

ILLINOIS POWER COMPANY



CLINTON POWER STATION, P.O. BOX 678, CLINTON, ILLINOIS 61727

July 15, 1985

Docket No. 50-461

Director of Nuclear Reactor Regulation
Attn: Mr. W. R. Butler, Chief
Licensing Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Clinton Power Station Unit 1
Illinois Power Company Endorsement of Visual
Weld Acceptance Criteria (VWAC), Revision 2

Dear Mr. Butler:

Please find attached for the Staff's review, advanced copies of revised Clinton Final Safety Analysis Report (FSAR) pages, which incorporate Illinois Power's adoption of Visual Weld Acceptance Criteria (VWAC) for AWS Structural Welding at Nuclear Power Plants, Revision 2. This revision of VWAC, which was prepared by the Nuclear Construction Issues Group (NCIG), was accepted by the NRC Staff on June 26, 1985, and has been endorsed by our designer, Sargent & Lundy, for use at Clinton Power Station (CPS). On the basis of these endorsements, we are adopting this revision and will be incorporating the enclosed pages into the CPS-FSAR. This incorporation will take place in Amendment 34, which is currently scheduled for publication later this month. Your timely review and approval of this material is requested to support implementation of these visual weld acceptance criteria at CPS by August 10, 1985.

Please contact us if you have any questions regarding this matter.

Sincerely yours,

F. A. Spangenberg
Director Nuclear Licensing
and Configuration
Nuclear Station Engineering

RTR/lab

Attachment

cc: B. L. Siegel, NRC Clinton Licensing Project Manager
NRC Resident Office
Regional Administrator, Region III, USNRC
Illinois Department of Nuclear Safety

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TABLE 1.8-4 (Cont'd)

SPECIFICATION REFERENCE NUMBER	SPECIFICATION OR STANDARD DESIGNATION	TITLE	EDITION	REMARKS
22	AISI	Specification for the Design of Light Gage Cold-Framed Steel Structural Members	1958 or 1980	
23	AWS D1.1	Structural Welding Code (with required visual inspection based upon VWAC, Revision 2)	1976 or 1977	See Note 1
24	AWS D12.1.61	Recommended Practice for Welding Reinforcing Steel, Metal Inserts and Connection in Reinforced Concrete Construction	1961	
25	ASME	ASME Boiler and Pressure Vessel Code, Section III, Division 1, NE	1971 with Summer of 1973 Addenda	For Containment Locks and Hatches
25a	ASME	ASME Boiler and Pressure Vessel Code, Section III, Division 1, NE	1974 with Summer of 1976 Addenda	For Drywell Locks and Hatches
25b	ASME	ASME Boiler and Pressure Vessel Code, Section III, Division 1, NF	1974 with Winter of 1975 Addenda	For Reactor Pedestal
25c	ASME	ASME Boiler and Pressure Vessel Code, Section III, Division 1, ND	1977	For Fuel Pool Gates
25d	ASME	ASME Boiler and Pressure Vessel Code, Section III, Division 2	1977	For Fuel Pool Liners
26	(Deleted)			
27	(Deleted)			
28	ASTM	Annual Books of ASTM Standards		
29	(Deleted)			
30	(Deleted)			
31	UBC	Uniform Building Code	1970 or 1979	
32	(Deleted)			
33	(Deleted)			
34	(Deleted)			
35	NRC Regulatory Guide 1.10	Mechanical Coldweld Splices in Reinforcing Bars of Concrete Containments	Feb. 1, 1971	Withdrawn by the NRC 7/8/81
36	NRC Regulatory Guide 1.12	Instrumentation for Earthquakes	Rev. 1, Apr. 1974	
37	NRC Regulatory Guide 1.13	Fuel Storage Facility Design Basis	Rev. 1, Dec. 1975	
38	NRC Regulatory Guide 1.15	Testing of Reinforcing Bars For Concrete Structures (revision 1)	Dec. 28, 1972	Withdrawn by the NRC 7/8/81
39	NRC Regulatory Guide 1.18	Structural Acceptance Test for Concrete Primary Reactor Con- tainments (Revision 1)	Dec. 28, 1972	Withdrawn by the NRC 7/8/81
40	NRC Regulatory Guide 1.19	Nondestructive Examinations of Primary Containment Liner Welds (Revision 1)	Aug. 11, 1972	Withdrawn by the NRC 7/8/81
41	NRC Regulatory Guide 1.26	Quality Group Classifications and Standards	Rev. 1, Feb. 1976	
42	NRC Regulatory Guide 1.27	Ultimate Heat Sink	Rev. 2, Jan. 1976	
43	NRC Regulatory Guide 1.29	Seismic Design Classification	Rev. 3, Sept. 1978	

