EBASCO SERVICES INCORPORATED

QUALITY ASSURANCE ENGINEERING

This Document is:

- [x] Reviewed Without Comments
- [ ] Reviewed With Comments as Noted; Incorporate Comments, and Resubmit; Proceed With Order.
- [ ] Rejected; Revise and Resubmit

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By: R A Roffe

Date: 4-12-79

Procedure No. W-SITP-4

J. A. JONES CONSTRUCTION COMPANY

SITE INSPECTION AND TEST PROCEDURE

FOR

REINFORCING STEEL - HANDLING, STORAGE, INSTALLING, CADWELDING AND MODIFICATION INSPECTION

WATERFORD SES UNIT NO. 3
CONTRACT NO. W3-NY-4

J. A. JONES CONST. CO.
CONTROLLED DOCUMENT
SET NO. 131

REV.	DATE	ENGINEERING REVIEWED BY	DATE	CONSTRUCTION REVIEWED BY	DATE	QUALITY ASSURANCE APPROVED BY	DATE
0	10/13/75	al Prince	10/14/75	Les Terry	10/14/75	Phillip L. Schoenecke	10/14/75
1	10/21/75	al Prince	10/21/75	Les Terry	10/21/75	[illegible]	10/21/75
2	10/24/75	al Prince	10/24/75	Jerry P. Lemaire	10-24-75	Phillip L. Schoenecke	10/24/75
3	11/6/75	al Prince	11/6/75	Jerry P. Lemaire	11-6-75	[illegible]	11/3/75
4	11/11/75	al Prince	11/13/75	Jerry P. Lemaire	11-13-75	[illegible]	11/13/75
5	12/3/76	al Prince	12/3/76	C E Harris	12-3-76	R M Pelliam	12-3-76
6	12/22/76	E M. Woolery	12-22/76	C E Harris	12-22-76	R M Pelliam	12-22-76
7	2/21/77	J W Honeycutt	2-21-77	D Schweepert	2-21-77	J R Witt	2/21/77
8	2-02-78	E M Woolery	2/28/78	J R Witt	3/1/78	T. M. McAllister	3-1-78
9	10/4/78	E M Woolery	10/4/78	J R Witt	10/4/78	T. M. McAllister	10-4-78
10	12/11/78	E M Woolery	12/11/78	Les Terry	12/12/78	T. M. McAllister	12-11-78
11	1/9/79	E M Woolery	1/10/79	Les Terry	1/10/79	T. M. McAllister	1-9-79

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FREEDOM OF INFORMATION ACT REQUEST
84-455 C/647

SITE INSPECTION AND TEST PROCEDURE:		PROCEDURE NO. W-SITP-4
TITLE:	REINFORCING STEEL - HANDLING, STORAGE, INSTALLING, CADWELDING AND MODIFICATION INSPECTION	REV. NO. 11 DATE: 1/9/79
PROJECT TITLE: WATERFORD SES UNIT NO. 3 CONTRACT NO. W3-NY-4		

1.0 PURPOSE

To specify the methods, techniques and records J. A. Jones will use to verify that reinforcing steel is installed in accordance with approved drawings and specifications.

2.0 SCOPE

This procedure covers the Quality Verification activities for handling, storing, installing, cadwelding and modification of reinforcing steel for Seismic Class I structures.

3.0 REFERENCES

3.1 Ebasco Specification No. LOU-1564.473, "Concrete Reinforcing Steel Furnishing, Fabrication and Delivery," latest revision.

3.2 Ebasco Specification No. LOU-1564.479, "Mechanical Splicing of Concrete Reinforcing Steel - Seismic Class I," latest revision.

3.3 J. A. Jones Procedure No. W-WP-3, "Qualification of Welders".

3.4 J. A. Jones Procedure No. W-WP-4, "Handling, Storing, Installing, Cadwelding and Modification of Reinforcing Steel".

R4 3.5 J. A. Jones Procedure No. W-SP-1, "Special Process Procedure for Cadwelding".

3.6 ANSI Standard N45.2.5-1974 "Supplementary Quality Assurance Requirements for Installation, Inspection and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants", as applicable.

4.0 RESPONSIBILITIES

4.1 Ebasco Services, Inc. is responsible for supplying reinforcing steel, ERICO Cadweld Splice Kits and testing services and records necessary to support J. A. Jones and Subcontractor work activities.

R10 4.2 Quality Verification Inspection is responsible for maintaining a Wall Chart that will be posted in their office to act as an aid in maintaining a status of welders' last weld number, date of last weld, last two rejects, and testing sequence.

~~[illegible]~~ Amanda

To: Controller Quality Assurance & Erection Holder C

From: R A Hartnett

Date: 4-17-79

Please acknowledge receipt of attached Q.A. I. No 1.

