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The Secretary of the Commission
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Virgil C. Summer Nuclear Station
Docket No. 50/355
Operating License NPF-12
Comments on Advance Notice of Proposed
Rulemaking (54 FR 7530)

Gentlemen:

South Carolina Electric & Gas Company has compiled comments to the questions identified in the Advance Notice of Proposed Rulemaking, "Acceptance of Products Purchased for Use in Nuclear Power Plant Structures, Systems and Components," (54 FR 7530). These comments are enclosed as Attachment I. Further, SCE&G has reviewed the Nuclear Utility Management and Resources Council comments on this subject and fully endorses them.

Should you have any further questions, please call at your convenience.

Very truly yours,

O S Bradham

O. S. Bradham

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Attachment

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Section 1

Products Procured for Use in Safety-Related Structure, Systems and Component Applications

Item 1.1.1a:

It is believed that the Commission's current regulations provide adequate criteria for ensuring the acceptability of purchased products. Implementation of the existing criteria is the responsibility of the licensed utility. While we believe that the current regulations are sufficient, a Regulatory Guide providing additional interpretations of acceptable implementation of the regulations would be an acceptable approach. This would allow the utilities the latitude to commit to the implementation guidelines of the Regulatory Guide or offer acceptable alternatives.

Item 1.1.1b:

Considering that the current regulations are adequate, a Regulatory Guide offering implementation recommendations would assist utilities in becoming more consistent in the interpretation of the regulations.

Item 1.1.1c:

This question is not applicable based on the answer given in 1.1.1a.

Item 1.1.2.a:

The definition of traceability as addressed in this question can be subdivided into two areas. Documentation traceability should be to qualified individuals who certified the material. Material traceability should be maintained from the point of origin in which a quality program is applied and in which raw material begins to assume its final form. These two subsections of traceability are, of course, interrelated and, therefore, the documentation must be identifiable and traceable to the material or equipment that it supports.

Item 1.1.2b:

Traceability of material should be maintained through all intermediary steps provided that quality verification has been performed during the intermediary steps. That is, traceability should begin at the point in which credit has been taken for some quality assuring function.

Item 1.1.2c:

This question is dependent upon the end-use application. That is, the end-use application and environment often controls the critical parameters, which are often beyond the manufacturer's knowledge. An example would be the operator of a passive valve which would not require traceability for critical characteristics in the valve operator mechanisms. Therefore, the utility must evaluate the application and based on the evaluation, determine which critical characteristics are required to be traceable.

Item 1.1.2d:

Exceptions to traceability requirements should be allowed for procurement of commercial grade items for dedication to safety-related. That is, those items without traceability may be dedicated by the utility and documented as such. Traceability would then begin at the utility.

Item 1.1.2e:

Uniquely marking individual parts is not always feasible, for example, small fasteners used in safety-related applications. However, traceability of an item to the procurement document and subsequently to the design parameters should be required.

Item 1.1.3:

It is believed that product acceptance should not be restricted to only inspections and tests, but must be evaluated based on the items' end use. Statistical sampling methods and destructive examinations and tests to verify chemical and physical characteristics may be appropriately applied depending on the end use application. Obviously, a defined statistical sampling process must be applied in lieu of 100% testing in cases where destructive examinations are required to verify an item's quality.

Item 1.1.4:

Inspections and tests should be applied based on vendor program acceptance, the complexity and safety significance of the item, and the plant environment in which the item is used. Inspections and tests may not be required if by manufacturing surveillance or audit it is determined that the vendor exercises sufficient quality controls during manufacturing and that the vendor performs sufficient in-house testing to verify the product will perform its safety function. Weaknesses in a vendor's program identified by audit should be supplemented by additional testing performed by an independent laboratory or by the utility's in-house testing program to compensate for any vendor program deficiencies. See also response to 2.1.8.

