



OLTIN YO'L GTL



UZBEKISTAN GAS TO LIQUID PROJECT (UZGTL)

HAZOP ACTION CLOSE-OUT REGISTER FOR MAKE-UP H2 COMPRESSOR PACKAGE

UZGTL-HDC-HSE-RP-50-0-0004

01

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CONFIDENTIAL

Rev	Revision Description	Date	By	Checked	Approved
00	Issue for Information	16-Mar-2018	T.H.Hong	W.S.Jung	C.K.Han
01	Issue for Information	04-May-2018	T.H.Hong	W.S.Jung	C.K.Han

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HAZOP ACTION CLOSE-OUT REGISTER FOR MAKE-UP H2 COMPRESSOR PACKAGE

Doc. No.: UZGTL-HDC-HSE-RP-50-0-0004 01

Date : 04-May-2018

Page 2 of 2



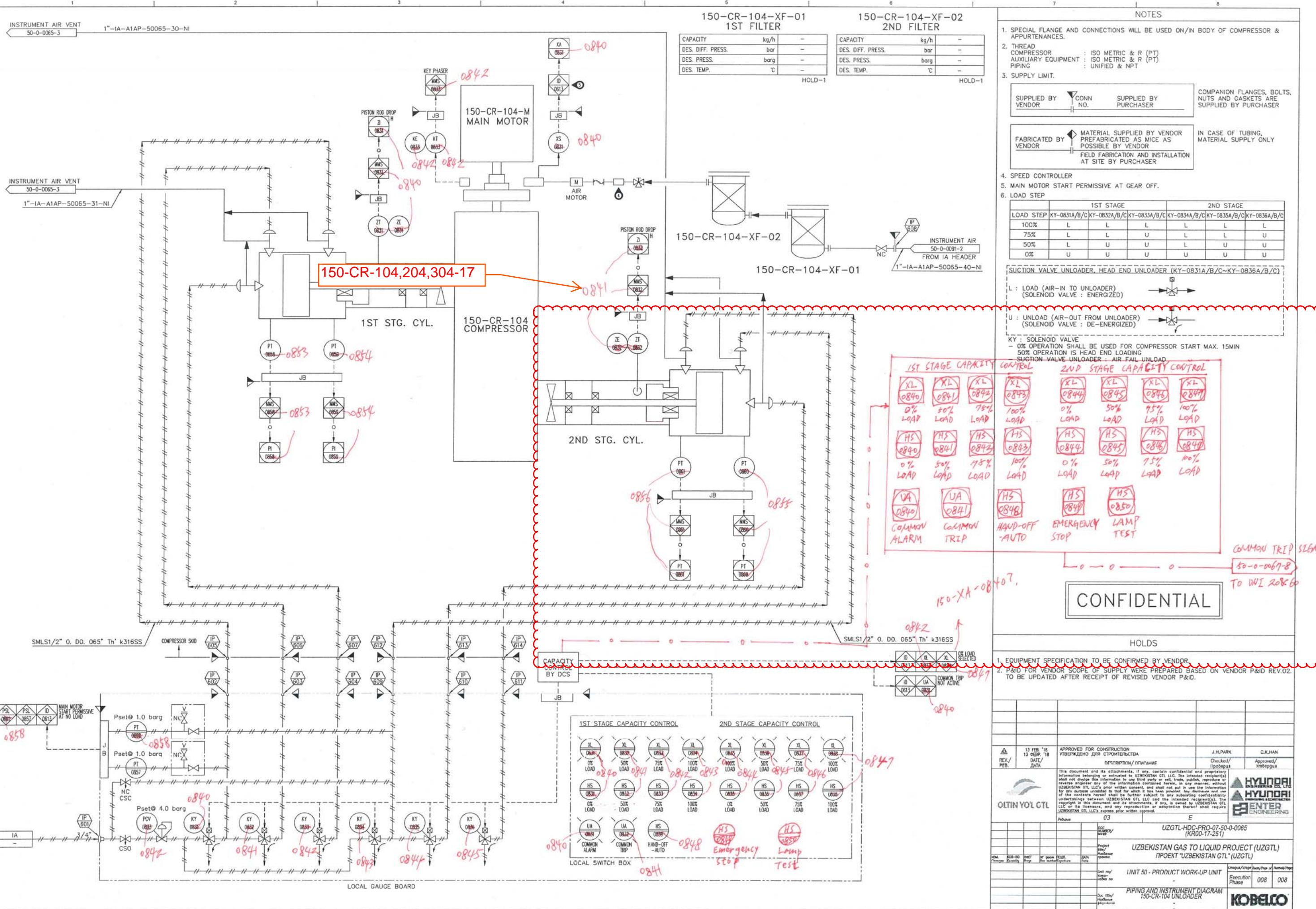
REVISION LOG

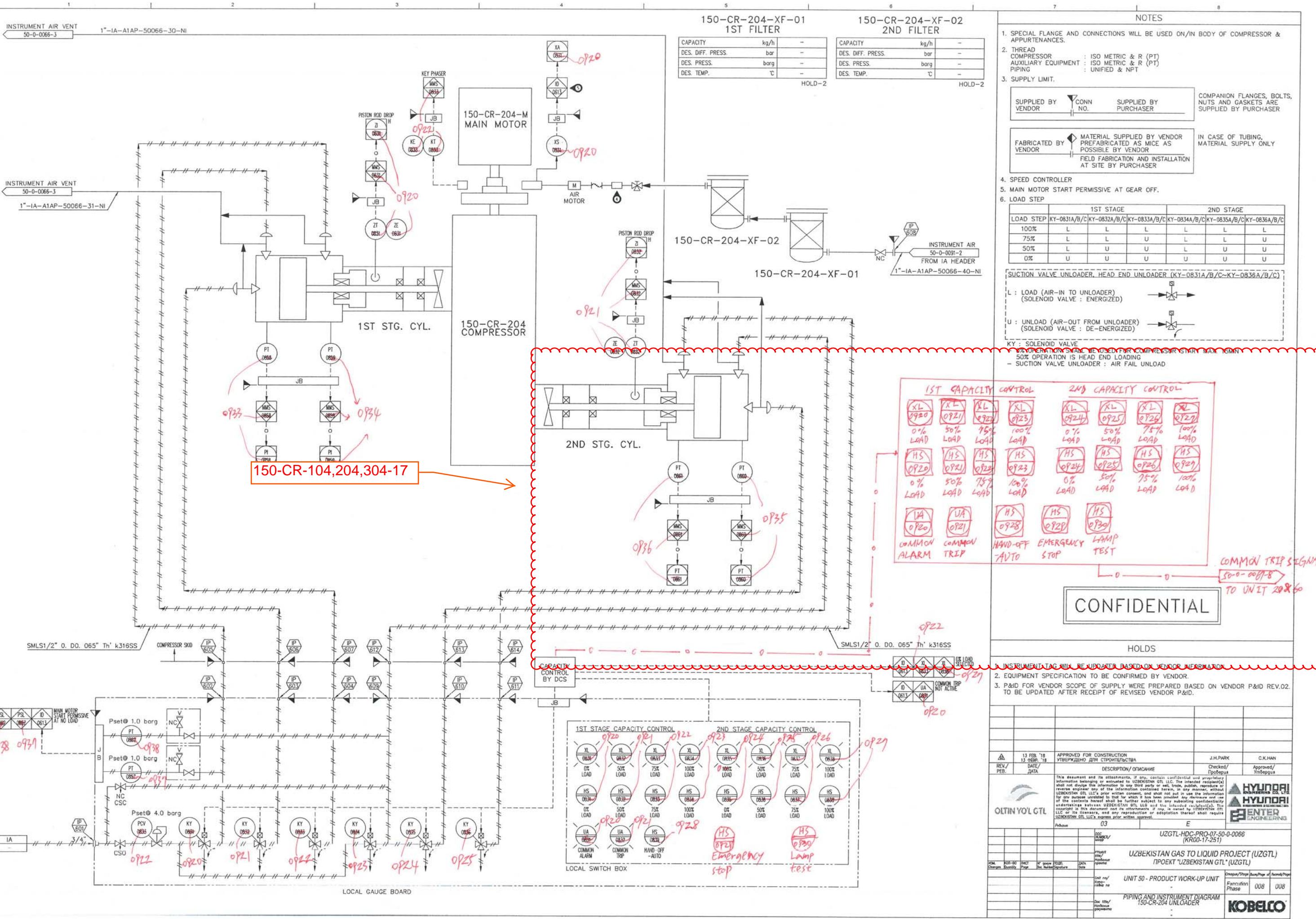
HAZOP Recommendations				O	To be incorporated	●	Incorporated	△	HOLD									
Unit 50: Product Work-up Unit			Related Documentation															
Unit	Rec. No.	Recommendations	Remarks	PFD	H&MB	P&ID	C&E	MDS / Eq list	Line List	IDS / Instr Index	alarm&trip list	Util/Chem Consumption	DB / Description	Control Narrative	Plot Plan	Operating Manual	MSD (Material Selection Diagram)	Others
50	150-CR-104/204/304-17	Address compressor 150-CR-104/204/304 trip signal to Unit 20 and Unit 60				O												
50	150-CR-104/204/304-18	Configure deviation alarm on DCS between 150-PT-0170, 150-PT-0171 and 150-PT-0838A				O												
50	150-CR-104/204/304-21	Provide check valve on 1st stage discharge of Compressor to Unit 20, 60, 50				O												
50	150-CR-104/204/304-22	Provide check valve on 2nd stage discharge of Compressor (upstream manual isolation valve on 2nd stage discharge line)				O												
50	150-CR-104/204/304-23	Provide manual valve (LO) downstream of check valve on Drain Pot 150-CR-104-XX-01/02 vent line				O												
50	150-CR-104/204/304-24	Provide check valve on cooling water supply line for Make-up H2 1st Stage Water Cooler																
50	150-CR-104/204/304-25	Provide High/Low Temperature Alarm on 150-TI-0831A on DCS				O					O							
50	150-CR-104/204/304-30	Provide check valve on H2 make-up line from Unit 60 (downstream isolation valve at BL)																
50	150-CR-104/204/304-33	Provide vent connection on high point of compressor suction piping				O												
50	150-CR-104/204/304-51	Evaluate discharge collection of 150-PSV-0834A/0835A to Oily Water Sewer (OWS)																
50	150-CR-104/204/304-83	Configure 150-LAH-0838A on DCS				O					O							
50	150-CR-104/204/304-85	Configure 150-TAL-0867A/0868A on DCS				O					O							

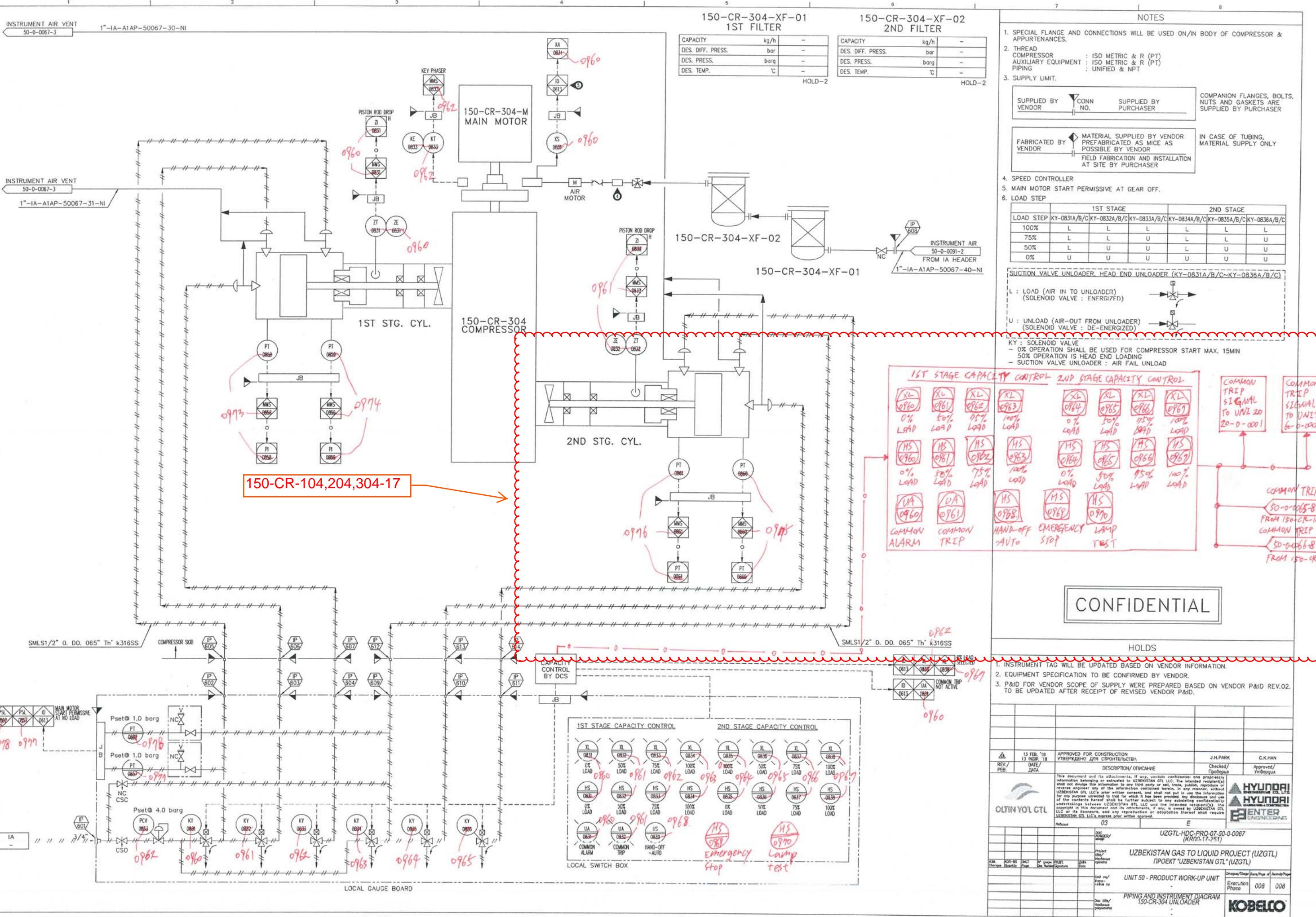
 OLTIN YO'L GTL	HAZOP ACTION CLOSE-OUT REGISTER FOR ERG COMPRESSOR PACKAGE	 HYUNDAI <small>ENGINEERING CO., LTD.</small>  ENTER <small>ENGINEERING</small>
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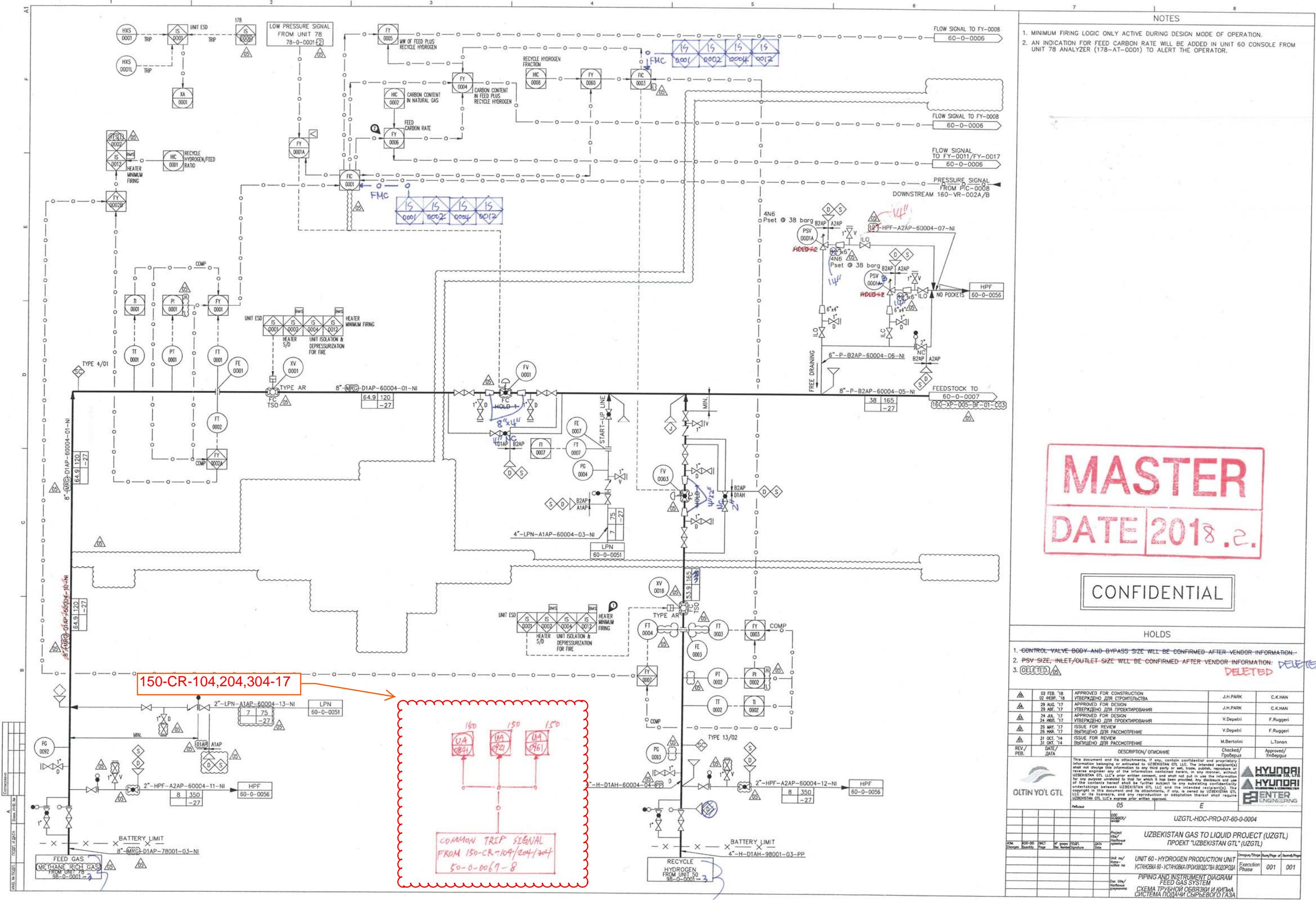
Action No.	150-CR-104/204/304-17	
Action By	PR	
Node No.	1	
Node Description	1. Compressor Process Gas / Compressor Vent & Drain / Compressor Unloader	
Cause	1.2.2. More Flow of process gas via 1st stage spillback line due to PIC control malfunction (1st stage spill back line malfunction open) (Refer to Unit 50 Process HAZOP)	
Consequence	1.2.2.1. 1st Stage suction pressure increase leading to potential compressor 1st stage discharge overpressure resulting in Compressor damage and gas leakage	
Safeguards	1.2.2.1.1. 150-PDAH-0835A 1.2.2.1.2. 150-PDSHH-0836A initiates 150-IS-0612 to trip Compressor 1.2.2.1.3. 150-TAH-0832A 1.2.2.1.4. 150-TSHH-0833A initiates 150-IS-0612 to trip Compressor 1.2.2.1.5. Compressor, 1st Stage Discharge Volume Bottle 150-CR-104-VD-72 and piping design condition 1.2.2.1.6. PSV on 1st stage discharge (set at 53.1 barg) (Process side)	
Action	Address compressor 150-CR-104/204/304 trip signal to Unit 20 and Unit 60	
Response	Incorporated on P&ID (50-0-0065/66/67-8, 20-0-0001, 60-0-0004). Compressor 150-CR-104/204/304 trip signal will be provided to Unit 20 and Unit 60. (Please refer to attached P&ID, UZGTL-HDC-PRO-07-50-0-0065/66/67-8, 20-0-0001, 60-0-0004)	

