UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

CONTAINER SUPPLIER INSPECTION PROGRAM

Inspection Report

ORGANIZATION: Chem-Nuclear Systems, Inc,
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Columbia, South Carolina 29210

CONTACT: Carl H. Ross TELEPHONE: 803-256-0450
TITLE: Director, Quality Assurance

ACTIVITY: Design, Fabricate, and Maintain Radioactive Material Packages

QUALITY ASSURANCE PROGRAM APPROVAL NO.: 0231

Report Number:	Inspection Dates:	Inspection On-Site
710231/89-03	6/19-22/89	Person-Hrs: 81

INSPECTION BASES AND SCOPE:

A. BASES: Title 10 CFR Parts 21 and 71, and Certificate of Compliance Nos. 5806, 6244, 6601, 9070, 9079, 9080, 9081, 9108, 9111, 9151 9159, 9168, 9216.

B. SCOPE: To determine whether the organization has established, documented and executed procedures which fulfill the commitments made in the organization's NRC-approved quality assurance program.

To determine whether fabricated packages were manufactured in accordance with the design approved by the Commission.

ENCLOSURE

CONTAINER SUPPLIER INSPECTION PROGRAM

Inspection Report

FINDINGS: Nonconformances with the requirements of 10 CFR Sections 71.103; 71.107; 71.109; 71.135 and 71.137 were identified.

INSPECTION TEAM LEADER: Len Gordon
L. Len Gordon, NMSS DATE: 10-18-89

OTHER NRC INSPECTORS: John P Jankovich
John P. Jankovich, NMSS DATE: 10/18/89

Dennis Kasnicki /118
Dennis Kasnicki, Region II DATE: 10-18-89

REPORT APPROVED BY: Charles E MacDonald
Charles E. MacDonald, Chief
Transportation Branch, NMSS DATE: 10/20/89

1. INSPECTION SUMMARY

The inspection was an announced U.S. Nuclear Regulatory Commission (NRC) team inspection of container design, fabrication, maintenance and facility management activities of Chem-Nuclear Systems, Inc. (CNSI). NRC's Division of Safeguards and Transportation conducted the inspection, using the Temporary Instruction, "Transportation Package Suppliers Inspection" and the attached Container Supplier Inspection Tree (Fig. 1). Inspection findings are based on data collected through observation of selected activities, review of implementation procedures and controls, review of selected documents and records, and interviews with personnel. The inspection team concluded that the implementation of the quality assurance (QA) program was satisfactory, in general. However, it identified specific items of nonconformance, on some aspects of QA management (10 CFR Sections 71.135, 71.103, 71.137), material control (10 CFR Section 71.109) and design modification (10 CFR Section 71.107). The team discussed tentative findings with the organization's representatives at the exit meeting.

2. CONTAINER SUPPLIER INSPECTION

This inspection was conducted to evaluate the extent of compliance with regulatory requirements during nuclear container design, manufacture, and certification. The Container Supplier Inspection Procedure (CSIP) comprises seven major elements, including: (1) QA Management; (2) Fabrication Process; (3) Materials; (4) Testing/Inspection; (5) Design Modification Verification; (6) Maintenance Control; and (7) Handling and Storage Control.

The objective of the inspection was to evaluate the nuclear container design, certification, and manufacturing activities, to determine if the activities were accomplished, effective, and assessed by CNSI management to assure compliance with regulatory requirements and QA Program commitments. Inspection data were obtained by review of work already accomplished, by observation of work in progress, and by evaluation of CNSI's assessment of its own and its contractors' activities, including the correction of any weaknesses.

2.1 Persons Contacted

The NRC inspection team interviewed the following persons.

*William Peter	- QA Specialist
*Leonard Tower	- General Manager - Transportation
*Carl H. Ross	- QA Director
David Ebenhack	- Vice President, Regulatory Affairs and Site Strategies
Richard L. Byars	- QA Manager
*Susan Kintner	- Document Control Administrator
Robert T. Anderson	- Executive Director, Engineering & Technology
Patrick L. Pacquin	- Sr. Licensing Engineer
*Glen Rae	- Vice President, Marketing & Utility Services
*Henry Sturkey	- Regulatory Affairs
*Albert Bonifacio	- Engineering & Technology

*Atterded exit meeting

Carl McGovern	- Program Manager
Edward Green	- Level 1 nondestructive examination (NDE) inspector
Marvin Stubbs	- Level 2 NDE inspector
Keith Frazier	- Level 3 NDE inspector
W. Stuart Point, Jr.	- Executive Vice President, Richmond Engineering Co. (RECO) Industries
Jim Brown	- Plant Manager, RECO Industries
Fred Zarbaugh	- QA/Quality Control (QC) Manager, RECO Industries

2.2 QA Management

The inspectors interviewed QA management, Engineering staff, and personnel responsible for technical processing, container maintenance, and activities involving shipping and receiving of transport packages. The inspectors also examined CNSI's QA documents, applicable administrative procedures, organizational charts, completed container manufacturing documents, design modification controls, inspection reports, and measurement and test equipment calibration records.