Item 1.1.5:

Joint testing could be an economically feasible project; however, the end use application of an item can vary widely within a plant and considerably between plants. As an example, seismic response criteria will vary significantly from site to site. Joint testing should be allowed when feasible, but not be regulated or required.

Item 1.1.6:

In performing destructive inspections and tests, approved statistical sampling should be applied. The application of statistical sampling could be partially based on the vendor's performance in the past, or per lot of material, or per container of homogenous material. Statistical sampling per purchase order presents a problem when purchase orders are written on an annual or bi-annual renewal basis and materials are shipped over a period of time. Some manufacturing processes are a continuous type process where lots of material are not identified; however, material composition in this case is closely related to the date of processing. Therefore, statistical sampling based on a date of manufacture can be appropriately applied. This indirectly applies to statistical sampling based on shipments, provided a date of manufacture can be determined.

Item 1.1.7:

Reference questions 1.1.3 and 1.1.6. Since many tests and inspections require destructive examination, 100% testing basis should not be required in determining frequency of tests or inspections.

Item 1.1.8:

The use of existing statistical sampling plans such as Mil Standard 105D in addition to receipt inspections and other considerations should provide adequate confidence that the product meets an acceptable level of quality.

Item 1.1.9:

Considerations for allowing sample plan testing should include the quantity of material, lot control, the manufacturing process, the safety significance of the end use application, the supplier's history and any ancillary critical parameters that may be verified by other means.

Item 1.1.10:

The shelf life of degradable material should be addressed by the utility's quality program. Since some suppliers are unable to meet shelf life requirements, it should be incumbent on the utility to establish shelf life requirements for material types, and based on environmental conditions in which the item is stored, the utility should control and regulate shelf life prior to issuance for installation. The reference date at which time shelf life begins should be established during product acceptance.

Item 1.1.11:

Vendor audits reduce the likelihood of questionable products being used in nuclear power plants to the degree of the performance of the utility's audit program. Inspections and tests after receipt of items can be conclusive in determining a products quality, but are often times too late to meet the utility's needs if a problem arises. The requirement that vendors maintain auditable quality programs provides an up front awareness on the vendor's part as to what is required to meet the utility's safety-related applications. Therefore, it is our opinion that vendor audits and receipt inspections and tests provide integral and interdependent functions.

Item 1.1.12:

For a vendor audit program to be fully effective, the program must be implemented to utilize technical as well as programmatic auditing expertise. This, combined with existing ANSI N-45.2.23 audit team requirements, is adequate to assure vendor program compliance.

Item 1.1.13:

Normally, a triannual audit schedule for suppliers with 10CFR50 Appendix B programs is an acceptable frequency for auditing. However, utilities should be afforded the latitude to go into suppliers' facilities and audit more often if questions arise that indicate a supplier's quality assurance program may not be fully implemented.

Item 1.1.14:

South Carolina Electric & Gas Company utilizes a computer based information system that identifies the status of current code certificate holders.

Item 1.1.15:

Documentation traceable to the ASME code material supplied by the stamp holder demonstrates that the product was purchased by a qualified code supplier.

Item 1.1.16a:

Audit results, including negative impacting statements, should be shared between licensees provided the audit is evaluated to determine the applicability of program compliance to the user's quality assurance program.

Item 1.1.16b:

We do not believe that there should be a regulatory requirement that audits be shared among utilities. Audits are performed to different utility program requirements and are based on different material applications.

Misunderstandings or misinterpretations of audit results are possible without full evaluation.

Item 1.1.16c:

Public release of audit results is likely to encourage some suppliers to drop their Appendix B programs. Utility audits of suppliers should be a made available to regulatory agencies for review and interpretation of results. Dissemination of this information should then become the responsibility of the regulatory agency evaluating the audits. In any case, audit results should not be released for public information.

Item 1.1.16d:

Based on affirmative answers to questions 1.1.16a, b and c, liabilities and litigations may become a concern. While audit results should be based on objective evidence, the subjectiveness exercised by some auditors could have substantial legal and industry repercussions.

