December 26, 2002

Alan S. Hanson
President and Chief Executive Officer
Transnuclear, Inc.
Four Skyline Drive
Hawthorne, NY 10532-2176

SUBJECT: NRC INSPECTION REPORT NO. 72-1029/2002-201 AND NOTICE OF VIOLATION

Dear Mr. Hanson:

This refers to the inspection conducted on November 18 through 21, 2002, at the facilities of Kie-Con in Antioch, California. Kie-Con is a fabrication contractor for Transnuclear, Inc. (TN), fabricating concrete components of the Advanced Standardized NUHOMS cask storage system to be used at Southern California Edison's San Onofre Nuclear Generating Station. The inspection was conducted to determine if fabrication activities were performed in accordance with the requirements of 10 CFR Parts 21 and 72, the applicable Certificate of Compliance and Safety Analysis Report, and TN's NRC-approved quality assurance program. The enclosed report presents the results of this inspection. On December 3, 2002, subsequent to the inspection, the inspectors, Spent Fuel Project Office management and other technical staff held a telephone conference with TN and SCE staff and management to discuss TN and SCE's assessment of the preliminary inspection results and any actions they had planned and taken.

Based on the results of this inspection, the NRC has determined that two Severity Level IV violations of NRC requirements occurred. One violation is cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding it are described in detail in the subject inspection report. The violation is being cited in the Notice because it was identified by the NRC.

One violation is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A of the "General Statement of Policy and Procedure for NRC Enforcement Actions" (Enforcement Policy), NUREG 1600. The NCV is described in the subject inspection report. If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Deputy Director, Licensing and Inspection Directorate, Spent Fuel Project Office, Office of Nuclear Material Safety and Safeguards, and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

The NRC also determined that one minor (less than Severity Level IV) violation of NRC requirements occurred that is not subject to enforcement action in accordance with the Enforcement Policy. The minor violation is described in the subject inspection report. In addition to the issues described in the violations, the NRC observed weaknesses that are described in the subject inspection report.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Sincerely,

/RA/
Michael Tokar, Section Chief
Transportation and Storage Safety and
Inspection Section
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

Docket No. 72-1029

Enclosures:
1. NRC Inspection Report No. 72-1029/2002-201
2. Notice of Violation

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Sincerely,

/RA/
Michael Tokar, Section Chief
Transportation and Storage Safety and
Inspection Section
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

Docket No. 72-1029

Enclosures:
1. NRC Inspection Report No. 72-1029/2002-201
2. Notice of Violation

Distribution:
Docket 72-1029

NRC f/c	Public	NMSS r/f	SFPO r/f TSIS Route
EBrach, SFPO	CMiller, SFPO	SMerchant, OE	DBroaddus, NMSS
NJensen, OGC	LDoerflein, RI	BSpitzberg, RIV	BBrown, OCFO

C:\ORPCheckout\FileNET\ML023610073.wpd

OFC:	SFPO	E	SFPO	E				
NAME:	FJacobs		MTokar					
DATE:	12/ 26/02		12/26/02		/ /		/ /	

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION
Office of Nuclear Material Safety and Safeguards
Spent Fuel Project Office

Inspection Report

Docket:	72-1029
Report:	72-1029/2002-201
Certificate Holder:	Transnuclear, Inc. Four Skyline Drive Hawthorne, NY 10532-2176
Fabricator:	Kie-Con 3551 Wilbur Avenue Antioch, CA 94509
Date:	November 18-21, 2002
Inspection Team:	F. Jacobs, Team Leader, SFPO P. Narbut, SFPO
Approved by:	Michael Tokar, Section Chief Transportation and Storage Safety and Inspection Section Spent Fuel Project Office, NMSS

ENCLOSURE 1

EXECUTIVE SUMMARY

NRC Inspection Report 72-1029/2002-201

On November 18 through 21, the U.S. Nuclear Regulatory Commission (NRC) performed an announced team inspection of Transnuclear, Inc. (TN), at the facilities of TN's fabrication contractor, Kie-Con, in Antioch, California. Kie-Con was fabricating concrete components of the Advanced Standardized NUHOMS cask storage system to be used at Southern California Edison's (SCE's) San Onofre Nuclear Generating Station. The team inspected fabrication activities to determine if they were executed in accordance with the requirements of 10 CFR Parts 21 and 72, the applicable Certificate of Compliance (CoC) and Safety Analysis Report (SAR), and TN's NRC-approved quality assurance (QA) program.

