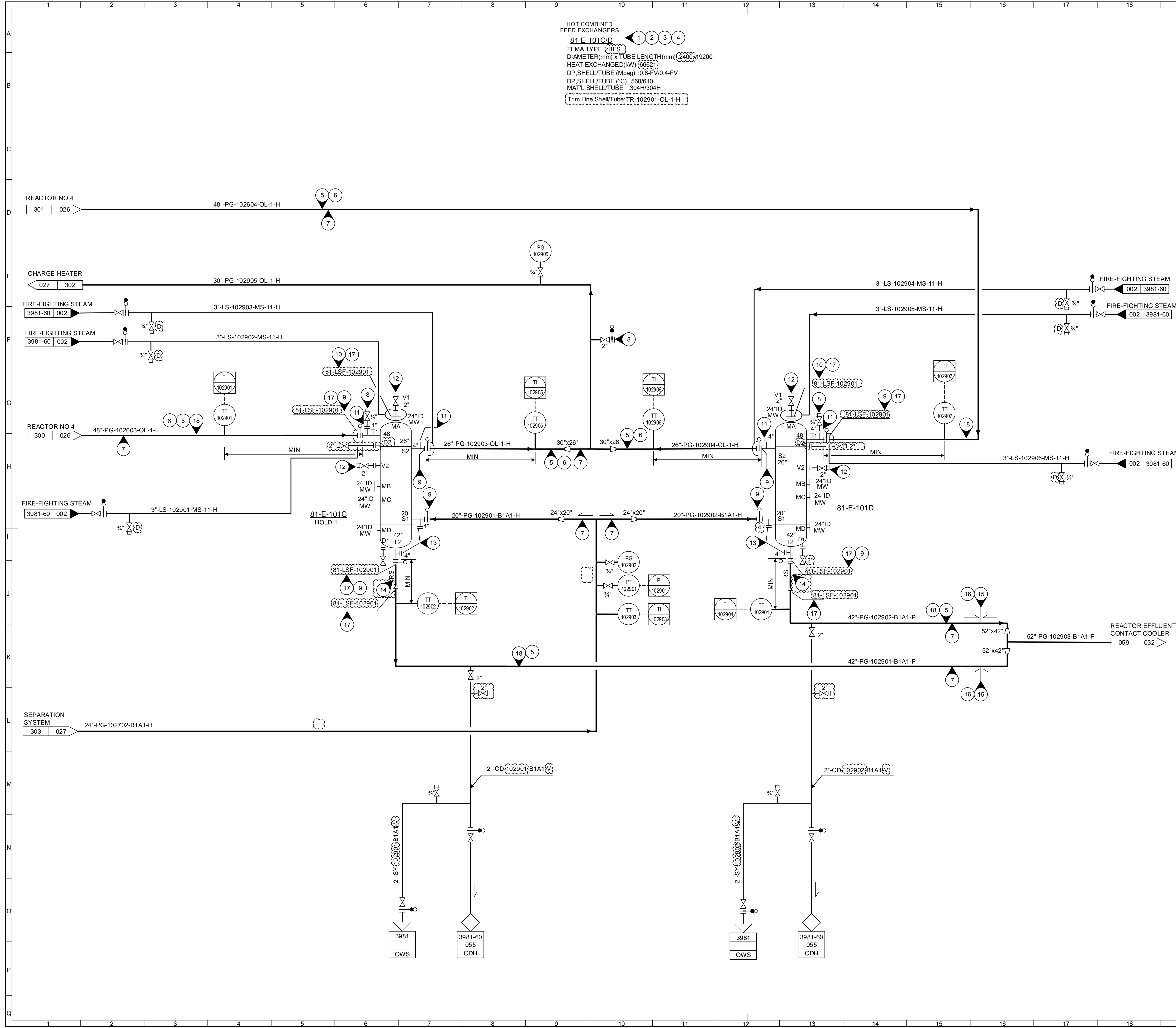






19	20	21	22	23		
REFERENCE			DRAWINGS			
NOTES						
<p>1. PROVIDE CLEARANCE FOR REMOVAL OF CONE, UPPER REACTOR AND REACTOR INTERNALS</p> <p>2. MAKE CONNECTION ON TOP OF PIPE.</p> <p>3. FLANGED CONNECTION FOR HEATER NEUTRALIZATION.</p> <p>4. DETAIL "WI", SEE DWG 3981-10-DE-PR-PID-017</p> <p>5. SEE REACTOR AREA AND REGENERATOR AREA OF CCR REGENERATION SECTION</p> <p>6. FOR PIPING REQUIREMENTS AND REACTOR ELEVATIONS SEE PROJECT SPECIFICATION 3981100-840</p> <p>7. PIPING FROM HEATER OUTLET HEADER TO REACTOR INLET ELBOW MUST BE HORIZONTAL RUN WITH NO BENDS</p> <p>8. WEATHERSHIELD ALL FLANGES 18" AND LARGER IN PIPING SEGMENT INDICATED, INCLUDING EQUIPMENT CONNECTIONS, REACTOR BODY FLANGES, AND HEADER DEAD ENDS. SEE PROJECT SPECIFICATION 3981100-907 FOR REQUIREMENTS.</p> <p>9. PIPING MUST BE SYMMETRICAL.</p> <p>10. FOR BOLTING AND GASKET REQUIREMENTS OF THIS FLANGE SEE PROJECT SPECIFICATION 3981100-304.</p> <p>11. NITROGEN PURGE CONNECTION</p> <p>12. PROVIDE BLIND FOR ISOLATION DURING NEUTRALIZATION. BOTH SIDES MUST BE SEALED. (CONTRACTOR TO PROVIDE FACILITIES FOR INSTALLATION, REMOVAL, HANDLING AND STORAGE OF BLIND).</p> <p>13. PIPING MUST BE SYMMETRICAL FROM REACTOR NO 4 TO HOT COMBINED FEED EXCHANGERS</p> <p>14. NEUTRALIZATION FILLING AND DRAIN</p> <p>15. MAKE CONNECTION ON TOP OR SIDE OF PIPE.</p> <p>16. LIP SEAL WELD REQUIRED, SEE PROJECT SPECIFICATION 3981100-801</p> <p>17. DETAIL "H1"</p> <p>18. NEUTRALIZATION DRAIN</p> <p>19. LOCATE OUTSIDE RADIUS OF THE LOWER REACTOR SECTION TO NOT INTERFERE WITH REACTOR SCREEN REMOVAL.</p>						
GENERAL NOTES:						
<p>1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-053</p> <p>2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER (PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.</p>						
HOLDS						
<p>1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/REDUCER</p> <p>2. ELEVATION</p> <p>3. FLOWMETER CONNECTION SIZE</p>						
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAHGH	
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAHGH	
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED	
OWNER:		MC:	CONTRACTOR/CONSULTANT:			
PROJECT TITLE:						
PROPANE DEHYDROGENATION (PDH) PROJECT						
DOCUMENT TITLE:						
PIPING AND INSTRUMENT DIAGRAM						
REACTION SECTION – REACTOR NO 4						
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.
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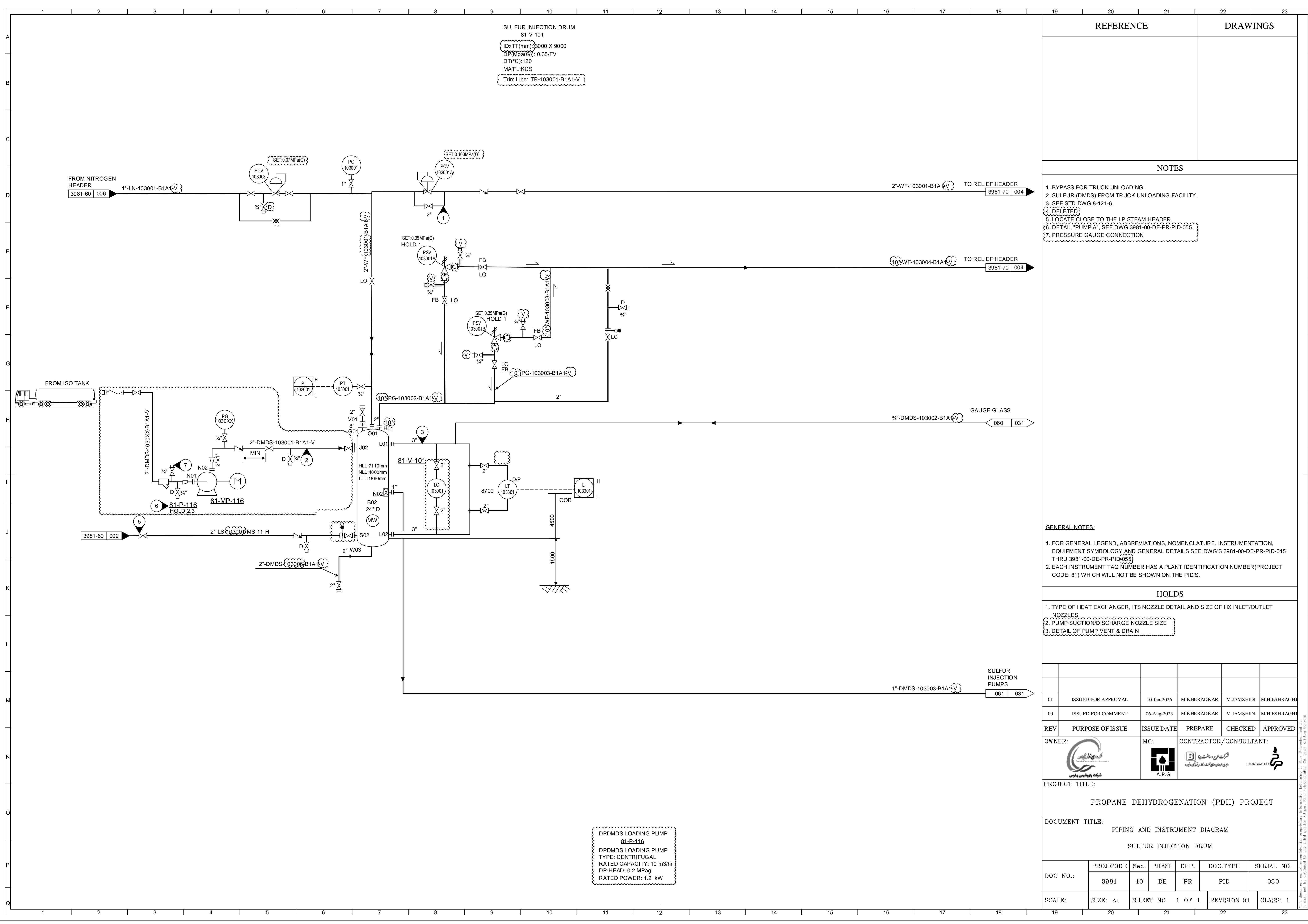


REFERENCE			DRAWINGS		
NOTES					
1. LOCATE DMDS INJECTION NOZZLES MINIMUM 10 PIPE DIAMETER FROM JUNCTION					
2. SULFUR (DMDS) AND NET GAS INJECTION					
3. MAKE CONNECTION ON TOP OF PIPE					
4. DISTRIBUTOR: STAINLESS STEEL PIPE					
5. MAKE CONNECTION ON TOP OF PIPE IN HORIZONTAL RUN					
6. SULFUR (DMDS) INJECTION					
7. PIPING MUST BE SYMMETRICAL					
8. DETAIL "CV", SEE DWG 3981-00-DE-PR-PID-054					
9. DETAIL "S", SEE DWG 3981-10-DE-PR-PID-017					
10.EACH PARAMETER HAS DEDICATED SIGNAL					
<div><div><div><div><div><div></div><div>5</div></div><div><div></div><div>6</div></div></div><div><div></div><div>1/2"</div></div><div><div></div><div>200</div></div><div><div></div><div>CL</div></div></div><div>DETAIL "F"</div><div><div><div><div><div></div><div>5</div></div><div><div></div><div>2</div></div></div><div><div></div><div>1"</div></div><div><div></div><div>200</div></div><div><div></div><div>CL</div></div></div><div>DETAIL "G"</div></div></div></div>					
GENERAL NOTES:					
1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID055					
2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER(PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.					
HOLDS					
1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/REDUCER					
2. FLOWMETER CONNECTION SIZE.					
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED
OWNER:		MC:	CONTRACTOR/CONSULTANT:		
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PROJECT TITLE:					
PROPANE DEHYDROGENATION (PDH) PROJECT					
DOCUMENT TITLE:					
PIPING AND INSTRUMENT DIAGRAM					
DMDS AND NET GAS INJECTION					
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE
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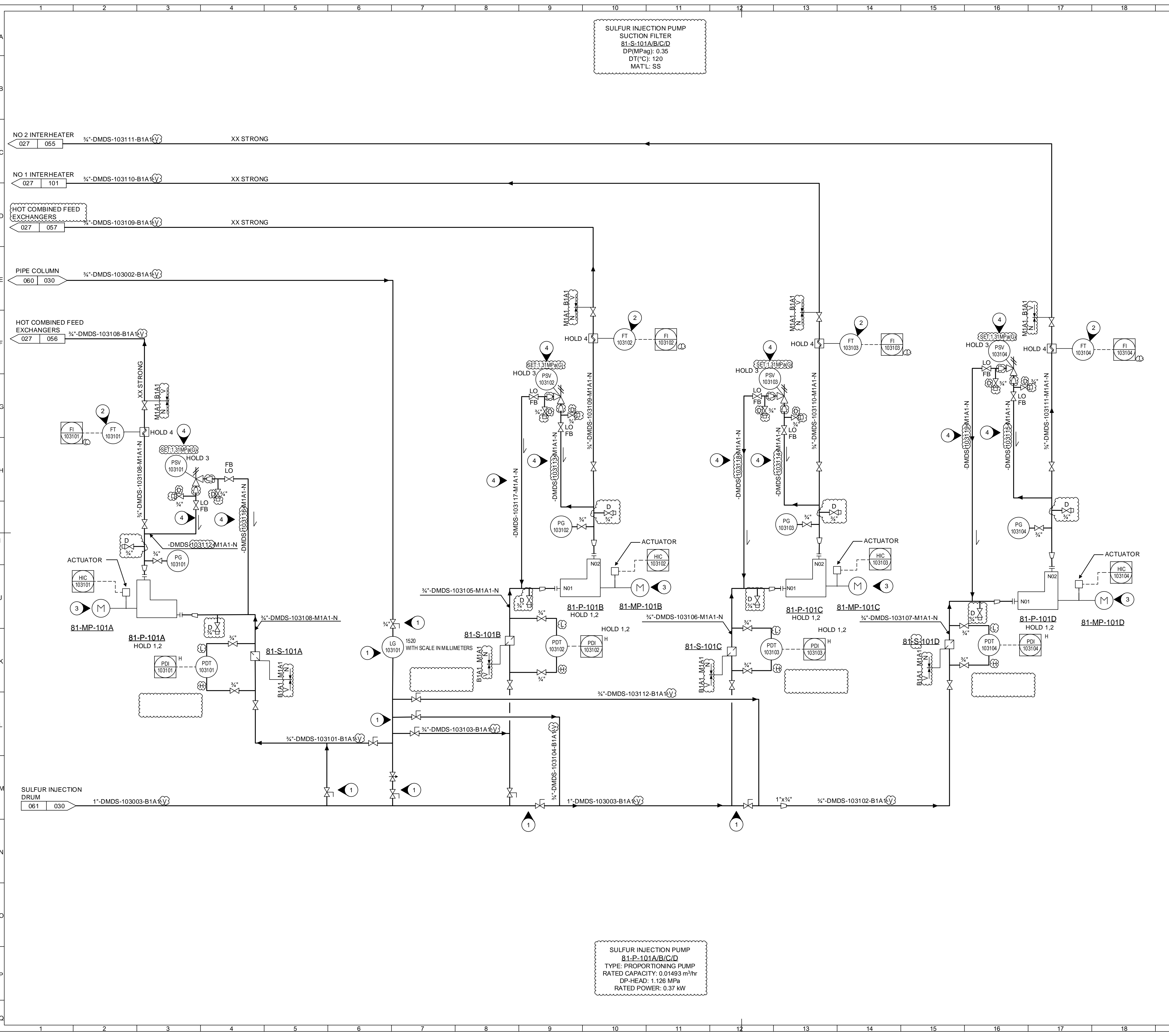
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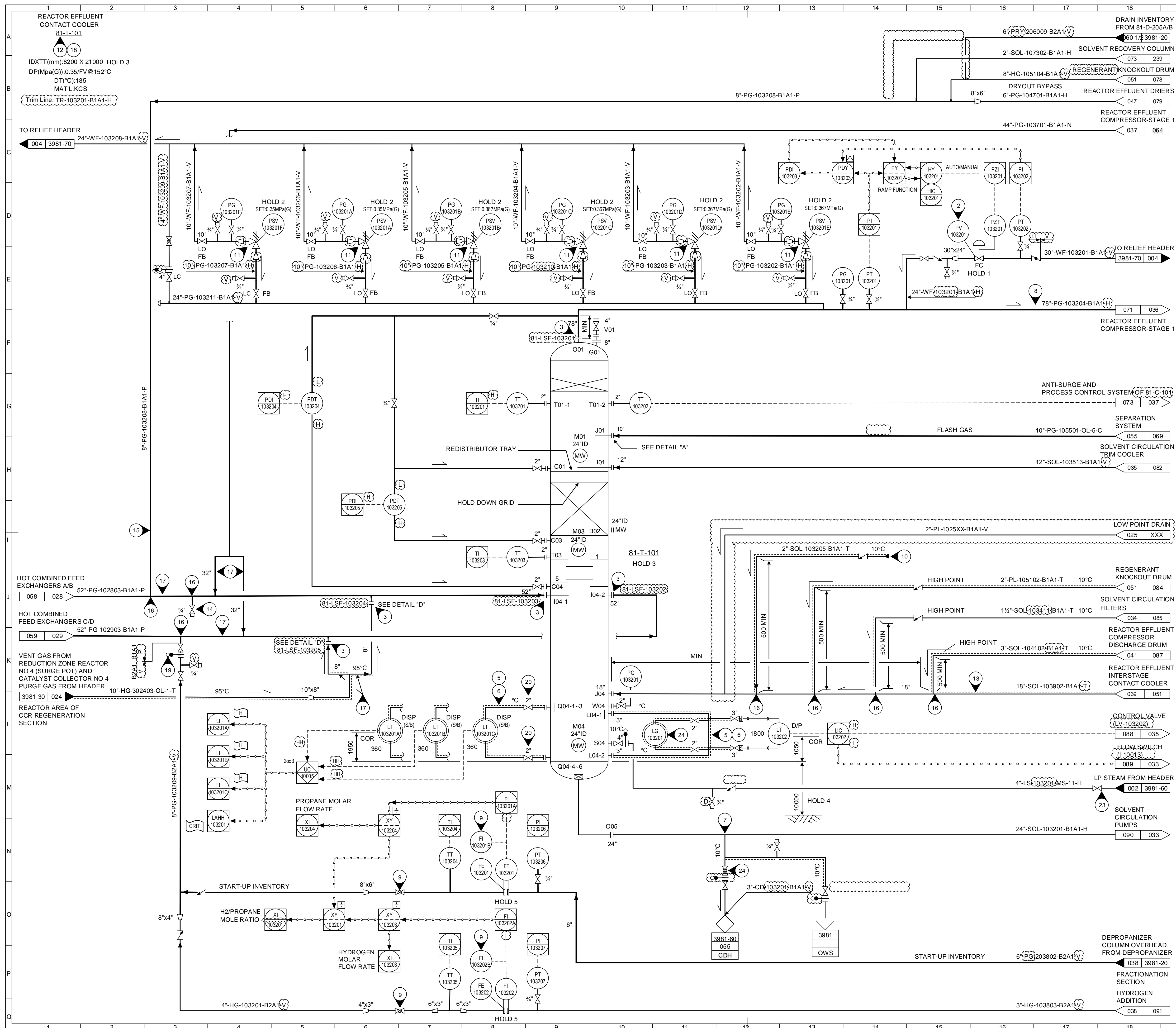
REFERENCE			DRAWINGS			
NOTES						
1. SHELL SIDE PIPING MUST BE SYMMETRICAL FROM COMMON INLET TO COMMON OUTLET.						
2. LOCATE AS CLOSE TO LAST REACTOR AS POSSIBLE.						
3. FOR PIPING REQUIREMENTS AND REACTOR ELEVATIONS SEE PROJECT SPECIFICATION 3981100-840.						
4. PIPING MUST BE SYMMETRICAL FROM REACTOR NO 4 TO REACTOR EFFLUENT CONTACT COOLER.						
5. FOR PIPING REQUIREMENTS AND REACTOR ELEVATIONS SEE PROJECT SPECIFICATION 3981100-840.						
6. WEATHERSHIELD ALL FLANGES 18" AND LARGER IN PIPING SEGMENT INDICATED, INCLUDING EQUIPMENT CONNECTIONS,AND HEADER DEAD ENDS. SEE PROJECT SPECIFICATION 3981100-907 FOR REQUIREMENTS.						
7. PIPING MUST BE SYMMETRICAL.						
8. NITROGEN PURGE CONNECTION.						
9. CONTRACTOR TO PROVIDE BLIND FOR ISOLATION DURING NEUTRALIZATION. BOTH SIDES MUST BE SEALED. (CONTRACTOR TO PROVIDE FACILITIES FOR INSTALLATION, REMOVAL, HANDLING AND STORAGE OF BLIND).						
10.WEATHERSHIELD FLANGE.SEE PROJECT SPECIFICATION 3981100-907 FOR REQUIREMENTS						
11. NEUTRALIZATION FILLING.						
12. NEUTRALIZATION VENT.						
13. NEUTRALIZATION DRAIN.						
14. PROVIDE REMOVABLE SECTION TO ALLOW REMOVAL OF BOTTOM HEAD.						
15. PIPING FROM HOT COMBINED FEED EXCHANGER TO CONTACT COOLER SHALL HAVE ONLY ONE LOW POINT POCKET.						
16. DETAIL "CCD", SEE DWG 3981-10-DE-PR-PID-017.						
17. LIP SEAL WELD REQUIRED, SEE PROJECT SPECIFICATION 3981100-801.						
18. MINIMIZE THE NUMBER OF FLANGES FROM REACTOR NO.4 OUTLET TO THE REACTOR EFFLUENT COMPRESSOR SUCTION.						
GENERAL NOTES:						
1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-053						
2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER(PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.						
HOLDS						
1. TYPE OF HEAT EXCHANGER, ITS NOZZLE DETAIL AND SIZE OF HX INLET/OUTLET NOZZLES						
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI	
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI	
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED	
OWNER:		MC:	CONTRACTOR/CONSULTANT:			
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PROJECT TITLE:						
PROPANE DEHYDROGENATION (PDH) PROJECT						
DOCUMENT TITLE:						
PIPING AND INSTRUMENT DIAGRAM						
HOT COMBINED FEED EXCHANGERS C/D						
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.
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SCALE:	SIZE: A1	SHEET NO. 1 OF 1		REVISION 01	CLASS: 1	



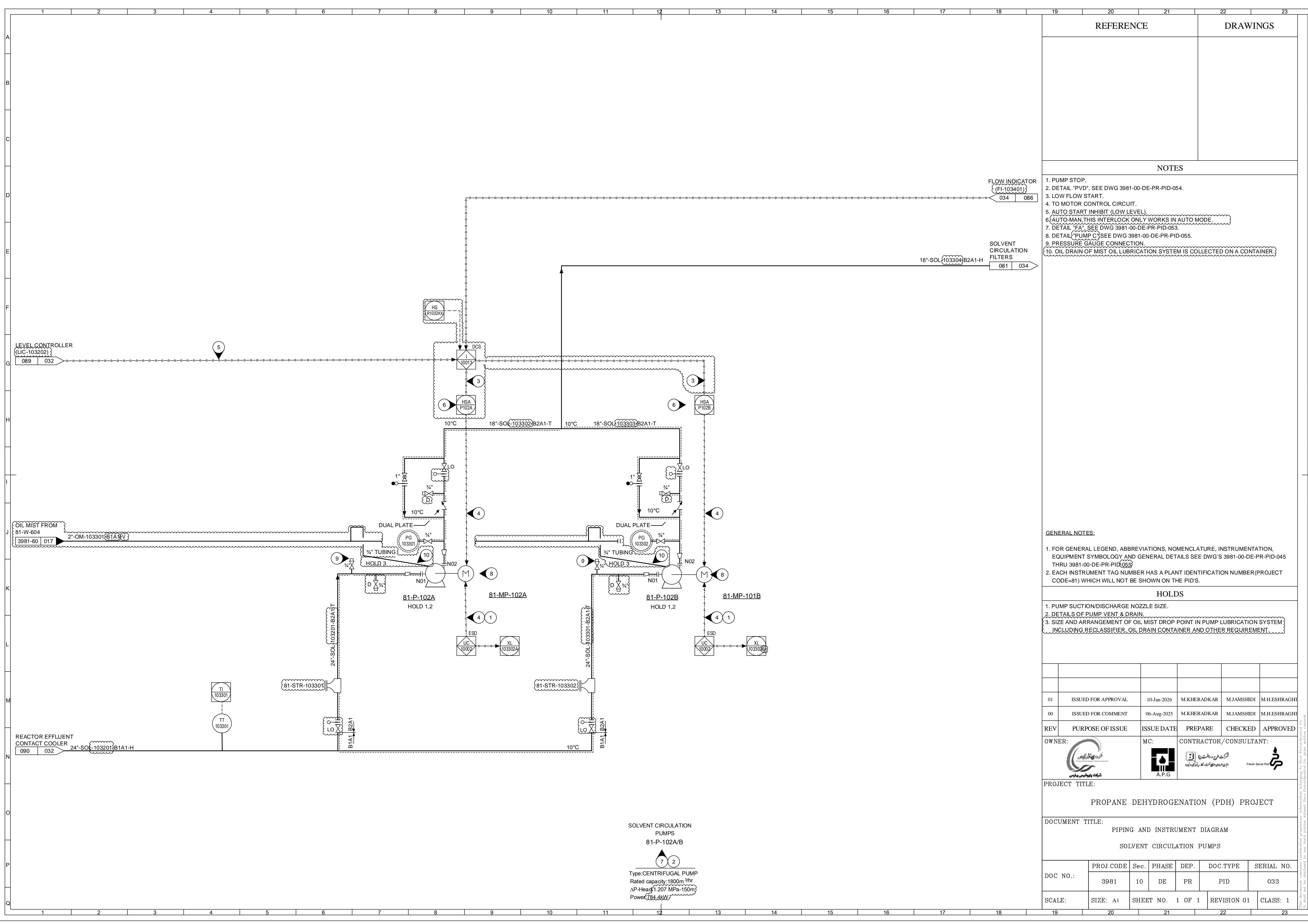
REFERENCE			DRAWINGS		
NOTES					
<div>1. BYPASS FOR TRUCK UNLOADING.</div> <div>2. SULFUR (DMDS) FROM TRUCK UNLOADING FACILITY.</div> <div>3. SEE STD DWG 8-121-6.</div> <div>4. DELETED</div> <div>5. LOCATE CLOSE TO THE LP STEAM HEADER.</div> <div>6. DETAIL "PUMP A", SEE DWG 3981-00-DE-PR-PID-055.</div> <div>7. PRESSURE GAUGE CONNECTION</div>					



19	20	21	22	23
REFERENCE			DRAWINGS	
NOTES				
1. LOCATE GAUGE GLASS AND VALVE MANIFOLD AT GRADE AS CLOSE TO PUMPS AS POSSIBLE WITH GAUGE GLASS READABLE FROM VALVES.				
2. LOCATE AT GRADE NEAR PUMP.				
3. DETAIL "PUMP A", SEE DWG 3981-00-DE-PR-PID-055.				
4. BY VENDOR.				

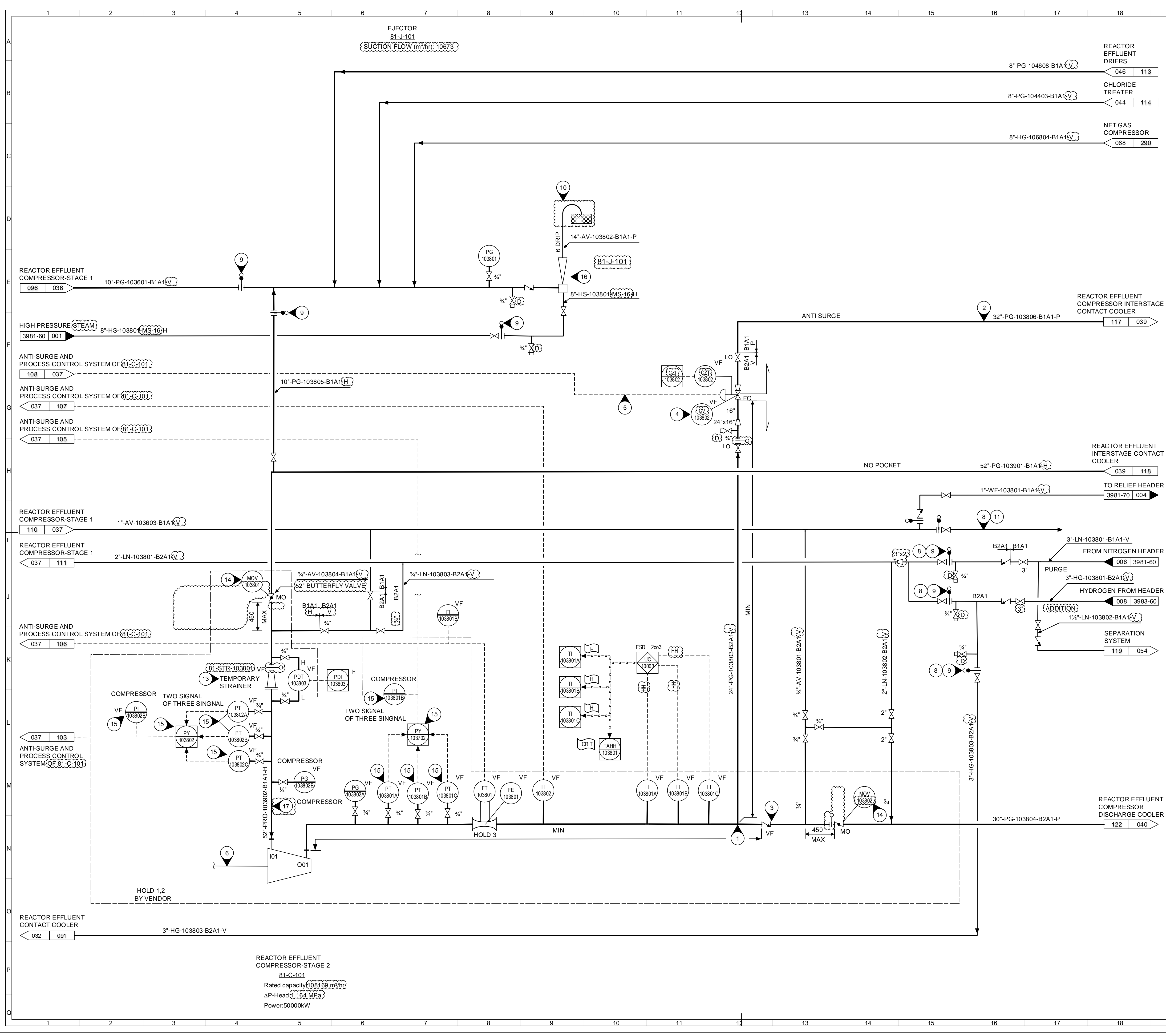


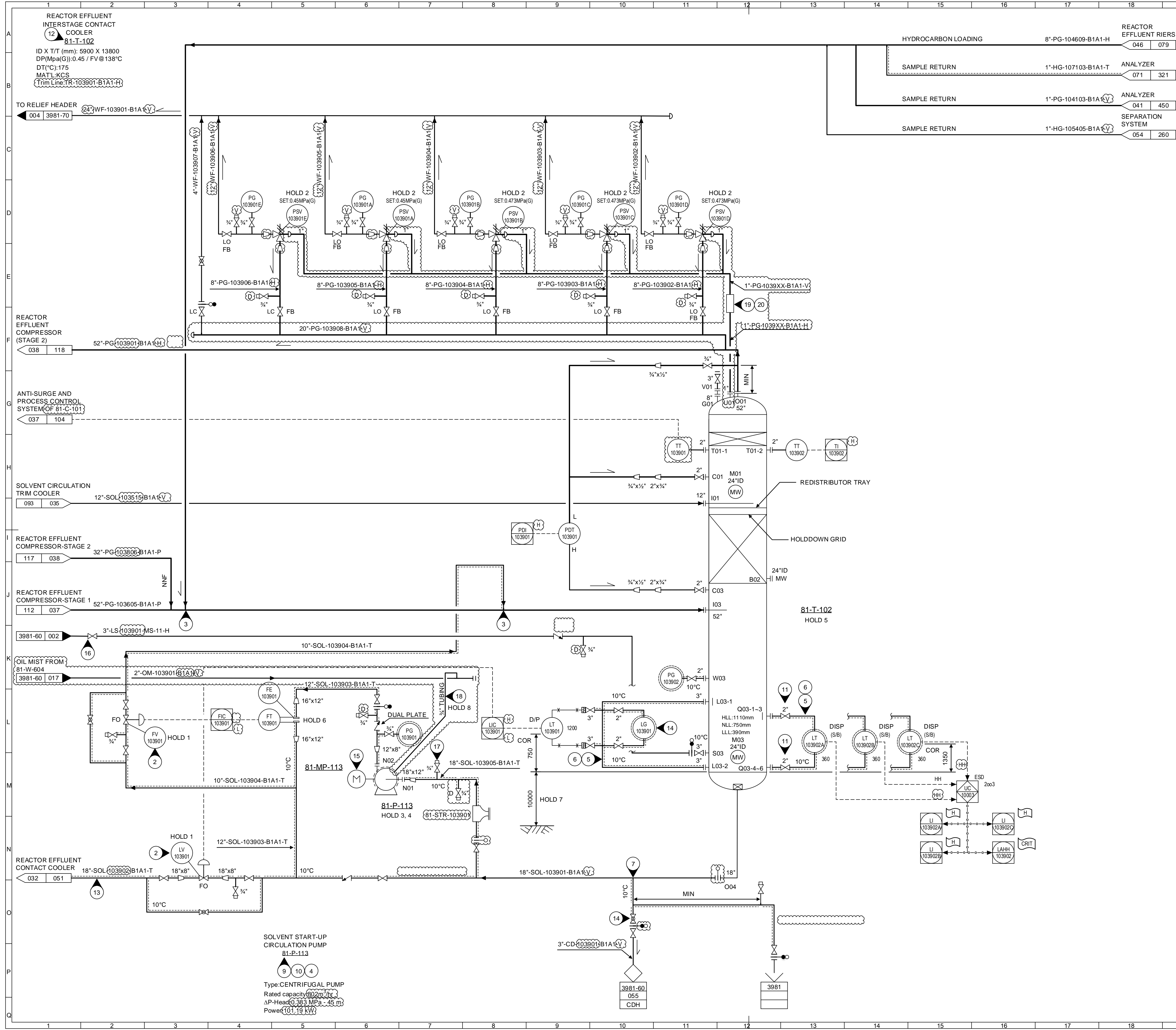
19	20	21	22	23		
REFERENCE			DRAWINGS			
NOTES						
<div>1. DELETE</div> <div>2. DETAIL "CV", SEE DWG 3981-00-DE-PR-PID-054</div> <div>3. LIP SEAL WELD REQUIRED, SEE PROJECT SPECIFICATION 3981100-801.</div> <div>4. DELETE</div> <div>5. SEE STD DWG 8-121-6</div> <div>6. DETAIL "LVD", SEE DWG 3981-00-DE-PR-PID-054</div> <div>7. MAKE CONNECTION ON BOTTOM OF PIPE AT LOW POINT</div> <div>8. DETAIL "CCD", SEE DWG 3981-10-DE-PR-PID-017</div> <div>9. FI MUST BE READABLE FROM VALVE</div> <div>10. FROM DETAIL "CCD" SEE DWG 3981-10-DE-PR-PID-017</div> <div>11. LOCAL PG REQUIRED BETWEEN THE PSV OUTLET AND DOWNSTREAM PSV ISOLATION VALVE TO CHECK LEAK ACROSS PSV</div> <div>12. LOCATE NEXT TO COMPRESSOR</div> <div>13. DESIGN FOR TWO PHASE FLOW</div> <div>14. FOR PRESSURE SURVEY</div> <div>15. DEPRESSURING, PURGING AND SAMPLE RETURN</div> <div>16. MAKE CONNECTION ON TOP OF PIPE</div> <div>17. PIPING MUST BE SYMMETRICAL</div> <div>18. 5 DISC AND DONUT PANS</div> <div>19. BLANK OFF WHEN NOT IN USE</div> <div>20. 1 SHOWN 3 REQUIRED</div> <div>21. CATALYST COLLECTOR NO 4 VENT AND VENT GAS FROM REDUCTION ZONE AND VENT/CCR GAS FROM REACTOR 4 SURGE POT</div> <div>22. MAKE CONNECTION ON TOP OF PIPE IN HORIZONTAL RUN.</div> <div>23. LOCATE CLOSE TO THE LP STEAM HEADER.</div> <div>24. GAUGE GLASS SHOULD BE READABLE FROM VALVE.</div>						
<div><div><p>DETAIL "D"</p></div><div><p>FLASH GAS</p><p>CL</p><p>DETAIL "A"</p><p>REQUIRED ONLY FOR COLD FLASH GAS</p></div></div>						
GENERAL NOTES:						
<div>1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-053</div> <div>2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER(PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PIDS.</div>						
HOLDS						
<div>1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/REDUCER</div> <div>2. PSV ORIFICE SIZE, ITS INLET/OUTLET LINE SIZE AND CORRESPONDING VESSEL NOZZLE SIZE.</div> <div>3. TOWER DIMENSION(IT SHALL BE CONFIRMED BY TRAY PACKING VENDOR)</div> <div>4. ELEVATION</div> <div>5. FLOWMETER CONNECTION SIZE</div>						
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI	
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI	
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED	
OWNER:		MC:	CONTRACTOR/CONSULTANT:			
PROJECT TITLE:						
PROPANE DEHYDROGENATION (PDH) PROJECT						
DOCUMENT TITLE:						
PIPING AND INSTRUMENT DIAGRAM						
REACTION SECTION - REACTOR EFFLUENT CONTACT COOLER						
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.
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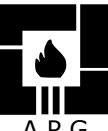
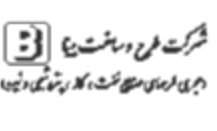