Item 1.1.17:

Optional joint procurement audits and inspections should be available to all utilities; however, it should be incumbent on the individual utility to assess the cost-effectiveness and program compliance concessions in determining if a joint audit or inspection is feasible. To regulate otherwise would lead to consistency at the expense of compromise between participating utilities.

Item 1.1.18:

Reference question 1.1.17.

Item 1.1.19:

Audit and testing documentation required as a result of a joint product acceptance would be required to meet each participant's program and material application requirements. That is, each audit and acceptance test would have to be performed to the most stringent utility end use application. This is not feasible for major components such as diesel generators where environmental conditions range from harsh environment to mild environment. Seismic design spectrums are also varied.

Item 1.1.20a:

It is considered that a listing of suppliers versus products would be helpful to the utility industry. However, a list of approved suppliers could be misleading considering the varied scopes and end use applications for materials, equipment and services supplied. Such a list should be provided with appropriate disclaimers to preclude its generic use in accepting vendor products.

Item 1.1.20b:

Reference 1.1.20a.

Item 1.1.20c:

If the list, generated by the NRC, is based upon an industry wide accumulation of information about suppliers, it would need to be maintained by the NRC. The basis of this is primarily because each individual utility would only be aware of the status of those suppliers that are currently approved to provide services and equipment for their applications.

Item 1.1.20d:

Licensees should not be restricted to making procurement decisions from a national list of approved vendors. This is partially based on on the response give to question 1.1.20A and also because it is incumbent upon the utilities to assess each vendor's program and material and end-use application.

Item 1.1.21:

Certificates of conformance should not be prohibited as a method of documentation to support the quality level of a procured item provided that confidence has been established in the vendor supplying the certificate of conformance. The audit process should be applied to the vendor generating a certificate of conformance to verify that items not manufactured directly under his control have been properly supplied by audited subtier suppliers or that the quality of the items has been independently verified by the supplier supplying the certificate of conformance.

Item 1.1.22:

Certified Material Test Reports and other manufacturer certifications should only be mandatory when required to provide a traceable link to the quality of the product from the point at which the initial quality assurance program was applied. Documentation from intermediate vendors should be allowed to be maintained by the supplier as quality records available for audit and should not be mandatorily required to be submitted from the supplier.

Item 1.1.23:

Suppliers whose quality assurance programs have been audited and are in full compliance with the requirements of Appendix B and 10CFR21 should be allowed to transcribe information from intermediate supplier certifications to documentation supplied with the hardware. It is incumbent upon the utility's supplier qualification/audit program to identify cases where transcription of intermediate supplier documentation data is acceptable.

Item 1.1.24:

Requirements for inspection of implementation of contractor product acceptance programs should be based on material/equipment application and utility program implementation. That is, a combination of many program elements such as auditing, inspection, testing, vendor history, etc., as well as plant specific material application considerations should be applied to determine if an inspection of the contractors product acceptance program is necessary.

Item 1.1.25:

The implementation of a supplier's 10CFR21 program should be verified during an audit provided the responsibility for dedicating an item to safety-related application is assumed by the supplier.

Item 1.1.26:

The reportability requirements of 10CFR21 are currently adequate for the identification of vendor supplied parts problems.

Item 1.1.27:

The licensee's participation in an additional national data system for reporting equipment component failures by manufacturers should not be required. Currently, Nuclear Plant Reliability Data System adequately performs this function.

Item 1.1.28:

See response to 1.1.27.

Item 1.1.29:

Indeterminate.

Item 1.1.30:

NUMARC in conjunction with the respective ASME code committees should effect any coordination activities.

Item 1.1.31:

Yes.

Item 1.1.32:

These requirements do not apply to non-safety-related components.

Item 1.2.1a:

Chemical analyses of the product should be required when necessary to verify that the item or product will perform its design intended function. The results of the analysis or testing should be available prior to acceptance of the product for safety-related applications.

