KANSAS GAS AND ELECTRIC COMPANY

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VICE PRESIDENT - NUCLEAR

September 16, 1983

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Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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Attn: Docketing and Service Branch

KMLNRC 83-119
Subj: Comments on Draft Commission Policy Statement on Engineering Expertise on Shift of July 19, 1983

Gentlemen:

The purpose of this letter is to comment on the subject Draft Commission Policy Statement published in the Federal Register on July 25, 1983. Our concern with the policy statement is the new definition of what is "or equivalent" to a baccalaureate degree in engineering or related sciences. We are encouraged that Commissioner Roberts specifically expressed the desire to receive comments on the "or equivalent" provision. Previous attempts by the Commission's staff and the industry to define this have always centered on specifying academic courses on subjects deemed related to the understanding and operation of nuclear power plants. The draft policy statement is a significant change from this previous concept in that it relies on credentials, such as a Professional Engineer License or completion of any accreditated four-year engineering degree program instead of looking at related academic courses such as reactor physics, reactor heat transfer or radiation protection. This letter outlines our understanding of previous efforts to define the academic requirements for engineering expertise on shift, the program that Kansas Gas and Electric Company undertook to satisfy these requirements, and why KG&E concludes that the proposed definition for "or equivalent" could result in a significant reduction of academically relevant engineering expertise on shift.

One of the concerns that resulted from the Three Mile Island incident was that operators on shift did not have sufficient knowledge of thermal hydraulics or reactor transient response. Draft versions of ANS 3.1, Standard for Selection, Qualification and Training of Personnel for Nuclear Power Plants as early as December 6, 1979, the second proposed Revision 2 to Regulatory Guide 1.8, Personnel Qualification and Training, SECY 80-490 and SECY 81-84 all identified the similar academic subjects of mathematics, reactor physics, chemistry, materials, thermodynamics, fluid mechanics, heat transfer, electrical theory and reactor control theory as useful training. The discussion that

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accompanied the proposed Regulatory Guide revision specifically stated that the requirement solely for a Bachelor of Science in engineering or related physical science degree was unacceptable. Task Report RS807-5 of September 1980 which accompanied the proposed regulatory guide stated that "having successfully earned a degree in engineering does not ensure knowledge of such specific areas such as fluid mechanics and reactor control theory that are necessary for the shift supervisor."

In April of 1980, the Institute of Nuclear Power Operations issued academic requirements for the interim Shift Technical Advisor position which were endorsed in Appendix C of NUREG-0737 as being acceptable. The academic requirements listed in this INPO Guideline included the subjects listed above, plus nuclear materials, radiation protection and radiation detection. As recently as February 17, 1983 in the Commission's Public Meeting on shift manning requirements (SECY-83-52), the NRC staff testified that "obviously INPO's standard like the 60 hours has been accepted."

In June, 1981, Kansas Gas and Electric Company initiated an extensive college education program that consisted of 64 credit hours of college level courses in all the subjects previously mentioned in the last two paragraphs. The courses were conducted by faculty members of Emporia State and Kansas State Universities and are part of the Bachelor of Science in Engineering Technology degree program of Kansas State University. This program is accreditated by the Accreditation Bureau of Engineering and Technology (ABET). Twenty-four Senior Reactor Operator candidates completed this course of study in December, 1982.

Kansas Gas and Electric Company chose to upgrade its Shift Supervisor and Supervisory Operator personnel with this academic program, rather than add the interim shift technical advisor position. KG&E is of the opinion that the public safety is much better served if appropriate personnel responsible for safe operation of the plant have all the prerequisite knowledge for plant operations and safety, rather than to rely on an advisor. The placement of of increased knowledge in line supervisory personnel is far more effective in the decision-making process than a separate "advisor" who has specialized academic training, but, far less, if any, operating experience than any of the individuals that he is "advising". KG&E has options with Emporia State and Kansas State Universities to continue the previously-described focused academic program for replacement supervisory operating personnel.

If Kansas Gas and Electric Company is required to recruit degreed personnel for on-shift support, it will most likely be from local universities. As previously noted by the NRC staff, completion of a Bachelor's degree in engineering or related science does not necessarily indicate any academic knowledge in a number of topics that have been deemed useful by the NRC to understanding the operation of a nuclear power plant. Personnel with a BS degree in Civil Engineering, Electrical Engineering or Chemistry would meet the requirements proposed by the NRC for engineering expertise on shift. We reviewed the technical academic requirements at several area universities to

determine to what extent the INPO academic topics are included in curriculums mentioned. The attached Table is a comparison of academic topics suggested by the INPO Shift Technical Advisor academic qualifications, the topics covered by the Wolf Creek college program and topics included in a number of local degree programs. A "mixed" means that it is included in the degree program at some universities, but not at others. It should be noted that the local universities surveyed are accreditated by North Central Association regionally and the Accreditation Bureau for Engineering and Technology as appropriate, so the degree programs in this area are similar to those in other parts of the United States.

None of the degree programs cover over half of the topics, and two cover less than one-third of the generally recommended academic topics for engineering expertise on shift. KG&E is not necessarily proposing to use people with this academic background for engineering expertise on shift; however, we are pointing out that they would meet the academic qualification requirements proposed by the NRC.

It is the opinion of Kansas Gas and Electric Company that the "or equivalent" to a baccalaureate degree in engineering or related science should be focused on a program of specific academic topics aimed towards understanding the operation of the nuclear power plant, rather than mandating credentials that are only marginally related to the goal of assuring engineering expertise on shift.

Kansas Gas and Electric Company appreciates the opportunity to present our comments on the Draft Commission Policy Statement on Engineering Expertise on Shift. We are sending a copy directly to Commissioner Roberts since he has expressed a special interest in receiving comments on proposed alternatives to define "or equivalent".

We trust our comments will help the Commission define requirements that are appropriate to our common goal of ensuring nuclear plant safety by having properly trained and qualified personnel on our operating shifts.

Yours very truly,

Glenn L Koester

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Vice President - Nuclear

GLK:bb
Attach

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John T. Collins, Region IV
Attachment

Attachment to
KMLNRC 83-119
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COMPARISON OF ACADEMIC REQUIREMENTS
IN VARIOUS BACCALAUREATE DEGREE PROGRAMS
VS. SPECIFIC INPO ACADEMIC REQUIREMENTS

ACADEMIC TOPIC	INPO S.T.A. TOPIC	B.S. CIVIL ENGINEERING	B.S. ELECTRICAL ENGINEERING	B.S. CHEMISTRY	WOLF CREEK COLLEGE PROGRAM
Calculus	Yes	Yes	Yes	Yes	Yes
Differential Eq.	Yes	Mixed	Yes	No	Yes
Reactor Theory	Yes	No	No	No	Yes
Chemistry	Yes	Yes	Yes	Yes	Yes
Materials	Yes	Yes	Mixed	Mixed	Yes
Thermodynamics	Yes	Yes	Mixed	Yes	Yes
Fluid Mechanics	Yes	Yes	No	No	Yes
Heat Transfer	Yes	No	No	No	Yes
Electrical Circuit Theory	Yes	Mixed	Yes	No	Yes
Reactor Control Theory	Yes	No	No	No	Yes
Nuclear Materials	Yes	No	No	No	Yes
Radiation Detection	Yes	No	No	No	Yes
Radiation Protection	Yes	No	No	No	Yes
Reactor Thermal Technology	Yes	No	No	No	Yes

Yes: Included in degree requirements for universities surveyed
No: Not included in degree requirements
Mixed: Included in degrees only at some universities surveyed