NRC FORM 591S PART 1
(05-2012)
10 CFR 2.201

U.S. NUCLEAR REGULATORY COMMISSION

SAFETY INSPECTION REPORT AND COMPLIANCE INSPECTION

1. CERTIFICATE/QUALITY ASSURANCE PROGRAM (QAP) HOLDER:	2. NRC/REGIONAL OFFICE
NAC International 3930 East Jones Bridge Road Norcross, GA 30092	Headquarters U. S. Nuclear Regulatory Commission Mail Stop 3WFN-14C28 Washington, DC 20555-0001
REPORT NUMBER(S) 072-1031/2014-201	

3. CERTIFICATE/QAP DOCKET NUMBER(S)	4. INSPECTION LOCATION	5. DATE(S) OF INSPECTION
72-1015 and 72-1031	GE-Hitachi (GEH) Nuclear Energy Custom Fabrication, Canonsburg, PA	June 9-13, 2014

CERTIFICATE/QUALITY ASSURANCE PROGRAM HOLDER:

The inspection was an examination of the activities conducted under your QAP as they relate to compliance with the Nuclear Regulatory Commission (NRC) rules and regulations and the conditions of your QAP Approval and/or Certificate(s) of Compliance. 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 violations were identified.

2. Previous violation(s) closed.

3. The violations(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, 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 NRC requirements and are being cited in accordance with NRC Enforcement Policy. This form is a NOTICE OF VIOLATION, which may be subject to posting in accordance with 10 CFR 19.11.
(Violations 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 is made in accordance with the requirements of 10 CFR 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.

TITLE	PRINTED NAME	SIGNATURE	DATE
CERTIFICATE/QAP REPRESENTATIVE	Howard Smith, Vice President, Quality	Howard Smith	7.21.14
NRC INSPECTOR	Earl C. Love	Earl C. Love	7.21.14
BRANCH CHIEF	Stephen Koenick	Stephen Koenick	7.24.14

INSPECTOR NOTES COVER SHEET

Licensee/Certificate Holder (name and address)	NAC International, Inc. 3930 East Jones Bridge Road Norcross, GA 30092
Licensee/Certificate Holder contact and phone number	Howard Smith 678-328-1276
Docket Nos.	07201015: Universal MPC System (UMS) Transportable Storage Canister (TSC) 07201031: MAGNASTOR TSC
Inspection Report No.	072-1031/2014-201
Inspection Date(s)	June 9-13, 2014
Inspection Location(s)	GE-Hitachi (GEH) Nuclear Energy, Custom Fabrication Canonsburg, PA
Inspectors	Earl Love, Safety Inspection Engineer Rob Temps, Senior Safety Inspector Clyde Morell, Safety Inspector Eben Allen, Project Manager (Observer)
Summary of Findings and Actions	GEH is under contract with NAC International to fabricate UMS TSCs and MAGNASTOR TSCs at the GEH custom fabrication facility located in Canonsburg, PA. The inspection was conducted to determine if fabrication activities were performed in accordance with the requirements of 10 CFR Parts 21, 71, and 72, the applicable Certificate of Compliances (CoC Nos. 072-1015 and 072-1031), Safety Analysis Reports, and NACs Nuclear Regulatory Commission (NRC)-approved Quality Assurance Program (QAP). The team noted that prior to the inspection, NAC had performed a pre-inspection audit and that numerous programmatic issues were identified that resulted in NAC having to issue a limited stop work order. The team noted that the resultant corrective actions are being satisfactorily addressed and that NAC has a permanent presence at the GEH facility that performs surveillances. With the exception of NACs identification of programmatic issues, the inspection verified through observation of shop assembly, inspection, and test activities, record reviews and interviews, that spent fuel storage and transportation canister fabrication was adequate. GEHs fabrication processes were assessed to be adequate. No violations were identified.
Lead Inspector Signature/Date	Earl Love 7/22/2014 Earl Love
Inspector Notes Approval Branch Chief Signature/Date	Stephen Koenick 7/24/14 Stephen Koenick

INSPECTION BACKGROUND

GEH is under contract with NAC International to fabricate ten (10) Arizona Public Service (APS), Palo Verde, UMS TSCs and twenty-one (21) ZionSolutions MAGNASTOR TSCs of which NAC and GEH have agreed to transition fabrication, by transfer of material, the fabrication of six (6) APS UMS TSCs to another fabrication shop (Petersen, Inc., Ogden, UT).

