

**SAFETY INSPECTION REPORT AND COMPLIANCE INSPECTION**

1. LICENSEE/CERTIFICATE HOLDER  Transnuclear, Inc. 7135 Minstrel Way, Suite 300 Columbia, MD 21045  REPORT NUMBER(S) 72-1004/2009-201	2. NRC/REGIONAL OFFICE  Division of Spent Fuel Storage and Transportation U. S. NRC M/S EBB-3D-02M Washington, DC 20555-0001
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3. LICENSEE/CERTIFICATE NUMBER(S) 72-1004	4. INSPECTION LOCATION Hitachi-Zosen, Japan	5. DATE(S) OF INSPECTION June 1 through 5, 2009
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The inspection was an examination of the activities conducted under your Nuclear Regulatory Commission (NRC) approved Quality Assurance Program related to compliance with the NRC's rules and regulations with regard to activities subject to 10 CFR Part 71 and 72. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector. The inspection findings are as follows:

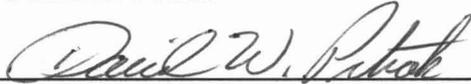
- 1. Based on the inspection findings, no violation or nonconformances were identified.
- 2. Previous violation(s) or nonconformance(s) closed.
- 3. The violation(s), specifically described to you by the inspector as non-cited violations, are not being cited because they were self-identified non-repetitive, and corrective action was or is being taken, and the remaining criteria in the NRC Enforcement Policy, NUREG-1600, to exercise discretion, were satisfied.  
  
 \_\_\_\_\_ Non-Cited Violation(s) was/were discussed involving the following requirement(s) and Corrective Actions(s):
- 4. During this inspection certain of your activities, as described below and/or attached, were in violation of nonconformance of NRC requirements and are being cited. This for is a NOTICE OF VIOLATION OR NONCONFORMANCE, which may be subject to posting in accordance with 10 CFR19.11.  
  
 (Violations, Nonconformances, and Corrective Actions)

**STATEMENT OF CORRECTIVE ACTIONS**

- I hereby state that, within 30 days, the actions described by me to the inspector will be taken to correct the violations identified. This statement of corrective actions I made in accordance with the requirements of 10 CRF 2.201 (corrective steps already taken, corrective steps which will be taken date when full compliance will be achieved). I understand that no further written response to NRC will be required, unless specifically requested; OR
- Written Response requested in 30 days  Yes  No

TITLE	PRINTED NAME	SIGNATURE	DATE
LICENSEE	Chris Lloyd		06/05/09
NRC INSPECTOR	Rob Temps		06/05/09

**INSPECTOR NOTES COVER SHEET**

Licensee/Certificate Holder (name and address)	Transnuclear Inc. (TN) 7135 Minstrel Way Columbia, MD 21045
Licensee/Certificate Holder contact and phone number	Chris Lloyd
Docket No.	07201004
Inspection Report No.	2009201
Inspection Date(s)	June 1 -5, 2009
Inspection Location(s)	Hitachi Zosen Corporation (HZC), Ariake Works Kumamoto, Japan
Inspectors	Robert Temps      James Pearson      Clyde Morell
Summary of Findings and Actions	<p>This inspection involved a review of TN's fabricator, HZC, located in Kumamoto, Japan. At the time of the inspection, cask storage system fabrication activities were ongoing for multiple Part 50 licensees.</p> <p>The team concluded that overall, TN's implementation of its Quality Assurance Program for fabrication activities at HZC was adequate. HZC's fabrication processes were assessed to be good especially with regard to the quality of workmanship and facility housekeeping practices. No significant findings were identified and no violations of Part 72 regulatory requirements were identified. Some observations were identified to TN and HZC with regard to work practices and level of detail in certain procedures. The team also followed up on corrective actions to an NOV issued during the previous inspection at HZC, in 2006, related to improper control of temporary weld attachments; the team concluded that the corrective actions were proper and that current temporary weld attachment controls were adequate.</p>
Lead Inspector Signature/Date	Robert R. Temps  06/18/09
Inspector Notes Approval Branch Chief Signature/Date	David W. Pstrak  6/18/09

