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EXECUTIVE SUMMARY

From February 24 through February 28, 1992, representatives of the Nuclear Regulatory Commission's (NRC's) Vendor Inspection Branch and the Region IV office inspected Nebraska Public Power District's (NPPD's) activities related to the procurement and dedication of commercial grade items (CGIs) used in safety-related applications at the Cooper Nuclear Station (CNS). The inspection team reviewed NPPD's procurement and dedication program to assess the licensee's compliance with the quality assurance (QA) requirements of Appendix B to Part 50 of Title 10 of the Code of Federal Regulations (10 CFR Part 50 Appendix B).

On August 24, 1990, the NRC staff forwarded to the Commission SECY-90-304, "NUMARC Initiatives on Procurement," in which the staff reported the status of the Nuclear Management and Resources Council's (NUMARC's) initiatives on general procurement practices. Procurement initiatives as described in NUMARC 90-13, "Nuclear Procurement Program Improvements," dated October 1990, committed licensees to assess their procurement programs and take specific action to strengthen inadequate programs. The initiative on the dedication of CGIs, which was supposed to be accomplished by January 1, 1990, stated that licensee programs should meet the intent of the guidance provided in the Electric Power Research Institute (EPRI) Final Report NP-5652, "Guideline for the Utilization of Commercial Grade Items in Nuclear Safety Related Applications (NCIG-07)," dated June 1988. The staff also stated in SECY-90-304 that it would conduct assessments at selected sites to review the licensees' implementation of improved procurement and commercial grade dedication programs, assess improvements made in the areas covered by the NUMARC initiatives, and report the results of those assessments to the Commission. From February through July 1991, the NRC's Vendor Inspection Branch conducted eight assessments of selected licensees to determine the current status of activities to improve the procurement program related to industry initiatives and NRC requirements. On September 16, 1991, the NRC staff forwarded to the Commission SECY-91-291, "Status of NRC's Procurement Assessments and Resumption of Programmatic Inspection Activity," in which the staff reported on the results of its assessments and noted that it was resuming inspection and enforcement activities.

NRC conducted this inspection at CNS, the second since completing the eight earlier assessments, to review NPPD's procurement and dedication programs and their implementation since January 1, 1990, the effective date of the NUMARC initiative on dedication of CGIs. The inspection focused on a review of procedures and representative records (including approximately 30 procurement and dedication packages for mechanical and electrical items); interviews with NPPD staff (including NPPD senior management and CNS site personnel); and observations by members of the inspection team. The inspection team also met with NPPD's management to discuss relevant aspects of commercial grade dedication and to identify areas requiring additional information. The inspection team's findings were discussed with NPPD's representatives and senior management at the exit meeting held on February 28, 1992. The inspection team identified two deficiencies, with multiple examples, summarized below.

Deficiency 92-201-01

The inspection team identified numerous examples in which NPPD either installed CGIs in safety-related plant applications or had identified them as available for installation in safety-related applications at CNS without adequate review for suitability of application of these materials, parts, equipment, and processes that were essential to the safety-related functions of structures, systems and components. NPPD failed to adequately determine the suitability of application of CGIs which resulted in the use or warehousing of CGIs of indeterminate quality, as indicated in the following examples:

(1) Items Purchased as Essential-Commercial Grade (ECG)

The following are examples of CGIs purchased under the ECG item classification that were improperly dedicated by CNS. This approach to dedication is delineated in CNS Plant Services Procedure 1.13, "Utilization of Essential-Commercial Grade Items in Safety-Related Applications," Revision 0, April 18, 1990, which acknowledges the limitations of the suppliers' QA program and also recognizes the need for NPPD to take responsibility for 10 CFR Part 21 reporting since these suppliers do not have 10 CFR Part 50 Appendix B QA programs. The following purchase orders (POs) were issued for items that were purchased as ECG and either installed or made available for installation in essential (10 CFR Part 50, Appendix B [safety-related]) applications at CNS.

a. PO 312069: Automatic Switch Company (ASCO) "Red Hat" solenoid-operated valves (SOVs) were purchased from the John Day Company of Omaha, Nebraska, on January 24, 1990. CNS relied on a 10 CFR Part 50, Appendix B audit of ASCO which focused on ASCO's dedication of parts used for its nuclear, environmentally qualified (EQ) NP-1 series SOVs. "Red Hat" SOVs are manufactured under ASCO's commercial program which does not meet Appendix B requirements. NPPD Memorandum QAD 9100010 placed this PO on hold; three other similar POs were also identified and placed on hold.

b. PO 342961: Sixteen Belleville spring washers to be installed in the high pressure coolant injection pump were purchased from Georgia Power Company's (GPC's) Plant Hatch on January 17, 1991. Plant Hatch was placed on CNS's suppliers list (SL) as a distributor for Dresser-Rand (the manufacturer) based on a telephone interview and a review of an NRC assessment report issued in May 1991. Dresser-Rand appeared on the CNS SL as a supplier of ECG items. The package reviewed did not contain documentation to support the traceability of the 100 washers purchased as nonsafety-related by GPC, nor did it contain any certification to establish the traceability of the 16 washers supplied to CNS. During the inspection, CNS performed an operability evaluation to determine suitability of the installed washers. As a result, CNS downgraded the washers to nonessential (nonsafety-related) on the basis of information received from Dresser-Rand.

c. PO 311091: Wire wound resistors to be installed in the control room's PMIS augmentation system were purchased from Dale Electronics on January 8, 1990. CNS accepted a January 16, 1990, test report that documented the monthly testing of resistors using sampling criteria established under Military Specification MIL-R-26E; however, CNS relied on a commercial grade survey that was performed nine months after the PO was placed (October 25-26, 1990).

d. PO 311709: Thirty-eight 150-pound gaskets purchased from Flexitallic Gasket Company, Pennsauken, New Jersey on January 17, 1990. Flexitallic appeared on the CNS SL as an EQG supplier based on a broad-based programmatic audit which was not critical characteristic specific to the commercial items purchased. Other POs reviewed that contained similar deficiencies were POs 311015 and 310601.

e. PO 312109: One hundred half-inch-diameter Nelson studs were purchased from TRW-Nelson, Welding Division, on January 18, 1990. The PO required the supplier to provide certified material test reports (CMTRs) and maintain and apply the supplier's QA program which meets the applicable portions of 10 CFR Part 50 Appendix B and American National Standards Institute (ANSI) N45.2. Such requirements are in violation of Section 8.2.1.2(a) of CNS Procedure 1.13 for EQG purchases. (Another example of this is PO 314872 for Viton o-rings purchased from the Parker-Hannifin Corporation.) TRW-Nelson was qualified as an approved supplier based on a broad-based programmatic audit performed by NPPD on May 29, 1989, which utilized a Coordinated Agency Supplier Evaluation-Nuclear Section checklist.

f. PO 329366: Six service water pump shaft couplings were purchased from BW/IP International (formerly Borg-Warner Industrial Products) on January 31, 1991. The PO required the couplings to be manufactured from American Society for Testing and Materials (ASTM) A-479, Type 410 material and a certificate of conformance to be supplied verifying that the items supplied meet all PO requirements. A review of the package found that at least two shaft couplings had been installed in service water pump 1C on October 19, 1991. After post-maintenance testing, the pump was declared operable on November 5, 1991. BW/IP was approved only as an essential supplier based on a Nuclear Procurement Issues Committee (NUPIC) joint utility audit performed in August 1989 in which BW/IP's 10 CFR Part 50, Appendix B QA program was reviewed and approved. However, the subject PO was placed as EQG. During the inspection, the NRC inspection team questioned the suitability of the installed couplings since there was no documentation available to support their commercial quality. On February 27, 1991, CNS received documentation from BW/IP stating that although the couplings were ordered commercial grade, BW/IP processed the order under its nuclear QA program and accepted the reporting responsibilities of 10 CFR Part 21. BW/IP also supplied CNS with CMTRs from Earle M. Jorgensen (the material manufacturer) that verified the specified material.

g. Other POs: Several POs that were reviewed related to various emergency diesel generator (EDG) replacement parts purchased from Cooper Energy

Services (CES) and installed in both EDGs. Each PO requested that CES provide a certificate of conformance stating that the items were equal to or better than those originally supplied to CNS (1964) and to impose CES's 10 CFR Part 50, Appendix B QA program including ANSI N45.2, despite the fact that these were EDG POs. This practice violated Section 8.2.1.2(a) of CNS Procedure 1.13 which prohibits invoking unique nuclear requirements on a commercial supplier. CNS's dedication primarily relied upon acceptance of CES's certifications combined with a standard visual receipt inspection and post-installation tests (PITs) normally required by plant technical specifications. CES stated that all POs accepted after July 1, 1991, would not contain the "equal to or better than" statement but would contain a revised statement that the items are considered CGIs and as such, CES makes no claims to form, fit, or function. POs reviewed that contained these deficiencies were POs 329844, 326792, 312074, 322798, and 336439.

(2) Nonessential Items Purchased Under the Commercial Grade Specification (CGS) Classification

The following are examples of CGIs purchased under the CGS classification that were improperly dedicated by CNS. This classification is delineated in CNS Engineering Procedure 3.22 and requires a technical evaluation that identifies the item's safety function, critical characteristics, and acceptance methods. CNS staff has performed approximately 40 CGS dedications since January 1, 1990.

a. Dedication Package 90-031 (PO 177637): CR 2940U310, a circuit breaker enclosure rackdown interlock switch, was purchased from the General Electric Supply Company on November 21, 1980. The switch was installed on March 26, 1990, in a Class 1E, 4160-Vac circuit breaker associated with the core spray pump. Concerns identified included listing "near infinity" as the acceptance criterion to verify open contact resistance, and a check to verify the terminal-to-ground resistance using a PIT. However, documentation did not exist to support that the resistance-to-ground test had ever been performed.

b. Dedication Package 90-032: Six hinge pins for several 18-inch tilt disc check valves were purchased from Anchor-Darling (A/D) Valve Company on June 16, 1989. A review of the package indicated that four of the six pins ordered were installed in several safety-related reactor feedwater check valves that act as containment isolation valves. The technical evaluation identified safety function, environmental and design criteria, and such critical characteristics as outside diameter and material. Deficiencies noted during the team's review included no documentation to support the identification of the material, failure to address design differences between the safety and nonsafety-related check valves that these pins were to be generically used in, and failure to provide a basis for the purchase of nonessential items from an essential (10 CFR Part 50 Appendix B) supplier. During the latter part of the inspection, NPPD performed an operability review for the installed pins. As a result, A/D committed

to providing NPPD material certifications by early March (1992) for the six pins, despite the fact that they were ordered as nonessential.

