AERO NAV LABORATORIES, INC.

REPORT OF FIRE TEST

ON

TWO (2) EXPANSION JOINTS
STYLE 206 (CS14A117) AND
STYLE 8100 (CS14A118)

FOR

GARLOCK SEALING TECHNOLOGIES
PALMYRA, NY

REV. A, October 27, 2014

WRITTEN BY	Salim Khabieh	REPORT	14-6031
CHECKED BY		AERO NAV S.O.	6031
APPROVED BY		CUSTOMER P.O.	259684
DATE	October 1, 2014	CONTRACT NO.:	
GOVERNMENT QAR	NO INSPECTION REQUIRED	NONE	

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REVISION HISTORY

Paragraphs/Sections Affected	Change
REV. A, October 27, 2014	Updated Conclusion. Added Style names.

ADMINISTRATIVE DATA

PURPOSE OF TEST:	To determine the effects of environmental conditions upon the characteristics of the submitted **TWO TWO (2) EXPANSION JOINTS STYLE 206 (CS14A117) AND STYLE 8100 (CS14A118)**
MANUFACTURER:	GARLOCK SEALING TECHNOLOGIES 1666 Division Street PALMYRA, NY 14522
MANUFACTURER'S NOMENCLATURE:	As specified on Purchase Order, the following nomenclature applies: **TWO (2) EXPANSION JOINTS STYLE 206 (CS14A117) AND STYLE 8100 (CS14A118)**
DRAWING (S) AND / OR SPECIFICATIONS:	Tested in accordance with ISO 15540, and detailed instructions of client.
QUANTITY OF ITEMS TESTED:	**Two (2)**
DATE TEST COMPLETED:	9/18/14
TEST CONDUCTED BY:	AERO NAV LABORATORIES, INC. 14-29 112TH STREET COLLEGE POINT, NEW YORK 11356
DISPOSITION OF SPECIMEN:	Returned to client.
ABSTRACT:	It is the function of Aero Nav Laboratories, Inc., as an impartial testing agency in performing tests, to subject the equipment to environmental conditions as specified in the detailed specifications.

1.0 DESCRIPTION OF TEST APPARATUS:

1.1 HYDRAULIC PUMP,
MODEL NO. S216JD60, SERIAL NO. 0023,
MANUFACTURED BY TELEDYNE-SPRAUGE.
NO CALIBRATION REQUIRED.

1.2 THERMOCOUPLE CONTROLLER,
MODEL NO. 804A, SERIAL NO. AN055,
MANUFACTURED BY WATLOW.
CALIBRATION DUE DATE: 10/22/2014.

1.3 FLOWMETER,
MODEL NO. HFL6310ABR, SERIAL NO. AN209,
MANUFACTURED BY OMEGA MFG.CO.
CALIBRATION DUE DATE: 10/28/2014

1.4 PRESSURE GAUGE,
MODEL NO. 0-100, SERIAL NO. AN913,
MANUFACTURED BY PRECISION GAUGE.
CALIBRATION DUE DATE: BEFORE EACH USE.

1.5 PRESSURE GAUGE,
MODEL NO. 0-1000, SERIAL NO. AN945,
MANUFACTURED BY WINTERS.
CALIBRATION DUE DATE: BEFORE EACH USE.

1.6 HYDRAULIC PUMP,
MODEL NO. HH12, SERIAL NO. 204900,
MANUFACTURED BY OMEGA ENGINEERING.
CALIBRATION DUE DATE: 10/22/2014.

1.7 METER, THERMOCOUPLE,
MODEL NO. 650-T-X-DSS,
MANUFACTURED BY OMEGA ENGINEERING.
CALIBRATION DUE DATE: 10/22/2014.

1.8 DIGITAL THERMOMETER,
MODEL NO. HH12, SERIAL NO. 204996,
MANUFACTURED BY OMEGA ENGINEERING.
CALIBRATION DUE DATE: 10/22/2014.

