U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Report No. 85-08

Docket No. 50-354

License No. CPPR-120 Priority --- Catergory C

Licensee: Public Service Electric & Gas Company

80 Park Plaza - 17C

Newark, New Jersey 07101

Facility Name: Hope Creek Unit 1

Inspection At: Hancocks Bridge, N. J.

Inspection Conducted: April 8 thru May 3, 1985

Inspectors: H. W. Kerch, Lead Reactor Engineer — 6/20/85 date

R. H. Harris, NDE Technician — 6/20/85 date

R. M. Campbell, NDE Technician — 6/20/85 date

Approved by: J. T. Wiggins, Chief, Materials and Processes Section, DRS — 6/20/85 date

Inspection Summary: Inspection on April 8 thru May 3, 1985 (Report No. 50-354/85-08)

Areas Inspected: A routine, announced NRC independent measurements inspection was conducted at the utility construction site using the NRC Mobile Non-destructive Examination (NDE) laboratory. Selected safety related piping, weldments fabricated to ASME Code, Section III, Classes 1,2 and 3 and ASME Code Section XI pre-service requirements were inspected. Three regional based inspection personnel assisted by two contracted NDE personnel were utilized during this inspection. The inspection involved 473 onsite hours and 168 offsite hours.

Results: No violations were identified.

DETAILS

1. Persons Contacted

Public Service Electric & Gas Company (PSE & G)

*A. E. Giardinao, Quality Assurance Manager
*A. D. Barnabei, Quality Assurance Engineer
*R. T. Griffith, Quality Assurance Engineer
*R. Donges, Lead Quality Assurance Engineer
*S. LaBruna, Assistant General Manager
*G. D. Owen, Principal Site Construction Engineer
*J. Nichols, Technical Manager
*C. W. Lambert, Supervising Engineer
*G. S. Daves, Senior Operations Engineer
*P. Kudless, Maintenance Manager
*E. C. Logan, Site Manager
*T. G. Busch, Technical Engineer
*M. F. Metcalf, QA Startup Engineer
*R. F. Brandt, Plant Engineer
*G. L. Duncan, Senior ISI Supervisor
V. J. Bleux, Construction Manager
W. Bloemer, Construction Engineer
K. McJunkin, Construction Engineer
G. Morrill, Radiation Protection Supervisor
*R. P. Inversa, Construction Contract Supervisor

Bechtel Construction Company

*W. Goebel, Quality Assurance Engineer
*B. Cole, Site Quality Assurance Engineer
*S. L. Vezendy, Assistant Quality Control Engineer
*C. D. Headrick, Quality Control Engineer
*M. J. Dutra, NDE Level III
*G. Moulton, Quality Assurance Engineer
*W. E. Mouer, Manager Site Construction
*W. D. Griffin, Project Field Engineer
A. J. Peter, Senior Safety Representative
E. Steiner, Quality Control
R. C. Hanselman, Weld Engineer
N. Wypyck, Lead NDE
C. H. Cecil, Lead Contract Engineer

General Electric Company

C. T. Brinson, Quality Assurance Engineer

U. S. Nuclear Regulatory Commission

*S. D. Ebneter, Director, Division of Reactor Safety
*A. Kortas, Reactor Engineer

*M. Dev,, Reactor Engineer
*N. Blumberg, Lead Reactor Engineer
*H. I. Gregg, Lead Reactor Engineer
S. K. Chaudhary, Senior Resident Inspector
A. R. Blough, Senior Resident Inspector
J. J. Lyash, Resident Inspector

2. Independent Measurements - NRC Nondestructive Examination and Quality Records Review of Safety Related Systems

During the period April 8 through 18, 1985, quality records received from Hope Creek Nuclear Plant #1 were reviewed in the regional office for completeness and compliance to the licensee's FSAR commitments to applicable codes, standards and specifications. Subsequently, an on-site independent verification inspection was conducted during the weeks of April 22 through May 3, 1985 using the NRC Mobile Nondestructive Examination (NDE) Laboratory. This inspection was conducted by region based personnel in conjunction with NRC contracted personnel.

The purpose of this examination was to verify the adequacy of the licensee's welding and nondestructive examination quality control programs. This was accomplished by duplicating those examinations required of the licensee and evaluating the results. In addition to the required examinations, several other confirmatory examinations designed to verify conformance with material specifications were performed and compared to quality assurance records.

An NRC inspector made a random selection of shop and field weldments fabricated to AWS and ASME Class 1, 2 and 3 codes. These were intended to provide a representative sample of piping systems, components, and pipe size. The items selected had been previously accepted by the licensee based on vendor shop and on site QA/QC records.