The team concluded that, overall, the fabrication activities met regulatory requirements. The exceptions are identified in one cited Severity Level IV violation, one non-cited Severity Level IV violation (NCV), and one minor violation (less than Severity Level IV). The cited violation concerns a failure to follow specification requirements for reinforcement steel bar spacing and coverage. The NCV concerns a self-identified failure to follow quality procedures for review and approval of drawings and procedures. The minor violation concerns the adequacy of the limitations on rebar spacing described in the TN fabrication specification.

In addition to the issues described in the violations, the team observed some weaknesses in QA program implementation involving the quality control (QC) experience and capabilities of some Kie-Con management and fabrication personnel. These weaknesses resulted from the fact that all Kie-Con QA/QC positions had personnel turnovers during the initial phases of the observed fabrication. The newly designated QA managers had little QA/QC experience, and the assigned QC person required training and certification to become fully functional. When notified of these observations regarding the problems with their QA/QC and fabrication techniques, Kie-Con management stated that they were in a learning experience and needed more time to come up to speed.

The team also had concerns about the adequacy of TN and SCE oversight of the fabrication activities. The weakness in the Kie-Con QA/QC functions required TN personnel to provide direct support to those functions, and thereby reduced the effectiveness and independence of oversight by TN.

Subsequent to the inspection, the inspectors, Spent Fuel Project Office (SFPO) management, and other SFPO technical staff held a telephone conference on December 3, 2002, with TN and SCE staff and management to discuss TN and SCE's assessment of the preliminary inspection results and any actions they had planned and taken. TN stated that they were increasing their oversight in several ways and described their plans. SCE stated that they would be maintaining their oversight but would increase its effectiveness. The NRC acknowledged the actions and noted that further NRC review or inspection would be performed after TN responded to the issues raised in this inspection report.

The violations are summarized in Table 1 below.

Table 1
Summary of Inspection Findings

Regulatory Requirement 10 CFR Section	Subject of Violation or Noncompliance	Number of Findings	Type of Finding	Report Section
72.150	Instructions, procedures, and drawings	1	Violation 72-1029/2002-201-01	2.4
72.152	Document control	1	Non-cited violation	2.6
72.146	Design control	1	Minor violation	2.1

INSPECTION PROCEDURES USED

60852, “ISFSI Component Fabrication by Outside Fabricators”
NUREG/CR 6314, “Quality Assurance Inspections for Shipping and Storage Containers”

PERSONS CONTACTED

The team held an entrance meeting with TN on November 18, 2002, to present the scope and objectives of the NRC inspection. On November 21, 2002, the team held an exit meeting with TN to present the preliminary results of the inspection. The individuals present at the entrance and exit meetings are listed below in Table 2.

Table 2
Entrance and Exit Meetings Attendance

*indicates attended via telephone

NAME	TITLE	AFFILIATION	ENTRANCE	EXIT
Frank Jacobs	Team Leader	NRC	X	X
Paul Narbut	Inspector	NRC	X	X
Paul Coughlin	Engineer, QA	SCE	X	
Danny Czapski	QC representative	SCE	X	
Jeff Larson	Supervisor, Procurement Quality	SCE		X
Torrey Yee	Design Engineer	SCE		X
Victor Abayan	Engineer	TN	X	X
Tony Chen	QA Manager, Fremont	TN	X	X
Usama Farradj	Project Manager	TN	X	X
William Gallo	Senior V.P., West Operations	TN		X*
Maisoon Khasim	QA Engineer	TN		X
David Lines	Surveillance	TN	X	X
Charles Lombardi	Project Engineer	TN	X	X
Ian McInnes	Project Engineer	TN	X	X*
George Zamry	Surveillance	TN	X	X
Ramani Ayakannu	Quality System Manager	Kie-Con		X
Mark Davidson	Project Superintendent	Kie-Con	X	X
Dominic Espinoza	QA Inspector	Kie-Con	X	
John Fitzpatrick	Job Superintendent	Kie-Con	X	X
Dan Griffin	Plant Superintendent	Kie-Con		X
Allen Kung	Manager	Kie-Con		X
Farshad Mazloom	Project Engineer	Kie-Con		X
Morsli Mokhtari	QC	Kie-Con		X

