

TEST REPORT

Dated: 27.01.2017

- | | | |
|-----|---------------------------|---|
| 1.0 | Description of Test Tower | : 220kV D/C Type "SPL" (0-60 Deg.) Tower with +12m Body & +9m Leg Extension. |
| 2.0 | Tested at | : Tower Testing Station,
Mechanical Engineering Division,
Central Power Research Institute
Bangalore - 560 080, India. |

3.0 Brief description of Test Facility / Procedure:

The test tower referred above was erected vertically on rigid footings on the test bed of Tower Testing Station. After completion of erection, the test tower was rigged with the approved loading and rigging arrangements. The loading arrangements are represented in the schematic diagram as shown in **ANNEXURE – 1** (1 Page).

The details of performance verification of each Load Cells used for measuring the loads applied on test tower are provided along with copy of master calibration certificate of UTM and copy of NABL Accreditation for ISO/IEC 17025 Certificate in **ANNEXURE – 2** (07 Pages).

After completion of Rigging, the load test was carried out on test tower referred above for the load cases and their sequence approved by the customer. The performance of the test tower is given in the following pages.

(Dr. M. SELVARAJ)
Test Engineer

CENTRAL POWER RESEARCH INSTITUTE



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TR. No. CPRI/MED/TTS/2016/S41/RSIPL/T-42/2016-17

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Documents constituting this report (in words):

Number of Sheets	: Twenty Four (Including Photos and excluding Drawings & Annexures)
Number of Oscillogram/s	: NIL
Number of Graphs	: NIL
Number of Photos	: Three
Number of Test circuit Diagrams	: NIL
Number of Drawings	: Ten

1. DRG. No. : C-237/HPPTCL/SPL/SD/BT/03, Sheet 01 of 07, Rev.0
2. DRG. No. : C-237/HPPTCL/SPL/SD/BT/03, Sheet 02 of 07, Rev.0
3. DRG. No. : C-237/HPPTCL/SPL/SD/BT/03, Sheet 03 of 07, Rev.0
4. DRG. No. : C-237/HPPTCL/SPL/SD/BT/03, Sheet 04 of 07, Rev.0
5. DRG. No. : C-237/HPPTCL/SPL/SD/BT/03, Sheet 05 of 07, Rev.0
6. DRG. No. : C-237/HPPTCL/SPL/SD/BT/03, Sheet 06 of 07, Rev.0
7. DRG. No. : C-237/HPPTCL/SPL/SD/BT/03, Sheet 07 of 07, Rev.0
8. DRG. No. : C-237/HPPTCL/SPL/SD/12BE/05, Sheet 01 of 02, Rev.0
9. DRG. No. : C-237/HPPTCL/SPL/SD/12BE/05, Sheet 02 of 02, Rev.0
10. DRG. No. : C-237/HPPTCL/SPL/SD/9LE/12, Sheet 01 of 01, Rev.0

(Dr. M. SELVARAJ)
Test Engineer



(D. REVANNA)
Head of Division

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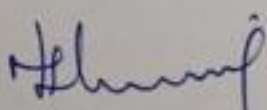
Dated: 27.01.2017

4.2 Destruction Test:

Destruction test was carried out under Test No. 6, Load Case: 07 (19), Reliability Condition, (Min Temp + 36% Wind + Max Weight) NC. The Vertical & Transverse loads were increased beyond 100% in steps of 5% with a waiting period of 60 seconds at each step. The Tower withstood 115% of Vertical & Transverse loads for waiting period of 60 seconds **WITH NO VISIBLE SIGN OF DEFORMATION**. Further loading was stopped and all the loads were released as per customer requirement.

4.3 PATTERN OF LOADING:

TEST No.	LOAD STAGE (%)			WAITING PERIOD IN SECONDS
	V	T	L	
1A	100	100	—	120
5	50	50	50	120
	75	75	75	120
	90	90	90	120
	95	95	95	120
	100	100	100	300
3	50	50	50	120
	75	75	75	120
	90	90	90	120
	95	95	95	120
	100	100	100	300
2	50	50	50	120
	75	75	75	120
	90	90	90	120
	95	95	95	120
	100	100	100	300


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WITNESS SHEET

- 1.0 Tested at : Tower Testing Station
Mechanical Engineering Division
Central Power Research Institute
Bangalore - 560 080, INDIA.
- 2.0 Description of Test Tower : 220kV D/C Type "SPL" (0-60 Deg.) Tower
with +12m Body & +9m Leg Extension.
- 3.0 Project Name : 220kV D/C Transmission Line Charor - Banala Line.
- 4.0 Condition of Tower : New & Black, with Erection mark "SPL".
- 5.0 i) Referred by : RS Infra Projects Pvt. Ltd., Noida.
- ii) End User : HP Power Transmission Corporation Ltd., (HPPTCL)
Shimla, Himachal Pradesh.
- 6.0 Reference : IS 802 (Part III): 1978, R.A 2008
- 7.0 Date of Test : 17th January 2017.
- 8.0 Witnessed by :