2.1 Quality Documents Review

Forty-eight safety related piping system document packages covering the items shown in attachment 3 were reviewed for compliance with licensee procedures, applicable codes, standards and regulatory requirements. The following documents were reviewed:

Document	Attributes Reviewed
Material Certifications (Base)	Material chemical and physical properties compared to standards and Code requirements.
NDE Records	Examinations meet codes and standards, licensee procedures and other commitments. Personnel properly qualified. Appropriate examinations performed.

Fabrication Records	A review of fabricators traveler and fabrication record was reviewed and compared against other corresponding records and sign off sheets.
Drawings (isometrics)	Drawings were reviewed for proper designation of weldments, location and classification.
Procedures	Procedures were reviewed for completeness, and to verify the implementation of the licensee's commitments to Code requirements.
Welding Material	Material certifications for welding materials were reviewed to determine if physical and chemical properties were as required by licensee's commitments to Code and Industry Standards.

Results: No violations were identified.

2.2 Nondestructive Examinations:

Nondestructive examinations were performed using NRC procedures with addenda written specifically to comply with the licensee's PSAR commitment to the ASME B&PV Code. The intent was to duplicate, to the extent practicable, the techniques and methods of the original examinations.

The following examinations were performed:

Radiographic Examination:

Thirty-nine pipe weldments were radiographed using an Iridium-192 source per NRC procedure NDE-5-Rev.0 addenda HC-1-5-1. The weldments examined were ASME class 1 and 2. The resulting radiographs were evaluated per applicable Code requirements and compared to the licensee's radiographs.

Results: No violations were identified.

Socket Welds:

Eighteen socket welds were visually examined and radiographed to ascertain minimum gap required during fit-up prior to welding.

Results: No violations were identified.

Penetrant Examination:

Thirty-one safety related pipe weldments and adjacent base material (½"either side of weld) were examined using liquid penetrant techniques per NRC procedure NDE-9, Rev.0 addenda HC-1-9-1. Samples included ASME Class 1 and 2.

Results: No violations were identified.

Visual Examination:

Eighty-nine weldment and adjacent base material (½" either side of weld) were visually inspected for weld reinforcement, rejectable visual indications, surface condition and overall workmanship per NRC procedure NDE 14, Rev.0.

Results: No violations were identified.

Magnetic Particle Examination:

Twenty-four safety related pipe weldments and adjacent base material (½" either side of weld) were methods examined by magnetic particle per NRC procedure NDE 6 Rev.0 addenda HC-1-6-1. Samples included ASME class 1 and 2.

Results: No violations were identified.

Utrasonic Examination:

Two (2) safety related pipe weldments were examined using a Sonic Mark I ultrasonic flaw detector per NRC procedure NDE-Rev.0 and Southwest Research Institute procedure, SWRI-600-41-Rev.9. Weldments examined were identified on SWRI ultrasonic examination records as line 1-BC-18GBB-063A, ID-12 and ID-8.

Instrument Calibration was performed using NRC procedure NDE-2, Instrument linearity verification. Distance Amplitude Correction (DAC) was constructed using SWRI calibration block 18-CS-XS-500-22-HPC. Instrument settings and the search unit were matched as close as possible to those for the original examinations in order to duplicate the original examinations.

Results: No violations were identified.

Hardness Measurements:

Twenty-three weldments and adjacent base metal were checked for hardness using the Equo-tip hardness tester per NRC procedure NDE-12, Rev.0. Hardness numbers were converted to Brinnell values and approximate tensile strength was determined by use of conversion tables.

Results: No violations were identified.

Thickness Measurements:

Fifty-one weldments and adjacent pipe material were examined to determine minimum wall thickness per NRC procedure NDE-11, Rev.0. Measurements were performed using a NOVA-D 100 thickness gauge. Minimum wall thickness was determined by use of ASTM standard pipe size and nominal thickness chart.

Results: No violations were identified.

Ferrite Measurements:

Nine pipe welds were checked for delta ferrite content using a Type II Ferrite Indicator (Severn Gauge). This test was to verify that welding filler metal compositions achieved as deposited microstructures with delta ferrite content adequate to eliminate possible hot cracking.

Results: No violations were identified.

3. Radiographic Review

A sampling of the licensee's radiographs were reviewed to verify compliance of the nondestructive examination program to ASME III Code requirements. The inspector reviewed nineteen field welds and ninety-two shop welds to verify the accuracy of interpretation and the adequacy of the licensee's radiographic program. Also thirty-seven of the above welds were re-radiographed by the NRC and these re-radiographed welds were compared to site file films in order to irdependently verify the correct radiographic file film was on hand. During this review the following shop welds required surface checks in order to resolve indications not properly documented on radiographic reader sheets.