LIST OF ACRONYMS USED

ACI	American Concrete Institute
AHSM	Advanced Horizontal Storage Module
ASTM	American Society for Testing and Materials
CAR	Corrective Action Report
CoC	Certificate of Compliance
ICBO	International Conference of Building Officials
NCR	Nonconformance Report
NCV	Non-Cited Violation
NRC	U.S. Nuclear Regulatory Commission
NUHOMS	Nutec Horizontal Modular Storage
QA	Quality Assurance
QC	Quality Control
SAR	Safety Analysis Report
SCE	Southern California Edison
SFPO	Spent Fuel Project Office
TN	Transnuclear, Inc.

REPORT DETAILS

1. Inspection Scope

The team inspected fabrication activities at Kie-Con to determine if they were performed in accordance with the requirements of 10 CFR Parts 21 and 72, the CoC, the SAR, and TN's NRC-approved QA program. The team reviewed documentation, interviewed personnel, and observed fabrication activities and facilities.

2. Fabrication Controls

2.1 Fabrication Specifications

2.1.1 Scope

The team examined a sample of fabrication specifications to determine if the specifications were consistent with the design commitments and requirements documented in the SAR and the CoC.

2.1.2 Observations and Findings

The inspector reviewed TN specification SCE-01.0114, "AHSM," Revision 0, dated December 26, 2001, to verify the requirements matched those in the SAR and the CoC[1]. Certain minor SAR errors were noted in the review. In several cases the SAR specified the concrete design

[1] CoC 72-1029 was not issued at the time of the inspection. The inspectors used the draft CoC.

and construction standard American Concrete Institute (ACI) 318, “Building Code Requirements for Reinforced Concrete,” but specified several different years for the code rather than the ACI 318-89 specified in the fabrication specification. Further, the CoC specified ACI 318-97, but after discussion with NRC staff, will be corrected to state ACI 318-89. TN personnel had noted several of the SAR errors and had previously initiated a tracking document to correct them in the next SAR revision. TN added the inspector’s additional observations to the SAR update tracking document. This was not considered a violation of NRC requirements because the CoC was in draft.

During inspection of reinforcing steel bar (rebar) for the base unit placement on November 19, 2002, the inspector noted a number of reinforcing bars that had spacing different than the 6 inches +/- 2 inches allowed by the fabrication drawings. The TN representative stated that condition was acceptable because the fabrication specification Table 6-1 stated: “Additional local tolerance may be permitted when bars are shifted to clear embedments and openings.” The inspector noted that this provision, for relaxing rebar spacing around embedments, was usually limited to changes approved by engineering or within some specified pre-engineered bounds. Further, the amount of bar shifted was not limited to the bar immediately adjacent to the embedment, but also affected several upstream and downstream bars in a domino effect. The inspector considered that the specification allowed craft to unilaterally exceed the spacing tolerances and therefore allowed craft to make de facto changes to engineered drawings. 10 CFR 72.146, “Design Control,” requires that design changes including field changes be subjected to control measures commensurate with those applied to the original design. The inspector noted that the Kie-Con fabrication plan (traveler) BE-1-P-2, Item 1.6, included more typical and acceptable language that allowed the additional tolerances around embedments and included a limitation that the total number of bars be maintained. TN subsequently wrote RA-99-1036 dated November 21, 2002, to revise the TN specification accordingly. Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of “General Statement of Policy and Procedure for NRC Enforcement Actions” (Enforcement Policy), NUREG 1600.

2.1.3 Conclusions

The team concluded that the fabrication specifications examined were consistent with the design commitments and requirements documented in the SAR and the CoC. A minor violation was identified regarding the adequacy of the limitations on rebar spacing described in the specification. Additionally, some minor typographical errors were identified in the SAR regarding the applicable year for ACI-318.

2.2 Corrective actions

2.2.1 Scope

The team reviewed corrective actions and nonconformance reports to determine if corrective actions for identified fabrication deficiencies have been implemented in a time frame commensurate with their significance, and if nonconformance reports documenting the deficiencies have been initiated and resolved.

