



August 15, 1983

POLICY ISSUE
(Information)

SECY-83-334

For: The Commissioners
From: William J. Dircks
Executive Director for Operations
Subject: OCONEE UNIT NO. 3 - SPENT FUEL POOL EXPANSION

Purpose: To advise the Commission that the staff is publishing the enclosed notice of consideration and proposed no significant hazards consideration (NSHC) determination relative to the licensee-requested expansion of the Oconee Unit 3 spent fuel pool.

Background: By letter dated March 10, 1983, Duke Power Company (DPC or the licensee) submitted a proposed amendment to the Oconee station operating license and the proposed revision to the Technical Specifications. The proposed Technical Specifications revision would allow the expansion of the Unit 3 spent fuel pool from 474 to 825 spaces by means of reracking the pool with high density neutron absorbing (poison) racks.

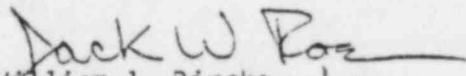
The staff reviewed a detailed NSHC determination included in the licensee's submittal and concluded that the determination appears to demonstrate that the three standards specified in 10 CFR 50.92 are met. In this instance, the reracking technology has been well developed and demonstrated in prior rerackings at the Oconee station. The proposed reracking does not appear to create the possibility of a new or different kind of accident from any accident previously evaluated. The proposed reracking would not appear to significantly reduce the margin of safety from the viewpoint of nuclear criticality or thermal-hydraulic, mechanical, material and structural considerations. In view of this, the staff proposes to determine that the licensee's application does not involve a significant hazard consideration.

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The staff submitted its proposed NSHC determination, as well as the licensee's request, to the Commission on June 23, 1983 (SECY 83-249). Subsequently, the Commission evaluated the staff's proposal. However, the vote on the proposal was split, 2-2. The staff was informed that the General Counsel, on July 27, 1983, advised the Commission that the 2-2 vote permits the staff to proceed with the proposed action or to seek more definitive guidance from the Commission.

Discussion: The staff has elected to proceed with publication in the FEDERAL REGISTER of the notice of consideration of the requested amendment and proposed NSHC determination in order to minimize impacts of further delaying issuance of this proposed amendment. The licensee had planned to commence the reracking operation on or about September 1, 1983 in order to support future refueling outages at the Oconee facility. The licensee, at our request, has provided additional information regarding the impacts of further delaying action on this amendment request. This information is contained in the enclosed letter from DPC dated August 8, 1983.


William J. Dircks *for*
Executive Director for Operations

Enclosure:
As Stated

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UNITED STATES NUCLEAR REGULATORY COMMISSIONDUKE POWER COMPANYDOCKET NO. 50-287NOTICE OF CONSIDERATION OF ISSUANCE OF AMENDMENT TO
FACILITY OPERATING LICENSE AND PROPOSED NO SIGNIFICANT HAZARDS
CONSIDERATION DETERMINATION AND OPPORTUNITY FOR HEARING

The U. S. Nuclear Regulatory Commission (the Commission) is considering issuance of an amendment to Facility Operating License No. DPR-55, issued to Duke Power Company (the licensee), for operation of the Oconee Nuclear Station, Unit No. 3 (the facility) located in Oconee County, South Carolina.

In accordance with the licensee's application for amendment dated March 10, 1983, the amendment would permit the expansion of the spent fuel storage capacity for Oconee Unit No. 3. This expansion would be accomplished by reracking the existing spent fuel storage pool with neutron absorbing (poison) spent fuel racks. Reracking the spent fuel pool would increase the Oconee Unit No. 3 pool storage capacity from 474 to 825 spaces.

Before issuance of the proposed license amendment, the Commission will have made findings required by the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations.

