

Department of Energy  
Oak Ridge Operations  
P.O. Box E  
Oak Ridge, Tennessee 37830



PDR

71-5939

MAY 14 1980



U. S. Nuclear Regulatory Commission  
ATTN: Mr. Charles E. MacDonald, Chief  
Transportation Certification Branch  
Division of Fuel Cycle and Material  
Safety  
Washington, D.C. 20555

Gentlemen:

MODIFICATION OF CERTIFICATE OF COMPLIANCE (USA 5939 BF)-SUPPLEMENTAL  
INFORMATION

Reference is given to the recent telephone conference discussion with  
R. H. Odegaard of your staff, J. Rattledge of ORNL, and W. A. Pryor  
of the ORO Safety staff.

Enclosed are seven copies of the comparative data for welded Hastelloy  
C-276 and Type 316L Stainless Steel. We concur with ORNL.

We request a priority review.

Sincerely,

*William H. Travis*  
William H. Travis, Director  
Safety & Environmental Control Division

MS-332:MAP  
TSS: 0155

Enclosure:  
As stated above (7)

cc: T. H. Hardin, AD-46, w/encl.  
C. A. Keller, MS-30, w/o encl.  
D. M. Ross, EV-125, E-201, GTN, w/encl.

RECEIPT

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May 7, 1980

W. A. Pryor  
Occupational and Health Branch  
DOE/ORO  
Room G126, Federal Building

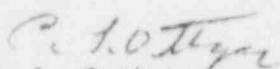
Supplemental Information on Special Form  
Testing of WESF Capsule (Ref. letter  
dated April 3, 1980 re modification of USA 5959 BF)

The  $^{137}\text{CsCl}$  capsule design was selected for special form testing over the  $^{90}\text{SrF}_2$  design for several reasons. Since the two designs are dimensionally so similar, it was not considered necessary to perform the tests on both. The lower melting point and higher thermal expansion of cesium chloride as compared to strontium fluoride and the somewhat thinner walls of the  $^{137}\text{CsCl}$  capsule as compared to the  $^{90}\text{SrF}_2$  capsule all indicate that testing of the  $^{137}\text{CsCl}$  capsule would represent worst-case conditions.

Although the two capsule materials, Type 316L stainless steel and Hastelloy C-276, are not identical both meet the requirements listed for encapsulation materials in 49 CFR 178.598(a). The melting points are similar (316L SST:  $\sim 2600^\circ\text{F}$ ; Hastelloy C-276:  $\sim 2450^\circ\text{F}$ ), and both exhibit excellent corrosion resistance characteristics. The tensile and impact properties of welded Hastelloy C-276 are superior to those of Type 316L stainless steel, so testing of the stainless steel capsule should represent worst-case conditions on this basis also. Some significant properties of welded Hastelloy C-276 are compared to those of Type 316L stainless steel below; the values are taken from manufacturers' information.

	Welded Hastelloy C-276	Type 316L SST
Ultimate strength, psi	110,600	70,000
Yield strength (0.2% offset), psi	59,800	30,000
Elongation, %	45	40
Charpy impact strength, ft-lbs	219	25-40*

\*Typical for welded austenitic stainless steels

  
C. L. Ottinger  
Isotope Sales  
ORNL

CLO:gfm