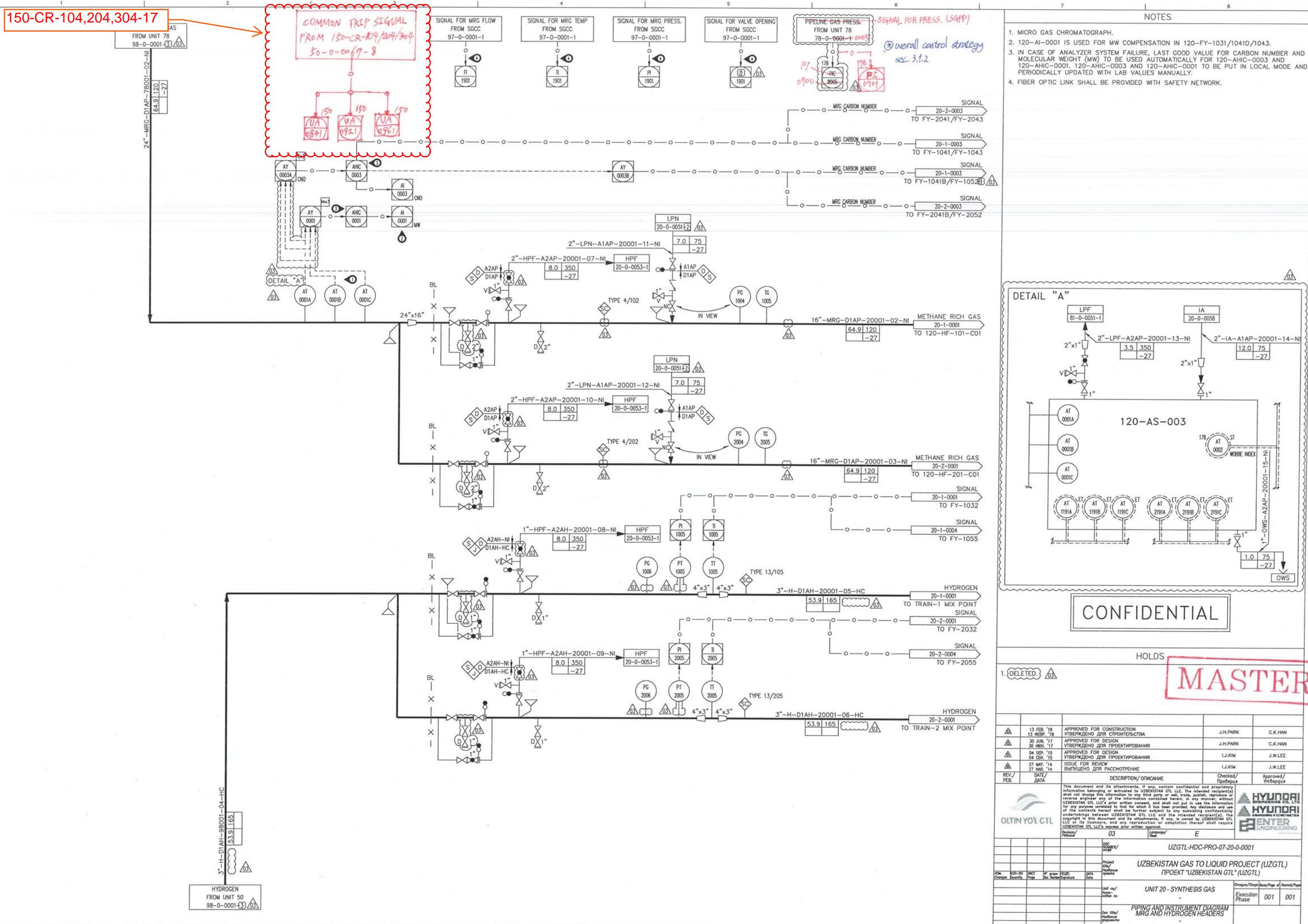
CONTRACTOR			OWNER		
Position	Signature	Date	Position	Signature	Date
Process Engineer	B.M.Hwang 	10-Apr-2018			