The inspection of this element included a review of two primary areas: the extent to which CNSI has implemented QA Approval No. 0231, and the proficiency and independence of the assigned QA personnel responsible for ensuring that the QA commitment is met.

CNSI's commitment to strong QA management oversight of all packaging and transport activities is apparent throughout the activities that were inspected. The President of CNSI endorses this commitment to quality by requiring, via a written policy directive, that all safety-related activities involving packaging and transport activities be accomplished in accordance with applicable QA requirements, and by delegating to the QA director the authority to stop unsatisfactory work or further processing, pending resolution of a potential quality problem.

The staffing level of the QA organization consists of ten persons, two at the Columbia site and eight located at the Barnwell site. The QA director and a QA specialist at the Columbia site are primarily concerned with QA management oversight, documentation review and auditing of CNSI's operations. The personnel at the Barnwell site, including a QA manager, a supervisory inspector, and seven inspectors are essentially involved with routine inspection, test, and maintenance of packages in support of trailer loading/unloading operations associated with burial of radioactive waste at the site. Observations of the conduct of their duties and discussions with QA personnel showed that they are knowledgeable and fully committed to adherence to QA requirements.

The basic QA requirements document, QA-AD-001, Revision F, dated 6/12/87, was reviewed and found to adequately address the requirements of Subpart H of Part 71, thereby providing a credible basis for a comprehensive QA program.

Other procedures, including programmatic controls for procurement actions, vendor evaluations, training, internal and external audits, control of measuring and test equipment, test and inspection activities were also reviewed and found to be fully acceptable, demonstrating QA personnel involvement. For example, all procurement questions are reviewed and a formal QA approval is needed for further processing of a purchase order. This formal approval is granted after a thorough review and concurrence by QA with the requisitioner's designation of the appropriate quality level. QA has the responsibility of assigning the appropriate QA requirements and ensuring that the procurement is from a qualified vendors list. This review, concurrence and approval process is again repeated prior to the release of a purchase order or an amendment to a purchase order. The procedure implemented for procurement actions is typical for other activities (e.g., engineering changes, disposition of nonconforming material, etc.).

The inspectors reviewed CNSI's procedure QA-AD-011 "QA Internal Audit Procedure," Revision D, dated 9/26/88, which is based on ASME/ANSI N45.2.12, "Requirements for Auditing of QA Programs at Nuclear Power Plants." The QA department conducts routine internal audits of the CNSI organization on an annual basis. The auditing system has evolved over the years; presently, 13 different functions

are audited (e.g., engineering, Barnwell site operations, personnel dosimetry). The audits are conducted by using a checklist for each function; the observations of the audit are documented in an audit report in one of three categories: findings, concerns, or satisfactory. During the year, the department responsible for the identified findings, or concerns responds to the QA department with a memorandum which describes how the issue was resolved. The inspectors reviewed the internal audit files for the past three years, and observed numerous instances when the internal audit system identified different items (e.g., torque wrenches out of calibration, misfiled documents) which were resolved. The past and current records for the internal audit system were found to be in good order and well-organized.

Records of the certification of the lead auditor were examined. Review of the records verified that he was certified in accordance with the ten-credit scoring system described in ASME/ANSI N45.2.23, "Audit Personnel Qualification."

The inspectors reviewed the audit history. The records indicated that each operation of CNSI is audited within the required 12-month cycle, and dates are scheduled for future audits.

The inspectors reviewed CNSI's procedure QA-AD-001 "Defect Reporting Procedure" and found it met the NRC requirements identified in 10 CFR Part 21. Part 21 and the procedures for notification of defects were posted at the Barnwell site.

In nonconformance with the requirements of 10 CFR Section 71.135, some test results, and welding records were unavailable. With regard to records management, 10 CFR Section 71.135 requires a system which ensures that QA records maintained in-house or at other locations are identifiable and retrievable and requires that the records be maintained for the life of the package to which they apply. Review of design/fabrication packages indicated problems in the retention/retrievability of QA records on numerous occasions. For example, when reviewing the 1-13G repair package file, CNSI was unable to locate the purchase order, although the purchase-requisition was in the file. Despite several attempts to locate the purchase order, both at Columbia and at Barnwell,

the record was not found. The records containing the engineering package for the 14-210 design were also reviewed. No date could be found identifying when the engineering review was conducted. Based on the location of this review in the file, the CNSI staff estimated that it must have been performed around October 1984.

The QA maintenance records at the Barnwell site are filed in three separate categories: (a) current and past-year records; (b) history files; and (c) nonconformance reports. The CNSI nonconformance reports are filed in sequential order. This practice makes it difficult to assemble a complete history for a unit or a model or when maintenance may be required. The Transportation Services Department also has a series of separate files: the managers in charge maintain two incomplete personal file systems, the work orders are handled as a separate system, and QA has another filing system which was called the "complete, official record."