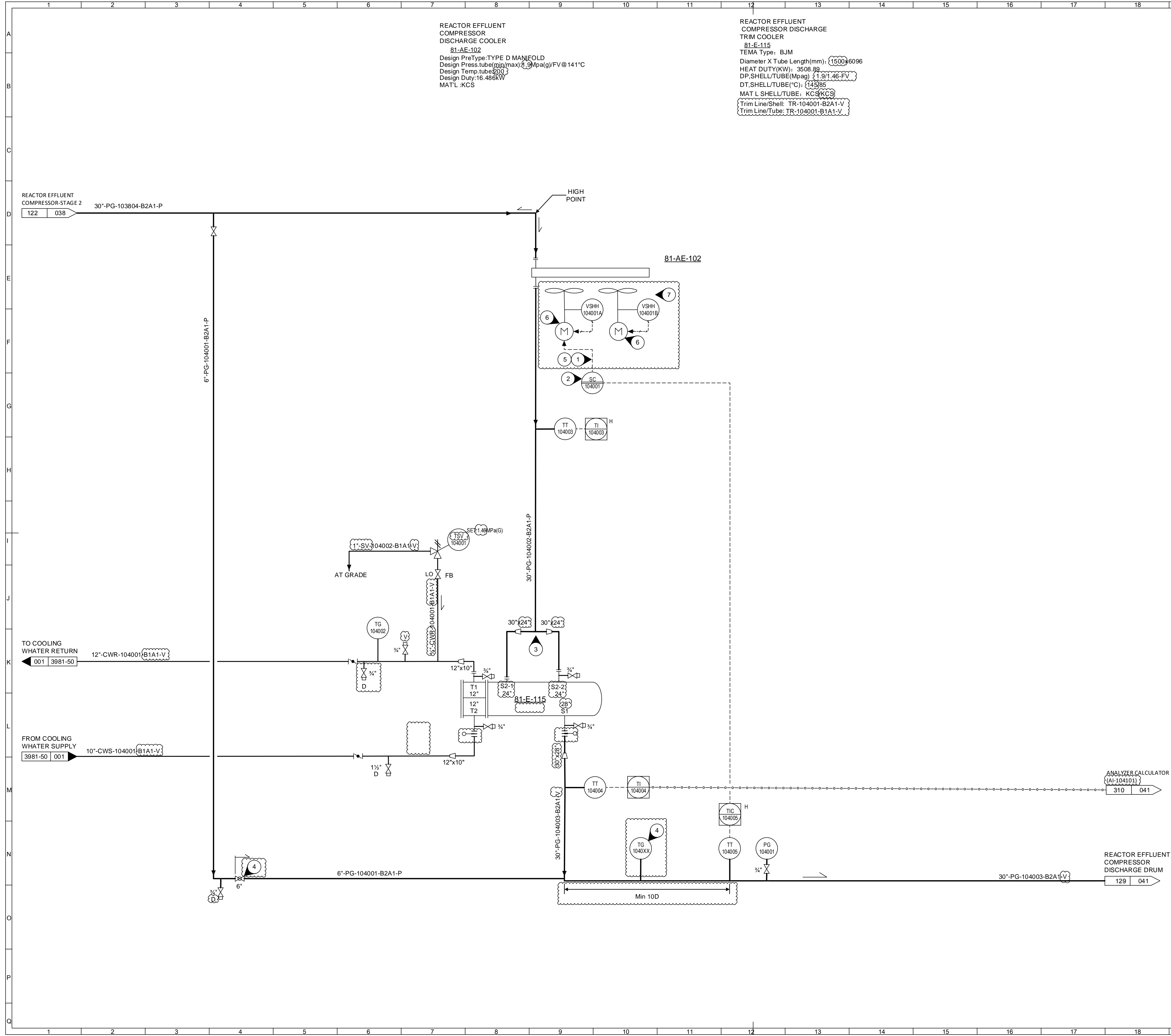
19	20	21	22	23		
REFERENCE			DRAWINGS			
NOTES						
1. PUMP STOP.						
2. DETAIL "PVD", SEE DWG 3981-00-DE-PR-PID-054.						
3. LOW FLOW START.						
4. TO MOTOR CONTROL CIRCUIT.						
5. AUTO START INHIBIT (LOW LEVEL).						
6. (AUTO-MAN, THIS INTERLOCK ONLY WORKS IN AUTO MODE.						
7. DETAIL "FA", SEE DWG 3981-00-DE-PR-PID-053.						
8. DETAIL "PUMP C" SEE DWG 3981-00-DE-PR-PID-055.						
9. PRESSURE GAUGE CONNECTION.						
10. OIL DRAIN OF MIST OIL LUBRICATION SYSTEM IS COLLECTED ON A CONTAINER.						
GENERAL NOTES:						
1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-053.						
2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER (PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.						
HOLDS						
1. PUMP SUCTION/DISCHARGE NOZZLE SIZE.						
2. DETAILS OF PUMP VENT & DRAIN.						
3. SIZE AND ARRANGEMENT OF OIL MIST DROP POINT IN PUMP LUBRICATION SYSTEM, INCLUDING RECLASSIFIER, OIL DRAIN CONTAINER AND OTHER REQUIREMENT.						
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI	
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI	
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED	
OWNER:		MC:	CONTRACTOR/CONSULTANT:			
PROJECT TITLE:		PROPANE DEHYDROGENATION (PDH) PROJECT				
DOCUMENT TITLE:						
PIPING AND INSTRUMENT DIAGRAM						
SOLVENT CIRCULATION PUMPS						
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.
	3981	10	DE	PR	PID	033
SCALE:	SIZE: A1		SHEET NO. 1 OF 1		REVISION 01	CLASS: 1

SOLVENT CIRCULATION PUMPS
81-P-102A/B
Type: CENTRIFUGAL PUMP
Rated capacity: 1800m³/hr
ΔP-Head: 1.207 MPa-150m
Power: 784 kW

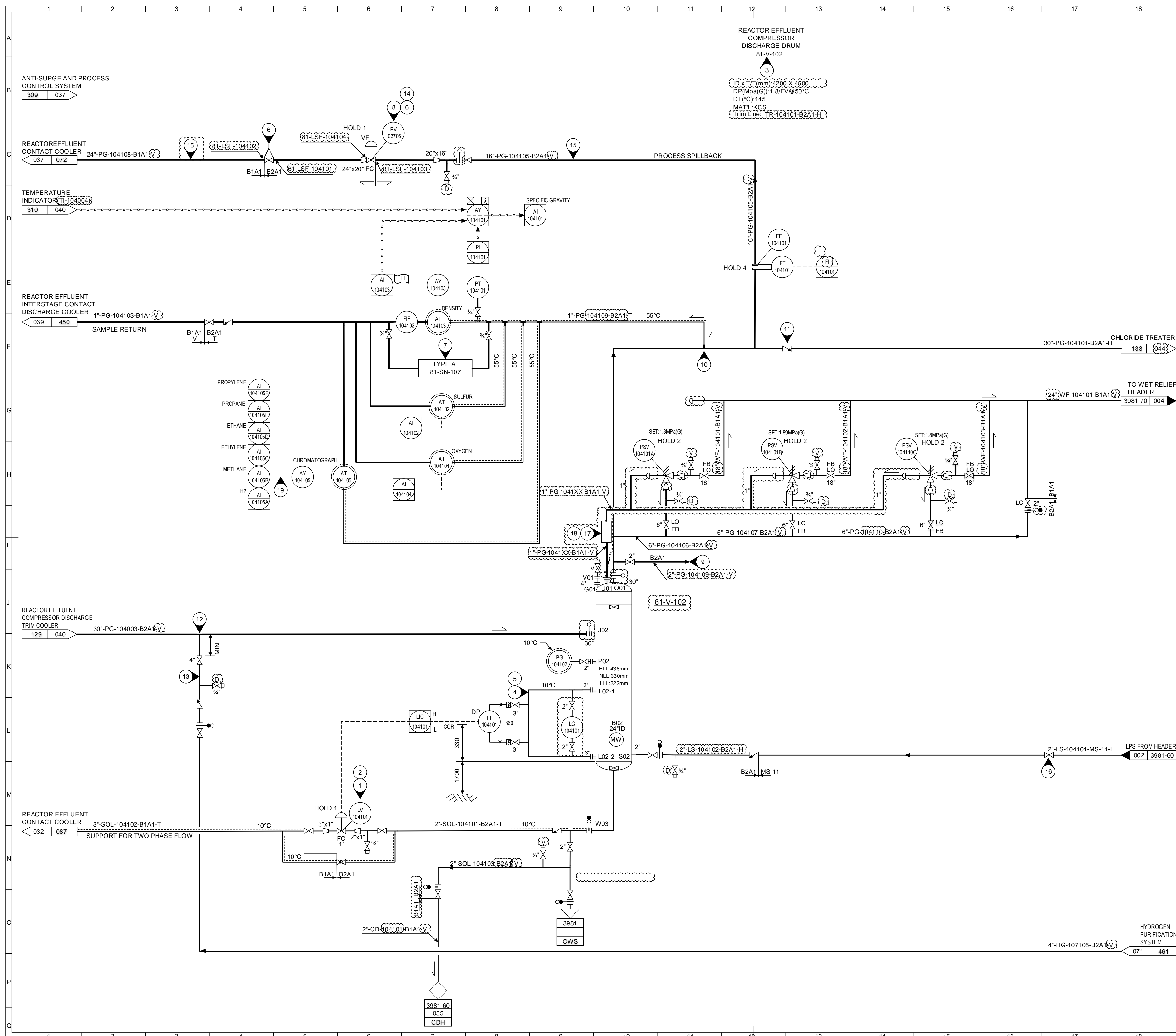







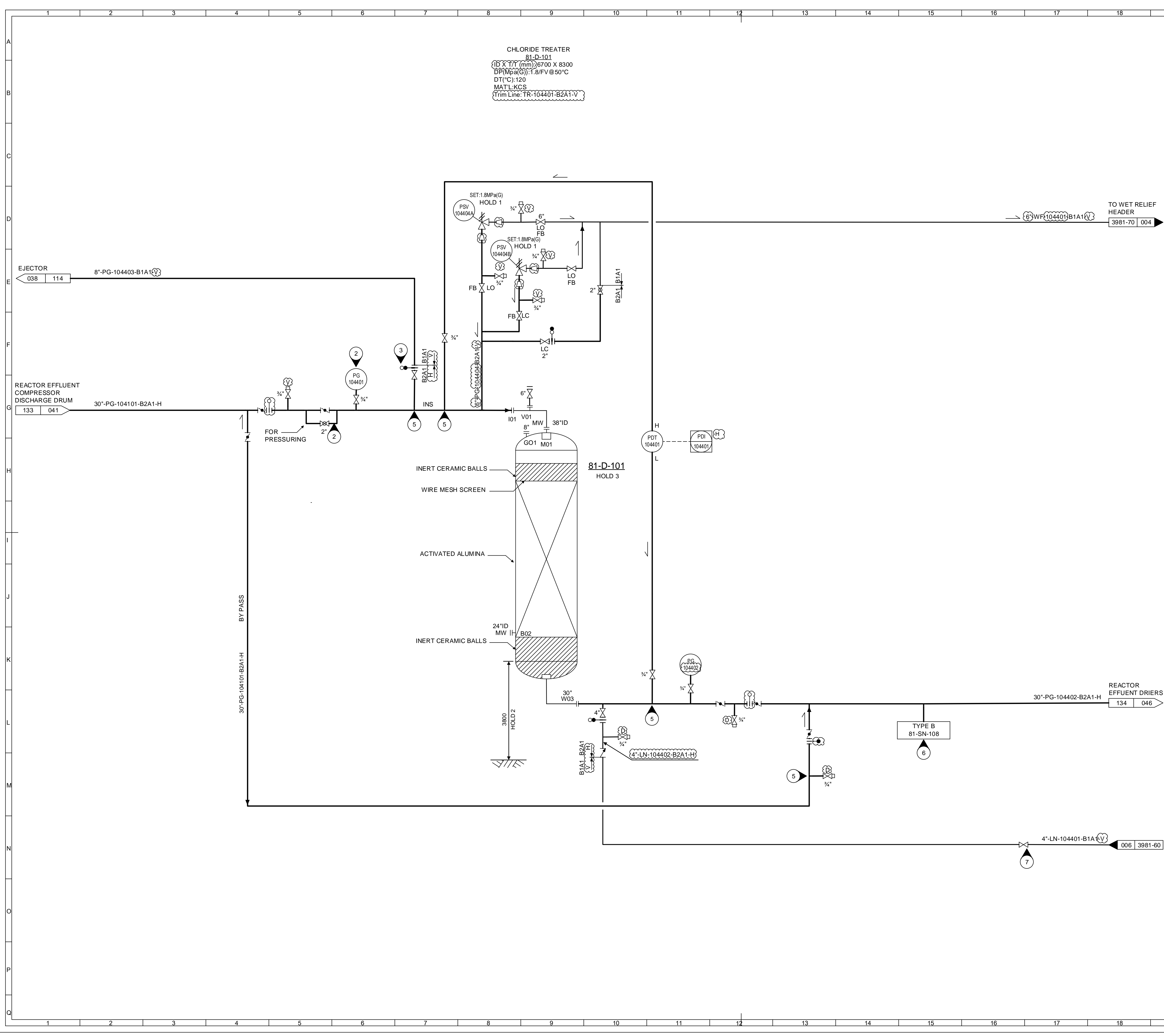
19	20	21	22	23		
REFERENCE			DRAWINGS			
NOTES						
1. DELETE						
2. DETAIL "CVD", SEE DWG 3981-00-DE-PR-PID-054						
3. MAKE CONNECTION ON TOP OF PIPE.						
4. FOR START-UP.						
5. SEE STD DWG 8-121-6.						
6. DETAIL "LVD", SEE DWG 3981-00-DE-PR-PID-054.						
7. MAKE CONNECTION ON BOTTOM OF PIPE AT LOW POINT.						
8. DELETED.						
9. DETAIL "TA", SEE DWG 3981-00-DE-PR-PID-052.						
10. DETAIL "PVD", SEE DWG 3981-00-DE-PR-PID-054.						
11. 1 SHOWN 3 REQUIRED.						
12. LOCATE NEXT TO COMPRESSOR.						
13. SUPPORT FOR TWO PHASE FLOW.						
14. GAUGE GLASS SHOULD BE READABLE FROM VALVE.						
15. DETAIL "PUMP A", SEE DWG 3981-00-DE-PR-PID-055.						
16. LOCATE CLOSE TO LP STEAM HEADER.						
17. PRESSURE GAUGE CONNECTION.						
18. OIL DRAIN OF MIST OIL LUBRICATION SYSTEM IS COLLECTED ON A CONTAINER.						
19. PILOT OPERATED SAFETY VALVE REMOTE SENSING SYSTEM						
20. BY PSV VENDOR						
GENERAL NOTES:						
1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055						
2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER (PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.						
HOLDS						
1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/REDUCER						
2. PSV ORIFICE SIZE, ITS INLET/OUTLET LINE SIZE AND CORRESPONDING VESSEL NOZZLE SIZE						
3. PUMP SUCTION & DISCHARGE NOZZLE SIZE						
4. DETAIL OF PUMP VENT & DARIN						
5. TOWER DIMENSION (IT SHALL BE CONFIRMED BY TRAY PACKING VENDOR).						
6. FLOWMETER CONNECTION SIZE.						
7. ELEVATION						
8. SIZE AND ARRANGEMENT OF OIL MIST DROP POINT IN PUMP LUBRICATION SYSTEM INCLUDING RECLASSIFIER, OIL DRAIN CONTAINER AND OTHER REQUIREMENT.						
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAHGH	
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAHGH	
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED	
OWNER:		MC:	CONTRACTOR/CONSULTANT:			
						
PROJECT TITLE:						
PROPANE DEHYDROGENATION (PDH) PROJECT						
DOCUMENT TITLE:						
PIPING AND INSTRUMENT DIAGRAM						
REACTOR EFFLUENT INTERSTAGE CONTACT COOLER						
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.
	3981	10	DE	PR	PID	039
SCALE:	SIZE: A1	SHEET NO. 1 OF 1		REVISION 01		CLASS: 1
19	20	21	22			23



19	20	21	22	23		
REFERENCE			DRAWINGS			
NOTES						
1. TO VARIABLE SPEED MOTOR CONTROL CIRCUIT. 2. SWITCHGEAR (FURNISHED WITH MOTOR). 3. OUTLET PIPING OF AIR COOLER MUST BE SYMMETRICAL. 4. TG MUST BE READABLE FROM VALVE 5. ONE-HALF (1/2) OF THE FANS IN THE AIR BAY SHALL HAVE A VARIBLE SPEED DRIVE SYSTEM. 6.FAN MOTOR SIGNALS:						
<div><div><div><div><div>M</div></div></div><div><div><div></div><div>MCC</div></div></div><div><div><div></div><div></div><div></div><div></div><div></div></div><div><div>PBST</div><div>PBSP</div><div>XI</div><div>XA</div><div>XRS</div></div><div><div>AE102</div><div>AE102</div><div>AE102</div><div>AE102</div><div>AE102</div></div><div><div>START</div><div>STOP</div><div>RUNNING/ STOP</div><div>FAULT</div><div>READY TO START</div></div></div></div></div>						
7. ALL AIR COOLER FANS HAVE VSHH.						
GENERAL NOTES:						
1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-053 2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER(PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.						
HOLDS						
{1. DELETED} {2. DELETED}						
3. NUMBER OF BAYS, FANS, SIZE OF NOZZLES AND DETAILS OF VENT/DRAIN.						
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI	
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI	
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED	
OWNER:		MC:	CONTRACTOR/CONSULTANT:			
PROJECT TITLE:						
PROPANE DEHYDROGENATION (PDH) PROJECT						
DOCUMENT TITLE:						
PIPING AND INSTRUMENT DIAGRAM						
REACTOR EFFLUENT COMPRESSOR DISCHARGE COOLER						
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.
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SCALE:	SIZE: A1		SHEET NO. 1 OF 1		REVISION 01	CLASS: 1
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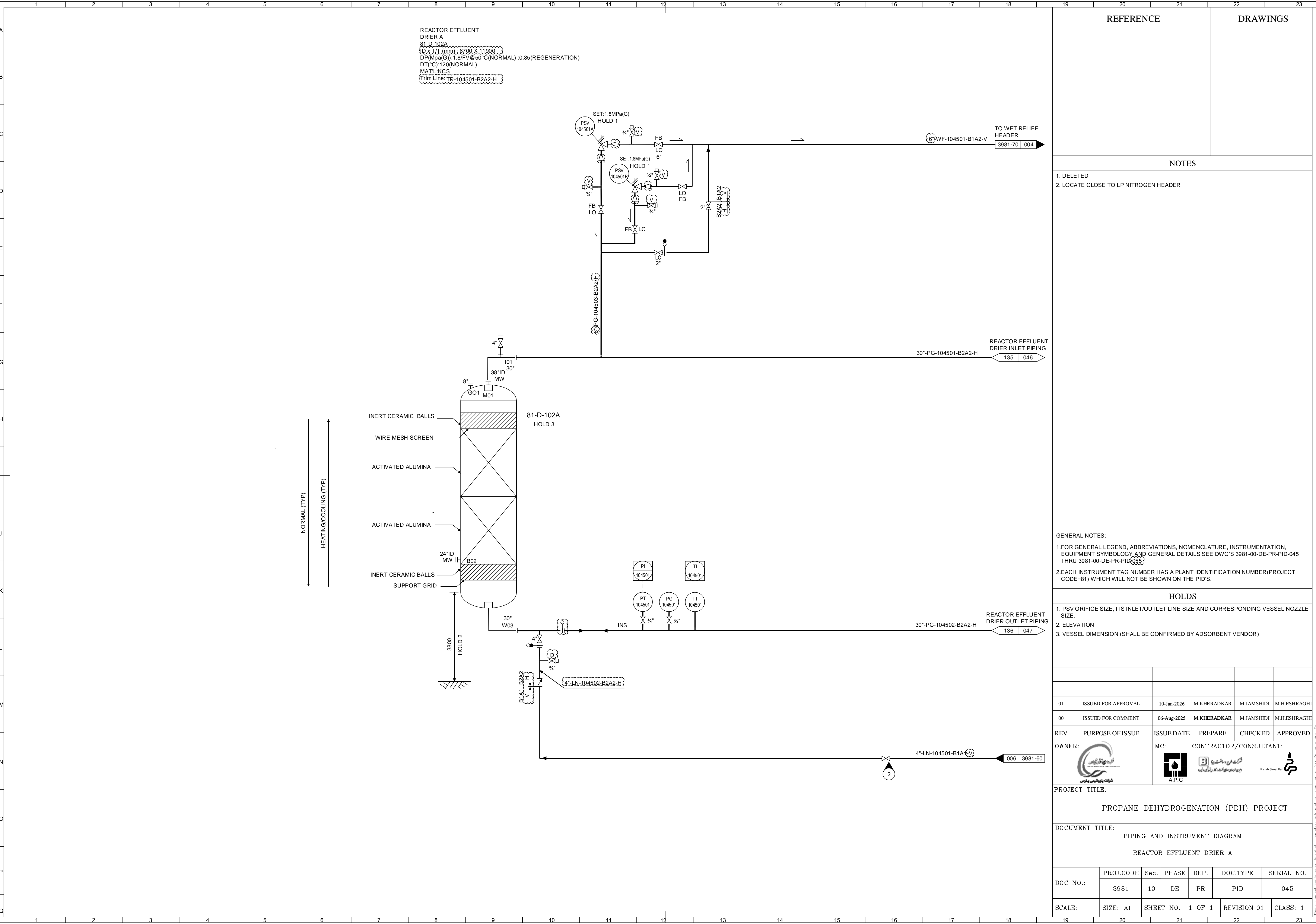


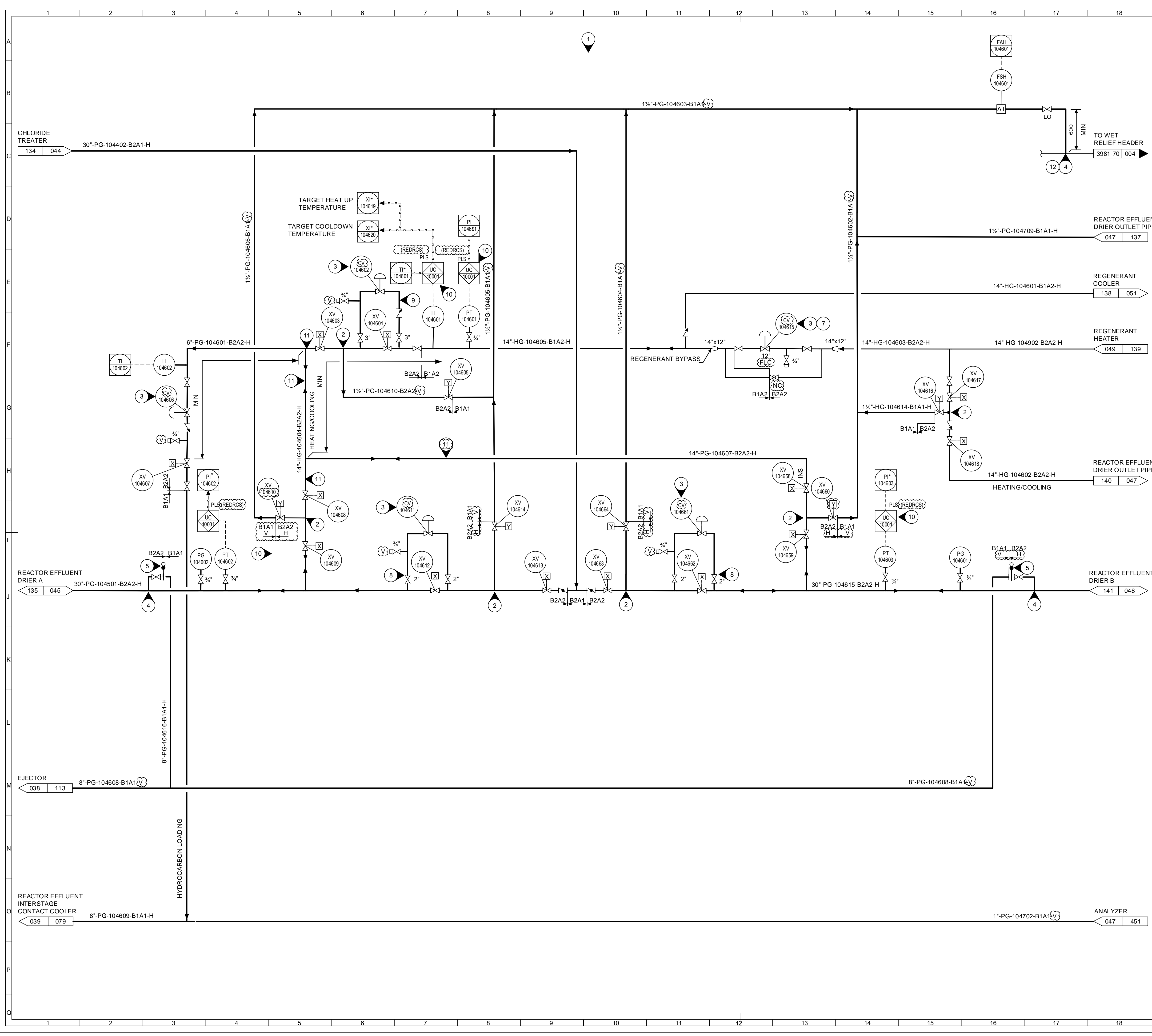
19	20	21	22	23						
REFERENCE			DRAWINGS							
<div>NOTES</div> <div>1. LOCATE AT GRADE CLOSE TO REACTOR EFFLUENT COMPRESSOR DISCHARGE DRUM.</div> <div>2. DETAIL "CVD", SEE DWG 3981-00-DE-PR-PID-054.</div> <div>3. LOCATE AS CLOSE TO REACTOR EFFLUENT COMPRESSOR AS POSSIBLE</div> <div>4. SEE STD DWG 8-121-6</div> <div>5. DETAIL "LVD", SEE DWG 3981-00-DE-PR-PID-054</div> <div>6. LP SEAL WELD REQUIRED, SEE PROJECT SPECIFICATION 3981100-801.</div> <div>7. WITH DETECTOR TUBE SAMPLE. DETAIL "DT", SEE DWG 3981-00-DE-PR-PID-050</div> <div>8. DETAIL "CV", SEE DWG 3981-00-DE-PR-PID-054</div> <div>9. 2" PIPING TO DETAIL "CCD" IF REQUIRED, SEE DWG 3981-10-DE-PR-PID-017</div> <div>10. MAKE CONNECTION ON TOP OR SIDE OF PIPE</div> <div>11. DUAL PLATE CHECK VALVE</div> <div>12. MAKE CONNECTION ON TOP OF PIPE</div> <div>13. START-UP SPILLBACK</div> <div>14. SUPPLIER BY VENDOR</div> <div>15. SUPPLIER BY VENDOR</div> <div>16. LOCATE CLOSE TO LP STEAM HEADER</div> <div>17. PILOT OPERATED SAFETY VALVE REMOTE SENSING SYSTEM</div> <div>18. BY PSV VENDOR</div> <div>19. EACH PARAMETER HAS DEDICATED SIGNAL.</div>										
					GENERAL NOTES:					
					1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID055 }					
					2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER(PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.					
					HOLDS					
					1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/ REDUCER					
					2. PSV ORIFICE SIZE, ITS INLET/OUTLET LINE SIZE AND CORRESPONDING VESSEL NOZZLE					
					3. ELEVATION					
					4. FLOWMETER CONNECTION SIZE					
					01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	MJAMSHIDI	M.H.ESHRAHGI
					00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	MJAMSHIDI	M.H.ESHRAHGI
					REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED
					OWNER:		MC:	CONTRACTOR /CONSULTANT:		
										
					PROJECT TITLE:					
PROPANE DEHYDROGENATION (PDH) PROJECT										
DOCUMENT TITLE:										
PIPING AND INSTRUMENT DIAGRAM										
REACTOR EFFLUENT COMPRESSOR DISCHARGE DRUM										
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.				
	3981	10	DE	PR	PID	041				
SCALE:	SIZE: A1	SHEET NO. 1 OF 1			REVISION 01	CLASS: 1				



REFERENCE		DRAWINGS																					
NOTES																							
<div>1. DELETE</div> <div>2. PG MUST BE READABLE FROM VALVE</div> <div>3. BLANKOFF WHEN NOT IN USE</div> <div>4. DELETE</div> <div>5. MAKE CONNECTION ON TOP OF PIPE</div> <div>6. WITH DETECTOR TUBE SAMPLE. DETAIL "DT", SEE DWG 3981-00-DE-PR-PID-050</div> <div>7. LOCATE CLOSE TO LP NITROGEN HEADER</div>																							
GENERAL NOTES:																							
<div>1.FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-053</div> <div>2.EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER(PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.</div>																							
HOLDS																							
<div>1.PSV ORIFICE SIZE, ITS INLET/OUTLET LINE SIZE AND CORRESPONDING VESSEL NOZZLE SIZE.</div> <div>2.ELEVATION</div> <div>3.VESSEL DIMENSION (SHALL BE CONFIRMED BY ADSORBENT VENDOR)</div>																							
<table border="1"><thead><tr><th>REV</th><th>PURPOSE OF ISSUE</th><th>ISSUE DATE</th><th>PREPARE</th><th>CHECKED</th><th>APPROVED</th></tr></thead><tbody><tr><td>01</td><td>ISSUED FOR APPROVAL</td><td>10-Jan-2026</td><td>M.KHERADKAR</td><td>M.JAMSHIDI</td><td>M.H.ESHRAGHI</td></tr><tr><td>00</td><td>ISSUED FOR COMMENT</td><td>06-Aug-2025</td><td>M.KHERADKAR</td><td>M.JAMSHIDI</td><td>M.H.ESHRAGHI</td></tr></tbody></table>						REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED	01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI	00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
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OWNER: <div></div>		MC: <div></div>		CONTRACTOR/CONSULTANT: <div></div>																			
PROJECT TITLE: <div>PROPANE DEHYDROGENATION (PDH) PROJECT</div>																							
DOCUMENT TITLE: <div>PIPING AND INSTRUMENT DIAGRAM</div> <div>CHLORIDE TREATER</div>																							
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SCALE:	SIZE: A1	SHEET NO. 1 OF 1		REVISION 01	CLASS: 1																		