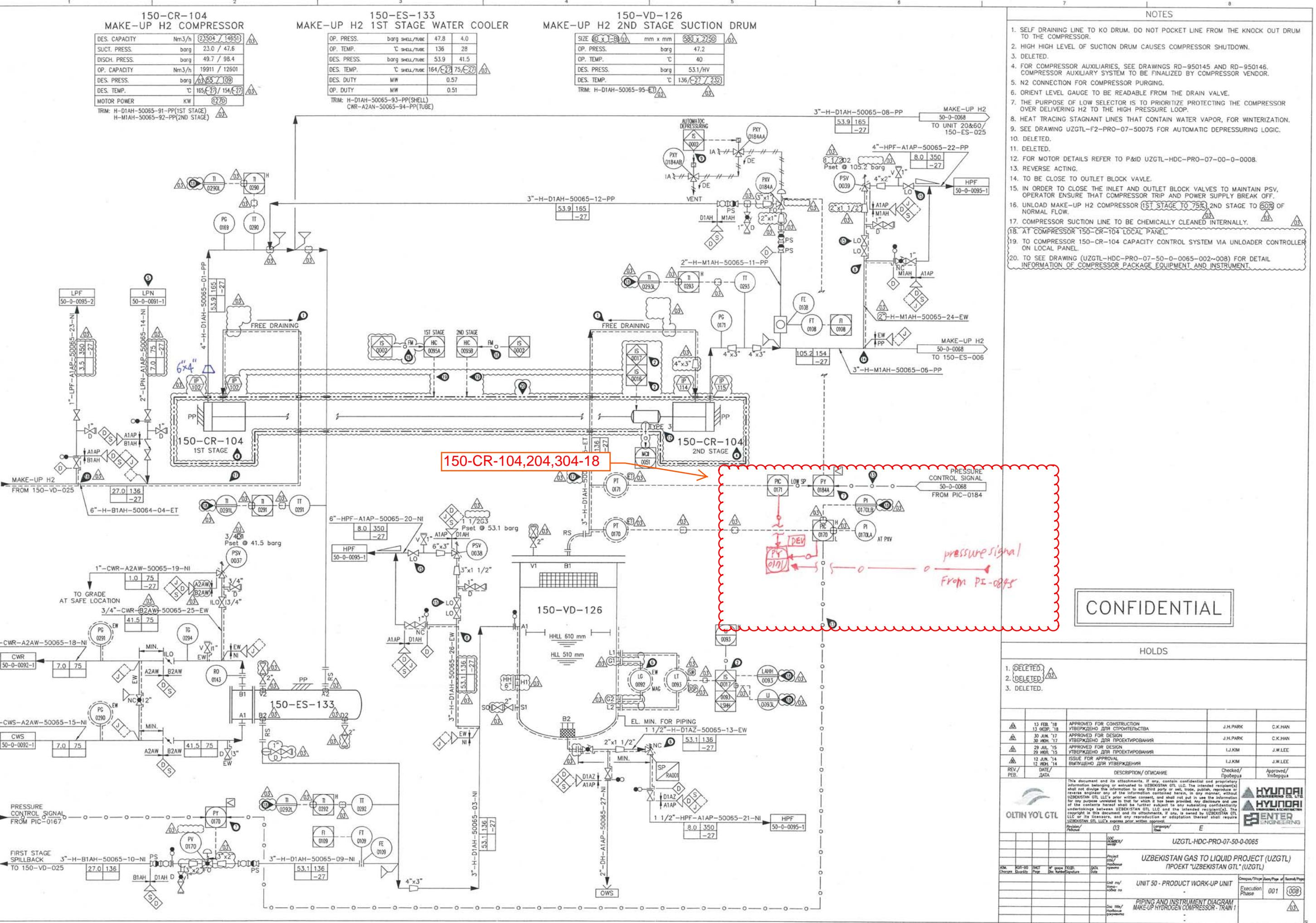


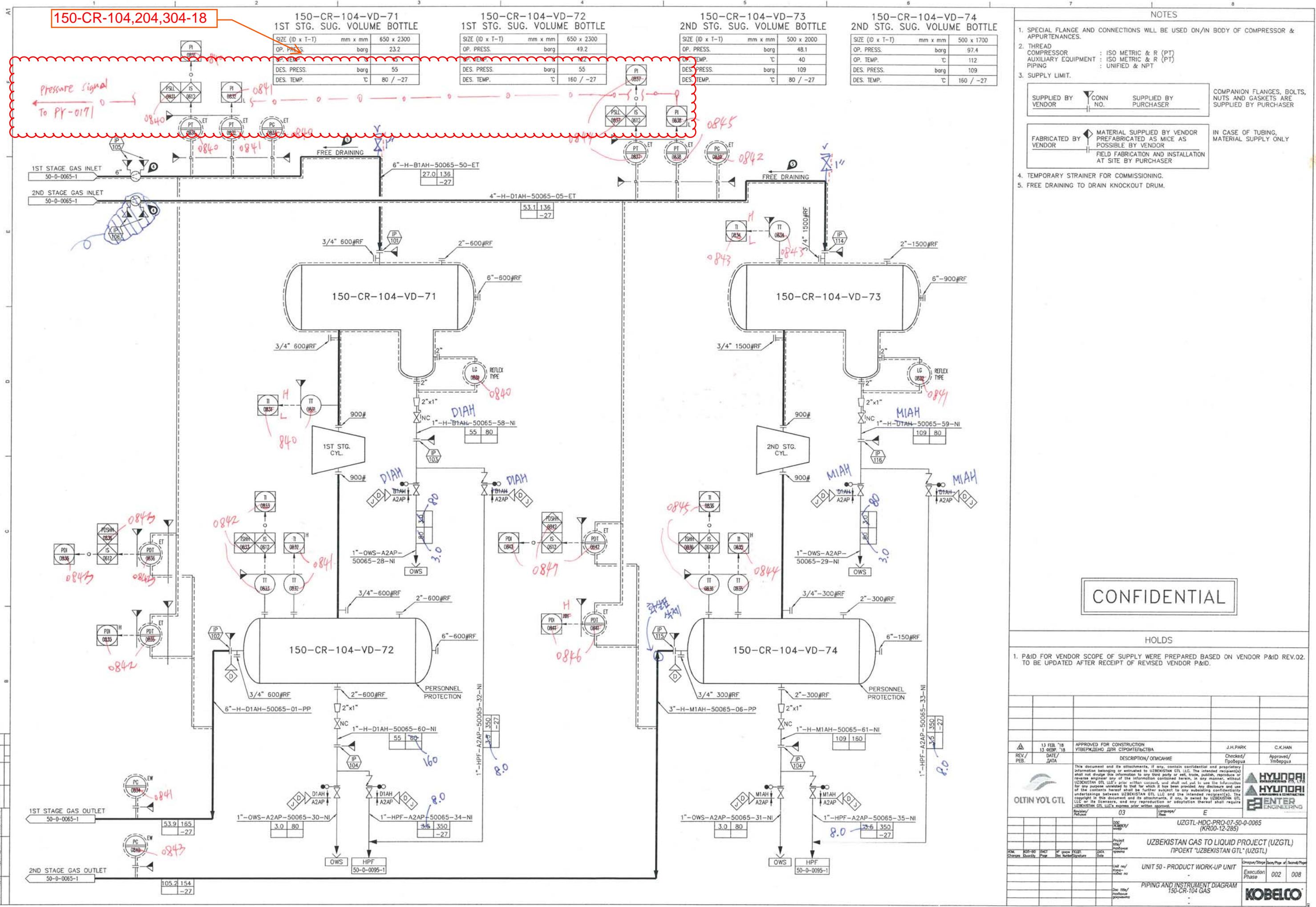


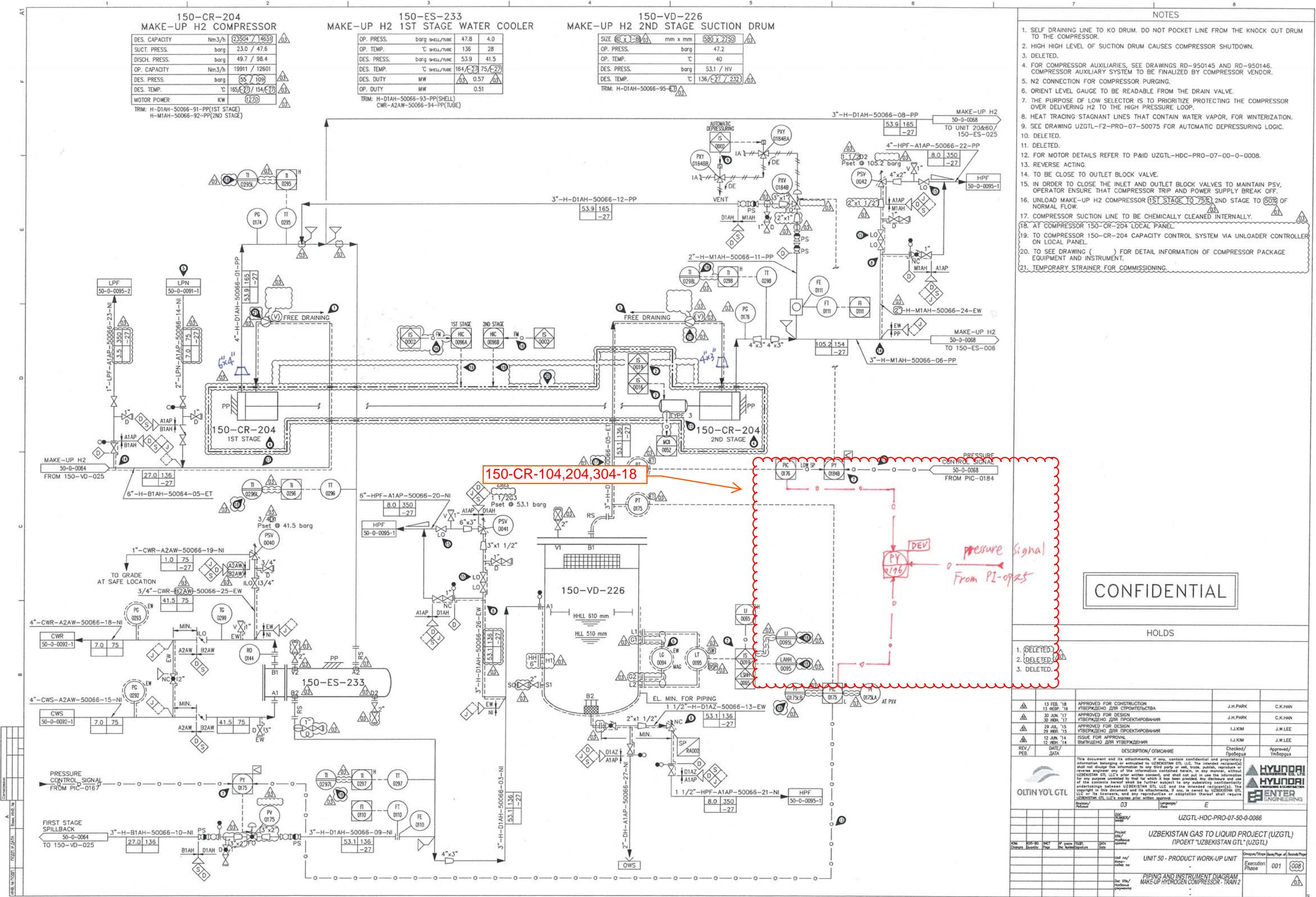
 OLTIN YO'L GTL	HAZOP ACTION CLOSE-OUT REGISTER FOR ERG COMPRESSOR PACKAGE	 HYUNDAI <small>ENGINEERING CO. LTD.</small> ENTER <small>ENGINEERING</small>
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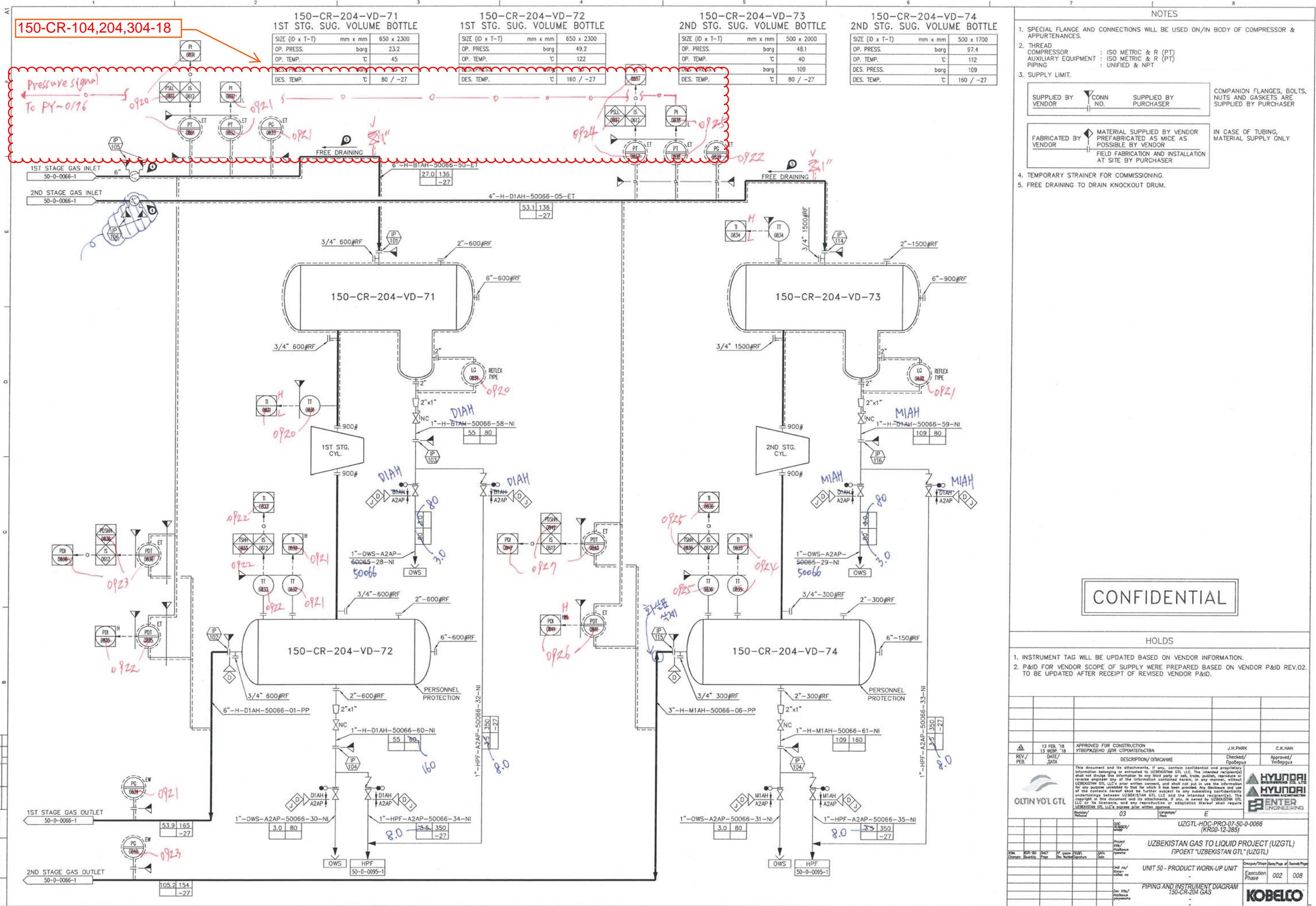
Action No.	150-CR-104/204/304-18	
Action By	PR	
Node No.	1	
Node Description	1. Compressor Process Gas / Compressor Vent & Drain / Compressor Unloader	
Cause	1.2.4. More Flow of process gas via H2 make-up line to Unit 20 / Unit 60 (Refer to Unit 50 Process HAZOP)	
Consequence	1.2.4.2. 2nd stage suction pressure decrease leading to compression ratio increase on 2nd stage resulting in mechanical damage of compressor. Increase of vibration.	
Safeguards	1.2.4.2.1. 150-PAL-0838A 1.2.4.2.2. 150-PSLL-0837A initiates 150-IS-0612 to trip Compressor (SIL rated) 1.2.4.2.3. 150-PDAH-0841A 1.2.4.2.4. 150-PDSHH-0842A initiates 150-IS-0612 to trip Compressor 1.2.4.2.5. 150-VAH-0831A (MMS) 1.2.4.2.6. 150-VSHH-0832A initiates MMS interlock to trip Compressor	
Action	Configure deviation alarm on DCS between 150-PT-0170, 150-PT-0171 and 150-PT-0838A	
Response	Incorporated on P&ID (50-0-0065/66/67-1/2). Deviation alarm on DCS between 150-PT-0170, 150-PT-0171 and 150-PT-0838A will be provided. (Please refer to attached P&ID, UZGTL-HDC-PRO-07-50-0-0065/66/67-1/2)	

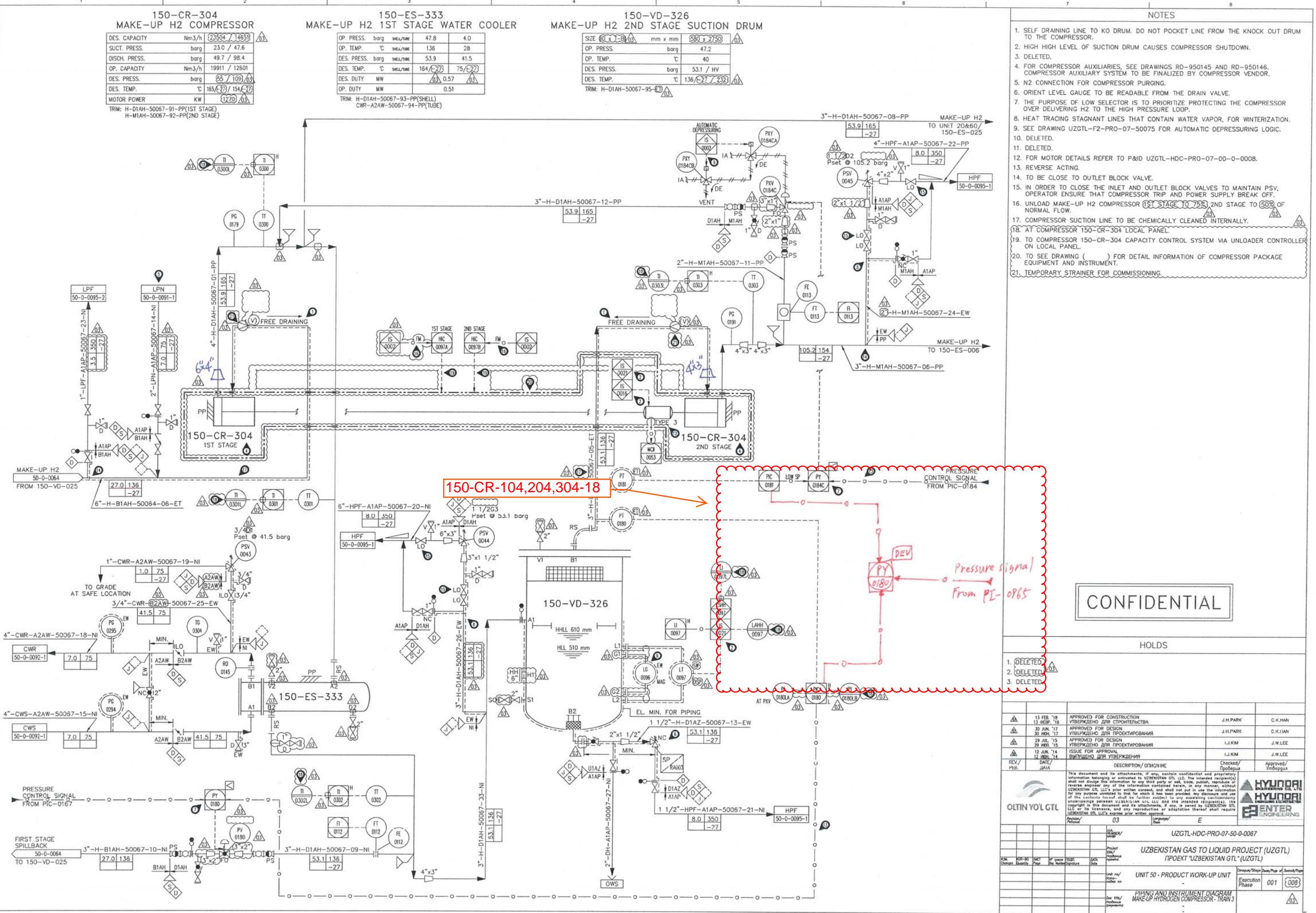
CONTRACTOR			OWNER		
Position	Signature	Date	Position	Signature	Date
Process Engineer	B.M.Hwang 	10-Apr-2018			











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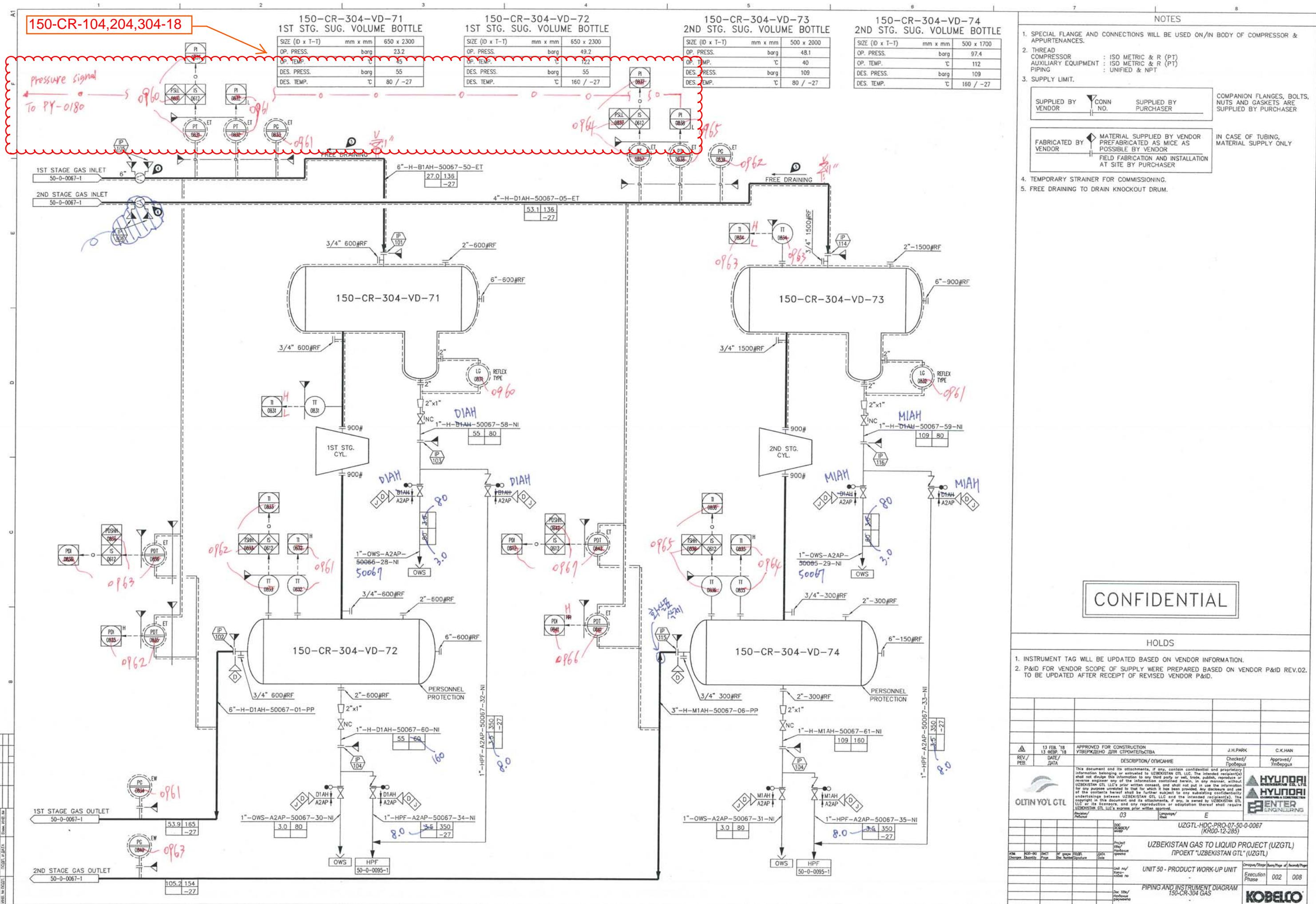
- SELF DRAINING LINE TO KO DRUM. DO NOT POCKET LINE FROM THE KNOCK OUT DRUM TO THE COMPRESSOR.
- HIGH HIGH LEVEL OF SUCTION DRUM CAUSES COMPRESSOR SHUTDOWN.
- DELETED.
- FOR COMPRESSOR AUXILIARIES, SEE DRAWINGS RD-950145 AND RD-950146. COMPRESSOR AUXILIARY SYSTEM TO BE FINALIZED BY COMPRESSOR VENDOR.
- N2 CONNECTION FOR COMPRESSOR PURGING.
- ORIENT LEVEL GAUGE TO BE READABLE FROM THE DRAIN VALVE.
- THE PURPOSE OF LOW SELECTOR IS TO PRIORITIZE PROTECTING THE COMPRESSOR OVER DELIVERING H2 TO THE HIGH PRESSURE LOOP.
- HEAT TRACING STAGNANT LINES THAT CONTAIN WATER VAPOR, FOR WINTERIZATION.
- SEE DRAWING UZGTL-F2-PRO-07-50075 FOR AUTOMATIC DEPRESSURING LOGIC.
- DELETED.
- DELETED.
- FOR MOTOR DETAILS REFER TO P&ID UZGTL-HDC-PRO-07-00-0-0008.
- REVERSE ACTING.
- TO BE CLOSE TO OUTLET BLOCK VALVE.
- IN ORDER TO CLOSE THE INLET AND OUTLET BLOCK VALVES TO MAINTAIN PSV, OPERATOR ENSURE THAT COMPRESSOR TRIP AND POWER SUPPLY BREAK OFF.
- UNLOAD MAKE-UP H2 COMPRESSOR 1ST STAGE TO 75% 2ND STAGE TO 50% OF NORMAL FLOW.
- COMPRESSOR SUCTION LINE TO BE CHEMICALLY CLEANED INTERNALLY.
- AT COMPRESSOR 150-CR-304 LOCAL PANEL
- TO COMPRESSOR 150-CR-304 CAPACITY CONTROL SYSTEM VIA UNLOADER CONTROLLER ON LOCAL PANEL.
- TO SEE DRAWING () FOR DETAIL INFORMATION OF COMPRESSOR PACKAGE EQUIPMENT AND INSTRUMENT.
- TEMPORARY STRAINER FOR COMMISSIONING.