1-BE-050-512-D, 1-BD-003-508-G, 1-BE-022-504-A
1-BE-066-501-F, 1-BC-075-509-D, 1-BC-072-506-E

Results: Although no violations were identified, the following were noted:

During NRC review of radiographic film for weld 1-AP-003-502-H, the inspectors noted that the film contained an apparent indication which was not properly documented on the licensee's radiographic reader sheet. In response to this finding, the licensee re-radiographed and properly reviewed the film for this weld. The weld was found to be acceptable. The inspector reviewed the radiographs and reader sheets and concurred with the licensee's data.

The radiographic reader sheet for weld 1-BC-072-505-233-D, dated 4 January 78, did not reflect the fact that film area 3-4 was radiographed at a different time, using a different technique than the remainder of the

weld. This item remains unresolved pending completion of the licensee's evaluation and NRC review (unresolved item 50-354/85-08-01).

4. Followup On Items From A Previous Inspection

The inspector reviewed previous NDE van inspection concerns, such as archive quality checks on radiographic film. Review of documented records indicates archive quality checks have been performed. The inspector requested a archive quality check to be performed. Different speed films were selected and the archive quality check of the fixer removal was satisfactory.

Radiographic procedure RT-HC-77-9-12-2 required two technical changes to address the use of non-standard RT techniques. These changes were subsequently incorporated in the licensee's radiographic procedure revision RT-HC-77-9-12-3.

The inspector had no further concerns with the above items.

5. Preservice Inspection (PSI) Program

The inspection selected ultrasonic calibration block 14-CS-STD-375-16-HPC to verify that the right calibration block was used for weld examination. He verified the dimension of the calibration block were adequate and that the dimensions were traceable to the National Bureau of Standards (NBS). Material Certification and documentation of the calibration block was also verified.

The inspector also reviewed fourteen ultrasonic and magnetic particle data reports for the following welds: 1-AE-24DLA-035-1 thru 13 and 15. No problems were found.

In the case of weld 1-AE-24DLA-035-6, Southwest Research Institute (SWRI) ultrasonic data record sheet 890027 indicated an examination limitation due to weld spatter. The UT record was accepted by all concerned. Southwest Research Institute procedure NQAP-13-1 requires customer notification (CNF) when an examination limitation is encountered. This should have been reported to the licensee and the weld spatter removed and the weld re-examined. This matter remains unresolved pending completion of the licensee's evaluation to determine if it was an isolated case or indicative of a more widespread problem. (unresolved 50-354/85-08-02)

6. Review of NDE Procedures

The following NDE procedures were reviewed to verify their technical adequacy and their conformance to Code requirements:

Branch Radiographic Lab Inc

Magnetic Particle - MT-HC-77-9-12-3

Liquid Penetrant - PT-HC-77-9-12-3
Radiography - RT-(ASME)-HC-77-9-12-3

Southwest Research Institute

Ultrasonic - SWRI-NDT-600-41- Rev.9
Magnetic Particle - SWRI-NDT-300-1 Rev.23
Liquid Penetrant - SWRI-NDT-200-1 Rev.55
Visual - SWRI-NDT-900-7- Rev.3

Dravo Corporation

Magnetic Particle - ASME-III-MP Rev.7
Radiography - ASME-III-RT Rev.0
Liquid Penetrant - ASME-III-DP Rev.6

Results: No violations were identified

7. Work Observation and Interview

Two (2) ultrasonic technicians (SWRI) were interviewed and their work activities observed during pipe weld UT examination. This examination was part of site preservice examination as required by ASME Section XI. The inspector noted that the ultrasonic examination was being performed by an ASNT-Level II examiner and recorded by an ASNT-Level I.

Results: No violations were identified.

8. NDE Personnel Qualifications

NDE qualification and certification records of six Branch Radiographic Laboratories (site NDE contractor) personnel, and six Southwest Research Institute (site preservice contractor) personnel were reviewed for compliance to SWT-TC-1A, ASME and ANSI-N45-2-9 criteria. Branch personnel qualification records were found to contain several corrections which had been made using white out. The inspector was satisfied that the changes made by white out were merely editorial in nature and not indicative of a problem with personnel qualifications. However, to address the inspector's concern, the licensee took corrective actions while the inspector was at the site which included:

a) issuance of an interim letter dated April 26, 1985 to establish the appropriate method to correct quality records;

b) issuance of a revision to Branch Quality Manual QAM-2 Rev.0 to establish a uniform method of documenting how corrections are made to quality related documentation.

(c) conduct of a 100% review of personnel records with all records containing white outs being retyped and signed.

The inspector had no further concerns with this item.

