# POLICY ISSUE
## (Information)

November 19, 1996 SECY-96-239

FOR: The Commissioners

FROM: James M. Taylor
Executive Director for Operations

SUBJECT: PROPOSED NUCLEAR REGULATORY COMMISSION GENERIC LETTER ENTITLED "INTERIM GUIDANCE ON TRANSPORTATION OF STEAM GENERATORS"

PURPOSE:

To inform the Commission, in accordance with the guidance in the December 20, 1991, memorandum from Samuel J. Chilk to James M. Taylor regarding SECY-91-172, "Regulatory Impact Survey Report-Final," of staff's intent to issue the attached generic letter (Attachment 1). The generic letter would clarify the application of the recently revised U.S. Department of Transportation (DOT) and U.S. Nuclear Regulatory Commission transportation regulations, to the shipment of discarded steam generators.

DISCUSSION:

DOT and NRC transportation regulations for the shipment of radioactive materials were recently revised for compatibility with those of International Atomic Energy Agency (IAEA) Safety Series No. 6, 1985 edition. The revisions, which generally became effective April 1, 1996, have changed the regulatory framework under which steam generators are shipped. Neither the previous nor the revised regulations specifically address shipment of large components, including steam generators. Staff's view is that safe transport of steam generators off-site for reprocessing or disposal (as opposed to continued on-site storage) is generally in the best interests of public health and safety.

Contact: Earl Easton, NMSS
(301) 415-8520

NOTE: TO BE MADE PUBLICLY AVAILABLE IN 5 WORKING DAYS FROM THE DATE OF THIS PAPER

0/1
D514

ID&A-5 GL

Copy 170005

x of M-G Commiss.

9611250011

XA 12/17/96

# POLICY ISSUE
## (Information)

November 19, 1996

SECY-96-239

FOR: The Commissioners

FROM: James M. Taylor
Executive Director for Operations

SUBJECT: PROPOSED NUCLEAR REGULATORY COMMISSION GENERIC LETTER ENTITLED "INTERIM GUIDANCE ON TRANSPORTATION OF STEAM GENERATORS"

PURPOSE:

To inform the Commission, in accordance with the guidance in the December 20, 1991, memorandum from Samuel J. Chilk to James M. Taylor regarding SECY-91-172, "Regulatory Impact Survey Report-Final," of staff's intent to issue the attached generic letter (Attachment 1). The generic letter would clarify the application of the recently revised U.S. Department of Transportation (DOT) and U.S. Nuclear Regulatory Commission transportation regulations, to the shipment of discarded steam generators.

DISCUSSION:

DOT and NRC transportation regulations for the shipment of radioactive materials were recently revised for compatibility with those of International Atomic Energy Agency (IAEA) Safety Series No. 6, 1985 edition. The revisions, which generally became effective April 1, 1996, have changed the regulatory framework under which steam generators are shipped. Neither the previous nor the revised regulations specifically address shipment of large components, including steam generators. Staff's view is that safe transport of steam generators off-site for reprocessing or disposal (as opposed to continued on-site storage) is generally in the best interests of public health and safety.

Contact: Earl Easton, NMSS
(301) 415-8520

NOTE: TO BE MADE PUBLICLY AVAILABLE IN 5 WORKING DAYS FROM THE DATE OF THIS PAPER

0/1
DS14

ID&R-5 GL

Policy 170005

x O&M-6 Commiss.

9611250011

XA 12/17/96

In the past, shippers of steam generators have been required to obtain package certification from NRC, under 10 CFR Part 71, because of the quantity of radioactivity remaining in discarded steam generators. These steam generators were required to meet the standards for Type A packages (i.e., non-accident resistant packages), and were categorized for transport as low-specific activity (LSA) material.

The proposed generic letter represents the DOT and NRC position on transporting discarded steam generators under the jointly revised rules. Under the DOT/NRC position in the generic letter, discarded steam generators are preferably categorized as surface contaminated objects (SCOs). SCOs are a newly defined category of radioactive materials, which were previously included within the LSA definition. Section 71.10 exempts licensees shipping packages of non-fissile LSA material and SCO, from all requirements (e.g., NRC package certification requirements) of 10 CFR Part 71, other than 10 CFR 71.5 (the requirement to comply with DOT rules) and 10 CFR 71.88 (applies only for plutonium air transport), unless the unshielded dose rate 3 meters (9.84 ft) from the LSA material or the SCO exceeds 10 millisievert per hour (1 rem per hour). It is expected that the dose rates from steam generators will not exceed this value. Therefore, steam generators shipped as SCOs would not require NRC package certification, contrary to past practice.

