FLOWSERVE

Flow Control Operations
Anchor/Darling Valves
BW/IP Valves
Edward Valves
Valtek Control Products
Worcester Valves

November 16, 2012

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

Mr. Edward H. Roach, Chief
Construction Mechanical Vendor Branch
Division of Construction Inspection and Operational Programs
Office of New Reactors

Subject: **Flowserve Corporation – Raleigh NC - Reply to Notice of Nonconformance #99901356/2012-201-01 and 99901356/2012-201-02.**

Dear Mr. Roach,

I am writing in response to the Notice of Nonconformance #99901356/2012-201-01 and 99901356/2012-201-02, addressed in the NRC Inspection Report No. 99901356/2012-201.

In accordance with the instructions outlined with the subject Notices of Nonconformance, Flowserve Corporation, Raleigh, NC, Offers the following replies:

With regard to Notice of Nonconformance 99901356/2012-201:

1. The reason for this nonconformance, as stated in the Flowserve Corrective Action Request (CAR #943) issued during the NRC Inspection (see attached) and as a result of our review of the NRC Inspection Report. We found that documentation of the technical evaluation that identifies critical characteristics for dedicated parts are not specifically required per our procedures. Proposed corrective action is to revise the Flowserve Raleigh SOI 70-39 to document technical evaluations and have the dedication sheets reference the applicable technical evaluation. The dedication database will be changed to use the technical evaluation to identify critical characteristics for dedication. – Proposed completion date 12/31/2012.

With regard to Notice of Nonconformance 99901356/2012-201-02:

1. The reason for this nonconformance, as stated in the Flowserve Corrective Action Request (CAR #942) issued during the NRC Inspection (see attached) and as a result of our review of the NRC Inspection Report: We found that while Flowserve had provided detailed work instructions, it was identified that during their implementation some of the details had not been fully adhered to.

IE09

Flowserve U S Inc
Flow Control Operations

Raleigh Operations
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2. As stated in the Flowserve CAR #942, the corrective steps that have and are being taken are:

   a. Management has re-affirmed to employees the need to fully adhere to the details of work instructions during their implementation. This has been communicated through Department Training Meetings.

   b. Operations and Quality Departments have prepared Standard Operating Instructions (SOI-23-19-00 and SOI-40-08-00) which address a scheduled monitoring oversight activity. Monitoring activities will be conducted in accordance with Monitoring Checklists prepared to verify the employee's implementation of Method Specifications so as to assure the details of these work instructions are being fully implemented. – see attached SOI and checklist as an example.

   c. Monitoring of employee implementation of Method Specifications has commenced as documented in completed monitoring checklist – see attached.

3. To address the 4 specific issues identified within Nonconformance 99901356/2012-201-02, the following actions have been taken:

   ISSUE 1. With regard to issue #1, dealing with weld bead thickness and foreign material, Flowserve CAR #935 was issued during the NRC Inspection. It was concluded that the issue concerning the maximum bead thickness was a welder training issue, which has been addressed by additional training of welders conducted on September 19, 2012. – see attached CAR# 935.

   ISSUE 2. With regard to issue #2, dealing with NDE examiner failing to examine the correct area of interest, Flowserve CAR #936 was issued during the NRC Inspection. It was concluded that the NDE Examiner confused the area of interest, which was identified as a training need. Training of the NDE examiner was conducted on 9/11/12 and documented on a training record. - see attached CAR #936.

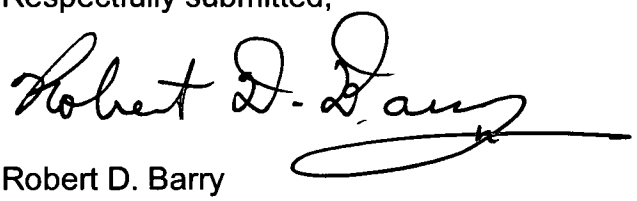
   ISSUE 3. With regard to issue #3, dealing with the NDE Examiner failing to use a "Gentle Air Stream" and not maintaining minimum amperage due to not cleaning and dressing the MT Prod Tips. Flowserve CAR #937 was written during the NRC Inspection. It was determined that the NDE Examiner and NDE assistant displayed incomplete knowledge of the process and required additional training. Training of the NDE examiner and NDE Assistants was provided and documented on training record dated 9/11/12. – see attached CAR #937.

   ISSUE 4. Regarding issue #4, concerning the NDE examiner who failed to UT examine the entire volume and performed the examination on an unacceptable

surface. Flowserve CAR #939 was issued during the NRC Inspection. Additional training was needed, this was completed and documented on Training Record dated 9/13/2012 – see attached CAR #939.

The corrective steps that have been and are being taken as described in this response and Flowserve CAR #942 together with the adoption of new Standard Operating Instructions for the monitoring of employee implementation of work instructions and the additional training of employees will avoid further non-compliances.