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HOLDS

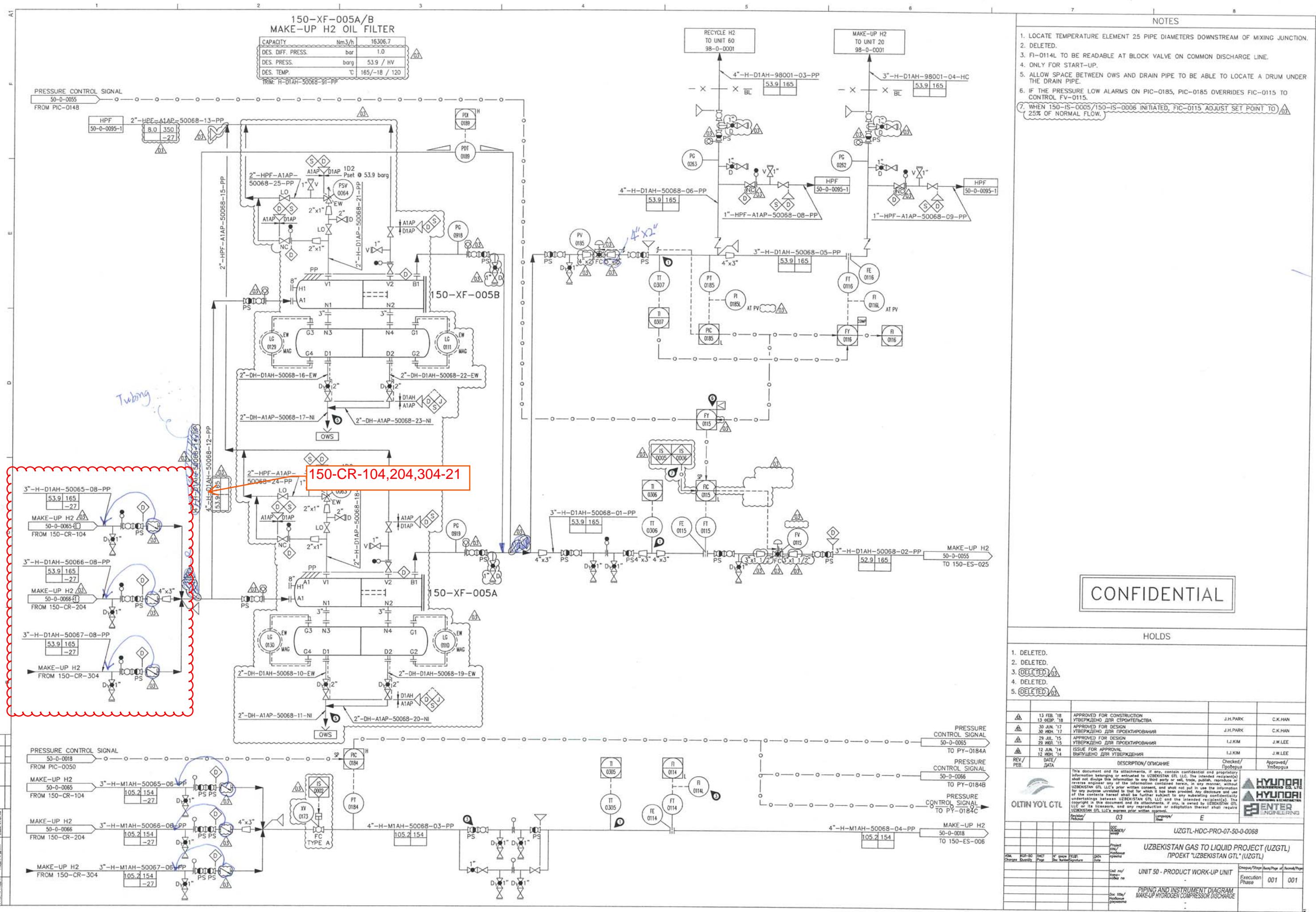
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13 FEB '18 13 FEBR '18	APPROVED FOR CONSTRUCTION УТВЕРЖДО ДЛЯ СТРОИТЕЛЬСТВА	J.H.PARK	C.K.MAN
30 JUN '17 30 ИЮН '17	APPROVED FOR DESIGN УТВЕРЖДО ДЛЯ ПРОЕКТИРОВАНИЯ	J.H.PARK	C.K.MAN
29 JUL '15 29 ИЮЛ '15	APPROVED FOR DESIGN УТВЕРЖДО ДЛЯ ПРОЕКТИРОВАНИЯ	I.J.KIM	J.W.LEE
12 JUN '14 12 ИЮН '14	ISSUE FOR APPROVAL УТВЕРЖДЕНИЕ ДЛЯ УТВЕРЖДЕНИЯ	I.J.KIM	J.W.LEE
REV./ Rev.	DATE/ Дата	Approved/ Принято	Approved/ Утверждено
		DESCRIPTION/ ОПИСАНИЕ	Checked/ Проверено
			Hyundai Engineering Co., Ltd.
			Hyundai Engineering & Construction
			ENTER ENGINEERING
			UZGTL-HDC-PRO-07-50-0-0067
			UZBEKISTAN GAS TO LIQUID PROJECT (UZGTL) ПРОЕКТ "УЗБЕКИСТАН ГТЛ" (UZGTL)
			UNIT 50 - PRODUCT WORK-UP UNIT
			Execution Phase 001 (008)
			PIPING AND INSTRUMENT DIAGRAM MAKE-UP HYDROGEN COMPRESSOR - TRAIN 3



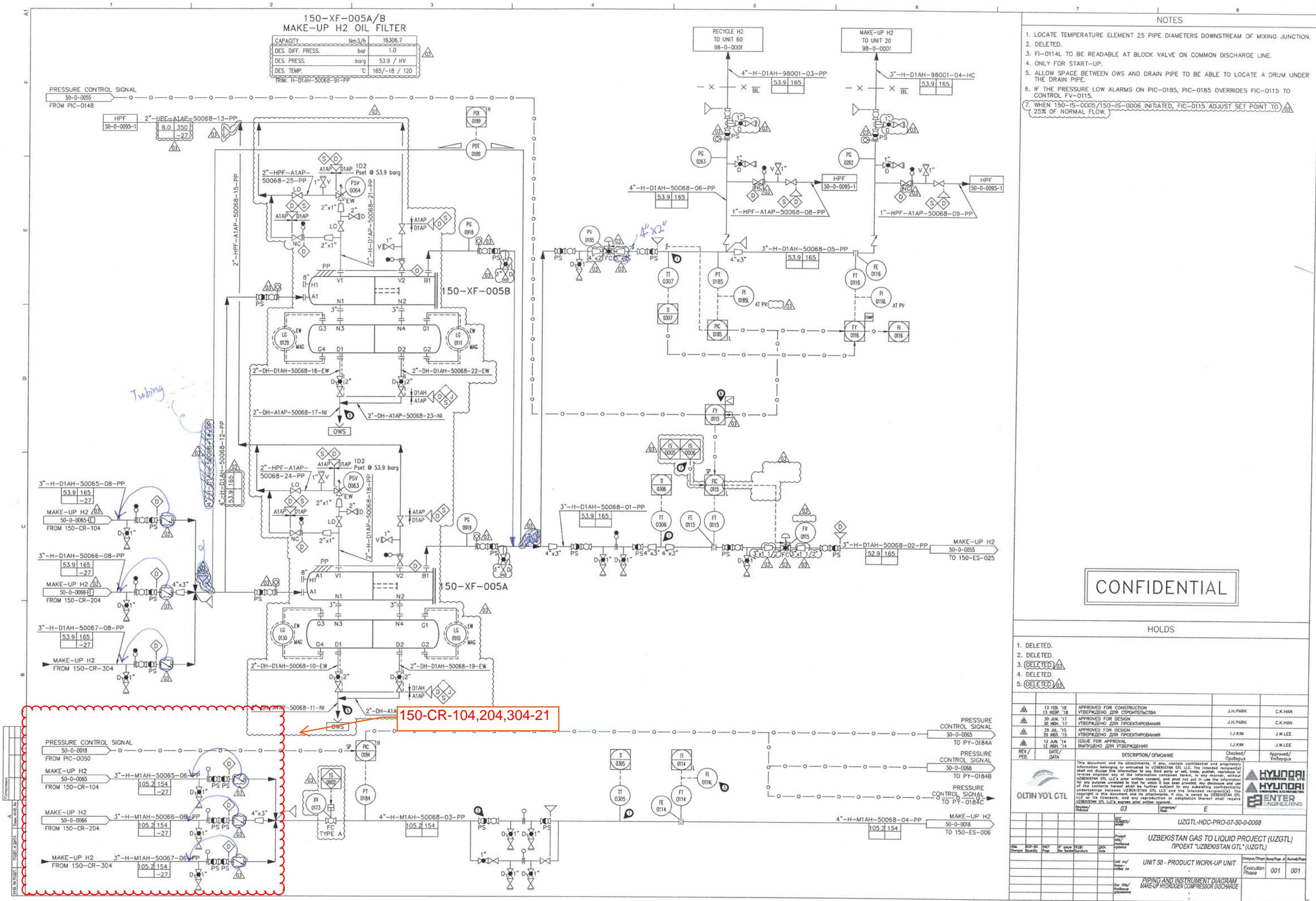
 OLTIN YO'L GTL	HAZOP ACTION CLOSE-OUT REGISTER FOR ERG COMPRESSOR PACKAGE	 HYUNDAI <small>ENGINEERING CO., LTD.</small>  ENTER <small>ENGINEERING</small>
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Action No.	150-CR-104/204/304-21				
Action By	PR				
Node No.	1				
Node Description	1. Compressor Process Gas / Compressor Vent & Drain / Compressor Unloader				
Cause	1.3.4. Reverse Flow of process gas from train 2 to train 1 due to train 1 Compressor trip (or vice versa)				
Consequence	1.3.4.1. Potential blow back of process gas into interstage section leading to potential overpressure				
Safeguards	1.3.4.1.1. PSV on 1st stage discharge (set at 53.1 barg) (Process side)				
Action	Provide check valve on 1st stage discharge of Compressor to Unit 20, 60, 50				
Response	Incorporated on P&ID (50-0-0068). Check valves are provided on 1st stage discharge of compressor. (Please refer to attached P&ID, UZGTL-HDC-PRO-07-50-0-0068)				
CONTRACTOR				OWNER	
Position	Signature	Date	Position	Signature	Date
Process Engineer	<u>B.M.Hwang</u> 	10-Apr-2018		_____	



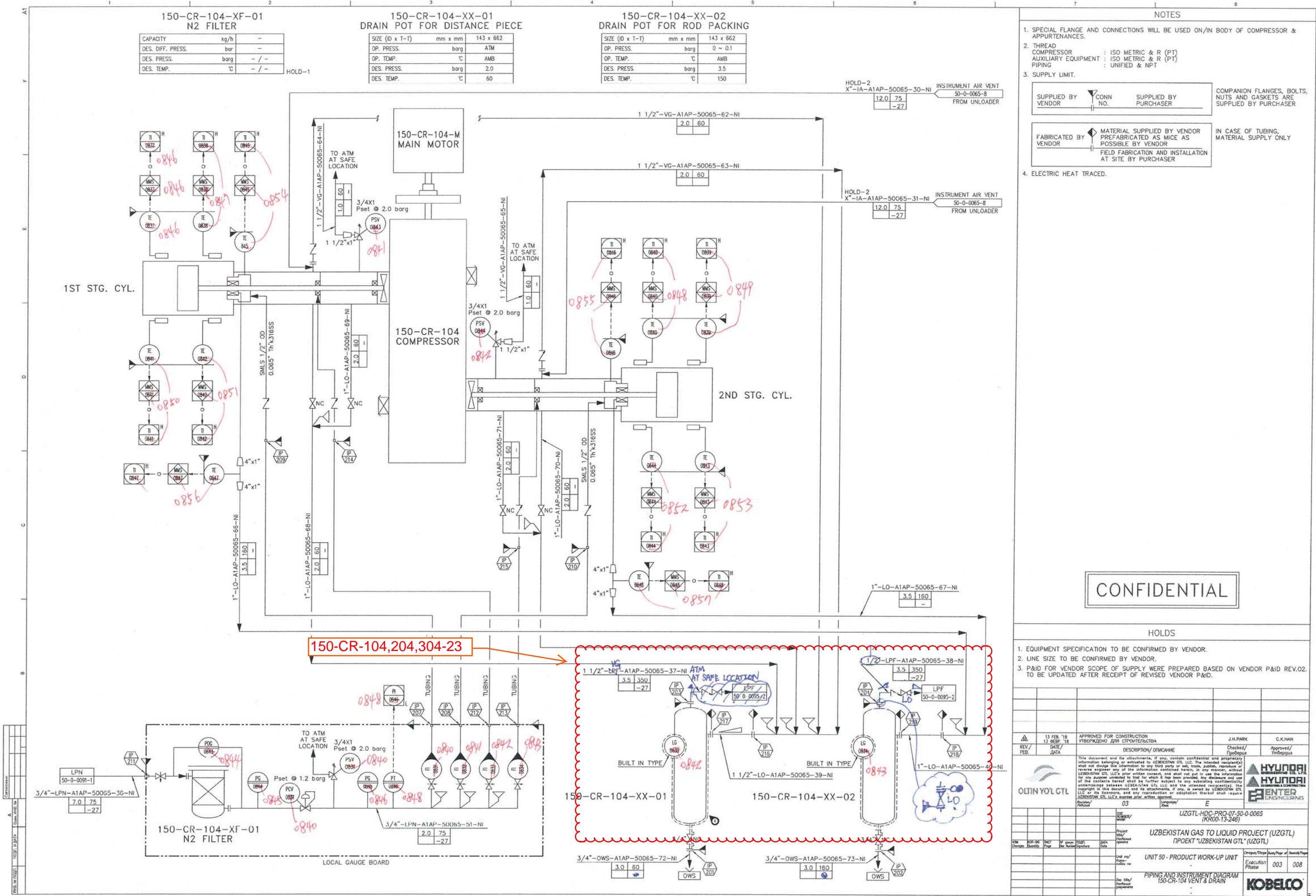
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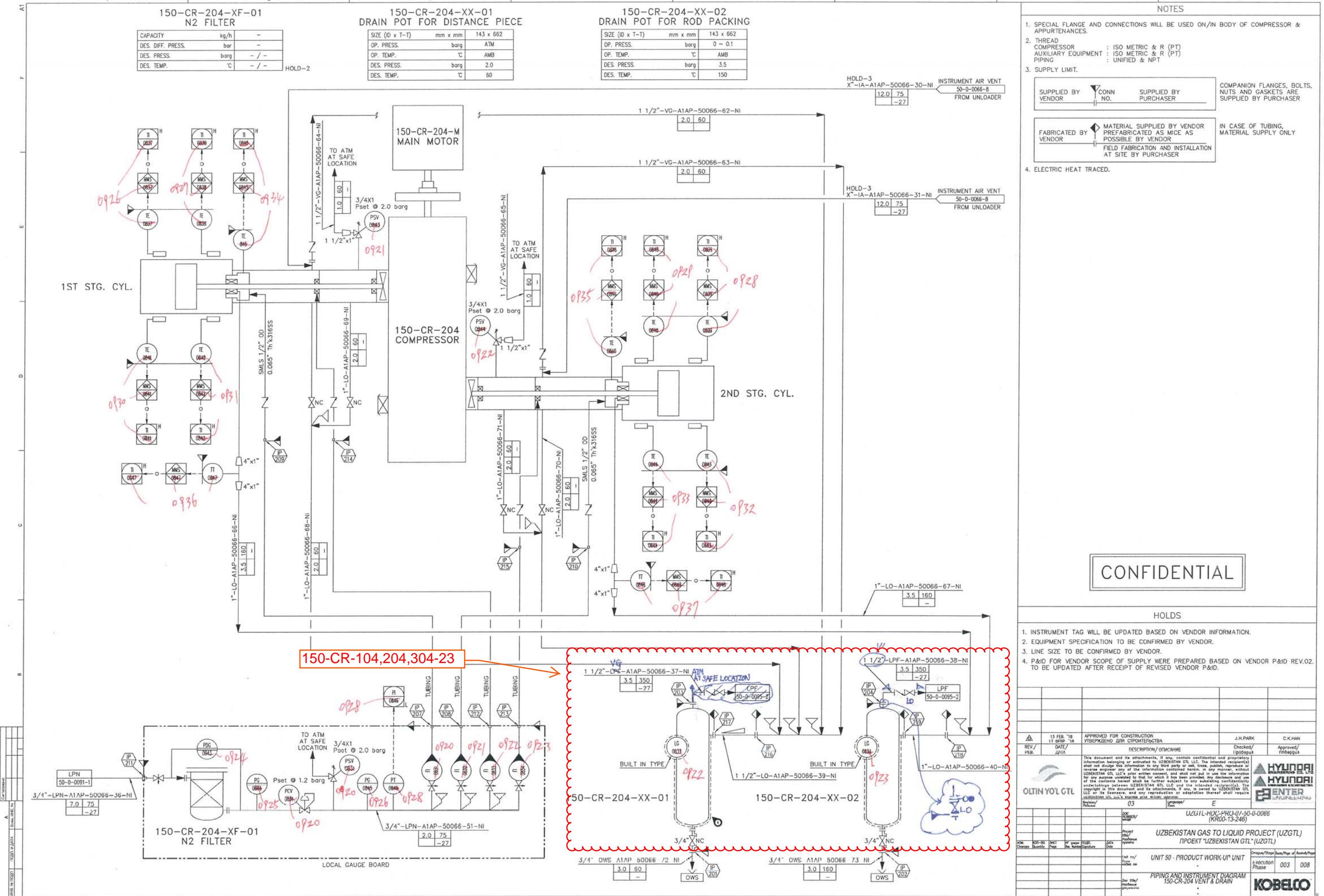
Action No.	150-CR-104/204/304-22				
Action By	PR				
Node No.	1				
Node Description	1. Compressor Process Gas / Compressor Vent & Drain / Compressor Unloader				
Cause	1.3.4. Reverse Flow of process gas from train 2 to train 1 due to train 1 Compressor trip (or vice versa)				
Consequence	1.3.4.2. Potential blow back of process gas from running Compressor discharge to stopped Compressor leading to potential overpressure				
Safeguards					
Action	Provide check valve on 2nd stage discharge of Compressor (upstream manual isolation valve on 2nd stage discharge line)				
Response	Incorporated on P&ID (50-0-0068). Check valves are provided on 2nd stage discharge of compressor. (Please refer to attached P&ID, UZGTL-HDC-PRO-07-50-0-0068)				
CONTRACTOR			OWNER		
Position	Signature	Date	Position	Signature	Date
Process Engineer	<u>B.M.Hwang</u> 	10-Apr-2018		_____	