The proposed generic letter makes two other important clarifications of the regulations, as they apply to steam generator shipments:

1. The proposed generic letter clarifies that DOT regulations do not allow shipment of unpackaged radioactive material. SCOs would normally require Industrial Packaging (i.e., packaging somewhat less robust than Type A packaging), as a minimum. In the case of steam generators, this requirement may be superfluous since a weld-sealed steam generator itself is more robust than Industrial Packaging. If a shipper can demonstrate that an SCO itself, as prepared for transport (e.g., a steam generator with weld-sealed enclosures), provides equivalent safety, the shipper may request an exemption from DOT pursuant to 49 CFR Part 107. Such applications for exemption from DOT requirements are noticed in the Federal Register.

2. The proposed generic letter states that if the necessary DOT approvals are obtained, and if the requirements of 10 CFR 71.10 are otherwise met, no exemptions from NRC requirements will be needed for the provisions of 10 CFR 71.10 to take effect.

The second clarification is necessary because a parallel definition of SCOs appears in both DOT and NRC regulations, which includes limits on contamination specified on each 300 square centimeters (46.5 square inches) of the accessible and inaccessible surfaces. Since the regulations do not specifically address large components, and since it is impractical to measure the contamination on each 300 square centimeters (46.5 square inches) of the internals of a steam generator, the distribution of the activity in the steam generator may result in uncertainties regarding the proper categorization of the material. The above clarification will permit a shipper to approach DOT,

when necessary, for proper categorization and packaging of a steam generator as an SCO, without the need to concurrently approach NRC with identical determination requests.

The proposed generic letter is identified as "interim guidance." NRC and DOT are conducting a joint study, at the Oak Ridge National Laboratory, to identify large-component (including steam generator) transportation issues, and to make associated recommendations. However, several NRC licensees are planning to replace steam generators shortly, and timely guidance on shipping discarded steam generators was requested at an industry workshop on March 28, 1996 (which the staff attended). When the study is completed, the staff intends to incorporate the results into additional guidance to be issued by the staff.

Chairman Jackson's letter to Mr. Paul Leventhal of the Nuclear Control Institute, dated October 3, 1996, stated, "The NRC, in coordination with DOT, is planning to issue guidance to clarify the application of the revised DOT and NRC transportation requirements to the shipment of discarded steam generators." A copy of this letter is attached (Attachment 2), as background information. The generic letter will be the guidance referred to in the Chairman's letter; further guidance will be issued as a result of the study mentioned above.

The proposed generic letter is for informational and clarification purposes, and requires no specific action or response.

The staff intends to issue this generic letter approximately five working days after the date of this Information Paper.

COORDINATION:

This paper and the proposed generic letter have been coordinated with the Office of the General Counsel (OGC), and OGC has no legal objections.

James M. Taylor
Executive Director
for Operations

Attachments (2):
1. Proposed NRC Generic Letter
2. Letter to Mr. Paul Leventhal
   dated October 3, 1996

DISTRIBUTION:

| | |
|---|---|
| Commissioners | OCA |
| OGC | ACNW |
| OCAA | REGIONS |
| OIG | EDO |
| OPA | SECY |

Attachment 1

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
WASHINGTON, D.C. 20555

November ##, 1996

(publishing draft)

NRC GENERIC LETTER 96-##: INTERIM GUIDANCE ON TRANSPORTATION OF STEAM GENERATORS

Addressees

All holders of operating licenses and decommissioning facilities with possession-only licenses for pressurized-water nuclear power reactors.

Purpose:

The U.S. Nuclear Regulatory Commission (NRC) is issuing this letter to notify you that the U.S. Department of Transportation (DOT) and the NRC have agreed on how DOT and NRC transportation requirements apply to the shipping of discarded steam generators. The guidance below will help ensure that methods of shipping steam generators are both safe and practical. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate. However, suggestions contained in this generic letter are not NRC requirements; therefore, no specific action nor written response is required.

Description of Circumstances

DOT and NRC transportation regulations for shipment of radioactive materials were recently revised to be compatible with those of International Atomic Energy Agency (IAEA) Safety Series No. 6, 1985 edition. The revisions generally became effective April 1, 1996, and have changed the regulatory framework under which steam generators are shipped.

Neither the previous nor the revised IAEA, DOT, nor NRC transportation regulations specifically address the shipment of large components, including steam generators. Several power reactors, or reactors undergoing decommissioning, plan to ship discarded steam generators shortly. The following information provides interim guidance on the shipment of steam generators under the revised regulations. In addition to this action, NRC and DOT are jointly studying large component transportation issues. The shipment of steam generators and other large components may be specifically addressed in future guidance and revisions of international and domestic transportation regulations.

