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Exceptional service in the national interest

Sandia National Laboratories

Photos placed in horizontal position with even amount of white space between photos and header

Identifying Export Controlled Information

Tara Anderson and Kevin Kehe

Export/Import Compliance

U.S. DEPARTMENT OF ENERGY

NNSA National Nuclear Security Administration

Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

What is Export Controlled Information?

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- Export Controlled Information (ECI) is information scientific or technical in nature (STI)
- ECI may be found in…
  - Statements of Work
  - Conference Papers
  - Conference Presentations
  - Journal Articles
  - Abstracts
  - Drawings
  - Fact Sheets
  - Reports
  - Memos
  - Manuals
  - Data Sets
  - Dissertations
  - Instructions
  - Blueprints
  - Specifications
  - Test Data
  - Engineering Analysis
  - Software / Scripts
  - Intangible Files
  - Patent Applications
  - Proposals
  - Photographs
- Broadly defined and intended to capture a wide variety of STI.

What's ECI? Who knows!

- Since ECI is STI, the person must be able to demonstrate technical proficiency.
- Typically this comes through extensive scientific and technical training at an accredited college or university.
- The U.S.P.T.O. trusts people with Bachelor's Degrees in these Recognized Technical Subjects:

Biology
Biochemistry
Botany
Computer Science*
Electronics Technology
Food Technology
General Chemistry
Marine Technology
Microbiology
Molecular Biology
Organic Chemistry
Pharmacology
Physics
Textile Technology
Aeronautical Engineering
Agricultural Engineering
Biomedical Engineering
Ceramic Engineering
Chemical Engineering
Civil Engineering
Computer Engineering
Electrical Engineering
Electrochemical Engineering
Engineering Physics
General Engineering
Geological Engineering
Industrial Engineering
Mechanical Engineering
Metallurgical Engineering
Mining Engineering
Nuclear Engineering
Petroleum Engineering

http://www.uspto.gov/ip/boards/oed/GRB_March_2012.pdf

What's ECI? Who decides!

§ 120.25 Empowered Official.

(a) Empowered Official means a U.S. person who:

(1) Is directly employed by the applicant or a subsidiary in a position having authority for policy or management within the applicant organization; and

(2) Is legally empowered in writing by the applicant to sign license applications or other requests for approval on behalf of the applicant; and

(3) Understands the provisions and requirements of the various export control statutes and regulations, and the criminal liability, civil liability and administrative penalties for violating the Arms Export Control Act and the International Traffic in Arms Regulations; and

(4) Has the independent authority to:

(i) Enquire into any aspect of a proposed export or temporary import by the applicant, and

(ii) Verify the legality of the transaction and the accuracy of the information to be submitted; and

(iii) Refuse to sign any license application or other request for approval without prejudice or other adverse recourse.

What's ECI? Where is it!

- Atomic Energy Act (AEA)
  - NNSA Policy Letter (NAP)
  - Assistance to Foreign Atomic Energy Activities
- Arms Export Control Act (AECA)
  - International Traffic in Arms Regulations (ITAR)
- Export Administration Act (EAA) / International Emergency Economic Powers Act (IEEPA)
  - Export Administration Regulations (EAR)

Atomic Energy Act

DRAFT NNSA Policy Letter (NAP)

….

The Atomic Energy Act of 1954, as amended (AEA), provides the Department of Energy (DOE) unique authority to perform a broad range of activities related to nuclear weapons. This authority extends to all policies and practices involving classified or unclassified information, drawings, parts, materials, facilities, software, technologies or services used to design, assess, detect, develop, fabricate, qualify, maintain, transport, render safe, or dispose of devices implementing a military application of atomic energy. These activities span the range of Technology Readiness Levels from basic research (the observation of basic principles) through demonstrating system performance at mission parameters, and Manufacturing Readiness Levels from expanding scientific principles that may have manufacturing implications through production.

….

For the purpose of this NAP, AEA-controlled information includes any item, technical data, or service which reveals information regarding designing, developing, fabricating, devising, carrying out, or evaluating nuclear weapons, weapons tests or any other nuclear explosions. Evidence of AEA-control may include information which is developed utilizing nuclear weapon program funding.

