National Nuclear Security Administration

OFFICE OF
NONPROLIFERATION AND ARMS CONTROL (NPAC)

Export Controls and Molten Salt Reactors

INTERNATIONAL NUCLEAR SAFEGUARDS
Build capacity of the International Atomic Energy Agency and partner countries to implement international safeguards obligations.

NUCLEAR EXPORT CONTROLS
Build domestic and international capacity to implement export control obligations.

NUCLEAR VERIFICATION
Support negotiation of and implement agreements and associated monitoring regimes to verifiably reduce nuclear weapons and nuclear programs.

NONPROLIFERATION POLICY
Develops approaches and strategies to address emerging nonproliferation and arms control challenges and opportunities.

Export Controls Impact Your Work

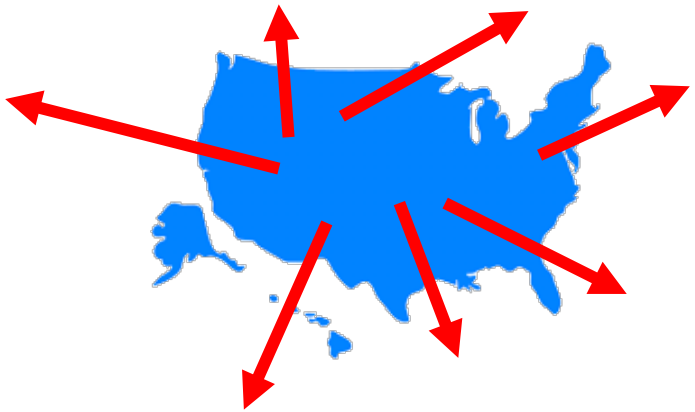
- Tours
- Customers
- Procurements
- Employees
- Visitors
- Computing systems and cyber security
- Services

- Nearly every aspect of your business is affected in some way by export controls

- Getting it right can be difficult, but getting it wrong can be costly

What is an Export?

An **export** occurs outside the geographical boundary of the United States



Sending or taking of an export-controlled commodity, technology, or software out of the United States **in any manner**

A **re-export** occurs when a controlled item is shipped from a foreign country to another foreign country

A **deemed export** occurs within the geographical boundary of the United States

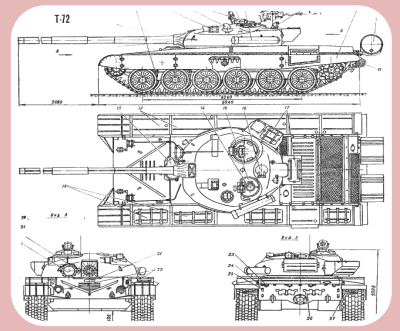
The release of technology or source code to a foreign national within the United States in any manner

Deemed exports can be tangible or intangible.

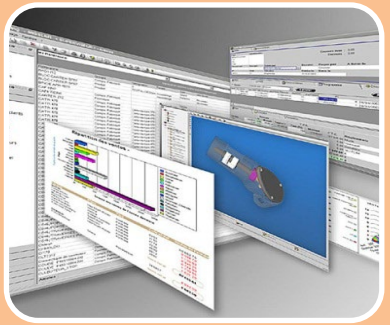
What is Covered by Export Control Laws?

