

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-320/85-11

Docket No. 50-320

License No. DPR-73

Priority -

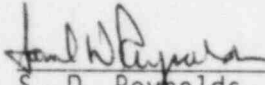
Category -

Licensee: GPU Nuclear Corporation  
P. O. Box 480  
Middletown, Pennsylvania 17057

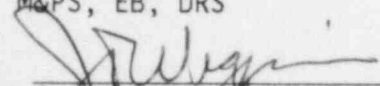
Facility Name: Three Mile Island-Unit 2

Inspection At: Middletown, Pennsylvania

Inspection Conducted: May 6 - 8, 1985

Inspectors:   
S. D. Reynolds, Jr., Lead Reactor Engineer  
M&PS, EB, DRS

6/9/85  
date

Approved by:   
J. Wiggins, Chief  
M&PS, EB, DRS

6/20/85  
date

Inspection Summary: Inspection on May 6 - 8, 1985 (Report No. 50-320/85-11)

Areas Inspected: Routine, unannounced inspection of activities related to design and fabrication of the ANSI B31.1-83 Defueling Water Cleanup System (DWCS). The inspection involved 22 hours on site and 2 hours at the regional office by one region based inspector.

Results: No violations were identified.

## DETAILS

### 1.0 Persons Contacted

#### General Public Utilities Nuclear Corporation (GPUN)

R. Gallage, Site Engineering Manager  
J. Marudri, GPUN/Bechtel  
E. Suttar, GPUN/Bechtel  
B. Bain, GPUN/Bechtel  
\*J. Byrne, Manager TMI-2 Licensing  
\*R. Corbit, Supervisor Site Weld Engineering  
\*J. Auger, Licensing Engineering-TMI-2  
\*S. Levin, Site Operations Director  
\*B. Ballaird, Sr., Manager-TMI QA MOD/OPS  
\*W. Heyser, TMI-2 Audit Supervisor  
\*R. Prabhakar, TMI QC, Manager  
D. McConnell, Site Welding Engineering  
J. Lazeski, Welder  
T. Petrovich, Welder  
M. Seltzer, Filler Metal Issue Clerk, NRC  
R. Cook, Sr., Resident Inspector  
\*T. Moshak, Resident Inspector

\*Denotes those present at Exit Interview

### 2.0 Purpose

The purpose of this inspection was to review the licensee activities in the fabrication of the Defueling Water Cleanup System (DWCS) which will be utilized to process water in the reactor vessel during defueling operations. This system utilizes stainless steel for piping and other pressure boundary parts. It is a low pressure - low temperature system. It is not classified as "safety related", but is classified as "important to safety" (ITS). The piping and pipe support system is in accordance with ANSI B31.1-1983. The applicable NDE requirements are those required by Table 136.4 of B31.1 for the service temperature and pressure conditions.

### 3.0 Defueling Water Cleanup Systems (DWCS) Welding

The inspector reviewed the licensee's activities related to the installation of the DWCS. The system consists of piping, piping supports filtration equipment for recirculating and cleanup of water in the reactor vessel. It is fabricated from P8 (pipe class 150-Bechtel Class HCD) austenitic stainless steel pipe up to 10 inches nominal size. The 2 inch and under joints are socket fillet welded. Supports for this piping system are fabricated from carbon steel except for those immersed in water. The ANSI B31.1 piping system is designed by the GPUN/Bechtel

(Gaithersburg) group to specification 15737-2-P-001 and the pipe supports to 15737-2-P-OM. Ten inch pipe is purchased to SA358 (seam welded-schedule 40S), 2½"-8" pipe to SA312 (seam welded or seamless schedule 40S), stainless and the 2" and under pipe to SA312 (seamless-schedule 80S). The permissible material for piping and fittings is either 304L or 316L with most being 304L. The piping butt joints utilize open root butt weld geometries. The pipe welders are qualified for butt and socket fillet welds by welding open root pipe butt weld test assemblies in the 6 G position. The welding and QA/QC is conducted by the licensee. Pipe welding is in accordance with either GPUN WPS 821, Rev. 3 gas tungsten arc welding (GTAW) qualified by PQR's 052-3, 085(37), and 097 or by WPS 831, Rev. 3 (GTAW/shielded metal arc welding/SMAW) qualified by PQR's 052-2, 052-3, 059 or 065. (These procedures were examined by and passed the ASTM: A262 Test E sensitization tests). The carbon steel hanger welding is in accordance with WPS 111, Rev. 4 (SMAW) qualified by PQR's 063, 089, and 106.

The NDE requirement for both pipe welds and support welds is visual inspection only which is the required inspection of B31.1, Table 136.4. GPUN utilizes a "pipe weld record sheet" for all pipe welds and Welding Engineering requires "weld history records" for approximately 10% of the welds.

The Unit Work Instruction (UWI) establishes the current revisions of all documents and acts as a traveler for all of the steps required. The required welding and NDE records are attached to the UWI.

The inspector questioned the licensee about the use of ASME code welders for the pipe support welding. The GPUN/Bechtel Gaithersburg personnel indicated that the justification for utilization of ASME welding for B31.1 supports (where the actual mechanical design basis and assignment of allowable stresses is AISC) is found in B31.1-83 paragraph 121.5 (page 44) which references MSS-SP-58 which states in Section 5.2 (page 13) that "unless otherwise stated" welding procedures and performance shall be in accordance with SCIX.

No violations were identified.

