

**PIPING & INSTRUMENT
DRAWING**

FOR

SCGP OF

TAEAN IGCC POWER PLANT (300MW x 1)



KOREA WESTERN POWER CO., LTD.

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VESSELS/TANKSMISCELLANEOUS SYMBOLSPUMPSTRANSPORTHEAT EXCHANGERSSTIRRERS/MIXERS

A



VESSEL (BASIC SYMBOL)



ELECTRICAL MOTOR



PUMP (BASIC SYMBOL)



BELT CONVEYOR

HEAT EXCHANGER
(BASIC SYMBOL)

STATIC MIXER

B



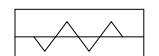
VESSEL (ONE CONE TYPE)



GENERATOR



CENTRIFUGAL PUMP



SCREW CONVEYOR

HEAT EXCHANGER
WITH FIXED TUBE SHEET

AGITATOR

C



VESSEL (TWO CONE TYPE)



STEAM TURBINE



SCREW PUMP



CHAIN CONVEYOR

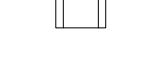
HEAT EXCHANGER
WITH FLOATING HEAD

ROLL CRUSHER

D



PIT

MANHOLE (FRONT VIEW)
HANDHOLEDISPLACEMENT PUMP
(BASIC SYMBOL)

ROTARY FEEDER

HEAT EXCHANGER
WITH U-TUBES

SLUDGE STORAGE RAKE

E



TANK



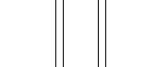
DRUM



BOTTLE



CALIBRATOR



AERATOR

DOUBLE-PIPE
HEAT EXCHANGERPLATE FIN HEAT
EXCHANGER

FAN

AIR COOLER
(BASIC SYMBOL)AIR COOLED
HEAT EXCHANGER
(FORCED DRAFT)HEAT EXCHANGER
WITHIN EQUIPMENT

STEAM COIL



DESUPERHEATER



ELECTRICAL HEATER



PLATE EXCHANGER

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	2016.07.31	AS-BUILT	SJC	HBK	SJL
	2014.12.19	FOR CONSTRUCTION	SJC	HBK	SJL
	2014.04.04	FOR CONSTRUCTION	SJC	SMK	SJL
	2013.09.24	FOR CONSTRUCTION	HBK	JEK	HJK
REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT (GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM EQUIPMENT SYMBOLS		
GASIFICATION U - 0000					
PROJECT DRAWING NUMBER			T11072-0000-02-001		SIZE
			-		
MULTI UNIT	PROJECT CODE	KOWEO NUMBER	REV.		SCALE
1		560	1-11000-ZM-105-001		F

OBRASTA REF

03 M 108 B

1

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9

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

5

6

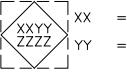
7

8

9

1	2	3	4	5	6	7	8	9	
<u>PIPING</u>		<u>VALVES</u>		<u>GENERAL</u>		<u>CONTROL VALVES</u>		<u>ABBREVIATIONS</u>	
A	PRIMARY PROCESS LINE		OPEN DURING NORMAL OPERATION (ALL VALVES EXCEPT BUTTERFLY)		SIGHT GLASS		AUTOMATIC ACTUATED CONTROL VALVE (NOTE 1)	AS : AREA SEWER ATM : ATMOSPHERIC CS : CARBON STEEL CSC : CAR SEAL CLOSE D : DRAIN DE : DETAILED ENGINEERING ACTIVITY GC : LIMIT SWITCH CLOSED GO : LIMIT SWITCH OPEN HH : HAND HOLE HP : HIGH PRESSURE IP : INTERMEDIATE PRESSURE LC : LOCKED CLOSED LP : LOW PRESSURE M : MOTOR MD : MINIMUM DISTANCE MH : MANHOLE MOF : MIDDLE OF FOUR MOT : MIDDLE OF THREE MP : MANUFACTURER PROPOSAL NNF : NORMALLY NO FLOW SC : SAMPLING CONNECTION (SEE BD0451A-0000-50-004) SCO : AIR AND SPRING CLOSED SP : SET PRESSURE SS : STAINLESS STEEL ST : STEAM TRAP S/T : SHELL / TUBE TW : TEST MEASUREMENT NOZZLE TSO : TIGHT SHUT OFF UC : UTILITY CONNECTION V : VENT/PROVIDED BY VENDOR	
	SECONDARY PROCESS LINE		CLOSED DURING NORMAL OPERATION (ALL VALVES EXCEPT BUTTERFLY)		STRAINER/ FILTER		AUTOMATIC ACTUATED ON/OFF VALVE	CSO : CAR SEAL OPEN GCO : LIMIT SWITCH OPEN AND CLOSED	
	INTERRUPTED LINE (FOR DRAFTING PURPOSES)		GATE VALVE		T-TYPE STRAINER		MAGNETIC ACTUATED CONTROL VALVE		
	LINE CROSS WITHOUT CONNECTION		ANGLE VALVE (BASIC SYMBOL)		Y-TYPE STRAINER		HAND OPERATED CONTROL VALVE		
	LINE CROSS WITHOUT CONNECTION		THREE-WAY VALVE (BASIC SYMBOL)		RING SPACER, OPEN		CONTROL VALVE OPENS ON FAILURE OF ACTUATING ENERGY (NOTE 2)		
	LINE CONNECTION		GLOBE VALVE		RING SPACER, CLOSED		CONTROL VALVE CLOSES ON FAILURE OF ACTUATING ENERGY (NOTE 2)		
	BURIED PIPE		NEEDLE VALVE		SPECTACLE BLIND (OPEN)		CONTROL VALVE OPERATION OF AUT. ACTUATING ELEMENT ON FAILURE OF ACTUATING ENERGY: ELEMENT RETAINS POSITION (NOTE 2)		
	PIPE TRENCH		ADJUSTABLE VALVE		SPECTACLE BLIND (CLOSED)		MOTOR OPERATED CONTROL VALVE (NOTE 2)		
	PIPE TUNNEL		DIAPHRAGM VALVE		GATE VALVE WITH SPECTACLE BLIND (CLOSED)	NOTE 1: PNEUMATIC ACTUATED UNLESS INDICATED OTHERWISE NOTE 2: ALSO APPLICABLE FOR ON/OFF VALVES.			
	JACKETED LINE		DOUBLE BLOCK VALVE (WLD UP TO DN40) (FLG ABOVE DN50)		DRAIN TO SEWER	<u>BREAKS</u>			
B	TRACED LINE (HOLD TEMPERATURE)				OPEN VENT		SPEC BREAK (PIPING)	<u>LINE DESIGNATION</u>	
	NOT REAL LINE, FOR ILLUSTRATIVE PURPOSES ONLY.				HOSE CONNECTION		RESPONSIBILITY BREAK	DNXXX - AAAAA - UUNNN - BBBB - CC(ZZZ) INSULATION SPECIFICATION (ZZZ)= TEMPERATURE TO BE MAINTAINED (°C) PIPING SPECIFICATION LINE NUMBER: UU = UNIT NUMBER NNN= SEQUENTIAL NUMBER FLUID CODE LINE SIZE (mm)	
	BORDER FOR PACKAGE ITEMS				FLEXIBLE HOSE	<u>INSTRUMENTS</u>			
	NO		BUTTERFLY VALVE (OPEN DURING NORMAL OPERATION)		STEAM TRAP		SURFACE MOUNTED TEMPERATURE SENSOR WITH TRANSMITTER	<u>GENERAL NOTES</u>	
	NC		BUTTERFLY VALVE (CLOSED DURING NORMAL OPERATION)		AIR TRAP		TEMPERATURE TRANSMITTER	1. REFERENCE DRAWING: T-13.412.204	
	REDUCER		SAFETY RELIEF VALVE		BELLOWS		ORIFICE FLOWMETER		
	FLANGED CONNECTION		VACUUM PROTECTION VALVE		SILENCER		FLOW NOZZLE		
	BLIND FLANGE		OVERPRESSURE AND VACUUM PROTECTION (BREATHING VALVE)		SLIDE VALVE (HAND OPERATOR)		PITOT TYPE METER		
	QUICK COUPLING				RAIN CAP		TURBINE TYPE METER		
	CAP		SELF-REGULATING PRESSURE REDUCER WITH INTERNAL ACTUATOR		BURSTING DISC		INTEGRATED ORIFICE METER		
C	1:100				DIAPHRAGM; WITHOUT "STEM" FLUSH MOUNTED WITH PIPE/VESSEL(WALL)		ROTAMETER		
	SLOPE		SELF-REGULATING PRESSURE REDUCER WITH EXTERNAL ACTUATOR		FLUSHING OR DRAIN CONNECTION		VENTURI METER		
	FLOW DIRECTION		LOCAL FLOW CONTROL VALVE WITH FLOWMETER (INTEGRAL TYPE)		LPN2 : LOW PRESSURE N2 HPN2 : HIGH PRESSURE N2 LPPW : LOW PRESSURE WATER HPPW : HIGH PRESSURE WATER WD : CLOSED WATER DRAIN SYSTEM CSS : CONTAMINATED SOLVENT SEWER		SPECIAL FLOWMETER		
	HEADER				VOR : VORTEX MAG : MAGNETIC CAP : CAPACITANCE SON : SONIC DOP : DOPPLER CM : CORIOLIS				
	HOSE CONNECTION				IF BLANK, TYPE TO BE ADDED VIA NOTE				
	SEAL POT								
	DAMPER								
	CAP (THREADED)								
	DAMPER								
	SPECIAL PIPE								
GDO451A1REF		<u>PIPING SPECIFICATION</u>		<u>GENERAL</u>		<u>INSTRUMENTS</u>		<u>AS BUILT</u>	
GDO451A1REF		3		4		5		6	
GDO451A1REF		3		4		5		6	
GDO451A1REF		3		4		5		6	
GDO451A1REF		3		4		5		6	
GDO451A1REF		3		4		5		6	
GDO451A1REF		3		4		5		6	
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GDO451A1REF		3		4		5		6	
GDO451A1REF		3		4		5		6	
GDO451A1REF		3		4		5		6	
GDO451A1REF		3		4					

NOTES

1.  XX = UNIT NUMBER
 YYY = FUNCTION, L. E. :
 KS = SEQUENCE PROGRAM
 US = SWITCH & TRIP FUNCTIONS VIA (DCS)
 UZ = TRIP FUNCTION VIA (ESD)
 ZZZZ = SEQUENTIAL NUMBER

2. WITHOUT "STEM" MEMBRANE TO BE FLUSH MOUNTED WITH VESSEL/PIPE WALL.

3. FOR VALVES: XX = UNIT NUMBER
 YY = FUNCTION
 FV = FLOW CONTROL VALVE
 LV = LEVEL CONTROL VALVE
 PV = PRESSURE CONTROL VALVE
 TV = TEMPERATURE CONTROL VALVE
 XV = BLOCK VALVE
 ZZZZ = SEQUENTIAL NUMBER

4. NOT ALL ELEMENTS OF AN INSTRUMENTATION/ CONTROL LOOP WILL BE SHOWN ON THE P&ID'S. THE DETAILS SHOWN WILL BE SUFFICIENT TO UNDERSTAND THE FUNCTIONALITY. HOWEVER, SOME EXPLANATIONS ARE GIVEN BELOW: E/P CONVERTORS ARE PRESENT BUT NOT SHOWN FOR ALL PNEUMATICALLY OPERATED VALVES; SOLENOIDS MIGHT BE PRESENT, BUT ARE NOT SHOWN EITHER. FURTHER DETAILS CAN BE FOUND IN THE "INSTRUMENT SYMBOL AND IDENTIFICATION"

GENERAL NOTES

1. REFERENCE DRAWING: T-13.412.205

AS BUILT

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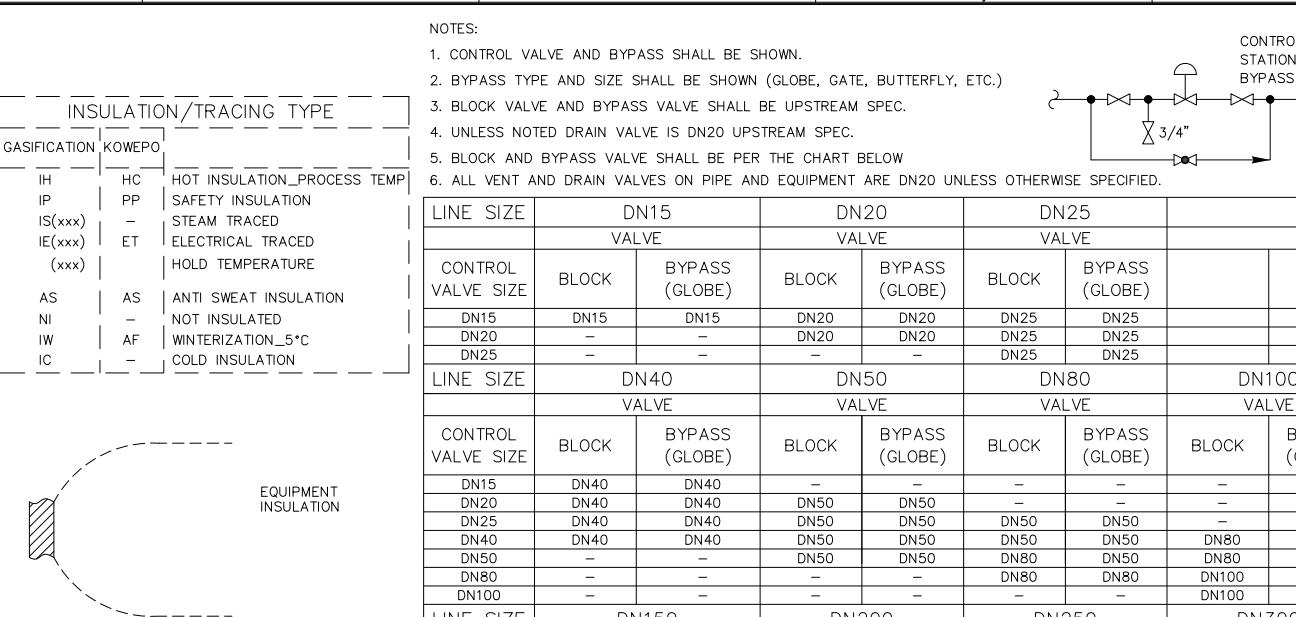
				
	2016.07.31	AS-BUILT	SJC	HBK
	2014.12.19	FOR CONSTRUCTION	SJC	HBK
	2014.04.04	FOR CONSTRUCTION	SJC	SMK
	2013.09.24	FOR CONSTRUCTION	HBK	JEK
REV.	DATE	DESCRIPTION	PRE'D	CHK'D
			REV'D	APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT (GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM LEGEND & SYMBOLS - 2		
GASIFICATION U- 0000			PROJECT DRAWING NUMBER		
			T11072-0000-02-003		
MULTI UNIT	PROJECT CODE	KOWEPO NUMBER	SHEET SIZE		
1		560	1-11000-ZM-105-003		
			F		

CONTROL SYSTEM SYMBOLS		
SHARED DISPLAY INDICATOR, CONTROLLER, OR OTHER DEVICES WITH OPERATOR ACCESS TO ADJUSTMENTS. (DCS)		
AUXILIARY OPERATORS INTERFACE DEVICE. FOR EXAMPLE BACK UP CONTROLLER OR MANUAL STATION. (PLC/LCP)		
EMERGENCY SHUTDOWN SYSTEM (ESD) (NOTE 1)		
DCS SWITCHING FUNCTIONS (NOTE 1)		



LETTER / FUNCTION IDENTIFICATION TABLE					
FIRST LETTER		SUCCEEDING LETTERS			
A	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS	ABSOLUTE	ALARM		
B	BURNER, COMBUSTION				
C			CONTROL	CLOSED (STOPPED)	
D	DENSITY				
d	DIFFERENTIAL				
E	VOLTAGE (EMF)		PRIMARY ELEMENT		
F	FLOW RATE	RATIO (FRACTION)			
G	POSITION/ROTATION		GLASS/VIEWING DEVICE		
H	HAND (MANUALLY INITIATED)			HIGH	
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME OR TIME SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M		MOMENTARY			MIDDLE OR INTERMEDIATE
N			MANUAL INPUT		
O			ORIFICE, RESTRICTION		OPEN (RUNNING)
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q	QUALITY	INTERGRATE OR TOTALIZE			
R				REGULATION	
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	DISPLACEMENT			VALVE, DAMPER OR LOUVER	
W	WEIGHT OR FORCE		WELL		
X	ON/OFF		NON CLASSIFIED		
Y	VIBRATION		SIGNAL CONNECTOR OR RELAY OR COMPUTER		ALGEBRAIC
Z	DIMENSION		EMERGENCY TRIP / SHUT DOWN		
			L	LOW, CLOSED	
			LL	LOW, LOW	
			LLL	LOW, LOW, LOW	
			LLLL	LOW, LOW, LOW, LOW	
			H	HIGH, OPEN	
			HH	HIGH, HIGH	
			HHH	HIGH, HIGH, HIGH	
	FOR SHUTDOWN AND ALARM FUNCTIONS:				
	THIS TABLE APPLIES ONLY TO THE FUNCTIONAL IDENTIFICATION OF INSTRUMENTS. (REF ISA S5.1)				
	NOTE 4				

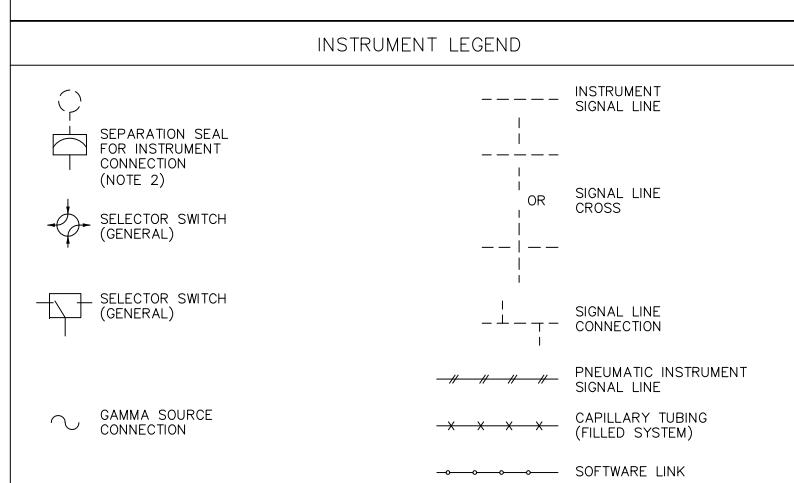
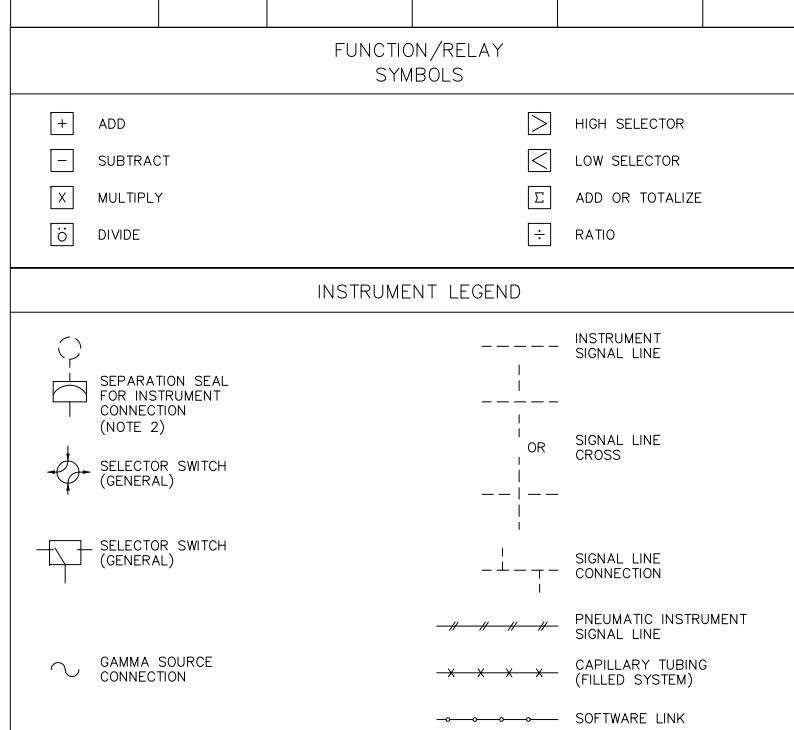


TABLE OF INSTRUMENT ROOT VALVE SIZE		
INSTRUMENT	TYPE	VALVE SIZE
LEVEL TRANSMITTER	DIAPHRAGM TYPE	DN50
LEVEL GAUGE	DP CELL TYPE	DN20
PRESSURE TRANSMITTER (PT/DPT)	MAGNETIC TYPE	DN40
PRESSURE GAUGE	FLOATING TYPE	DN40
FLOW TRANSMITTER (ORIFICE/VENTURI)	DIAPHRAGM TYPE	DN50
	CONVENTIONAL TYPE	DN20
	DIAPHRAGM TYPE	DN50
	CONVENTIONAL TYPE	DN20
	FLANGE TAPS WITH DIAPHRAGM TYPE	DN50
	FLANGE TAPS WITH CONVENTIONAL TYPE UP TO 900#	DN15
	FLANGE TAPS WITH CONVENTIONAL TYPE ABOVE TO 900#	DN20

IF THE SIZE OF ROOT VALVE IS NOT CATEGORIZED INTO ABOVE TABLE, IT WILL BE INDICATED ON P&ID

NOTES

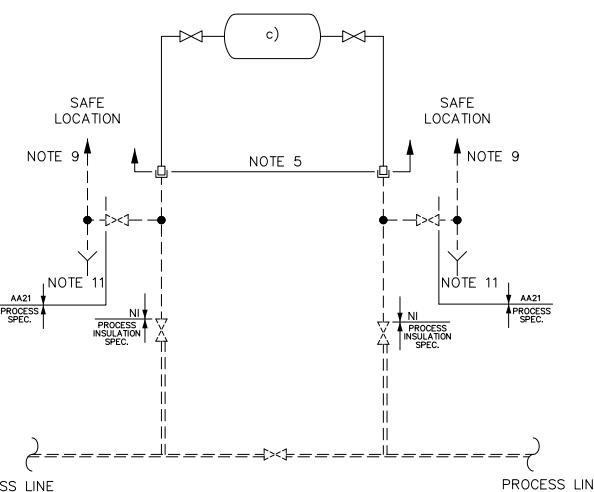
- RECOMMENDED:
 c) $\pm 0.5 \text{ dm}^3$ d) $\pm 2.0 \text{ dm}^3$
- ENTIRE SYSTEM OF SS 316L OR BETTER (PIPE CLASS)
 - FOR LIQUIDS, SAMPLE BOMB SHOULD BE VERTICAL.
 - NOT USED.
 - BLOCK VALVES AND SAMPLING CONNECTIONS SHOULD BE WELL ACCESSIBLE
 - FOR LARGE LINES BETWEEN BLOCK VALVES. INSTALL ADDITIONAL VALVES NEAR SC.
 - NOT USED.
 - VALVE SIZE (TO BE CONFIRMED LATER)
 SC 1/5 : 5 L/min.
 SC 2/3/4 : 10 L/min.
 - NOT USED.
 - PROVIDE VENT & DRAIN IF SYSTEM PRESSURE $> 0.3 \text{ MPag}$.
 - SINGLE OR DOUBLE BLOCKS DEPEND ON SYSTEM PRESSURE. BLOCK VALVE SHOWN ON THE P&ID.
 - DRAIN SYSTEM : CWS
 - DESTINATION IS INDICATED ON P&ID DRAWING.
 - A DOTTED LINE IS INDICATED ON RELEVANT P&ID.
 - WSA SAMPLE CONNECTION DESCRIBED TO BE LATER.
 - SAMPLING CYLINDER WITH BLOCK VALVE.

GENERAL NOTES

- FOR LEGENDS AND SYMBOLS SEE DRG'S :
 11000-ZM-105-001 11000-ZM-105-007
 11000-ZM-105-002 11000-ZM-105-008
 11000-ZM-105-003 11000-ZM-105-009
 11000-ZM-105-004 11000-ZM-105-010
 11000-ZM-105-005 11000-ZM-105-011
 11000-ZM-105-006
- TRACING ON SAMPLE LINES ONLY TO BE INSTALLED WHEN APPLICABLE. TRACING FOR WINTERIZING ONLY IS SHOWN (DETAILED ENGINEERING).
- REFERENCE DRAWING: T-13.412.206

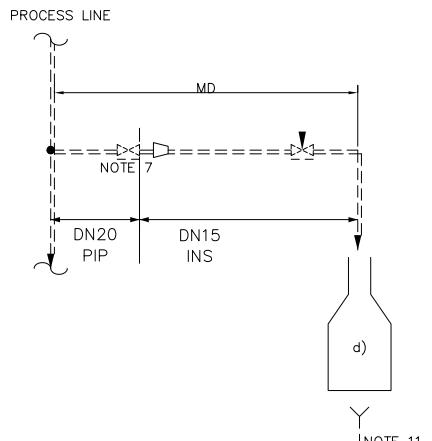
SC 1b

SUITED FOR GAS AND LIQUID SAMPLING
 LIQUID $< 60^\circ\text{C}$
 GAS $< 150^\circ\text{C}$
 SEE NOTES 1-6.



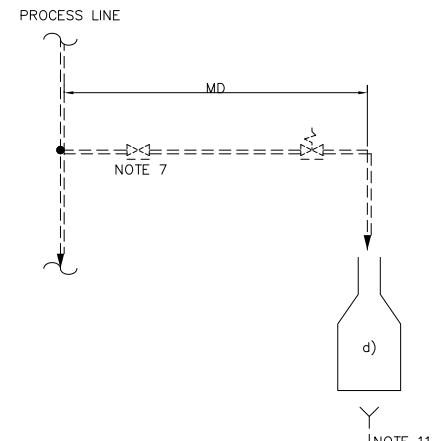
SC 2b

SUITED FOR NON HARMFUL LIQUIDS $< 60^\circ\text{C}$
 (NOT OIL, SLURRY OR SOLVENT)
 SEE NOTES 1, 2, 4, 5, 6.



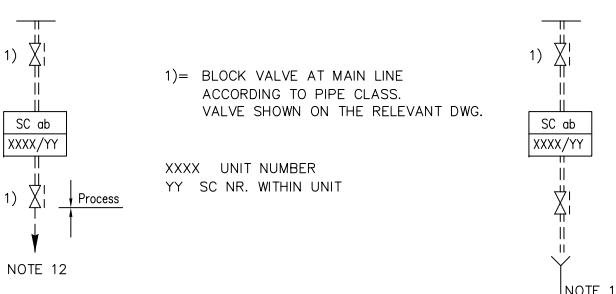
SC 3b

SUITED FOR NON HARMFUL SLURRIES $< 60^\circ\text{C}$



SAMPLE POINTS

AS INDICATED ON P&ID's



a = SAMPLE NUMBER TYPE;
 IF a=0, SPECIAL SAMPLING SYSTEM
 WORKED OUT IN DETAIL IN THE RELATED P&ID.
 IF NOTE 7, 9, AND 10 ARE NOT APPLICABLE, THEN b=0.
 IF NOTE 10 IS APPLICABLE BUT NOTES 7 AND 9 ARE NOT APPLICABLE, THEN b=1.
 IF NOTE 9 AND 10 ARE APPLICABLE BUT NOTE 7 IS NOT APPLICABLE, THEN b=2.
 IF NOTE 9 IS APPLICABLE BUT NOTES 7 AND 10 ARE NOT APPLICABLE, THEN b=3.
 IF NOTE 7, 9, AND 10 ALL ARE APPLICABLE, THEN b=4.
 IF NOTE 7 AND 10 ARE APPLICABLE, BUT NOT 9 IS NOT APPLICABLE, THEN b=5.
 IF NOTE 7 AND 9 ARE APPLICABLE, BUT NOTE 10 IS NOT APPLICABLE, THEN b=6.
 IF NOTE 7 IS APPLICABLE, BUT NOTES 9 AND 10 ARE NOT APPLICABLE, THEN b=7.

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△					
△F	2016.07.31	AS-BUILT	SJC	HBK	SJL
△2	2014.12.19	FOR CONSTRUCTION	SJC	HBK	SJL
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△0	2013.09.24	FOR CONSTRUCTION	HBK	JEK	HKJ
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 UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM SAMPLING CONNECTION		
GASIFICATION U- 0000					
PROJECT DRAWING NUMBER			T11072-0000-02-004		
MULTI UNIT	PROJECT CODE	KOWEO NUMBER	REV.	SCALE	
1		560	1-11000-ZM-105-004	F	

NOTES

1. PIPE CLASS INDEX are identified by four(4) digits as follows.
2. 3rd digit B through T used only after 2nd digit R or S.
3. 4th digit to be defined for each job indicate special requirements such as: valves, special trims, PWHT requirements, austenitic stainless steel grade, etc.
4. CS Low temperature service.
5. 4th digit "J" may be used to identify external jacketing application on piping specification.

PIPE CLASS INDEX

Position	1st Digit		2nd Digit		3rd Digit		4th Digit	
Description	Class		Material		Corrosion Allowance (mm) / Non-Metallic Piping or Lining		Special Requirements	
	symbol	meaning	symbol	meaning	symbol	meaning	symbol	meaning
	A	150	A	C.S.	1	0		
	B	300	B	LT C.S. (Note 4)	2	1		
	D	600	C	Galvanized CS	3	---		
	E	900	D	1 1/4 Cr - 1/2 Mo	4	---		
	F	1500	E	2 1/4 Cr - 1 Mo	5	3.0 (1/8")		
	G	2500	F	5 Cr - 1/2 Mo	6	---		
	H	4500	G	9 Cr - 1 Mo	7	4.5 (3/16")		
	I	(Do not use)	H	12 Cr	8	---		
	J	25	I	C-Mo	9	6.0 (1/4")		
	K	75	J	304 (Any grade)	A	None		
	L	125	K	316 (Any grade)	B	Concrete		
	M	200	L	321/347	C	CPVC		
	O	(Do not use)	M	Monel	D	XS (C.A.incl.)		
	P	250	N	Incoloy	E	Epoxy		
	Q	800	O	(Do not use)	F	Polyester		
	R	3000	P	Inconel	G	Polyethylene		
	S	6000	Q	Cast Iron	H	Polypropylene		
	T	Low Pressure Ducting	R	Lined C.Steel	I	(Do not use)		
			S	Non-Metallic	J	Vinyl Ester		
			T	Hastelloy C	K	Kynar		
			U	Hastelloy B	O	(Do not use)		
			V	Duplex SS	P	PVC		
			W	Alloy 20	Q	ECTFE Lined GRP (based on Vinyl Ester)		
			X	Ductile Iron	R	GLASS		
			Y	Concrete	S	Saran		
			Z	Clay	T	Teflon		

(See Note 2&4)

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	2013.09.24	FOR CONSTRUCTION	HBK	JEK	HKJ
REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT (GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO.,LTD.

BLOCK GASIFICATION U- 0000	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM PIPE CLASS INDEX		
			PROJECT DRAWING NUMBER		T11072-0000-02-005 - / -
			MULTI UNIT		PROJECT CODE
			KOWEO NUMBER		REV. SCALE
1			560		1-11000-ZM-105-005 F

FLUID CODE INDEX

A

A

B

B

C

C

D

D

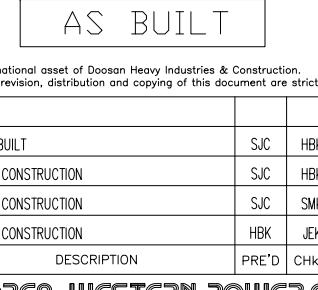
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MEDIUM	CODE	DESIGN		NOTE	MEDIUM	CODE	DESIGN		NOTE	MEDIUM	CODE	DESIGN		NOTE
		P(BAR)	T(°C)				P(BAR)	T(°C)				P(BAR)	T(°C)	
INSTRUMENT AIR	AI	13	93		HOT VHP N2	NVHH	91.5	250		SLAG SLURRY	PSS1	13.9	150	
PLANT AIR	AP	13	93		HP OXYGEN	DHP	60	65		SLUDGE	PSS2	4.2	100	
ATMOSPHERIC BLOWDOWN SYSTEM	APBD	3.5	150		ACID SUPPLY	PAC	7.5	50		SLUDGE(SLUDGE STORAGE TANK BOTTOM SLUDGE)	PSS3	7.5	100	
POLYMER (FOR CLARIFIER)	APOL	3.5	60		ACID	PAC1	3.5	70		SLAG BATH CIRCULATION	PSSA	67	150	
OFF-AIR TO SAFE LOCATION	AVN	3.5	130		CAUSTIC SODA	PCA	7	70		SLAG SLUICE WATER	PSSC	62.7	150	
BLOWDOWN EFFLUENT	BDE1	3.5	150		LP CAUSTIC	PCA1	6	70		SLAG/WATER HP	PSSH	56	150	
COOLED BLOWDOWN DFFLUENT	BDE2	3.5	100		HP CAUSTIC	PCA2	51	70		POTABLE WATER	PTW	6	60	
STORM SEWER WATER	BSS	11	100		PROCESS CONDENSATE REFLUX	PCRF	9	160		GAS VENTS	PVG	ATM	70	
CLOSED ACID WATER DRAIN	CAD	5	165		SSS GAS CONDENSATE	PCSS	11.6	165		NITROGEN VENTS	PVN	3.5	130	
CONDENSATE FROM B.L.	CCND	44	90		MP STEAM DRUM CIRC. SUPPLY	PCW1	73	280	<10mg LP N2 VENT 2	HOT SOLIDS FREE LP N2 VENT	PVN2	0.4	150	
ANTI FOAM AGENT	CHFO	7	60		MP STEAM DRUM CIRC. RETURN	PCW2	73	280		OXYGEN VENTS	PVN3	11	300	
POLYMER(FOR VBF)	CPOL	3.5	60		HP STEAM DRUM CIRC. SUPPLY	PCW3	171	350		PVS	ATM	280		
CLOSED SLURRY DRAIN	CSD	5	165		HP STEAM DRUM CIRC. RETURN	PCW4	171	350		STEAM VENTS	PVS	3.5	275	
TEMPERED WATER TO BURNERS	CWBU	77	260		PROCESS CONDENSATE SATURATOR	PCWS	57	160		STEAM / OXYGEN VENTS	PVSD	2.5	330	
CONTAMINATED WATER DRAIN	CWD	3.5	70		FILTRATE FROM CLARIFICATION	PFBF	-3.5	100		VENT FROM MP STEAM SYSTEM	PVSH	ATM	350	
COOLIN WATER RETURN	CWRT	12	70		FILTRATE FROM CLARIFICATION	PFIL	5.1	100		SUPERHEATED MP STEAM VENTS	PVSM	ATM	280	
COMBINED DRAIN HEADER	CWSD	9.6	165		ACID FLARE CONDENSATE	PFLC	6.5	148		START-UP VENTS	PVSU	3.5	280	
COOLING WATER SUPPLY	CWSU	12	70		HP COAL TRANSPORT LINE	PHC1	58.3	130		VENT FROM VACUUM PUMP VENT POT	PVVP	50	100	
LP DIESEL OIL	FG01	0.3	50		HP ASH TRANSPORT LINE	PHC2	46.2	300		WASH WATER BLEED	PWB	48	90	
HP DIESEL OIL	FG02	62	50		HP CHEMICAL DOSING LINE	PHCH	185	70		WASH WATER RECYCLE	PWC	48	90	
EMERGENCY DIESEL OIL	FG03	4.4	50		HP N2 GAS1	PHN3	58.3	150		WASH WATER MAKE-UP	PWM	11	85	
ACID GAS FLARE HEADER	FLAG	3.5	250		HP RECYCLE WATER	PHRH	72	150		PROCESS STRIPPED SLURRY	PWS	53	200	
ACID FLARE GAS FROM V-3802	FLAS	3.5	250		LP SOLIDS TRANSPORT LINE	PLC1	0.4	130		SSS UNSTRIPPED SLURRY	PWSA	9.8	165	
SYNGAS FLARE HEADER	FLSG	3.5	300		LP ASH TRANSPORT LINE 1	PLC2	11	300		SSS COOLED STRIPPED SLURRY	PWSB	7.4	165	
MAIN FLARE GAS FROM V-3801	FLSS	3.5	300		LP ASH TRANSPORT LINE 2	PLC3	11	300		SCRUBBER CIRCULATION WATER	PWSC	53	200	
HP STEAM DRUM BLOWDOWN	HPBD	171	350		LP ASH TRANSPORT LINE 3	PLC4	11	300		SSS STRIPPED SLURRY	PWSS	13.9	165	
HP PROCESS WATER FROM P-3302	HPPW	92.4	75		LP CHEMICAL DOSING LINE	PLCH	10	60		WASTE WATER	PWW	8.7	100	
HIGH PRESSURE FIRE WATER	HPWF	14	70		LP RECYCLE WATER	PLRL	7	150		MAIN FLARE CONDENSATE	SFLC	6.7	148	
LP BLOWDOWN FROM V-3403	LBD	7	190		MP CHEMICAL DOSING LINE	PMCH	75.2	70		HP SATURATED STEAM	SHP1	159	350	
NATURAL GAS	LNG	8	60		PREHEATED OXYGEN	POH	53	280		FLASHED LP STEAM FROM V-3402	SLP1	3.5	150	
LP BLOWDOWN SYSTEM	LPBD	7	190		STEAM / OXYGEN	POHS	58.3	330		LP STEAM FROM B.L. & V-3401	SLPC	7	190	
LOW PRESSURE CONDENSATE	LPC	7	150		COAL FEED LINE	PPC1	58.3	130		MP STEAM TO B.L.	SMP	61	333	
COOLED LP CONDENSATE	LPC1	4.5	150		COAL RECYCLE LINE	PPC2	58.3	130		MP SATURATED STEAM	SMP1	61	280	
LP PROCESS WATER FROM P-3301	LPPW	13.9	75		COAL RECYCLE / ASH STORAGE	PPC3	58.3	130		MP SATURATED STEAM INTERNAL	SMP2	61	330	
LOW SOLIDS HP GAS 1	LSN1	58.3	130		PROCESS HYDRO CARBON	PPHC	6.5	85		START-UP MP STEAM FROM B.L.	SMP3	61	352	
LOW SOLIDS HP GAS 2	LSN2	53	350		PROCESS WATER	PPW	0.5	75		MP SUPERHEATED STEAM	SMP4	70	480	
MP / HP STEAM CONDENSATE SYSTEM	MCR	7	190		PROCESS CONDENSATE	PPWC	11	75		O2 CLEAN MP SH STEAM	SMPD	61	330	
MP STEAM DRUM BLOWDOWN	MPBD	65	280		HP PROCESS WATER FROM P-3402	PPWH	72	80		STRIPPED OFF-GAS	SOG1	5	165	
MP STEAM CONDENSATE	MPC	12	190		MOTOR FILLING WATER	PPWL	18	80		SOUR GAS	SOG2	5	165	
MEDIUM SOLIDS HP N2 GAS 1	MSH1	46.2	300		QUENCH GAS TO COMPRESSOR	PQG1	46.2	300		SOUR GAS	SOG3	3.5	170	
MEDIUM SOLIDS HP N2 GAS 3	MSH3	46.2	300		QUENCH GAS FROM COMPRESSOR	PQG2	53	310		ACID GAS	SOG4	3.5	75	
MEDIUM SOLIDS HP N2 GAS 4	MSH4	58.3	130		COMPRESSOR KICK-BACK	PQG3	53	310		SOUR OFF-GAS	SOG5	3.5	120	
MEDIUM SOLIDS LP N2 GAS 2	MSL2	0.4	130		REFLUX	PRF	11	75		SLAG BATH SLURRY BLEED HP	SSB1	67	150	
MEDIUM SOLIDS LP N2 GAS 3	MSL3	11	300		SOUR CONDENSATE	PSC	3.5	90		SLAG BATH SLURRY BLEED LP	SSB2	5	150	
MEDIUM SOLIDS LP N2 GAS 4	MSL4	11	300		COOLED SYNGAS	PSGC	46.2	189		SULFURIC ACID	SUAC	7.7	68	
HP N2	NHP1	58.3	130		LOW SOLIDS SYNGAS	PSGF	46.2	300		HP BFW	WBHP	240	300	
HOT HP N2	NHP2	58.3	250		HIGH SOLIDS SYNGAS	PSGS	46.2	300		MP BFW	WBMP	100	250	
OS CLEAN HP N2	NHPD	58.3	280		TREATED GAS	PSGT	46.2	90	A-1304 RECIRCULATION LOOP	WBRL	73	130		
LP N2 FROM ASU	NLP	9	130		WASHED SYNGAS	PSGW	46.2	225	DEMINERALISED WATER	WDE	13	70		
LP N2 FROM HP N2	NLP1	9	130		PROCESS SOLVENT	PSD	10	85	FIRE WATER	WF	10	70		
HOT LP N2	NLP2	11	200		PROCESS SOLVENT DRAIN	PSD	5	140	RAW WATER	WFR	7	60		
LLP N2	NLP3	5	130		LEAN SOLVENT	PSOL	23	126						
VHP N2	NVH	91.5	130		RICH SOLVENT	PSOR	48	90						



BLOCK		SAFETY		TITLE	PIPING & INSTRUMENTATION DIAGRAM		
GASIFICATION U- 0000				FLUID CODE INDEX			
PROJECT DRAWING NUMBER							
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VALVE INCLUDES A PRESSURE VESSEL DETAIL

NO.	EQUIPMENT NAME	VOLUME	MATERIAL	OPERATION PRESS /DESIGN PRESS (Mpa)	PSV Set Press (Mpa)	DWG NO.
1	13XV-0034 (Air Reciever Tank)	0.025 m³	STS304	0.7 / 0.97	0.97	1-11300-ZM-105-017
2	13XV-0037 (Air Reciever Tank)	0.082 m³	STS304	0.7 / 0.97	0.97	1-11300-ZM-105-019
3	13XV-0042 (Air Reciever Tank)	0.014 m³	STS304	0.7 / 0.97	0.97	1-11300-ZM-105-021
4	13XV-0043 (Air Reciever Tank)	0.082 m³	STS304	0.7 / 0.97	0.97	1-11300-ZM-105-021
5	13XV-0051 (Air Reciever Tank)	0.025 m³	STS304	0.7 / 0.97	0.97	1-11300-ZM-105-021
6	13XV-0103 (Air Reciever Tank)	0.014 m³	STS304	0.7 / 0.97	0.97	1-11300-ZM-105-019
7	13XV-0203 (Air Reciever Tank)	0.014 m³	STS304	0.7 / 0.97	0.97	1-11300-ZM-105-019
8	13XV-0303 (Air Reciever Tank)	0.014 m³	STS304	0.7 / 0.97	0.97	1-11300-ZM-105-019
9	13XV-0403 (Air Reciever Tank)	0.014 m³	STS304	0.7 / 0.97	0.97	1-11300-ZM-105-019
10	13XV-0541 (Air Reciever Tank)	0.025 m³	STS304	0.7 / 0.97	0.97	1-11300-ZM-105-026
11	13XV-0542 (Air Reciever Tank)	0.082 m³	STS304	0.7 / 0.97	0.97	1-11300-ZM-105-026
12	13XV-0543 (Air Reciever Tank)	0.82 m³	STS304	0.7 / 0.97	0.97	1-11300-ZM-105-026
14	13XV-0545 (Air Reciever Tank)	0.025 m³	STS304	0.7 / 0.97	0.97	1-11300-ZM-105-029
13	13XV-0546 (Air Reciever Tank)	0.025 m³	STS304	0.7 / 0.97	0.97	1-11300-ZM-105-027
15	13FV-0103 (Air Reciever Tank)	0.046 m³	STS304	0.7 / 0.97	0.97	1-11300-ZM-105-008
16	13FV-0203 (Air Reciever Tank)	0.046 m³	STS304	0.7 / 0.97	0.97	1-11300-ZM-105-009
17	13FV-0303 (Air Reciever Tank)	0.046 m³	STS304	0.7 / 0.97	0.97	1-11300-ZM-105-010
18	13FV-0403 (Air Reciever Tank)	0.046 m³	STS304	0.7 / 0.97	0.97	1-11300-ZM-105-011
19	13PV-0540B (Air Reciever Tank)	0.046 m³	STS304	0.7 / 0.97	0.97	1-11300-ZM-105-026
20	15XV-0004 (Air Reciever Tank)	0.017 m³	STS304	0.7 / 0.97	0.97	1-11500-ZM-105-002
21	15XV-0050 (Air Reciever Tank)	0.027 m³	STS304	0.7 / 0.97	0.97	1-11500-ZM-105-002
22	15XV-0051 (Air Reciever Tank)	0.02 m³	STS304	0.7 / 0.97	0.97	1-11500-ZM-105-002
23	16XV-0012 (Air Reciever Tank)	0.017 m³	STS304	0.7 / 0.97	0.97	1-11600-ZM-105-002
24	16XV-0021 (Air Reciever Tank)	1.23 m³	STS304	0.7 / 0.97	0.97	1-11600-ZM-105-003
25	16XV-0022 (Air Reciever Tank)	1.23 m³	STS304	0.7 / 0.97	0.97	1-11600-ZM-105-003
26	16PV-0008A (Air Reciever Tank)	0.039 m³	STS304	0.7 / 0.97	0.97	1-11600-ZM-105-003
27	16PV-0008B (Air Reciever Tank)	0.039 m³	STS304	0.7 / 0.97	0.97	1-11600-ZM-105-003
28	17XV-0002 (Air Reciever Tank)	0.024 m³	STS304	0.7 / 0.97	0.97	1-11700-ZM-105-005
29	18XV-0001 (Air Reciever Tank)	0.017 m³	STS304	0.7 / 0.97	0.97	1-11800-ZH-105-001
30	18XV-0002 (Air Reciever Tank)	0.017 m³	STS304	0.7 / 0.97	0.97	1-11800-ZH-105-005
31	18XV-0004 (Air Reciever Tank)	0.8 m³	STS304	0.7 / 0.97	0.97	1-11800-ZH-105-002
32	18XV-0010 (Air Reciever Tank)	0.025 m³	STS304	0.7 / 0.97	0.97	1-11800-ZH-105-002
33	18XV-0010(Air Tank)	0.032 m³	STS304	0.7 / 0.97	0.97	1-11800-ZH-105-002
34	18HV-0003 (Air Reciever Tank)	0.046 m³	STS304	0.7 / 0.97	0.97	1-11800-ZH-105-005
38	19XV-0001 (Air Reciever Tank)	0.014 m³	STS304	0.7 / 0.97	0.97	1-11900-ZH-105-001
39	19XV-0002 (Air Reciever Tank)	0.1 m³	STS304	0.7 / 0.97	0.97	1-11900-ZH-105-001
40	19XV-0020 (Air Reciever Tank)	0.08 m³	STS304	0.7 / 0.97	0.97	1-11900-ZH-105-001
41	19XV-0021 (Air Reciever Tank)	0.219 m³	STS304	0.7 / 0.97	0.97	1-11900-ZH-105-002
42	19XV-0023 (Air Reciever Tank)	0.014 m³	STS304	0.7 / 0.97	0.97	1-11900-ZH-105-002
35	19XV-1010 (Air Reciever Tank)	0.219 m³	STS304	0.7 / 0.97	0.97	1-11930-ZH-105-001
36	19PV-0010 (Air Reciever Tank)	0.046 m³	STS304	0.7 / 0.97	0.97	1-11900-ZH-105-002
37	19HV-1011 (Air Reciever Tank)	0.046 m³	STS304	0.7 / 0.97	0.97	1-11930-ZH-105-001
43	21XV-0010 (Air Reciever Tank)	0.017 m³	STS304	0.7 / 0.97	0.97	1-12100-ZH-105-002
44	21XV-0012 (Air Reciever Tank)	0.017 m³	STS304	0.7 / 0.97	0.97	1-12100-ZH-105-001
45	30XV-0004 (Air Reciever Tank)	0.014 m³	STS304	0.7 / 0.97	0.97	1-14100-ZM-105-001
46	30XV-0016 (Air Reciever Tank)	0.237 m³	STS304	0.7 / 0.97	0.97	1-14100-ZM-105-054
47	34XV-0002 (Air Reciever Tank)	0.08 m³	STS304	0.7 / 0.97	0.97	1-14400-ZM-105-054

NOTES

GENERAL NOTES

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REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D	APP'D

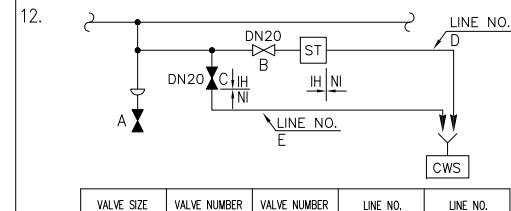


KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT (GASIFICATION)
UNIT 1 (300MW X 1)

BLOCK		SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM VALVE INCLUDES A PRESSURE VESSEL DETAIL			
GASIFICATION U- 0000							
PROJECT DRAWING NUMBER		T11072-0000-02-007		SHEET	SIZE		
				- / -			
MULTI UNIT	PROJECT CODE		KOWEPO NUMBER		REV.	SCALE	
1	560		1-11000-ZM-105-007		F		

NOTES

- OXYGEN AND RELATED NITROGEN LINES TO MEET "OXYGEN CLEAN" INSTRUCTIONS.
- ISOLATION AND PURGE FACILITY TO BE PROVIDED (FOR SINGLE OXYGEN USER AT ASU B.L.), UPSTREAM INSTALL BUFFER VESSEL TO ACHIEVE STABLE OXYGEN HEADER PRESSURE.
- A TYPICAL VALVE FOR THE VOLUME OF THE BUFFER VESSEL SIZE IS ABOUT 50-60 CUBIC METERS; DETAILS SHALL BE FINALIZED LATER IN CONSULTATION WITH THE ASU VENDOR.
- COAL STORAGE SILO FLANGE OF CMD UNIT
- FLUX STORAGE SILO FLANGA OF CMD UNIT
- DELETED
- START-UP MP STEAM CONDITION FOR GASIFICATION PLANT VARIES FROM MINIMUM CONDITION OF 36BARG AND 310 deg C TO MAXIMUM CONDITION OF 53BARG AND 338 deg C.
- FOR PERFORMANCE TEST WILL BE CONNECTED TO DAS.
- LOCATE PRESSURE TRANSMITTER NEARBY B.L.
- GBD IS CCPM MATERIAL SPECIFICATION.
PIPE : A106B SMLS, S-30, BE
FITTING : A234 WPB SMLS, BW
FLANGE : A105, 300#, RFWN
B/N : STUD BOLT W/2 HEX NUTS. A193 GR.B7 / A194 GR.2H
GASKET : 4.5mm THK SPIRAL WOUND SS.316 / GRAPHITE, 300#, 3.2mm THK OUTER C.S RING + SS316 INNER RING, RF
- VALVE FOR WARM-UP OF SYNGAS LINE DURING START UP. THE CONTROL AND MANUAL VALVE'S SCOPE OF SUPPLY IS DOOSAN.



VALVE SIZE (A)	VALVE NUMBER (B)	VALVE NUMBER (C)	LINE NO. (D)	LINE NO. (E)
V34404 (DN25)	V34405	V34921	34303	34304
V34407 (DN25)	V34408	V34922	34291	34305
V34417 (DN20)	V34418	V34923	34292	34306

GENERAL NOTES

- ALL INSTRUMENTS TO BE IW(WINTERIZATION).

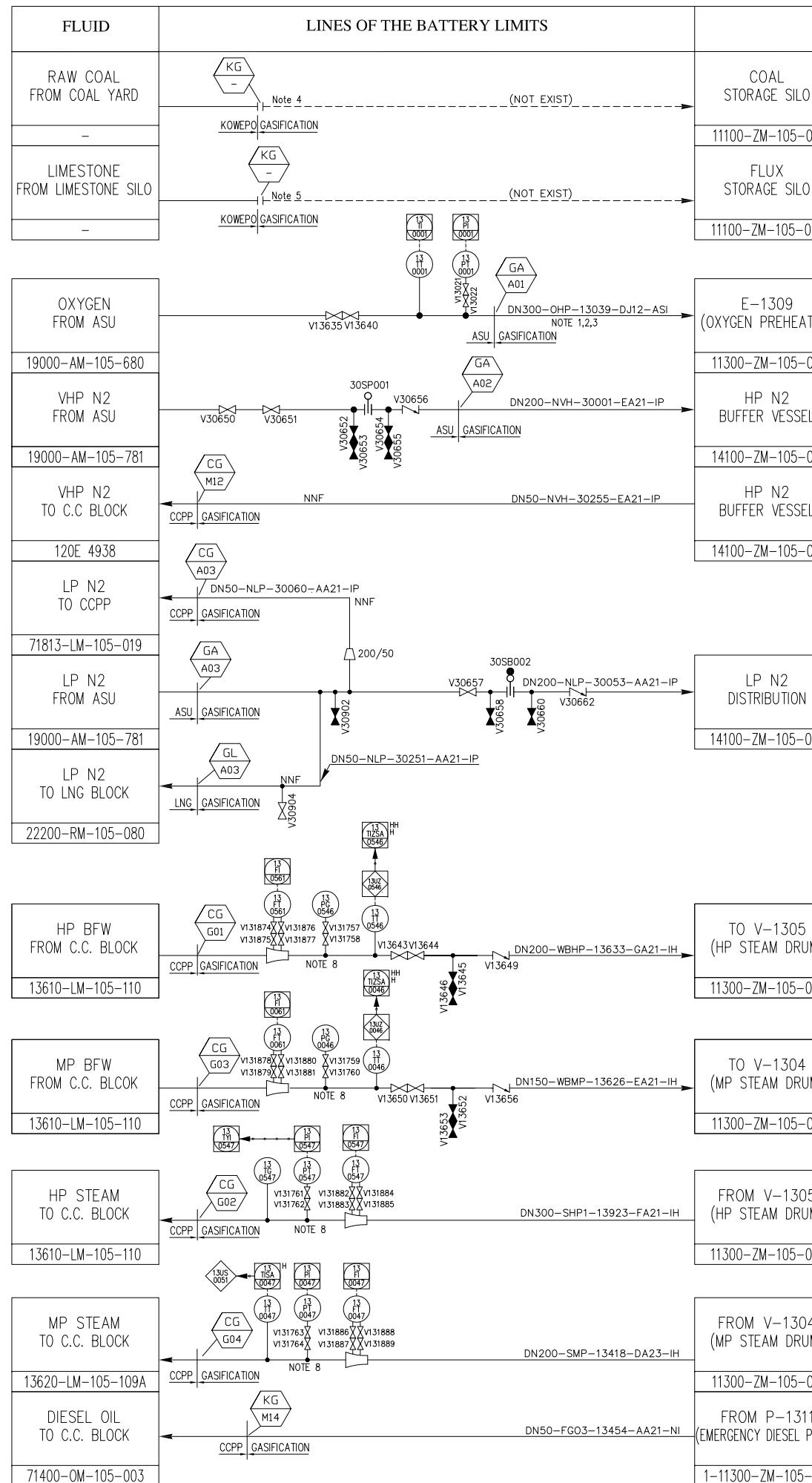
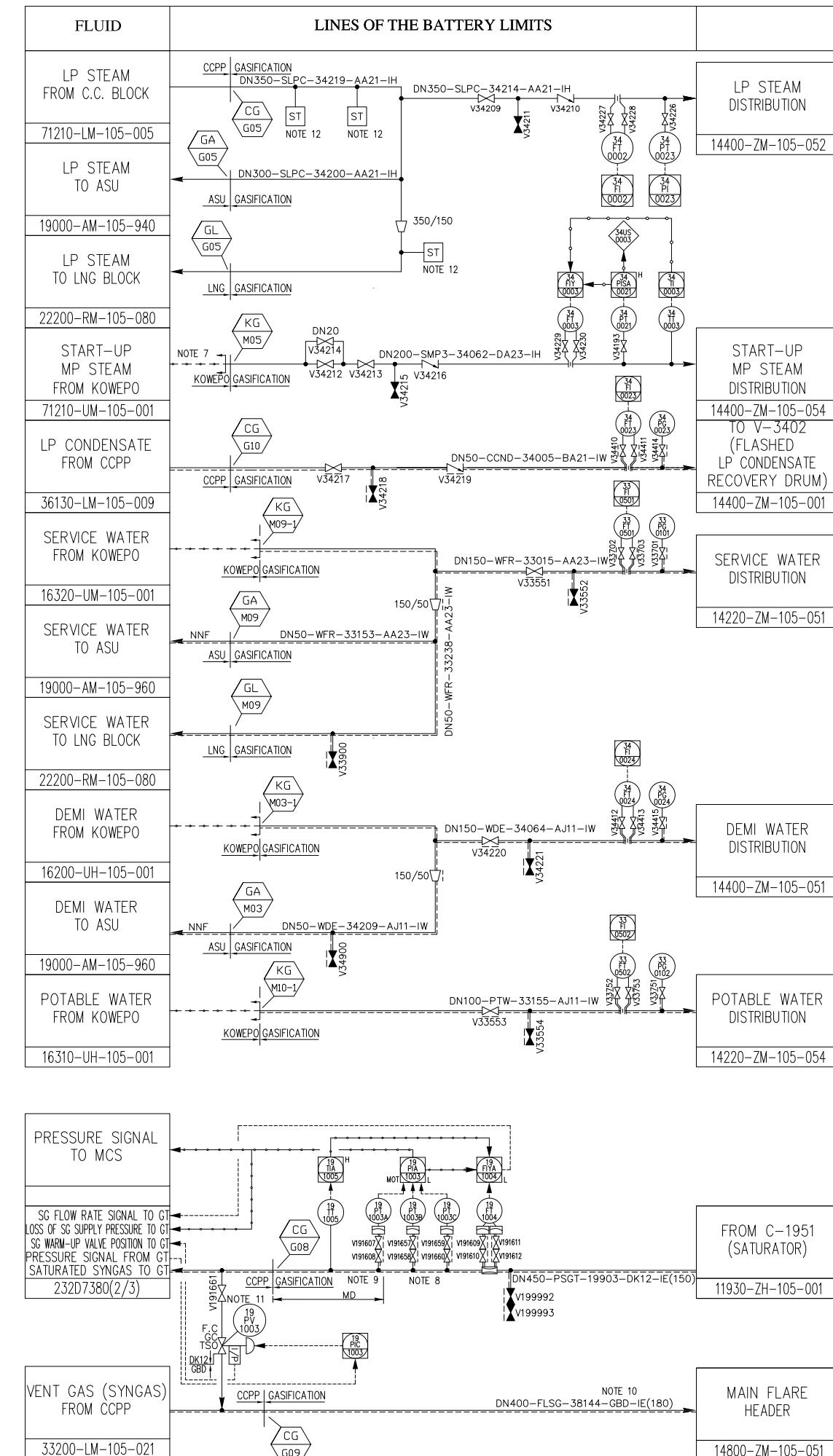
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REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D	APP'D
	2016.07.31	AS-BUILT	SJC	HBK		SJL
	2014.12.19	FOR CONSTRUCTION	SJC	HBK		SJL
	2014.08.04	FOR CONSTRUCTION	SJC	HBK		SJL
	2013.09.24	FOR CONSTRUCTION	HBK	JEK		HKJ

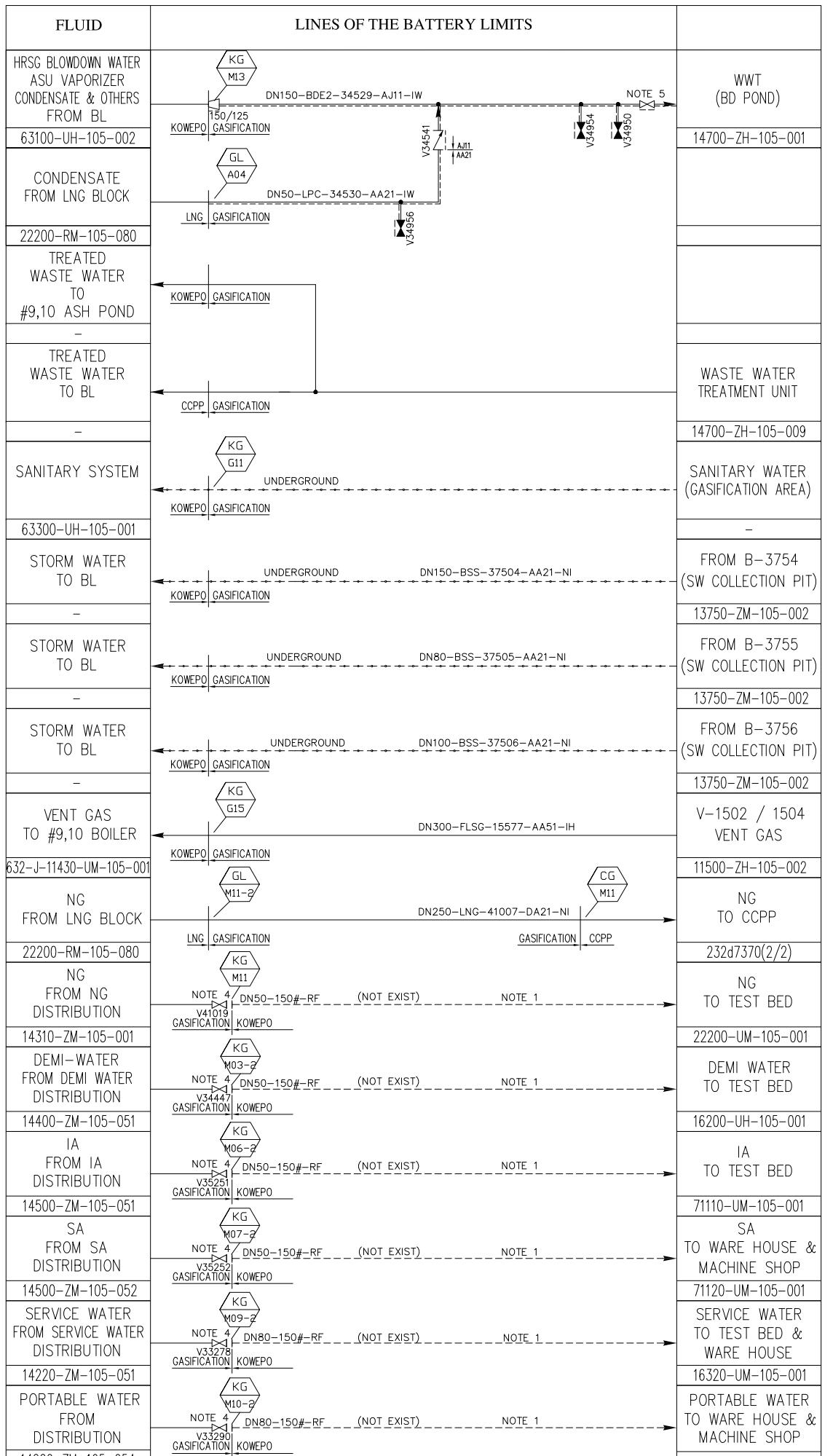
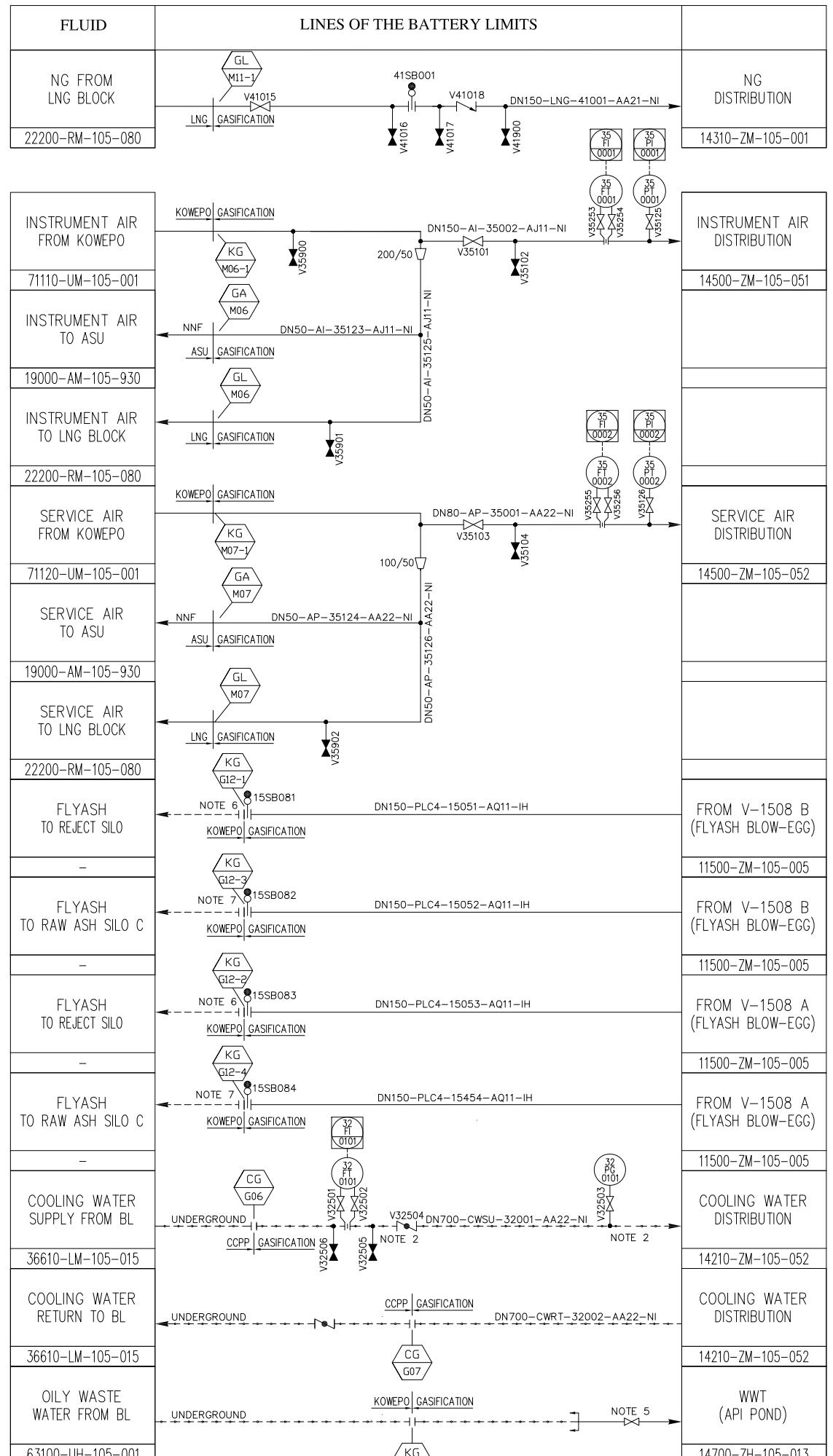
KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT (GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.



NOTES

1. THE PIPING FROM NOZZLE TO TEST BED OR WAREHOUSE IS KOWEPO'S SCOPE OF SUPPLY.
2. TO BE LOCATED IN VALVE PIT OF CCPA AREA.
3. DELETED.
4. BLOCK VALVE LOCATED IN GASIFICATION DISTRIBUTION.
5. BLOCK VALVE LOCATED IN WWT SYSTEM.
6. B.L : SPOOL FLANGE OF REJECT SILO.
7. B.L : SPOOL FLANGE OF RAW ASH SILO C.