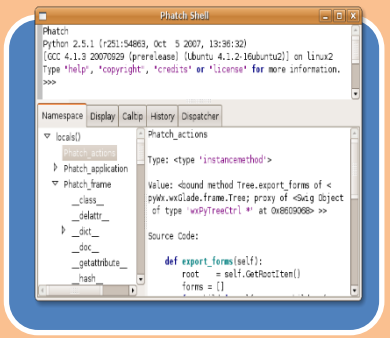
Commodities

Technology

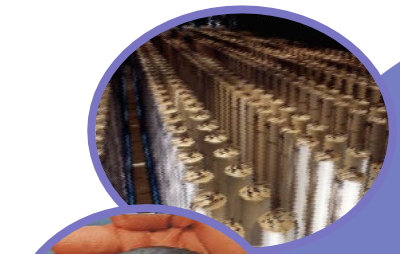


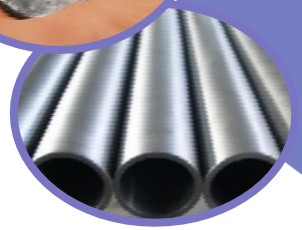
Software





U.S. Nuclear Export Regulations



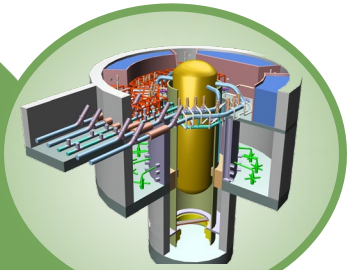
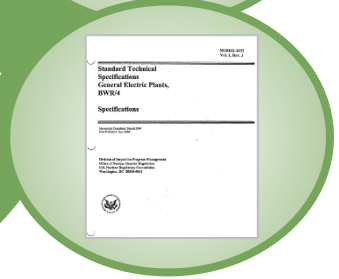


NRC

Nuclear material, equipment, and components

Energy

Technology that can indirectly or directly assist in the development of production of special nuclear material (SNM)

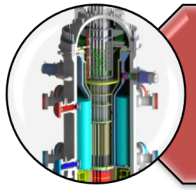
Commerce

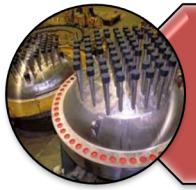
Dual-use commercial items

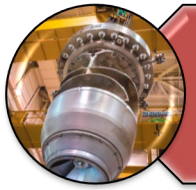


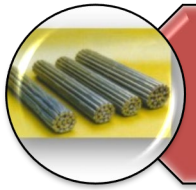
Guards, guns, and gates fall to DOS

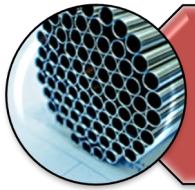
Nuclear Regulatory Commission
10 CFR 110 Commodity Controls

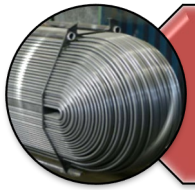

Reactor pressure vessels


Control rod systems


Reactor coolant pumps


Nuclear fuel and cladding


Zirconium tubes


Heat exchangers

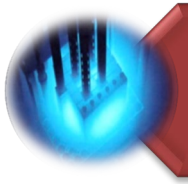

Fuel fabrication

Department of Energy
10 CFR 810 Technology Controls

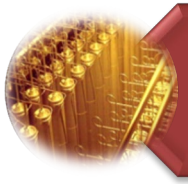
Applies, but is not limited to, activities involving nuclear reactors and other nuclear fuel cycle facilities. Controls the **technology** associated with. . .

Fabrication of nuclear fuel

Designing, constructing, fabricating, maintenance and the operating of production reactors



