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UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
Washington, D.C. 20555

INSPECTION AND ENFORCEMENT MANUAL

DQASIP

INSPECTION PROCEDURE 55150

WELD VERIFICATION CHECKLIST

PROGRAM APPLICABILITY: 2512,2515,2730

55150-01 INSPECTION OBJECTIVE

011 To provide a guidance to the generalist inspector performing inspection of areas interfacing welding.

012 To assure continuing monitoring of welding activities by a generalist inspector throughout the construction phase of the plant as well as during maintenance welding activities at operating plants.

013 To supplement other inspection procedures interfacing welding; i.e., structural, mechanical, QA, etc.

Inspection Schedule

Inspection schedule is as required by the applicable procedure being supplemented or as needed by the user.

55150-02 INSPECTION REQUIREMENTS

For specific area selected for examination, complete applicable requirements (021 through 212) of the enclosed Weld Verification Checklist.

55150-03 INSPECTION GUIDANCE

031 General Guidance

The IE inspector performing the weld verification under this procedure should review the content of IE Procedures 55050, Nuclear Welding and 55100, Structural Welding. The intent of this procedure is to provide guidance to the generalist and resident inspector in order to achieve a continuing coverage of the welding activities taking place at the construction site.

This procedure will also be used to supplement inspection performed under the requirements of other IE Manual procedures covering areas such as piping, mechanical, structural, and civil engineering.

The IE inspector can use this procedure to verify the integrity of a completed weld by performing a documentation review (back tracing) or perform actual verification by observing the making of the weld.

The major elements of the weld verification checklist consists of the following verifications:

- Welding procedure and welder qualifications
- Weld filler metal control
- Welding positions
- Preheat and postheat
- Welding technique
- Visual examination

The checklist is intended to provide macro review of welding activities on a continuing basis and is expected to generate informal communications between the generalist/Resident Inspector using the checklist and the regional welding specialist.

Findings from this inspection should address each element as being satisfactory, being unresolved and requiring resolution or being in violation and requiring correction. When significant inadequacies indicating possible generic deficiency are identified, the issue should be addressed at the appro- priate level of licensee management.

END

E-1 & E-2 do not exist

		YES	NO	REMARKS
021	Identify base materials by material specification type or grade, thickness and/or diameter of pipe.			
	(a) Is the specification listed in Table 4.1.1 of the AWS code or Appendix I of the ASME?	___	___	_____
	(b) Are the base materials listed in the WPS provided for this welding application?	___	___	_____
022	Identify the filler metals by SFA specification and AWS classifications.			
	(a) Is the specification listed in the applicable code; AWS or ASME?	___	___	_____
	(b) Are the filler metals listed in the WPS provided for this welding application?	___	___	_____
023	Determine that base material filler metal combinations are compatible. Use the guidance provided in Table 1 of the IE Inspection Procedure 55050 and Table 4.1.1 of the AWS code as applicable.			
	(a) Are the combinations compatible?	___	___	_____
024	Confirm that production welding is (was) performed using qualified welding procedures approved by cognizant welding engineer. For AWS welding, if prequalified procedures are used, confirm that the WPS are approved by a cognizant welding Engineer.			
	(a) Is (was) production welding qualified?	___	___	_____
	(b) Are (were) welding procedures approved by cognizant welding Engineer?	___	___	_____
	(c) Are (were) AWS prequalified procedures approved by a cognizant welding Engineer.	___	___	_____
025	Confirm that welders and/or welding operators performing production are (were) properly qualified.			
	(a) Are (were) welders and/or welding operators qualified for the welding processes; material configuration and thickness; and welding positions observed?	___	___	_____

		YES	NO	REMARKS
026	If practical, sample adequate number of welders taking the qualification tests and confirm that the person welding the test weldment is indeed the person being qualified. (a) Is the person welding the test weldment indeed the welder being qualified?	___	___	_____
027	If practical, compare the production welding position with the positions qualified by the welding procedure. For AWS welding, if prequalified procedures are used, verify that the positions are included in the welding procedure. (a) Are all welding positions qualified?	___	___	_____
028	Compare production preheat temperatures with the welding procedure preheat temperatures. (a) Are the preheat temperatures within the values recommended by Appendix D of the ASME code or Table 4.2 of the AWS code as applicable? (b) Are (were) production preheat temperatures within the limits identified in the welding procedures?	___ ___	___ ___	_____ _____
029	Identify temperatures, holding time, heating and cooling rates used in production and compare it to the requirements of the applicable welding and/or heat treating procedure. (a) Are the temperatures, holding time, heating and cooling rates in compliance with the applicable procedure?	___	___	_____
030	For welding processes utilizing gas shielding and/or purging, confirm that gas composition and gas flow used in production are within the parameters listed in the welding procedure. (a) Are the compositions and gas flow within the parameters of the welding procedures.	___	___	_____

		YES	NO	REMARKS
210	Confirm that the amperage and voltage values used in production are as stated in the welding procedure and within the parameters listed for the electrode size.			
	(a) Are voltage and amperage values as stated in the welding procedures and within the parameters for the applicable electrode size?	___	___	_____
211	Identify type of welding technique used - string or weave bead. Measure deposited weld metal weave bead width and compare with WPS requirements for size and type of electrode.			
	(a) String technique used?	___	___	_____
	(b) Weave technique used?	___	___	_____
	(c) Measurements within the requirements of WPS?	___	___	_____
212	If practical, visually examine completed weld for discontinuity (such as cracks, lack of fusion, undercut, etc.) and general appearance.			
	(a) Are there any visually identifiable discontinuities?	___	___	_____
	(b) Is the general weld appearance indicative of good workmanship?	___	___	_____