Records for the required tests after weld repair of the 1-13G cask were incomplete. Specifically, CNSI had committed to NRC (ref. Correspondence R-A-0163-7, March 3, 1987) to perform a series of tests to approve the repair of the welds for Cask 1-13G. After an extensive search of several days, approximately 60 percent of the test results were located.

Records, with the exception of a purchase order and QA acceptance tests on the welding of the base plate, were not available at either CNSI central offices, the CNSI Barnwell site, nor at the site of the welding vendor, RECO Industries, Inc. While inspecting the files that were available for Cask 1-13G, the inspectors noticed a purchase order not related to the cask in question filed with the records. Earlier, a similar incident was recorded, when one of the CNSI internal audits (IA-87-4) identified documents missing. This issue was closed by a letter to the file indicating that the documents were found and placed in the proper file.

A nonconformance was identified with regard to 10 CFR Section 71.103, which specifies that the authority and duties of persons and organizations performing

activities affecting safety-related functions must be clearly established and delineated in writing. In nonconformance with this requirement, engineering changes and amendments/revisions to the NRC-approved QA program are not procedurally controlled. The current procedure for engineering changes is accomplished informally by a person or persons in the engineering department. Based on the individual's judgment, changes are implemented and a determination is made whether the change is within the condition for the applicable certificate of compliance. Concerning the NRC-approved QA program, the current QA program on file with NRC is Revision B, dated 2-22-82. The review of the document control system indicated that there had been revisions up through F, dated 6-12-87. Each revision was authorized by QA management, but the QA program does not have a provision to determine whether the CNSI change affected the NRC commitments, and no person is designated by a position description to perform this function.

A nonconformance was identified with regard to 10 CFR Section 71.137, which requires a periodic audit of the effectiveness of the QA program. This Section states that such audits be conducted with a comprehensive system of planned and periodic audits, to verify compliance with all aspects of the QA program. The requirements also state that the audits must be performed by personnel not having direct responsibilities in the areas being audited. CNSI's audit procedure (QA-AD-001) states that the effectiveness of the QA Program will be determined through internal audits, internal reporting procedures, and customer and user reports. Several letters that the President sent the QA Director, over the past several years, were reviewed and it was found that the President's assessment of the effectiveness was based on internal information, and could not be considered independent of direct responsibilities.

2.3 Fabrication Process

This element was inspected to verify that all phases of the fabrication process are properly controlled and implemented. The fabrication processes are to be controlled, verifiable, and traceable, from the onset of design through completion of the assembly process. Since no fabrication was going on at the time

of the inspection, the inspectors reviewed completed documents for containers located at CNSI facilities and at the plant site of a vendor, RECO Industries, Inc. A contractor facility walkthrough was performed to determine the adequacy of the contractor controls and programs.

The inspectors reviewed procurement and fabrication records for a number of casks (e.g., Models 14-210HA and 8-120B) and determined that the fabrication control specified on the procurement documents as complete. Hold and witness points were identified during the fabrication process, and the appropriate testing/inspections were performed when reached. A hold point requires that the fabrication process stop until CNSI QA inspectors perform the specified inspection. A witness point allows the inspector to conduct, at his/her discretion, a QA inspection, but within a specified time period. The inspectors found that the CNSI QA inspections were performed at the specified hold points. A complete set of fabrication documentation for the cask (Model 8-120) was available at the site of the vendor, RECO Industries, Inc., in Cayce, SC, indicating that QA inspections were performed as scheduled. Review of the nonconformance reports indicated that nonconformance questions were similarly resolved with CNSI QA involvement. RECO had a fully documented QA program throughout the fabrication, qualification requirements for QA auditors, and a documented procedure for performing internal QA audits. The training record for the RECO QA auditors was also reviewed and found satisfactory.

2.4 Materials

In the areas of materials a review was conducted to determine the effectiveness of the controls used to ensure compliance with requirements placed on materials. Materials should be controlled, verifiable, and traceable from the time of purchase through the life of the container. The inspectors reviewed documentation for four containers and interviewed CNSI personnel. The documents were reviewed to ensure completeness of material identification and certification, to verify that the specified material was used, and to evaluate material controls and QA program controls. The contractor facility controls were inspected at RECO Industries, Inc., to verify that they also met material control requirements.

During the inspection, it was determined that material control for the fabrication process was adequate and met the regulatory requirements and application commitments. The certificate of compliance for materials submitted by the fabricating contractors is complete and fully documented.