GENERAL NOTES

1. ALL INSTRUMENTS TO BE IW(WINTERIZATION).

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	2016.07.31	AS-BUILT	SJC	HBK	SJL	
	2014.12.19	FOR CONSTRUCTION	SJC	HBK	SJL	
	2014.08.04	FOR CONSTRUCTION	SJC	HBK	SJL	
	2013.09.24	FOR CONSTRUCTION	HBK	JEK	HKJ	

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT (GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM BATTERY LIMIT CONFIGURATION		
GASIFICATION U-0000					
PROJECT DRAWING NUMBER			T11072-0000-02-011		SIZE
			- / -		
MULTI UNIT	PROJECT CODE	KOWEPO NUMBER			REV.
1	560	1-11000-ZM-105-011			F


**PIPING & INSTRUMENT
DRAWING**

FOR

**1100 UNIT OF
TAEAN IGCC POWER PLANT (300MW x 1)**



KOREA WESTERN POWER CO., Ltd.



1. BAG FILTER CLEANING CONTROLLER
2. R-10D BEND FOR FLYASH TRANSFER LINE
3. 80°C TRACING APPLIED UNTIL ASH LINE IS OVER PIPE RACK, IH APPLIED AFTER RACK
4. MOTOR TRIPPED WHEN LOW SPEED.

FILE NO.:	KOREA POWER ENGINEERING COMPANY, INC.
DOCUMENT STATUS:	
1. WORK MAY PROCEED. CONTRACTOR MAY PROCEED WITH FABRICATION OR CONSTRUCTION IN ACCORDANCE WITH SPECIFICATION.	
2. REVISE AND RESUBMIT. CONTRACTOR MAY PROCEED IN ACCORDANCE WITH SPECIFICATION BASED ON MAKING REVISIONS AS NOTED AND RESUBMIT.	
3. REVISE AND RESUBMIT. WORK MAY NOT PROCEED. REVISE AS NOTED AND RESUBMIT. HOLD FABRICATION / CONSTRUCTION UNTIL APPROVAL.	
4. FOR INFORMATION ONLY.	
M. RESUBMIT NOT ACCEPTABLE FOR CD OR REPRODUCTIONS.	

NOTE : Permission to proceed does not constitute acceptance or approval of design data, calculations, analyses, test work or materials developed by the Supplier. The Supplier does not relieve Supplier from full compliance with contractual obligations.

REVIEW DATE	
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2016.07.31	AS BUILT
2014.10.27	FOR CONSTRUCTION
REV. DATE	DESCRIPTION
PRE'D	CHK'D
REV'D	REV'D
APP'D	APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION UNIT 1 (300MW X 1))

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM
GASIFICATION		CMD A COAL AND FLYASH FEEDING	U-1100
PROJECT DRAWING NUMBER		T11072-1100-02-0001	1 / 1
MULTI UNIT	PROJECT CODE	KOWEPO NUMBER	REV. SCALE
1	560	1-11100-ZM-105-001	F

V-1102A	LIMESTONE SILO ID X LENGTH VOLUME MATERIAL INSULATION	S-1102A	LIMESTONE SILO DEDUSTING FILTER FILTER MATERIAL DIMENSION (L X W X H) WASTE GAS VOLUME	X-1105A	LIMESTONE WEIGHING FEEDER TYPE CAPACITY MATERIAL INSULATION	X-1109A	SILICA & LIMESTONE ROTARY VALVE TYPE CAPACITY MATERIAL INSULATION	V-1103A	SILICA SILO ID X LENGTH VOLUME MATERIAL INSULATION	S-1103A	SILICA SILO DEDUSTING FILTER FILTER MATERIAL DIMENSION (L X W X H) WASTE GAS VOLUME	X-1104A	SILICA SILO ROTARY VALVE TYPE CAPACITY MATERIAL INSULATION	X-1102A	LIMESTONE SILO OUTLET SLIDE GATE TYPE CAPACITY MATERIAL INSULATION	X-1153A	SILICA SILO OUTLET SLIDE GATE TYPE CAPACITY MATERIAL INSULATION
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A

A

B

B

C

C

D

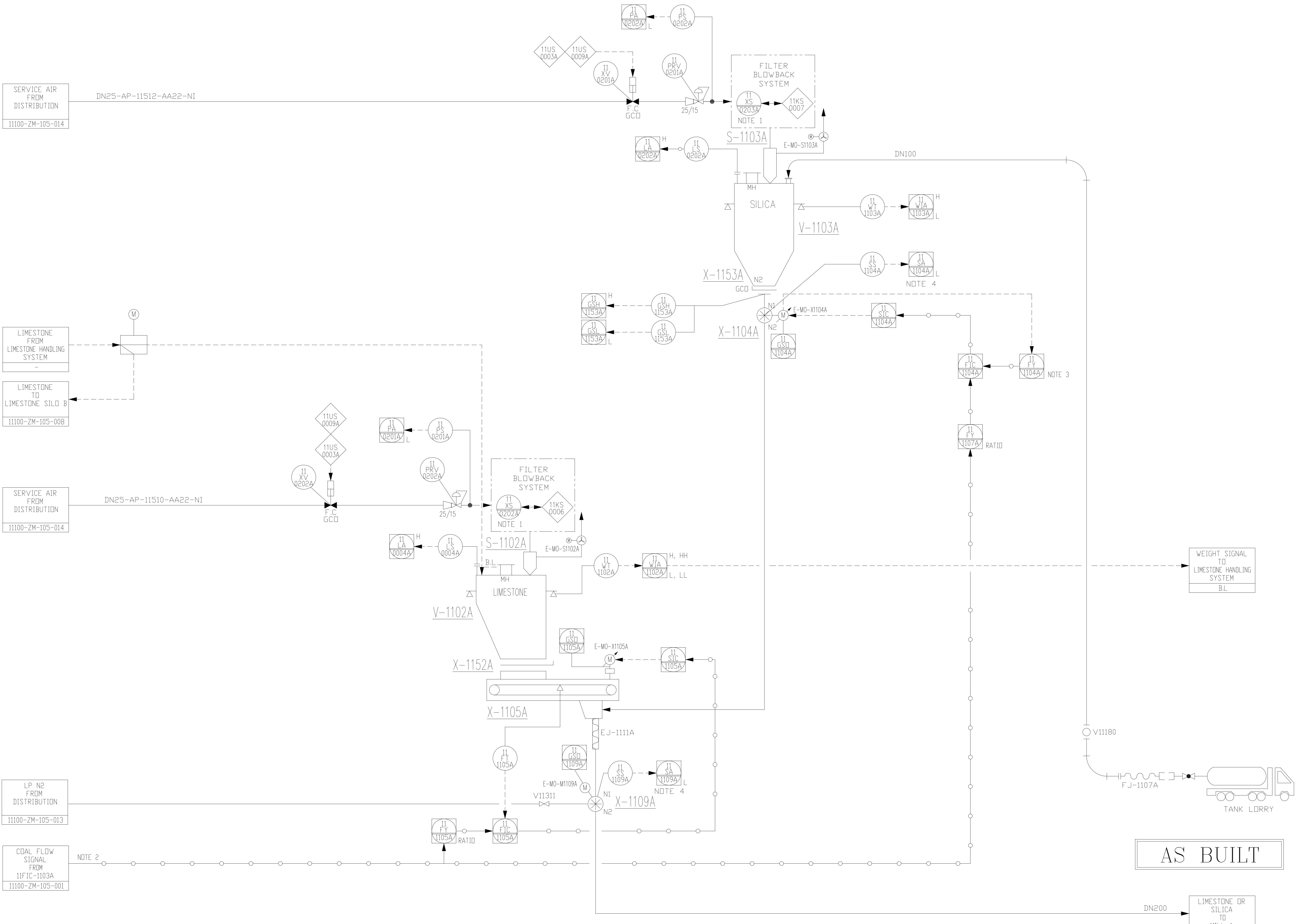
D

E

E

F

F



1. BAG FILTER CLEANING CONTROLLER
2. FROM COAL FEED PROPORTIONING(RATIO) CONTROL RESPECTIVELY FOR EACH FEEDER.
3. FLOW RATE CALCULATED FROM ROTARY VALVE SPEED BY MULTIPLYING WITH BULK DENSITY.
4. MOTOR TRIPPED WHEN LOW SPEED.

GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :

- 11000-ZM-105-001
- 11000-ZM-105-002
- 11000-ZM-105-003
- 11000-ZM-105-004
- 11000-ZM-105-005
- 11000-ZM-105-006
- 11000-ZM-105-010
- 11000-ZM-105-011

DOCUMENT REVIEW STATUS	FILE NO. : KOREA POWER ENGINEERING COMPANY, INC
DOCUMENT STATUS	1. WORK MAY PROCEED. CONTRACTOR MAY PROCEED WITH FURTHER DESIGN CONSTRUCTION IN ACCORDANCE WITH SPECIFICATION.
	2. REVISE AND RESUBMIT. CONTRACTOR MAY PROCEED IN ACCORDANCE WITH SPECIFICATION BASED ON MAKING REVISIONS AS NOTED IN THIS DRAWING.
	3. REVISE AND RESUBMIT. WORK MAY NOT PROCEED. REVISE CONSTRUCTION AS NOTED IN THIS DRAWING.
4. FOR INFORMATION ONLY.	M RESUBMIT. NOT ACCEPTABLE FOR CD OR REPRODUCTIONS.
NOTE : Permission to proceed does not constitute acceptance or approval of design data, calculations, analyses, test results or materials developed by Supplier. The Owner and Supplier are not relieved of contractual obligations.	
REVIEW	DATE
RE	

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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	2016.07.31	AS BUILT	T.H.HAN JK.HA S.H.SONG
<input checked="" type="checkbox"/>	2014.10.27	FOR CONSTRUCTION	T.H.HAN JK.HA S.H.SONG

REV. DATE DESCRIPTION PRE'D CHK'D REV'D APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM
GASIFICATION		U-1100	CMD A SILICA AND LIMESTONE FEEDING
U-1100			U-1100
PROJECT DRAWING NUMBER			TI1072-1100-02-0002
MULTI UNIT	PROJECT CODE	KWEPD NUMBER	REV. SCALE
1	560	1-1100-ZM-105-002	F

0000541REF

03 M 108 B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 7 8 9

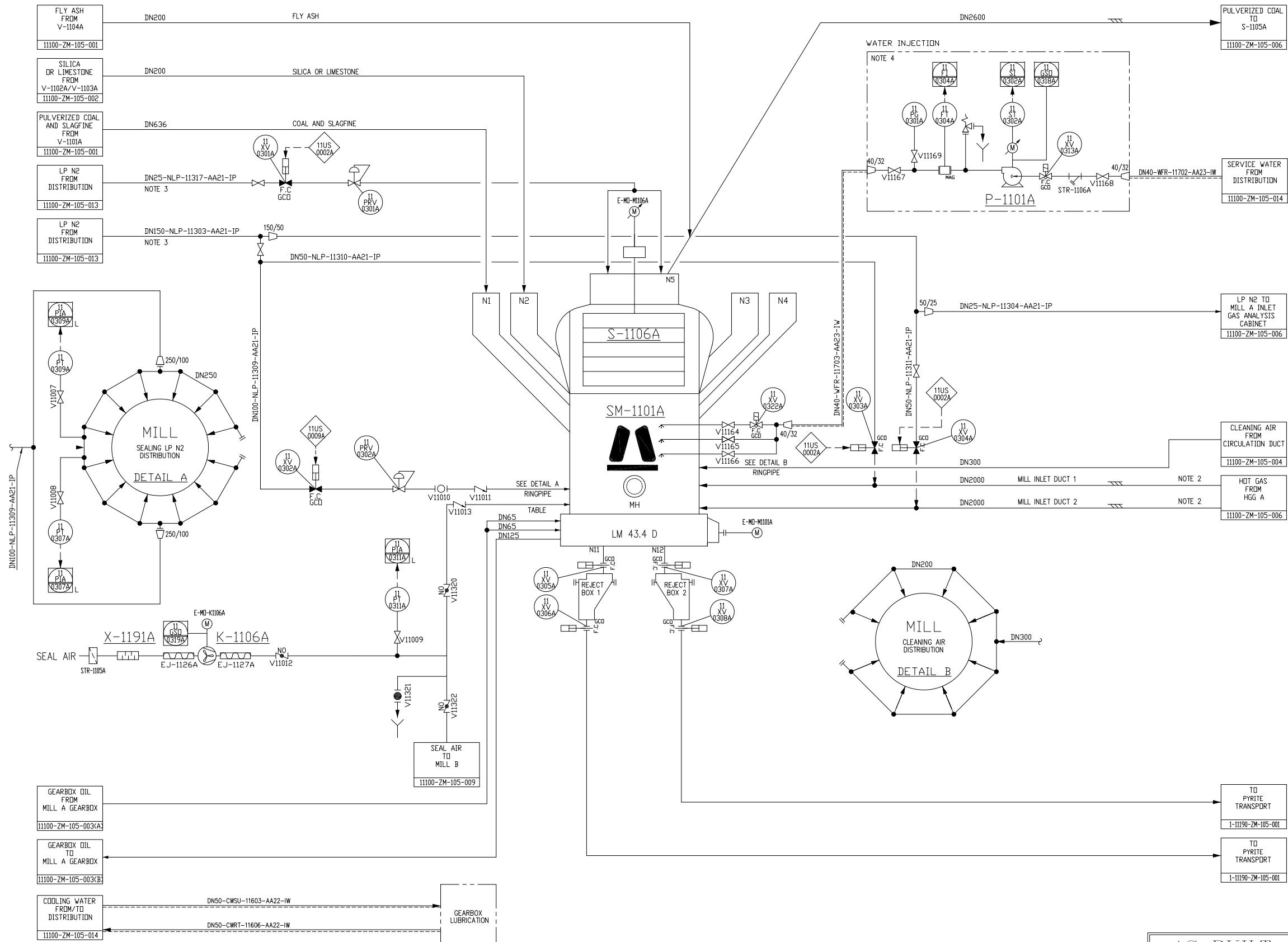
NOTES

- DELETED.
- AIR MEASURING INSTRUMENTS ARE DESCRIBED ON "11100-ZM-105-006" DRAWING.
- NITROGEN OF THIS LINE IS FOR INERTING SOURCE.
- WATER INJECTION IS BACK UP SOURCE TO CONTROL OXYGEN CONTENTS FOR CMD SYSTEM.
6m³ WATER INJECTION.

SM-1101A	MILL (LM43.4D)
TYPE	VERTICAL ROLLER
CAPACITY	123.7 t/h (PDC)
POWER	1600 KW
CLASSIFIER	LSKS 64.1

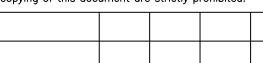
K-1106A	MILL SEALING AIR FAN
CAPACITY	1,350 m³/h
DIFFERENTIAL PRESSURE	0.021 bar
POWER	15 KW
MATERIAL/INTERNAL	CS/CS
TYPE	INLINE TYPE

P-1101A	WATER INJECTION PUMP
CAPACITY	1,350 m³/h
DIFF. HEAD	160 m
POWER	6.3 KW
MATERIAL/INTERNAL	SS/CrNiMo 5
TYPE	INLINE TYPE



FILE NO.:	KOREA POWER ENGINEERING COMPANY, INC.		
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REF. NO.:	DATE:		

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2016.07.31 AS BUILT TJ.HAN JK.HA SH.SONG
2014.10.27 FOR CONSTRUCTION TJ.HAN JK.HA SH.SONG

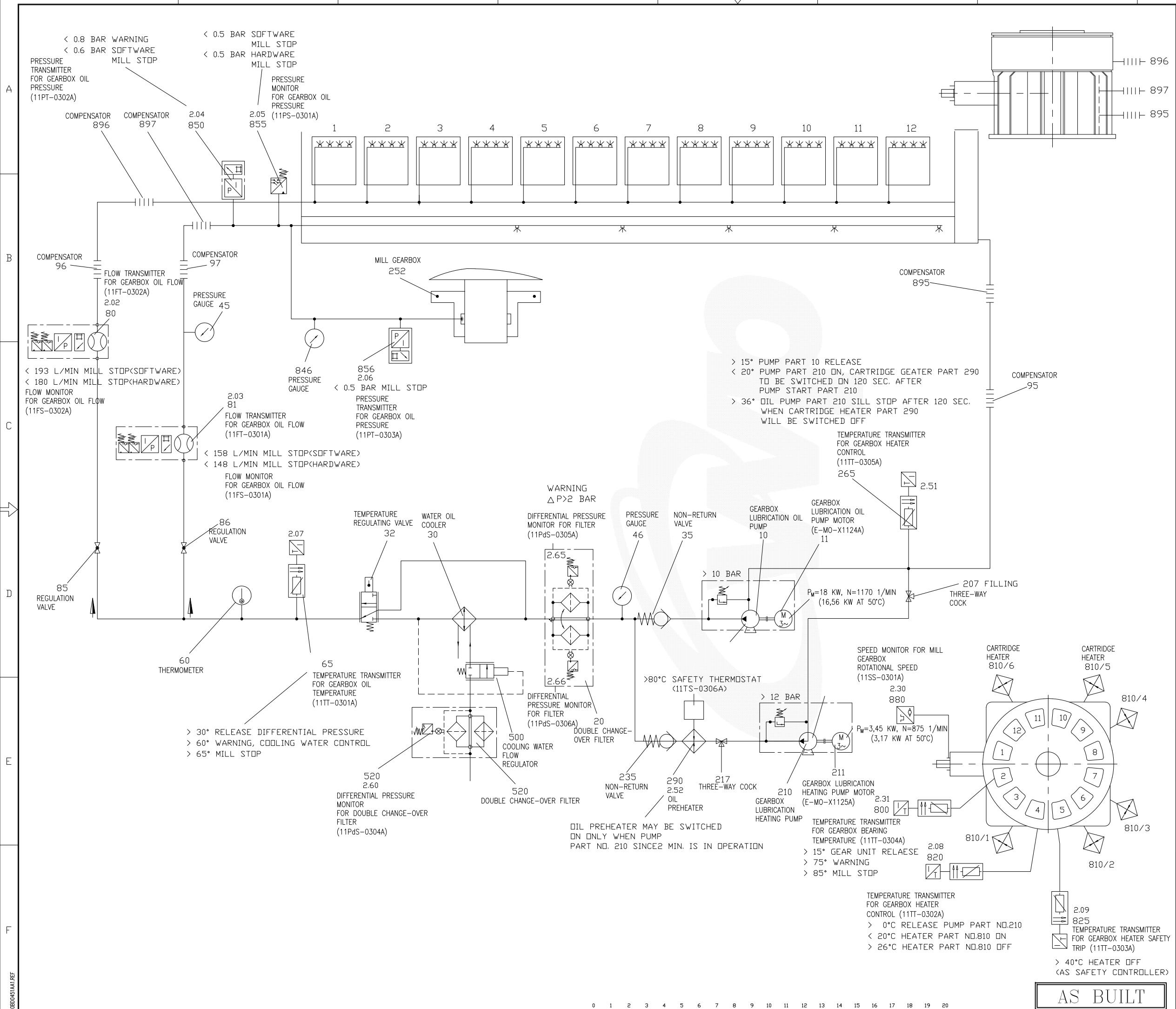
REV. DATE DESCRIPTION PRE'D CHK'D REV'D APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 <300MW X 1D

DOOSAN
DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

LOESCHE
INNOVATIVE ENGINEERING

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM		
GASIFICATION U-1100		MILL A MONITORING U-1100			
PROJECT DRAWING NUMBER			T11072-1100-02-0003		
MULTI UNIT	PROJECT CODE	KOWEPO NUMBER	REV.	SCALE	
1	560	1-11100-ZM-105-003	F		



NOTES

- MANUAL MAINTENANCE SLIDE GATE WITH LIMIT SWITCH OPEN AND CLOSED.

 - . AIR MEASURING INSTRUMENTS ARE DESCRIBED ON "11100-ZM-105-006" DRAWING.
 - . NITROGEN OF THIS LINE IS FOR INERTING SOURCE.
 - . WATER INJECTION IS BACK UP SOURCE TO CONTROL OXYGEN CONTENTS FOR CMD SYSTEM.

GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :

 - 11000-ZM-105-001
 - 11000-ZM-105-002
 - 11000-ZM-105-003
 - 11000-ZM-105-004
 - 11000-ZM-105-005
 - 11000-ZM-105-006
 - 11000-ZM-105-010
 - 11000-ZM-105-011

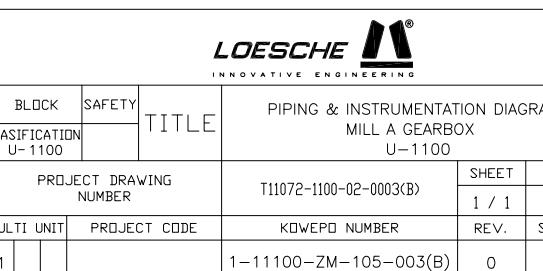
DOCUMENT REVIEW STATUS		FILE NO.:
KOREA POWER ENGINEERING COMPANY, INC.		
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REVIEW		DATE
RE		

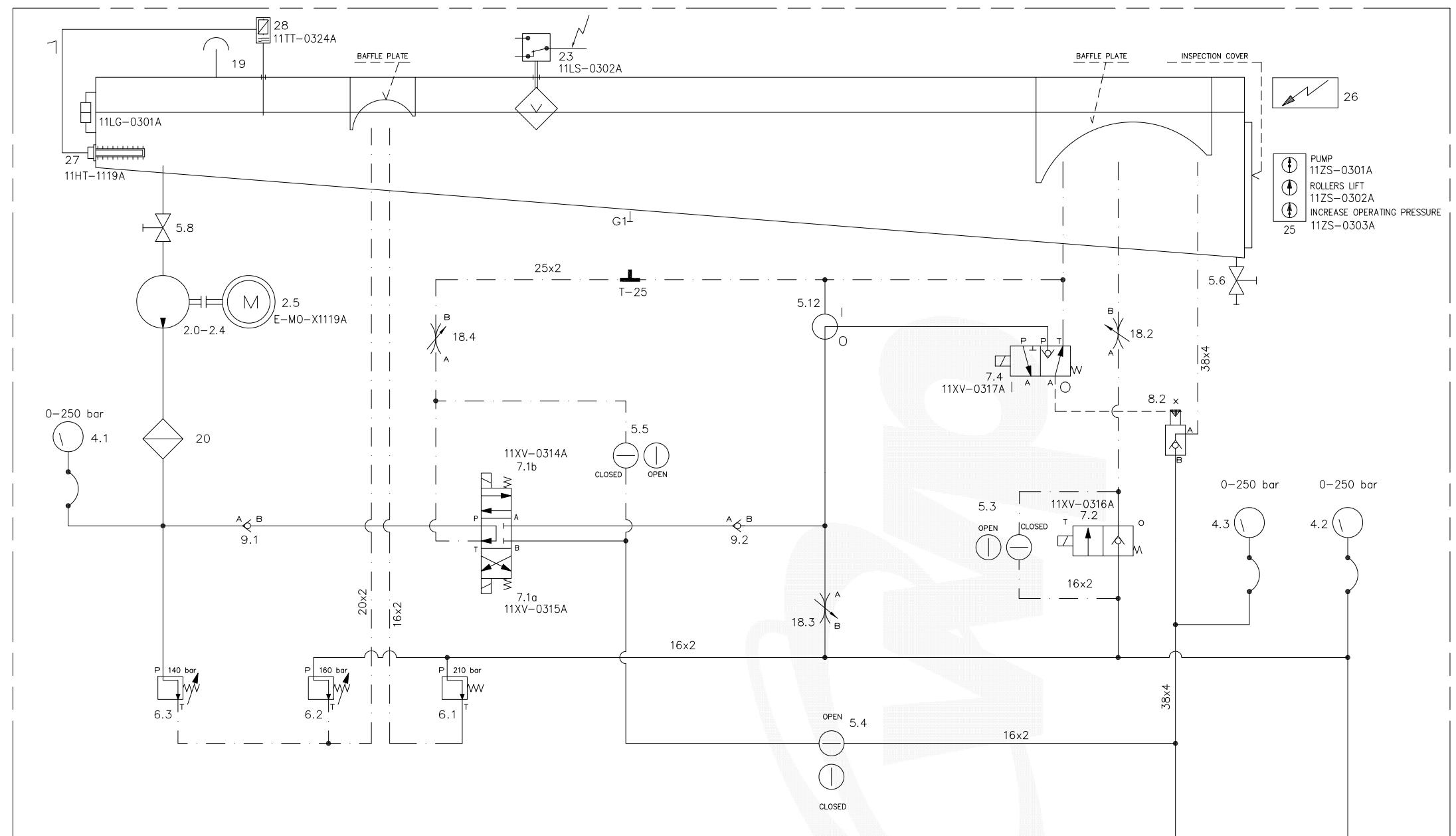
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	2016.07.31	AS BUILT	T.H.HAN	J.K.HA	
	2014.10.27	FOR CONSTRUCTION	T.H.HAN	J.K.HA	
E.V.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D

KOREA WESTERN POWER CO., LTD.
 TAEGAN IGCC POWER PLANT(GASIFICATION)

**DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO., LTD.**



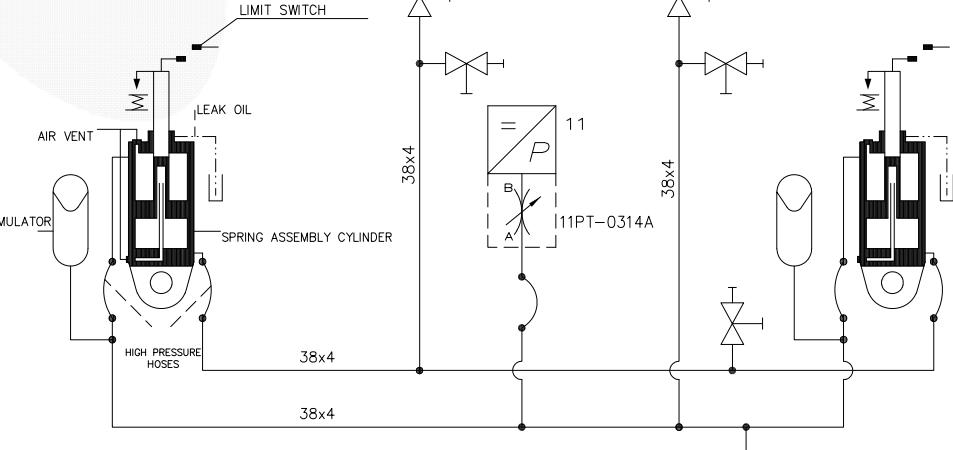


SOLENOID CONTROL VALVES
SOLENOID VALVES DRAWN
IN POSITION DEAD
POSITION "O" DEAD
POSITION "I" LIVE
POSITION "I (a,b)" LIVE

PRESSURE GAUGES
4.1 PUMP PRESSURE
4.2 OPERATING PRESSURE
4.3 LIFTING PRESSURE

CONNECTIONS
A OPERATING PRESSURE
G ROLLERS LIFT/LOWER

HSLM	30
	29
	28 TEMPERATURE SENSOR
	27 HEATING CARTRIDGE
	26 TERMINAL BOX
	25 TRIPLE PUSH-BUTTON
	24
	23 LEVEL SWITCH
	22
	21
	20 FILTER
	19 FILLER WITH AIR VENT
	18 THROTTLE VALVE
	17
	16
	15
	14
	13
	12
	11 MEASURING TRANSMITTER WITH PRESSURE SHOCK REDUCER



FUNCTION TABLE	PUMP MOTOR	CLOSURE DEVICE				SOLENOID CONTROL VALVES				PILOT OPERATED CHECK VALVES			
		5.3	5.4	5.5	5.12	7.1 a	7.1 b	7.2	7.4	8.2	15	16	17
MILL IN OPERATION	STOP	CLOSED	OPEN	CLOSED	O	O	O	O	I	OPEN	14		
INCREASE OPERATING PRESSURE	RUNNING	CLOSED	OPEN	CLOSED	O	I	O	O	I	OPEN	13		
REDUCE OPERATING PRESSURE	STOP	CLOSED	OPEN	CLOSED	O	O	O	I	I	OPEN	12		
RAISING ROLLERS	RUNNING	CLOSED	OPEN	CLOSED	O	O	I	O	O	CLOSED	10		
KEEP ROLLERS IN TOP POSITION	STOP	CLOSED	OPEN	CLOSED	O	O	O	O	O	CLOSED	9	CHECK VALVE	
LOWERING ROLLERS	STOP	CLOSED	OPEN	CLOSED	O	I	O	O	O	CLOSED	8	PILOT OPERATED CHECK VALVE	
PARTIAL FLOW FILTER	RUNNING	CLOSED	OPEN	CLOSED	O	O	O	O	I	OPEN	7	SOLENOID CONTROL VALVE	
SERVICE										OPEN	6	SAFETY VALVE (6.1 LICENSED/LEAD SEALED)	
NITROGEN PRESSURE TEST IN ACCUMUL.	STOP	OPEN	OPEN	OPEN	O	O	O	O	I	OPEN	5	CLOSURE DEVICE	
KEEP ROLLERS IN TOP POS.FOR SERVICE	STOP	CLOSED	CLOSED	CLOSED	I	O	O	O	O	CLOSED	4	PRESSURE GAUGE	
LOWERING ROLLERS MANUALLY	STOP	CLOSED	OPEN	OPEN	I	O	O	O	O	CLOSED	20-24	ELECTRIC MOTOR	
											1	HYDRAULIC OIL PUMP	
												HYDRAULIC OIL CABINET	

03 M 108 B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 AS BUILT

DOCUMENT REVIEW STATUS	
FILE NO. : KOREA POWER ENGINEERING COMPANY, INC.	
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REVIEW	DATE
RE	

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△	2016.07.31	AS BUILT	T.H.HAN J.K.HA S.H.SONG
△	2014.10.27	FOR CONSTRUCTION	T.H.HAN J.K.HA S.H.SONG
REV.	DATE	DESCRIPTION	PRE'D CHK'D REV'D APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

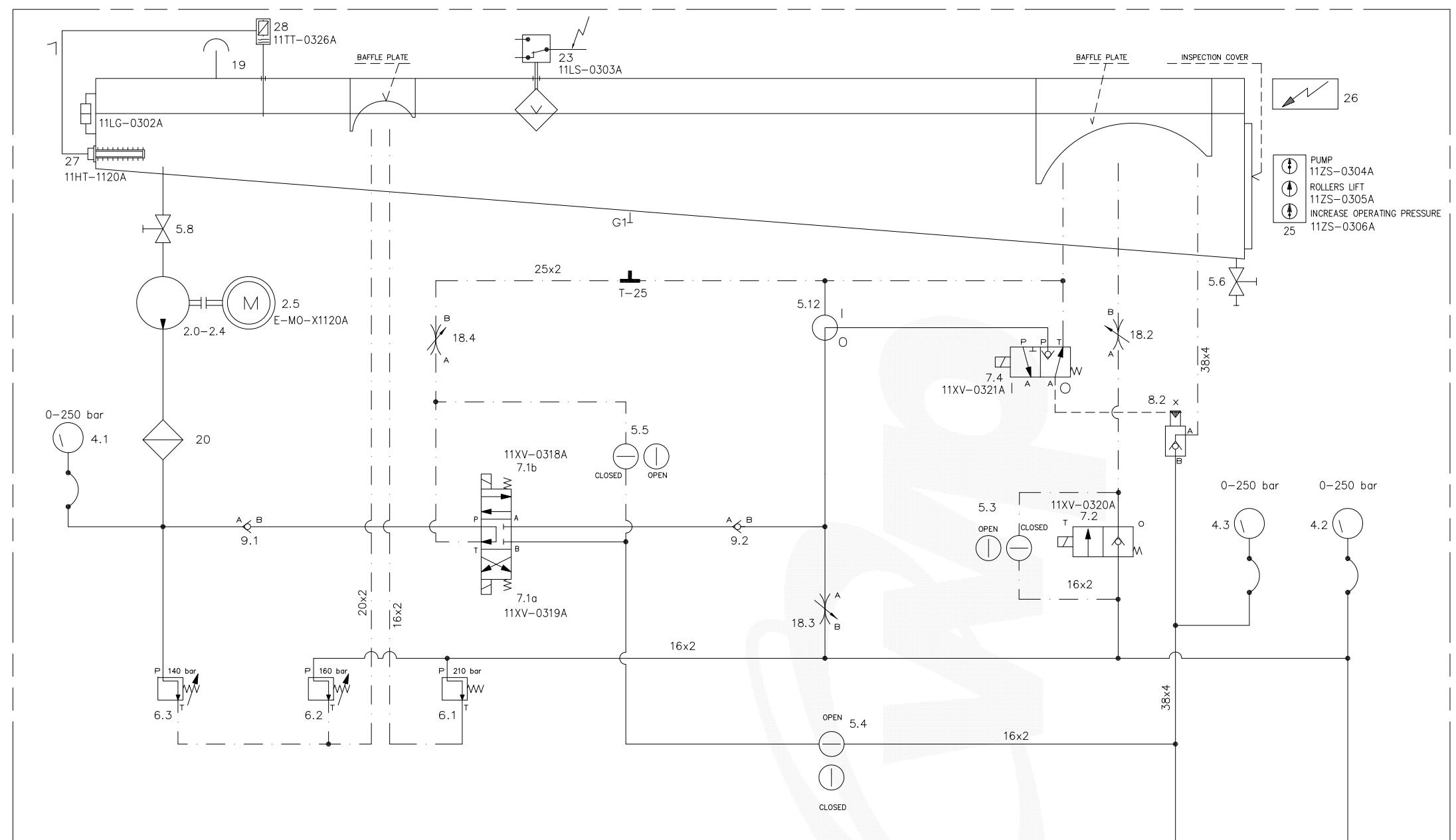
DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

LOESCHE INNOVATIVE ENGINEERING

BLOCK SAFETY TITLE PIPING & INSTRUMENTATION DIAGRAM
GASIFICATION U-1100 U-1100 MILL A HSLM 1

PROJECT DRAWING NUMBER T11072-U1100-02-0003(C) SHEET SIZE
1 / 1

MULTI UNIT PROJECT CODE KDWEPD NUMBER REV. SCALE
1 560 1-11100-ZM-105-003(C) 0



SOLENOID CONTROL VALVES
SOLENOID VALVES DRAWN IN POSITION DEAD
POSITION "O" DEAD
POSITION "I" LIVE
POSITION "I (a,b)" LIVE

PRESSURE GAUGES
4.1 PUMP PRESSURE
4.2 OPERATING PRESSURE
4.3 LIFTING PRESSURE

CONNECTIONS
A OPERATING PRESSURE
G ROLLERS LIFT/LOWER

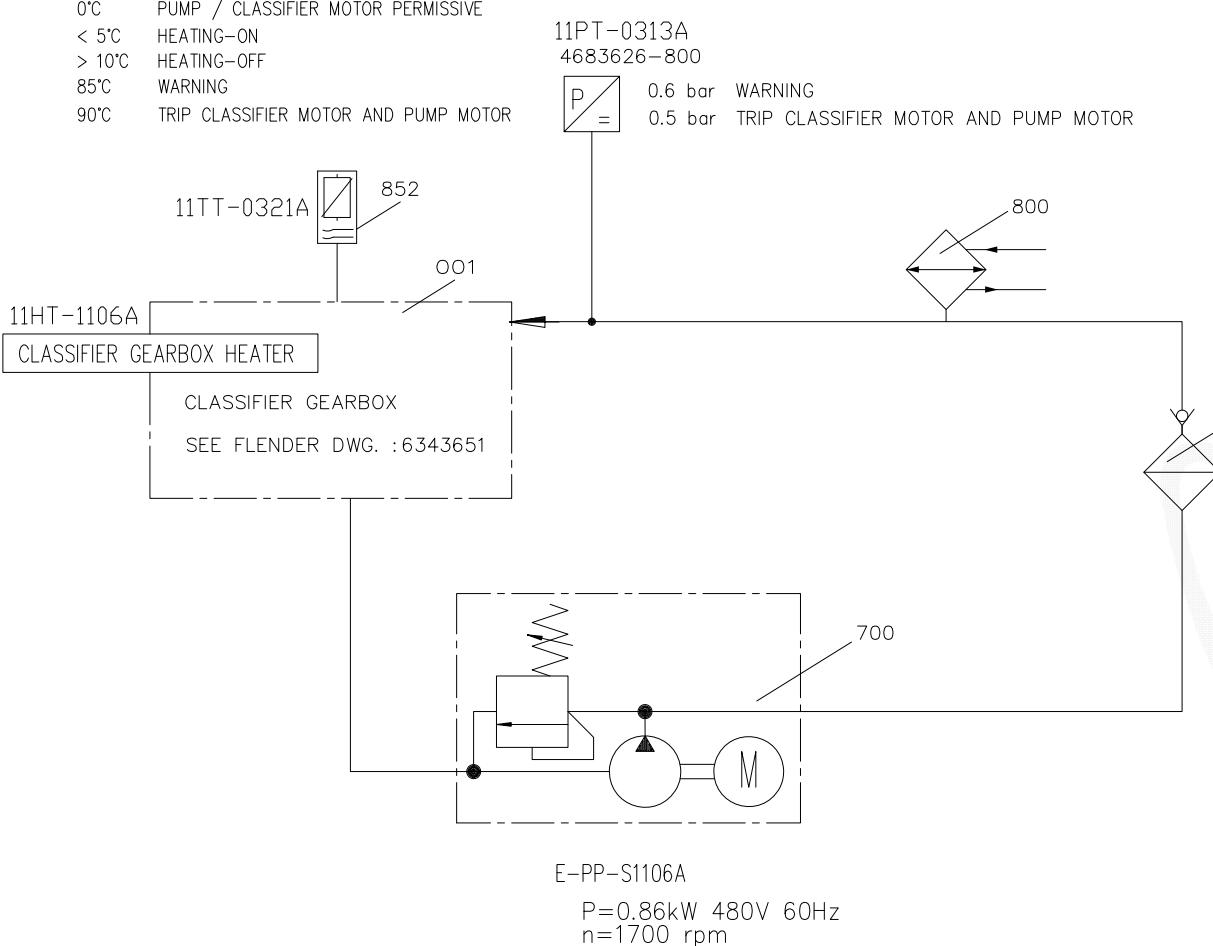
HSLM	30
	29
	28 TEMPERATURE SENSOR
	27 HEATING CARTRIDGE
	26 TERMINAL BOX
	25 TRIPLE PUSH-BUTTON
	24
	23 LEVEL SWITCH
	22
	21
	20 FILTER
	19 FILLER WITH AIR VENT
	18 THROTTLE VALVE

CLOSED

OPEN

CLASSIFIER GEARBOX LUBRICATION

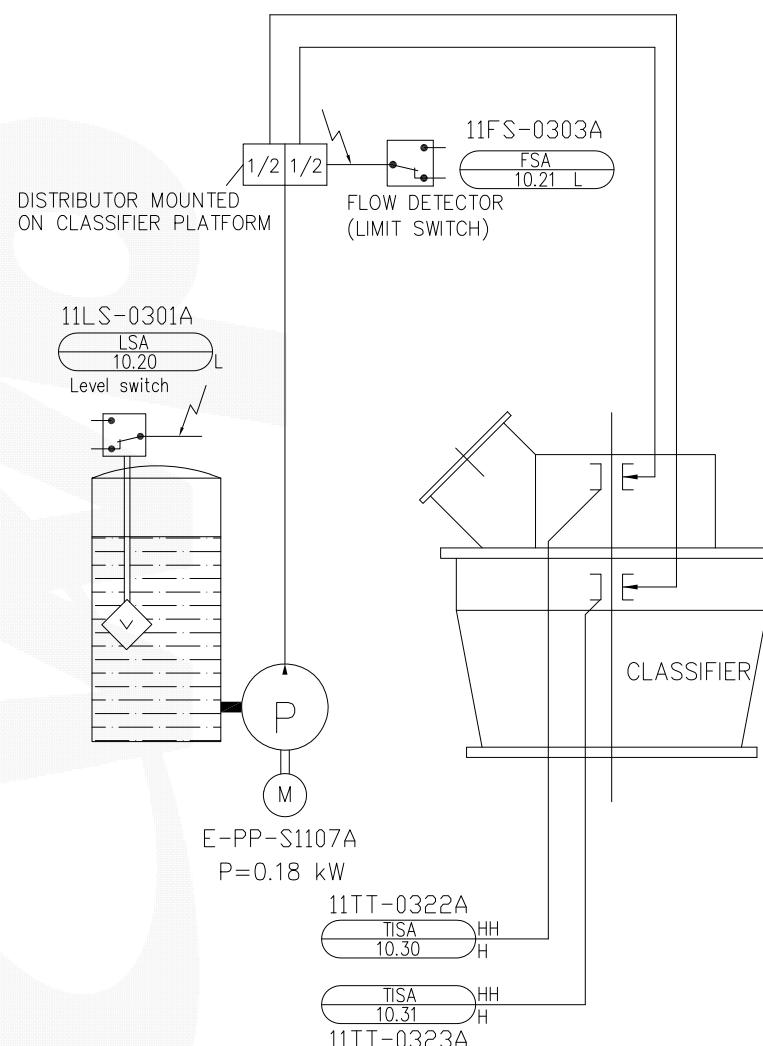
0°C PUMP / CLASSIFIER MOTOR PERMISSIVE
 < 5°C HEATING-ON
 > 10°C HEATING-OFF
 85°C WARNING
 90°C TRIP CLASSIFIER MOTOR AND PUMP MOTOR



ITEM	DESIGNATION
001	CLASSIFIER GEARBOX
700	GEARED PUMP
4683626-800	PRESSURE TRANSMITTER
774	FILTER
800	OIL WATER COOLER
893	RESISTANCE THERMOMETER (RTD)

THIS DRAWING HAS BEEN DERIVED FROM
SIEMENS DWG. : 6388084

CLASSIFIER GREASE DISTRIBUTION



THE PUMP IS RUN ON AN INTERVAL TIMER.
RUN TIME APPROX. 18MIN/HOUR.
SEE SCHEME CLASSIFIER LUBRICATION 913770-00-4.

GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :
- 11000-ZM-105-001
 11000-ZM-105-002
 11000-ZM-105-003
 11000-ZM-105-004
 11000-ZM-105-005
 11000-ZM-105-006
 11000-ZM-105-010
 11000-ZM-105-011

DOCUMENT REVIEW STATUS	
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KOREA POWER ENGINEERING COMPANY, INC.	
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REVIEW	DATE
RE	

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△	2016.07.31	AS BUILT	T.H.HAN	S.H.SONG
△	2014.10.27	FOR CONSTRUCTION	T.H.HAN	S.H.SONG
REV.	DATE	DESCRIPTION	PRE'D	CHK'D
			REV'D	APP'D


KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO.,LTD.

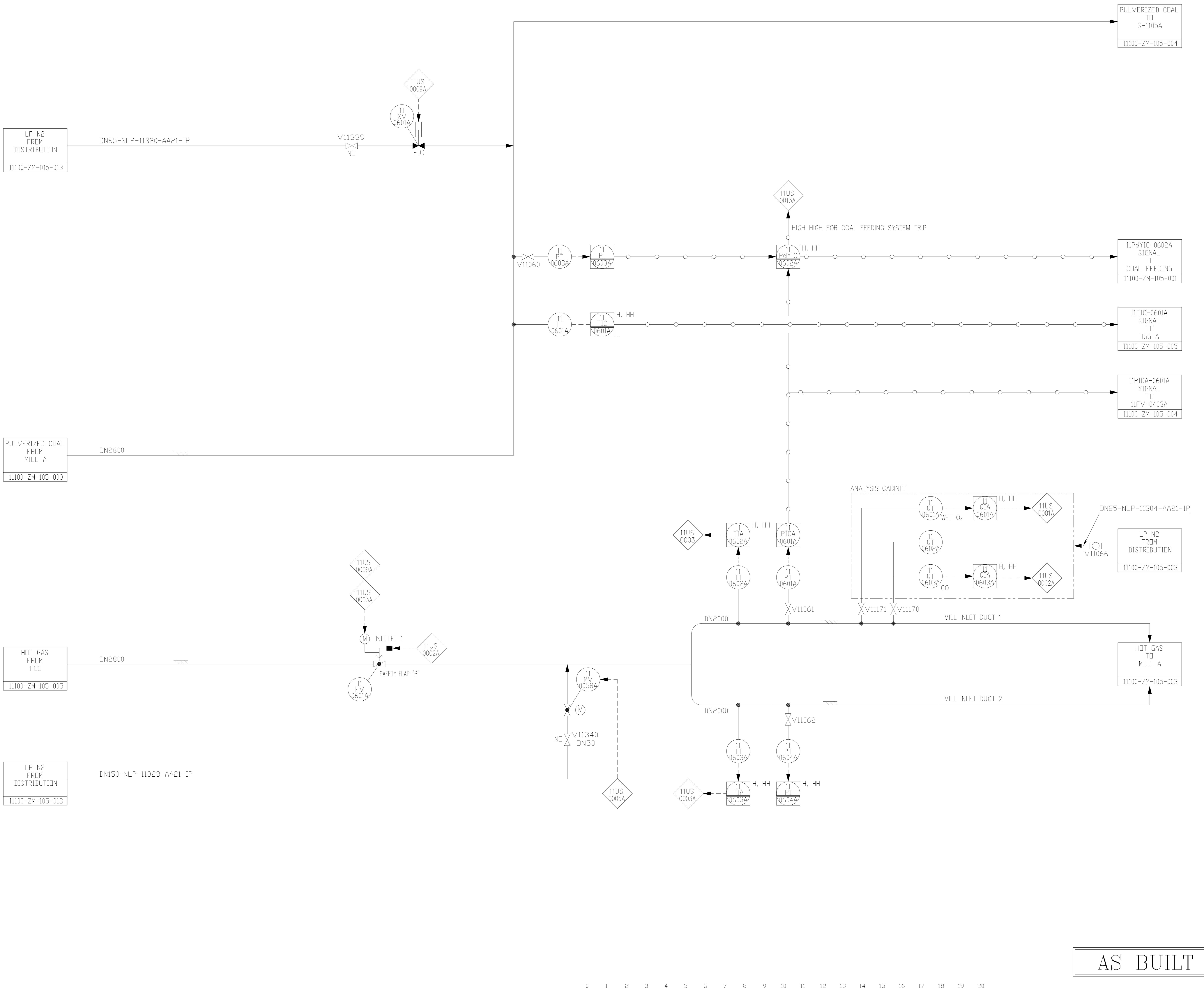
LOESCHE 
INNOVATIVE ENGINEERING

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM		
GASIFICATION U-1100			MILL A CLASSIFIER GREASE DISTRIBUTION & GEARBOX LUBRICATION U-1100		
			PROJECT DRAWING NUMBER		
			T11072-1100-02-0003(E)	SHEET	SIZE
MULTI UNIT	PROJECT CODE	KOWEPD NUMBER	1	1 / 1	
			560	1-11100-ZM-105-003(E)	0
				REV.	SCALE

AS BUILT



CO LEVEL HIGH HIGH DE-ENERZISE
CLAMPING MAGNET AND CLOSE FLAP.

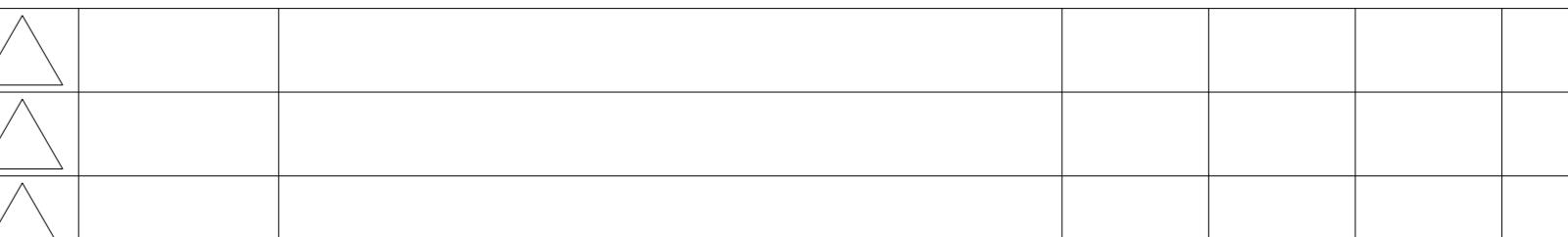


GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :
11000-ZM-105-001
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11000-ZM-105-003
11000-ZM-105-004
11000-ZM-105-005
11000-ZM-105-006
11000-ZM-105-010
11000-ZM-105-011

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
F	2016.07.31	AS BUILT	T.H.HAN	J.K.HA	S.H.S	
O	2014.10.27	FOR CONSTRUCTION	T.H.HAN	J.K.HA	S.H.S	
REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D	AP

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)



BLOCK		SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM CMD A PROCESS MILL INLET/OUTLET U-1100	
GASIFICATION U-1100					
PROJECT DRAWING NUMBER		T11072-1100-02-0006		SHEET	SIZ
MULTI UNIT	PROJECT CODE	KOWEPO NUMBER	REV.	SCA	
1	560	1-11100-ZM-105-006	F		

AS BUILT



V-1102B	LIMESTONE SILO
ID X LENGTH	4520 x 10900 mm
VOLUME	173 m³
MATERIAL	CS
INSULATION	NI

S-1102B	LIMESTONE SILO DEDUSTING FILTER
FILTER MATERIAL	POLYESTERE
TYPE	BELT CONVEYOR
CAPACITY	10 t/h
MATERIAL	CS
INSULATION	NI

X-1105B	LIMESTONE WEIGHING FEEDER
TYPE	BELT CONVEYOR
CAPACITY	10 t/h
MATERIAL	CS
INSULATION	NI

X-1109B	SILICA&LIMESTONE ROTARY VALVE
TYPE	ROTARY VALVE
CAPACITY	11.5 t/h
MATERIAL	CS
INSULATION	NI

V-1103B	SILICA SILO
ID X LENGTH	5220 x 14000 mm
VOLUME	188 m³
MATERIAL	CS
INSULATION	NI

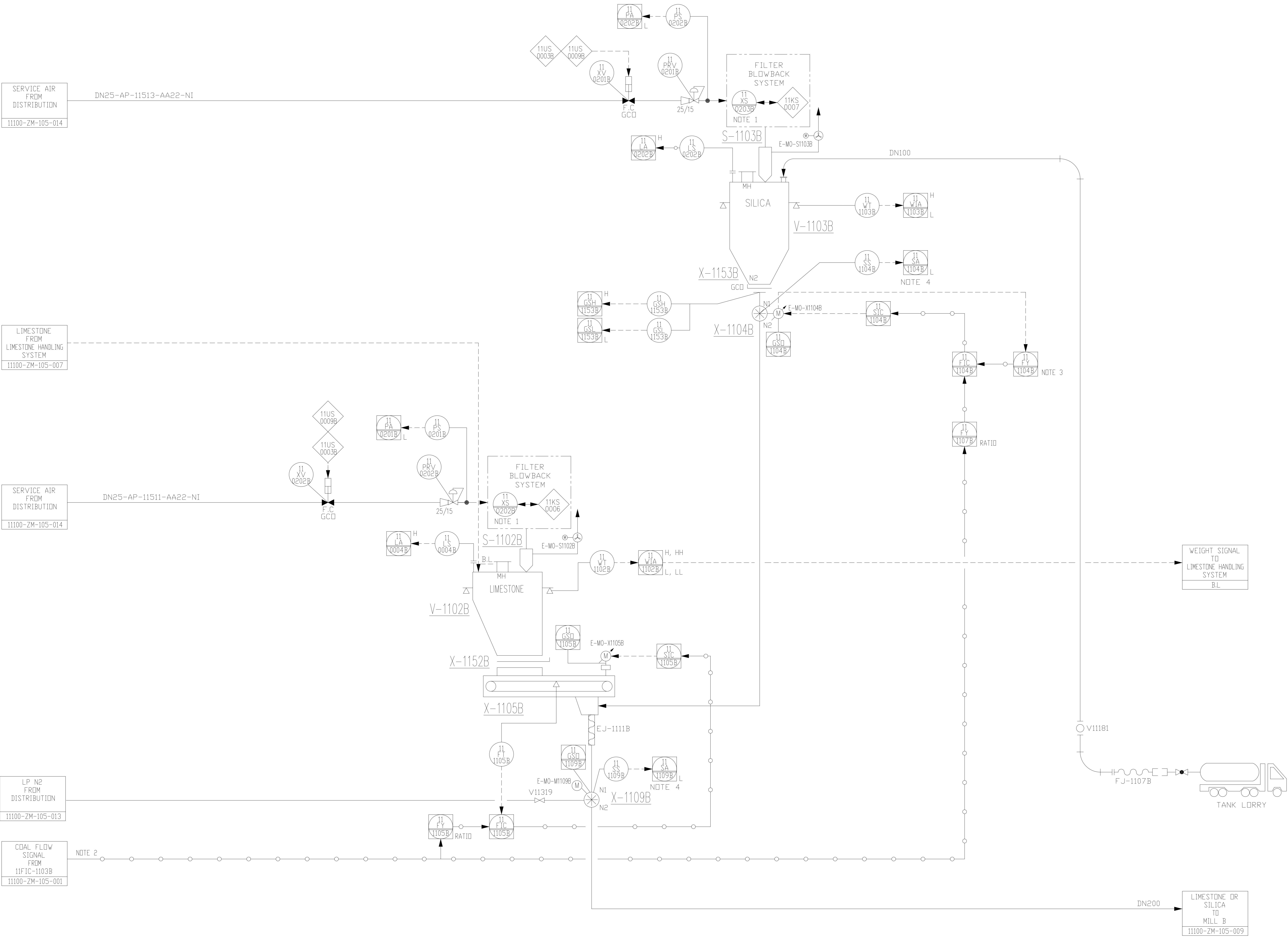
S-1103B	SILICA SILO DEDUSTING FILTER
FILTER MATERIAL	POLYESTERE
TYPE	ROTARY VALVE
CAPACITY	11.5 t/h
MATERIAL	CS
INSULATION	NI

X-1104B	SILICA SILO ROTARY VALVE
TYPE	ROTARY VALVE
CAPACITY	11.5 t/h
MATERIAL	CS
INSULATION	NI

X-1152B	LIMESTONE SILO OUTLET SLIDE GATE
TYPE	SLIDE GATE
CAPACITY	10.0 t/h
MATERIAL	CS
INSULATION	NI

X-1153B	SILICA SILO OUTLET SLIDE GATE
TYPE	SLIDE GATE
CAPACITY	11.5 t/h
MATERIAL	NI
INSULATION	NI

1. BAG FILTER CLEANING CONTROLLER
2. FROM COAL FEED PROPORTIONING(RATIO) CONTROL RESPECTIVELY FOR EACH FEEDER.
3. FLOW RATE CALCULATED FROM ROTARY VALVE SPEED BY MULTIPLYING WITH BULK DENSITY.
4. MOTOR TRIPPED WHEN LOW SPEED.



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REVIEW	DATE

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<input type="checkbox"/>		

2016.07.31 AS BUILT T.HAN JK.HA SH.SONG
2014.10.27 FOR CONSTRUCTION T.HAN JK.HA SH.SONG

REV. DATE DESCRIPTION PRE'D CHK'D REV'D APP'D

CWP COREA WESTERN POWER CO.,Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO.,LTD.

LOESCHE INNOVATIVE ENGINEERING

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM		
GASIFICATION U-1100			CMD B SILICA AND LIMESTONE FEEDING U-1100		
PROJECT DRAWING NUMBER			T11072-I1100-02-0008	SHEET	SIZE
MULTI UNIT	PROJECT CODE	KOWEPD NUMBER	1 / 1	REV.	SCALE
1	560	1-11100-ZM-105-008	F		

AS BUILT

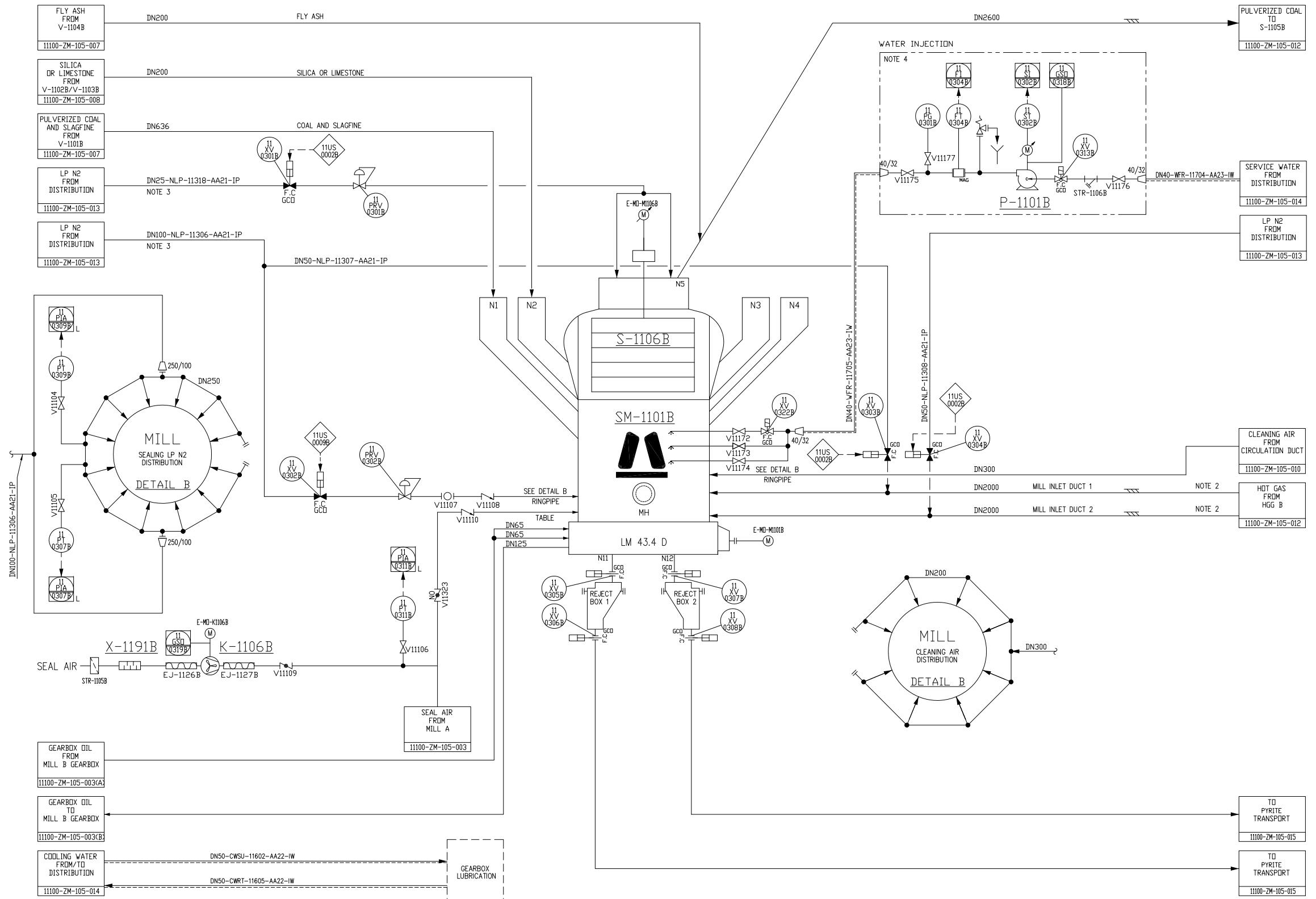
NOTES

1. DELETED.
2. AIR MEASURING INSTRUMENTS ARE DESCRIBED ON "11100-ZM-105-006" DRAWING.
3. NITROGEN OF THIS LINE IS FOR INERTING SOURCE.
4. WATER INJECTION IS BACK UP SOURCE TO CONTROL OXYGEN CONTENTS FOR CMD SYSTEM.
6m³ WATER INJECTION.

SM-1101B	MILL (LM43.4D)
TYPE	VERTICAL ROLLER
CAPACITY	123.7 t/h (PDC)
POWER	1600 KW
CLASSIFIER	LSKS 64.1

K-1106B	MILL SEALING AIR FAN
CAPACITY	1,350 m³/h
DIFFERENTIAL PRESSURE	0.021 bar
POWER	15 KW
MATERIAL/INTERNAL	CS/CS

P-1101B	WATER INJECTION PUMP
CAPACITY	1,350 m³/h
DIFF. HEAD	160 m
POWER	6.3 KW
MATERIAL/INTERNAL	SS/CrNiMo 6
TYPE	INLINE TYPE



GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :
- 11000-ZM-105-001
11000-ZM-105-002
11000-ZM-105-003
11000-ZM-105-004
11000-ZM-105-005
11000-ZM-105-006
11000-ZM-105-010
11000-ZM-105-011

DOCUMENT REVIEW STATUS	FILE NO. : KOREA POWER ENGINEERING COMPANY, INC
DOCUMENT STATUS	1. WORK MAY PROCEED. CONTRACTOR MAY PROCEED WITH CONSTRUCTION IN ACCORDANCE WITH SPECIFICATION.
	2. REVISE AND RESUBMIT. CONTRACTOR MAY PROCEED IN ACCORDANCE WITH SPECIFICATION BASED ON MAKING REVISIONS AS NOTED AND RESUBMIT.
	3. REVISE AND RESUBMIT. WORK MAY NOT PROCEED. REVISE AS NOTED AND RESUBMIT. HOLD FABRICATION / INSTALLATION UNTIL APPROVAL IS RECEIVED.
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REVIEW	DATE

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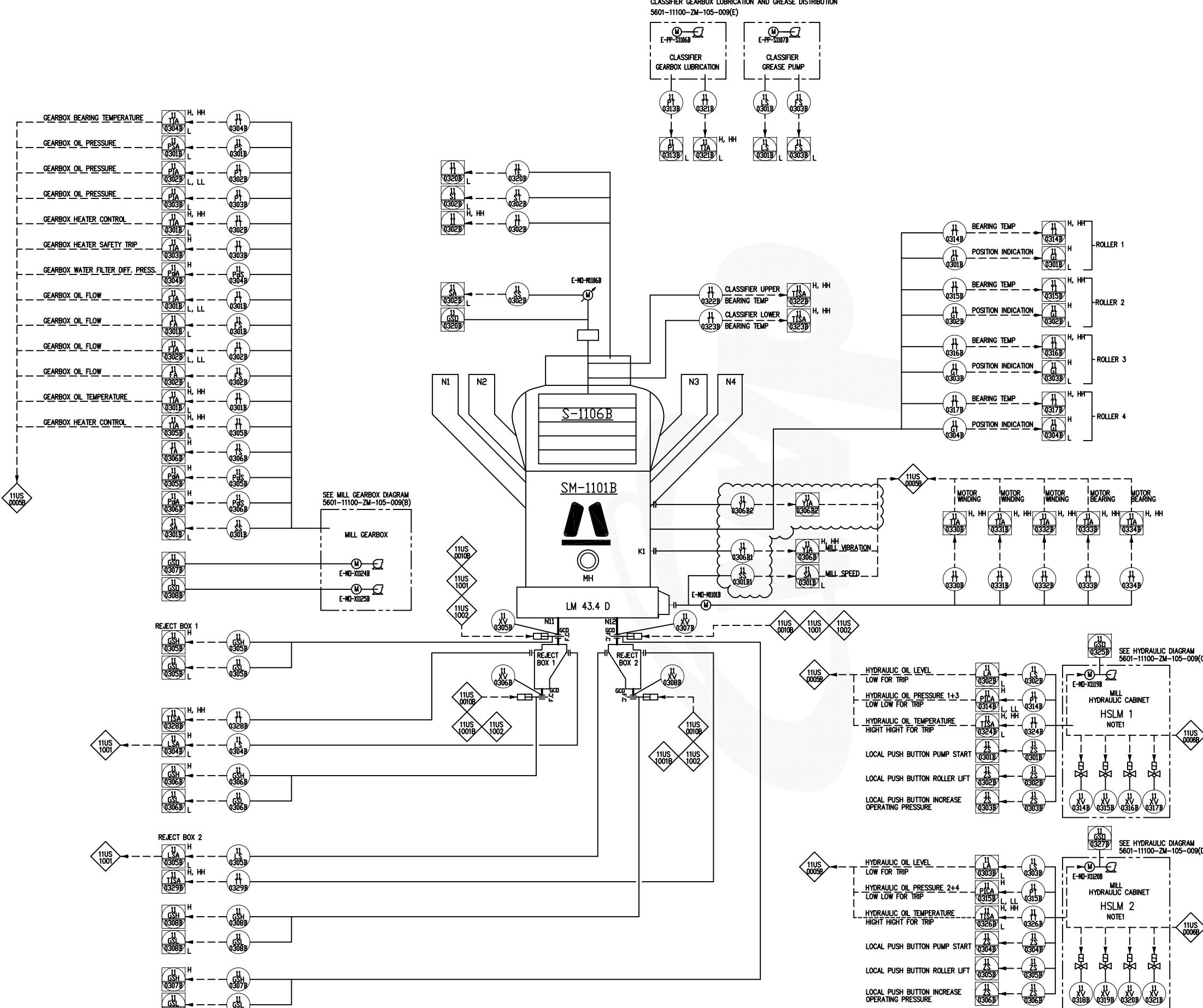
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△			
△	2016.07.31	AS BUILT	T.J.HAN JK.HA SH.SONG
△	2014.10.27	FDR CONSTRUCTION	T.J.HAN JK.HA SH.SONG
REV. DATE		DESCRIPTION	PRE'D CHK'D REV'D APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 <300MW X 1D

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO.,LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM		
GASIFICATION		U-1100	MILL B MONITORING		
PROJECT DRAWING NUMBER	T11072-1100-02-0009			SHEET	SIZE
MULTI UNIT	PROJECT CODE	KOWEPO NUMBER	REV.	SCALE	
1	560	1-11100-ZM-105-009	F		

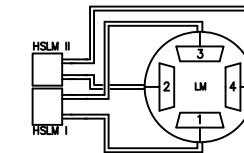
AS BUILT



AS BUILT

NOTES

- ## 1. ROLLER-HYDRAULIC CABINET DESIGNATION



GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :

 - 11000-ZM-105-001
 - 11000-ZM-105-002
 - 11000-ZM-105-003
 - 11000-ZM-105-004
 - 11000-ZM-105-005
 - 11000-ZM-105-006
 - 11000-ZM-105-010
 - 11000-ZM-105-011

DOCUMENT REVIEW STATUS	
FILE NO. : KOREA POWER ENGINEERING COMPANY, INC.	
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RE	DATE

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LOCAL PUSH BUTTON ROLLER LIFT

LOCAL PUSH BUTTON INCREASE
OPERATING PRESSURE

11 XV
Q302B

11 ZS
Q302B'

11 XV
Q303B

11 ZS
Q303B'

11 XV
Q314B

11 XV
Q315B

11 XV
Q316B

11 XV
Q317B

GSD
0327B SEE HYDRAULIC DIAGRAM

5601-11100-ZM-105-005

11US
0005B

HYDRAULIC OIL LEVEL
LOW FOR TRIP

11
LA
Q303B

11
LS
Q303B

11
PICA
Q315B

11
PL
Q315B

E-MD-X1120B

MILL
HYDRAULIC CABINET

LOW LOW FOR TRIP

5601-11100-ZM-105-005

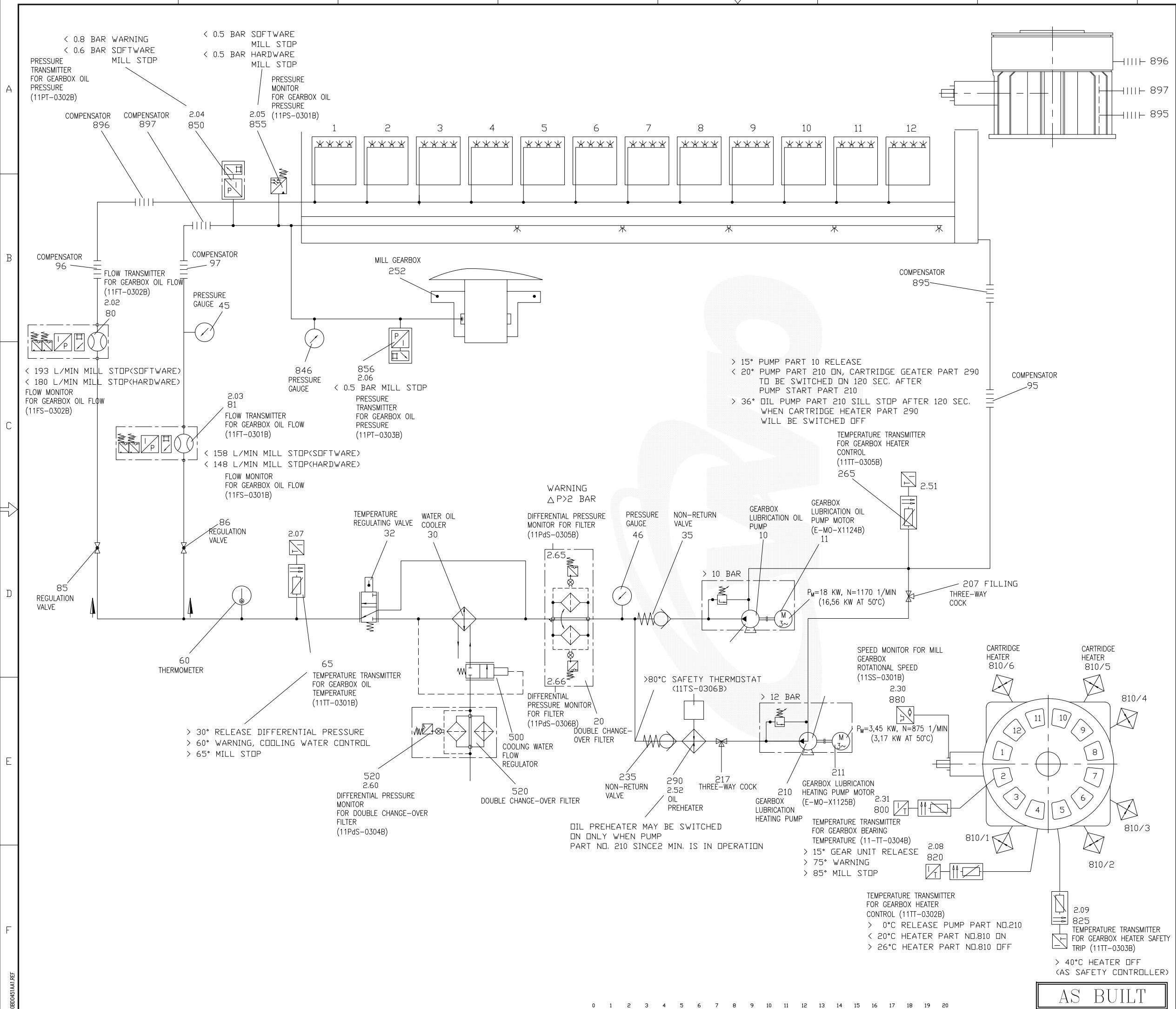
HIGHT HIGHT FOR TRIP TUSA 0326B 0326B NOTE1 11US 0006

The diagram shows a local control panel with three push buttons:

- LOCAL PUSH BUTTON PUMP START**: Located at the top left, with a label box containing "Q304B".
- LOCAL PUSH BUTTON ROLLER LIFT**: Located in the middle left, with a label box containing "Q305B".
- LOCAL PUSH BUTTON INTERLOCK**: Located at the bottom left, with a label box containing "Q306B".