INSPECTOR NOTES: APPLICABLE PORTIONS OF 02.01 THROUGH 02.08 OF IP 60852 WERE PERFORMED DURING THE INSPECTION WITH RESULTS DOCUMENTED BELOW:

**Background:**

The team determined that current fabrication activities at HZC on TN's behalf included work for the following utilities:

- NPPD – Cooper Station: System (Model 61BT)
- PPL – Susquehanna: System (Model 61BT)
- Exelon – Limerick: System (Model 61BTH Type C)
- FPL – St. Lucie & Point Beach: System (Model 32PTH)
- DUKE – Oconee: System (Model 24PHBL)
- Progress – Brunswick: System (Model 61BTH Type 2)
- Constellation – Nine Mile: System (Model 61BT)
- Constellation – Ginna: System (Model 32PT-S125)
- Constellation – System (Model OS197H-7 Transfer Cask)

**02.01: Determine whether the fabrication specifications are consistent with the design commitments and requirements documented in the SAR, and, as applicable, the CoC or the site-specific license and technical specifications.**

The team's focus in addressing this inspection element was on the process HZC uses to control the translation of vendor supplied design information into controlled HZC procedures and drawings for fabrication activities.

The team noted that the design development process for TN occurs at their corporate offices in Columbia, MD. The translation of the intended design at the fabrication level and from the corporate design drawings was verified by the team. The team used samples of materials from the shop floor and traced them back to their associated purchase orders and applicable design drawings. In each case, HZC and TN staff was able to show that the material samples conformed to the requirements of the associated design drawings. Overall, no concerns were identified in the translation of design information into the procurement and use of materials in the fabrication process.

**02.02: Determine whether corrective actions for identified fabrication deficiencies have been implemented in a time frame commensurate with their significance, and whether nonconformance reports documenting the deficiencies have been initiated and resolved.**

The team reviewed procedures at HZC related to their problem identification and corrective action programs. Discussions were held with Quality Assurance (QA) personnel, and the team also reviewed selected documents. HZC has procedures for the documentation and resolution of material and fabrication nonconformances and also has procedures for addressing higher level issues through the use of corrective action reports. The team reviewed samples of nonconformance and corrective action reports. In general, the issues documented in the reports were straightforward and their resolution was assessed to be appropriate to the nature and extent of the documented problems. No significant concerns were identified in this area. In the previous NRC inspection at HZC in 2006, the NRC had identified that the number of nonconformance reports and corrective action reports appeared to be low for the level of fabrication activity. During this inspection, the number of reports appeared appropriate to the level of activity.

Prior to the inspection, the team was aware of an issue that was raised between the licensee for the Cooper station and TN regarding NDE Level III reviews of the radiograph films associated

with canisters fabricated at HZC for delivery to Cooper. Cooper had identified what they considered to be linear indications on the radiograph film of the longitudinal welds of three canisters and had rejected the canisters on this basis. HZC had dispositioned these indications as being non-relevant "ghost" images.

The team determined that TN had contracted with an RT Level III consultant to travel to Cooper to read the film in question; he interpreted the film as indicating that two of the DSCs had relevant indications. For these two canisters, TN requested HZC to excavate the welds to search for the indications. Several successive excavations of 2mm each, followed by PT examination after each excavation, failed to identify any indications in the welds. The two DSCs in question were weld repaired, had RT re-performed, and have been accepted by Cooper. At the time of the inspection, the third DSC was on hold awaiting final disposition between TN and Cooper. The team verified that the RT issues were documented in HZC's and TN's corrective action systems and were being satisfactorily processed through their respective systems.

TN specification documents require HZC to have procedures for the implementation of 10 CFR Part 21 requirements at their facility. The team reviewed applicable HZC Part 21 procedures. The imposition of Part 21 requirements in purchase orders, where applicable, was also verified by the team. No concerns were identified.

