PENTAIR

Brian Martin
Quality Assurance Manager

PENTAIR VALVES & CONTROLS
508-594-4463 (direct)
508-594-4249 (fax)
508-298-4603 (mobile)
Brian.Martin@Pentair.com

Mansfield, MA 02048
www.pentair.com

March 24, 2014

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Subject: Reply to Notice of Nonconformance
NRC Inspection Report No. 99901431/2013-201
Nonconformances 99901431/2013-201-01, -02, -04, -05 and -06

Dear Sir:

In response to your letter dated 25 February 2014, the following clarifications and additional information is provided.

Nonconformance 99904312013201-01-A

Description

PV-62 is a valve that had a QME-1 requirement of seismic load testing. The valve was sent out for a natural frequency scan to identify if the valve is considered a rigid body. The requirement for rigid body is no natural frequencies below 33 Hz. If the valve meets the rigid body requirement, the valve can proceed to a static load test (versus a dynamic load test). PV-62 meets the requirement of no natural frequencies below 33 Hz. PV-62 is not completely symmetrical and has different natural frequencies in the different directions. Therefore, one direction is more rigid than the other.

The requirement for the static load test is to test PV-62 in the least rigid axis. PV-62 was not tested in the least rigid axis, according to the natural frequency scan. PV-62 was shipped to the customer, not having met the requirement of a static load test in the least rigid axis. The customer has an inactive reactor.

Resolution

CAR 673 should have initiated, at time of discovery (27 June 2013), a 10CFR21 evaluation as PV-62 was delivered to a customer while it did not meet required specifications. A 10CFR21 evaluation

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was completed and it was determined that there is no 10CFR21 reportable required due to the plant being inactive. PV-62 was returned to Pentair Mansfield to test the valve correctly. VQT-38173 was modified to create a linking process between the natural frequency scan and the identification of the least rigid axis, "Engineering must verify the direction of the least rigid axis against the results of the natural frequency test for each valve and advise the test engineer which direction to apply the seismic load. A photograph of the test setup is required." The static load was applied to PV-62 in the least rigid axis. Due to production scheduling and customer witness requirements PV-62 was not able to be tested until 13 Feb 2014.

Extent of Condition

As a result of CAR 673, Pentair Mansfield has initiated an investigation into past valves that had similar requirements. In the evaluation of the extent of conditions, PV-16 was also deemed inadequately tested. PV-16 had not left the facility and was retested with the static load applied in the least rigid axis and passed the static load testing successfully. Pentair Mansfield has identified 93 Test Reports as potential orders that had similar requirements. Upon further review, if any of the orders have inadequate testing methodology, Pentair Mansfield will initiate a 10CFR21 evaluation for each type. Pentair is committed to evaluate all 93 by 15 June 2014. Pentair respectfully requests an extension until 15 June 2014 to complete the 10CFR21 evaluations of all 93 test reports.

Did Product Ship? (if yes, 10CFR21 Evaluation)

Yes, PV-62 left the factory. A 10CFR21 evaluation for the seismic requirements has been performed and completed.

Training

A Department Operating Instruction (DOI) will be created to identify minimum requirements for all Valve Qualification Test (VQT) procedures. After creation and approval of the DOI, all nuclear engineering staff will be trained. Training has been provided to the Engineering staff to reinforce the understanding of the specific requirements of the seismic testing as well as the linking between requirements and test results. A training record is on file as objective evidence of completion.

Nonconformance 99904312013201-01-B

Description

PV-62 is a valve that had a QME-1 requirement of seismic load testing. The valve was sent out for a natural frequency scan to identify if the valve is considered a rigid body. The requirement for rigid body is no natural frequencies below 33 Hz. If the valve meets the rigid body requirement, the valve can proceed to a static load test (versus a dynamic load test). PV-62 meets the

requirement of no natural frequencies below 33 Hz. PV-62 is not completely symmetrical and has different natural frequencies in the different directions. Therefore, one direction is more rigid than the other. The static seismic load was not applied to PV-62 at the full set pressure of 2485 psig. PV-62 was tested to a prorated pressure of 900 psig. The test facility is not capable of testing PV-62 at the full set pressure of 2485 psig.