TABLE 3.8-4 (Cont'd)

SPECIFICATION REFERENCE NUMBER	SPECIFICATION OR STANDARD DESIGNATION	TITLE	EDITION	REMARKS
44	NRC Regulatory Guide 1.31	Control of Stainless Steel Welding	Rev. 3, Apr. 1976	
45	(Deleted)			
46	CRSI	Manual of Standard Practice	1973	
47	ANSI N45.2.5	Proposed Supplementary QA Requirements for Installation, Inspection and Testing of Structural Concrete and Structural Steel during Con- struction Phase of Nuclear Power Plants	1974	
48	NRC Regulatory Guide 1.55	Concrete Placement in Category I Structures	Rev. 0, June 1973	Withdrawn by the NRC 7/8/81
49	NRC Regulatory Guide 1.57	Design Limits and Loading Combinations for Metal Primary Reactor Containment Systems and Components	June 1973	
50	NRC Regulatory Guide 1.136	Materials for Concrete Contain- ments (Article CC-2000 of the Code for Concrete Reactor Vessels and Containments)	Rev. 1, Oct. 1978	

Explanation of Abbreviations

ACI	-	American Concrete Institute
AISC	-	American Institute of Steel Construction
AISI	-	American Iron and Steel Institute
ANSI	-	American National Standards Institute
API	-	American Petroleum Institute
ASME	-	American Society of Mechanical Engineers
ASTM	-	American Society for Testing and Materials
AWS	-	American Welding Society
CRSI	-	Concrete Reinforcing Steel Institute
NEC	-	National Electric Code
NRC	-	Nuclear Regulatory Commission
UBC	-	Uniform Building Code
VWAC	-	Visual Weld Acceptance Criteria

NOTES:

1. Clarification to and deviation from portions of AWS D1.1 (and VWAC Revision 2 for visual inspection of welds made to the requirements of AWS D1.1) are made based on engineering evaluations.

B.3 STRUCTURAL STEEL

B.3.1 Structural Steel Materials

Structural support steel was ASTM A36-75, ASTM A572-76, Grade 50 and ASTM A588-75 Grade 50 high strength, low alloy corrosion-resistant steel.

B.3.2 Structural Steel Connections and Connection Material

B.3.2.1 Bolted Connections

High strength structural steel connections used ASTM A325 and ASTM A490 friction-type high strength bolts. These connections conform to AISC Specifications. For other types of connections ASTM A36 material was used for threaded rods, ASTM A307 was used for headed bolts and ASTM A307 or A563 material was used for nuts.

B.3.2.2 Welded Connections

Standard welded beam connections conformed to Table III or IV of AISC Manual, Seventh Edition. Shop and field welding procedures were in accordance with AWS Specifications listed in Table 3.8-4. Selection of electrodes and recommended minimum preheat and interpass temperature were in accordance with AWS requirements. All welders and welding operators were certified by an approved testing laboratory and were qualified under AWS procedure as stated in AWS Specifications.

B.3.3 Quality Control

B.3.3.1 General

Quality control requirements were applied to the fabrication and testing of structures and components. Certified material test reports were furnished stating the actual results of all chemical analyses and mechanical tests required by ASTM specifications. Identifying heat numbers were furnished on all structural steel to trace the steel to the specific heat in which the steel was made.

B.3.3.2 Testing and Inspection of Weldments

One hundred percent of all complete penetration groove welds for beams, girders, and columns had complete radiographic

examination, except that welds impractical to radiograph were examined by ultrasonic and either magnetic particle or liquid penetrant methods.

The above nondestructive test methods were in compliance with applicable sections of the following ASTM specifications:

- a. E94-68, "Recommended Practice for Radiographic Testing,"
- b. E142-77, "Controlling Quality of Radiographic Testing,"
- c. E164-74, "Recommended Practice for Ultrasonic Contact Examination of Weldments,"
- d. E109-63, "Dry Powder Magnetic Particle Inspection,"
- e. E138-63, "Wet Magnetic Particle Inspection,"
- f. E165-75, "Recommended Practice for Liquid Penetrant Inspection Method," and
- g. AWS D1.1. (as clarified VWAC, Revision 2).