Respectfully submitted,



Robert D. Barry
Manager, Quality Assurance
Flowserve Corporation
1900 South Saunders Street
Raleigh, NC 27603

Attachments:
Flowserve Corrective Action Request # 942 / 943 / 935 / 936 / 937 / 939
Flowserve Standard Operating Instructions: 23-19-00 and 40-08-00
Monitoring Checklist

FLOWSERVE

DATE INITIATED: 9/12/2012	**PROPOSAL DUE: 10/12/2012**	**CORRECTIVE ACTION REQUEST**
MANAGER/SUPERVISOR OR VENDOR: J. Tucker, R. A. Sizemore		
PART, RT# OR OTHER IDENTIFIER: Commercial Grade Dedication (CGD) Process		
10CFR21 EVALUATION REQUIRED? N		**INTERNAL** ☒
HOW IDENTIFIED: During NRC Inspection		**CAR # : 943**
INITIATED BY: R. Slomski	**CODE MATERIAL?** N	**IF CODE, ANI REVIEW**

PROBLEM STATEMENT –(to be completed by QA or responsible department):

Contrary to the requirements of 10CFR50 Appendix B, Criterion III – Design Control and Criterion XVII - Quality Assurance Records with further clarification provided in NRC Information Notice 2011-01 Section "Documentation of the CGD Process",

BELOW DESCRIBE THE CONDITION OR CIRCUMSTANCE VIOLATING THE ABOVE LISTED REQUIREMENT

NRC Inspectors found that Technical Evaluations for critical characteristics as part of the CGD process was not sufficiently documented.

ACKNOWLEDGEMENT OF RECEIPT OF THIS REQUEST (BUYER ACKNOWLEDGES EXTERNAL REQUESTS)	**SIGNATURE/DATE** [signature] 9.13.12

ROOT CAUSE AND PROPOSED ACTION (to be completed by responsible manager or designee)

Documentation of the technical evaluation that identifies critical characteristics for dedicated parts is not specifically required per our procedures. Proposed corrective action is to revise the Flowserve Raleigh SOI 70-39 to document technical evaluations and have the dedication sheets reference the applicable technical evaluation. The dedication database will be changed to use the technical evaluation to identify critical characteristics for dedication.

ACTIONS WILL BE COMPLETED BY (DATE) 12/31/12	**SIGNATURE/DATE** [signature] 11-15-12

CORRECTIVE ACTION TAKEN TO PRECLUDE RECURRENCE: (attach evidence of actions taken)

SUBMITTED BY (printed name)	**SIGNATURE AND DATE**

CONFIRMATION OF CORRECTIVE ACTION TAKEN (To be completed by Flowserve QA after review of evidence)

EVIDENCE SUFFICIENT TO CLOSE? Y ☐ N ☐		**FURTHER FOLLOW UP REQUIRED?** Y ☐ N ☐
CORRECTIVE ACTION REVIEWED BY (QA Manager or Designee)	DATE	**SIGNATURE**

FORM Q-985 REV. 2

FLOWSERVE

DATE INITIATED: 9/12/2012	**PROPOSAL DUE: 10/12/2012**	**CORRECTIVE ACTION REQUEST**
MANAGER/SUPERVISOR OR VENDOR: R. Sherman, R. Barry		
PART, RT# OR OTHER IDENTIFIER: Shop Operations and NDE Inspections		
10CFR21 EVALUATION REQUIRED? No		**INTERNAL** ☒
HOW IDENTIFIED: During NRC Inspection		**CAR # : 942**
INITIATED BY: R. Slomski	**CODE MATERIAL?** N	**IF CODE, ANI REVIEW**

PROBLEM STATEMENT –(to be completed by QA or responsible department):

Contrary to the requirements of 10CFR50 Appendix B, Criterion V - Instruction, Procedures and Drawings, and Criterion IX - Control of Special Processes,

BELOW DESCRIBE THE CONDITION OR CIRCUMSTANCE VIOLATING THE ABOVE LISTED REQUIREMENT

Several observations of personnel failing to completely follow Procedures and Instructions were observed and documented by NRC Inspectors. Specific incidences are identified in CARs 935, 936, 937, and 939. This CAR is to address a more overall issue with regard to this matter.

ACKNOWLEDGEMENT OF RECEIPT OF THIS REQUEST (BUYER ACKNOWLEDGES EXTERNAL REQUESTS)	**SIGNATURE/DATE** R.D. Barry **Robert D. Barry - 10/11/2012**

ROOT CAUSE AND PROPOSED ACTION (to be completed by responsible manager or designee)

We found that while Flowserve had provided detailed work instructions, it was identified that during their implementation some of the details had not been fully adhered to. Management has re-affirmed to employees the need. This has been communicated through Department Training Meetings. Management is to reaffirm to employees the need to fully adhere to the details of work instructions during their implementation and thru systematic monitoring activities assure the details of these work instructions are being fully implemented.