2.2.2 Observations and Findings

Kie-Con had issued five Nonconformance Reports (NCRs) dated from September 6, 2002, to September 19, 2002, and all had been marked as requiring client approval. None had been dispositioned or closed prior to the inspection so the effectiveness of the program could not be fully assessed. NCR No. 007, regarding the NRC-identified rebar deficiencies, was written and dispositioned during the inspection. The Kie-Con Project Quality Plan states, " nonconformances...should include recommended dispositions." The inspector noted that only NCR No. 007, regarding the NRC-identified rebar deficiencies, documented a recommended disposition. Although this was not in accordance with the Quality Plan, it has no safety significance and is considered an observation.

TN had issued two Corrective Action Requests (CARs); however, corrective action had not been completed for either CAR. CAR 02.017, dated September 15, 2002, documented a failure to follow TN procedures for review and approval of rebar placement drawings, the Kie-Con Fabrication Plans, and the Kie-Con Project Quality Plan. CAR 02.019, dated September 19, 2002, documented a failure of Kie-Con inspection and TN oversight to detect discrepancies in rebar placement. The draft corrective actions taken or planned appeared to be adequate for both CARs.

2.2.3 Conclusions

The team concluded that fabrication deficiencies were being identified and documented, but the effectiveness of the process could not be fully assessed during the inspection due to the limited number of corrective actions taken at the time of the inspection.

2.3 Training and Certification

2.3.1 Scope

The team reviewed records to determine if individuals performing quality-related activities were trained and certified where required.

2.3.2 Observations and Findings

Kie-Con personnel performing testing activities observed by the inspectors had appropriate ACI certifications for those activities. The inspector observed that Kie-Con did not have a procedure describing the specific training and qualification requirements for personnel performing activities affecting quality.

Kie-Con training attendance sheets indicated that four training sessions associated with fabrication of the Advanced Horizontal Storage Module (AHSM) had been conducted. None of the attendance sheets contained signatures of the listed attendees. The attendance sheet for the training session "Use of Vibrators - Hi Cycle," dated October 30, 2002, provided no insight into the extent of the training and indicated only three individuals had attended the training. More than three personnel were involved in operating vibrators during placement of the second lift for the base unit on September 19, 2002, in which poor vibration practices were observed.

While the training records indicated there had been a training session for "Pulling Rebar from Stockpiles," there was no documentation of training sessions for some of the more complex activities such as rebar placement. Improper rebar placement in the AHSM base unit was identified by the team during the inspection.

2.3.3 Conclusions

Based on training documentation and the observed performance of fabrication and inspection personnel, the team concluded that training needs and personnel qualification requirements had not been adequately assessed or effectively managed. The team considered this to be a weakness in the implementation of Kie-Con's QA program.

2.4 Fabricator Personnel Knowledge

2.4.1 Scope

The team observed fabrication and quality control work in progress, reviewed records, and interviewed personnel to assess the fabricator personnel's familiarity with the specified design, designated fabrication techniques, testing requirements, and quality controls associated with the construction of the AHSM.

2.4.2 Observations and Findings

The inspector verified that the required design mix was being used and noted that the achieved test cylinder break strengths were well in excess of the required strength. The inspector reviewed records of the American Society for Testing and Materials (ASTM) tests required by ACI 318 for the concrete materials, the batch plant, and the concrete testing equipment and found them to be adequate.

The concrete placement for the bottom half of the AHSM base unit was accomplished prior to the team's arrival. When the forms were removed, large rock pockets and voids in the concrete were found which may or may not be repairable. TN stated that the slump or plasticity of the concrete used was low and prevented free flow of the concrete. Also, the forms had a large area, about five feet across that was subject to, and did, form an air pocket creating a large void. TN stated that they were on a learning curve on the first unit and would use concrete with a better slump for future placements, and were revising the form design to allow venting of the air from the large flat spot. TN and the fabricator properly recorded nonconformances for the conditions noted. TN had not determined the repair procedure, or if repairs would be made, at the end of the inspection. The inspectors considered that an experienced fabricator, familiar with placements of complex shapes should have foreseen the fabrication difficulties and taken appropriate actions regarding, slump, and form venting, before the placement.