A nonconformance was identified concerning the requirements in 10 CFR Section 71.109 which specify that measures must be established to assure adequate quality in the documents for procurement of material, equipment and services, whether purchased directly or through contractors or subcontractors. In nonconformance with this Section, the inspectors found that, CNSI did not specify shelf life on the purchase orders, and in the shipping documentation; the storage tags in the store room did not specify shelf life either. In particular, shelf life for gaskets was not specified. The applicable procedure (TR-MN-005, Rev.G, 11/22/88) specifies a five-year shelf life. No engineering analysis or other documentation was available to indicate that a five-year shelf life is justifiable. One correspondence from the gasket supplier indicated that the gaskets purchased by CNSI have a minimum shelf life of two years and a maximum life of five years. Another correspondence from the supplier referenced various MIL standards specifying shelf lives of 3, 5 and 20 years, but did not identify whether these standards apply to the materials purchased by CNSI. The maintenance manual calls for annual replacement of the gaskets used as seals. In practice, the seals on the containers are inspected prior to each shipment and replaced annually or sooner if damaged.

The inspectors did not find any indication, upon reviewing past maintenance work orders, that seals older than five years were used. However, without indicating shelf life for the seals in stock, as is the practice at the present time, the possibility exists for using material beyond its shelf life. The question of shelf life is of particular concern for the gaskets which are stored in the emergency kit on transportation trailers. These gaskets may be exposed to extreme weather conditions which may adversely affect their performance. It is current practice to use the gaskets from the emergency kit when gaskets are replaced on the container, and thus rotate the stock. However, the rotation is accomplished informally on the basis of maintenance "practice," and no procedure

or other documentation formally specifies such a practice. When this concern was raised with CNSI management, they immediately recognized the issue and indicated that steps will be taken to ensure that the question of seal shelf life will be addressed.

2.5 Testing/Inspection

The various areas involving tests and inspections were reviewed to determine the effectiveness of the controls used to ensure compliance with requirements placed on the testing and inspection program. Tests and inspections should be controlled, verifiable, and traceable, using calibrated measurement and test equipment. The inspectors reviewed completed documents, interviewed CNSI personnel at the Barnwell facility, and reviewed the calibration status of selected measuring and test equipment.

Inspection of this element considered three major areas: Program, Implementation and Quality Assurance. During the inspection, it was determined that testing and inspection controls were fully within regulatory requirements. Major strengths identified included QA controls to ensure: (a) that nonconforming materials or out-of-calibration measuring and test equipment were not used during repair or maintenance activities; (b) materials received from vendors were in full agreement with purchase order provisions; and (c) the inspection and test personnel were qualified and not personally involved in the activity being inspected.

Review of the inspection reports and checklists generated during trailer loading and unloading operations, during maintenance and during final inspection, verified that the inspectors' findings are independently reviewed by QA personnel who formally approve the data sheet or checklist before permitting release for further processing.

The CNSI nonconformance procedure uses a graded approach on disposition of nonconforming material. Dispositions of material identified as Category I require immediate removal from service; Category II require corrective active

disposition within 30 days; and Category III, corrective action disposition within 90 days.

The inspectors reviewed the calibration files and confirmed that all measurement and test equipment were within their prescribed calibration cycle. Measuring equipment, including a pressure gauge (manometer), a MPE tester, and halogen leak detector, were randomly removed from their test/inspection stations. It was determined that their calibration status was current, and that the standards used by the calibrators were traceable to nationally recognized standards. A CNSI procedure provides for all material to be retested if it is found that measurements have been made with out-of-calibration instruments.

The inspectors reviewed the training files of the seven inspectors at the Barnwell facility. The files included histories of the training and certifications of each inspector and a description of company training, on-the-job training, and courses taken at local vocational schools. CNSI has four Level 1, one Level 2, and two Level 3 NDE inspectors certified by written examination according to ANST-TC-1A guidelines, "Recommended Guidelines for NDE Inspections."

An NDE inspector from each level was interviewed. All expressed satisfaction that the training received was commensurate with gaining the necessary skills to perform the type of activities they were engaged in. It was mentioned that CNSI specialists conduct weekly "lunch bag" training sessions, to maintain and update inspectors' skills on the job.

2.6 Design Modification Verification

A review of design modifications was made to verify that adequate controls have been developed and implemented in the design and modification process, ensuring compliance with the Safety Analysis Report requirements. One objective of this inspection was to ensure that past container manufacturing changes had been given adequate consideration. The design modification process should be controlled, retrievable, and traceable from the onset of design through completion of testing and delivery to an owner or user. The inspectors reviewed completed

documents for containers and interviewed CNSI personnel. The documents were reviewed for completeness of modification design review, adequacy of design modification changes, and verification that the design modification requirements were met. The review also evaluated the design modification controls and QA program controls.

The inspectors reviewed CNSI's administrative procedure entitled, "Design Control Procedure," EN-AD-002, Rev. F. This procedure defines the framework around which all safety-related components are designed and verified. It is the engineering managers' responsibility to designate a particular design feature as related or not related to safety. Design input, analysis, and verification are to be filed in the design package (file). The design package contains design documents such as design reports, computer program documentation, engineering drawings, safety assessment reports, and technical specifications. The inspectors also reviewed related administrative procedures, entitled "Drawing Control Procedure," EN-AD-001, Rev. G, and "Engineering Records," EN-AD-004, Rev. G. Collectively, these procedures and their implementation demonstrate that the design and design modification processes are documented, reviewed, controlled and approved. Designs and modifications are retrievable and traceable; responsibilities are established and documented; and an independent design review is established.