GEH plans to permanently close its Canonsburg, PA fabrication facility in December 2014, but NAC has ongoing fabrication that is projected to go beyond the closure date. The anticipated closure has resulted in a reduction in quality assurance (QA) and shop personnel and the identification by NAC of certain programmatic noncompliances causing NAC to issue a partial stop work. As a result, to assure that GEHs closure in December does not impact contractual and regulatory compliance, as well as, GEH schedule and delivery commitments, NAC has increased full time residency with technical and quality personnel.

INSPECTION PURPOSE

The purpose of the inspection was to assess that NAC and GE-Hitachi's fabrication activities of the MAGNASTOR TSCs (for ZIONSolutions) and Universal MPC System TSCs (for Arizona Public Service, Palo Verde) are being performed in accordance with the requirements of 10 CFR Parts 72 and 21, applicable CoC (Nos. 72-1031 and 72-1015), Final Safety Analysis Reports, and NAC's NRC-approved QA program.

INSPECTION RESULTS

The inspection at GEH was completed as planned. The inspection team assessed that overall NAC and GEHs implementation of their QA program for fabrication activities was satisfactory. GEHs fabrication processes were assessed to be good with regard to the quality of workmanship and housekeeping practices. The team noted that prior to the inspection, NAC had performed a pre-inspection audit and that numerous programmatic issues were identified that resulted in NAC having to issue a limited stop work order. The team noted that the identified issues were programmatic in nature and none affected product quality. The partial stop work order remains under evaluation. NAC, as the CoC holder, maintains essentially 100% oversight of activities to assure compliance to NRC issued CoCs. The team reviewed the status of corrective actions and noted that NAC and GEH are systematically using their corrective action program in addressing issues. The team cautioned NAC and GEH that the pending facility closure does not lead to work processes and control systems not being effective in producing a product of desired quality. The team noted that this was not evident during shop observations conducted as part of the inspection. Overall, the team noted some minor observations in the area of an external audit of a calibration service supplier and notations on certain calibration records. None of the observations approached a violation of NRC requirements. NAC, ZionSolutions and APS continue to be proactive in identifying and addressing quality issues. Both NAC and ZionSolutions have committed to performing 100% oversight until project completion.

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

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 reviewed NAC licensing and design drawings and GEH fabrication drawings for consistency of critical dimensions and material specification as well as testing and inspection requirements. The team also reviewed the list of currently approved NAC fabrication procedures/drawings and their revision numbers against the list maintained by GEH. The team also checked a sampling of shop procedures against the controlled procedure lists and no discrepancies were noted. The team reviewed NAC procurement/fabrication specifications (790-S-05 and 71160-S-05) and noted that both specifications adequately covered the requirements for materials, fabrication, inspection, testing, documentation, packaging, and quality assurance for the MAGNASTOR and UMS TSCs, respectively. No concerns were noted.

The team reviewed for compliance to 10 CFR 72.234(D) (2) (II-III), "Conditions of Approval," NAC Certificate of Conformances for TSC assemblies MAG-TSC-215555-29 dated April 11, 2014, and UMS-TSC-407-120 dated January 15, 2014. The team noted the certifications were acceptable.

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 two NAC surveillances that were performed in preparation for the NRC team inspection. Surveillance 14-S-18 was performed April 28 through May 1, 2014, to follow-up GEHs corrective actions to previous NAC surveillance findings and observations and NAC Stop Work Order (SWO) 13-01. The surveillance identified a number of programmatic concerns that resulted in NAC issuing SWO 14-01 and NAC Corrective Action Report 14-01. Follow-up surveillance, 14-S-23, was conducted May 12-15, 2014. In that surveillance, NAC noted GEH's response to the previous surveillance. Actions included the reassignment of senior personnel and subject matter experts from within the GEH organization to the Custom Fabrication (CF) facility to help address the programmatic concerns that had been identified by NAC. The team assessed that GEH was responding appropriately to NAC's concerns and that the programmatic issues did not have any adverse effect on the quality of supplied components.

The team reviewed procedure GEH QAP-1500, "Nonconforming Material Control," used at the facility to document and resolve nonconformances associated with cask fabrication. The procedure allows for the identification and resolution of nonconformances that occur for NAC work through use of a GEH NonConformance Report (NCR).