Discussion

DOT and NRC have agreed that steam generators may generally be shipped under DOT procedures and requirements as outlined below:

(1) DOT has determined that steam generators are best categorized as surface contaminated objects (SCOs). Although the *average* surface contamination level over the internals of a steam generator may be shown (through calculation, reasoned argument, and/or measurement) to meet the limits for inaccessible surfaces in the applicable SCO definition, the requirement is that the contamination be averaged over each 300 $cm^2$ (46.5 $in^2$). It is impractical to measure the contamination level on each 300 $cm^2$ (46.5 $in^2$) of the steam generator internals; therefore, reasoned arguments and calculations should be used. At a minimum, the following uncertainties should be accounted for in the analyses: (1) dose to curie conversions; (2) material differences and uneven crud composition/deposition in the channel head bowl, divider plate, tube sheet, and tubes; and (3) the source term identification (e.g., scaling ratios, transuranic contribution to $A_2$ total). If significant uncertainty remains concerning the distribution of deposited activity on steam generator surfaces, the licensee should obtain approval from DOT that the steam generator can be properly classified for shipment as SCO.

(2) The maximum radiation level at 3 meters (9.84 feet) from the unshielded contents [see 49 CFR 173.427(a)(1) and 10 CFR 71.10(b)(2)] is defined as the largest measured or calculated dose rate 3 meters (9.84 feet) from any point on the outside housing of an unshielded steam generator. Materials securely fastened (e.g., welded) onto the steam generator, to seal penetrations, are considered part of the steam generator, for these purposes.

(3) DOT has determined that the outside housing of a steam generator is considered as part of the "unshielded contents" (i.e., the dose rate is measured from the outside shell). Therefore, the entire steam generator is considered to be the radioactive material contents, and there is no "package" as defined in 49 CFR 173.403. Shippers wishing to ship an unpackaged steam generator as an SCO would, therefore, need to request that DOT grant them relief from the regulatory requirement to package SCO, given the special nature and practical considerations for steam generator shipments. The request should be made in accordance with 49 CFR Part 107, and should demonstrate that the unpackaged, sealed steam generator provides the safety equivalent to an Industrial Packaging (IP). If such relief (from the requirement that a steam generator be packaged) is not granted, then a steam generator shipped as an SCO must be shipped in an IP or Type A package, pursuant to 49 CFR 173.427.

(4) If shipped as an SCO, a steam generator is subject to the SCO conveyance activity limit of 100 $A_2$ given in 49 CFR 173.427, Table 9.

(5) If the necessary DOT approvals are obtained, and if the requirements of 10 CFR 71.10 are otherwise met, no exemptions from NRC requirements are needed for the provisions of 10 CFR 71.10 to take effect.

NRC licensee shipments of steam generators are subject to NRC inspection for compliance with the DOT regulations, pursuant to 10 CFR 71.5. It is particularly important that each licensee maintain complete documentation of any tests or evaluations required by DOT, for complying with the conditions specified in item (3), above, for shipping steam generators as unpackaged SCO. These may include engineering evaluations of the unpackaged steam generator's ability to meet the IP or Type A package design standards and criteria, if required by DOT as a compensatory measure for permitting the unpackaged shipment. The requirements for documenting the design of IP and Type A packaging are given in 49 CFR 173.411(c) and 49 CFR 173.415, respectively.

This generic letter requires no specific action nor written response. If you have questions about this matter, please contact one of the technical contacts listed below or the appropriate Office of Nuclear Reactor Regulation project manager.

Charles J. Haughney, Acting Director
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

Technical contacts: Richard Boyle, DOT
(202) 366-4545
E-mail: rick.boyle@rspa.dot.gov

Earl P. Easton, NMSS
(301) 415-8520
E-mail: exe@nrc.gov

Enclosure: List of Recently Issued NRC Generic Letters

**S:\PROJ\RXL\SGGENLTR.JRC** ***See Previous Concurrence.**

| OFC | SFPO* | E | SFPO* | C | SFPO* | C | NRR/DRPM* | C | OGC* | C | TEDITOR | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NAME | RLewis:LMG | | EEaston | | SShankman | | TMartin | | ENJenson | | EKraus* | |
| DATE | 10/9/96 | | 10/10/96 | | 10/10/96 | | 10/18/96 | | 10/22/96 | | 10/22/96 | |

| OFC | DWM* | | IMOB | | SFPO* | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NAME | RJohnson | | KRamsey* | | CJHaughney | | | | | | | |
| DATE | 10/24/96 | | 10/24/96 | | 11/15/96 | | | | | | | |