9. Other Confirmatory Examinations

9.1 The following welds and spool pieces on drawing, FSK-p-1-AB-616 Rev.6 were examined visually and by the dye penetrant method:

LINE	WELD NO	SPOOL PIECE	SIZE	ASME CLASS
1-AB-075-DBA-2	FW 1	1-AB-616-2	2"	1
1-AB-075-DBA-2	FW 2	1-AB-616-2	2"	1
1-AB-075-DBA-2	FW 3	1-AB-616-2	2"	1
1-AB-075-DBA-2	FW 4	1-AB-616-2	2"	1
1-AB-075-DBA-2	FW 5	1-AB-616-2	2"	1
1-AB-075-DBA-2	FW 6	1-AB-616-2	2"	1
1-AB-075-DBA-2	FW 7	1-AB-616-2	2"	1
1-AB-075-DBA-2	FW 8	1-AB-616-2	2"	1
1-AB-075-DBA-2	FW 9	1-AB-616-2	2"	1
1-AB-075-DBA-2	FW 11	1-AB-616-2	2"	1
1-AB-075-DBA-2	FW 12	1-AB-616-2	2"	1
1-AB-075-DBA-2	FW 14	1-AB-616-2	2"	1
1-AB-075-DBA-2	FW 15	1-AB-616-2	2"	1
1-AB-075-DBA-1	FW 23	1-AB-22[illegible]	1"	1
1-AB-075-DBA-1	FW 24	1-AB-22[illegible]-5A	1"	1
1-AB-075-DBA-1	FW 25	1-AB-225-5A	1"	1
1-AB-075-DBA-1	FW 37	1-AB-225-5A	1"	1
1-AB-075-DBA-1	FW 38	1-AB-225-5B	1"	1

The results of this examination found no apparent indications.

9.2 The following weldments and spool pieces were visually inspected during a walkdown inspection of approximately 560 feet of 28 inch diameter piping.

LINE	WELD NO.	SIZE	ASME CLASS	DRAWING
003-DBC	FW 4	28"	3	1-P-AB-01
004-DBC	N/A	28"	3	1-P-AB-01
001-DBC	FW 4	28"	3	1-P-AB-01
002-DBC	N/A	28"	3	1-P-AB-01

Thickness measurements were also taken at various spots on each spool piece. In addition to the visual inspections, field welds FW 4 on line 003-DBC and on FW 4 on line 001-DBC were magnetic-particle examined.

The results of these examinations were acceptable with no apparent indications.

10. Attachments

Attachment No. 1 is a tabulation of the specific items examined and the results achieved. Attachment No. 2 is a list of specific radiographs reviewed. Attachment No. 3 is a list of specific document packages reviewed.

11. Unresolved Items

An Unresolved Item is that for which more information is necessary for the NRC to determine whether the item is acceptable or a violation or deviation. Unresolved Items are contained in paragraphs 3 and 5.

12. Exit Interview

An exit interview was held on May 3, 1985 with members of the licensee's staff. The inspector summarized the scope and findings of this inspection. No written material was provided to the licensee during this inspection.

INDEPENDENT MEASUREMENT PROGRAM

DATE: 22 April thru 3 May ,1985 Page 1 of 9 SITE: Hope Creek Unit #1

WELD NUMBER LINE/ISO	CLASS	ALLOY ANAL.	FERRITE	THICK	M.T.	R.T.	U.T.	P.T.	HARDNESS	VISUAL	REMARKS
BE-012 FW-2	2	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC	
BE-012 SW-M	2	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC	
BC-001 SW-D	2	N/A	N/A	ACC	ACC	ACC	N/A	N/A	ACC	ACC	
BC-001 SW-B	2	N/A	N/A	ACC	ACC	ACC	N/A	N/A	ACC	ACC	
BE-009 FW-6	2	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N/A	ACC	
BE-009 FW-20	2	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N/A	ACC	
BE-009 FW-21	2	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N/A	ACC	
BC-018 FW-3	2	N/A	N/A	ACC	ACC	ACC	N/A	N/A	ACC	ACC	
BC-018 SW-B	2	N/A	N/A	ACC	ACC	ACC	N/A	N/A	ACC	ACC	
BE-001 FW-16	2	N/A	N/A	ACC	N/A	ACC	N/A	N/A	ACC	ACC	
BE-001 SW-B	2	N/A	N/A	ACC	N/A	ACC	N/A	N/A	ACC	ACC	

ATTACHMENT #1

INDEPENTDENT MEASUREMENT PROGRAM

DATE: 22 April thru 3 May, 1985 SITE: Hope Creek Unit #1

WELD NUMBER LINE/ISO	CLASS	ALLOY ANAL.	FERRITE	THICK	M.T.	R.T.	U.T.	P.T.	HARDNESS	VISUAL	REMARKS
BE-009 FW-5	2	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N.A	ACC	
BE-005 SW-D	2	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N/A	ACC	
FC-003 SW-B	2	N/A	N/A	ACC	N/A	ACC	N/A	N/A	ACC	ACC	
FC-003 FW-13	2	N/A	N/A	ACC	N/A	ACC	N/A	N/A	ACC	ACC	
BJ-002 FW-10	2	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC	
BJ-005 SW-A	2	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC	
SW-G	2	N/A	N/A	ACC	N/A	ACC	N/A	N/A	ACC	ACC	
FC-001 FW-3	2	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC	
FC-001 SW-D	2	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC	
BC-001 FW-9	2	N/A	N/A	ACC	N/A	N/A	N/A	N/A	N/A	ACC	
BJ-005 SW-4	2	N/A	N/A	ACC	N/A	ACC	N/A	ACC	N/A	ACC	