(3) Lubricants and Fluids Purchased as Nonessential and Used in Essential and Essential-EQ Applications

The following are examples of lubricants, oils and greases purchased as nonessential but used in essential applications, including EQ equipment, for which CNS had no procedures in place for determining their suitability in a safety-related application. Additionally, no analysis existed to document and ensure similarity to the lubricants tested as documented in the EQ test report or to establish traceability back to the original equipment manufacturer (OEM).

a. PO 326028: DAG 156 lubricant, procured from Acheson Colloids Company on November 15, 1990, was used on safety-related main steam isolation valve (MSIV) stems, guide rods, and internal threads. The team's review identified no documentation to support the compatibility of this material with the Versilube lubricant used on the MSIV pneumatic actuator o-rings or with the elastomers used in the MSIV's SOVs supplied by ASCO, which could be exposed to this material as air is exhausted through the SOVs during the MSIV closing cycle.

b. PO 346760: Mobil DTE 797 oil, procured from the Allied Oil and Supply Company on January 17, 1992, was used in various safety-related EQ applications such as the core spray pump motor bearing. A review of the General Electric (GE) drawing for the core spray pump and motor showed that GE specified the bearing's minimum viscosity to be 45 Saybolt Universal Seconds (SUS), whereas the Mobil product data sheet specified 44 SUS. There was no documented resolution of or justification for the discrepancy. Other deficiencies identified included: no traceability to the OEM, critical characteristic of environmental qualification not verified, and no similarity to the EQ sample or traceability to the original EQ test report. Other POs reviewed which exhibited the same types of deficiencies included PO 250546 (Chevron SRI No. 2 grease used in EQ electric motors), and POs 343117 and 315910 (Mobilgrease 28 used in Limitorque actuator limit switch gear boxes).

Deficiency 92-201-02

The inspection team identified several generic weaknesses in the procurement program and in implementation that contributed to the specific examples of deficient CGI dedication described in Deficiency 92-201-01.

The most significant weakness concerned the use of the EOG approach to dedicating CGIs for safety-related applications. Under this approach, there is no requirement in CNS Procedure 1.13 that a technical evaluation be performed to identify the item's safety functions and/or failure modes from which critical characteristics could be identified, but rather utilizes a standard, routine receipt inspection and post-installation tests usually

required under most plant technical specifications, as the means by which the item was accepted for nuclear safety-related service. Such PITs usually cannot adequately verify critical characteristics necessary to verify the full range of design conditions, including seismic, even if such characteristics were required to be identified. This approach relied predominantly on qualifying the supplier using a broad-based, programmatic survey, instead of performing a well-focused, critical characteristic-specific survey of the commercial supplier's program controls in place to control selected critical characteristics. Finally, this approach does not ensure compliance with the requirements of 10 CFR Part 50 Appendix B, since the use of a broad-based audit/survey does not verify the ability of the supplier's program to control those critical characteristics necessary for the item to perform its safety functions.

Another weakness in the CNS dedication process was the failure, in some instances, to identify safety function, critical characteristics, and related acceptance methods in the technical evaluation when using the CGS approach. Such parameters are required under CNS Engineering Procedure 3.22.

Generic weaknesses within the dedication process included the failure to verify that the original seismic qualification for replacement electrical and mechanical items was still valid. If CNS identifies no changes to configuration (form, fit, function, and materials), then it is assumed that the item is identical and, therefore, that the original seismic qualification has been maintained. As mentioned previously, CNS relied on broad-based programmatic audits/surveys in lieu of a well-focused commercial grade survey, to verify that the supplier has the necessary controls in place to handle changes made in the design, the manufacturing process, and materials. Also, important characteristics for greases, lubricants, and oils used in safety-related and environmental qualification applications are not required to be identified and verified per current licensee procedures. Because such items are classified as nonessential (nonsafety-related) they are not required to be inspected upon receipt or dedicated in order to be used in safety-related applications at CNS. Additionally, traceability to the OEM and similarity to the original environmental qualification test report are not required, which raised concerns over the suitability of application of these materials. Another generic weakness concerned specifying PITs as part of the verification for critical characteristics without ensuring that the PIT actually verified the identified critical characteristics. Most of these PITs are routine tests used to verify that the item functions normally. The team also identified several examples in which unique nuclear requirements were imposed on suppliers furnishing items under CNS's EOG procurement classification without specifying in the procurement documents that 10 CFR Part 21 applied. This practice violated Section 8.2.1.2(a) of CNS Procedure 1.13.

In response to the NRC inspection team's identification of these program and implementation deficiencies, the NPPD/CNS staff committed during the inspection to placing on hold all material associated with approximately 212 purchases made since January 1, 1990. CNS will use such material only if the supplier is requalified using the NUPIC Commercial Grade Items Survey Checklist, or if the item is formally dedicated under CNS Engineering Procedure 3.22, "Commercial Grade Specification." NPPD also committed to

requalify all EQ suppliers before January 1, 1993, using the NUPIC checklist. NPPD's procurement program enhancements committed to during the inspection are found in the appendix to the report.

1 INTRODUCTION

During this inspection, the Nuclear Regulatory Commission (NRC) inspection team (team) from the Vendor Inspection Branch (VIB) of the Division of Reactor Inspection and Safeguards of the Office of Nuclear Reactor Regulation reviewed the Nebraska Public Power District (NPPD) program and its implementation for the procurement of commercial grade items (CGIs) used in safety-related applications in the Cooper Nuclear Station (CNS). The team also reviewed the NPPD program and its implementation at CNS for determination or verification of suitability of those CGIs for their intended or approved safety-related applications, a process referred to as "dedication."

Part 21 of Title 10 of the Code of Federal Regulations (10 CFR Part 21) defines dedication as the point at which an item or service becomes a "basic component," which it defines essentially as items (or services) with safety-related functions. However, 10 CFR Part 21 also defines CGIs (Section 21.3(a)(3)(a-1)), as distinguished from items procured as basic components. The regulation then allows the procurement of items that are to become basic components, but that meet its definition of CGIs, without invoking 10 CFR Part 21 in the procurement documents.

When CGIs are procured for safety-related service, their procurement and dedication constitute activities affecting quality and, therefore, these activities must be controlled in accordance with the requirements of Appendix B, "Quality Assurance Requirements for Nuclear Power Plants," to 10 CFR Part 50.

In particular, Criterion III, "Design Control," and Criterion VII, "Control of Purchased Material, Equipment, and Services," of 10 CFR Part 50, Appendix B are most pertinent to procurement and dedication of CGIs; therefore, the NPPD program governing these activities and the implementation of that program at CNS were reviewed for compliance with these (primarily) and other applicable Appendix B criteria, as well as with the requirements of 10 CFR Part 21.

Additionally, the NRC has provided further guidance and interpretation to amplify and clarify the requirements of Appendix B as they pertain to the procurement and dedication of CGIs in NRC Generic Letter (GL) 89-02, "Actions to Improve the Detection of Counterfeit and Fraudulently Marketed Products," dated March 21, 1989, and GL 91-05, "Licensee Commercial-Grade Procurement and Dedication Programs," dated April 9, 1991. Therefore the NPPD CGI procurement and dedication program and its implementation were also evaluated for incorporation of and consistency with the guidance and NRC staff positions promulgated in these GLs.

Finally, with respect to procurement in general, including procurement and dedication of CGIs, NPPD has committed to various industry standards and other publications (as endorsed or conditionally endorsed by NRC regulatory guides (RGs), NUREGs (NRC documents), and GLs), as stated in the "NPPD QA Program for Operations" policy document referenced in Appendix D of the NPPD Updated Safety Analysis Report (USAR) for CNS, and as expressed for the industry by the Nuclear Management and Resources Council (NUMARC) in the "NUMARC Initiative on the Dedication of CGIs" (adopted by NUMARC in May 1989).

In particular, NPPD, like other nuclear utilities, was committed to establish a program for procurement and dedication of CGIs consistent with Electric Power Research Institute (EPRI) Report NP-5652, "Guideline for the Utilization of Commercial Grade Items in Nuclear Safety Related Applications (NCIG-07)," on or before January 1, 1990. The acceptance methods described in NP-5652 were conditionally endorsed by the NRC in GL 89-02 and the NRC staff positions on several dedication issues were later clarified in GL 91-05. Therefore, the team assessed the degree to which the NPPD CGI procurement and dedication program in effect since January 1990, and its implementation, were consistent with the pertinent industry commitments.