A nonconformance was identified with regard to 10 CFR Section 71.107, which specifies that design changes, including field changes, must be subject to design control measures commensurate with those applied to the original design. Procedure EN-AD-002, Rev. F, establishes forms for use in documenting design modifications. One of these forms is a design review checklist which assures that essential design criteria, such as applicable codes, standards, regulations, specifications and design bases have been considered. The inspectors noted that while this form included "regulations" as a criterion to be considered, it did not explicitly indicate the Certificate of Compliance and its supporting Safety Assessment Report (SAR). CNSI representatives concurred that the explicit inclusion of these items would enhance the procedure and could be accomplished with another form such as a concurrence sheet, which would assure the involvement of affected disciplines, including QA.

The inspectors reviewed "Vendor Surveillance Procedure," QA-AD-004, Rev. D. and "Vendor Evaluation Procedure," QA-AD-007, Rev. E, and found them comprehensive.

2.7 Maintenance Control

The performance of maintenance is to ensure that containers used are in unimpaired physical condition. The goals of maintenance inspection are to identify the maintenance that should be performed on the container to ensure that it will meet its design objective, and then to confirm that the scheduled maintenance has been performed, as planned. The inspectors reviewed completed documents and history files for the entire life of selected units and interviewed CNSI personnel. The documents were reviewed for: completeness of maintenance identification, adequacy of identified maintenance, maintenance controls, and QA program controls. The inspection of this element considered three major areas: Program, Process, and QA.

The Transportation Services Department implements the maintenance program at CNSI's Barnwell site. The QA group at the site, under independent management, inspects the maintenance work and keeps the records. Maintenance activities are extensive and well-documented. Specifically, activities related to inspection and maintanence are performed prior to each shipment, and extend to the entire transportation unit as a whole: the trailer, the truck, as well as the cask are inspected each time a shipment is made. Multiple inspections are used. The driver fills out both a pre-trip and a post-trip inspection report. The QA staff inspects the cask at the site gate, upon arrival at the trench, and in the cask maintenance building after unloading (and performs repairs if needed). Truck and trailer maintenance are performed in another building. In addition to the routine inspection and maintenance, major overhauls are also scheduled and performed on the cask units. Selected cask models, e.g., Model 14-210, receive major overhauls annually.

2.8 Handling and Storage Control

The inspection of handling and storage control verifies that adequate controls have been implemented to ensure that the container handling and storage process

are controlled, retrievable, and traceable from the start of the container design process through container storage fabrication.

The inspectors reviewed CNSI's administrative procedure entitled, "Packaging, Shipping, Receiving, Storage and Handling Procedure," CN-AD-009, Rev. A, and found it to be satisfactory. Regarding protective aspects of storage, Procedure CN-AD-009 defines four different classes of items which correspond to four sets of protective storage requirements. The types of controls that the procedure addresses are: access control; cleanliness and housekeeping; fire protection; preclusion of food items; preclusion of corrosives and other harmful chemical agents; and preclusion of rodents and other animals. The procedure also addresses pre-storage receiving inspections, control of retrieval from storage, and storage records indicating item location, inspection results, applicable protective measures, and applicable personnel access controls. This portion of the procedure also addresses care to be taken when handling items, to preclude damage and assure quality. Discussions with CNSI representatives and the inspector's observations indicated that some of the types of storage considerations addressed by this portion of CN-AD-009 are beyond the scope of current CNSI storage operations requirements. CNSI representatives concurred with this observation and stated that the more extensive scope had been written into the procedure to cover future storage requirements that CNSI may become involved with. The inspectors questioned the appropriateness of this approach to procedure content, and CNSI representatives agreed to evaluate whether the scope of the procedure should be limited to current storage operations requirements.

Another portion of CN-AD-009 establishes a requirement for detailed handling procedures for all items which require "special handling." Examples of subordinate procedures which satisfy this requirement are: "Operating Guidelines for Use of Polyethylene High Integrity Containers (HIC)," FO-AD-002, Rev. M; "Gasket/Seal/O-Ring Replacement/Repair," TR-MN-005, Revision G; and "Rigging and Lifting for Heavy Shipments," S20-AD-005, Rev. C. These procedures were noted as examples which address: environmental controls (limit on exposure to sunlight for polyethylene high integrity containers (HICs); chemical exposure controls (for HICs); the receipt of inspection and shelf life control for gaskets and O-rings;

and controls on rigging and lifting loads in excess of 50,000 pounds. Discussions with CNSI representatives and the inspectors' observations during the visit at the Barnwell site indicated adequate implementation of these types of controls.