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REFERENCE

DRAWINGS

NOTES

1. LOCATE VALVE SWITCHING MANIFOLD AT LOWER PLATFORM.

2. SEE DETAIL "Z".

3. DETAIL "V", SEE DWG 3981-10-DE-PR-PID-018.

4. MAKE CONNECTION ON TOP OF PIPE.

5. BLANK OFF WHEN NOT IN USE.

6. SIZE BY OTHERS.

7. DETAIL "CV", SEE DWG 3981-00-DE-PR-PID-054.

8. FOR PRESSURING.

9. FOR INITIAL PURGING.

10. DETAIL "W", SEE DWG 3981-10-DE-PR-PID-018.

11. INSULATE LINE TO T1.

12. CONNECT TO THE TOP OF THE NEARBY HEADER.

PPS = PREFERRED PRESSURE SIDE

PPS

MIN

PPS

DETAIL "Z"

TYPICAL DETAIL FOR FREE DRAINING DOUBLE BLOCK AND BLEED ARRANGEMENT AT DRIERS

X

Y

FOR DETAILED INFORMATION
SEE DETAILS X AND Y
LOCATED ON UNIT SPECIFIC
DETAILS AND NOTES P&ID

GENERAL NOTES:

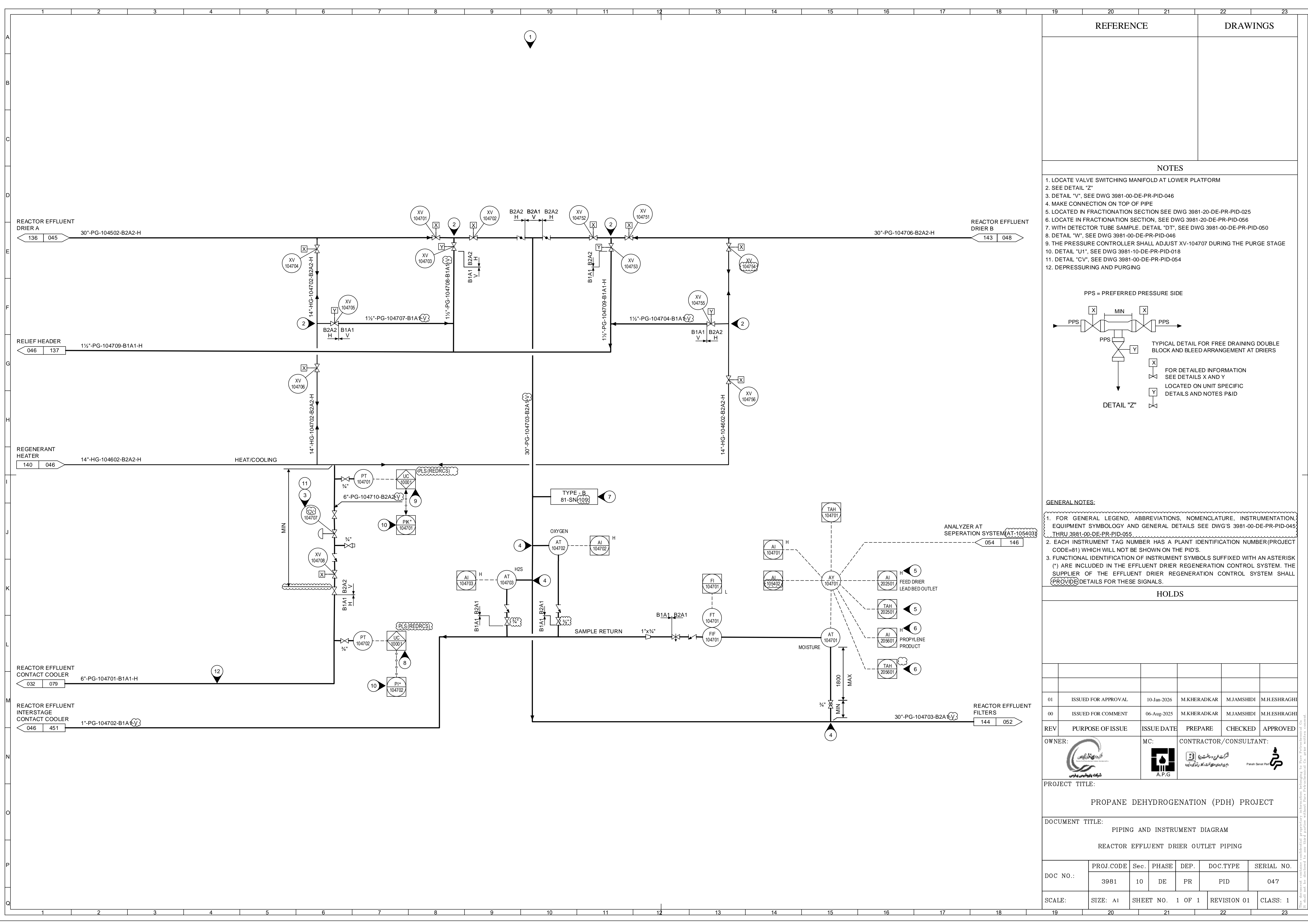
1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055

2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER (PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.

3. FUNCTIONAL IDENTIFICATION OF INSTRUMENT SYMBOLS SUFFIXED WITH AN ASTERISK (*) ARE INCLUDED IN THE EFFLUENT DRIER REGENERATION CONTROL SYSTEM. THE SUPPLIER OF THE EFFLUENT DRIER REGENERATION CONTROL SYSTEM SHALL PROVIDE DETAILS FOR THESE SIGNALS.

HOLDS

01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAHGH
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAHGH
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED
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PROPANE DEHYDROGENATION (PDH) PROJECT					
DOCUMENT TITLE:					
PIPING AND INSTRUMENT DIAGRAM					
REACTOR EFFLUENT DRIER INLET PIPING					
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE
	3981	10	DE	PR	PID
SCALE:	SIZE: A1	SHEET NO. 1 OF 1		REVISION 01	CLASS: 1



REFERENCE

DRAWINGS

NOTES

1. LOCATE VALVE SWITCHING MANIFOLD AT LOWER PLATFORM

2. SEE DETAIL "Z"

3. DETAIL "V", SEE DWG 3981-00-DE-PR-PID-046

4. MAKE CONNECTION ON TOP OF PIPE

5. LOCATED IN FRACTIONATION SECTION SEE DWG 3981-20-DE-PR-PID-025

6. LOCATE IN FRACTIONATION SECTION, SEE DWG 3981-20-DE-PR-PID-056

7. WITH DETECTOR TUBE SAMPLE. DETAIL "DT", SEE DWG 3981-00-DE-PR-PID-050

8. DETAIL "W", SEE DWG 3981-00-DE-PR-PID-046

9. THE PRESSURE CONTROLLER SHALL ADJUST XV-104707 DURING THE PURGE STAGE

10. DETAIL "U1", SEE DWG 3981-10-DE-PR-PID-018

11. DETAIL "CV", SEE DWG 3981-00-DE-PR-PID-054

12. DEPRESSURING AND PURGING

PPS = PREFERRED PRESSURE SIDE

MIN

PPS

PPS

PPS

PPS

TYPICAL DETAIL FOR FREE DRAINING DOUBLE BLOCK AND BLEED ARRANGEMENT AT DRIERS

X

Y

FOR DETAILED INFORMATION SEE DETAILS X AND Y

LOCATED ON UNIT SPECIFIC DETAILS AND NOTES P&ID

DETAIL "Z"

GENERAL NOTES:

1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055

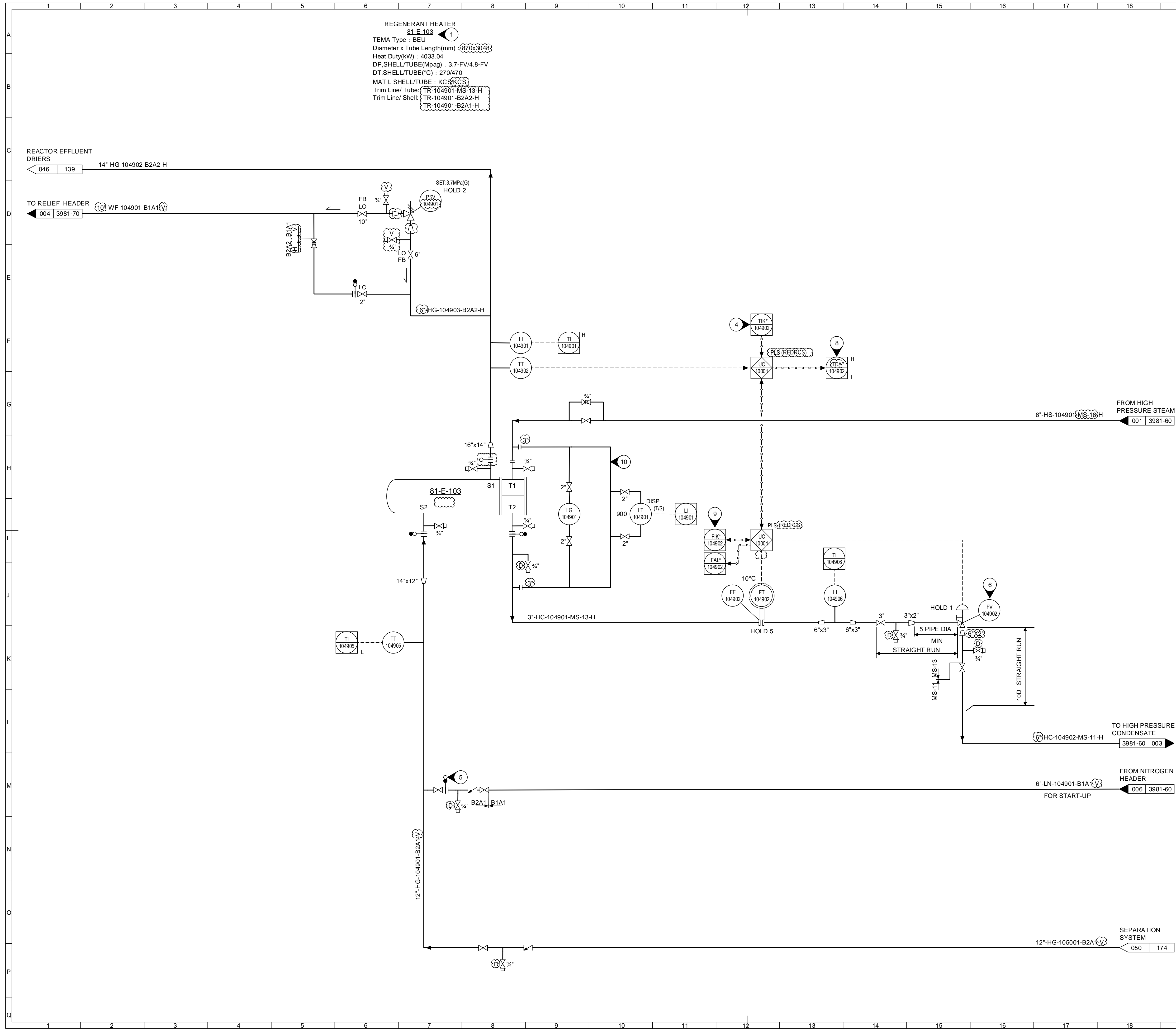
2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER (PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.

3. FUNCTIONAL IDENTIFICATION OF INSTRUMENT SYMBOLS SUFFIXED WITH AN ASTERISK (*) ARE INCLUDED IN THE EFFLUENT DRIER REGENERATION CONTROL SYSTEM. THE SUPPLIER OF THE EFFLUENT DRIER REGENERATION CONTROL SYSTEM SHALL PROVIDE DETAILS FOR THESE SIGNALS.

HOLDS

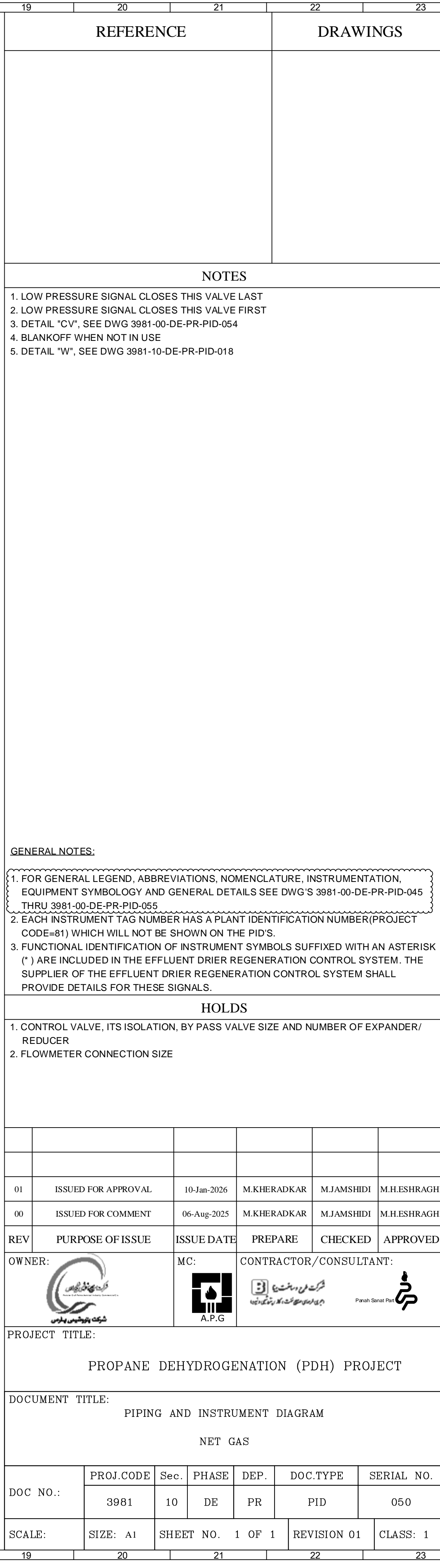
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REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED
OWNER:		MC:		CONTRACTOR/CONSULTANT:	
PROJECT TITLE:					
PROPANE DEHYDROGENATION (PDH) PROJECT					
DOCUMENT TITLE:					
PIPING AND INSTRUMENT DIAGRAM					
REACTOR EFFLUENT DRIER OUTLET PIPING					
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE
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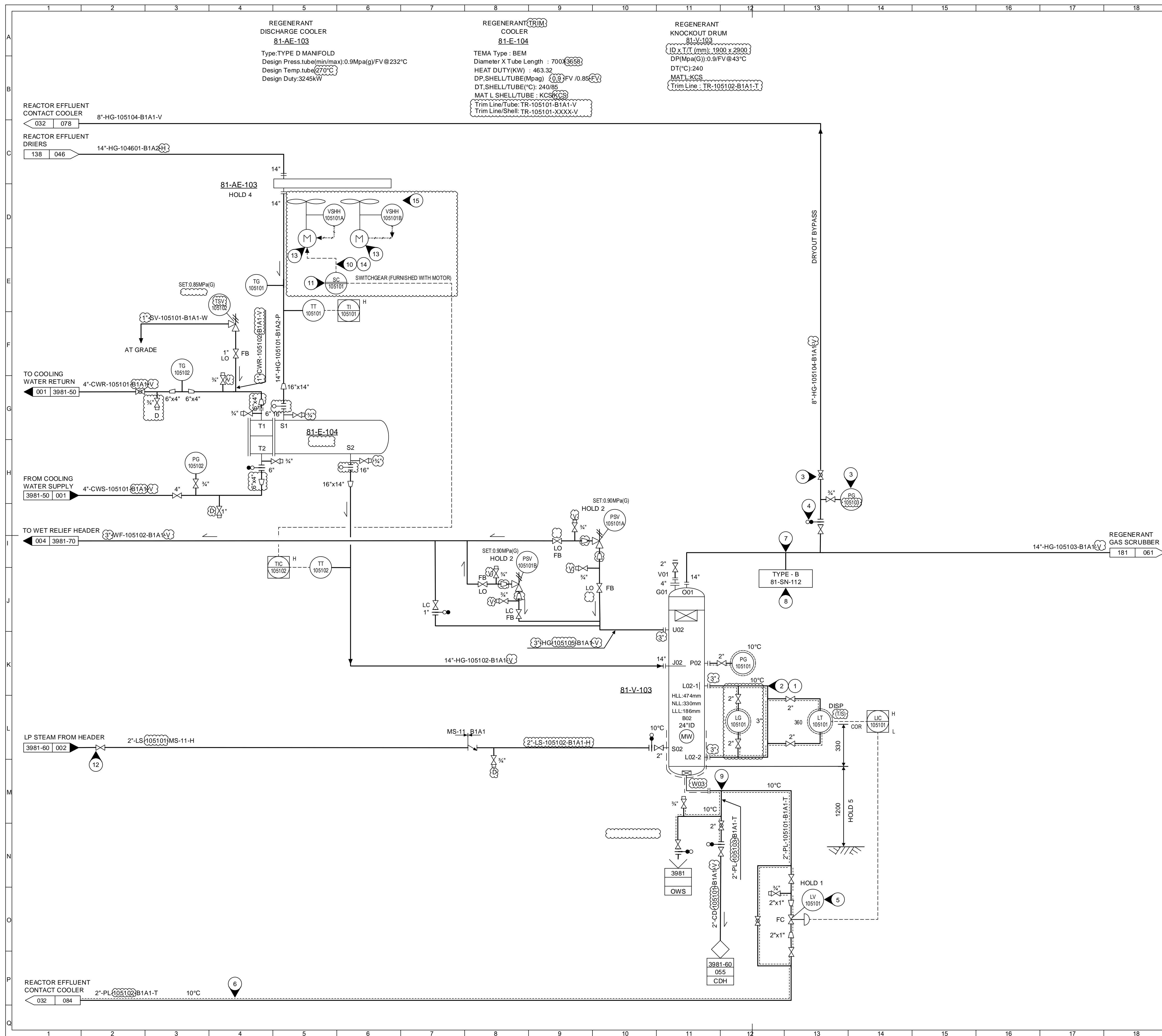
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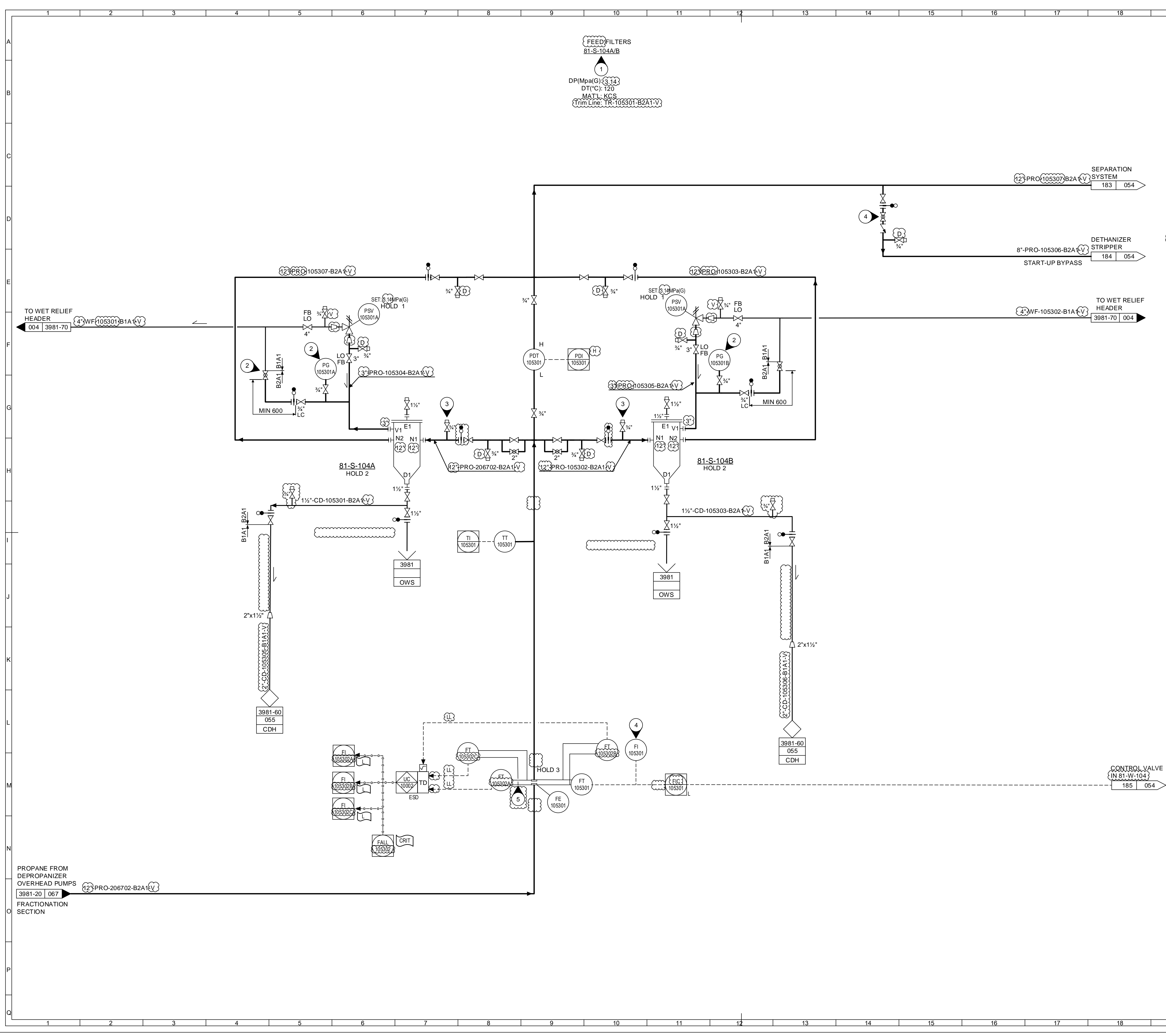
19	20	21	22	23	
REFERENCE			DRAWINGS		
NOTES					
1. LOCATE AS CLOSE TO REACTOR EFFLUENT DRIERS					
2. DELETED					
3. DELETED					
4. DETAIL "U3", SEE DWG 3981-10-DE-PR-PID-018					
5. BLANKOFF WHEN NOT IN USE					
6. LOCATE ORIFICE FLANGES AND ORIENT CONTROL VALVE INLET AND OUTLET PIPING ASSEMBLY IN HORIZONTAL RUN AT HEATER					
7. DELETE					
8. DEVIATION FROM SETPOINT ALARM					
9. DETAIL "U2", SEE DWG 3981-10-DE-PR-PID-018					
10. SEE STD DWG 8-121					
					GENERAL NOTES:
1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-048 THRU 3981-00-DE-PR-PID-055.					
2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER(PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.					
3. FUNCTIONAL IDENTIFICATION OF INSTRUMENT SYMBOLS SUFFIXED WITH AN ASTERISK (*) ARE INCLUDED IN THE EFFLUENT DRIER REGENERATION CONTROL SYSTEM. THE SUPPLIER OF THE EFFLUENT DRIER REGENERATION CONTROL SYSTEM SHALL PROVIDE DETAILS FOR THESE SIGNALS.					
HOLDS					
1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/REDUCER					
2. PSV ORIFICE SIZE, ITS INLET/OUTLET LINE SIZE AND CORRESPONDING VESSEL NOZZLE SIZE					
3. DELETED					
4. ELEVATION					
5. FLOWMETER CONNECTION SIZE					
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OWNER:		MC:	CONTRACTOR/CONSULTANT:		
PROJECT TITLE:					
PROPANE DEHYDROGENATION (PDH) PROJECT					
DOCUMENT TITLE:					
PIPING AND INSTRUMENT DIAGRAM					
REGENERANT HEATER					
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE
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SCALE:	SERIAL NO.				
	049				
SCALE:	SHEET NO.		REVISION		CLASS:
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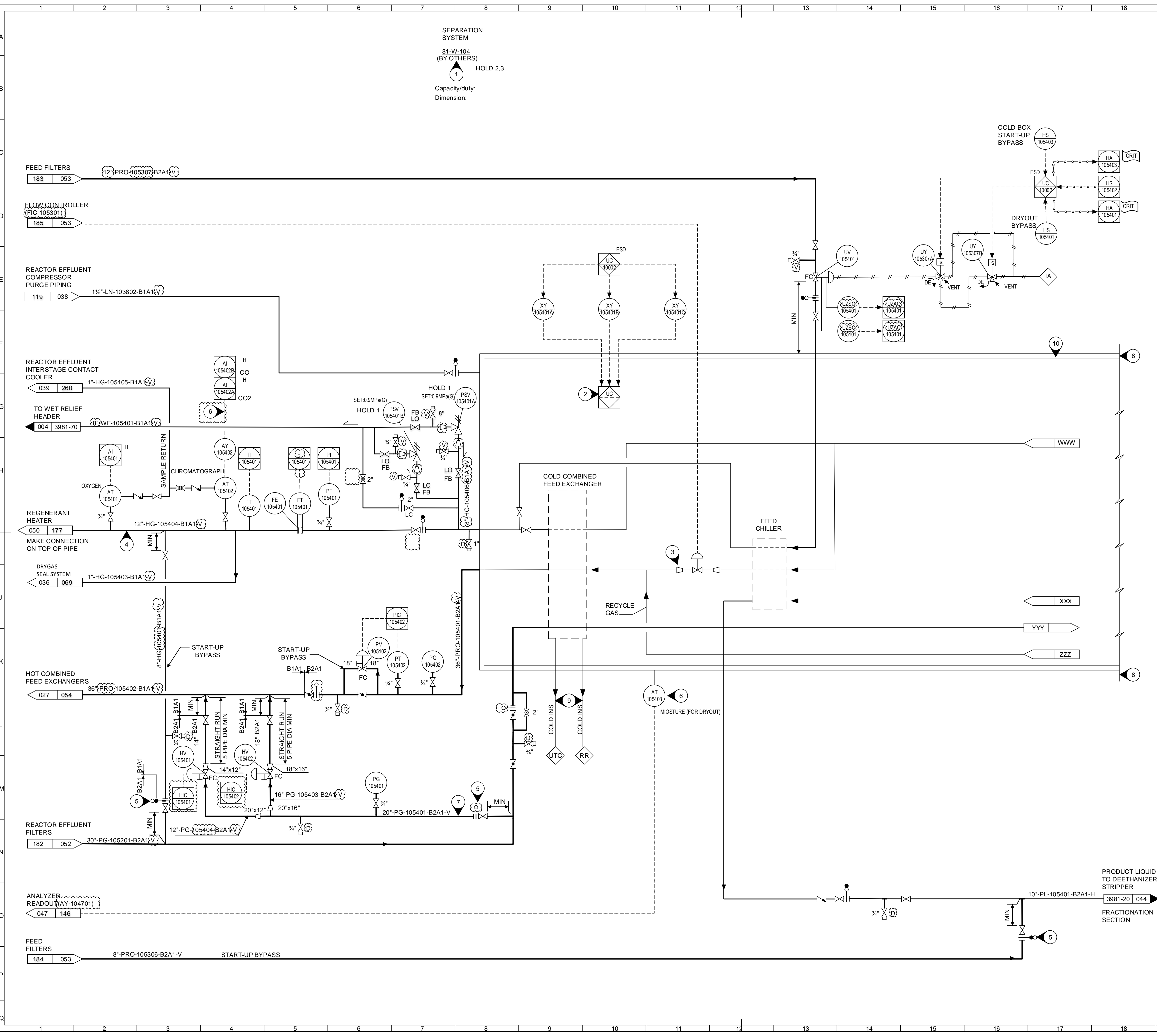




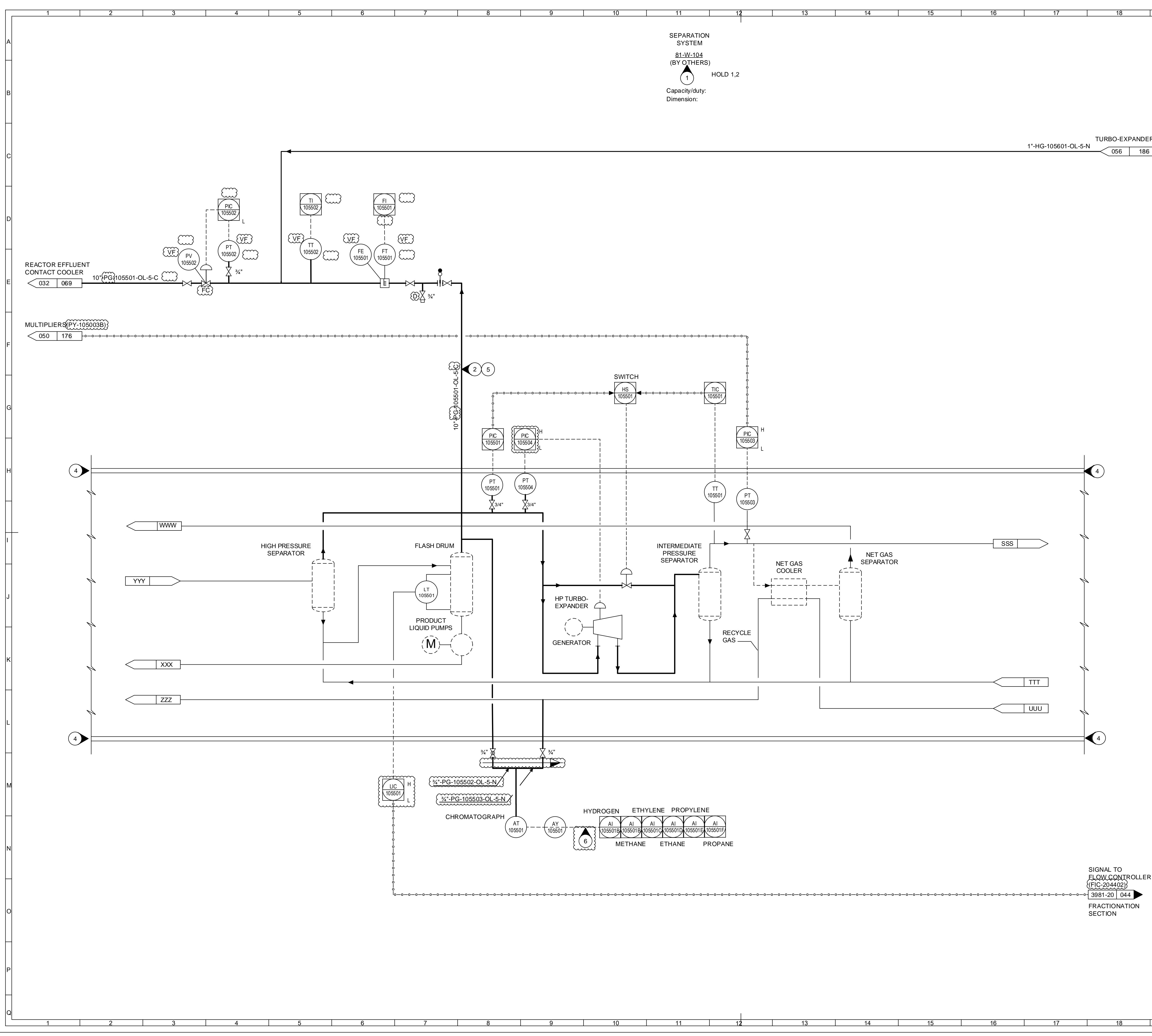
19	20	21	22	23
REFERENCE			DRAWINGS	
NOTES				
<div>1. DETAIL "LVD", SEE DWG 3981-00-DE-PR-PID-054.</div> <div>2. SEE STD DWG 8-121-6.</div> <div>3. PG MUST BE READABLE FROM VALVE.</div> <div>4. BLANKOFF WHEN NOT IN USE.</div> <div>5. DETAIL "CVD", SEE DWG 3981-00-DE-PR-PID-054.</div> <div>6. INTERMITTENT FLOW.</div> <div>7. MAKE CONNECTION ON TOP OF PIPE.</div> <div>8. WITH DETECTOR TUBE SAMPLE, DETAIL "DT", SEE DWG 3981-00-DE-PR-PID-050.</div> <div>9. MAKE CONNECTION ON BOTTOM OF PIPE AT LOW POINT.</div> <div>10. ONE-HALF (½) OF THE FANS IN THE AIR BAY SHALL HAVE A VARIABLE SPEED DRIVE SYSTEM.</div> <div>11. SWITCHGEAR (FURNISHED WITH MOTOR).</div> <div>12. LOCATE CLOSE TO LP STEAM HEADER.</div> <div>13. FAN MOTOR SIGNALS:</div> <div><div><div><div><div>M</div><div></div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><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19	20	21	22	23
REFERENCE			DRAWINGS	
NOTES				
1. LOCATE AS CLOSE TO SEPARATION SYSTEM AS POSSIBLE. 2. PG MUST BE READABLE FROM VALVE. 3. NITROGEN PURGE CONNECTION. 4. FI MUST BE READABLE FROM VALVE. 5. DEDICATED TAPPING FOR EACH FT ARE CONSIDERED ON ORIFICE FLANGE.				
</				



19	20	21	22	23		
REFERENCE			DRAWINGS			
NOTES						
1. INSTRUMENTATION WITHIN SEPARATION SYSTEM BOX TO BE DESIGNED BY SYSTEM SUPPLIER.						
5. SHUTDOWN SYSTEM (FURNISHED WITH SEPARATION SYSTEM).						
3. SUPPLIER PROVIDE STRAIGHT RUN OF REDUCED DIAMETER PIPING TO REDUCE VALVE VIBRATION.						
4. MAKE CONNECTION ON TOP OF PIPE.						
5. BLANKOFF WHEN NOT IN USE.						
6. SEE PROJECT SPECIFICATION 3981100-994 ANALYZER SAMPLING LOCATION TO BE PROVIDED BY SEPARATION SYSTEM.						
7. START-UP AND DRYOUT BYPASS.						
8. FOR CONTINUATION OF SEPARATION SYSTEM SEE DWGS 3981100-37 AND 3981-10-DE-PR-PID-056.						
9. SEPARATION SYSTEM VENDOR TO DETERMINE IF REFRIGERANT IS REQUIRED.						
10. SEPARATION SYSTEM COLD BOX HOUSING.						
11. EACH PARAMETER HAS DEDICATED SIGNAL.						
GENERAL NOTES:						
1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055.						
2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER(PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.						
HOLDS						
1. PSV ORIFICE SIZE, ITS INLET/OUTLET LINE SIZE AND CORRESPONDING VESSEL NOZZLE SIZE.						
2. SEPARATION SYSTEM DETAILS WITHIN VENDOR BATTERY LIMIT.						
3. REQUIRED UTILITY AND LINE SIZES FOR SEPARATION SYSTEM.						
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI	
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI	
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED	
OWNER:		MC:	CONTRACTOR/CONSULTANT:			
PROJECT TITLE:						
PROPANE DEHYDROGENATION (PDH) PROJECT						
DOCUMENT TITLE:						
PIPING AND INSTRUMENT DIAGRAM						
SEPARATION SYSTEM A						
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.
	3981	10	DE	PR	PID	054
SCALE:	SIZE: A1	SHEET NO. 1 OF 1		REVISION 01	CLASS: 1	
19	20	21	22	23		



REFERENCE

DRAWINGS

NOTES

GENERAL NOTES:

HOLDS

01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED

OWNER:

MC:

CONTRACTOR/CONSULTANT:

PROJECT TITLE:

DOCUMENT TITLE:

DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.
	3981	10	DE	PR	PID	055
SCALE:	SIZE: A1	SHEET NO.	1 OF 1	REVISION 01	CLASS: 1	

- INSTRUMENTATION WITHIN SEPARATION SYSTEM BOX TO BE DESIGNED BY SYSTEM SUPPLIER AND CONTRACTOR
- SIZE AND PIPE CLASS BY CONTRACTOR/SEPARATION SYSTEM VENDOR.
- DELETED
- FOR CONTINUATION OF SEPARATION SYSTEM SEE DWGS 3981-10-DE-OR-PID-054 AND 3981-10-DE-OR-PID-056.
- OPTIONAL
- Each parameter has dedicated signal.

