


**WESTERN MOUNTAIN GAS TURBINE POWER STATION
RUWAIS, LIBYA
OF
GENERAL ELECTRICITY COMPANY OF LIBYA
TECHNICAL SPECIFICATION
FOR
PIPES & FITTINGS FOR FIRE PROTECTION SYSTEM**

SPECIFICATION NO.: - PE-TS-210-552-A003



**BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
PPEI BUILDING, NOIDA (U.P.)
INDIA**

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VOLUME – II B

SECTION – A

INTENT OF SPECIFICATION



FIRE PROTECTION SYSTEM SCOPE OF ENQUIRY

DOCUMENT NO.: **PE-TS-210-552-A003**

VOLUME- IIB

SECTION-A

REV. 0

SHEET 1 OF 1

1.0 SCOPE

This specification covers the design, manufacturing, testing, proper packing, delivery to port as specified elsewhere in specification for Pipes & fittings for Fire protection system as mentioned in the different section of this specification for WESTERN MOUNTAIN GAS TURBINE POWER STATION RUWAIS, LIBYA.

2.0 GENERAL TECHNICAL INSTRUCTIONS

- 2.1 This volume covers requirements of design, engineering, manufacturing and delivery of pipes & fittings for fire protection system. It is not the intent to specify completely all details of design and construction. However, all the equipment shall conform, in all respect, to high standard of engineering, design and workmanship and be capable of performing the required duties in a manner acceptable to the owner who will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material which in his judgement is not in full accordance herewith.
- 2.2 In case of any Technical deviation, the Bidder shall indicate the same clause by clause in the enclosed schedules. In the absence of duly filled schedules, it will be construed that the bid conforms strictly to the specification.
- 2.3 Test reports & certificate of conformance for the items shall be submitted for BHEL acceptance.
- 2.4 In case of conflict between any two clauses, stringent of the two conditions shall prevail.

VOLUME – II B

SECTION – B

PROJECT INFORMATION

WESTERN MOUNTAIN (4 X V 94.2), RUWAIS, LIBYA EXT. GAS POWER PROJECT

PROJECT INFORMATION DATA

1.	Owner	GENERAL ELECTRIC COMPANY OF LIBYA (GECOL)
2.	Main Contractor	ELECTRIC CONSTRUCTION CO. (ECCO), LIBYA (A JOINT VENTURE OF LIBYAN AND INDIAN GOVT.)
3.	Project	4X156.1 MW (ISO) RATING V94.2 GAS TURBINE POWER PROJECT, RUWAIS, LIBYA
4.	Owner's consultant	ARABIAN CONSULTING AND ENGINEERING SERVICES CO. (ACESCO)
5.	Location	ABOUT 5 KMS FROM NEAREST RUWAIS TOWN. ABOUT 258 KMS FROM TRIPOLI (CAPITAL AND PORT CITY OF LIBYA, ALSO KNOWN AS TARABULUS IN ARABIC).
6.	Site	ABOUT 25 KMS FROM NALUT- A HILL STATION FOR WHICH CUSTOMER HAS PROVIDED METEOROLOGICAL DATA. Map of Libya and RUWAIS locations attached below.