Each button is connected to a vertical line labeled "11" and then to a horizontal line labeled "75". The "75" lines from all three buttons converge at a junction point.

BLOCK		SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM MILL B MONITORING SYSTEM U-1100		
GASIFICATION U-1100						
PROJECT DRAWING NUMBER			T11072-1100-02-0009(A)	SHEET	SIZE	
MULTI UNIT		PROJECT CODE	KOWEPO NUMBER		REV.	SCALE
1		560	1-11100-ZM-105-009(A)		F	



NOTES

- MANUAL MAINTENANCE SLIDE GATE WITH LIMIT SWITCH OPEN AND CLOSED.

 - . AIR MEASURING INSTRUMENTS ARE DESCRIBED ON "11100-ZM-105-006" DRAWING.
 - . NITROGEN OF THIS LINE IS FOR INSERTING SOURCE.
 - . WATER INJECTION IS BACK UP SOURCE TO CONTROL OXYGEN CONTENTS FOR CMD SYSTEM.

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 - 11000-ZM-105-002
 - 11000-ZM-105-003
 - 11000-ZM-105-004
 - 11000-ZM-105-005
 - 11000-ZM-105-006
 - 11000-ZM-105-010
 - 11000-ZM-105-011

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▲	2016.07.31	AS BUILT	T.H.HAN	JK.HA	S
▲	2014.10.27	FOR CONSTRUCTION	T.H.HAN	JK.HA	
EX	DATE	DESCRIPTION	PRE/P	CH/CD	REV/R

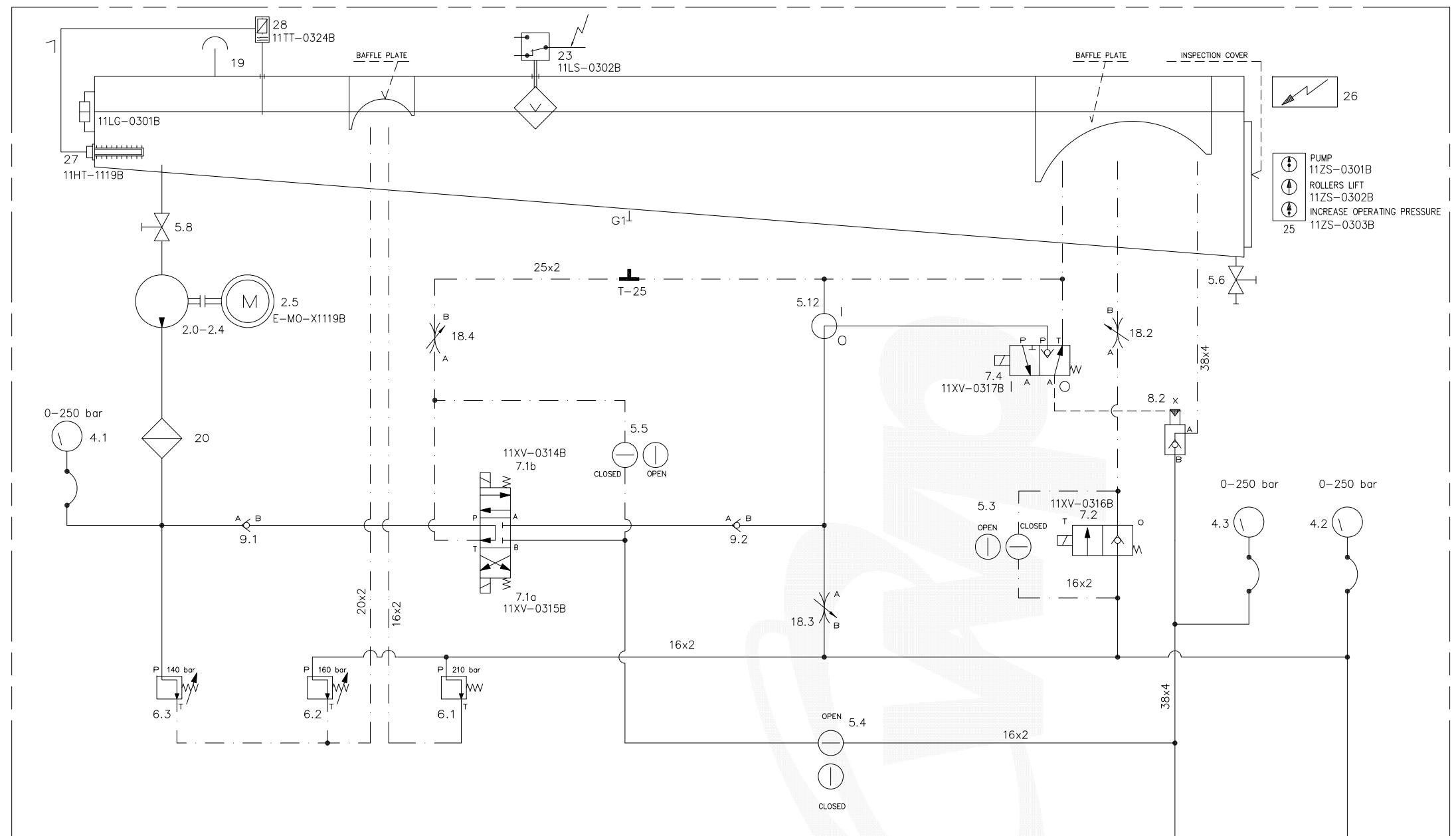
KOREA WESTERN POWER CO., LTD.

**DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO., LTD.**

LOESCHE 

LOESCHE 
 INNOVATIVE ENGINEERING

	T11072-1100-02-0009(B)	SHEET 1 / 1
DE	KOWEPO NUMBER	REV. S
	1-11100-ZM-105-009(B)	0

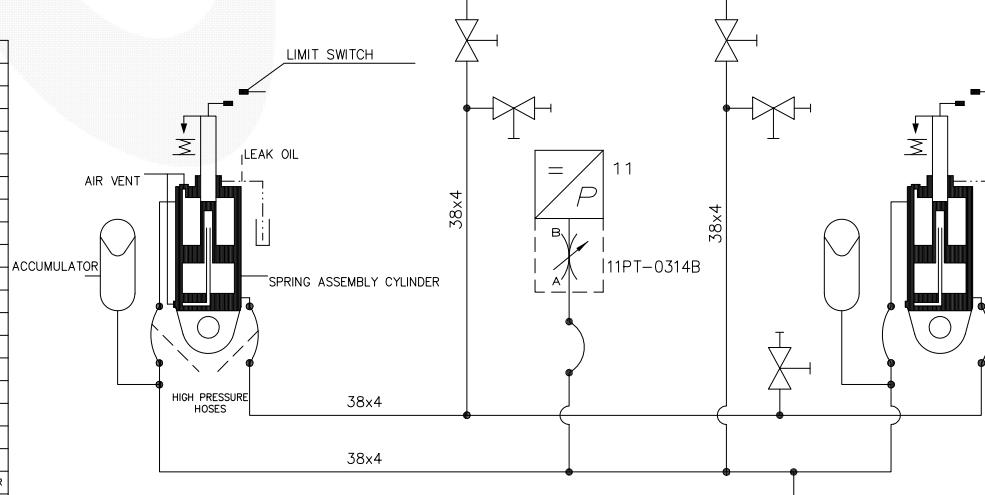


SOLENOID CONTROL VALVES
SOLENOID VALVES DRAWN IN POSITION DEAD
POSITION "O" DEAD
POSITION "I" LIVE
POSITION "I (a,b)" LIVE

PRESSURE GAUGES
4.1 PUMP PRESSURE
4.2 OPERATING PRESSURE
4.3 LIFTING PRESSURE

CONNECTIONS
A OPERATING PRESSURE
G ROLLERS LIFT/LOWER

HSLM	LM
30	
29	
28 TEMPERATURE SENSOR	
27 HEATING CARTRIDGE	
26 TERMINAL BOX	
25 TRIPLE PUSH-BUTTON	
24	
23 LEVEL SWITCH	
22	
21	
20 FILTER	
19 FILLER WITH AIR VENT	
18 THROTTLE VALVE	



FUNCTION TABLE	PUMP MOTOR	CLOSURE DEVICE				SOLENOID CONTROL VALVES				PILOT OPERATED CHECK VALVES			
		5.3	5.4	5.5	5.12	7.1 a	7.1 b	7.2	7.4	8.2	15	16	17
MILL IN OPERATION	STOP	CLOSED	OPEN	CLOSED	O	O	O	O	I	OPEN	14		
INCREASE OPERATING PRESSURE	RUNNING	CLOSED	OPEN	CLOSED	O	I	O	O	I	OPEN	13		
REDUCE OPERATING PRESSURE	STOP	CLOSED	OPEN	CLOSED	O	O	O	I	I	OPEN	12		
RAISING ROLLERS	RUNNING	CLOSED	OPEN	CLOSED	O	O	I	O	O	CLOSED	10		
KEEP ROLLERS IN TOP POSITION	STOP	CLOSED	OPEN	CLOSED	O	O	O	O	O	CLOSED	9	CHECK VALVE	
LOWER ROLLERS	STOP	CLOSED	OPEN	CLOSED	O	I	O	O	O	CLOSED	8	PILOT OPERATED CHECK VALVE	
PARTIAL FLOW FILTER	RUNNING	CLOSED	OPEN	CLOSED	O	O	O	O	I	OPEN	7	SOLENOID CONTROL VALVE	
SERVICE											6	SAFETY VALVE (6.1 LICENSED/LEAD SEALED)	
NITROGEN PRESSURE TEST IN ACCUMUL.	STOP	OPEN	OPEN	OPEN	O	O	O	O	I	OPEN	5	CLOSURE DEVICE	
KEEP ROLLERS IN TOP POS.FOR SERVICE	STOP	CLOSED	CLOSED	CLOSED	I	O	O	O	O	CLOSED	4	PRESSURE GAUGE	
LOWER ROLLERS MANUALLY	STOP	CLOSED	OPEN	OPEN	I	O	O	O	O	CLOSED	2.5	ELECTRIC MOTOR	

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

AS BUILT

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△	2014.10.27	FOR CONSTRUCTION	T.H.HAN JK.HA S.H.SONG
REV.	DATE	DESCRIPTION	PRE'D CHK'D REV'D APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

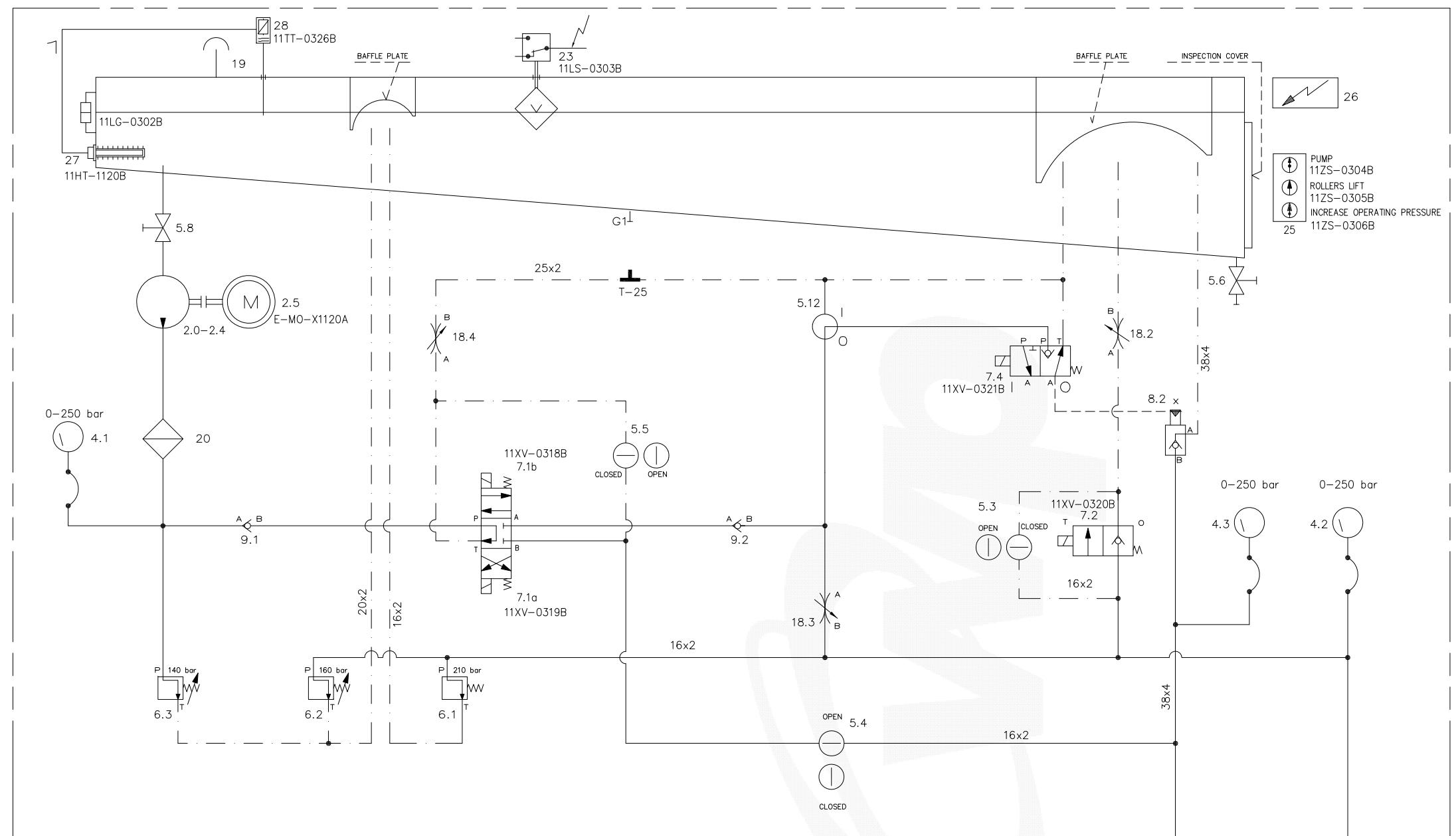
DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

LOESCHE 
INNOVATIVE ENGINEERING

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM
GASIFICATION U-1100			MILL B HSLM 1 U-1100

PROJECT DRAWING NUMBER	SHEET	SIZE
T11072-1100-02-0009(C)	1 / 1	

MULTI UNIT	PROJECT CODE	KDWEPD NUMBER	REV.	SCALE
1	560	1-11100-ZM-105-009(C)	0	

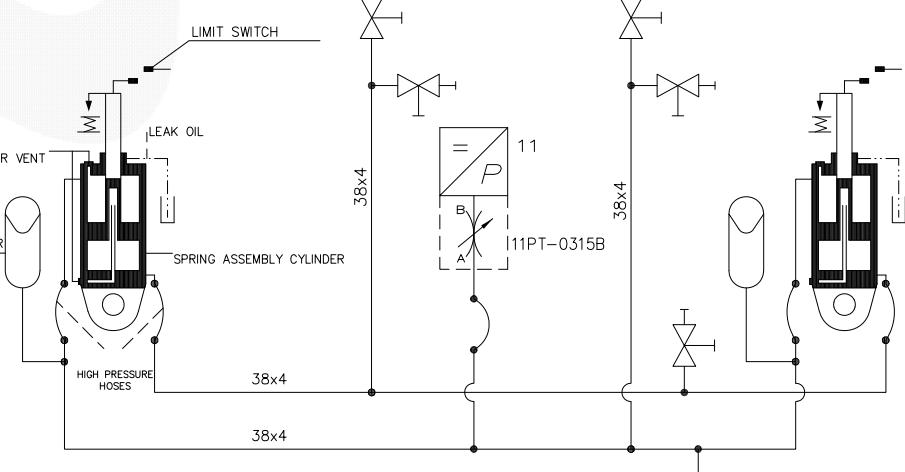


SOLENOID CONTROL VALVES
SOLENOID VALVES DRAWN IN POSITION DEAD
POSITION "O" DEAD
POSITION "I" LIVE
POSITION "I (a,b)" LIVE

PRESSURE GAUGES
4.1 PUMP PRESSURE
4.2 OPERATING PRESSURE
4.3 LIFTING PRESSURE

CONNECTIONS
A OPERATING PRESSURE
G ROLLERS LIFT/LOWER

HSLM	30
	29
	28 TEMPERATURE SENSOR
	27 HEATING CARTRIDGE
	26 TERMINAL BOX
	25 TRIPLE PUSH-BUTTON
	24
	23 LEVEL SWITCH
	22
	21
	20 FILTER
	19 FILLER WITH AIR VENT
	18 THROTTLE VALVE
	17
	16
	15
	14
	13
	12
	11 MEASURING TRANSMITTER WITH PRESSURE SHOCK REDUCER
	10
	9 CHECK VALVE
	8 PILOT OPERATED CHECK VALVE
	7 SOLENOID CONTROL VALVE
	6 SAFETY VALVE (6.1 LICENSED/LEAD SEALED)
	5 CLOSURE DEVICE
	4 PRESSURE GAUGE
	2.5 ELECTRIC MOTOR
	20-24 HYDRAULIC OIL PUMP
	1 HYDRAULIC OIL CABINET



FUNCTION TABLE	PUMP MOTOR	CLOSURE DEVICE				SOLENOID CONTROL VALVES				PILOT OPERATED CHECK VALVES			
		5.3	5.4	5.5	5.12	7.1 a	7.1 b	7.2	7.4	8.2	15	16	17
MILL IN OPERATION	STOP	CLOSED	OPEN	CLOSED	O	O	O	O	I	OPEN	14		
INCREASE OPERATING PRESSURE	RUNNING	CLOSED	OPEN	CLOSED	O	I	O	O	I	OPEN	13		
REDUCE OPERATING PRESSURE	STOP	CLOSED	OPEN	CLOSED	O	O	O	I	I	OPEN	12		
RAISING ROLLERS	RUNNING	CLOSED	OPEN	CLOSED	O	O	I	O	O	CLOSED	10		
KEEP ROLLERS IN TOP POSITION	STOP	CLOSED	OPEN	CLOSED	O	O	O	O	O	CLOSED	9	CHECK VALVE	
LOWERING ROLLERS	STOP	CLOSED	OPEN	CLOSED	O	I	O	O	O	CLOSED	8	PILOT OPERATED CHECK VALVE	
PARTIAL FLOW FILTER	RUNNING	CLOSED	OPEN	CLOSED	O	O	O	O	I	OPEN	6	SAFETY VALVE (6.1 LICENSED/LEAD SEALED)	
SERVICE											5	CLOSURE DEVICE	
NITROGEN PRESSURE TEST IN ACCUMUL.	STOP	OPEN	OPEN	OPEN	O	O	O	O	I	OPEN	4	PRESSURE GAUGE	
KEEP ROLLERS IN TOP POS.FOR SERVICE	STOP	CLOSED	CLOSED	CLOSED	I	O	O	O	O	CLOSED	20-24	ELECTRIC MOTOR	
LOWERING ROLLERS MANUALLY	STOP	CLOSED	OPEN	OPEN	I	O	O	O	O	CLOSED	1	HYDRAULIC OIL CABINET	

AS BUILT

DOCUMENT REVIEW STATUS	
FILE NO. : KOREA POWER ENGINEERING COMPANY, INC.	
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REV. DATE	DESCRIPTION	PRE'D CHK'D REV'D APP'D	

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

LOESCHE 
INNOVATIVE ENGINEERING

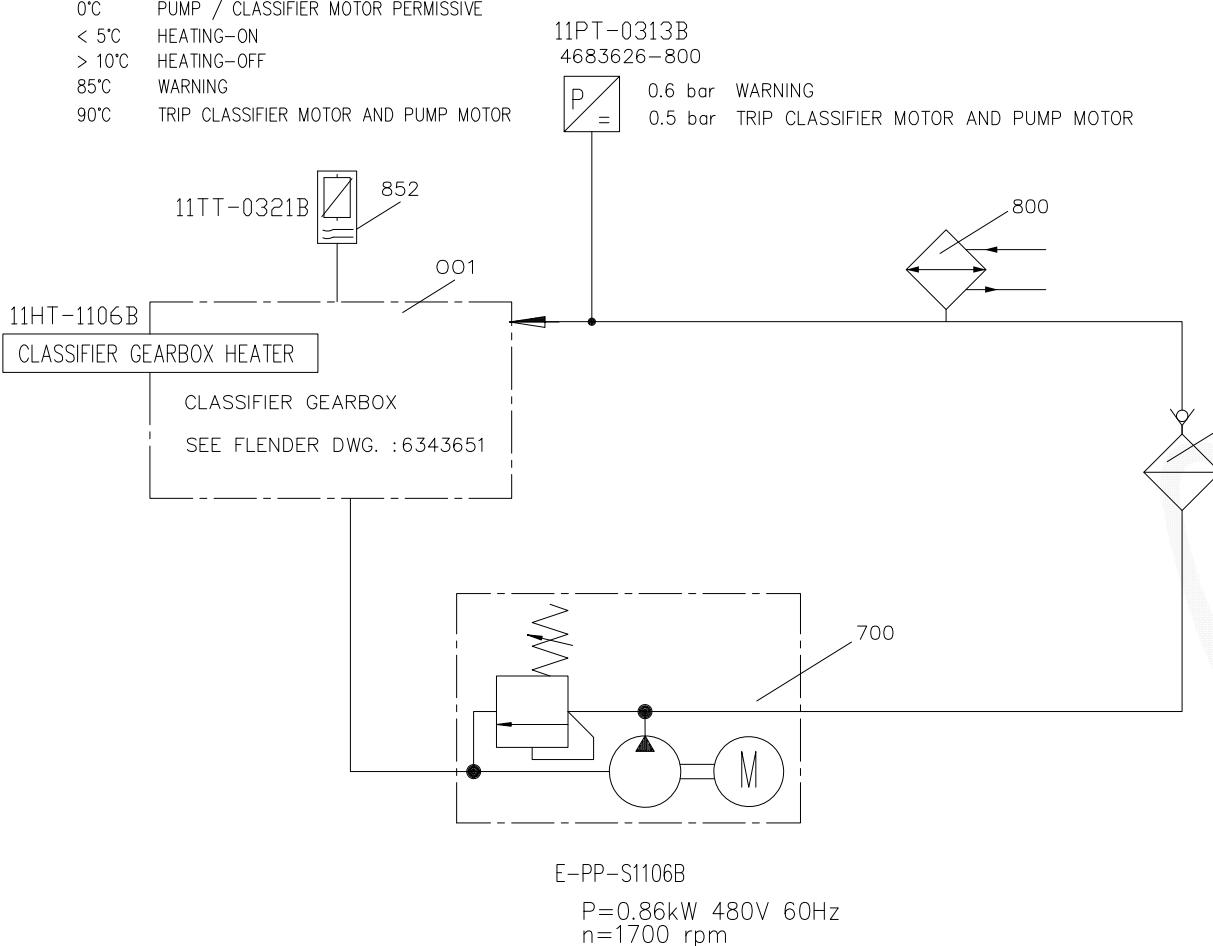
BLOCK SAFETY TITLE PIPING & INSTRUMENTATION DIAGRAM
GASIFICATION U-1100 U-1100 MILL B HSLM 2

PROJECT DRAWING NUMBER T11072-U1100-02-0009(D) SHEET SIZE
1 / 1

MULTI UNIT PROJECT CODE KDWEPD NUMBER REV. SCALE
1 560 1-11100-ZM-105-009(D) 0

CLASSIFIER GEARBOX LUBRICATION

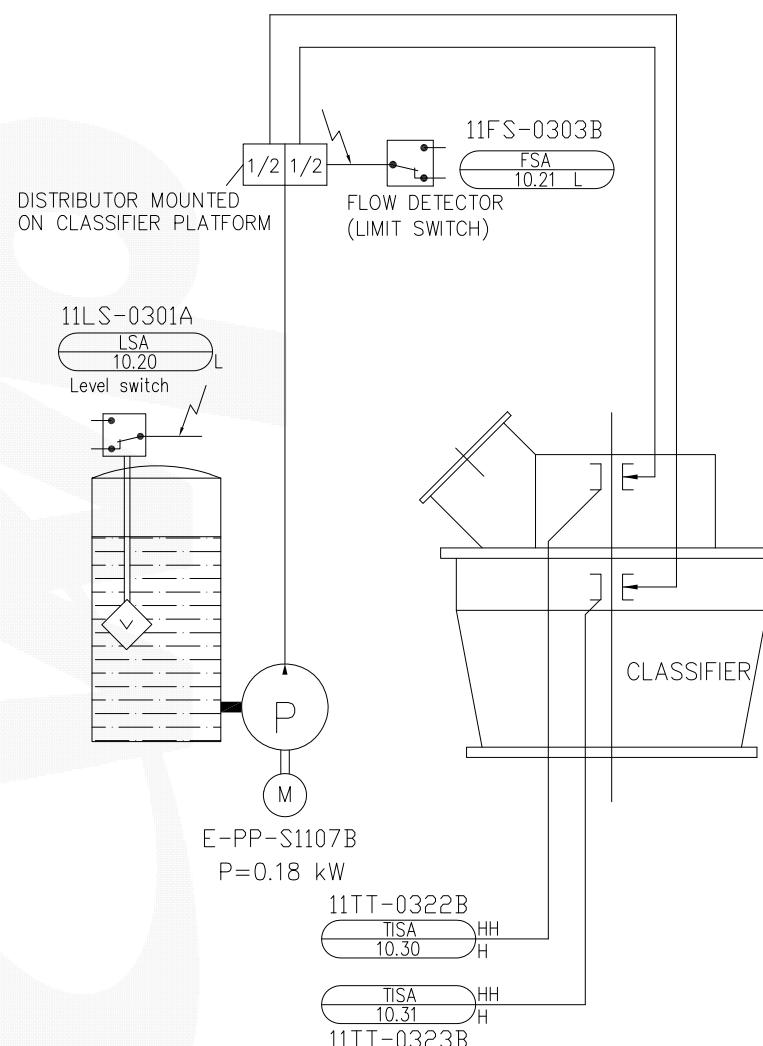
0°C PUMP / CLASSIFIER MOTOR PERMISSIVE
 < 5°C HEATING-ON
 > 10°C HEATING-OFF
 85°C WARNING
 90°C TRIP CLASSIFIER MOTOR AND PUMP MOTOR



ITEM	DESIGNATION
001	CLASSIFIER GEARBOX
700	GEARED PUMP
4683626-800	PRESSURE TRANSMITTER
774	FILTER
800	OIL WATER COOLER
893	RESISTANCE THERMOMETER (RTD)

THIS DRAWING HAS BEEN DERIVED FROM
SIEMENS DWG. : 6388084

CLASSIFIER GREASE DISTRIBUTION



THE PUMP IS RUN ON AN INTERVAL TIMER.
RUN TIME APPROX. 18MIN/HOUR.
SEE SCHEME CLASSIFIER LUBRICATION 913770-00-4.

GENERAL NOTES

- FOR LEGENDS AND SYMBOLS SEE DRG'S :
- 11000-ZM-105-001
11000-ZM-105-002
11000-ZM-105-003
11000-ZM-105-004
11000-ZM-105-005
11000-ZM-105-006
11000-ZM-105-010
11000-ZM-105-011

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KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO.,LTD.

LOESCHE 
INNOVATIVE ENGINEERING

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM	
GASIFICATION U-1100			MILL B CLASSIFIER GREASE DISTRIBUTION & GEARBOX LUBRICATION U-1100	

PROJECT DRAWING NUMBER		T11072-1100-02-0009(E)		SHEET	SIZE
MULTI UNIT	PROJECT CODE	560		1 / 1	
KOWEPD NUMBER		1-11100-ZM-105-009(E)		REV.	SCALE
1		560		0	

AS BUILT

S-1105B	BAG FILTER
FILTER MATERIAL	POLYACRYLNITRIL
DIMENSION	15400X1000X16000 mm
WASTE GAS VOLUME	407,000 m ³ /h
GAS TEMPERATURE	Max. 120 °C
INSULATION	TF

X-1141/2B	PRODUCT FILTER SCREW FEEDER
TYPE	SCREW
CAPACITY	57.5 t
MATERIAL	CS
INSULATION	IE

X-1168/9B	PRODUCT F ROTARY FEEDER
TYPE	ROTARY
CAPACITY	57.5
MATERIAL	CS
INSULATION	NI

X-1170B	COAL SCREW CONVE
TYPE	SCREW
CAPACITY	115
MATERIAL	CS
INSULATION	IE

	X-1144B	VIS SC
CUT SIZE	4	
CAPACITY		115
MATERIAL		CS
INSULATION		IH

TING N	X-1146 B
mm	TYPE
t / h	CAPACITY
	MATERIAL
	INSULATION

DRAG CHAIN CONVEYOR	X-1166/7
CHAIN CONVEYOR	TYPE
5 t /h	CAPACITY
	MATERIAL
	INSULATION

COAL DUST ROTARY FEEDER	K-1105
ROTARY	CAPACITY
125	DIFFERENTIAL
CS	POWER
NI	MATERIAL

	MILL FAN	K-11
	424,0000	m ³ /h
PRESS.	0.12	bar
	1900	Kw
	CS	MATERIAL

B	FRESH AIR FAN
	10,100 m ³ /h
SL PRESS.	0.02 bar
	11 Kw
	CS

NOTES

- NUAL MAINTENANCE SLIDE GATE WITH LIMIT
TCH OPEN AND CLOSED.

LEVEL HIGH HIGH DEENERZISE
AMPING MAGNET AND CLOSE FLAP.

G FILTER CLEANING CONTROLLER.

YONE OF HIGH HIGH SIGNAL SHOULD TRIGGER
US-0004.

ELATED.

ERGENCY CASE INERTING.

W SPEED FOR TRIP MOTOR.

W SPEED FOR TRIP MOTOR INCLUDE UPSTREAM
JIPMENTS.

GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :

 - 11000-ZM-105-001
 - 11000-ZM-105-002
 - 11000-ZM-105-003
 - 11000-ZM-105-004
 - 11000-ZM-105-005
 - 11000-ZM-105-006
 - 11000-ZM-105-010
 - 11000-ZM-105-011

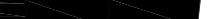
DOCUMENT REVIEW STATUS

	FILE NO. :
KOREA POWER ENGINEERING COMPANY, INC	
IT STATUS.	
MAY PROCEED. CONTRACTOR MAY PROCEED WITH ICATION OR CONSTRUCTION IN ACCORDANCE WITH IFICATION.	
SE AND RESUBMIT. CONTRACTOR MAY PROCEED IN RDANCE WITH SPECIFICATION BASED ON MAKING SIONS AS NOTED AND RESUBMIT.	
SE AND RESUBMIT (WORK MAY NOT PROCEED). REVISE OTED AND RESUBMIT. HOLD FABRICATION / TRUCTION.	
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DATE	

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KOREA WESTERN POWER CO., Ltd
TAEAN ICCC POWER PLANT/CASIFICATION



**DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO., LTD.**

LOESCHE 
AN INNOVATIVE FINISHING TECHNOLOGY

INNOVATIVE ENGINEERING

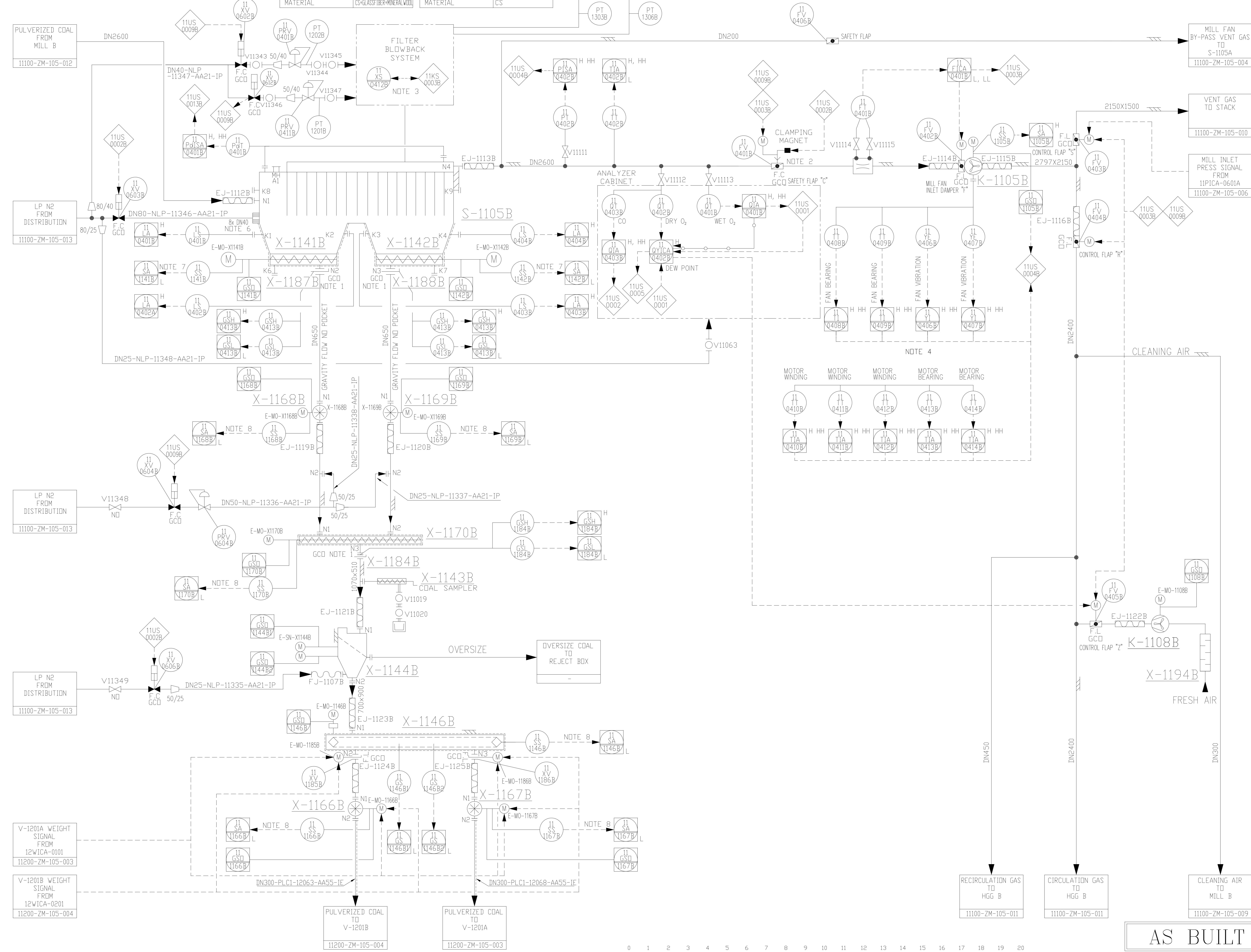
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LOCATION			

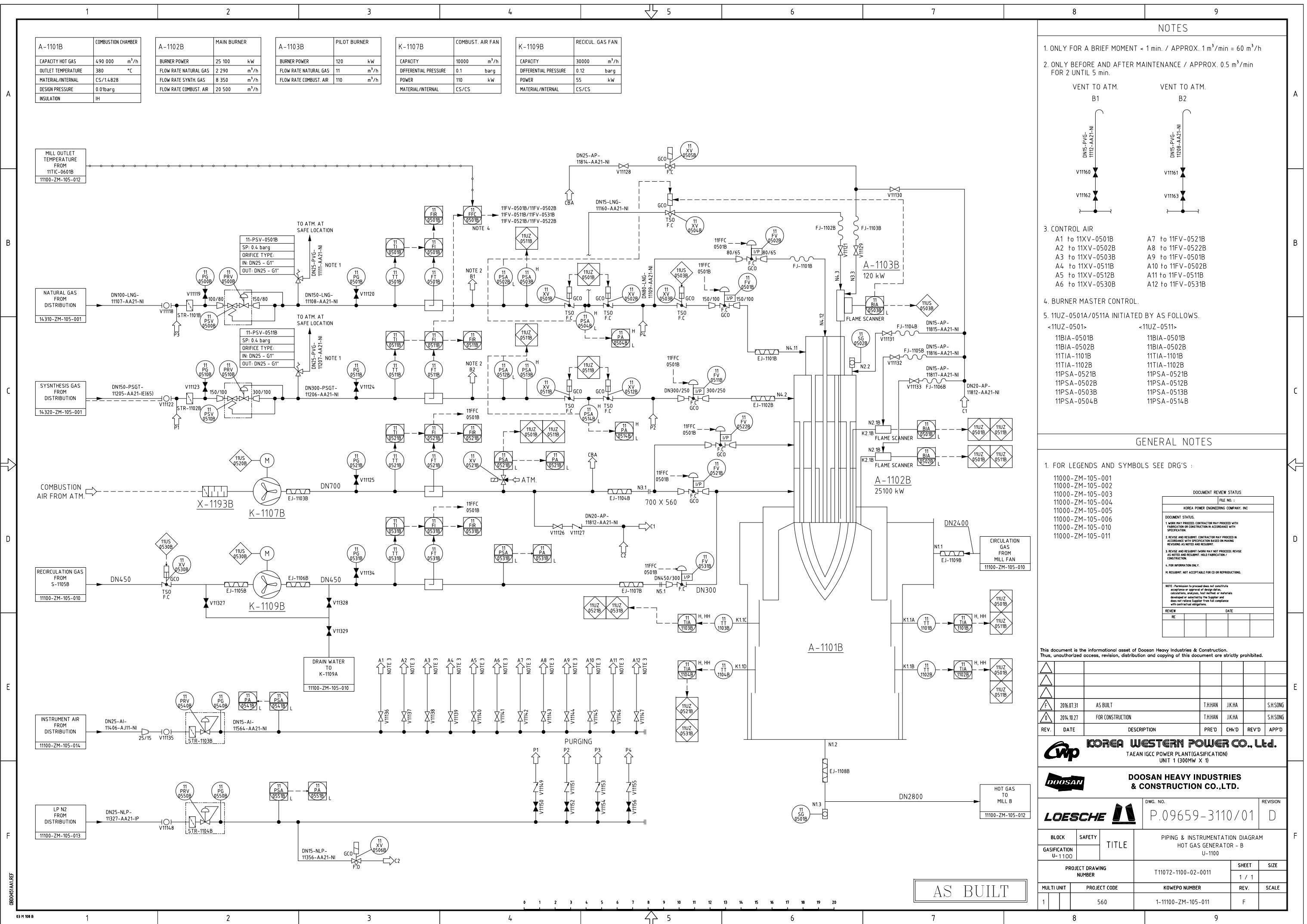
ICATION 1100			U-1100
PROJECT DRAWING	T11072-1100-02-0010	SHEET	SIZ

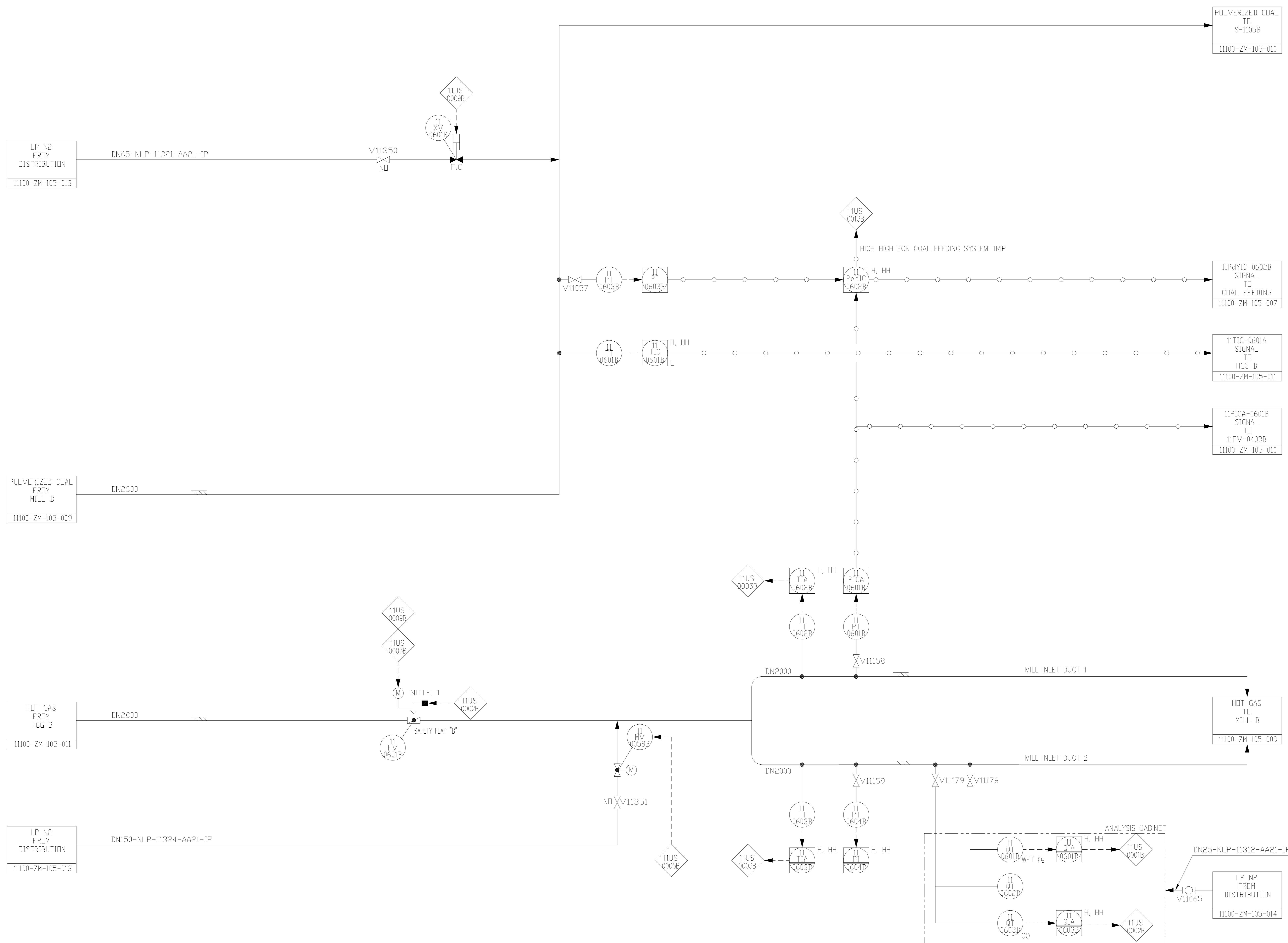
NUMBER	11107E 1100 0E 0010	1 / 1
UNIT	PROJECT CODE	KOWEPO NUMBER

560	1-11100-ZM-105-010	F
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8 9







1. CO LEVEL HIGH HIGH DE-ENERZISE CLAMPING MAGNET AND CLOSE FLAP.

GENERAL NOTES

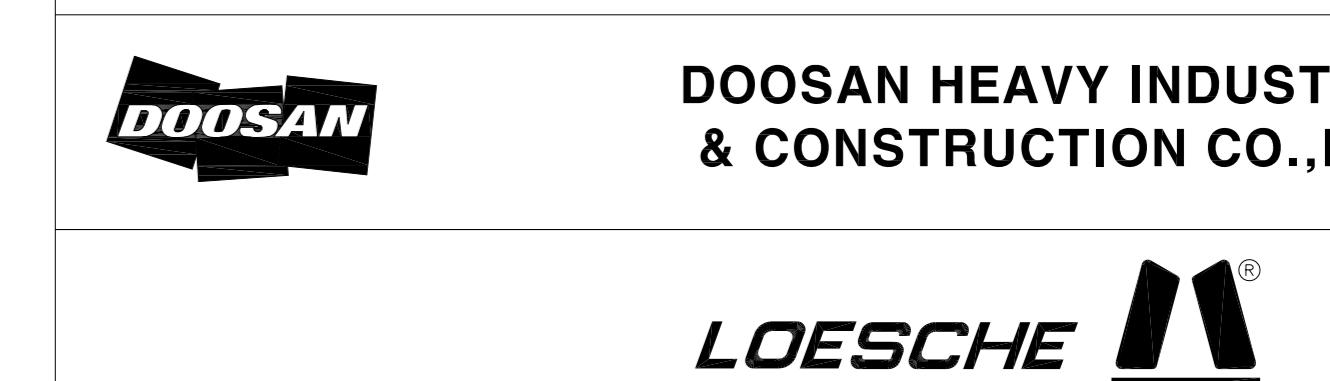
1. FOR LEGENDS AND SYMBOLS SEE DRG'S :
 - 11000-ZM-105-001
 - 11000-ZM-105-002
 - 11000-ZM-105-003
 - 11000-ZM-105-004
 - 11000-ZM-105-005
 - 11000-ZM-105-006
 - 11000-ZM-105-010
 - 11000-ZM-105-011

DOCUMENT REVIEW STATUS	
	FILE NO. :
KOREA POWER ENGINEERING COMPANY, INC	
DOCUMENT STATUS.	
<ol style="list-style-type: none"> 1. WORK MAY PROCEED. CONTRACTOR MAY PROCEED WITH FABRICATION OR CONSTRUCTION IN ACCORDANCE WITH SPECIFICATION. 2. REVISE AND RESUBMIT. CONTRACTOR MAY PROCEED IN ACCORDANCE WITH SPECIFICATION BASED ON MAKING REVISIONS AS NOTED AND RESUBMIT. 3. REVISE AND RESUBMIT (WORK MAY NOT PROCEED). REVISE AS NOTED AND RESUBMIT. HOLD FABRICATION / CONSTRUCTION. 4. FOR INFORMATION ONLY. <p>M. RESUBMIT. NOT ACCEPTABLE FOR CD OR REPRODUCTIONS.</p>	
<p>NOTE : Permission to proceed does not constitute acceptance or approval of design datas, calculations, analyses, test method, or materials developed or selected by the Supplier and does not relieve Supplier from full compliance with contractual obligations.</p>	
REVIEW	DATE
RE	

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
	2016.07.31	AS BUILT	T.H.HAN	J.K.HA	S.H.S.	
	2014.10.27	FOR CONSTRUCTION	T.H.HAN	J.K.HA	S.H.S.	
REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D	AP

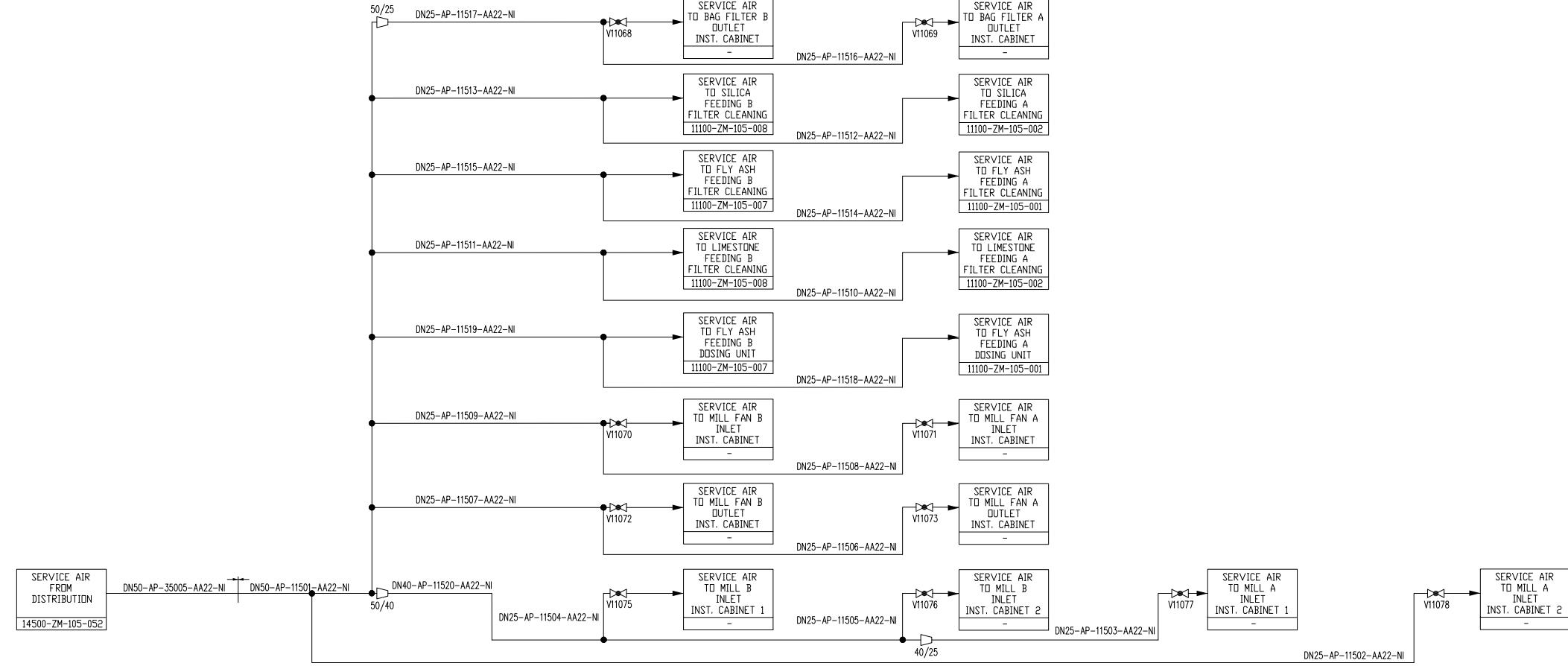
EV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D	AP
KOREA WESTERN POWER CO., Ltd.						
TAEAN IGCC POWER PLANT(GASIFICATION)						
UNIT 1 (300MW) / X-12						



INNOVATIVE ENGINEERING				
BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM CMD B PROCESS MILL INLET/OUTLET U-1100	
GASIFICATION U-1100				
PROJECT DRAWING NUMBER		T11072-1100-02-0012		SHEET
				1 / 1
MULTI UNIT	PROJECT CODE	KOWEPO NUMBER		REV.
1	560	1-11100-ZM-105-012		F

AS BUILT

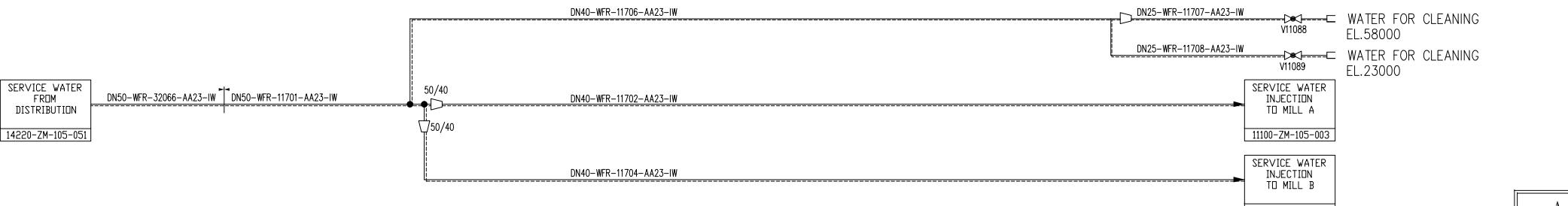
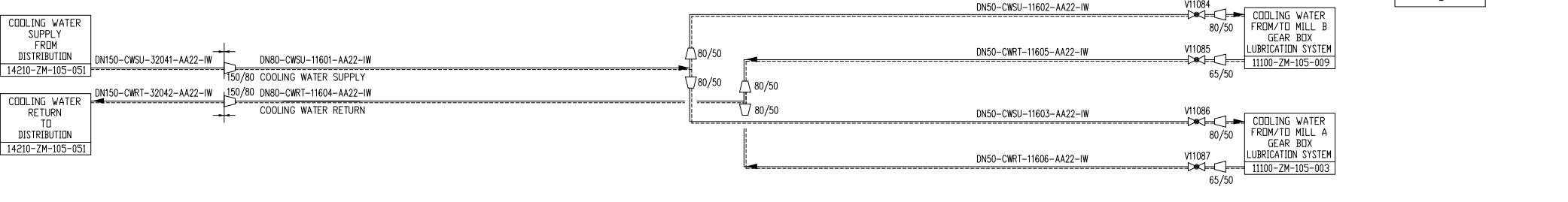
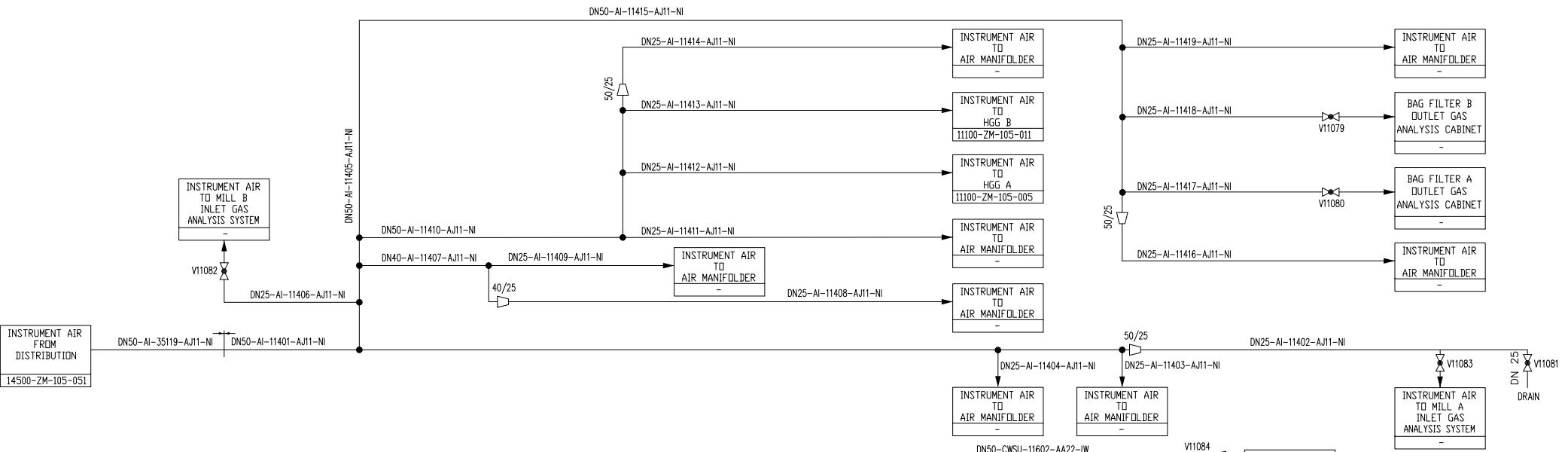
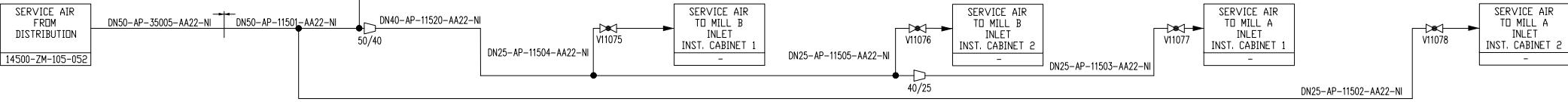




GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :

11000-ZM-105-001
11000-ZM-105-002
11000-ZM-105-003
11000-ZM-105-004
11000-ZM-105-005
11000-ZM-105-006
11000-ZM-105-010
11000-ZM-105-011



DOCUMENT REVIEW STATUS	
FILE NO. : KOREA POWER ENGINEERING COMPANY, INC.	
DOCUMENT STATUS	
1. WORK MAY PROCEED. CONTRACTOR MAY PROCEED WITH FABRICATION OR CONSTRUCTION IN ACCORDANCE WITH SPECIFICATION.	
2. REVISE AND RESUBMIT. CONTRACTOR MAY PROCEED IN ACCORDANCE WITH SPECIFICATION PROVIDED ON MAKING REVISIONS AS NOTED AND RESUBMIT.	
3. REVISE AND RESUBMIT. (WORK MAY NOT PROCEED) REVISE AS NOTED AND RESUBMIT. HOLD FABRICATION / CONSTRUCTION UNTIL APPROVED.	
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REVIEW DATE	
RE	DATE

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2016.07.31	AS BUILT	T.H.HAN	S.H.SONG
2014.10.27	FOR CONSTRUCTION	T.H.HAN	S.H.SONG
REV. DATE	DESCRIPTION	PRE'D	CHK'D REV'D APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO.,LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM			
GASIFICATION	U-1100		CMD UTILITY DISTRIBUTION			
PROJECT DRAWING NUMBER			T11072-1100-02-0014		SHEET SIZE	
MULTI UNIT			1 / 1			
PROJECT CODE			KOWEPO NUMBER		REV. SCALE	
1			1-1100-ZM-105-014		F	

AS BUILT

NOTES

- STOP BELT CONVEYOR FOR SWAY SIGNAL HIGH
- SYSTEM DESCRIPTION**
THIS SYSTEM IS PYRITE HANDLING SYSTEM TO DISPOSE OF PYRITES. AT FIRST, THE PYRITES ARE DISPOSED TO SCREW CONVEYOR FROM COAL MILL. THEN, THE PYRITES ARE MOVED AND LOADED TO Silo THROUGH SCREW CONVEYOR, BELT CONVEYOR, BUCKET ELEVATOR AND SCREW FEEDER, CONTINUOUSLY. IN MAIN CONTROL ROOM, OPERATOR CAN SEE INFORMATION ABOUT SILO WEIGHT AND LEVEL. OPERATOR HAVE TO SEND TRUCK AND DRIVER TO SILO. DRIVER HAVE TO OPERATE PENDANT SWITCH TO ACTIVATE SLIDE GATE, CUT GATE IF DRIVER OPERATE PENDANT SWITCH(ON), SLIDE AND CUT GATE WILL BE OPERATED. IF SLIDE GATE IS OPERATED, VIBRATOR WILL BE OPERATED.(AUTOMATICALLY INTERLOCK SYSTEM) AND PYRITES IN Silo ARE UNLOADED ON TRUCK. IF THE TRUCK IS FILLED WITH PYRITES, DRIVER HAVE TO PUSH THE BUTTON TO CLOSE GATES. IN MAIN CONTROL ROOM, OPERATOR CAN SEE INFORMATION ABOUT BELT SPEED, SILO WEIGHT, HEIGHT OF PYRITES IN Silo AND DIFFERENTIAL PRESSURE OF BAG FILTER.

GENERAL NOTES

- FOR LEGENDS AND SYMBOLS SEE DRAWING :
11000-ZM-105-001
11000-ZM-105-002
11000-ZM-105-003
11000-ZM-105-004

AS BUILT

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	2016.07.31	AS BUILT	B.G.CHOI S.D.JEONG D.M.YANG S.H.HAN
	2014.10.28	FOR CONSTRUCTION	B.G.CHOI S.D.JEONG D.M.YANG J.B.JIN
	2014.10.01	FOR CONSTRUCTION	B.G.CHOI S.D.JEONG D.M.YANG J.B.JIN
	2013.10.23	FOR CONSTRUCTION	B.G.CHOI S.D.JEONG D.M.YANG J.B.JIN
REV. DATE	DESCRIPTION	PRE'D	CHK'D
		APP'D	APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES
CONSTRUCTION CO., LTD.

chonhaiji CHON HAI JI CO. LTD

BLOCK	SAFETY	TITLE	PIPING AND INSTRUMENT DIAGRAM						
			GASIFICATION U-1100	FOR PYRITE HANDLING SYSTEM					
PROJECT DRAWING NUMBER			T11072-1100-02-1001						
MULTI UNIT			PROJECT CODE						
1			KOWEPO NUMBER	1-11190-ZM-105-001					
REV.	SCALE		REV.	SCALE					
1			560		N/A				

X-1171 A1/A2 SCREW CONVEYOR	X-1172 B1/B2 SCREW CONVEYOR	X-1173 BELT CONVEYOR	X-1174 BUCKET ELEVATOR	V-1110 PYRITES Silo	F-1110 VENT FILTER	S-1110 VENT FILTER FAN	X-1175 ROTARY VALVE	X-1176 SLIDE GATE VALVE	X-1177 CUT GATE VALVE	X-1180 SCREW FEEDER
TYPE SCREW CONVEYOR	TYPE SCREW CONVEYOR	TYPE BELT CONVEYOR	TYPE SCREW CONVEYOR	ID X LENGTH 4500 x 5747 mm	FILTER MATERIAL POLYACRYLONITRIL	CAPACITY 4800 m ³ /h	TYPE ROTARY	TYPE SLIDE GATE	TYPE CUT GATE	TYPE SCREW CONVEYOR
CAPACITY 0.75 t/h	CAPACITY 0.75 t/h	CAPACITY 3 t/h	CAPACITY 3 t/h	VOLUME 30 m ³	DIMENSION 1350x1350x260 mm	DIFFERENTIAL PRESS. 0.05 bar	CAPACITY 2.8 t/h	MATERIAL CS	CAPACITY 3 t/h	MATERIAL CS
MATERIAL CS	MATERIAL INSULATION	MATERIAL CS	MATERIAL CS	MATERIAL CS	WASTE GAS VOLUME 4800 m ³ /h	POWER 7.5 KW	MATERIAL CS	MATERIAL CS	MATERIAL CS	MATERIAL CS
INSULATION MINERAL WOOL	INSULATION MINERAL WOOL				GAS TEMPERATURE Max. 100 °C					


**PIPING & INSTRUMENT
DRAWING**

FOR

**1200 UNIT OF
TAEAN IGCC POWER PLANT (300MW x 1)**



KOREA WESTERN POWER CO., Ltd.