ACTIONS WILL BE COMPLETED BY (DATE) 11/15/12	**SIGNATURE/DATE** R.D. Barry 10/31/12

CORRECTIVE ACTION TAKEN TO PRECLUDE RECURRENCE: (attach evidence of actions taken)

1. Management has re-affirmed to employees the need to fully adhere to the details of work instructions during their implementation. This has been communicated through Department Training Meetings. – see attached training records.
2. Operations and Quality Departments have prepared Standard Operating Instructions (SOI-23-19-00 and SOI-40-08-00) which address a scheduled monitoring oversight activity. Monitoring activities will be conducted in accordance with Monitoring Checklists prepared to verify the employee's implementation of Method Specifications so as to assure the details of these work instructions are being fully implemented. – see attached SOI and checklist as an example.
3. Monitoring of employee implementation of Method Specifications has commenced as documented in completed monitoring checklist – see attached.

SUBMITTED BY (printed name) **R. Sherman & R.D. Barry**	**SIGNATURE AND DATE** R.D. Barry 11/15/12 R Sherman

CONFIRMATION OF CORRECTIVE ACTION TAKEN (To be completed by Flowserve QA after review of evidence)

EVIDENCE SUFFICIENT TO CLOSE? Y ☒ N ☐		**FURTHER FOLLOW UP REQUIRED?** Y ☐ N ☒
CORRECTIVE ACTION REVIEWED BY (QA Manager or Designee)	DATE 11/16/12	**SIGNATURE** R.D. Barry

FORM Q-985 REV. 2

FLOWSERVE

Standard Operating Instruction

Raleigh, NC

TITLE
PERFORMANCE OBSERVATION MONITORING

SOI 23-19-00 Effective Date: 11/09/12 Revision Date: 11/09/12

PURPOSE:
To outline a Standard Operating Instruction to ensure departmental adherence to documented procedures by establishing a program that monitors and observes actual performance of work performed.

EXHIBITS:
I. Performance Observation Monitoring Matrix - *TYPICAL*
II. Performance Observation Monitoring Checklist - *TYPICAL*
III. Welding Attributes Performance Observation Monitoring Checklist - *TYPICAL*

STANDARD OPERATING INSTRUCTIONS:
1.0 Performance Observations

1.1 Each identified functional area of the department shall be monitored to ensure adherence to related procedures and/or work instructions on a frequency that ensures each area is monitored and observed on an annual basis. Refer to Exhibit I for the matrix that is to be used to ensure that each area is appropriately monitored.

1.2 Performance shall be observed by an experienced, competent and un-bias observer that can be sufficiently thorough in the performance observation monitoring activities. The observer is not required to be a member of the Operations Department.

1.3 Results of the performance observations shall be documented using a checklist similar to that shown in exhibit II and III. The first step in conducting any direct labor performance observations is to ensure that the correct work instructions are present. Verify that the correct revision of the procedure(s) and/or drawing(s) match the revisions specified by the QAP and Routing or other specified work instructions.

1.4 Results of the performance observations shall be reviewed as required with the related functional department personnel, supervision, and management. Where actual work performed is observed as not being in compliance with the related work instructions and/or procedures, further evaluations shall be conducted to determine the cause for non-compliance.

1.5 The nature and frequency of the performance observations is subject to change by the Department Management based on the results that are being monitored at the time.

Prepared by R P Keenan Department Approval R P Keenan

FLOWSERVE

Standard Operating Instruction

Raleigh, NC

TITLE
PERFORMANCE OBSERVATION MONITORING

Performance Observation Monitoring Matrix

Exhibit I

Month	Small Cast			Forged Steel			Large Cast			2nd Shift			3rd Shift		Heat Treatment	Cleaning / Painting	Packaging / Crating
	Machining	Assy/Test	Welding	Machining	Assy/Test	Welding	Machining	Assy/Test	Welding	Machining	Assy/Test	Welding	Machining	Welding			
January																	
February																	
March																	
April																	
May																	
June																	
July																	
August																	
September																	
October																	
November																	
December																	
Completed Y or N																	

Notes:

1) There are 17 functional areas in the Operations Department as identified above, performance observations must be completed in each of these areas at least once a year.

2) Use this matrix to schedule and document that each area has been appropriately monitored during the course of the year.

Prepared by _____ Department Approval_____

FLOWSERVE

Standard Operating Instruction

Raleigh, NC

TITLE
PERFORMANCE OBSERVATION MONITORING

Exhibit II: Performance Observation Checklist

Date:	
Work Order No.:	
Related Sales Order no.:	
Part Number:	
Procedure No.:	
Name of employee being observed:	
Functional Area being observed i.e. - (Machining, Welding, Heat Treat, Assy, Test, Cleaning, Painting, Packaging/Crating)	
Location (i.e. - Large Cast, Small Cast or Forged Steel):	
Are all required work instructions present Y/N	
Are the Procedure and Drawing revisions at work site correct and do they match the revisions specified by the Route Card Y/N	
Has the employee read the Procedure Y/N	
Does the employee acknowledge that he/she understands thePprocedure Y/N	
Are the Procedure instructions being followed Y/N	
Is the Sequence of Operations being followed Y/N	
Are the Route Card Signatures properly signed-off Y/N	
Are the Quality Plan Signatures (if applicable) properly signed off Y/N	
Are the Gages, Tools, Measuring Devices etc that are being used calibrated Y/N	