Item 1.2.1b:

When an acceptable level of quality can be verified by performing nondestructive tests, it is obviously preferred that this method be utilized over destructive examination.

Item 1.2.2a:

Mechanical properties such as hardness, tensile strength, etc., of a product should be required when necessary to verify that the item will perform its design intended function. Product acceptance should be based on the results of the mechanical testing prior to the item being available for plant installation.

Item 1.2.2b:

Tests for mechanical properties of products should be performed by nondestructive means rather than destructive means when the same level of quality assurance can be determined through the nondestructive testing.

Item 1.2.3:

Test coupons should be an acceptable source of test material for destructive test provided documentation and traceability is available to indicate that the test coupon is representative of the product for which the testing is being performed.

Item 1.3.1a:

Chemical analyses should be performed on lubricants, tapes, elastomers, etc., during product acceptance if necessary to provide reasonable confidence that the product will perform its design intended function and whose failure would not be detrimental to other nearby or associated safety-related components.

Item 1.3.1b:

Chemical analyses should be performed preferably by using nondestructive means when the same level of quality can be verified as would be achieved through destructive testing.

Item 1.3.2:

Physical property tests should be required for product acceptance if necessary to verify that the product will perform its design intended function. (Note: The answers to questions concerning chemical and physical analysis are based on the fact that the supplier's quality assurance program is either deficient in these areas, has been unaudited in these areas or the traceability of the material or documentation is insufficient in these areas.)

Item 1.4.1:

Functional tests should not be required for product acceptance provided adequate assurance has been provided by the supplier that the component will perform its design intended function. This question is not intended to address site operational testing after installation.

Item 1.4.2a:

Components may need to be disassembled during product acceptance if dimensional characteristics are critical to the function of the item and have not been previously verified by the supplier under the approved supplier's quality assurance program.

Item 1.4.2b:

Critical characteristics of components should be required to be verified. A number of options should be available to document that this verification has been completed. Suppliers providing documentation under an approved supplier quality assurance program that the critical characteristics had been verified is an acceptable method. Receipt inspections to supplement or enhance the supplier supplied documentation may be applied to verify the critical characteristics. In addition, credit should be taken for functional testing after installation if specified in the procurement document and controlled by the utility.

Item 1.4.3a:

Chemical and physical properties of component materials should be analyzed during product acceptance inspections if adequate confidence does not exist in the supplier quality assurance program that verifies product acceptance.

Item 1.4.3b:

Utilities should utilize receipt inspections, chemical test, independent laboratories and existing plant testing facilities to verify chemical and physical properties of component materials.

Section 2

Dedication of Commercial Grade Products for Use and Safety-related Structure Systems Component Applications

Item 2.1.1:

As discussed in question 1.1.1a, existing Commission rules and regulations are in fact adequate to ensure that commercial grade products being dedicated for use as well as safety-related products satisfy operational requirements. The question deals with the fact that implementation of existing requirements vary from utility to utility. Therefore, it appears that some level of performance based requirements should be established to more adequately standardize implementation of existing regulations within the nuclear power industry. The performance based requirements should center on an individual product's capability to meet its intended application as defined by specific engineering evaluations.

Item 2.1.2:

As previously stated, existing guidance is adequate. Further endorsement could be to support such documents as Nuclear Constructions Issues Group (NCIG) 07 as a viable methodology for assuring that commercial grade components have received an appropriate level of dedication to nuclear power service. It should be emphasized that it is incumbent upon each licensee to verify that all products utilized in nuclear power applications are acceptable for its intended application. The endorsement of NCIG-07 primarily would be utilized to promote some level of consistency throughout licensee programs. Even within NCIG-07, alternative measures can be utilized by individual licensees provided it can be demonstrated to the Commission that such alternative measures adequately dedicate a commercial grade item for use in nuclear power applications.

Item 2.1.3a:

See response to question 1.1.2a.