NOTES

- NUMBER OF VALVES, ETC.: MANUFACTURER PROPOSAL
- ISOKINETIC SAMPLING POINT
- VALVES ARE OPPOSITE OF EACH OTHER ON LINE.
- INLET BELOW FILTER BAG AREA
- INSTALL FLANGE TO FLANGE.
- INSTALLATION OF INSTRUMENT, SAMPLE CONNECTION AND TOTAL PARTICULATE MATTER SPECIFICATION DEPENDING ON ENVIRONMENTAL REGULATIONS.
- NOT USED.
- INCLUDED TO S-1201A/B PACKAGE UNIT
- INDIVIDUAL DEPRESSURIZATION OR VENT LINES. MAY TIE-IN DIRECTLY TO S-1201B
- MOUNTING BRACKET ONLY, NON-PENETRATING NOZZLE (SOURCE & SENSOR AT SAME LEVEL IN OPPOSITE POSITION).
- INSTALL MULTIPLE ORIFICES TO REDUCE NOISE.
- DELETED.
- DIAPHRAGM INSTALLED DIRECTLY ON PIPING (NO NOZZLES) AND FLUSH WITH INNER PIPE WALL.
- RO'S AND VALVES ON EROSION SERVICE REQUIRE HARD FACING.
- ALLOWABLE ANGLE WITH HORIZONTAL FOR
 - GRAVITY FLOW LINES MINIMUM 70°
 - EQUALIZING / DEPRESSURIZATION LINES: MINIMUM 60°
- NO POCKETS IN LINES WITH SOLIDS VALVES IN GRAVITY FLOW PIPES AND PRESSURE EQUALIZING LINES AT HIGHEST POINT AND IN VERTICAL LINES.
- USE DEAD END "T" FOR HIGH VELOCITY SERVICES.
- DELETED.
- USE FORGED Y-PIECE

GENERAL NOTES

- FOR LEGENDS AND SYMBOLS SEE DRG'S :

11000-ZM-105-001	11000-ZM-105-005
11000-ZM-105-002	11000-ZM-105-006
11000-ZM-105-003	11000-ZM-105-010
11000-ZM-105-004	11000-ZM-105-011
- TRACING 80°C UNLESS INDICATED OTHERWISE
- REFERENCE DRAWING : T-13.412.208
- DELETED.
- ALL INSTRUMENTS TO BE IW (WINTERIZATION)


AS BUILT

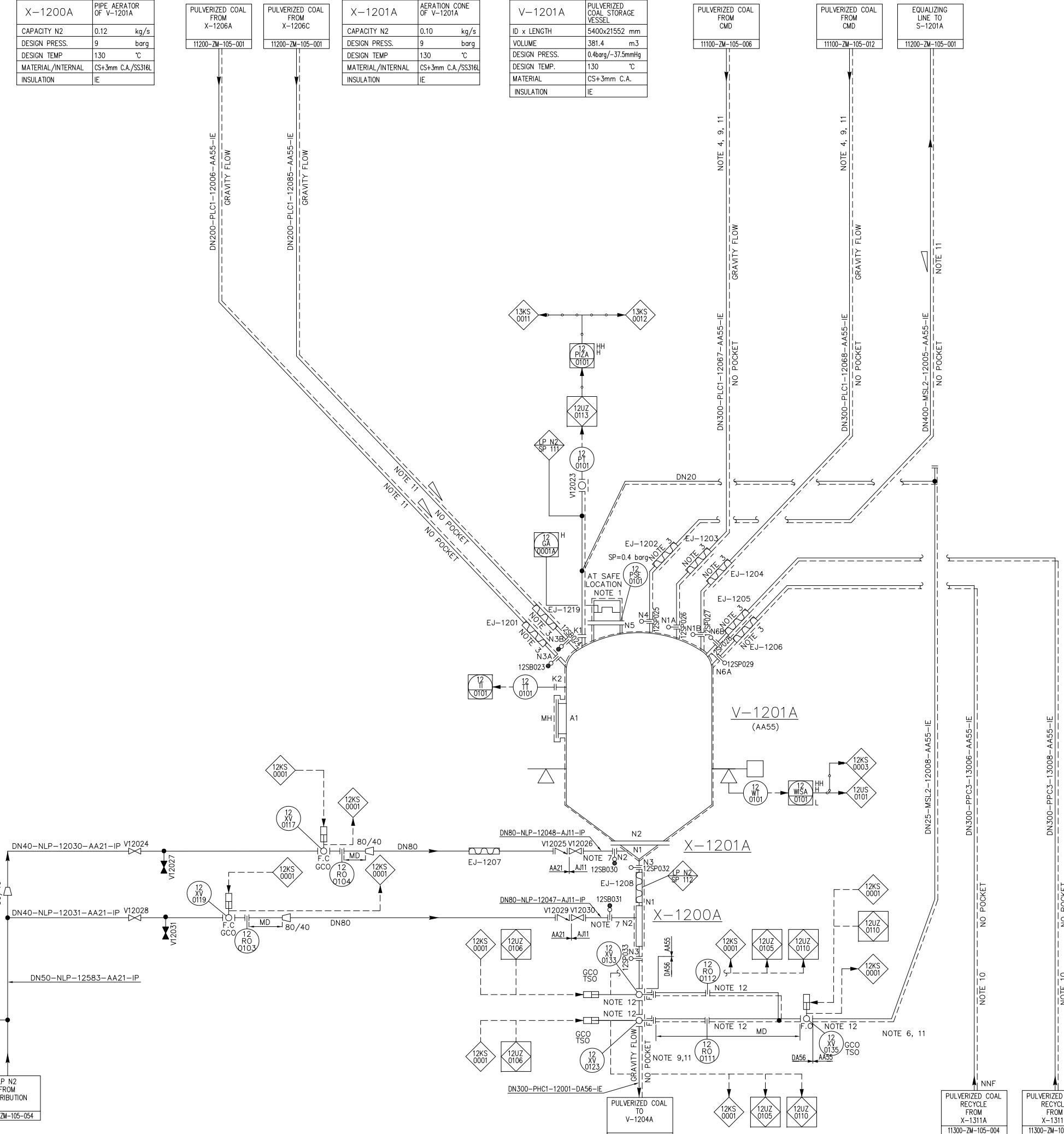
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REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D	APP'D
	2017.08.29	AS-BUILT	ICS	HBK	SJL	
	2014.12.19	FOR CONSTRUCTION	ICS	SMK	SJL	
	2014.03.04	FOR CONSTRUCTION	ICS	SMK	SJL	
	2013.09.24	FOR CONSTRUCTION	ICS	JEK	HJK	
REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D	APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO., LTD.





NOTES

- 1. LID SUITABLE FOR OVERPRESSURE PROTECTION.
 - 2. DELETED.
 - 3. ALL PIPES CONNECTED TO V-1201A SHOULD BE INSTALLED WITH EXPANSION JOINTS UNLESS OTHER MEASURES FOR COMPENSATION OF FORCES AND MOMENTS HAVE BEEN FORESEEN.
 - 4. INSTALL SCREEN AT CMD TO AVOID FOREIGN MATERIAL TO ENTER PULVERIZED COAL SYSTEM.
 - 5. DELETED.
 - 6. LINE SHOULD BE SELF-DRAINING.
(NO POCKET, NO DEAD)
 - 7. SPOOL PIECE TO PROVIDE SUFFICIENT SPACE WHEN DISMANTLING THE AERATION DEVICES.
 - 8. DELETED.
 - 9. VERTICAL LINE.
 - 10. ONLY OPERATED DURING START-UP AND CALIBRATION.
 - 11. ALLOWABLE ANGLE WITH HORIZONTAL:
 - GRAVITY FLOW LINES: MINIMUM 70°
 - EQUALIZING / DEPRESSURIZATION LINES: MINIMUM 60°
 - NO POCKETS IN LINES WITH SOLIDS
 - VALVES IN GRAVITY FLOW AND EQUALIZING LINES AT HIGHEST POINT IN VERTICAL LINE.
 - 12. RO'S AND VALVES ON EROSION SERVICE REQUIRE HARD FACING.
 - 13. DELETED.
 - 14. LP N2 BRANCH LINE IS ONLY CONNECTED DURING COMMISSIONING FOR RECYCLE COAL TRANSPORT.

GENERAL NOTES

- FOR LEGENDS AND SYMBOLS SEE DRG'S :
 - 11000-ZM-105-001 11000-ZM-105-005
 - 11000-ZM-105-002 11000-ZM-105-006
 - 11000-ZM-105-003 11000-ZM-105-010
 - 11000-ZM-105-004 11000-ZM-105-011
 - TRACING 80°C UNLESS
INDICATED OTHERWISE
 - REFERENCE DRAWING : T-13.412.209
 - DELETED.
 - ALL INSTRUMENTS TO BE IW (WINTERIZATION)

AS BUILT

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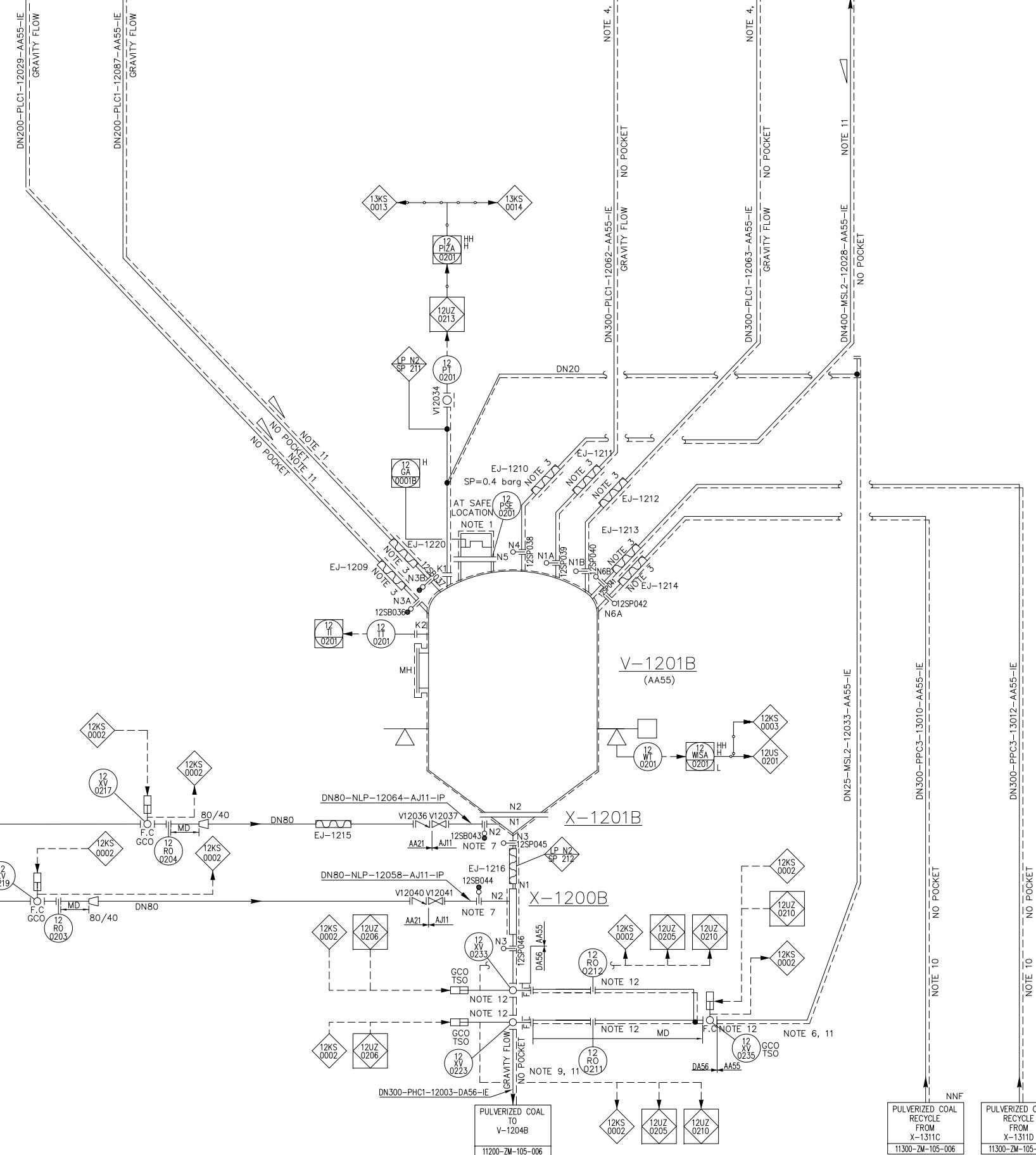
	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D	APP'D
✓	2016.07.31	AS-BUILT	ICS	HBK	SJL	
✓	2014.12.15	FOR CONSTRUCTION	ICS	SMK	SJL	
✓	2014.04.04	FOR CONSTRUCTION	ICS	SMK	SJL	
✓	2013.09.24	FOR CONSTRUCTION	ICS	JEK		HKJ
✓.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D	APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO.,LTD.

BLOCK SIFICATION J-1200	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM LP PULVERIZED COAL STORAGE TRAIN A U-1200		
PROJECT DRAWING NUMBER			T11072-1200-02-003	SHEET - / -	SIZE
LTI UNIT	PROJECT CODE	KOWEPO NUMBER		REV.	SCALE
	560	1-11200-ZM-105-003		F	

1	2	3	4	5	6	7	8	9
A X-1200B PIPE AERATOR OF V-1201B CAPACITY N2 0.12 kg/s DESIGN PRESS. 9 barg DESIGN TEMP. 130 °C MATERIAL/ INTERNAL CS+3mm C.A./SS316L INSULATION IE	PULVERIZED COAL FROM X-1206B 11200-ZM-105-002	PULVERIZED COAL FROM X-1206D 11200-ZM-105-002	X-1201B AERATION CONE OF V-1201B CAPACITY N2 0.10 kg/s DESIGN PRESS. 9 barg DESIGN TEMP. 130 °C MATERIAL/ INTERNAL CS+3mm C.A./SS316L INSULATION IE	V-1201B PULVERIZED COAL STORAGE VESSEL ID x LENGTH 5400x21552 mm VOLUME 381.4 m³ DESIGN PRESS. 0.4 barg/-37.5mmHg DESIGN TEMP. 130 °C MATERIAL CS+3mm C.A. INSULATION IE	PULVERIZED COAL FROM CMD 11100-ZM-105-006	PULVERIZED COAL FROM CMD 11100-ZM-105-012	EQUALIZING LINE TO S-1201B 11200-ZM-105-002	



NOTES

1. LID SUITABLE FOR OVERPRESSURE PROTECTION.
2. DELETED
3. ALL PIPES CONNECTED TO V-1201B SHOULD BE INSTALLED WITH EXPANSION JOINTS UNLESS OTHER MEASURES FOR COMPENSATION OF FORCES AND MOMENTS HAVE BEEN FORESEEN.
4. INSTALL SCREEN AT CMD TO AVOID FOREIGN MATERIAL TO ENTER PULVERIZED COAL SYSTEM.
5. DELETED
6. LINE SHOULD BE SELF-DRAINING. (NO POCKET, NO DEAD)
7. SPOOL PIECE TO PROVIDE SUFFICIENT SPACE WHEN DISMANTLING THE AERATION DEVICES.
8. DELETED.
9. VERTICAL LINE.
10. ONLY OPERATED DURING START-UP AND CALIBRATION.
11. ALLOWABLE ANGLE WITH HORIZONTAL:
 - GRAVITY FLOW LINES: MINIMUM 70°
 - EQUALIZING / DEPRESSURIZATION LINES: MINIMUM 60°
 - NO POCKETS IN LINES WITH SOLIDS
 - VALVES IN GRAVITY FLOW AND EQUALIZING LINES AT HIGHEST POINT IN VERTICAL LINE.
12. RO'S AND VALVES ON EROSION SERVICE REQUIRE HARD FACING.
13. LP N2 SUPPLY LINE IS ONLY CONNECTED DURING COMMISSIONING FOR RECYCLE COAL TRANSPORT.

GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :
 11000-ZM-105-001 11000-ZM-105-005
 11000-ZM-105-002 11000-ZM-105-006
 11000-ZM-105-003 11000-ZM-105-010
 11000-ZM-105-004 11000-ZM-105-011
2. ----- TRACING 80°C UNLESS INDICATED OTHERWISE
3. REFERENCE DRAWING : T-13.412.210
4. DELETED.
5. ALL INSTRUMENTS TO BE IW (WINTERIZATION)

AS BUILT

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REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D	APP'D
	2016.07.31	AS-BUILT	ICS	HBK	SJL	
	2014.12.19	FOR CONSTRUCTION	ICS	SMK	SJL	
	2014.04.04	FOR CONSTRUCTION	ICS	SMK	SJL	
	2013.09.24	FOR CONSTRUCTION	ICS	JEK	HKJ	

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM				
			GASIFICATION U- 1200				
PROJECT DRAWING NUMBER			T11072-1200-02-004				
MULTI UNIT			KOWEO NUMBER				
1		560	1-11200-ZM-105-004	F			
				REV.	SCALE		

NOTES

1. INSTALL FLANGE TO FLANGE.
2. MOUNTING BRACKET ONLY, NON-PENETRATING NOZZLE (SOURCE & SENSOR AT SAME LEVEL IN OPPOSITE POSITION).
3. DIAPHRAGM INSTALLED DIRECTLY ON PIPING (NO NOZZLES) AND FLUSH WITH INNER PIPE WALL.
4. DELETED.
5. LINE SHOULD BE SELF-DRAINING. (NO POCKET, NO DEAD)
6. SPOOL PIECE TO PROVIDE SUFFICIENT SPACE WHEN DISMANTLING THE AERATION DEVICES.
7. VERTICAL LINE.
8. DELETED.
9. RO'S AND VALVES ON EROSION SERVICE REQUIRE HARD FACING.
10. ALLOWABLE ANGLE WITH HORIZONTAL FOR:
 - GRAVITY FLOW LINES: MINIMUM 70°
 - PRESSURE EQUALIZING / DEPRESSURIZATION LINE: MINIMUM 60°
 - NO POCKETS IN LINES WITH SOLIDS VALVES IN GRAVITY FLOW AND EQUALIZING LINES AT HIGHEST POINT IN VERTICAL LINE.
11. DELETED.

GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :

11000-ZM-105-001	11000-ZM-105-005
11000-ZM-105-002	11000-ZM-105-006
11000-ZM-105-003	11000-ZM-105-010
11000-ZM-105-004	11000-ZM-105-011
2. ----- TRACING 80°C UNLESS INDICATED OTHERWISE
3. REFERENCE DRAWING : T-13.412.211
4. DELETED.
5. ALL INSTRUMENTS TO BE IW (WINTERIZATION)

AS BUILT

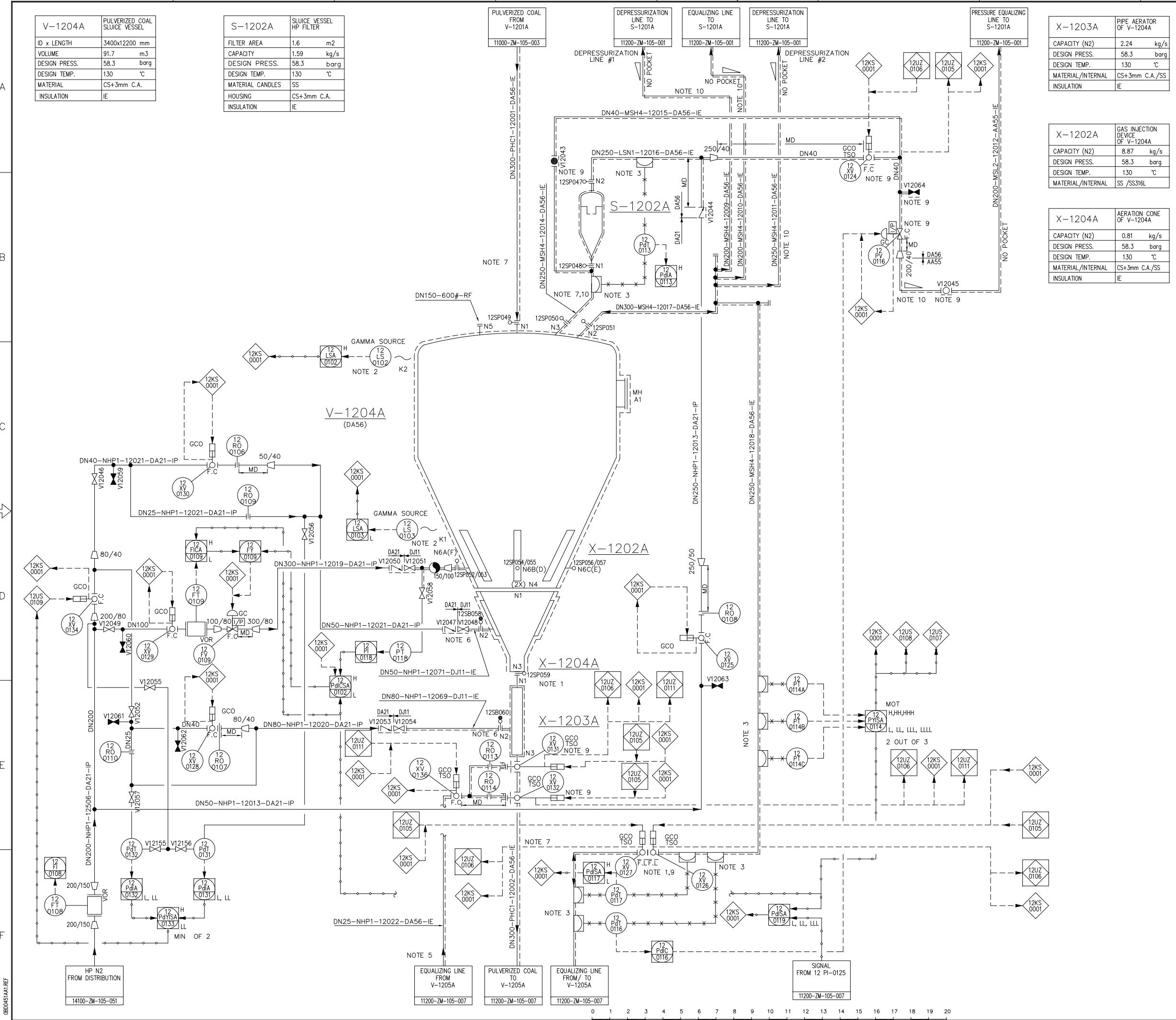
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REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D	APP'D
		AS-BUILT	ICS	HBK	SJL	
	2016.07.31	FOR CONSTRUCTION	ICS	SMK	SJL	
	2014.12.19	FOR CONSTRUCTION	ICS	SMK	SJL	
	2014.04.04	FOR CONSTRUCTION	ICS	SMK	SJL	
	2013.09.24	FOR CONSTRUCTION	ICS	JEK	HKJ	

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER(GASIFICATION)
UNIT 1 (300MW X 1)

**DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO., LTD.**

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM			
			COAL SLUICE VESSEL TRAIN A			
GASIFICATION U-1200	U-1200			PROJECT DRAWING NUMBER		
	T11072-1200-02-005			SHEET		
MULTI UNIT	PROJECT CODE		KOWEO NUMBER		SCALE	
1	560		1-11200-ZM-105-005		F	



NOTES

1. INSTALL FLANGE TO FLANGE.
2. MOUNTING BRACKET ONLY, NON-PENETRATING NOZZLE (SOURCE & SENSOR AT SAME LEVEL IN OPPOSITE POSITION).
3. DIAPHRAGM INSTALLED DIRECTLY ON PIPING (NO NOZZLES) AND FLUSH WITH INNER PIPE WALL.
4. DELETED.
5. LINE SHOULD BE SELF-DRAINING. (NO POCKET, NO DEAD)
6. SPOOL PIECE TO PROVIDE SUFFICIENT SPACE WHEN DISMANTLING AERATION DEVICE.
7. VERTICAL LINE.
8. ALLOWABLE ANGLE WITH HORIZONTAL FOR:
- GRAVITY FLOW LINES: MINIMUM 70°
- PRESSURE EQUALIZING / DEPRESSURIZATION LINE: MINIMUM 60°
NO POCKETS IN LINES WITH SOLIDS VALVES IN GRAVITY FLOW AND EQUALIZING LINES AT HIGHEST POINT IN VERTICAL LINE.
9. RO'S AND VALVES ON EROSION SERVICE REQUIRE HARD FACING.
10. DELETED.

GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :
11000-ZM-105-001 11000-ZM-105-005
11000-ZM-105-002 11000-ZM-105-006
11000-ZM-105-003 11000-ZM-105-010
11000-ZM-105-004 11000-ZM-105-011
2. ----- TRACING 80°C UNLESS INDICATED OTHERWISE
3. REFERENCE DRAWING : T-13.412.212
4. DELETED.
5. ALL INSTRUMENTS TO BE IW (WINTERIZATION)

AS BUILT

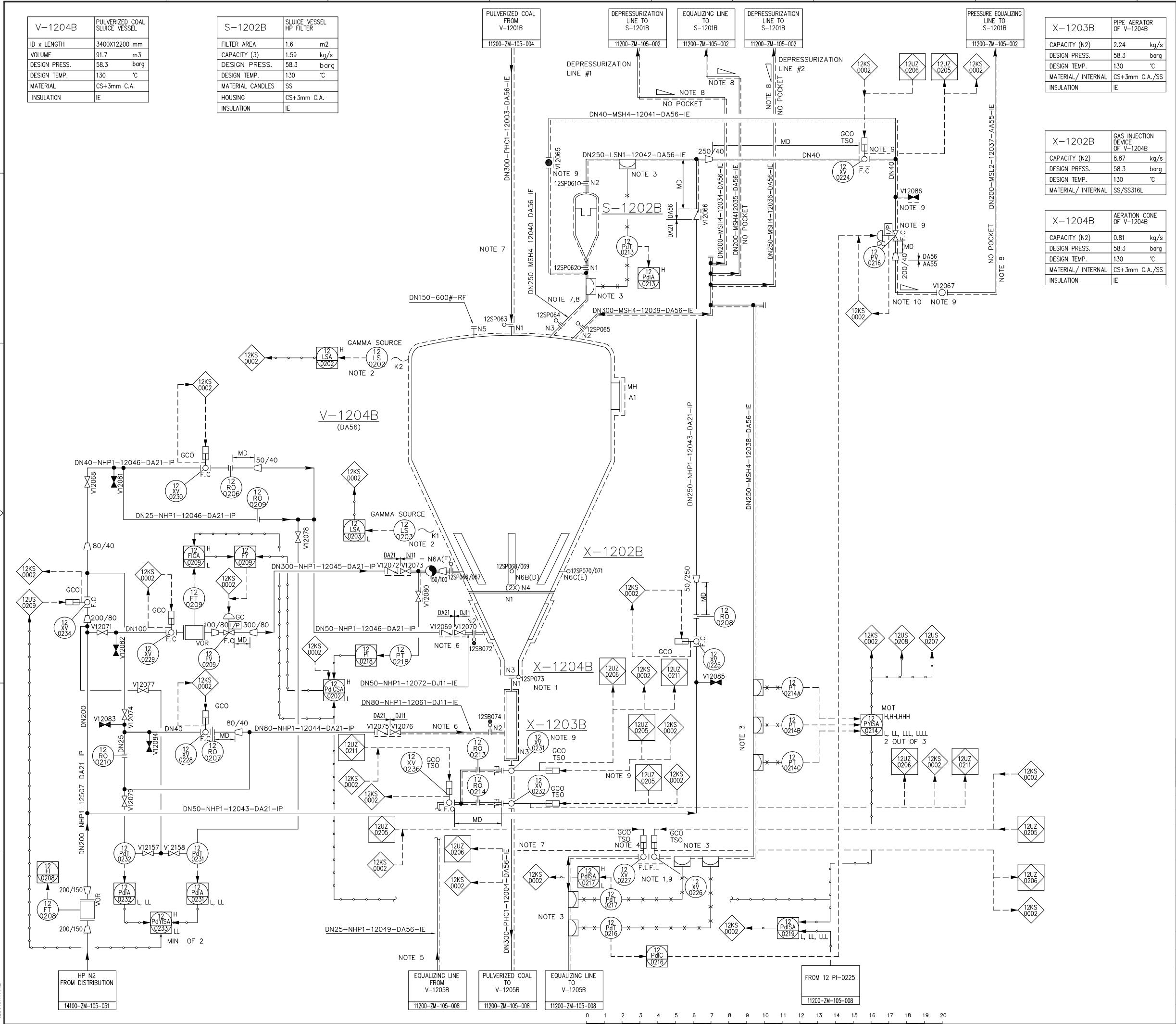
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△				
△F	2016.07.31	AS-BUILT	ICS	HBK
△2	2014.12.19	FOR CONSTRUCTION	ICS	SMK
△1	2014.04.04	FOR CONSTRUCTION	ICS	SMK
△0	2013.09.24	FOR CONSTRUCTION	ICS	JEK
REV.	DATE	DESCRIPTION	PRE'D	CHK'D
			REV'D	APP'D

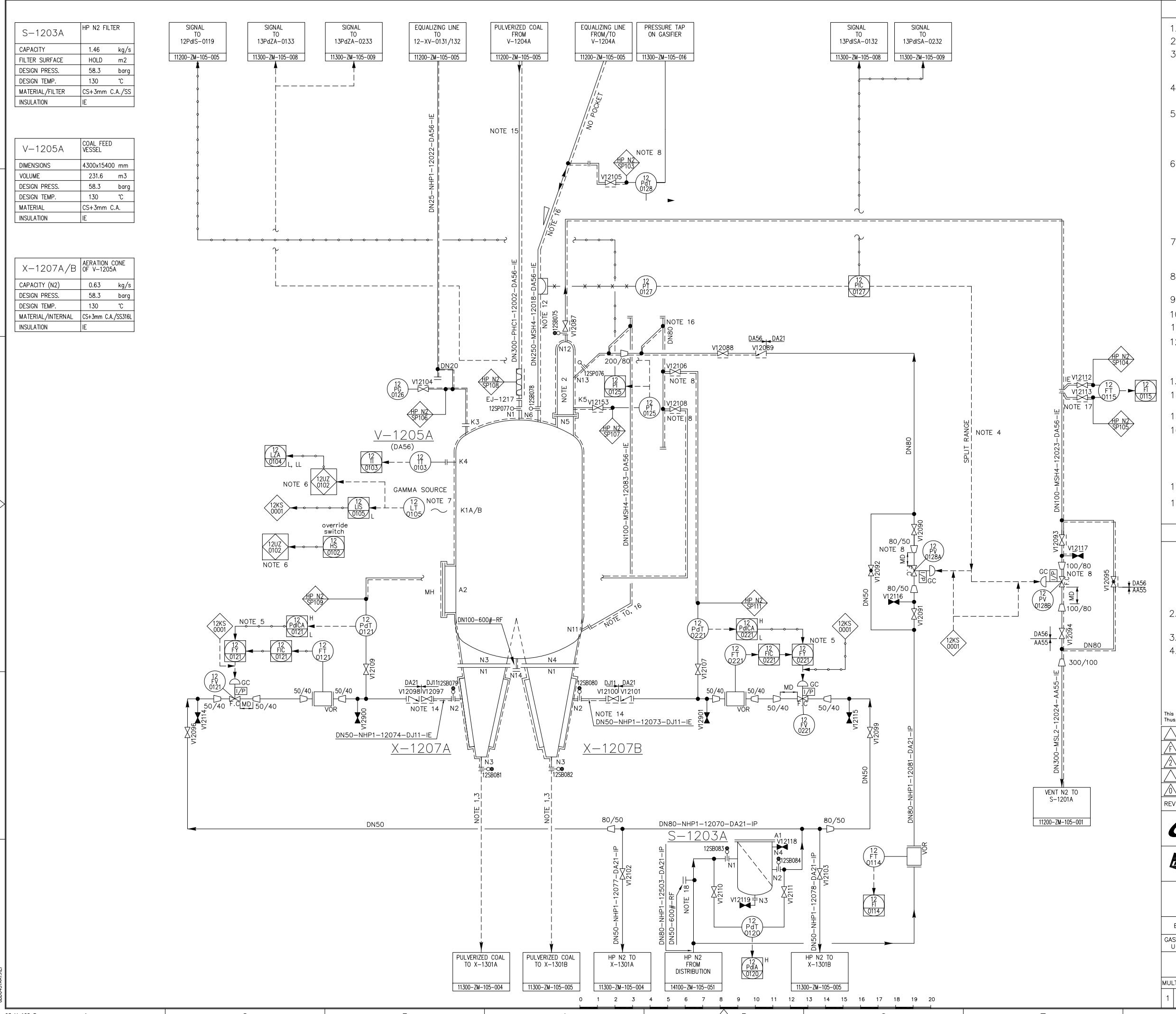
KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO.,LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM COAL SLUICE VESSEL TRAIN B U-1200	SHEET	SIZE
GASIFICATION U- 1200		PROJECT DRAWING NUMBER	T11072-1200-02-006	- / -	
MULTI UNIT	PROJECT CODE	KOWEO NUMBER	1-11200-ZM-105-006	REV.	SCALE



NOTES



1. INSTALL FLANGE TO FLANGE
2. PIPE IS PART OF THE VESSEL.
3. COAL FEED LINE SPECIAL FLANGE CONNECTION, SMOOTH WALL AND BENDS R=50D. SEE BDPE VOLUME 6 NARRATIVE, APPENDIX 2.
4. SPLIT RANGE DETAILS ARE PROVIDED IN THE CONTROL NARRATIVE.
5. DCS ALARMING IN CASE VALVE IS CONTROLLED AT DIFFERENTIAL PRESSURE. VALVES LOCATED ON FALL-LINES AND Δp MEASUREMENT AT HIGHEST POINT AND IN VERTICAL POSITION.
- 6.
7. MOUNTING BRACKET ONLY, NON-PENETRATING NOZZLE (SOURCE & SENSOR IN OPPOSITE POSITION.)
8. ALL INSTRUMENTATION, VALVES, ETC. TO BE INSTALLED ABOVE V-1205A.
9. NOT USED.
10. PRESSURE EQUALIZATION LINE
11. NOT USED.
12. DIAPHRAGM INSTALLED DIRECTLY ON PIPING (NO NOZZLE) AND FLUSH WITH INNER PIPE WALL.
13. NOT USED.
14. SPOOL PIECE TO PROVIDE SUFFICIENT SPACE WHEN DISMANTLING THE AERATION DEVICES.
15. VERTICAL LINE.
16. ALLOWABLE ANGLE FOR HORIZONTAL -FALL PIPE; MINIMUM 70° -DEPRESSURIZATION LINES; MINIMUM 60° NO POCKETS WHEN SOLIDS ARE PRESENT, VALVES VERTICALLY AT HIGHEST POINT
17. NITROGEN PURGE ON BOTH IMPULSE LINES.
18. LP N2 BRANCH LINE IS ONLY CONNECTED DURING COMMISSIONING FOR RECYCLE COAL TRANSPORT.

GENERAL NOTES

FOR LEGENDS AND SYMBOLS

1. TRACING 80°C UNLESS INDICATED OTHERWISE
2. REFERENCE DRAWING : T-13.412.213
3. DELETED.

AS BUILT

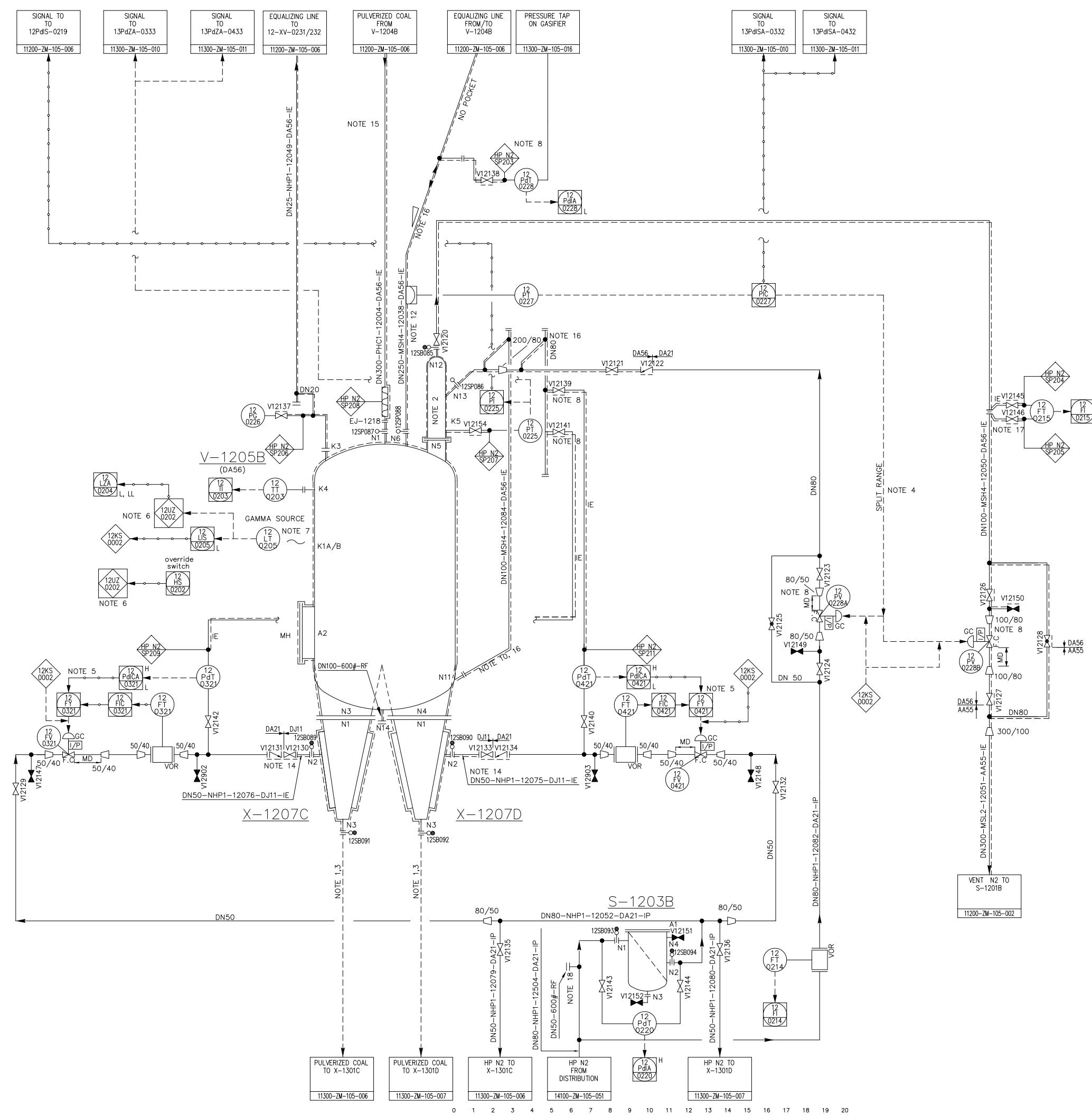
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	2016.07.31	AS-BUILT	ICS	HBK
	2014.12.19	FOR CONSTRUCTION	ICS	SMK
	2013.09.24	FOR CONSTRUCTION	ICS	JEK
REV. DATE		DESCRIPTION	PRE'D	CHK'D
			REV'D	APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM GASIFICATION U- 1200
GASIFICATION U- 1200		PROJECT DRAWING NUMBER	T11072-1200-02-007
		MULTI UNIT	PROJECT CODE
			KOWEO NUMBER
			REV. SCALE
1		560	1-11200-ZM-105-007 F



NOTES

- INSTALL FLANGE TO FLANGE
PIPE IS PART OF THE VESSEL.
COAL FEED LINE SPECIAL FLANGE CONNECTION,
SMOOTH WALL AND BENDS R=50D.
SEE BDEP VOLUME 6 NARRATIVE, APPENDIX 2.
SPLIT RANGE DETAILS ARE PROVIDED IN THE
CONTROL NARRATIVE.

DCS ALARMING IN CASE VALVE IS CONTROLLED
AT DIFFERENTIAL PRESSURE. VALVES LOCATED ON
FALL-LINES AND Δp MEASURMENT AT HIGHEST
POINT AND IN VERTICAL POSITION.

MOUNTING BRACKET ONLY, NON-PENETRATING
NOZZLE (SOURCE & SENSOR IN OPPOSITE
POSITION.)

ALL INSTRUMENTATION, VALVES, ETC.
TO BE INSTALLED ABOVE V-1205A.

NOT USED.

 - . PRESSURE EQUALIZATION LINE
NOT USED.
 - . DIAPHRAGM INSTALLED DIRECTLY ON
PIPING (NO NOZZLE) AND FLUSH WITH
INNER PIPE WALL.
 - . NOT USED.
 - . SPOOL PIECE TO PROVIDE SUFFICIENT SPACE
WHEN DISMANTLING THE AERATION DEVICES.
 - . VERTICAL LINE.
 - . ALLOWABLE ANGLE FOR HORIZONTAL
-FALL PIPE, MINIMUM 70°
-DEPRESSURIZATION LINES; MINIMUM 60°
NO POCKETS WHEN SOLIDS ARE PRESENT,
VALVES VERTICALLY AT HIGHEST POINT
 - . NITROGEN PURGE ON BOTH IMPULSE LINES.
 - . LP N2 BRANCH LINE IS ONLY CONNECTED DURING
COMMISSIONING FOR RECYCLE COAL TRANSPORT.

GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :
11000-ZM-105-001 11000-ZM-105-005
11000-ZM-105-002 11000-ZM-105-006
11000-ZM-105-003 11000-ZM-105-010
11000-ZM-105-004 11000-ZM-105-011
 2. ----- TRACING 80°C UNLESS
INDICATED OTHERWISE
 3. REFERENCE DRAWING : T-13.412.214
 4. DELETED.
 5. ALL INSTRUMENTS TO BE IW (WINTERIZATION)

AS BUILT

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△	2016.07.31	AS-BUILT	ICS	HBK	SJL
△	2014.12.19	FOR CONSTRUCTION	ICS	SMK	SJL
△	2014.04.04	FOR CONSTRUCTION	ICS	SMK	SJL
○	2013.09.24	FOR CONSTRUCTION	ICS	JEK	HKJ
REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D
					APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MM X 1)

DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO.,LTD.

BLOCK		SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM COAL FEED VESSEL TRAIN B U-1200		
GASIFICATION U- 1200						
PROJECT DRAWING NUMBER			T11072-1200-02-008	SHEET	SIZE	
MULTI	UNIT	PROJECT	CODE	KOWEPO	NUMBER	REV.
1			560	1-11200-ZM-105-008	F	

**PIPING & INSTRUMENT
DRAWING**

FOR

**1300 UNIT OF
TAEAN IGCC POWER PLANT (300MW x 1)**



KOREA WESTERN POWER CO., Ltd.

NOTES

- NITROGEN CONNECTION TO INERT SYSTEM. NOT CONNECTED DURING OPERATION.
- OXYGEN AND RELATED NITROGEN LINES TO MEET "OXYGEN CLEAN" INSTRUCTIONS.
- WEEP HOLE AT LOWEST POINT TO SAFE LOCATION.
- N2 RELIEF AND THERMAL RELIEF FOR OXYGEN. MAIN RELIEF VALVE FOR OXYGEN AT AIR SEPARATION UNIT (ASU).
- START-UP BYPASS LINE SHALL BE IN NICKEL BASED MATERIAL (INCONEL 625).
- NOT USED.
- LOW ALARM ACTIVE ONLY IF STEAM IS ADDED TO OXYGEN.
- HIGH SELECTOR OF FOUR TEMPERATURES.
- MIMUM DISTANCE TO A-1302.
- UP TO AND INCLUDING UNLESS ONE COAL BURNER IS IN OPERATION.
- NOT ACTIVE WHEN THE START-UP BURNER IS IN OPERATION.
- AFTER START UP BURNER IN OPERATION.
- NOT USED.
- 13KS-003X REPRESENTS 13KS-0031 THROUGH 13KS-0034.
- 13KS-001X REPRESENTS 13KS-0011 THROUGH 13KS-0014. THERE IS INTERACTION BETWEEN PROGRAMS 13KS-0001 AND 13KS-001X.
- 13UZ-001X REPRESENTS 13UZ-0011 THROUGH 13UZ-0014.
- DELETED.
- OPERATION IN THROTTLING OXYGEN SERVICE.
- EXPANDER LOCATED DIRECTLY DOWNSTREAM RESTRICTION ORIFICE. RESTRICTION ORIFICE LOCATED DIRECTLY DOWNSTREAM OF VALVE.
- TAKE-OFF POINT FROM BY-PASS LINE
- TUBE SIDE MATERIAL TO BE OXYGEN CLEAN.
- TO CHECK IF LOCATED AT LOW POINT IN ORDER TO DRAIN THE SHELL SIDE OF E-1309.
- DELETED.
- SILENCER NOT REQUIRED.
- DELETED.
- VENT LINE TIE-IN ON TOP OF MAIN OXYGEN LINE.
- TIE-IN(TEES) SHALL BE IN NICKEL BASED MATERIAL(INCONEL 625).
- HORIZONTAL VENTS PREFERRED AND MESH SCREEN IN VENT OUTLET.
- NO BENDS WITHIN 20D OF VENT VALVE.

GENERAL NOTES

- FOR LEGENDS AND SYMBOLS SEE DRG'S :
11000-ZM-105-001 11000-ZM-105-005
11000-ZM-105-002 11000-ZM-105-006
11000-ZM-105-003 11000-ZM-105-010
11000-ZM-105-004 11000-ZM-105-011
- REFERENCE DRAWING : T-13.412.216
- DELETED.
- ALL INSTRUMENTS TO BE IW (WINTERIZATION)

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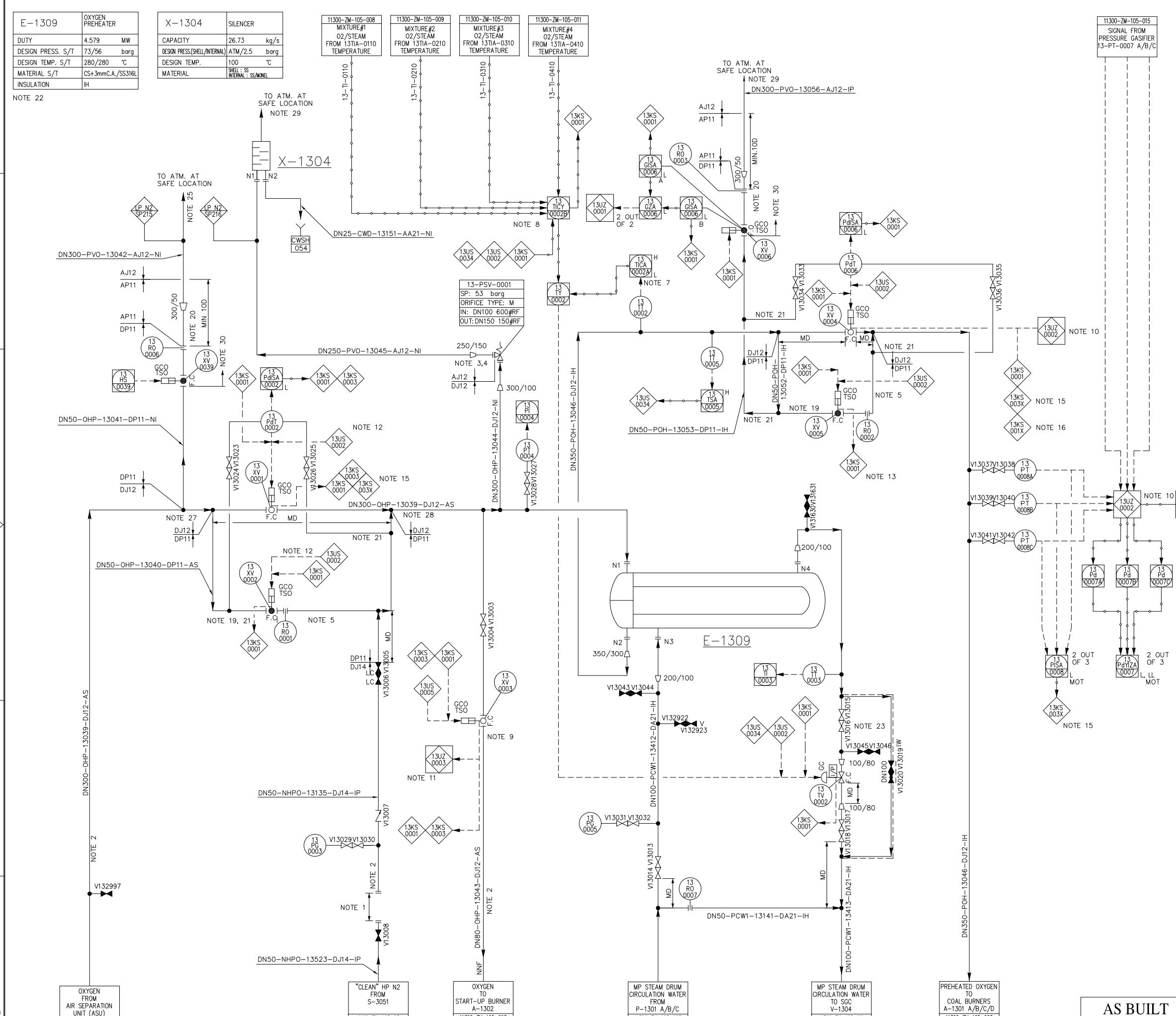
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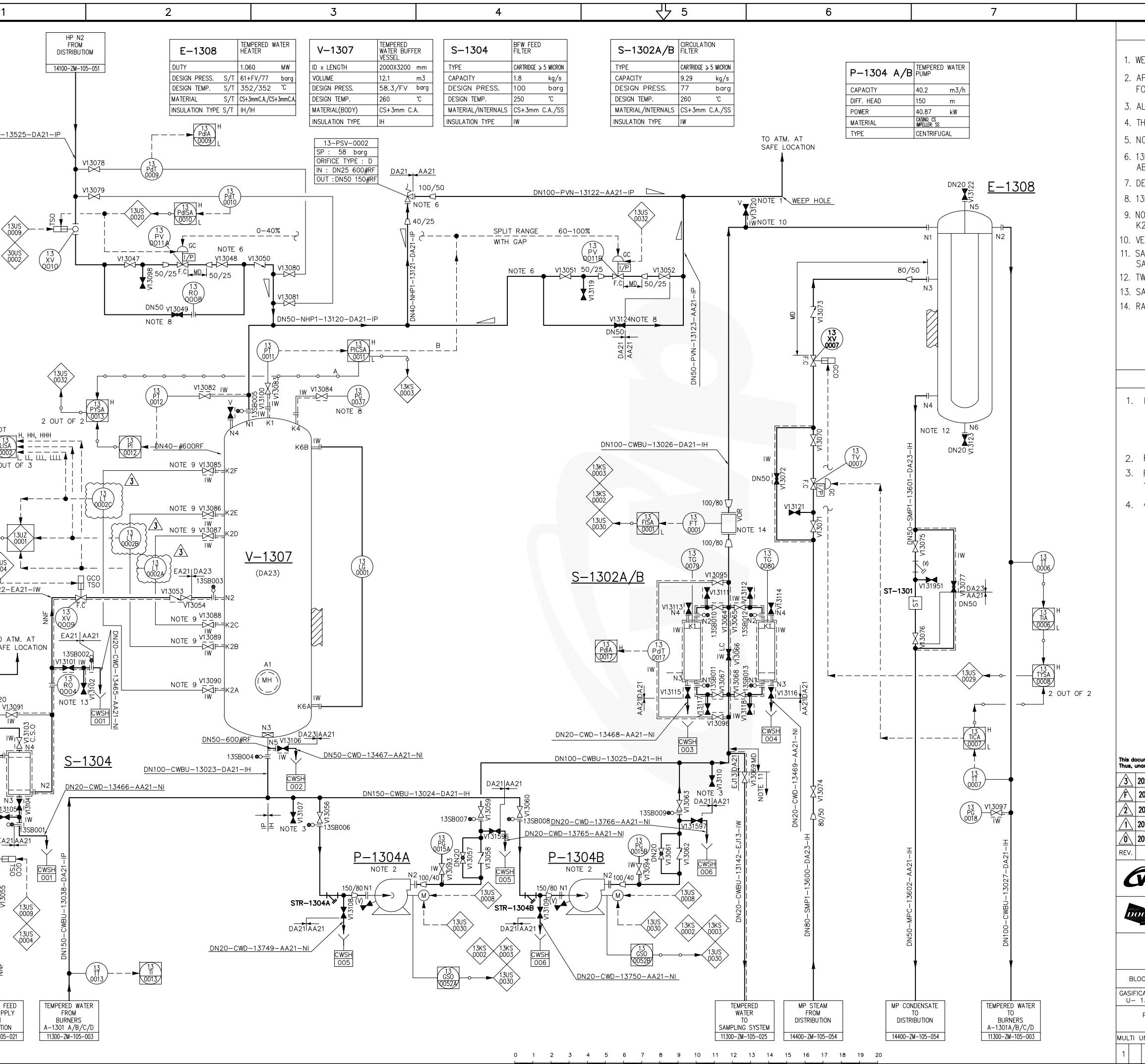
KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)


DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO., LTD.


BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM				
			OXYGEN PREHEATING U-1300				
PROJECT DRAWING NUMBER			T11072-1300-02-001				
MULTI UNIT			KOWEO NUMBER				
1		560	1-11300-ZM-105-001	F			


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












X-1301D	COAL PICK-UP BURNER #4
CAPACITY (COAL)	8.72 kg/s
DESIGN PRESS.	58.3 barg
DESIGN TEMP.	130 °C
MATERIAL/INTERNAL	CS+3mmca/SS 316
INSULATION TYPE	I.E

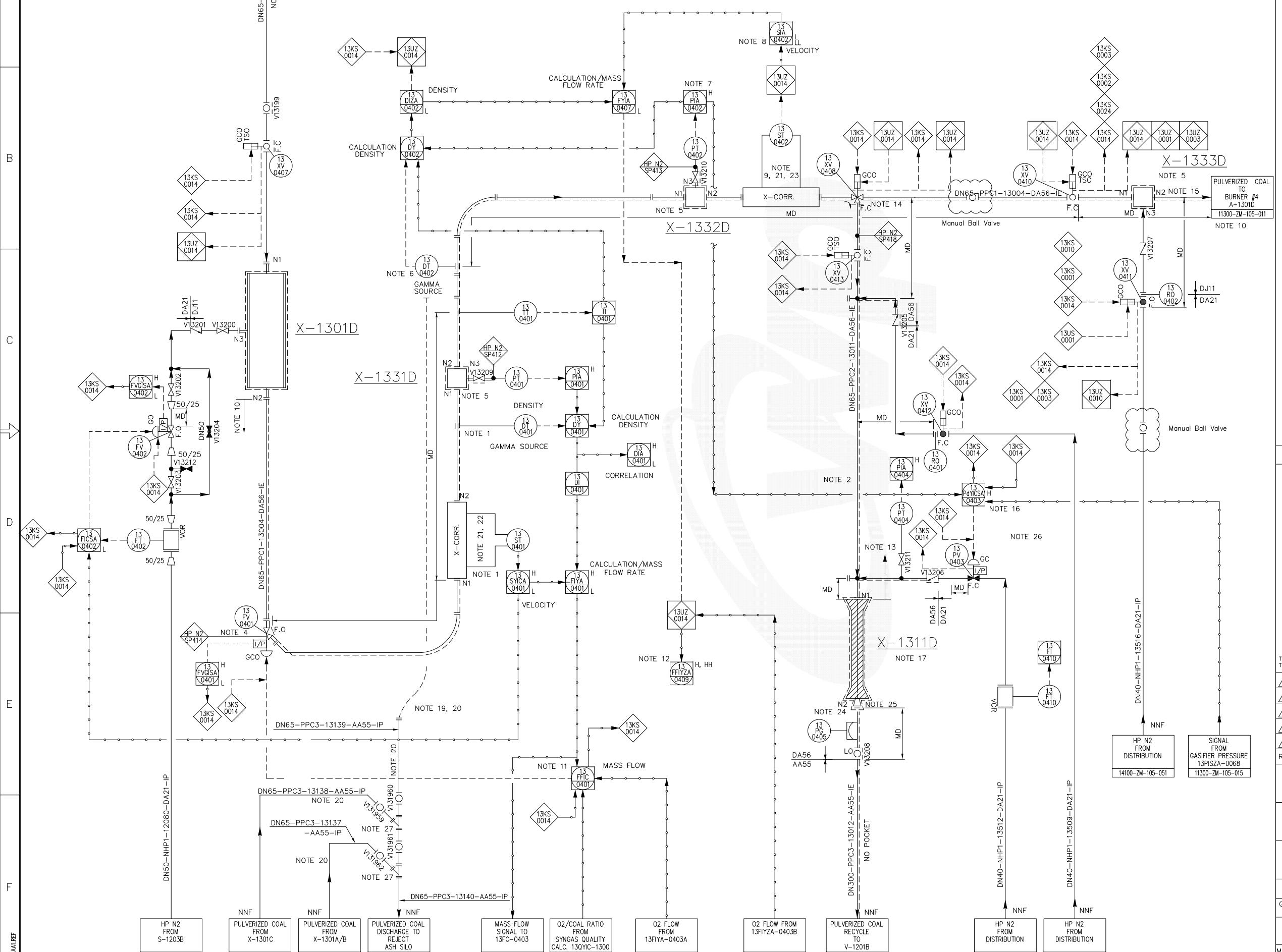
PULVERIZED COAL
FROM COAL FEED
VESSEL
V-1205 B
11200-ZM-105-001

X-1311D	LETDOWN BURNER
ID X LENGTH	28 X 20
DESIGN PRESS.	58.3
DESIGN TEMP.	130
MATERIAL	CS
INSULATION TYPE	IE

X-1331D	PRESSURE TRANSMITTER PU CONNECTION #
CAPACITY (COAL)	8.72 kmt
DESIGN PRESS.	58.3 b
DESIGN TEMP.	130 °C
MATERIAL/INTERNAL	CS+3mmCA/SS
INSULATION TYPE	I.E

X-1332D	PRESSURE TRANSMITTER PURGE CONNECTION #4
CAPACITY (COAL)	8.72 kg/s
DESIGN PRESS.	58.3 barg
DESIGN TEMP.	130 °C
MATERIAL/INTERNALCS	CS+3mmCA/Ss 316L
INSULATION TYPE	IE

-1333D	PURGE CONNECTION #4
CACITY (COAL)	8.72 kg/s
GN PRESS.	58.3 barg
GN TEMP.	130 °C
RIAL/INTERNALCS	CS+3mmCA/SS 316L
LATION TYPE	IE



NOTES

- VELOCITY METER AND DENSITY METER MUST BE INSTALLED VERTICALLY AND AT A MINIMUM DISTANCE FROM ONE ANOTHER. LOCAL RETURN LINE WITH SPECIAL FLANGE CONNECTION. SEE TECHNICAL SPECIFICATION FOR SCGP PIPE AERATORS AND PICK-UPS. BDEP VOLUME 6 NARRATIVE , APPENDIX 2.

A 13XV-0407, AND HAND VALVE DIRECTLY CONNECTED TO RATION CONE X-1207D OF COAL FEED VESSEL.

CIAL CONTROL VALVE (DETAILED DESIGN); SEE TECHNICAL CIFICATION COAL FEED CONTROL VALVE.

CIAL CONSTRUCTION TO PREVENT PLUGGING. SEE TECHNICAL CIFICATION FOR SCGP PIPE AERATORS AND PICK-UPS.

S DENSITY METER MUST BE INSTALLED VERTICALLY AND AS CLOSE POSSIBLE TO THE BURNER.

RING START-UP ONLY, SET PRESSURE 0.1 MPa HIGHER THAN SIFIER.

W/NO FLOW INDICATOR.

W METER (CORRELATOR) IN HORIZONTAL PIPE SECTION AS CLOSE POSSIBLE TO THREE WAY VALVE.

OAL FEED LINE WITH SPECIAL FLANGE CONNECTION, SMOOTH WALL BENDS R=500. PIPE SEGMENTS, EQUIPMENT AND INSTRUMENTATION WILL BE CONNECTED BY SPECIAL FLANGES OR OTHER CONNECTIONS AS MAILED ELSEWHERE IN THE DESIGN DOCUMENTATION. SEE TECHNICAL CIFICATION FOR SCGP PIPE AERATORS AND PICK-UPS. AND BDEP VOLUME 6 NARRATIVE, APPENDIX 2.

ESET O2/C RATIO OF INDIVIDUAL BURNER.

/C RATIO ALARM/TRIP.

ANGES IN FLOW DIRECTIONS OF COAL POWDER CARRIED OUT WITH OSS-PIPES.

REE-WAY VALVE, FULL THROUGHPUT, "RECYCLE" BEING REE POSITION.

STALL X-1333D WITH A-1301D FLANGE TO FLANGE. > 0.08 MPa ALLOWS BURNER START-UP.

MINIMUM DISTANCE TO V-1201B. HOWEVER MINIMUM DISTANCE IS METER. NO ELBOWS/BENDS DOWNSTREAM X-1311D.

T USED.

COOL PIECE ONLY CONNECTED DURING COMMISSIONING IN CASE OF LIKERIZED COAL DISCHARGE TO REJECT ASH SILO.

MINIMUM BENDS R= 10D.

CESSIBILITY TO BE CONSIDERED FOR MAINTENANCE.

IS VELOCITY METER MUST BE INSTALLED VERTICALLY, WITH STRAIGHT LENGTH UPSTREAM 40D MINIMUM DISTANCE, AND WITH STRAIGHT LENGTH DOWNSTREAM 20D MINIMUM DISTANCE.

IS VELOCITY METER MUST BE INSTALLED HORIZONTALLY, WITH STRAIGHT LENGTH UPSTREAM 20D MINIMUM DISTANCE, AND WITH STRAIGHT LENGTH DOWNSTREAM 10D MINIMUM DISTANCE.

APHRAGM INSTALLED DIRECTLY ON PIPING (NO NOZZLE) AND SH WITH INNER PIPE WALL.

EICAL EROSION RESISTANT EXPANDER AS PER X-1311D DATA SHEET.

FETY CRITICAL.

SE Y-PIECE.

GENERAL NOTES

- OR LEGENDS AND SYMBOLS SEE DRG'S :
1000-ZM-105-001 11000-ZM-105-005
1000-ZM-105-002 11000-ZM-105-006
1000-ZM-105-003 11000-ZM-105-010
1000-ZM-105-004 11000-ZM-105-011

---- TRACING 80°C UNLESS
INDICATED OTHERWISE

REFERENCE DRAWING : T-13.412.222
ELETED.

ALL INSTRUMENTS TO BE IW (WINTERIZATION)

AS BUILT

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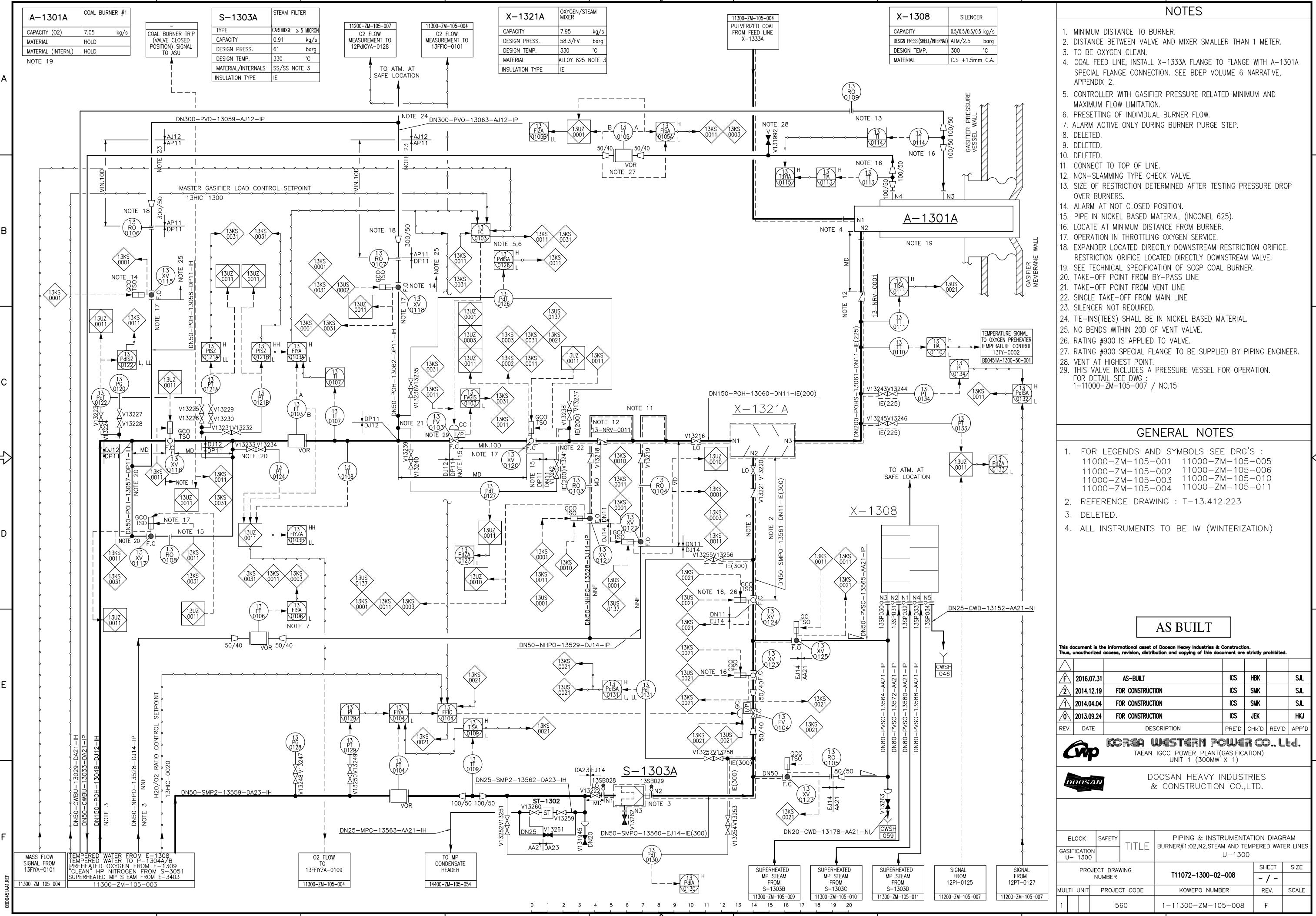
DATE	DESCRIPTION	PRE'D	CHK'D	REV'D	APP'D
6.07.31	AS-BUILT	ICS	HBK		SJL
4.12.19	FOR CONSTRUCTION	ICS	SMK		SJL
4.04.04	FOR CONSTRUCTION	ICS	SMK		SJL
6.09.24	FOR CONSTRUCTION	ICS	JEK		HKJ

KOREA WESTERN POWER CO., Ltd
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (700MW X 1)

KOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO.,LTD.