- GENERAL NOTES:
- FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055
 - EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER(PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PIDS.

- HOLDS
- SEPARATION SYSTEM DETAILS WITHIN VENDOR BATTERY LIMIT.
 - REQUIRED UTILITY AND LINE SIZE FOR SEPARATION SYSTEM.

01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED

OWNER:

MC:

CONTRACTOR/CONSULTANT:

PROJECT TITLE:

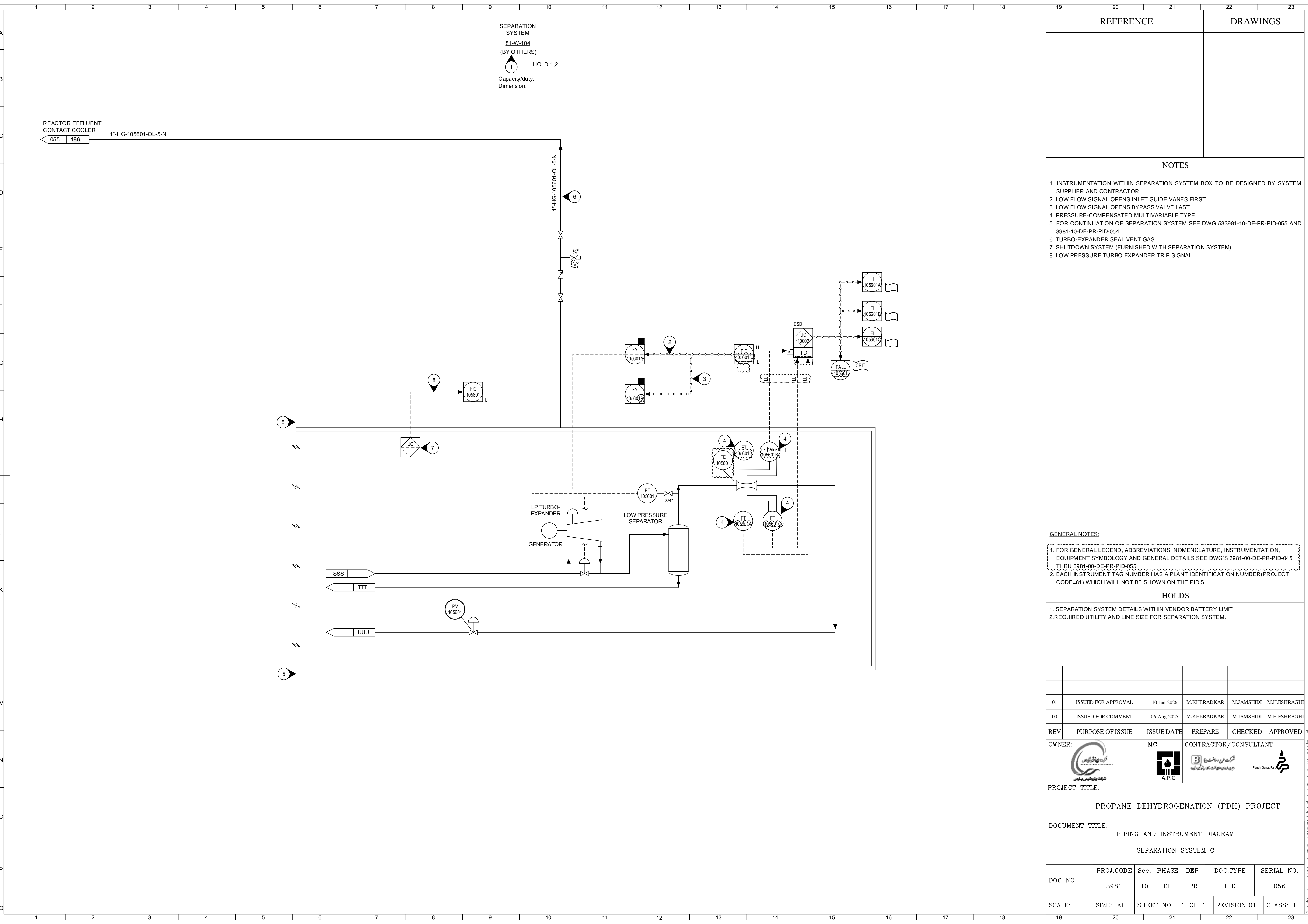
PROPANE DEHYDROGENATION (PDH) PROJECT

DOCUMENT TITLE:

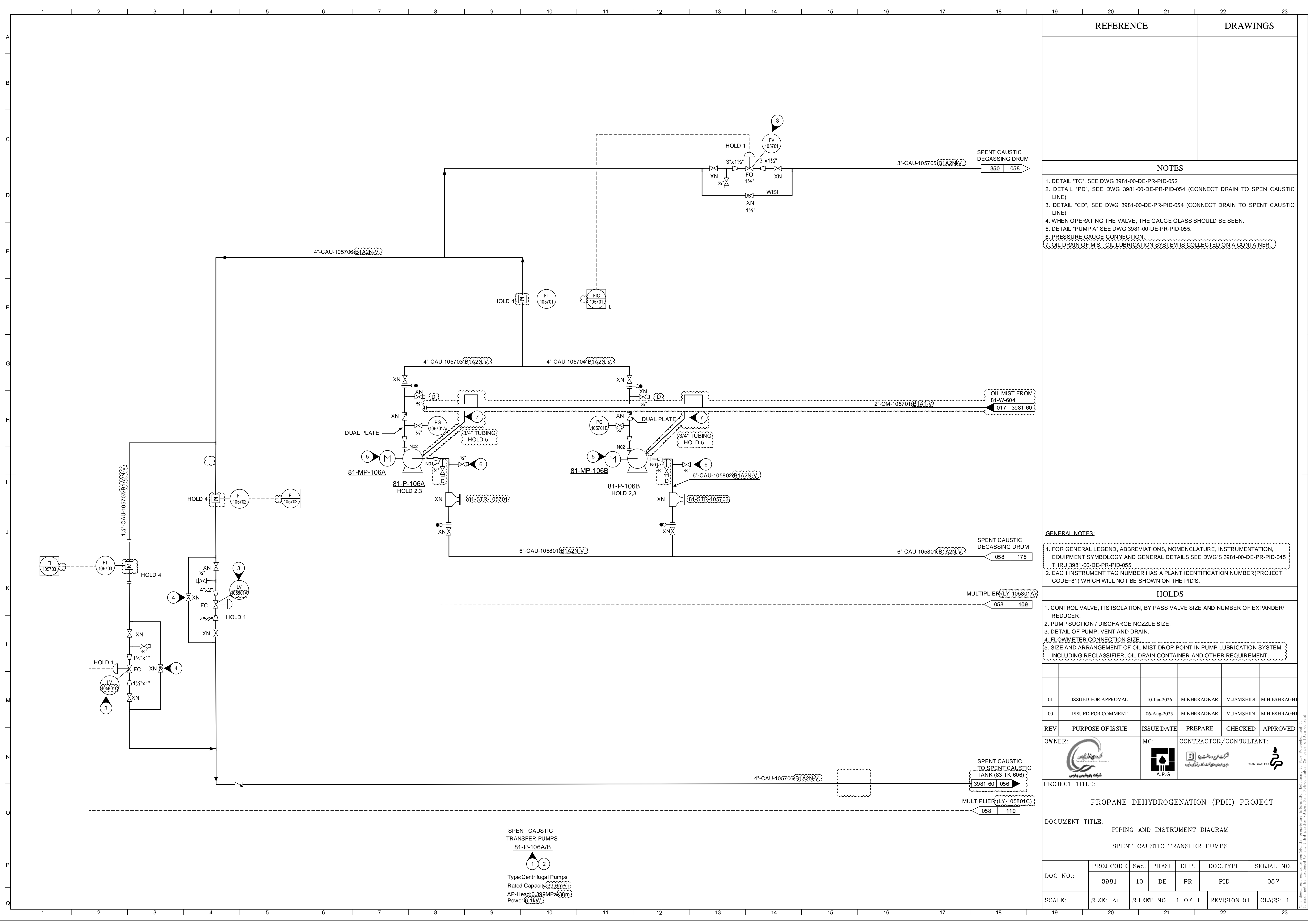
PIPING AND INSTRUMENT DIAGRAM

SEPARATION SYSTEM B

DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.
	3981	10	DE	PR	PID	055
SCALE:	SIZE: A1	SHEET NO.	1 OF 1	REVISION 01	CLASS: 1	



19	20	21	22	23
REFERENCE			DRAWINGS	
NOTES				
1. INSTRUMENTATION WITHIN SEPARATION SYSTEM BOX TO BE DESIGNED BY SYSTEM SUPPLIER AND CONTRACTOR.				
2. LOW FLOW SIGNAL OPENS INLET GUIDE VANES FIRST.				
3. LOW FLOW SIGNAL OPENS BYPASS VALVE LAST.				
4. PRESSURE-COMPENSATED MULTIVARIABLE TYPE.				
5. FOR CONTINUATION OF SEPARATION SYSTEM SEE DWG 533981-10-DE-PR-PID-055 AND 3981-10-DE-PR-PID-054.				
6. TURBO-EXPANDER SEAL VENT GAS.				
7. SHUTDOWN SYSTEM (FURNISHED WITH SEPARATION SYSTEM).				
8. LOW PRESSURE TURBO EXPANDER TRIP SIGNAL.				



REFERENCE	DRAWINGS

- NOTES
1. DETAIL "TC", SEE DWG 3981-00-DE-PR-PID-052
 2. DETAIL "PD", SEE DWG 3981-00-DE-PR-PID-054 (CONNECT DRAIN TO SPEN CAUSTIC LINE)
 3. DETAIL "CD", SEE DWG 3981-00-DE-PR-PID-054 (CONNECT DRAIN TO SPEN CAUSTIC LINE)
 4. WHEN OPERATING THE VALVE, THE GAUGE GLASS SHOULD BE SEEN.
 5. DETAIL "PUMP A",SEE DWG 3981-00-DE-PR-PID-055.
 6. PRESSURE GAUGE CONNECTION
 7. OIL DRAIN OF MIST OIL LUBRICATION SYSTEM IS COLLECTED ON A CONTAINER

- GENERAL NOTES:
1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055
 2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER(PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.

- HOLDS
1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/ REDUCER.
 2. PUMP SUCTION / DISCHARGE NOZZLE SIZE.
 3. DETAIL OF PUMP: VENT AND DRAIN.
 4. FLOWMETER CONNECTION SIZE
 5. SIZE AND ARRANGEMENT OF OIL MIST DROP POINT IN PUMP LUBRICATION SYSTEM INCLUDING RECLASSIFIER, OIL DRAIN CONTAINER AND OTHER REQUIREMENT.

01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED

OWNER:

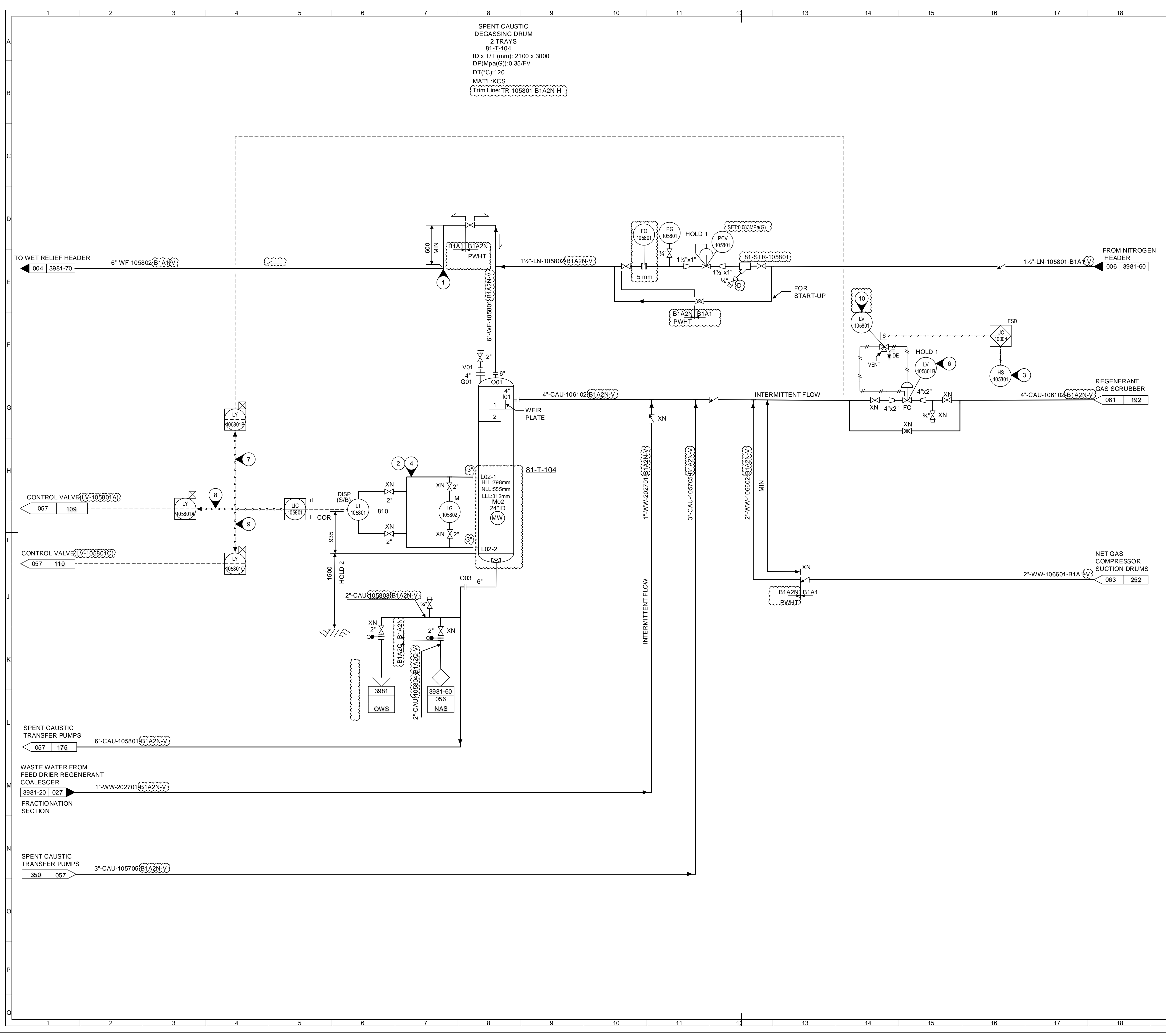
MC:

CONTRACTOR/CONSULTANT:

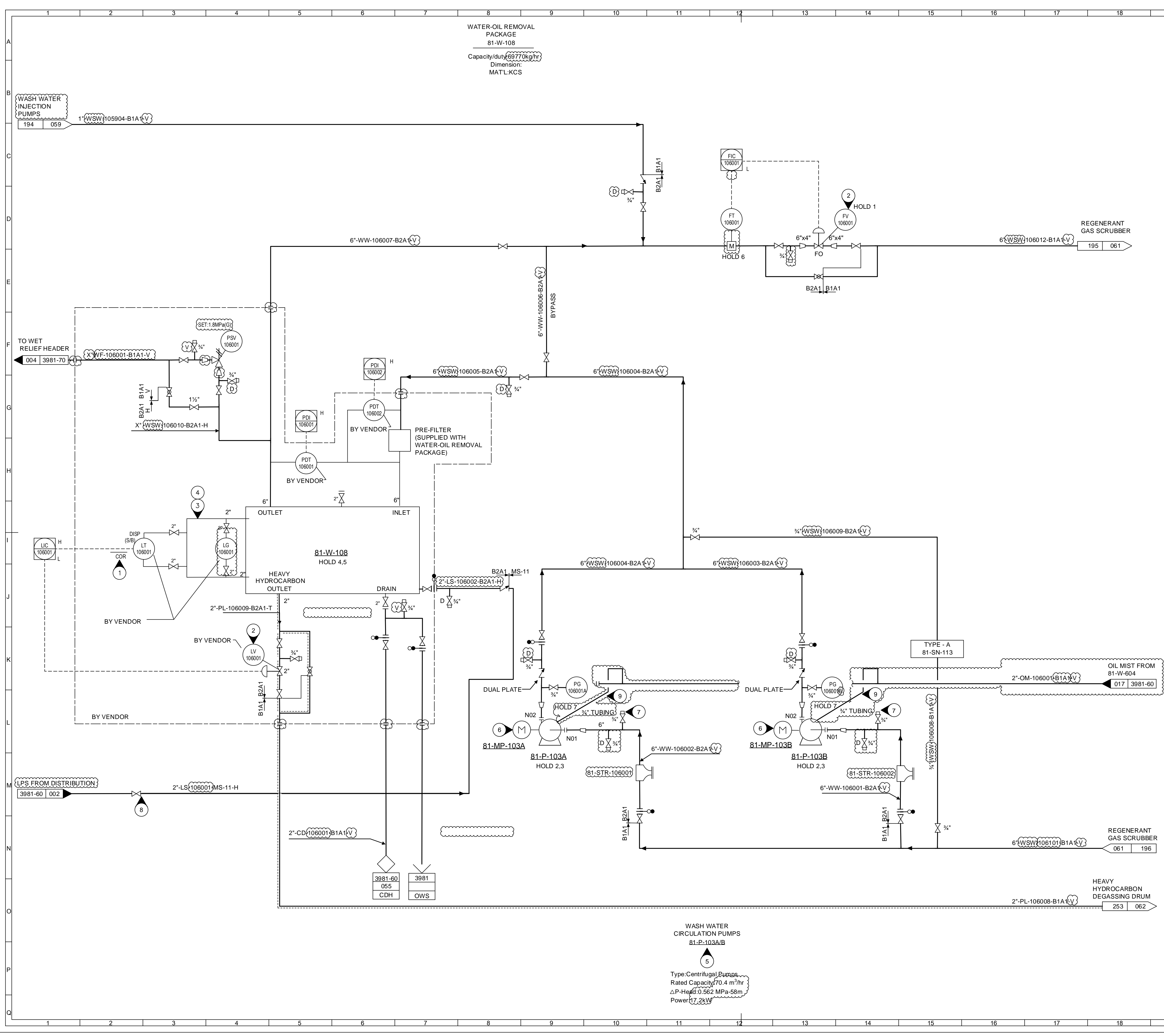
PROJECT TITLE: PROPANE DEHYDROGENATION (PDH) PROJECT

DOCUMENT TITLE: PIPING AND INSTRUMENT DIAGRAM
SPENT CAUSTIC TRANSFER PUMPS

DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.
	3981	10	DE	PR	PID	057
SCALE:	SIZE: A1	SHEET NO.	1 OF 1	REVISION 01	CLASS: 1	

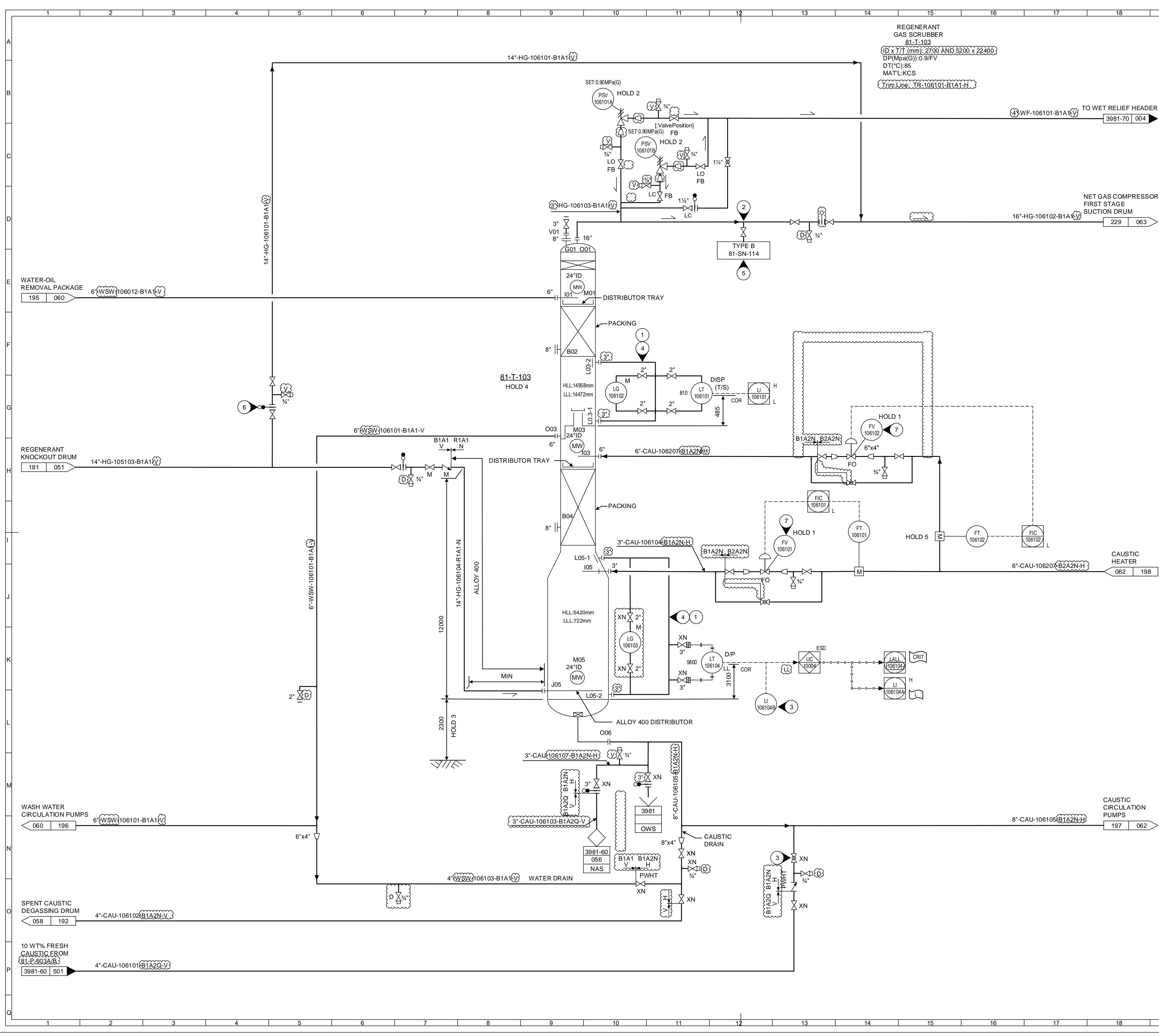




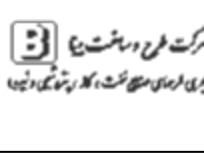
19		20		21		22		23	
REFERENCE						DRAWINGS			
NOTES									
1. MAKE CONNECTION ON TOP OF PIPE.									
2. DETAIL "LD", SEE DWG 3981-00-DE-PR-PID-054 (CONNECT DRAIN TO SPENT CAUSTIC LINE).									
3. RESET, LOCATE NEAR ASSOCIATED VALVE.									
4. SEE STD DWG 8-121.									
5. DELETED.									
6. DETAIL "CD", SEE DWG 3981-00-BA-PR-PID-054 (CONNECT DRAIN TO SPENT CAUSTIC LINE).									
7. HIGH LEVEL SIGNAL CLOSES THIS VALVE.									
8. LOW LEVEL SIGNAL CLOSES THIS VALVE FIRST.									
9. LOW LEVEL SIGNAL CLOSES THIS VALVE LAST.									
10. SEPARATED ON/OFF VLAVE FOR ESD PORPOSE TO BE CHECKED AND FINALIZED IN SIL STUDY.									
GENERAL NOTES:									
1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055									
2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER(PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.									
HOLDS									
1. PCV ORIFICE SIZE, ITS INLET/OUTLET LINE SIZE AND CORRESPONDING VESSEL NOZZLE SIZE.									
2. ELEVATION									
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAHGH				
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAHGH				
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED				
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PROJECT TITLE:									
PROPANE DEHYDROGENATION (PDH) PROJECT									
DOCUMENT TITLE:									
PIPING AND INSTRUMENT DIAGRAM									
SPENT CAUSTIC DEGASSING DRUM									
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.			
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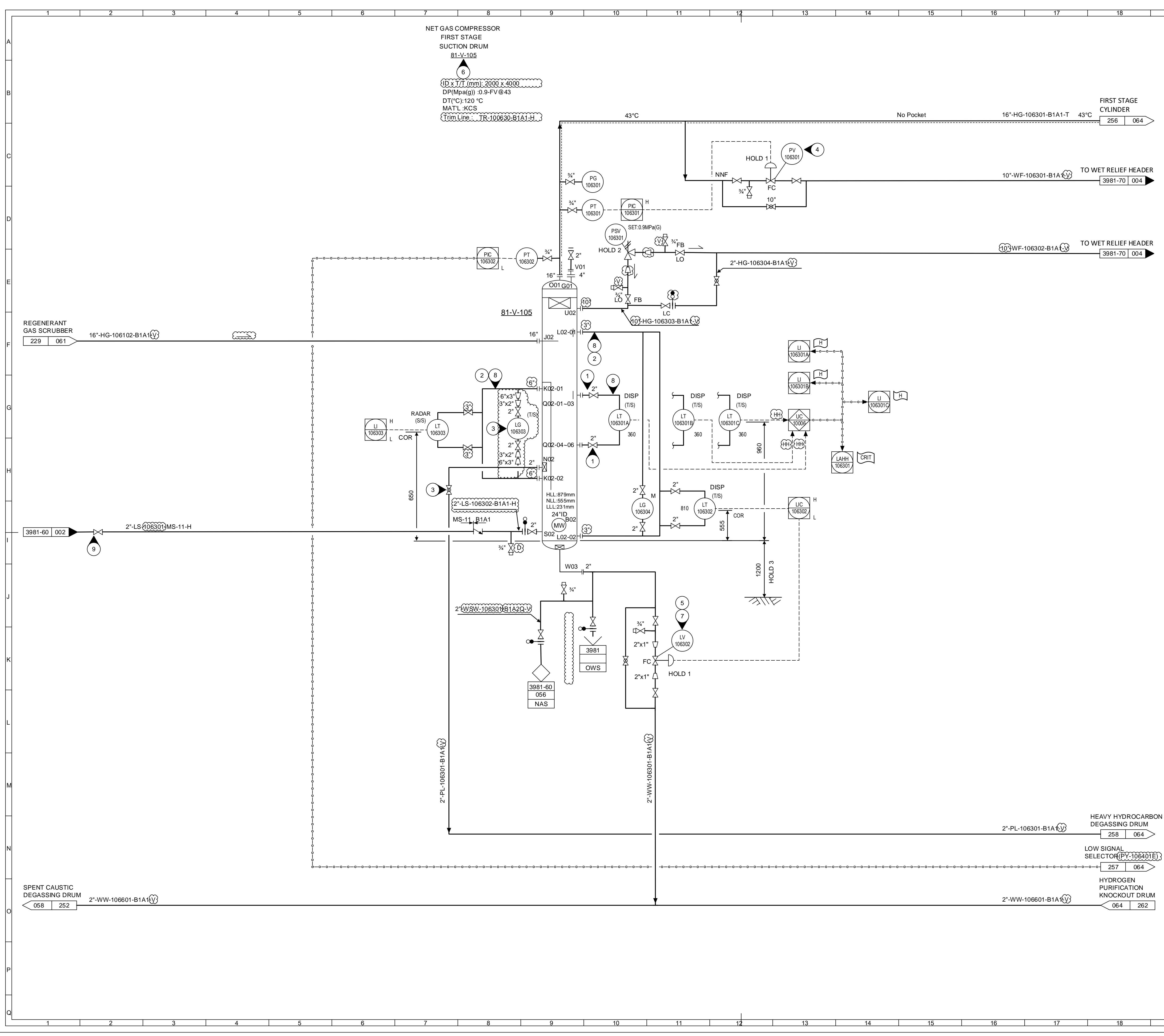




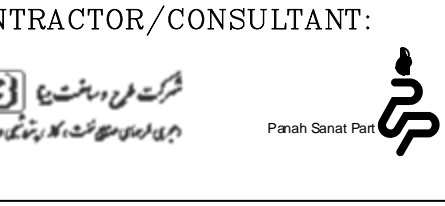
REFERENCE		DRAWINGS			
NOTES					
<p>1. COR IS AT THE CONTROLLED INTERFACE LEVEL.</p> <p>2. DETAIL "CD", SEE DWG 3981-00-DE-PR-PID-054 (CONNECT DRAIN TO SPENT CAUSTIC LINE)</p> <p>3. DETAIL "LD", SEE DWG 3981-00-DE-PR-PID-054 (CONNECT DRAIN TO SPENT CAUSTIC LINE)</p> <p>4. SEE STD DWG 8-121-6.</p> <p>5. DETAIL "PD", SEE DWG 3981-00-DE-PR-PID-054 (CONNECT DRAIN TO SPENT CAUSTIC LINE)</p> <p>6. DETAIL "PUMP A", SEE DWG 3981-00-DE-PR-PID-055.</p> <p>7. PRESSURE GAUGE CONNECTION.</p> <p>8. LOCATE CLOSE TO LP STEAM HEADER.</p> <p>9. OIL DRAIN OF MIST OIL LUBRICATION SYSTEM IS COLLECTED ON A CONTAINER.</p>					
GENERAL NOTES:					
<p>1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055.</p> <p>2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER (PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.</p>					
HOLDS					
<p>1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER REDUCER</p> <p>2. PUMP SUCTION / DISCHARGE NOZZLE SIZE.</p> <p>3. DETAIL OF PUMP VENT AND DRAIN.</p> <p>4. PACKAGE DETAIL WITHIN VENDOR BATTERY LIMIT.</p> <p>5. REQUIRED UTILITY AND LINE SIZE FOR PACKAGE.</p> <p>6. FLOWMETER CONNECTION SIZE.</p> <p>7. SIZE AND ARRANGEMENT OF OIL MIST DROP POINT IN PUMP LUBRICATION SYSTEM INCLUDING RECLASSIFIER, OIL DRAIN CONTAINER AND OTHER REQUIREMENT.</p>					
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED
OWNER:	MC:		CONTRACTOR/CONSULTANT:		
PROJECT TITLE:					
PROPANE DEHYDROGENATION (PDH) PROJECT					
DOCUMENT TITLE:					
PIPING AND INSTRUMENT DIAGRAM					
WASH WATER CIRCULATION PUMPS					
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE
	3981	10	DE	PR	PID
SCALE:	SIZE: A1	SHEET NO. 1 OF 1		REVISION 01	CLASS: 1