On November 18, 2002, at the initial arrival at Kie-Con, the inspectors examined the forms and rebar for the planned second concrete lift for the base unit. The second lift was to be placed on top of the first lift described above. The inspectors noted that the large void area in the first lift would remain accessible for repair after the second lift because of the shape of the base unit. The inspector observed several rebars that were too close to the forms and would not permit

the required 1 ½ inch minimum concrete coverage required by ACI 318 and the construction specification. One rebar was within ½ inch of the forms and another within 3/4 inch. Several others were between 3/4 inch and 1 1/4 inch. The inspector also noted several bars that were parallel and touching and did not have the minimum 1 inch between-bar spacing required by ACI-318. The Kie-Con QC inspector had inspected and accepted the rebar spacing and coverage on his Kie-Con construction traveler (BE-1-P-2) on November 16, 2002. The SCE oversight inspector and the TN oversight inspector had also examined and approved the readiness for concrete placement. The failure to follow specification requirements for rebar spacing and coverage is considered a violation of 10 CFR 72.150, "Instructions, procedures, and drawings," which requires that instructions, procedures, and drawings be followed. (Violation 72-1029/02-202-01)

TN subsequently decided to halt the placement. Kie-Con wrote NCR No. 007 dated November 18, 2002, to document the noted rebar problems. Similarly, TN wrote CAR 02.019 dated November 19, 2002. The rebar problems were subsequently corrected.

On November 19, 2002, the inspectors observed the concrete placement for the top half of the base unit. The first batch of concrete produced in the batch plant was overseen by the Kie-Con mix design engineer. The NRC inspector independently verified that the mix met specification requirements for aggregates, cement, admixtures, and water; however, when delivered and tested, the mix had excessive slump. After a delay period, the mix was retested and met slump, but failed on low air entrainment. The load was rejected and dumped. The second batch was adjusted (within existing mix limits) by the mix engineer and batched. The tests were acceptable. This chain of events, and the mix stiffness problems encountered on the first lift, indicated to the inspectors that the Kie-Con personnel were not familiar with the mix design and its attributes and were on a learning curve.

During the placement, the NRC inspectors and the TN and SCE oversight personnel noted poor placement practices regarding excessive vibration and dragging of concrete using the vibrators. There appeared to be a difference of opinion between the Kie-Con foreman and the TN and SCE oversight personnel about the excessive vibration and the sequence of the placement locations which was inducing excessive lateral movement of the concrete during vibration. The TN oversight person was independently turning off the power for some vibrators. There appeared to be a lack of command and control during the placement. The inspectors did not observe a prejob briefing for the involved craft and inspection personnel, however, after the placement the foreman stated that he had held a quick informal brief with only the vibration personnel. There is no regulatory requirement for a pre-job brief, but it is considered a good practice.

The NRC inspector interviewed and observed the Kie-Con QC inspector performing inspection activities for the placement. The Kie-Con QC inspector had appropriate certifications for the tasks performed and performed them properly, but his employment was terminated during the placement. According to Kie-Con management, the inspector's employment was terminated for reasons unrelated to the placement. The inspector examined the qualifications of the replacement inspector and found him qualified for the functions he was to perform, but not qualified for all necessary functions. Kie-Con management stated that they had other personnel qualified for the other required functions. The NRC inspector observed the

replacement inspector performing a sampling of fine aggregate the following day. He prepared to take the sample in a manner that would not have been best practice, but he was corrected by the TN QA oversight representative and performed the sampling properly.

2.4.3 Conclusions

The team concluded that the fabricator's personnel did not demonstrate adequate familiarity with the designated fabrication techniques and quality controls associated with the construction of the AHSM. The team considered this to be a weakness in the implementation of Kie-Con's QA program. One violation was identified for failure to follow procedure for rebar placement.

2.5 Material and Procurement Specifications

2.5.1 Scope

The team sampled materials to determine if they met the design requirements and procurement specifications. Additionally, the team sampled procurement specifications to verify the specifications conformed to the requirements contained in the SAR and the CoC.

2.5.2 Observations and Findings

The inspector found that the procurement specifications for cement and rebar met the requirements contained in the SAR and the CoC. The inspector found that the cement, rebar and aggregates met the design requirements and procurement specifications. Additionally, the inspector reviewed, and found adequate, the records and data associated with the aggregate petrographic examinations and thermal expansion testing performed to verify that the concrete was adequate for the high temperature application associated with the spent fuel storage.

2.5.3 Conclusions

The team concluded that the materials and procurement specifications samples conformed to the requirements contained in the SAR and the CoC.