The Commission has made a proposed determination that the amendment request involves no significant hazards consideration. Under the Commission's regulations in 10 CFR 50.92, this means that operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

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The Commission has provided guidance concerning the application of these standards by providing certain examples (48 FR 14870). Spent fuel pool reracking was specifically excluded from either set of examples because "[for reracking]...a significant hazards consideration finding is a technical matter which has been assigned to the Commission..." and the Commission "...will make a finding...for each reracking application, on a case-by-case basis..." (48 FR 14869). In this instance, the licensee's submittal of March 10, 1983 (hereafter referred to as the submittal) included a discussion of the proposed action with respect to the no significant hazards consideration. This discussion has been reviewed and the Commission finds it acceptable. Each of the three standards is discussed below.

First Standard

The analysis of the proposed reracking has been accomplished using current NRC Staff accepted Codes and Standards as specified in Section 2.1.2 of Attachment 2 of the submittal. The results of the analysis meet the specified acceptance criteria set forth in these standards. In addition, Duke has reviewed NRC Staff Safety Evaluation Reports for prior PWR rerackings involving poison racks to ensure that there are no identified concerns not fully addressed in their submittal.

From its analyses and SER reviews Duke has identified the following potential accident scenarios: (1) spent fuel cask drop; (2) loss of spent fuel pool forced cooling; (3) seismic event; (4) spent fuel assembly drop; and (5) construction accidents. The probability of any of the first four accidents is not affected by the racks themselves; thus, reracking cannot increase the probability of these accidents. As for the construction

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accident, the proposed Oconee 3 pool reracking will not involve an increase in probability of any previously evaluated construction accident as accepted construction standards and procedures will be employed as described in Sections 4.0 and 6.1 of Attachment 2 of the submittal. Since there will be no fuel assemblies in the fuel pool during rack installation, the probability of some types of postulated construction accidents has actually decreased.

The consequences of the (1) spent fuel cask drop accident have been evaluated as described in Section 6.2 of Attachment 2 of the submittal. By limiting the age of fuel stored in the first 31 rows to not less than 70 days prior to any cask movement, Duke indicates that the consequences of this type accident would be less than with the present racks as described in the Oconee FSAR Section 15.11.2.2. Thus, the consequences of this type accident would not be significantly increased from previous accident analyses.

The consequences of the (2) loss of spent fuel pool forced cooling accident have been evaluated and are described in Section 6.3 of Attachment 2 of the submittal. As indicated by Duke in Tables 6.3-1 and 6.3-2, there is ample time to effect repairs to the cooling system or to establish a makeup flow, and since the required makeup flow is less than the 70 gpm rate accepted by the NRC Staff for the Oconee 1 and 2 pool, the consequences of this type accident would not be significantly increased from previously evaluated accidents by this proposed reracking.

The consequences of a (3) seismic event have been evaluated and are described in Section 2.3.1 of Attachment 2 of the submittal. The racks were evaluated against the appropriate NRC Standard described in Section 2.1.2. Duke indicates that the results of the seismic and structural analysis show

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that the proposed racks meet all of the NRC structural acceptance criteria and are consistent with results found acceptable by the NRC Staff in all previous poison rerack SERs including Oconee 1 and 2. Thus, the consequences of seismic events would not significantly increase from previously evaluated seismic events.

The consequences of a (4) spent fuel assembly drop accident are described in Section 2.3.1.5 of Attachment 2 of the submittal. The radiological consequences of this type accident are bounded by the cask drop accident and Duke indicates that K_{eff} is shown to be always less than the NRC acceptance criteria of 0.95 and not significantly different from the margin to criticality found in the December 22, 1975 SER for the previous Oconee 3 rerack. Thus, the consequences of this type accident would not be significantly increased from previously evaluated spent fuel assembly drop accidents.

The consequences of a (5) construction accident are described in Section 6.1 of Attachment 2 of the submittal. Since there will be no fuel assemblies in the fuel pool during rack installation, there would be no radiological consequences of any construction accident. Thus, using accepted construction practices as described in Section 4.0 of Attachment 2 of the submittal the consequences of a construction accident would be less than construction accidents previously evaluated by the NRC Staff.