1.9 FIRE TEST CHAMBER,
MODEL NO. AN2003, SERIAL NO. AN210,
MANUFACTURED BY AERO NAV LABS.
CALIBRATION DUE DATE: BEFORE EACH USE

2.0 NAMEPLATE DATA:

None

3.0 TEST SEQUENCE AND COMPLETION DATES:

3.1 Fire Test: 9/18/14

4.0 METHOD OF TEST:

4.1 Fire Test:

Prior to testing, a hydrostatic pressure test consisting of pressurizing the unit to 375 psig for a 10 minute period shall be performed.

Each unit in turn shall be placed within the support frame. The Hose shall be connected to the flow circuit. Water at (5±0.2) Bar, flowing at approximately 3 GPM and at temperature of 80˚±2˚C shall be pumped through the unit. The burner shall be ignited and allowed to warm up until the test settings were verified to be stable (800˚±50˚C). The unit shall be transferred into the flame in such a manner that the burner end extends beyond a hose fitting by at least 20 mm such as that the fitting is completely enclosed by the flames. The test specimens shall be centered above the burner surface. The elapsed time meter shall then be started. All operating parameters shall be monitored continuously and recorded at 15-minute intervals throughout the test. Upon completion of the 30-minute fire test, the flame shall be removed and the flow circuit shall be stopped. The unit shall be allowed to cool slightly, and the proof pressure circuit shall be connected. When all the air is bled out of the system, a proof pressure post test consisting of pressurizing the unit to 375 psig for a 10 minute period shall be performed. The unit shall be then removed from the test frame.

Throughout the Fire Test, the unit shall be observed for leakage.

5.0 RESULTS OF TEST:

5.1 Fire Test (per paragraph 4.1):

5.1.1 EXPANSION JOINT STYLE 206 (CS14A117):

Pre Test Hydrostatic pressure test was performed at 375 psig for ten minutes. No leakage was observed.

TIME	WATER				CENTER OF HOSE	UNDER FITTING
(MINUTES)	INLET (°C)	OUTLET (°C)	PRESSURE (PSIG)	FLOW GPM	(°C)	(°C)
0	79	79	72	3	755	765
15	81	82	72	3	759	760
30	82	83	72	3	772	768

There was no evidence of leakage as a result of the fire test.

Post Test Hydrostatic pressure test was performed at 375 psig for ten minutes. The unit leaked at 150 psig. As per customer request, the hardware was torqued to 50 ft/lbs.

Post Test Hydrostatic pressure test was repeated as per customer request. No leakage was observed.

RESULTS OF TESTS (CONTINUED):

5.1.2 EXPANSION JOINT STYLE 8100 (CS14A118):

Pre Test Hydrostatic pressure test was performed at 375 psig for ten minutes. No leakage was observed.

TIME	WATER				CENTER OF HOSE	UNDER FITTING
(MINUTES)	INLET (°C)	OUTLET (°C)	PRESSURE (PSIG)	FLOW GPM	(°C)	(°C)
0	78	79	72	3	788	763
15	81	81	72	3	819	772
30	81	82	72	3	816	772

There was no evidence of leakage as a result of the fire test.

Post Test Hydrostatic pressure test was performed at 375 psig for ten minutes. No leakage was observed.

6.0 VISUAL POST TEST EXAMINATION:

Visual post test examination revealed no further evidence of leakage as a result of the stress of the testing herein.

7.0 RECOMMENDATIONS:

AERO NAV LABORATORIES provides this report, for informational purposes only. It presents the results of the various tests, as observed in the laboratory, which were performed on the customer's equipment.

It does not certify, recommend or otherwise endorse the use of the equipment to perform its intended purposes. It does not comment on the design or any other issues relating to the equipment.

8.0 CONCLUSIONS:

Final evaluation of the submitted Hoses for conformance to the requirements of the detailed specifications will be accomplished by Garlock Sealing Technologies and the cognizant government agency upon review of results reported herein and further examination as required.

TWO (2) EXPANSION JOINTS
STYLE 206 (CS14A117) AND
STYLE 8100 (CS14A118)
GARLOCK SEALING TECHNOLOGIES
PALMYRA, NY
TYPICAL FIRE TEST SETUP