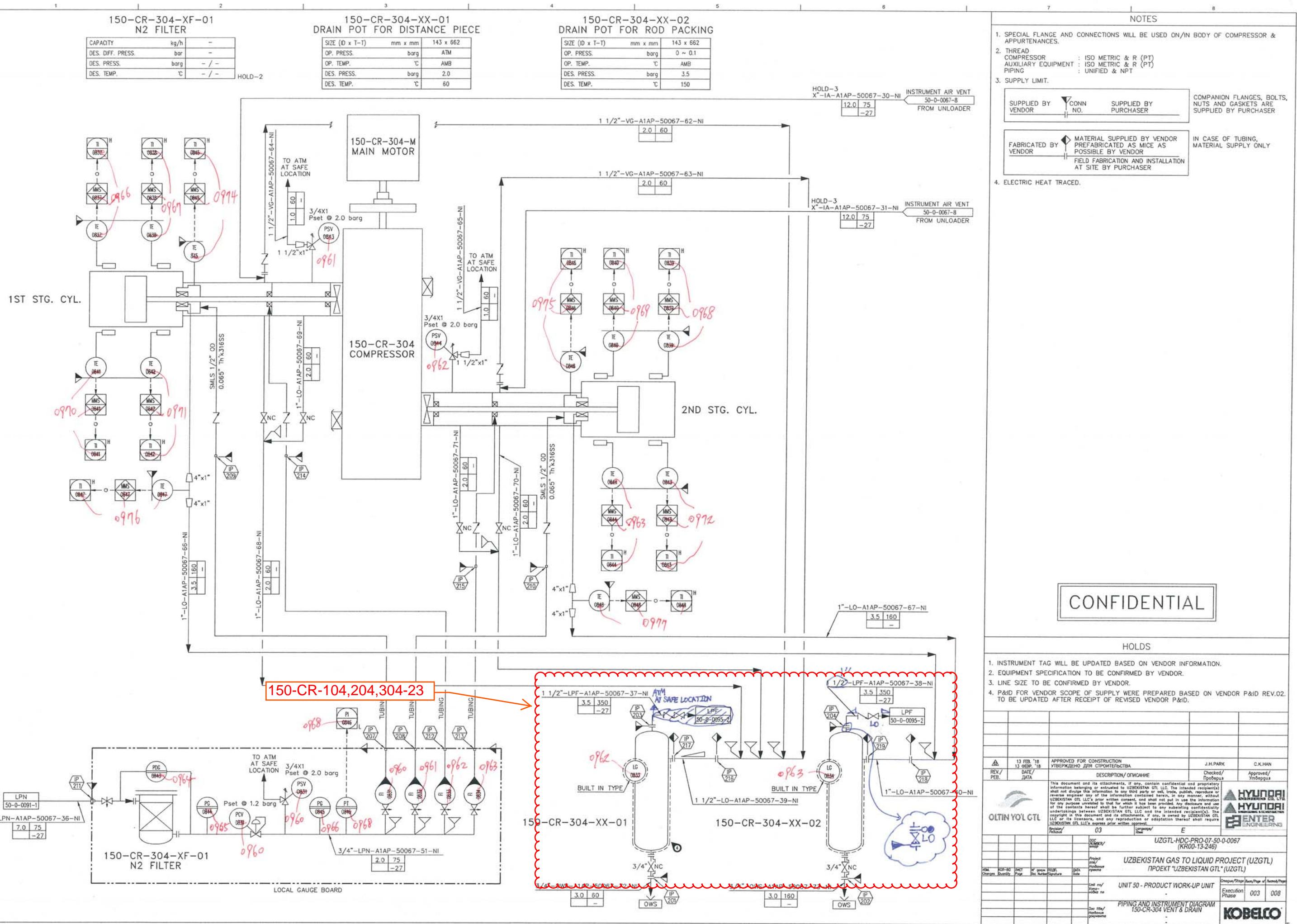


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Action No.	150-CR-104/204/304-23				
Action By	PR				
Node No.	1				
Node Description	1. Compressor Process Gas / Compressor Vent & Drain / Compressor Unloader				
Cause	1.3.6. Reverse Flow of flammable gas from flare into Drain Pot 150-CR-104-XX-01 1.3.7. Reverse Flow of flammable gas from flare into Drain Pot 150-CR-104-XX-02				
Consequence					
Safeguards	1.3.6.1.1. Check valve on Drain Pot 150-CR-104-XX-01 vent 1.3.7.1.1. Check valve on Drain Pot 150-CR-104-XX-02 vent				
Action	Provide manual valve (LO) downstream of check valve on Drain Pot 150-CR-104-XX-01/02 vent line				
Response	The vendor confirmed that both lines of the 150-CR-104-XX-01/02 could be released to ATM. However, contractor decided to connect the vent line of the Drain Pot for ROD Packing (150-CR-104-XX-02) to the LPF by supplying manual valve (LO). Therefore, the vent line of 150-CR-002-XX-01 will be connected to ATM, and the vent line of 150-CR-002-XX-02 will be connected to LPF by supplying manual valve (LO). (Please refer to attached E-mail and P&ID, UZGTL-HDC-PRO-07-50-0-0065/66/67-3)				
CONTRACTOR			OWNER		
Position	Signature	Date	Position	Signature	Date
Process Engineer	<u>B.M.Hwang</u> 	10-Apr-2018		_____	





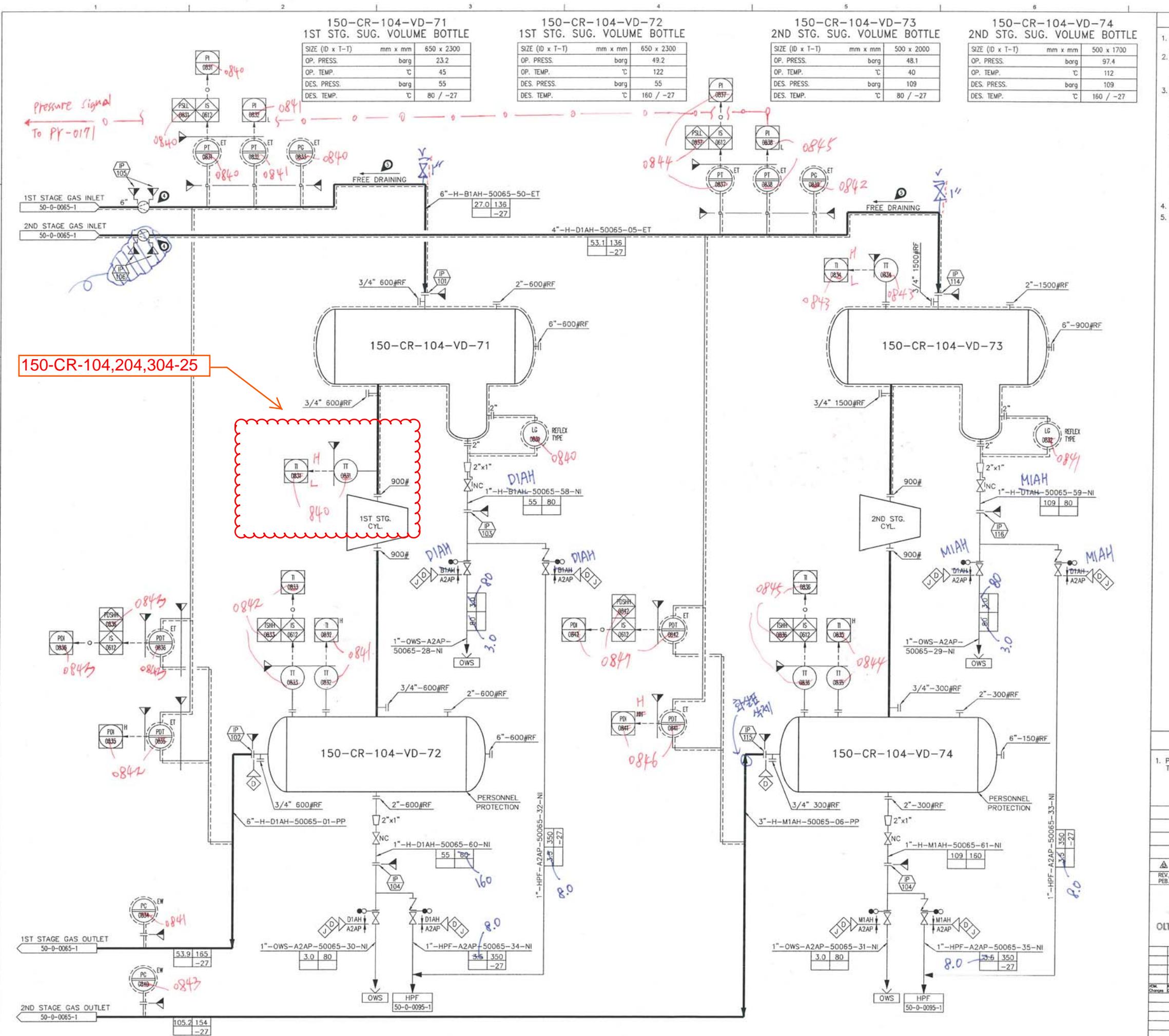


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Action No.	150-CR-104/204/304-24				
Action By	PR				
Node No.	1				
Node Description	1. Compressor Process Gas / Compressor Vent & Drain / Compressor Unloader				
Cause	1.5.1. Make-up H2 1st Stage Water Cooler tube rupture (Refer to Unit 50 Process HAZOP)				
Consequence	1.5.1.1. Refer to Unit 50 Process HAZOP				
Safeguards	1.5.1.1.1. Emergency procedure for compressor				
Action	Provide check valve on cooling water supply line for Make-up H2 1st Stage Water Cooler				
Response	In the case of the water cooler tube rupture, it is meaningless to install the check valve of the supply line because the fluid will flow toward the return line according to the pressure profile. Hydrogen monitoring is possible via the gas detector on the vent goose neck on the cooling tower side and the PT on the cooling water return line. Therefore, check valve will not be installed on the cooling water supply line.				
CONTRACTOR				OWNER	
Position	Signature	Date	Position	Signature	Date
Process Engineer	<u>B.M.Hwang</u> 	10-Apr-2018			

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Action No.	150-CR-104/204/304-25				
Action By	PR				
Node No.	1				
Node Description	1. Compressor Process Gas / Compressor Vent & Drain / Compressor Unloader				
Cause	1.8.2. More Temperature of process gas from upstream (Refer to Unit 50 Process HAZOP) 1.9.1. Less Temperature of process gas from upstream (Refer to Unit 50 Process HAZOP) 1.9.2. Low ambient temperature (Refer to Unit 50 Process HAZOP)				
Consequence	1.8.2.2. Gas density decrease leading to gas mass flow rate decrease. No significant consequence. 1.9.1.1. Gas density increase leading to gas mass flow rate increase resulting in potential high pressure and compressor overload 1.9.2.1. Gas density increase leading to gas mass flow rate increase resulting in potential high pressure and compressor overload				
Safeguards	1.9.1.1.1. Motor overload protection 1.9.2.1.1. Motor overload protection				
Action	Provide High/Low Temperature Alarm on 150-TI-0831A on DCS				
Response	Incorporated on P&ID (50-0-0065/66/67-2). High/Low temperature alarm on 150-TI-0831 on DCS will be provided. (Please refer to attached P&ID, UZGTL-HDC-PRO-07-50-0-0065/66/67-2)				
CONTRACTOR			OWNER		
Position	Signature	Date	Position	Signature	Date
Process Engineer	<u>B.M.Hwang</u> 	10-Apr-2018		_____	