INDEPENDENT MEASUREMENT PROGRAM

DATE: 22 April thru 3 May, 1985 Page 3 of 9 SITE: Hope Creek Unit #1

WELD NUMBER LINE/ISO	CLASS	ALLOY	FERRITE	THICK	M.T.	R.T.	U.T.	P.T.	HARDNESS	VISUAL	REMARKS
BJ-005 SW-B	2	N/A	N/A	ACC	N/A	ACC	N/A	ACC	N/A	ACC	
BJ-005 SW-C	2	N/A	N/A	ACC	N/A	ACC	N/A	ACC	N/A	ACC	
BC-040 FW-19	1	N/A	N/A	ACC	N/A	ACC	N/A	ACC	ACC	ACC	
BC-040 FW-21	1	N/A	N/A	ACC	N/A	ACC	N/A	ACC	ACC	ACC	
BC-040 FW-40	1	N/A	N/A	ACC	N/A	N/A	N/A	ACC	N/A	ACC	
BC-040 FW-13C1	1	N/A	N/A	ACC	N/A	N/A	N/A	ACC	N/A	ACC	
BC-005 FW-5	2	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC	
BC-005 SW-B	2	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC	
BE-014 SW-E	1	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC	
BC-023 SW-10	2	N/A	N/A	ACC	ACC	N/A	N/A	N/A	N/A	ACC	
BC-023 SW-F	2	N/A	N/A	ACC	ACC	N/A	N/A	N/A	N/A	ACC	

ATTACHMENT #1

INDEPENTDENT MEASUREMENT PROGRAM

DATE: 22 April thru 3 May, 1985 SITE: Hope Creek Unit #1

WELD NUMBER LINE/ISO	CLASS	ALLOY ANAL.	FERRITE	THICK	M.T.	R.T.	U.T.	P.T.	HARDNESS	VISUAL	REMARKS
BC-023 SW-B	2	N/A	N/A	ACC	ACC	N/A	N/A	N/A	N/A	ACC	
BE-009 FW-1	1	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N/A	ACC	
BE-009 FW-2	1	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N/A	ACC	
BE-009 FW-3	1	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N/A	ACC	
AE-002 FW-8	1	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N/A	ACC	
AE-002 SW-E	1	N/A	N/A	ACC	ACC	N/A	N/A	N/A	N/A	ACC	
AE-002 SW-D	1	N/A	N/A	ACC	ACC	N/A	N/A	N/A	N/A	ACC	
BE-015 FW-6	1	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N/A	ACC	
BE-015 SW-E	1	N/A	N/A	ACC	ACC	N/A	N/A	N/A	N/A	ACC	
BE-015 SW-F	1	N/A	N/A	ACC	ACC	N/A	N/A	N/A	N/A	ACC	
BC-035 FW-1	1	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC	

INDEPENDENT MEASUREMENT PROGRAM

DATE: 22 April thru 3 May, 1985 Page 5 of 9 SITE: Hope Creek Unit #1

WELD NUMBER LINE/ISO	CLASS	ALLOY ANAL.	FERRITE	THICK	M.T.	R.T.	U.T.	P.T.	HARDNESS	VISUAL	REMARKS
BC-035 SW-C	1	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC	
BC-033 FW-4	1	N/A	N/A	ACC	N/A	ACC	N/A	ACC	N/A	ACC	
BC-033 SW-G	1	N/A	N/A	ACC	N/A	ACC	N/A	ACC	N/A	ACC	
FC-003 FW-2	2	N/A	N/A	ACC	N/A	ACC	N/A	ACC	ACC	ACC	
FC-003 FW-24	2	N/A	N/A	ACC	N/A	ACC	N/A	ACC	ACC	ACC	
FC-003 SW-L	2	N/A	N/A	ACC	N/A	ACC	N/A	ACC	ACC	ACC	
BG-010 FW-8	1	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC	
BG-010 (S0-3) SW-C	1	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC	
BG-010 (S17) SW-C	1	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC	
BG-010 FW-7	1	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC	
BE-015 FW-1	1	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC	