Sl. No.	Name	Designation	Company	Signature
1.	Mr. S. K. Verma	Sr. Manager (Design)	HPPTCL, Hamirpur.	<i>[Signature]</i> 17/1/17
2.	Mr. Vinod Kumar	Sr. Manager (Contracts)	HPPTCL, Shimla.	<i>[Signature]</i> 17/1/17
3.	Mr. Rajiv Sharma	Manager (Planning)	RS Infra Projects Pvt. Ltd., Noida.	<i>[Signature]</i> 17/1/17
4.	Mr. Sandeep Sharma	Assistant Manager (Projects)	RS Infra Projects Pvt. Ltd., Noida.	<i>[Signature]</i> 17/1/17
5.	Mr. P.K. Deka	Sr. Manager (Drawing Design)	RS Infra Projects Pvt. Ltd., Noida.	<i>[Signature]</i> 17.1.17
6.	Mr. Rahul Khadse	Design Engineer	Trucon Associates	<i>[Signature]</i>

[Signature]

परीक्षण अभियन्ता / TEST ENGINEER
यांत्रिक इंजीनियरी प्रभाग
MECHANICAL ENGINEERING DIVISION
केन्द्रीय विद्युत अनुसंधान संस्थान
Central Power Research Institute

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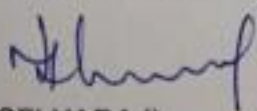
Dated: 27.01.2017

4.0 PERFORMANCE OF TEST TOWER.

4.1 TESTS CONDUCTED ON 17.01.2017 IN THE ORDER OF TESTING.

4.1.1 The tower withstood the loads pertaining to the tests given below WITH NO VISIBLE SIGN OF DEFORMATION.

Sl. No.	Test Number with reference to Rigging Chart No. T-42/2016-17, Rev. 2, 09.01.2017	Description of Test
1.	1A	Bolt Slip Test [Under Test No.1, 50% of Vertical & Transverse Loads].
2.	5	Load Case: 05, Safety Condition, Groundwire, Top Conductor (Left) & Bottom Conductor (Left) Broken, (Maintenance + No Wind + Max Weight).
3.	3	Load Case: 03, Security Condition, Groundwire, Top Conductor (Left) & Bottom Conductor (Left) Broken, (Min Temp + PERP + Max Weight).
4.	2	Load Case: 02, Security Condition, Groundwire, Top Conductor (Left) & Middle Conductor (Left) Broken, (Min Temp + PERP + Max Weight).
5.	4	Load Case: 04, Security Condition, Top Conductor (Left), Middle Conductor (Left) & Bottom Conductor (Left) Broken, (Min Temp + PERP + Max Weight).
6.	7	Load Case: 06 (57), Reliability Condition (Left Strung), (Min Temp + 36% Wind + Max Weight) NC.
7.	1	Load Case: 01, Reliability Condition, (Everyday Temp + Full Wind + Max Weight).
8.	6	Load Case: 07 (19), Reliability Condition, (Min Temp + 36% Wind + Max Weight) NC.


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TEST REPORT

Test Report Number : CPRI/MED/TTS/2016/S41/RSIPL/T-42/2016-17
Date: 27.01.2017

Name & Address of the Customer : M/s. RS Infra Projects Pvt. Ltd.,
B-133, Sector-2
Noida-201301
Reference: Customer Request Form Dated: 17.01.2017.

Name and Address of the Manufacturer : M/s. RS Infra Projects Pvt. Ltd.,
A-53/2, Industrial Area,
District-Bulandshahar
Sikandrabad-203 205, (U.P)

Particulars of sample tested : 220kV D/C Type "SPL" (0-60 Deg.) Tower
with +12m Body & +9m Leg Extension.

Condition of Sample on receipt : New & Galvanized.
Type : "SPL"
Description of test sample : Not Applicable
Serial Number : Erection mark "SPL".
Number of samples tested : ONE

Date(s) of Test(s) : a. Verification of Load Cells : 13th January 2017
b. Rigging Arrangements : 16th January 2017
c. Tower Test : 17th January 2017

CPRI Sample code No(s). : MEDTTS2016S0041

Particulars of tests conducted : Mechanical Strength Test

Test in accordance with : IS 802 (Part III): 1978, R.A 2008
Standard/Specification
Sampling Plan : Not Applicable
Customer's Requirement : Nil
Deviations if any : Nil

Name of the witnessing persons :
Customers representative : As per Witness sheet (Sheet 03 of 24)
Other than customer's representatives : As per Witness sheet (Sheet 03 of 24)

Test subcontracted with address of the laboratory : None

(Dr. M. SELVARAJ)
Test Engineer

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