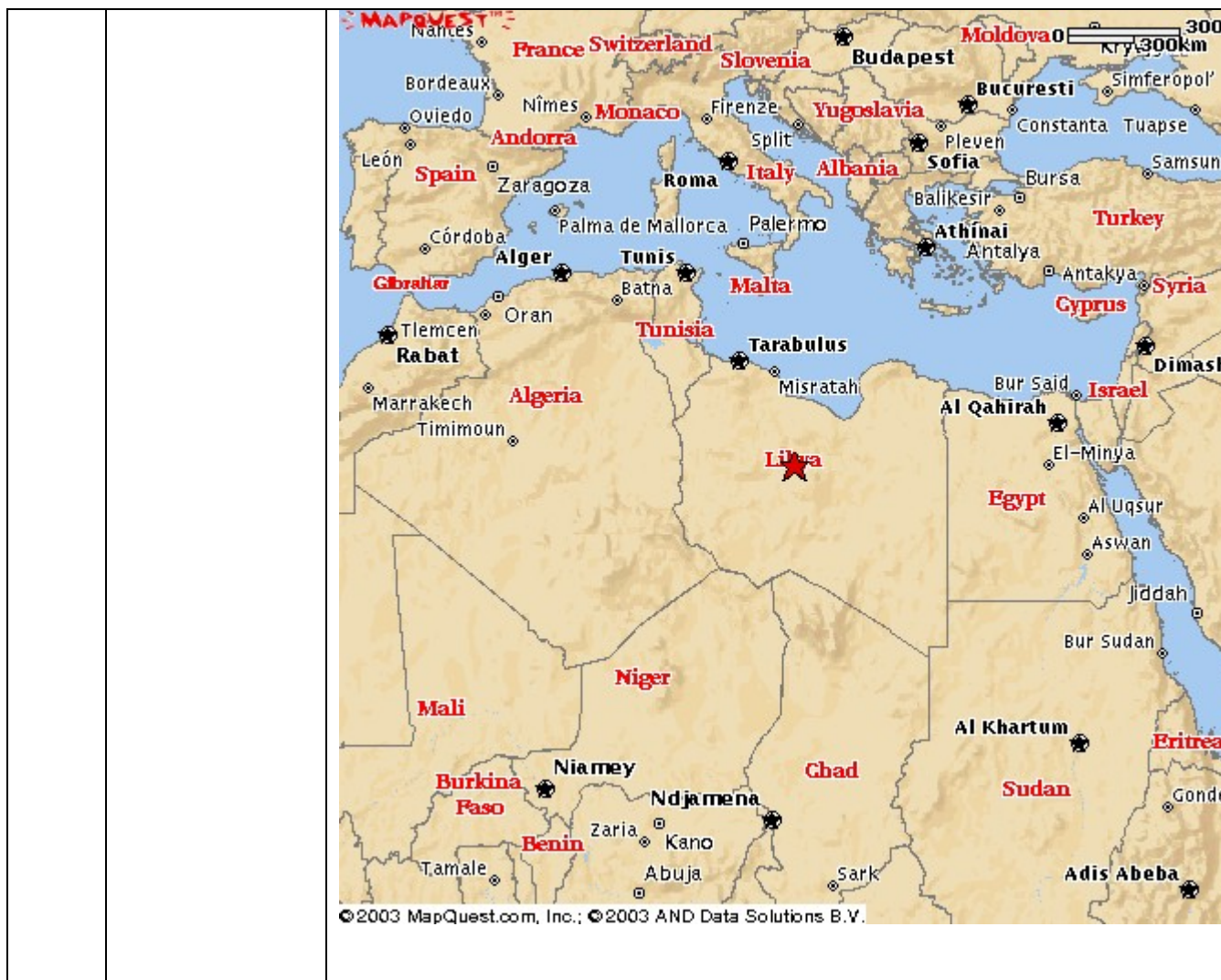
PREP : PB KARTHIK

CHKD : K.K.VOHRA

REVIEW : K.K.VOHRA

WESTERN MOUNTAIN (4 X V 94.2), RUWAIS, LIBYA EXT. GAS POWER PROJECT

PROJECT INFORMATION DATA



PREP : PB KARTHIK

CHKD : K.K.VOHRA

REVIEW : K.K.VOHRA

WESTERN MOUNTAIN (4 X V 94.2), RUWAIS, LIBYA EXT. GAS POWER PROJECT

PROJECT INFORMATION DATA

		<p>© 2003 MapQuest.com, Inc.; © 2003 AND Data Solutions B.V.</p>
7.	Nearest Airport	TRIPOLI (CAPITAL OF LIBYA)
8.	Nearest Port	TRIPOLI (CAPITAL OF LIBYA)
9.	Access to site	SITE IS ABOUT 258 KMS FROM TRIPOLI. TRANSPORT TIME FROM PORT TO SITE -ABOUT 4 TO 5 HOURS.
10.	Meteorological data	METEOROLOGICAL DATA FOR NALUT – A HILL STATION ABOUT 25 KMS FROM SITE HAS BEEN PROVIDED BY CUSTOMER AS ANNEXURE-I.

