



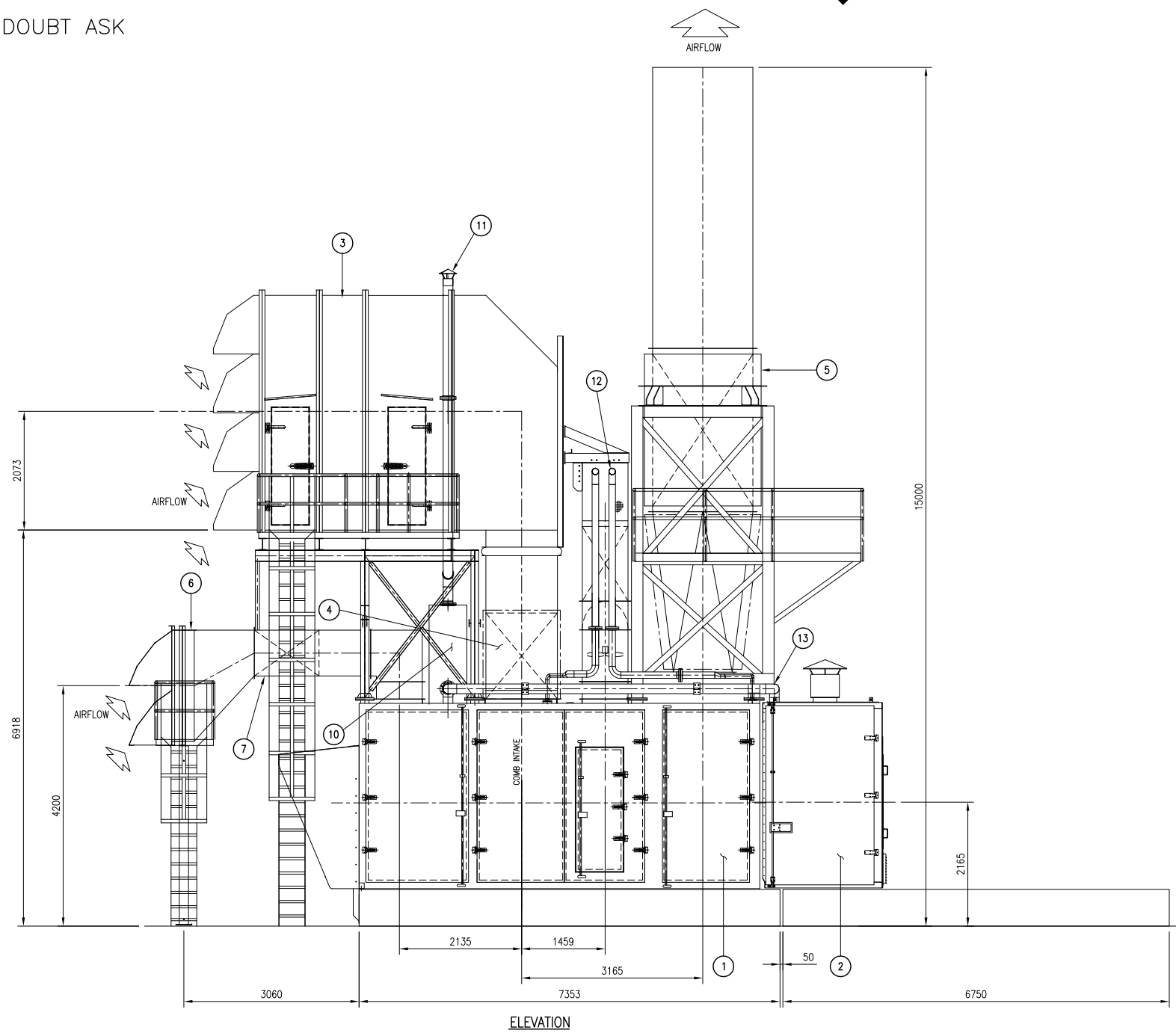
10.0 Drawings, Brochures and Schedule

10.1 Typical Site Layout Drawing

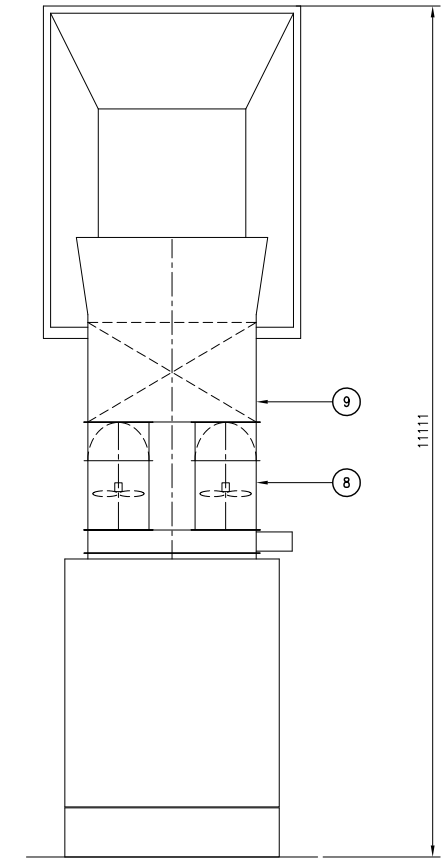
See Layout Drawing.

NOT TO BE SCALED IF IN DOUBT ASK

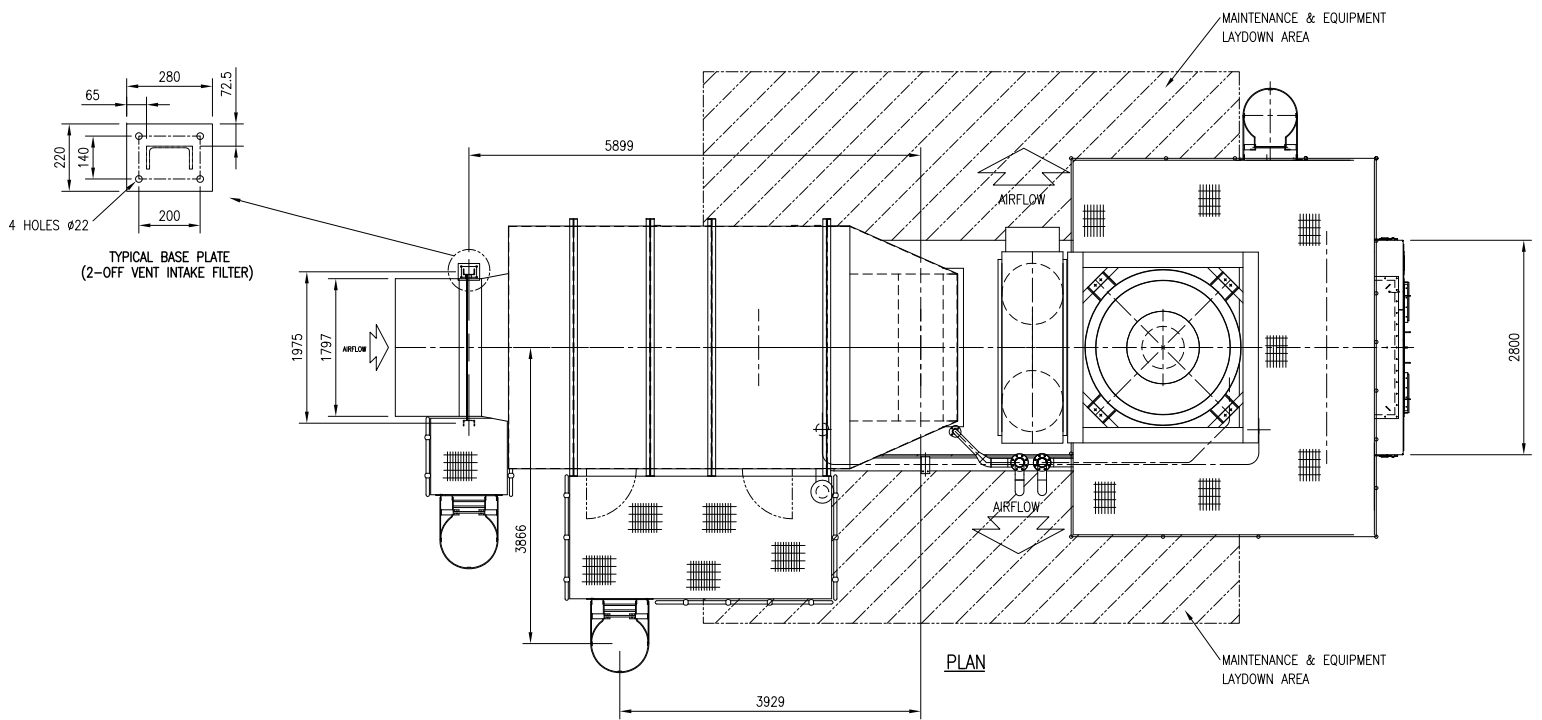
REV	REVISION					
1	FIRST ISSUE					
DRN	C.F	CKD	P.B	APVD	A.B	DATE 03.02.11
REV	REVISION					
2	COMBUSTION EXHAUST ACCESS PLATFORM ADDED					
DRN	C.F	CKD	P.B	APVD	A.B	DATE 04.02.11



ELEVATION



VIEW ON NON-DRIVE END
(EXHAUST SYSTEM & ACCESS NOT SHOWN FOR CLARITY)



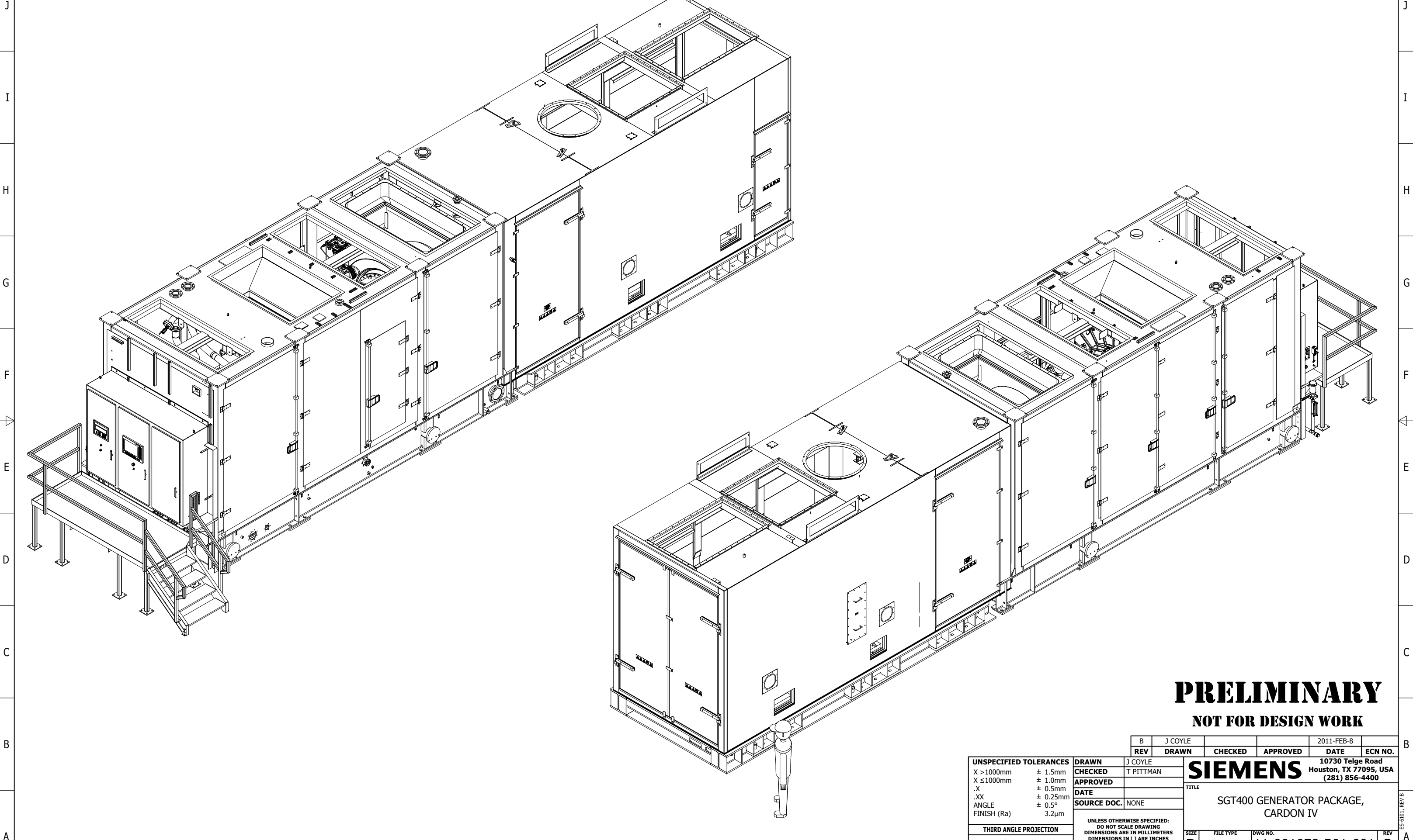
PLAN

KEY TO EQUIPMENT	
1	GAS TURBINE PACKAGE
2	GEARBOX ENCLOSURE
3	COMBUSTION AIR INTAKE FILTER
4	COMBUSTION AIR INTAKE SILENCER
5	COMBUSTION EXHAUST SYSTEM
6	GAS TURBINE VENT AIR INTAKE FILTER
7	GAS TURBINE VENT AIR INTAKE SILENCER
8	GAS TURBINE VENT AIR EXHAUST FAN
9	GAS TURBINE VENT AIR EXHAUST SILENCER
10	OIL MIST COALESCER
11	COALESCER BREATHER
12	ENGINE BREATHER PIPEWORK
13	TANK BREATHER PIPEWORK

