September 24, 2002

MEMORANDUM TO: Michael Cullingford, Special Assistant to the Director,
Office of Nuclear Reactor Regulation

/RA/

FROM: Theodore R. Quay, Chief
Equipment and Human Performance Branch
Division of Inspection Program Management, NRR

SUBJECT: JAPANESE INQUIRY INTO NRC'S OPERATOR LICENSING PRACTICES

On August 12, 2002, the NRC's Office of International Programs received an e-mail from Mr. Motokuni Eto, of the Japan Atomic Energy Research Institute (JAERI). In this e-mail, Mr. Eto asked questions pertaining to how operators at U.S. nuclear power plants are licensed, and what organizations within the NRC perform the operator licensing function. Please see the attached cover letter and enclosure, and feel free to make minor editorial changes and forward these to Mr. Eto electronically or by mail. If you have any questions, please contact David C. Trimble, Chief, Operator Licensing Section (IOHS), NRR, at (301)415-2942.

Attachments: 1. Cover letter to Mr. Eto
2. Overview of operator licensing

September 24, 2002

MEMORANDUM TO: Michael Cullingford, Special Assistant to the Director,
Office of Nuclear Reactor Regulation

/RA/

FROM: Theodore R. Quay, Chief
Equipment and Human Performance Branch
Division of Inspection Program Management, NRR

SUBJECT: JAPANESE INQUIRY INTO NRC'S OPERATOR LICENSING PRACTICES

On August 12, 2002, the NRC's Office of International Programs received an e-mail from Mr. Motokuni Eto, of the Japan Atomic Energy Research Institute (JAERI). In this e-mail, Mr. Eto asked questions pertaining to how operators at U.S. nuclear power plants are licensed, and what organizations within the NRC perform the operator licensing function. Please see the attached cover letter and enclosure, and feel free to make minor editorial changes and forward these to Mr. Eto electronically or by mail. If you have any questions, please contact David Trimble, Chief, Operator Licensing Section (IOHS), NRR, at (301)415-2942.

Attachments: 1. Cover letter to Mr. Eto
2. Overview of operator licensing

Distribution:
KBurke, OIP

ADAMS ACCESSION NUMBER: ML022550627

OFFICE	IOHS:IQPB	SC:IOHS:IQPB	BC:IQPB:DIPM
NAME	DMuller	DCTrimble	TRQuay
DATE	9/18/02	9/20/02	9/24/02

OFFICIAL RECORD COPY

Mr. Motokuni Eto
Japan Atomic Energy Research Institute,
Washington Office
1825 K Street, NW, Suite 508
Washington, DC 20006

Dear Mr. Eto,

Thank you for your inquiry concerning how operators at U.S. nuclear power plants are licensed, and what organizations within the NRC perform the operator licensing function. Overall, operators at commercial U.S. nuclear power plants are licensed in accordance with the requirements contained in Title 10, Part 55, of the *Code of Federal Regulations* (10 CFR 55). Specifically, in accordance with 10 CFR 55.31 and 55.33, the NRC will grant a license to an applicant if: (1) the license applicant has obtained the required experience and completed the required training, (2) the applicant has passed the requisite written examination and operating test, and (3) the applicant's medical condition will not adversely affect the performance of licensed operator duties. Although the NRC does not provide a brochure to license applicants, all of the regulations and testing requirements are readily available to the students. Regarding the responsible NRC organizations, the operator licensing function is primarily performed by the four NRC Regional Offices (located in King of Prussia, Pennsylvania; Atlanta, Georgia; Lisle, Illinois; and Arlington, Texas) with additional activities and oversight performed by the Office of Nuclear Reactor Regulation at NRC Headquarters (located in Rockville, MD).

A more detailed overview of how operators at commercial U.S. nuclear power plants are licensed, and how the NRC's operator licensing program is organized is provided as an attachment. If you have any questions, please contact Kevin Burke, NRC's Office of International Programs, at (301)415-2317.

Sincerely,

Michael Cullingford, Special Assistant to the Director,
Office of Nuclear Reactor Regulation

Attachment: As stated

Mr. Motokuni Eto
Japan Atomic Energy Research Institute,
Washington Office
1825 K Street, NW, Suite 508
Washington, DC 20006

Dear Mr. Eto,

Thank you for your inquiry concerning how operators at U.S. nuclear power plants are licensed, and what organizations within the NRC perform the operator licensing function. Overall, operators at commercial U.S. nuclear power plants are licensed in accordance with the requirements contained in Title 10, Part 55, of the *Code of Federal Regulations* (10 CFR 55). Specifically, in accordance with 10 CFR 55.31 and 55.33, the NRC will grant a license to an applicant if: (1) the license applicant has obtained the required experience and completed the required training, (2) the applicant has passed the requisite written examination and operating test, and (3) the applicant's medical condition will not adversely affect the performance of licensed operator duties. Although the NRC does not provide a brochure to license applicants, all of the regulations and testing requirements are readily available to the students. Regarding the responsible NRC organizations, the operator licensing function is primarily performed by the four NRC Regional Offices (located in King of Prussia, Pennsylvania; Atlanta, Georgia; Lisle, Illinois; and Arlington, Texas) with additional activities and oversight performed by the Office of Nuclear Reactor Regulation at NRC Headquarters (located in Rockville, MD).

A more detailed overview of how operators at commercial U.S. nuclear power plants are licensed, and how the NRC's operator licensing program is organized is provided as an attachment. If you have any questions, please contact Kevin Burke, NRC's Office of International Programs, at (301)415-2317.