Based on the information provided with the application, the proposed Oconee 3 spent fuel pool rerack would not involve a significant increase in the probability or consequences of an accident previously evaluated.

Second Standard

Duke has evaluated the proposed reracking in accordance with the "NRC Position for Review and Acceptance of Spent Fuel Storage and Handling Applications," appropriate NRC Regulatory Guides, appropriate NRC Standard Review Plans, and appropriate Industry Codes and Standards as described in Section 2.1.2 of Attachment 2 of the submittal. In addition, Duke has reviewed previous NRC Safety Evaluation Reports for poison rerack applications. In Duke's analysis and review of NRC evaluations and Industry Standards and Codes, Duke finds that the proposed reracking does not in any way create the possibility of a new or different kind of accident from any accident previously evaluated including those on the Oconee 3 Docket.

Third Standard

The issue of margin of safety when applied to a reracking modification will need to address the following areas (as established by the NRC Staff Safety Evaluation review process):

1. Nuclear criticality considerations
2. Thermal-hydraulic considerations
3. Mechanical, material, and structural considerations

The margin of safety that has been established for nuclear criticality considerations is that the neutron multiplication factor in the spent fuel pool is to be less than or equal to 0.95, including all uncertainties, under all conditions. For the proposed modification, the criticality analysis, as discussed in Section 2.3.2 of Attachment 2 of the submittal is exactly

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the same as that which was approved by the NRC Staff (SER issued December 24, 1980) for the Unit 1 and 2 shared pool reracking modification. The exact same codes, techniques, and assumptions were made. All aspects of the bases of the SER conclusions are covered in the identical manner.

The methods utilized in the analysis conform with ANSI N18.2-1973, "Nuclear Safety Criteria for the Design of Stationary Pressurized Water Reactor Plants," Section 5.7, Fuel Handling System; ANSI N210-1976, "Design Objectives for LWR Spent Fuel Storage Facilities at Nuclear Power Stations," Section 5.1.12; ANSI N16.9-1975, "Validation of Computational Methods for Nuclear Criticality Safety," NRC Standard Review Plan, Section 9.1.2, "Spent Fuel Storage;" and the NRC guidance, "NRC Position for Review and Acceptance of Spent Fuel Storage and Handling Applications."

The results of Duke's analysis indicate that K_{eff} is always less than 0.95 including uncertainties at a 95/95 probability/confidence level. Thus meeting the acceptance criteria for criticality, the proposed rerack does not involve a significant reduction in the margin of safety for nuclear criticality.

From a thermal-hydraulic consideration the areas of concern when evaluating if there is a significant reduction in margin of safety are: (1) maximum fuel temperature, and (2) the increase in temperature of the water in the pool. The thermal-hydraulic evaluation is described in Section 2.3.3 of Attachment 2 of the submittal. Results of these analyses by Duke show that fuel cladding temperatures under abnormal conditions are sufficiently low to preclude structural failure and that boiling does not occur in the water channels between the fuel assemblies nor within the

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storage cells. However, the proposed reracking will allow an increase in the heat load in the Oconee 3 spent fuel pool. The evaluation in Section 3 of Attachment 2 of the submittal shows that a third spent fuel cooling train will be added prior to putting more than the currently authorized 474 Fuel Assemblies in the spent fuel pool. The addition of the third cooling train is intended to ensure that the pool temperature margins of safety of 150°F and 205°F described in Section 9.1.3 of the Oconee FSAR are maintained. Thus, there would be no significant reduction in the margin of safety from a thermal-hydraulic standpoint or from a spent fuel cooling standpoint.