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FIRST ANGLE PROJECTION	TITLE	DRAWING SIZE - A1	DRAWING REV - 2.0
	LAYOUT OF SIEMENS SUPPLIED EQUIPMENT	FIRST ORDER NUMBER 41.11.022	
TOLERANCES UNLESS OTHERWISE STATED PART AND FABRICATION TOLERANCES TO BE IN ACCORDANCE WITH AAF-LTD'S STANDARD ENGR0030	SIEMENS CARDON IV	SCALE 1 : 50	DRAWING NUMBER
WEIGHTS STATED ON THIS DRAWING ARE FOR AAF-LTD GUIDANCE AND DO NOT FORM THE BASIS OF A CONTRACT BETWEEN AAF-LTD. AND THE SUB-CONTRACTOR	AAF POWER & INDUSTRIAL	AAFLtd. Basingstoke Lane Cramlington Northumberland United Kingdom NE23 5BF Tel: 01670 713477 Fax: 01670 714370	-GB- 4111022 SHEET 1 OF 1

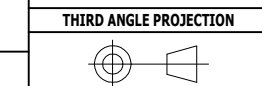
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PRELIMINARY
NOT FOR DESIGN WORK

B	J COYLE			2011-FEB-8	
REV	DRAWN	CHECKED	APPROVED	DATE	ECN NO.
	J COYLE				
	T PITTMAN				
SIEMENS					
10730 Telge Road Houston, TX 77095, USA (281) 856-4400					
TITLE SGT400 GENERATOR PACKAGE, CARDON IV					
SIZE	FILE TYPE	DWG NO.	REV		
D	INVENTOR	11-001078-B01-001	B		
SCALE	NONE	EST. WT.	N/A	SHEET	1 OF 3

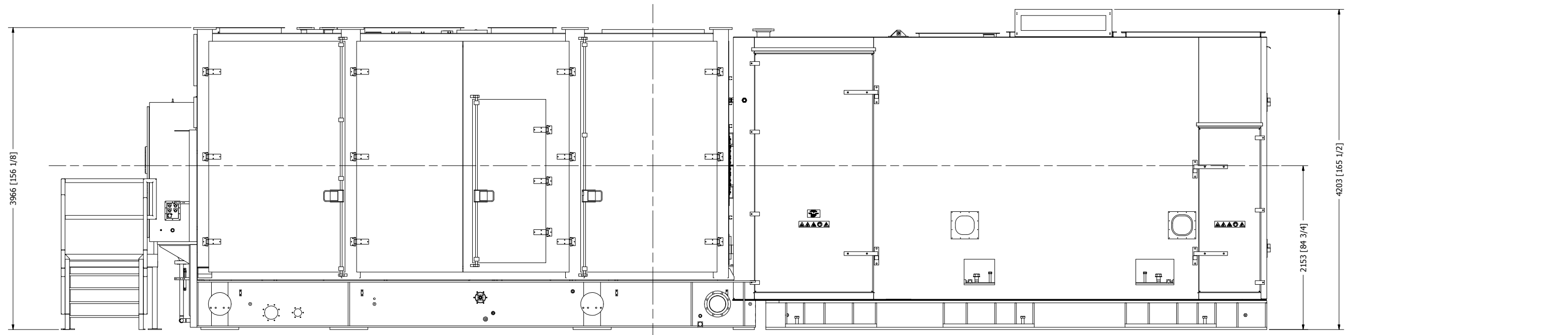
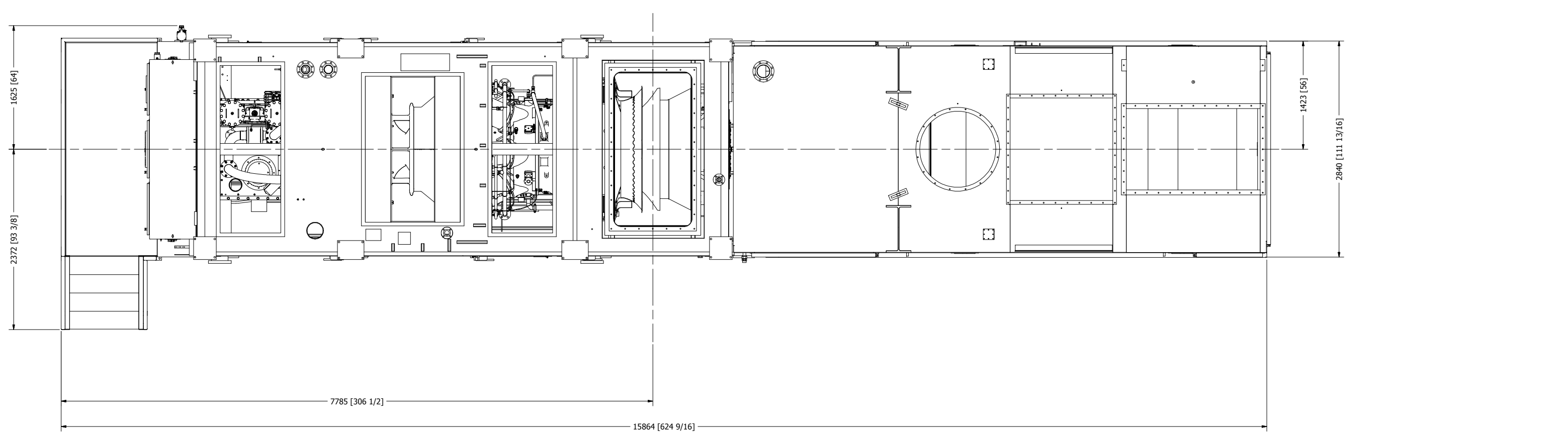
UNSPECIFIED TOLERANCES	
X > 1000mm	± 1.5mm
X ≤ 1000mm	± 1.0mm
.X	± 0.5mm
.XX	± 0.25mm
ANGLE	± 0.5°
FINISH (Ra)	3.2µm



UNLESS OTHERWISE SPECIFIED:
 DO NOT SCALE DRAWING
 DIMENSIONS ARE IN MILLIMETERS
 DIMENSIONS IN [] ARE INCHES
 BREAK ALL SHARP CORNERS
 REMOVE ALL BURRS

16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1



PRELIMINARY
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TITLE
 SGT400 GENERATOR PACKAGE,
 CARDON IV

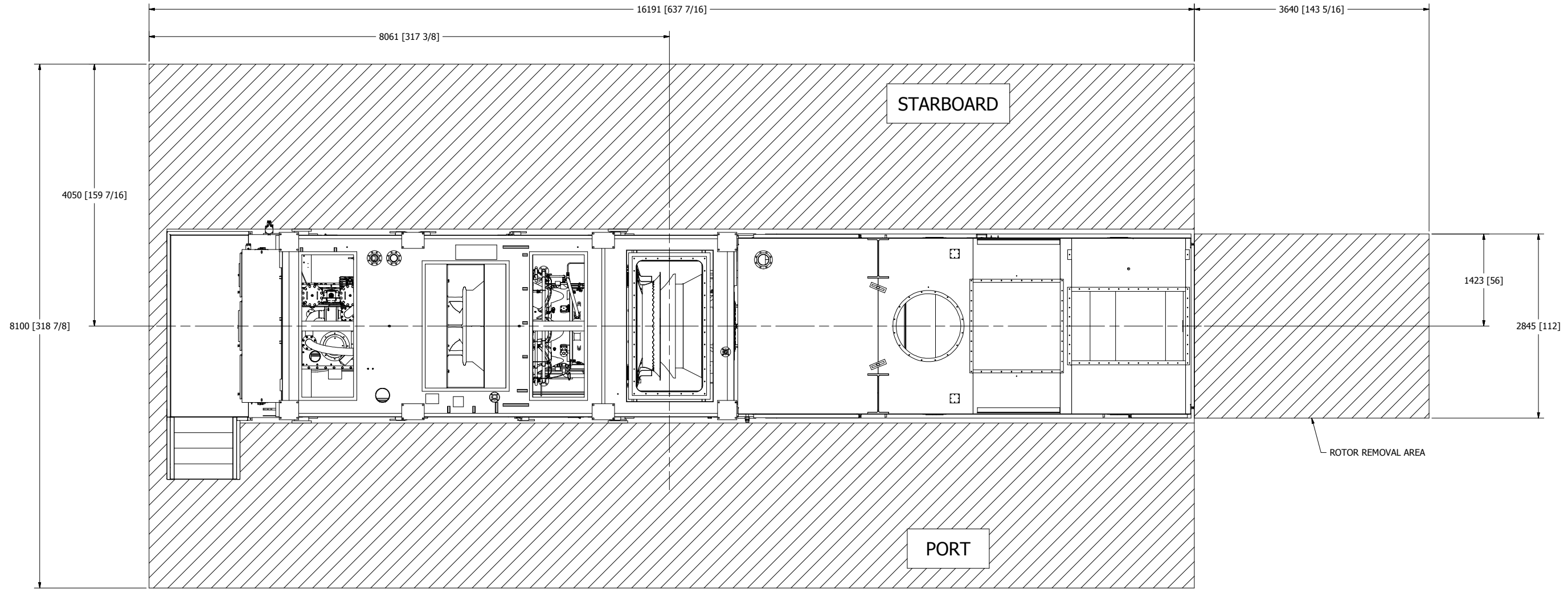
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D	INVENTOR	11-001078-B01-001	B
SCALE	NONE	EST. WT. N/A	SHEET 2 OF 3

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16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

NOTES:

1. LARGEST GAS TURBINE DOOR SWING = 76 [1930].
2. MAINTENANCE AREA SHALL BE LEVEL.
3. CORE REMOVAL CAN BE TO EITHER SIDE OF PACKAGE. FOR HORIZONTAL EXHAUST THE RECOMMENDED ROLL-OFF LOCATION IS ON THE SIDE OPPOSITE TO THE EXHAUST.
4. PIPES AND CABLES IN MAINTENANCE AREAS SHOULD BE RUN IN TRENCHES WITH COVERS CAPABLE OF CARRYING 10,500 PSF [500kN/M^2] IF SUBJECT TO HEAVY LOADS.
5. ADEQUATE ACCESS SHOULD BE PROVIDED TO ALLOW TROLLEY TO BE WHEELED AWAY.



PRELIMINARY
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TITLE SGT400 GENERATOR PACKAGE, CARDON IV			
SIZE D	FILE TYPE INVENTOR	DWG NO. 11-001078-B01-001	REV B
SCALE NONE	EST. WT. N/A	SHEET 3 OF 3	



10.2 P&ID Drawings

See P&ID Drawings.