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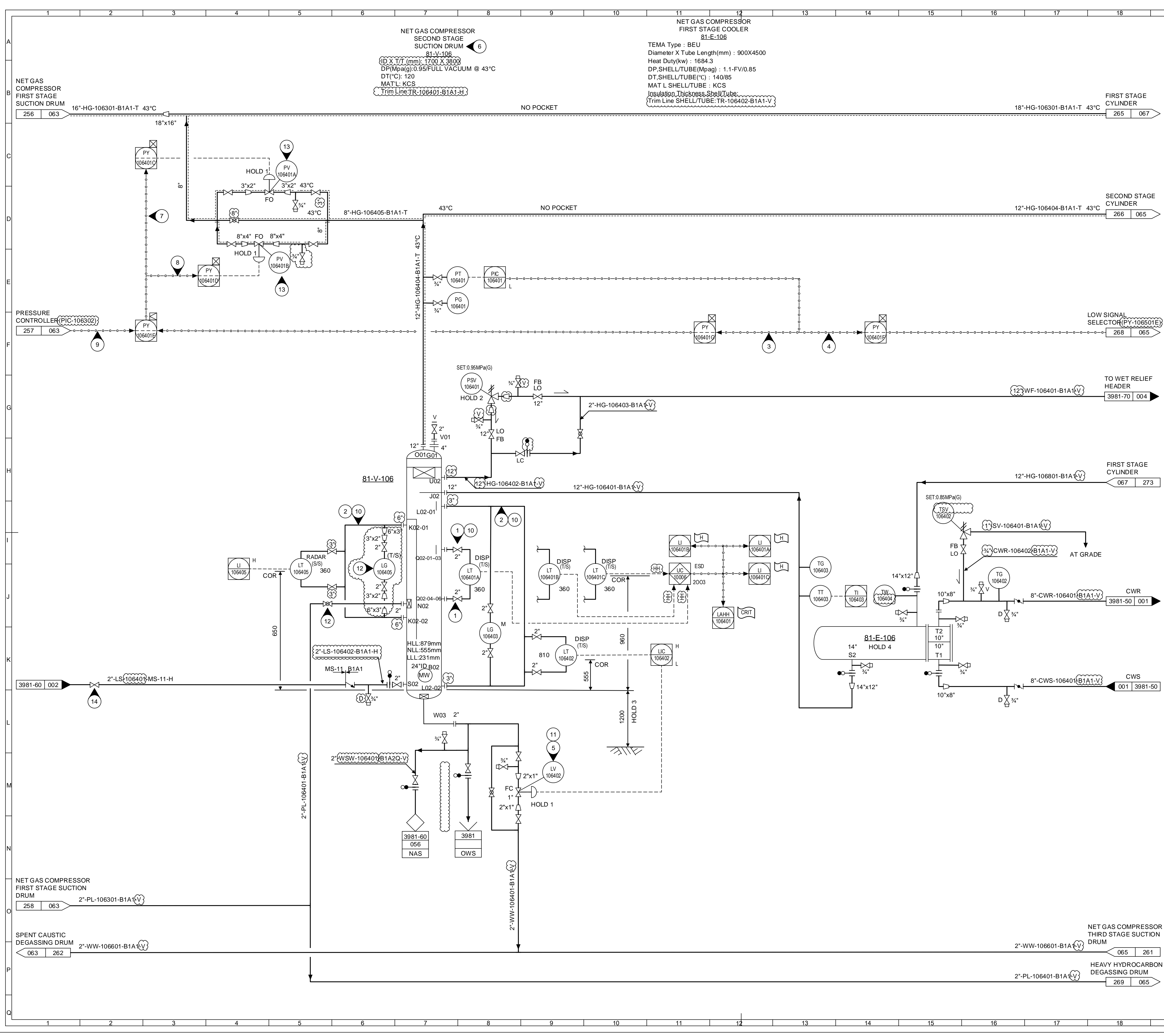


19	20	21	22	23		
REFERENCE			DRAWINGS			
NOTES						
1. DETAIL "LVD", SEE DWG 3981-00-DE-PR-PID-054(CONNECT DRAIN TO SPENT CAUSTIC LINE). 2. MAKE CONNECTION ON TOP OF PIPE. 3. LOCATE AT GRADE (LI MUST BE READABLE FROM VALVES). 4. SEE STD DWG 8-121-6. 5. WITH DETECTOR TUBE SAMPLE. DETAIL "DT", SEE DWG 3981-00-DE-PR-PID-050 6. BLANKOFF WHEN NOT IN USE. 7. DETAIL "CD", SEE DWG 3981-00-DE-PR-PID-054 (CONNECT DRAIN TO SPENT CAUSTIC LINE).						
GENERAL NOTES:						
1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055 2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER(PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.						
HOLDS						
1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/REDUCER 2. PSV ORIFICE SIZE, ITS INLET/OUTLET LINE SIZE AND CORRESPONDING VESSEL NOZZLE SIZE. 3. ELEVATION 4. TOWER DIMENSION (SHALL BE CONFIRMED BY PACKING VENDOR) 5. FLOWMETER CONNECTION SIZE						
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI	
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI	
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED	
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DOCUMENT TITLE:						
PIPING AND INSTRUMENT DIAGRAM						
REGENERANT GAS SCRUBBER						
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.
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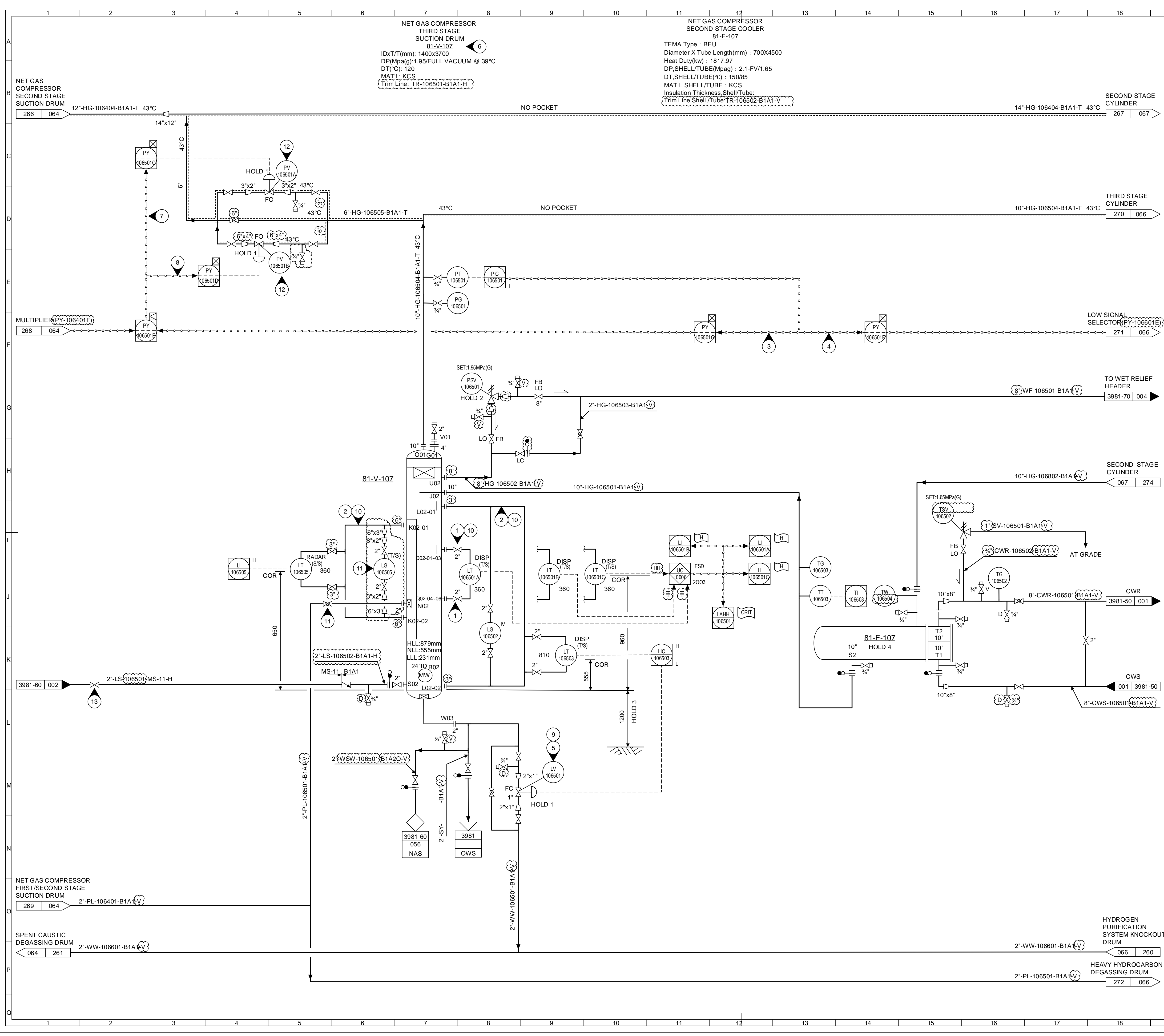


REFERENCE		DRAWINGS																					
<div>NOTES</div> <div>1. 1 SHOWN, 3 REQUIRED. 2. SEE STD DWG 8-121. 3. GAUGE GLASS MUST BE READABLE FROM VALVE. 4. DETAIL "CV", SEE DWG 3981-00-DE-PR-PID-054. 5. DETAIL "CVD", SEE DWG 3981-00-DE-PR-PID-054 (CONNECT DRAIN TO SPENT CAUSTIC LINE). 6. LOCATE AS CLOSE TO NET GAS COMPRESSOR AS POSSIBLE. 7. LOCATE AT GRADE CLOSE TO NET GAS COMPRESSOR FIRST STAGE SUCTION DRUM. 8. DETAIL "LVD", SEE DWG 3981-00-DE-PR-PID-054 (CONNECT TO HEAVY HYDROCARBON DEGASSING DRUM). 9. LOCATE CLOSE TO LP STEAM HEADER.</div>																							
<div>GENERAL NOTES:</div> <div>1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055. 2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER (PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.</div>																							
<div>HOLDS</div> <div>1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/REDUCER 2. PSV ORIFICE SIZE, ITS INLET/OUTLET LINE SIZE AND CORRESPONDING VESSEL NOZZLE SIZE. 3. ELEVATION.</div>																							
<table border="1"><thead><tr><th>REV</th><th>PURPOSE OF ISSUE</th><th>ISSUE DATE</th><th>PREPARE</th><th>CHECKED</th><th>APPROVED</th></tr></thead><tbody><tr><td>01</td><td>ISSUED FOR APPROVAL</td><td>10-Jan-2026</td><td>M.KHERADKAR</td><td>M.JAMSHIDI</td><td>M.H.ESHRAGHI</td></tr><tr><td>00</td><td>ISSUED FOR COMMENT</td><td>06-Aug-2025</td><td>M.KHERADKAR</td><td>M.JAMSHIDI</td><td>M.H.ESHRAGHI</td></tr></tbody></table>						REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED	01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI	00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED																		
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00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI																		
OWNER: 		MC: 	CONTRACTOR/CONSULTANT: 																				
PROJECT TITLE: PROPANE DEHYDROGENATION (PDH) PROJECT																							
DOCUMENT TITLE: PIPING AND INSTRUMENT DIAGRAM NET GAS COMPRESSOR FIRST STAGE SUCTION DRUM																							
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.																	
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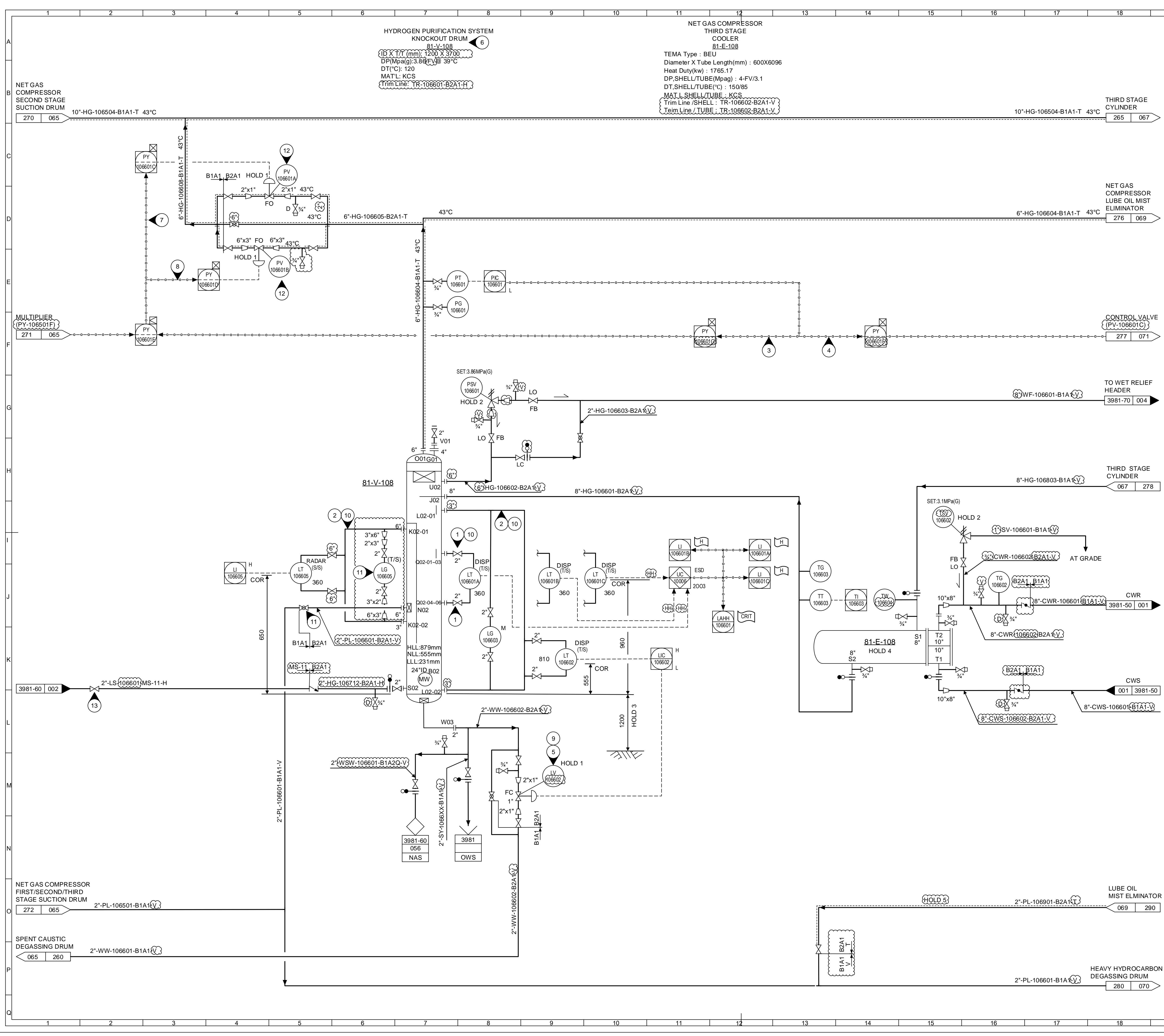
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19			20			21			22			23					
REFERENCE									DRAWINGS								
NOTES																	
1. 1 SHOWN, 3 REQUIRED.																	
2. SEE STD DWG 8-121.																	
3. HIGH PRESSURE SIGNAL OPENS VALVE.																	
4. LOW PRESSURE SIGNAL OPENS VALVE.																	
5. LOCATE AT GRADE CLOSE TO NET GAS COMPRESSOR SECOND STAGE SUCTION DRUM.																	
6. LOCATE AS CLOSE TO NETGAS COMPRESSORS AS POSSIBLE.																	
7. LOW SELECTOR SIGNAL OPENS THIS VALVE FIRST.																	
8. LOW SELECTOR SIGNAL OPENS THIS VALVE LAST.																	
9. LOW PRESSURE SIGNAL OPENS CONTROL VALVE.																	
10. DETAIL "LVD", SEE DWG 3981-00-DE-PR-PID-054 (CONNECT TO HEAVY HYDROCARBON DEGASSING DRUM)																	
11. DETAIL "CVD", SEE DWG 3981-00-DE-PR-PID-054 (CONNECT DRAIN TO SPENT CAUSTIC LINE)																	
12. GAUGE GLASS MUST BE READABLE FROM VALVE.																	
13. DETAIL "CV", SEE DWG 3981-00-DE-PR-PID-054.																	
14. LOCATE CLOSE TO LP STEAM HEADER.																	



19		20		21		22		23	
REFERENCE						DRAWINGS			
NOTES									
1. 1 SHOWN, 3 REQUIRED. 2. SEE STD DWG 8-121. 3. HIGH PRESSURE SIGNAL OPENS VALVE. 4. LOW PRESSURE SIGNAL OPENS VALVE. 5. LOCATE AT GRADE CLOSE TO NET GAS COMPRESSOR SECOND STAGE SUCTION DRUM. 6. LOCATE AS CLOSE TO NETGAS COMPRESSORS AS POSSIBLE. 7. LOW SELECTOR SIGNAL OPENS THIS VALVE FIRST. 8. LOW SELECTOR SIGNAL OPENS THIS VALVE LAST. 9. DETAIL "CVD", SEE DWG 3981-00-DE-PR-PID-054 (CONNECT DRAIN TO SPENT CAUSTIC LINE). 10. DETAIL "LVD", SEE DWG 3981-00-DE-PR-PID-054 (CONNECT TO HEAVY HYDROCARBON DEGASSING DRUM). 11. GAUGE GLASS MUST BE READABLE FROM VALVE. 12. DETAIL "CV", SEE DWG 3981-00-DE-PR-PID-054. 13. LOCATE CLOSE TO LP STEAM HEADER.									
GENERAL NOTES:									
1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055. 2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER/PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.									
HOLDS									
1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/ REDUCER 2. PSV ORIFICE SIZE, ITS INLET/OUTLET LINE SIZE AND CORRESPONDING VESSEL NOZZLE SIZE. 3. ELEVATION 4. TYPE OF HEAT EXCHANGER, ITS NOZZLE DETAIL AND SIZE OF HX INLET/ OUTLET NOZZLE.									
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	MJAMSHIDI	M.H.ESHRAHGH				
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	MJAMSHIDI	M.H.ESHRAHGH				
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED				
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PROPANE DEHYDROGENATION (PDH) PROJECT									
DOCUMENT TITLE:									
PIPING AND INSTRUMENT DIAGRAM									
NET GAS COMPRESSOR THIRD STAGE SUCTION DRUM									
DOC NO.:		PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.		
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SCALE:		SIZE: A1	SHEET NO.		1 OF 1	REVISION 01	CLASS: 1		
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REFERENCE		DRAWINGS	

NOTES					
1. 1 SHOWN, 3 REQUIRED.					
2. SEE STD DWG 8-121.					
3. HIGH PRESSURE SIGNAL OPENS VALVE.					
4. LOW PRESSURE SIGNAL OPENS VALVE.					
5. LOCATE AT GRADE CLOSE TO NET GAS COMPRESSOR SECOND STAGE SUCTION DRUM.					
6. LOCATE AS CLOSE TO NETGAS COMPRESSORS AS POSSIBLE.					
7. LOW SELECTOR SIGNAL OPENS THIS VALVE FIRST.					
8. LOW SELECTOR SIGNAL OPENS THIS VALVE LAST.					
9. DETAIL "CVD", SEE DWG 3981-00-DE-PR-PID-054 (CONNECT DRAIN TO SPENT CAUSTIC LINE).					
10. DETAIL "LVD", SEE DWG 3981-00-DE-PR-PID-054 (CONNECT TO HEAVY HYDROCARBON DEGASSING DRUM).					
11. GAUGE GLASS MUST BE READABLE FROM VALVE.					
12. DETAIL "CV", SEE DWG 3981-00-DE-PR-PID-054.					
13. LOCATE CLOSE TO LP STEAM HEADER.					

GENERAL NOTES:					
1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION EQUIPMENT SYMBOLOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055.					
2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER (PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.					

HOLDS					
1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/REDUCER					
2. PSV ORIFICE SIZE, ITS INLET/OUTLET LINE SIZE AND CORRESPONDING VESSEL NOZZLE SIZE.					
3. ELEVATION					
4. TYPE OF HEAT EXCHANGER, ITS NOZZLE DETAIL AND SIZE OF HX INLET/ OUTLET NOZZLE.					
5. NESSECCITY OF TRACING					

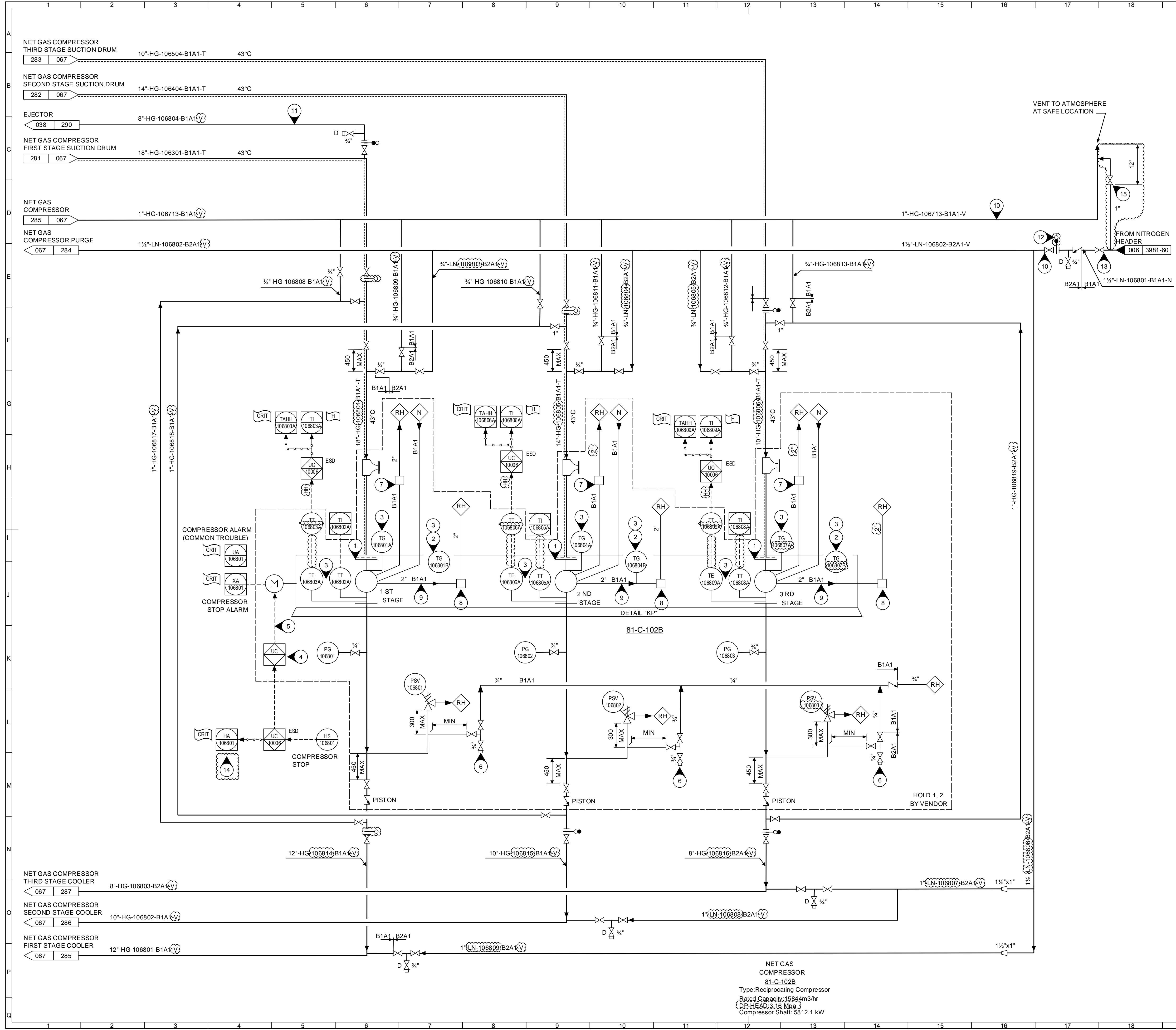
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAIGHI
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAIGHI
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED
OWNER:	MC:		CONTRACTOR/CONSULTANT:		

PROJECT TITLE:					
PROPANE DEHYDROGENATION (PDH) PROJECT					

DOCUMENT TITLE:					
PIPING AND INSTRUMENT DIAGRAM					
HYDROGEN PURIFICATION SYSTEM KNOCKOUT DRUM					

DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.
	3981	10	DE	PR	PID	066

SCALE:	SIZE: A1	SHEET NO.	1 OF 1	REVISION 01	CLASS: 1



REFERENCE

DRAWINGS

NOTES

1. PULSATION SUPPRESSION DEVICE.

2. BY OTHERS.

3. ONE FOR EACH CYLINDER.

4. SHUTDOWN SYSTEM (FURNISHED WITH COMPRESSOR).

5. TO MOTOR CONTROL CIRCUIT.

6. VENT.

7. DETAIL "KD", SEE DWG 3981-00-DE-PR-PID-051.

8. DETAIL "KP", SEE DWG 3981-00-DE-PR-PID-051.

9. PACKING VENT.

10. LOCATE END OF HEADER OUTSIDE COMPRESSOR SHELTER.

11. SIZE BY SUPPLIER.

12. BLANKOFF WHEN NOT IN USE.

13. LOCATE CLOSE TO LP NITROGEN HEADER.

14. HS FEEDBACK

15. THIS VALVE TO BE ACCESSLIBLE.

GENERAL NOTES:

1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055

2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER(PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.

HOLDS

1. COMPRESSOR PACKAGE DETAILS WITHIN VENDOR BATTERY LIMIT.

2. REQUIRED UTILITY AND LINE SIZE FROM COMPRESSOR PACKAGE.

01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED
OWNER:		MC:		CONTRACTOR/CONSULTANT:	

PROJECT TITLE:

PROPANE DEHYDROGENATION (PDH) PROJECT

DOCUMENT TITLE:

PIPING AND INSTRUMENT DIAGRAM

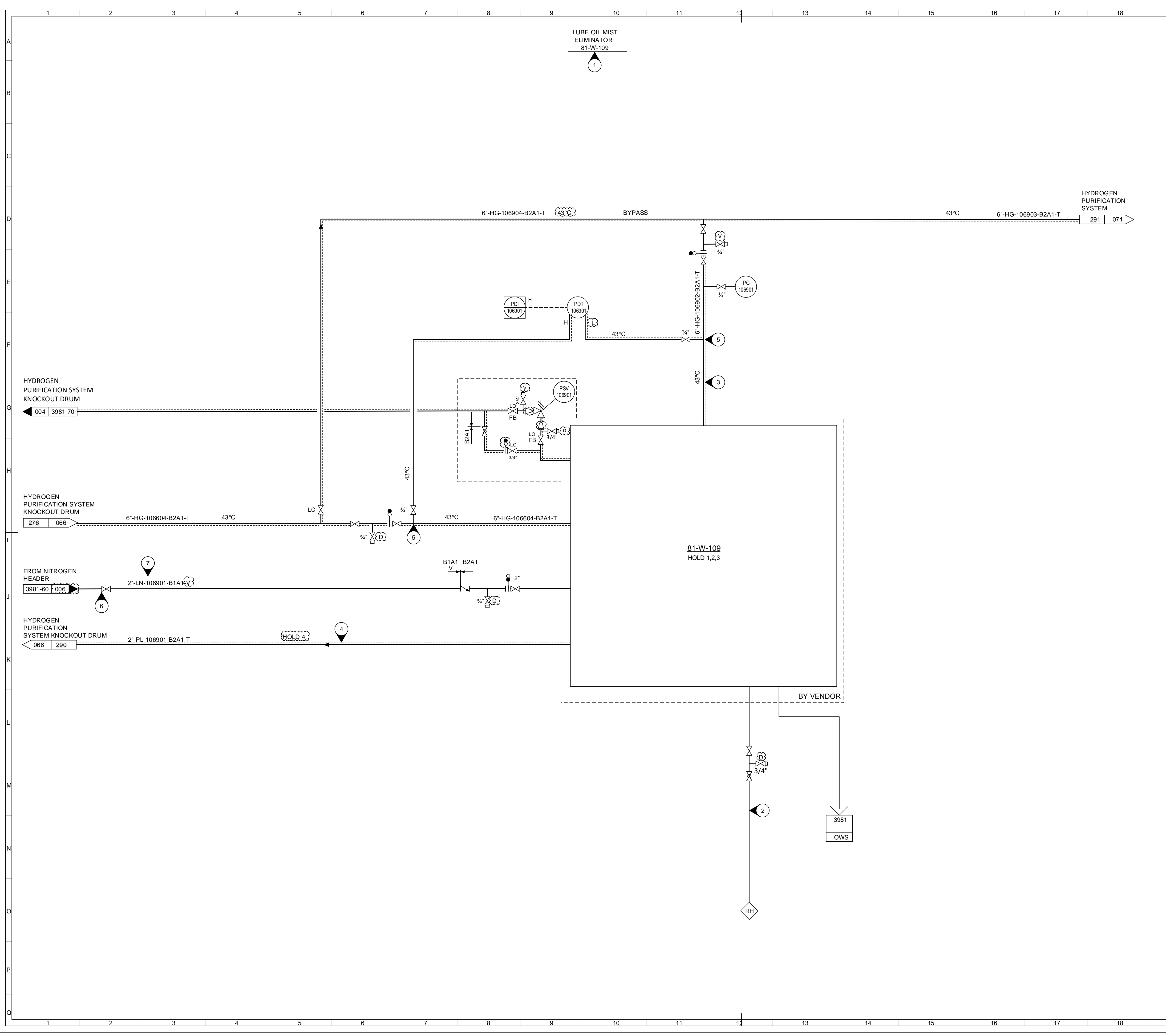
NET GAS COMPRESSOR B

DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.
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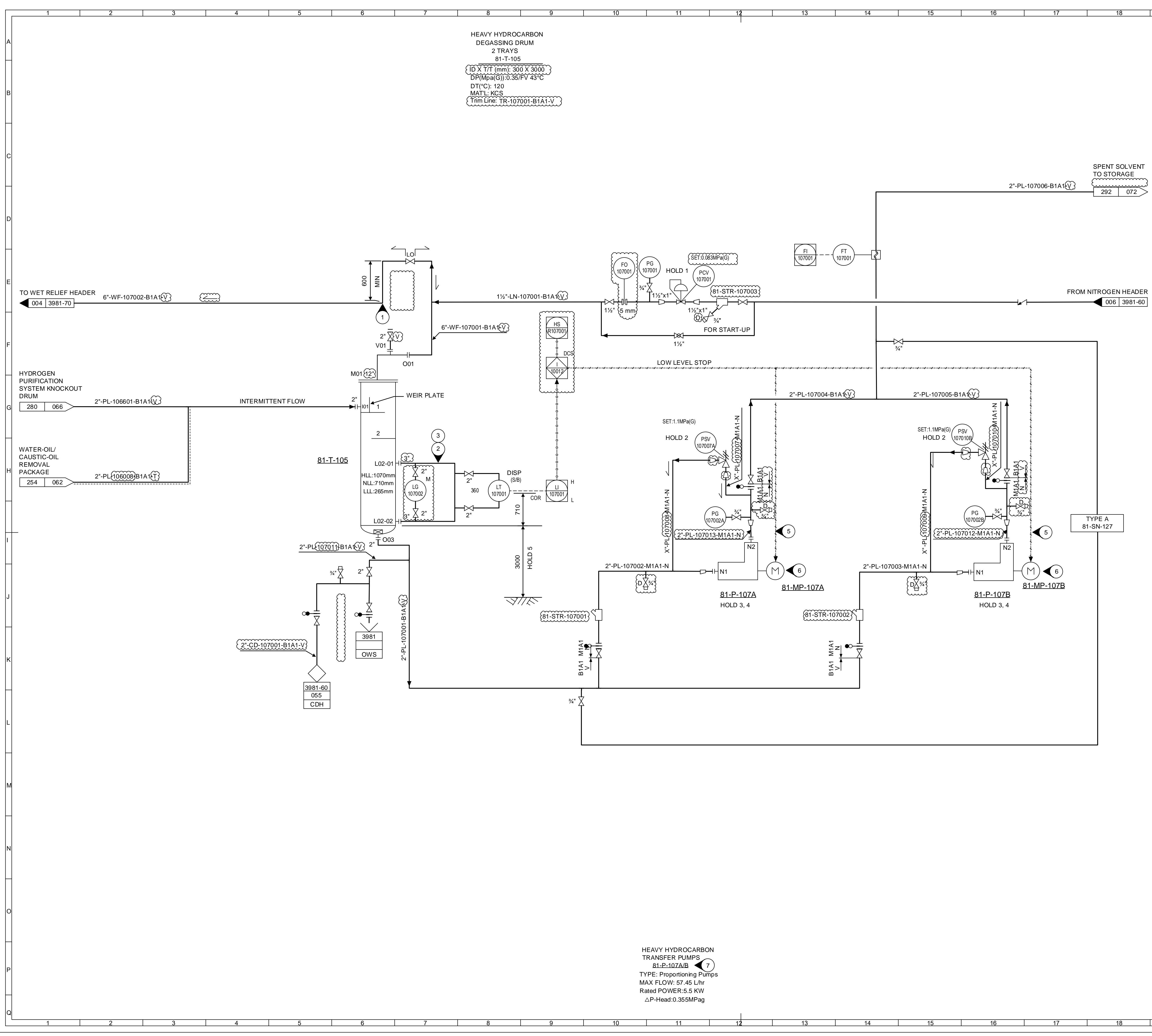
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SIZE: A1	SHEET NO. 1 OF 1	REVISION 01	CLASS: 1
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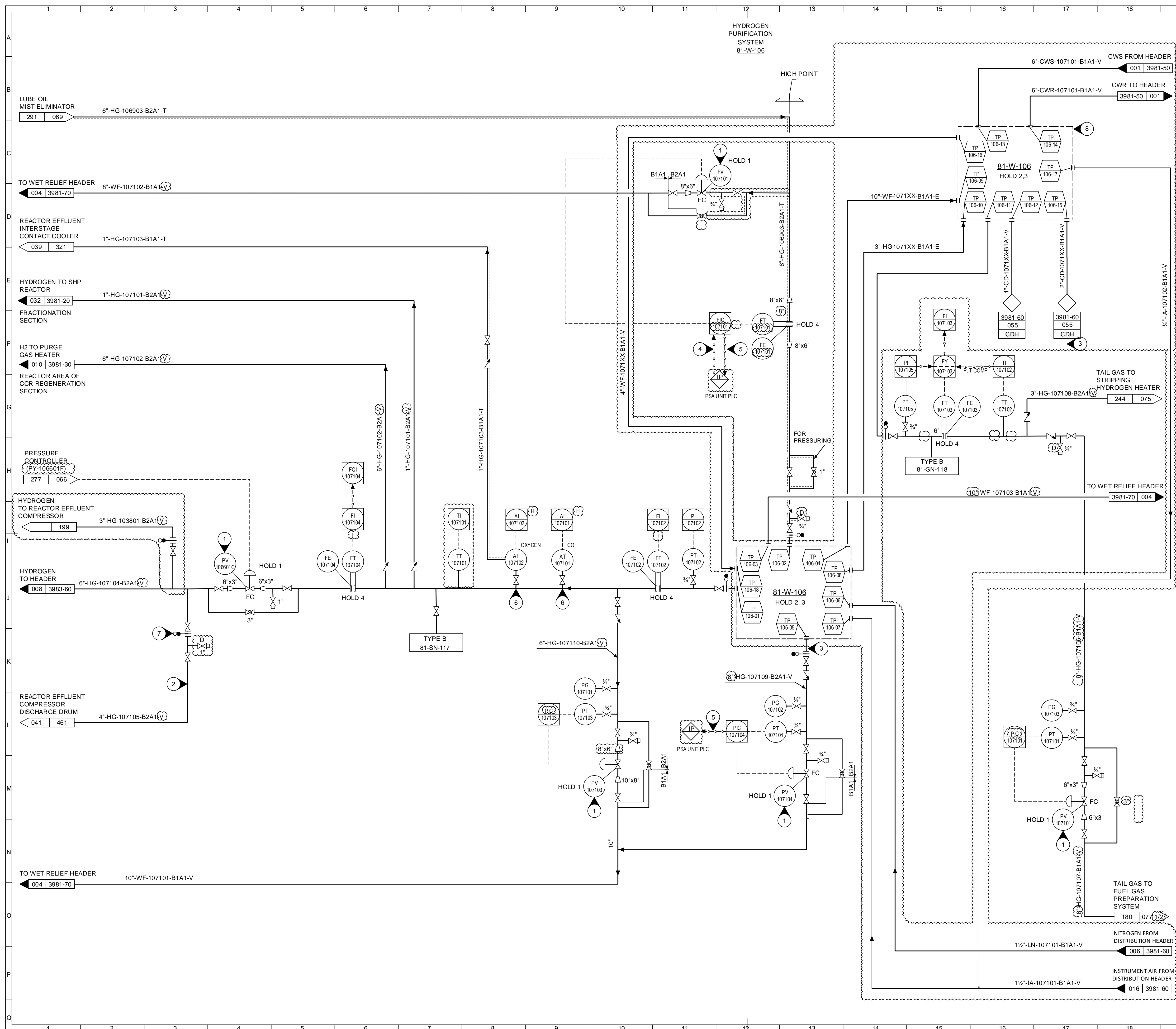
19	20	21	22	23
REFERENCE			DRAWINGS	
NOTES				
1. LOCATE NEAR HYDROGEN PURIFICATION SYSTEM 2. SIZED BY VENDOR. 3. HEAT TRACE FROM LUBE OIL MIST ELIMINATOR OUTLET TO HYDROGEN PURIFICATION SYSTEM AT THE HIGHEST OPERATION TEMPERATURE. 4. LIQUID COLLECTED IN LUBE OIL MIST ELIMINATOR. 5. MAKE CONNECTION ON TOP OF THE PIPE. 6. LOCATE CLOSE TO LP NITROGEN HEADER. 7. LINE SIZE WILL BE FINALIZED AFTER RECEIVING PACKAGE VENDOR DATA.				