ATTACHMENT #1

INDEPENDENT MEASUREMENT PROGRAM

DATE: 22 April thru 3 May, 1985 Page 6 of 9 SITE: Hope Creek Unit #1

WELD NUMBER LINE/ISO	CLASS	ALLOY ANAL.	FERRITE	THICK	M.T.	R.T.	U.T.	P.T.	HARDNESS	VISUAL	REMARKS
BE-015 SW-F	1	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC	
FD-001 SW-D	1	N/A	N/A	ACC	ACC	ACC	N/A	N/A	N/A	ACC	
FSK-P214 FW-6	1	N/A	N/A	ACC	ACC	ACC	N/A	N/A	N/A	ACC	
FSK-P214 FW-14	1	N/A	N/A	ACC	ACC	ACC	N/A	N/A	N/A	ACC	
GE S/N 480 W-404	2	N/A	ACC	N/A	N/A	N/A	N/A	N/A	ACC	ACC	
GE S/N 374 W-322	2	N/A	ACC	N/A	N/A	N/A	N/A	N/A	ACC	ACC	
GE S/N 406 W-383	2	N/A	ACC	N/A	N/A	N/A	N/A	N/A	ACC	ACC	
GE S/N 212 W-389	2	N/A	ACC	N/A	N/A	N/A	N/A	N/A	ACC	ACC	
GE S/N 366 W-321	2	N/A	ACC	N/A	N/A	N/A	N/A	N/A	ACC	ACC	
GE S/N 430 W-379	2	N/A	ACC	N/A	N/A	N/A	N/A	N/A	ACC	ACC	
GE S/N 296 W-244	2	N/A	ACC	N/A	N/A	N/A	N/A	N/A	ACC	ACC	

ATTACHMENT #1

INDEPENDENT MEASUREMENT PROGRAM

DATE: 22 April thru 3 May, 1985 Page 7 of 9 SITE: Hope Creek Unit #1

WELD NUMBER LINE/IOS	CLASS	ALLOY ANAL.	FERRITE	THICK	M.T.	R.T.	U.T.	P.T.	HARDNESS	VISUAL	REMARKS
GE S/N 358 W-393	2	N/A	ACC	N/A	N/A	N/A	N/A	N/A	ACC	ACC	
GE S/N 357 W-338	2	N/A	ACC	N/A	N/A	N/A	N/A	N/A	ACC	ACC	
FD-001 FW-14	2	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC	
AB-225 FW-23	1	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC	
AB-225 FW-24	1	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC	
AB-225 FW-25	1	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC	
AB-225 FW-37	1	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC	
AB-225 FW-38	1	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC	
AB-616 FW-1	1	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC	
AB-616 FW-2	1	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC	
AB-616 FW-3	1	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC	

ATTACHMENT #1

INDEPENDENT MEASUREMENT PROGRAM

DATE: 22 April thru 3 May, 1985 Page 8 of 9 SITE: Hope Creek Unit #1

WELD NUMBER LINE/ISO	CLASS	ALLOY ANAL.	FERRITE	THICK	M.T.	R.T.	U.T.	P.T.	HARDNESS	VISUAL	REMARKS
AB-616 FW-4	1	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC	
AB-616 FW-5	1	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC	
AB-616 FW-6	1	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC	
AB-616 FW-7	1	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC	
AB-616 FW-8	1	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC	
AB-616 FW-9	1	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC	
AB-616 FW-11	1	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC	
AB-616 FW-12	1	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC	
AB-616 FW-14	1	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC	
AB-616 FW-15	1	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC	

ATTACHMENT #1

INDEPENDENT MEASUREMENT PROGRAM

DATE: 22 April thru 3 May, 1985 Page 9 of 9 SITE: Hope Creek Unit #1

WELD NUMBER LINE/ISO	CLASS	ALLOY ANAL.	FERRITE	THICK	M.T.	R.T.	U.T.	P.T.	HARDNESS	VISUAL	REMARKS
BC-063 A FW-8	2	N/A	N/A	ACC	N/A	N/A	ACC	N/A	N/A	ACC	Preservice Inspection Sec.XI (ASME)
BC-063 A FW-12	2	N/A	N/A	ACC	N/A	N/A	ACC	N/A	N/A	ACC	Preservice Inspection Sec.XI (ASME)

ATTACHMENT #1

C - CRACK
SL - SLAG
P - POROSITY
T - TUNGSTEN

LF - LACK FUSION
IP - INADEQUATE PENETRATION
LI - LINEAR INDICATION
UI - UNFUSED INSERT

A - ARTIFACTS
S - SURFACE
CC - CONCAVITY
CV - CONVEXITY

SYSTEM/LINE	WELD ID	ACC	REJ	C	SL	P	T	LF	IP	LI	UI	A	S	CC	CV	COMMENTS
1-P-BE-054	SWC	±														
1-P-BJ-005	SWA	±														
1-P-BE-022	SWC	±														
1-P-BE-022	SWA	±														
1-P_BJ-003	SWA	±														
1-P-BC-075	SWE	±														
1-P-BC-075	SWD	±														
1-P-BC-075	SWC	±														
1-P-BC-075	SWD	±														
1-P-BC-075	SWE	±														
1-P-BC-075	SWB	±														
1-P-BC-027	SWF	±														
1-P-BC-027	SWD	±														
1-P-BC-027	SWL	±														
1-P-BC-004	SWP	±														
1-P-BC-019	SWE	±														
1-P-BC-019	SWC	±														
1-PD-003	SWJ	±														
1-P-BG-010	FW7	±														Compar. Made
1-P-BC-018	FW3	±														Compar. Made
1-P-FC-003	FW24	±														Compar. Made
1-P-FC-003	FW2c	±														Compar. Made