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WESTERN MOUNTAIN (4 X V 94.2), RUWAIS, LIBYA EXT. GAS POWER PROJECT

PROJECT INFORMATION DATA

S.NO.	DESCRIPTION	DATA
A	Altitude [Observatory]	621m. above mean sea level
B	Ambient Conditions:	
1.	Mean Maximum Ambient Air Temperature (IN HOTTEST MONTH)	48 Deg.C
2.	Mean Minimum Ambient Air Temperature (IN COLDEST MONTH)	1 Deg.C
	Dry Bulb Temperatures	
1.	Minimum [Annual Mean]	
2.	Maximum [Annual Mean]	40 Deg.C.
3.	Highest recorded :	50 Deg.C.
4.	Lowest recorded :	-5 Deg.C.
	Wet Bulb Temperatures	
1.	Annual Mean	
2.	Monthly Mean	
C	RELATIVE HUMIDITY	
1.	Maximum Humidity	60%
2.	Minimum Humidity	
3.	Annual Mean	
D	RAINFALL	
1.	Annual Mean	
2.	Maximum for 24 hours	
3.	Rainfall Intensity (Peak)	60 mm/hr
E	WIND DATA	
1.	Max Wind Speed	150Kmph
2.	Prevailing Wind Direction	
3.	Wind Pressure	
F	SEISMIC COEFFICIENT	Basic Earthquake Horizontal Coefficient : 0.04 g
G	Atmospheric Pressure [Annual Mean]	

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WESTERN MOUNTAIN (4 X V 94.2), RUWAIS, LIBYA EXT. GAS POWER PROJECT

PROJECT INFORMATION DATA

10.0	Power Supply The power supplies for distribution and auxiliaries shall be as under:	
	a) In plant generation	15.75kV \pm 5% , 3ph, 50Hz + 3% to -5%, high resistance earthed.
	b) MV distribution	6.6kV \pm 10 % , 3ph, 3w, 50 Hz, + 3 % to - 5%, low resistance earthed .
	c) LT distribution	380V \pm 10%, 3ph, 4W, 50Hz + 3% to -5%, solidly earthed system.
	d) Motor rated 200 KW and above	6.6kV \pm 10 % , 3 ph, 50Hz +3% to -5%.
	e) Motor rated 0.2 KW to below 200 KW	380V \pm 10%, 3 ph, 50Hz +3% to- 5%
	f) Motor rated below 0.2 KW	220V \pm 10%, 1 ph, 50Hz +3% to- 5%
	g) Panel space heating , lighting.	220V \pm 10%, 1ph, 50H z + 3% t o - 5%.
	h) DC Motors	220V D C + 10 % to - 15%, 2 w ire ungrounded system
	i) Control supply for relay panel/ 6.6kV breakers/380V breakers	220V D C + 10 % to - 15%, 2 w ire ungrounded system
	j) UPS for instrumentation & Control system (2X100% common UPS for all four units with Lead Acid Plante batteries for ONE (1.0) hour back-up).	220V AC \pm 2 % , 50Hz \pm 0. 5%
	k) Control supply for 380V Motor contactors/AC Control circuits [to be generated in MCC /panel by vendor]	110V AC \pm 10%, 50Hz + 3% to -5%
	l) 6.6 kV Black Start Supply Diesel Generator	6.6 kV \pm 10%, 3ph, 3W, 50Hz +3%to -5%, Ungrounded.
NOTE:	1. All equipment shall be suitable for 10% combined voltage and frequency variation. 2. Any other power supply requirement shall be derived by the vendor from the above available power supplies.	

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WESTERN MOUNTAIN (4 X V 94.2), RUWAIS, LIBYA EXT. GAS POWER PROJECT

PROJECT INFORMATION DATA

11.0	Design ambient:	
11.1	All electrical equipment and devices shall be designed for ambient temperature of 50 deg. C.	
12.0	Fault levels for Auxiliary Power Supplies	
	a) 6.6kV	31.5kA RMS for 1 Sec.
	b) 380V	45 kA RMS for 1 Sec.
	a) 220V DC	10 kA for 1 Sec.

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FIRE PROTECTION SYSTEM
SCOPE OF SUPPLY

WESTERN MOUNTAIN GAS TURBINE POWER STATION

DOCUMENT NO.: **PE-TS-210-552-A003**

VOLUME- IIB

SECTION-C

REV. 0

SHEET 1 OF 3

VOLUME-IIB
SECTION- 'C'
SCOPE OF SUPPLY



FIRE PROTECTION SYSTEM

SCOPE OF SUPPLY

WESTERN MOUNTAIN GAS TURBINE POWER STATION

DOCUMENT NO.: PE-TS-210-552-A003

VOLUME- IIB

SECTION-C

REV. 0

SHEET 2 OF 3

GENERAL

This specification is intended to cover design, engineering, manufacture, inspection, testing at manufacturer's works, supply/delivery duly packed at port as specified elsewhere inclusive of all prevailing taxes, duties and other levies as required for the project.