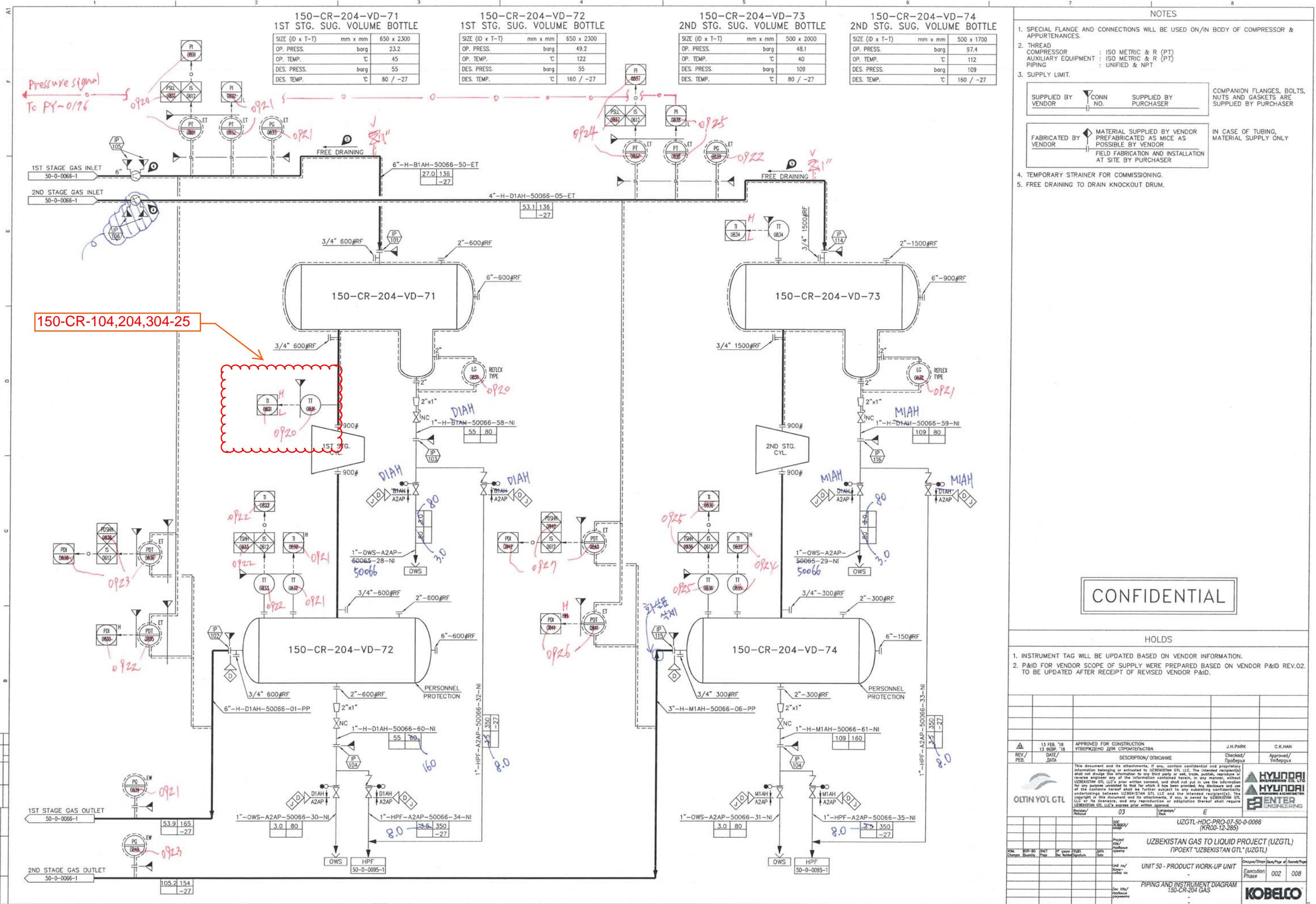
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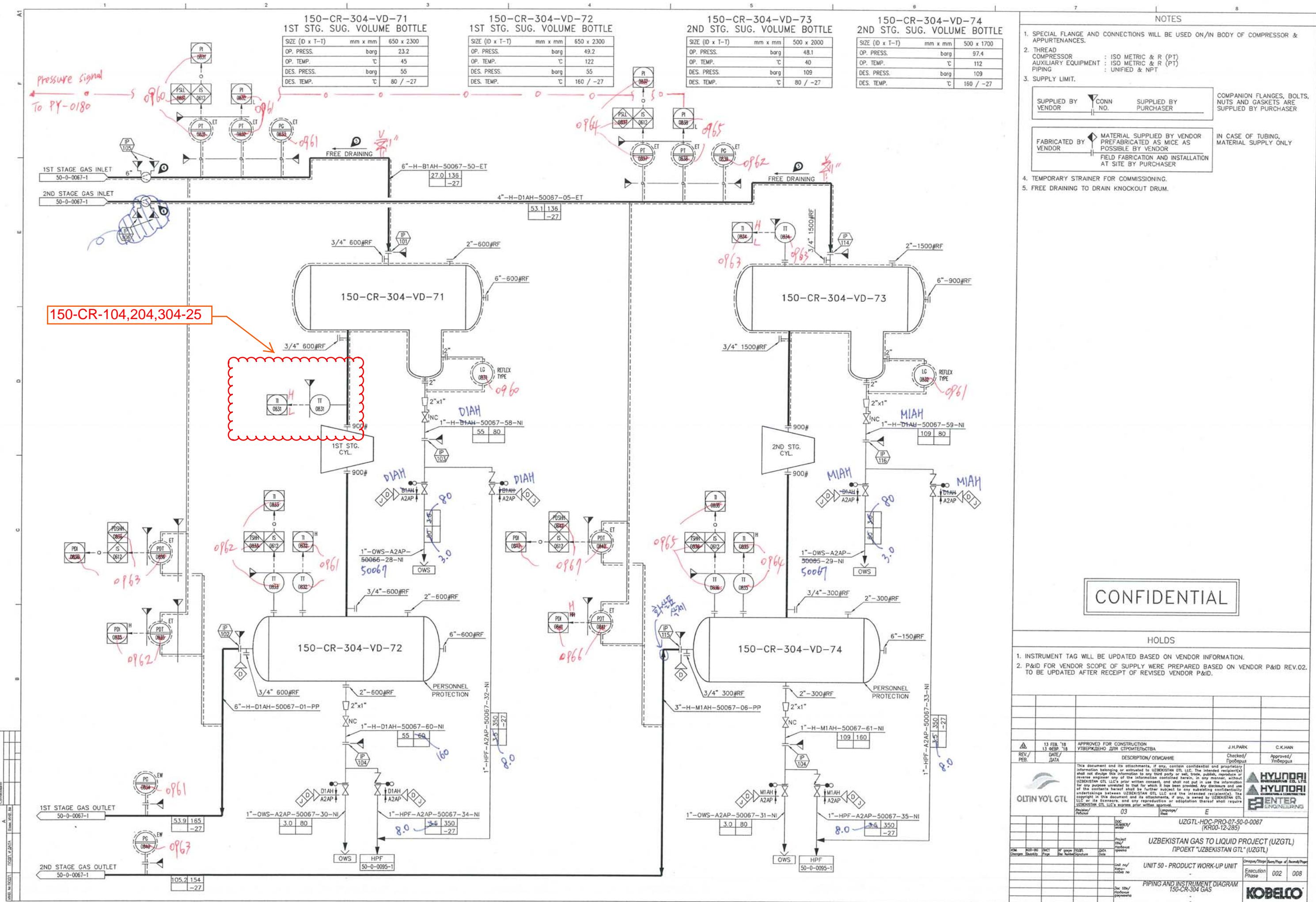
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|---|--|
| SPECIAL FLANGE AND CONNECTIONS WILL BE USED ON/IN BODY OF COMPRESSOR & PURTANCES. | |
| READ | |
| COMPRESSOR | : ISO METRIC & R (PT) |
| AUXILIARY EQUIPMENT | : ISO METRIC & R (PT) |
| PING | : UNIFIED & NPT |
| SUPPLY LIMIT. | |
| SUPPLIED BY VENDOR |  CONN.
NO. |
| SUPPLIED BY PURCHASER | |
| COMPANION FLANGES, BOLT NUTS AND GASKETS ARE SUPPLIED BY PURCHASER | |
| FABRICATED BY VENDOR |  MATERIAL SUPPLIED BY VENDOR
PREFABRICATED AS MICE AS POSSIBLE BY VENDOR |
| |  FIELD FABRICATION AND INSTALLATION AT SITE BY PURCHASER |
| IN CASE OF TUBING,
MATERIAL SUPPLY ONLY | |
| TEMPORARY STRAINER FOR COMMISSIONING.
SEE DRAINING TO DRAIN KNOCKOUT DRUM. | |

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HOLDS

1. P&ID FOR VENDOR SCOPE OF SUPPLY WERE PREPARED BASED ON VENDOR P&ID REV.02.
TO BE UPDATED AFTER RECEIPT OF REVISED VENDOR P&ID.



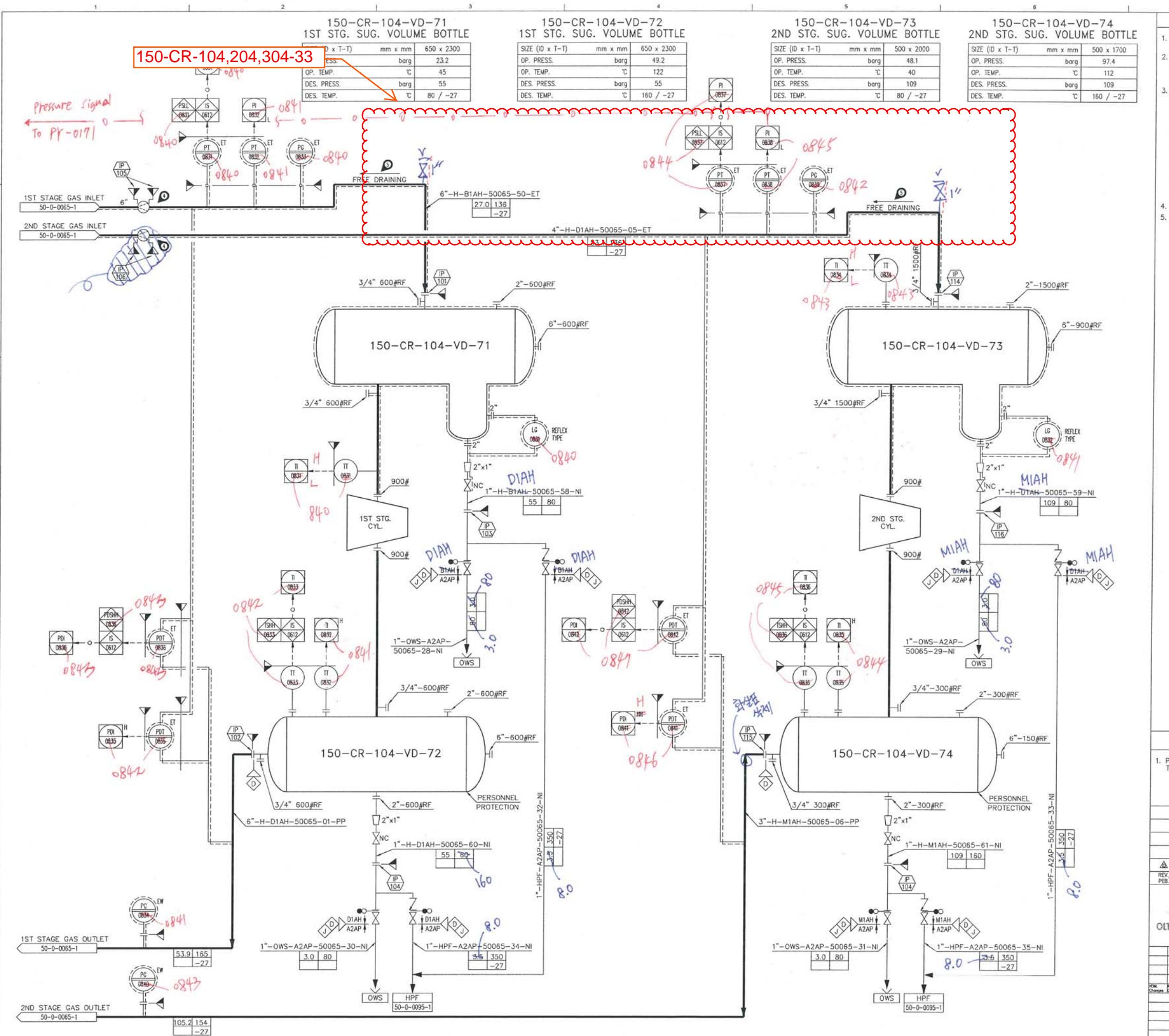


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Action No.	150-CR-104/204/304-30				
Action By	PR				
Node No.	1				
Node Description	1. Compressor Process Gas / Compressor Vent & Drain / Compressor Unloader				
Cause	1.17.3. Compressor capacity load control malfunction during start-up with N2 run				
Consequence	1.17.3.2. In case of incorrect line up, potential overpressure could affect upstream piping and equipment				
Safeguards	1.17.3.2.1. 150-PCV-0284 (Pressure regulator on N2 line)				
Action	Provide check valve on H2 make-up line from Unit 60 (downstream isolation valve at BL)				
Response	Since the dissimilar type double check valves are installed on the H2 make-up line of Unit 60 (60-0-0012-1), the check valve will not be installed on the H2 make-up line of unit 50 line.				
CONTRACTOR			OWNER		
Position	Signature	Date	Position	Signature	Date
Process Engineer	<u>B.M.Hwang</u> 	10-Apr-2018		_____	

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Action No.	150-CR-104/204/304-33				
Action By	PR				
Node No.	1				
Node Description	1. Compressor Process Gas / Compressor Vent & Drain / Compressor Unloader				
Cause	1.20.1. Positive isolation				
Consequence					
Safeguards	1.20.1.1.1. Maintenance Manual (positive isolation)				
Action	Provide vent connection on high point of compressor suction piping				
Response	Incorporated on P&ID (50-0-0065/66/67-2). Vent valves will be provided on high point of compressor suction piping. (Please refer to attached P&ID, UZGTL-HDC-PRO-07-50-0-0065/66/67-2)				
CONTRACTOR			OWNER		
Position	Signature	Date	Position	Signature	Date
Process Engineer	<u>B.M.Hwang</u> 	10-Apr-2018		_____	



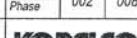
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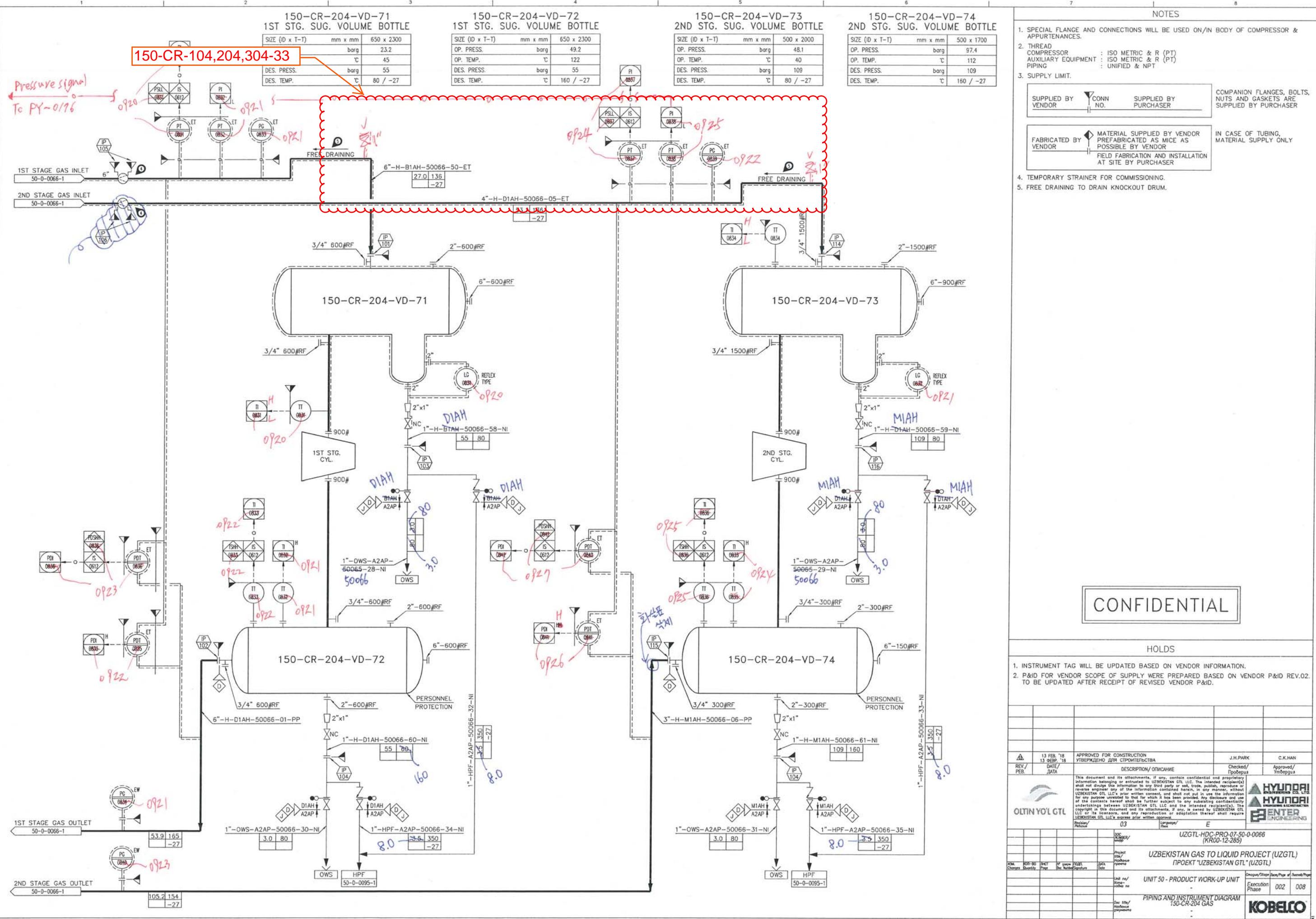
- | | |
|---|---|
| SPECIAL FLANGE AND CONNECTIONS WILL BE USED ON/IN BODY OF COMPRESSOR & APPURTENANCES. | |
| HEAD | |
| COMPRESSOR | : ISO METRIC & R (PT) |
| AUXILIARY EQUIPMENT | : ISO METRIC & R (PT) |
| PIPING | : UNIFIED & NPT |
| SUPPLY LIMIT. | |
| SUPPLIED BY VENDOR |  CONN NO.
<hr/> |
| | SUPPLIED BY PURCHASER |
| | COMPANION FLANGES, BOLTS, NUTS AND GASKETS ARE SUPPLIED BY PURCHASER |
| FABRICATED BY VENDOR |  MATERIAL SUPPLIED BY VENDOR
PREFABRICATED AS MICE AS POSSIBLE BY VENDOR
<hr/> FIELD FABRICATION AND INSTALLATION AT SITE BY PURCHASER |
| | IN CASE OF TUBING,
MATERIAL SUPPLY ONLY |
| TEMPORARY STRAINER FOR COMMISSIONING. | |
| FREE DRAINING TO DRAIN KNOCKOUT DRUM. | |