ATTACHMENT #2

C - CRACK
SL - SLAG
P - POROSITY
T - TUNGSTEN

LF - LACK FUSION
IP - INADEQUATE PENETRATION
LI - LINEAR INDICATION
UI - UNFUSED INSERT

A - ARTIFACTS
S - SURFACE
CC - CONCAVITY
CV - CONVEXITY

SYSTEM/LINE	WELD ID	ACC	REJ	C	SL	P	T	LF	IP	LI	UI	A	S	CC	CV	COMMENTS
1-P-BG-010	FW8	±														Compar. Made
1-P-BC-001	SWC	±														Compar. Made
1-P-BG-001	SWC	±														Compar. Made
1-P-BC-018	SWB	±														Compar. Made
1-P-BJ-002	FW10	±														Compar. Made
1-P-BE-001	FW16	±														Compar. Made
1-BJ-005	SWA	±														Compar. Made
1-BE-022-S09	SWA	±														
1-BE-022-S05	SWA	±														
1-AP-003-S02	SWH	±														
1-BG-018-S04	SWD	±														
1-FC-005-S01	SWH	±														
1-FC-005-S01	SWG	±														
1-FC-005-S01	SWF	±														
1-BE-022-S04	SWA	±														
1-BE-022-S03	SWC	±														
1-BE-054-325	SWC	±														
1-BE-054-S01	SWC	±														
1-BJ-003-S02	SWA	±														
1-BC-066-S01	SWF	±														
1-BC-075-S07	SWE	±														

ATTACHMENT #2

C - CRACK
SL - SLAG
P - POROSITY
T - TUNGSTEN

LF - LACK FUSION
IP - INADEQUATE PENETRATION
LI - LINEAR INDICATION
UI - UNFUSED INSERT

A - ARTIFACTS
S - SURFACE
CC - CONCAVITY
CV - CONVEXITY

SYSTEM/LINE	WELD ID	ACC	REJ	C	SL	P	T	LF	IP	LI	UI	A	S	CC	CV	COMMENTS
1-BC-075-S07	SWC	±														
1-BC-075-S07	SWD	±														
1-BC-075-S07	SWE	±														
1-BC-075-S07	SWB	±														
1-BC-027-S08	SWF	±														
1-BC-027-S08	SWD	±														
1-BC-027-S01	SWL	±														
1-BC-004-S03	SWP	±														
1-BE-008-S03	SWB	±														Compar. Made
1-BE-050-S12	SWD	±														
1-BD-001-S09	SWB	±														
1-BD-003-S08	SWB	±														
1-BD-003-S08	SWG	±														
1-BC-088-S04	SWF	±														
1-BC-088-S10	SWB	±														
1-BC-046-S01	SWB	±														
1-BC-049-S12	SWD	±														
1-BC-019-S03	SWE	±														
1-BC-019-S03	SWF	±														
1-BC-004-S14	SWC	±														
1-BC-074-S02	SWD	±														
1-BC-063-S01	SWD	±														

C - CRACK
SL - SLAG
P - POROSITY
T - TUNGSTEN

LF - LACK FUSION
IP - INADEQUATE PENETRATION
LI - LINEAR INDICATION
UI - UNFUSED INSERT

A - ARTIFACTS
S - SURFACE
CC - CONCAVITY
CV - CONVEXITY

SYSTEM/LINE	WELD ID	ACC	REJ	C	SL	P	T	LF	IP	LI	UI	A	S	CC	CV	COMMENTS
1-BC-063-S01	SWQ	±														
1-BC-063-S09	SWM	±														
1-BC-066-S05	SWC	±														
1-BC-066-S05	SWG	±														
1-BC-072-S05	SWH	±														
1-BC-072-S05	SWC	±														
1-BC-072-S05	SWD	±														Reader Sheet
1-BC-072-S06	SWE	±														
1-P-BC-018	FW3	±														Compar. Made
1-P-FC-003	SW VWB	±														Compar. Made
1-P-FC-003	FW13	±														Compar. Made
1-BC-019-S09	SWE	±														
1-BC-019-S09	SWC	±														
1-BD-003-S01	SWJ	±														
1-P-BE-012	FW2	±														Compar. Made
1-P-BJ-005	FW4	±														Compar. Made
1-P-BJ-005	SWC	±														Compar. Made
1-P-BC-040	FW21	±														Compar. Made
1-P-BC-040	FW19	±														Compar. Made
1-P-BC-005	FW5	±														Compar. Made
1-P-BC-035	FW1	±														Compar. Made
1-P-BE-014	SWE	±														Compar. Made
1-P-BC-001	SWD	±														Compar. Made