2 COMMERCIAL GRADE DEDICATION PROGRAM REVIEW

2.1 Procedures Review

The NPPD program for procurement and dedication of CGIs for safety-related applications at CNS is described and prescribed in a hierarchy of procedural documentation beginning at the NPPD corporate level (Columbus General Office, or "CGO," Nuclear Power Group, or "NPG") with NPG Directive 3.13, "Nuclear Procurement." NPG 3.13 incorporated the NPPD general guidance for CNS procurement activities. The team reviewed the currently effective revision of NPG 3.13, Revision 3, dated February 20, 1990, and made the following observations:

Under Section IV, "Responsibilities," the procedure charged the QA Manager, CNS, and the QA Manager, CGO with the responsibility for reviewing procurement documents for safety-related materials and services and for evaluating suppliers of items for safety-related applications. Paragraph V.K, under Section V, "Requirements," directed that all procurements of essential materials and services and materials requiring equipment qualification were to be reviewed by the "QA Division" and Paragraph V.L required that all essential procurements be from suppliers evaluated and approved by the QA group. Although it was this procedure in which NPPD codified its policy that the requirements of 10 CFR Part 50 Appendix B, and the intent of American National Standards Institute (ANSI) Standard N45.2.13-1974, "Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants," shall be met with respect to procurement, this procedure did not delineate any formal policy with respect to primary responsibility for preparing procurement documents with the attendant technical evaluations and acceptance planning. Neither did it assign responsibility explicitly for activities relating to procurement and dedication of CGIs or evaluation of suppliers of CGIs. Although a so-called "task force" for CGI procurement and dedication had been established, there was no NPPD/CGO-level policy statement that formally recognized commercial grade procurement and dedication and established a group or assigned an existing group within the NPPD/CNS staff to be cognizant of CGI procurement and dedication activities. This apparent lack of corporate recognition in official procedural documentation and lack of commitment was reflected in the deficiencies observed by the NRC team in the quality and implementation of the CGI program and practices at CNS and in the unsatisfactory progress made by CNS in implementing industry commitments (i.e., NUMARC initiatives).

The principal implementing procedures pertinent to procurement and dedication of CGIs were contained in the CNS Operations Manual and covered activities including safety classification, supplier evaluation, dedication, and receipt inspection. Volume 1 of the manual, "Plant Services Procedures" (PSPs), contained the general procurement guidance in PSP 1.4, "General Procurement Program." Receipt inspection activities for all types of material were governed by PSP 1.5, "Warehouse Receiving." Procurement and dedication of CGIs were covered in PSP 1.13, "Utilization of Essential Commercial Grade Items in Safety-Related Applications," and Engineering Procedure (EP) 3.22, "Commercial Grade Specification." System/component safety classification was conducted under CNS EP 3.13, "Equipment Safety Classification," of which the current revision, Revision 7, dated June 21, 1990, was reviewed. Equipment and components, that is, items with unique identifiers or tag numbers called component identification codes (CICs), classified as essential in accordance with EP 3.13, would be put on the Q-list. CNS EP 3.24, "Part Safety Classification," was designed to document the process of justifying classification of parts of a component differently (i.e., as nonessential) than the parent equipment, component or system; Revision 0, October 3, 1988, the current revision of EP 3.24, was reviewed. Equipment and components classified as nonessential in accordance with EP 3.13 would not be put on the Q-list. Reclassification/downgrading of components and subcomponents and parts of essential systems and components to nonessential status was to be documented on a Safety Classification Checklist (Attachment A to EP 3.24). EP 3.24 assigned the CNS system or design engineer the responsibility for determining the safety class of an item to be procured, and hence, whether the item was to be procured under QA program controls.

The review of these procedures is discussed in greater detail later in this report, but it is appropriate to note here that EP 3.24 established some important fundamental concepts in 1988 that appeared to have been largely supplanted by the current (primarily EPRI) dedication philosophy, namely, that (1) consideration was to be given to possible failure modes in determination of part safety function (Paragraph II.B.1.c); (2) the plant applications of parts should not be classified nonessential merely because the supplier cannot comply with 10 CFR Part 21, or is not on the Approved Suppliers List (ASL); (3) the procurement safety classification is what is determined by the safety classification, the supplier's QA program/ASL status, and whether the part must be dedicated (Paragraph II.B.4); and (4) critical characteristics are those properties or attributes of a part that are essential to the safety function of the parent component (Paragraph II.C.3).

While these concepts, if adhered to and adequately implemented, would have significantly strengthened the CNS CGI procurement and dedication program, the team noted that some were contravened by other procedures and prevalent practices, and that when a part was classified as essential, the procedure itself negated the benefits to the CGI dedication process of the rigorous technical evaluation that would presumably be conducted in accordance with its implementing provisions (1) by the statement that no classification per the procedure was required when it was certain that a part was essential (Paragraph II.B.5) and (2) by the lack of requirements to feed any safety functions and failure modes if thus identified into the dedication process.

For CNS, there were two main safety classifications. Safety-related and environmentally qualified (EQ) applications were designated "essential" and "essential-EQ" (a subclass of essential) respectively. Nonsafety-related plant applications were designated "nonessential," and anticipated transient without scram, radwaste, fire protection, etc., applications were handled as nonessential.

However, NPPD chose to use similar terms to distinguish among its three types of procurements. These categories were (1) "essential" or E-type procurements for safety-related application, procured from a supplier who ostensibly manufactures/supplies the item under a 10 CFR Part 50, Appendix B program and accepts 10 CFR Part 21 reporting responsibilities, (2) "essential-commercial grade," (ECG) or C-type procurements for safety-related/essential application, but procurable as a CGI (presumably meeting the 10 CFR 21.3(a)(4)(a-1) tests) from a Suppliers List (SL)-listed C-type supplier with an approved "commercial QA" program, but who does not accept 10 CFR Part 21, and (3) "nonessential" or N-type procurements in which the item is not necessarily intended for an essential application.

According to CNS procurement staff, normally only when needed replacement parts for essential applications, or new parts for essential modifications were not available from approved E-type suppliers, would such parts then be procured as CGIs (and presumably only if they met the 10 CFR Part 21 CGI definition) by one of the two alternate methods. However, the team noted that in practice the apparent preference was to attempt first to obtain like-for-like replacements, regardless of the type of procurement required. Also noted was the overwhelming majority use of C-type CGI procurements (numbering more than 200) during the period of interest, which were substantially simpler than N-type procurements (numbering about 20), with their more traditional (and much more detailed) dedication requirements.

2.1.1 Essential-Commercial Grade Dedication Method

Procurements of CGIs as ECG were required to be conducted in accordance with PSP 1.13. The team reviewed Revision 0 of PSP 1.13, dated April 18, 1990, which, although not in effect as early as January 1, 1990, was the currently effective revision at the time of this inspection and was effective for most of the procurements of interest. PSP 1.13 was brief, describing a four step process for dedication of CGIs procured as ECG.

The first step was qualifying certain suppliers who have so-called commercial QA programs that either were at one time based on 10 CFR Part 50, Appendix B and the associated standards, or whose QA program resembles/meets the intent of Appendix B for CNS purposes, but none of whom will accept the reporting responsibilities of 10 CFR Part 21. Nevertheless, CNS effectively treats these suppliers as if they were fully approved Appendix B suppliers once they have had a satisfactory "commercial audit" by CNS or a third party audit in accordance with QA Instruction (QAI)-16, "Supplier Approval." These suppliers are then placed on the SL in Section C, and although restrictions are supposed to be placed on their scope of supply, in practice their listing in the SL is treated largely as blanket authority to purchase any items in their product line. Under PSP 1.13, there is no technical evaluation process, so no safety

functions or critical characteristics are identified and, until about April of 1991, the audits of these suppliers consisted primarily of a broad-based, programmatic audit.

The second step in the EOG process involved issuing the PO. The procurement documents were to be reviewed per PSP 1.4 and the review was to include a determination that the item was, in fact a CGI, that is, that it met the tests in 10 CFR Part 21. Paragraph 8.2.1.2.(a) stated that the procurement documents should impose the suppliers' NPPD-approved QA program, but that the documents should make no reference to 10 CFR Part 50, Appendix B or ANSI N45.2, or 10 CFR Part 21. As discussed later in this report, the team noted in reviewing several EOG procurements that the POs violated this requirement by requiring a supplier to have a QA program meeting 10 CFR Part 50, Appendix B, and ANSI N45.2. This had the effect of imposing design requirements unique to NRC-licensed facilities and, hence, the PO was ordering basic components, not CGIs.

The third step involved performing a receipt inspection in accordance with PSP 1.5. However, despite the heavy reliance on supplier controls for quality, the procedures did not adequately address capture and proper review of documents to establish traceability to the original equipment manufacturer (OEM).

Finally, the fourth step involved normal pre-installation testing as may be required by PSP 1.5, or post maintenance (installation) testing under the administrative controls of Maintenance Procedure (MP) 7.0.1, "Work Item Tracking." Several other procedures were referenced for testing associated with plant design changes. However, review of numerous C-type dedications indicated that the routine testing usually consisted of simple operational checks under nominal conditions and was not always adequate to ensure performance of safety function, or no failures detrimental to safety, under all design conditions. The team noted that the vast majority of CGI procurements since January 1, 1990 (approximately 212) were EOG per PSP 1.13. Consequently, in effect, CNS was relying almost entirely on the C-type suppliers to control the critical characteristics of the items (though not identified) without actually verifying such controls through a proper commercial grade survey that was item and critical characteristic-specific.

2.1.2 Dedication Method For CGIs Procured As "Nonessential"

In contrast to these C-type procurements, those CGIs needed for essential applications, but that either had already been procured as nonessential (no essential use initially identified), or that were not available from a C-type supplier, were to be upgraded/dedicated (in the more traditional sense) in accordance with EP 3.22, "Commercial Grade Specification." The team reviewed Revision 3 of EP 3.22, dated December 28, 1989, which was in effect as of January 1, 1990, as well as Revision 4, dated January 23, 1992, and the new Revision 5, dated February 20, 1992, which was currently effective. The N-type procurements and dedications reviewed were evaluated against the revision of EP 3.22 in effect at the time they were prepared.

The review of EP 3.22 indicated that the procedure was generally consistent with the provisions of EPRI NP-5652; although, the guidance on the principles and considerations in the process of obtaining critical characteristics, or more correctly, deriving them from safety functions and other essential application suitability requirements (e.g., safety affecting failure modes) was meager. Instead, examples of critical characteristics were given. With respect to the definition of critical characteristics, the team noted that the term was defined (in the definition section) as it is in EPRI NP-5652, that is, those attributes that provide reasonable assurance that the item received is the item specified. However, the procedural section (8.0) did contain a good working definition of the term that was consistent with the NRC position as expressed in GL 91-05. Three other concerns were identified with the EP 3.22 dedication process, as written. Under the description of acceptance method 2 (same as EPRI method 2), regarding commercial grade surveys, there was no procedural reference to other guidance on surveys, that is, QAI-16, and also the need to verify distributors' controls, as applicable, as stated in GL 89-02, was not addressed. Although CNS had a distributor surveillance procedure, QA Guideline 3.15, it was not referenced or otherwise tied in to the dedication process programmatically. Finally, the procedure did not adequately address capture and review of documentation to establish traceability of the CGIs as received to their OEMs, which would be necessary for establishing the validity and applicability of vendor controls and/or vendor-supplied information/documentation, to the extent they are relied upon to support dedication (and/or qualification).