INSTRUMENT CONTROL SYMBOLS

- UNIT CONTROL PANEL (UCP)
- FIELD MOUNTED
- CONTROL PANEL MOUNTED
- DEVICE MOUNTED BEHIND CONTROL PANEL
- LOCAL PANEL MOUNTED
- DEVICE MOUNTED BEHIND LOCAL PANEL
- ANNUNCIATOR FUNCTION
- UNDEFINED INTERLOCK LOGIC
- MANUAL RESET

SPECIAL ABBREVIATIONS

ALM	ALARM
FF	FAIL FIXED
FC	FAIL CLOSED
FO	FAIL OPEN
ECU	ELECTRONIC CONTROL UNIT
IND	INDICATION
IS	INTRINSICALLY SAFE
NC	NORMALLY CLOSED - DE-ENERGIZED
NO	NORMALLY OPEN - DE-ENERGIZED
PERM	PERMISSIVE
RTD	RESISTANCE TEMPERATURE DETECTOR
SD	SHUTDOWN, TRIP
SOL	SOLENOID VALVE
SP	SET POINT
TC	THERMOCOUPLE
TP	TEST POINT
VDU	VISUAL DISPLAY UNIT
UCP	UNIT CONTROL PANEL

IDENTIFICATION LETTERS

FIRST LETTER		SUCCEEDING LETTER			
	MEAS'RD/INITIAT'G VAR.	MODIFIER	READOUT/PASSIVE FUNC	OUTPUT FUNC/ADD MODIFIER	MODIFIER
A	ANALYSIS		ALARM	PULSE CLEAN	
B	BURNER, COMBUSTION			CHANGE OVER	
C	CONDUCTIVITY (ELEC)			CONTROL	CLOSED
D	DENSITY/SPEC. GRAV.	DIFFERENTIAL		DETECTOR	
E	VOLTAGE		ELEMENT		EMERGENCY PUMP
F	FLOW		FILTER		FAILURE
G	GAS		GLASS		
H	HAND	HEAT EXCHANGER		HIGH (ALARM)	HIGH (SD/PERM)
I	CURRENT (ELECTRICAL)		INDICATE		INHIBIT
J	POWER	SCAN			START
K	TIME, TIME SCHEDULE				WASH
L	LEVEL, LOCKED		LIGHT	LOW (ALARM)	LOW (SD/PERM)
M	MOISTURE OR HUMIDITY		MOTOR	MONITOR	MIDDLE OR INTERMED
N	KEY PHASOR		LUBRICATOR		
O	OPTICAL		ORIFICE, RSTR, NOZZLE	OPEN (ALARM)	OPEN (SD)
P	PRESSURE/VACUUM		PUMP	PERMISSIVE TO	PURGE
Q	QUANTITY				
R	RESISTANCE (ELECTRICAL)		RECORD OR PRINT		STEAM INJECTION
S	SPEED/FREQUENCY	SAFETY		SWITCH	SILENCER
T	TEMPERATURE			TRANSMIT	
U	VIBRATION		MULTIFUNCTION		MULTIFUNCTION
V	VISCOSITY/VIBRATION	VENTILATION		VALVE, DAMPER, LOUVER	
W	WEIGHT OR FORCE		WELL		WATER INJECTION
X	UNCLASSIFIED	X AXIS	PROVING		UNCLASSIFIED
Y	FIRE	Y AXIS		RELAY OR COMPUTE	
Z	POSITION	Z AXIS		DRIVE, ACTUATE	

LINE TYPE AND PIPING SYMBOLS

- MAIN PROCESS
- INSTRUMENT SUPPLY OR SECONDARY PROCESS
- PNEUMATIC SIGNAL
- PNEUMATIC SIGNAL, BINARY
- SOFTWARE SIGNAL
- ELECTRICAL SIGNAL
- ELECTRICAL SIGNAL, BINARY
- HYDRAULIC SIGNAL
- CAPILLARY TUBE
- MECHANICAL LINKAGE
- BOUNDARY LINE
- CUSTOMER SCOPE OF SUPPLY
- HEAT TRACE & INSULATION
- INSULATION

PIPING
 XXX"-XXXXX-XX
 MATERIAL SCHEDULE
 LINE SIZE

TUBING
 XXX"-XXXXX-XX
 MATERIAL WALL THICKNESS
 LINE SIZE

- VORTEX BREAKER
- SLOPE
- QUICK DISCONNECT (MALE/FEMALE)
- CONNECTION
- ELECTRICAL CONNECTOR (MALE/FEMALE)
- FLEX LINE
- EXPANSION JOINT
- REDUCER CONCENTRIC
- REDUCER ECCENTRIC
- CAP, WELDED
- CAP OR PLUG
- SPECTACLE BLIND (OPEN, CLOSED)
- DRAIN FUNNEL
- DRAIN CASE
- DEVICE OPEN TO ATMOSPHERE

VALVE & EQUIPMENT SYMBOLS

- GATE VALVE
- GLOBE VALVE
- PLUG VALVE
- BALL VALVE
- BUTTERFLY VALVE
- NEEDLE VALVE
- HAND OPERATOR
- CHECK VALVE
- CHECK VALVE, SPRING RETURN
- CHECK VALVE, FOOT VALVE TYPE
- PRESSURE SAFETY VALVE
- PRESSURE SAFETY VALVE, ANGLE
- RUPTURE DISK
- ANGLE VALVE
- 3-WAY VALVE
- FOUR WAY VALVE
- BLOCK WITH INTEGRAL BLEED PLUG
- TWO VALVE MANIFOLD (INSTRUMENT)
- FIVE VALVE MANIFOLD (INSTRUMENT)
- LEVEL CONTROL VALVE
- BACK PRESSURE CONTROL VALVE SELF CONTAINED
- PRESSURE REDUCING CONTROL VALVE, SELF-CONTAINED
- PRESSURE CONTROL VALVE REMOTE SENSING
- TEMPERATURE CONTROL VALVE

VALVE & EQUIPMENT SYMBOLS

- PNEUMATIC ACTUATOR, SPRING RETURN
- PNEUMATIC ACTUATOR, DUAL ACTING
- SOLENOID ACTUATOR
- ELECTRIC ACTUATOR
- FILTER
- BREATHER
- STRAINER, Y TYPE
- STRAINER, T TYPE
- STRAINER, CONE TYPE
- MESH SCREEN
- INSTRUMENT AIR DRYER
- CONDENSATE TRAP
- VAPOR COALESCER
- FLAME ARRESTER
- BURNERS
- HORN
- THERMOWELL
- LEVEL FLOAT
- EXTINGUISHANT NOZZLE
- FLOW ORIFICE
- BLOWER
- FAN
- TRASH / BUG SCREEN
- SILENCER
- DAMPER
- DAMPER, BACKDRAFT

VALVE & EQUIPMENT SYMBOLS

- FLOW METER, TURBINE
- FLOW METER, VORTEX
- FLOW METER, CORIOLIS
- FLOW METER, LOCAL
- FLOW METER, PITOT TUBE
- FLOW METER, VENTURI
- STRAIGHTENING VANE
- AIR COOLER
- SHELL & TUBE COOLER
- FINNED TUBE COOLER
- PLATE & FRAME COOLER
- IMMERSION HEATER
- SPACE HEATER

VALVE & EQUIPMENT SYMBOLS

- PUMP, CENTRIFUGAL
- PUMP, PISTON
- PUMP, DIAPHRAGM
- PUMP, SCREW OR GEAR
- PUMP, MANUAL
- PUMP, HYDRAULIC
- MOTOR, HYDRAULIC
- MOTOR, ELECTRIC (AC)
- MOTOR, ELECTRIC (DC)
- MOTOR, PNEUMATIC
- GEARBOX DRIVEN
- CLUTCH

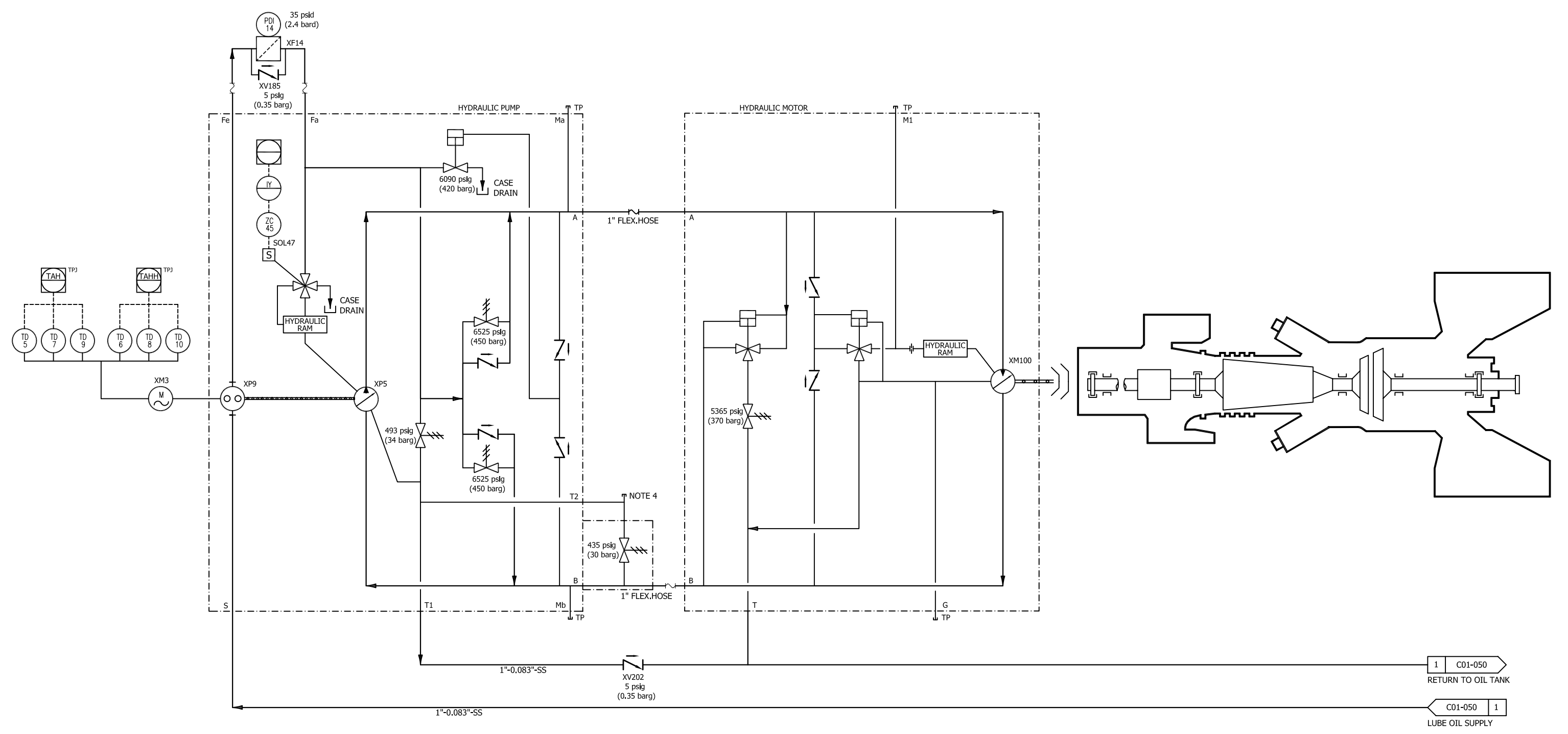
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DATE						
SOURCE DOC.						

