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MP/L5/J10(712B)
Test 010186

23 OCT 1957

From: Commanding Officer and Director
To: Chief, Bureau of Ships

Subj: Spiral-wound metallic-asbestos gaskets, Garlock Packing Co., Mfr.; MEM-066-001, Qualification Report 010186

Ref: (a) BUSHIPS ltr JJ33/1 (548B) ser 548-3933 of 21 Dec 1953
(b) Military Specification MIL-G-16265A

Encl: (1) Dimensions and construction of the gaskets

1. The Bureau of Ships, reference (a), requested the Station to test Guardian spiral-wound metallic-asbestos gaskets to determine their compliance with reference (b). Cost Classification "Y" was assigned.

2. Guardian gaskets are spiral-wound metallic-asbestos Navy Symbol 2410, pipe-flange type. Eight 6" size gaskets, six with and two without outer metal rings; and four gaskets of all other sizes, two each with and without outer metal rings (classes b and c) covered by reference (b), were received on various dates from 23 August 1954 to 20 January 1956. The dimensions and construction of the gaskets are given in enclosure (1).

3. All sizes of the gaskets were subjected to compression tests for compliance with the requirements of reference (b). Two 6" size gaskets were subjected to the shock test, as described in reference (b) except for modification of the method of application of the thermal shock. The test joint was subjected to thermal shock obtained by impingement of the boiler feedwater spray on the joint. This was accomplished by means of a nozzle centrally located in the apparatus, the details of which are given in paragraph 6. By this method a drop in temperature of the joint from 850°F to less than 400°F was obtained in seven minutes. The results of the tests are given in enclosure (1) and in the following paragraphs.

4. The dimensions, composition, and compression characteristics of the gaskets comply with the requirements of reference (b). The class b gaskets were loose in the outer metal ring after compression and no buckling on the inner periphery or broken welds of any of the gaskets occurred during the test.

5. Satisfactory results were obtained in the shock tests of the two gaskets as no leakage occurred from the test joints during the prescribed 20 thermal

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shocks. After removal from the joints, the gaskets were found to be compressed but otherwise in satisfactory condition and could have been reinstalled for further service.

6. To provide for standardization of the method of application of the thermal shock, the description of the test apparatus, paragraph 4.5.2 of reference (b), should be changed to read as follows:

Line flange shock test - The apparatus used for this test shall consist of 6" size pipe sections flanged together with welding-neck flanges to provide two joints. The center or spool-piece section shall consist of two flanges butt welded together. The end sections shall consist of 6" size pipe flanged at one end and blanked off at the other. One end section shall be provided with steam and boiler feedwater inlet connections and the other with an exhaust connection. Two nozzles for directing a spray of boiler feedwater on the inner periphery of the test joints shall be centrally located within the apparatus, one at the centerline of each joint. Each nozzle shall consist of a 1/2" size pipe with 6 holes of 1/8" diameter drilled radially at 60° intervals around the pipe. Thermocouples shall be placed appropriately for measurement of temperatures at outer surface of pipe, at the raised faces of the test joints, of inlet steam and boiler feedwater, and at the exhaust connection. The test shall consist of 20 cycles of thermal shock obtained by changing conditions from steam at 600 psig and 850°F to boiler feedwater at 700 psig and 250°F. The test joints shall be inspected closely for leakage during the shocks.

7. It is recommended that Guardian spiral-wound metallic-asbestos gaskets be considered suitable for use in the Naval service as Symbol 2410 type. It is further recommended that reference (b) be revised as indicated in paragraph 6 to include the new description of the shock test apparatus.

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