According to the procedure, the QA group was to review essential, BOG, and nonessential (that were to become essential) procurement documents for technical and quality requirements and the responsible engineers were to prepare the CGI acceptance plans (APs) which were to be used to document the QA and technical requirements for procuring and accepting CGIs and services as well as the critical characteristics technical evaluation and pertinent special instructions.

The lack of adequate guidance on derivation of critical characteristics from safety functions, failure mode information, or other essential safety-related application suitability requirements, and the lack of a requirement to verify all critical characteristics once they were properly identified, lead to numerous examples (found by the team during this inspection of CGIs) that were inadequately dedicated. The inadequate dedications of these CGIs, which are discussed in detail later in this report, some of which had been installed, constituted a failure by NPPD to perform and document an adequate review for suitability of application and, in some cases, adequate design verification (seismic/EQ), for items intended for safety service, contrary to the requirements of Criterion III of 10 CFR Part 50 Appendix B. The inadequate dedications also constituted a failure to verify that the items received met the specifications for their safety-related applications contrary to the requirements of Criterion VII of 10 CFR Part 50 Appendix B.

2.2 Commercial Grade Supplier Surveys

NPPD Quality Assurance Division QA Instruction No. 16 (QAI-16), entitled "Supplier Approval," provided general requirements for evaluating suppliers

and maintenance of the CNS SL. The team reviewed the currently effective revision of QAI-16, Revision 17, dated May 17, 1991. This revision had incorporated, among other things, new provisions for commercial grade supplier surveys (also termed "commercial audits" at CNS), "commercial surveillance" or "commercial source surveillance" (CNS terms for source verifications), and directed the use of the Nuclear Procurement Issues Committee (NUPIC) audit or commercial grade survey procedures and checklists for audits or commercial surveys by NPPD or NUPIC joint or member audits or commercial surveys, also allowing equivalent checklists as approved by the QA Supplier Supervisor. The QA Supplier Supervisor at COO was assigned the responsibility by QAI-16 for implementing of the supplier approval program.

Although the NUPIC survey procedures were mentioned (under Paragraph 3.2.1.6) along with prescribing the use of the NUPIC checklists, it was not clear that the NUPIC procedures were being consistently or uniformly followed. Review of several NUPIC joint and member surveys recently conducted (Coltec-NPPD, September 25-26, 1991; Parker-Hannifin-GSU, January 29-30, 1991; and Woodward Governor-GSU, July 16-18, 1991) revealed some inconsistency and variability in the implementation of the checklists in terms of item and critical characteristic specificity and level of documented objective evidence. More significantly, there was no documented guidance on how or from whom to obtain the critical characteristics for the subject CGIs, which are necessary in order to conduct the survey properly and with which to fill in the survey plan form in the NUPIC checklist. In response to this concern, NPPD QA staff explained that normally the QA supplier auditor and the CNS responsible engineer discussed this informally and agreed upon a set of critical characteristics that would be listed on the checklist. Nevertheless, the team noted that the use of QAI-16 for commercial grade surveys (and hence the use of the NUPIC checklist) was prescribed only by PSP 1.13 for BOG procurements and was not mentioned under EPRI Method 2 in EP 3.22 for nonessential dedications. However, PSP 1.13 had no CGI technical evaluation requirements; that is, no requirements for identification of safety functions and from them, derivation of critical characteristics to be used in a survey. Therefore, even if QAI-16 had directed that safety functions and critical characteristics be formally established through a documented technical evaluation, there was no mechanism in place to do this.

The team also identified the following concerns. Section 3.3, "Supplier Reevaluation," of QAI-16 required that surveys be conducted at least every three years. Also, an annual update was required that amounted to a brief review (not necessarily requiring a visit) of changes to the supplier's QA program since the last audit. Although there was also a provision for audits for cause, the team was concerned that this may not be adequate coverage depending on several factors, including, but not necessarily limited to (1) the complexity of the CGI(s) in question, (2) the frequency and size of purchases, (3) the critical characteristics to be verified by survey and the extent to which those are relied upon to support dedication, (4) the strength of the supplier's controls on design, materials, manufacturing processes, and subsuppliers of parts and services, and (5) the strength of the supplier's commitment/obligation to either not make changes in certain products, or at least to inform the customer of any changes made.

2.2.1 Third Party Surveys

Section 4.5 of QAI-16 generally addressed audits and surveys by third parties, such as NUPIC joint or member-conducted audits and surveys. Paragraph 4.5.1 required that third party surveys be evaluated in accordance with NPPD requirements. However, this instruction did not limit the time (or circumstances) preceding the intended procurement for which such a survey could be considered valid. Although specifying that third-party surveys were to be evaluated in accordance with NPPD requirements, this procedure did not contain any other guidance or acceptance criteria for evaluating such surveys. Upon reviewing these requirements, the team found the evaluation criteria to be general in nature and largely slanted toward broad-based programmatic QA audits. The procedure did not specify survey applicability to the same (or similar) items being procured by NPPD, and there were no requirements (1) for the third-party survey to have verified that the supplier had documented and effectively implemented commercial quality controls, (2) that the specific critical characteristics selected by NPPD for verification by survey were, in fact, verified and documented in the third-party survey, and (3) that both distributor and manufacturer controls were verified where applicable.

The NUPIC process provides for canvassing the membership to compile a generic set of critical characteristics. The survey then need only verify generically that the supplier has controls for the critical characteristics (within NPPD's programmatic limits on those selected for verification as discussed above) associated with the CGIs in the supplier's product line (presumably only those of interest to NPPD). However, although this provision may theoretically ensure that the supplier has controls for a given critical characteristic for some CGI it can produce, it does not necessarily ensure that particular critical characteristic is controlled for the CGI being procured and dedicated by NPPD. Hence, it does not ensure that every critical characteristic (selected for verification by survey) of each CGI to be dedicated by NPPD will be controlled. The team was concerned that such a survey might verify that the supplier controls a given critical characteristic, but not necessarily for the CGI of interest. The team also noted that the procedure did not provide for surveys of distributors as well as manufacturers, where applicable, as discussed in GL 89-02. Although, QA Guideline 3.15, "Distributor Surveillance," had been written, it had not been formally tied into the process.

In order to assess the effectiveness of the implementation of NPPD's commercial grade survey program in support of dedication, the team also reviewed a number of completed survey reports associated with some of the individual dedication packages reviewed. Any such surveys thus evaluated are discussed later in this report in conjunction with the discussion of the associated dedication.

2.2.2 Source Verifications

NPPD's CGI dedication procedures provided for acceptance of CGIs through source verifications (EPRI Method 3). Accordingly, the team reviewed the NPPD procedure governing this method, QAP N10.01, "Source Inspections." The team reviewed the currently effective revision of N10.01, Revision 18, dated

September 9, 1991. The team found that this procedure provided acceptable guidance for the performance of source verifications and did specify verification of critical characteristics. The only weakness identified was that the detailed instructions for the inspection report, Attachment 2, called for a "narrative summary of inspection activities," but did not specifically require that the particular critical characteristics be listed and that their method of control and verification and results be documented to provide documented objective evidence of those critical characteristics.

2.3 Parts Classification

The team reviewed the process used at CNS to determine the safety classification of individual component parts and determined it was adequate. The process offered the basic guidance required for classifying parts. Industry-recognized documents were used as references in the review of the spare parts safety classification program. The methodology used for classifying parts and subassemblies of essential components was described in CNS EP 3.24, Revision 0. The procedure provided a method of documenting the basis of each part classification using the Safety Classification Checklist (Attachment A to the procedure). The responsible system engineer was required to use the checklist, which consisted of a series of questions to be answered yes or no. There were four categories of questions: mechanical, electrical, instrumentation and controls, and structural reviews. The procedure also gave instructions to ensure that the spare parts inventory list for equipment was revised if a part was actually reclassified.

The NRC inspection team determined that lack of documentation was the primary procedural weakness. Only part number, manufacturer/supplier, the applicable component identification code number, basis for evaluation results, and references had to be documented. A section for notes was also provided.

The procedure did not require the following specific items to be documented: (1) safety function of the parent component, (2) technical evaluations, including the failure modes and effects analysis, (3) safety function modes, either active or passive, of the part and parent component, and (4) the name of the part. The procedure instructed the person using the checklist to complete the review and analysis, but didn't actually require that the review be documented. Documentation was missing in several completed checklists that were reviewed.

NPPD had performed 26 reclassification reviews as of the date of the inspection. The team reviewed five of NPPD's reclassification reviews for technical adequacy and adherence to administrative requirements. Of the five checklists reviewed, all were technically adequate. The basis for reclassification was marginal in several cases. Several basis statements were actually summary statements, and were not substantiated with documented results. There were no indications that certain attributes important to the part, such as part material or seismic requirements, had even been considered. One possible weakness was observed during the checklist reviews. Downgrading a part from safety-related to nonsafety-related could lead to uncontrolled changes in part material. The formal review process of the checklists was inconsistent because the "reviewed by" signature blank was missing from the

checklists. Of the five checklists reviewed, one was missing the necessary formal review. The five safety classification checklists (Attachment A to EP 3.24) reviewed during the inspection are discussed in the paragraphs that follow.

- Checklist Q-90-01, Valve Body-to-Bonnet Gasket

  The safety classification of the body-to-bonnet gasket of a primary containment isolation valve was downgraded in safety classification because the gasket was not required for maintaining the pressure boundary. This was the only checklist example of material properties being considered and documented in the basis section.