Sincerely,

Michael Cullingford, Special Assistant to the Director,
Office of Nuclear Reactor Regulation

Attachment: As stated

OFFICE	IEHB:DIPM	SC:IEHB:DIPM	BC:IEHB:DIPM	SA:NRR
NAME	DSMuller	DCTrimble	TRQuay	MCCullingform
DATE	9/18/02	9/20/02	9/26/02	/ /02

OFFICIAL RECORD COPY

OPERATOR LICENSING AT U.S. NUCLEAR POWER PLANTS:

AN OVERVIEW

Title 10, Part 55, of the *Code of Federal Regulations* (10 CFR 55) requires individuals who manipulate the controls of a nuclear facility (or direct these manipulations, such as a shift supervisor) to be licensed by the NRC. In accordance with 10 CFR 55, the NRC will grant a license to an individual if:

(1) The license applicant has obtained the required experience and completed the required training,

(2) The applicant has passed the requisite written examination and operating test, and

(3) The applicant's medical condition will not adversely affect the performance of licensed operator duties.

EXPERIENCE AND TRAINING

The training required for a license applicant is performed by personnel employed by the nuclear power plant at which the license is sought. Licensed operator training programs typically are about 18 months in length. The training programs at each nuclear power plant were initially approved by the NRC, and these training programs are currently accredited and monitored by an independent organization - the Institute of Nuclear Power Operations (INPO).

The experience required for a license applicant is gained through a combination of experience at fossil power plants and nuclear power plants, with a minimum of at least 6 months experience at the nuclear power plant for which a license is sought. Although operators and supervisory operators are only required to have a high school diploma, supervisory operators are granted some credit for a university technical degree (e.g., Bachelor Of Science Degree in Engineering) in lieu of actual power plant experience.

Each individual must complete Form NRC-398, "Personal Qualification Statement - Licensee," to apply for a license. By completing and signing this form, the nuclear power plant operator and the license applicant are certifying to the NRC that all education, training, and operating experience requirements for being licensed have been satisfied. These forms are typically forwarded to the appropriate NRC Regional Office (located in King of Prussia, Pennsylvania; Atlanta, Georgia; Lisle, Illinois; or Arlington, Texas) 30 days prior to the NRC plant-specific licensing examination.

NRC EXAMINATION

In order to be granted a license, each applicant must pass an NRC examination. The NRC examination consists of three separate parts:

(1) A generic fundamentals written examination,

2) Another written examination specific to the nuclear power plant for which a license is sought (the so called “plant-specific” written examination), and

(3) A plant-specific operating test, conducted primarily on a plant-specific control room simulator.

The Generic Fundamentals Exam

The generic fundamentals examination is a 100 question, multiple choice written examination, prepared by a contractor and approved by the NRC’s headquarters operator licensing staff. This exam contains questions at a fundamental, non-plant specific level, associated with generic plant components, reactor theory, and thermodynamics. The generic fundamentals exam is typically taken about 2 months after a license applicant begins his formal license training. There are two versions of the generic fundamentals exam, one version for boiling water reactors, and another version for pressurized water reactors. This exam is administered by personnel employed by nuclear power plants, graded by a contractor, and the final results are approved by the NRC.

The Plant-Specific Exams: Written Examination and Operating Test

If the license applicant has satisfactorily completed the generic fundamentals exam, and the application forms are satisfactory (which certifies the applicant’s education, training, operating experience, and medical condition), then the NRC will allow the license applicant to take the NRC plant-specific examination. The NRC plant-specific examination consists of a 100 question, multiple choice written test, and an operating test. The plant-specific written and operating tests are typically prepared by training personnel employed by the nuclear power plant owner, and subsequently reviewed and approved by the NRC. The operating test, primarily performed on a plant-specific control room simulator, requires applicants to perform individual tasks and participate in crew-based dynamic simulator scenarios while being evaluated by NRC examiners.

MEDICAL CONDITION

Approximately 30 days prior to the NRC plant-specific examination, along with submitting Form NRC-398, “Personal Qualification Statement - Licensee,” the license applicant will also submit Form NRC-396, “Certification of Medical Examination by Facility Licensee.” By completing and signing Form NRC-396, the nuclear power plant owner and the license applicant are certifying to the NRC the medical fitness of the applicant, as determined by a medical examination conducted by a licensed health care professional. If there are any concerns regarding an applicants’ medical condition, then the NRC will forward medical examination results to an NRC-contracted licensed physician for review. In general, a licensed applicant must be in sound physical and mental condition, such that the applicant can safely perform licensed duties.

NRC OPERATOR LICENSING ORGANIZATION

NRC’s operator licensing function is primarily performed by the four NRC Regional Offices with oversight from NRC Headquarters. Within each of the Regions is an Operations Branch, which

consists of from 8 to 11 NRC examiners, a licensing assistant, and a supervisor. These Regional personnel perform the majority of the NRC's operator licensing function, including reviewing the license applications, reviewing and preparing the plant-specific examinations, administering and grading the plant-specific examinations, and issuing individual licenses when all of the requirements have been satisfied. Within the Office of Nuclear Reactor Regulation (NRR) at NRC Headquarters is the Operator Licensing and Human Performance Section, which consists of 5 operator licensing specialists, 5 human performance specialists, a licensing assistant, and a supervisor. These headquarters personnel perform activities including establishing and revising operator licensing policies and regulations, researching operator licensing process improvements, reviewing generic fundamentals exams, monitoring and auditing the four NRC Regions' operator licensing programs, and budgeting of NRC operator licensing resources and personnel.

FOR MORE INFORMATION

- Title 10, Part 55, of the *Code of Federal Regulations* (10 CFR 55)
- NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 8, Supplement 1
- American Nuclear Society Standard 3.4 (ANS 3.4), "Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants"
- NRC's Operator Licensing Web Page at: www.nrc.gov/reactors/operator-licensing.html, which provides links to various operator licensing documents

Any additional inquiries should be addressed to NRC's Office of International Programs.