3. DOCUMENTS REVIEWED

3.1 CNSI

Document ID	Revision No.	Title
CN-AD-001	F	Safety Review Board Responsibilities
CN-AD-003	P	Document Preparation
CN-AD-004	D	Defect Reporting Procedures
CN-AD-007	G	Purchasing Procedure
CN-AD-008	C	QA Records
CN-AD-009	A	Packaging, Shipping, Recovery Storage and Handling Procedure
CN-AD-010	A	Control of Special Processes
CN-AD-011	D	Control of Measuring and Test Equipment
CN-AD-013	D	Test Control
CN-AD-015	E	Nonconforming Items and Corrective Action
CN-AD-018	B	Inspection Program
CN-AD-024	B	Training Requirements for NDE Personnel
QA-AD-001	F	QA Program
QA-AD-003	C	Procurement Document Review
QA-AD-004	D	Vendor Surveillance Procedure
QA-AD-007	E	Vendor Evaluation Procedure

3.1 CNSI (Cont.)

Document ID	Revision No.	Title
QA-AD-009	D	QA/QC Department Training
QA-AD-010	C	QA Recordkeeping Procedure
QA-AD-011	D	Internal Audits
QA-AD-012	E	Control of Measuring and Test Equipment
QA-QI-005	C	Cask and Trailer Inspection
EN-AD-001	G	Drawing Control Procedure
EN-AD-002	F	Design Control Procedure
EN-AD-004	G	Engineering Records
QA-MF-002	C	Recordkeeping and Storage Procedure
QA-MF-005	B	Liquid Penetration Examination Procedure
QA-MF-006	A	Magnetic Particle Inspection Procedure
QA-MF-007	B	Visual Examination Procedure
S20-OP-032	A	Multi-Size Timer Grapple Operations Procedure
S20-AD-005	C	Rigging and Lifting for Heavy Shipments Procedures
FO-AD-002	M	Guidelines for Use of Polyethylene High Integrity Containers
TR-AD-001		Training Program
TR-AD-002		QA Records and Storage for Transportation
TR-MN-005	G	Gasket/Seal/O-Ring Replacement/Repair

3.1 CNSI (Cont.)

Document ID	Revision No.	Title
TR-OP-018		Instructions for Drivers Technicians for Radioactive Shipments
ST-013 through ST-019	C	Engineering Design Packages

3.2 Richmond Engineering Co. (RECO)

Package Nos. 14/210 HA, and Model 8-1203-2	Package Closeout, Documentation, Training Records, Purchase Orders.

Quality Assurance Program, Edition 2, 8/21/87

Procedure ES-209, "Procedure for the Quality Assurance Audit"

Non-Conformance Reports for Purchase Order NS2558, dated between 6/7/87 and 6/19/89

Procedure "Liner Operations Quality Assurance Records," Rev. B, 11/22/88

Operating Procedures for Cask CNS 6-80-2, and for Cask CNS-14-210-H

History QA files for Casks 210.3 and 210.6, Cask 14-195, and Cask 1-13G

Nonconformance Records for Cask 4-195, #9; Nos. NCR 509-113, NCR 403-047

Yearly Maintenance Records for Casks 210.3, 210.4 and 14-195 #4

Purchase Order File T-455833, 6/13/89

Purchase Order File P.O. 445686, 5/15/87

Testing Records for Cask 1-13G in 1987, ref. Chem Nuclear Correspondence with NRC R-A-0163-7, 3/3/87

Purchase Order No. A432873, 5/3/85

Procurement Specification No. 24500-186-01, CNSI 14-210H, Series A and 8-120B

Internal audit files:

IA-88-04	"Engineering Audit"
IA-88-07	"Transportation"
IA-89-04	"Engineering"
IA-89-07	"Transportation"
IA-87-04	"CNSI Engineering"

4. NONCONFORMANCES

The following nonconformances were identified:

Nonconformance 1

10 CFR Section 71.135 requires a system which ensures that QA records maintained in-house or at other locations are identifiable and retrievable and requires that the records be maintained for the life of the package to which they apply.

In nonconformance with 10 CFR Section 71.135, some container records were neither retained nor retrievable. (Reference Sec. 2.2, Page 7)

Nonconformance 2

10 CFR Section 71.103, requires that the authority and duties of person and organizations performing activities affecting safety-related functions must be clearly established and delineated in writing.

In nonconformance with 10 CFR Section 71.103, engineering changes and amendments/ revisions to the NRC-approved QA program were not procedurally controlled. (Reference Sec. 2.2, Page 8)

Nonconformance 3

10 CFR Section 71.137, requires that audits be conducted with a comprehensive system of planned and periodic audits, to verify compliance with all aspects of the QA program. These audits must be performed by personnel not having direct responsibilities in the areas being audited.

In nonconformance with 10 CFR Section 71.137, periodic audits of the effectiveness of the QA program were not made by an independent and objective source. (Reference Sec. 2.2, Page 9)

Nonconformance 4

10 CFR Section 71.109, requires that measures must be established to assure adequate quality in the documents for procurement of material, equipment and services, whether purchased directly or through contractors or subcontractors.