….

Atomic Energy Act

DRAFT NNSA Policy Letter (NAP), Section 5(a)

AEA-controlled information is managed in a graded manner.

Tier 1: Anything which involves Restricted Data or Formerly Restricted Data….

Tier 2: AEA-controlled information which is neither RD nor FRD but which is included on the Trigger List (10 CFR 110), the Dual-Use List (Commerce Control List), the U.S. Munitions List (22 CFR 121), or on the NNSA Tier Guidance list which identifies this Tier of information as a concern….

Situational: The NNSA Tier Guidance list shall identify information as situational which requires a case by case Tier 2 or Tier 3 determination.

Tier 3: All AEA-controlled information which is neither Tier 1, Tier 2, nor situational is by definition of low concern and identified as Tier 3. NNSA herein provides a general authorization (that is, no specific Federal approval is required) to import, export, or publish Tier 3 information except as it may be protected in accordance with 10 CFR 1017 or DOE OUO guidelines….

Atomic Energy Act

Assistance to Foreign Atomic Energy Activities, 10 CFR 810.2(c)

Applies, but is not limited to, activities involving nuclear reactors and other nuclear fuel cycle facilities for the following: fluoride or nitrate conversion; isotope separation (enrichment); the chemical, physical or metallurgical processing, fabricating, or alloying of special nuclear material; production of heavy water, zirconium (hafnium-free or low-hafnium), nuclear-grade graphite, or reactor-grade beryllium; production of reactor-grade uranium dioxide from yellowcake; and certain uranium milling activities.

ITAR Requirements

§ 120.10 Technical data.

(a) *Technical data* means, for purposes of this subchapter:

(1) Information, other than software as defined below, which is required for the design, development, production, manufacture, assembly, operation, repair, testing, maintenance or modification of defense articles. This includes information in the form of blueprints, drawings, photographs, plans, instructions or documentation.

(2) Classified information relating to defense articles and defense services;

(3) Information covered by an invention secrecy order;

(4) Software directly related to defense articles (includes but is not limited to the system functional design, logic flow, algorithms, application programs, operating systems and support software for design, implementation, test, operation, diagnosis and repair)

(5) This definition does not include information concerning general scientific, mathematical or engineering principles commonly taught in schools, colleges and universities or information [lawfully] in the public domain as defined in §120.11. It also does not include basic marketing information on function or purpose or general system descriptions of defense articles.

ITAR Requirements

§ 120.6 Defense article.

Defense article means any item or technical data designated in § 121.1 of this subchapter. The policy described in § 120.3 is applicable to designations of additional items. This term includes technical data recorded or stored in any physical form, models, mockups or other items that reveal technical data directly relating to items designated in § 121.1 of this subchapter. It does not include basic marketing information on function or purpose or general system descriptions.

§ 120.5 Relation to regulations of other agencies.

If an article or service is covered by the U.S. Munitions List, its export is regulated by the Department of State….

ITAR Requirements

§ 120.9 Defense service.

(a) *Defense service* means:

(1) The furnishing of assistance (including training) to foreign persons, whether in the United States or abroad in the design, development, engineering, manufacture, production, assembly, testing, repair, maintenance, modification, operation, demilitarization, destruction, processing or use of defense articles;

(2) The furnishing to foreign persons of any technical data controlled under this subchapter (see § 120.10), whether in the United States or abroad; or

(3) Military training of foreign units and forces, regular and irregular, including formal or informal instruction of foreign persons in the United States or abroad or by correspondence courses, technical, educational, or information publications and media of all kinds, training aid, orientation, training exercise, and military advice. (See also § 124.1.)

ITAR Requirements

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§ 120.3 Policy on designating and determining defense articles and services.

An article or service may be designated or determined in the future to be a defense article or defense service if it:

(a) Is specifically designed, developed, configured, adapted, or modified for a military application, and

(i) Does not have predominant civil applications, and

(ii) Does not have performance equivalent (defined by form, fit and function) to those of an article or service used for civil applications; or

(b) Is specifically designed, developed, configured, adapted, or modified for a military application, and has significant military or intelligence applicability such that control under this subchapter is necessary.