Observer's Name: _____

Printed Name / Sign & Date

OTHER COMMENTS:

Prepared by _____ Department Approval _____

FLOWSERVE

Standard Operating Instruction

Raleigh, NC

TITLE
PERFORMANCE OBSERVATION MONITORING

Exhibit III: Welding Attributes Performance Observation Checklist

Date:	
Work Order No.:	
Related Sales Order No.:	
Part Number:	
Weld Procedure No.:	
Welder's Name:	
Location (Large Cast, Small Cast or Forged Steel):	
Joint	
Base Metal	
Filler Metal & Size	
Max Bead Thickness	
Max Weld Thickness	
Positions	
Preheat Temperature	
Interpass Temperature	
PWHT	
Temperature	
Maximum Time	
Current Type	
Polarity	
Max Heat Input (joules)	
Electrode dia, Amps & Volts	
Technique	
Process type	
Bead technique	
Initial/interpass cleaning	
Backgouge method	
Multiple/single passes	
Peening	

Observer's Name: _____

Print Name / Sign & Date

OTHER COMMENTS:

Prepared by _____ Department Approval _____

FLOWSERVE Raleigh, NC

Standard Operating Instruction

TITLE:
MONITORING QC INSPECTION and NDE EXAMINERS PERFORMANCE

SOI: 40-08-00	Effective Date: 11/05/12	Revision Date: –	Page 1 of 1

The master copy of this document resides in electronic format. Printed copies of this document are for convenience only.
Verify that the revision of this printed document matches the current revision of the electronic master before use.

PURPOSE:

To outline a Standard Operating Instruction to ensure QC Inspection and NDE Personnel are adhering to documented procedures by establishing a program that monitors actual performance of work performed.

EXHIBITS:

I. QC Inspection and NDE Monitoring Schedule - *TYPICAL*
II. QC Inspector Monitoring Checklist - *TYPICAL*
III. NDE Examiner Montoring Checklist - *TYPICAL*

STANDARD OPERATING INSTRUCTIONS:

1. Performance Observations

1.1. Each QC Inspector and NDE Examiner shall be monitored to ensure adherence to related procedures and/or work instructions on a periodic basis. Refer to Exhibit I for the QC Inspection and NDE Monitoring Schedule that is to be used to ensure that each individual is periodically monitored.

1.2. Monitoring shall be observed by an un-biased observer that can be sufficiently thorough in the monitoring activities. The observer is not required to be a member of the Quality Department.

1.3. Results of the monitoring shall be documented using a checklist similar to that shown in exhibit II and III. The first step in conducting any monitoring is to ensure that the correct work instructions are present. Verify that the correct revision of the procedure(s) and/or drawing(s) match the revisions specified by the QAP and Routing or other work instructions.

1.4. Results of the monitoring activity shall be reviewed with Quality Department Supervision. Where actual work performed is observed as not being in compliance with the related work instructions and/or procedures, further evaluations shall be conducted to determine the cause for non-compliance and the product rejected.

1.5. The nature and frequency of the monitoring activity is subject to change by the Quality Department Supervisor based on the results at the time.

PREPARED BY	11/8/12 DATE	DEPARTMENT APPROVAL	11/8/12 DATE

FLOWSERVE
Raleigh, NC

SOI EXHIBIT

TITLE:
QC Inspection and NDE Monitoring Schedule - *TYPICAL*

EXHIBIT:	Effective Date:	Revision Date:	Page
I	11/05/12	--	1 of 1

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Verify that the revision of this printed document matches the current revision of the electronic master before use.

QC Inspection & NDE Monitoring Schedule
2012

QC Insp.	1st QTR	2nd QTR	3rd QTR	4th QTR	Comments
Recv. Insp	SOI40-00-20				
D.Craddock					
T. Stem					
Small Cast	SOI40-28-54	SO 40-11-09	MS 1025D	MS7935	
D.Harper					
L.Williams					
Ferrent Steel	SOI40-28-54	SO 40-11-09	MS 1025D	MS7935	
S. Rawlins					
P. Miller					
Large Cast	SOI40-28-54	SO 40-11-09	MS 1025D	MS7935	
S. Reh					
M. Cheek					
D. Raby					
B. Croom					
R. Carter					
LC Final	SOI40-28-54	SO 40-11-09	MS 1025D	MS7935	
M. Channing					
Gage Lab	SOI40-59-25				
K. Hay					
M. Teri					
NDE Exam					
Radiography		MS 1025NE		MS 1026NE	
K.Federico					
B. Hoots					
P. Penic					
Ultrasonic	MS 1025H		MS 1025H		
K. Worth					
Liquid Peneterant	MS 1155NW		MS 1155NW		
R. Carter					
M. Channing					
D. Craddock					
K. Federico					
D. Harper					
B. Hoots					
P. Miller					
C. Petits					
D. Raby					
S. Reh					
L. Williams					
K. Worth					
Mag. Partical		MS 1025 NE		MS 1025 NE	
Visual Insp					
J. Thompson					
Tool & Gage					