The team reviewed a sampling of open and closed NCRs and assessed that resolution of the issues documented in the various reports was appropriate and timely commensurate to their importance. The team reviewed several NCRs that required customer (NAC) approval. NAC requires that NCRs initially dispositioned by GEH as "Accept As-Is" or "Repair" be sent to them for review and approval. Such NCRs are transmitted to NAC who then generates an associated Vendor Nonconformance Report (VNCR). The VNCR has the GEH NCR attached to it and is

then dispositioned by NAC personnel. The team reviewed a sampling of NCRs initially dispositioned as “Accept As-Is” or “Repair” and verified that they had associated NAC VNCRs. The team verified that the associated VNCRs contained appropriate technical justification and required 10 CFR 72.48 screenings/evaluations were performed. Results of the VNCRs are then communicated to GEH for final disposition of the nonconforming condition through the GEH NCR process.

Overall, no concerns were identified with the approach GEH was addressing fabrication nonconformances.

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

The team reviewed QAP-1800, “Training and Qualification of Lead Auditors,” and also reviewed the certification records for two lead auditors. This included the lead auditor that performed the GEH 2013 annual audit. The team determined that the lead auditors’ qualifications were documented in accordance with the QAP-1800 requirements.

Fabricator personnel performing quality functions are welders, NDE inspectors, QC staff, and QA auditors. A program for qualification and certification has been defined and implemented by GEH and has been approved by NAC prior to performance of quality activities by these individuals. The team reviewed a sample of NDE examiner certificates and determined that in all cases the inspectors were qualified according to ASNT-TC-1A. The team selected from the Welder Continuity database welder’s nos. 551, 599, 736, 849 and 868 and verified that welder qualifications were current as required by ASME Section IX, QW-322.

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

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

The team reviewed GEH Purchase Order (PO) #437088534. The PO involved fabrication work to be performed at a non-GEH fabrication facility for six (6) UMS TSCs. The team determined that the PO provided specifics on the hardware to be fabricated, scope of supply and reference to applicable NAC design and fabrication drawings. The PO invoked NAC Fabrication Specification 790-5-05, “Procurement/Fabrication Specification, NAC Transportable Storage Canisters, Basket Assemblies and Fuel Cans.” The NAC specification provides technical and quality requirements for fabrication of the NAC TSC and associated PWR and BWR fuel baskets and GTCC waste baskets and fuel cans. The team determined that GEH will provide oversight of fabrication activities at the off-site facility including after the GEH facility closes later in 2014.

The team reviewed Purchase Orders (PO) 437052811, 437076398 and 437079038 (Category “A” plate material) and associated CMTRs. In addition, the team verified for the POs sampled that each supplier was listed acceptably as an active supplier on the GEH Approved Vendor List. The team verified that the plate materials were acceptable according to purchase specifications. The team also reviewed the receipt inspection reports for materials. The team had no issues or concerns with the procurement process.

The team reviewed QAP-1820, "Procedure for Evaluation of Third Party Audit Reports." The QAP provides criteria that must be verified to exist within a third party audit report to determine if it is acceptable to use. A number of companies on the Approved Vendor List (AVL) were added through acceptance of third party audits such as those from NIAC. GEH uses Form 1108 "Third Party Evaluation Form," and Form 1043, "Vendor Qualification Evaluation Report," to document review and acceptance of such third party audits. Overall, the team concluded that GEH's procurement activities were being performed in accordance with their controlling procedures. Methods used to approve addition of suppliers to the AVL were appropriate and the audits used to qualify and maintain suppliers on the AVL were adequate. Where issues identified in the audits required a response by the supplier, documentation of supplier corrective action was included in the audit files.

02.05.b 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 NAC International fabrication specifications 790-S-05 revision 16, "Procurement/Fabrication Specification, Transportable Storage Canisters, Basket Assemblies and Fuel Cans" and 71160-S-05 revision 2, "Procurement/Fabrication Specification, MAGNASTOR Transportable Storage Canisters, Basket Assemblies, DFCs and Fuel Spacers." The team found the specifications to have the appropriate signatures and approvals and all fabrication activities observed during the inspection to be in compliance with the specification, with no concerns.

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

The team examined fabrication drawings, work control procedures, and shop travelers to determine that fabrication of TSCs met the requirements of the CoCs. In addition, the team observed fabrication activities, special processes (i.e., liquid penetrant examination, and welding), and applicable personnel qualification and certification records to determine that fabrication satisfied requirements and was accomplished by qualified personnel. Further, the team reviewed a sample of completed examination/inspection reports for procedural compliance. The team noted that in all cases manufacturing drawings, shop travelers and inspection and welding procedures were adequately identified and at various work locations and the documents reflected the correct revisions, as applicable. Observations included shield and structural lids, fuel tubes, TSC shell plates, forgings, heat transfer disks, support disks, fuel tubes, and weld wire.