The mechanical, material, and structural considerations of the proposed rerack are described in Sections 2.1, 2.2, and 2.3 of Attachment 2 of the submittal. As described by Duke in Section 2.1, the racks are designed in accordance with the "NRC Position for Review and Acceptance of Spent Fuel Storage and Handling Applications" dated April 14, 1978 and revised January 18, 1979. The racks are designed to Seismic Category 1 requirements and are classified as ANS Safety Class 3 and ASME Code Class 3 Component Support Structures. In addition, the racks are designed to withstand the loads which may result from fuel handling accidents and from the maximum uplift force of the fuel handling crane. Duke indicates that the materials utilized are described in Sections 2.2 and 2.3.4 and are compatible with the spent fuel pool and the spent fuel assemblies. The structural considerations of the racks are described in Section 2.3 and show that the margin of safety against tilting is greater than 100, that the racks do not impact each other nor impact the pool walls, and that sufficient clearance is provided to prevent the racks from sliding into pool floor obstructions. Thus, the margin of safety would not be significantly reduced by the proposed rerack.

Because the submittal by the licensee appears to demonstrate that the standards specified in 10 CFR 50.92 are met, and because the reracking technology in this instance has been well developed and demonstrated, the Commission proposes to determine that the application does not involve a significant hazard consideration.

The Commission is seeking public comments on this proposed determination. Any comments received within 30 days after the date of publication of this notice will be considered in making any final determination. The Commission will not normally make a final determination unless it receives a request for a hearing.

Comments should be addressed to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, ATTN: Docketing and Service Branch.

By _____, the licensee may file a request for a hearing with respect to issuance of the amendment to the subject facility operating license and any person whose interest may be affected by this proceeding and who wishes to participate as a party in the proceeding must file a written petition for leave to intervene. Request for a hearing and petitions for leave to intervene shall be filed in accordance with the Commission's "Rules of Practice for Domestic Licensing Proceedings" in 10 CFR Part 2. If a request for a hearing or petition for leave to intervene is filed by the above date, the Commission or an Atomic Safety and Licensing Board, designated by the Commission or by the Chairman of the Atomic Safety and Licensing Board Panel, will rule on the request and/or petition and the Secretary or the designated Atomic Safety and Licensing Board will issue a notice of hearing or an appropriate order.

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As required by 10 CFR §2.714, a petition for leave to intervene shall set forth with particularity the interest of the petitioner in the proceeding, and how that interest may be affected by the results of the proceeding. The petition should specifically explain the reasons why intervention should be permitted with particular reference to the following factors: (1) the nature of the petitioner's right under the Act to be made a party to the proceeding; (2) the nature and extent of the petitioner's property, financial, or other interest in the proceeding; and (3) the possible effect of any order which may be entered in the proceeding on the petitioner's interest. The petition should also identify the specific aspect(s) of the subject matter of the proceeding as to which petitioner wishes to intervene. Any person who has filed a petition for leave to intervene or who has been admitted as a party may amend the petition without requesting leave of the Board up to fifteen (15) days prior to the first prehearing conference scheduled in the proceeding, but such an amended petition must satisfy the specificity requirements described above.

Not later than fifteen (15) days prior to the first prehearing conference scheduled in the proceeding, a petitioner shall file a supplement to the petition to intervene which must include a list of the contentions which are sought to be litigated in the matter, and the bases for each contention set forth with reasonable specificity. Contentions shall be limited to matters within the scope of the amendment under consideration. A petitioner who fails to file such a supplement which satisfies these requirements with respect to at least one contention will not be permitted to participate as a party.

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Those permitted to intervene become parties to the proceeding, subject to any limitations in the order granting leave to intervene, and have the opportunity to participate fully in the conduct of the hearing, including the opportunity to present evidence and cross-examine witnesses.

If a hearing is requested, the Commission will make a final determination on the issue of no significant hazards consideration. The final determination will serve to decide when the hearing is held.

If the final determination is that the amendment request involves no significant hazards consideration, the Commission may issue the amendment and make it effective, notwithstanding the request for a hearing. Any hearing held would take place after issuance of the amendment.

If the final determination is that the amendment involves a significant hazards consideration, any hearing held would take place before the issuance of any amendment.