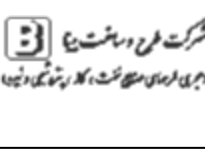


HEAVY HYDROCARBON
DEGASSING DRUM
2 TRAYS
81-T-105
ID X TT (mm): 300 X 3000
DP(Mpa(G)):0.35/FV 43°C
DT(°C): 120
MAT'L: KCS
Trim Line: TR-107001-B1A1-V

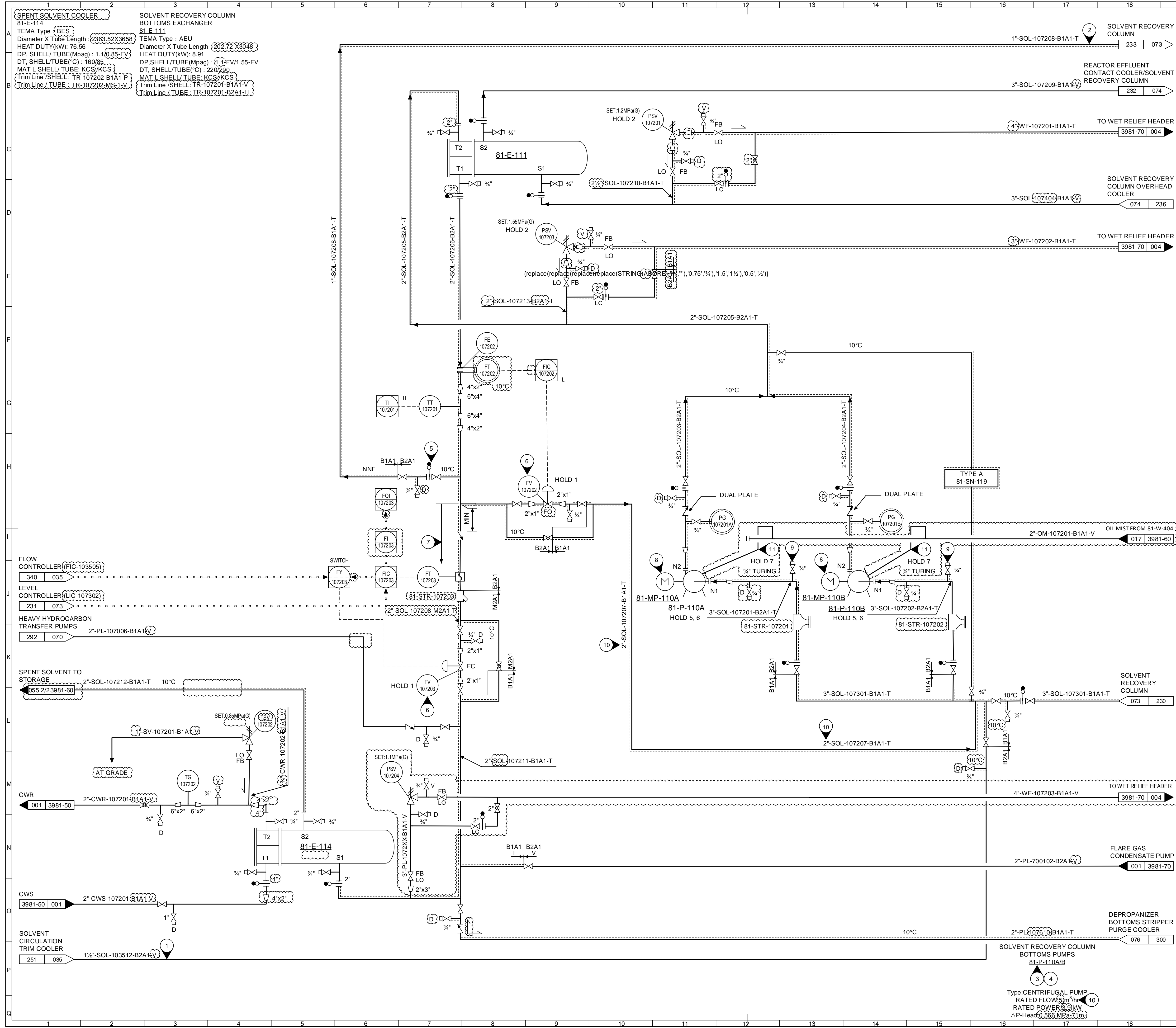
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REFERENCE						DRAWINGS			
NOTES									
1. MAKE CONNECTION ON TOP OF PIPE.									
2. SEE STD DWG 8-121.									
3. DETAIL "LD", SEE DWG 3981-00-DE-PR-PID-054									
(CONNECT DRAIN TO HEAVY HYDROCARBON DEGASSING DRUM).									
4. DELETED.									
5. TO MOTOR CONTROL CIRCUIT.									
6. DETAIL 'PUMP D' SEE DWG 3981-00-DE-PR-PID-055.									
7. DETAIL 'PD'. SEE DWG 3981-00-DE-PR-PID-054.									

HEAVY HYDROCARBON
TRANSFER PUMPS
81-P-107A/B
TYPE: Proportioning Pumps
MAX FLOW: 57.45 L/hr
Rated POWER:5.5 KW
ΔP-Head:0.355MPag

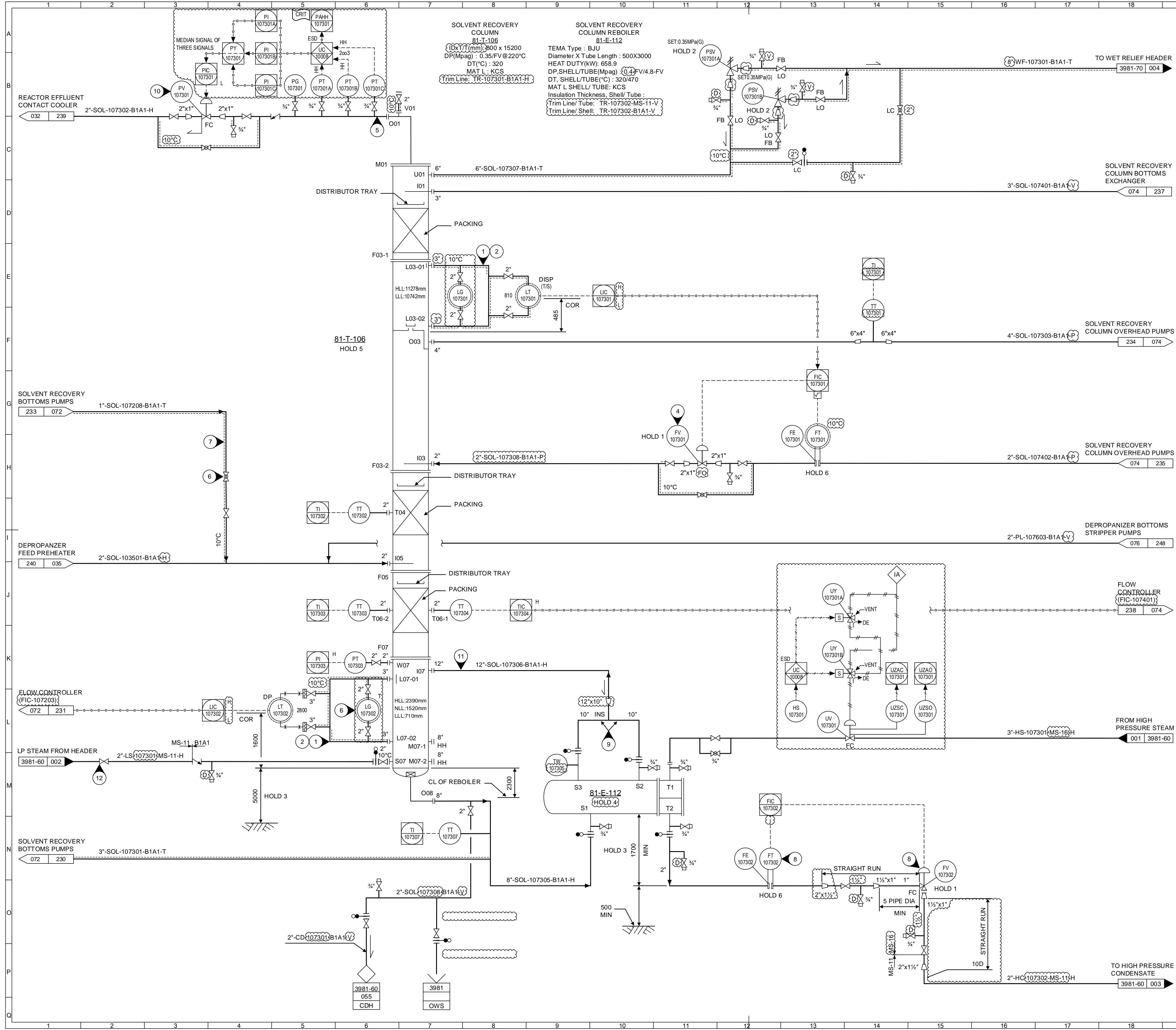


19	20	21	22	23		
REFERENCE			DRAWINGS			
NOTES						
1. DETAIL "CV", SEE DWG 3981-00-DE-PR-PID-054. 2. START-UP SPILLBACK. 3. PSA TAIL GAS. 4. REMOTE SET POINT. 5. PROCESS VARIABLE. 6. MAKE CONNECTION ON TOP OF PIPE. 7. BLANKOFF WHEN NOT IN USE. 8. IT IS RELATED TO TAIL GAS COMPRESSOR PACKAGE OF 81-W-106						
GENERAL NOTES:						
1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055 2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER(PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.						
HOLDS						
1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/ REDUCER 2. PACKAGE DETAILS WITHIN VENDOR BATTERY LIMIT. 3. REQUIRED UTILITY AND LINE SIZE FOR THE PACKAGE. 4. FLOWMETER CONNECTION SIZE						
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI	
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PROPANE DEHYDROGENATION (PDH) PROJECT						
DOCUMENT TITLE:						
PIPING AND INSTRUMENT DIAGRAM						
HYDROGEN PURIFICATION SYSTEM						
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.
	3981	10	DE	PR	PID	071
SCALE:	SIZE: A1	SHEET NO.	1 OF 1		REVISION 01	CLASS: 1
19	20	21	22	23		

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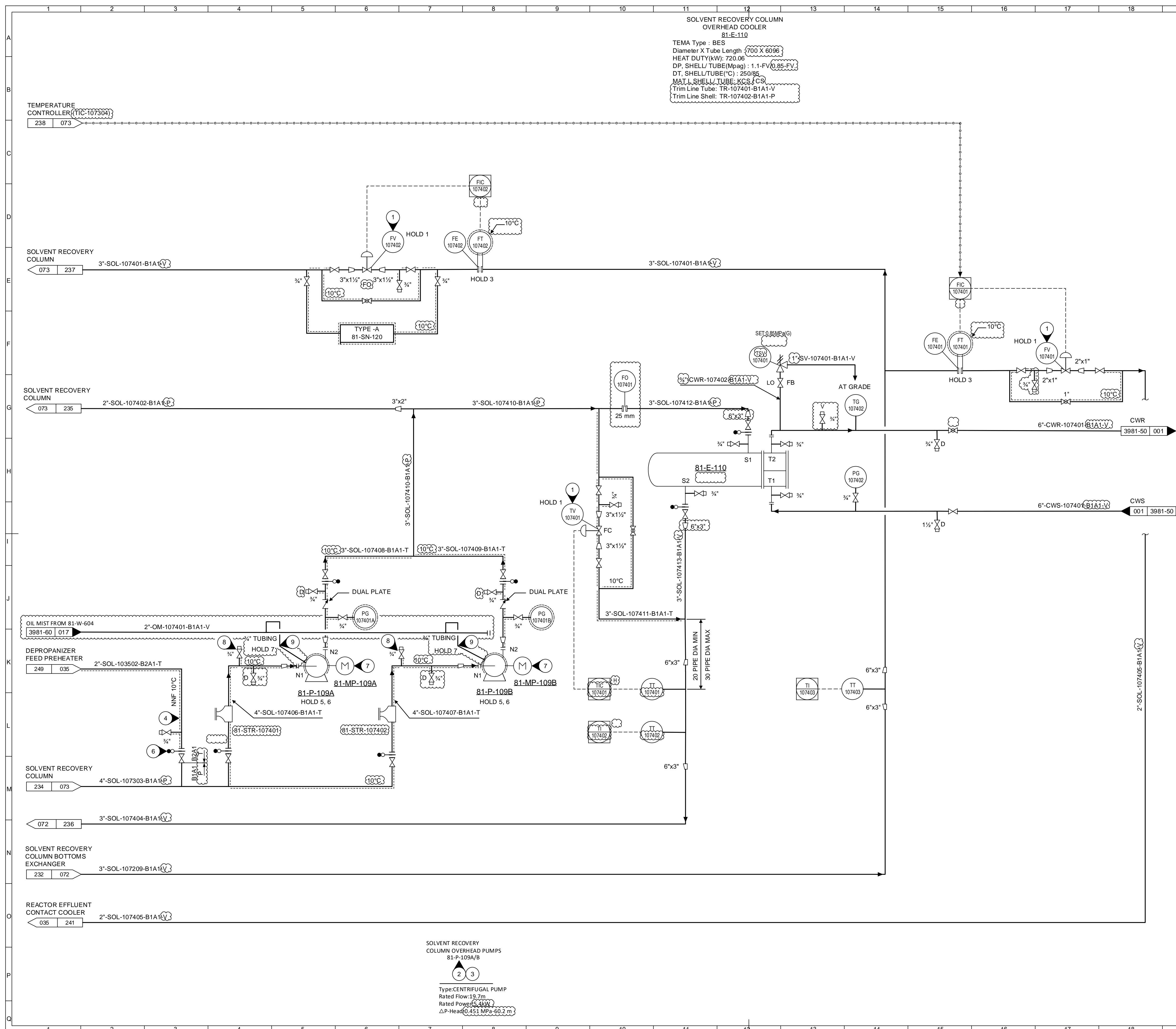




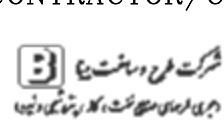
19	20	21	22	23
REFERENCE			DRAWINGS	
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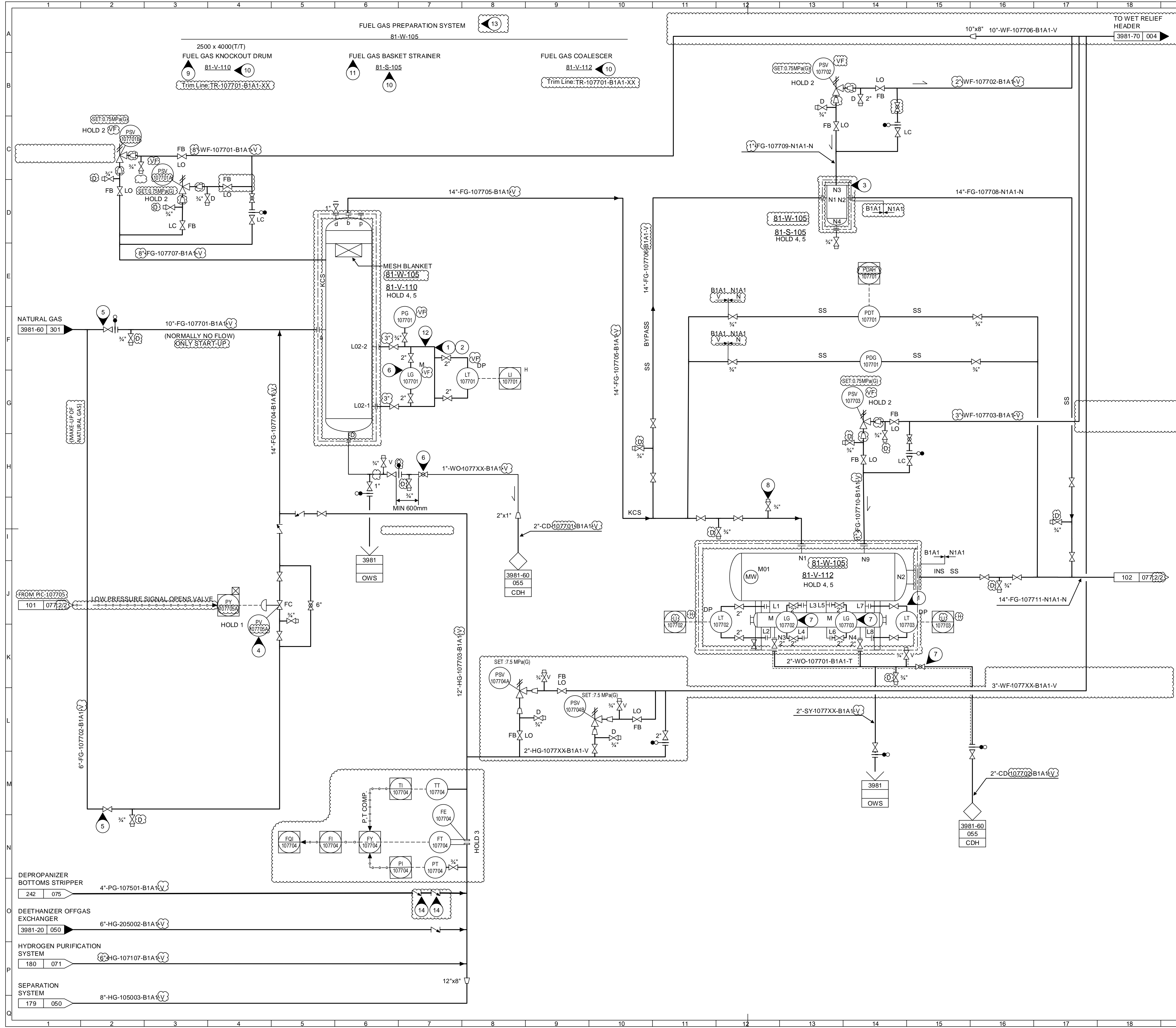




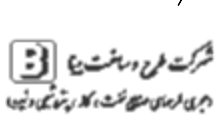

19	20	21	22	23
REFERENCE			DRAWINGS	
NOTES				
1. DETAIL "LVD", SEE DWG 3981-00-DE-PR-PID-054				
2. SEE STD DWG 8-121				
3.(DELETED)				
4. DETAIL "CVD", SEE DWG 3981-00-DE-PR-PID-054				
5. HEAT LOSS WITH RESULTING CONDENSATION OF HYDROCARBON. LIMIT POCKET TO MINIMIZE STATIC HEAD				
6. LEVEL GAUGE MUST BE READABLE FROM GLOBE VALVE				
7. FOR REPROCESSING AT START-UP				
8. LOCATE ORIFICE FLANGES AND ORIENT CONTROL VALVE INLET AND OUTLET PIPING ASSEMBLY IN HORIZONTAL RUN AT REBOILER				
9. PIPING MUST BE SYMMETRICAL				
10. DETAIL "CV", SEE DWG 3981-00-DE-PR-PID-054				
11. NO POCKET.				
12. LOCATE CLOSE TO LP STEAM HEATER				
</				

It is acknowledged that the information contained herein is for general reference only and is not intended to be used for any other purpose without the prior written consent of the owner.

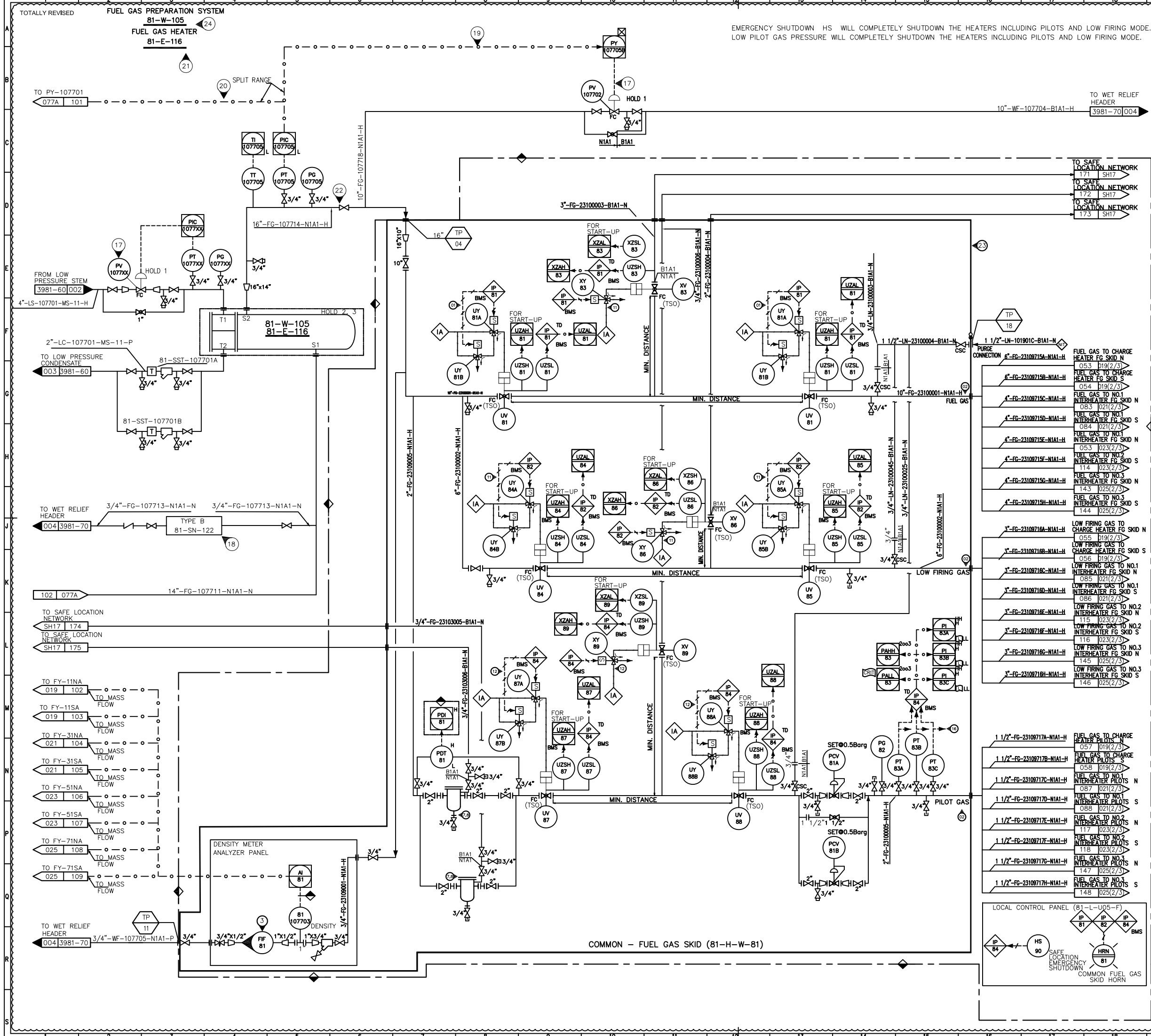


19	20	21	22	23		
REFERENCE			DRAWINGS			
NOTES						
1. DETAIL "CVD", SEE DWG 3981-00-DE-PR-PID-054 2. DETAIL "PVD", SEE DWG 3981-00-DE-PR-PID-054 3. DETAIL "TA", SEE DWG 3981-00-DE-PR-PID-052 4. FOR INVENTORYING TOP SECTION OF SOLVENT RECOVERY COLUMN 5. DELETED 6. BLANKOFF WHEN NOT IN USE 7. DETAIL "PUMP A",SEE DWG 3981-00-DE-PR-PID-055. 8. PRESSURE GAUGE CONNECTION 9. OIL DRAIN OF MIST OIL LUBRICATION SYSTEM IS COLLECTED ON A CONTAINER						
GENERAL NOTES:						
1.FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055. 2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER(PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.						
HOLDS						
1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/REDUCER 2. DELETED 3. FLOWMETER CONNECTION SIZE 4. DELETED 5. PUMP SUCTION/DISCHARGE NOZZLE SIZE. 6. DETAIL OF PUMP,VENT & DRAIN 7. SIZE AND ARRANGEMENT OF OIL MIST DROP POINT IN PUMP LUBRICATION SYSTEM INCLUDING RECLASSIFIER, OIL DRAIN CONTAINER AND OTHER REQUIREMENT.						
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI	
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI	
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED	
OWNER:		MC:	CONTRACTOR/CONSULTANT:			
						
PROJECT TITLE:						
PROPANE DEHYDROGENATION (PDH) PROJECT						
DOCUMENT TITLE:						
PIPING AND INSTRUMENT DIAGRAM						
SOLVENT RECOVERY OVERHEAD PUMPS						
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.
	3981	10	DE	PR	PID	074
SCALE:	SIZE: A1	SHEET NO. 1 OF 1			REVISION 01	CLASS: 1



REFERENCE			DRAWINGS			
NOTES						
1. DETAIL "LVD", SEE DWG 3981-00-DE-PR-PID-054. 2. SEE STD DWG 8-121. 3. APPLY CLOSED VENT PIPING AND VALVING FOR BASKET STRAINE. 4. DETAIL "CV", SEE DWG 3981-00-DE-PR-PID-054. 5. LOCATE REMOTE FROM HEATER(S) OPERATED FROM GRADE). 6. GAUGE GLASS MUST BE READABLE FROM VALVE. 7. COALESCENCE LEVEL GAUGE GLASS MUST BE READABLE FROM VALVE. 8. ¾" P NITROGEN PURGE CONNECTION 9. LOCATE AS CLOSE TO HEATER(S) AS POSSIBLE. 10. THE PART OF PROCESS DUTY SPECIFICATION FOR FUEL GAS PREPARATION SYSTEM (81-W-105). 11. SEE STANDARD DRAWING 8-138,TYPE-II. 12. SEE STANDARD DRAWINGS AND 8-121. 13. PIPING OF THE PACKAGE AND INSTRUMENT WHICH ARE INSTALLED ON PIPE ARE OUT OF VENDOR SCOPE OF SUPPLY. 14. TYPE OF CHECK VALVE TO BE DISSIMILAR.						
GENERAL NOTES:						
1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055. 2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER (PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.						
HOLDS						
1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/REDUCER 2. PSV ORIFICE SIZE, ITS INLET/OUTLET LINE SIZE AND CORRESPONDING VESSEL NOZZLE SIZE. 3. FLOWMETER CONNECTION SIZE. 4. PACKAGE DETAILS WITHIN VENDOR BATTERY LIMIT. 5. REQUIRED UTILITY AND LINE SIZE FOR THE PACKAGE.						
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAHGH	
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAHGH	
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED	
OWNER:		MC:	CONTRACTOR/CONSULTANT:			
		 A.P.G	 Parsian Petrochemical Co. 			
PROJECT TITLE:						
PROPANE DEHYDROGENATION (PDH) PROJECT						
DOCUMENT TITLE:						
PIPING AND INSTRUMENT DIAGRAM						
FUEL GAS PREPARATION						
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.
	3981	10	DE	PR	PID	077
SCALE:	SIZE: A1	SHEET NO. 1 OF 2		REVISION 01		CLASS: 1

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REFERENCE

DRAWINGS

NOTES

1. SOLENOIDS TO BE RESET LOCALLY BY HS-83 FOR UV-81, UV-82 AND XV-83 NEAR THE VALVE.

2. TERMINAL POINT INSIDE VENDOR BATTERY LIMIT:
- INTERCONNECTING PIPING BETWEEN COMMON FUELS SKID & EACH HEATER FUEL SKID UP TO EACH HEATER.

3. ALL INSTRUMENT TAG NUMBERS START WITH 81 AND TO INCLUDE 9506 BETWEEN TYPE AND SEQUENCE.

4. NUMBER, FOR EXAMPLE: 81-AI-950621 WILL BE MARKED AS AI-21.

5. INTERCONNECTING CABLES (MULTICABLES) FROM FIELD TO CONTROL ROOM ARE NOT IN VENDOR SCOPE.

6. FLOW ROTAMETER (LOCAL INDICATION)

7. LOCATE EQUIPMENT AS CLOSE TO HEATER AS POSSIBLE AT SAFE LOCATION.

8. MECHANICAL DESIGN CONDITIONS: PRESSURE 7.5 BARG / TEMPERATURE 180 °C.

9. FOR ALARM & TRIP SETS REFER TO DEDICATED DOCUMENT INSTRUMENT LIST / ALARM & TRIP SETS

10. DELETED.

11. SOLENOIDS TO BE RESET LOCALLY BY HS-84 FOR UV-84, UV-85 AND XV-86 NEAR THE VALVE.

12. SOLENOIDS TO BE RESET LOCALLY BY HS-87 FOR UV-87, UV-88 AND XV-89 NEAR THE VALVE.

13. PACKAGE NUMBER IS 06 AND PACKAGE TYPE IS BMS + TYPE B

14. PANEL SHALL BE EQUIPPED WITH SOUNDER HORN WITH BEACON.

15. FOR SAFE LOCATION NETWORK, REFER TO SHEET 17.

16. DUPLICATOR FOR PI-107706A/B/C AND PI-107706A/B/C. SEE DETAIL C.

17. DETAIL "CV", SEE DWG 3981-00-DE-PR-PID-054

18. WITH DETECTOR TUBE SAMPLE (SEE DETAIL "DT")

19. HIGH PRESSURE SIGNAL OPENS VALVE

20. LOW PRESSURE SIGNAL OPENS VALVE

21. THE PART OF PROCESS DUTY SPECIFICATION FOR FUEL GAS PREPARATION SYSTEM(81-W-105)

22. LOCATE AT SAFE LOCATION.

23. FUEL GAS SKID

24. PIPING OF THE PACKAGE AND INSTRUMENT WHICH ARE INSTALLED ON PIPE ARE OUT OF VENDOR SCOPE OF SUPPLY.

DETAIL "A"

EMERGENCY SHUTDOWN

UY INSTRUMENT TAG NUMBERS ARE THE SAME AS THE SHUTDOWN VALVE THEY ARE ASSOCIATED WITH

LOCATE REMOTE FROM HEATER (OPERATED FROM GRADE)

KEY, LOCK

LOW FIRING PERMISSION

HOLD

1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/REDUCER

2. PACKAGE DETAILS WITHIN VENDOR BATTERY LIMIT.

3. REQUIRED UTILITY AND LINE SIZE FOR THE PACKAGE.

GENERAL NOTES:

1. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER (PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.

01

ISSUED FOR APPROVAL

10-Jan-2026

M.KHERADRAK

M.JAMSHIDI

M.H.ESHRAGH

00

ISSUED FOR COMMENT

06-Aug-2025

M.KHERADRAK

M.JAMSHIDI

M.H.ESHRAGH

REV.

PURPOSE OF ISSUE

ISSUE DATE

PREPARE

CHECKED

APPROVED

OWNER:

MC:

CONTRACTOR/CONSULTANT:

PROJECT TITLE:

PROPANE DEHYDROGENATION (PDH) PROJECT

DOCUMENT TITLE:

PIPING & INSTRUMENT DIAGRAM
Fuel Gas Preparation

DOC NO.:

PROJ.CODE

Sec.

PHASE

DEP.

DOC. TYPE

SERIAL NO.

