

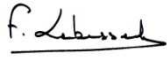

Company :

CPPM

CLIMATIC TESTS ON A OFP BASE PENETRATOR

Tests performed in August 2019

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	Name	Function	Visa
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Approved by	A. CUCHET	Manager	

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1. ADMINISTRATIVE INFORMATIONS

1.1. ORDER GIVEN BY

CPPM
163, Avenue de Luminy – Case 902 -
13288 MARSEILLE
FRANCE

1.2. OBJECT OF THE ORDER

Climatic tests on a penetrator base module OFP.

1.3. ORDER NUMBER

Order n° 0933L052760 of 18/07/2019.

1.4. DATE AND SITE OF TESTS

The tests have been performed at SOPAVIB laboratory between August 22nd & 26th 2019.

1.5. REPRESENTATIVES OF BOTH COMPANIES

CPPM is represented by Mr. HENRY who ensures the co-ordination of tests.
SOPAVIB is represented by Mr. LABESSEDE who ensures the execution of tests.

1.6. RECORDS

1.6.1. File

The technical files numbered 2E18734 are saved during 5 years. This period should be increased on a written customer request.

1.6.2. Data

Measurements performed during tests are saved on external disk during 5 years. This period should be increased on a written customer request.

2. EQUIPMENT SUBMITTED TO TESTS**2.1. CPPM REFERENCES**

The specimen submitted to tests is a Penetrator Base Module OFP.

2.2. SOPAVIB REFERENCES

The specimen submitted to test has been identified BC18734.

3. TEST FACILITIES AND MEASUREMENT EQUIPMENTS USED

Ref.	Denomination	Validity
M211	Climatic chamber (SECASI)	07/2020
M402-211	Universal recorder (EUROTHERM, Nanodac)	07/2020
M403-211	Humidity sensor (VAISALA, HMM100)	07/2020

4. TESTS PROGRAM**4.1. SCHEDULE**

The test program is described below:

- Humidity test
- Air-water thermal shock test

4.2. HUMIDITY TEST

Temperature / humidity:+70°C / 93%RH

Step duration:.....96 hours

4.3. AIR-WATER THERMAL SHOCK TEST

Air temperature:.....+50°C

Stabilization duration:2 hours minimum

Water temperature:+10°C

Immersion duration:15 minutes minimum

5. TEST CONDITIONS

5.1. TEST FACILITIES DESCRIPTION

Test is performed with a climatic chamber referenced M211.
The temperature and humidity are piloted by Pt 100 sensors connecting to a regulator.

5.2. CONTROLS

Visual and functional tests are performed by CPPM representative.

5.3. METHODS FOR CLIMATIC TESTS

The specimen is disposed inside the climatic chamber at ambient laboratory conditions.

For the humidity test, temperature and humidity are controlled by Pt100 sensors connected to a programmer BIA.

Humidity is generated using 2 subsidiary shells which generate steam in the workspace.

The temperature around the equipment is measured using Pt100 sensors, ambient humidity is measured using a thermohygrometer sensor.

For the air-water thermal shock test, the specimen under test is stored at $+50^{\circ}\text{C}\pm 2^{\circ}\text{C}$ for a minimum of 2 hours while a tank filled with water is stored at $+10^{\circ}\text{C}\pm 2^{\circ}\text{C}$.

The thermal shock test is performed manually.

Sensors are connected to an universal recorder which stores data every minute. Temperature and humidity measurements are given on the curves in annex.

6. TESTS PROGRESS

Date, time	Observations
22/08/19 11h30	➤ Start of humidity test Check: No visual damage after test
26/08/19 12h15	➤ Start of air-water thermal shock test Check: No visual damage after test. Normal work after test

7. TEST RESULTS**7.1. RESPECT TO STANDARD PRESCRIPTIONS**

Tests have been performed in accordance with applicable documents.