All other weld joints including fillet welds, were 100% visually examined. The visual examination conformed to all applicable requirements of AWS D1.1 through July 1985. Visual welding inspection after that date was performed to the criteria contained in VWAC Revision 2. Clarifications to and deviations from portions of AWS D1.1 (and VWAC Revision 2) are made based on engineering evaluations.

B.3.3.3 Fabrication

The fabrication of structural steel conformed to AISC "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings," 1969 or 1978.

B.4 REACTOR PEDESTAL-SHIELD WALLB.4.1 Type of Construction

The reactor pedestal and the reactor shield wall are shell-type structures fabricated from steel plates.

The materials, fabrication, erection, and examination procedures for the reactor pedestal conformed to the requirements of Articles NF-2000, NF-4000, and NF-5000 of the ASME Boiler and Pressure Vessel Code, Section III, Division 1, 1974 Edition, Winter 1975 Addenda and applicable code cases acceptable to consulting engineers for a plate and shell-type Class I component support. The pedestal was not inspected by the authorized nuclear inspector (ANI) nor stamped in accordance with Section III of the ASME Code.

B.4.2 Materials

Materials used in the reactor pedestal and reactor shield wall conform to the following specifications:

Reactor Pedestal ApplicationSpecification

Shell plates and diaphragms

A588, Grade A or Grade B

Plates highly stressed in the through-gauge direction

A588 made by electroslag remelt process

Penetration sleeves

SA-333
SA-316

Shield Wall ApplicationSpecification

Shield plates and diaphragms

A588, Grade A or Grade B

Reactor Holddown Bolting
MaterialsSpecification

Studs-nuts

SA-540, B-23, Class 4

B.4.3 WeldingB.4.3.1 Reactor Pedestal

The reactor pedestal was fabricated in accordance with the requirements of NF-4000, ASME Code, Section III, 1974 Edition, Winter 1975 Addenda. Shop and field welding procedures were in accordance with the requirements of ASME Section III and Section IX. Recommended minimum preheat, interpass temperature and postweld heat treatment were in accordance with ASME Section III requirements. All welders and welding operators were qualified in accordance with ASME Section IX.

SUBJECT: IPC Endorsement of Visual Weld
Acceptance Criteria (VWAC),
Revision 2

U-600192
L30-85(-)-L
1A.120

- bcc
- ⑨ W. C. Gerstner, B-13
 - ⑨ D. P. Hall, V-275
 - H. E. Daniels, V-650
 - J. S. Perry, V-275
 - S. B. Fisher, V-913
 - ⑤ J. W. Wilson, T-31-2009 *to*
 - ⑦ J. H. Greene, V-130 *re*
 - ⑥ H. R. Victor, V-928 *AW/ant*
 - W. Connell, V-923
 - J. R. Patten, V-922
 - A. E. King, V-500
 - L. W. Osborne, V-900
 - J. G. Cook, T-31
 - R. E. Wyatt, V-914
 - C. D. Schaefer, V-913
 - J. S. Spencer, V-920
 - ⑧ ④ F. A. Spangenberg, V-920 ④ 20 7/9/85
 - R. E. Campbell, V-923
 - K. B. Roys, V-645
 - D. K. Schopfer, V-270
 - J. Greenwood, V-600
 - H. M. Sroka, S&L (Atten: R. C. Heider)
 - S. A. Zabel, Schiff, Hardin & Waite
 - G. L. Edgar, Newman & Holtzinger
 - P. J. Telthorst, IPC (Newman & Holtzinger)
 - CPS Central File, T-31
 - ① R. T. Reese, V-920 Author(s)

7/11/85
Approved
for signature
if you have
a written
acceptance/concurrence
from S & L
7/12/85

Note for D.P. Hall:

S&L letter

SL5-I-5146 dated
6/4/85 acknowledges
concurrence.

J.A.S. III

Technical Validators

- ③ 1. J. Karr, V-923 *7.4.85*
- ② 2. J. M. Scott, V-928 *7/9/85*

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