2.6 Fabrication

2.6.1 Scope

The team examined documents, fabrication, and associated quality control checks to determine if the AHSM was being fabricated in accordance with approved implementing procedures and fabrication specifications.

2.6.2 Observations and Findings

The inspectors examined the placements associated with the AHSM base unit and questioned the method of sampling fresh concrete. The Kie-Con yard transports fresh mixed concrete for a distance of about 300 feet from the central mixer to the form site using a nonmixing conveyance. The method of sampling from a nonmixing conveyance was not described in the

applicable ASTM C 172 standard, “Sampling Freshly Mixed Concrete.” However, the inspectors concluded that the sampling methods used achieved the intent of the ASTM standard in that the sample was not taken from the initial discharge and resulted in a representative sample by using a mix of a samples drawn from two separate wheelbarrows of 6 cubic feet each.

Prior to the inspection, TN CAR 02.017 documented that Kie-Con rebar placement drawings had not been approved in accordance with TN quality procedures. Initially, Kie-Con had responsibility for preparation of rebar placement drawings, and TN procedure QP 7-7 for approval of supplier document submittals was applicable for TN review and approval of the drawings. Subsequently, TN assumed the responsibility of preparing the drawings for Kie-Con, and TN procedure QP 5-3 for preparation of fabrication documents was applicable for TN review and approval of the drawings. However, neither procedure QP 7-7 nor procedure QP 5-3 was followed. Similarly, TN had revised the Kie-Con Project Quality Plan and Fabrication Plans without following the applicable quality procedure. The failure to properly review and approve revisions to the drawings, Project Quality Plan, and Fabrication Plans is considered a violation of 10 CFR 72.152, “Document control,” which requires that changes to documents are reviewed and approved. This non-repetitive, licensee-identified and corrected violation is being treated as a Non-Cited Violation, consistent with Section VI.A.8 of the NRC Enforcement Policy.

2.6.3 Conclusions

A non-cited violation was identified regarding failure to follow properly review and approve revisions to rebar placement drawings, Fabrication Plans, and the Project Quality Plan.

2.7 Part 21

2.7.1 Scope

The team reviewed fabrication activities to determine if the provisions of 10 CFR Part 21 for reporting defects had been implemented.

2.7.2 Observations and Findings

The inspector found that TN had retained responsibility for the requirements of 10 CFR Part 21 through the evaluation of Kie-Con nonconformance reports. TN had not imposed any Part 21 responsibility on Kie-Con. This is considered an acceptable approach.

2.7.3 Conclusions

The implementation of 10 CFR Part 21 was considered adequate.

2.8 Audits and Oversight

2.8.1 Scope

The inspectors examined audits, surveillances and inspections of Kie-Con activities to determine if the corrective actions were appropriate and implemented in a time frame

commensurate with their safety significance. Additionally, the inspectors examined the oversight of fabrication and inspection activities by the supervision and QC or QA personnel to determine if appropriate oversight was performed during fabrication activities.

2.8.2 Observations and Findings

TN had audited Kie-Con as documented in Audit Report No. KIE.0001 dated July 29, 2002, and August 13, 2002. TN placed Kie-Con on their Approved Suppliers/Vendors List based on a TN-Fremont Supplier Evaluation Report dated September 16, 2002, with the restrictions that TN approve Kie-Con Category "B" Purchase Orders and that TN oversight is required. TN oversight included a full time QA surveillance inspector when activities were in process and periodic site visits by QA management and the project engineer. Through interviews, the inspectors noted that the TN QA inspector was knowledgeable in concrete technology and had systematic check lists for recording his surveillances.

SCE had not performed an audit of Kie-Con, and SCE did not have a full-time representative on site at Kie-Con. SCE had developed TNI-SV3-02, "Source Verification Checklist," for verification activities at Kie-Con, and was performing surveillances at approximately two-week intervals. The SCE surveillance engineer was experienced in concrete technology.

The inspector noted that the Kie-Con was overseen by the International Conference of Building Officials (ICBO) and was an approved fabricator (Number FA-351) facility which includes periodic examinations and approval by the ICBO Evaluation Service. ICBO examines and approves the fabrication process and procedures.