ATTACHMENT #2

C - CRACK
SL - SLAG
P - POROSITY
T - TUNGSTEN

LF - LACK FUSION
IP - INADEQUATE PENETRATION
LI - LINEAR INDICATION
UI - UNFUSED INSERT

A - ARTIFACTS
S - SURFACE
CC - CONCAVITY
CV - CONVEXITY

SYSTEM/LINE	WELD ID	ACC	REJ	C	SL	P	T	LF	IP	LI	UI	A	S	CC	CV	COMMENTS
1-P-BE-012	SWM	±														Compar. Made
1-P-BC-033	FW4	±														Compar. Made
1-P-BE-033	SWG	±														Compar. Made
1-P-BE-022	SWA	±														
1-P-FC-005	SWH	±														
1-P-FC-005	SWK	±														
1-P-FC-005	SWG	±														
1-P-FC-005	SWF	±														
1-P-FC-005	SWF	±														
1-P-BE-022	SWC	±														
1-P-BE-054	SWC	±														
1-P-BE-001	SWB	±														Compar. Made
1-P-FC-001	SWD	±														Compar. Made
1-P-BE-015	FW1	±														Compar. Made
1-P-BE-015	SWF	±														Compar. Made
1-P-FC-001	SWD	±														Compar. Made
FSK P214	FW6	±														Compar. Made
FSK P214	FW14	±														Compar. Made

ATTACHMENT #2

REVIEW OF DOCUMENTATION PACKAGES

Hope Creek Unit #1

LINE NUMBER	WELD NUMBER	REVIEW	COMMENT
FC-004	FW-6	ACCEPT	N/A
FC-003	SW-C	ACCEPT	N/A
FC-003	FW-14	ACCEPT	N/A
FC-003	FW-6	ACCEPT	N/A
FC-004	SW-D	ACCEPT	N/A
FC-004	FW-3	ACCEPT	N/A
FC-010	SW-B	ACCEPT	N/A
FC-007	SW-D	ACCEPT	N/A
BC-034	FW-6	ACCEPT	N/A
BC-034	SW-B	ACCEPT	N/A
BC-010	FW-11	ACCEPT	N/A
BC-010	SW-B	ACCEPT	N/A
BC-063	FW-3	ACCEPT	N/A
BC-063	SW-B	ACCEPT	N/A
BC-004	FW-8	ACCEPT	N/A
BC-004	SW-D	ACCEPT	N/A
BC-139	FW-2	ACCEPT	N/A
BC-139	SW-B	ACCEPT	N/A
BC-056	FW-6	ACCEPT	N/A
BC-056	SW-C	ACCEPT	N/A
BE-023	FW-3	ACCEPT	N/A
BE-023	SW-B	ACCEPT	N/A

ATTACHMENT #3

REVIEW OF DOCUMENTATION PACKAGES

SITE: Hope Creek Unit #1

LINE NUMBER	WELD NUMBER	REVIEW	COMMENTS
BE-020	FW-1	ACCEPT	N/A
BE-020	SW-C	ACCEPT	N/A
BE-008	FW-16	ACCEPT	N/A
BE-008	SW-B	ACCEPT	N/A
BE-002	FW-18	ACCEPT	N/A
BE-002	SW-B	ACCEPT	N/A
BE-005	FW-5	ACCEPT	N/A
BE-005	SW-D	ACCEPT	N/A
BJ-003	FW-9	ACCEPT	N/A
BJ-003	SW-G	ACCEPT	N/A
AE-036	FW-5	ACCEPT	N/A
AE-036	SW-B	ACCEPT	N/A
AE-036	FW-9	ACCEPT	N/A
AE-036	SW-E	ACCEPT	N/A
BC-069	FW-6	ACCEPT	N/A
AB-050	FW-28	ACCEPT	N/A
AB-050	SW-G	ACCEPT	N/A
FD-001	FW-5	ACCEPT	N/A
FD-001	SW-G	ACCEPT	N/A
BG-007	FW-2	ACCEPT	N/A
BG-007	SW-C	ACCEPT	N/A

ATTACHMENT #3

REVIEW OF DOCUMENTATION PACKAGES

SITE: Hope Creek Unit #1

LINE NUMBER	WELD NUMBER	REVIEW	COMMENTS
BG-078	FW-3	ACCEPT	N/A
BG-016	SW-B	ACCEPT	N/A
BG-016	SW-D	ACCEPT	N/A
BG-016	FW-1	ACCEPT	N/A

ATTACHMENT #3