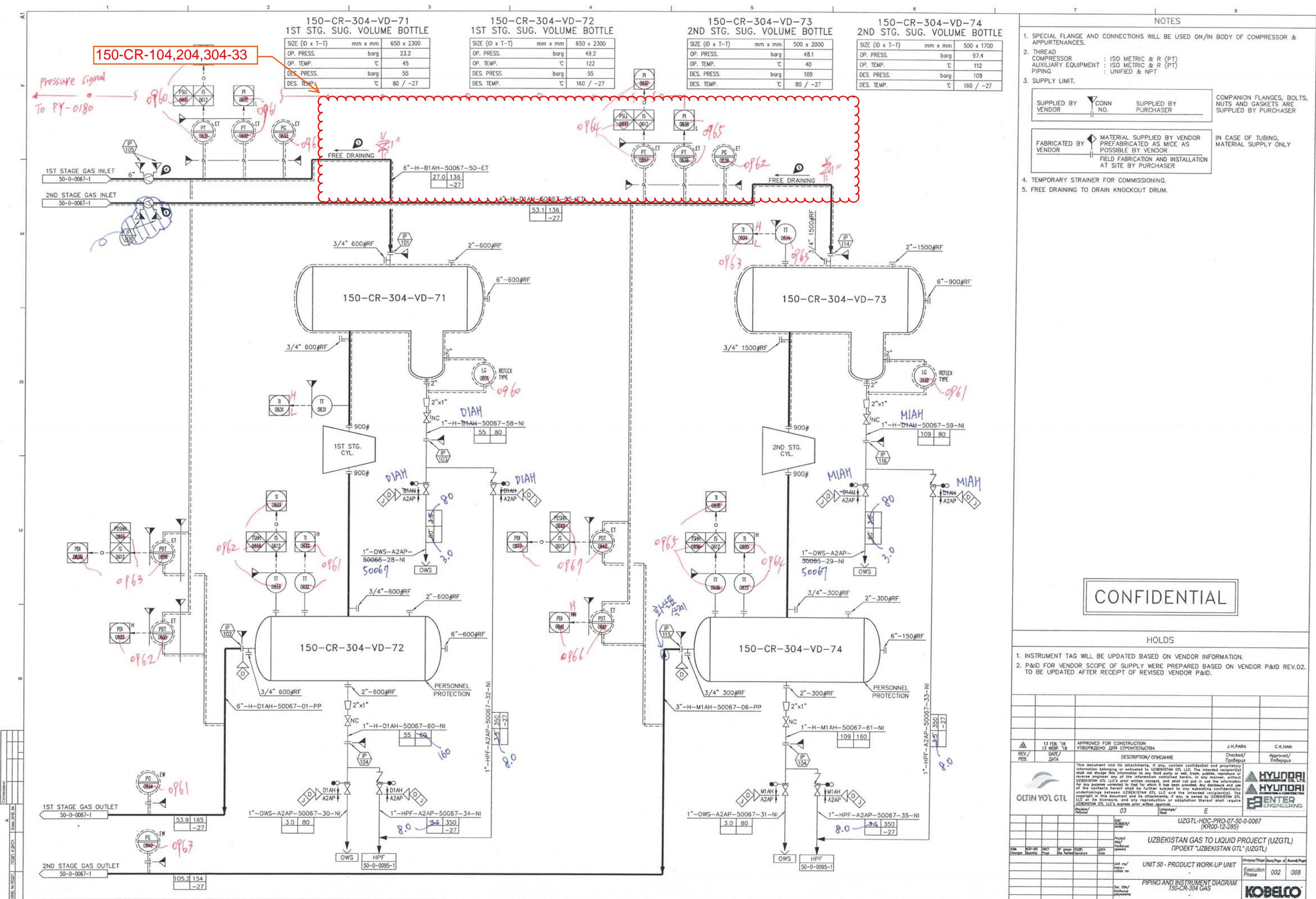
CONFIDENTIAL

HOLDS

1. P&ID FOR VENDOR SCOPE OF SUPPLY WERE PREPARED BASED ON VENDOR P&ID REV.02.
TO BE UPDATED AFTER RECEIPT OF REVISED VENDOR P&ID.

	13 FEB '18 13 ФЕВР '18	APPROVED FOR CONSTRUCTION УВЕРЖДЕНО ДЛЯ СТРОИТЕЛЬСТВА	J.H.PARK C.K.HAN
REV./ PEB.	DATE/ ДАТА	DESCRIPTION/ОПИСАНИЕ	Checked/ Проверен Approved/ Утверждена
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Replaces/ Поменуло	03	Language/ Русский	E
UZGTL-HDC-PRO-07-50-0-0065 (KR00-12-285)			
Item/ Changes Rev-B0 Duration Page	Project Title/ Наименование Газопровода	UZBEKISTAN GAS TO LIQUID PROJECT (UZGTL) ПРОЕКТ "УЗБЕКИСТАН ГТЛ" (UZGTL)	Original/ Signed Copy/ Signed Execution Phase
Doc. No/ Doc Number Signature	Unit no/ Продукция по	UNIT 50 - PRODUCT WORK-UP UNIT	Start/Phase of Execution Phase
Date/ Дата	Doc. Mtr/ Материал документа	PIPING AND INSTRUMENT DIAGRAM 150-CR-104 GAS	002 008
			





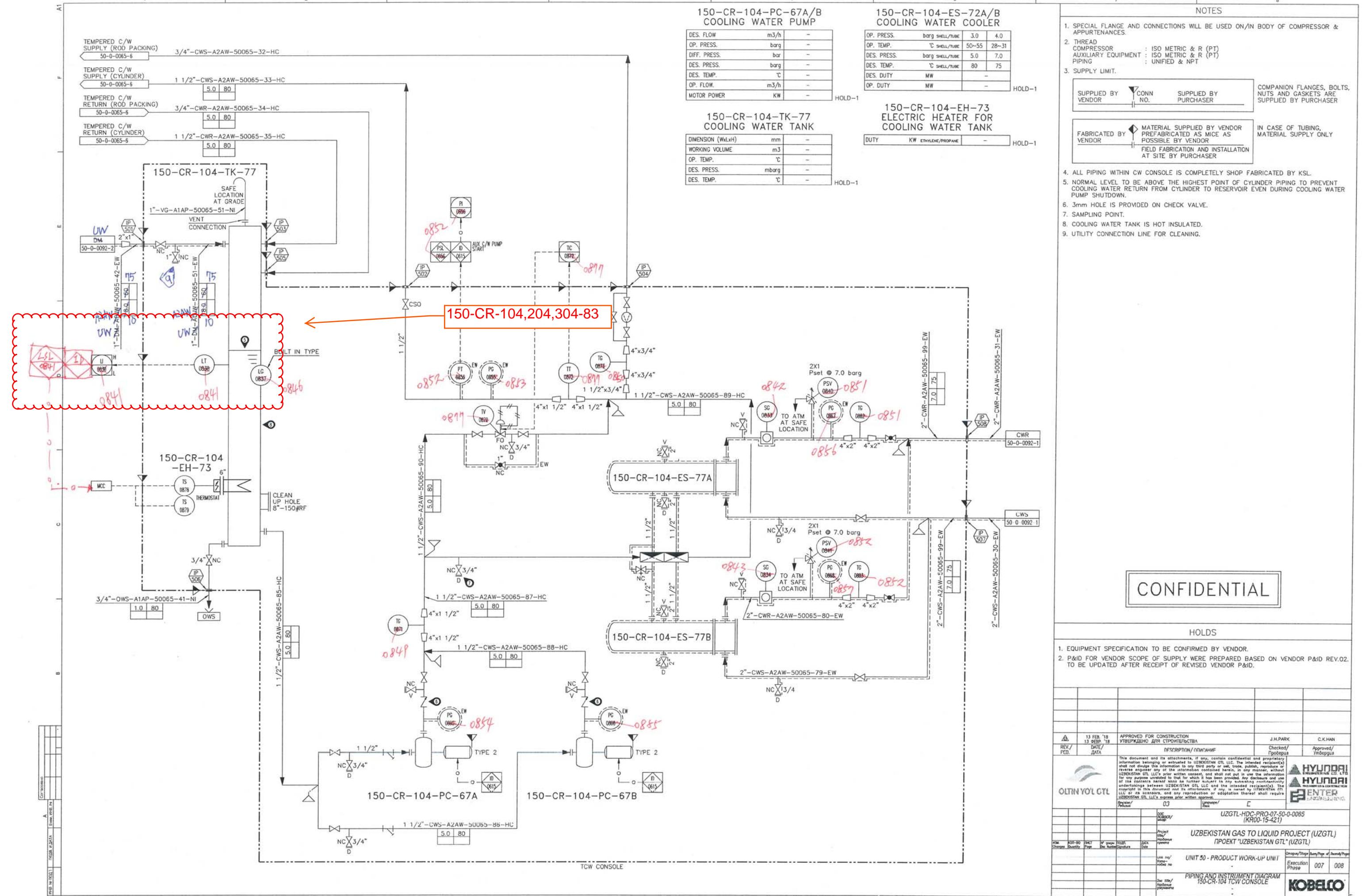
 OLTIN YO'L GTL	HAZOP ACTION CLOSE-OUT REGISTER FOR ERG COMPRESSOR PACKAGE	 HYUNDAI <small>ENGINEERING CO., LTD.</small>  ENTER <small>ENGINEERING</small>
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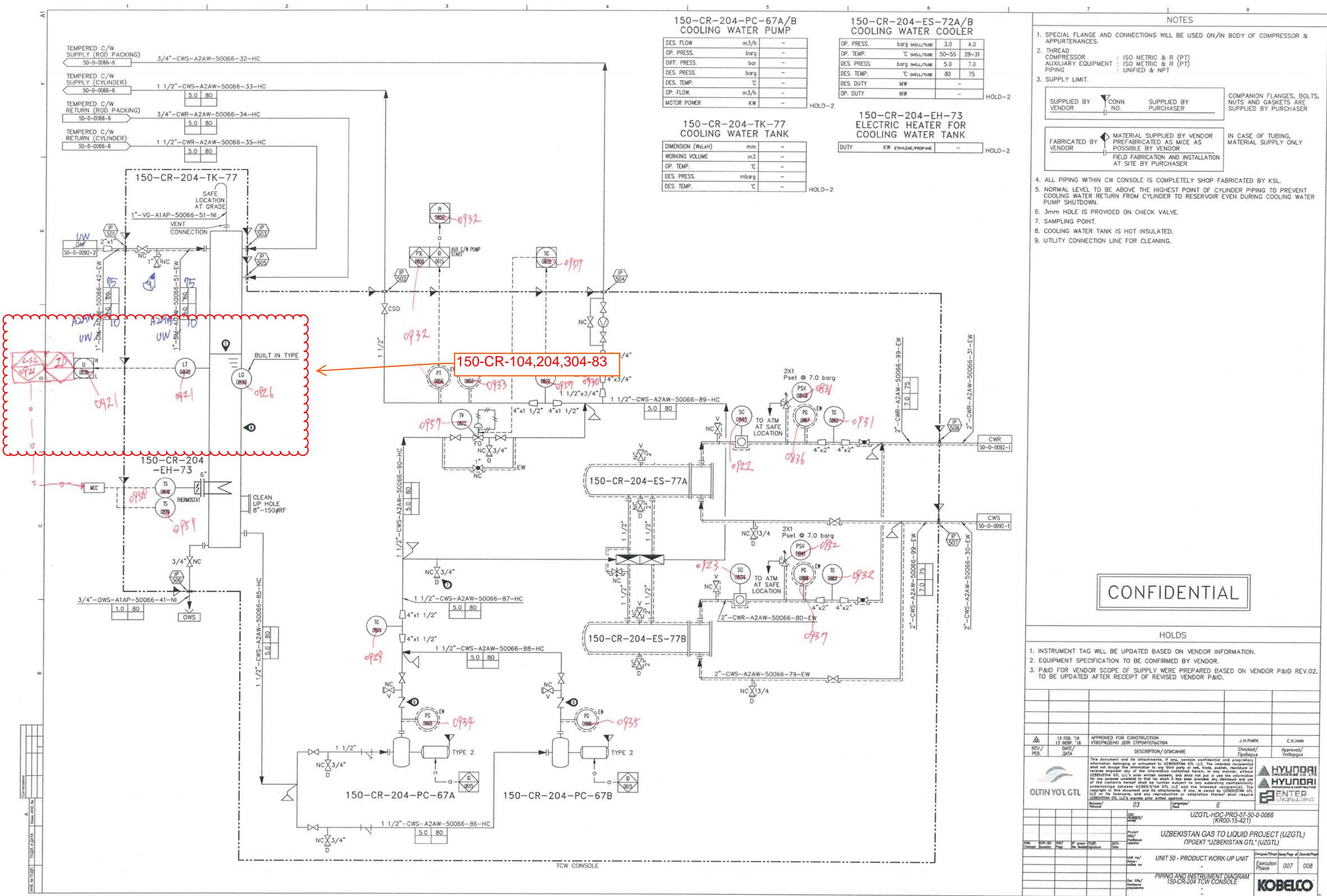
Action No.	150-CR-104/204/304-51	
Action By	PR	
Node No.	2	
Node Description	2. Lube Oil System	
Cause	2.6.2. Thermal expansion of cooling water circuit	
Consequence	2.6.2.1. Potential overpressure of cooling water circuit	
Safeguards	2.6.2.1.1. 150-PSV-0834A/0835A	
Action	Evaluate discharge collection of 150-PSV-0834A/0835A to Oily Water Sewer (OWS)	
Response	Current scheme of PSV discharge to grade at safe location will be maintained, as this PSV is only a thermal relief valve and expected relieving flow and frequency is quite low. (i.e., maintenance of PSV) It should be noted that the PSV and line will be located inside skid. It is a general practice to route thermal relief outlet inside the skid. If discharge is separately routed outside of skid, this line will block open spaces and make maintenance works difficult.	

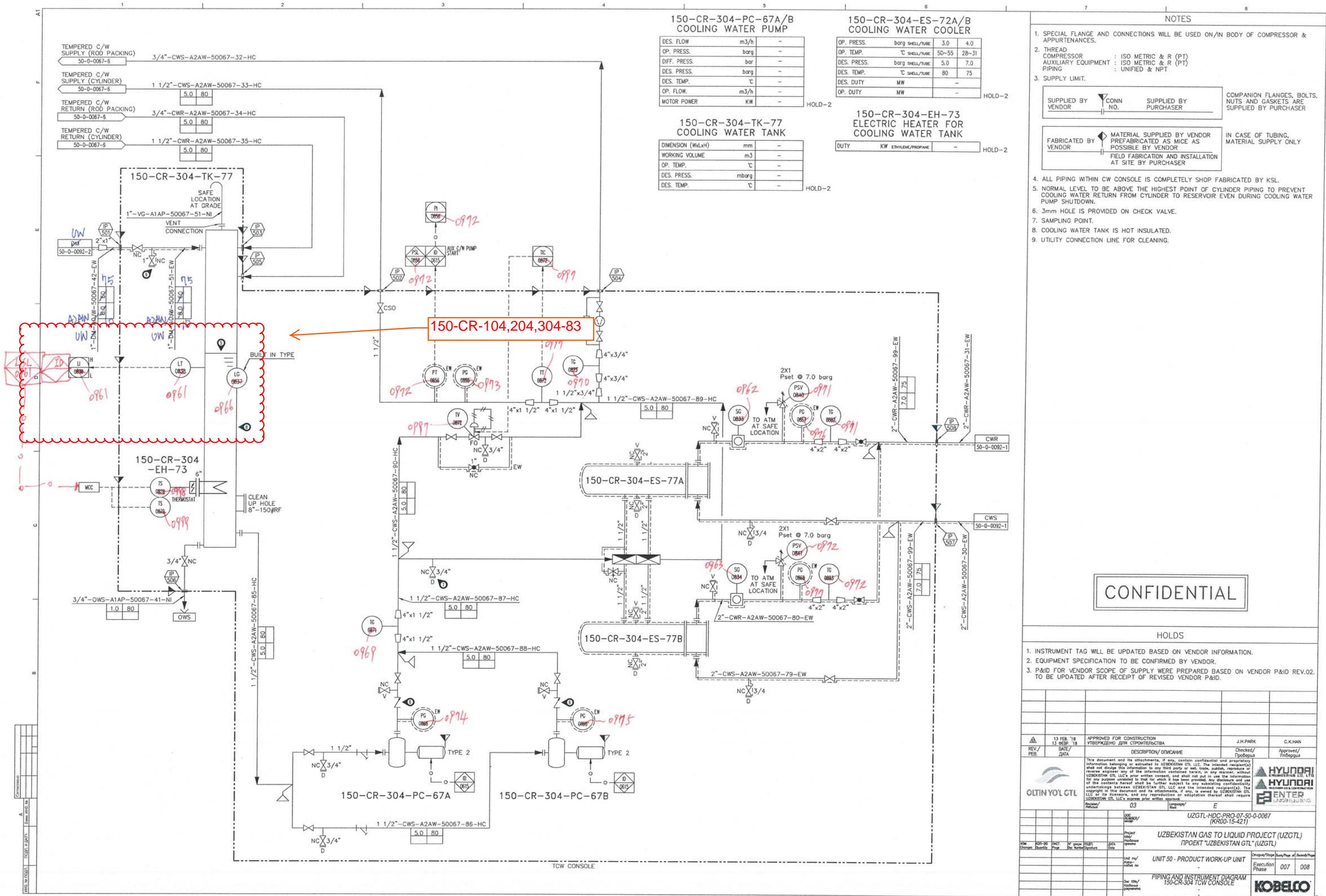
CONTRACTOR			OWNER		
Position	Signature	Date	Position	Signature	Date
Process Engineer	<u>B.M.Hwang</u> 	10-Apr-2018		_____	

