WEP Closure Statement --- Evaluation Report	QUALITY INDICATOR GROUP CLOSURE WELDING WITHOUT PURGE WEP GROUP IDENTIFIER QI-SP-16	Page 1 of 3 Date 01/20/87 Revision 0 WEP Group No 240

Approved _____ Date _____

Reviewed A. E. Bradford 1/23/87 Prepared Jonathan H Jones

Address the following items in the space remaining on this page and on additional pages as needed (see Standard Practice WEP 3.1.10 for specific instructions).

1. Employee Concern(s)/Quality Indicator(s)
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1. Employee Concern(s)/Quality Indicator(s) (Reference 7.1)

Nuclear Regulatory Commission Enforcement Item 50-390/78-3.

Nuclear Regulatory Commission Enforcement Item 50-390/79-41.

2. Characterization of Issue

The two Quality Indicators in Paragraph 1 are Enforcement Items taken from NRC Inspection Reports. They refer to the maintenance of inert gas purge on pipe welds, where required by the weld procedure. In one case, purge was not maintained, resulting in a weld with oxidation and lack of fusion on the inside surface of the pipe. In the other case, exit purge gas oxygen content was found to be above the maximum specified by the weld procedure (1% oxygen).

The initial review of the quality indicators raised a concern as to whether a generic problem existed with maintenance of purge gas flow during welding being properly performed and documented and whether welds idenfitied as being made without purge or with inadequate purge were properly dispositioned.

Tennessee Valley Authority (TVA), General Construction Specification G-29, Process Specification 1.M.1.2(a), Addendum 6, dated October 27, 1977 states: "Purging shall be maintained during welding until a minimum of 3/16 inch of weld metal has been deposited. The exit gas may be analyzed and shall not contain more than 1% oxygen or, if the exit gas is not analyzed, the purge shall be maintained for six volume changes of the purge area prior to welding." (Reference 7.2).

3. Summary

Not applicable.

4. Evaluation Methodology

DOE/WEP Assessment Plan 240 (Reference 7.3) specifies that a 100% document review of selected welds be performed to determine if purging, when required, has been properly documented.

DOE/WEP conducted a document review of the two incidents concerning purge gas which are described in NRC Enforcement Items 50-390/78-3 and 50-390/79-41.

NRC Enforcement Item 50-390/78-3 describes an incident where an NRC inspector questioned a TVA inspector on the acceptability of oxygen level in the exit purge gas. The TVA inspector stated 2% oxygen was acceptable. The exit purge gas oxygen content was measured as 1-1/2 to 2%. TVA Process Specification 1.M.1.2(a) states that purge gas oxygen content, if measured, must be less than 1% (Reference 7.2).

NRC Enforcement Item 50-390/79-41 describes an incident where an ASME pipe weld had a black, sugary appearance, showing lack of internal purge gas.

5. Findings

On NRC Enforcement Item 50-390/78-3, the inspector was given training on the importance of proper purge gas flow and of the importance of accurate documentation. A TVA welding engineer demonstrated that 2% oxygen in the purge gas would not lead to excessive oxidation on the inside of the weld. This incident occurred in Unit 2, which is outside the scope of the DOE/WEP investigation.

On NRC Enforcement Item 50-390/79-41, the weld was cut out and rewelded. Inspection of the weld showed the rework was acceptable. The cause of the weld failure was traced to a defective purge flowmeter. All other purge flowmeters were checked for proper operation (Reference 7.4).

6. Conclusion

DOE/WEP review of NRC Enforcement Items 50-390-78-3 and 50-390/79-41 indicates that compliance with purging requirements was enforced and the reported deficiencies were isolated instances and properly dispositioned.

For this reason, the document review of statistically selected welds required by Assessment Plan 240 was cancelled.

DOE/WEP considers this group closed.

7. References

7.1 Quality Indicators as listed in Section 1.

7.2 Tennessee Valley Authority, General Construction Specification G-29, Process Specification 1.M.1.2(a), Addendum 6, October 27, 1977.

7.3 DOE/WEP Assessment Plan 240, Revision 0, August 16, 1986.

7.4 EG&G Notegram to A. E. Bradford from D. Cochran dated July 30, 1986.

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