1. MECHANICAL SCOPE

• PIPES

- ✓ Carbon steel ERW as per ASTM A-53 Gr.B. Sch.40 with Bevelled end for Butt welding.
- ✓ Approved makes are : SAIL / JINDAL / SURYA ROSHINI / GOOD LUCK TUBES / ADVANCE STEEL TUBES LTD. / HI-TECH PIPES / TATA TUBE
- ✓ Quantity to be provided:
 - 100 NB - 70 M
 - 150 NB - 270 M
 - 200 NB - 160 M
 - 250 NB - 300 M
 - 300 NB - 310 M
 - 15 NB - 250 M

• FITTINGS (ELBOW (90 DEG. / 45 DEG), EQUAL TEE, REDUCING TEE, END CAP)

- ✓ 65 NB & Above : Carbon steel A-234, Gr. W PB AN SI B -16.9 (For Butt welded fittings), Sch.40
- ✓ Approved makes are : MS Fittings / Siddarth & Gautam / EBY / Bharat Forge / Tube Products / Nitin Profile / Metal Lloyds / Jupiter / Fit Tech Industries
- ✓ Quantity to be provided:
 - ❖ **Elbow (90 Deg.)**
 - 100 NB - 16 Nos.
 - 150 NB - 36 Nos.
 - 200 NB - 17 Nos.
 - 250 NB - 46 Nos.
 - 300 NB - 45 Nos.
 - ❖ **Elbow (45 Deg.)**
 - 250 NB - 01 Nos.
 - ❖ **Equal Tee**
 - 300 NB X 300 NB - 2 Nos.
 - 200 NB x 200 NB - 1 No.
 - 150 NB x 150 NB - 1 No.
 - ❖ **Reducing Tee**
 - 300 NB X 200 NB - 1 Nos.
 - 300 NB x 150 NB - 1 No.
 - 300 NB x 100 NB - 1 No.
 - ❖ **End Cap**
 - 300 NB - 1 Nos.



FIRE PROTECTION SYSTEM

SCOPE OF SUPPLY

WESTERN MOUNTAIN GAS TURBINE POWER STATION

DOCUMENT NO.: PE-TS-210-552-A003

VOLUME- IIB

SECTION-C

REV. 0

SHEET 3 OF 3

- **Vent Valves along with drain valves & accessories**

- ✓ MOC : Gun Metal / SS 304
- ✓ Pl. refer the GA drg. attach for mounting accessories.
- ✓ Quantity to be provided:
25 NB Vent Valve with drain valve & accessories - 30 Nos.

2. PACKING

Mechanical items e.g. valves, fittings, pipes, wrapping and coating material shall be individually wrapped using polyethylene sheets/foam/thermocole sheets/air bubbled sheets depending upon the item and then packed in wooden boxes suitable for sea transportation. The leftover spaces and top of the boxes shall be filled with rubberized coir to get proper cushioning effect. Silica gel shall be used for absorbing moisture (qty shall not be 4 gms per liter volume of case subject to min 400 gms per case). Marking shall be provided on the boxes indicating position of the boxes for handling, storage and nature of consignment along with dispatch details.

3. PACKING

All the items specified at Sl.No. 1 shall suitably be painted as below:

Primer : 1 coat of Epoxy based polyamide cured (2) pack HB zinc phosphate primer with 50-75 per coat Dry Film Thickness (DFT).

Intermediate : 1 coat of Epoxy based MIO pigmented polyamide cured paint with 50 per coat Dry Film Thickness (DFT).

Finish coat : 2 coat of Polyamide cured epoxy finish coating with Min. 30 per coat DFT. Color code shall be Fire Red, shade 536 as per IS:5.

Additionally, final touch up paint 20 lit. quantity shall be supplied loose.