- Checklist Q-91-03, Barton Differential Pressure Switch Gasket

  The gasket function was to provide a seal to ensure moisture, fumes, and dust did not enter the indicator through the faceplate bezel. This gasket was downgraded on the basis of environmental qualification data that indicated the gasket did not have to provide a leak-tight seal from steam intrusion. This checklist applied to approximately 30 instruments. The most severe service requirement for all applications should have been noted and considered in the analysis. The instruments were EQ to withstand the effects of exposure to high radiation. The effect of such exposure on the gasket was not documented in the basis sections.

- Checklist Q-91-06, High-Pressure Coolant Injection (HPCI) Lubricating Oil Filter Element

  The lube oil filter is a passive component that filters out contaminants in the HPCI turbine lubricating and control oil systems. The justification for reclassifying this element was based on component design. Internal bypass valves would allow flow to bypass a filter clogged with debris. The analysis only considered one failure mode (blockage). Other failure modes, such as erosion, corrosion, and loss of material properties, were apparently not considered.

- Checklist Q-91-10, Air Handling Unit Cooling Coil Gasket

  The purpose of the part was to maintain pressure integrity (a leak-tight seal) to prevent loss of cooling water fluid. The basis statement for the reclassification was: "a leaking gasket on coil cover will not preclude coil from performing its safety function, i.e., cooling of air." The team considered this a summary statement and not an adequate basis for reclassifying the gasket. This statement was not supported with documented analysis. No failure modes were listed; these could have included cracking, embrittlement, loss of seal, loss of resiliency, or loss of material properties. The references cited were marginally acceptable because only the vendor manual was listed. The vendor manual offered very little information about the gasket. Checklist Q-91-10 was considered only marginally technically adequate.

- Checklist Q-91-11, Breaker Control Relay

  The part was a 125-Vdc control relay for the power supply breakers for the station air compressors. Failure of the part was determined to have no safety effect; however, a loss of station air compressors would inhibit plant recovery following an accident condition. Of the five checklists reviewed, Checklist Q-91-11 documented the technical evaluation best. The person who prepared it exceeded the minimum levels of documentation established by the procedure.

The review of EP 3.24 identified several other areas in which procedures needed to be improved. For example, the definition of critical characteristics listed in Section 2.12.9 of EP 3.22, Revision 5, was different from the definition of critical characteristic in EP 3.24, Step II.C.3. The wording of the definition in EP 3.24 agreed with NRC GL 91-05 recommendations; the definition in EP 3.22 did not. An NPPD representative stated that the incorrect wording of the definition of critical characteristics in EP 3.22 was an NPPD oversight, and that the step required revision. Also, the Attachment A structural review section was missing a critical yes/no question about the part's effect on fuel movement. Of the checklists reviewed, this question was not applicable to the function of the parts or parent components. Finally, the procedure did not clearly require a written basis if all the criteria questions in a subsection were answered no; therefore, the basis sections of several checklists were simply left blank.

The method to classify generic parts for such items as gaskets, o-rings, and valve packing was not proceduralized at CNS. Generic parts have not been classified to date, but are evaluated on a case-by-case basis. If generic parts are to be classified, procedures have to be revised.

In conclusion, the end result (reclassification of parts to nonsafety-related) appeared acceptable. Documentation of the basis for the reclassification was marginal in several cases. Also, there was no indication that certain attributes important to the part had been considered in the analysis.

2.4 Trending of Suppliers

The failures of CGIs installed in safety-related applications at CNS are trended according to existing plant procedures. These failures are tracked using the nonconformance report (NCR) process per CNS Procedure 0.5.1, Revision 6, "Nonconformance and Corrective Action," which establishes measures to ensure conditions adverse to plant safety and reliability are promptly identified and corrected. NCRs are written for equipment failures, malfunctions, deficiencies, deviations, defective materials, and other similar nonconforming conditions. NCR dispositions normally included root-cause evaluations, a review of previous NCRs and equipment history to identify repetitive occurrences or adverse trends, and corrective actions to prevent recurrence.

Plant procedures do not require that receipt inspection failures be tracked. CNS PSP 1.5, Revision 12, Step 8.2.7, stated, "Vendor shipped materials identified as nonconforming or defective in accordance with purchase order

criteria or specifications shall be relocated to a designated warehouse 'REJECT' area. An NCR, for 10 CFR Part 21 reportability, is not required to identify the situation or the return of an item to the vendor." However, the receipt inspectors are informally questioned during the annual supplier update evaluation. Problems encountered with the supplier or the determination of any noncompliances noted would then be discussed and documented. CGI acceptance test failures were also not required by the procedure to be tracked. Step 8.3.1 of EP 3.22, Revision 5, stated, "In the event that the component fails the specified inspection and/or test, the performer will notify the responsible engineer for disposition." The procedure did not discuss the disposition process further.

In conclusion, failures of installed CGIs at CNS are trended according to existing plant procedures. Receipt inspection and acceptance test failures for CGIs not installed in the plant were not formally trended. Trending of all CGI failures before parts are installed would give NPPD valuable data which should be included in NPPD's annual update of its supplier survey. These data could be used to flag suppliers of components that fail at a higher than normal rate and could be used to feed information back into the CGI dedication process.

2.5 Detection of Fraudulent Materials

Fraudulent materials at CNS were detected primarily by the physical receipt inspectors; these inspectors were qualified in accordance with Training Program Description (TPD) 0515, "Physical Receipt Inspector," Revision 0, February 11, 1992. The licensee had documented that all receipt inspectors had completed Lesson File No. SKL033-02-01, "Physical Receipt Inspection," Revision 1, May 6, 1991, a requirement of TPD 0515. Section IV of the lesson file, "Identification of Fraudulent Materials," discussed NRC GL 89-02, NRC Information Notices 89-70 and 91-01, general information on nonconforming molded case circuit breakers (MCCBs), and specific information on General Electric, Westinghouse, Siemens-Gould-ITE, and Square D MCCBs.

Physical receipt inspection was performed in accordance with PSP 1.5, Revision 12, October 10, 1991. Paragraph 8.2.1.13 of PSP 1.5 required inspection of items such as valves, circuit breakers, and motor control centers, for fraudulent or substandard materials or materials that had been tampered with. Findings were required to be documented on an attachment to the receipt inspection report. The NRC inspection team discussed the detection of fraudulent materials with a receipt inspector who demonstrated familiarity with the methods. It was noted that the area in which the receipt inspectors performed their work had a large posting of information and methods related to detection of fraudulent materials. The inspection team concluded that personnel responsible for detecting fraudulent materials were adequately trained and had properly implemented the appropriate methods.

3 DEDICATION PACKAGE REVIEW

To facilitate the NRC review of individual dedications, NPPD prepared (at the NRC's request) a number of dedication record review files, compiled from

diverse records, but each pertaining to one dedication, as selected by the team from its review of the CNS dedication file lists. The review packages were organized by discipline into electrical and instrumentation, mechanical, and materials (including lubricants). In addition, NPPD provided the associated commercial audit or commercial grade survey reports in separate files. The team reviewed the available records for the selected dedications, including POs, invoices, receiving reports, receipt inspection reports, dedication acceptance plans/records, maintenance work requests (MWRs), and qualification reports.

3.1 Items Purchased as Essential-Commercial Grade (ECG)

CNS PSP 1.13 was the document established to control the activities associated with the procurement and use of CGIs for safety-related applications. The procedure required that ECG items be procured from a source whose approved commercial quality program had been invoked during the manufacture of these items and prohibits reference of unique nuclear requirements in the procurement documents, to Appendix B to 10 CFR Part 50, ANSI N45.2, or 10 CFR Part 21. However, the audits performed were generally programmatic in nature and did not verify the supplier's ability to control the critical characteristics. Additionally, critical characteristics and safety functions were not required to be identified under this approach. A documented receipt inspection is performed upon receipt, and items subsequently issued for maintenance purposes were to receive either pre-installation tests or post-maintenance tests, while items issued for design change or equipment specification changes were to receive acceptance testing. The procedure stated that dedication occurred at the time the item was placed in service following acceptance. The following examples are items that were purchased as ECG and either installed or made available for installation in essential (10 CFR Part 50, Appendix B) applications at CNS without being adequately reviewed for suitability.

a. PO change authorization 342961 ordered 16 Belleville spring washers from Georgia Power Company (GPC), Plant Hatch, on January 17, 1991. The PO to GPC did not require certification that items supplied by Dresser-Rand to GPC were the same items GPC supplied to NPPD. The package contained a copy of the PO from GPC to Dresser-Rand for 100 washers, certification from Dresser-Rand to GPC certifying part number and that it was supplied to CNS as a CGI. Plant Hatch was placed on CNS's SL as a distributor for Dresser-Rand on the basis of a phone interview on October 30, 1991, and an NRC assessment of Hatch dated May 3, 1991, that was critical of GPC's extensive reliance on broad-based, programmatic audits to qualify commercial grade suppliers. Dresser-Rand appeared on the CNS SL as an ECG supplier. During the inspection, the NRC team found that the washers had been installed in the HPCI turbine. CNS performed an operability evaluation to determine suitability and informed the team that the spring washers would be downgraded to nonsafety-related. Dresser-Rand participated with NPPD in this decision.

b. PO 311091, January 8, 1990, to Dale Electronics, purchased various wire-wound resistors manufactured to Military Specification MIL-R-26E

and installed in the PMIS augmentation phase II system located in the control room. The PO required Dale Electronics to provide Test Report No. 26080, January 16, 1990, which documented the testing of a monthly sample of these resistors. The test report covered resistance, tolerance, thermal shock, short-time overload, resistance temperature coefficient, dielectric withstand voltage, insulation resistance, high-temperature exposure, moisture resistance, and low-temperature storage. CNS qualified Dale Electronics as an EQG supplier on the basis of a commercial grade survey (SA 90-48) performed nine months after the PO was placed (October 25-26, 1990). The survey was programmatic and referenced MIL-I-45208, MIL-STD-45622, MIL-STD-105, and MIL-Q-9858. The NRC inspection team's review of the commercial grade survey found that, although not required by CNS procedures, the survey addressed critical characteristics such as resistance, tolerance, power rating, dielectric strength, and seismic qualification of the resistors. A technical evaluation had not been performed to identify safety function or critical characteristics.