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P&ID SYMBOLS AND DESIGNATIONS

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SCALE	NONE	EST. WT. N/A	SHEET 1 OF 1

IF IN DOUBT ASK

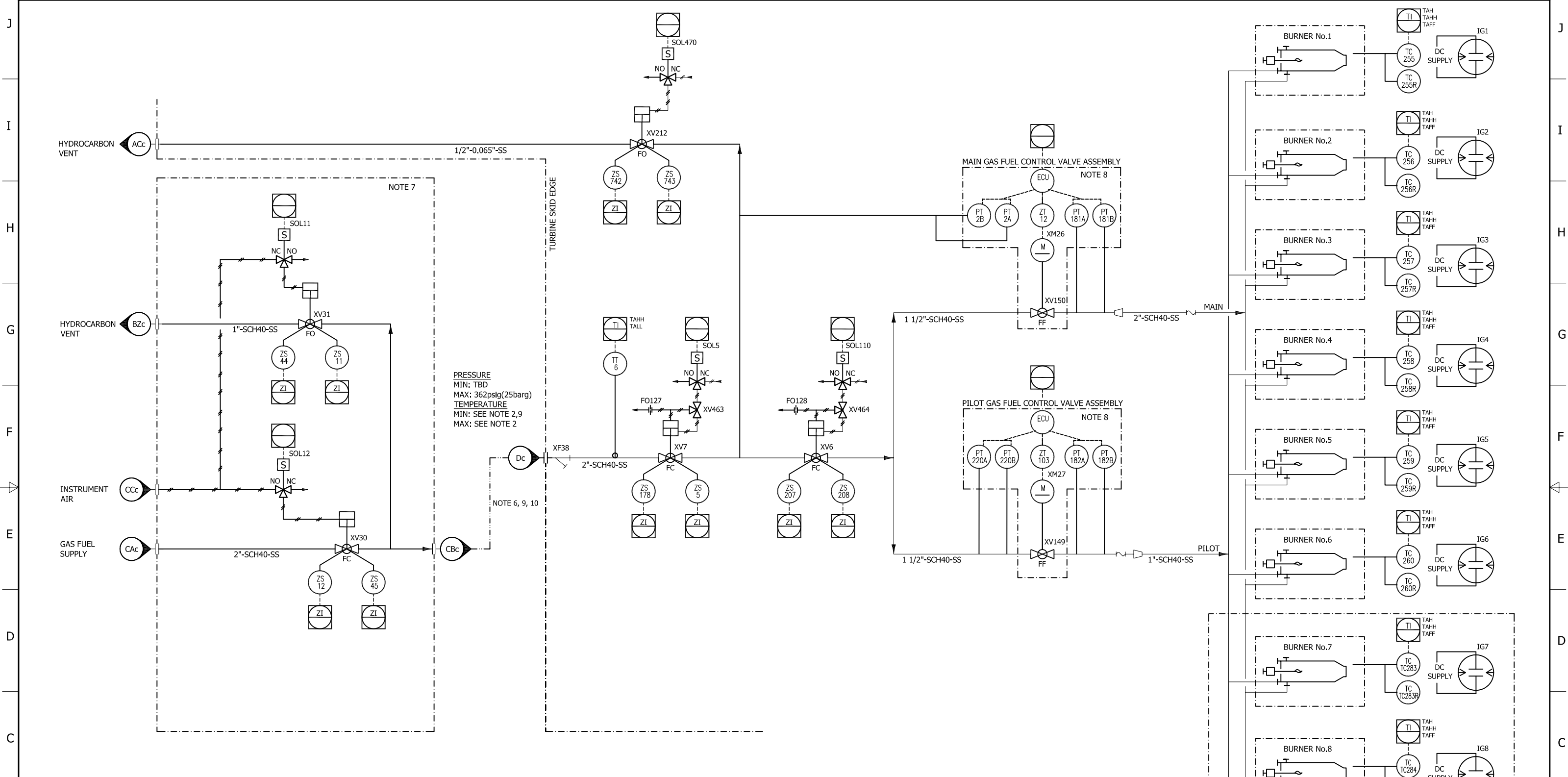


- NOTES**
1. INSTRUMENT/EQUIPMENT LIST REFER TO INSTRUMENT/EQUIPMENT LIST FOR SET POINTS AND RANGES OF INSTRUMENTATION/EQUIPMENT ON THIS P&ID. DOCUMENT ISSUED 6-8 WEEKS AFTER KICK OFF MEETING. *-C17-001
 2. UTILITIES AND TIE-IN SCHEDULE REFER TO UTILITIES AND TIE-IN SCHEDULE FOR DETAILS OF CONNECTION TYPES AND DESIGN INFORMATION. DOCUMENT ISSUED 6-8 WEEKS AFTER KICK OFF MEETING. *-C03-001
 3. GENERAL ARRANGEMENT REFER TO GENERAL ARRANGEMENT DRAWING FOR PHYSICAL LOCATION OF ALL PACKAGE CONNECTIONS. *-B01-001
- *-CONTRACT NUMBER
4. FILL THE PUMP CASING AND HYDRAULIC MOTOR CASING WITH TURBINE OIL BEFORE FIRST RUN OF PACKAGE.

1 C01-050
RETURN TO OIL TANK

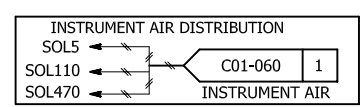
C01-050 1
LUBE OIL SUPPLY

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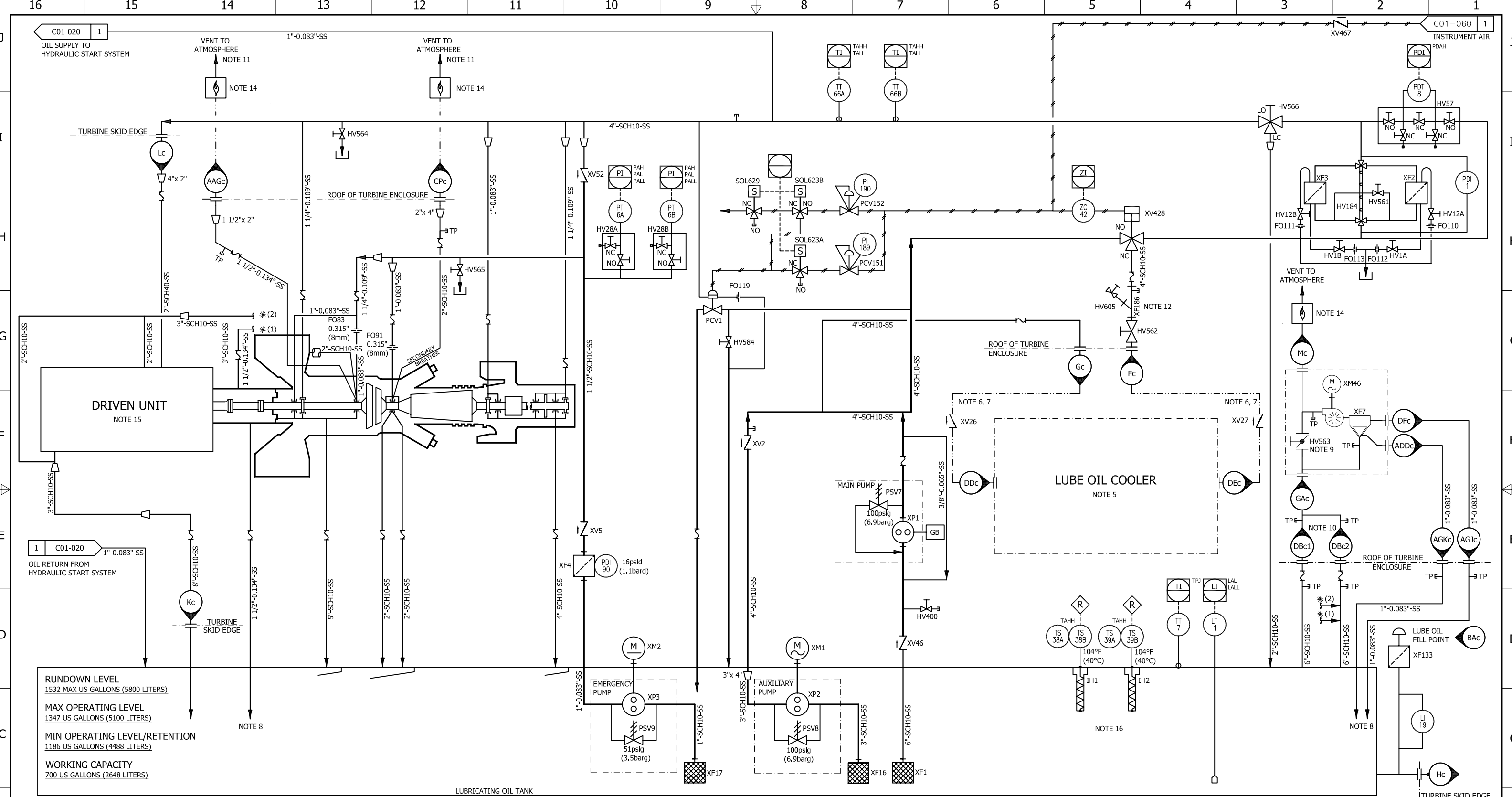


PRESSURE
MIN: TBD
MAX: 362psig(25barg)
TEMPERATURE
MIN: SEE NOTE 2,9
MAX: SEE NOTE 2

- NOTES**
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 - GENERAL ARRANGEMENT REFER TO GENERAL ARRANGEMENT DRAWING FOR PHYSICAL LOCATION OF ALL PACKAGE CONNECTIONS. *-B01-001
 - ALL INSTRUMENT AND AIR TUBING SHALL BE 3/8"-0.065" STAINLESS STEEL UNLESS SPECIFIED OTHERWISE.
 - ALL N.O. AND N.C. NOTATIONS APPLY TO VALVES SHOWN IN THE "DE-ENERGIZED" STATE.
 - INTERCONNECT PIPING MATERIAL BETWEEN BLOCK AND BLEED VALVE ASSEMBLY AND GAS TURBINE SHALL BE STAINLESS STEEL.
 - GAS FUEL BLOCK & VENT ASSEMBLY IS OPTIONAL. SEE SCOPE OF SUPPLY FOR DETAILS.
 - CONTROL VALVE DIFFERENTIAL PRESSURE SETTING TBDpsid(TBD bard).
 - MINIMUM GAS TEMPERATURE SHALL BE 41°F(5°C) OR 36°F(20°C) ABOVE THE DEW POINT OF THE GAS, WHICHEVER IS GREATER.
 - FUEL GAS SUPPLY PIPING SHOULD BE SLOPING CONTINUOUSLY UPWARDS TO THE GAS TURBINE Dc CONNECTION. PROVISIONS FOR DRAINING SHALL BE MADE AT PIPING LOW POINT.
 - BURNERS 7 & 8 AND ASSOCIATED EQUIPMENT/INSTRUMENTATION ONLY ON SGT-200.



REV	N/A	N/A	N/A	N/A	N/A
DRAWN	CHECKED	APPROVED	DATE	ECN NO.	
SIEMENS					
10730 Telge Road Houston, TX 77095, USA (281) 856-4400					
DLE GAS FUEL SYSTEM					
IF IN DOUBT ASK					
SIZE	FILE TYPE	DWG NO.	REV		
D	ACAD	PROP-C01-030	A		
SCALE	NONE	EST. WT.	N/A	SHEET 1 OF 1	



RUNDOWN LEVEL
1532 MAX US GALLONS (5800 LITERS)

MAX OPERATING LEVEL
1347 US GALLONS (5100 LITERS)

MIN OPERATING LEVEL/RETENTION
1186 US GALLONS (4488 LITERS)

WORKING CAPACITY
700 US GALLONS (2648 LITERS)

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 - ALL INSTRUMENT AND AIR TUBING SHALL BE 3/8"-0.065" STAINLESS STEEL UNLESS SPECIFIED OTHERWISE.
 - SEE SCOPE OF SUPPLY FOR DETAILS ON LUBE OIL COOLER.
 - MAXIMUM ALLOWABLE PRESSURE DROP IN INTER-CONNECT PIPING BETWEEN LUBE OIL COOLER AND GAS TURBINE ENCLOSURE SHALL NOT EXCEED 5 PSID (0.35BARD). PIPING MATERIAL SHALL BE STAINLESS STEEL.
 - CHECK VALVES ARE SUPPLIED BY COMPANY AND SHALL BE INSTALLED BY CUSTOMER. CHECK VALVES TO BE AS CLOSE AS POSSIBLE TO THE TURBINE ENCLOSURE CONNECTION, IN THE HORIZONTAL PIPE RUN. DRAIN VALVES SHALL BE PROVIDED AT LOW POINTS BETWEEN COOLER AND CHECK VALVES.
 - DRAIN PIPE TO EXTEND BELOW MINIMUM OPERATING LEVEL IN OIL TANK
 - SET AND LOCK AT THE APPROPRIATE VALUE DURING COMMISSIONING.
 - INTERCONNECT PIPING BETWEEN COALESCER AND TURBINE ENCLOSURE SUPPLIED BY COMPANY AND SHIPPED LOOSE FOR RE-INSTALLATION BY CUSTOMER AT SITE.
 - DISCHARGE FROM AAGc & CPc BREATHER PIPING MAY BE DIRECTED SO THAT THEY ARE ENTRAINED INTO THE ENCLOSURE VENTILATION OUTLET STREAM TO IMPROVE DISPERSION.
 - REMOVE STRAINER SCREEN AFTER FLUSHING.
 - ALL N.O. AND N.C. NOTATIONS APPLY TO VALVES SHOWN IN THE "DE-ENERGIZED" STATE.
 - FLAME ARRESTOR OPTIONAL. SEE SCOPE OF SUPPLY FOR DETAILS.
 - DRIVEN UNIT AS DETAILED IN SCOPE OF SUPPLY (WILL INCLUDE GEARBOX WHERE REQUIRED).
 - SEE SCOPE OF SUPPLY FOR NUMBER OF HEATERS

REV	A	N/A	N/A	N/A	N/A	N/A
DRAWN						
CHECKED						
APPROVED						
DATE						
SOURCE DOC.						