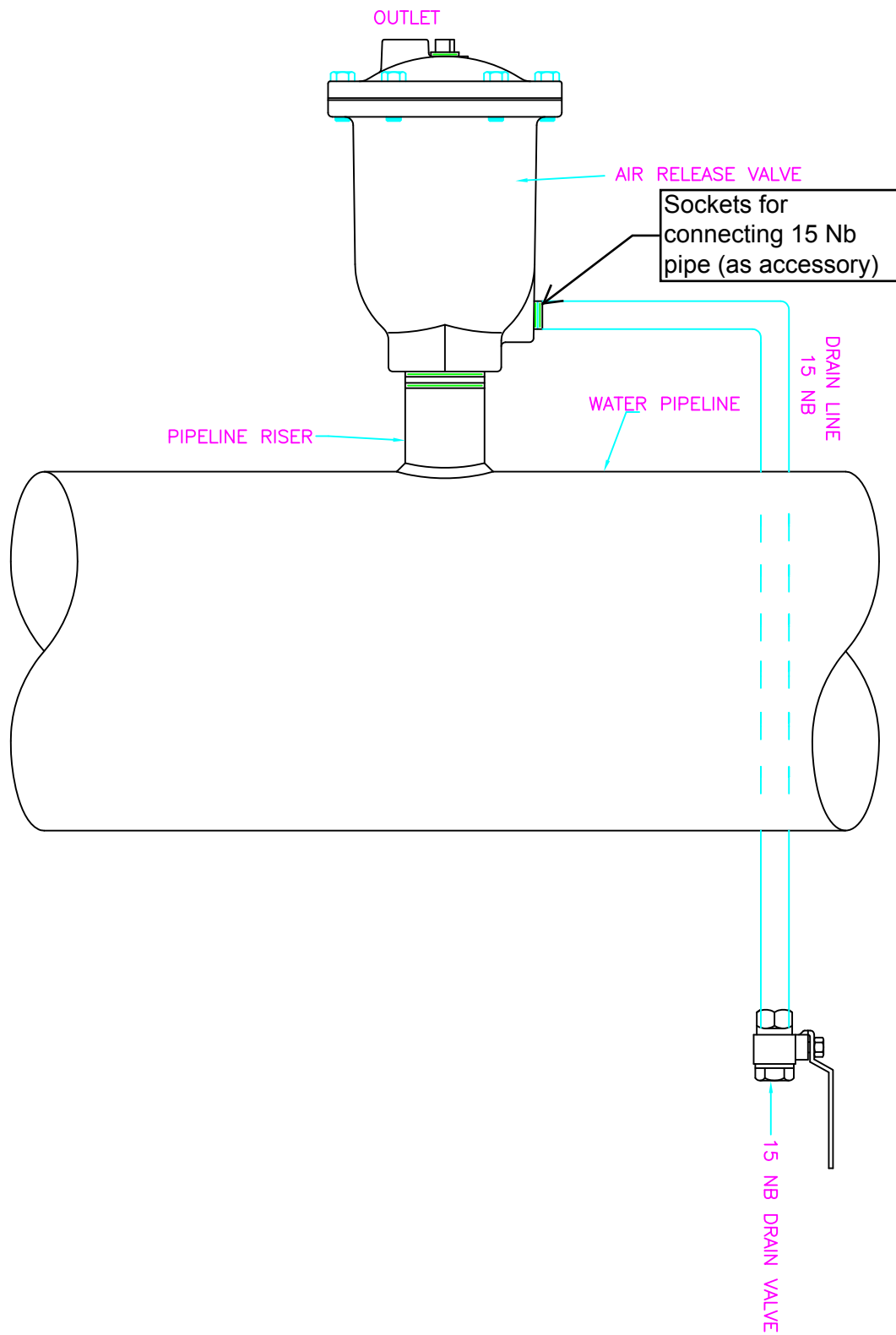
Approved makes : Asian Paints (I) Ltd. / Berger Paints India Ltd. / Goodlass Nerolac / Jenson & Nicholson (I) Ltd. / CDC carboline (I) Ltd. / Shalimar Paints Ltd. / Bombay Paints

4. MAKES OF EQUIPMENTS / ITEMS

Bidder to note that makes shall be as specified above in S.No.1 above.

5. INSPECTION & TESTING

Bidder shall furnish the copy of Test Report and Certificate of Conformance (COC) for all the components listed above.



AIR RELEASE VALVE DETAIL

VOLUME – III
PRICE FORMAT