**02.03: Determine whether individuals performing quality-related activities are trained and certified where required.**

The team interviewed several HZC personnel to determine their familiarity with specified design, fabrication techniques, testing requirements and quality controls. Familiarity with the required subject areas appeared to be adequate based on responses from the personnel interviewed and on the quality of the work performed as witnessed by the team during the inspection.

The team sampled certification records for welding personnel. The team verified welders were qualified for the processes they were using on the floor and met their current requirements. The team determined that HZC welding and non-destructive examination (NDE) personnel were knowledgeable in their respective areas. All HZC personnel interviewed were very motivated and had a very positive attitude regarding procedure compliance. No concerns were identified.

The team reviewed training and certification records for several Quality Control (QC) personnel qualified in a variety of areas such as ASNT Visual Level III & II, RT Level III & II, MT Level III & II, PT Level III & II, and UT Level III & II. The team determined that these personnel were performing acceptably through review of records attesting to the performance of recent fabrication activities. The training and certification process was adequate based on the sampled items. In addition, the team observed several in-field NDE activities including a PT inspection of a weld preparation, a UT base metal thickness, and an RT of a longitudinal weld. In all cases, the NDE personnel demonstrated high proficiency in their understanding of the applicable procedures and the acceptance criteria. No concerns were identified.

**02.05a: Determine whether materials, components, and other equipment received by the fabricator meet DCSS design procurement specifications.**

**02.05b: Determine whether the procurement specifications conform to the design commitments and requirements contained in the SAR and, as applicable, the CoC or the site-specific license and technical specifications.**

The team reviewed procurement procedures, reviewed various approved vendor audits/surveillances, and traced the procurement history of components undergoing fabrication to verify that they were procured from qualified suppliers and met specifications.

As discussed in 02.01 above, the team obtained a sampling of materials in use on the shop floor for use in evaluating HZC's material procurement process. HZC staff traced each of the materials selected back to the applicable purchase order and the associated heat/lot numbers. The team noted that Part 21 requirements were noted on the purchase orders reviewed, as applicable, and that the purchase orders included the reference to the associated drawing(s) showing the prescribed use of the material. The team also noted that the materials listed on the purchase orders were appropriate to the design specifications and the material's use.

The team reviewed vendor audit reports conducted by HZC for companies maintained on its qualified vendors list (QVL). The audits were conducted in accordance with QA administrative procedures and used audit checklist formats. The audit checklists were quite detailed with respect to items and documents reviewed during the audits. Very few findings and observations were noted to be documented in the audit reports.

Overall, the team concluded that HZC's procurement activities were being performed in accordance with their controlling procedures. Procurement personnel understood the procurement process and the procedures used. Methods used to approve addition of suppliers to the QVL were appropriate and the audits and surveillances used to qualify and maintain suppliers on the QVL were adequate.

#### **02.06: Determine whether DCSS components are being fabricated per approved QA and 10 CFR Part 21 implementing procedures and fabrication specifications.**

##### Scope

The team evaluated control of the fabrication process through observations, examinations, and personnel interviews in the areas of material procurement, fabrication and assembly, test and inspection, and tools and equipment. The team also reviewed the areas that had findings in the previous inspection in 2006.

##### Observations and Findings

##### Material Procurement

The team verified that appropriate procedures were implemented for control of the procurement process. The team selected samples of materials and services in use, as well as from completed work, to assess for compliance with the Certificate of Compliance (CoC) and TN specification and procurement requirements. The team examined HZC's procurement documents, receipt inspection records, certificates of conformance, certified material test reports, and vendor qualifications. No concerns were identified.

##### Fabrication and Assembly

The team examined selected samples of fabrication specifications, quality plans, engineering drawings, work control procedures, and routers to determine that fabrication met the requirements of the CoC. The team observed fabrication activities and processes and examined applicable qualification and certification records to determine that fabrication satisfied requirements and was accomplished by qualified personnel. The team also reviewed a sample of completed documentation packages to assess work which had been completed prior to the inspection. No concerns were identified.