In nonconformance with 10 CFR Section 71.109, shelf life is not specified on purchase orders and in shipping documentation; storage tags in the store room do not specify shelf life. (Reference Sec. 2.4, Page 11)

Nonconformance 5

10 CFR Section 71.107, requires that design changes, including field changes, must be subject to design control measures commensurate with those applied to the original design.

In nonconformance with 10 CFR Section 71.107, the check list used for design review did not explicitly indicate that the Certificate of Compliance and its supporting SAR should be referenced. (Reference Sec 2.6, Page 14)

5. EXIT MEETING

On the morning of June 22, 1989, an exit meeting was conducted with the facility management, engineers and other support personnel. At the meeting, the team members summarized the preliminary inspection results by using the inspection tree.

The following CNSI personnel attended the exit meeting:

William Peter - QA Specialist
Leonard Tower - General Manager, Transportation
Carl H. Ross - QA Director
Susan Kintner - Document Control Administrator
Glen Rae - Vice President, Marketing & Utility Services
Henry Sturkey - Regulatory Affairs
Albert Bonifacio - Engineering & Technology

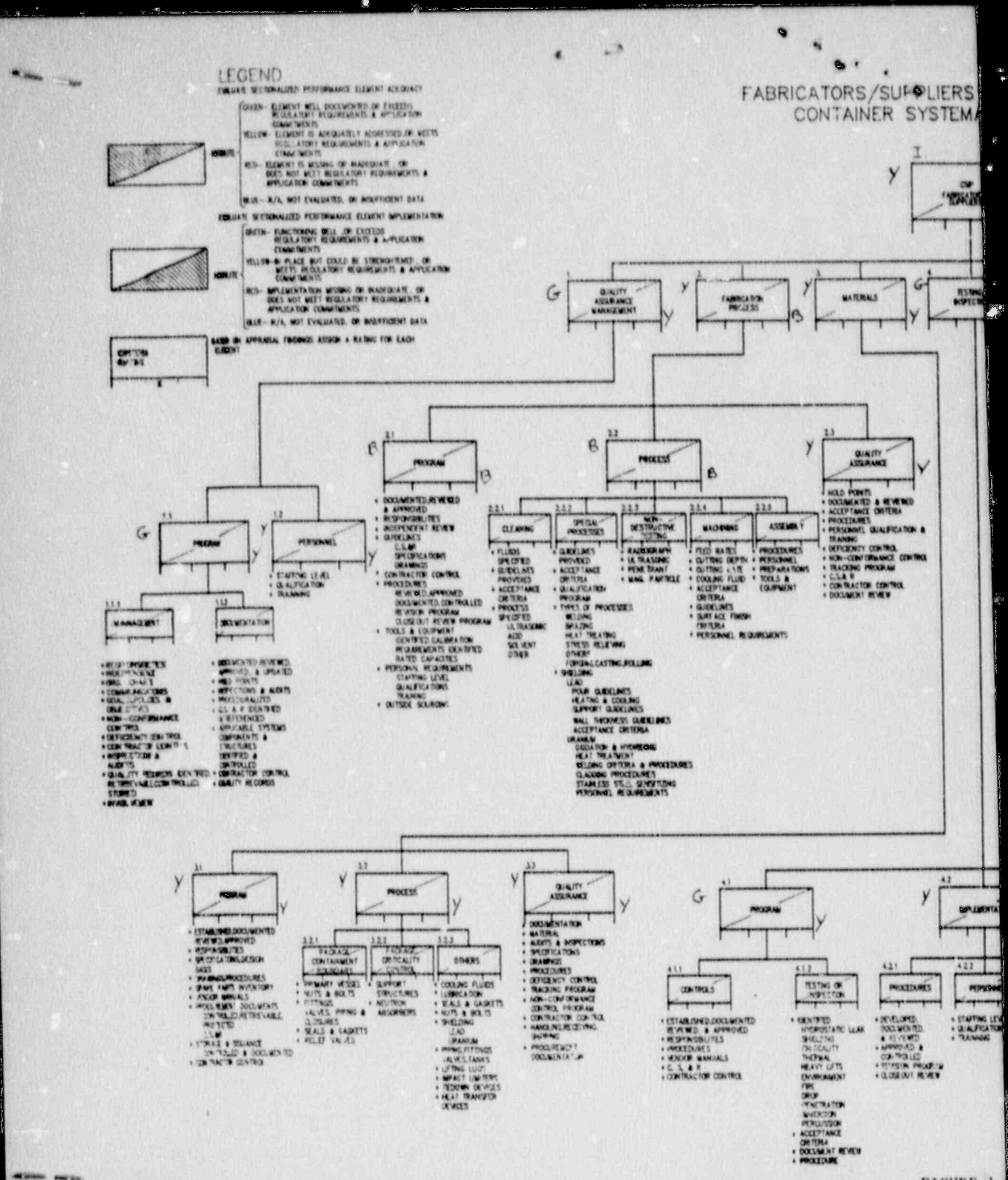

LEGEND
FABRICATORS/SUPPLIERS
CONTAINER SYSTEM
QUALITY ASSURANCE MANAGEMENT
FABRICATION PROCESS
MATERIALS
PROGRAM
PROCESS
QUALITY ASSURANCE
PERSONNEL
MANAGEMENT
DOCUMENTATION
CLEANING
SPECIAL PROCESSES
NON-DESTRUCTIVE TESTING
MACHINING
ASSEMBLY
CONTROLS
TESTING OR INSPECTION
PROCEDURES

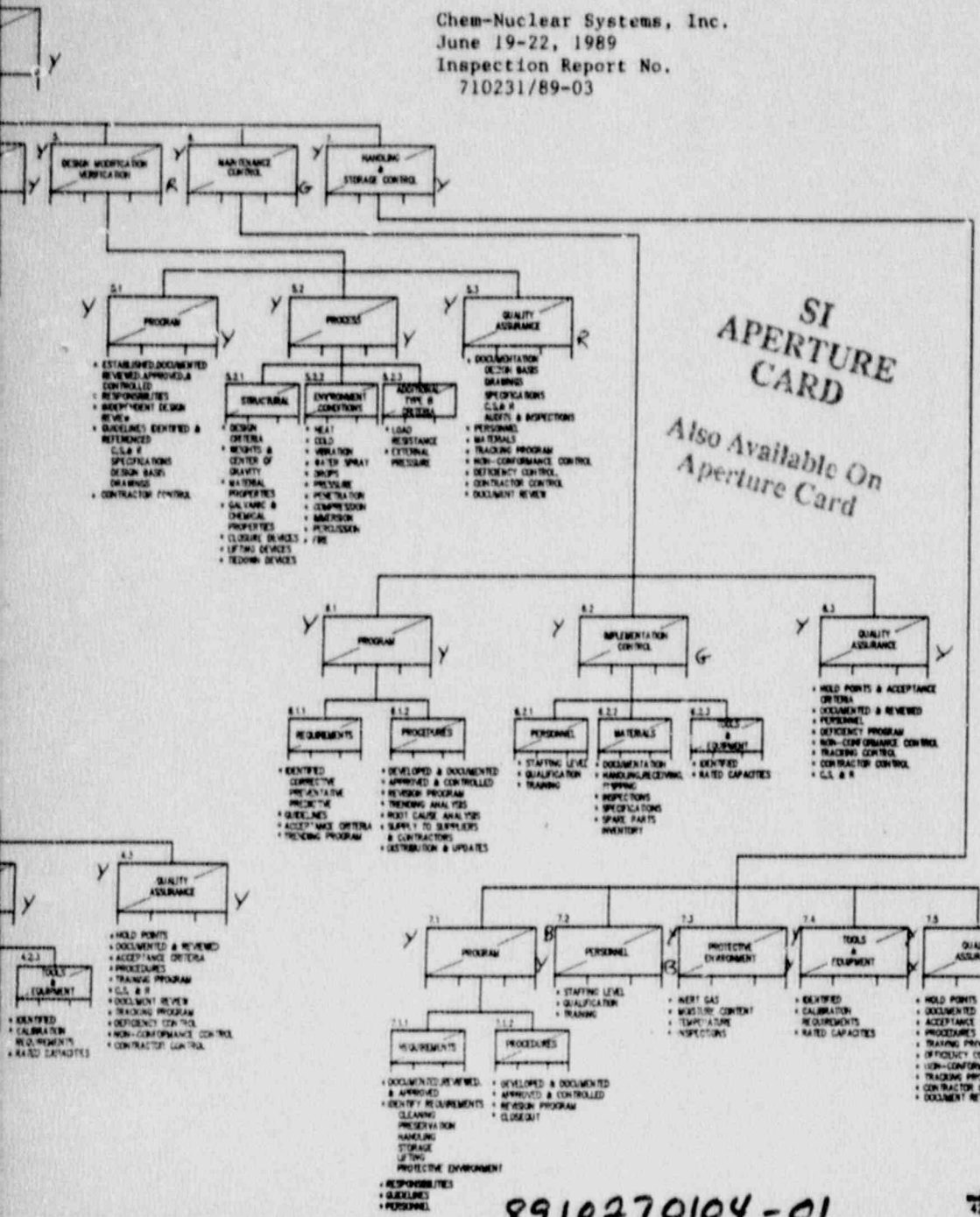
FIGURE 1

WORKING INSPECTION TREE
TIC INSPECTION TREE

POOR RATING ACTIVITY GOOD

OVERALL PERFORMANCE EVALUATION

Chem-Nuclear Systems, Inc.
June 19-22, 1989
Inspection Report No.
710231/89-03



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