Item 2.1.3b:

There is no current need to update traceability provisions. The requirements as defined in 10CFR50 Appendix B and 10CFR21 for required quality assurance programs as well as dedicating commercial grade products to nuclear power applications are clear and consistent with respect to the level of traceability. That level is clearly defined to assure that the critical attributes of a given item have been satisfied prior to installation or use in nuclear power applications.

Item 2.1.3c:

See response to question 1.1.2b.

Item 2.1.3D:

Commercial dedication by its very nature allows for upgrading products whose traceability cannot be established. The basic assumption is that traceability does not exist for the individual product for utility useage. The level of upgrading is consistent with the end use application as defined by engineering resources. That requires a critical-to-function attribute determination in addition to an appropriate level of testing for verification of such attributes prior to acceptance for use in nuclear power applications.

Item 2.1.3e:

The upgrading traceability provisions should not be any different if the products are heat/lot identified. That is not consistent with the basis for 10CFR21 which relates to dedication of commercial grade products to nuclear power applications. Again, the assumption must be made the traceability link has been lost. This then requires the appropriate review and product inspection or test prior to utilization. Commercial grade surveys may also be substituted. The heat/lot traceability will only assist commercial grade survey results when manufacturing repeatability and process and program controls within given facilities has been established.

Item 2.1.3f:

The identification requirements for traceability should be consistent with the critical-to-function attribute determination as discussed in 2.1.3d. Specific identification requirements must be established under a unique purchase order by purchase order basis related to individual product hardware.

Item 2.1.4:

The inspections referred to here must be established on a case by case basis for the specific critical attributes identified. It can range from a simple visual inspection to a full scope destructive and nondestructive examination. This is unique to the individual product being procured, the source of procurement, level of verification required, and the critical characteristics of the individual item in question.

Item 2.1.5:

Shelf life should be identified. If it cannot be identified, then a methodology must be established for designating a specific shelf life during the upgrade inspection process as it relates to the individual product.

Item 2.1.6:

See response to 2.1.5.

Item 2.1.7:

The types of inspections and tests required for commercial dedication will be destructive and nondestructive to verify both chemical and physical characteristics as required for the individual item subjected to the dedication process. It primarily relates to the individual licensee's confidence with the vendor, his program, usage history, other inspections and tests previously conducted on similar items, the criticality of the component, test facility availability, economic considerations, and end use applications. Our experience to date has indicated that destructive and nondestructive tests are routinely required for dedication of commercial grade items.

Item 2.1.8:

The typical types of inspections and tests required range from the very simple visual inspections, dimensional verifications, spectrographic analysis, hardness testing, spring rate testing, Charpy testing, NDE examinations such as MT, LP, UT and RT, functional and operability tests, etc. See also response to question 1.1.8.

Item 2.1.9:

Inspections should verify the critical characteristics under examination. The test methods identified in the response to question 2.1.8 determine the degree to which they should apply. This should directly correlate to the proper identification of the critical characteristics and their relationship to the end use application of the individual product.

Item 2.1.10a:

Recognized sample plans should be utilized as the basis for determining sample sizes. In lieu of the utilization of the recognized sample plan, an appropriate individual justification should be documented to provide the basis for the decision.

Item 2.1.10b:

The same logic should apply whether the items are identified by heat/lot or not as described in a response to question 2.1.10a.

Item 2.1.11:

See response to question 2.1.10a.

Item 2.1.12:

The criteria for sample plan testing should be from a recognized standard sample plan or justified on an individual basis accordingly.

Item 2.2.1a:

Chemical analysis is appropriate for commercial grade dedication as it relates to the critical attributes determination identified previously. The level of analysis is directly related to the criticality of the component's end use as determined by appropriate engineering resources.

Item 2.2.1b:

Whether chemical analysis be by destructive or nondestructive means relates to the ability of the individual test facility to verify.

Item 2.2.2a:

Mechanical property tests such as hardness, tensile and impact are appropriate for critical attribute function determination. Again, the level should be determined on a product specific basis relating it to end use applications.