##### Test and Inspection

In addition to those activities observed and discussed in 02.03 above, the team observed dye

penetrant testing and basket free path testing to assess the quality of construction and the capability of personnel to perform these test and inspection activities. The team reviewed the applicable records for these personnel to determine that they were qualified to perform the associated activities. The team also reviewed a sample of completed documentation packages to assess work which had been completed prior to the inspection.

In observing various processes during fabrication, the team noted that multiple hold and witness points existed for verification of quality activities. In some cases these hold and witness points had been added to provide assurance to oversight personnel that activities were being performed properly. The team noted that overall HZC had firm control of their processes and the ongoing work, including the testing and inspection of individual items as well as assemblies. The team noted that the free path testing was performed by personnel who demonstrated adequate performance during the testing process. A concern was noted in this activity during the 2006 inspection and was documented in HZC Corrective Action Report (CAR) C-06-05. The team noted that all corrective actions noted in the CAR were adequately addressed and the observation of the free path test during the current inspection indicated that the corrective actions were effective in addressing the performance issue from 2006.

As a follow-up to HZC CAR C-06-03 and an associated Notice of Violation issued in the last HZC inspection report in 2006, the team witnessed the application of HZC procedures: 61B-FTAW Revision 1, "Control Procedure for Temporary Attachment Welds (TAW)," and 61B-VT/PT, Revision 0, "Visual Weld Examination and Liquid Penetrant Examination Procedure," to process a NUHOMS-61BT basket rail, item no. 35, for Job: 16F317 (Susquehanna). The team observed many areas of TAW removal on the surface of the rail, as well as the associated grinding to remove excess weld metal. The team followed the process by re-verifying the TAW Map for Rail 46MA1 on the HZC prepared Type 1A Map, Page 10 of 11 from the HZC procedure noted above, which controls the TAW process and the associated drawing 61B-D-46MA1, Rev. 1. The team reviewed the procedures in use by HZC, the associated documentation for the basket rail, as well as other completed TAW work and determined that the HZC TAW process was being adequately applied and that corrective actions for CAR C-06-03 were effective in addressing the issues identified in 2006.

The team observed fabrication welding activities such as fit-up, tack weld, and welding using both manual and automated machine welding methods. Through a review of records, the team verified that welders, weld procedures, and procedure qualification records met applicable ASME Code requirements and were properly qualified. The team reviewed a sample of weld material and base metal material and verified they met applicable ASME Code and TN fabrication specification requirements. The team reviewed the welding and NDE procedures to determine if the HZC Quality Assurance Program parameters and the requirements for the training and certification of personnel performing fabrication activities were being implemented. No concerns were identified.

#### Measuring & Test Equipment

The team verified that appropriate procedures were implemented for control of tools and equipment. The team identified samples of measuring and test equipment used on both current and completed work to assess the control and traceability of measuring and test equipment.

#### Conclusions

The team reviewed HZC NDE and welding procedures, interviewed fabrication and QC personnel, and reviewed various NDE and welding procedures to verify they met TN design specifications. The team also reviewed controls on calibrated equipment used for both QC inspection and fabrication activities. From this review, the team concluded that the HZC

fabrication and inspection activities were being performed in accordance with TN specifications through the controlling implementing procedures. Fabrication and Inspection personnel clearly understood the fabrication process and the procedures used. The procedure and process for controlling calibrated M&TE equipment was also reviewed. Overall, no concerns were identified.

**02.08a: With regard to quality assurance activities, determine whether the fabricator has been audited by either the licensee or CoC holder.**

The team reviewed the schedule for internal audits of the QA functions performed by the HZC QA groups and determined that audit schedules had been prepared and approved in accordance with applicable QA administrative procedures. Qualification and training records of auditors were reviewed by the team and determined to be in accordance with procedures. The independence of auditors from the areas being audited was also determined to be proper. The team also reviewed a recent external audit. That audit was thorough and identified a number of findings and observations requiring corrective action by HZC. The team also noted that licensee representatives from Duke and Dominion were present at HZC during the NRC inspection.