c. PO 311709 was for thirty-eight 150-pound gaskets that were procured on January 17, 1990, from the Flexitallic Gasket Company, Pennsauken, New Jersey. Flexitallic (Pennsauken) appeared on the CNS SL as an EQG supplier. NPPD's Quality Assurance Follow-up Checklist, Audit SA88-31, was a follow-up to Audit S87-36 which identified problems with Flexitallic's supplier list and procedure revision control. The audits were programmatic in nature and did not verify the supplier's ability to control specific critical characteristics. Several other Flexitallic orders reviewed which contained similar deficiencies were POs 311015 and 310601.

d. PO 312069, January 24, 1990, was for Automatic Switch Company (ASCO) HB8320A90 "Red Hat," solenoid operated valves (SOVs), procured from the John Day Company of Omaha. The file contained an ASCO drop-ship packing slip, February 14, 1990, and a receipt inspection report (RIR), February 27, 1990. The format and usage practice of the RIR left the applicability of attributes up to the receipt inspector instead of being pre-approved. Consequently all testing blocks, including post installation tests, were marked not applicable. Upon inquiry by the team, CNS determined that the SOV from this PO was in the warehouse and available for installation in essential applications (e.g., SW-SOV-SPV857). The dedication of these CGIs was inadequate in that it was based on an Appendix B audit of ASCO that focused on ASCO's dedication of parts for its nuclear, EQ, Appendix B QA program-manufactured, catalog NP-1 line of SOVs. However, the ASCO "Red Hat" SOV is not manufactured to this program but to their commercial quality program and controls. The audit was not a proper commercial grade survey, since it was not item specific, and the critical characteristics were not verified for the items purchased. Note that PO 312069 was not listed as being put on hold for this reason in NPPD Memorandum QAD9100010, January 7, 1991, as were three other similar POs (327193, 315840, and 312427).

e. POs 315840 and 3.7193, also issued to John Day Company, for ASCO SOVs and rebuild kits had the same problems as PO 312069, but items from this PO were captured and put on QA hold according to NPPD QAD Memorandum QAD9100010, dated January 7, 1991, listing ASCO SOVs and rebuild kits from POs 372193, 315840, and 312427. Note that this memo did not list PO 312069, which was apparently overlooked. CNS reported that the item was in the warehouse, and was available for issue for such essential application as SW-SOV-SPV857.

f. PO 312109, January 18, 1990, was issued to TRW-Nelson, Welding Division for 100 Nelson studs, 1/2" x 2", P/N 101-017-315. The PO specified that the supplier was to provide certified material test reports (CMTRs) attesting to compliance with American Welding Society (AWS) Code D1.1-1985. The PO, contrary to procedural requirements, also required the supplier to maintain and apply a program that was in accordance with those applicable portions of 10 CFR Part 50, Appendix B and ANSI N45.2, thus invoking unique nuclear requirements in a commercial grade purchase. This practice violated CNS procedure 1.13, Section 8.2.1.2(a). TRW-Nelson supplied the studs and a product certification dated February 8, 1990, which attested to compliance with AWS, ASTM, Appendix B, and ANSI N45.2, without TRW-Nelson committing to implementing an Appendix B QA program. The certification also provided the material grade, heat number, chemistry analysis, and physical properties. Receipt inspection consisted of verification of quantity, obvious physical damage, and review of TRW-Nelson's product certification. There was no evidence that any special tests had been performed.

The CNS SL showed that TRW had been approved as a supplier of ECC products only. The triennial evaluation (NPPD Audit SA89-27) was performed on May 29, 1989, using a CASE (Coordinated Agency Supplier Evaluation)-Nuclear Section checklist. A review of the completed checklist indicated that the evaluation was programmatic and did not address the supplier's ability to control specific critical characteristics. Annual supplier evaluations were performed on November 8, 1990, and April 29, 1991.

g. PO 311631, January 16, 1990, was issued to Omaha Valve and Fitting Co. for 14 valve bonnets (3 half-inch and 11 three-eights-inch Union Bonnets) and certifications. The PO specified the manufacturer as Whitey Company, and indicated the part numbers for each of the two sizes of valve bonnets. The PO, contrary to procedural requirements, specified that the supplier was to maintain and apply a program that was in compliance with the applicable portions of 10 CFR Part 50 Appendix B and ANSI N45.2. The PO also stated that all requirements were to be transmitted and imposed on any manufacturer or subtier suppliers involved in the manufacture of the components.

The 14 valve bonnets were received and receipt inspected on January 29, 1990. The RIR showed that the technical data were reviewed and approved on February 8, 1990; that data consisted of two certificates of compliance from Whitey Company, dated January 19, 1990.

The certificates showed the appropriate quantities and part numbers, and stated that the Type 316 stainless steel used to manufacture the bonnets had been purchased and certified as being in accordance with material specifications ASTM A-479 and A-262, and that the bonnets had been tested and packaged in accordance with WS-22 and WS-23, respectively. The procurement package also contained warehouse issue and return tickets which showed that at least seven of the valve bonnets had been installed in safety-related applications, using MWP 90-1179. The MWR also showed that all work was completed and the equipment was declared ready for service on April 30, 1990.

The CNS SL showed that Whitey Company had been approved for the procurement of BOG items only. The approval became effective on October 30, 1989, and was based on a triennial evaluation (NPPD QA Audit SA89-26) performed May 23-24, 1989, using a programmatic CASE-Nuclear Section checklist. The procurement package did not contain any annual supplier evaluations of Whitey Company. It should be noted that program implementation effectiveness was not reviewed during the inspection.

h. PO 329366, January 31, 1991, through PO change authorization E, July 22, 1991, was issued to BW/IP International, Incorporated, for six shaft couplings P/N 7002355, Drawing No. IF-6921, made from ASTM A-479 Type 410 Class 2 material. The PO stipulated that all work was to be performed at the Vernon, California, facility and that the supplier must impose the quality program that had been previously approved by NPPD. A certificate of conformance was also required to be submitted. The team noted that BW/IP's Pump Division was listed on the CNS SL as an essential supplier. Therefore, procedurally, an BOG PO should not have been issued. The couplings were received, receipt inspected, and approved on July 22, 1991. The receipt inspection consisted of identifying the couplings, verifying their characteristics and quantity, and approving the supplier's documentation. The certificate of conformance, revised on July 22, 1991, attested that the parts met all of the requirements of the PO. In addition, the certificate provided such information as part number, drawing number, and material type, and stated that the parts were produced under BW/IP's QA Program Manual (2nd edition, Revision 2), July 18, 1990.

The procurement package contained MWR 90-4017, which showed that at least two shaft couplings had been installed in service water pump 1C on October 19, 1991, and that subsequent post-maintenance testing had been performed. The equipment was declared ready for service on November 5, 1991. At the time the PO was issued, BW/IP had been approved as an essential supplier based on a NUPIC audit (AG89-018) conducted between August 14 and 18, 1989. The audit was a joint nuclear utility QA audit in which Union Electric Company had the lead. The audit verified that BW/IP's QA program was based on 10 CFR Part 50 Appendix B, ANSI N45.2, ANSI/ASME NQA-1 (1986), and 10 CFR Part 21. The NRC inspection team's general review of this audit showed it was more comprehensive and performance-based than the others that it had reviewed similarly.

The team expressed concern regarding the apparent lack of traceability that would provide assurance that the couplings had been manufactured under the QA program that NUPIC had approved. Further, there were no CMTRs from the original material manufacturer to confirm the actual material used in the manufacture. As a result of telephone communication between NPPD and B&W/IP, faxes were received on February 27, 1991, attesting to the use of the QA program that had been approved as meeting the requirements of Appendix B to 10 CFR Part 50 and that the material had been processed in accordance with the requirements of 10 CFR Part 21. Additionally, it was attested that the material was supplied to B&W/IP under an approved QA program from the material supplier, Earle M. Jorgensen. A fax of a CMTR, February 27, 1990, provided the information needed for establishing material traceability.

i. PO 329844, was for four 2-inch elbows, purchased from Cooper Energy Services (CES) on February 1, 1991, which were installed on emergency diesel generator (EDG) No. 1 during the recently completed refueling outage under MWR 91-1892. The PO requested a certificate of conformance that the parts were equal to or better than those originally supplied (1964) and imposed CES's QA program as previously approved by NPPD. The basis of placing CES on the SL consisted of a programmatic-type QA audit which did not verify CES's ability to control specific critical characteristics.

j. PO 326792, was for nine Viton fuel oil filter gaskets, purchased from CES on November 11, 1990, which were installed on EDG No. 1 during the recently completed refueling outage under MWR 91-1658. Dedication consisted only of performing standard post maintenance and inservice leak tests in accordance with CNS's procedures.

k. PO 312074, was for 12 gaskets, purchased from CES on January 18, 1990, which were installed on intercooler piping for EDG No. 2. CNS relied upon a certificate of conformance stating the parts are equal to or better than those originally supplied; however, CES classified the parts as noncritical. The PO invoked such unique nuclear requirements as 10 CFR 50 Appendix B and ANSI N45.2, which were not appropriate for these EDG items. CNS performed a standard inservice leak test per CNS Procedure 7.0.8.1 and accepted a certificate of conformance from CES which was based on a broad-based programmatic QA audit performed by NPPD in January 1988. Receipt inspection, per the EDG method, only consisted of a visual inspection and no critical characteristics were required to be identified or verified. Imposing unique nuclear requirements violated Section 8.2.1.2(a) of CNS Procedure 1.13. Other POs reviewed which had the same deficiencies were POs 322798 and 336439.