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Raleigh, NC

SOI EXHIBIT

TITLE:
QC Inspector Monitoring Checklist - *TYPICAL*

EXHIBIT:	Effective Date:	Revision Date:	Page
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FLOWSERVE
RALEIGH

QC INSPECTOR MONITORING CHECKLIST
(DIMENSIONAL INSPECTION)

DATE:	**WORK ORDER No.:**
PART NUMBER:	**SALES ORDER No.:**

EMPLOYEE BEING MONITORED:	
ACTIVITY BEING MONITORED:	
METHOD SPECIFICATION & REV:	
CHECK ITEMS:	

1. Are the correct Work Instructions Available?
2. Are correct Drawings and Revision level available?
3. Has the employee familiarized themselves with the Method Specification?
4. Does the employee understand the requirements of the Method Specification?
5. Observe the employee's implementation of the Method Specification?

FLOWSERVE
Raleigh, NC

SOI EXHIBIT

TITLE:
QC Inspector Monitoring Checklist - *TYPICAL*

EXHIBIT:	Effective Date:	Revision Date:	Page
II	11/05/12	--	2 of 2

FLOWSERVE
RALEIGH

QC INSPECTOR MONITORING CHECKLIST
(DIMENSIONAL INSPECTION)

CHECK FOR THE FOLLOWING:	YES	NO
1 Have the proper measuring equipment and instruments been selected to perform the dimensional inspection?		
2 Are the measuring equipment and instrument(s) calibrated? Are calibrations stickers on the equipment/instruments?		
3 Have instrument numbers been recorded on inspection reports when required?		
4 Are measured dimensions compared to the corresponding drawing dimensions and verified to be within tolerance?		
5 When Minimum Wall Dimensions are inspected are the areas of minimum thickness the area being measured? Are minimum dimensions measured and recorded?		
6 Are minimum wall dimensions compared to minimum wall requirements specified on the drawing or in the QAP?		
7 Are minimum wall measures made in the zones specified within the Method specification?		
8 Are minimum wall measurements recorded on a Minimum wall inspection report?		
9 If the measured minimum wall dimensions are less than the "Required" minimum thickness, did the Inspector write a Reject Ticket?		
10 When inspection for critical dimensions is performed, are the measurements taken at the locations shown for the part/assembly as depicted in the method specification?		
11 Are the proper dimensional inspection reports completed when performing these inspections?		
12 Has the Route Card been signed and dated?		

OBSERVER NAME | OBSERVER SIGNATURE | DATE

FLOWSERVE
Raleigh, NC

SOI EXHIBIT

TITLE:
NDE Examiner Monitoring Checklist - *TYPICAL*

EXHIBIT:	Effective Date:	Revision Date:	Page
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FLOWSERVE
RALEIGH

NDE EXAMINER MONITORING CHECKLIST
(LIQUID PENETRANT EXAMINATION)

DATE:		WORK ORDER No.:	
PART NUMBER:			
SALES ORDER No.:			

EMPLOYEE BEING MONITORED:	
ACTIVITY BEING MONITORED:	
METHOD SPECIFICATION & REV:	
CHECK ITEMS:	

1. Are the correct Work Instructions Available?
2. Do Work Instructions (MS) match what is required by the Route Card, Drawing and QAP?
3. Has the employee familiarized themselves with the Method Specification?
4. Does the employee understand the requirements of the Method Specification?
5. Observe the employee's implementation of the Method Specification?

FLOWSERVE
Raleigh, NC

SOI EXHIBIT

TITLE:
NDE Examiner Monitoring Checklist - *TYPICAL*

EXHIBIT:	Effective Date:	Revision Date:	Page
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FLOWSERVE
RALEIGH

NDE EXAMINER MONITORING CHECKLIST
(LIQUID PENETRANT EXAMINATION)

CHECK FOR THE FOLLOWING:	YES	NO
1 Has the material to be examined been cleaned in accordance with the MS?		
2 Does the lighting meet the minimum requirements of the MS?		
3 Which method of Liquid Penetrant is being used? Solvent Removable OR Post Emulsification		
4 Are the proper Liquid Penetrant materials being used?		
5 Have the correct material batch numbers been recorded?		
6 Has minimum dry time been allowed after cleaning, prior to penetrant application?		
7 Has penetrant been applied in accordance with the MS instructions?		
8 Have Penetrant Dwell Times and temperature requirements been observed?		
9 Have proper Penetrant Removal Techniques been utilized?		
10 Have proper drying Time after Penetrant Removal been observed?		
11 Has developer been agitated and applied within the time specified after the surface has dried?		
12 Has the examiniation of the surface and final interpretation performed within the specified time after applying developer?		
13 After the evaluation is completed, is the test surface cleaned?		
14 Are Test Results properly recorded, all areas of the report completed, proper Acceptance Criteria used for evaluation? Has the Route Card been signed and dated?		
15 If unacceptable indications were identified, was a Reject Ticket prepared which recorded the type of indication, location and extent?		