Revision No 6 and void/destroy previous revision.

I acknowledge receipt of Q.A.I. No _____, Revision No _____

Signed: _____

Date: _____

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4.2 J. A. Jones and Subcontractors are responsible for compliance with this procedure and for compliance with References 3.1 thru 3.4, as applicable.

4.3 J. A. Jones Engineering is responsible for issuing accurate cadweld mapping to provide the documentation as required by this procedure.

4.4 J. A. Jones Quality Assurance/Verification personnel are responsible to provide the inspection and documentation (records) in accordance with this procedure and to assure compliance with References 3.1 and 3.5.

5.0 DEFINITIONS

5.1 Cadweld - Used interchangeably with "Mechanical Splice", and denoting a splice formed with a sleeve which is placed over the end of a reinforcing bar and filled with molten metal to form a mechanical (shear) means of transmitting longitudinal force from the bar to the member to which the sleeve is attached.

5.2 Acceptable material - Reinforcing steel and cadweld kits which have been received, inspected, tested, green-tagged and issued by Ebasco Services, Inc.

6.0 HANDLING

J. A. Jones Quality Assurance/Verification personnel shall perform surveillance and inspection of reinforcing steel handling to assure no permanent deflection in straight bars and no straightening of prefabricated bars, and no other damage or loss of identification occurs.

7.0 STORAGE

After acceptable material (see paragraph 5.2) has been withdrawn from Ebasco for use, J. A. Jones Quality Assurance/Verification personnel shall provide surveillance activities to assure that materials are stored properly and in case of cadweld splice kits, in accordance with the manufacturer's recommendations. In addition, J. A. Jones Quality Assurance shall receive and file a copy of all completed "Requisition on Warehouse" Forms, Ebasco Form No. 136(X)/2-75.

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8.0 INSTALLING

The assigned Quality Verification Inspector(s) shall perform the following inspections:

8.1 Assure that placing of steel reinforcement is as shown on "approved for construction" drawings and in accordance with "approved for construction" specifications.

8.2 Pay particular attention to reinforcing bar placement to avoid congestion that will hinder the placement of concrete.

8.3 Assure that support steel has been installed in accordance with approved drawings.

8.4 Assure that the material which has been identified for a pour is the material installed.

8.5 Assure that all reinforcing steel, support steel and cadwelds are properly cleaned and free from loose rust, oil, grease, paint (except that used for cadweld status) or other contaminants that will destroy or reduce bond.

9.0 CADWELDING

9.1 Qualification of Personnel:

9.1.1 The assigned Quality Verification Inspector(s) shall verify that only welders qualified in accordance with References 3.3 are used for cadwelding.

9.1.2 The assigned Quality Verification Inspector(s) shall be qualified by a certified cadweld instructor.

9.2 Inspection:

The assigned Quality Verification Inspector(s) shall daily inspect the following in addition to the visual inspection criteria of Reference 3.2:

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9.2.1 That bar ends are thoroughly cleaned by wire brushing to remove all loose mill scale, dirt or other foreign matter.

9.2.2 That bars are heated to remove all moisture.

9.2.3 That, in order to confirm correct centering or bar ends in the splice sleeve, permanent reference marks are made equidistant from the bar ends.

9.2.4 That splice sleeves are free of foreign material or serious rust on the inside surfaces.

9.2.5 That all graphite parts except crucible covers are cleaned as required, using a material or tool that will not damage the graphites.

9.2.6 That proper alignment between sleeve and guide tube is maintained to assure proper fill.

9.2.7 That before ignition all possibility of moisture in the uncompleted splice is avoided by reheating, if required. This particularly applies to cold, damp weather or sub-freezing temperatures.

9.2.8 That no cadwelding takes place during periods of precipitation unless performed under shelters.

9.2.9 If all the above pre-weld inspections are acceptable, including those in Reference 3.2, the Quality Verification Inspector(s) shall initial the pre-weld inspection column of the Daily Cadweld Inspection Report for the applicable cadweld. If any of the pre-weld inspections are unacceptable, the Quality Verification Inspector(s) shall have them corrected prior to igniting the cadweld.

9.2.10 If the final cadweld is acceptable the Quality Verification Inspector(s) shall initial the final weld inspection column of the Daily Cadweld Inspection Report for the applicable cadweld.

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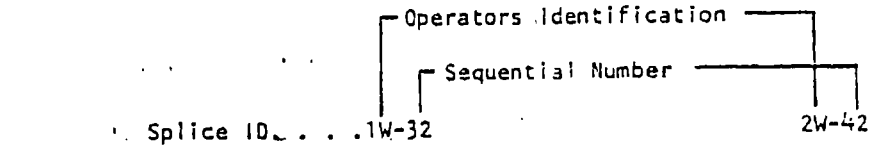
9.2.11 If the final cadweld is unacceptable, the Quality Verification Inspector(s) shall indicate the unacceptability in the final weld inspection column and initial. Replacement welds for rejected weld shall be referenced in the comments column of the Daily Cadweld Inspection Report.