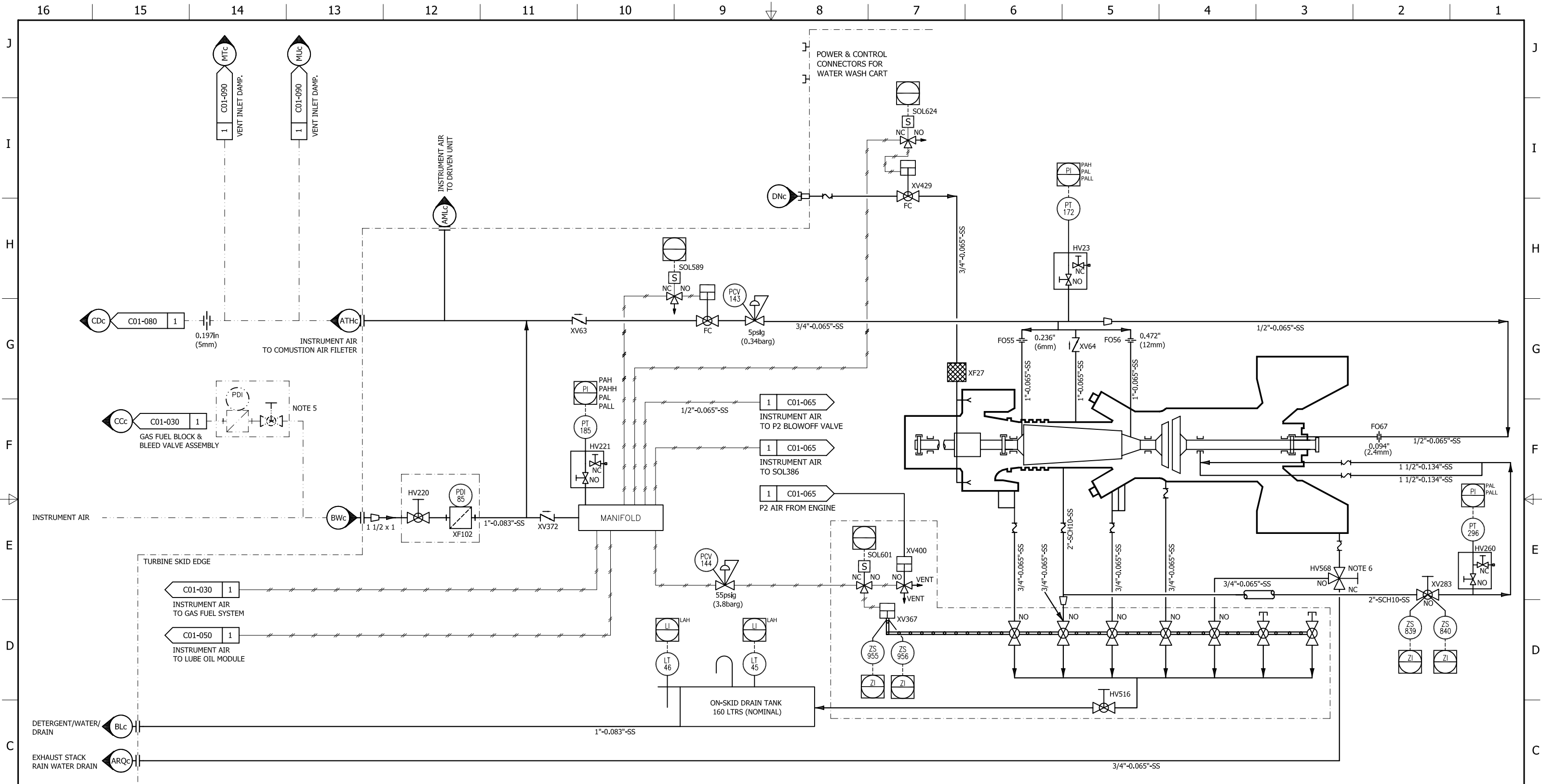
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SGT-400 LUBE OIL SYSTEM

SIZE **D** FILE TYPE ACAD DWG NO. **PROP400-C01-050** REV **A**

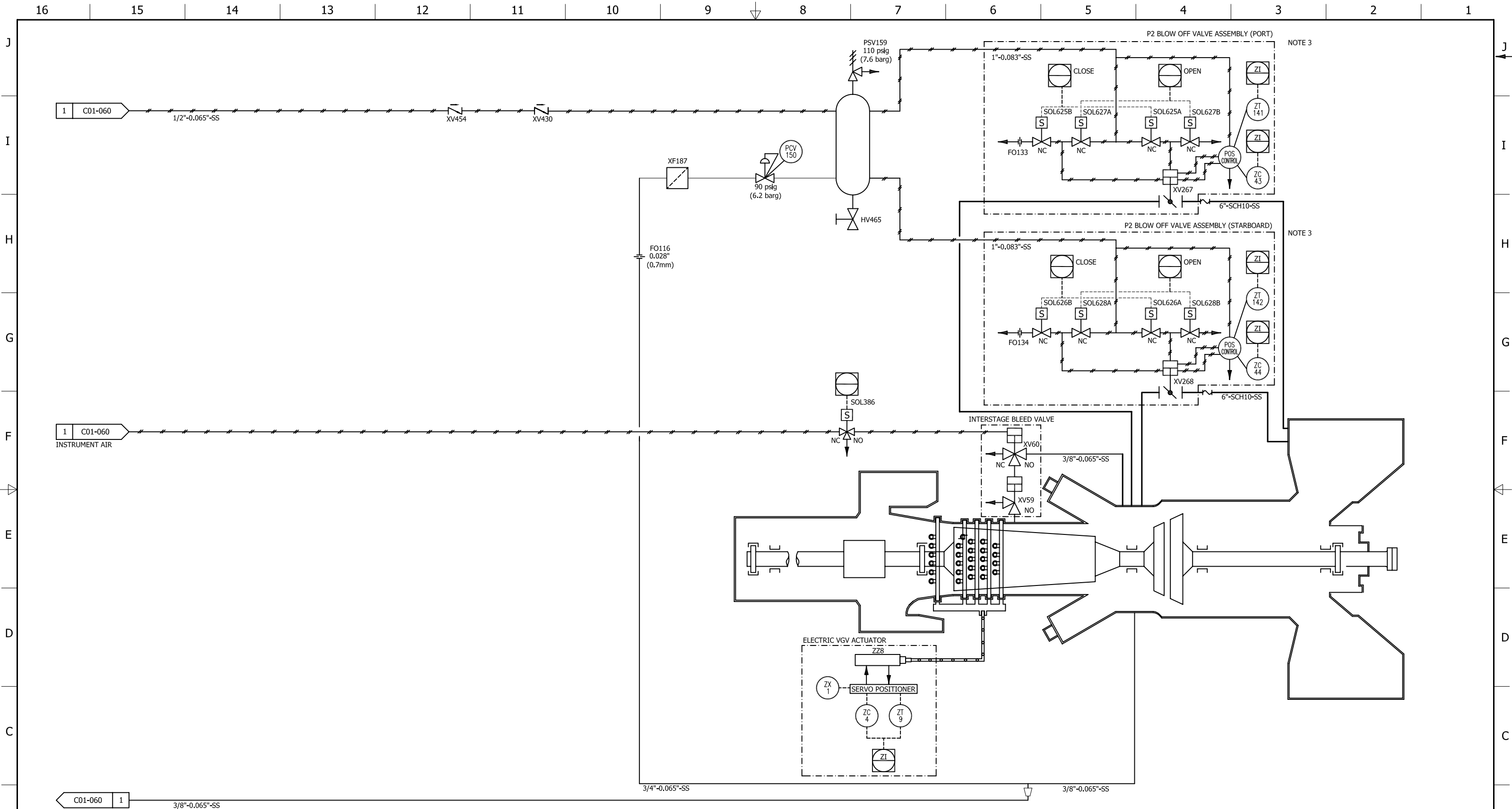
SCALE NONE EST. WT. N/A SHEET 1 OF 1

IF IN DOUBT ASK



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 - GENERAL ARRANGEMENT REFER TO GENERAL ARRANGEMENT DRAWING FOR PHYSICAL LOCATION OF ALL PACKAGE CONNECTIONS. *-B01-001
 - ALL INSTRUMENT AND AIR TUBING SHALL BE 3/8"-0.065" STAINLESS STEEL UNLESS SPECIFIED OTHERWISE.
 - IT IS RECOMMENDED THAT CUSTOMER INSTALLS A FILTER AND ISOLATION VALVE IN EACH SUPPLY TO OFF-SKID PNEUMATIC EQUIPMENT.
 - USED TO DRAIN VERTICAL EXHAUST WHEN ENGINE IS NOT RUNNING. *-CONTRACT NUMBER

REV	A	N/A	N/A	N/A	N/A	N/A														
DRAWN																				
CHECKED																				
APPROVED																				
DATE																				
SOURCE DOC.																				
IF IN DOUBT ASK		<table border="1"> <tr> <td>SIEMENS</td> <td>10730 Telge Road Houston, TX 77095, USA (281) 856-4400</td> </tr> <tr> <td>TITLE</td> <td>SGT-400 INSTRUMENT AIR, CLEANING AND SEAL AIR SYSTEM</td> </tr> <tr> <td>SIZE</td> <td>FILE TYPE</td> </tr> <tr> <td>D</td> <td>ACAD</td> </tr> <tr> <td>SCALE</td> <td>NONE</td> </tr> <tr> <td>EST. WT.</td> <td>N/A</td> </tr> <tr> <td>SHEET</td> <td>1 OF 1</td> </tr> </table>					SIEMENS	10730 Telge Road Houston, TX 77095, USA (281) 856-4400	TITLE	SGT-400 INSTRUMENT AIR, CLEANING AND SEAL AIR SYSTEM	SIZE	FILE TYPE	D	ACAD	SCALE	NONE	EST. WT.	N/A	SHEET	1 OF 1
SIEMENS	10730 Telge Road Houston, TX 77095, USA (281) 856-4400																			
TITLE	SGT-400 INSTRUMENT AIR, CLEANING AND SEAL AIR SYSTEM																			
SIZE	FILE TYPE																			
D	ACAD																			
SCALE	NONE																			
EST. WT.	N/A																			
SHEET	1 OF 1																			

