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REVISED BY: E

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THIS DOCUMENT SHALL BE REVISED IN ITS ENTIRETY. ALL SHEETS OF THIS DOCUMENT ARE THE SAME REVISION LEVEL AS INDICATED.

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DESCRIPTION

DATE

APPROVED

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SH 1: NOTE 24 ADDED. SH 2: DEVICES 96FM-TL-96FM-TL-CH1,96FM-TL-CH2 AND 96FM-TL-CH3ADDED AT ZONE F7.

04-04-21

MP5 REH

1. SEE 123E4888 FOR P & ID SYMBOL DEFINITION.

2. SEE DEVICE SUMMARY (MLI 0414) FOR DEVICE SETTINGS, RATINGS AND RANGES.

3. FG2, FG3 AND FG25 ARE POTENTIAL CLASS 1 DIV1/DIV2 GROUP D SOURCES. INSTALLER SHALL ROUTE THESE VENTS TO A NATURALLY VENTILATED AREA OUTSIDE OF ANY BUILDINGS OR ENCLOSURES, FREE FROM ANY SOURCES OF IGNITION IN ACCORDANCE WITH GEK 110743 AND IN ACCORDANCE WITH ALL APPLICABLE SAFETY CODES AND STANDARDS. THE EXTENT OF THE HAZARDOUS AREAS FROM THE CUSTOMERS FINAL TERMINATION POINT FOR THESE VENTS IS AS FOLLOWS:
FG2: CLASS 1 DIV 1 SPHERE, RADIUS 5 FT. CLASS 1 DIV 2 SPHERE, RADIUS 15 FT.
FG3: CLASS 1 DIV 1 SPHERE, RADIUS 5 FT. CLASS 1 DIV 2 SPHERE, RADIUS 15 FT.
FG25: CLASS 1 DIV 1 SPHERE, RADIUS 1.5 FT. CLASS 1 DIV 2 SPHERE, RADIUS 3 FT.

4. FOLLOW API 14.3 / AGA REPORT 3 FOR INSTALLATION AND REQUIREMENTS FOR PIPE LENGTH PRECEDING AND FOLLOWING METER TUBE, MG2-1.

5. METER TUBE MG2-1 ORIFICE DIAMETER TO BE DETERMINED BY SUPPLIER USING G.E. ORDERING SHEET DATA. PRESSURE DROP FROM FG20 TO FG21 SHALL BE 5 PSID [34 KPAD].

6. -ALL FLANGED CONNECTIONS, VENTS OR OTHER POTENTIAL LEAKAGE SOURCES UPSTREAM OF FG1 SHALL BE LOCATED BY THE CUSTOMER/INSTALLER SUCH THAT THE RESULTANT HAZARDOUS AREAS DO NOT INTERSECT WITH ANY VENTILATION FRESH AIR INTAKES, WITH THE GAS TURBINE INLET, OR WITH ANY EQUIPMENT THAT IS NOT RATED FOR THE RESULTANT HAZARDOUS AREA. IT IS THE RESPONSIBILITY OF THE CUSTOMER/INSTALLER TO CARRY OUT ANY NECESSARY HAZARDOUS AREA CLASSIFICATION STUDIES AND TO DESIGN AND INSTALL PIPING AND EQUIPMENT IN ACCORDANCE WITH APPLICABLE SAFETY CODES AND STANDARDS.
-G.E. SUPPLIED EQUIPMENT UPSTREAM OF FG1 IS DESIGNED AND RATED FOR A CLASS 1, DIV 2, GROUP D HAZARDOUS AREA AND MUST BE INSTALLED AND LOCATED IN A MANNER CONSISTENT WITH THIS RATING.

7. BLEED VALVE TO BE OPEN AND EQUALIZER VALVES TO BE CLOSED DURING TURBINE OPERATION TO ENSURE ACCURATE GAS FLOW MEASUREMENTS.

8. A CONICAL STRAINER IS TO BE FIELD INSTALLED BETWEEN THE GAS VALVE AND THE FUEL GAS MANIFOLD AT A FLANGED LOCATION (AS CLOSE AS POSSIBLE TO THE MANIFOLD). THE STRAINER IS ORIENTED PER MANUFACTURER'S INSTRUCTIONS. REFER TO OPERATING INSTRUCTIONS (MLI A179) FOR ADMINISTRATIVE GUIDELINES ON REMOVAL OF THE STRAINER TO VERIFY SYSTEM CLEANLINESS. A NEW GASKET MUST BE INSTALLED FOLLOWING THE REMOVAL OF THE STRAINER

9. THE STRAINER BASKETS ARE CLEANED OR REPLACED ONCE A PRE-DETERMINED PRESSURE DROP IS REACHED FOR A GIVEN VOLUMETRIC FLOW RATE. CONSULT THE SERVICE MANUAL FOR FURTHER INFORMATION ABOUT WHEN TO CHANGE THE STRAINER BASKET.

