May 22, 2014

Daniel B. Shrum
Senior Vice President
Regulatory Affairs
Energy*Solutions*, LLC
423 West 300 South, Suite 200
Salt Lake City, UT 84101

SUBJECT: INTERPRETATION OF THE DEFINITION OF SPECIAL NUCLEAR MATERIAL FOR PURPOSES OF PARTS 70 AND 150

Dear Mr. Shrum:

This letter is in response to your March 10, 2014, letter requesting an interpretation from the U.S. Nuclear Regulatory Commission (NRC) staff regarding the definition of special nuclear material (SNM). Your request is available via the NRC's Agencywide Documents Access and Management System (ADAMS) at Accession No. ML14071A178.

The NRC maintains jurisdiction over SNM in quantities that exceed the limits in §150.11. Under that regulatory authority, the NRC issued an Order on January 30, 2003, that exempted Energy*Solutions* from the requirement to obtain an NRC Part 70 license to possess SNM in quantities greater than the limits in Title 10, *Code of Federal Regulations* (CFR) §150.11. The NRC Order allows Energy*Solutions*, under certain conditions and concentration limitations, to possess more than the §150.11 quantities of SNM without an NRC license. Disposal of SNM at the Clive, Utah facility remains subject to the regulatory oversight of the State of Utah as long as the conditions and concentration limits of that NRC Order are met. It is our understanding that the State of Utah has incorporated those conditions and concentration limits into RML UT 2300249 and that compliance with those limitations is considered as part of Utah's inspection and/or compliance program associated with that State of Utah license.

In particular, your letter requested that the NRC address the following questions:

1. Are there any circumstances under which uranium containing 0.711 weight percentage uranium-235 or less is considered to be special nuclear material?

2. If so, what would those conditions be?

Special Nuclear Material is defined in Section 11aa. of the Atomic Act of 1954, as amended (AEA) to mean "(1) plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission, pursuant to the provisions of section 51, determines to be special nuclear material, but does not include source material; or (2) any material

artificially enriched by any of the foregoing but does not include source material. “ Therefore, if the material is enriched in uranium isotope 235, it would be considered SNM unless it is source material.

The AEA defines source material in 11z. to mean “(1) uranium, thorium, or other material which is determined by the Commission pursuant to the provisions of section 61 to be source material; or (2) ores containing one or more of the foregoing materials, in such concentration as the Commission may be regulation determine from time to time.”

The NRC does not interpret these statutory provisions to mean that any material containing uranium or thorium is a source material and not SNM. Such an interpretation would make the statutory definition for SNM in 11aa. meaningless. The NRC interprets these provisions to mean that all uranium enriched in the isotope 235 is SNM. The AEA also authorizes the Commission to set concentration limits for ores when determining whether a material is a source material. However, your letter does not raise this issue.

The NRC can use concentration limits to determine whether the SNM needs an NRC license. With respect to question 1, the NRC does not consider material which has 0.711 weight percentage or less of uranium-235 to require an NRC SNM license because it is equivalent to or has lower levels than the concentration of U-235 in naturally occurring uranium. The NRC staff also is unaware of any circumstances where the NRC has required an SNM license to possess uranium equal or less than 0.711 weight percentage of uranium-235.

Your reference to 10 CFR 150.11 refers to considerations of whether an NRC license is required, not whether the material is or is not considered SNM. The provisions of 10 CFR 150.11 are, in fact, delineating the definition of critical mass, not SNM, in order to determine under what circumstances a facility in an Agreement State can be exempt from the requirement to obtain a specific NRC license.

The NRC focused on the regulation pertaining to critical mass in 10 CFR 150.11 when evaluating whether the Clive, Utah facility needed a specific NRC Part 70 license. The Order contains conditions and concentration limits that provides adequate protection for public health and safety to support the NRC’s determination not to require a specific NRC Part 70 license.