7.2. MEASUREMENTS

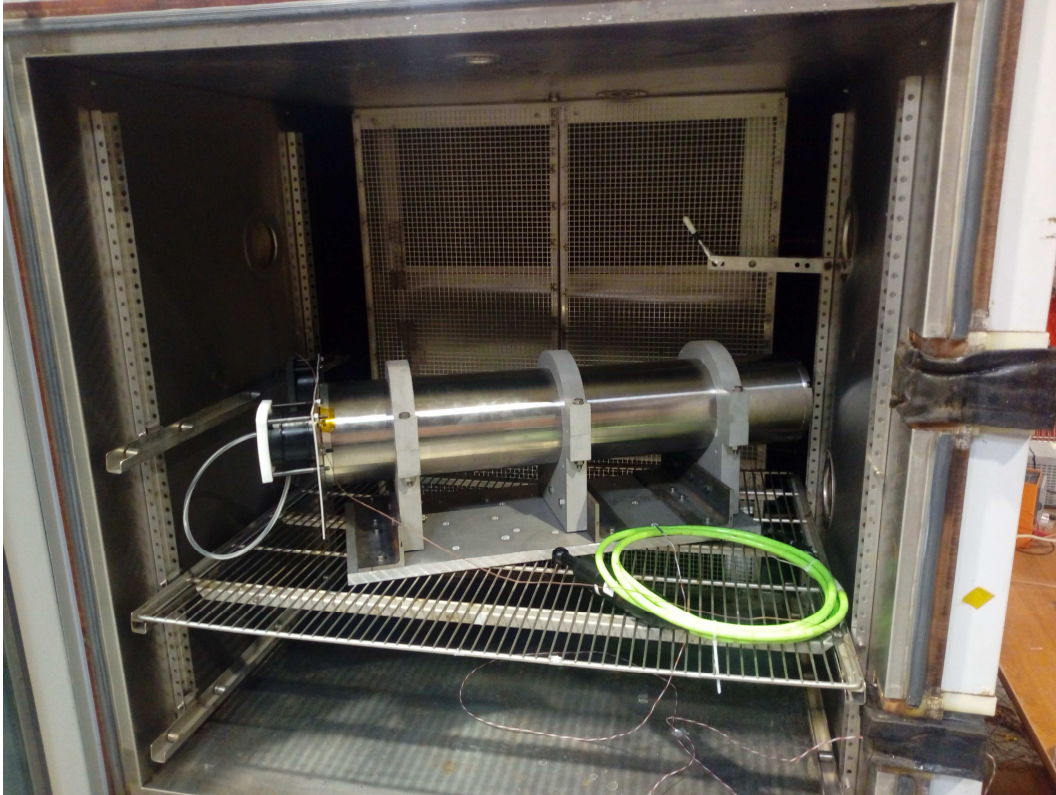
Curve n° 1: Temperature and humidity measured during test