The team observed nondestructive dye penetrate examination of longitudinal seam of a half shell for Arizona Public Service. Procedures were in place and being followed according to shop travelers. The team verified, for those items that had been received by GEH for fabrication, that appropriate tags associated with the status of incoming items either awaiting receipt (red tag) or for those items that had been inspected (green tag) were affixed to the materials. The team verified by observation that identification of incoming items was maintained by heat and job order number on the items and on records traceable to the item.

The team noted that certain ultrasonic inspections were outsourced to an approved NDE contractor, Team Industrial Services (TIS). The procedure used. UM-805, revision 2, is approved by GEH.

The team selected Welding Procedure Specification (WPS) 500DM-1, Rev. 0 used on shop traveler no. 173944-NCR-3592, sequence no. 60 and WPS-300SS-1, WPS-300SS-2, WPS-300SS-3, and WPS-300SS-4, used on traveler no. 172504-201, sequence no. 110 and verified compliance to ASME Section IX WPS current essential variable requirements.

Based on shop observations, the team verified that measuring and testing devices used in activities affecting quality were appropriately controlled and calibrated. The team noted affixed tags showing calibration date, next calibration due date and equipment serial number.

QAP-1200 Revision 18, "Measuring and Test Equipment," was used to direct and coordinate calibration of measurement and test equipment. The procedure requires all calibrations to be done in the calibration lab with the climate controlled within a certain band. A check of the temperature display in the calibration lab showed the temperature was within the prescribe restraints of the procedure. Tools sent to a separate calibration facility and were marked as OSV outside vendor. The in-house calibration records would be accompanied by the records from the outside vendor which included calibration and environmental conditions. In the case of helium leak detection equipment (SN C-0591), the calibration did not have a specific humidity. LDS Vacuum products certified by the American Association for Laboratory Accreditation indicated that specific humidity would not change the calibration in any appreciable manner. This brought into question purchasing agreements and the way GEH communicated to the outside vendors on their imposed environmental conditions. Condition Report (CR) No. 10869 addressed the procurement orders requirements of specifying environmental conditions (temperature and humidity as required by QAP 1200 section 5.2.

The Calibration examiner granted a 3 month extension of a device. According to QAP-1200, extensions must be approved by the Quality Manager, Quality Supervisor, or Quality Control Supervisor. It was not recorded or documented that these personnel had been informed or were approving the extensions of calibrations; this resulted in a CR No. 10858. A review of the calibration records was performed and authorized by the Quality Manager.

A calibration record was noted as misfiled and certain others were not completed on a consistent basis. Questionable tools that might have been in service during fabrication activities were reviewed to ensure they had not been used for measuring activities while out of calibration. CR No. 10873 specifically addresses the x-ray film densitometer's (SN C0178) missing records for a three month period (8/12-11/12). Calibration records for the time period before and after was maintained in the folder record.

The team observed the vault where records were kept in a climate controlled room with controlled access. The door had multiple locks and an access list mounted with approve personnel. Controls were in place to prevent and mitigate damage in the event of fire. The records were being stored within the procedures of QA-1700. An index was provided to look through the records. A random check of the index and records showed a system where there were reasonable assurance records could be found using this system.

The team reviewed GEH's 2013 annual audit report of activities as documented in audit NQA-2013-04-CF conducted October 7-11, 2013. The audit check list supporting the audit report was

also reviewed. The audit report was assessed to be adequate with sufficient detail to support the findings (7) and concerns (16) that were documented in Condition reports (CRs). The team also reviewed the GEH Nuclear Energy 2014 Internal Audit schedule and noted that it had the CF location slated for audit in October.

02.07: With regard to fabrication activities, determine whether the provisions of 10 CFR Part 21, have been implemented; personnel are familiar with the reporting requirements of 10 CFR Part 21; and compliance with 10 CFR 21.6, Posting requirements.

GEH nonconformance reports are screened for reportability under 10 CFR 21. The team observed postings of 10 CFR Part 21 requirements and noted that the procedure and postings were met.

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

The team examined selected audits and surveillances to determine if GEH had implemented its quality assurance program with regard to internal audits and if GEH had been audited, or had surveillances performed, by NAC. The team noted the presence of oversight representatives from both APS and ZionSolutions and determined that oversight for the fabrication activities occurring at GEH was adequate. The team reviewed a sample of NAC surveillance reports and noted adequate objective evidence in support of assuring compliance to contractual requirements specific to fabrication, NDE and Test activities. In all cases the results were acceptable.