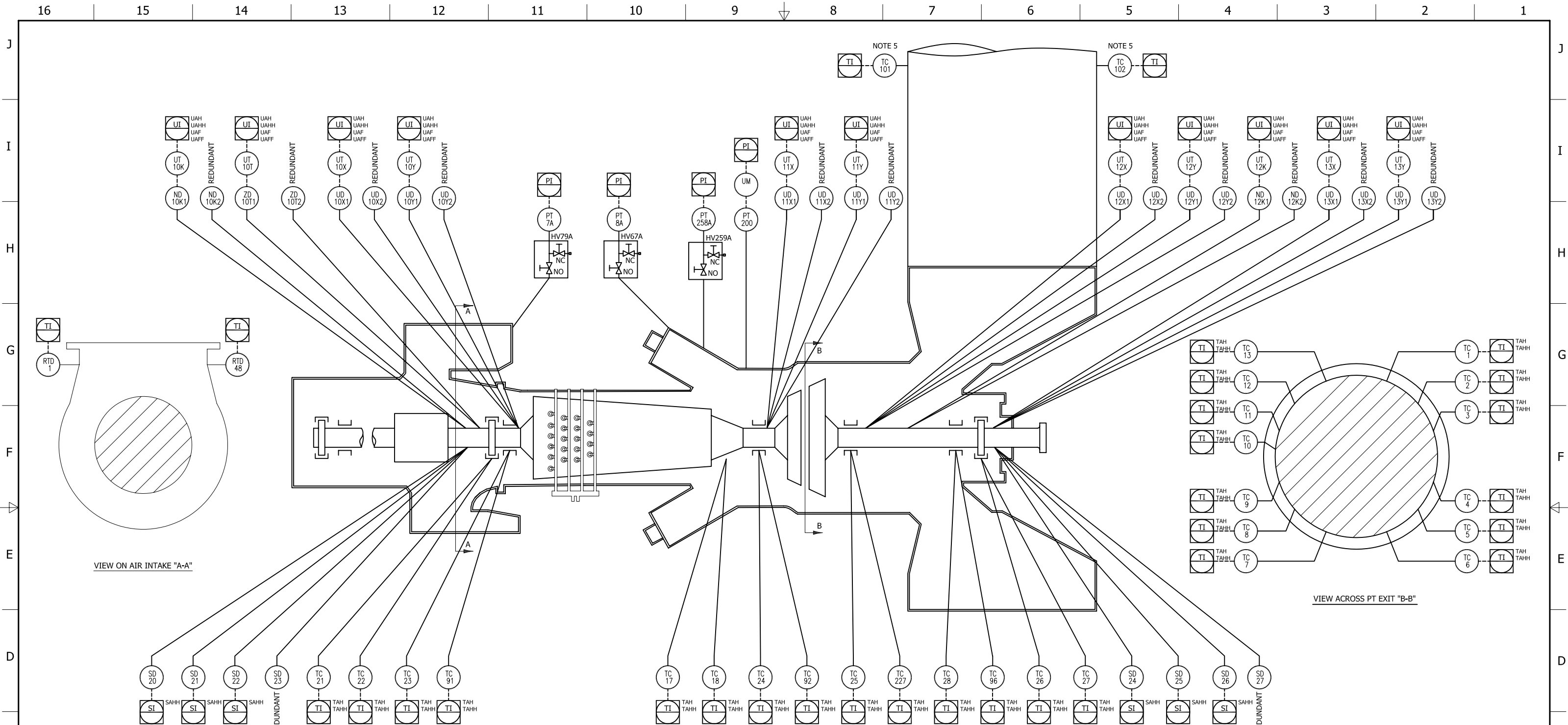


- NOTES
- INSTRUMENT/EQUIPMENT LIST REFER TO INSTRUMENT/EQUIPMENT LIST FOR SET POINTS AND RANGES OF INSTRUMENTATION/EQUIPMENT ON THIS P&ID. DOCUMENT ISSUED 6-8 WEEKS AFTER KICK OFF MEETING. *-C17-001
 - ALL INSTRUMENT AND AIR TUBING SHALL BE 3/8"-0.065" STAINLESS STEEL UNLESS SPECIFIED OTHERWISE.
 - P2 BLOW OFF VALVE PROVIDED FOR GENERATING SETS ONLY.
- *-CONTRACT NUMBER

REV	DATE	ECN NO.
A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

DRAWN	CHECKED	APPROVED	DATE	SOURCE DOC.

IF IN DOUBT ASK		SIZE	FILE TYPE	DWG NO.	REV
		D	ACAD	PROP-C01-065	A
		SCALE	NONE	EST. WT.	N/A
		SHEET 1 OF 1			



NOTES

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2. ALL INSTRUMENT AND AIR TUBING SHALL BE 3/8"-0.065" STAINLESS STEEL UNLESS SPECIFIED OTHERWISE.

3. ONLY SET POINTS OF MECHANICAL EQUIPMENT ARE SHOWN. FOR A FULL DEVICE OPERATION DESCRIPTION, THE CONTRACT SOFTWARE SPECIFICATION SHOULD BE CONSULTED.

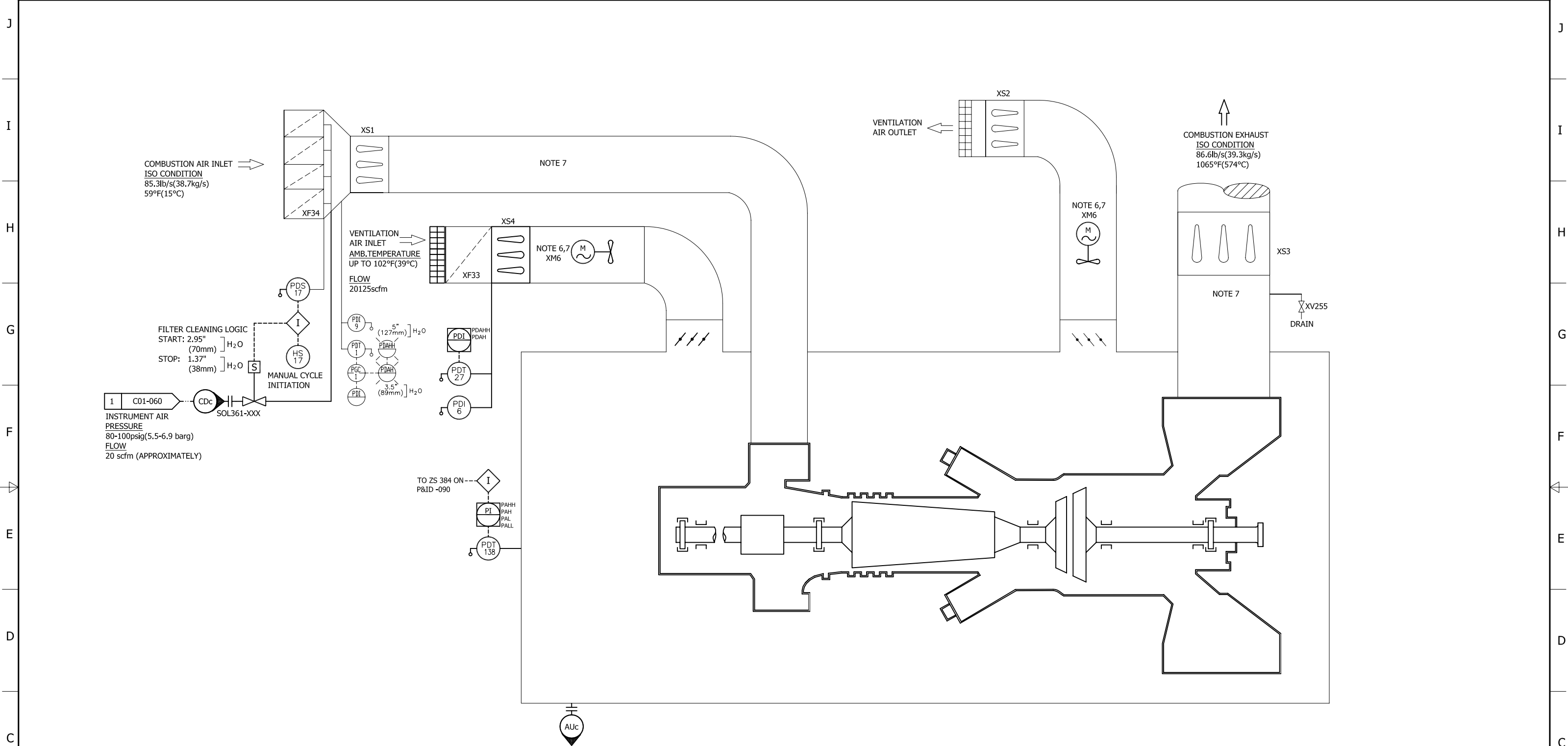
*-CONTRACT NUMBER

4. REDUNDANT SENSING ELEMENTS ARE ISOLATED IN THE LOCAL JUNCTION BOX.

5. THERMOCOUPLES ARE SUPPLIED BY SIEMENS AND ARE SHIPPED LOOSE FOR INSTALLATION AND WIRING BY CUSTOMER TO TURBINE CONTROL PANEL. PROBES SHALL BE LOCATED 8 FT DOWNSTREAM OF EXHAUST CASING OUTLET FLANGE.

REV	A	N/A	N/A	N/A	N/A	N/A
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CHECKED						
APPROVED						
DATE						
SOURCE DOC.						

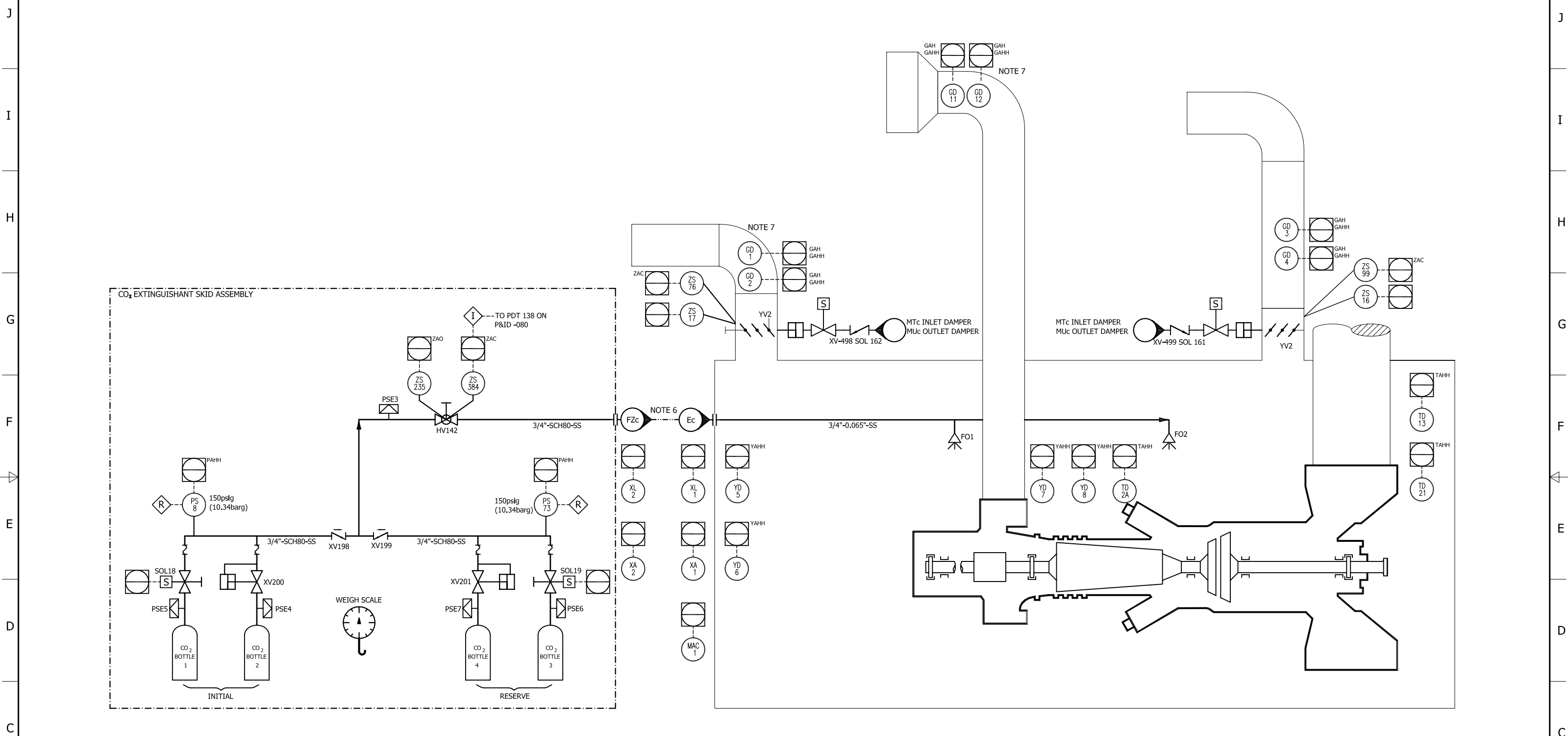
DRAWN		10730 Telge Road	
CHECKED		Houston, TX 77095, USA	
APPROVED		(281) 856-4400	
TITLE			
SGT-400			
GAS TURBINE INSTRUMENTATION			
SIZE	FILE TYPE	DWG NO.	REV
D	ACAD	PROP400-C01-070	A
SCALE	NONE	EST. WT.	N/A
SHEET		1 OF 1	