Curve n° 2: Temperature during air-water thermal shock test

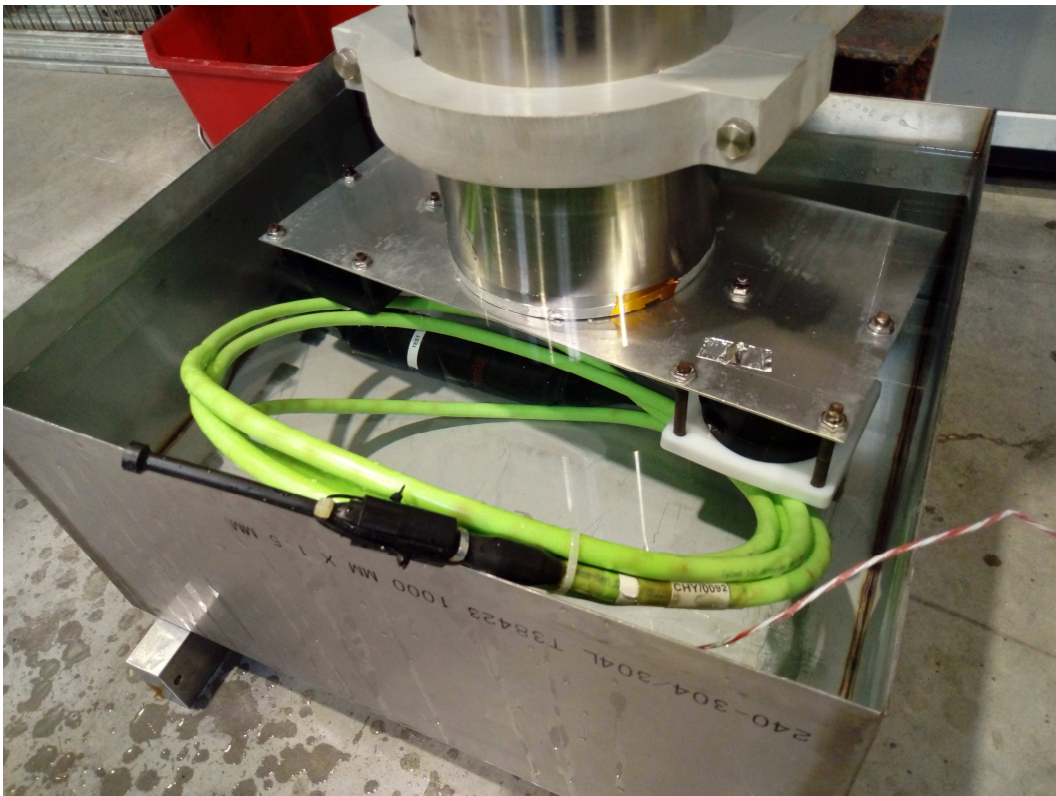
7.3. CONTROLS

Controls are performed by CPPM representative.

PHOTOGRAPH N° 1: Global view during humidity test



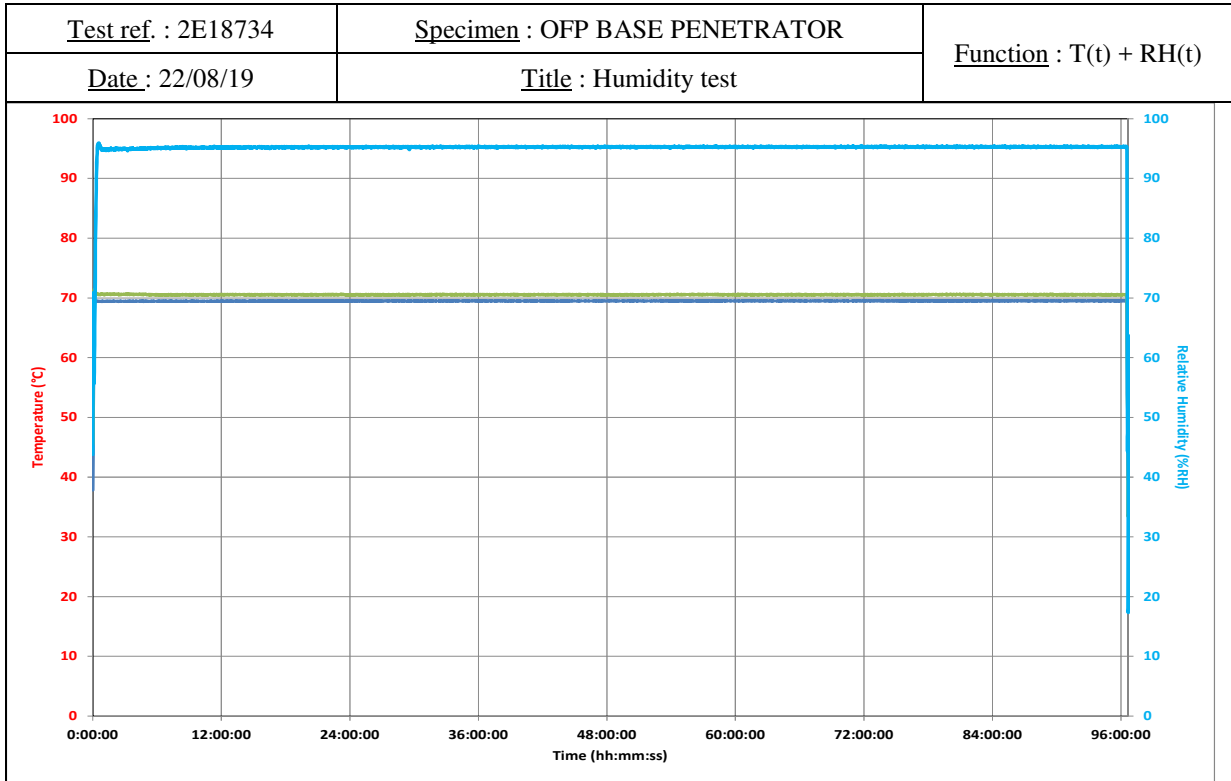
PHOTOGRAPH N° 2: Global view during air-water thermal shock test



ANNEX

Climatic measurements Curves n° 1 & 2

Curve n°1



Curve n°2