10. AVOID REDUCERS AND MAINTAIN CONSTANT PIPE DIAMETER MATCHING THE FG1 FLANGE IN THE PIPING IMMEDIATELY UPSTREAM OF FG1.

11. TEMPORARY DIFFERENTIAL PRESSURE INDICATOR IS CONNECTED BETWEEN THE GAS SUPPLY PIPING AND GAS MANIFOLD LOW POINT DRAINS WHILE TEMPORARY CONICAL STRAINER IS IN USE.

12. LOW POINT DRAIN THREADED BALL VALVE CONNECTION (SEE MLI A179).

13. SEE MLI 0302 FOR PURCHASER'S CONNECTION AND INSTALLATION DETAILS OF METERING TUBE.

14. FLUID VELOCITY SHALL BE LIMITED TO 200 FEET/SEC (61 M / SEC) IN INTERCONNECT PIPING.

15. NATURAL GAS LHV 922.33 BTU / SCF 20501 BTU / LB

16. GAS TEMPERATURES
MAX: 120.0 °F [49°C]
MIN SUPERHEAT TEMP SHALL COMPLY WITH THE REQUIREMENTS STATED IN GEI 41040G. THE MAXIMUM RATE OF GAS TEMPERATURE CHANGE IS 2°F / SEC.

17. CUSTOMER/INSTALLER MUST PROVIDE AN ANSI CLASS VI ISOLATION VALVE UPSTREAM OF G.E. SUPPLIED EQUIPMENT IN ORDER TO ALLOW THIS EQUIPMENT TO BE ISOLATED FOR MAINTENANCE ETC.

18. CUSTOMER/INSTALLER MUST PROVIDE A PRESSURE RELIEVING DEVICE IN THE FUEL GAS SUPPLY PIPING UPSTREAM OF FG1 IN ACCORDANCE WITH ASME B31.3 AND CONSISTENT WITH A PIPING/EQUIPMENT DESIGN PRESSURE OF 500 PSIG.

19. GAS FUEL MUST MEET GEI 41040.

20. MAXIMUM TEMPERATURE WILL BE 710°F [378.7°C] DURING PURGE AIR OPERATION AND THE VALUE SHOWN IN NOTE 16 DURING FUEL GAS OPERATION.

21. VENTILATION FANS (88VL-1, 88VL-2) ARE PART OF MLI 0991 FUEL GAS MODULE SCOPE OF SUPPLY. THEY MAY BE SHIPPED LOOSE WITH THE MODULE, AND WILL REQUIRE INSTALLATION ON THE MODULE ROOF AT THE CUSTOMER SITE AS PART OF THE MLI 0991 COMMISSIONING.

22. STRAINER VENTING VALVE HAS PROVISIONS FOR A LOCK AND SHALL BE LOCKED IN THE CLOSED POSITION DURING OPERATION. IN ORDER TO REMOVE BASKET FOR REPLACEMENT OR CLEANING FOLLOWING SHUTDOWN, ISOLATE FUEL GAS SUPPLY AT CUSTOMER PROVIDED UPSTREAM ISOLATION VALVE. VENT PRESSURE IN STRAINER AND ATTACHED PIPING BY OPENING THE VALVE. VERIFY PRESSURE HAS COMPLETELY VENTED BY CHECKING PRESSURE GAUGE P1FG-1 AND BY MONITORING OUTPUT TRANSMITTER PT 96FG-1 BEFORE REMOVING STRAINER COVER IN ACCORDANCE WITH STRAINER MANUFACTURERS INSTRUCTIONS IN SERVICE MANUAL.

23. PRESSURE REGULATION AND CONTROL:
-STEADY-STATE: SUPPLY PRESSURE AT FG1 AT ANY OPERATING POINT WITHIN THE GAS TURBINE CAPABILITY SHALL BE REGULATED WITHIN +/- 1% OF POINT, WITH PEAK-TO-PEAK PERIOD OF NOT LESS THAN 8 SECONDS (0.25% PER SECOND AVERAGE RATE OF CHANGE).
-TRANSIENT: DURING TRANSIENTS MAXIMUM SUPPLY PRESSURE EXCURSIONS SHALL NOT EXCEED EITHER A 1% PER SECOND RAMP OR A 5% STEP. THE 1% PER SECOND RAMP LIMIT IS APPLICABLE OVER THE RANGE OF MINIMUM REQUIRED PRESSURE TO MAXIMUM OPERATING PRESSURE SPECIFIED IN THIS DRAWING. THE 5% STEP LIMIT IS APPLICABLE OVER THE RANGE OF MINIMUM REQUIRED PRESSURE TO 95% OF MAXIMUM OPERATING PRESSURE SPECIFIED IN THIS DRAWING AND WITH NO MORE THAN ONE 5% STEP CHANGE IN 5 SECONDS. THESE TRANSIENT LIMITS APPLY DURING BRIEF PERIODS ASSOCIATED WITH PRESSURE CONTROL MODE TRANSFERS SUCH AS TRANSFER BETWEEN GAS FUEL PRESSURE REGULATING VALVES, GAS COMPRESSOR CHANGEOVERS OR GAS SUPPLY SOURCE CHANGEOVERS, OR RAPID FUEL DEMAND TRANSIENTS SUCH AS GAS TURBINE LOAD REJECTIONS OR TRIPS.