The T-16093 did not make the customer fully aware of the limitations of the test facility. However, T-16093 did make the customer aware of the testing being performed at a prorated pressure.

Resolution

The use of prorate springs to test the valve within the capabilities of the test facility is a common practice among valve manufacturers and does not invalidate the test findings. The Customer has been made aware of the test facility limitations. T-16093 has been updated to reflect the limitations of the test facility. A Department Operating Instruction (DOI) will be created to identify the minimum requirements for all test procedures.

Extent of Condition

Pentair Mansfield performed an investigation to identify if this situation has occurred on any other valves and determined that the other test procedures have the additional language to make customers aware of the limitations of the test facility and the use of prorate testing.

Did Product Ship? (if yes, 10CFR21 Evaluation)

Yes, a 10CFR21 evaluation should have been performed at time of discovery. A 10CFR21 evaluation for prorate use will be complete by 28 March 2014.

Training

Training will be performed prior to 28 March 2014. Training log will be filed. After the creation and approval of the DOI, all nuclear engineering staff will be trained.

Nonconformance 99904312013201-02-A

Description

During testing of the PV-62 pressurizer safety valves, Pentair Mansfield failed to evaluate the validity of the test, which was performed at a temperature 25°F higher than the allowable ambient test temperatures, to ensure compliance with the Pentair T-161093 procedural requirements. There was concern that testing outside of the temperature range would cause performance issues. There was concern that there was no evaluation of the fact that the test was performed outside of the temperature range.

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Resolution

Engineering evaluation of the impact of the 25°F over range was that the change in temperature had an insignificant impact on the performance of the valve. Training to emphasize the testing requirements and impact on the test report and performance of the valve will be performed by 28 March 2014. A record of training performed will be on file at Pentair.

Extent of Condition

Pentair has completed the investigation and has found no other occurrences.

Did Product Ship? (if yes, 10CFR21 Evaluation)

Yes, a 10CFR21 evaluation should have been performed at time of discovery. A 10CFR21 evaluation will be complete by 28 March 2014. The completed report form will be on file at Pentair.

Training

Training will be performed prior to 28 March 2014. Training log will be filed at Pentair.

Nonconformance 99904312013201-02-B

Description

During testing of the PV-16 auxiliary relief valve, Pentair Mansfield failed to install a device to ensure that the tested valve satisfies the leakage acceptance criteria in Pentair procedure VQT-38188. The NRC representative made note of the deficiency prior to the test, prompting the tester to follow procedure and install the leakage test device prior to the start of the test. The NRC representative was also concerned with the device itself. The device did not have direct leakage measurement capability.

Resolution

The NRC representative made note of the deficiency prior to the test, prompting the tester to follow procedure and install the leakage test device prior to the start of the test. Therefore, the testing procedure was followed. Training to understand the importance of following the procedures has been completed with Special Projects Engineering personnel. Training records have been completed and are on file at Pentair. Pentair has implemented the use of graduated cylinders for testing purposes. All active test procedures will be updated to include the use of graduated cylinders during testing. All procedures will be updated, approved and released by 15 June 2014.

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Extent of Condition

Pentair completed an investigation of other product being affected. It was determined that no other product was impacted.

Did Product Ship? (if yes, 10CFR21 Evaluation)

No, the product did not ship with any nonconformance. A 10CFR21 evaluation is not required.

Training

Test Standard Work Training will be defined, documented and performed prior to 28 March 2014. Training log will be filed at Pentair.

Nonconformance 99904312013201-04

Description

Pentair failed to establish proper measures to identify requirements necessary to assure the selection, purchase, use, and review for suitability of application of the Neolube lubrication material.

Specifically, Pentair failed to have adequate controls or documentation in place to select and verify that the appropriate type of Neolube was purchased and used to lubricate various valve types during and after testing activities in accordance with the application and design specifications for the valves. If a temperature of 400°F is exceeded while using Neolube1, the result is a chemical breakdown of the product which could lead to binding of lubricated areas such as the valve stem. This binding would prevent the valves from accomplishing their intended safety functions.