Normally, the Commission will not issue the amendment until the expiration of the 30-day notice period. However, should circumstances change during the notice period such that failure to act in a timely way would result, for example, in derating or shutdown of the facility, the Commission may issue the license amendment before the expiration of the 30-day notice period, provided that its final determination is that the amendment involves no significant hazards consideration. The final determination will consider all public and State comments received. Should the Commission take this action, it will publish a notice of issuance and provide for opportunity for a hearing after issuance. The Commission expects that the need to take this action will occur very infrequently.

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A request for a hearing or a petition for leave to intervene must be filed with the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch, or may be delivered to the Commission's Public Document Room, 1717 H Street, N.W. Washington, D.C., by the above date. Where petitions are filed during the last ten (10) days of the notice period, it is requested that the petitioner promptly so inform the Commission by a toll-free telephone call to Western Union at (800) 325-6000 (in Missouri (800) 342-6700). The Western Union operator should be given Datagram Identification Number 3737 and the following message addressed to John F. Stolz: petitioner's name and telephone number; date petition was mailed; plant name; and publication date and page number of this FEDERAL REGISTER notice. A copy of the petition should also be sent to the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, and to J. Michael McGarry, III, DeBevoise & Liberman, 1200 17th Street, N.W., Washington, D.C. 20036, attorney for the licensee.

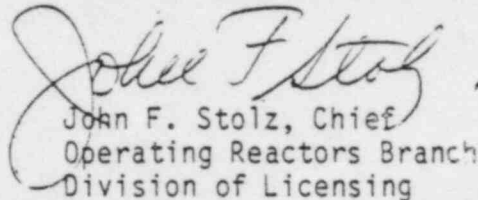
Nontimely filings of petitions for leave to intervene, amended petitions, supplemental petitions and/or requests for hearing will not be entertained absent a determination by the Commission, the presiding officer or the Atomic Safety and Licensing Board designated to rule on the petition and/or request, that the petitioner has made a substantial showing of good cause for the granting of a late petition and/or request. That determination will be based upon a balancing of the factors specified in 10 CFR 2.714(a)(1)(i)-(v) and 2.714(d).

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For further details with respect to this action, see the application for amendment which is available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C., and at the Oconee County Library, 501 West Southbroad Street, Walhalla, South Carolina.

Dated at Bethesda, Maryland, this day of

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script, reading "John F. Stolz".

JOHN F. STOLZ, Chief
Operating Reactors Branch #4
Division of Licensing

DUKE POWER COMPANY

P.O. BOX 33189
CHARLOTTE, N.C. 28242

PAUL H. TUCKER
V. P. PRESIDENT
DUKE POWER COMPANY

August 8, 1983

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. G. C. Linaas
Assistant Director for Operating Reactors

Subject: Oconee Nuclear Station
Docket No. 50-267

Dear Sir:

On March 10, 1983 Duke Power Company submitted a proposed license amendment concerning the expansion of the storage capacity of the Oconee Unit 3 spent fuel pool by reracking with poison racks. Duke's schedule had called for reracking to begin in September 1983 and to be completed prior to the Unit 3 refueling outage currently scheduled to start in March 1984. To achieve a greater degree of safety in the reracking operation, the current inventory of spent fuel assemblies stored in the Unit 3 spent fuel pool will be completely transferred to the Unit 1 and 2 shared pool for temporary storage. This will be complete by the end of August and would allow the reracking to be accomplished with no fuel in the pool.

As of August 8, 1983, the NRC had not noticed, as required by 10 CFR 50, 550.91, in the Federal Register, the Duke request for an amendment revision to increase Unit 3's spent fuel storage capacity, even though a no significant hazards determination has been made by both Duke and the NRC Staff. Without this notice, the license amendment cannot be approved to allow for the reracking operations to begin within a reasonable period of time and to assure completion prior to Unit 3's refueling outage as a 30-day comment period is required. As will be shown, further delay beyond that which has been incurred thus far will result in undesirable safety and economic impacts.