The intended use of the article or service after its export (i.e., for a military or civilian purpose) is not relevant in determining whether the article or service is subject to the controls of this subchapter. Any item covered by the U.S. Munitions List falls under the ITAR. The scope of the U.S. Munitions List shall be changed only by amendments made pursuant to section 38 of the Arms Export Control Act (22 U.S.C. 2778).

ITAR Requirements

§ 120.10 Technical data.

(a) *Technical data* means, for purposes of this subchapter:

(1) Information, other than software as defined below, which is required for the design, development, production, manufacture, assembly, operation, repair, testing, maintenance or modification of defense articles. This includes information in the form of blueprints, drawings, photographs, plans, instructions or documentation.
(2) Classified information relating to defense articles and defense services;
(3) Information covered by an invention secrecy order;
(4) Software directly related to defense articles (includes but is not limited to the system functional design, logic flow, algorithms, application programs, operating systems and support software for design, implementation, test, operation, diagnosis and repair)

(5) This definition does not include information concerning general scientific, mathematical or engineering principles commonly taught in schools, colleges and universities or information in the public domain as defined in §120.11. It also does not include basic marketing information on function or purpose or general system descriptions of defense articles.

ITAR Requirements

§ 120.11 Public domain.

(a) *Public domain* means information which is published and which is generally accessible or available to the public:

(1) Through sales at newsstands and bookstores;

(2) Through subscriptions which are available without restriction to any individual who desires to obtain or purchase the published information;

(3) Through second class mailing privileges granted by the U.S. Government;

(4) At libraries open to the public or from which the public can obtain documents;

(5) Through patents available at any patent office;

(6) Through unlimited distribution at a conference, meeting, seminar, trade show or exhibition, generally accessible to the public, in the United States;

(7) Through public release (i.e., unlimited distribution) in any form (e.g., not necessarily in published form) after approval by the cognizant U.S. government department or agency (see also §125.4(b)(13) of this subchapter);

….

ITAR – U.S. Munitions List

§ 121.1 General. The United States Munitions List

I. Firearms, Close Assault Weapons and Combat Shotguns
II. Guns and Armament
III. Ammunition/Ordnance
IV. Launch Vehicles, Guided Missiles, Rockets, Torpedoes, Bombs, and Mines
V. Explosives and Energetic Materials, Propellants, Incendiary Agents and Their Constituents
VI. Vessels of War and Special Naval Equipment
VII. Tanks and Military Vehicles
VIII. Aircraft and Associated Equipment
IX. Military Training Equipment
X. Protective Personnel Equipment
XI. Military Electronics
XII. Fire Control, Range Finder, Optical and Guidance, and Control Equipment
XIII. Auxiliary Military Equipment
XIV. Toxicological Agents, Including Chemical Agents, Biological Agents, and Associated Equipment
XV. Spacecraft Systems and Associated Equipment
XVI. Nuclear Weapons, Design and Testing Related Items
XVII. Classified Articles, Technical Data and Defense Services Not Otherwise Enumerated
XVIII. Directed Energy Weapons
XIX. Reserved
XX. Submersible Vessels, Oceanographic and Associated Equipment
XXI. Miscellaneous Articles

121.16 Missile Technology Control Regime Annex

ITAR – Category XI

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Category XI—Military Electronics

(a) Electronic equipment not included in Category XII of the U.S. Munitions List which is specifically designed, modified or configured for military application. This equipment includes but is not limited to:

*(1) Underwater sound equipment to include active and passive detection, identification, tracking, and weapons control equipment.

*(2) Underwater acoustic active and passive countermeasures and counter-countermeasures.

(3) Radar systems, with capabilities such as:

*(i) Search,

*(ii) Acquisition,

*(iii) Tracking,

*(iv) Moving target indication,

*(v) Imaging radar systems,

(vi) Any ground air traffic control radar which is specifically designed or modified for military application.

ITAR – Category XI

Sandia National Laboratories

Category XI—Military Electronics

*(4) Electronic combat equipment, such as:
(i) Active and passive countermeasures,
(ii) Active and passive counter-countermeasures, and
(iii) Radios (including transceivers) specifically designed or modified to interfere with other communication devices or transmissions.