3981

10

DE

PR

PID

077

SCALE:

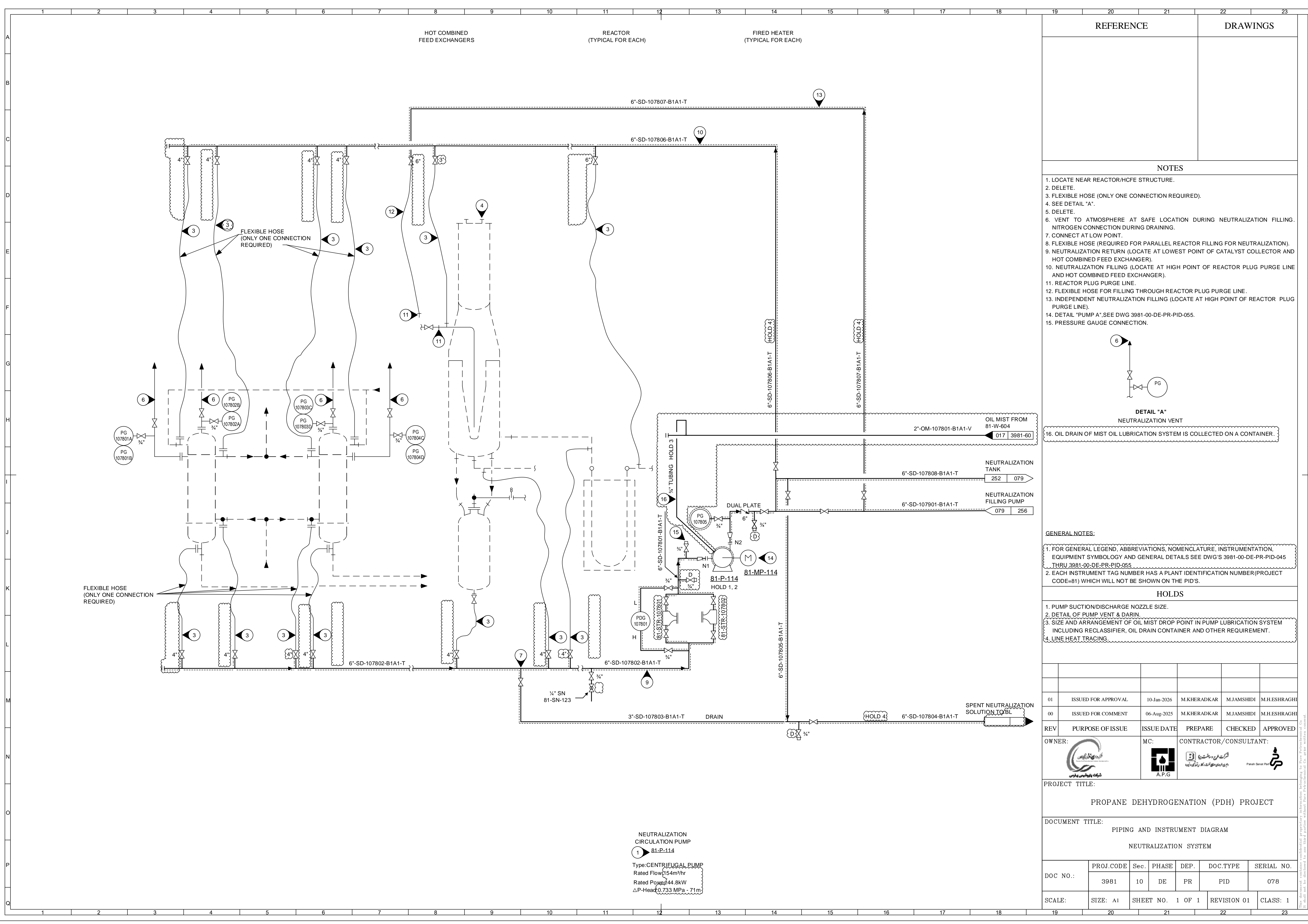
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SHEET NO: 2 OF 2

REVISION: 01

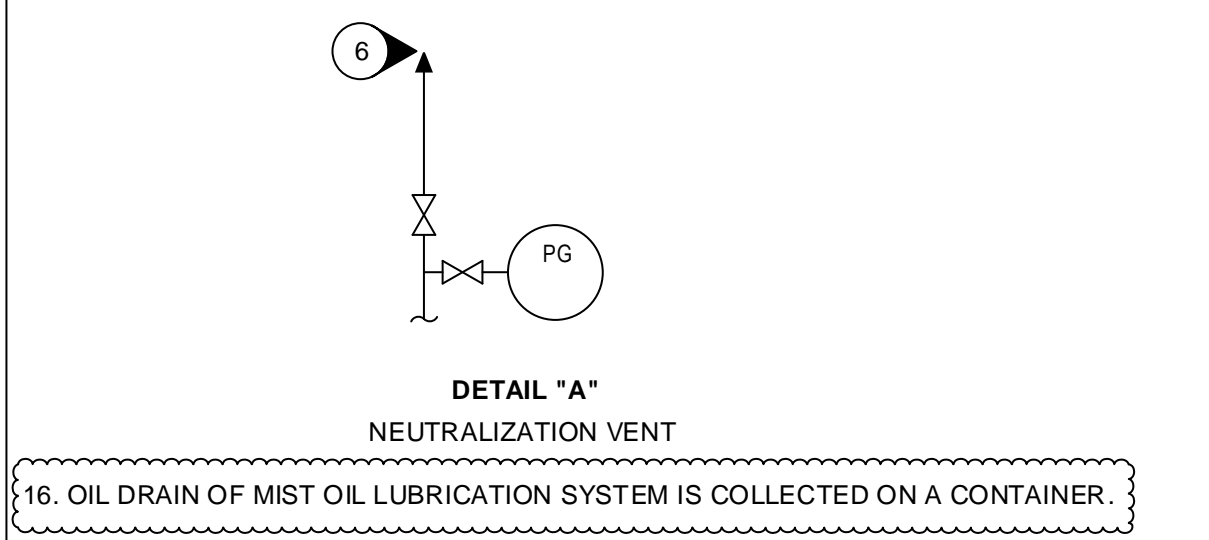
CLASS: 1

EMERGENCY SHUTDOWN HS WILL COMPLETELY SHUTDOWN THE HEATERS INCLUDING PILOTS AND LOW FIRING MODE.
LOW PILOT GAS PRESSURE WILL COMPLETELY SHUTDOWN THE HEATERS INCLUDING PILOTS AND LOW FIRING MODE.



REFERENCE	DRAWINGS

- NOTES
- LOCATE NEAR REACTOR/HCFE STRUCTURE.
 - DELETE.
 - FLEXIBLE HOSE (ONLY ONE CONNECTION REQUIRED).
 - SEE DETAIL "A".
 - DELETE.
 - VENT TO ATMOSPHERE AT SAFE LOCATION DURING NEUTRALIZATION FILLING. NITROGEN CONNECTION DURING DRAINING.
 - CONNECT AT LOW POINT.
 - FLEXIBLE HOSE (REQUIRED FOR PARALLEL REACTOR FILLING FOR NEUTRALIZATION).
 - NEUTRALIZATION RETURN (LOCATE AT LOWEST POINT OF CATALYST COLLECTOR AND HOT COMBINED FEED EXCHANGER).
 - NEUTRALIZATION FILLING (LOCATE AT HIGH POINT OF REACTOR PLUG PURGE LINE AND HOT COMBINED FEED EXCHANGER).
 - REACTOR PLUG PURGE LINE.
 - FLEXIBLE HOSE FOR FILLING THROUGH REACTOR PLUG PURGE LINE.
 - INDEPENDENT NEUTRALIZATION FILLING (LOCATE AT HIGH POINT OF REACTOR PLUG PURGE LINE).
 - DETAIL "PUMP A",SEE DWG 3981-00-DE-PR-PID-055.
 - PRESSURE GAUGE CONNECTION.



- GENERAL NOTES:
- FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055.
 - EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER (PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.

- HOLDS
- PUMP SUCTION/DISCHARGE NOZZLE SIZE.
 - DETAIL OF PUMP VENT & DARIN.
 - SIZE AND ARRANGEMENT OF OIL MIST DROP POINT IN PUMP LUBRICATION SYSTEM INCLUDING RECLASSIFIER, OIL DRAIN CONTAINER AND OTHER REQUIREMENT.
 - LINE HEAT TRACING.

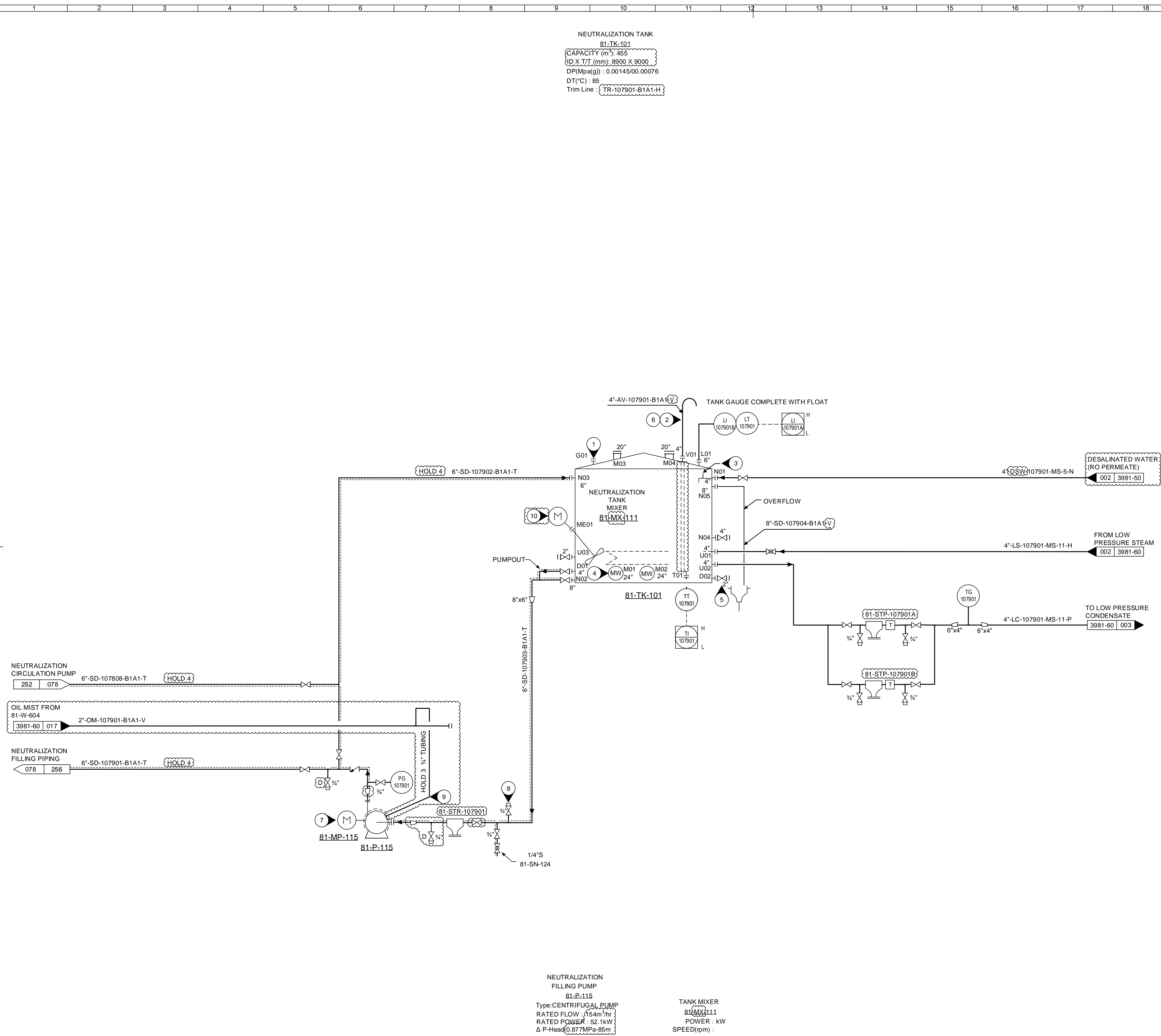
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED
OWNER:		MC:	CONTRACTOR/CONSULTANT:		



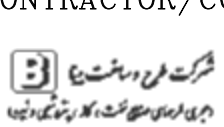
PROJECT TITLE:
PROPANE DEHYDROGENATION (PDH) PROJECT

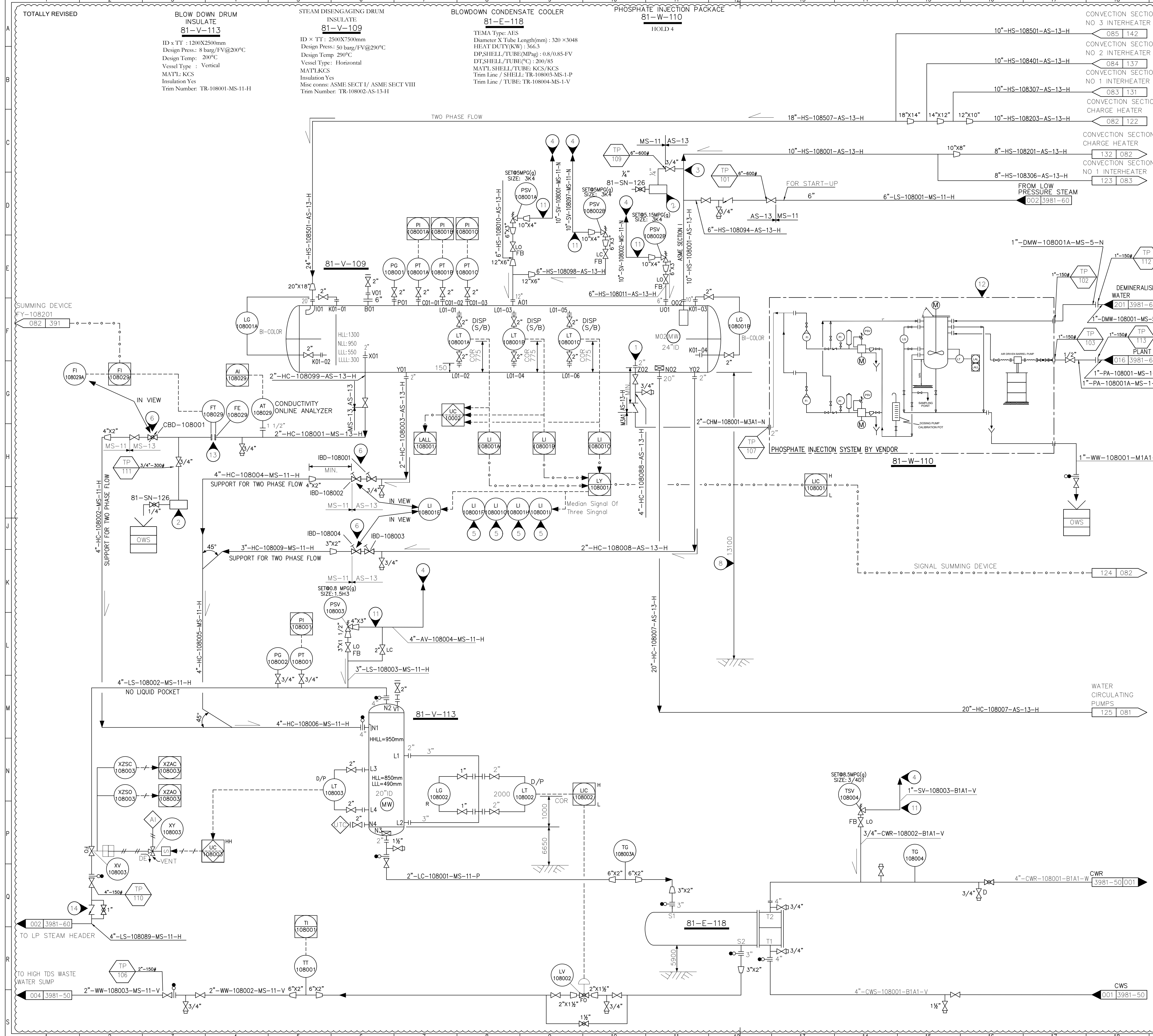
DOCUMENT TITLE:
PIPING AND INSTRUMENT DIAGRAM
NEUTRALIZATION SYSTEM

DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC.TYPE	SERIAL NO.
	3981	10	DE	PR	PID	078
SCALE:	SIZE: A1	SHEET NO. 1 OF 1		REVISION 01		CLASS: 1

NEUTRALIZATION CIRCULATION PUMP
1 81-P-114
Type:CENTRIFUGAL PUMP
Rated Flow:154m³/hr
Rated Power:44.8kW
ΔP-Head:0.733 MPa ~ 71m



19	20	21	22	23
REFERENCE			DRAWINGS	
NOTES				
1. PROVIDE FACILITIES FOR UNLOADING SODA ASH THROUGH GAUGING HATCH. 2. DELETED 3. SIPHON BREAKER. 4. AS REQUIRED. 5. DRAIN NOZZLES (AS REQUIRED). 6. VENT TO ATMOSPHERE AT SAFE LOCATION. 7. DETAIL "PUMP A",SEE DWG 3981-00-DE-PR-PID-055. 8. PRESSURE GAUGE CONNECTION. 9. OIL DRAIN OF MIST OIL LUBRICATION SYSTEM IS COLLECTED ON A CONTAINER. 10. MIXER MOTOR SIGNALS:				
GENERAL NOTES:				
1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-055 2. EACH INSTRUMENT TAG NUMBER HAS A PLANT IDENTIFICATION NUMBER (PROJECT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.				
HOLDS				
1. PUMP SUCTION/DISCHARGE NOZZLE SIZE. 2. DETAIL OF PUMP VENT & DARIN. 3. SIZE AND ARRANGEMENT OF OIL MIST DROP POINT IN PUMP LUBRICATION SYSTEM INCLUDING RECLASSIFIER, OIL DRAIN CONTAINER AND OTHER REQUIREMENT. 4. LINE HEAT TRACING				
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI
REV	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED
OWNER:		MC:	CONTRACTOR/CONSULTANT:	
				
PROJECT TITLE:				
PROPANE DEHYDROGENATION (PDH) PROJECT				
DOCUMENT TITLE:				
PIPING AND INSTRUMENT DIAGRAM				
NEUTRALIZATION TANK				
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.
	3981	10	DE	PR
		DOC.TYPE		SERIAL NO.
		PID		079
SCALE:	SIZE: A1	SHEET NO.		REVISION 01
				CLASS: 1



REFERENCE

DRAWINGS

NOTES

GENERAL NOTES:

HOLD

01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAHI
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAHI
REV.	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED
OWNER:	MC:		CONTRACTOR/CONSULTANT:		

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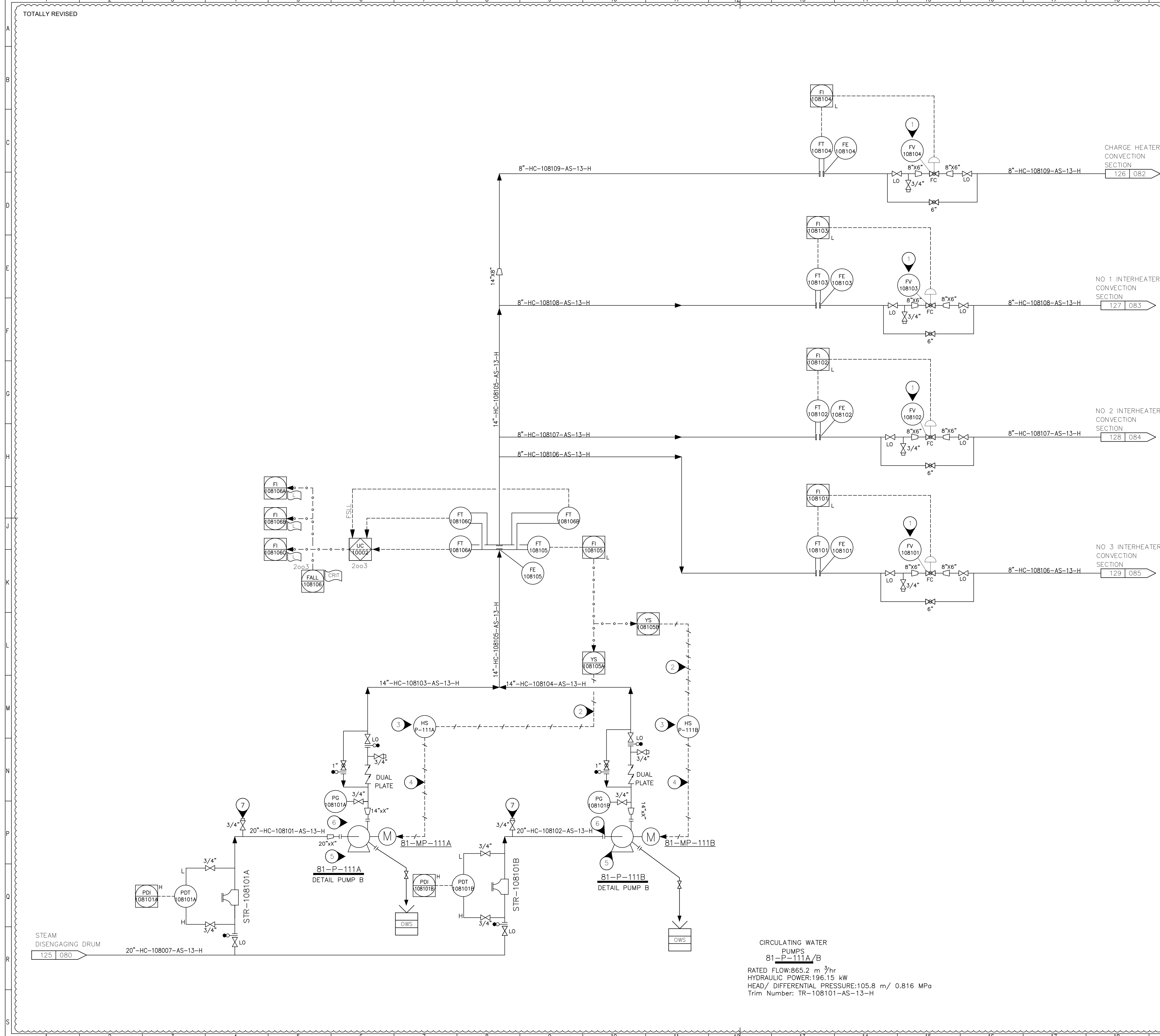
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SCALE:

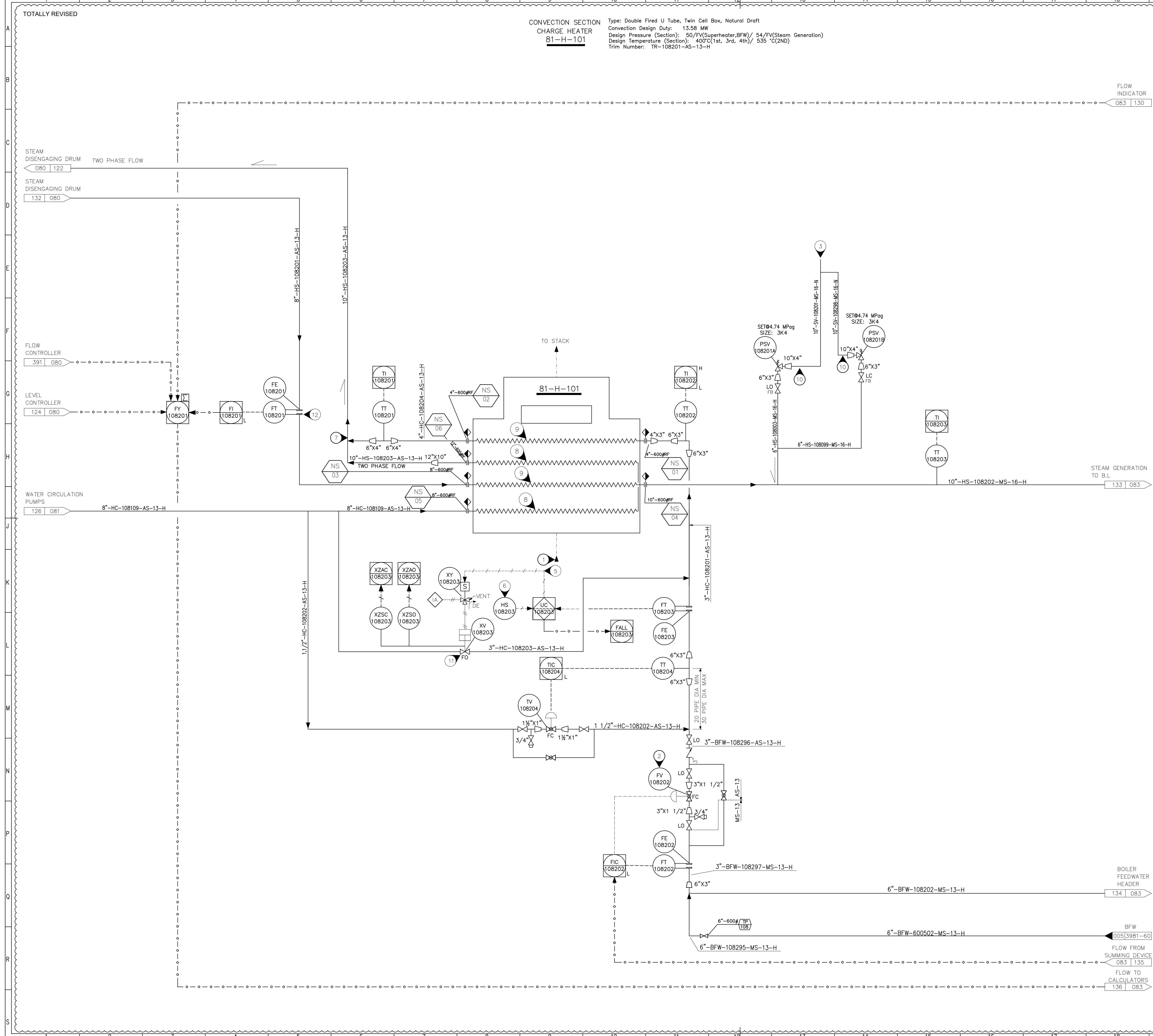
SIZE:	SHEET NO: 1 OF 1	REVISION: 01	CLASS: 1
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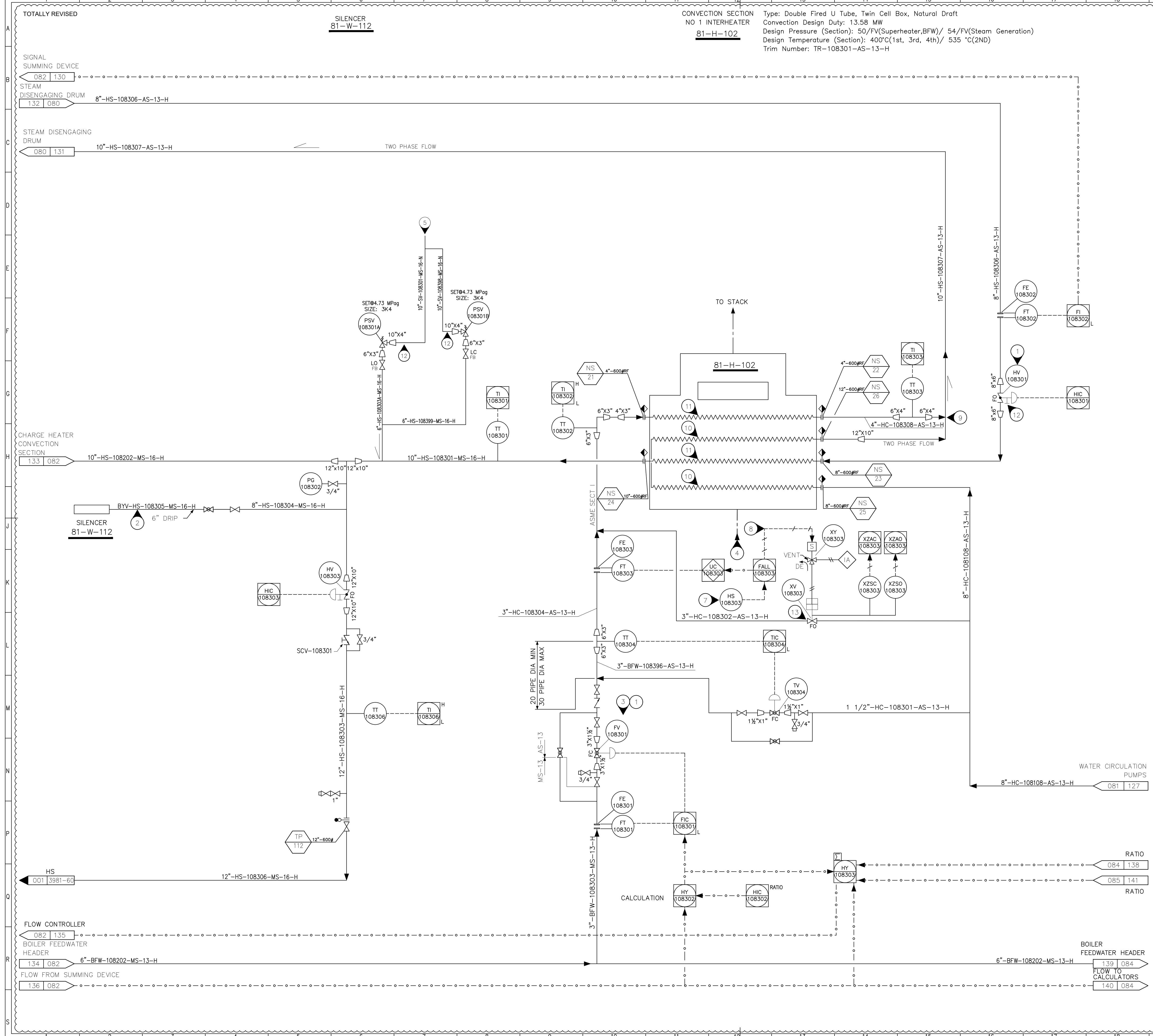
REFERENCE			DRAWINGS			
NOTES						
1. PROVIDE LIMIT STOPS: FV-108101: 38% OF NORMAL FLOWRATE. FV-108102: 40% OF NORMAL FLOWRATE. FV-108103: 37% OF NORMAL FLOWRATE. FV-108104: 37% OF NORMAL FLOWRATE. 2. LOW FLOW START 3. HAND-OFF-AUTO 4. TO MOTOR CONTROL CIRCUIT 5.DETAIL "PUMP B",SEE DWG 3981-00-DE-PR-PID-055. 6.MINIMUM FLOW REQUIREMENT AND ARRANGEMENT AND PRIMING REQUIREMENT WILL BE FINALIZED AFTER RECEIVING PUMP VENDOR DATA. 7.PRESSURE GAUGE CONNECTION.						
GENERAL NOTES:						
1. EACH INSTRUMENT TAG NUMBER HAS A PIANT IDENTIFICATION NUMBER(PROJRCT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID'S.						
HOLD						
1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/REDUCER 2. PUMP SUCTION/DISCHARGE NOZZLE SIZE. 3. DETAIL OF PUMP VENT & DARIN 4. FLOWMETER CONNECTION SIZE						
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI	
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI	
REV.	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED	
OWNER:		MC:	CONTRACTOR/CONSULTANT:			
PROJECT TITLE:						
PROPANE DEHYDROGENATION (PDH) PROJECT						
DOCUMENT TITLE:						
PIPING & INSTRUMENT DIAGRAM Water Circulation Pumps						
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC. TYPE	SERIAL NO.
	3981	10	DE	PR	PID	081
SCALE:	SIZE:	SHEET NO: 1 OF 1		REVISION: 01	CLASS: 1	

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REFERENCE				DRAWINGS			
NOTES							
<div>1. FLUE GAS FROM CHARGE HEATER. SEE HEATER DWG 3981-10-DE-PR-PID-019 2. LOCATE AT GRADE 3. TO ATMOSPHERE AT SAFE LOCATION 4. PID SCHEMATIC IS NOT THE EXACT ARRANGEMENT INSIDE THE HEATERS. 5. LOW FLOW START 6. RESET, LOCATE NEAR ASSOCIATED VALVE 7. MIXPOINT TO BE LOCATED AT MINIMUM ELEVATION 8. CO-CURRENT STREAM INSIDE CONVECTION SECTION. 9. COUNTER CURRENT STREAM INSIDE CONVECTION SECTION. 10. HOLE AT LOW POINT. 11. VALVE OPERATION DISCREPANCY ALARM SHALL BE PROVIDED FOR ALL VALVES WHICH ARE CONNECTED TO ESD. 12. ORIFICE PRESSURE DROP AT FULL CAPACITY IS 0.75 BAR.</div>							
A. EACH INSTRUMENT TAG NUMBER HAS A PIANT IDENTIFICATION NUMBER(PROJRCT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID's.							
GENERAL NOTES:							
FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE, INSTRUMENTATION, EQUIPMENT SYMBOLOGY AND GENERAL DETAILS SEE DWG'S 3981-00-BA-PR-PID-045 THROUGH 3981-00-BA-PR-PID-054							
HOLD							
<div>1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/REDUCER 2. PSV ORIFICE SIZE, ITS INLET/OUTLET LINE SIZE AND CORRESPONDING VESSEL NOZZLE SIZE.</div>							
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI		
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI		
REV.	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED		
OWNER:		MC:	CONTRACTOR/CONSULTANT:				
PROJECT TITLE:							
PROPANE DEHYDROGENATION (PDH) PROJECT							
DOCUMENT TITLE:							
PIPING & INSTRUMENT DIAGRAM Convection Section Charge Heater							
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC. TYPE	SERIAL NO.	
	3981	10	DE	PR	PID	082	
SCALE:	SIZE:	SHEET NO: 1 OF 1		REVISION: 01		CLASS: 1	
10	00	01		00		10	

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REFERENCE

DRAWINGS

NOTES

1.PROVIDE LIMIT STOP

2.SIZE BY SILENCER VENDOR.

3.LOCATE AT GRADE

4.FLUE GAS FROM NO 1 INTERHEATER

SEE HEATER DWG 3981-10-DE-PR-PID-021.

5.TO ATMOSPHERE AT SAFE LOCATION

6.PID SCHEMATIC IS NOT THE EXACT ARRANGEMENT INSIDE THE HEATERS.

7.RESET, LOCATE NEAR ASSOCIATED VALVE

8.LOW FLOW START

9.MIXPOINT TO BE LOCATED AT MINIMUM ELEVATION.

10.CO-CURRENT STREAM INSIDE CONVECTION SECTION.

11.COUNTER CURRENT STREAM INSIDE CONVECTION SECTION.

12.WEEP HOLE AT LOW POINT.

13.VALVE OPERATION DISCREPANCY ALARM SHALL BE PROVIDED FOR ALL VALVES WHICH ARE CONNECTED TO ESD.

14.MECHANICAL STOP ON MINIMUM FLOWRATE OF 21600 KG/H.