The inspectors noted numerous errors and omissions in Kie-Con documentation that TN oversight personnel had identified for correction. The inspectors also observed TN oversight personnel providing direct assistance or direction to Kie-Con fabrication and inspection personnel. The inspectors considered that the amount of TN involvement reduced the effectiveness and independence of oversight by TN.

The inspectors found that the oversight by Kie-Con supervision and QC personnel was not adequate for the first and second lifts of concrete for the AHSM base unit as evidenced by the problems described in paragraph 2.4 above. Additionally, it was noted that the two key Kie-Con quality assurance and quality control positions, the Quality Systems Manager and the Quality Control Manager, were either not filled or the assigned personnel changed during the week of the inspection. At the end of the inspection, personnel had been assigned to the positions, but the personnel were from engineering positions and were not familiar with the requirements of the positions in regards to oversight. As described earlier in paragraph 2.4 above, employment of the QC inspector (who was also the designated Quality Control Manager) was terminated during the concrete placement on November 19, 2002, and the QC inspector was unavailable for further interview. Kie-Con's replacement QC inspector was interviewed regarding records but was unfamiliar with the files. The NRC inspectors considered that the oversight by Kie-Con management and QA was inadequate and informed the TN and SCE representatives of their opinion. TN and SCE representatives agreed.

2.8.3 Conclusions

The team concluded that although the TN and SCE oversight appeared to be adequate in scope, the effectiveness of the oversight was not adequate as evidenced by the NRC observations and findings for the base unit placements. The weakness in the Kie-Con QA/QC functions required TN personnel to provide direct support to those functions and thereby reduced the effectiveness and independence of oversight by TN.

3. Exit Meeting

On November 21, 2002, at the conclusion of the inspection, the team held an exit meeting with TN's management to present the preliminary inspection results. TN's management acknowledged the inspection results presented by the team. SCE and Kie-Con management were also present at the exit meeting. Subsequent to the inspection, the inspectors, SFPO management, and other SFPO technical staff held a telephone conference on December 3, 2002, with TN and SCE staff and management to discuss TN and SCE's assessment of the preliminary inspection results and any actions they had planned and taken. TN stated that they were increasing their oversight in several ways and described their plans. SCE stated that they would be maintaining their oversight but would increase its effectiveness. NRC staff and management acknowledged the actions and noted that further NRC review or inspection would be performed after TN responded to the issues raised in this inspection report.

NOTICE OF VIOLATION

Transnuclear, Incorporated
Hawthorne, New York

Docket No. 72-1029

During an NRC inspection conducted at Kie-Con facilities in Antioch, California, on November 18-21, 2002, a violation of NRC requirements was identified. Kie-Con is a concrete fabricator for Transnuclear, Incorporated. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, the violation is listed below:

> 10 CFR 72.150, “Instructions, procedures, and drawings,” requires, in part, that the certificate holder shall prescribe activities affecting quality by documented instructions, and that these instructions be followed.
>
> The Safety Analysis Report for the Standardized Advanced NUHOMS Horizontal Modular Storage System for Irradiated Nuclear Fuel, drawing NUH-03-4011, “Advanced Horizontal Storage Module Main Assembly,” Revision 1, Sheet 1 of 9, Note 19 requires that the minimum concrete coverage for reinforcing bar be 1 ½ inches. Further, Note 2 requires that construction be performed in accordance with American Concrete Institute (ACI) Standard 318. ACI 318-89, Section 7.6.1 requires that the minimum clear spacing between parallel bars in a layer be not less than 1 inch.
>
> Contrary to the above, on November 18, 2002, the reinforcing bar for the base unit of the Advanced Horizontal Storage Module had reinforcing bar placed such that 1 ½ inch concrete coverage would not be achieved in several places (with coverage down to ½ inch) and the spacing between two parallel bars was less than one inch (the bars had zero clearance). The reinforcing bar placement had been accepted by the Kie-Con quality control inspector on November 16, 2002.

This is a Severity Level IV violation (Supplement VI).

Pursuant to the provisions of 10 CFR 2.201, Transnuclear, Incorporated is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555 with a copy to Charles L. Miller, Deputy Director, Licensing and Inspection Directorate, Spent Fuel Project Office, Office of Nuclear Material Safety and Safeguards, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

ENCLOSURE 2

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the Publically Available Records (PARS) component of NRC's document system (ADAMS), to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html, (the Public Electronic Reading Room). If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.790(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 26 day of December 2002