 OLTIN YO'L GTL	HAZOP ACTION CLOSE-OUT REGISTER FOR ERG COMPRESSOR PACKAGE	 HYUNDAI <small>ENGINEERING CO., LTD.</small>  ENTER <small>ENGINEERING</small>
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Action No.	150-CR-104/204/304-83				
Action By	PR				
Node No.	3				
Node Description	3. Cooling Water / TCW console				
Cause	3.5.1. Cooling Water Cooler tube rupture 3.10.1. Cooling Water Tank overfilling due to incorrect refilling				
Consequence	3.5.1.1. Cooling water flow from tube side to shell side leading to overfilling of Cooling Water Tank. Potential fouling of cooling jackets. 3.10.1.1. Loss of cooling water. No significant issue.				
Safeguards	3.5.1.1.1. Vent routed at grade level acting as overflow line (Refer to Recommendation) 3.10.1.1.1. Vent routed at grade level acting as overflow line (Refer to Recommendation)				
Action	Configure 150-LAH-0838A on DCS				
Response	Incorporated on P&ID (50-0-0065/66/67-7). 150-LAH-0838A on DCS is provided on AFC P&ID. (Please refer to attached P&ID, UZGTL-HDC-PRO-07-50-0-0065/66/67-7)				
CONTRACTOR			OWNER		
Position	Signature	Date	Position	Signature	Date
Process Engineer	<u>B.M.Hwang</u> 	10-Apr-2018		_____	

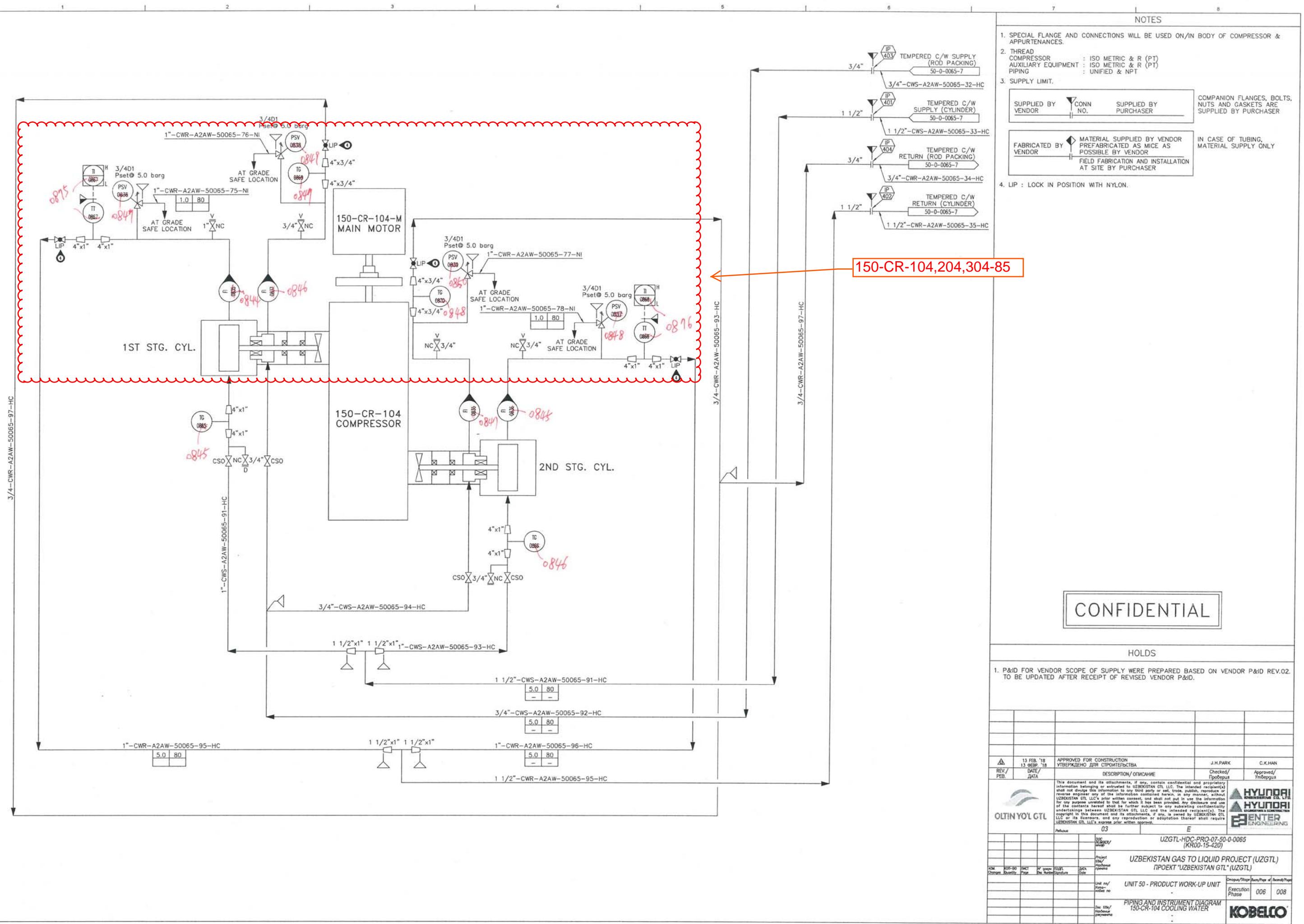


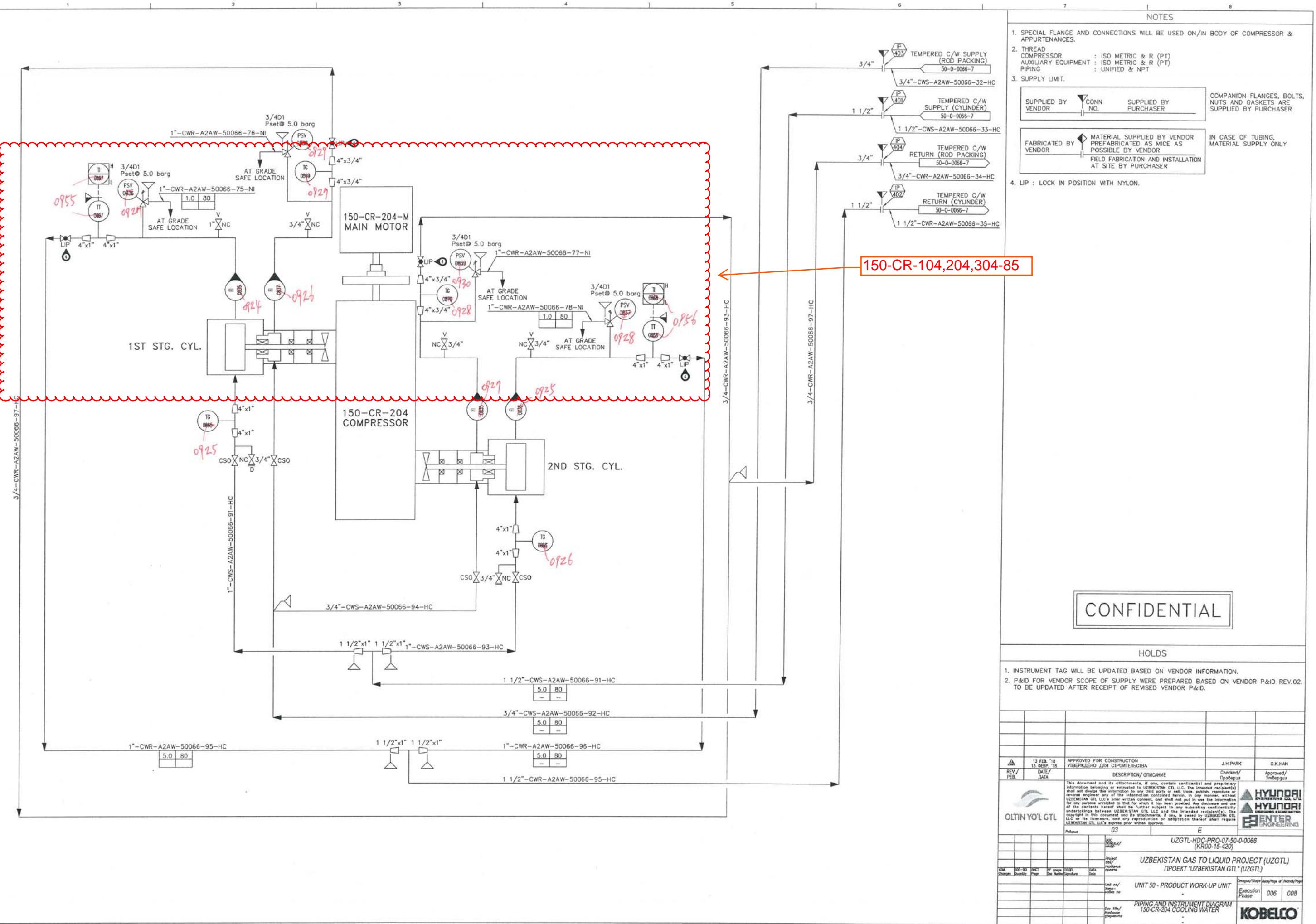


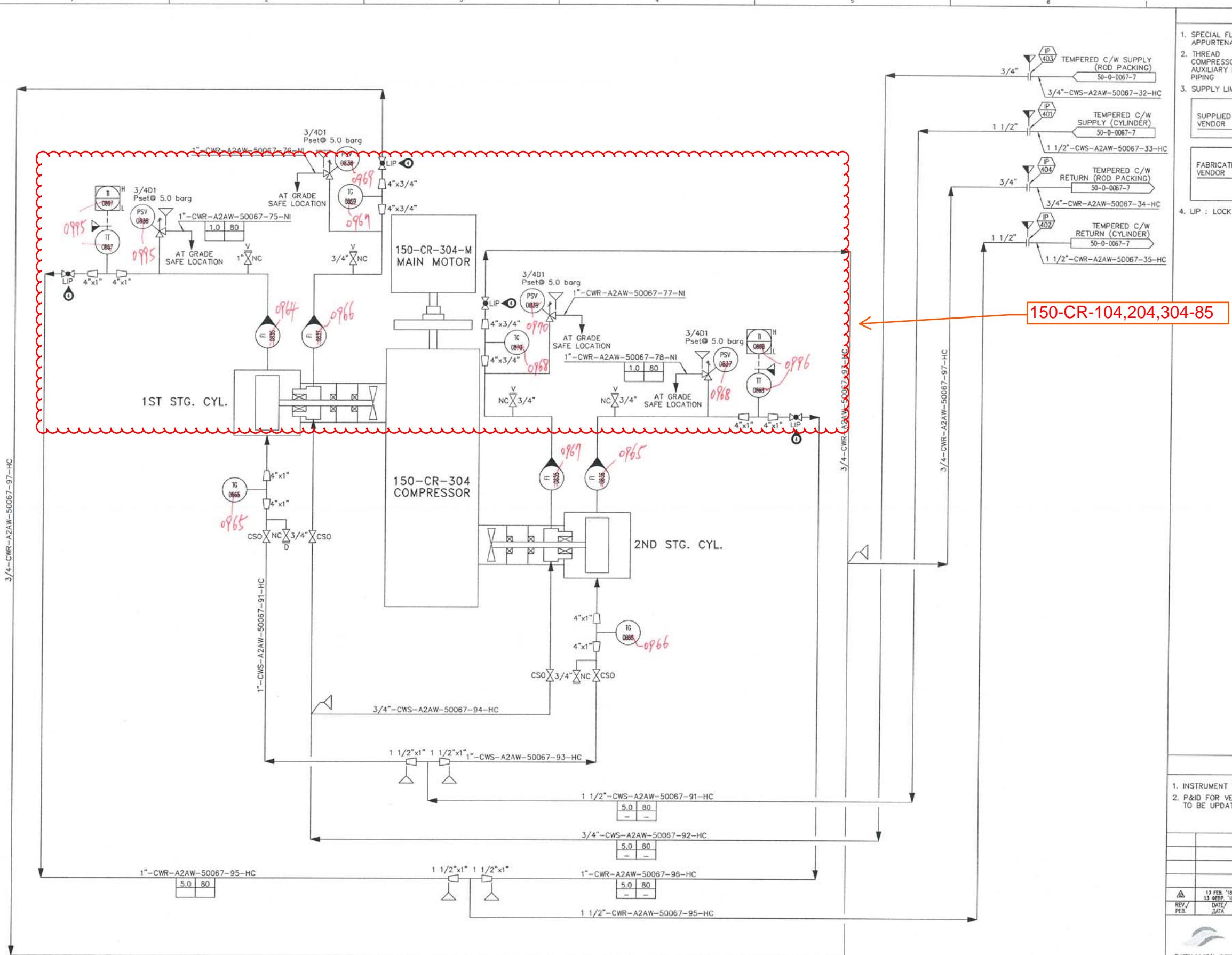


 OLTIN YO'L GTL	HAZOP ACTION CLOSE-OUT REGISTER FOR ERG COMPRESSOR PACKAGE	 HYUNDAI <small>ENGINEERING CO., LTD.</small>  ENTER <small>ENGINEERING</small>
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Action No.	150-CR-104/204/304-85				
Action By	PR				
Node No.	3				
Node Description	3. Cooling Water / TCW console				
Cause	3.9.1. Less Temperature of Cooling Water due to 150-TIC-0872A control loop malfunction or failure (150-TV-0832A close)				
Consequence	3.9.1.1. Potential condensate formation of process gas leading to potential piston ring lifetime decrease.				
Safeguards					
Action	Configure 150-TAL-0867A/0868A on DCS				
Response	Incorporated on P&ID (50-0-0065/66/67-6). 150-TAL-0867A/0868A on DCS is provided on AFC P&ID. (Please refer to attached P&ID, UZGTL-HDC-PRO-07-50-0-0065/66/67-6)				
CONTRACTOR			OWNER		
Position	Signature	Date	Position	Signature	Date
Process Engineer	<u>B.M.Hwang</u> 	10-Apr-2018		_____	







NOTES

1. SPECIAL FLANGE AND CONNECTIONS WILL BE USED ON/IN BODY OF COMPRESSOR & APPURTENANCES.
 2. THREAD
COMPRESSOR : ISO METRIC & R (PT)
AUXILIARY EQUIPMENT : ISO METRIC & R (PT)
PIPING : UNIFIED & NPT
 3. SUPPLY LIMIT.

SUPPLIED BY  CONN
VENDOR NO. SUPPLIED BY PURCHASER

COMPANION FLANGES, BOLTS,
NUTS AND GASKETS ARE
SUPPLIED BY PURCHASER

 FABRICATED BY VENDOR	 MATERIAL SUPPLIED BY VENDOR PREFABRICATED AS MICE AS POSSIBLE BY VENDOR	 FIELD FABRICATION AND INSTALLATION AT SITE BY PURCHASER	<small>IN MA</small>
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CASE OF TUBING,
MATERIAL SUPPLY ONLY

LIP : LOCK IN POSITION WITH NYLON.

CONFIDENTIAL

HOLDS

1. INSTRUMENT TAG WILL BE UPDATED BASED ON VENDOR INFORMATION.
 2. P&ID FOR VENDOR SCOPE OF SUPPLY WERE PREPARED BASED ON VENDOR P&ID REV.02. TO BE UPDATED AFTER RECEIPT OF REVISED VENDOR P&ID.

△	13 ФЕВ '18 13 FEB '18	APPROVED FOR CONSTRUCTION УТВЕРЖДНО ДЛЯ СТРОИТЕЛЬСТВА	J.H.PARK	C.K.HAN
REV./ PEB.	DATE/ ДАТА	DESCRIPTION/ ОПИСАНИЕ	Checked/ Подпись	Approved/ Утверждена
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		Refuse 03	E	
		000- Код/ номер	UZGTL-HDC-PRO-07-50-0-0067 (KR00-15-420)	
		Project Site/ Название места	UZBEKISTAN GAS TO LIQUID PROJECT (UZGTL) ПРОЕКТ "UZBEKISTAN GTL" (UZGTL)	
QAL Changes	ROT-80 Quantity	Unit Price Unit Price	DATA Date	Open/Stop Open/Stop
		Unit no/ Номер блока	UNIT 50 - PRODUCT WORK-UP UNIT -	Open/Stop Open/Stop
		Doc title/ Название документа	PIPING AND INSTRUMENT DIAGRAM 150-CR-304 COOLING WATER -	Execution Phase 006 008
				KOBELCO