A surveillance of CES was performed by CNS in September 1991 (SS91-57) to evaluate current NPPD POs with regard to the newly revised method of certification to CES's procedures only. The report stated that after July 1, 1991, CES will no longer certify that the items supplied are

equal to or better than those originally supplied, but will only certify that the items are considered as CGIs and as such, CES makes no claims to form, fit, or function. CNS reviewed approximately 10 POs dated between January 1, and July 1, 1991, and concluded that no problem existed, since CES's QA program, applied to these orders at the time, was consistent with current industry procurement practice. As a result, some parts procured through these POs have been installed in the plant and others are presently available in the warehouse.

3.2 Items Purchased as Nonessential

Examples follow of items that were purchased as nonessential and were either installed or made available for installation in essential (10 CFR Part 50, Appendix B) applications at CNS without the performance of an adequate review for suitability. CNS EP 3.22, "Commercial Grade Specification," was the document used to control the dedication activities associated with these items. The procedure required a CGI dedication package to be prepared that consisted of a CGI technical evaluation and an acceptance plan (AP).

a. Dedication Package 90-031, PO 177637, dated November 21, 1990, was for a General Electric (GE) CR2940U310 circuit breaker enclosure rackdown interlock switch, that was procured as a nonessential item from General Electric Supply Company, Omaha, Nebraska, dedicated under AP 90-031, and installed under MWR 90-1617, dated March 26, 1990, in Class 1E, 4160-Vac circuit breaker EE-CB-4160G associated with the core spray pump. The dedication package was placed on hold for engineering review on January 27, 1992, as a result of deficiencies identified in NPPD internal QA Audit SG90-1400L-24 (for example, seismic qualification not addressed in the technical evaluation performed per EP 3.22). The CNS response to the audit finding stated that seismic qualification was covered by the like-for-like determination based on same part number and visual comparison. In response to the NRC concern about the adequacy of the CNS response on this issue, CNS prepared a memorandum to the 90-031 file containing a seismic qualification justification statement. The bases for the critical characteristics were not clear from the technical evaluation. This had also been identified in the internal QA audit, although the characteristics listed appeared technically sound. The team also identified some additional concerns. The technical evaluation list of critical characteristics included open and closed contact resistance (>10 megohm and <1 ohm, respectively) separately and then listed them again as evidence of satisfactory operation, but with "near infinity" listed as the acceptance criterion for open contact resistance. The technical evaluation also listed switch terminal-to-frame (insulation) resistance as a critical characteristic. The AP called for bench testing accordingly, except that for the operational test, the acceptance criterion for open contact resistance was >1 megohm (not >10 megohm or near infinity). The AP, appropriately, also called for checking the terminal-to-ground resistance as a post-installation test. However, the quality control testing checklist attached to MWR 90-1617, under which the switch was installed, stated that no test was required, and the post-maintenance testing checksheet listed only "verify proper operation." Hence, there

was no documented objective evidence that the insulation resistance-to-ground test was ever performed. The inspection team noted that this was not one of the internal audit findings.

b. Dedication Package 90-032 consisted of six hinge pins for Anchor-Darling (A/D) tilt disc check valves. The PO, dated June 16, 1989, specified pins with an outside diameter of 1.992 inches in the bushing area between steps for an 18-inch check valve. The PO was nonsafety-related and A/D appeared on the CNS SL as an approved Appendix B supplier, qualified by a NUPIC Appendix B audit. The PO also specified that the valves were to be made to A/D Part No. 764-3D-5 and Drawing Nos. 764-3 (Revision D5) and 920-3.

The CGI technical evaluation revealed that four of the six pins were to be used in safety-related reactor feedwater check valves RF-CV-13CV, 14CV, 15CV, and 16CV, which act as isolation valves and are located inboard and outboard of containment on lines A and B. The technical evaluation included the items' end use, component safety function and environment, design criteria with manufacturer's description and design code, critical characteristics (outside diameter and material), and acceptance criteria (part number, outside diameter, and local leak rate test). Documented in the dedication package were outside diameter measurements for two of the four safety-related valves. The remaining two pins were to be used in nonsafety-related feedwater check valves (RF-CV-10CV and 11CV).

Another review identified A/D Drawing No. 920-3, which specified a pin diameter of 1.975 inches and A276 Type 410 stainless steel pins for RF-CV-13CV, 14CV, 15CV and 16CV check valves. A/D Drawing No. 764-3D-5 specified a pin diameter of 1.992 inches and A582 Type 416 stainless steel for the nonsafety-related check valves. A previous discussion between an A/D design engineer and a CNS employee allowed the substitution of the 1.992-inch A582 Type 416 pins (designed for the nonsafety-related valves) for the 1.975-inch A276 Type 410 pins (designed for the safety-related valves).

The pins were dedicated by measurement of the outside diameter, verification of part number, and an ASME Section XI IWA 521(e), 1980, visual inspection of valve bonnet leakage. This was performed under MWR 90-0525, Test 90-111, on May 5, 1990, for the 15CV valve, and under MWR 90-0524, Test 90-110, on April 21, 1990, for the 16CV valve. A deficiency noted during the review was the absence of material verification or documentation addressing seismic qualification of the entire assembly, given the fact that the newly installed hinge pin was not identical to the pin replaced. In addition, the original PO was for nonessential items despite A/D's classification as an essential supplier on the CNS SL. Since the pins were installed in four safety-related feedwater check valves without proper dedication, NPPD performed an operability evaluation during the latter part of the inspection. As a result, A/D committed to providing material certifications for the six hinge pins, although they had been originally ordered as nonsafety-related, by early March 1992.

3.3 Lubricants and Fluids Used in Essential and Essential-EQ Applications

The team selected several lubricant and fluid procurements for review from those listed for essential and essential-EQ applications on the CNS Master Lubricant List, dated February 9, 1991. Certain fluids (e.g., diesel fuel, snubber hydraulic fluid, and main steam isolation valve (MSIV) stem and guide lubricants) were being procured as essential or EQG, but other lubricants for CNS had been, and were being procured as nonessential, and without dedication under EP 3.22. Although CNS had a program for routine, in-service lubricant sampling (e.g., for breakdown or excessive bearing wear), no acceptance testing was required or was being performed. The following examples are items that were purchased as nonessential and either were used in safety-related (essential) equipment at CNS (including equipment under the EQ rule), or were made available for use in such equipment, without being reviewed for suitability.

a. PO 326028, November 15, 1990, for DAG 156 lubricant, was procured as nonessential from Acheson Colloids Company, Kansas City, Missouri, for use on essential MSIV stems (under MWR 90-3914), guide rods, and internal threads. The file contained no invoice or packing slip and the warehouse "pick" ticket in the file referenced PO 287238 instead of 326028. (Despite an inquiry, CNS never explained this discrepancy during the inspection.) There was no receipt inspection or testing record. Some of this type of lubricant was used on MSIVs under MWR 90-3914. There was no evaluation evident of the compatibility of this material with the Versilube used on the MSIV pneumatic actuator o-rings, or with the o-rings themselves, or with elastomers used in the MSIVs' ASCO SOVs which could be exposed to this material as air from the actuating cylinders was exhausted through the SOVs during the MSIV closing cycle.

b. PO 346760, January 17, 1992, was for Mobil DTE 797 oil, procured as nonessential from Allied Oil & Supply Company. This oil is used in such essential-EQ applications as the core spray pump motor bearing. There was no documented technical evaluation or acceptance plan, so no safety functions or critical characteristics were identified; nor was there any acceptance sampling/testing required or performed. General Electric Nuclear Energy (GENE) Drawing No. 234C735CX, Revision 8, for the CNS core spray pump and motor, stated that the minimum viscosity for the lubricant at 210 degrees Fahrenheit (°F) was to be 45 Saybolt Universal Seconds (SUS); whereas, the Mobil product data sheet stated that the viscosity for DTE 797 oil at 210°F was 44 SUS. The discrepancy was neither resolved or documented, nor was it justified. In response to this concern, NPPD contacted GENE and produced a record of telephone conversation with a GENE representative on February 27, 1992, that did not specifically resolve the discrepancy, but reportedly stated that DTE 797 oil (among other lubricants) was acceptable. Other deficiencies included: no receipt inspection, no traceability to the OEM, critical characteristic of environmental qualification not verified, and no similarity to EQ sample or traceability to EQ test report.

Additionally, the NRC inspection team had concerns associated with the environmental qualification itself which included:

(1) Applicability to CNS's commercial-grade Mobil DTE 797 oil of Mobil's NUTECH Engineers Report XMO-01-101, Revision 1, March 24, 1987, "Environmental Qualification of Mobil Oils and Greases" ... Other commercial-grade Mobil oils and greases in essential-EQ use at CNS including Mobilgrease 28 (EQ application: the Limitorque MOV actuator limit switch gear case). According to the Mobil product data sheet on "Mobilrad"-series nuclear-grade lubricants, commercial-grade DTE 797 oil (Mobil Product No. 60011-4), and others (Mobilgrease 28, Product No. 52062-6) were used as EQ test samples, but Report XMO-01-101, intended to apply to Mobilrad-series lubricants (specific CNS examples: Mobilrad oil 797, Product No. 60006-4 and Mobilrad SHC 28 grease, Product No. 53060-0), reportedly were of the same composition as the CGIs, but only Mobilrad-series lubricants were claimed to be supported by Mobil's 10 CFR Part 50 Appendix B QA/10 CFR Part 21 programs; the implication clearly being guaranteed consistent similarity to the tested samples.

(2) Applicability of simulation in report to CNS application conditions, that is, similarity of tested to installed conditions: The test fixture bearing loading was 40 to 60 pounds, based on producing a 45°C oil temperature rise through the bearing; whereas, according to the core spray pump motor drawing, vertical bearing static loading (continuous down thrust) was 2525 pounds, but there was no documented resolution of the difference. The CNS lubrication engineer contended that bearings of the type in question are generally designed for a 45°C rise, but he did not address the possible effects of specific loading, or any synergism between heat and mechanical working that might be accounted for by temperature rise alone.