Item 2.2.2b:

Destructive and nondestructive means should be utilized as appropriate to the individual product end use application.

Item 2.2.3:

Sample inspection is valid if the product heat/lot is traceable.

Item 2.2.4:

Sample methodology is still acceptable even if heat/lot traceability is not identifiable. Such things as tightened inspection sample plans as defined in Mil Standard 105D and other methodologies may be employed if the generic population to be tested is not specifically traceable to an individual lot. Again, these determinations should be made on a case-by-case basis with individual logic being provided as to the basis for sample plan determination.

Item 2.2.5:

Requirements, in addition to those included in industry standards, should be utilized as appropriate to the individual circumstance. Again, this must be made on a case-by-case basis relating product history, product quality, sample plan methodology and end use application for each individual item.

Item 2.2.6:

Test coupons can be utilized when they can be directly correlated to the individual items being subjected to tests. If this correlation cannot be determined or verified, then test coupon testing is neither appropriate nor acceptable.

Item 2.3.1a:

Chemical analysis may, in fact, be required to establish critical characteristics for items for which traceability cannot be provided.

Item 2.3.1b:

Destructive or nondestructive means is purely dependent upon the individual test resource.

Item 2.3.2:

Physical property test may be required dependent upon the critical-to-function attribute determinations as previously discussed.

Item 2.3.3:

Sample inspection as previously discussed in response to question 2.2.3 and 2.2.4 and 2.2.5 is acceptable.

Item 2.4.1:

Each critical characteristic must be inspected to some degree prior to utilization of the item. The degree to which the inspection is conducted should be based on the particular critical characteristic's relative importance to the overall function of the item and its end use application. This should be clearly documented by engineering evaluation on a specific dedication document.

Item 2.4.2:

Chemical and physical properties should be determined and analyzed for individual items as previously discussed in Sections 1 and 2.

Item 2.4.3:

Critical characteristics for components must be established. This question seems to be more related to sample inspections. Previous responses related to sample inspections should be considered adequate for component inspection as well.

Item 2.4.4a:

See response to question 2.4.3.

Item 2.4.4b:

See response to question 2.4.3.

Item 2.4.5a:

Disassembly of components should be required to verify critical characteristics as required by specific engineering direction. The level to which the disassembly is required depends on the specific end use application and the level of criticality of the component to support end use application.

Item 2.4.5b:

All critical characteristics for an individual item must be verified. Subsequently, sample verification of individual items that relates to a given lot or batch may be done utilizing a sample plan as discussed in previous responses.

Item 2.4.5c:

Again, the basis for performing only a sample inspection must be clearly identified and documented to be in accordance with standard approved sampling plans such as Mil Standard 105D or uniquely identified for non-standard sample plans. It is not our opinion that critical attributes for an individual item can be sampled; however, it must be only as relates to a given lot or batch.

Item 2.4.5d:

If components are not disassembled to verify dimensions, then functional verifications must be performed or operability verifications must be utilized to prove that the internal components are aligned or meet various dimensional requirements which relate directly to the operability of the unit, which can be verified by testing. This testing can be in the form of electrical performance testing, system testing or individual component bench test. The degree to which this testing can be utilized to verify individual product acceptability must be determined on a case-by-case basis by the appropriate engineer.

Item 2.5.1a:

The only standard that currently exists is NCIG-07 generated by EPRI which provides a methodology for commercial grade product upgrade.

Item 2.5.1b:

It would be appropriate for the NRC to endorse NCIG-07 with the additional requirement that alternative methods for dedication proven acceptable by individual licensees would be appropriate.

Item 2.5.2:

There are other alternatives which are basically spinoffs from NCIG-07 document that provide equal levels of assurance that products will meet their intended function upon being subjected to a design basis event.

Item 2.5.3:

We do not believe that extending these controls to non-nuclear-safety or balance of plant items is appropriate at this time.