OBSERVER NAME:	OBSERVER SIGNATURE	DATE

FLOWSERVE
RALEIGH

NDE EXAMINER MONITORING CHECKLIST
(LIQUID PENETRANT EXAMINATION)

DATE:	11/12/12	**WORK ORDER No.:**	401318
PART NUMBER:	013167119117001 – SEAT RING		
SALES ORDER No.:	91170-01		

EMPLOYEE BEING MONITORED:	DONNIE HARPER
ACTIVITY BEING MONITORED:	PT OF SEAT GROOVE/POCKET PRIOR TO HARFACING
METHOD SPECIFICATION & REV:	1151NW REV. 1
CHECK ITEMS:	L-4118-1-1&2

1. Are the correct Work Instructions Available? YES

2. Do Work Instructions (MS) match what is required by the Route Card, Drawing and QAP?
   YES

3. Has the employee familiarized themselves with the Method Specification?
   YES

4. Does the employee understand the requirements of the Method Specification?
   YES- PROCEDURE OPENED TO ACCEPTANCE "A" IN AREA

5. Observe the employee's implementation of the Method Specification?
   YES

FLOWSERVE
RALEIGH

NDE EXAMINER MONITORING CHECKLIST
(LIQUID PENETRANT EXAMINATION)

CHECK FOR THE FOLLOWING:	YES	NO
1 Has the material to be examined been cleaned in accordance with the MS?	X	
2 Does the lighting meet the minimum requirements of the MS?	X	
3 Which method of Liquid Penetrant is being used? (Solvent Removable) OR Post Emulsification	X	
4 Are the proper Liquid Penetrant materials being used?	X	
5 Have the correct material batch numbers been recorded?	X	
6 Has minimum dry time been allowed after cleaning, prior to penetrant application?	X	
7 Has penetrant been applied in accordance with the MS instructions?	X	
8 Have Penetrant Dwell Times and temperature requirements been observed?	X	
9 Have proper Penetrant Removal Techniques been utilized?	X	
10 Have proper drying Time after Penetrant Removal been observed?	X	
11 Has developer been agitated and applied within the time specified after the surface has dried?	X	
12 Has the examination of the surface and final interpretation performed within the specified time after applying developer?	X	
13 After the evaluation is completed, is the test surface cleaned?	X	
14 Are Test Results properly recorded, all areas of the report completed, proper Acceptance Criteria used for evaluation? Has the Route Card been signed and dated?	X	
15 If unacceptable indications were identified, was a Reject Ticket prepared which recorded the type of indication, location and extent? N/A		

VIC SAFARIAN	Vic Safarian	11/12/12
OBSERVER NAME:	OBSERVER SIGNATURE	DATE

FLOWSERVE

DATE INITIATED 9/10/2012	PROPOSAL DUE 10/10/2012	**CORRECTIVE ACTION REQUEST**
MANAGER/SUPERVISOR OR VENDOR Robert Sherman, Operation Manager/ Chris Carter, LC Supervisor		
PART, RT# OR OTHER IDENTIFIER 91176 Body, HT# K5364-1		
10CFR21 EVALUATION REQUIRED? NO		INTERNAL ☒ EXTERNAL ☐
HOW IDENTIFIED: In-process review of welding		CAR # 935
INITIATED BY: James Haithcox, QC/NDE supr	CODE MATERIAL? Y	IF CODE, ANI REVIEW JHH 9/25/12

PROBLEM STATEMENT –(to be completed by QA or responsible department):

Contrary to the requirements contained in welding procedure P8-123N revision 2 the maximum weld height of 1/8" was exceeded during a base metal weld repair to SO 91176 body HT K5364-1 and foreign material "Protect-o-Metal" was in the exclusion zone required by note 4 of the same procedure. The weld bead height was measured at 3/16"

BELOW DESCRIBE THE CONDITION OR CIRCUMSTANCE VIOLATING THE ABOVE LISTED REQUIREMENT

ACKNOWLEDGEMENT OF RECEIPT OF THIS REQUEST (BUYER ACKNOWLEDGES EXTERNAL REQUESTS)	SIGNATURE/DATE Chris Carter 9/19/12

ROOT CAUSE AND PROPOSED ACTION (to be completed by responsible manager or designee)

The failure to maintain a Maximum Bead Thickness in accordance with (QW-403.9) as stated in P8-123NW R/2 is a direct result of unfamiliarity with the WPS on the part of the welder. Training in reading and understanding a WPS will be conducted. A Reject Ticket will be initiated to direct a repair sequence to remove and replace the material welded outside the parameters of the WPS.

The Position of Flowserve Metallurgical Process Control is that there is no violation of the cleaning requirements of Note 4 by a subsequent application of anti-spatter compound. See Justification Below.

ACTIONS WILL BE COMPLETED BY (DATE) 9/21/12	SIGNATURE/DATE Chris Carter 9/21/12

CORRECTIVE ACTION TAKEN TO PRECLUDE RECURRENCE: (attach evidence of actions taken)

9-12-12 Reject Ticket # 136656 has been initiated and will be executed directing a repair sequence to remove and replace the material welded outside the parameters of the WPS.