(3) Problems with the report itself: Mobil Report XMO-01-101, Revision 1, March 24, 1987, Appendix D, "Calculation Package to Establish Temperature Aging Times for Mobil Oils and Greases," was prepared for Mobil by NUTECH Engineers, San Jose, California; aging and loss-of-coolant accident (LOCA) by Wyle Laboratories-Norco, California; sample irradiation aging by Radiation Sterilizers; and design-basis accident (DBA) LOCA dose sample irradiation by ISOMEDIX, Incorporated; sample physical and chemical analysis by an independent laboratory; and infrared spectroscopy scans by Mobil itself. NUTECH's Arrhenius calculations for accelerated thermal aging were ambiguous. They contained a questionable determination of sample activation energies based on so-called "life" data (but with no end-of-life point or condition defined) using only two data points; for example, for DTE 797 oil: 410 "minutes" [sic] at 150°C and 885 "minutes" [sic] at 140°C. However, the Institute of Electrical and Electronics Engineers (IEEE) Standard 101-1972, "Guide for

Statistical Analysis of Thermal Life Test Data," referenced for Arrhenius accelerated aging/activation energy calculations in IEEE Standard 323-1974, "IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations," (according to which methods the lubricants were supposed to be qualified) requires a minimum of three data points. In addition, it was not clear that the aging times, for example, 272 unspecified units of time at 150°C (for DTE 797 oil) for equivalent degradation to 36 months at 95°C, were appropriate. If the aging time was expressed in hours, which makes more sense, it would then have been extrapolated, that is, not bounded by activation energy life data. However, if it was correctly expressed in minutes, which would be comparable to the life data at similar temperatures, then it did not meet the minimum aging time requirement, 100 hours, of IEEE 323-74. In response to these questions, CNS agreed to obtain clarification from NUTECH, and others, as appropriate.

Three additional types of lubricants used, according to the CNS Master Lubricant List, in essential-EQ applications were procured or received since January 1, 1990, on various nonessential POs, including: PO 250546 (Chevron SRI No. 2 grease, use in EQ electric motors), PO 345259 (Exxon Nebula EP-1, possible use in EQ equipment, e.g., Limitorque actuators), POs 343117 and 315910 (Mobilgrease 28, use: EQ-Limitorque actuator limit switch gear box). This information was obtained from a CNS spare part information retrieval system printout. These nonessential lubricants were procured under the same controls as the lubricants separately reviewed above and would be expected to exhibit the same types of dedication and/or environmental qualification.

In response to these concerns, some of which were originally raised during the NRC's preinspection visit, CNS prepared a position paper on procurement of lubricants for essential (and essential-EQ) applications. The team reviewed the position paper and found that although it committed CNS to initiate a program of random acceptance sampling and analysis (by a Mobil laboratory, as an "enhancement" to provide "greater initial assurance that what we ordered is what we received"), the acceptability of lubricants was still largely stated to be based on reliance on the various lubricant EQ reports. The questions of documented, verifiable traceability to the OEM and OEM test reports and consistent similarity (i.e., batch homogeneity and traceability) to EQ-tested samples were not fully addressed.

4 PROCUREMENT AND DEDICATION TRAINING

The inspection team reviewed CNS's training activities in support of the process of dedication of CGIs used in safety-related applications performed after January 1, 1990. In May 1990, CNS's Technical Staff Training (TST) group performed a job survey and task analysis which identified the required components needed for performing such specific tasks as commercial grade dedication. The reviewers found that knowledge in a variety of areas was required, including systems and components, codes and standards, updated safety analysis report (USAR) and system safety functions, and determination of component design characteristics.

Engineering Department Instruction 89-04, "System Engineer Program," Revision 1, February 26, 1990, required system engineers to be certified in accordance with TPD 502, "Technical Staff," Revision 8, April 23, 1991, which required completion of courses identified in the task analysis as necessary knowledge required to support the dedication process. Course ADM004-01-01, "Codes, Standards, and Classifications," Revision 1, November 21, 1990, discussed the Code of Federal Regulations, NRC regulatory guides, and the ASME Code. Course ADM009-01-01, "USAR Overview," Revision 0, March 22, 1991, discussed the USAR and the safety classification of the plant's systems. Course ADM011-01-01, "Testing Overview," Revision 0, January 24, 1992, had been given on February 19, 1992, to a class that included six system engineers. The course covered the major aspects of the dedication process, such as identifying safety function, determining critical characteristics, and selecting verification methods. The course was not a requirement in the systems engineer's training curriculum at the time of the NRC inspection, although it was indicated that TPD 502 would be revised to include this course.

In addition, TST was in the process of developing a set of engineering workbooks, each of which would be unique to a particular system, and indicated that training requirements would be revised to require the system engineer to complete the portions of the engineer workbook required for each system that the engineer needed to know about. The inspection team reviewed an engineer workbook proposed for the core spray system and determined that, once the workbook was complete, it would familiarize students with parameters and operating characteristics of the system and would support the technical aspects of commercial grade dedication. After reviewing CNS's task analysis information, training requirements, and various courses that were required and were being planned, the inspection team concluded that TST had developed an adequate technical framework to support the process of the dedication of CGIs but had failed to require any training that specifically addressed the process itself. The course specific to the dedication process, "Testing Overview," had been given to approximately 25 percent of the system engineers in February 1992. Engineers were not yet required to complete the course before performing dedication-related activities.

5 EXIT MEETING

On February 28, 1992, the inspection team conducted an exit meeting with members of the NPPD staff and management at the CNS site. During the exit meeting the team summarized the inspection findings and observations. The following individuals were present:

Nebraska Public Power District

G. Horn, Nuclear Power Group Manager
J. Meacham, Division Nuclear Operations Manager
G. Smith, Nuclear Licensing and Safety Manager
M. Estes, CPI Task Force Leader
J. Larson, QA Supplier Supervisor
D. Robinson, QA Manager
M. Spencer, Engineering Programs Supervisor
R. Gardner, Senior Operations Manager
S. Peterson, Senior Manager of Technical Support Services
M. Dean, Licensing Supervisor
L. Brag, Regulatory Compliance Specialist
H. Hitch, Plant Services Manager
J. Flaherty, CNS Engineering Manager
D. Overbeck, Purchasing and Materials Supervisor
V. Wolstenholm, Division Manager - QA
B. Toline, Technical Staff Training Instructor
R. Gibson, Audit and Procurement QA Supervisor
R. Wilbur, Division Manager, Nuclear Engineering and Construction
D. Whitman, Division Manager, Nuclear Support
R. Wenzl, NED Site Engineering Manager
J. Dutton, Training Manager
R. Uhri, Tech/Ops Supervisor

Nuclear Regulatory Commission

L. Norrholm, Chief, VIB
U. Potapovs, Section Chief, VIB
I. Barnes, Section Chief, RIV
R. Pettis, Team Leader, VIB
B. Rogers, Reactor Engineer, VIB
W. Gleaves, Mechanical Engineer, VIB
S. Alexander, EQ and Test Engineer, VIB
L. Ellershaw, Reactor Inspector, RIV
R. Evans, Resident Inspector, RIV
W. Walker, Resident Inspector, CNS

Other Organizations

B. Bradley, Senior Project Manager, NUMARC
T. Spink, Materials Management Services, TENERA
J. Grace, SRAB Member
A. Hubll, SRAB Administrator
H. Green, SRAB Outside Member
L. Payne, Manager, Supplier Quality, Wolf Creek
N. Hoadley, Manager, Equipment Engineering, Wolf Creek

APPENDIX

NEBRASKA PUBLIC POWER DISTRICT
PROCUREMENT PROGRAM ENHANCEMENTS

The purpose of this paper is to provide a status of the enhancements to the District's Procurement Program which have been implemented and to identify those which are to be implemented by July 1, 1992.

A Procurement Initiative Task Force was created in October 1990 to evaluate the NRC's eight assessment inspections, the NUMARC Initiatives, and to upgrade CNS's Procurement Program accordingly. The NUMARC Comprehensive Procurement Initiative has been analyzed and an action plan developed. In addition, an industry recognized expert was utilized to review the current CNS Procurement Program. His recommendations have been factored into this action plan.

A number of actions have been taken as a result of the above activities. They are as follows:

1. The eight NRC Procurement Assessment Inspections have been evaluated, the findings categorized and summarized, and an action plan developed.

2. Procedure 3.22, "Commercial Grade Specification," was revised to address several program improvements.

3. A "Hold" statement has been placed in each approved dedication package, pending review to ensure compliance with current procedural requirements.

4. A position paper has been generated on the classification and use of lubricants which will form the basis for producing a dedication package.

5. Special training has been conducted with System Engineers on the latest revision to CNS Procedure 3.22, "Commercial Grade Specification."

The following actions are planned to be implemented by July 1, 1992:

1. Establish procedural requirements to provide formal documentation of critical characteristics as applied to Essential-Commercial Grade (ECG) procurement.

2. Formalize the Engineering Programs Department independent review of dedication packages and ECG technical evaluations.

3. Improve testing and inspection capabilities.

4. Review and revise procurement procedures (e.g. 3.22, 3.24, 1.13, QAI-16) as appropriate.

5. Enhance Quality Assurance supplier audits.

6. Implement testing for lubricants along with a dedication package if decide to purchase under a 10CFR50, Appendix B Program.

In addition, the NRC Inspection of February 24, 1992, identified the Commercial Surveys of Essential Commercial Grade Suppliers from January 1, 1990, to May 1991 to be broad-based, programmatic, Appendix B type audits and not product/critical characteristic commercial surveys. The following actions will address this concern:

1. A "HOLD" will be placed on all items in the Warehouse purchased as ECG since January 1, 1990, until such time as either the survey is re-performed using the NUPIC Commercial Survey Checklist, or the item is formally dedicated.

2. Focused, commercial surveys of ECG suppliers will be completed prior to January 1, 1993, using the NUPIC Commercial Survey Checklist.

All of the above items have been reviewed and approved for implementation by Nuclear Power Group Management.

C. Michael Estes
Comprehensive Procurement Initiative
Task Force Leader