एनटीपीसी लिमिटेड
भारत सरकार का उद्यम
NTPC Limited
(A Govt. of India Enterprise)
(Formerly National Thermal Power Corporation Ltd.)
केन्द्रीय कार्यालय नोएडा
Corporate Centre NOIDA

Reference: CC:PE102:16526

Date:04-07-14

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SUBJECT : KUDGI, STEAM GENERATOR

Please find enclosed following drawings/documents for necessary action at your end as indicated in purpose code.

VENDOR DRG NO:	DT12001-HG-Q4209
NTPC DRG NO:	9573-102-PVM-X045
REVISION NO:	00
DRG TITLE:	Life cycle endurance test report of CLH (Constant Load Hanger)
APP CATEGORY:	I
RELEASE DATE:	04-07-14
COMMENTS:	NO COMMENTS.

DOCUMENT COVER SHEET

PROJECT NAME : **KUDGI STPP (3 x 800MW) SG Package**

CONTRACT NO. : **CS-9573-102-2-FC-COA-5658**

I T E M : **CONSTANT LOAD HANGER**

DOCUMENT TITLE : **LIFE CYCLE ENDURANCE TEST OF CONSTANT LOAD HANGER**

Mohit Jain

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Date: 2014.07.04 10:55:38 +05'30'

This document is vetted by Q.S.G.M.

REV.	DATE	DESCRIPTION	DGN	CHECK	REVW	APPR
A	2014.06.06	For Approval	MSK	RC	PKA	PKA

एनटीपीसी NTPC

एनटीपीसी लिमिटेड
NTPC Limited.
(A Government of India Enterprise)

CONTRACTOR

DOOSAN

DOOSAN CHENNAI WORKS PRIVATE LIMITED

SUPPLIER

P S

PIPE HANGERS & SUPPORTS PRIVATE LIMITED

CATEGORY		Approval	SHEET	REV.
DOCUMENT NO.	DOOSAN	DT12001-HG-Q4209	1 OF 104	A
	NTPC	9573-102-PVM-X045	1 OF 104	00

PROJECT	SUBJECT	Doc. No.	Rev
KUDGI STPP (3 X 800MW)	Life cycle endurance test report of CLH	DT12001-HG-Q4209	A

Introduction:

Constant Spring Hangers for Critical piping are introduced in the piping systems for the NTPC KUDGI STPP to accommodate pipe movement from the initial (installed) condition to the final (operating) condition of the piping system. For all constant spring supports there is no difference in load and the supported load will remain uniform throughout the deflection cycle.

A type test was conducted on the Constant load hanger for the support tag number. 10LBC12-C1-004 to verify and establish the capability of the Constant load hanger on critical piping systems for the desired number of the Life cycles by M/s Pipe Hangers and supports private ltd, Plot No.18, Sidco, Nanjikottai Road, tanjore-613006., Tamilnadu., India.

Objective:

When the pipe moves from cold position to the hot position during start up and sustained operation and move back from its hot or operating position to its cold or preset position during shut down it is considered as 1 cycle of complete movement.

As per KTA 3205.3 CLH may be subjected to 10000 cycles for testing .

Thus if the hanger is able to perform its intended duties after the cycle test it can be safely assumed that the performance of the hanger will be good for the complete life span of the power plant where it is going to operate subject to other conditions like corrosion , proper maintenance and being correctly installed , commissioned , floated and operated during its operational life.

Description Of Constant load hanger:

Constant load hanger (Tag No. 10LBC12-C1-004) is selected for testing which is on CRH system. The size of the Constant load spring CD-15 type is H2, S3.

Test Method:

The test was carried out as per the procedure approved by NTPC Doc No. 9573-102-PVM-P047

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Test Setup and Procedure:

1) The CLH has been identified and tested for making prototype

2) Constant load hangers fabricated parts, machined parts, springs were checked for dimensions.

3) Spring TC verified.

4) The spring which is subjected to cycle test was tested for cramp test as per procedure given in appendix A as per the Doc No. 9573-102-PVM-P047. After cramp test dimensions were checked

5) After cramp test load deflection test conducted as per approved procedure Doc No. 9573-102-PVM-P047.

6) The dimensions measured before and after cramp test, spring TC, load deflection test check found satisfactory.

7) The CLH's stamped as NTPC/1009 for identification.

Cycle test setup

1) The CLH has been mounted on the test rig and the load transfer point of CLH is connected to the piston rod of the Hydraulic cylinder.

2) The test rig equipped with Hydraulics capable of load / direction reversal by either manual operation or by use of solenoid valves and limit switches for automatic operation.

3) A suitable counter has been attached to the limit switches to count number of cycles that the piston is subjected to. The counter was locked and sealed, such that it cannot be tampered with.

4) The test set up was operated based on shop timings and brief stoppages by operator was permitted as long as the total number of cycles are met.

5) The hanger was assembled and calibrated to the required load, subjected to constancy test and deviations recorded.

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Cycle test

1) The assembled constant load hanger was subject to cycle test.

2) The movement of the hanger has been considered as 1 full cycle for the total movement considering cold position to hot position & hot position to cold position.