Note 4 is imposed by reference in WPS P8-123NW R/2 Section (QW-410) Technique. Specifically by QW-410 .5 Initial/Interpass Cleaning. QW-410.5 states "A change in the Method of initial and interpass cleaning (brushing, grinding, etc.).

Note 4 specifically addresses required initial cleaning. The wording incorporates specific text from the Westinghouse Specification APP-GW-VLR-010 and is applicable to the cleaning activity controlled by

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Non-Essential Variable QW-410.5. Following the completion of the cleaning activity a separate activity outside the scope of QW-410.5 is then performed applying a protective coating of anti-spatter compound. This action is separate and distinct from the cleaning activity as addressed in the Non-Essential QW-410.5 and note 4. Consultation with Westinghouse has confirmed that the meaning and intent of the paragraph in APP-GW-VLR-010 does not prohibit the application of anti-spatter compound following the completion of the initial cleaning activity. The application of anti-spatter compound is outside the requirements of the scope of the cleaning activity as delineated in APP-GW-VLR-010. In conclusion, the application of anti-spatter compound does not violate the stated requirements of Note 4 as currently worded in WPS P8-123NW R/2 and submitted, reviewed and approved by Westinghouse.

SUBMITTED BY (printed name) Chris Carter	SIGNATURE AND DATE Chris Carter 9/21/12	
CONFIRMATION OF CORRECTIVE ACTION TAKEN (To be completed by Flowserve QA after review of evidence)		
EVIDENCE SUFFICIENT TO CLOSE? Y ☒ N ☐		**FURTHER FOLLOW UP REQUIRED?** Y ☐ N ☒
CORRECTIVE ACTION REVIEWED BY (QA Manager or Designee)	DATE 9/25/12	**SIGNATURE** R.D. Dan

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DATE INITIATED 9/11/12	PROPOSAL DUE 10/11/2012	**CORRECTIVE ACTION REQUEST**
MANAGER/SUPERVISOR OR VENDOR James Haithcox, Supervisor Quality Control		
PART, RT# OR OTHER IDENTIFIER 91216-01		
10CFR21 EVALUATION REQUIRED? Y ☐ N x		**INTERNAL x EXTERNAL** ☐
How Identified: In-process NDE inspection monitoring by NRC		CAR # 936
INITIATED BY **James Haithcox, QC/NDE supr**	CODE MATERIAL? Y	IF CODE, ANI REVIEW JHC 9/14/12

PROBLEM STATEMENT –(to be completed by QA or responsible department):

Contrary to the requirements of 91216-01 route card sequence 90 for PT inspection of Finish Machine BWE the NDE inspector did not PT the required area of interest.

BELOW DESCRIBE THE CONDITION OR CIRCUMSTANCE VIOLATING THE ABOVE LISTED REQUIREMENT
The NDE inspector misunderstood what finished machine bwe referred therefore he inspected it as RT bwe which does not include the tapered machined area. Since the in-processing by NRC inspector was being conducted the questioning prevented the inspection from being performed incorrectly. The PT inspection was restarted and the proper area of interest was inspected.

ACKNOWLEDGEMENT OF RECEIPT OF THIS REQUEST (BUYER ACKNOWLEDGES EXTERNAL REQUESTS)	SIGNATURE/DATE J Haithcox 9/11/12

ROOT CAUSE AND PROPOSED ACTION (to be completed by responsible manager or designee)

The NDE inspector mixed up the RT and PT sequences which lead to the problem. Training will be held.

ACTIONS WILL BE COMPLETED BY (DATE) 9/12/12	SIGNATURE/DATE J Haithcox QCS 9/12/12

CORRECTIVE ACTION TAKEN TO PRECLUDE RECURRENCE: (attach evidence of actions taken)

Training was conducted on the spot with the NDE inspector on the subject of route card reading, "area of interest" and later on the subject of "Attention to Detail" as an inspector.

SUBMITTED BY (printed name) James Haithcox	SIGNATURE AND DATE J Haithcox QCS 9/12/12

CONFIRMATION OF CORRECTIVE ACTION TAKEN (To be completed by Flowserve QA after review of evidence)

EVIDENCE SUFFICIENT TO CLOSE? Y ☒ N ☐		FURTHER FOLLOW UP REQUIRED? Y ☐ N ☒
CORRECTIVE ACTION REVIEWED BY (QA Manager or Designee)	DATE 9/14/12	SIGNATURE R.D.Dan

FORM Q-985 REV. 2

FLOWSERVE

DATE INITIATED 9/11/12	PROPOSAL DUE 10/11/2012	**CORRECTIVE ACTION REQUEST**
MANAGER/SUPERVISOR OR VENDOR James Haithcox, Supervisor Quality Control		
PART, RT# OR OTHER IDENTIFIER 91227-01		
10CFR21 EVALUATION REQUIRED? Y ☐ N x		**INTERNAL x EXTERNAL** ☐
How Identified: In-process NDE inspection monitoring by NRC		CAR # 937
INITIATED BY **James Haithcox, QC/NDE Supr**	CODE MATERIAL? Y	IF CODE, ANI REVIEW JH 9/14/12

PROBLEM STATEMENT –(to be completed by QA or responsible department):

Contrary to the requirements of MT method specification 1025EN Rev.3 to use 100 -125 amp per inch of prod spacing the NDE inspector setup with 770 but it was measured at 650 amperes at the conclusion of the inspection. Additionally, the air pressure used to remove particles exceeded the defined "gentle air stream" of paragraph 8.1.3 with an air regulator setting of 50 psi. Paragraph 8.1.4 specifies the prod tips need to be kept dressed to reduce arc strikes but the inspection resulted in numerous arc strikes and led to a reduction in ampere output.