24. DEVICES FROM THE GAS FUEL METERING TUBE ARE ALL WIRED AS PART OF THE SAME 96FM-1 MULTIVARIABLE TRANSMITTER. DEVICES ARE READ LOCALLY AT THE TURBINE CONTROL PANEL.

INTERFACE POINT NAME	SHEET NO. DWG ZONE	FLUID TYPE	MINIMUM PRESSURE PSIG [KG/CM2]	MINIMUM TEMPERATURE °F [°C]	MINIMUM FLOW LBS/S [KG/S]	MAXIMUM PRESSURE PSIG [KG/CM2]	MAXIMUM TEMPERATURE °F [°C]	MAXIMUM FLOW LBS/S [KG/S]	CONNECTION DESCRIPTION	INTERFACE TYPE
FG1	SH 2 B6 & SH 3 E8	GAS (SEE NOTE 15)	335.0 [0]	SEE NOTE 16	0	375 [26]	SEE NOTE 16	13 [6]	FUEL GAS INLET	GEPGE-OTHERS
FG2	SH 2 B6 & SH 3 D8	GAS	0	AMBIENT	0	375 [26]	SEE NOTE 16	1.0 [0.45]	FUEL GAS STRAINER VENT	GEPGE-OTHERS
FG3	SH 2 F6 & SH 3 G4	GAS / AIR	0	AMBIENT	0	150 [10.5]	SEE NOTE 20	1.0 [0.45]	GAS COMPARTMENT VALVE VENT	GEPGE-OTHERS
FG13	SH 2 D5 & SH3 B1	GAS/AIR	0	AMBIENT	0	325 [23]	SEE NOTE 20	5.54 [3]	FUEL GAS TRANSFER DISCHARGE	GEPGE-GEPGE
FG14	SH 3 H2	GAS / AIR	-	AMBIENT	775 SCFM	6 IN. H ₂ O	150 [65]	-	GAS COMPARTMENT VENT DISCHARGE	GEPGE-OTHERS
FG18	SH 2 F5 & SH3 E1	GAS/AIR	0	AMBIENT	0	325 [23]	SEE NOTE 20	10.84 [5]	FUEL GAS PRIMARY DISCHARGE	GEPGE-GEPGE
FG19	SH 2 E5 & SH3 D1	GAS	0	AMBIENT	0	325 [23]	SEE NOTE 16	5.36 [2]	FUEL GAS SECONDARY DISCHARGE	GEPGE-GEPGE
FG20	SH 2 D8	GAS	335.0 [0]	AMBIENT	0	375 [26]	SEE NOTE 16	13 [6]	FUEL GAS #1 METER TUBE INLET	GEPGE-OTHERS
FG21	SH 2 D6	GAS	335.0 [0]	AMBIENT	0	375 [26]	SEE NOTE 16	13 [6]	FUEL GAS #1 METER TUBE OUTLET	GEPGE-OTHERS
FG22	SH 2 D8	GAS	335.0 [0]	AMBIENT	0	375 [26]	SEE NOTE 16	0	FUEL GAS #1 METER TUBE SENSING LINE-UPSTREAM	GEPGE-OTHERS
FG23	SH 2 D7	GAS	335.0 [0]	AMBIENT	0	375 [26]	SEE NOTE 16	0	FUEL GAS #1 METER TUBE SENSING LINE-DOWNSTREAM	GEPGE-OTHERS
FG24	SH 2 E8	GAS	335.0 [0]	AMBIENT	0	375 [26]	SEE NOTE 16	0	FUEL GAS #1 5 VALVE MANIFOLD-HI PRESSURE INLET	GEPGE-OTHERS
FG25	SH 2 E7	GAS / AIR	0	AMBIENT	0	375 [26]	SEE NOTE 16	0	FUEL GAS #1 5 VALVE MANIFOLD-EQUALIZER VENT	GEPGE-OTHERS
FG26	SH 2 E7	GAS	335.0 [0]	AMBIENT	0	375 [26]	SEE NOTE 16	0	FUEL GAS #1 5 VALVE MANIFOLD-LO PRESSURE INLET	GEPGE-OTHERS

THIRD ANGLE PROJECTION

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UNLESS OTHERWISE SPECIFIED

SIGNATURES

DATE

DESIGNED AND DRAWN BY: T. HANRAHAN

CHECKED BY: T. HANRAHAN

DATE: 03-09-23

DATE: 03-09-23

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DATE: 03-09-23

GENERAL ELECTRIC COMPANY

GE Power Generation

DIAG, SCHEM PP-FUEL GAS

FIRST MADE BY : ML-7AFPEA277-1.2

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DATE: 03-09-23

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