10.0 SPLICE IDENTIFICATION AND TRACEABILITY

10.1 The Quality Verification Inspector(s) shall assure that the identification number is stamped on the visible side of the sleeve. He shall also assure accurate recording of the splice identification number on the cadweld map or Cadweld Map Log (RCB only).

10.1.1 A symbol will be stamped on the cadweld sleeve indicating the assigned identification letter(s) of the operator or crew, the sequential number of the weld (starting from the first weld made by the crew and continuing without interruption).

Note: If the splice is a replacement weld, the next sequential number of the welder replacing the splice will be stamped on the sleeve and entered in the "Daily Cadweld Inspection Report" (see Attachment 14.3) and a notation in the comments column reflecting that the original splice was replaced by the new splice number.



10.1.2 At the time of visual inspection of a splice, the Quality Verification Inspector(s) shall record the above information plus bar size and position on the "Daily Cadweld Inspection Report", and spray the sleeve with a small spot of paint according to the color code:

Accepted:	White
Test Specimen:	Yellow
Rejected:	Red

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10.1.3 All cadwelds within a pour must be accepted, and therefore painted white, before concrete may be placed.

10.2 J. A. Jones' Engineering group shall prepare detailed cadweld mapping drawings which will be layed out by layer, by pour.

10.3 The assigned Quality Verification Inspector(s) shall use the cadweld maps to record the following:

10.3.1 Verification of the location of each splice.

10.3.2 Inspector will also enter on the "Daily Cadweld Inspection Report" in the Map Number Column the map number of each splice recorded to provide traceability between the cadweld map and the "Daily Cadweld Inspection Report."

11.0 TESTING OF SPLICES

11.1 The assigned Quality Verification Inspector(s) shall assure that the frequency of splice testing as defined in Reference 3.2 is complied with. He shall record on the cadweld map and on the Daily Cadweld Inspection Report (Attachment 14.1) all data concerning locations and types of test splices and their replacements.

11.2 J. A. Jones Quality Verification Inspector(s) shall assure that the splice test samples taken are tagged properly (Attachment 14.5), handled properly, and depositing of test samples at a secured point for pick-up by testing laboratory. All test forms and tags should accompany or be attached to test samples.

11.3 All splice tests will be considered on hold by J. A. Jones until a report on cadweld test splices have been received from the testing laboratory. The results of the tests will be recorded on a weekly basis on the "Weekly Cadweld or Rebar Test Report," Attachment 14.2.

12.0 MODIFICATIONS

The assigned Quality Verification Inspector(s) shall assure that modifications to reinforcing steel are made in accordance with Reference 3.2 and 3.4.

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13.0 RECORDS

R 8 All records will be complied and filed by pour number. After the pour has been completed and accepted by Ebasco, the records will be turned over to Ebasco Quality Assurance for purchaser records.

14.0 ATTACHMENTS

14.1 Daily Cadweld Inspection Report (Form No. W-SITP-4.1)

R-8 14.2 Weekly Cadweld or Rebar Test Report (Form No. W-SITP-4.2)

14.3 (Sample) Daily Cadweld Inspection Report

R-8 14.4 Report of Tensile Tests - Cadweld Splices

14.5 Cadweld Test Splice Tag (Sample)

14.6 Cadweld Map Log (Form No. W-SITP-4.6)

R 1 14.7 Cadwelders Weld Status

J. A. JONES CONSTRUCTION COMPANY
WATERFORD UNIT NO. 3

DAILY CADWELD INSPECTION REPORT
(one form for each operator or crew per day)

Inspectors:_____
Name & Initials:_____

Job:_____
Date:_____

SPLICE I.D.	SLEEVE LOT NO.	POWDER LOT NO.	INSPECTIONS STATUS		COMMENTS	MAP NUMBER	PULL FOR TEST
			PRE-WELD	FINAL WELD			

Form No. W-SITP-4.1
Page No._____

Attachment 14.1

Project_____

Date_____

J. A. JONES CONSTRUCTION COMPANY
WATERFORD UNIT NO. 3

WEEKLY CADWELD OR REBAR TEST REPORT

Spec No._____

Lab. Insp._____

Tested Week of_____

Sheet _____ of _____

TEST DATE	TEST NO.	IDENTIFICATION	YIELD STRENGTH (KSI)		TENSILE STRENGTH (KSI)		REMARKS
			TEST RESULT	REQUIRED MIN.	TEST RESULT	REQUIRED MIN.	