Pentair uses Nuclear grade Never-Seez as a lubricant unless a customer specification requires a special lubricant be used. The use of Never-Seez has been reviewed for use by Pentair and found to be acceptable. Pentair performs work under Navy contracts that require the use of Neolube1 as a lubricant.

Resolution

Because Pentair has Navy contracts that require the use of Neolube1 as a lubricant the following actions were taken to prevent the accidental use of Neolube1 in nuclear operations. Firstly, a complete search of the nuclear assembly and test operations areas was conducted and Neolube1 was verified to not be present. Secondly, all in use and incoming bottles of Neolube1 lubricant have been labeled "For Navy Use Only" and are located only in Navy assembly/test, the Navy clean room and the Navy storage cabinet. Thirdly, all Nuclear and Navy assembly/test personnel have been trained regarding the use of Neolube1 (restricted to Navy assembly/test operations). The

manufacturing supervisor has been trained to monitor and label all new incoming shipments of Neolube1 prior to disbursement into the shop. This training was completed on 17 September 2013 and training records are available at Pentair as objective evidence.

Additionally, Pentair has taken the action of removing any ambiguous requirement for Neolube materials from nuclear assembly/test procedures. Any customer specified requirement for Neolube materials remain in nuclear assembly/test procedures. Engineering identified all nuclear procedures that referred to the use of Neolube (40 cleaning procedures and 17 assembly procedures). Engineering updated all 57 procedures before 31 January 2014. A complete list of all updated procedures is on file at Pentair as objective evidence. All engineering and assembly personnel will be trained on the updated procedures by 15 April 2014. A training record will be created to document this activity.

Nonconformance 99904312013201-05

Description

For the 18 Dedication Procedures reviewed, Pentair did not provide objective evidence that technical evaluations had been performed to justify that the critical characteristics and the associated acceptance methods selected for various valve parts and components would provide reasonable assurance that the valves would perform their intended safety functions. The NRC would like to see a complete FMEA for the dedicated products and a form that includes not only the critical characteristics, but also the linking procedure.

Resolution

Pentair has developed and implemented QC-710 form to identify the critical characteristics, failure modes and results. The use of this form is detailed in the dedication procedures.

Extent of Condition

This applies to all dedicated components. However, the NRC agrees that the new form will be used going forward and will not be retroactive.

Did Product Ship? (if yes, 10CFR21 Evaluation)

Yes, however this is a change in our evaluation process and does not constitute a 10CFR21 event.

Training

Training will be required for all engineering staff as well as contracts staff. All training will be completed and documented on training records by 28 March 2014 for the updated dedication procedure and QC-701 form.

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Nonconformance 99901431/2013-201-06

Description

Pentair failed to establish measures to assure that special processes are controlled and accomplished in accordance with applicable codes, standards, specifications, criteria and other special requirements. Specifically, Pentair's weld rod ovens failed to have controls in place for the temperature read out display and humidity indication to provide assurance that the weld rods were adequately maintained in accordance with the applicable sections of the ASME code.

Resolution

Pentair relied on the thermostatic setting on the weld rod oven coupled with the quarterly monitoring of the oven in accordance with calibration procedure CPIE-0240 to control the weld rod oven.

Pentair has now installed temperature indicating gages on the weld rod ovens that are maintained, calibrated and controlled within the Pentair calibration system. The ovens are set at 250°F. The ovens are still verified quarterly for temperature uniformity in accordance with calibration procedure CPIE-0240 by gage calibration personnel.

In addition, CPIE-0240 has been updated to include the requirement for the gage calibration personnel to verify the oven temperature is within the acceptable range each production day and log it on QC Form 616-2. This form is posted in the weld rod oven area and stored monthly in accordance with calibration procedure CPIE-0240. All welding and gage calibration personnel were trained on the updated calibration procedure CPIE-0240 requirements. All training records are available at Pentair for objective evidence of completion.

Sincerely,

Brian L. Martin
Quality Assurance Manager

cc: Edwin H. Roach
Chief, Mechanical Vendor Inspection Branch
Division of Construction Inspection and Operational Programs
Office of New Reactors