- NOTES**
- INSTRUMENT/EQUIPMENT LIST REFER TO INSTRUMENT/EQUIPMENT LIST FOR SET POINTS AND RANGES OF INSTRUMENTATION/EQUIPMENT ON THIS P&ID. DOCUMENT ISSUED 6-8 WEEKS AFTER KICK OFF MEETING. *-C17-001
 - UTILITIES AND TIE-IN SCHEDULE REFER TO UTILITIES AND TIE-IN SCHEDULE FOR DETAILS OF CONNECTION TYPES AND DESIGN INFORMATION. DOCUMENT ISSUED 6-8 WEEKS AFTER KICK OFF MEETING. *-C03-001
 - GENERAL ARRANGEMENT REFER TO GENERAL ARRANGEMENT DRAWING FOR PHYSICAL LOCATION OF ALL PACKAGE CONNECTIONS. *-B01-001
 - ALL INSTRUMENT AND AIR TUBING SHALL BE 3/8"-0.065" STAINLESS STEEL UNLESS SPECIFIED OTHERWISE.
 - ONLY SET POINTS OF MECHANICAL EQUIPMENT ARE SHOWN. FOR A FULL DEVICE OPERATION DESCRIPTION, THE CONTRACT SOFTWARE SPECIFICATION SHOULD BE CONSULTED.
 - FAN LOCATED IN VENTILATION INLET FOR POSITIVE PRESSURE, OR IN VENTILATION OUTLET FOR NEGATIVE PRESSURE SET. SEE SCOPE OF SUPPLY FOR DETAILS.
 - TYPICAL SUPPLY SHOWN FOR ACOUSTIC SYSTEM. PLEASE SEE SCOPE OF SUPPLY FOR DETAILS.
 - PULSE TYPE COMBUSTION AIR INLET SHOWN. SEE COPY OF SUPPLY FOR FILTER DETAILS.
- *-CONTRACT NUMBER

REV	DATE	BY	CHKD	APPD	ECN NO.
A					

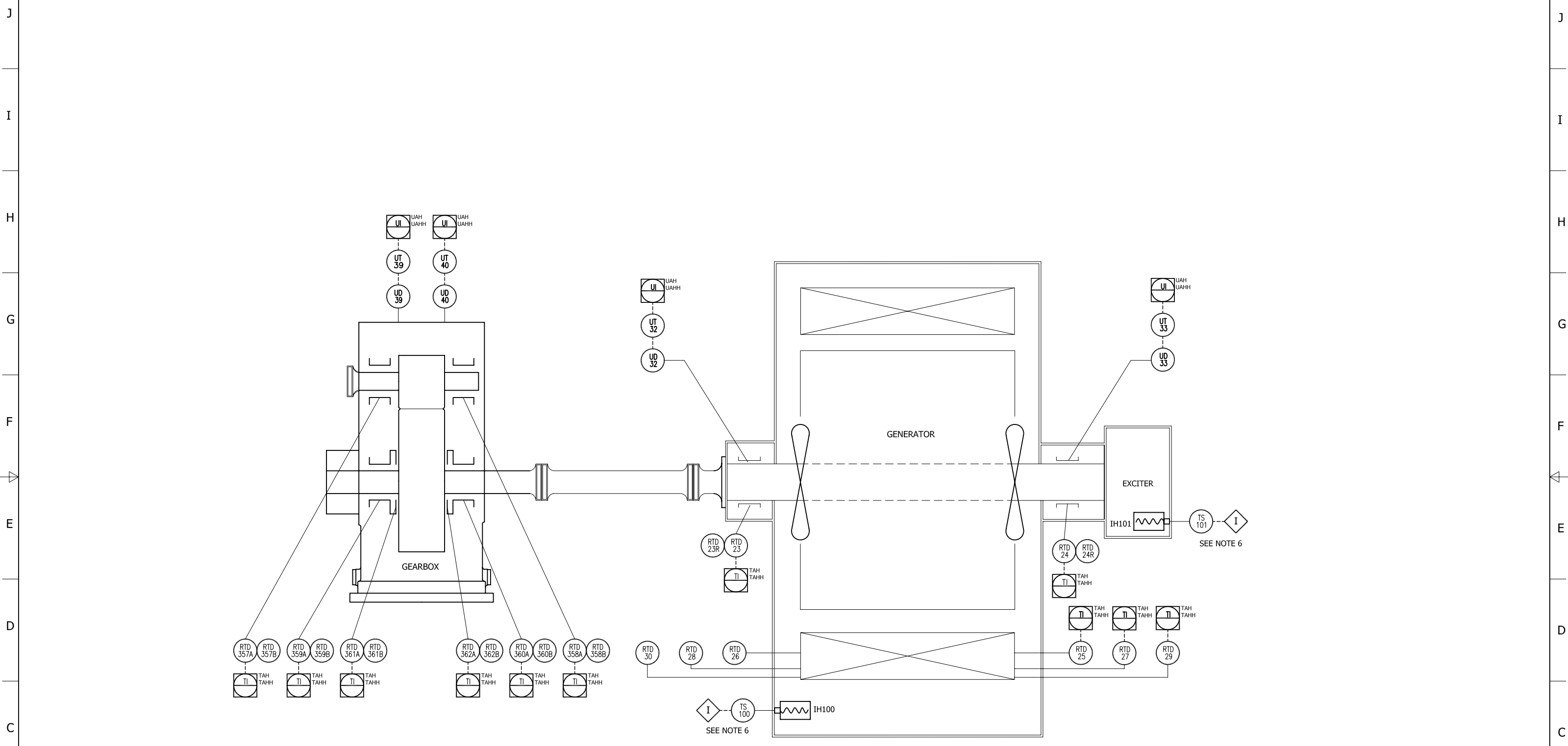
DRAWN CHECKED APPROVED DATE SOURCE DOC.	SIEMENS 10730 Telge Road Houston, TX 77095, USA (281) 856-4400
IF IN DOUBT ASK	TITLE SGT-400 GAS TURBINE COMBUSTION AND VENTILATION AIR SYSTEM
SIZE D	FILE TYPE ACAD
DWG NO. PROP400-C01-080	REV A
SCALE NONE	EST. WT. N/A
SHEET 1 OF 1	



- NOTES**
- INSTRUMENT/EQUIPMENT LIST
REFER TO INSTRUMENT/EQUIPMENT LIST FOR DETAILS OF INSTRUMENTATION/EQUIPMENT ON THIS P&ID. DOCUMENT ISSUED 6-8 WEEKS AFTER KICK OFF MEETING. *C17-001
 - UTILITIES AND TIE-IN SCHEDULE
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- ONLY SET POINTS OF MECHANICAL EQUIPMENT ARE SHOWN. FOR A FULL DEVICE OPERATION DESCRIPTION, THE CONTRACT SOFTWARE SPECIFICATION SHOULD BE CONSULTED.
- CO₂ EXTINGUISHANT SKID SHALL BE LOCATED WITHIN 50 EQUIVALENT FEET FROM TURBINE ENCLOSURE. LINE SHALL BE STAINLESS STEEL, 3/4"-0.065" TUBING OR 3/4"-SCH80 PIPE.
- ADDITIONAL GAS DETECTORS SHOWN. SEE SCOPE OF SUPPLY FOR DETAILS.

REV	A	N/A	N/A	N/A	N/A	N/A																																																
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SIEMENS		10730 Telge Road		Houston, TX 77095, USA		(281) 856-4400																																																
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- NOTES**
1. INSTRUMENT/EQUIPMENT LIST REFER TO INSTRUMENT/EQUIPMENT LIST FOR SET POINTS AND RANGES OF INSTRUMENTATION/EQUIPMENT ON THIS P&ID. DOCUMENT ISSUED 6-8 WEEKS AFTER KICK OFF MEETING. *-C17-001
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- *-CONTRACT NUMBER

4. ALL INSTRUMENT AND AIR TUBING SHALL BE 3/8"-0.065" STAINLESS STEEL UNLESS SPECIFIED OTHERWISE.
5. ONLY SET POINTS OF MECHANICAL EQUIPMENT ARE SHOWN. FOR A FULL DEVICE OPERATION DESCRIPTION, THE CONTRACT SOFTWARE SPECIFICATION SHOULD BE CONSULTED.
6. HEATER IS ON WHEN THE GENERATOR CIRCUIT BREAKER IS OPEN AND VICE-VERSA. HEATER IS CONTROLLED BY GCP.
7. FOR GENERATOR COOLING AND INSTRUMENTATION DETAILS SEE SCOPE OF SUPPLY FOR DETAILS.

REV	A	N/A	N/A	N/A	N/A	N/A																
DRAWN																						
CHECKED																						
APPROVED																						
DATE																						
SOURCE DOC.																						
IF IN DOUBT ASK		<table border="1"> <tr> <td>SIZE</td> <td>FILE TYPE</td> <td>DWG NO.</td> <td>REV</td> </tr> <tr> <td>D</td> <td>ACAD</td> <td>PROP-C01-270</td> <td>A</td> </tr> <tr> <td>SCALE</td> <td>NONE</td> <td>EST. WT.</td> <td>N/A</td> </tr> <tr> <td colspan="2"></td> <td colspan="2">SHEET 1 OF 1</td> </tr> </table>					SIZE	FILE TYPE	DWG NO.	REV	D	ACAD	PROP-C01-270	A	SCALE	NONE	EST. WT.	N/A			SHEET 1 OF 1	
SIZE	FILE TYPE	DWG NO.	REV																			
D	ACAD	PROP-C01-270	A																			
SCALE	NONE	EST. WT.	N/A																			
		SHEET 1 OF 1																				