The further delay to the proposed schedule would result in the delay of the reracking until after the completion of the Unit 3 refueling outage which would then result in performing the reracking modification with 68 spent fuel assemblies discharged from Unit 3, either in the pool or transferred to the Unit 1, 2 spent fuel pool. If these assemblies remained in the Unit 3 pool, they would pose additional hazards to the personnel involved by the following:

- a) The handling of the temporary construction crane over the spent fuel will be necessary.
- b) A substantial loss in the amount of margin associated with the distance between the divers and freshly discharged fuel assemblies would occur. Due to the design features of the presently installed racks and the Unit 3 spent fuel pool, removal of these racks presents a greater real potential for the overexposure of the divers if the 68 freshly discharged spent fuel assemblies are left in the pool. Based

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Mr. Harold R. Denton, Director
August 8, 1983
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on this reduction in the amount of margin, a decision was made in 1982 to remove all fuel assemblies from the Unit 3 pool.

- c) The cutting instrument used to remove the presently installed racks was justified based on a no fuel scenario. Thus, the use of this cutting instrument with fuel in the pool has not been evaluated with respect to reactions with fuel assembly material.
- d) There would be a substantial increase in the person-rem dose due to the increased time required to complete the job with fuel in the pool. The person-rem dose may increase by as much as a factor of 3.

Based on the above points, DPA has considered removal of these 68 freshly discharged fuel assemblies from Unit 3's pool prior to commencing with reracking operations. However, this alternative results in the loss of full core discharge capability in the Oconee 1, 2 shared spent fuel pool, which is operationally undesirable.

Considering the amount of time necessary for pre-shipment decay and actual on-site transfer of these 68 assemblies, installation of the Oconee 3 fuel racks under this delayed schedule would not be completed prior to Oconee 1 and Oconee 2 refueling outages and resultant spent fuel discharges scheduled for March 1985 and September 1983, respectively. The combination of the 68 Oconee 3 assemblies and the Oconee 1 and 2 discharges (64 and 72 assemblies, respectively) will totally exhaust the now available full core discharge capacity in the Oconee 1, 2 pool, assuming no transfers to McGuire Nuclear Station.

Full core discharge capability at Duke Power Company has historically been a necessary tool for operation of the Oconee Nuclear Station. More specifically, if an off-load is required in order to replace failed core barrel bolt rings, the upcoming refueling outage for Oconee 2 would be the fifth consecutive refueling outage requiring a complete core off-load at Oconee Nuclear Station.

Avoiding a compromise of full core discharge capability will require approximately 190 spent fuel shipments to the McGuire Nuclear Station between now and initiation of reracking operations, a period of about 22 months. While this endeavor would be theoretically achievable due to Duke's approval to ship up to 300 assemblies to McGuire, the physical, economical, and logistical limitations on shipping 190 assemblies over a period of only 22 months make it practically impossible, based on Duke's recent experience with transshipment of spent fuel between Oconee and McGuire. We are continuing to ship spent fuel to McGuire but cannot reasonably accommodate the increased rate required by this alternative.

In summary, performance of the Oconee 3 reracking under a delayed schedule would have adverse safety and economic impacts on Duke Power which are not justified in light of the detailed analyses by Duke which have shown that this reracking

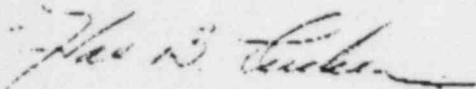
Mr. Harold E. Denton, Director

August 8, 1983

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does not involve any significant hazards, as submitted on March 10, 1983. This analysis has been reviewed by the NRC Staff and to this date has been concurred with. The safety analysis is virtually complete. Duke urgently requests that the appropriate notice be promptly published in the Federal Register so that the planned rerack of Oconee 3 may begin promptly upon the expiration of the comment period and issuance of the license amendment.

Very truly yours,



Hal B. Tucker

PFG/php

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