Production of heavy water



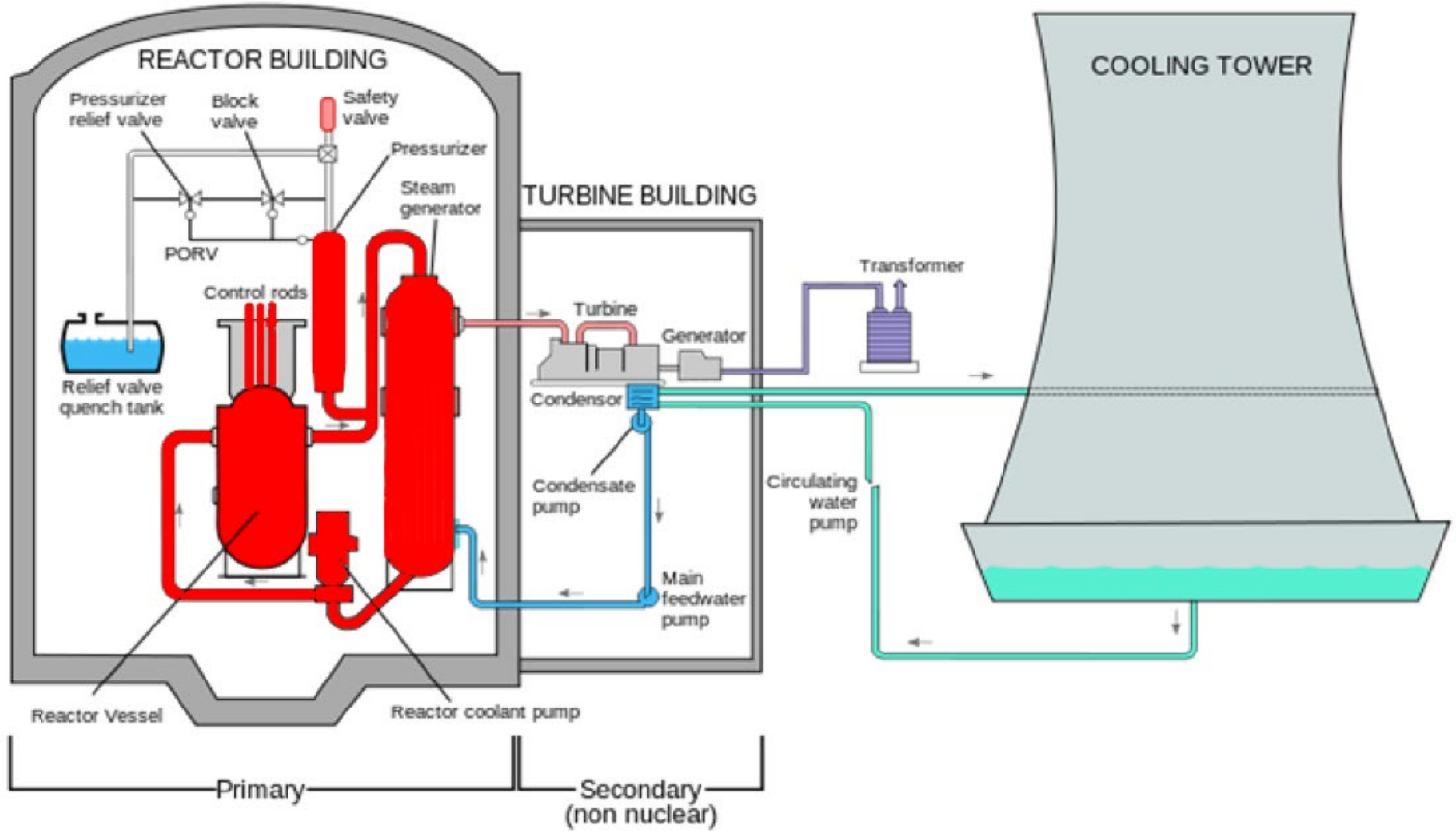
Enrichment and reprocessing

810 Questions? Contact: PART810@nnsa.doe.gov or 202-586-1007

10 CFR 810 and Nuclear Reactor Technology

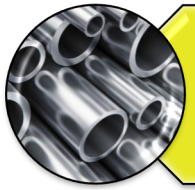
10 CFR 810 applies to nuclear reactor **development, production, or use** of the components within or attached directly to the:

- **reactor vessel**
- **equipment that controls the level of power in the core**
- **equipment that comes in direct contact with the primary**



Department of Commerce Dual-Use Commodity Examples

Sensors and lasers



High strength, light weight, corrosion resistant metals

Electronics

Radiation detectors

Machine tools

Composite materials

Encryption software

These are just a few of the commodities used in reactor facilities. There are many more.

Export Control Challenges

- Export controls vary from agency to agency. Differences include:
  - Different agencies control different items
  - Levels of detail in the control language
  - Definitions, terminology, and thresholds
  - Different licensing processes and associated timeframes
  - Different rules for each export destination

13 pages

2,000+ pages

Sanctions and Restricted Parties

- The U.S. government implements sanctions and restricted party lists to further foreign policy goals
- The Departments of Commerce, State, and Treasury maintain restricted party lists, all of which can be searched on the Consolidated Screening List
- Restricted lists contain foreign and domestic entries
  - Consider **ALL** lists in **ALL** transactions

Consolidated Screening List

Szuhsiung Ho – alias: Allen Ho

- 66-year-old naturalized U.S. citizen, with dual residence in Delaware and Taiwan.
- Owner/President: Energy Technology International Company in Delaware since 1996.
- Employed as a consultant by China General Nuclear Power Company (CGNPC)
  - CGNPC is state-owned and specializes in nuclear reactor development
- Indictment – From 1997 through April 2016, Ho conspired to enlist others to assist with the development and production of Special Nuclear Material (SNM) without authorization from DOE.
  - SNM
    - Enriched U-235, U-233, and Plutonium
  - In particular, Ho sought technical assistance related to:
    - Small Modular Reactors
    - Advanced Fuel Assembly
    - Fixed In-Core Detector System
    - Nuclear-related computer codes
- August 31, 2017: Sentenced to two years in U.S. prison, one year supervised release, and $20,000 fine for violation of the Atomic Energy Act.

Allen Ho

Questions?