C = COVER E = COVER & ENCLOSURE N = NO COPY

Attachment 2

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

CHAIRMAN

October 3, 1996

Mr. Paul Leventhal, President
Nuclear Control Institute
1000 Connecticut Ave. NW
Suite 804
Washington, D.C. 20036

Dear Mr. Leventhal:

I am responding to your letter of August 23, 1996, in which you requested information regarding the transport of used steam generators from the Ginna plant and, specifically, whether discarded steam generators from the nation's nuclear power plants may now be shipped without a package certification issued by the Nuclear Regulatory Commission. In fact, Department of Transportation and NRC regulations for the transportation of radioactive materials were recently revised (see 60 FR 50292 and 60 FR 50248), to be compatible with those of the International Atomic Energy Agency (IAEA Safety Series No. 6, 1985 edition). The revisions, which generally became effective April 1, 1996, have changed the regulatory framework under which steam generators are shipped.

When NRC licensees have shipped steam generators in the past, they have been required to obtain an NRC certificate for the steam generator package. In prior NRC certifications, licensees typically proposed to fill the steam generators with low-density concrete, although there was no specific regulatory requirement to do so. Under the new DOT and NRC regulations, NRC certification is generally not required for packages containing low-specific activity material and surface contaminated objects (SCOs). Therefore, if licensees are able to ship steam generators as SCOs, NRC certification will not be required.

The new DOT and NRC regulations require that SCO packages are to be evaluated against DOT requirements. In particular, DOT regulations require that SCOs be packaged for transport in Industrial Packaging. If it can be reasonably demonstrated that the SCO itself as prepared for transport (e.g., a steam generator with weld-sealed enclosures) provides equivalent safety to an Industrial Package, the shipper may request an exemption from DOT. Under DOT regulations (49 CFR Part 107), applications for exemption from DOT requirements are noticed in the Federal Register for public comment. NRC will continue oversight of licensee steam generator transportation since steam generator shipments by licensees are subject to NRC inspection for compliance with the DOT regulations, pursuant to 10 CFR 71.5.

With respect to the Ginna steam generators, it is our understanding that Rochester Gas and Electric (RG&E) Corporation, the licensee for Ginna Station, has not yet made final plans for shipment of the two original steam generators, which are currently being stored on site. Nevertheless, we expect that RG&E will attempt to qualify the steam generators as SCOs for shipment under DOT regulations without filling them with low-density concrete. Further, it appears that RG&E could, under DOT regulations, request a DOT exemption, provided RG&E can meet DOT criteria.

Since neither the previous nor the revised transportation regulations specifically address shipment of large components, including steam generators, the NRC, in coordination with DOT, is planning to issue guidance to clarify the application of the revised DOT and NRC transportation requirements to the shipment of discarded steam generators. Further, NRC and DOT are also conducting a joint study of large-component transportation issues.

I hope this information will clarify the regulatory requirements governing the possible shipment of the Ginna steam generators. If you have any further questions, please contact me.

Sincerely,

Shirley Ann Jackson

Shirley Ann Jackson

NUCLEAR CONTROL
INSTITUTE

1000 CONNECTICUT AVE. NW, SUITE 804 WASHINGTON DC 20036 202•822•8444 FAX 202•452•0892
E-mail nci@access.digex.net web http://www.nci.org/nci/

August 23, 1996

The Honorable Shirley Ann Jackson
Chairman
Nuclear Regulatory Commission
Washington, D.C.

Transport of Used Steam Generators from Ginna Plant

Dear Chairman Jackson:

This week, I received in the mail from an anonymous individual the following information, which I am passing on to you for appropriate action (full text follows):

> I know you have an interest in shipping radioactive materials--- how they are transported. Before, in this country, old reactor components like steam generators were shipped filled with solid concrete and welded closed so the radioactive materials could not be released. Now at the Ginna plant they are not going to do that. They are just shipping the steam generators without an NRC certificate for the package. They need to get exemptions from the Department of Transportation. It all has to be done using exemptions.

As you know, the Nuclear Control Institute has concentrated on safe and secure transport of weapons-usable fissile materials, but we are also interested in ensuring adequate protection of all radioactive transports from accident and sabotage risks. I would appreciate, therefore, if you would look into this matter and let me know whether the above information is accurate and, if so, whether it applies only to the Ginna plant or more generally.

Thank you.

Sincerely,

Paul Leventhal

8/26...To EDO to Prepare Response
for Chairman's Signature..Date
due Comm: Sept 10..Cpy to: Chairman
Comrs, RF...96-0923