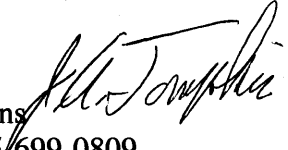


Off-Site Source Recovery Project  
N3-International Threat Reduction

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Symbol: N-3: 08-050  
Date: April 22, 2008

**SUBJECT: Special Form Character of MRC model 24128 & 24143 capsules**

**Special Form Character**

In September of 1971 Texas Nuclear contracted with Monsanto Research Corp. (MRC) to build several Pu8Be model 24128 "pancake" sources. These sources were double encapsulated, stainless steel, neutron sources containing a mixture of beryllium metal and up to 12 Ci of Plutonium 238 oxide (see attached mfg file). The original Model 24128 went through 3 minor revisions to overcome manufacturing issues. The rev. 2 made the source clad top (weld area 0.015" thicker, which strengthened the overall design. Overall design testing at this stage was ANSI classification testing and the special form temperature testing. This source was evaluated under the ANSI N542-1977 (Sealed Radioactive Sources - Classification) standard as meeting a classification of 68E44344

In 1980 another version of the model 24128, labeled model 24143, was fabricated. This version was 0.150" greater in length. In all other respects these two models are identical. MRC model 24143 and 24128 sources were given a complete set of special form testing under USDOT 49CFR 173.398. These tests included: temperature test (1475° F), impact, external pressure, vibration, and puncture. Both models (24128 & 24143) passed all tests without leakage per the attached helium leak test.

The MRC model 24128 was certified as special form by the USDOT with the issuance of COCA USA/0241/S. This COCA expired in 1986. An additional 20years of age on these capsules will not significantly affect the integrity of these sources with respect to pressure build up. The original test items were tested to 1500 psi at room temperature, in order to simulate a 500 psi buildup at the 1475° F temperature test level.

Since models 24128 and 24143 are almost identical in design and construction, and both models were given special form tests in 1980, leading to the issuance of COCA USA/0241/S, it is my engineering opinion that both models exhibit special form character and may be domestically shipped as US DOT special form radioactive material under 49CFR173.469.

JAT/lh

Cy:attach

MRC Manufacturers Order 829.9070  
Notes from Ed Janzow dated 7/16/02, (formerly a source Engineer at MRC)  
Drawings A24128-AA00 & A24143-AA00