GENERAL NOTES:

1. EACH INSTRUMENT TAG NUMBER HAS A PIANT IDENTIFICATION NUMBER(PROJRCT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID's.

HOLD

1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/REDUCER

2. PSV ORIFICE SIZE, ITS INLET/OUTLET LINE SIZE AND CORRESPONDING VESSEL NOZZLE SIZE.

01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
REV.	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED
OWNER:		MC:		CONTRACTOR/CONSULTANT: Pars Petroleum Co.	

PROJECT TITLE:

PROPANE DEHYDROGENATION (PDH) PROJECT

DOCUMENT TITLE:

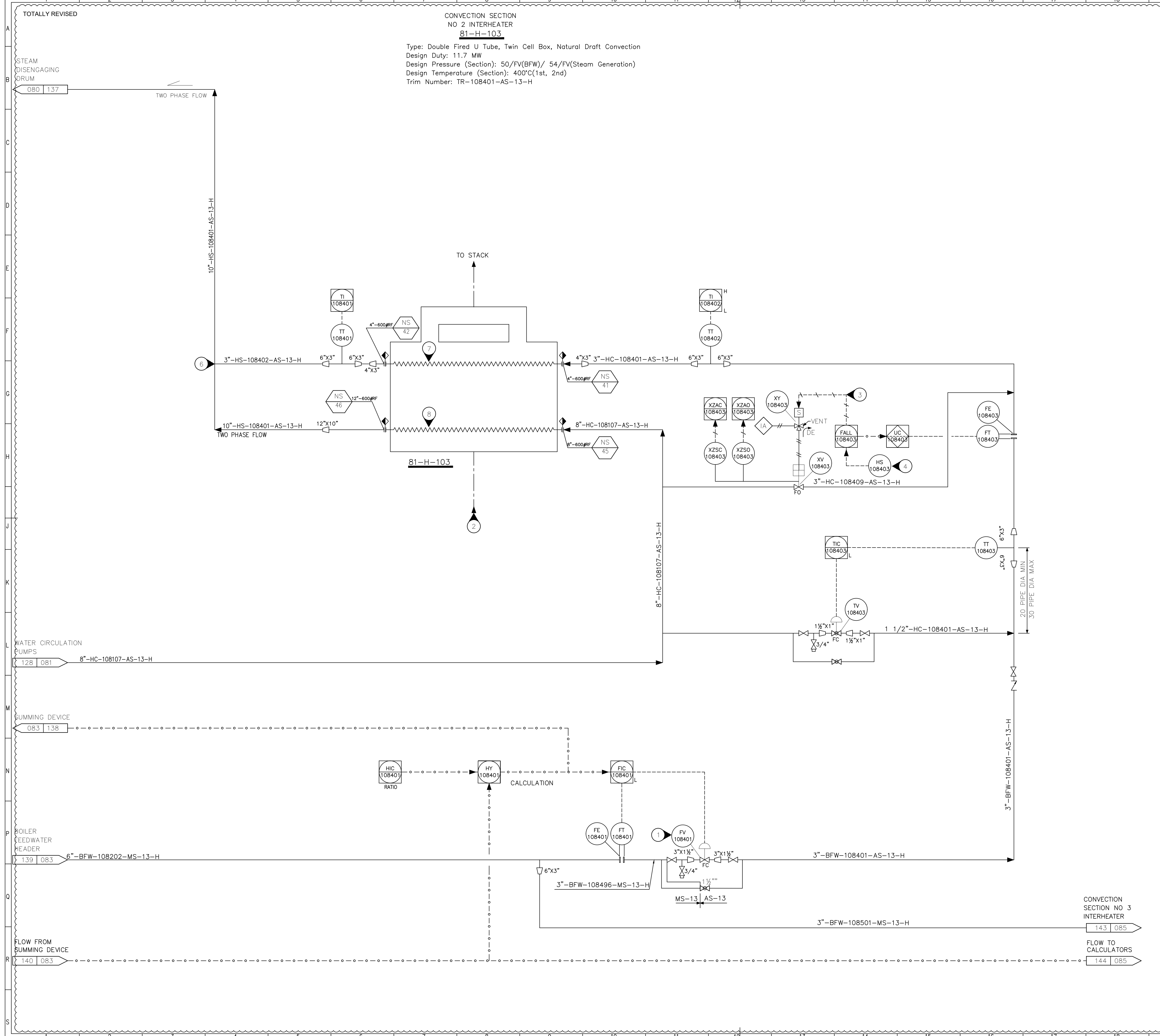
PIPING & INSTRUMENT DIAGRAM
Convection Section No 1 Interheater



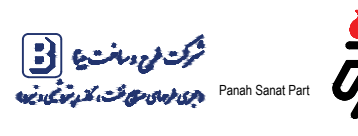
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC. TYPE	SERIAL NO.
	3981	10	DE	PR	PID	083

SCALE:

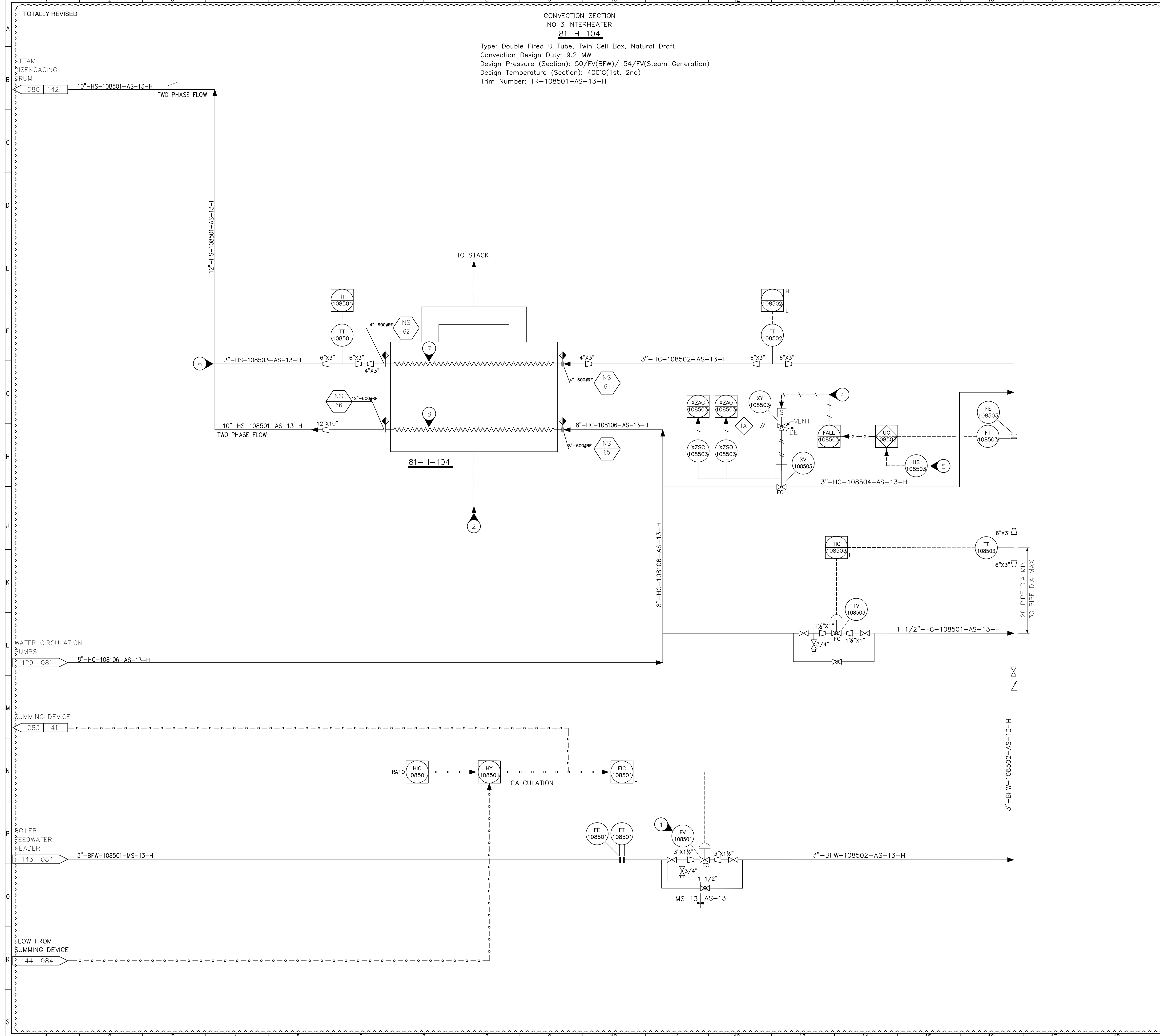
SIZE:	SHEET NO: 1 OF 1	REVISION: 01	CLASS: 1
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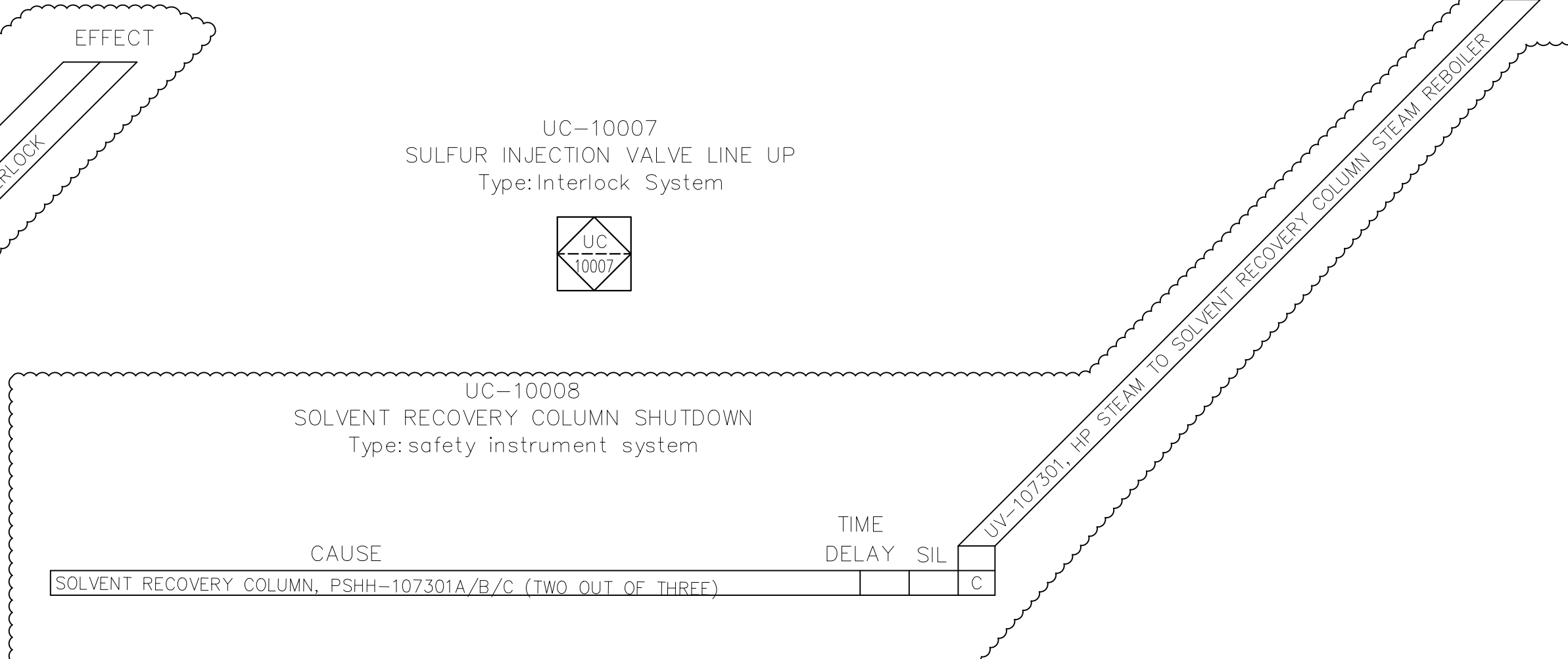
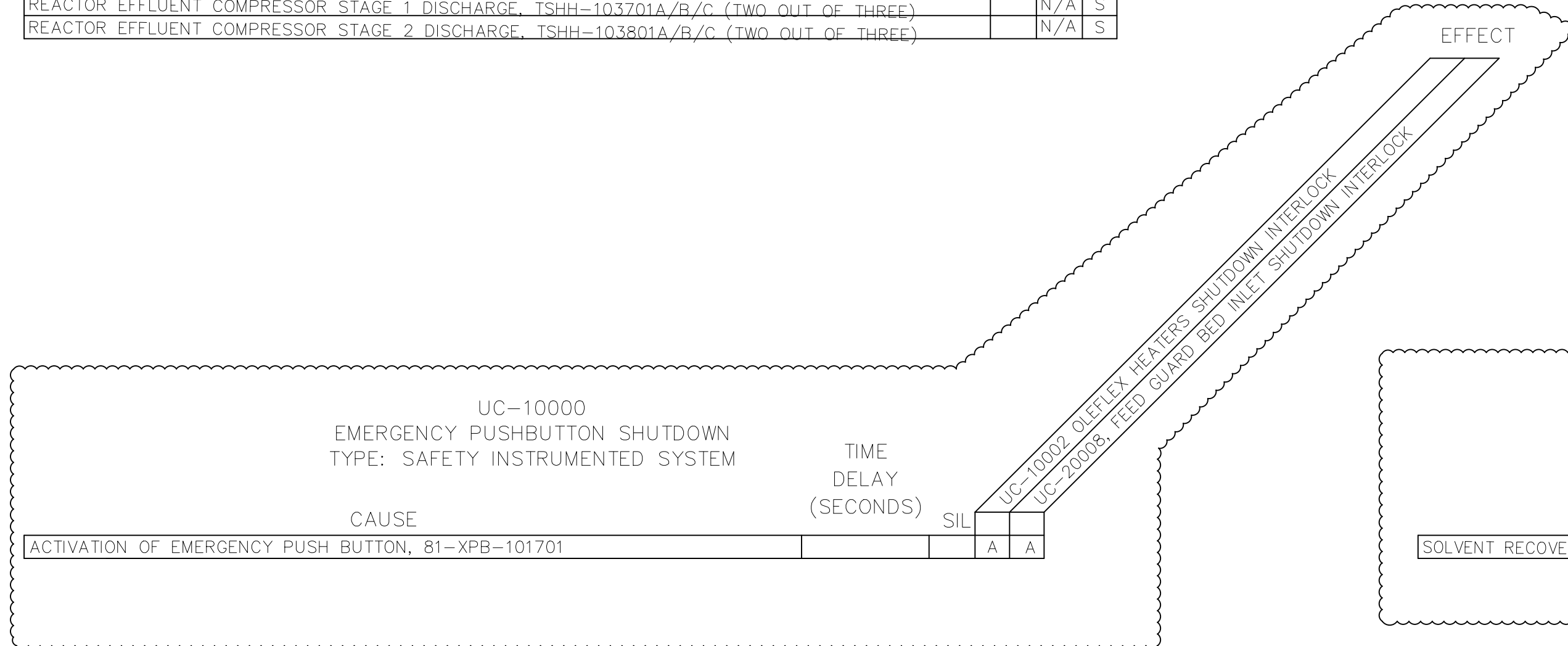
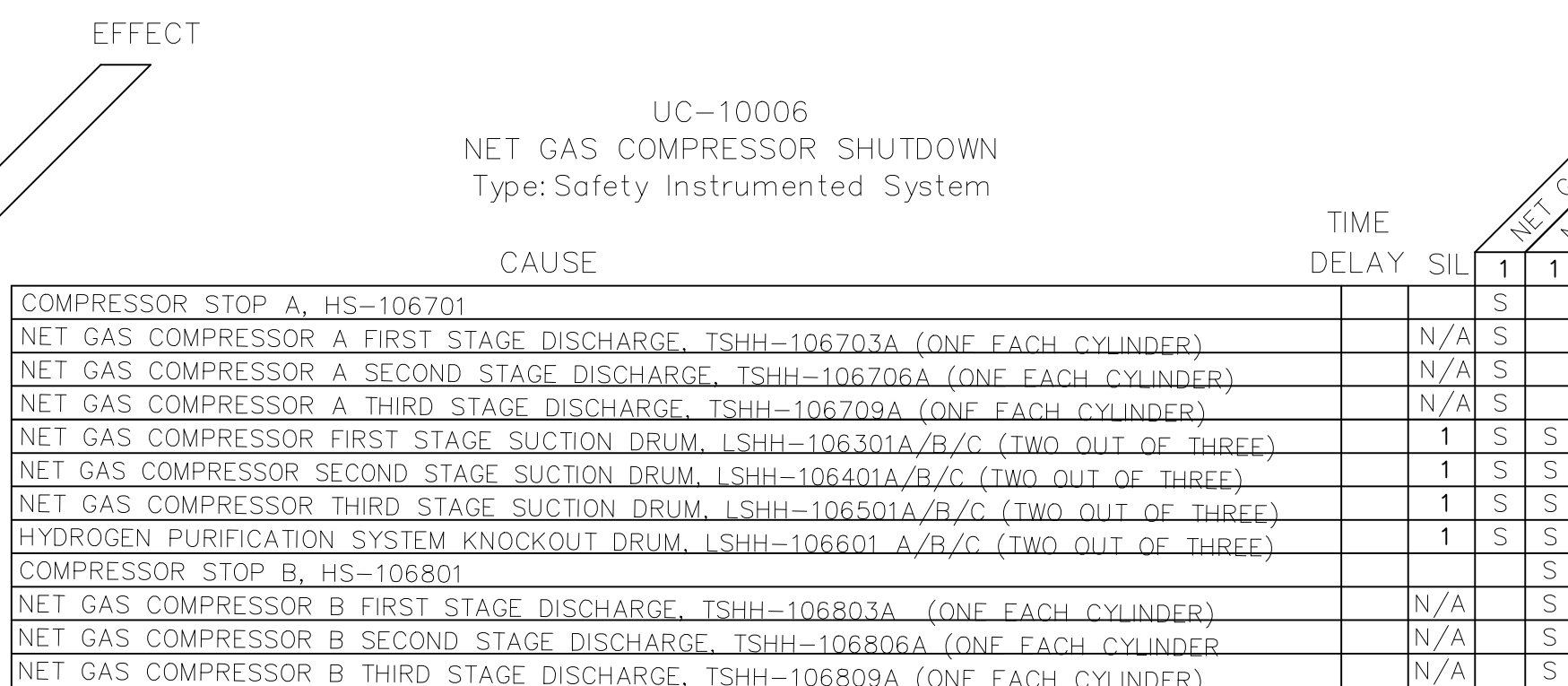
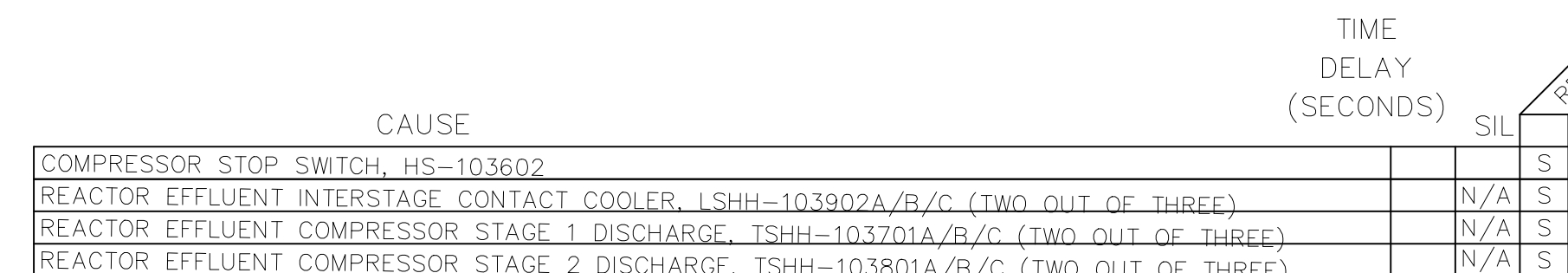
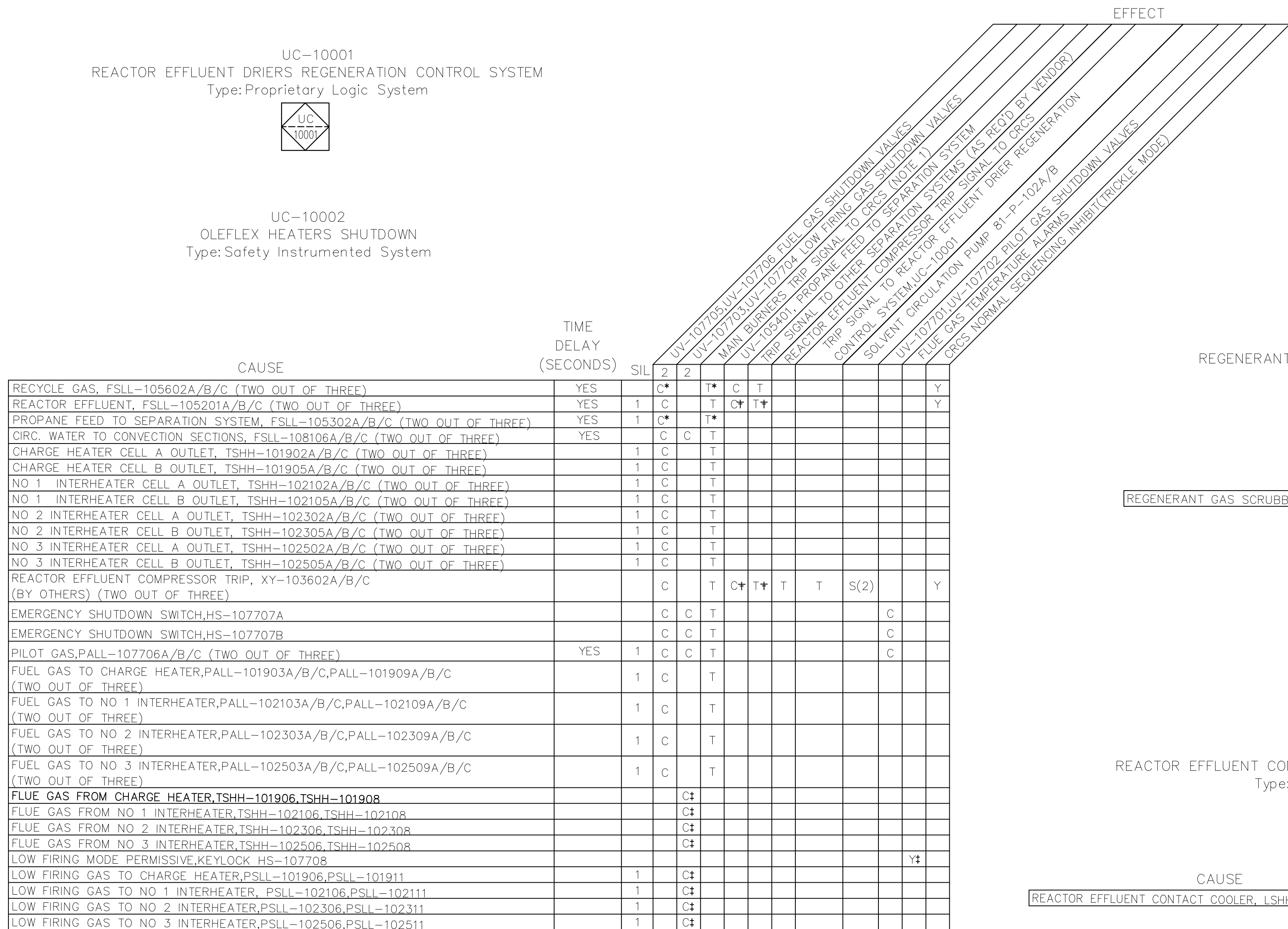
REFERENCE			DRAWINGS		
NOTES					
1.LOCATE AT GRADE. 2.FLUE GAS FROM NO 2 INTERHEATER SEE HEATER DWG 3981-10-DE-PR-PID-023. 3.LOW FLOW START 4.RESET, LOCATE NEAR ASSOCIATED VALVE 5.PID SCHEMATIC IS NOT THE EXACT ARRANGEMENT INSIDE THE HEATERS. 6.MIXPOINT TO BE LOCATED AT MINIMUM ELEVATION. 7.COUNTER CURRENT STREAM INSIDE CONVECTION SECTION. 8.CO-CURRENT STREAM INSIDE CONVECTION SECTION.					
GENERAL NOTES:					
1. EACH INSTRUMENT TAG NUMBER HAS A PIANT IDENTIFICATION NUMBER(PROJRCT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID's.					
HOLD					
1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/REDUCER					
01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M-JAMSHIDI	M.H.ESHRAGHI
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M-JAMSHIDI	M.H.ESHRAGHI
REV.	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED
OWNER:		MC:	CONTRACTOR/CONSULTANT:		
					
PROJECT TITLE:					
PROPANE DEHYDROGENATION (PDH) PROJECT					
DOCUMENT TITLE:					
PIPING & INSTRUMENT DIAGRAM Convection Section No 2 Interheater					
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	SERIAL NO.
	3981	10	DE	PR	084
SCALE:	SIZE:	SHEET NO: 1 OF 1		REVISION: 01	CLASS: 1

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REFERENCE			DRAWINGS		
NOTES					
1.LOCATE AT GRADE 2.FLUE GAS FROM NO 3 INTERHEATER SEE HEATER DWG 3981-10-DE-PR-PID-025 3.PID SCHEMATIC IS NOT THE EXACT ARRANGEMENT INSIDE THE HEATERS. 4.LOW FLOW START 5.RESET, LOCATE NEAR ASSOCIATED VALVE 6.MIXPOINT TO BE LOCATED AT MINIMUM ELEVATION. 7.COUNTER CURRENT STREAM INSIDE CONVECTION SECTION. 8.CO-CURRENT STREAM INSIDE CONVECTION SECTION.					
GENERAL NOTES:					
1. EACH INSTRUMENT TAG NUMBER HAS A PIANT IDENTIFICATION NUMBER(PROJRCT CODE=81) WHICH WILL NOT BE SHOWN ON THE PID's.					
HOLD					
1. CONTROL VALVE, ITS ISOLATION, BY PASS VALVE SIZE AND NUMBER OF EXPANDER/REDUCER					
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00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
REV.	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED
OWNER:		MC:		CONTRACTOR/CONSULTANT:	
PROJECT TITLE:					
PROPANE DEHYDROGENATION (PDH) PROJECT					
DOCUMENT TITLE:					
PIPING & INSTRUMENT DIAGRAM CONVECTION SECTION NO 3 INTERHEATER					
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC. TYPE
	3981	10	DE	PR	PID
SCALE:	SIZE:	SHEET NO: 1 OF 1		REVISION: 01	CLASS: 1
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REFERENCE	DRAWINGS

NOTES

Case no.	Age	Sex	Occupation	Duration of disease (years)	Onset of disease	Family history	Previous treatment	Current treatment	Outcome	Histopathological findings		Immunohistochemical findings	Molecular findings	Genetic findings	Clinical course	Follow-up	Comments
										HE	Immunohistochemistry						
1	65	F	Housewife	10	2010	No	No	No	No	Fig. 1a	Fig. 1b	Fig. 1c	Fig. 1d	Fig. 1e	Fig. 1f	Fig. 1g	Fig. 1h
2	68	F	Retired	5	2012	No	No	No	No	Fig. 2a	Fig. 2b	Fig. 2c	Fig. 2d	Fig. 2e	Fig. 2f	Fig. 2g	Fig. 2h
3	72	F	Retired	15	1997	No	No	No	No	Fig. 3a	Fig. 3b	Fig. 3c	Fig. 3d	Fig. 3e	Fig. 3f	Fig. 3g	Fig. 3h
4	75	F	Retired	10	2005	No	No	No	No	Fig. 4a	Fig. 4b	Fig. 4c	Fig. 4d	Fig. 4e	Fig. 4f	Fig. 4g	Fig. 4h
5	78	F	Retired	10	2008	No	No	No	No	Fig. 5a	Fig. 5b	Fig. 5c	Fig. 5d	Fig. 5e	Fig. 5f	Fig. 5g	Fig. 5h
6	80	F	Retired	10	2008	No	No	No	No	Fig. 6a	Fig. 6b	Fig. 6c	Fig. 6d	Fig. 6e	Fig. 6f	Fig. 6g	Fig. 6h
7	82	F	Retired	10	2008	No	No	No	No	Fig. 7a	Fig. 7b	Fig. 7c	Fig. 7d	Fig. 7e	Fig. 7f	Fig. 7g	Fig. 7h
8	85	F	Retired	10	2008	No	No	No	No	Fig. 8a	Fig. 8b	Fig. 8c	Fig. 8d	Fig. 8e	Fig. 8f	Fig. 8g	Fig. 8h
9	88	F	Retired	10	2008	No	No	No	No	Fig. 9a	Fig. 9b	Fig. 9c	Fig. 9d	Fig. 9e	Fig. 9f	Fig. 9g	Fig. 9h
10	90	F	Retired	10	2008	No	No	No	No	Fig. 10a	Fig. 10b	Fig. 10c	Fig. 10d	Fig. 10e	Fig. 10f	Fig. 10g	Fig. 10h
11	92	F	Retired	10	2008	No	No	No	No	Fig. 11a	Fig. 11b	Fig. 11c	Fig. 11d	Fig. 11e	Fig. 11f	Fig. 11g	Fig. 11h
12	95	F	Retired	10	2008	No	No	No	No	Fig. 12a	Fig. 12b	Fig. 12c	Fig. 12d	Fig. 12e	Fig. 12f	Fig. 12g	Fig. 12h
13	98	F	Retired	10	2008	No	No	No	No	Fig. 13a	Fig. 13b	Fig. 13c	Fig. 13d	Fig. 13e	Fig. 13f	Fig. 13g	Fig. 13h
14	100	F	Retired	10	2008	No	No	No	No	Fig. 14a	Fig. 14b	Fig. 14c	Fig. 14d	Fig. 14e	Fig. 14f	Fig. 14g	Fig. 14h
15	102	F	Retired	10	2008	No	No	No	No	Fig. 15a	Fig. 15b	Fig. 15c	Fig. 15d	Fig. 15e	Fig. 15f	Fig. 15g	Fig. 15h
16	105	F	Retired	10	2008	No	No	No	No	Fig. 16a	Fig. 16b	Fig. 16c	Fig. 16d	Fig. 16e	Fig. 16f	Fig. 16g	Fig. 16h
17	108	F	Retired	10	2008	No	No	No	No	Fig. 17a	Fig. 17b	Fig. 17c	Fig. 17d	Fig. 17e	Fig. 17f	Fig. 17g	Fig. 17h
18	110	F	Retired	10	2008	No	No	No	No	Fig. 18a	Fig. 18b	Fig. 18c	Fig. 18d	Fig. 18e	Fig. 18f	Fig. 18g	Fig. 18h
19	112	F	Retired	10	2008	No	No	No	No	Fig. 19a	Fig. 19b	Fig. 19c	Fig. 19d	Fig. 19e	Fig. 19f	Fig. 19g	Fig. 19h
20	115	F	Retired	10	2008	No	No	No	No	Fig. 20a	Fig. 20b	Fig. 20c	Fig. 20d	Fig. 20e	Fig. 20f	Fig. 20g	Fig. 20h
21	118	F	Retired	10	2008	No	No	No	No	Fig. 21a	Fig. 21b	Fig. 21c	Fig. 21d	Fig. 21e	Fig. 21f	Fig. 21g	Fig. 21h
22	120	F	Retired	10	2008	No	No	No	No	Fig. 22a	Fig. 22b	Fig. 22c	Fig. 22d	Fig. 22e	Fig. 22f	Fig. 22g	Fig. 22h
23	122	F	Retired	10	2008	No	No	No	No	Fig. 23a	Fig. 23b	Fig. 23c	Fig. 23d	Fig. 23e	Fig. 23f	Fig. 23g	Fig. 23h
24	125	F	Retired	10	2008	No	No	No	No	Fig. 24a	Fig. 24b	Fig. 24c	Fig. 24d	Fig. 24e	Fig. 24f	Fig. 24g	Fig. 24h

CAUSE AND EFFECT TABLE LEGEND

SIL SAFETY INTEGRITY LEVEL(*)

A ACTIVE

C CLOSE

O OPEN

R RUN

S STOP

ST START

T TRIP

Y YES

(*) SIL LEVELS WILL BE FINALIZED AFTER SIL STUDY DURING DETAIL DESIGN.

GENERAL NOTES:

1. FOR GENERAL LEGEND, ABBREVIATIONS, NOMENCLATURE,
INSTRUMENTATION, EQUIPMENT SYMBOLLOGY AND GENERAL DETAILS
SEE DWG'S 3981-00-DE-PR-PID-045 THRU 3981-00-DE-PR-PID-054

	HOLD
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01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGH
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGH

REV.	PURPOSE OF ISSUE	ISSUE DATE	PREPARE	CHECKED	APPROVED
OWNER:		MC:	CONTRACTOR/CONSULTANT:		





PROJECT TITLE:	PROPANE DEHYDROGENATION (PDH) PROJECT	
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DOCUMENT TITLE:	PIPING & INSTRUMENT DIAGRAM
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Cause And Effect Table for Reaction Unit						
PROJ.CODE	Sec.	PHASE	DEP.	DOC. TYPE	SERIAL NO.	
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DOC NO.:	3981	10	DE	PR	PID	086
SCALE	SHEET	SHEET NO. 1 OF 3		REVISION: 1		CLASS: 1

SCALE:		SIZE:		SHEET NO: 1 OF 2		REVISION: 01		CLASS: 1	
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DELETED

REFERENCE

DRAWINGS

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01	ISSUED FOR APPROVAL	10-Jan-2026	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
00	ISSUED FOR COMMENT	06-Aug-2025	M.KHERADKAR	M.JAMSHIDI	M.H.ESHRAGHI
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PROJECT TITLE:					
PROPANE DEHYDROGENATION (PDH) PROJECT					
DOCUMENT TITLE:					
PIPING & INSTRUMENT DIAGRAM Cause And Effect Table for Reaction Unit					
DOC NO.:	PROJ.CODE	Sec.	PHASE	DEP.	DOC. TYPE
	3981	10	DE	PR	PID
SCALE:	SIZE:	SHEET NO: 2 OF 2		REVISION: 01	CLASS: 1

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