As quoted in your letter, the January 30, 2003 Order stated:

> A principal emphasis of 10 CFR Part 70 is criticality safety and safeguarding SNM against diversion or sabotage. The staff considers that criticality safety can be maintained by relying on concentration limits, under the conditions specified. Safeguarding SNM against diversion or sabotage is not considered a significant issue because of the diffuse form of the SNM in waste meeting the conditions specified. These conditions are considered an acceptable alternative to the

criticality definition provided in 10 CFR 150.11, thereby assuring the same level of protection.

However, the NRC disagrees with the Energy*Solutions* reliance on the definitions in 10 CFR Part 71 for interpretation of what would be considered SNM for purposes of evaluating nuclear criticality safety to support the exemption from a specific 10 CFR Part 70 license. The definitions in §71.3 apply to the regulatory requirements concerning the packaging and transportation of radioactive material. The definitions in Part 70 and Part 150 are relevant to the NRC review of an Energy*Solutions* request for exemption from a specific Part 70 license and issuance of an NRC Order.

Previously, the NRC staff reviewed the Energy*Solutions* description of the process of receipt and disposal of shipments containing SNM at the Clive, Utah facility. The NRC staff concluded that the process used to receive and dispose of shipments containing SNM downblended with depleted uranium met the requirements of the January 14, 2003, NRC Order.

However, the NRC's previous determination that the description of the process of receipt and disposal of shipments did not violate the NRC's January 14, 2003 Order does not determine whether specific shipments can be disposed of at the Energy*Solutions* facility. The activities involving SNM are among those that Energy*Solutions* is authorized to perform under its Utah radioactive material license (RML UT 2300249). As an Agreement State, Utah has the authority to regulate SNM under critical mass. The State included the NRC's Order's conditions and concentration limits in the State Energy*Solutions* license to adopt an alternative critical mass determination that supported the NRC's exemption determination and allows Utah to be responsible for regulating the SNM when the facility meets the NRC's Order's criteria. The State has adopted a compatible regulatory provision for the definition of SNM and is responsible for interpretation and the implementation of its regulations as it applies to the State's radiation protection program. Thus, even an NRC determination that a particular process or shipment would comply with the NRC Order, would not equate to permission for disposal in a Utah licensed facility. The State of Utah has the responsibility of determining the waste acceptance criteria for disposal within the State. Any questions about the compliance with Energy*Solutions* Utah license should be discussed with Utah.

Should you have any questions regarding this response, please contact Joan Olmstead of my staff at (301) 415-2859 or the NRC Project Manager for this request, Harry Felsher, at (301) 415-6559.

Sincerely,

/RA/

Bradley W. Jones,
Assistant General Counsel for Reactors and
Materials Rulemaking
Office of General Counsel

Docket No.: 40-8989

cc: Mr. Rusty Lundberg, Director
Utah Division of Radiation Control
Department of Environmental Quality
195 North 1950 West
Salt Lake City, UT 84116

Should you have any questions regarding this response, please contact Joan Olmstead of my staff at (301) 415-2859 or the NRC Project Manager for this request, Harry Felsher, at (301) 415-6559.

Sincerely,

/RA/

Bradley W. Jones,
Assistant General Counsel for Reactors and
Materials Rulemaking
Office of General Counsel

Docket No.: 40-8989

cc: Mr. Rusty Lundberg, Director
Utah Division of Radiation Control
Department of Environmental Quality
195 North 1950 West
Salt Lake City, UT 84116

DISTRIBUTION:
SPoy/FSME
DSollenberger/FSME
HFelsher/FSME
JOlmstead/OGC
AMohseni/FSME

ADAMS ACCESSION NO.: ML14141A288 – incoming ML14141A176 – pkg ML14141A195 – response

OFFICE	OGC	OGC	MSSA	DWMEP
NAME	JOlmstead	BJones	DWhite	GSuber
DATE	5/ 21 /14	5/ 22 /14	5/ 21 /14	5/ 21 /14

OFFICIAL RECORD COPY