BELOW DESCRIBE THE CONDITION OR CIRCUMSTANCE VIOLATING THE ABOVE LISTED REQUIREMENT
The NDE inspector didn't verify that he was maintaining an acceptable amperage during the inspection, keep the prod tips clean to reduce arcing or set the air regulator to produce a gentle stream of air.
the inspection was re-performed correctly. The job was still in process and ~~never~~ was not accepted until the re-inspection.

ACKNOWLEDGEMENT OF RECEIPT OF THIS REQUEST (BUYER ACKNOWLEDGES EXTERNAL REQUESTS)	SIGNATURE/DATE Haithcox QCS 9/11/12

ROOT CAUSE AND PROPOSED ACTION (to be completed by responsible manager or designee)

The inspector did not follow the method specification verbatim as written and displayed a lack of knowledge in maintaining amperage required to conduct a MT correctly. The certified inspection assist didn't recognize the mistakes.
Training of inspector and inspector assist.

ACTIONS WILL BE COMPLETED BY (DATE) 10/11/12	SIGNATURE/DATE Haithcox QCS 9/12/12

CORRECTIVE ACTION TAKEN TO PRECLUDE RECURRENCE: (attach evidence of actions taken)

Training held on the method specification in all of the attributes that were identified.

SUBMITTED BY (printed name) James Haithcox	SIGNATURE AND DATE Haithcox 9/12/12

CONFIRMATION OF CORRECTIVE ACTION TAKEN (To be completed by Flowserve QA after review of evidence)

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EVIDENCE SUFFICIENT TO CLOSE? Y ☒ N ☐		FURTHER FOLLOW UP REQUIRED? Y ☐ N ☒
CORRECTIVE ACTION REVIEWED BY (QA Manager or Designee)	DATE 9/14/12	SIGNATURE

FORM Q-985 REV. 2

FLOWSERVE

DATE INITIATED 9/12/2012	PROPOSAL DUE 10/12/2012	**CORRECTIVE ACTION REQUEST**
MANAGER/SUPERVISOR OR VENDOR James Haithcox, QC/NDE Supervisor		
PART, RT# OR OTHER IDENTIFIER 91175-13		
10CFR21 EVALUATION REQUIRED? N		INTERNAL ☒
HOW IDENTIFIED: In-process review of UT inspection		CAR # 939
INITIATED BY: James Haithcox, QC/NDE supr	CODE MATERIAL? Y	IF CODE, ANI REVIEW see 9/14/12

PROBLEM STATEMENT –(to be completed by QA or responsible department):

Contrary to the requirements of MS 1029NE-B paragraph 9.1 the entire volume shall be examined. SO 91175-13 HT 103163 srl 3, 4, 5 and 6 were not prepped for this full examination but the NDE inspector performed an inspection of an unacceptable surface that prevented inspection of the entire volume.

BELOW DESCRIBE THE CONDITION OR CIRCUMSTANCE VIOLATING THE ABOVE LISTED REQUIREMENT

ACKNOWLEDGEMENT OF RECEIPT OF THIS REQUEST (BUYER ACKNOWLEDGES EXTERNAL REQUESTS)	**SIGNATURE/DATE** J Haithcox 9/12/12

ROOT CAUSE AND PROPOSED ACTION (to be completed by responsible manager or designee)

The NDE inspector tried to apply acceptance criteria to the unacceptable area.
Training to be held. The stems were returned to have the surface prepped before conducting the UT again. The work was in progress and is being worked on the route card.

ACTIONS WILL BE COMPLETED BY (DATE) 10/12/12	**SIGNATURE/DATE** J Haithcox 9/13/12

CORRECTIVE ACTION TAKEN TO PRECLUDE RECURRENCE: (attach evidence of actions taken)

Training held with the NDE inspector about parallel surfaces in order to obtain signal from the back wall of the surface being inspected. Operations supervisor and the engineering manager have committed to training their machinist and to create a drawing for UT preparation.

SUBMITTED BY (printed name) James Haithcox	**SIGNATURE AND DATE** J Haithcox QCS 9/13/12

CONFIRMATION OF CORRECTIVE ACTION TAKEN (To be completed by Flowserve QA after review of evidence)

EVIDENCE SUFFICIENT TO CLOSE? Y ☒ N ☐		**FURTHER FOLLOW UP REQUIRED?** Y ☐ N ☒
CORRECTIVE ACTION REVIEWED BY (QA Manager or Designee)	DATE 9/14/12	**SIGNATURE** K.D. Lang

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