

Packaging capabilities



BEA Research
Reactor fuel cask



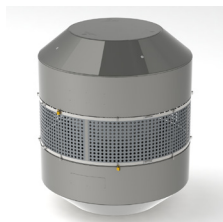
WIPP TRUPACT-III



ATR Fresh Fuel
Shipping Container



435-B package



380-B cask

Orano Federal Services (Orano) provides the nuclear industry with significant experience, lessons learned and a depth of resources in packaging design, analysis, testing, licensing and fabrication.

Orano is an established market leader due to our commitment to technology development, innovation, and focus on customer service and delivery. Our expertise is based on vast experience and lessons learned in analytical simulation and physical testing of radioactive material packages that are compliant with all IAEA, NRC, DOE and DOT regulations, requirements and standards.

Orano also provides design, analysis, and fabrication of ancillary handling equipment, tiedown systems, and leak testing hardware for integrated packaging solutions.

Orano Federal Services has access to the full packaging and transportation capabilities of Orano commercial affiliates including Orano TN and Orano TN International.

Featured packages

BEA Research Reactor Fuel Cask

Designed to transport Type B quantities of irradiated research reactor fuels, this package can ship multiple spent nuclear fuel payloads (ATR, MURR, MITR, TRIGA) and Co60 and Pu238 production targets, and is easily retro-fitted for other payloads: 8" of lead shielding; cask gross weight: 16 tons. The inner vessel measures 16" in diameter by 54" tall. This package was licensed in 2010 and 3 units are in use.

WIPP TRUPACT-III

Large rectangular package originally designed as the TN-Gemini in France to be used for transport of standard large boxes. Developed for DOE and Nuclear Waste Partnership, including design, licensing and production, to be used for transport of standard large boxes of CH-TRU waste to WIPP. This package was licensed in 2010 and 6 units are in use.

ATR Fresh Fuel Shipping Container

Type AF-96 stackable, interlocking container designed for transportation and storage

with shipping racks to transport several configurations of plate-type research reactor fuel elements. Testing included live fuel to demonstrate no brittle fracturing of aluminum/uranium aluminide composite fuel. This package was licensed in 2008 and over 100 units with shipping racks are in use.

LANS Type B Source Recovery Packages

Design and licensing of packages for the NNSA Source Recovery Program

435-B/1105-SD: This package is used for the transport of sealed sources with demonstrated integrity. The design began in 2009 and licensed in 2014. Three units have been fabricated and are in use. The Orano 1105-SD package is identical in design to the 435-B and is available for commercial use for source recoveries and other transport needs.

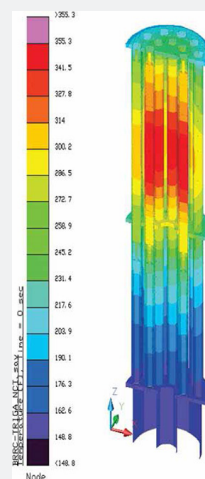
380-B: Shielded cask developed for sources where device integrity cannot be assured. This package was licensed in 2017. One unit is in use, and a second is in production.

Simulation and testing

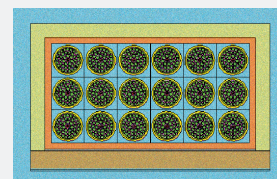
Orano uses state of the art simulation technology and rigorous testing of our packaging designs during the design and modeling process. Some examples of these are illustrated below.

SIMULATION

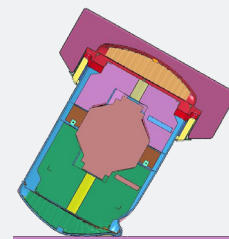
THERMAL ANALYSIS
OF BEA RESEARCH
REACTOR FUEL
PACKAGING BASKET



LOW VOID REACTOR
FUEL (LVRF) CRITICALITY
ANALYSIS MODEL



435-B CERTIFICATION TEST
BENCHMARK SIMULATION



TESTING

PUNCTURE BAR TESTING OF 435-B PACKAGE AT LAMPSON CRANE IN COORDINATION WITH MID-COLUMBIA ENGINEERING



DROP TESTING OF CAMECO LVRFP PACKAGE AT SOUTH-WEST RESEARCH INSTITUTE



DROP TESTING OF MOX FRESH FUEL PACKAGE AT SANDIA NATIONAL LABORATORY



FIRE TESTING OF TN-55 PACKAGE AT SOUTH CAROLINA FIRE ACADEMY



Orano currently licensed packages

CUSTOMER	SYSTEM	PAYLOAD	CoC#
Battelle Energy Alliance (BEA)	BEA Research Reactor Package	Irradiated fuel and cobalt sources	9341*
BEA	ATR Fresh Fuel Shipping Container	Unirradiated fuel	9330
Pooled Inventory Management	PAS-1	Liquid samples	9184*
Washington TRU Solutions	TRUPACT-II	CH-TRU waste	9218
Washington TRU Solutions	TRUPACT-III	CH-TRU waste	9305*
DOE	RH-TRU 72-B	RH-TRU waste	9212
Los Alamos National Security (LANS)	S300	PuBe sources	9329
LANS	435-B	Sealed sources	9355
LANS	380-B	Sealed sources	9370
Duke/Cogema/Stone & Webster	MOX Fresh Fuel Package	Unirradiated fuel	9295*
Orano/Commercial Applications	1105-SD	Sealed sources	9379*
CH2M Hill	Hanford Unirradiated Fuel Package	Unirradiated fuel	9905 (DOE)
Westinghouse Hanford	Radioisotope Thermoelectric Generator Package	RTG	9904 (DOE)

*Design license held by Orano Federal Services LLC



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