Attachment 14.2
Form No. W-SITP-4.2

S - Satisfactory
U - Unsatisfactory

J. A. JONES CONSTRUCTION COMPANY
WATERFORD UNIT NO. 3

DAILY CADWELD INSPECTION REPORT
(One Form For Each Operator Or Crew Per Day)

Inspectors: _____
Name & Initials: _____

Job: _____
Date: _____

SPLICE I.D.	SLEEVE LOT NO.	POWDER LOT NO.	INSP. STATUS		COMMENTS	MAP NUMBER	TEST
			PRE-WELD	FINAL WELD			

Attachment 14.1

Form No. W-SITP-4.1
Page No. _____

R4

J. A. JONES CONSTRUCTION COMPANY
WATERFORD UNIT NO. 3

DAILY CADWELD INSPECTION REPORT
(one form for each operator or crew per day)

Inspectors: John Doe
Name & Initials: John Doe (J.D)

Job: 75-317
Date: 30 Feb. 1975

SPLICE I.D.	SLEEVE LOT NO.	POWDER LOT NO.	INSPECTIONS STATUS PRE-WELD	INSPECTIONS STATUS FINAL WELD	COMMENTS	MAP NUMBER	PULL FOR TEST
10-18H	735	P11771	JD	JD	Replaces Splice No. 3W8		
Position	Not stamped on sleeve but entered by inspector						
Bar Size							
Sequential	Number						
Operator's	ID						

SAMPLE

Attachment 14.3

Form No. W-SITP-4.1
Page No.

WATERFORD STEAM ELECTRIC STATION

1980 - 1165 MW INSTALLATION - UNIT NO. 3

REPORT OF TENSILE TESTS - CADWELD SPLICES

POUR NO._____

Portion to be Completed by Inspector Requesting Test

Cadweld Operator and Sequential Number_____

Date Cadweld Splice Completed_____

Position of Splice - Vertical - Horizontal - Other_____

Size of Rebar Spliced_____ Type of Splice: Sister or Production

Filler Material Cartridge No. _____

Inspector Signature_____ Date_____
J. A. Jones Q. V.

Portion to be Completed by Testing Laboratory

Lab Report Number _____

Total Load, Lbs.	Strength, PSI	Position of Failure
*Tensile -		

Lab Tech. Signature_____ Date_____

Remarks: _____

Portion to be Completed by J. A. Jones Q. A.

Does Test Results Comply with Applicable Specifications? Yes_____ No _____

Remarks:_____

Signature_____ Date_____
J. A. Jones Q. A.

*Minimum Tensile Strength - 125% of Minimum Yield Strength = 75,000 Lbs. (LOU-1564.479)

cc: Ebasco Engineering
1/30/78

ATTACHMENT
W-SITP-4.4

DATE_____ INSPECTOR: _____

CADWELD TEST SPLICE

SPLICE NO._____ SIZE & POSITION_____

BUILDING _____

POUR NO._____

J. A. JONES CONSTRUCTION COMPANY

ATTACHMENT NO. 14.5

R-8

CADWELD MAP LOG

Placement/Map No. 539-1

Drawing No. G544

Building: Reactor

SLEEVE I.D	RADIUS	AZIMUTH	N-S	E-W	ELEV.	BAR SIZE/ POSITION	REMARKS
J59-1000	17'-0½"	90°	NA	NA	-10.0	#14 H	Radius Point - ℄ Reactor } Sample for
J59-1001	17'-0½"	135°	NA	NA	-9.0	#14H	} Radial Bar
J59-1002	17'-0½"	160°	NA	NA	-10.0	#14 H	
J59-1007	NA	NA	7'-0N	18'-0E	-10.0	#11 H	} Sample for non-radial bars
J59-1008	NA	NA	9'-0N	18'-0E	-9.0	#11 H	

Sample

NOTE: N-S & E-W Directions are from the Center Line of the RCB and are to be indicated along with the dimension. Radius Point to be indicated in Remarks Column.

J. A. JONES CONSTRUCTION COMPANY

Engineer [signature] Date 2/20/78

Q. V. Inspector [signature] Date 2-20-78

Attachment 14.6
Form No. W-SITP-4.6

J. A. JONES CONSTRUCTION COMPANY, WATERFORD UNIT #3

CADWELDERS WELD STATUS

CADWELDER NUMBER	LAST WELD NUMBER	LAST WELD DATE	LAST TWO WELD REJECTS	TEST SEQUENCE ACTUAL / PROPOSED	REMARKS
1-W	1744	12/7/78	None	1707, 1728, 1744 / 1707, 1720, 1740, 1765	Cert. 10/2/78 Both Vert & Horz. #11 & #14
27-W	0	0	0	8, 24, 50, 75, 92	Cert. 10/23/78, Both Vert & Horz. #11 & #14 Never Welded

SAMPLE