3) The No. of cycles undergone during the test has been indicated by an electromechanical counter and the number of cycles vs time was recorded in the log sheets

4) The above had been repeated for 10000 times.

5) The test had been stopped once 10,000 cycles are achieved.

Measurements:

1) The CLH was subjected to load test as given in clause 3.8 & 3.9 as per the approved procedure Doc No. 9573-102-PVM-P047.

2) The CLH was disassembled and complete measurement of all parts taken as given in clause 3.7 as per the approved procedure Doc No. 9573-102-PVM-P047.

3) The spring coil was inspected and subjected to load deflection test to ascertain the spring constant values after the test as per the approved procedure Doc No. 9573-102-PVM-P047. complete physical dimensions has been recorded and compared.

4) The CLH has been inspected visually to ensure no bending , physical deformation or any surface defect and weak spots.

5) The measurements taken from load test and dimensions found satisfactory.

Instrument Used:

1. Vernier Caliper
3. micrometer
4. Steel Rule

The Calibration Certificate for the instruments enclosed – Refer the Annexure 12

Conclusion

The Constant load hangers does not have any failure till the completion of the 10000 cycles and thus the cycle test requirement for the 25 years of plant operation and specified number of Plant Start up and Shut down are met. The constant load hangers used for the life cycle test test will not be used / supplied to any NTPC site / customer as it has consumed its working life.

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ANNEXURES

Annexure 1	Raw Material Identification of CLH for Life cycle Test
Annexure 2	Support drawing assembly
Annexure 3	Inspection report on fabricated & machined items – Before Life Cycle Test
Annexure 4	Cramp Test on spring coil
Annexure 5	Load deflection test on hangers A, B – Before Life Cycle Test
Annexure 6	Inspection report on test setup – Before Life Cycle Test
Annexure 7	MOM for continuing the cycle test
Annexure 8	Life Cycle Test – Log Sheets
Annexure 9	Final Inspection report on fabricated & machined items – After Life Cycle Test
Annexure 10	Final Load deflection test on hangers A, B- After Life Cycle Test
Annexure 11	MOM for life cycle test report
Annexure 12	Calibration Certificates for Instrument
Annexure 13	Photographs

ANNEXURE 11

MOM for life cycle test report

MINUTES OF MEETING HELD BETWEEN PHSPL, DPSI WITH NTPC AT PIPE HANGERS AND SUPPORTS PVT. LIMITED (PHSPL) WORKS THANJAVUR ON 26.05.14 &27.05.2014.

CUSTOMER: M/S.DOOSAN POWER SYSTEMS INDIA PRIVATE LIMITED (DPSI)

PO NO: 2013001123 DT: 16-06-2013

DOCUMENT REF: LIFE CYCLE ENDURANCE TEST PROCEDURE OF CLH

Document No: 9573-102-PVM-P-047 Rev B

QAP NO: QAP-LCT/CLH-001 DT:06.09.2013 & 9573-102-QVM-Q-010 B / REV.01 Dt:13.01.2014 ; Cl.No:3.5

PROJECT: 3X800 MW KUDGI SUPER THERMAL POWER PROJECT

Tag no: 10LBC12-C1-004

Drawing No: DT12001-HG-V4202 REV: B4, SHEET: 50

Size & Type: CD-15, H2 S3 Spring No: T13-2374-118, T13-2384-128 CLH ID: A&B

Participants:

PHSPL	DPSI	NTPC
Mr. A Paneerselvam	Mr. M. Satish Kumar	Mr. Nipun pharlia
Mr. J Srinivasan	Mr. D Jeyachandran	Mr.T.Ethiraj
		Mr. Ashok Kumar Dayma

This minutes is in continuation with previous minutes i.e., 18.02.14, 27.03.14 and 16.04.14 held between PHSPL, DPSI and NTPC at PHSPL works Thanjavur. M/s Doosan and M/s NTPC witnessed the Life cycle test time to time. PHSPL/Doosan confirmed that they will not reuse above type tested CLH on any NTPC site.

The Lifecycle Endurance test of Constant Load Hanger (CLH) has been successfully completed after 10000 cycles of operation on 26.5.14 as per approved NTPC document no. 9573-102-PVM-P-047 Rev B. dtd. 22.01.14

Cycle Test Witness report

NTPC & Doosan visited PHSPL on 26.05.14 & 27.05.14. The following points are observed after completion of 10000 cycles:

1. As per approved procedure, test conducted as per Table Q1 and results found satisfactory.
2. Complete Life Cycle endurance test records (log) from Start to finish are verified and found satisfactory .
3. Load deflection test conducted checked found satisfactory.
4. Spring dimensions checked found satisfactory.
5. CLH machined parts & fabricated parts dimensions checked found satisfactory.
6. The CLH inspected visually, there is no bending, physical deformations, surface defect and weak spots.

Enclosures:

1. Dimension Report for fabricated and machined items. (Annexure-I).
2. Load deflection report for hangers A & B.(Annexure-II).
3. Full Life Cycle test log.(Annexure-III).
4. Photographs of CLH after type test

NTPC DOOSAN PHSPL

27/05/14

27/05/14