	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM BURNER COAL FEED LINE #4 U-1300		
ION	DO				
PROJECT DRAWING NUMBER			T11072-1300-02-007	SHEET	SIZE
T	PROJECT CODE	KOWEPO NUMBER		- / -	
				REV.	SCALE

1 2 3 4 5 6 7 8 9



MASS FLOW SIGNAL FROM 13FYA-0101
TEMPERED WATER FROM P-1304A/B
PREHEATED OXYGEN FROM E-1309
CLEAN HP NITROGEN FROM E-3051
SUPERHEATED MP STEAM FROM E-3403
11300-ZM-105-003

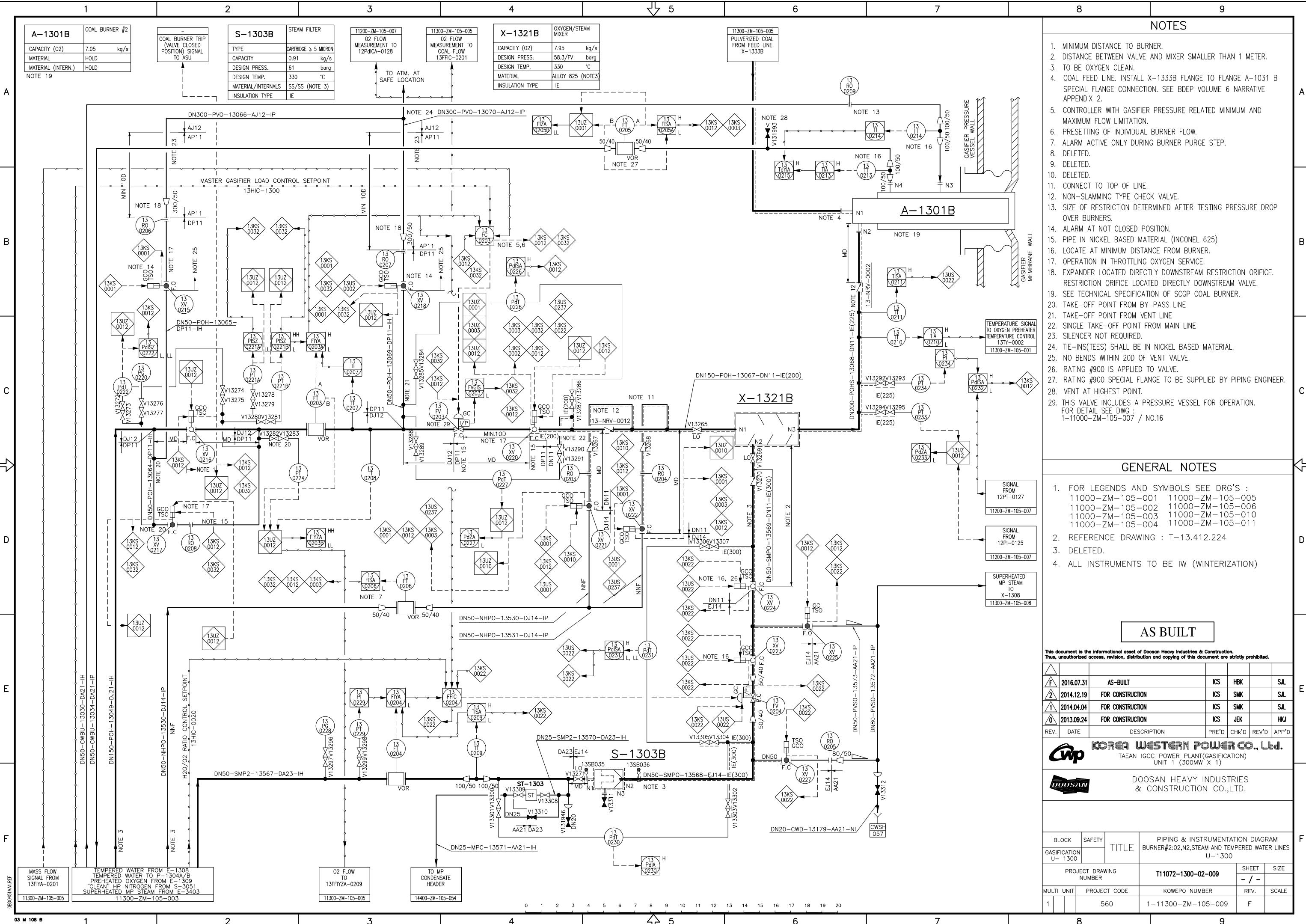
11300-ZM-105-004

11300-ZM-105-002

11300-ZM-105-001

11300-ZM-105-000

11300-ZM-105-003



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NOTES

- MINIMUM DISTANCE TO BURNER.
- DISTANCE BETWEEN VALVE AND MIXER SMALLER THAN 1 METER.
- TO BE OXYGEN CLEAN.
- COAL FEED LINE, INSTALL X-1333C FLANGE TO FLANGE WITH A-1301C SPECIAL FLANGE CONNECTION. SEE BDEP VOLUME 6 NARRATIVE, APPENDIX 2.
- CONTROLLER WITH GASIFIER PRESSURE RELATED MINIMUM AND MAXIMUM FLOW LIMITATION.
- PRESETTING OF INDIVIDUAL BURNER FLOW.
- ALARM ACTIVE ONLY DURING BURNER PURGE STEP.
- DELETED.
- DELETED.
- DELETED.
- CONNECT TO TOP OF LINE.
- NON-SLAMMING TYPE CHECK VALVE.
- SIZE OF RESTRICTION DETERMINED AFTER TESTING PRESSURE DROP OVER BURNERS.
- ALARM AT NOT CLOSED POSITION.
- PIPE IN NICKEL BASED MATERIAL (INCONEL 625)
- LOCATE AT MINIMUM DISTANCE FROM BURNER.
- OPERATION IN THROTTLING OXYGEN SERVICE.
- EXPANDER LOCATED DIRECTLY DOWNSTREAM RESTRICTION ORIFICE. RESTRICTION ORIFICE LOCATED DIRECTLY DOWNSTREAM VALVE.
- SEE TECHNICAL SPECIFICATION OF SCGP COAL BURNER.
- TAKE-OFF POINT FROM BY-PASS LINE.
- TAKE-OFF POINT FROM VENT LINE.
- SINGLE TAKE-OFF FROM MAIN LINE.
- SILENCER NOT REQUIRED.
- TIE-INS(TEES) SHALL BE IN NICKEL BASED MATERIAL.
- NO BENDS WITHIN 2OD OF VENT VALVE.
- RATING #900 IS APPLIED TO VALVE.
- VENT AT HIGHEST POINT.
- THIS VALVE INCLUDES A PRESSURE VESSEL FOR OPERATION. FOR DETAIL SEE DWG : 1-11000-ZM-105-007 / NO.17

GENERAL NOTES

- FOR LEGENDS AND SYMBOLS SEE DRG'S :
11000-ZM-105-001 11000-ZM-105-005
11000-ZM-105-002 11000-ZM-105-006
11000-ZM-105-003 11000-ZM-105-010
11000-ZM-105-004 11000-ZM-105-011
- REFERENCE DRAWING : T-13.412.225
- DELETED.
- ALL INSTRUMENTS TO BE IW (WINTERIZATION)

AS BUILT

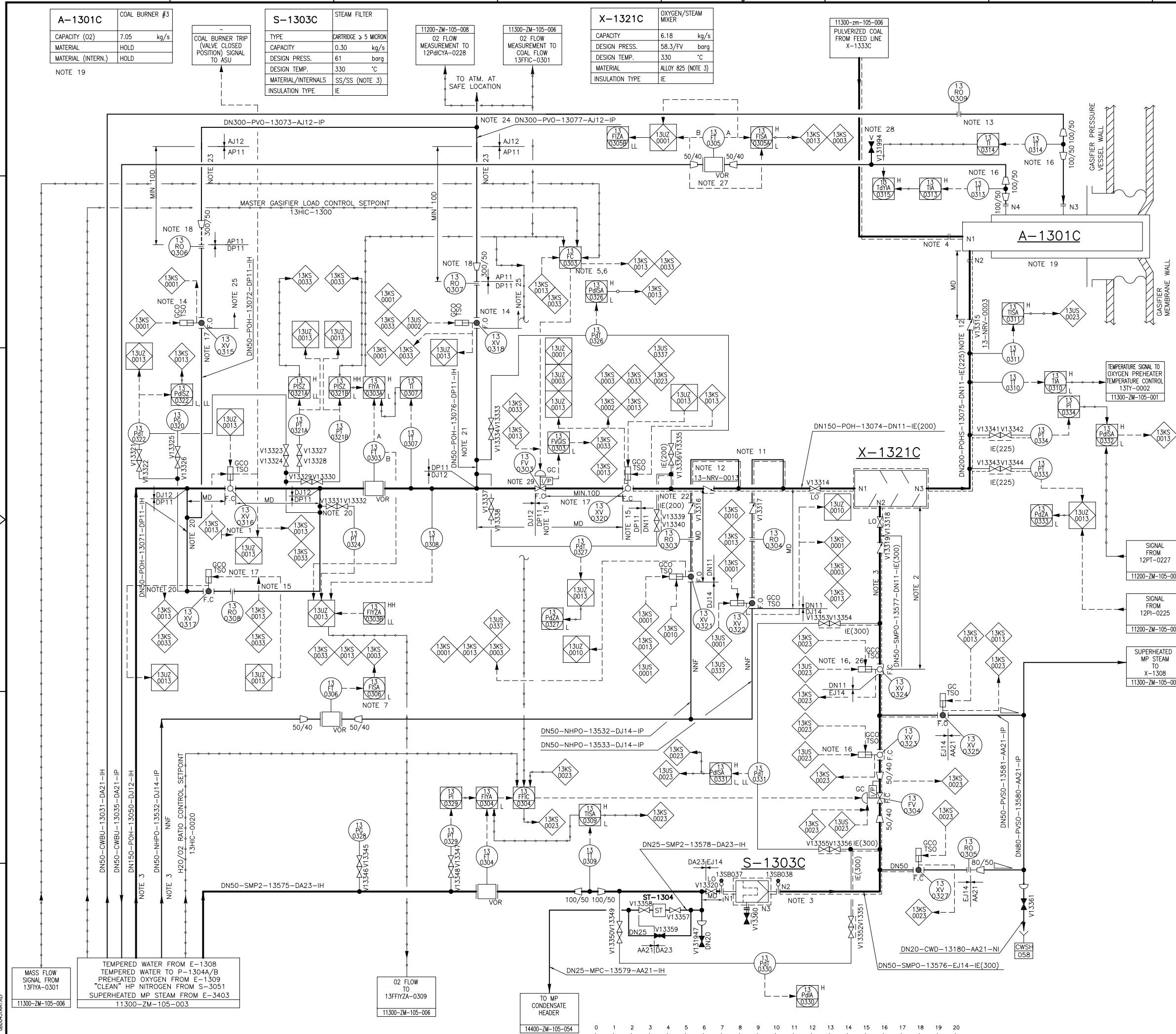
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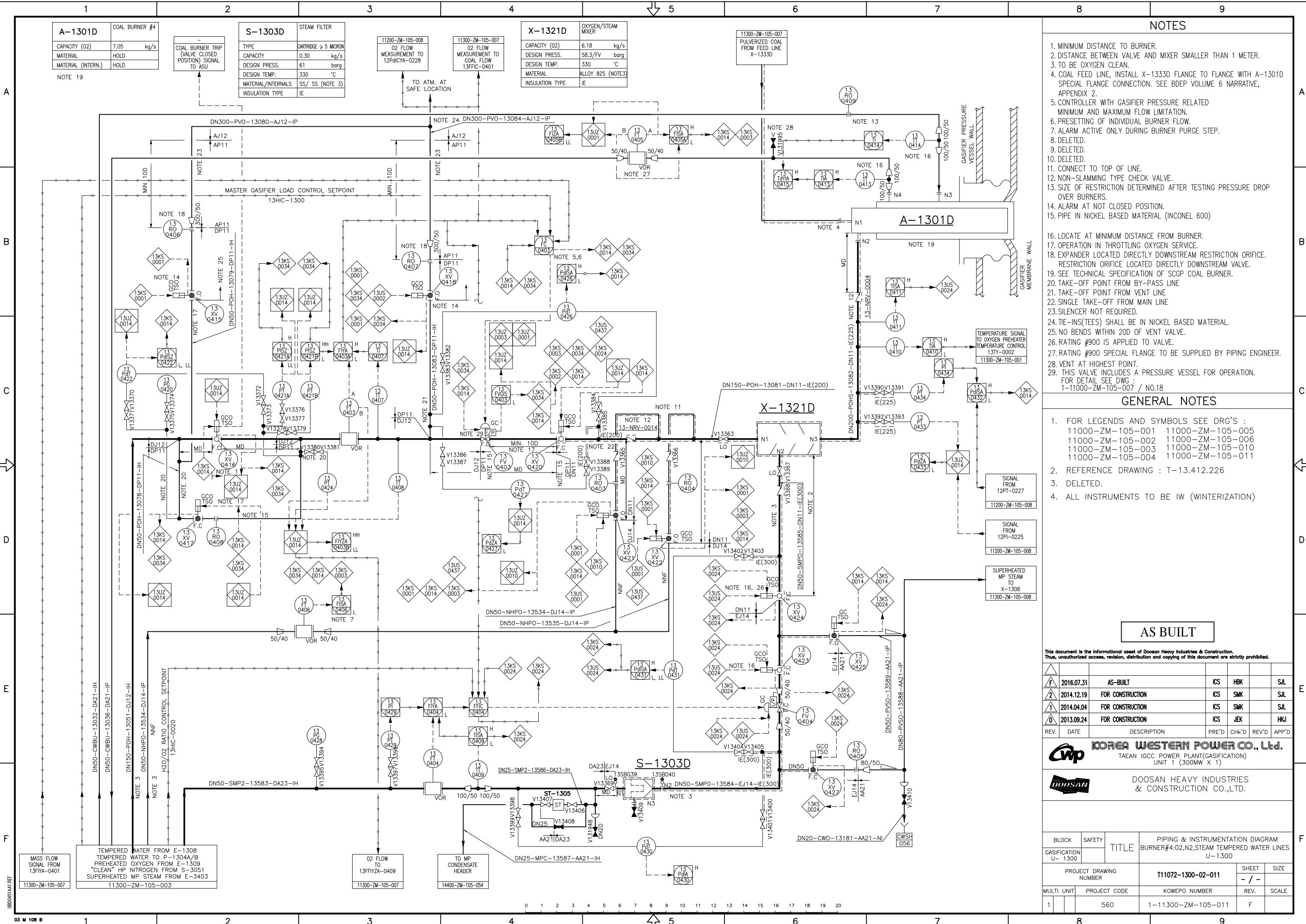
		ICS	HBK	SIL
△	2016.07.31	AS-BUILT		
△	2014.12.19	FOR CONSTRUCTION	ICS	SMK
△	2014.04.04	FOR CONSTRUCTION	SMK	SIL
△	2013.09.24	FOR CONSTRUCTION	JEK	HJK
REV.	DATE	DESCRIPTION	PRED	CHK'D
			REV'D	APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO., LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM	
			GASIFICATION U-1300	
PROJECT DRAWING NUMBER		T11072-1300-02-010	SHEET	SIZE
MULTI UNIT	PROJECT CODE	KOWEO NUMBER	-/-	
1	560	1-11300-ZM-105-010	F	





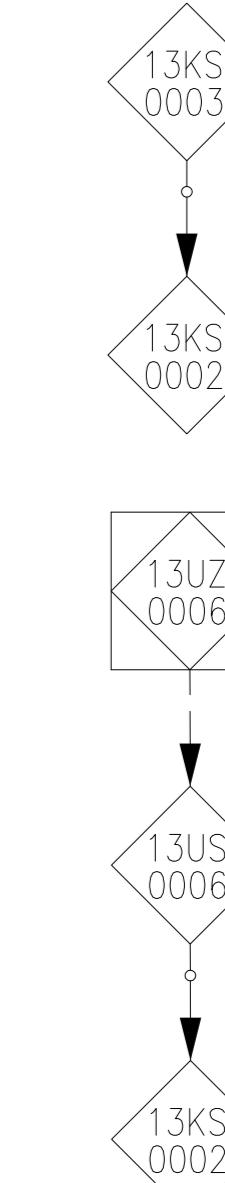
NOTES

1. WEEP HOLE AT LOWEST POINT TO SAFE LOCATION.
2. MINIMUM DISTANCE TO IGNITION BURNER.
3. DELETED
4. NOT USED.
5. NOT USED.
6. ELECTRONIC IGNITION, WHICH IS INSULATED/COOLED BY INSTRUMENT AIR.
7. DELETED
8. TO VERIFY THE DESIGN OF THE RESTRICTION ORIFICES BASED ON NG CHARACTERISTICS.
9. SAFETY CRITICAL.
10. MAINTENANCE ON 13PSV-0006 IS ONLY POSSIBLE AFTER A COMPLETE PLANT SHUTDOWN

GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :
11000-ZM-105-001 11000-ZM-105-005
11000-ZM-105-002 11000-ZM-105-006
11000-ZM-105-003 11000-ZM-105-010
11000-ZM-105-004 11000-ZM-105-011

2. NORMAL SHUTDOWN OF BURNER VIA START-UP BURNER IGNITION PROGRAM



- 3.
4. REFERENCE DRAWING : T-13.412.228
5. DELETED.
6. ALL INSTRUMENTS TO BE IW (WINTERIZATION)

AS BUILT

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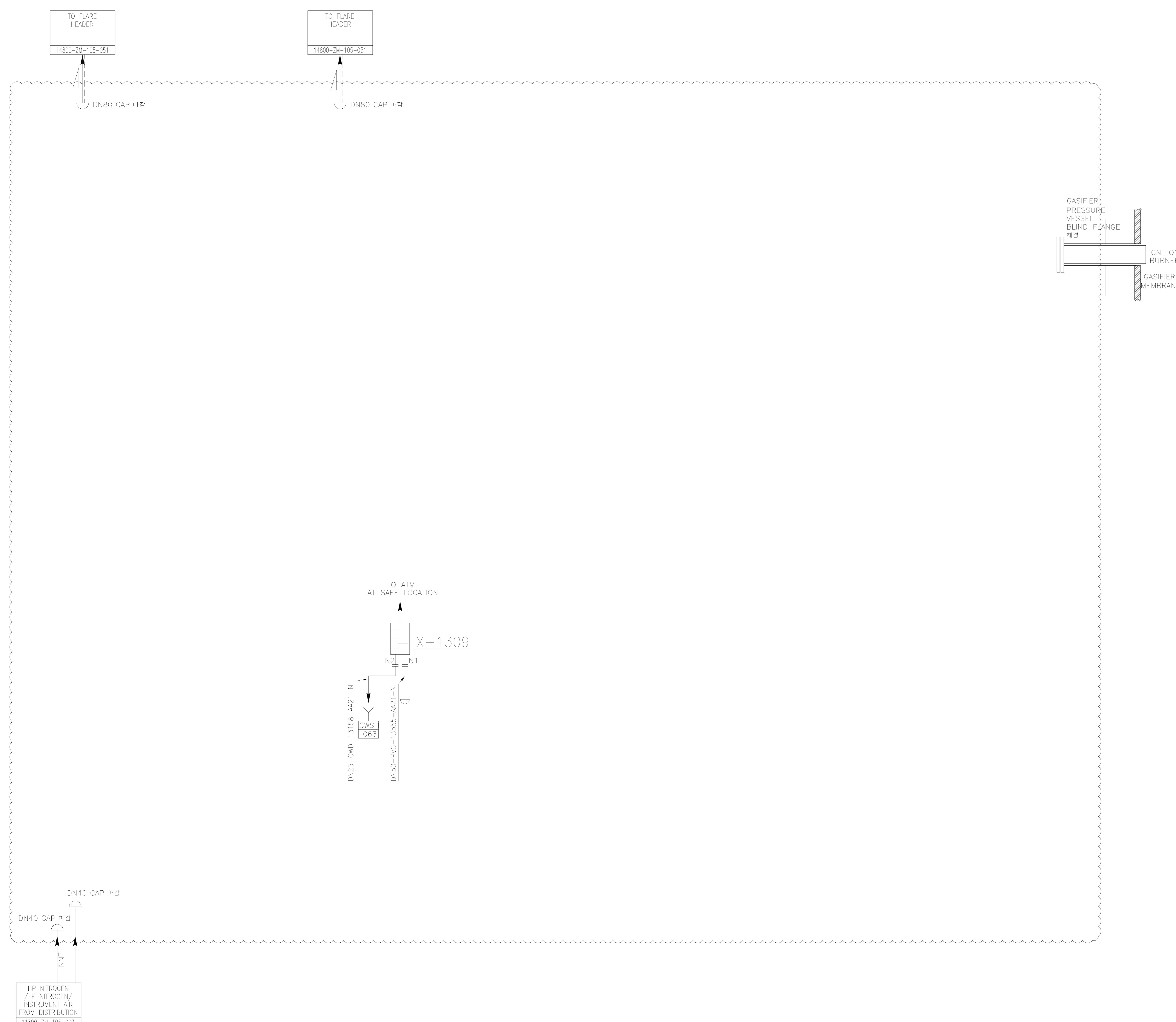
REV.	DATE	DESCRIPTION	PREP'D	CHK'D	REV'D	APP'D
	2016.07.31	AS-BUILT	ICS	HBK		SJL
	2014.12.19	FOR CONSTRUCTION	ICS	SMK		SJL
	2014.04.04	FOR CONSTRUCTION	ICS	SMK		SJL
	2013.09.24	FOR CONSTRUCTION	ICS	JEK		HJK
REV.	DATE	DESCRIPTION	PREP'D	CHK'D	REV'D	APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM			
			IGNITION BURNER U-1300			
GASIFICATION U-1300		PROJECT DRAWING NUMBER	T11072-1300-02-012		SIZE	
MULTI UNIT		PROJECT CODE	KOWEPO NUMBER		REV. SCALE	
1		560	1-11300-ZM-105-012		F	

X-1309	SILENCER
CAPACITY	0.23 kg/s
DESIGN PRESS.(SHELL/INTERNAL)	ATM/2.5 barg
DESIGN TEMP.	100 °C
MATERIAL	C.S +1.5mm C.A.



NOTES

1. ONLY OPERABLE FROM CONTROL ROOM, AUTOMATICALLY CLOSED BY 13LISA-0005 H.
2. SIGNAL TO CONTROL ROOM AND LOCAL ACOUSTIC ALARM (HORN).
3. DIKE, TANK NOZZLE SHALL BE HIGHER THAN PUMP SUCTION NOZZLE.
4. NOT USED.
5. QUICK COUPLING FOR TANK TRUCK.
6. NOT USED.
7. NOT USED.
8. DELETED.
9. NOT USED.
10. DELETED.
11. DELETED.
12. DELETED.
13. TANK OVERFLOW TO BE COLLECTED IN DIKE.
14. DELETED.
15. PSV IS A SCOPE OF SUPPLY OF PUMP VENDOR.
16. DELETED.
17. API SEAL PLAN 01.
FOR DETAIL ARRANGEMENT SEE DWG : 1-11000-ZM-105-008
18. P-1311, P-1306, S-1301, 13PV-0026 LOCATED IN CURBED AREA.
19. SIGNAL FROM LEVEL OF DIESEL TANK FOR EMERGENCY POWER GENERATOR IN CCP.
20. "A"NOZZLE IS USED FOR PROCESS CONNECTION WITH LEVEL GAUGE AND THE OTHERS ARE USED FOR TOP ANCHOR CONNECTION.
21. FOR COMMISSIONING.

GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :
 11000-ZM-105-001 11000-ZM-105-005
 11000-ZM-105-002 11000-ZM-105-006
 11000-ZM-105-003 11000-ZM-105-010
 11000-ZM-105-004 11000-ZM-105-011
2. REFERENCE DRAWING : T-13.412.229
3. DELETED.
4. ALL INSTRUMENTS TO BE IW (WINTERIZATION)

AS BUILT

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	2022.08.29	VALVE CLOSE ON NORMAL	이창준	김서현	김대성
	2016.07.31	AS-BUILT	ICS	HBK	SJL
	2014.12.19	FOR CONSTRUCTION	ICS	SMK	SJL
	2014.04.04	FOR CONSTRUCTION	ICS	SMK	SJL
	2013.09.24	FOR CONSTRUCTION	ICS	JEK	HJK
REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

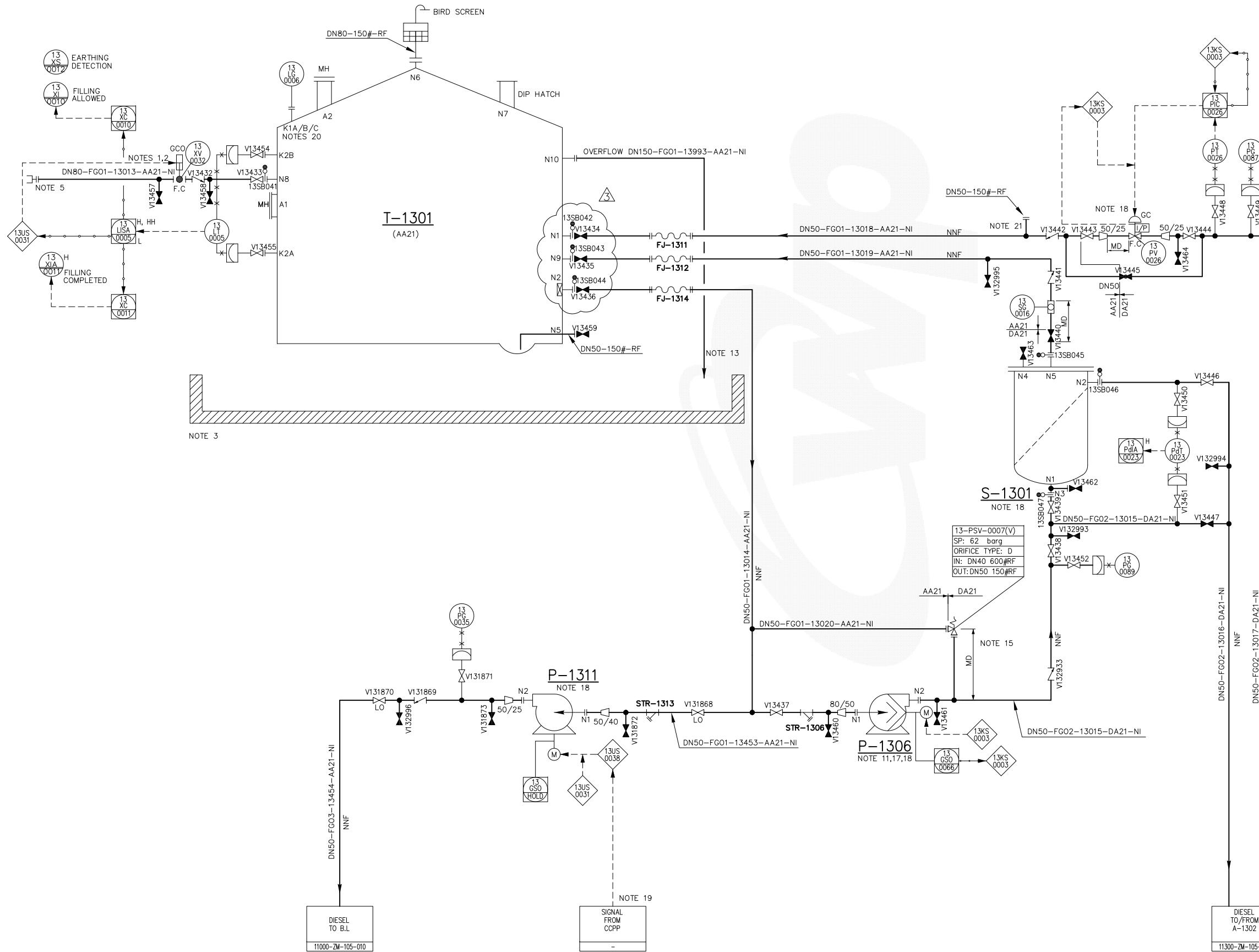
BLOCK		SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM DIESEL FOR START-UP BURNER U-1300		
GASIFICATION U- 1300						
				PROJECT DRAWING NUMBER		
				T11072-1300-02-013		
MULTI UNIT	PROJECT CODE			KOWEPO NUMBER		
				1-11300-ZM-105-013		
REV.	SCALE			F		
1	560			1		

P-1306	DIESEL PUMP
CAPACITY	6.9 m ³ /h
DIFF. HEAD.	658.5 m
POWER	22 kW
MATERIAL	CASING: CS IMPELLER: SS
TYPE	3-SCREW

P-1311	EMERGENCY DIESEL PUMP
CAPACITY	5.52 m ³ /h
DIFF. HEAD.	38.9 m
POWER	5.5 kW
MATERIAL	CASING: CS IMPELLER: SS
TYPE	3-SCREW

S-1301	DIESEL FILTER
TYPE	CARTRIDGE > 5 MICRON
ID x HEIGHT	3600x4100 mm
CAPACITY	1.35 kg/s
DESIGN PRESS.	62 barg
DESIGN TEMP.	-1.86mmHg/0.0075barg
MATERIAL/INTERNAL	CS+3mm C.A./SS
INSULATION TYPE	NI

T-1301	DIESEL TANK
ID x HEIGHT	3600x4100 mm
VOLUME	41.7 m ³
DESIGN PRESS.	-1.86mmHg/0.0075barg
DESIGN TEMP.	50 °C
MATERIAL	CS+3mm C.A./SS
INSULATION TYPE	NI



1

2

3

4

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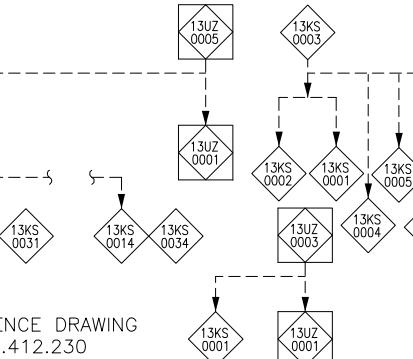
9

NOTES

- DOUBLE WALL HOSE WITH LEAK DETECTION.
- KEEP DISTANCE FOR MAINTENANCE OF BURNERS.
- MINIMUM DISTANCE TO START-UP BURNER.
- MINIMUM FLOW 0.5 kg/s IN CASE START-UP BURNER OUT OF OPERATION.
- NOT USED.
- SEE TECHNICAL SPECIFICATION OF SCGP START-UP AND IGNITION BURNER.
- 13FI-0020 VISUAL FROM 13PI-0029 LOCATION.
- OXYGEN AND RELATED NITROGEN LINES TO MEET OXYGEN CLEAN STANDARDS.
- FLEXIBLE HOSES SHOULD ALLOW INSERTION/RETRACTION OF BURNER OVER 2 METER HOSES DIRECTLY COUPLED TO BURNER.
- DELETED.
- NOT USED.
- TO LIMIT WATER LOSS DURING HOSE FAILURE (MINIMUM ΔP DURING NORMAL OPERATION).
- FAIL LOCKED ON FAILURE OF INSTRUMENT AIR IF START-UP BURNER IS INSERTED.
- FAIL CLOSE BY SPRING IF START-UP BURNER IS RETRACTED.
- WEEP HOLE AT LOWEST POINT TO SAFE LOCATION.
- DELETED.
- EXPANDER LOCATED DIRECTLY DOWNSTREAM RESTRICTION ORIFICE.
- OPERATION IN THROTTLING OXYGEN SERVICE.
- THERE MUST BE NO POCKETS IN LINE FROM 13XV-0024 TO A-1302 SO THAT FUEL CAN FLOW FREELY.
- RESTRICTION ORIFICE (6mm) IS PART OF PACKAGE UNIT BY VENDOR. DOES NOT HAVE TO BE INSTALLED SEPARATELY.
- DELETED.
- DELETED.
- SAFETY CRITICAL.
- SILENCER NOT REQUIRED TO BE CONFIRMED LATER.
- HIGHEST POINT VENT.
- INTERNAL IS NICKEL BASED MATERIAL. (INCONEL 625)
- TIE-INS(TEES) SHALL BE IN NICKEL BASED MATERIAL.
- NO BENDS WITHIN 20D OF VENT VALVE.
- ELECTRICAL IGNITER, WHICH IS INSULATED/COOLED BY NITROGEN.

GENERAL NOTES

- FOR LEGENDS AND SYMBOLS SEE DRG'S :
11000-ZM-105-001 11000-ZM-105-005
11000-ZM-105-002 11000-ZM-105-006
11000-ZM-105-003 11000-ZM-105-010
11000-ZM-105-004 11000-ZM-105-011
-



- REFERENCE DRAWING : T-13.412.230
 - DELETED.
 - ALL INSTRUMENTS TO BE IW (WINTERIZATION)
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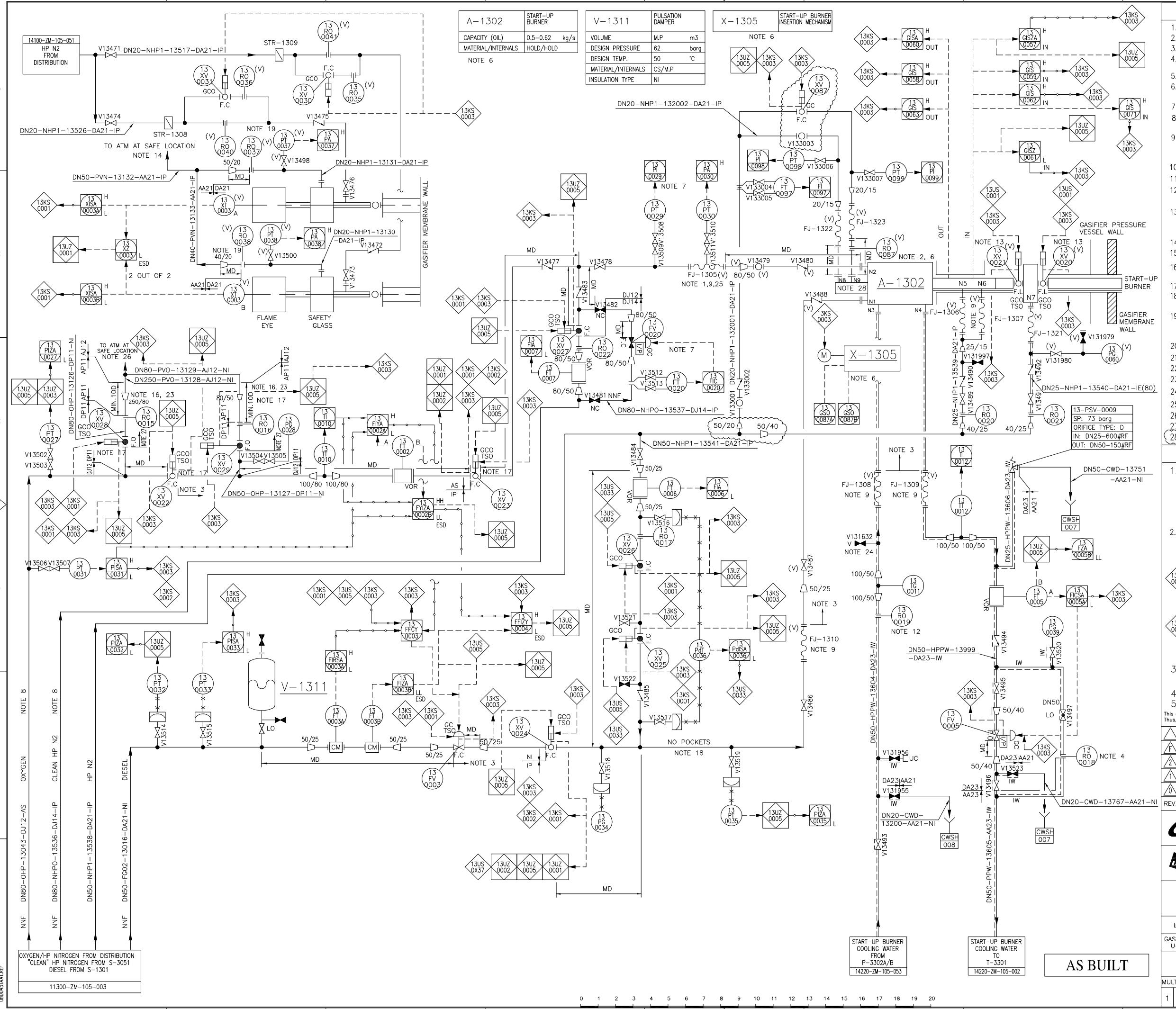
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	2014.12.15	FOR CONSTRUCTION	ICS SMK SJL
	2014.04.04	FOR CONSTRUCTION	ICS SMK SJL
	2013.09.24	FOR CONSTRUCTION	ICS JEK HKJ
REV. DATE		DESCRIPTION	PRED CHKD REV'D APP'D

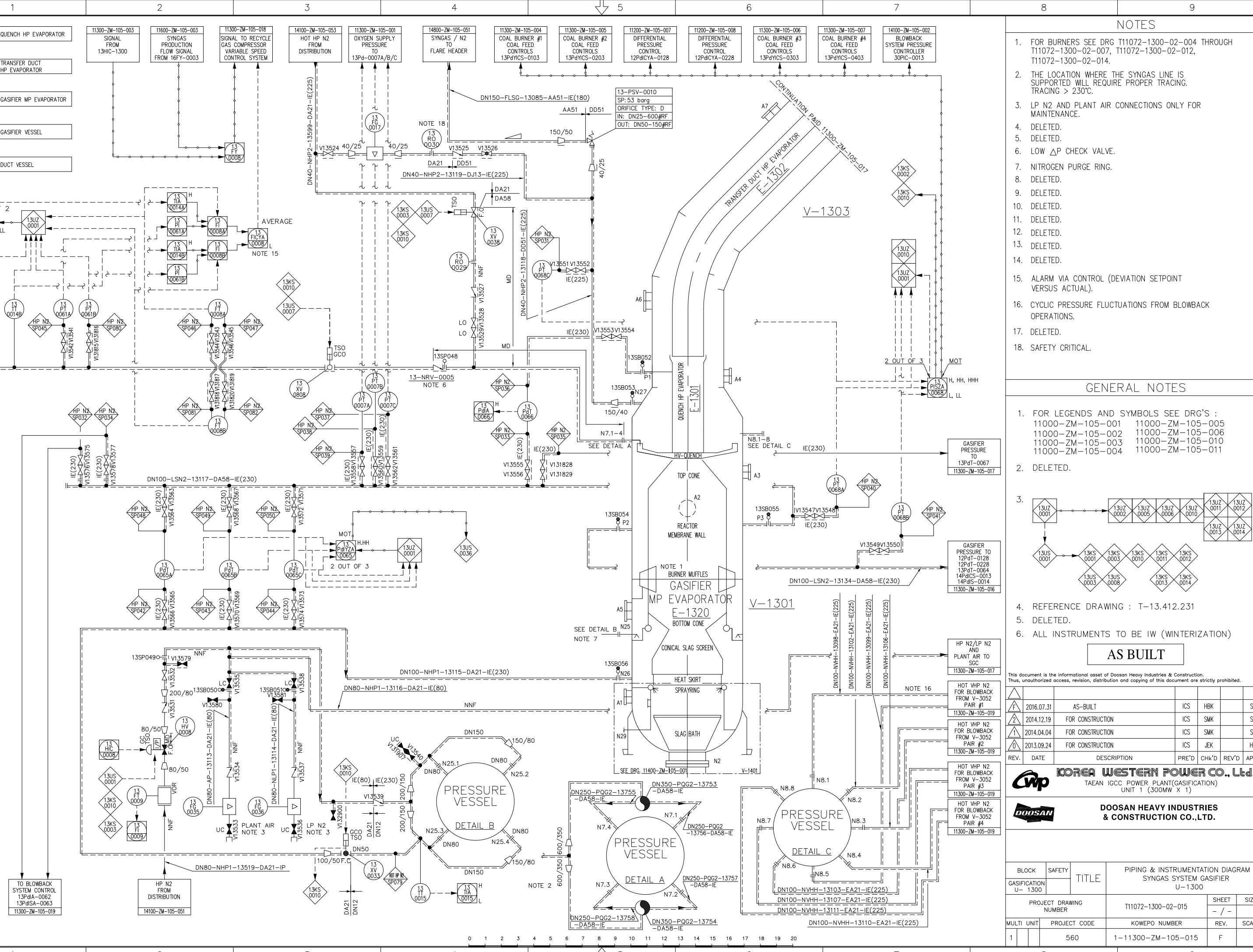
KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

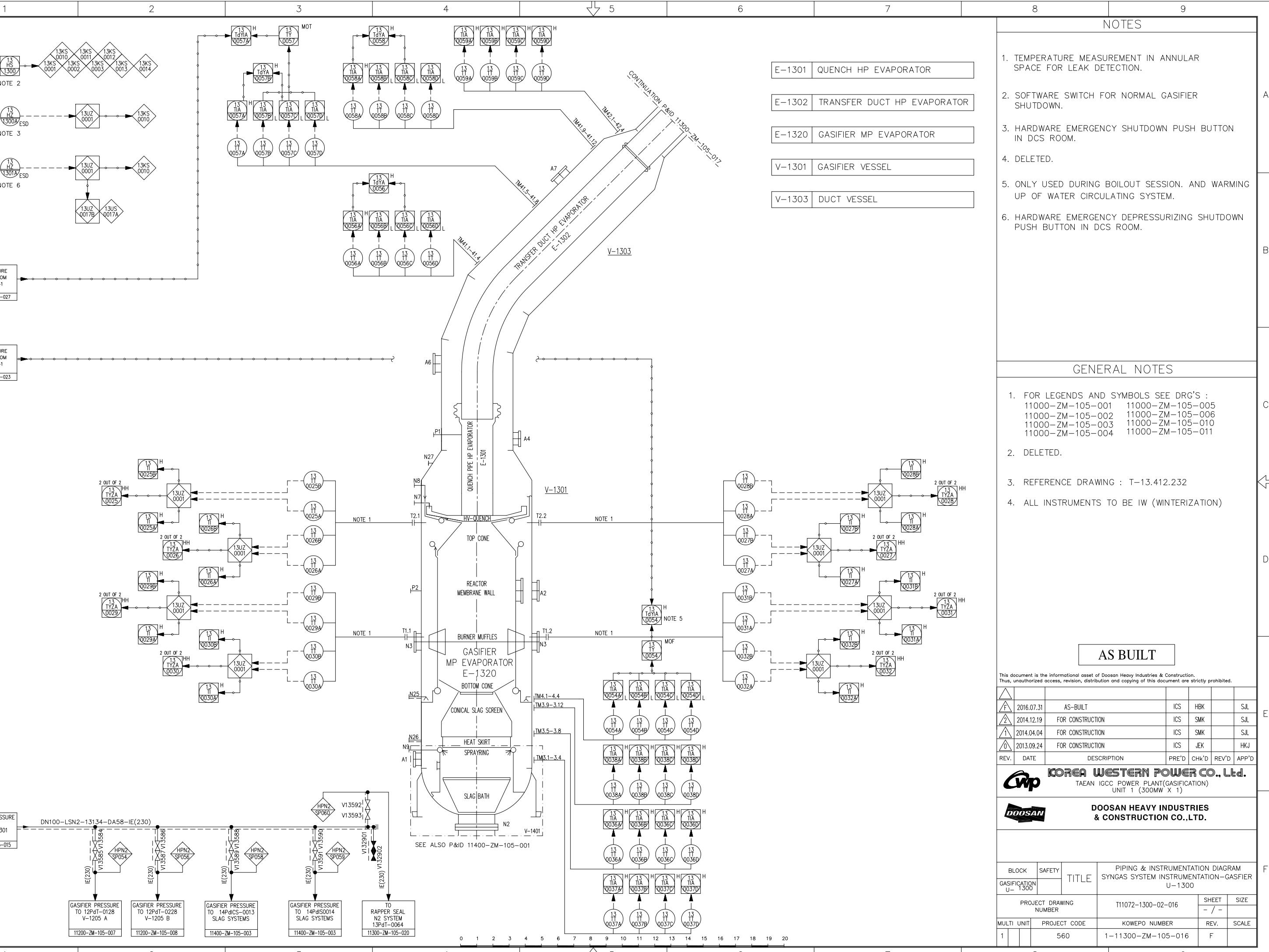
DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.


BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM
		GASIFICATION U-1300	START-UP BURNER U-1300
		PROJECT DRAWING NUMBER	11072-1300-02-014
MULTI UNIT	PROJECT CODE	KOWEO NUMBER	REV. SCALE
1	560	1-11300-ZM-105-014	F

AS BUILT









NOTES

1. FLUSH BOTTOM DRAIN VALVE AT LOWEST POINT OF FIRST BEND
 2. TRACING ONLY IN U – BEND. REMAINING PIPE SECTION INSULATED.
TRACING >230°C
 3. FLOW MEASUREMENT FOR MEASUREMENT OF CONSTANT FLOW, ALARM DEACTIVATED DURING PULSE. 20D STRAIGHT LENGTH UPSTREAM AND 10D STRAIGHT LENGTH DOWNSTREAM FLOW MEASUREMENT
 4. BENDS: R=3D
 5. AT LOWEST POINT OF THE LINE
 6. ONLY USED DURING BOILOUT SESSION
 7. DELETED
 8. NON-SLAMMING TYPE CHECK VALVE
 9. CYCLIC PRESSURE FLUCTUATIONS FROM BLOWBACK OPERATIONS
 10. TRACING >230°C
 11. THE LOCATIONS WHERE THE SYNGAS PIPE IS SUPPORTED WILL REQUIRE PROPER TRACING.
TRACING >230°C
 12. REDUCER / EXPANDER, 800mm/768mm INNER DIAMETER, SHALL BE INSTALLED.
 13. THIS VALVE INCLUDES A PRESSURE VESSEL FOR OPERATION.
FOR DETAIL SEE DWG :
1-11000-ZM-105-007 / NO.1

GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :
11000-ZM-105-001 11000-ZM-105-005
11000-ZM-105-002 11000-ZM-105-006
11000-ZM-105-003 11000-ZM-105-010
11000-ZM-105-004 11000-ZM-105-011
 2. DELETED.
 3. REFERENCE DRAWING : T-13.412.233
 4. ALL INSTRUMENTS TO BE IW (WINTERIZATION)

AS BUILT

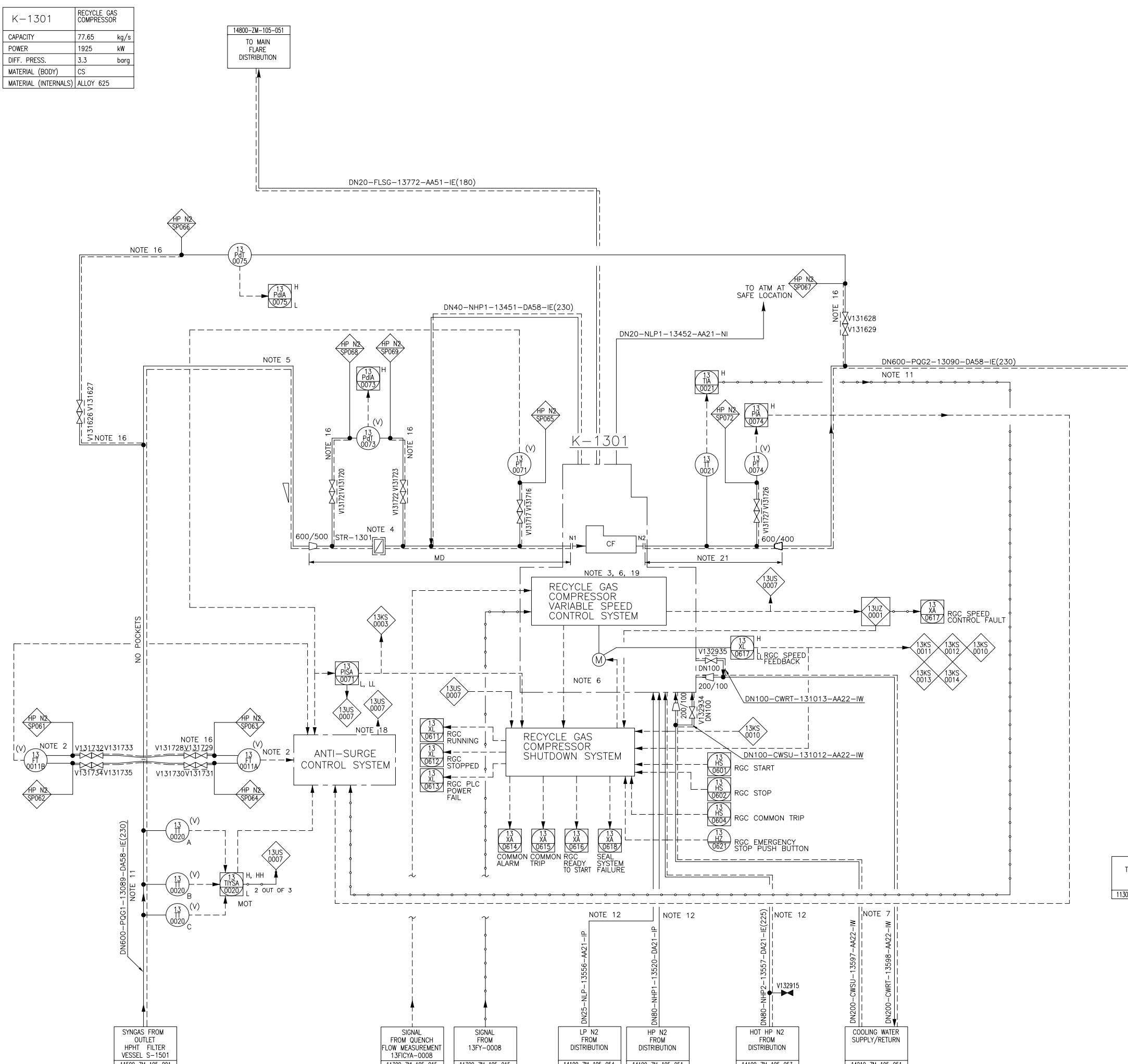
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	2017.08.16	AS-BUILT	ICS	HBK	SJL	
	2014.12.19	FOR CONSTRUCTION	ICS	SMK	SJL	
	2014.04.04	FOR CONSTRUCTION	ICS	SMK	SJL	
	2013.09.24	FOR CONSTRUCTION	ICS	JEK	HKJ	
REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D	APP'D

 KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

**DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO., LTD.**

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM SYNGAS SYSTEM INSTRUMENTATION-SYNGAS COOLER U-1300
GASIFICATION U- 1300			
PROJECT NUMBER	DRAWING NUMBER	T11072-1300-02-017	SHEET / SIZE
ULTI UNIT	PROJECT CODE	KOWEPO NUMBER	REV. / SCALE
1	560	1-11300-ZM-105-017	F



NOTES

- NOT USED.

dP SIGNAL MEASUREMENT.

COMPRESSOR IS HEATED VIA ELECTRIC TRACING.

DURING START-UP FINE GRID FILTER. DURING NORMAL OPERATION COARSE GRID FILTER.

FILTER TO BE INSTALLED AT MINIMUM DISTANCE FROM COMPRESSOR SUCTION NOZZLE.

COMPRESSOR SUCTION LINE TO BE (CHEMICAL) CLEANED.

SPECIFICATION OF (CHEMICAL) CLEANING BY VENDOR.

DETAILS REFER TO K-1301 EQUIPMENT DATASHEET.

(DOCUMENT NO. 5601-11300-ZM-489-101)

COMPRESSOR COOLING.

DELETED.

DELETED.

DELETED.

LOCATIONS ALONG THE PIPE WHERE SUPPORTS ARE BEING USED WILL REQUIRE TRACING > 230°C.

TRACING IS NOT REQUIRED FOR OTHER LOCATIONS.

COLD LP/HP N2 AND HOT N2 FOR COMPRESSOR MECHANICAL SEALING.

DELETED.

DELETED.

DELETED.

INSTRUMENTATION CONNECTIONS AND DEAD LEGS TO BE TRACED.

TRACING > 230°C

DELETED.

ANTI-SURGE CONTROL. ALL THE FUNCTIONS INSIDE ASC BOX ARE IMPLEMENTED IN ANTI-SURGE CONTROL PROVIDED BY COMPRESSOR VENDOR.

ANTI-SURGE CAPACITY IS DESIGNED FOR 130%.

DELETED.

STRAIGHT PIPING OF 3D SHALL BE REQUIRED.

GENERAL NOTES

- FOR LEGENDS AND SYMBOLS SEE DRG'S :
11000-ZM-105-001 11000-ZM-105-005
11000-ZM-105-002 11000-ZM-105-006
11000-ZM-105-003 11000-ZM-105-010
11000-ZM-105-004 11000-ZM-105-011

REFERENCE DRAWING : T-13.412.234

DELETED.

ALL INSTRUMENTS TO BE IW (WINTERIZATION)

AS BUILT

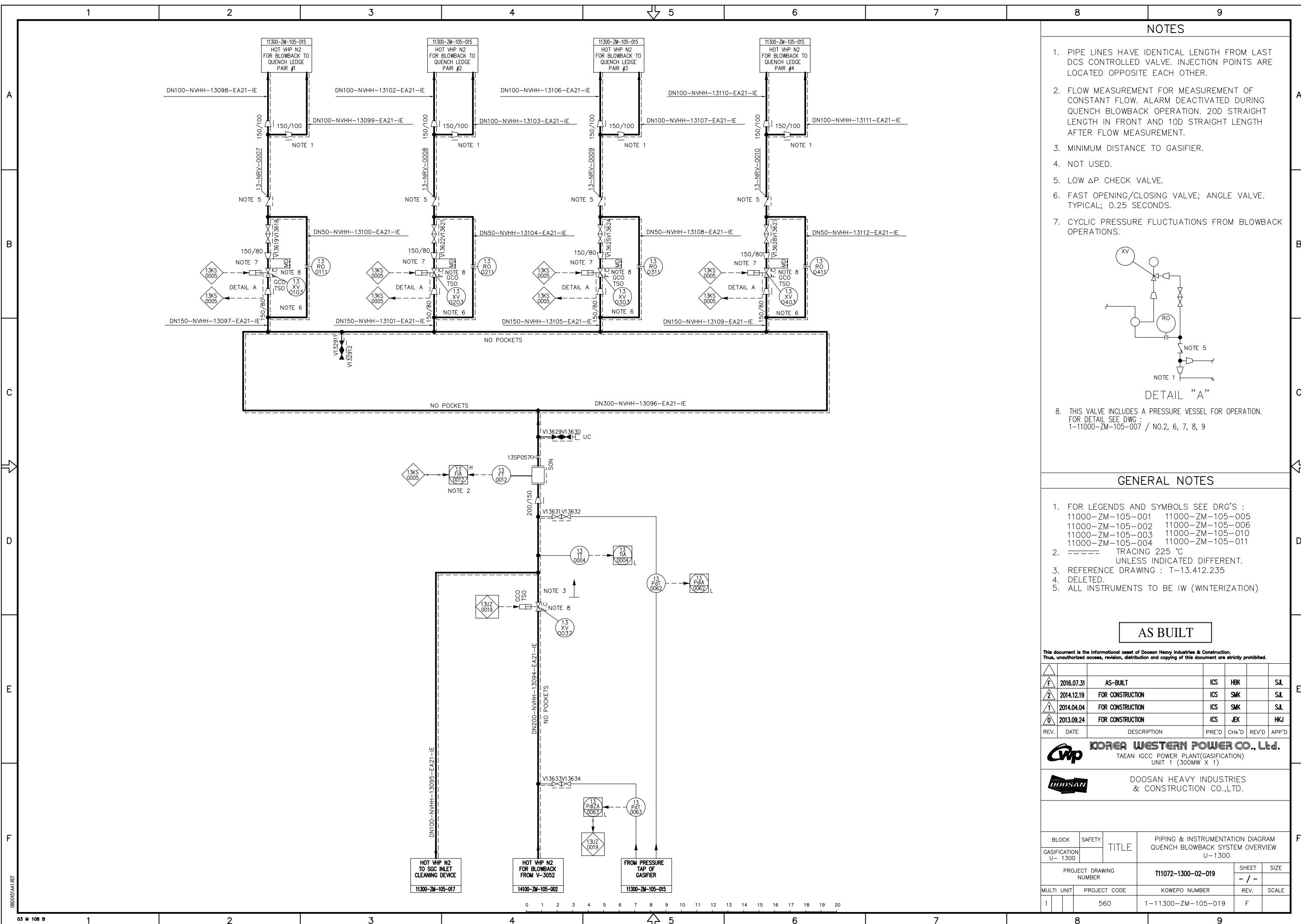
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
	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D	APP'D
	2016.07.31	AS-BUILT	ICS	HBK	SJL	E
	2014.12.19	FOR CONSTRUCTION	ICS	SMK	SJL	
	2014.04.04	FOR CONSTRUCTION	ICS	SMK	SJL	
	2013.09.24	FOR CONSTRUCTION	ICS	JEK		HKJ

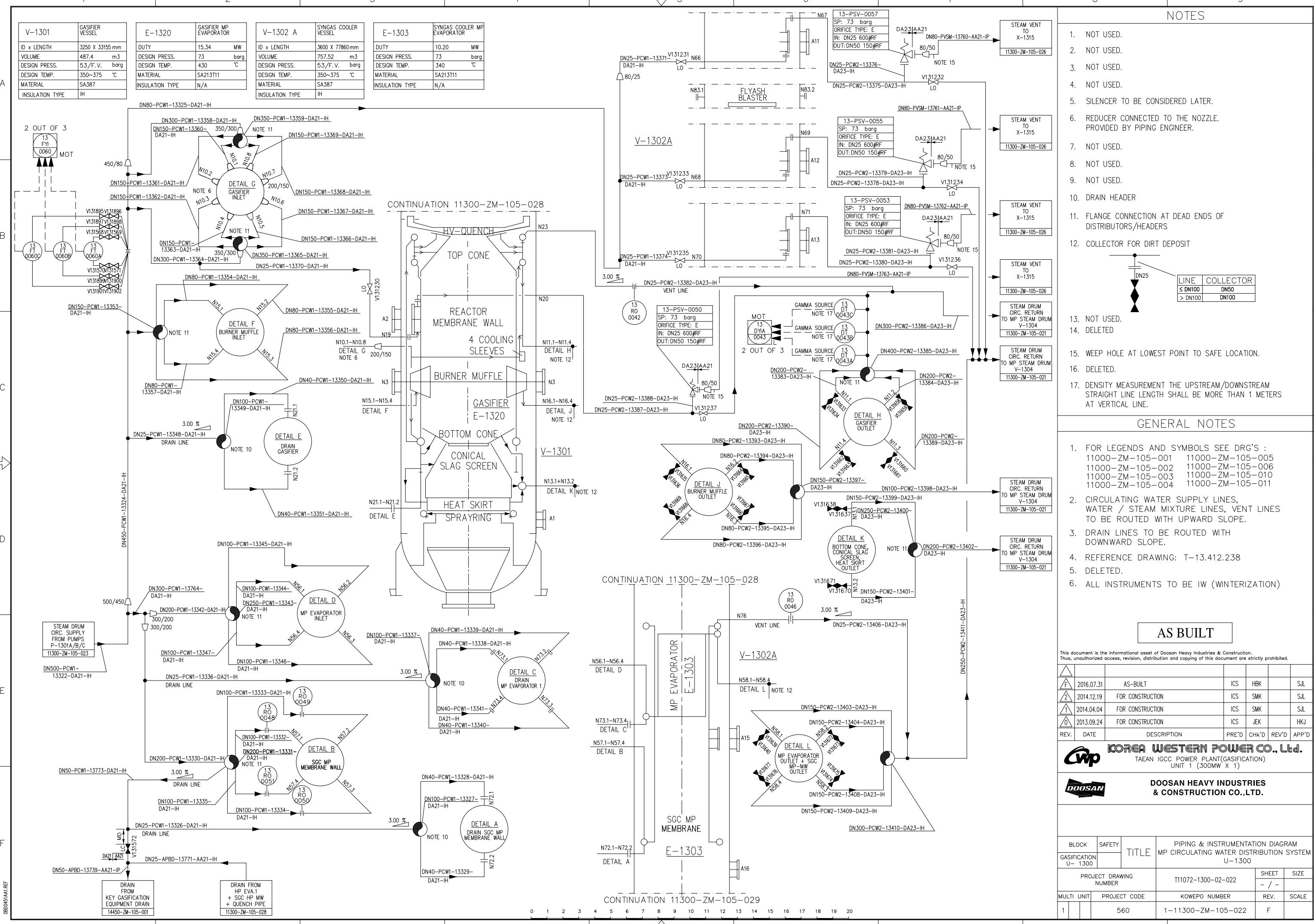
KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (700MW X 1)

**DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO.,LTD.**

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM RECYCLE GAS COMPRESSOR U-1300 U-1300		
IFICATION - 1300			SHEET	SIZE	
PROJECT DRAWING NUMBER		T11072-1300-02-018		- / -	
TI UNIT	PROJECT CODE	KOWEPO NUMBER		REV.	SCALE
	560	1-11300-ZM-105-018		F	

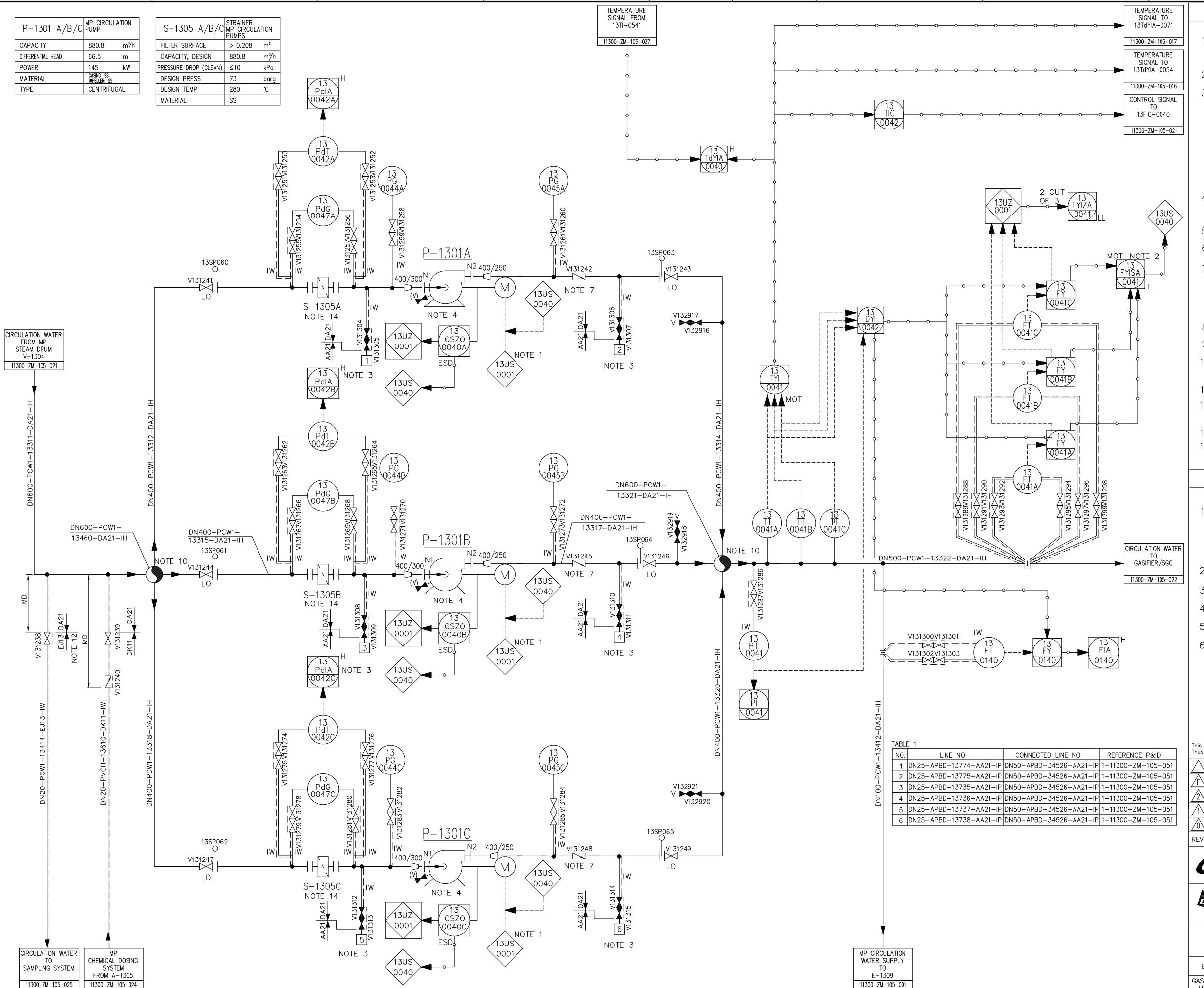






P-1301 A/B/C		MP CIRCULATION PUMP
CAPACITY	880.8	m³/h
DIFFERENTIAL HEAD	66.5	m
POWER	145	kW
MATERIAL	CASING SS IMPELLER SS	
TYPE	CENTRIFUGAL	

S-1305 A/B/C		STRAINER MP CIRCULATION PUMPS
FILTER SURFACE	> 0.208	m²
CAPACITY, DESIGN	880.8	m³/h
PRESSURE DROP (CLEAN)	≤ 10	kPa
DESIGN PRESS	73	bar g
DESIGN TEMP	280	°C
MATERIAL	SS	



NOTES

- ONLY IF 13 UZ0001 IS ACTIVATED VIA V-1304 LICSZA "LOW-LOW" SIGNAL.
- IN CASE OF LOW THROUGHPUT THE 3RD PUMP IS STARTED.
- NO.
- CONNECTION TO INTERMITTENT BLOWDOWN SYSTEM NUMBER OF DEWATERING VALVES, LOCATION AND OPERATION BY CLIENT INSTALLATION AT BOTTOM POINT. FOR LINE NUMBERS SEE TABLE 1. FOR DETAIL DRAWING OF GASIFICATION EQUIPMENT DRAIN SEE DWG : 11300-ZM-105-051.
- API SEAL PLAN 23/61. FOR DETAIL ARRANGEMENT SEE DWG : 11300-ZM-105-102.
- DELETED.
- DELETED.
- BORE OF 10mm IN CHECK VALVE. SIZE OF BORE TO BE CHECKED LATER. ENGINEERING PHASE BASED ON WARM-UP FLOW REQUESTED BY PUMP VENDOR.
- DELETED.
- DELETED.
- INSPECTION NOZZLE (DN 200) WITH BLIND FLANGE AT DEAD ENDS OF DISTRIBUTOR/HEADERS.
- DELETED.
- SAMPLING LINE IN STAINLESS STEEL, MD TO SAMPLING SYSTEM.
- DELETED.
- TYPE TO BE RECOMMENDED BY PUMP VENDOR.

GENERAL NOTES

- FOR LEGENDS AND SYMBOLS SEE DRG'S :
11000-ZM-105-001 11000-ZM-105-005
11000-ZM-105-002 11000-ZM-105-006
11000-ZM-105-003 11000-ZM-105-010
11000-ZM-105-004 11000-ZM-105-011
- DRAINS AT ALL BOTTOM POINTS.
- VENTS AT ALL TOP POINTS.
- REFERENCE DRAWING: T-13.412.240
- DELETED.
- ALL INSTRUMENTS TO BE IW (WINTERIZATION)

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NO.	LINE NO.	CONNECTED LINE NO.	REFERENCE P&ID
1	DN25-APBD-13774-AA21-IP	DN50-APBD-34526-AA21-IP	1-11300-ZM-105-051
2	DN25-APBD-13775-AA21-IP	DN50-APBD-34526-AA21-IP	1-11300-ZM-105-051
3	DN25-APBD-13735-AA21-IP	DN50-APBD-34526-AA21-IP	1-11300-ZM-105-051
4	DN25-APBD-13736-AA21-IP	DN50-APBD-34526-AA21-IP	1-11300-ZM-105-051
5	DN25-APBD-13737-AA21-IP	DN50-APBD-34526-AA21-IP	1-11300-ZM-105-051
6	DN25-APBD-13738-AA21-IP	DN50-APBD-34526-AA21-IP	1-11300-ZM-105-051

REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D	APP'D
		AS-BUILT				
		FOR CONSTRUCTION				
		FOR CONSTRUCTION				
		FOR CONSTRUCTION				

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO., LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM			
			MP BOILER WATER CIRCULATING PUMPS U-1300			
PROJECT DRAWING NUMBER			T11072-1300-02-023			
MULTI UNIT	PROJECT CODE		KOWEPO NUMBER			
1	560		1-11300-ZM-105-023			
REV.	F		SCALE			

NOTES

A-1305 MP/HP BFW CHEMICAL DOSING PACKAGE

NOTE

T-1302	MP / HP BWF CHEM DOSING TANK
1,090 X 1,390	1,090 X 1,390
VOLUME	1.0
DESIGN PRESS.	ATM
DESIGN TEMP.	AMB
MATERIAL	SS304L
INSULATION TYPE	IW

80mm

M-1301	MP/HP BFW CH DOSING PACH MIXER
POWER	0.4
SPEED	119
MATERIAL	SS316

kw

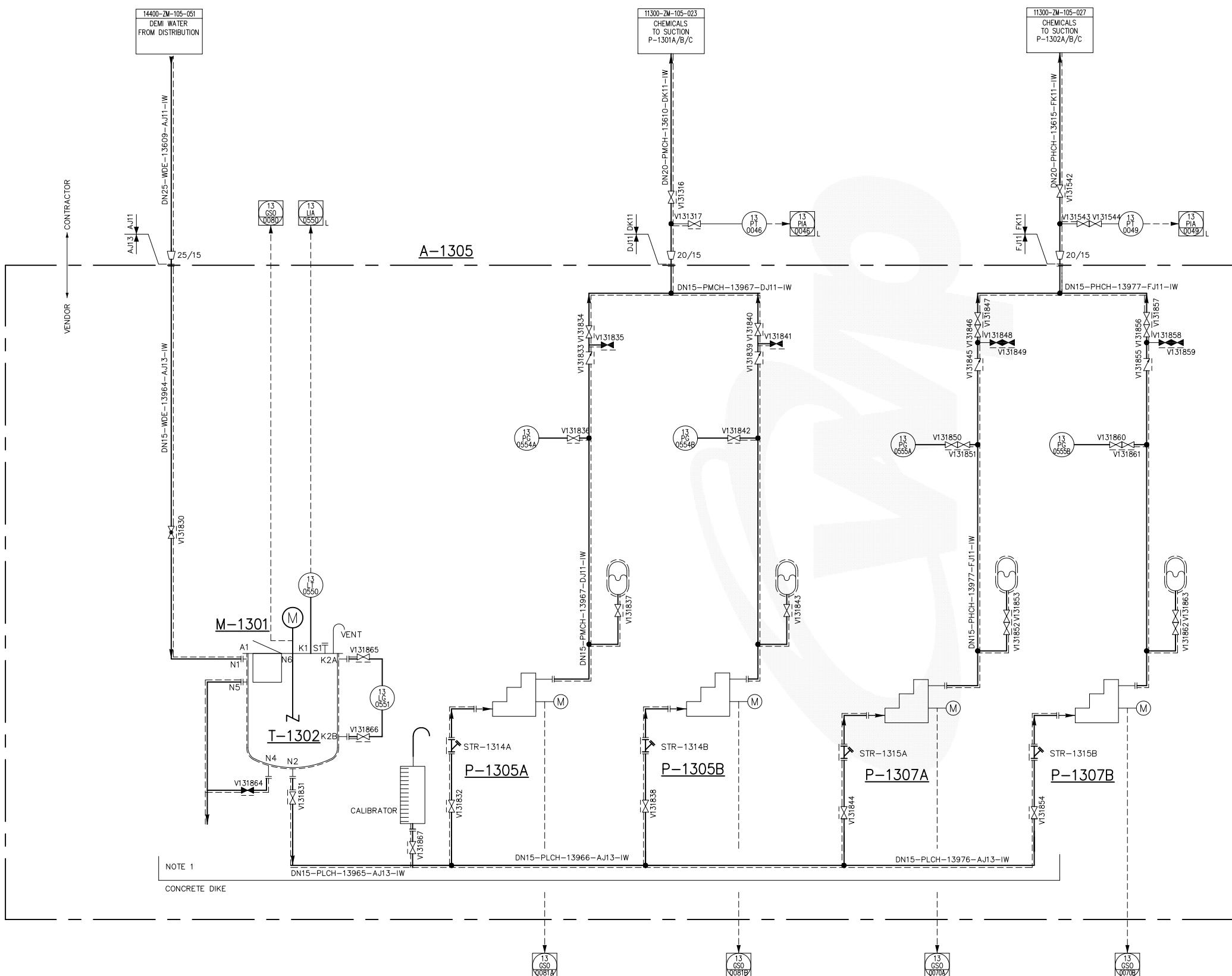
P-1305A/B	MP BFW DOSING
CAPACITY	5
DIFF. HEAD	580
POWER	0.43

1

P-1307A/B	HP BFW CHEM DOSING PUMP
CAPACITY	5 l, min.
DIFF. HEAD	1480 m
POWER	0.43 kW

1/h

- "LEAKPAN" DO NOT DRAIN CHEMICALS TO SEWER SYSTEM.
 - MP / HP BFW CHEMICAL DOSING SYSTEM INJECTION PACKAGE. PREFERABLE TO BE INSTALLED AT GROUND LEVEL.
 - ALL LINES AND EQUIPMENT INSIDE THE PACKAGE NEED TO BE WINTERISED.