10.3 Electrical Drawings

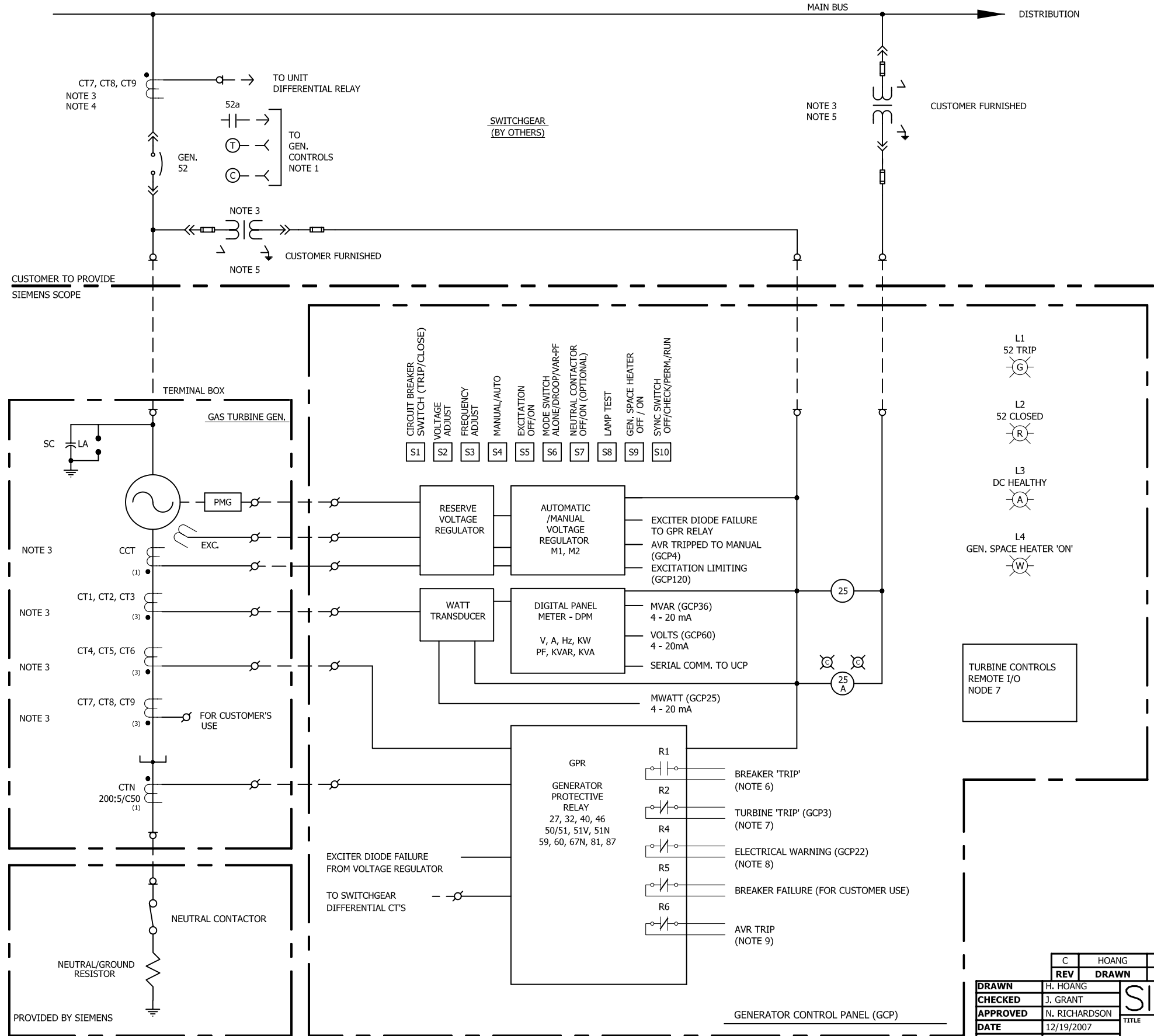
See Electrical Drawings

NOTES

- CUSTOMER TO PROVIDE REMOTE CLOSE/TRIP INPUTS TO GENERATOR BREAKER FROM TURBINE GCP. CUSTOMER TO ALSO PROVIDE THE FOLLOWING AUX CONTACTS FROM THE GENERATOR BREAKER
QTY(2) - 52a
QTY(4) - 52b
- CUSTOMER TO PROVIDE 1-52a + 1-52b CONTACT FROM THE UTILITY TIE BREAKER.
- SEE CHARTS ON SHEET 2 FOR WINDING RATIOS AND RELAY CLASS.
- SHIPPED LOOSE MOUNTING BY CUSTOMER
- PT CONFIGURATION CAN BE EITHER OPEN DELTA OR WYE-WYE WITH 'B' PHASE GROUNDED.
- THE GPR WILL TRIP THE GENERATOR BREAKER FOR ANY OF THE FOLLOWING:
27/59 UNDER/OVER VOLTAGE
32 REVERSE POWER
40 GENERATOR FIELD FAILURE
46 NEGATIVE PHASE SEQUENCE
50/51 INSTANTANEOUS / TIMED OVER CURRENT
51V TIMED OVER CURRENT, VOLTAGE RESTRAINED (BACK UP)
51N NEUTRAL TIMED OVER CURRENT
81U/O UNDER / OVER FREQUENCY
87 DIFFERENTIAL CURRENT
N/A EXCITER DIODE FAILURE
- THE GPR WILL TRIP THE GENERATOR BREAKER AND SHUT THE TUBINE DOWN VIA GCP3 FOR THE FOLLOWING:
51N NEUTRAL TIMED OVER CURRENT
59 OVER VOLTAGE
87 DIFFERENTIAL CURRENT
N/A EXCITER DIODE FAILURE
- THE GPR WILL ISSUE A COMMON WARNING (GCP22) TO THE TURBINE CONTROLS FOR THE FOLLOWING:
27 UNDER VOLTAGE ALARM
40 FIELD FAILURE ALARM
46 NEGATIVE PHASE SEQUENCE ALARM
59 OVER VOLTAGE ALARM
81U UNDER FREQUENCY ALARM
81O OVER FREQUENCY ALARM
- THE GPR WILL TRIP THE AVR IN THE EVENT OF AN 87 DIFFERENTIAL CURRENT TRIP.

LEGEND

- C - CLOSE COIL
- EXC - GENERATOR EXCITER FIELD
- GPR - GENERATOR PROTECTIVE RELAY
- LA - LIGHTNING ARRESTOR
- MVAR - MEGA VOLTS AMPS REACTIVE
- MW - MEGA WATTS
- M1 - EXCITER FIELD AMPS
- M2 - EXCITER FIELD VOLTS
- PMG - PERMANENT MAGNET GENERATOR
- PT - POTENTIAL TRANSFORMER
- SC - SURGE CAPACITOR
- T - TRIP COIL
- UCP - UNIT CONTROL PANEL
- 25 - AUTOSYNCHRONIZER
- 25A - SYNCHROSCOPE W/ SYNC. CHECK
- 52 - CIRCUIT BREAKER
- 27 - UNDERVOLTAGE RELAY
- 32 - DIRECTIONAL POWER RELAY
- 40 - FIELD FAILURE
- 46 - NEGATIVE PHASE SEQUENCE RELAY
- 50/51 - OVER CURRENT RELAY
- 51V - BACKUP OVER CURRENT RELAY
- 51N - NEUTRAL TIMED OVER CURRENT RELAY
- 59 - OVERVOLTAGE RELAY
- 60 - VOLTAGE BALANCE / VT SUPERVISION
- 67N - SENSITIVE DIRECTIONAL EARTH FAULT
- 81 - UNDER/OVER FREQUENCY RELAY
- 87 - DIFFERENTIAL CURRENT RELAY



C	HOANG	BOWMAKER	RICHARDSON	2008-05-21	4151
REV	DRAWN	CHECKED	APPROVED	DATE	ECN NO.
DRAWN	H. HOANG	CHECKED	J. GRANT	DATE	12/19/2007
APPROVED	N. RICHARDSON	SOURCE DOC.	N/A		
SIEMENS Industrial Turbomachinery, Inc. 10730 Telge Road Houston, TX 77095, USA					
TITLE ELECTRICAL ONE LINE DIAGRAM GENERATOR CONTROLS					
IF IN DOUBT ASK					
SIZE	FILE TYPE	DWG NO.	REV		
D	ACAD	HHCT038017	C		
SCALE	NONE	EST. WT.	N/A	SHEET 1 OF 2	

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VOLTAGE: 13800 VAC, 60 Hz VT RATIO 120:1

KVA	CT1-CT9 PRIMARY	RELAY CLASS	CTN	GRD RESISTOR
7000 KVA	400 A	C 50	200 A	200 A 40 OHM
8000 KVA	400 A	C 50	200 A	200 A 40 OHM
9000 KVA	500 A	C 50	200 A	200 A 40 OHM
10000 KVA	500 A	C 50	200 A	200 A 40 OHM
11000 KVA	600 A	C100	200 A	200 A 40 OHM
15000 KVA	800 A	C100	200 A	200 A 40 OHM
16000 KVA	1000 A	C100	200 A	200 A 40 OHM
17000 KVA	1000 A	C100	200 A	200 A 40 OHM
18000 KVA	1000 A	C100	200 A	200 A 40 OHM

VOLTAGE: 12470 VAC, 60 Hz VT RATIO 120:1

KVA	CT1-CT9 PRIMARY	RELAY CLASS	CTN	GRD RESISTOR
7000 KVA	400 A	C 50	200 A	200 A 36 OHM
8000 KVA	500 A	C 50	200 A	200 A 36 OHM
9000 KVA	500 A	C 50	200 A	200 A 36 OHM
10000 KVA	600 A	C100	200 A	200 A 36 OHM
11000 KVA	700 A	C100	200 A	200 A 36 OHM
15000 KVA	1000 A	C100	200 A	200 A 36 OHM
16000 KVA	1000 A	C100	200 A	200 A 36 OHM
17000 KVA	1000 A	C100	200 A	200 A 36 OHM
18000 KVA	1000 A	C100	200 A	200 A 36 OHM

VOLTAGE: 11000 VAC, 50 Hz VT RATIO 100:1

KVA	CT1-CT9 PRIMARY	RELAY CLASS	CTN	GRD RESISTOR
7000 KVA	500 A	C 50	200 A	200 A 32 OHM
8000 KVA	500 A	C 50	200 A	200 A 32 OHM
9000 KVA	600 A	C100	200 A	200 A 32 OHM
10000 KVA	700 A	C100	200 A	200 A 32 OHM
11000 KVA	700 A	C100	200 A	200 A 32 OHM
15000 KVA	1000 A	C100	200 A	200 A 32 OHM
16000 KVA	1200 A	C200	200 A	200 A 32 OHM
17000 KVA	1200 A	C200	200 A	200 A 32 OHM
18000 KVA	1200 A	C200	200 A	200 A 32 OHM

VOLTAGE: 6900 VAC, 60 Hz VT RATIO 60:1

KVA	CT1-CT9 PRIMARY	RELAY CLASS	CTN	GRD RESISTOR
7000 KVA	700 A	C100	200 A	200 A 20 OHM
8000 KVA	800 A	C100	200 A	200 A 20 OHM
9000 KVA	900 A	C100	200 A	200 A 20 OHM
10000 KVA	1000 A	C100	200 A	200 A 20 OHM
11000 KVA	1200 A	C200	200 A	200 A 20 OHM
15000 KVA	1500 A	C200	200 A	200 A 20 OHM
16000 KVA	1600 A	C200	200 A	200 A 20 OHM
17000 KVA	2000 A	C200	200 A	200 A 20 OHM
18000 KVA	2000 A	C200	200 A	200 A 20 OHM

VOLTAGE: 6600 VAC, 50/60 Hz VT RATIO 60:1

KVA	CT1-CT9 PRIMARY	RELAY CLASS	CTN	GRD RESISTOR
7000 KVA	800 A	C100	200 A	200 A 20 OHM
8000 KVA	1000 A	C100	200 A	200 A 20 OHM
9000 KVA	1000 A	C100	200 A	200 A 20 OHM
10000 KVA	1200 A	C200	200 A	200 A 20 OHM
11000 KVA	1200 A	C200	200 A	200 A 20 OHM
15000 KVA	1600 A	C200	200 A	200 A 20 OHM
16000 KVA	2000 A	C200	200 A	200 A 20 OHM
17000 KVA	2000 A	C200	200 A	200 A 20 OHM
18000 KVA	2000 A	C200	200 A	200 A 20 OHM

VOLTAGE: 4160 VAC, 60 Hz VT RATIO 35:1

KVA	CT1-CT9 PRIMARY	RELAY CLASS	CTN	GRD RESISTOR
7000 KVA	1200 A	C200	200 A	200 A 12 OHM
8000 KVA	1500 A	C200	200 A	200 A 12 OHM
9000 KVA	1500 A	C200	200 A	200 A 12 OHM
10000 KVA	2000 A	C200	200 A	200 A 12 OHM
11000 KVA	2000 A	C200	200 A	200 A 12 OHM
15000 KVA	2500 A	C200	200 A	200 A 12 OHM
16000 KVA	3000 A	C200	200 A	200 A 12 OHM
17000 KVA	3000 A	C200	200 A	200 A 12 OHM
18000 KVA	3000 A	C200	200 A	200 A 12 OHM

SIEMENS Industrial Turbomachinery, Inc.
10730 Telge Road
Houston, TX 77095, USA

TITLE
**ELECTRICAL ONE LINE DIAGRAM
GENERATOR CONTROLS**

SIZE D	FILE TYPE ACAD	DWG NO. HHCT038017	REV C
SCALE NONE	EST. WT. N/A	SHEET 2 OF 2	

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