#### 4.0 Observation of Welding and Visual Welding Inspection

The inspector visually inspected approximately 110 welds in the pumps 2A and 2B stand pipe assembly and other spool piece weldments. Visual inspection was also made of welds or spool piece assemblies being welded by welders F-579 and F-583. The welds inspected met acceptance criteria with the GTAW welds showing better as welded contour than the SMAW welds. This inspection included inspection of stainless steel supports on the stand pipe system (2-C64-DWC001 sheets 1 to 8). It was noted that the bolts presently installed were not austenitic stainless per drawing requirements. Review of the licensee's quality program indicated there was no specific inspection point for checking the identification of the installed bolts. The inspector reviewed the QC Inspection Criteria for

H/W (hold) Point Assignment for W/A 4370352584-P246 and verified no hold point was assigned. Review of plant inspect reports (PIR) CS /33079/85 and CS/33057/85 did show QC involvement in bolt inspection (not related to the P246 assembly). The licensee indicated this assembly is not complete, has not received its final assembly inspection and will be specifically checked for SA 193 Grade 8 bolts during the walk down inspection.

No violations were identified.

#### 5.0 DWCS Pipe Supports

The inspector reviewed the following hanger drawings for the DWCS: (The generic notes for the carbon steel hanger drawings were found on 2-C64-DWC08).

Drawing Number 2-C64-DWC001 sheets 1 to 8 (stainless steel supports)

- DWC04 H00 to H018
- DWC05 H00 to H22 and R01 to R04
- DWC06 H00 to H53 and R01 and R02
- DWC07 H00 to H22
- DWC08 H00 to H34
- DWC09 H00 to H57
- DWC10 H00 to H29 and R01
- DWC11 H00 to H25
- DWC12 H00 to H29 and R01 -DWC13 H00 to H25
- DWC14 H00 to H18 and R01 to R02

Some of the significant notes are: (4) Hanger materials will be field procured, (6) Vendor ID numbers pipe are IIT/Grinnell numbers, (8) Fabrication, installation and inspection per B31.1-83 (paragraph 136.4.2 is referenced on typical UWI documents for visual inspection criteria), (9) welding shall be per TMI-2 welding procedures. The inspector noted that all of the approximately 322 support drawings reviewed utilized 1/4" or 3/16" fillet welds exclusively with perpendicular welded member connections. (No skewed member connections).

No violations were identified.

#### 6.0 Review of DWCS Welding Records

The inspector reviewed the pipe weld record sheet data for the following welds:

DWC-	DWC-	DWC-	DWC-
5	55	110H	138
6H	56	111	139
7	57H	112	2435
8	58	113	2436

9	59	114	2438
10	60	115H	2439
11	61	116	2440
12	62	117	2441
13	63	118	

The inspector reviewed weld history records for the following welds:

DWC-

4	95	105
44	96	107
45	97	108
47	98	109
55xR	99	140
	100	141

It was noted that the filler metal initially was specified as the "L" grades, but was changed to the regular carbon grades. This is a permissible change per "codes and standards" rules.

The welding records met site and applicable "codes and standards" requirements.

No violations were identified.

#### 7.0 Welder Performance Qualification

The inspector reviewed welder performance qualification records folders for the following welders:

F-052	F-269
F-136	F-277
F-154	F-216
F-173	F-579
F-189	F-583
F-198	F-202
F-199	

Some of the welders have Catalytic performance records rewritten by GPUN which is acceptable on the basis that Catalytic was working under the GPUN quality program at time of initial qualification. The licensee is reviewing the approval signature system used for the rewritten documents and will consider including both QC and Welding Engineering review and approval signatures. Review of records showed examples where GPUN has initiated re-qualification based on observation of weld quality below desired level.

The inspector reviewed the April 29, 1985 qualified welder list. The inspector reviewed the monthly welder quality trending system portion of

the Monthly Report to N.C. Kazanas), (e.g. Memo 6151-85-0038: Patterson to Kazanas)

The records are thorough and indicate that the minimum qualification requirements of SCIX are exceeded.

No violations were identified.

#### 8.0 Welding Engineering Activities on ITS and "Not Important to Safety" (NITS) Areas

The inspector previously questioned the adequacy of the licensee's welding engineering control over welding activities that were not "safety related". The licensee has revised GPUN Administrative Procedure AP1063 in paragraphs 1.2 and 2.1.9 to insure that welding engineering considerations extend to all site welding activities. The Site Welding Engineer reports to the QA Corporate Welding Manager (currently located at Oyster Creek). This increased responsibility and authority over welding which is not "safety related" has increased the quality and reliability of these activities.

On the DWCS fabrication, Welding Engineering initiates weld history record documentation and requires this for approximately 10% of the welds.

The inspector discussed with licensee the potential confusion caused by the lack of a nationally recognizable definitive "codes and standards" documents for the design, fabrication and inspections of piping supports. The licensee indicated they had committed themselves to develop a QA Engineering Standard to provide explicit information for site use which will establish the systems necessary for the (AWS) "Engineer's" clarifications and modifications to the structural welding "codes and standards" documents. It was reported that a draft of this document is currently being reviewed by Engineering. The relationship between the responsibilities of design engineering and welding engineering will be addressed in this document.

No violations were identified.

#### 9.0 Quality Assurance

The inspector reviewed licensee QA involvement in maintaining work activities by surveillance type quality audits during the period 11/84 to 5/85 covering a wide variety of activities. There were approximately 250 entry items of which 16 were specifically involved in the DWCS and many more were generically related (e.g. filler metal control performance qualification testing, surface cleaning for welding, etc.).

No violations were identified.



#### 10.0 Exit Meeting

The inspector met with licensee representatives (see paragraph 1) at the end of the inspection on May 8, 1985. In addition, Mr. Tom Moslak, (NRC Resident Inspector) was present. The inspector summarized the scope of the inspection and indicated the inspection findings. At no time during this inspection was written material provided to the licensee by the inspector.