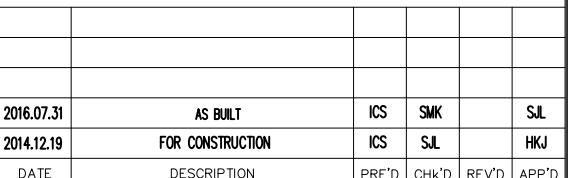


GENERAL NOTES

- FOR LEGENDS AND SYMBOLS SEE DRG'S :
 - 11000-ZM-105-001 11000-ZM-105-005
 - 11000-ZM-105-002 11000-ZM-105-006
 - 11000-ZM-105-003 11000-ZM-105-010
 - 11000-ZM-105-004 11000-ZM-105-011
 - DOUBLE BLOCK VALVES DUE TO HIGH PRESSURE
 - REFERENCE DRAWING: T-13.412.242/T-13.412.248
 - ALL INSTRUMENTS TO BE IW (WINTERIZATION)

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KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)

**DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO.,LTD.**

 WHASUNG SYSTECH CO.,LTD.

LOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM MP/HP CHEMICAL DOSING PACKAGE U-1300		
FICATION 1300			- / -		
PROJECT DRAWING NUMBER		T11072-1300-02-024		SHEET	SIZE
				- / -	
UNIT	PROJECT CODE	KOWEPO NUMBER		REV.	SCALE
	560	1-11300-ZM-105-024		F	

NOTES

1. - - - INDICATES VENDOR PACKAGE ITEM
2. THE DISCHARGE FROM ALL RELIEF VALVES AND ANALYZERS, ETC, SHALL BE CONNECTED WITH A DRAIN HEADER.
3. WHEN THE GRAB SAMPLE IS REQUIRED, THE SAMPLE SHALL BE DRAIN INTO SINK.
4. PANEL DESIGNATIONS
SR - SAMPLE CONDITIONING RACK
AP - ANALYZER PANEL
CP - CONTROL PANEL
5. ANALYZER TYPE.
CC: CATION CONDUCTIVITY
pH: pH METER
SiO2: SILICA ANALYZER
6. SS304 WILL BE APPLIED FOR HEADER.
7. SYMBOL & LEGEND

[Symbol]	BULKHEAD
[Symbol]	HIGH PRESSURE REDUCING VALVE
[Symbol]	LOW PRESSURE REDUCING VALVE
[Symbol]	GLOBE VALVE
[Symbol]	BALL VALVE, PLUG VALVE
[Symbol]	SAMPLE COOLER
[Symbol]	PNEUMATIC VALVE
[Symbol]	3-WAY SOLENOIDE VALVE
[Symbol]	BACK PRESSURE REGULATING VALVE
[Symbol]	AIR SUPPLY REGULATOR
[Symbol]	FILTER
[Symbol]	RESIN COLUMN
[Symbol]	PRESSURE RELIEF VALVE
[Symbol]	SIGHT GLASS

GENERAL NOTES

AS BUILT

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REV.	DATE	DESCRIPTION	PRED	CHK'D	REV'D	APP'D
	2016.07.31	AS-BUILT	ICS	HBK		SJL
	2013.09.24	FOR CONSTRUCTION	ICS	SMK		SJL
	2013.09.24	FOR CONSTRUCTION	ICS	SMK		SJL
	2013.09.24	FOR CONSTRUCTION	ICS	JEK		HKJ

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

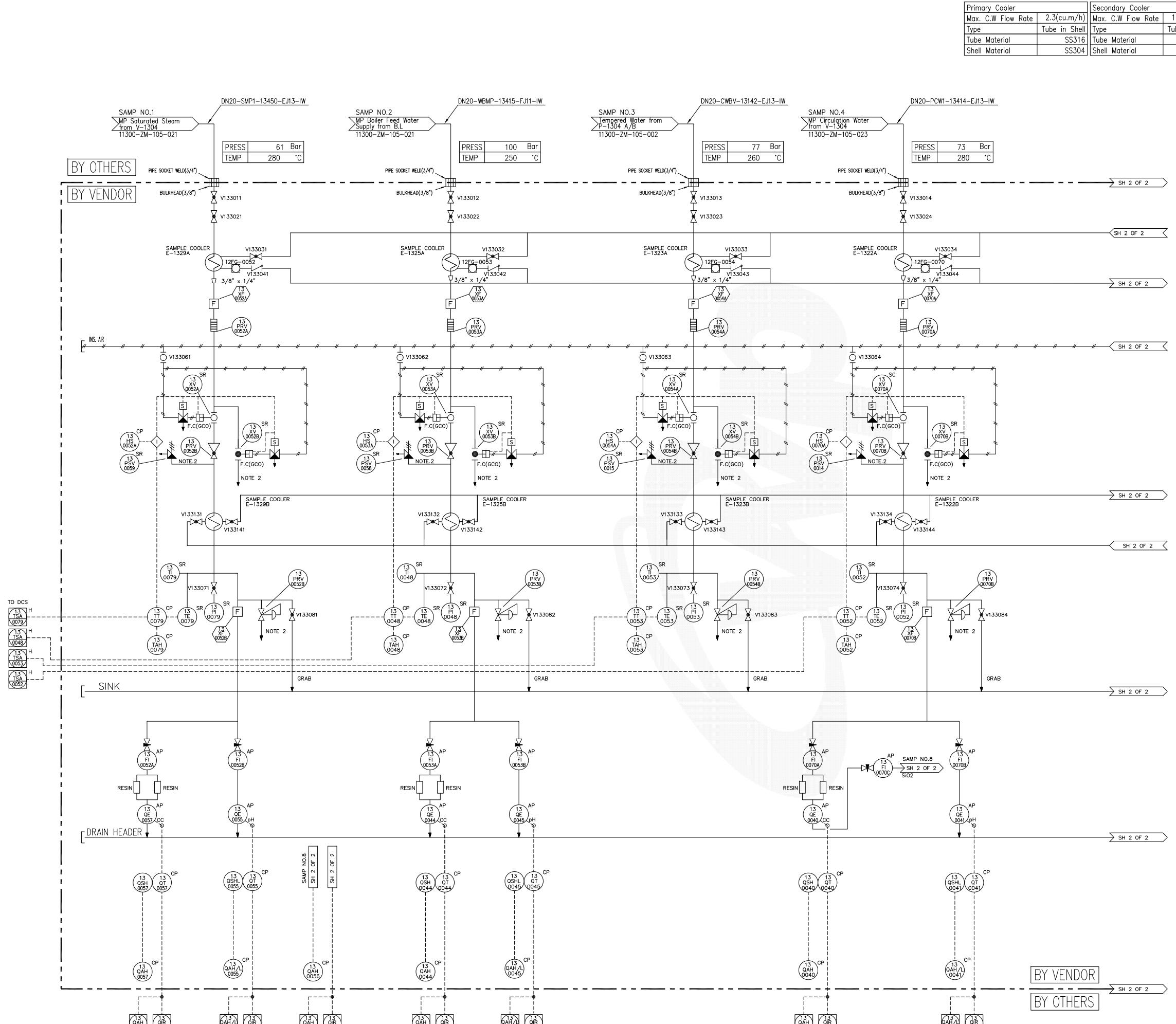
DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO., LTD.

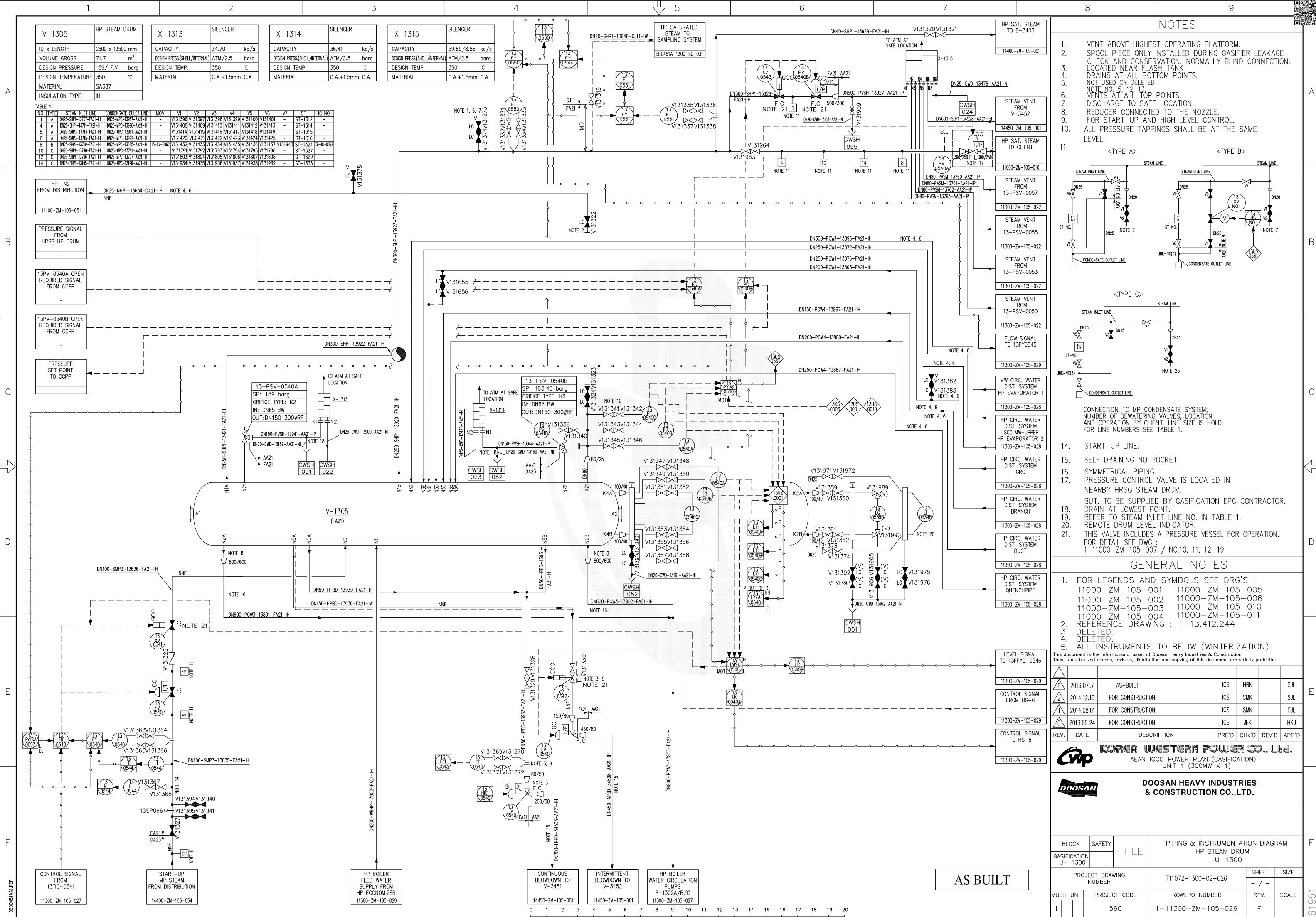
WOORI SYSTEM CO., LTD.

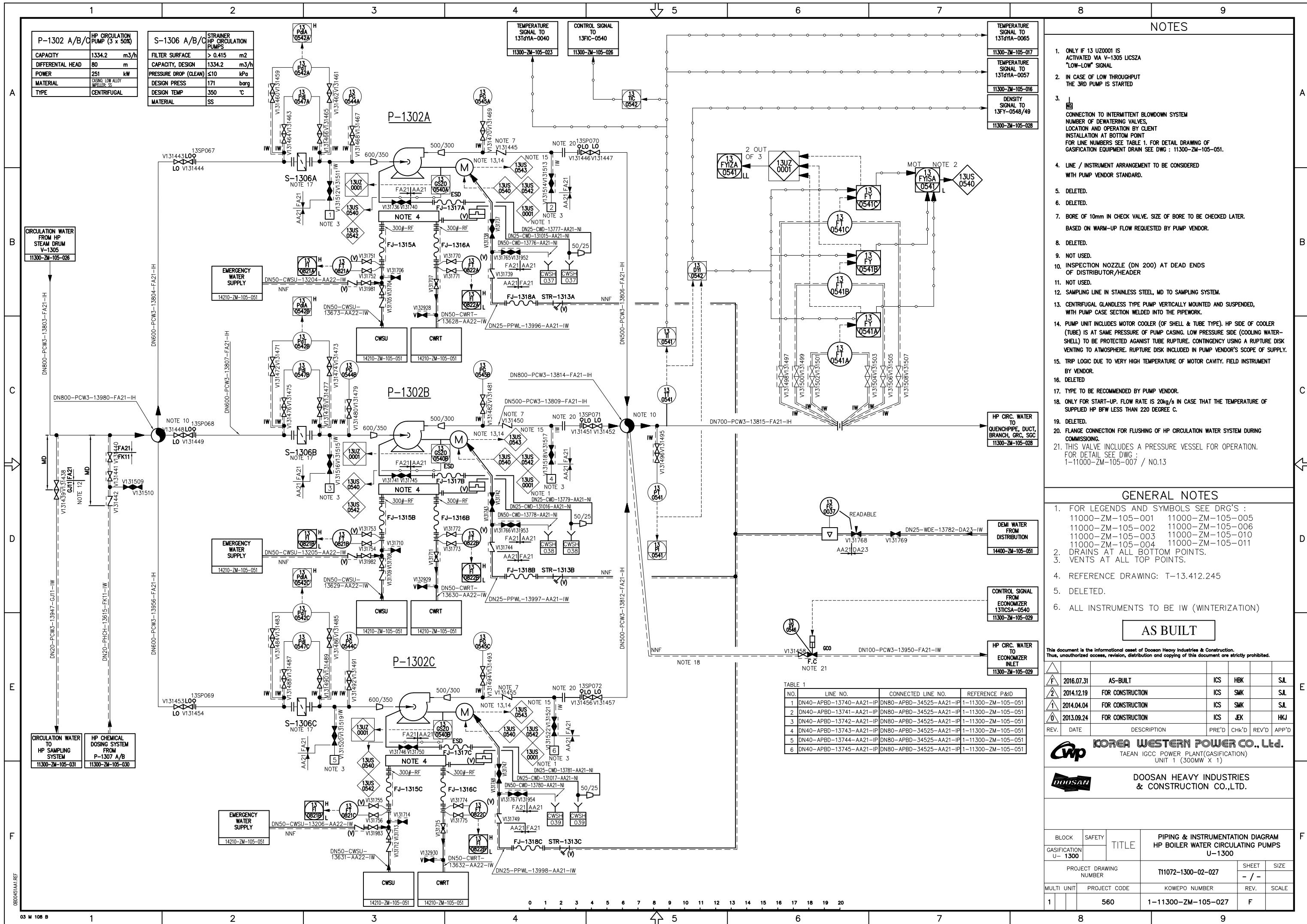
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GASIFICATION U- 1300			MP WATER/STEAM SAMPLING SYSTEMS U-1300		

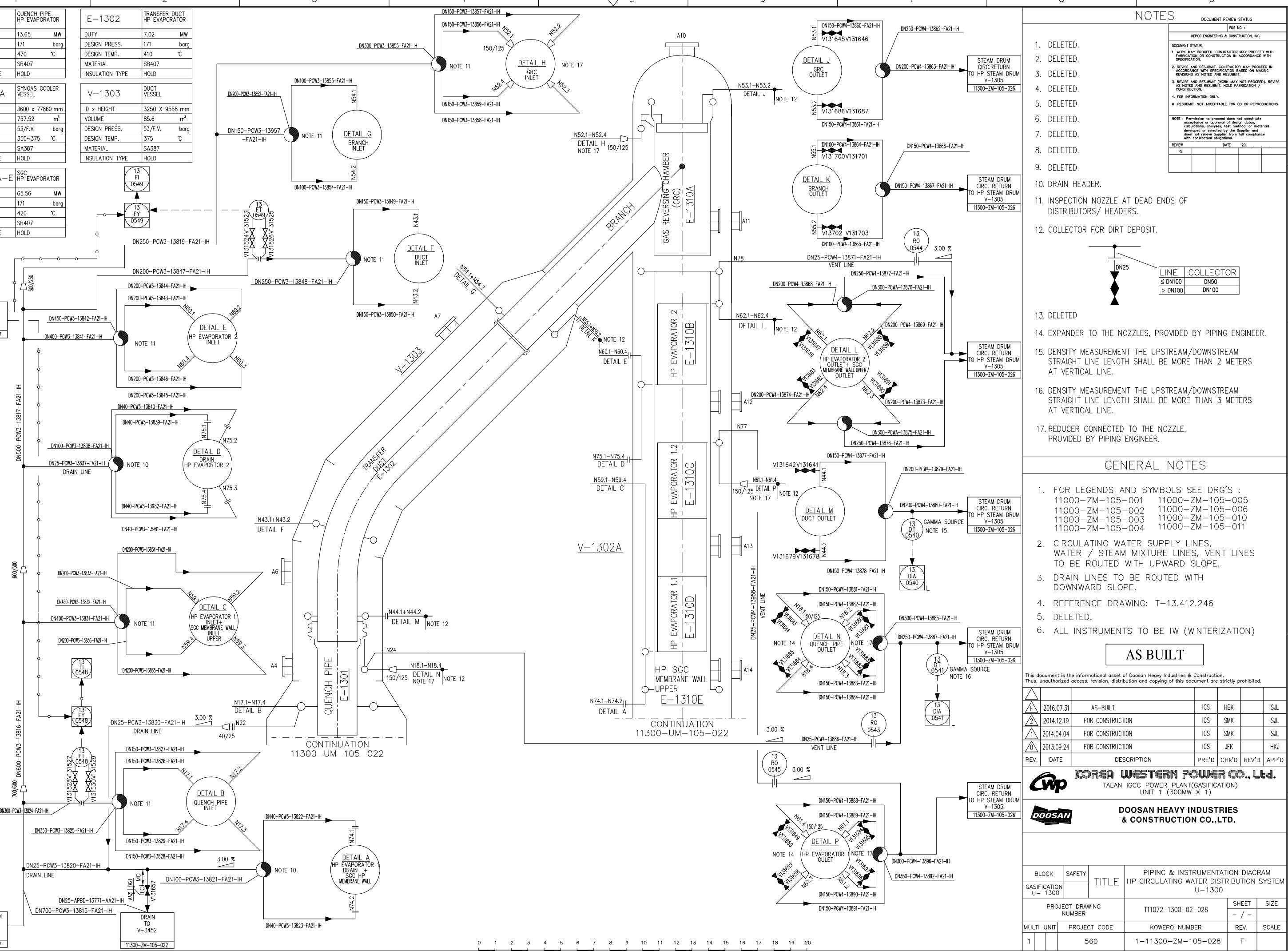
PROJECT DRAWING NUMBER		T11072-1300-02-025	
- / -			

MULTI UNIT	PROJECT CODE	KOWEPO NUMBER	REV.	SCALE
1	560	1-11300-ZM-105-025	F	









NOTES

FILE NO. :
KEPCO ENGINEERING & CONSTRUCTION, INC

UMENT STATUS.
WORK MAY PROCEED. CONTRACTOR MAY PROCEED WITH
STRUCTURAL CONSTRUCTION IN ACCORDANCE WITH
SPECIFICATION.

REVISE AND RESUBMIT. CONTRACTOR MAY PROCEED IN
ACCORDANCE WITH SPECIFICATION BASED ON MARKED
EWINGS AS NOTED AND RESUBMIT.

REVISE AND RESUBMIT (WORK MAY NOT PROCEED). REVISE
AND RESUBMIT. HOLD FABRICATION /
CONSTRUCTION.

FOR INFORMATION ONLY.

RESUBMIT. NOT ACCEPTABLE FOR CD OR REPRODUCTIONS

E : Permission to proceed does not constitute
acceptance of the work. The work must be in full
compliance with contractual obligations.

EW	DATE	20	.	.
RE				

1. DELETED.

2. DELETED.

3. DELETED.

4. DELETED.

5. DELETED.

6. DELETED.

7. DELETED.

8. DELETED.

9. DELETED.

10. DRAIN HEADER.

11. INSPECTION NOZZLE AT DEAD ENDS OF DISTRIBUTORS/ HEADERS.

12. COLLECTOR FOR DIRT DEPOSIT.

LINE	COLLECTOR
\leq DN100	DN50
> DN100	DN100

13. DELETED

14. EXPANDER TO THE NOZZLES, PROVIDED BY PIPING ENGINEER.

15. DENSITY MEASUREMENT THE UPSTREAM/DOWNSTREAM STRAIGHT LINE LENGTH SHALL BE MORE THAN 2 METERS AT VERTICAL LINE.

16. DENSITY MEASUREMENT THE UPSTREAM/DOWNSTREAM STRAIGHT LINE LENGTH SHALL BE MORE THAN 3 METERS AT VERTICAL LINE.

17. REDUCER CONNECTED TO THE NOZZLE,
PROVIDED BY PIPING ENGINEER.

DOCUMENT STATUS.
1. WORK MAY PROCEED. CONTRACTOR MAY PROCEED WITH FABRICATION OR CONSTRUCTION IN ACCORDANCE WITH SPECIFICATION.
2. REVISE AND RESUBMIT. CONTRACTOR MAY PROCEED IN ACCORDANCE WITH SPECIFICATION BASED ON MAKING REVISIONS AS NOTED AND RESUBMIT.
3. REVISE AND RESUBMIT (WORK MAY NOT PROCEED). REASSEMBLY / RECONSTRUCTION IS REQUIRED.
4. FOR INFORMATION ONLY.
M. RESUBMIT. NOT ACCEPTABLE FOR CD OR REPRODUCTION.

NOTE : Permission to proceed does not constitute compliance or acceptance. design documents, calculations, analyses, test results, drawings or materials developed or selected by the Supplier and does not relieve Supplier from full compliance with contract terms and conditions.

REVIEW	DATE	20 . . .
RE		

GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :
11000-ZM-105-001 11000-ZM-105-005
11000-ZM-105-002 11000-ZM-105-006
11000-ZM-105-003 11000-ZM-105-010
11000-ZM-105-004 11000-ZM-105-011
 2. CIRCULATING WATER SUPPLY LINES,
WATER / STEAM MIXTURE LINES, VENT LINES
TO BE ROUTED WITH UPWARD SLOPE.
 3. DRAIN LINES TO BE ROUTED WITH
DOWNWARD SLOPE.
 4. REFERENCE DRAWING: T-13.412.246
 5. DELETED.
 6. ALL INSTRUMENTS TO BE IW (WINTERIZATION)

AS BUILT

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M&S, unauthorized access, revision, distribution and copying of this document are strictly prohibited.						
DATE	DESCRIPTION	PPN	PPN	PPN	PPN	PPN
2016.07.31	AS-BUILT	ICS	HBK		SJL	
2014.12.19	FOR CONSTRUCTION	ICS	SMK		SJL	
2014.04.04	FOR CONSTRUCTION	ICS	SMK		SJL	
2013.09.24	FOR CONSTRUCTION	ICS	JEK		HJK	

KOREA WESTERN POWER CO., Ltd
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1, (700MW X 1)

DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO., LTD.

NOTES

1. DRAIN HEADER
2. INSPECTION NOZZLE CONNECTION AT DEAD ENDS OF DISTRIBUTORS/HEADERS
3. SAMPLING LINE IN STAINLESS STEEL
4. DELETED.
5. DELETED.
6. DELETED.
7. CONTROL VALVE 13TV-0545 KEEP TEMPERATURE 13TIC-0545 CONSTANT AT 220°C BY VERIFYING BFW FLOW RATE THROUGH ECONOMIZER BY-PASS LINE DURING START-UP PHASE.
8. REDUCER CONNECTED TO THE NOZZLE. PROVIDED BY PIPING ENGINEER.
9. ONLY FOR START-UP. FLOW RATE IS 20kg/s IN CASE THAT THE TEMPERATURE OF SUPPLIED HP BFW LESS THAN 220 DEGREE C.
10. CONNECTION AND VALVE LOCATION EL.+40000
11. CONNECTION LOCATION EL.+41610
12. THIS VALVE INCLUDES A PRESSURE VESSEL FOR OPERATION. FOR DETAIL SEE DWG : 1-1100-ZM-105-007 / NO.14

GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S : 11000-ZM-105-001 11000-ZM-105-005
11000-ZM-105-002 11000-ZM-105-006
11000-ZM-105-003 11000-ZM-105-010
11000-ZM-105-004 11000-ZM-105-011
2. VENT ABOVE HIGHEST OPERATING PLATFORM
3. DRAINS AT ALL BOTTOM POINTS
4. REFERENCE DRAWING: T-13.412.247
5. DELETED.
6. ALL INSTRUMENTS TO BE IW (WINTERIZATION)

AS BUILT


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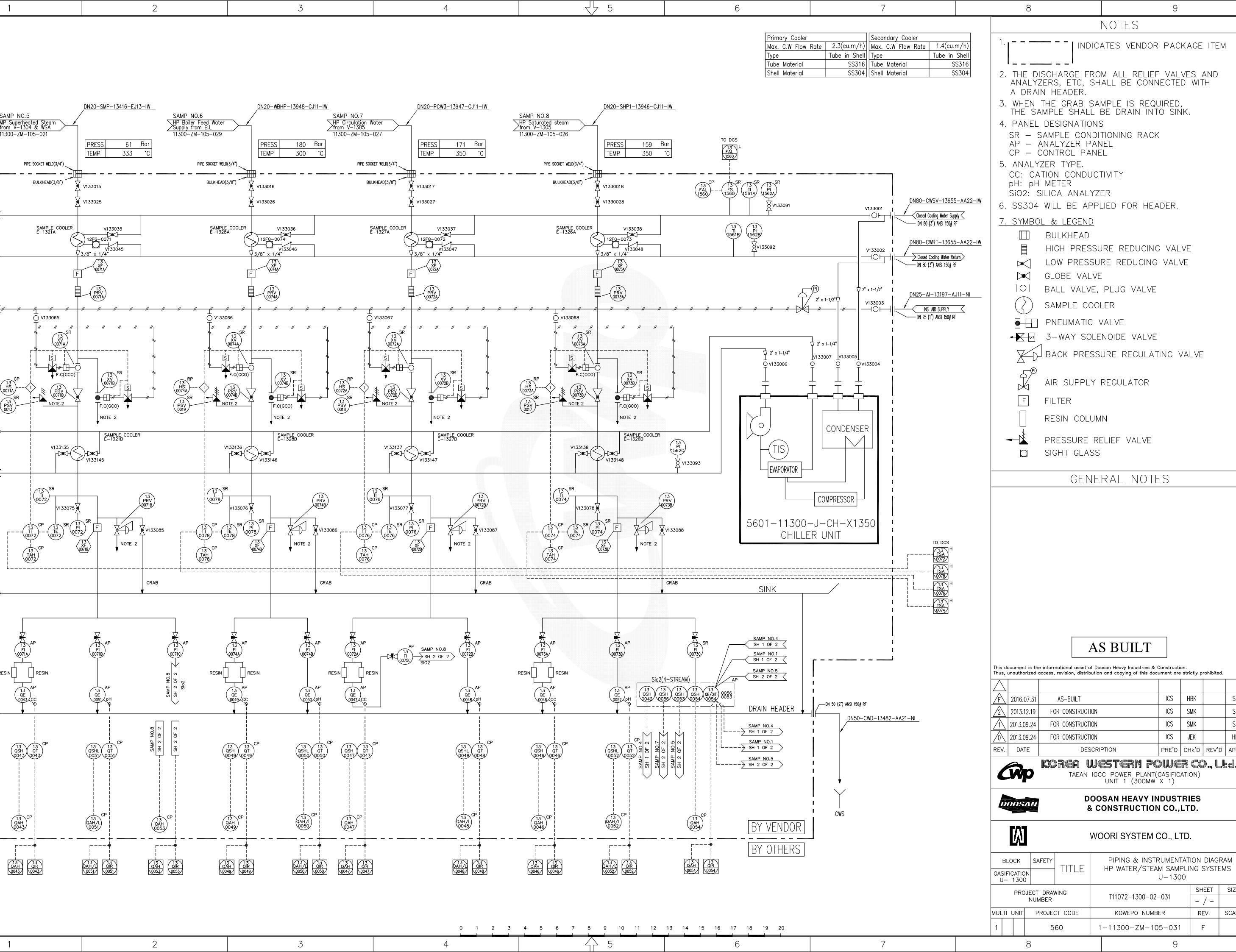
REV.	DATE	DESCRIPTION	PRED	CHK'D	REV'D	APP'D
	2019.07.23	AS-BUILT	SHL	SGK	DJK	
	2017.08.16	AS-BUILT	ICS	HBK	SJL	
	2014.12.19	FOR CONSTRUCTION	ICS	SMK	SJL	
	2014.04.04	FOR CONSTRUCTION	ICS	SMK	SJL	
	2013.09.24	FOR CONSTRUCTION	ICS	JEK	HJK	

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO., LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM		
			GASIFICATION U- 1300		
PROJECT DRAWING NUMBER			T11072-1300-02-029		
MULTI UNIT	PROJECT CODE	KOWEO NUMBER	REV. SCALE		
1	560	1-11300-ZM-105-029	F		





A

A

B

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C

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GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :
11000-ZM-105-001 11000-ZM-105-005
11000-ZM-105-002 11000-ZM-105-006
11000-ZM-105-003 11000-ZM-105-010
11000-ZM-105-004 11000-ZM-105-011
 2. ALL INSTRUMENTS TO BE IW (WINTERIZATION)

2. ALL INSTRUMENTS TO BE IW (WINTERIZATION)

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	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D	APP'D
	2016.07.31	AS-BUILT	ICS	HBK		SJL
	2014.12.19	FOR CONSTRUCTION	ICS	SMK		SJL
	2014.04.04	FOR CONSTRUCTION	ICS	SMK		SJL
	2013.09.24	FOR CONSTRUCTION	ICS	JEK		HKJ

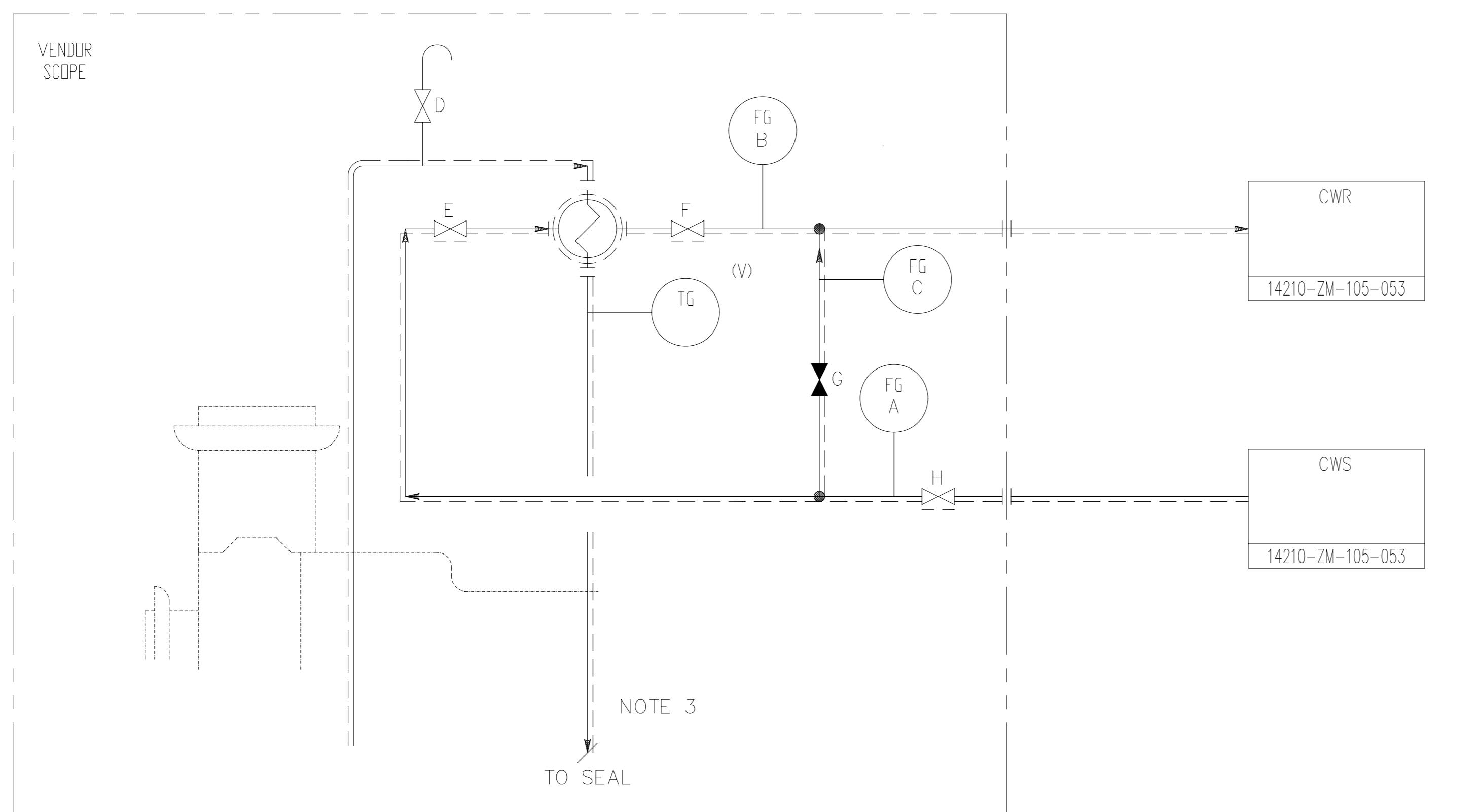
KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

**DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO.,LTD.**

BLOCK IFICATION - 1300	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM KEY GASIFICATION EQUIPMENT DRAIN U-1300		
PROJECT DRAWING NUMBER			T11072-1300-02-051	SHEET - / -	SIZE
UNIT	PROJECT CODE	KOWEPO NUMBER	REV.	SCALE	
	560	1-11300-ZM-105-051	F		

NOTES

- ARRANGEMENT DEPENDS ON PUMP DESIGN OF SELECTED VENDOR. TO BE SPECIFIED AFTER PUMP SELECTION.
- COOLING WATER ARRANGEMENT AS PER API PLAN M
- API PLAN 11, 23 FOR PRIMARY SEAL PLAN.
- API PLAN 61 FOR SECONDARY SEAL PLAN.



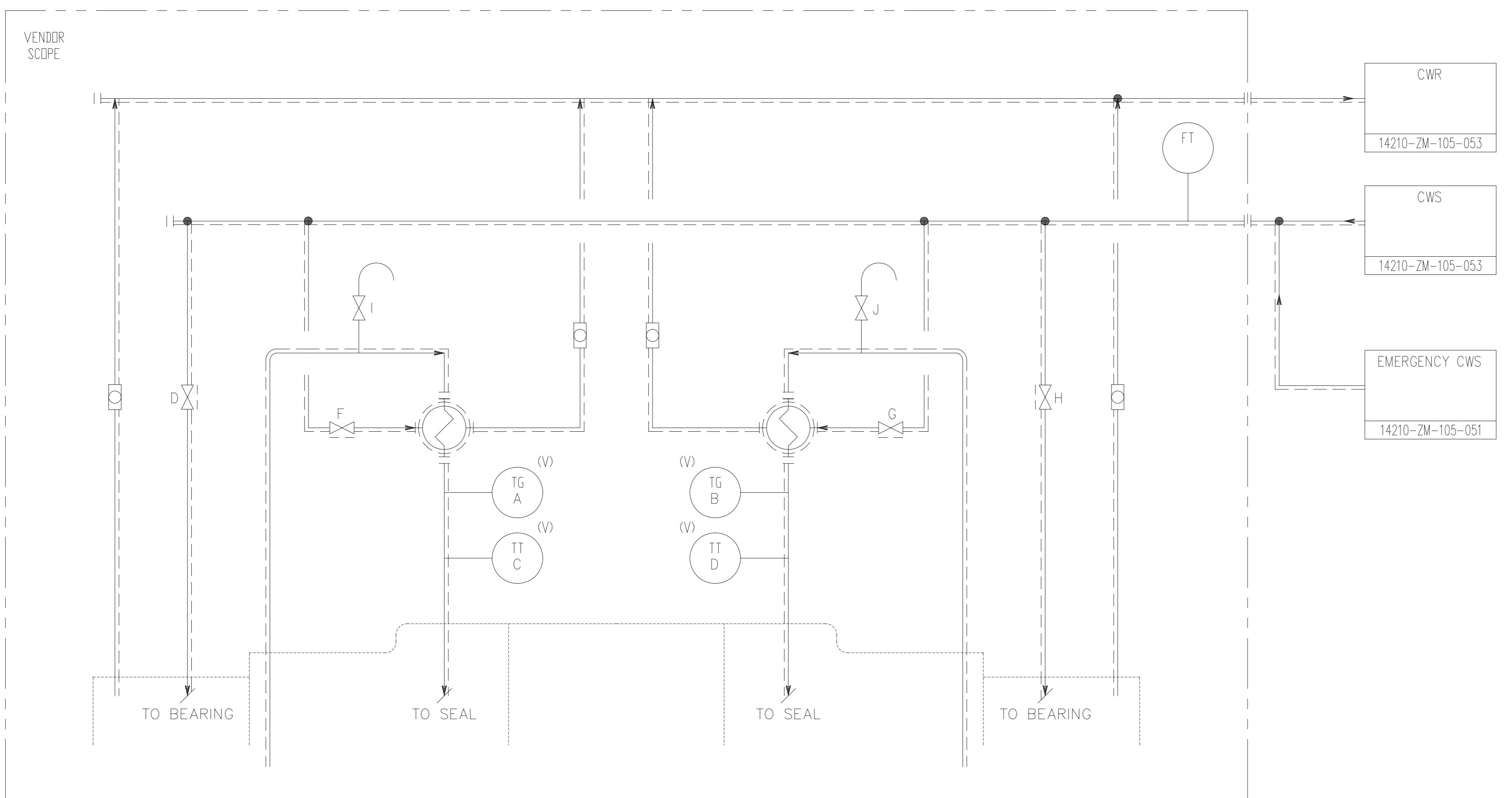
	PUMP NO.	P & ID NO.	TG TAG NO.	FG TAG NO.		LINE NO. (NOTE 2)		VALVE DESIGNATION					REMARKS	
				A	B	C	CWS	CWR	D	E	F	G	H	
1	P-1304A	11300-ZM-105-002	13-TG-0801A	13-FG-0801A	13-FG-0802A	13-FG-0803A	DN20-CWSU-13593-AA22-IW	DN20-CWRT-13594-AA22-IW	V132803	V132804	V132805	V132806	V132807	
2	P-1304B	11300-ZM-105-002	13-TG-0801A	13-FG-0801B	13-FG-0802B	13-FG-0803B	DN20-CWSU-13595-AA22-IW	DN20-CWRT-13596-AA22-IW	V132808	V132809	V132810	V132811	V132812	

GENERAL NOTES

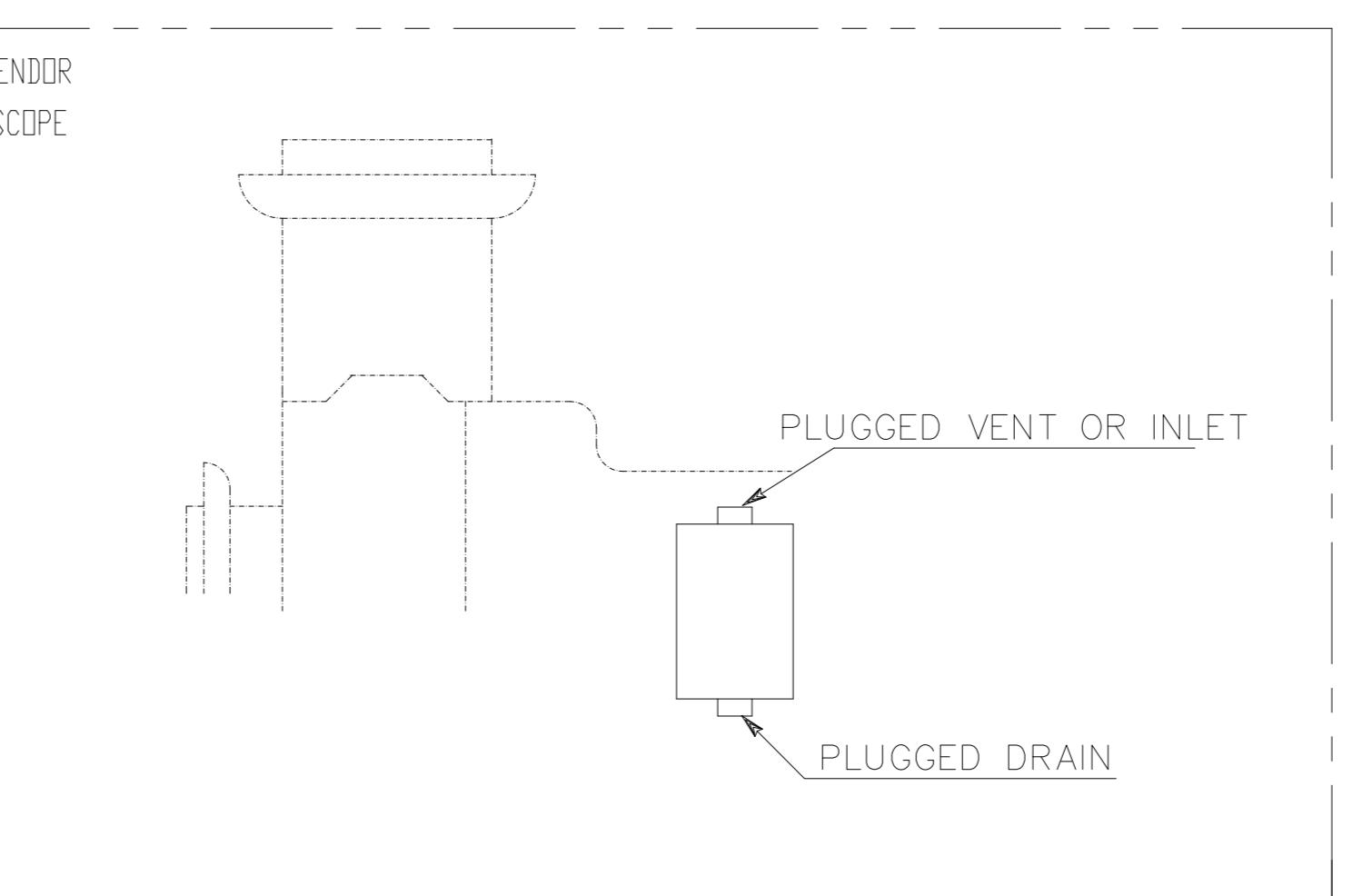
- FOR LEGENDS AND SYMBOLS SEE DRG'S :

11000-ZM-105-001	11000-ZM-105-005
11000-ZM-105-002	11000-ZM-105-006
11000-ZM-105-003	11000-ZM-105-010
11000-ZM-105-004	11000-ZM-105-011
- DELETED.
- ALL INSTRUMENTS TO BE IW (WINTERIZATION)

API PLAN "23"



API PLAN "61"



PLAN "23" WITH API COOLING PLAN K

RECYCLATION FROM SEAL WITH
PUMPING RING THROUGH HEAT EXCHANGER & BACK TO SEAL

PUMP NO.	P & ID NO.	REMARKS
1	P-1301A/B/C	11300-ZM-105-023
2	P-1304A/B	11300-ZM-105-002
3	P-1309A/B	11300-ZM-105-032

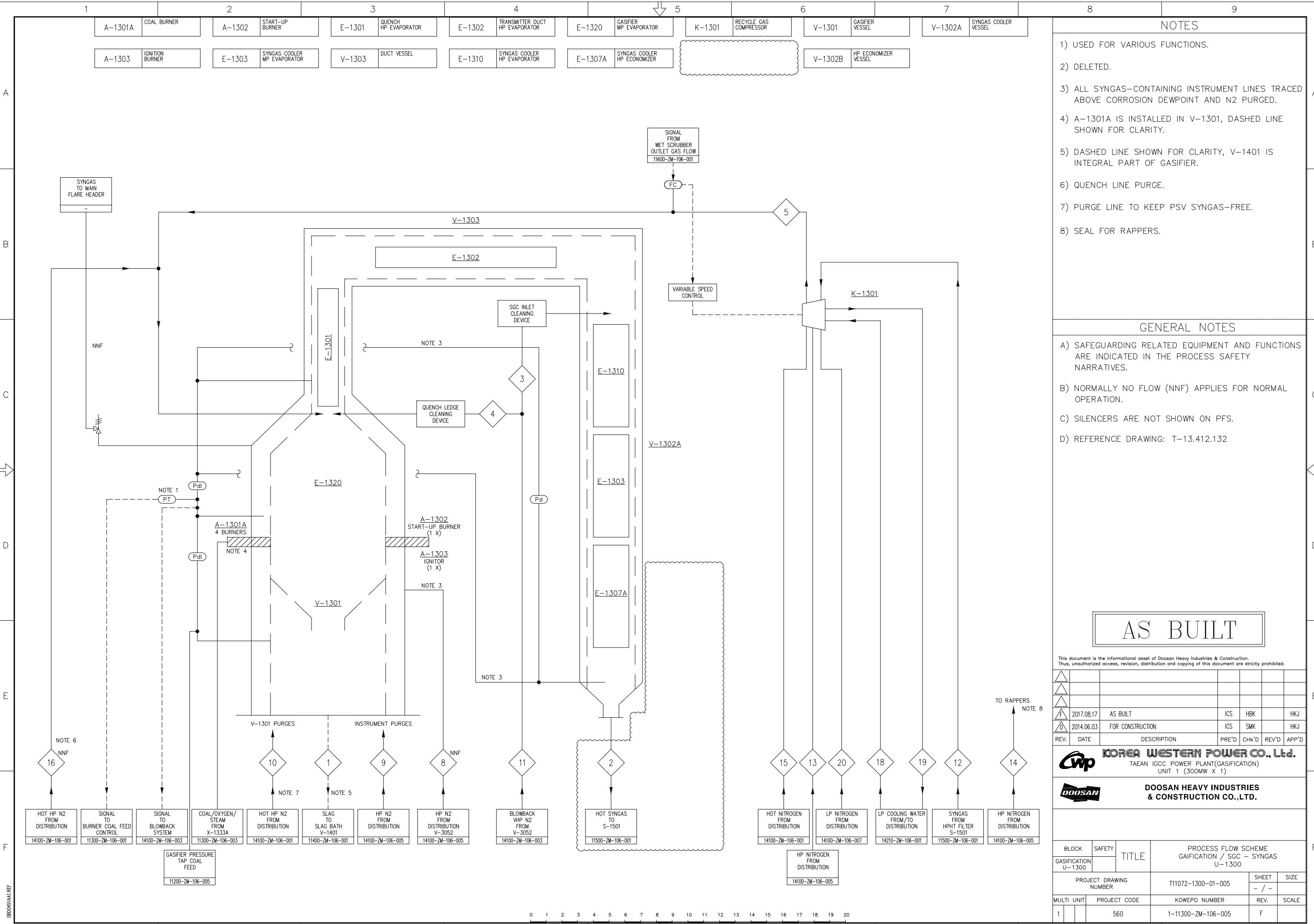
	PUMP NO.	P & ID NO.	FT TAG NO.	TG TAG NO.		TT TAG NO.		LINE NO. (NOTE 2)		VALVE DESIGNATION					REMARKS		
				A	B	C	D	CWS	CWR	EMERGENCY CWS	E	F	G	H	I		
1	P-1301A	11300-ZM-105-023	13-FT-0801A	13-TG-0801A	13-TG-0802A	13-TI-0801A	13-TT-0802A	DN25-CWSU-13617-AA22-IW	DN25-CWRT-13618-AA22-IW	DN25-CWSU-13201-AA22-IW	V132813	V132814	V132815	V132816	V133024	V133025	DCS MONITORING REQUIRED
2	P-1301B	11300-ZM-105-023	13-FT-0801B	13-TG-0801B	13-TG-0802B	13-TI-0801B	13-TT-0802B	DN25-CWSU-13619-AA22-IW	DN25-CWRT-13620-AA22-IW	DN25-CWSU-13202-AA22-IW	V132817	V132818	V132819	V132820	V133026	V133027	DCS MONITORING REQUIRED
3	P-1301C	11300-ZM-105-023	13-FT-0801C	13-TG-0801C	13-TG-0802C	13-TI-0801C	13-TT-0802C	DN25-CWSU-13621-AA22-IW	DN25-CWRT-13622-AA22-IW	DN25-CWSU-13203-AA22-IW	V132821	V132822	V132823	V132824	V133028	V133029	DCS MONITORING REQUIRED

2016.07.31	AS-BUILT	ICS	HBK	SJL
2014.12.19	FOR CONSTRUCTION	ICS	SMK	SJL
2014.04.04	FOR CONSTRUCTION	ICS	SMK	SJL
2013.09.24	FOR CONSTRUCTION	ICS	JEK	HKJ
REV. DATE	DESCRIPTION	PRE'D	CHK'D	REV'D APP'D

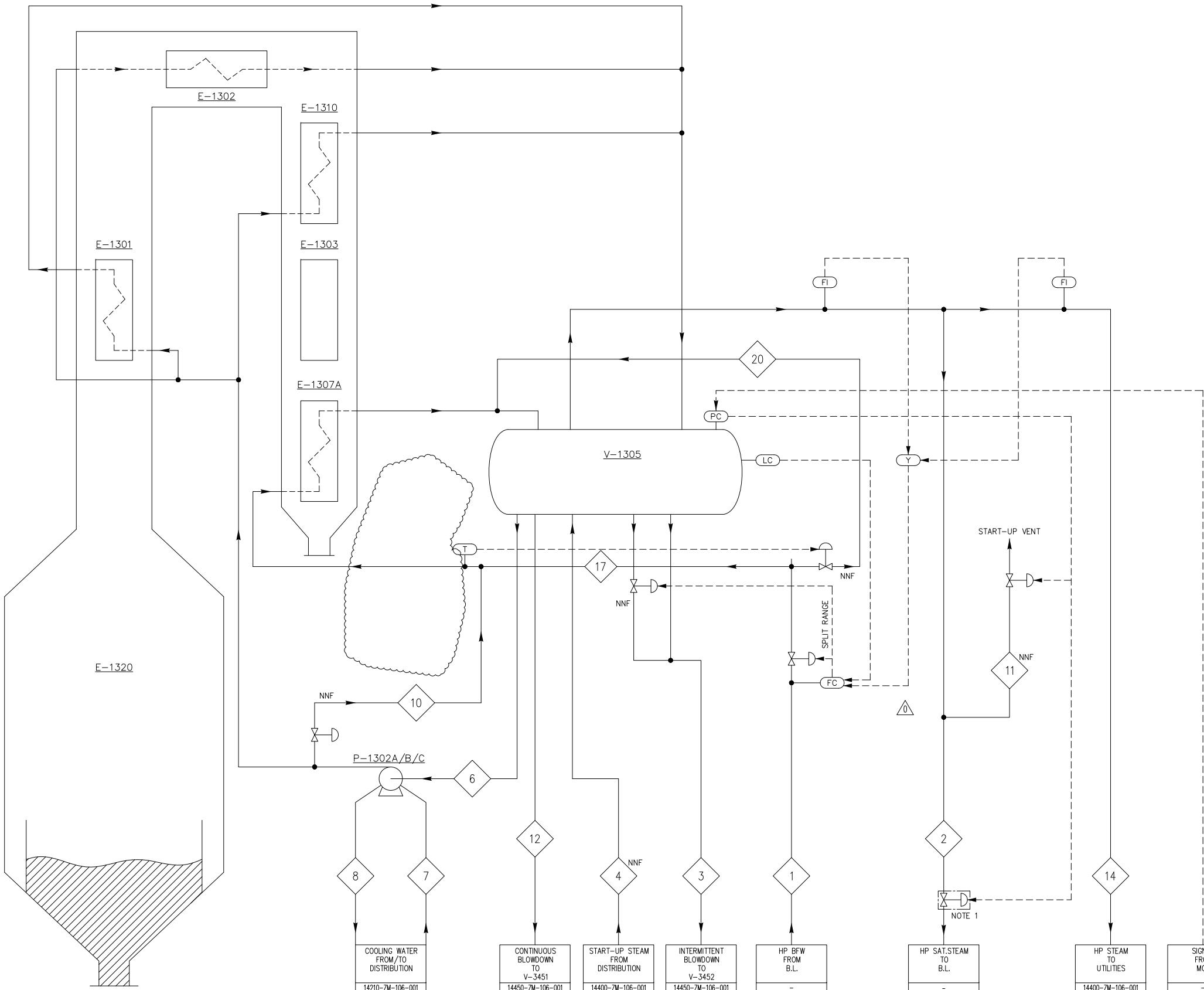
KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM		
			PUMP AUXILIARIES		
GASIFICATION U- 1300			PROJECT DRAWING NUMBER		
			T11072-1300-02-102		
			SHEET SIZE		
			- / -		
MULTI UNIT	PROJECT CODE	KOWEPO NUMBER	REV. SCALE		
			1-11300-ZM-105-102		



1) PRESSURE CONTROL VALVE FOR HP STEAM DRUM WILL BE INSTALLED IN C.C POWER PLANT. TO BE PROVIDED BY GASIFICATION EPC CONTRACTOR. THIS VALVE WILL BE CONTROLLED BY GASIFICATION CONTRACTOR.



GENERAL NOTES

- A) SAFEGUARDING RELATED EQUIPMENT AND FUNCTIONS ARE INDICATED IN THE PROCESS SAFETY NARRATIVES.
- B) NORMALLY NO FLOW (NNF) APPLIES FOR NORMAL OPERATION.
- C) SILENCERS ARE NOT SHOWN ON PFS.
- E) CONTROL LOGIC IS PRELIMINARY. TO BE CONFIRMED LATER.
- F) REFERENCE DRAWING: T-13.412.133B

AS BUILT

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REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D	APP'D
	2017.08.17	AS BUILT	ICS	HBK	SJL	
	2014.06.11	FOR CONSTRUCTION	ICS	SMK	SJL	

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

BLOCK	SAFETY	TITLE	PROCESS FLOW SCHEME		
			GASIFICATION / SCC - HP STEAM U-1300		
PROJECT DRAWING NUMBER			T11072-1300-01-009		
MULTI UNIT	PROJECT CODE	KOWEPO NUMBER	- / -		
1		560	1-11300-ZM-106-009		
			REV.	SCALE	F

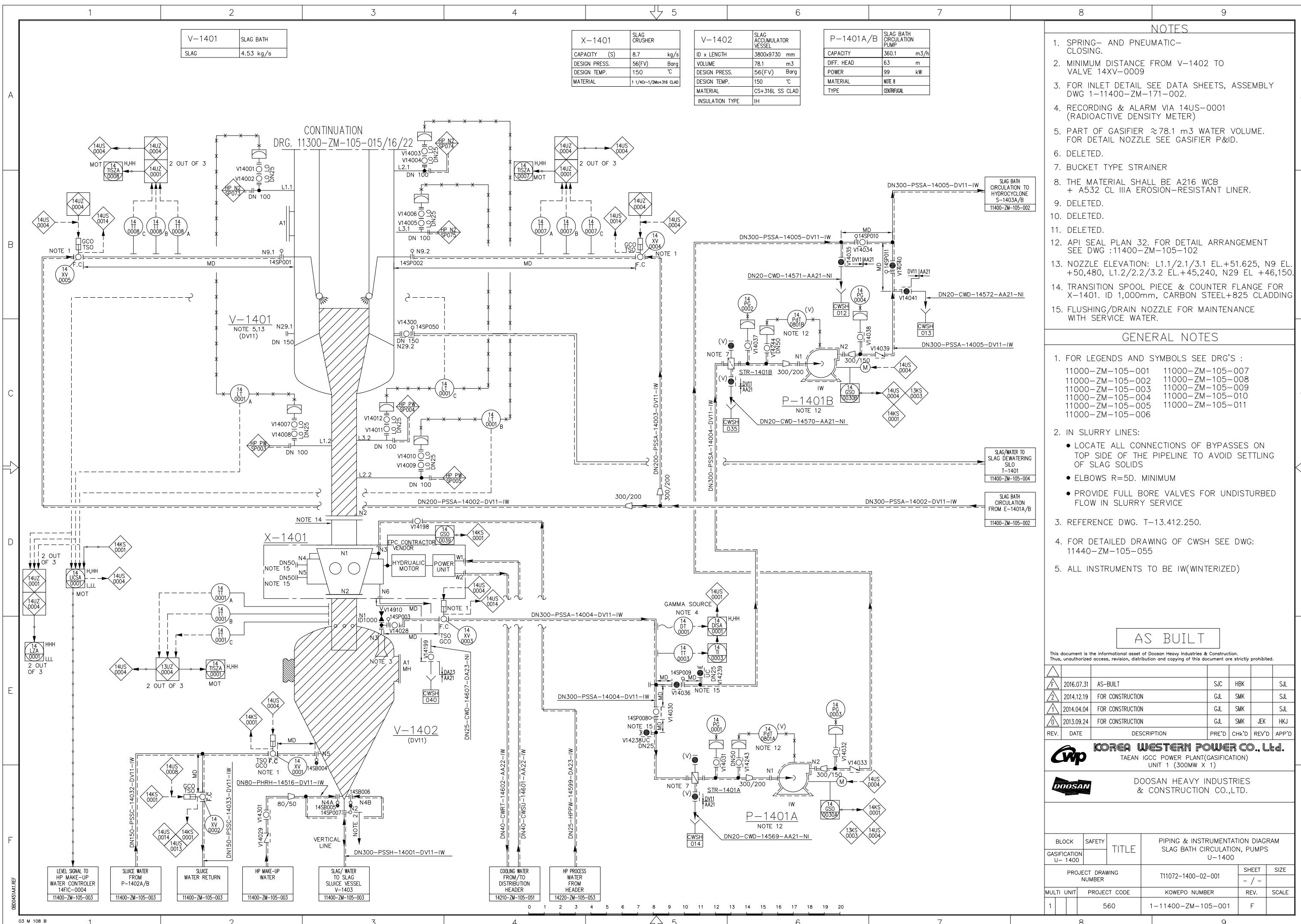
**PIPING & INSTRUMENT
DRAWING**

FOR

**1400 UNIT OF
TAEAN IGCC POWER PLANT (300MW x 1)**



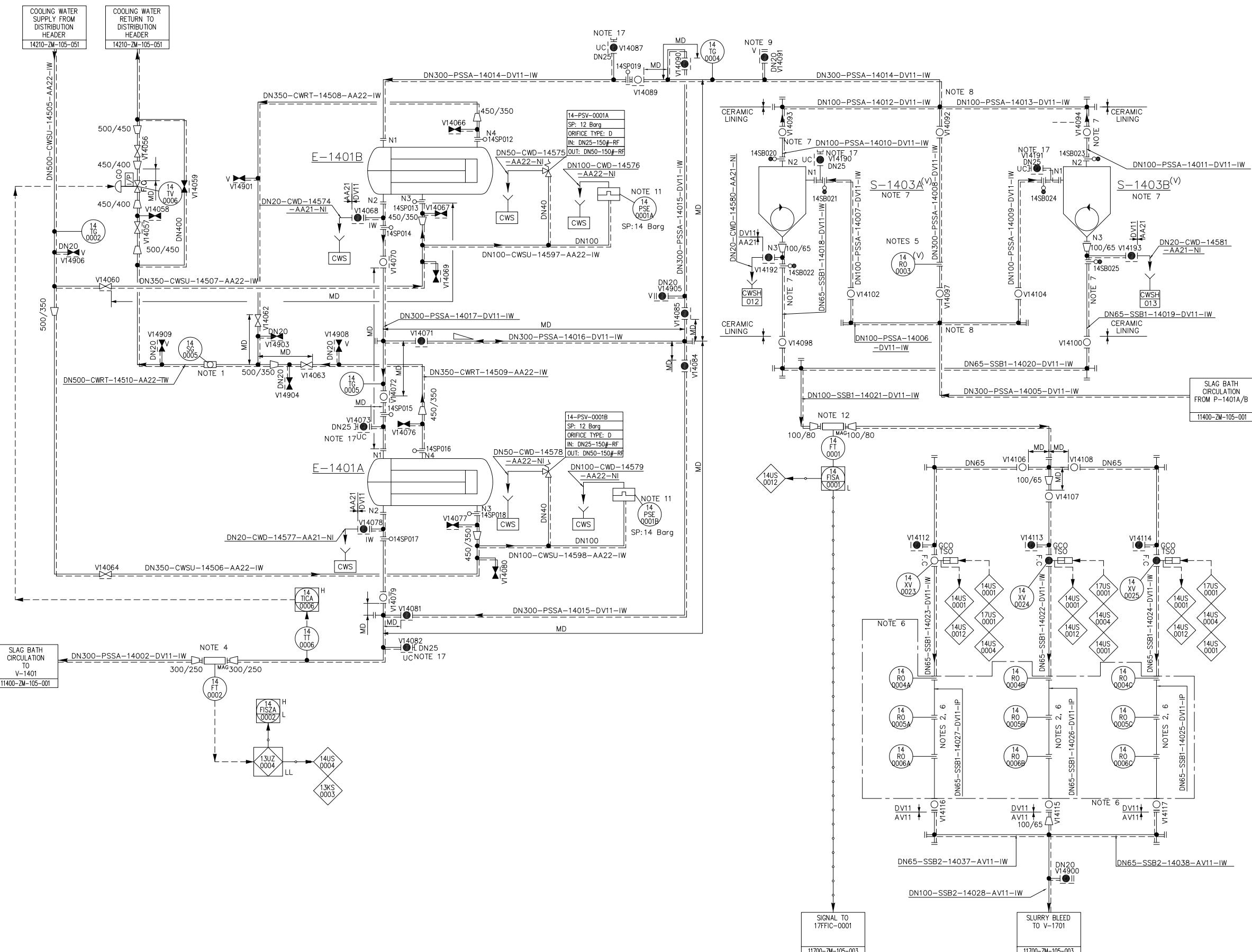
KOREA WESTERN POWER CO., Ltd.



NOTES

NOTE 13	E-1401	A/B	SLAG BATH COOLER
	DUTY TOTAL	14970	kW
	DESIGN PRESS.	S/T	12 / 67
	DESIGN TEMP.	S/T	150 / 150 °C
	MATERIAL	S/T	CS+MM CA / DUPLEX S
	INSULATION	I/P	

S-1403 A/B	HYDROCYCLONE	
DIFF. PRESS.	1.15	Barg
CAPACITY	13	kg/s
ID x LENGTH	190x1040	mm
DESIGN PRESS.	67	Barg
DESIGN TEMP.	150	°C
MATERIAL	22 Cr DUPLEX SS WITH CERAMIC LINER	



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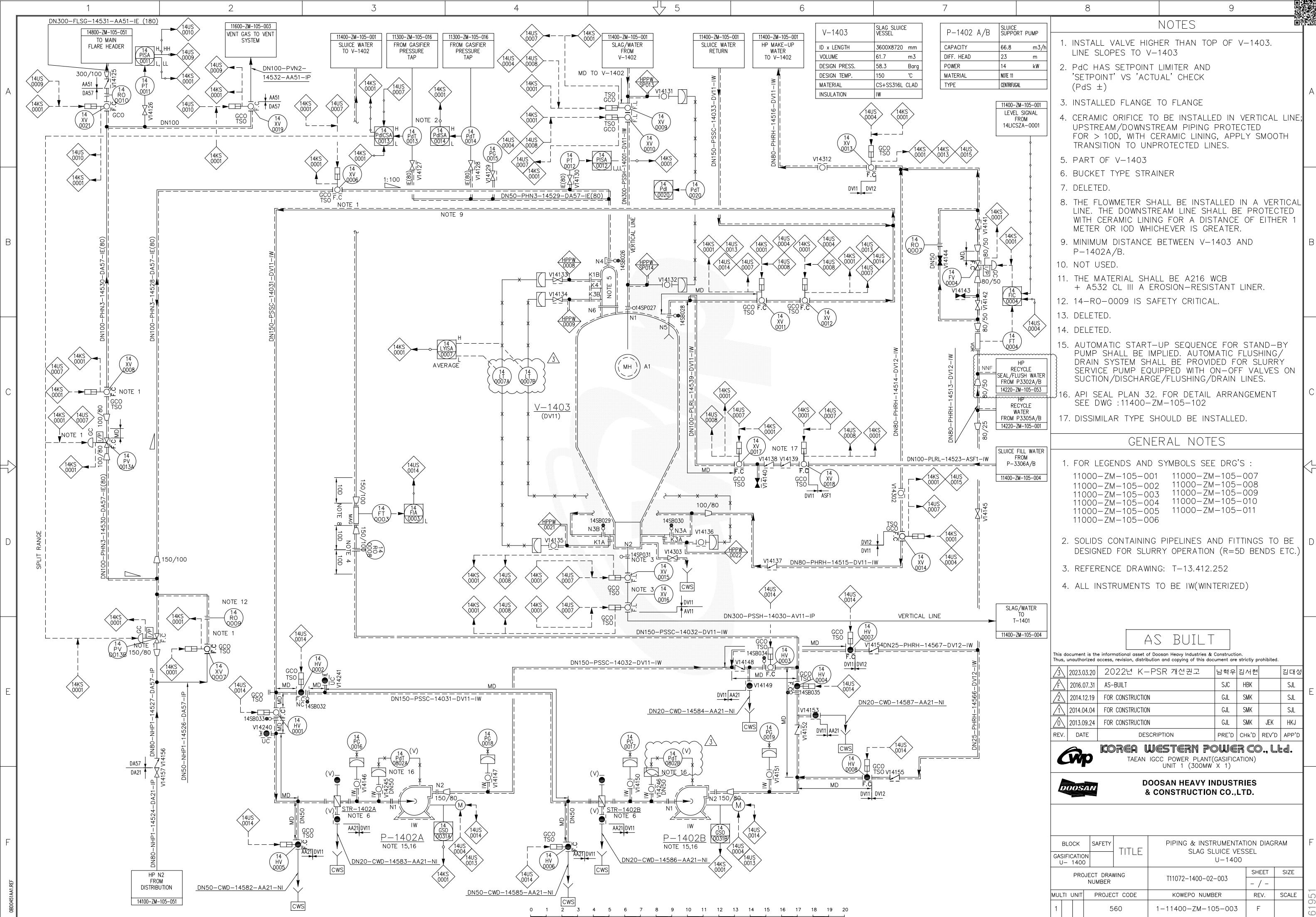
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△						
△ F	2016.07.31	AS-BUILT	SJC	HBK		SJL
△ 2	2014.12.19	FOR CONSTRUCTION	GJL	SMK		SJL
△ 1	2014.04.04	FOR CONSTRUCTION	GJL	SMK		SJL
△ 0	2013.09.24	FOR CONSTRUCTION	GJL	SMK	JEK	HKJ
RFV	DATE	DESCRIPTION	PREF'D	CHK'D	REV'D	APP'D

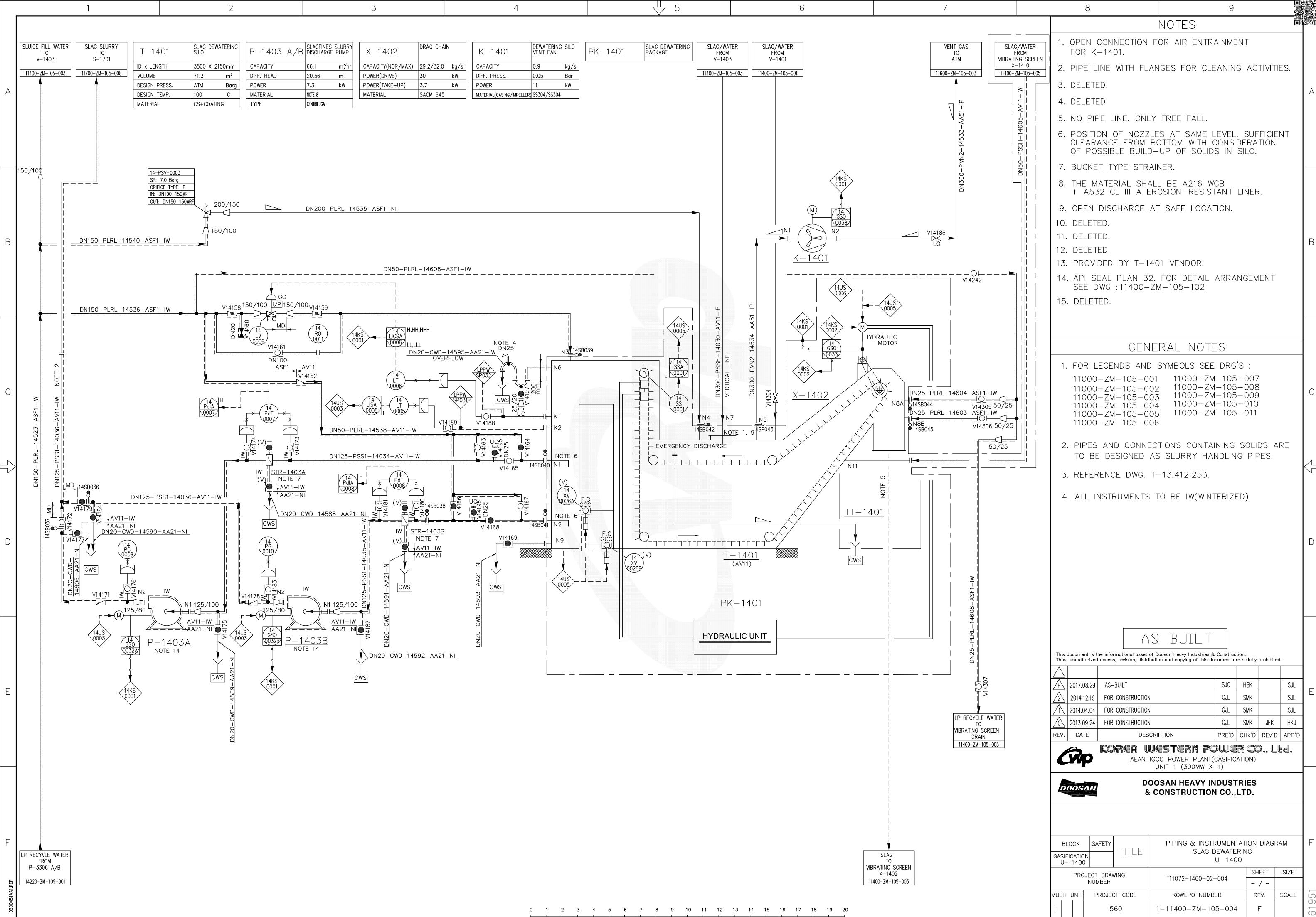
KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES

& CONSTRUCTION CO.,LTD.

BLOCK		SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM SLAG BATH CIRCULATION, HYDROCYCLONE, COOLERS U-1400		
GASIFICATION U-1400						
PROJECT DRAWING NUMBER		T11072-1400-02-002	SHEET	SIZE		
			- / -			
MULTI UNIT		PROJECT CODE	KOWEO NUMBER		REV.	SCALE
1		560	1-11400-ZM-105-002		F	

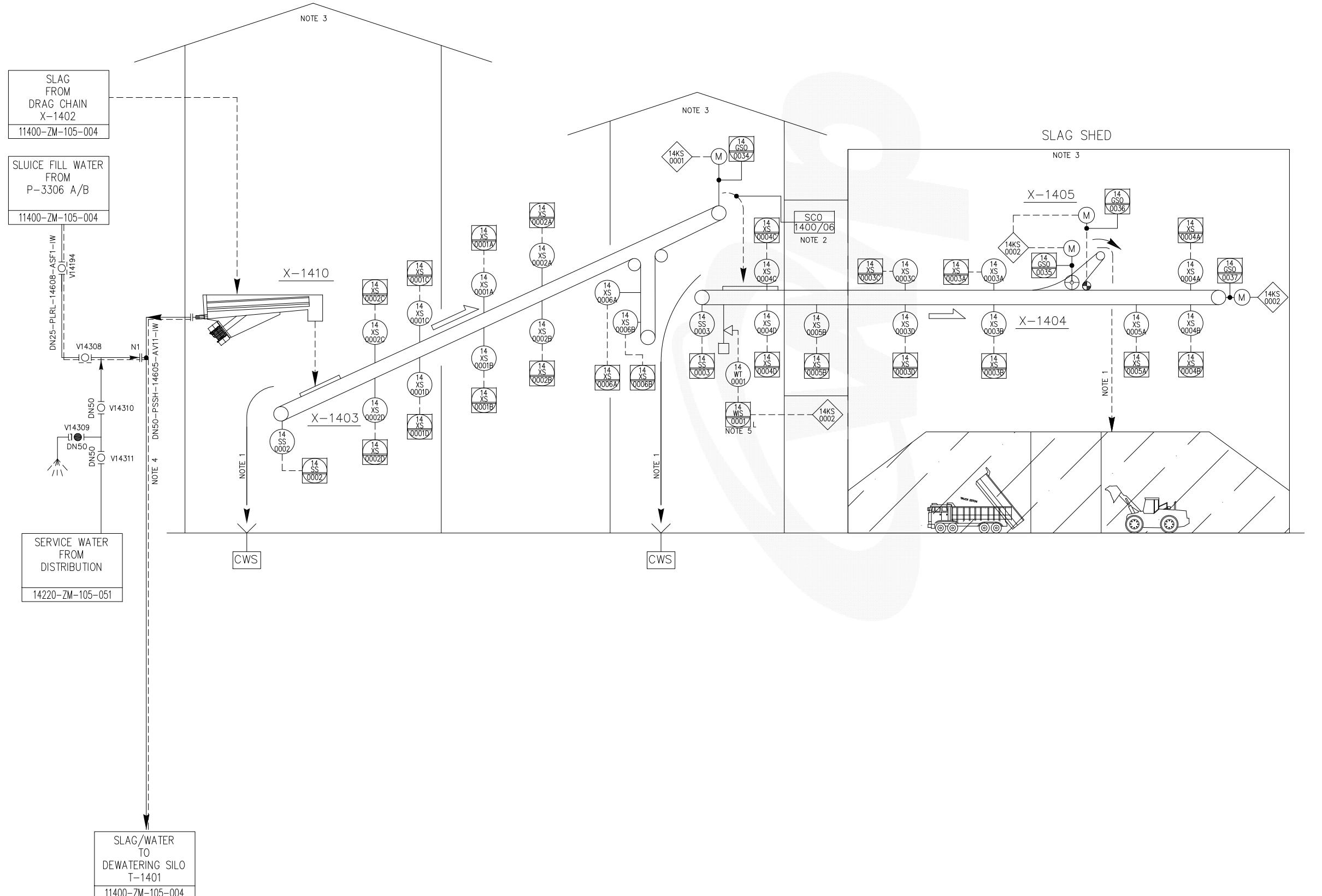




NOTES

- NO PIPE LINE. ONLY FREE FALL.
- ACCESS PLATFORM SHALL BE PROVIDED FOR SAMPLING SLAG.
- INSIDE OF ENCLOSED STRUCTURE.
- T-1401 VENDOR SUPPLY THIS LINE.
- WEIGHT TRANSMITTER TO BE IN DCS, ONLY LOW SIGNAL IS SENT TO SLAG HANDLING PLC.

X-1403	PIPE CONVEYOR	X-1404	BELT CONVEYOR (TRIPPER CONV)	X-1405	TRIPPER	X-1410	VIBRATING SCREEN	-	SLAG SHED
CAPACITY(NOR/MAX)	105/115 T/Hr	CAPACITY(NOR/MAX)	105/115 T/Hr	CAPACITY(NOR/MAX)	105/115 T/Hr	CAPACITY(NOR/MAX)	105/115 T/Hr	CAPACITY	5,822 Ton
POWER	2.2 kW	POWER	7.5 kW	POWER	5.5 kW	MATERIAL	SS400	AREA	1,350 m ²
MATERIAL	RUBBER/SS400	MATERIAL	RUBBER/SS400	MATERIAL	RUBBER/SS400				



GENERAL NOTES

- FOR LEGENDS AND SYMBOLS SEE DRG'S :
11000-ZM-105-001 11000-ZM-105-007
11000-ZM-105-002 11000-ZM-105-008
11000-ZM-105-003 11000-ZM-105-009
11000-ZM-105-004 11000-ZM-105-010
11000-ZM-105-005 11000-ZM-105-011
11000-ZM-105-006
- PIPS AND CONNECTIONS CONTAINING SOLIDS ARE TO BE DESIGNED AS SLURRY HANDLING PIPES.

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△	2016.07.31	AS-BUILT	SJC	HBK	SUL
△	2014.12.19	FOR CONSTRUCTION	GJL	SMK	SUL
△	2014.04.04	FOR CONSTRUCTION	GJL	SMK	SUL
△	2013.09.24	FOR CONSTRUCTION	GJL	SMK	JEK HKJ
REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

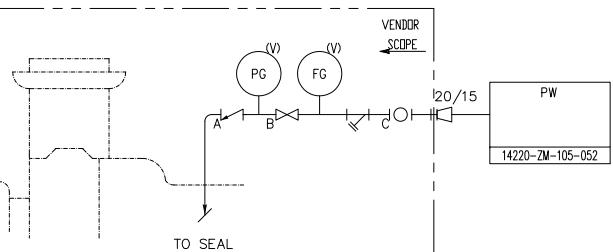
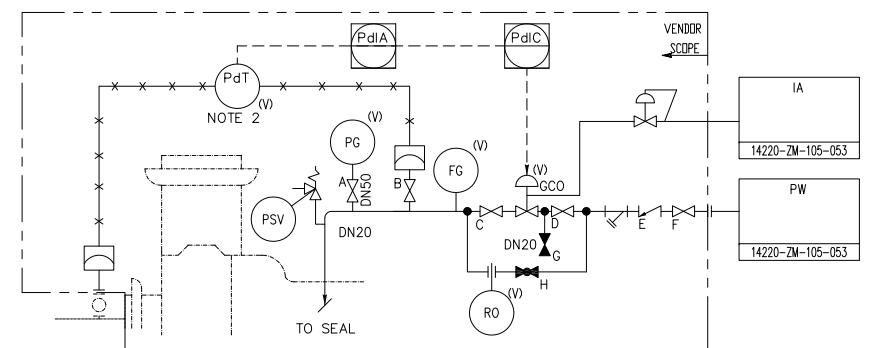
DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM				
			SLAG TRANSPORT BELT U-1400				
GASIFICATION U-1400			PROJECT DRAWING NUMBER				
T11072-1400-02-005			- / -				
MULTI UNIT			PROJECT CODE				
560			KOWEPO NUMBER				
1-11400-ZM-105-005			REV.				
F			SCALE				

NOTES

- PRESSURE DIFFERENTIAL BETWEEN PUMP SUCTION AND EXTERNAL FLUSHING LINE.. DIAPHRAGM DIRECTLY CONNECTED TO PUMP SUCTION AND SEAL FLUSHING LINE. PdT SIGNAL ACTS ON CONTROL VALVE.
- DIAPHRAGM SEAL HAS 2" CLASS #600 ANSI FLUSH SURFACE FLANGE WITH TEN FT OF CAPILARY. D/P TRANSMITTER WITH A DIAPHRAGM SEAL CANNOT USE MANIFOLD VALVES.

API PLAN "32"



P-1401 A/B & P-1402 A/B

P-1403 A/B

	PUMP NO.	P & ID NO.	PG TAG NO.	FG TAG NO.	RD TAG NO.	CV TAG NO.	PDT TAG NO.	PSV TAG NO.	LINE NO.
									PW
1	P-1401A	11400-ZM-105-001	14-PG-0801A	14-FG-0801A	14-RD-0801A	14-PV-0801A	14-PDT-0801A	14-PSV-0801A	DN20-HPPW-14541-DA23-IV
2	P-1401B	11400-ZM-105-001	14-PG-0801B	14-FG-0801B	14-RD-0801B	14-PV-0801B	14-PDT-0801B	14-PSV-0801B	DN20-HPPW-14542-DA23-IV
3	P-1402A	11400-ZM-105-003	14-PG-0802A	14-FG-0802A	14-RD-0802A	14-PV-0802A	14-PDT-0802A	14-PSV-0802A	DN20-HPPW-14543-DA23-IV
4	P-1402B	11400-ZM-105-003	14-PG-0802B	14-FG-0802B	14-RD-0802B	14-PV-0802B	14-PDT-0802B	14-PSV-0802B	DN20-HPPW-14544-DA23-IV

	PUMP NO.	P & ID NO.	PG TAG NO.	FG TAG NO.	LINE NO.			VALVE DESIGNATION		
					PW			A	B	C
1	P-1403A	11400-ZM-105-004	14-PG-0803A	14-FG-0803A				V14232	V14233	V14234
2	P-1403B	11400-ZM-105-004	14-PG-0803B	14-FG-0803B				V14235	V14236	V14237

NO.	PUMP NO.	VALVE DESIGNATION							
		A	B	C	D	E	F	G	H
1	P-1401A	V14200	V14201	V14202	V14203	V14204	V14205	V14206	V14207
2	P-1401B	V14208	V14209	V14210	V14211	V14212	V14213	V14214	V14215
3	P-1402A	V14216	V14217	V14218	V14219	V14220	V14221	V14222	V14223
4	P-1402B	V14224	V14225	V14226	V14227	V14228	V14229	V14230	V14231

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	2014.12.19	FOR CONSTRUCTION	GJL	SMK	SJL
	2014.04.04	FOR CONSTRUCTION	GJL	SMK	SJL
	2013.09.24	FOR CONSTRUCTION	GJL	SMK	JEK HKJ
REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM GASIFICATION U - 1400		
PROJECT DRAWING NUMBER			T11072-1400-02-102		SIZE
MULTI UNIT	PROJECT CODE	KOWEO NUMBER		REV.	SCALE
1		560	1-11400-ZM-105-102	F	

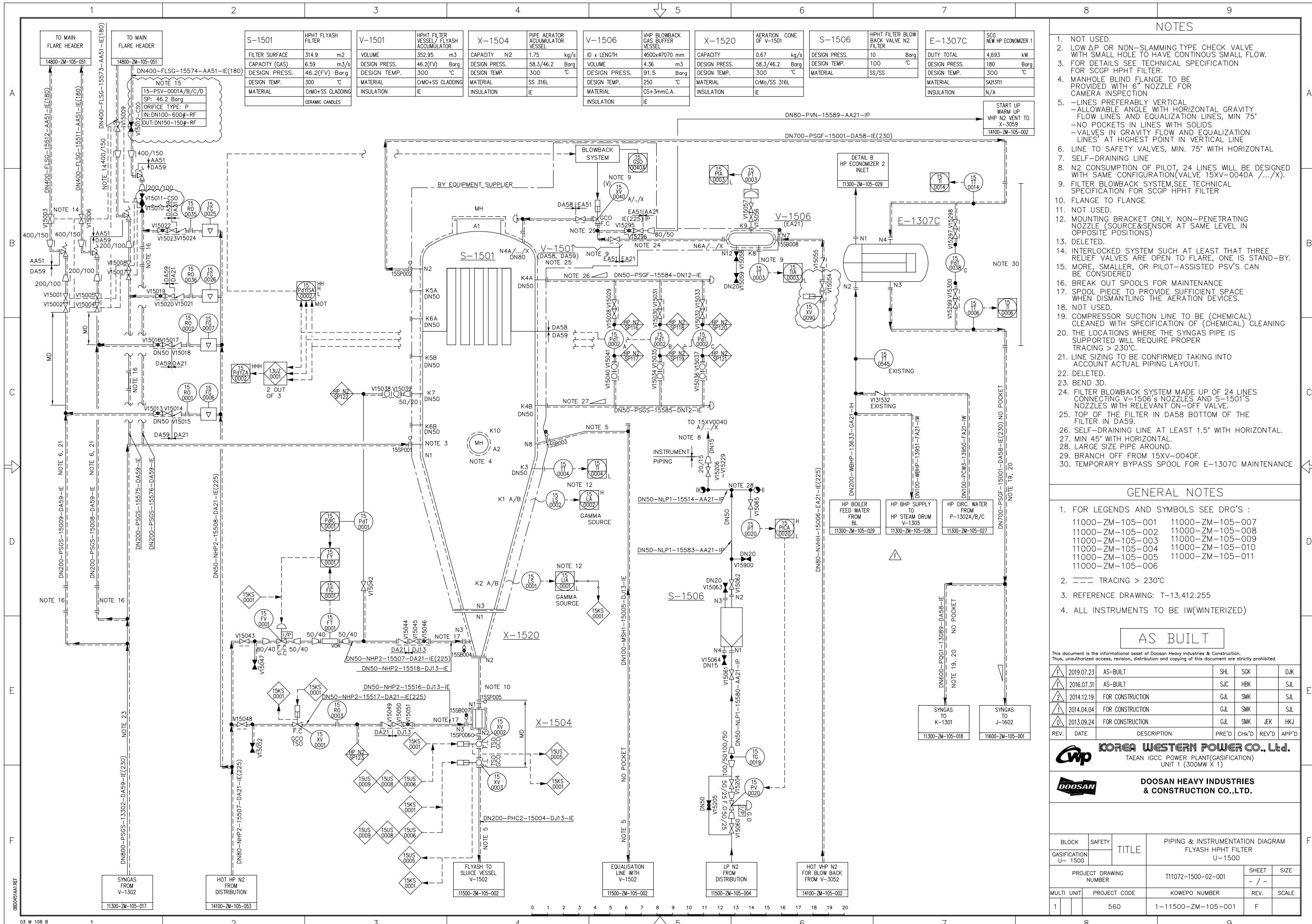
**PIPING & INSTRUMENT
DRAWING**

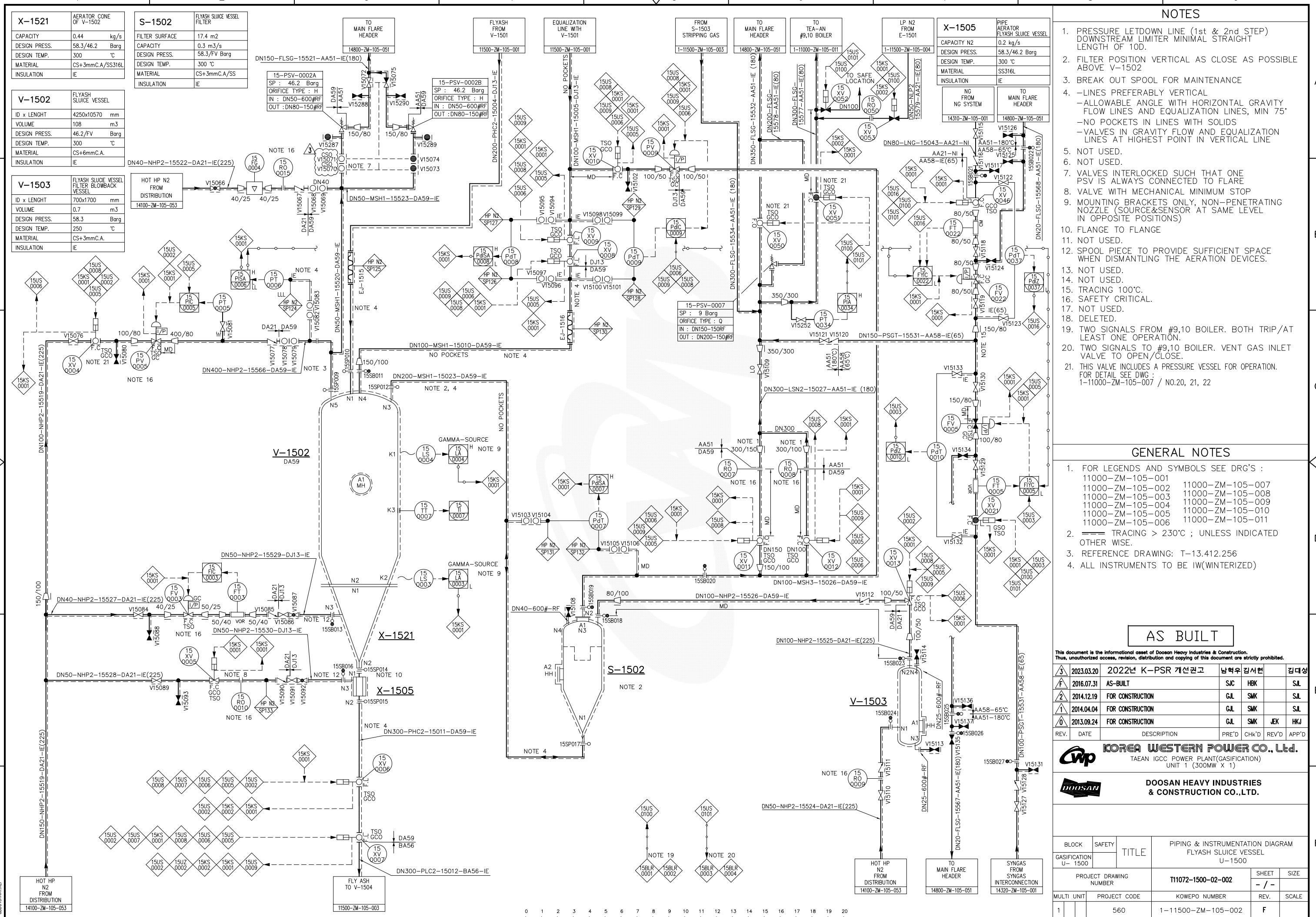
FOR

**1500 UNIT OF
TAEAN IGCC POWER PLANT (300MW x 1)**



KOREA WESTERN POWER CO., Ltd.





NOTES

- PRESSURE LETDOWN LINE (1st & 2nd STEP)
DOWNSTREAM LIMITER MINIMAL STRAIGHT
LENGTH OF 10D.

VALVE POSITION VERTICAL AS CLOSE AS POSSIBLE
ABOVE V-1502

BREAK OUT SPOOL FOR MAINTENANCE

LINES PREFERABLY VERTICAL

ALLOWABLE ANGLE WITH HORIZONTAL GRAVITY
FLOW LINES AND EQUALIZATION LINES, MIN 75°

NO POCKETS IN LINES WITH SOLIDS

VALVES IN GRAVITY FLOW AND EQUALIZATION
LINES AT HIGHEST POINT IN VERTICAL LINE

NOT USED.

NOT USED.

VALVES INTERLOCKED SUCH THAT ONE
IS ALWAYS CONNECTED TO FLARE

VALVE WITH MECHANICAL MINIMUM STOP

MOUNTING BRACKETS ONLY, NON-PENETRATING

NOZZLE (SOURCE&SENSOR AT SAME LEVEL
IN OPPOSITE POSITIONS)

FLANGE TO FLANGE

NOT USED.

SPROUPL PIECE TO PROVIDE SUFFICIENT SPACE
WHEN DISMANTLING THE AERATION DEVICES.

NOT USED.

NOT USED.

TRACING 100°C.

SAFETY CRITICAL.

NOT USED.

DELETED.

TWO SIGNALS FROM #9,10 BOILER. BOTH TRIP/AT
LEAST ONE OPERATION.

TWO SIGNALS TO #9,10 BOILER. VENT GAS INLET
VALVE TO OPEN/CLOSE.

THIS VALVE INCLUDES A PRESSURE VESSEL FOR OPERATION.
FOR DETAIL SEE DWG :
-11000-ZM-105-007 / NO.20, 21, 22

GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :
11000-ZM-105-001 11000-ZM-105-007
11000-ZM-105-002 11000-ZM-105-008
11000-ZM-105-003 11000-ZM-105-009
11000-ZM-105-004 11000-ZM-105-010
11000-ZM-105-005 11000-ZM-105-011
11000-ZM-105-006
 2. TRACING > 230°C ; UNLESS INDICATED OTHER WISE.
 3. REFERENCE DRAWING: T-13.412.256
 4. ALL INSTRUMENTS TO BE IW(WINTERIZED)

AS BUILT

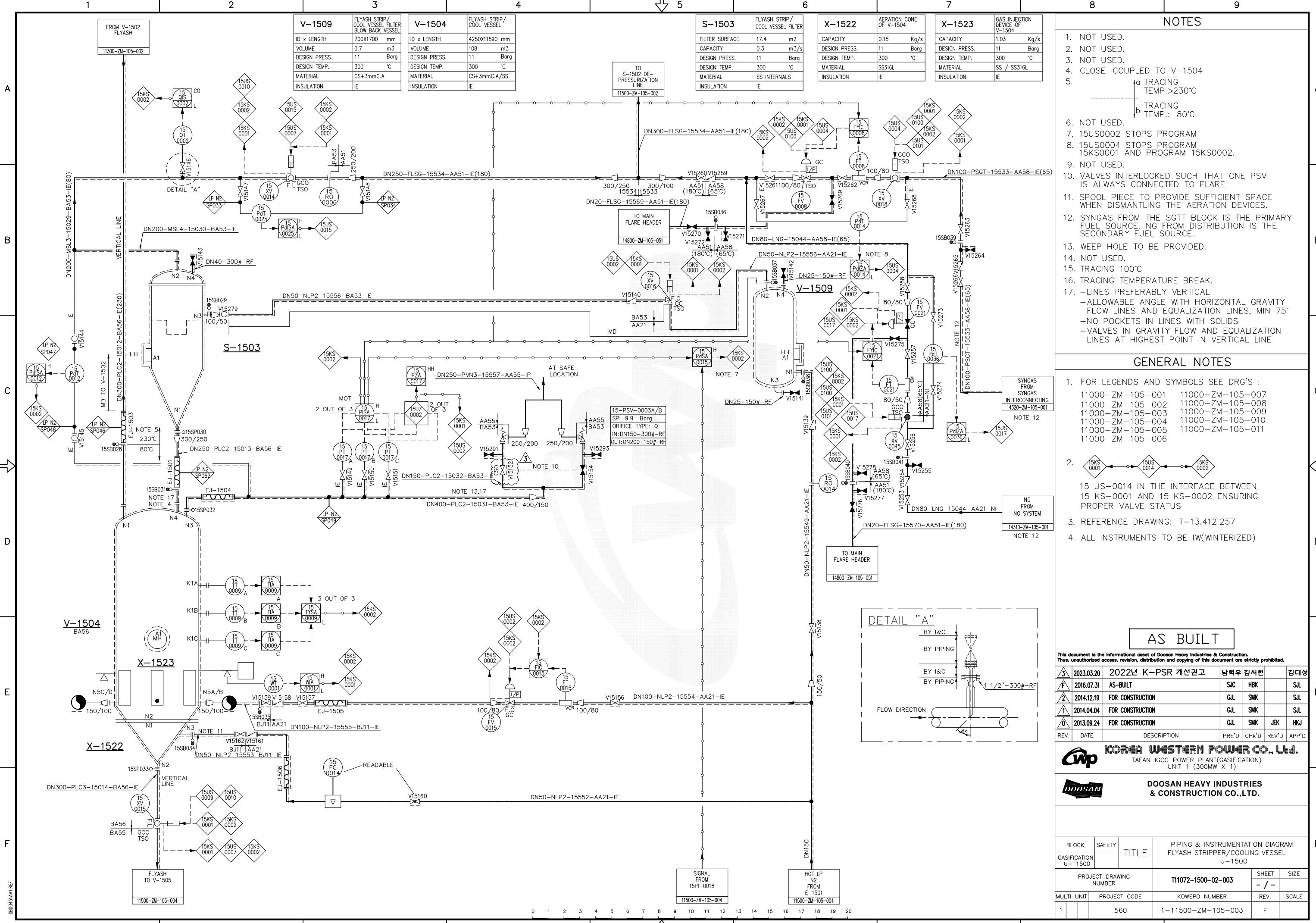
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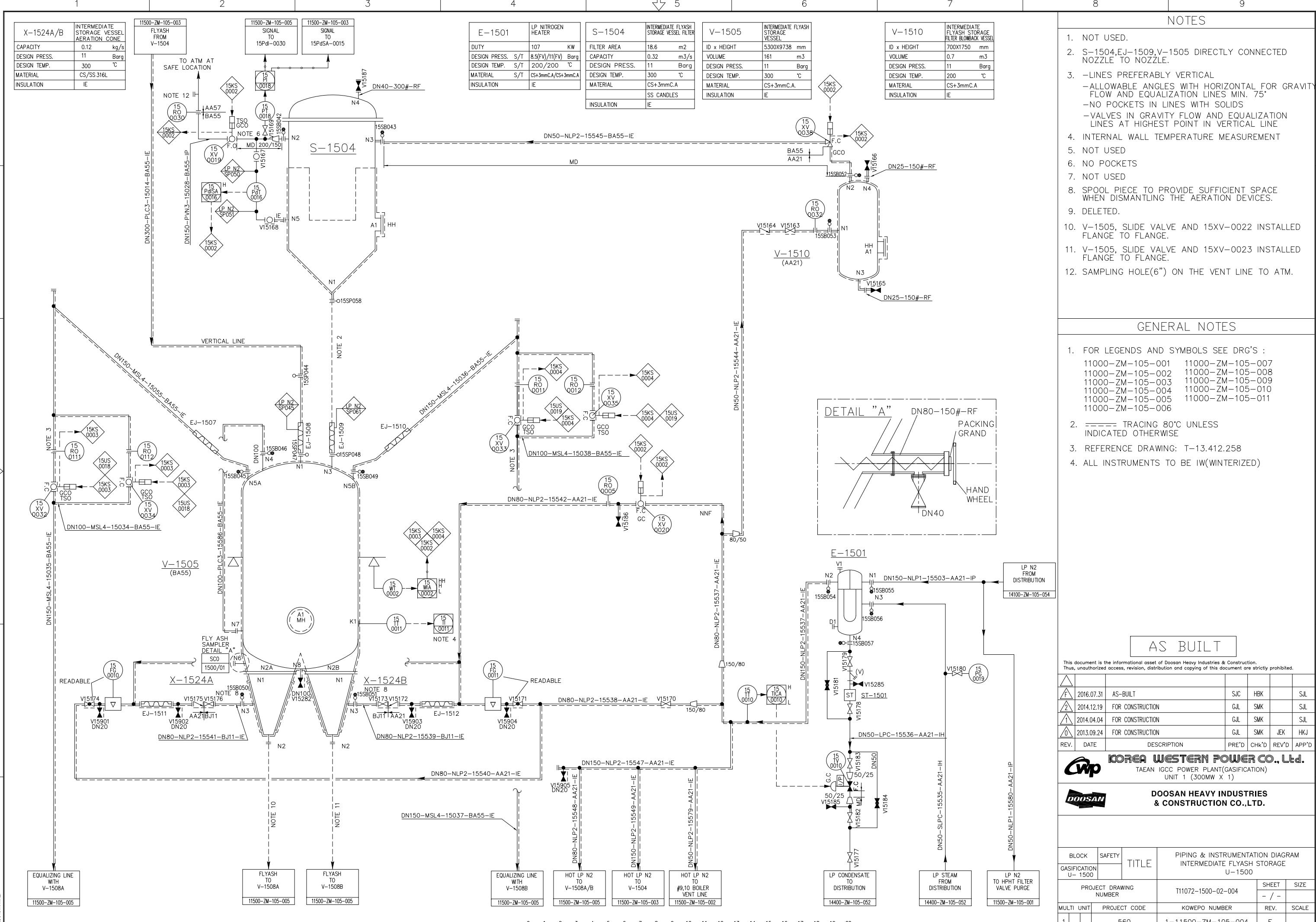
	2023.03.20	2022년 K-PSR 개선권고	남혁우	김서현	김대성
△	2016.07.31	AS-BUILT	SJC	HBK	SJL
▽	2014.12.19	FOR CONSTRUCTION	GJL	SMK	SJL
▽	2014.04.04	FOR CONSTRUCTION	GJL	SMK	SJL
▽	2013.09.24	FOR CONSTRUCTION	GJL	SMK	JEK HKJ
▽	DATE	DESCRIPTION	PREP'D	CHK'D	APPROV'D


KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (730MW X 1)

DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO., LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM FLYASH SLUICE VESSEL U-1500		
SPECIFICATION U - 1500			SHEET	SIZE	
PROJECT DRAWING NUMBER			T11072-1500-02-002	- / -	
LTI UNIT	PROJECT CODE	KOWEPO NUMBER	REV.	SCALE	
	560	1-11500-7M-105-002	F		







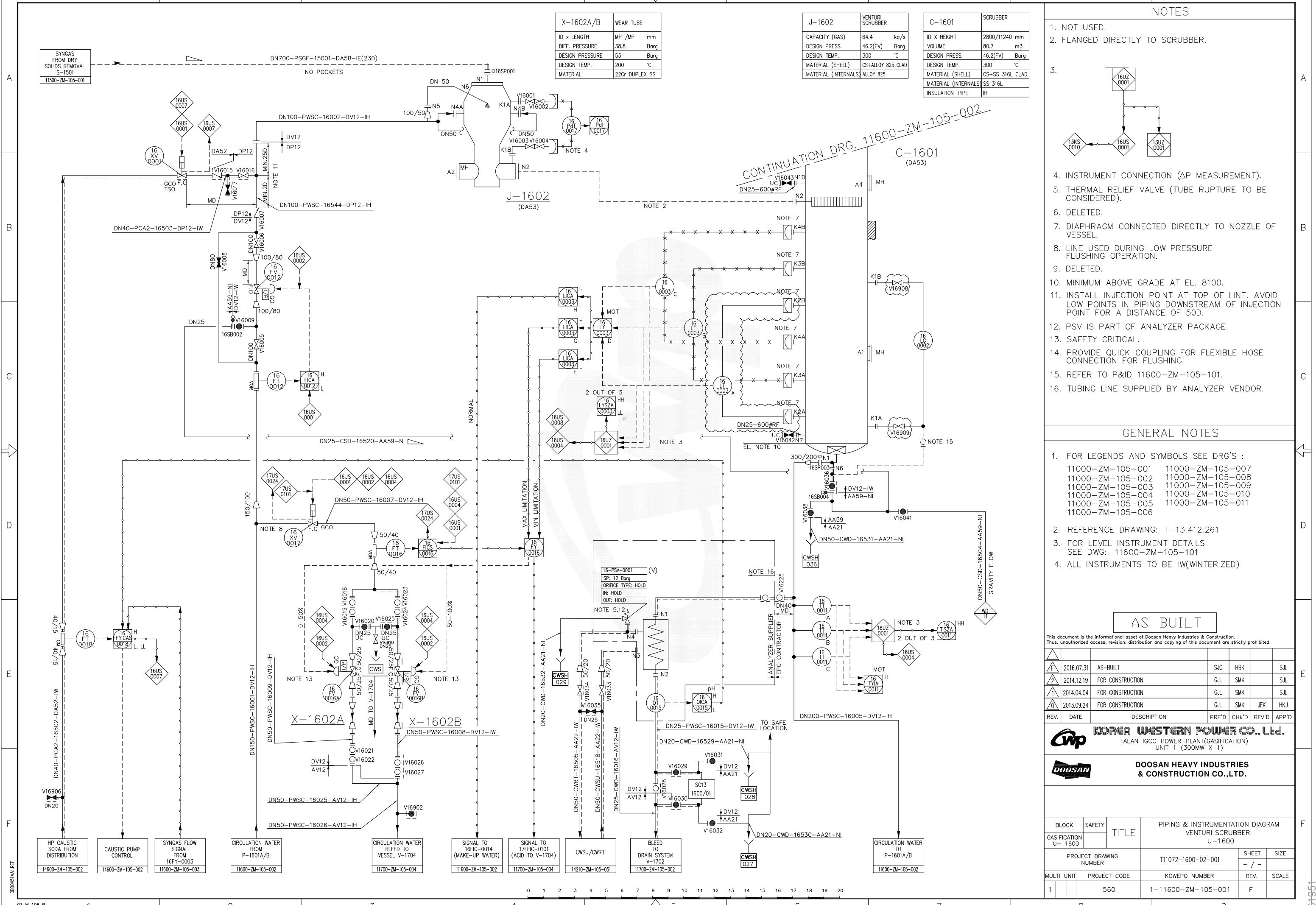
**PIPING & INSTRUMENT
DRAWING**

FOR

**1600 UNIT OF
TAEAN IGCC POWER PLANT (300MW x 1)**



KOREA WESTERN POWER CO., Ltd.



1

2

3

4

5

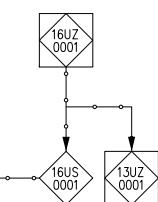
6

7

8

9

NOTES

1. FINE FILTER DURING INITIAL START-UP. REPLACE WITH COARSE SCREEN DURING NORMAL OPERATION.
2. NOT USED.
3. 
4. NOT USED.
5. DELETED.
6. MINIMUM FLOW SET POINT
7. DIAPHRAGM CONNECTED DIRECTLY TO NOZZLE OF VESSEL.
8. NOT USED.
9. DELETED.
10. PUMPS GROUP D1 OF ISO 13709.
11. DELETED.
12. DELETED.
13. PIPING SPEC IS EXTENDED UP TO VALVE 21-XV-0010 IN ORDER TO TAKE INTO ACCOUNT POSSIBLE BACKFLOW OF SCRUBBER RECYCLE WATER.
14. API SEAL PLAN 32/53B. FOR DETAIL ARRANGEMENT SEE DWG :11600-ZM-105-102
15. THIS VALVE INCLUDES A PRESSURE VESSEL FOR OPERATION. FOR DETAIL SEE DWG : 1-11000-ZM-105-007 / NO.23

GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :
11000-ZM-105-001 11000-ZM-105-007
11000-ZM-105-002 11000-ZM-105-008
11000-ZM-105-003 11000-ZM-105-009
11000-ZM-105-004 11000-ZM-105-010
11000-ZM-105-005 11000-ZM-105-011
11000-ZM-105-006
2. REFERENCE DRAWING: T-13.412.262
3. ALL INSTRUMENTS TO BE IW(WINTERIZED)

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	2014.04.04	FOR CONSTRUCTION	GJL	SMK
	2013.09.24	FOR CONSTRUCTION	GJL	SMK JEK HKJ
REV.	DATE	DESCRIPTION	PRE'D	CHK'D REV'D APP'D

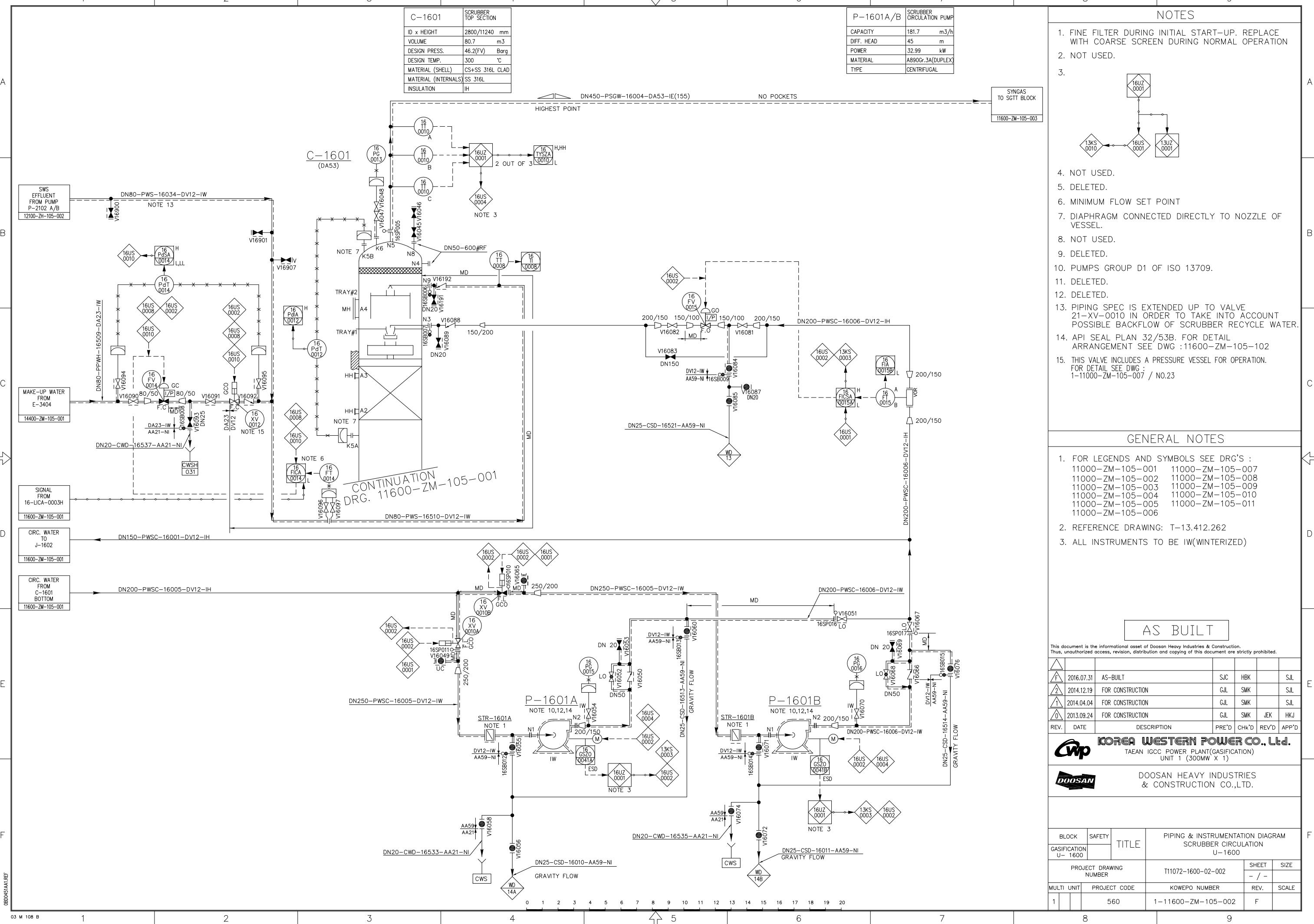


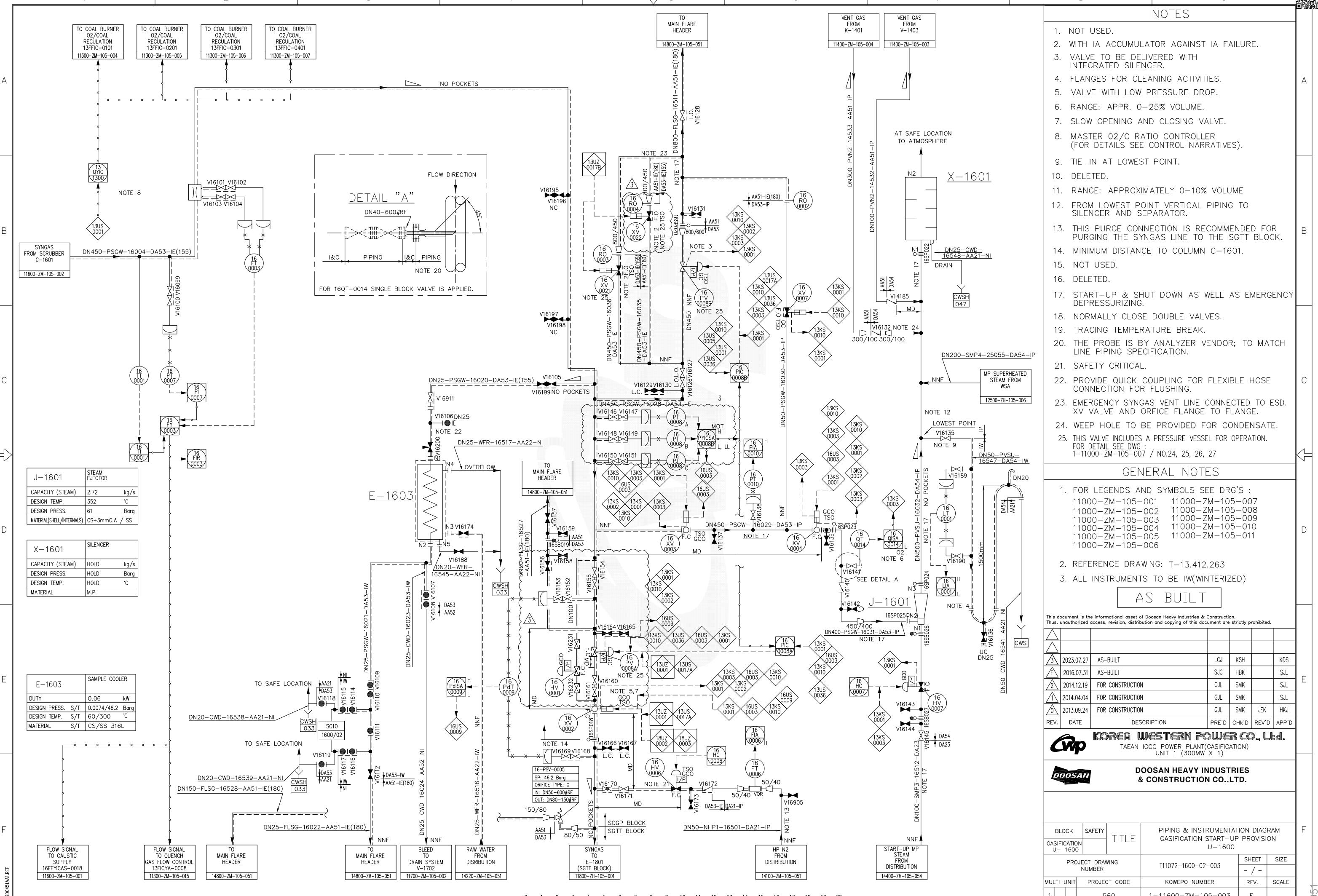
KOREA WESTERN POWER CO.,Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)



DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO.,LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM SCRUBBER CIRCULATION U-1600
PROJECT DRAWING NUMBER		T11072-1600-02-002	SHEET - / -
MULTI UNIT	PROJECT CODE	KOWEO NUMBER	REV.
1		560	1-11600-ZM-105-002
			F





NOTES

- NOT USED.

WITH IA ACCUMULATOR AGAINST IA FAILURE.

VALVE TO BE DELIVERED WITH
INTEGRATED SILENCER.

FLANGES FOR CLEANING ACTIVITIES.

VALVE WITH LOW PRESSURE DROP.

RANGE: APPR. 0-25% VOLUME.

SLOW OPENING AND CLOSING VALVE.

MASTER O2/C RATIO CONTROLLER
(FOR DETAILS SEE CONTROL NARRATIVES).

TIE-IN AT LOWEST POINT.

DELETED.

RANGE: APPROXIMATELY 0-10% VOLUME

FROM LOWEST POINT VERTICAL PIPING TO
SILENCER AND SEPARATOR.

THIS PURGE CONNECTION IS RECOMMENDED FOR
PURGING THE SYNGAS LINE TO THE SGTT BLOCK.

MINIMUM DISTANCE TO COLUMN C-1601.

NOT USED.

DELETED.

START-UP & SHUT DOWN AS WELL AS EMERGENCY
DEPRESSURIZING.

NORMALLY CLOSE DOUBLE VALVES.

TRACING TEMPERATURE BREAK.

THE PROBE IS BY ANALYZER VENDOR; TO MATCH
LINE PIPING SPECIFICATION.

SAFETY CRITICAL.

PROVIDE QUICK COUPLING FOR FLEXIBLE HOSE
CONNECTION FOR FLUSHING.

EMERGENCY SYNGAS VENT LINE CONNECTED TO ESD.
XV VALVE AND ORIFICE FLANGE TO FLANGE.

WEEP HOLE TO BE PROVIDED FOR CONDENSATE.

THIS VALVE INCLUDES A PRESSURE VESSEL FOR OPERATION.
FOR DETAIL SEE DWG :
1-11000-2M-105-007 / NO 24 25 26 27

GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :
11000-ZM-105-001 11000-ZM-105-007
11000-ZM-105-002 11000-ZM-105-008
11000-ZM-105-003 11000-ZM-105-009
11000-ZM-105-004 11000-ZM-105-010
11000-ZM-105-005 11000-ZM-105-011
11000-ZM-105-006

2. REFERENCE DRAWING: T-13.412.263

3. ALL INSTRUMENTS TO BE IW(WINTERIZED)

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2016.07.31	AS-BUILT	SJC	HBK		SJL
2014.12.19	FOR CONSTRUCTION	GJL	SMK		SJL
2014.04.04	FOR CONSTRUCTION	GJL	SMK		SJL
2013.09.24	FOR CONSTRUCTION	GJL	SMK	JEK	HKJ
DATE	DESCRIPTION	DRAWN BY	checked BY	APPROVED BY	RECORDED BY

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (700MW X 1)

OOSAN HEAVY INDUSTRIES

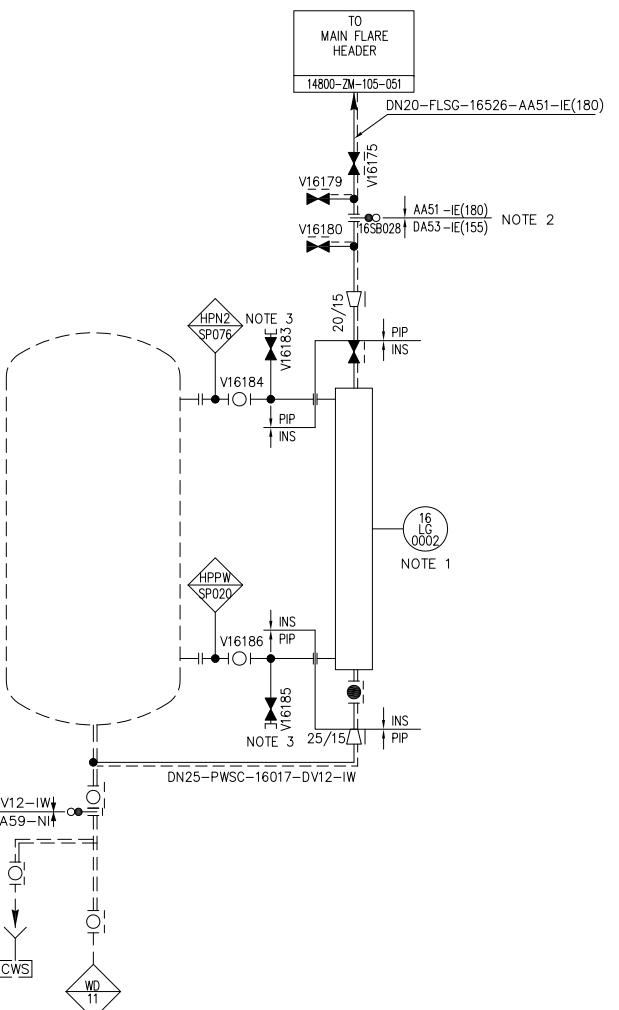
OOSAN HEAVY INDUSTRIES

OOSAN HEAVY INDUSTRIES

LOCK ICATION 1600	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM GASIFICATION START-UP PROVISION U-1600			F
			PROJECT DRAWING NUMBER	T11072-1600-02-003	SHEET - / -	
UNIT	PROJECT CODE	KOWEO NUMBER	REV.	SCALE		
	560	1-11600-ZM-105-003	5			51

NOTES

- . LEVEL GAUGE SHOWN ON PROCESS P&ID
1-11600-ZM-105-001
 - . TRACING TEMPERATURE BREAK.
 - . PROVIDE QUICK COUPLING FOR FLEXIBLE HOSE CONNECTION FOR FLUSHING.



GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :
11000-ZM-105-001 11000-ZM-105-007
11000-ZM-105-002 11000-ZM-105-008
11000-ZM-105-003 11000-ZM-105-009
11000-ZM-105-004 11000-ZM-105-010
11000-ZM-105-005 11000-ZM-105-011
11000-ZM-105-006

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V.	DATE	DESCRIPTION	PРЕ'D	CHK'D	REV'D	APP'D
	2016.07.31	AS-BUILT	SJC	HBK		SJL
	2014.12.19	FOR CONSTRUCTION	GJL	SMK		SJL
	2014.04.04	FOR CONSTRUCTION	GJL	SMK		SJL
	2013.09.24	FOR CONSTRUCTION	GJL	SMK	JEK	HKJ

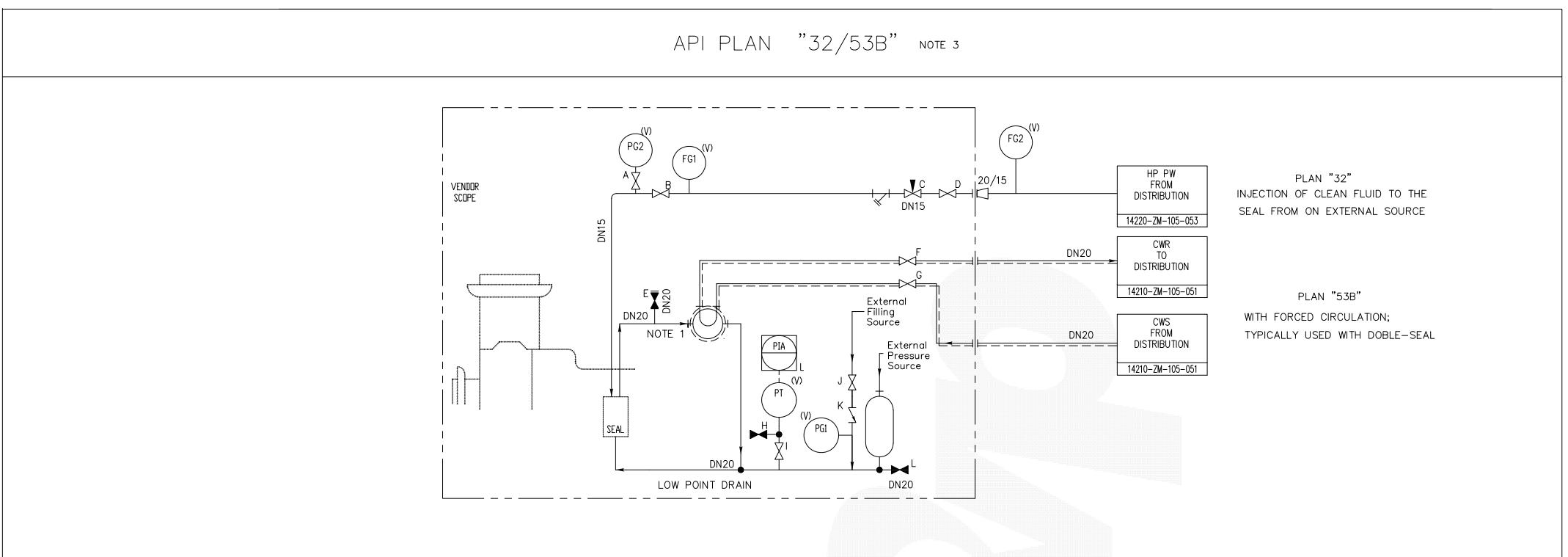
KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

**DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO.,LTD.**

BLOCK SIFICATION U- 1600	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM LEVEL INSTRUMENT DETAILS U-1600		
			PROJECT DRAWING NUMBER	T11072-1600-02-101	SHEET - / -
LTI UNIT	PROJECT CODE	KOWEPO NUMBER	REV.	SCALE	
	560	1-11600-ZM-105-101	F		

NOTES

1. NO POCKETS.
2. DELETED.
3. ONLY FOR P-1601, NOT A TYPICAL AUX P&ID.

**GENERAL NOTES**

1. FOR LEGENDS AND SYMBOLS SEE DRG'S :

11000-ZM-105-001	11000-ZM-105-007
11000-ZM-105-002	11000-ZM-105-008
11000-ZM-105-003	11000-ZM-105-009
11000-ZM-105-004	11000-ZM-105-010
11000-ZM-105-005	11000-ZM-105-011
11000-ZM-105-006	

2. INSTRUMENT NUMBERING TO BE FINALIZED

P-1601 A/B

NO.	PUMP NO.	P & ID NO.	FG1 TAG NO.	FG2 TAG NO.	PG1 TAG NO.	PG2 TAG NO.	PT TAG NO.	PIA TAG NO.	TG TAG NO.	LINE NO.		
										CWS	CWR	HP PW
	P-1601A	11600-ZM-105-002	16-FG-0801A	16-FG-0802A	16-PG-0801A	16-PG-0802A	16-PT-0801A	16-PIA-0801A	16-TG-0801A	DN20-CWSU-16519-AA22-IW	DN20-CWRT-16506-AA22-IW	DN20-HPPW-16523-DA23-IW
	P-1601B	11600-ZM-105-002	16-FG-0801B	16-FG-0802B	16-PG-0801B	16-PG-0802B	16-PT-0802B	16-PIA-0802B	16-TG-0801B	DN20-CWSU-16507-AA22-IW	DN20-CWRT-16508-AA22-IW	DN20-HPPW-16524-DA23-IW

NO.	PUMP NO.	VALVE DESIGNATION											
		A	B	C	D	E	F	G	H	I	J	K	L
	P-1601A	V16201	V16202	V16203	V16204	V16205	V16206	V16207	V16208	V16209	V16210	V16211	V16212
	P-1601B	V16213	V16214	V16215	V16216	V16217	V16218	V16219	V16220	V16221	V16222	V16223	V16224

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	2014.04.04	FOR CONSTRUCTION	GJL	SMK	SJL
	2013.09.24	FOR CONSTRUCTION	GJL	SMK	JEK HKJ
REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO.,LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM				
			GASIFICATION U- 1600		SIZE		
PROJECT DRAWING NUMBER			T11072-1600-02-102				
MULTI UNIT			- / -				
PROJECT CODE			KOWEPO NUMBER				
1			560				
1-11600-ZM-105-102			F				

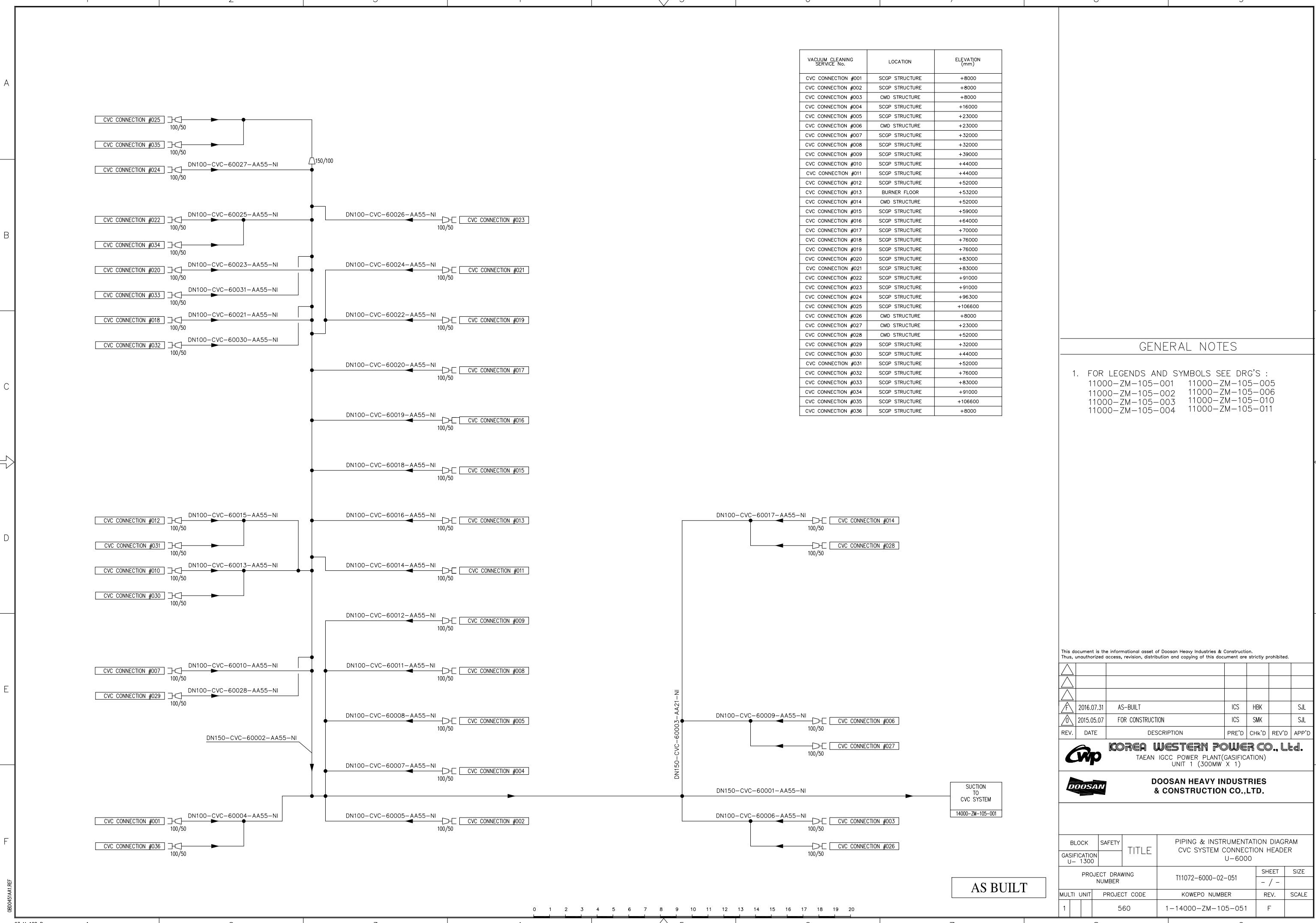
**PIPING & INSTRUMENT
DRAWING**

FOR

**3000, 3200 UNIT OF
TAEAN IGCC POWER PLANT (300MW x 1)**



KOREA WESTERN POWER CO., Ltd.



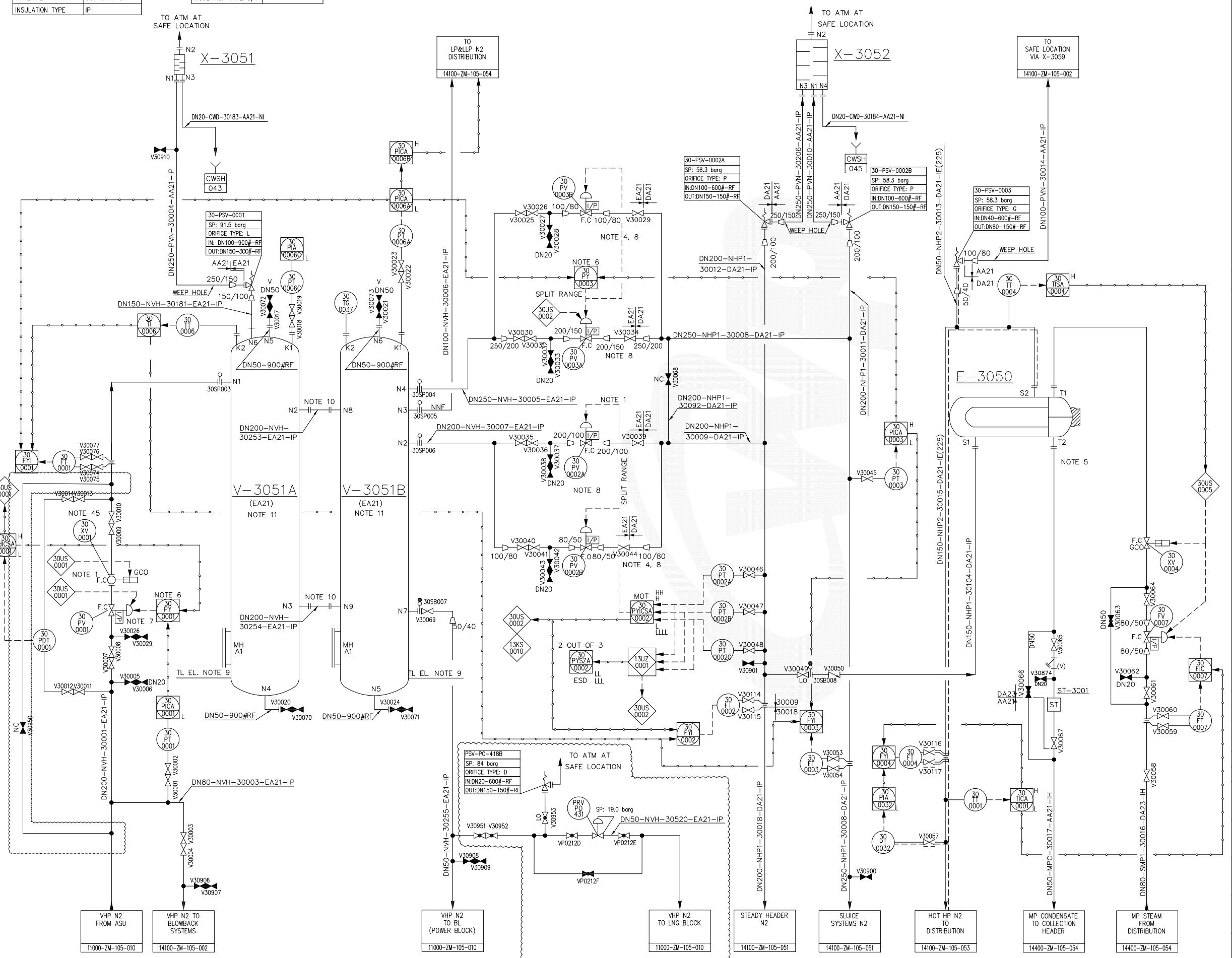
NOTES

V-3051A/B	HP NITROGEN BUFFER VESSEL
ID x LENGTH	4000X15500 mm
VOLUME	228.632 m3
DESIGN PRESS.	91.5 barg
DESIGN TEMP.	130 °C
MATERIAL	CS+ 3mm CA
INSULATION TYPE	IP

E-3050	HP N2 HEATER
DUTY	1029 kW
DESIGN PRESS.	S/T 58.3/61(FV) barg
DESIGN TEMP.	S/T 280/352 °C
MATERIAL	S/T CS+3mmCA/CS+3mmCA
INSULATION TYPE	S/T III

X-3051	SILENCER	
CAPACITY	22.3	kg/s
DESIGN PRESS.(SHELL/INTER.)	ATM	/2.5 barg
DESIGN TEMP.	100	°C
MATERIAL	C.S+1.5mm	CA

X-3052	SILENCER
CAPACITY	50.4/47.8 kg/s
DESIGN PRESS.(SHELL/INTER.)	ATM/2.5 barg
DESIGN TEMP.	100 °C
MATERIAL	C.S+1.5mm CA



- ONTROL DETAILS TO BE FINALIZED LATER WITH ASU VHP NITROGEN
OMPRESSOR(S) CONTROL SYSTEM.

AIMUM NITROGEN TEMPERATURE FROM ASU IS 84 degC.
LETED.

MALL BYPASS VALVE FOR NITROGEN SUPPLY TO SYSTEMS DURING LOW
ITROGEN CONSUMPTION.

RAIN VALVES ARE REQUIRED AT LOWEST POINT OF HEAT EXCHANGER.
OW SELECTOR.

ONTROL VALVE 30-PV-0001 IS SAFETY CRITICAL ONLY IN CASE ASU VHP
ITROGEN DESIGN PRESSURE IS HIGHER THAN V-3051 DESIGN PRESSURE.
O BE CONFIRMED LATER.

SAFETY CRITICAL.

HE V-3051A/B SHALL BE INSTALLED AS SAME ELEVATION.
OZZLES FOR EQUALIZING BETWEEN V-3051A AND V-3051B
HALL BE INSTALLED WTH SAME ELEVATION.

HE V-3051A/B SHALL BE INSTALLED AS CLOSE AS POSSIBLE.
LETED.

THIS VALVE INCLUDES A PRESSURE VESSEL FOR OPERATION.
FOR DETAIL SEE DWG :
-11000-ZM-105-007 / NO.45

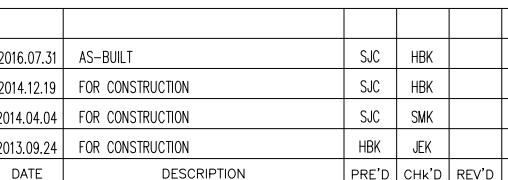
GENERAL NOTES

- FOR LEGENDS AND SYMBOLS SEE DWG'S :
11000-ZM-105-001 11000-ZM-105-005
11000-ZM-105-002 11000-ZM-105-006
11000-ZM-105-003 11000-ZM-105-010
11000-ZM-105-004 11000-ZM-105-011

REFERENCE DRAWING: T-13.412.276

ALL INSTRUMENTS TO BE IW(WINTERIZATION).

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KOREA WESTERN POWER CO., LTD.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (700MW X 1)

DOOSAN HEAVY INDUSTRIES

LOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM HP N2 BUFFER U-3000		
ICATION 3000			SHEET	SIZE	
	PROJECT DRAWING NUMBER		T11072-3000-02-001	- / -	
UNIT	PROJECT CODE	KOWEPO NUMBER	REV.	SCALE	
	560	1-14100-ZM-105-001	F		

NOTES

- DELETED.
- CONTENTS OF 14100-ZM-105-002 HAVE BEEN TRANSFERRED TO P&ID 14100-ZM-105-051.
- CONTROL VALVE 30-PV-0013 IS SAFETY CRITICAL. (ASU VHP NITROGEN DESIGN PRESSURE IS HIGHER THAN V-3052 DESIGN PRESSURE.)

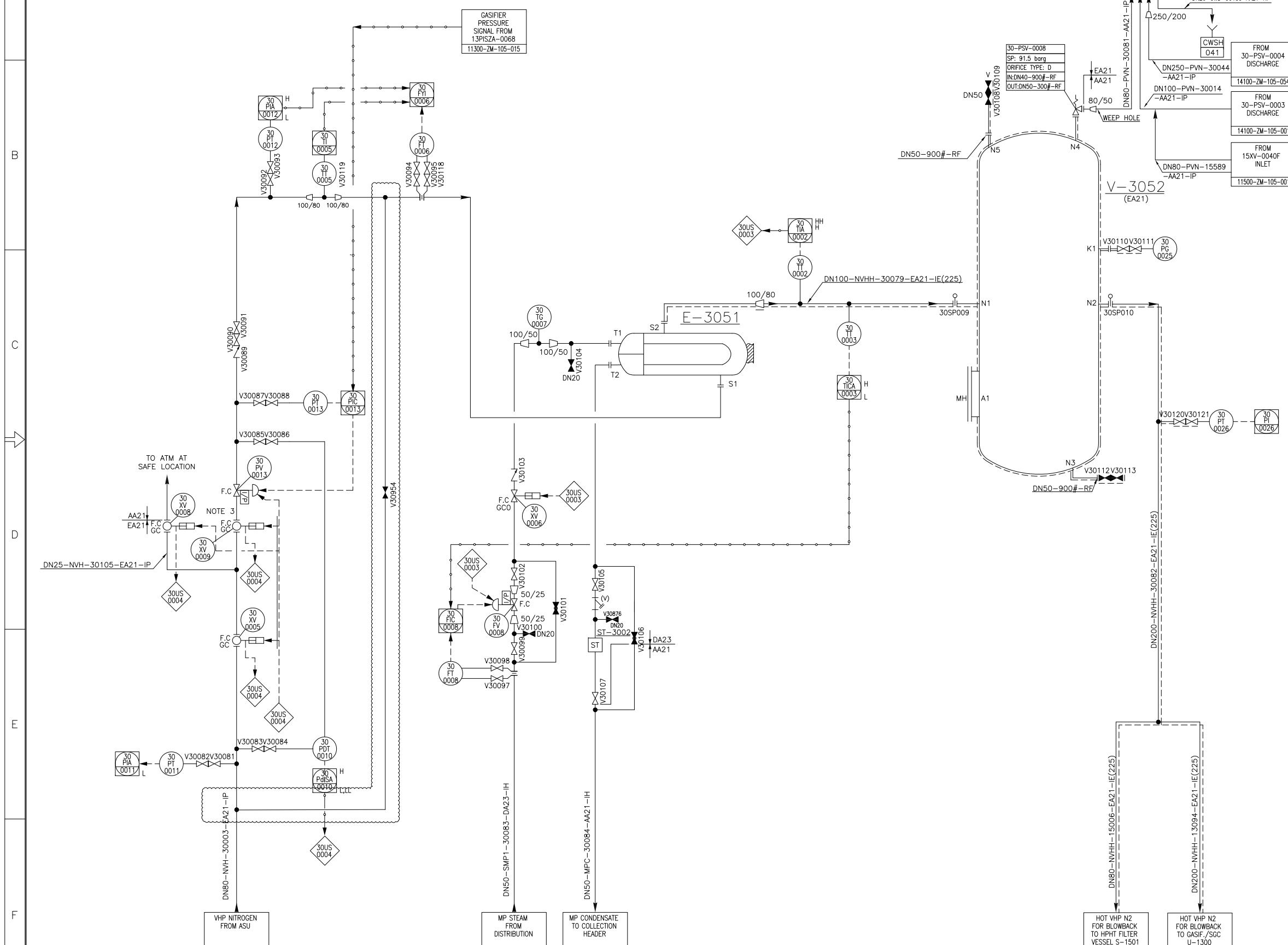
A

E-3051	BLOWBACK NZ HEATER
DUTY	338 kW
DESIGN PRESS. S/T	91.5 / 70.4(FV) barg
DESIGN TEMP. S/T	280 / 352 °C
MATERIAL	C5+3mm CA
INSULATION TYPE S/T	IH

V-3052	BLOWBACK BUFFER VESSEL
ID x LENGTH	1500x7500 mm
CAPACITY	3.0/0.96/4.9 kg/s
DESIGN PRESS.(SHELL/INTER.)	ATM/2.5 barg
DESIGN TEMP.	91.5 °C
MATERIAL	C.S.+1.5 mm CA
INSULATION TYPE	IE (225)

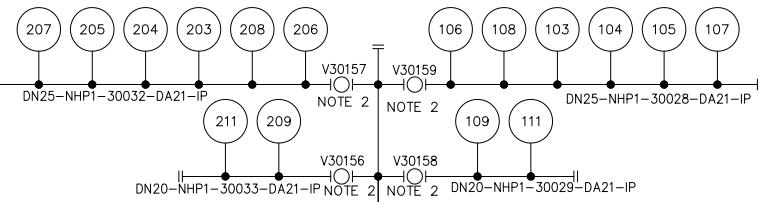
X-3059	SILENCER
CAPACITY	3.0/0.96/4.9 kg/s
DESIGN PRESS.(SHELL/INTER.)	ATM/2.5 barg
DESIGN TEMP.	300 °C
MATERIAL	C.S.+1.5 mm CA

B





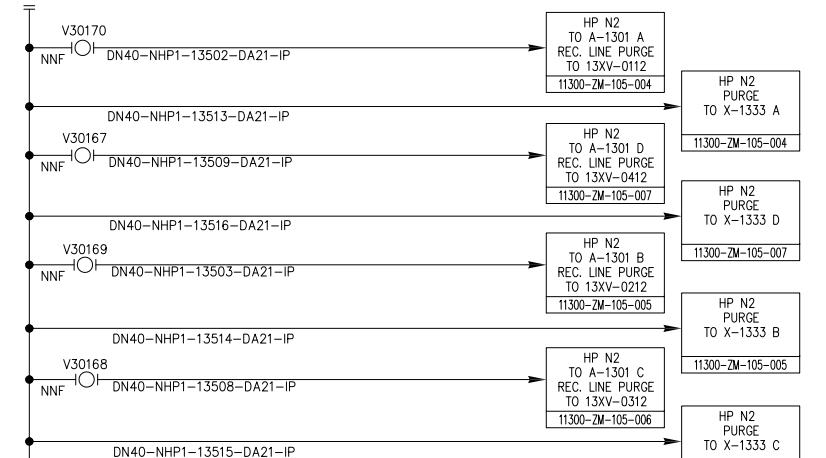
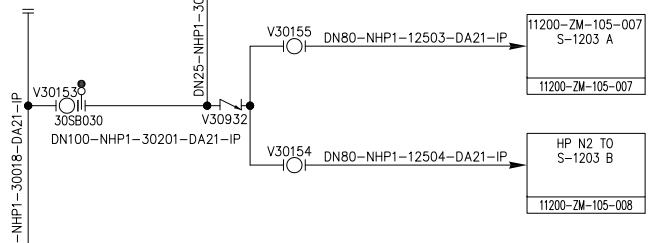
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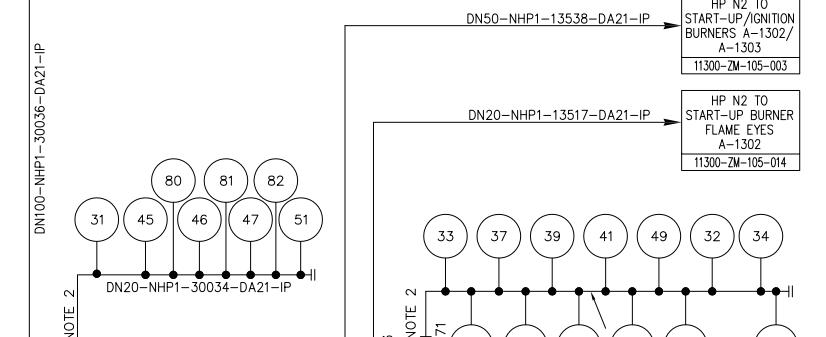
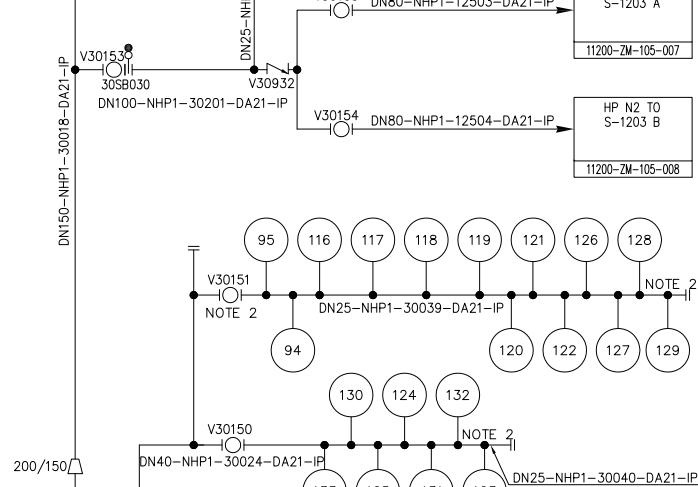
S-3051	CLEAN HP N2 FILTER
ID X LENGTH	432mmX1500mm
CAPACITY	5.86 Kg/s
DESIGN PRESSURE	58.3 barg
DESIGN TEMPERATURE	130 °C
MATERIAL	SS

1. PIPING TO BE OXYGEN CLEAN.
2. INSTRUMENT PURGES.
3. SLUICING VALVE PURGE(NNF)

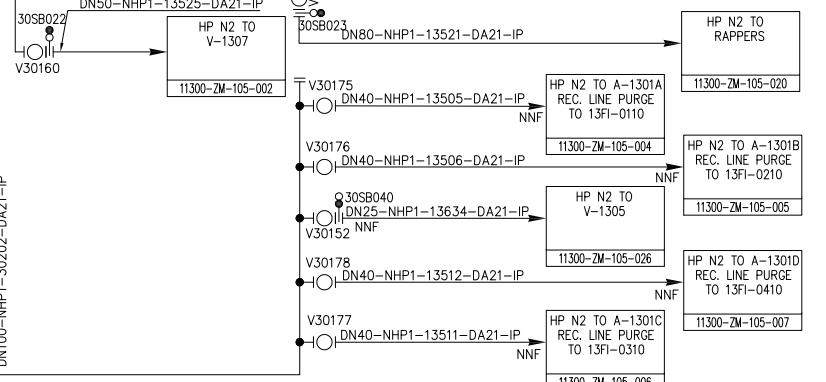
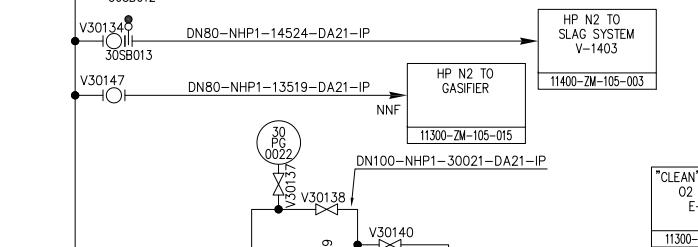
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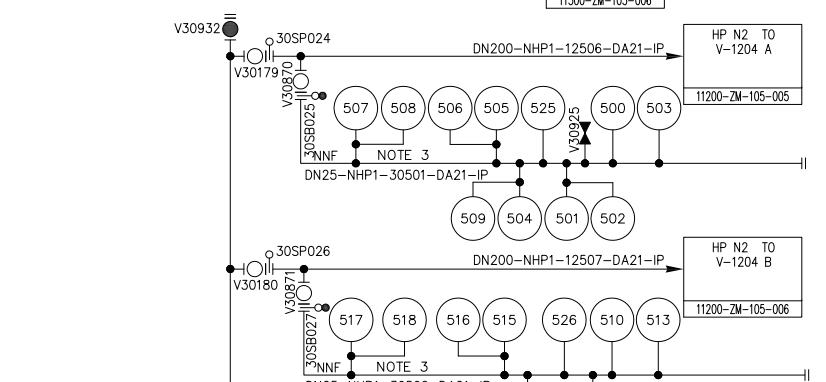
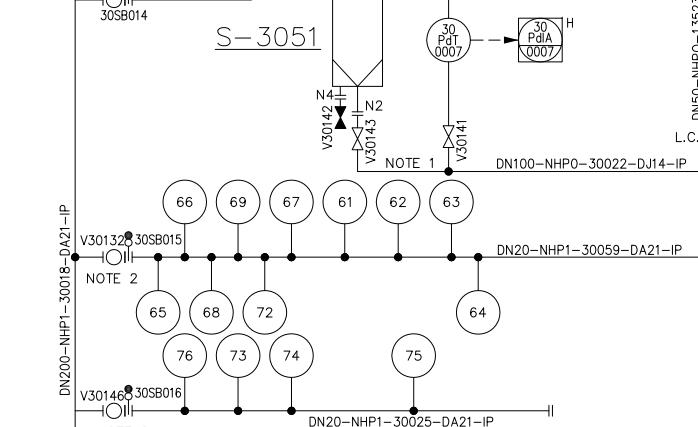
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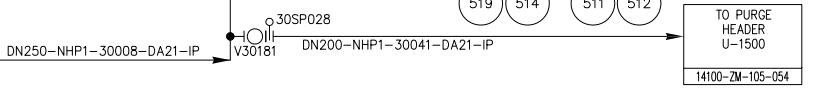
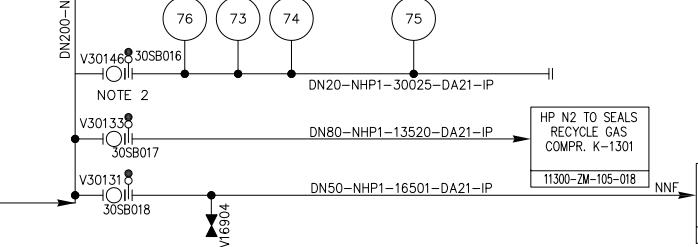
D



E



F



NOTES

1. PIPING TO BE OXYGEN CLEAN.
2. INSTRUMENT PURGES.
3. SLUICING VALVE PURGE(NNF)

GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DWG'S :
11000-ZM-105-001 11000-ZM-105-005
11000-ZM-105-002 11000-ZM-105-006
11000-ZM-105-003 11000-ZM-105-010
11000-ZM-105-004 11000-ZM-105-011
2. VENT VALVES ARE REQUIRED AT HIGHEST POINTS OF HEADERS/SUB-HEADERS.
3. DRAIN VALVES ARE REQUIRED AT LOWEST POINTS OF HEADERS/SUB-HEADERS.
4. REFERENCE DWG: T-13.412-277
5. FOR PURGES DETAILS SEE DWG : 14100-ZM-105-052
6. ALL INSTRUMENTS TO BE IW(WINTERIZATION).

AS BUILT

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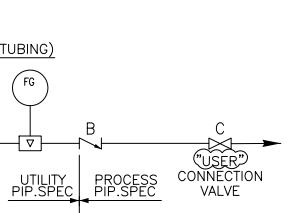
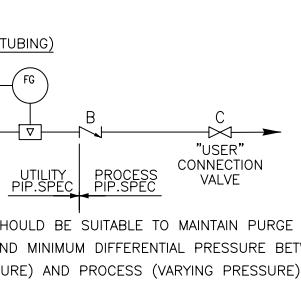
REV.	DATE	DESCRIPTION	PRED	CHK'D	REV'D	APP'D
	2017.08.29	AS-BUILT	SJC	HBK	SJL	
	2014.12.19	FOR CONSTRUCTION	SJC	HBK	SJL	
	2014.04.04	FOR CONSTRUCTION	SJC	SMK	SJL	
	2013.09.24	FOR CONSTRUCTION	HBK	JEK	HKJ	

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO., LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM		
GASIFICATION		U-3000	HP N2 DISTRIBUTION		
PROJECT DRAWING NUMBER			SHEET SIZE		
			- / -		
MULTI UNIT	PROJECT CODE	KOWEO NUMBER	REV.	SCALE	
1	560	1-14100-ZM-105-051	F		
03 M 108 B	1				
2	2				
3	3				
4	4				
5	5				
6	6				
7	7				
8	8				
9	9				

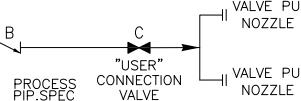
NOTES



2. THE PURGE FOR EQUIPMENTS OR PIPING.
THIS PURGE IS PIPE LINE TO USER.

3. PURGE CONNECTION REFER TO 14100-ZM-106-053.

4. FOR INTERMITTENT SLICING VALVE PURGE(NNF)



5. FOR HYDRO STATIC TEST DURING COMMISSIONING.

GENERAL NOTES

- FOR LEGENDS AND SYMBOLS SEE DWG'S :
11000-ZM-105-001 11000-ZM-105-005
11000-ZM-105-002 11000-ZM-105-006
11000-ZM-105-003 11000-ZM-105-010
11000-ZM-105-004 11000-ZM-105-011

2. PURGES ON BELLOWS TO BE CHECKED FOR FLEXIBILITY.

3. PURGE FLOW TO BE DETERMINED LATER.

4. REFERENCE DRAWING : T-13.412.278

5. ALL INSTRUMENTS TO BE IW(WINTERIZATION).

AS BUILT

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△ 2016.07.31 AS-BUILT SJC HBK SJL

△ 2014.12.19 FOR CONSTRUCTION SJC HBK SJL

△ 2014.04.04 FOR CONSTRUCTION SJC SMK SJL

△ 2013.09.24 FOR CONSTRUCTION HBK JEK HKJ

REV. DATE DESCRIPTION PRE'D CHk'D REV'D APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

BLOCK SAFETY TITLE PIPING & INSTRUMENTATION DIAGRAM
GASIFICATION U-3000 U-3000

PROJECT DRAWING NUMBER T11072-3000-02-052 SHEET SIZE

MULTI UNIT PROJECT CODE KOWEO NUMBER REV. SCALE

1 560 1-14100-ZM-105-052 F

PURGE CONNECTION NUMBER ON N.P.D&O	PURGE CONNECTION NUMBER ON PROCESS P&ID	PROCESS P&ID	PURGE TYPE	PURGE OF	PURGE CONNECTION LINE NO.	VALVE NUMBER (A)	UTILITY PIPING SPEC. (B,C)	VALVE NUMBER (B)	VALVE NUMBER (C)	INSTRUMENT TAG NO.
31	HPN2 SPO 31	11300-ZM-105-015	SP1	13 PT0068C	DN20-NHP1- 30300 -DA21-IP	V30500	DA21	-	-	-
32	HPN2 SPO 32	11300-ZM-105-015	SP1	13 PdIA0062	DN20-NHP1- 30301 -DA21-IP	V30501	DA21	-	-	-
33	HPN2 SPO 33	11300-ZM-105-015	SP1	13 PdIA0066	DN20-NHP1- 30302 -DA21-IP	V30502	DA21	-	-	-
34	HPN2 SPO 34	11300-ZM-105-015	SP1	13 PdIA0063	DN20-NHP1- 30303 -DA21-IP	V30503	DA21	-	-	-
35	HPN2 SPO 35	11300-ZM-105-015	SP1	13 PdI0067	DN20-NHP1- 30304 -DA21-IP	V30504	DA21	-	-	-
36	HPN2 SPO 36	11300-ZM-105-015	SP1	13 PdIA0066	DN20-NHP1- 30305 -DA21-IP	V30505	DA21	-	-	-
37	HPN2 SPO 37	11300-ZM-105-015	SP1	13 PT007C	DN20-NHP1- 30306 -DA21-IP	V30506	DA21	-	-	-
38	HPN2 SPO 38	11300-ZM-105-015	SP1	13 PT007B	DN20-NHP1- 30307 -DA21-IP	V30507	DA21	-	-	-
39	HPN2 SPO 39	11300-ZM-105-015	SP1	13 PT007A	DN20-NHP1- 30308 -DA21-IP	V30508	DA21	-	-	-
40	HPN2 SPO 40	11300-ZM-105-015	SP1	13 PT0068A	DN20-NHP1- 30309 -DA21-IP	V30509	DA21	-	-	-
41	HPN2 SPO 41	11300-ZM-105-015	SP1	13 PT0068B	DN20-NHP1- 30310 -DA21-IP	V30510	DA21	-	-	-
42	HPN2 SPO 42	11300-ZM-105-015	SP1	13 PdI0065A	DN20-NHP1- 30311 -DA21-IP	V30511	DA21	-	-	-
43	HPN2 SPO 43	11300-ZM-105-015	SP1	13 PdI0065B	DN20-NHP1- 30312 -DA21-IP	V30512	DA21	-	-	-
44	HPN2 SPO 44	11300-ZM-105-015	SP1	13 PdI0065C	DN20-NHP1- 30313 -DA21-IP	V30513	DA21	-	-	-
45	HPN2 SPO 45	11300-ZM-105-015	SP1	13 PT0061A	DN20-NHP1- 30314 -DA21-IP	V30514	DA21	-	-	-
46	HPN2 SPO 46	11300-ZM-105-015	SP1	13 PT0008A	DN20-NHP1- 30315 -DA21-IP	V30515	DA21	-	-	-
47	HPN2 SPO 47	11300-ZM-105-015	SP1	13 PT0008A	DN20-NHP1- 30316 -DA21-IP	V30516	DA21	-	-	-
48	HPN2 SPO 48	11300-ZM-105-015	SP1	13 PdI0065A	DN20-NHP1- 30317 -DA21-IP	V30517	DA21	-	-	-
49	HPN2 SPO 49	11300-ZM-105-015	SP1	13 PdI0065B	DN20-NHP1- 30318 -DA21-IP	V30518	DA21	-	-	-
50	HPN2 SPO 50	11300-ZM-105-015	SP1	13 PdI0065C	DN20-NHP1- 30319 -DA21-IP	V30519	DA21	-	-	-
51	HPN2 SPO 51	11300-ZM-105-017	SP1	13 PT0070	DN20-NHP1- 30320 -DA21-IP	V30520	DA21	-	-	-
54	HPN2 SPO 54	11300-ZM-105-016	SP1	12 PdI0128	DN20-NHP1- 30321 -DA21-IP	V30521	DA21	-	-	-
55	HPN2 SPO 55	11300-ZM-105-017	SP1	13 PdI0067	DN20-NHP1- 30322 -DA21-IP	V30522	DA21	-	-	-
56	HPN2 SPO 56	11300-ZM-105-016	SP1	12 PdI0228	DN20-NHP1- 30323 -DA21-IP	V30523	DA21	-	-	-
58	HPN2 SPO 58	11300-ZM-105-016	SP1	14 PdI0013	DN20-NHP1- 30324 -DA21-IP	V30524	DA21	-	-	-
59	HPN2 SPO 59	11300-ZM-105-016	SP1	14 PdI0014	DN20-NHP1- 30325 -DA21-IP	V30525	DA21	-	-	-
60	HPN2 SPO 60	11300-ZM-105-016	SP1	13 PdI0064	DN20-NHP1- 30326 -DA21-IP	V30526	DA21	-	-	-
61	HPN2 SPO 61	11300-ZM-105-018	SP1	13 PT0011B	DN20-NHP1- 30327 -DA21-IP	V30527	DA21	-	-	-
62	HPN2 SPO 62	11300-ZM-105-018	SP1	13 PT0011B	DN20-NHP1- 30328 -DA21-IP	V30528	DA21	-	-	-
63	HPN2 SPO 63	11300-ZM-105-018	SP1	13 PT0011A	DN20-NHP1- 30329 -DA21-IP	V30529	DA21	-	-	-
64	HPN2 SPO 64	11300-ZM-105-018	SP1	13 PT0011A	DN20-NHP1- 30330 -DA21-IP	V30530	DA21	-	-	-
65	HPN2 SPO 65	11300-ZM-105-018	SP1	13 PT0071	DN20-NHP1- 30331 -DA21-IP	V30531	DA21	-	-	-
66	HPN2 SPO 66	11300-ZM-105-018	SP1	13 PdI0075	DN20-NHP1- 30332 -DA21-IP	V30532	DA21	-	-	-
67	HPN2 SPO 67	11300-ZM-105-018	SP1	13 PdI0075	DN20-NHP1- 30333 -DA21-IP	V30533	DA21	-	-	-
68	HPN2 SPO 68	11300-ZM-105-018	SP1	13 PdI0073	DN20-NHP1- 30334 -DA21-IP	V30534	DA21	-	-	-
69	HPN2 SPO 69	11300-ZM-105-018	SP1	13 PdI0073	DN20-NHP1- 30335 -DA21-IP	V30535	DA21	-	-	-
72	HPN2 SPO 72	11300-ZM-105-018	SP1	13 PdI0074	DN20-NHP1- 30338 -DA21-IP	V30538	DA21	-	-	-
73	HPN2 SPO 73	11400-ZM-105-001	SP1	14 LT0001A	DN20-NHP1- 30339 -DA21-IP	V30539	DA21	-	-	-
74	HPN2 SPO 74	11400-ZM-105-001	SP1	14 LT0001B	DN20-NHP1- 30340 -DA21-IP	V30540	DA21	-	-	-
75	HPN2 SPO 75	11400-ZM-105-001	SP1	14 LT0001C	DN20-NHP1- 30341 -DA21-IP	V30541	DA21	-	-	-
76	HPN2 SPO 76	11600-ZM-105-001	SP1	16 LG0002	DN20-NHP1- 30342 -DA21-IP	V30542	DA21	-	V30797	D453
79	NOTE 2,3 HOT HPN2 SP079	11300-ZM-105-015	SP1	DN50-NHP1-13115-DN12-IE	DN20-NHP2- 30449 -DA21-IP	V30593	DA21	V30594	V30595	DN12 30-FCV-0144
80	HPN2 SPO 80	11300-ZM-105-015								



A

A

B

B

C

C

D

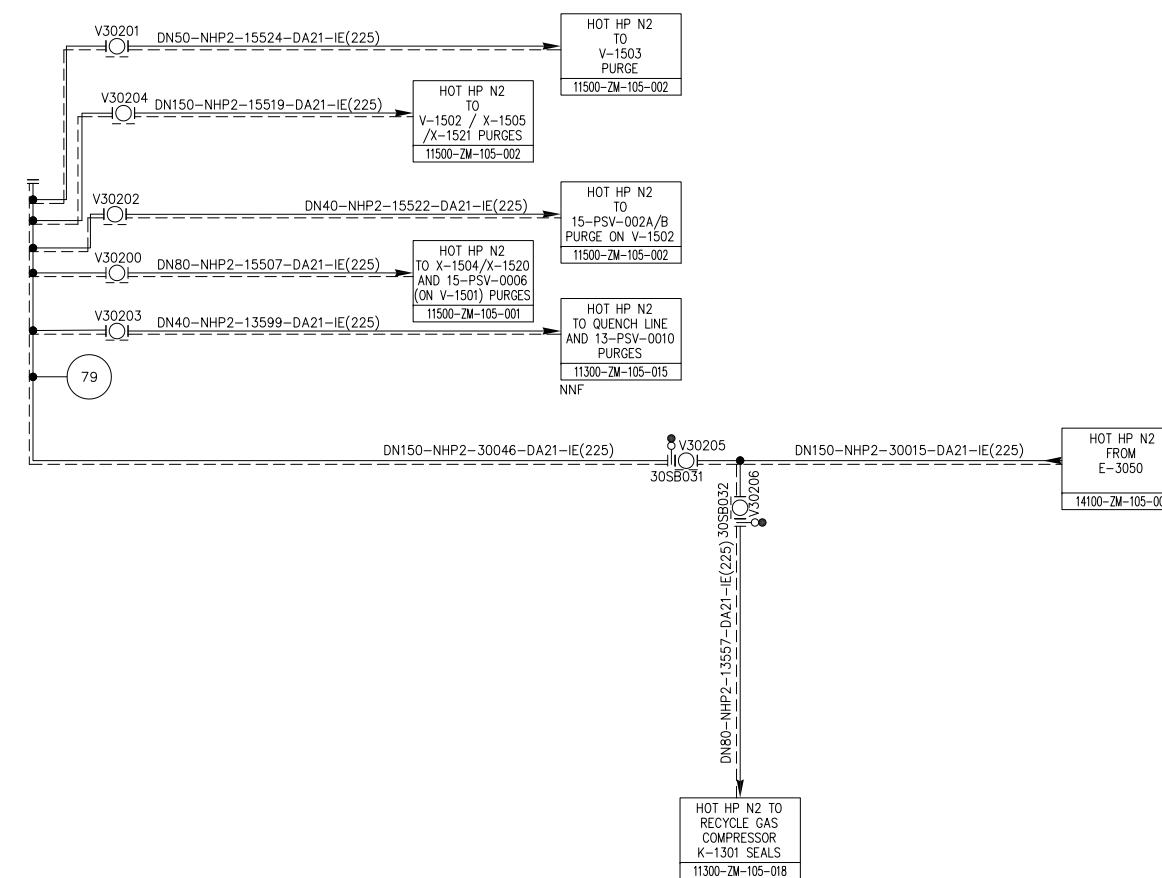
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E

E

F

F



GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DWG'S :
11000-ZM-105-001 11000-ZM-105-005
11000-ZM-105-002 11000-ZM-105-006
11000-ZM-105-003 11000-ZM-105-010
11000-ZM-105-004 11000-ZM-105-011
2. REFERENCE DWG: T-13.412-279
3. ALL INSTRUMENTS TO BE IW(WINTERIZATION).

AS BUILT

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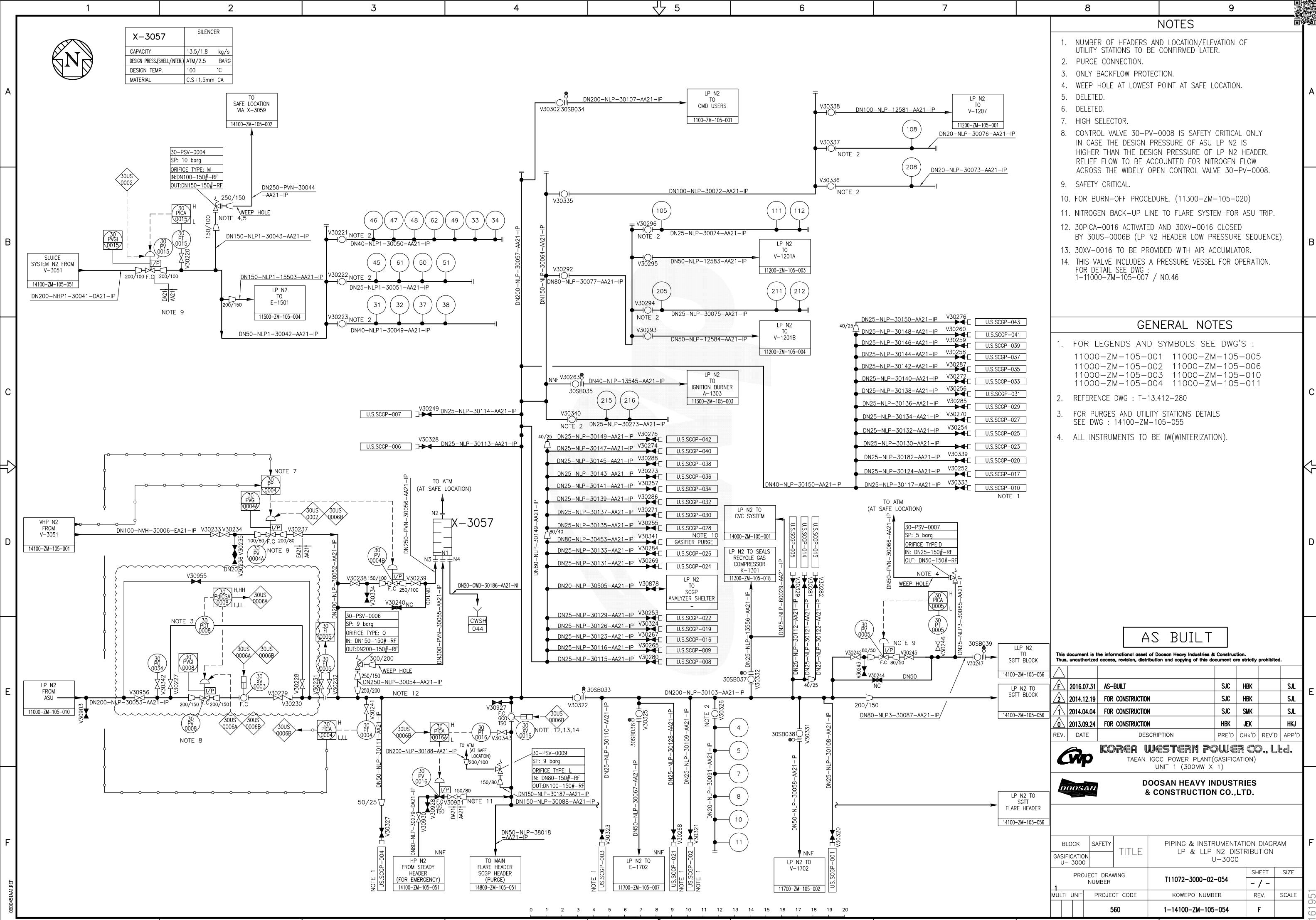
△					
△F	2016.07.31	AS-BUILT	SJC	HBK	SJL
△2	2014.12.19	FOR CONSTRUCTION	SJC	HBK	SJL
△1	2014.04.04	FOR CONSTRUCTION	SJC	SMK	SJL
△0	2013.09.24	FOR CONSTRUCTION	HBK	JEK	HKJ
REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)



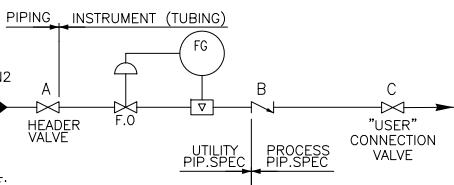
**DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO., LTD.**

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM GASIFICATION U-3000	SHEET	SIZE
			PROJECT DRAWING NUMBER	T11072-3000-02-053	- / -
MULTI UNIT	PROJECT CODE	KOWEO NUMBER		REV.	SCALE
1		560	1-14100-ZM-105-053	F	



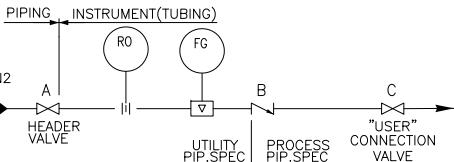
NOTES

1. TYPE SP 1:



NOTE:
INTEGRATED FLOW CONTROL SHOULD BE SUITABLE TO MAINTAIN PURGE VOLUME BETWEEN MAXIMUM AND MINIMUM DIFFERENTIAL PRESSURE BETWEEN PURGE MEDIUM (FIXED PRESSURE) AND PROCESS (VARYING PRESSURE).

TYPE SP 2:



2. THE PURGE FOR EQUIPMENTS OR PIPING.
THIS PURGE IS PIPE LINE TO USER.

3. FOR HYDRO STATIC TEST DURING COMMISSIONING.

GENERAL NOTES

1. FOR LEGENDS AND SYMBOLS SEE DWG'S :
 11000-ZM-105-001 11000-ZM-105-005
 11000-ZM-105-002 11000-ZM-105-006
 11000-ZM-105-003 11000-ZM-105-010
 11000-ZM-105-004 11000-ZM-105-011

2. PURGES ON BELLows / VESSELS WITH WEIGHT CELLS TO BE CHECK FOR FLEXIBILITY.

3. PURGE FLOWS TO BE DETERMINED LATER.

4. REFERENCE DRAWING: T-13.412.281

5. ALL INSTRUMENTS TO BE IW(WINTERIZATION).

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	2016.07.31	AS BUILT	SHS	KML	SGK	DJK
	2019.10.15	FOR CONSTRUCTION	SHS	KML	SGK	DJK
REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D	APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN
& CONSTRUCTION CO.,LTD.

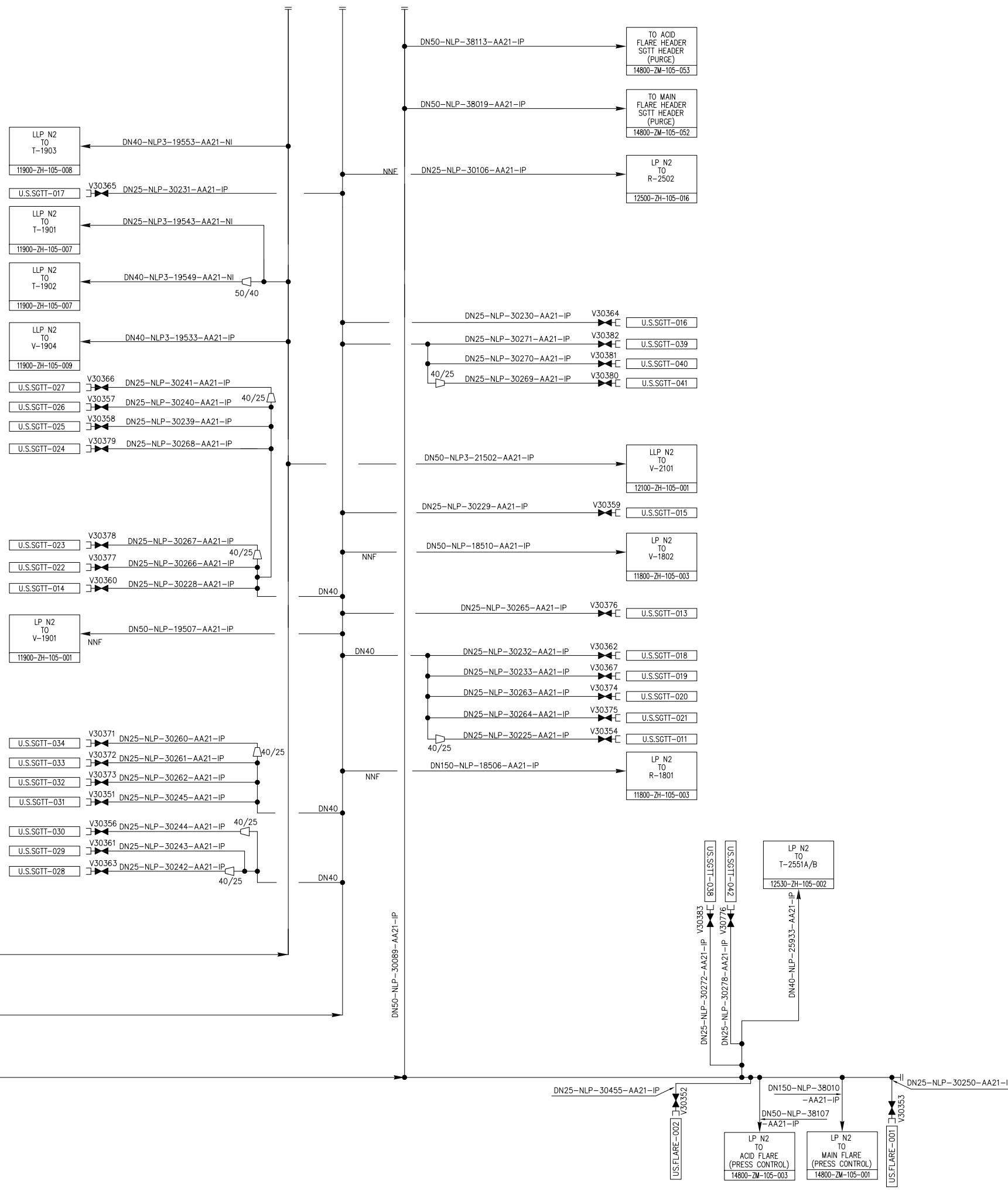
BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM		
			GASIFICATION U-3000		SIZE
PROJECT DRAWING NUMBER		T11072-3000-02-055	SHEET	SIZE	
MULTI UNIT	PROJECT CODE	KOWEPO NUMBER	REV.	SCALE	
1	560	1-14100-ZM-105-055	0		

AS BUILT

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20



U.S. No.	EQUIPMENT SERVED	ELEVATION (mm)
SGTT-011	E1801A/B	+8000
SGTT-012	COMMON	+8000
SGTT-013	P1901A/B	+8000
SGTT-014	E-1901	+8000
SGTT-015	P-1902A/B/C	+8000
SGTT-016	S-2101A/B	+8000
SGTT-017	T1901	+8000
SGTT-018	R-1801/R-1802	+14000
SGTT-019	R-1801/R-1802	+18300
SGTT-020	R-1802	+23200
SGTT-021	R-1801	+28500
SGTT-022	E-1902A/B	+13000
SGTT-023	E-1904	+20700
SGTT-024	C-1902	+15400
SGTT-025	C-1902	+23650
SGTT-026	C-1902	+34200
SGTT-027	C-1902	+36000
SGTT-028	C-1901	+11000
SGTT-029	C-1901	+14850
SGTT-030	C-1901	+24700
SGTT-031	V-1902	+10800
SGTT-032	V-1902	+15200
SGTT-033	V-1902	+19400
SGTT-034	V-1902	+21650
SGTT-035	C-1951	+15300
SGTT-036	C-1951	+29800
SGTT-037	C-1951	+38000
SGTT-038	T-3601/T-3602	+8000
SGTT-039	C-2101	+12700
SGTT-040	C-2101	+23000
SGTT-041	C-2101	+29200
SGTT-042	T-2551A/B	+8000
FLARE-001	X-3801/X-3802	+8000
FLARE-002	V-3801 A/B /V-3802	+8000



NOTES

1. NOT USED.

GENERAL NOTES

- FOR LEGENDS AND SYMBOLS SEE DWG'S :
 11000-ZM-105-001 11000-ZM-105-005
 11000-ZM-105-002 11000-ZM-105-006
 11000-ZM-105-003 11000-ZM-105-010
 11000-ZM-105-004 11000-ZM-105-011
 - ALL INSTRUMENTS TO BE IW(WINTERIZATION).

AS BUIL

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	2016.07.31	AS-BUILT	SJC	HBK	SJL
	2014.12.19	FOR CONSTRUCTION	SJC	HBK	SJL
	2014.04.04	FOR CONSTRUCTION	SJC	SMK	SJL
	2013.09.24	FOR CONSTRUCTION	HBK	JEK	HKJ
REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D
					APP'D

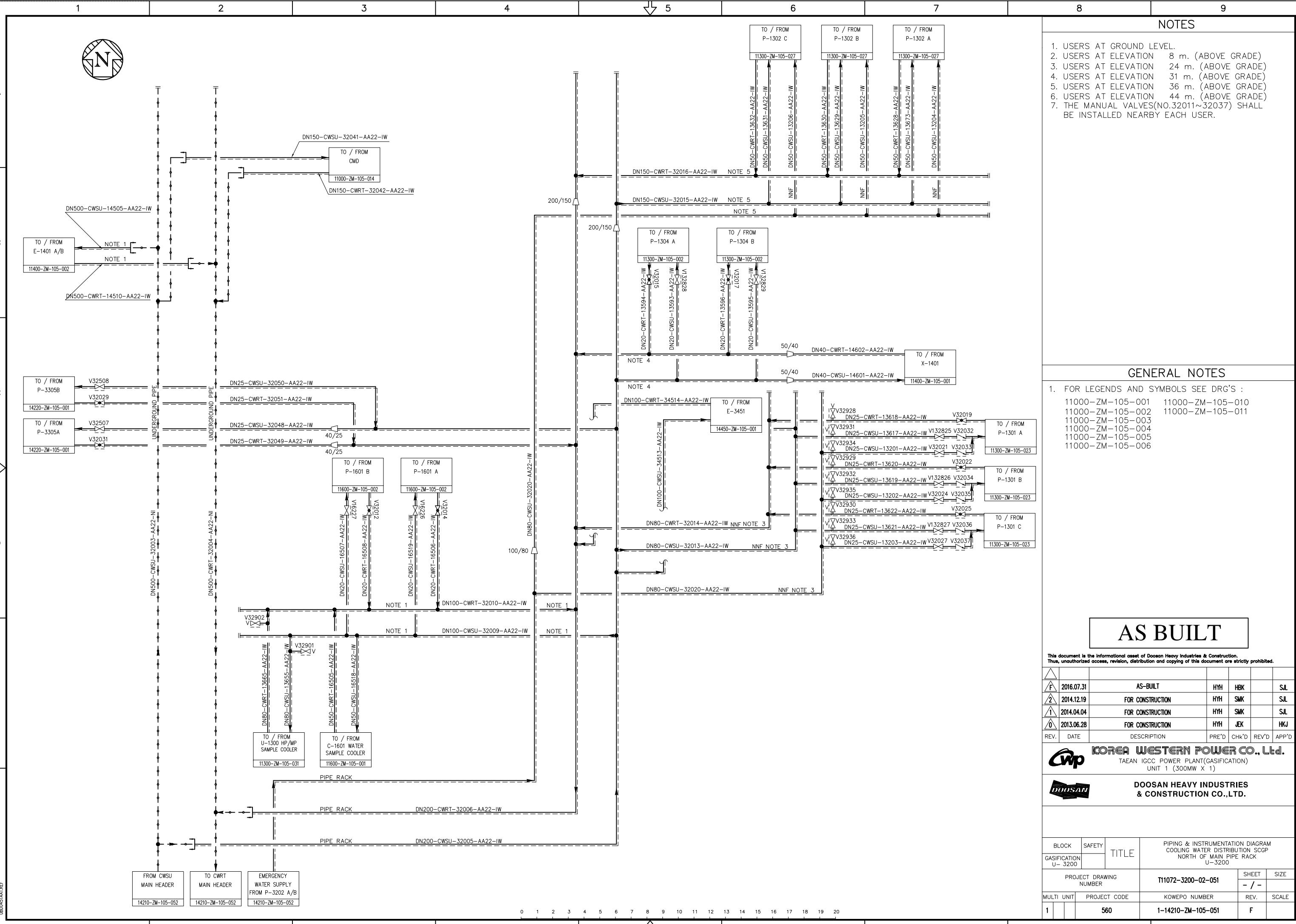
KOREA WESTERN POWER CO., Ltd
TAEAN IGCC POWER PLANT(GASIFICATION)

**DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO., LTD.**

BLOCK		SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM LP & LLP N2 DISTRIBUTION U-3000		
GASIFICATION U - 3000						
PROJECT DRAWING NUMBER			T11072-3000-02-056	SHEET	SIZE	
				- / -		
MULTI UNIT		PROJECT CODE	KOWEO NUMBER	REV.	SCALE	
1		560	1-14100-ZM-105-056	F		

NOTES

1. USERS AT GROUND LEVEL.
2. USERS AT ELEVATION 8 m. (ABOVE GRADE)
3. USERS AT ELEVATION 24 m. (ABOVE GRADE)
4. USERS AT ELEVATION 31 m. (ABOVE GRADE)
5. USERS AT ELEVATION 36 m. (ABOVE GRADE)
6. USERS AT ELEVATION 44 m. (ABOVE GRADE)
7. THE MANUAL VALVES(No.32011~32037) SHALL BE INSTALLED NEARBY EACH USER.



NOTES

- EQUIPMENT TO BE WINTERIZED UP TO NORMAL LIQUID LEVEL.
- DELETED.
- EQUIPPED WITH BIRD SCREEN.
- LOCATION AT ELEVATION 44 m. (ABOVE GRADE)
- THE MANUAL VALVES(No.32142~32167) SHALL BE INSTALLED NEARBY EACH USER.
- OPERATING FOR BLACK OUT CASE.
- V-3201 LIQUID LEVEL
LLL : 200 mm, NLL : 1500 mm, HLL : 4700 mm
- CLOSED COOLING WATER DESIGN CONDITIONS ARE AS FOLLOWS.
 - SUPPLY PRESSURE : 6.5 barg
 - RETURN PRESSURE : 4.0 barg
 - SYSTEM DESIGN PRESSURE : 12.0 barg
 - SUPPLY TEMPERATURE : 35 °C
 - MAXIMUM RETURN TEMPERATURE : 45 °C
 - SYSTEM DESIGN TEMPERATURE : 70 °C
 - PEAK FLOW : 3400 ton/hr



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GENERAL NOTES

FOR LEGENDS AND SYMBOLS SEE DRG'S :

11000-ZM-105-001	11000-ZM-105-010
11000-ZM-105-002	11000-ZM-105-011
11000-ZM-105-003	
11000-ZM-105-004	
11000-ZM-105-005	
11000-ZM-105-006	

2. FOR LEVEL INSTRUMENTS DETAILS
SEE DWG: 14210-ZH-105-101

3. ALL INSTRUMENT TO BE IW(WINTERIZATION)

AS BUILT

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	2016.07.31	AS-BUILT	HYH	HBK	SJL
	2014.12.19	FOR CONSTRUCTION	HYH	SMK	SJL
	2014.04.04	FOR CONSTRUCTION	HYH	SMK	SJL
	2013.06.28	FOR CONSTRUCTION	HYH	JEK	HJK
REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

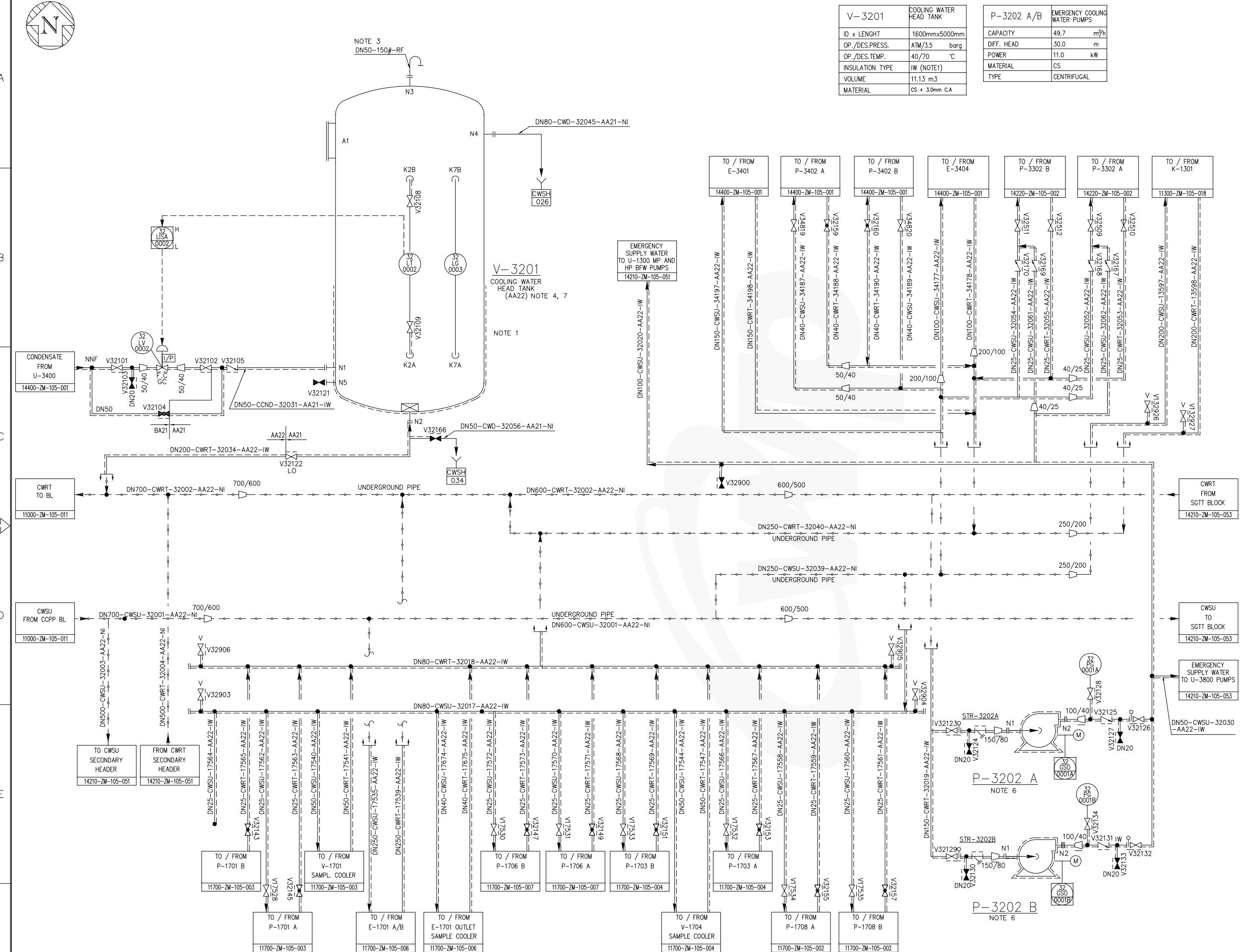
DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.

PIPING & INSTRUMENTATION DIAGRAM
COOLING WATER DISTRIBUTION SCGP
SOUTH OF MAIN PIPERACK
U-3200

PROJECT DRAWING NUMBER T11072-3200-02-052 SHEET SIZE
- / -

MULTI UNIT PROJECT CODE KOWEO NUMBER REV. SCALE

1 560 1-14210-ZM-105-052 F



NOTES

1. DELETED.
2. USERS AT ELEVATION 8 m. (ABOVE GRADE)
3. THE MANUAL VALVES(No.32205~32247) SHALL BE INSTALLED NEARBY EACH USER.

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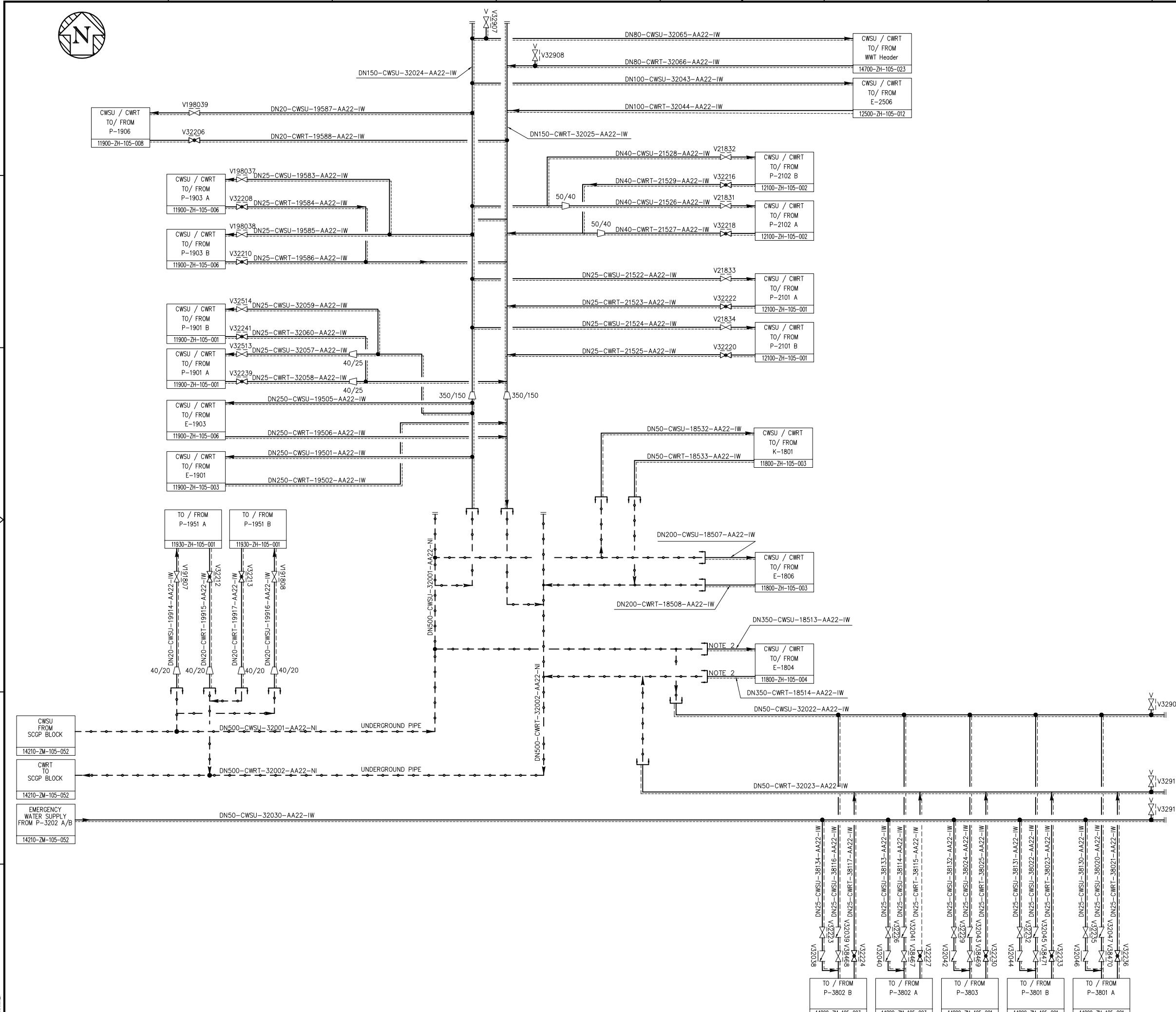
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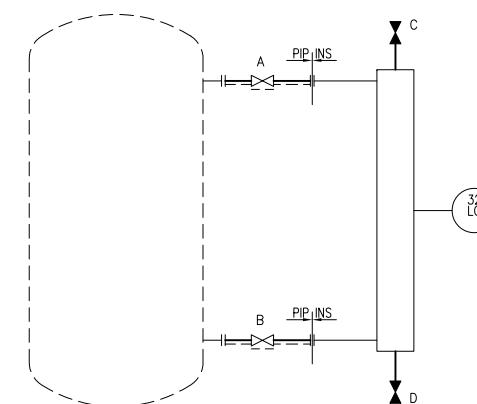
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P&ID 1-11420-ZM-105	ITEM	CLOSE DRAIN	DRAIN	VENT	PROCESS PIPING SPEC.	VALVE DESIGNATION			
						A	B	C	D
052	32-LG-0003	N/A	N/A	N/A	AA22	V32301	V32302	V32303	V32304

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	2016.07.31	AS-BUILT	HYH	HBK	SIL
	2014.12.29	FOR CONSTRUCTION	HYH	SMK	SIL
	2014.04.04	FOR CONSTRUCTION	HYH	SMK	SIL
	2013.06.28	FOR CONSTRUCTION	HYH	JEK	HKJ
REV.	DATE	DESCRIPTION	PRE'D	CHK'D	REV'D APP'D

KOREA WESTERN POWER CO., Ltd.
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO.,LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM LEVEL INSTRUMENT DETAILS U-3200	SHEET	SIZE
GASIFICATION U- 3200			PROJECT DRAWING NUMBER	T11072-3200-02-101	- / -
MULTI UNIT	PROJECT CODE	KOWEPO NUMBER		REV.	SCALE
1		560		1-14210-ZM-105-101	F

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GDOOSAN REF

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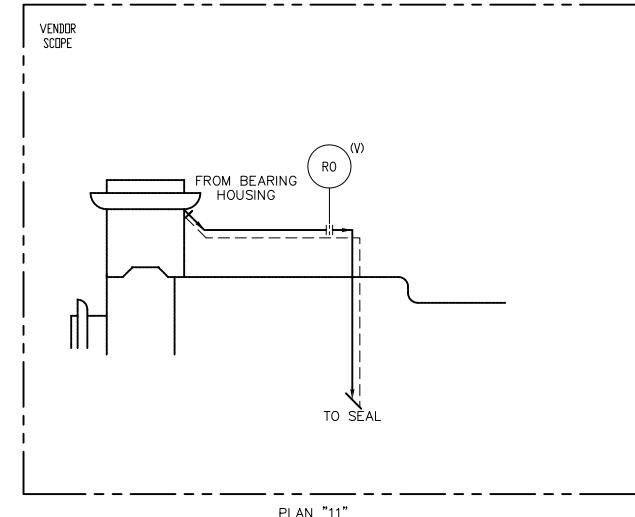
9

NOTES

- ARRANGEMENT DEPENDS ON PUMP DESIGN OF SELECTED VENDOR. TO BE SPECIFIED AFTER PUMP SELECTION.
- API PLAN 11 FOR PRIMARY SEAL PLAN
- API PLAN 61 FOR SECONDARY SEAL PLAN

API PLAN "11"

NOTE 2



PLAN "11"

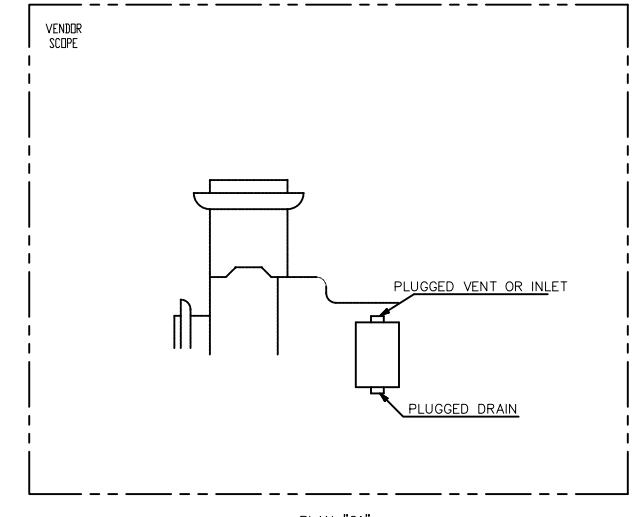
RECIRCULATION FROM PUMP CASE THROUGH ORIFICE TO SEAL.

API PLAN "11"

NO.	PUMP NO.	P & ID NO.	RD TAG NO.	REMARKS
1	P-3202A	14210-ZM-105-052	32-RD-0801	
2	P-3202B	14210-ZM-105-052	32-RD-0802	

API PLAN "61"

NOTE 3



PLAN "61"

TAPPED CONNECTIONS FOR PURCHASER'S USE;
APPLIES WHEN PURCHASER IS TO SUPPLY FLUID (STEAM, GAS, WATER, ETC.)
TO AUXILIARY SEALING DEVICE.

API PLAN "61"

NO.	PUMP NO.	P & ID NO.
1	P-3202A	14210-ZM-105-052
2	P-3202B	14210-ZM-105-052

GENERAL NOTES

- FOR LEGENDS AND SYMBOLS SEE DRG'S :
 - 11000-ZM-105-001 11000-ZM-105-010
 - 11000-ZM-105-002 11000-ZM-105-011
 - 11000-ZM-105-003
 - 11000-ZM-105-004
 - 11000-ZM-105-005
 - 11000-ZM-105-006
- ALL INSTRUMENT TO BE IW(WINTERIZATION)

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△					
△ F	2016.07.31	AS-BUILT	HYH	HBK	SJL
△ 2	2014.12.29	FOR CONSTRUCTION	HYH	SMK	SJL
△ 1	2014.04.04	FOR CONSTRUCTION	HYH	SMK	SJL
△ 0	2013.06.28	FOR CONSTRUCTION	HYH	JEK	HKJ
REV. DATE		DESCRIPTION	PRE'D	CHK'D	REV'D APP'D

KOREA WESTERN POWER CO., Ltd.
KWP
TAEAN IGCC POWER PLANT(GASIFICATION)
UNIT 1 (300MW X 1)

DOOSAN
DOOSAN HEAVY INDUSTRIES
& CONSTRUCTION CO.,LTD.

BLOCK	SAFETY	TITLE	PIPING & INSTRUMENTATION DIAGRAM PUMPS AUXILIARY U-3200		
GASIFICATION U- 3200		PROJECT DRAWING NUMBER	T11072-3200-02-102		
MULTI UNIT	PROJECT CODE	KOWEPO NUMBER			REV. SCALE
1		560			1-14210-ZM-105-102
		F			

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