*(5) Command, control and communications systems to include radios (transceivers), navigation, and identification equipment.

(6) Computers specifically designed or developed for military application and any computer specifically modified for use with any defense article in any category of the U.S. Munitions List.

(7) Any experimental or developmental electronic equipment specifically designed or modified for military application or specifically designed or modified for use with a military system.

ITAR – Category XI

Sandia National Laboratories

Category XI—Military Electronics

*(b) Electronic systems or equipment specifically designed, modified, or configured for intelligence, security, or military purposes for use in search, reconnaissance, collection, monitoring, direction-finding, display, analysis and production of information from the electromagnetic spectrum and electronic systems or equipment designed or modified to counteract electronic surveillance or monitoring. A system meeting this definition is controlled under this subchapter even in instances where any individual pieces of equipment constituting the system may be subject to the controls of another U.S. Government agency. Such systems or equipment described above include, but are not limited to, those:

….

ITAR – Category XI

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Category XI—Military Electronics

(c) Components, parts, accessories, attachments, and associated equipment specifically designed or modified for use with the equipment in paragraphs (a) and (b) of this category, except for such items as are in normal commercial use.

(d) Technical data (as defined in §120.10) and defense services (as defined in §120.9) directly related to the defense articles enumerated in paragraphs (a) through (c) of this category. (See §125.4 for exemptions.) Technical data directly related to the manufacture or production of any defense articles enumerated elsewhere in this category that are designated as Significant Military Equipment (SME) shall itself be designated as SME.

EAR Requirements

The Bureau of Industry and Security (BIS) maintains the Commerce Control List (CCL) that includes items (commodities, software, and technology) subject to the authority of BIS.

What is Not Subject to the EAR

- Items under the exclusive jurisdiction of another Federal Agency
- Literary publications, such as newspapers or literary works (non-technical in nature)
- Publicly available technology and software (excluding encryption)

What is Subject to the EAR

- Most items inside and certain items outside the U.S.

EAR Requirements

Sandia National Laboratories

Ten CCL Categories (or “chapters” of the CCL)

0	Nuclear and Miscellaneous
1	Materials, Chemicals, Microorganisms and Toxins
2	Materials Processing
3	Electronics
4	Computers
5 Part 1	Telecommunications
5 Part 2	Information Security
6	Sensors and Lasers
7	Navigation and Avionics
8	Marine
9	Propulsion Systems, Space Vehicles and Related Equipment

Each category is divided into, Five Sub-Categories

A	Equipment, Assemblies, and Components
B	Production and Test Equipment
C	Materials
D	Software
E	Technology

- Items are classified based on overall functions, characteristics, specifications (e.g. computers) unless they incorporate items also classified elsewhere (e.g. inertial navigation systems)
- Any item "not elsewhere specified" is given a blanket EAR99 designation; these entries are at the end of each CCL category

EAR Requirements

Sandia National Laboratories

Items controlled by the Department of Commerce have an Export Control Classification Number (ECCN) that consists of the category number, the product group letter, the reason for control, and two more digits. For example, ECCN 3E001

3	E	0	01
Category	Group	Reason for Control	Item No.
0-Nuclear Materials, Facilities and Equipment 1-Materials, Chemicals, "Microorganisms," and Toxins 2-Materials Processing 3-Electronics 4-Computers 5-Telecomm and Information Security 6-Sensors and Lasers 7-Navigation and Avionics 8-Marine 9-Propulsion Systems, Space Vehicles and Related Equipment	A - Equipment, Assemblies and Components B - Test, Inspection and Production Equipment C - Materials D - Software E - Technology	0: NS (National Security) and NP EDP items 1: MT (Dual use) 2: NP (Dual use) 3: CB (Dual use)	

What the ITAR says about Research

- (4) *Design Methodology,* such as: The underlying engineering methods and design philosophy utilized (*i.e.,* the "why" or information that explains the rationale for particular design decision, engineering feature, or performance requirement); engineering experience (*e.g.,* lessons learned); and the rationale and associated databases (*e.g,.* design allowables, factors of safety, component life predictions, failure analysis criteria) that establish the operational requirements (*e.g.,* performance, mechanical, electrical, electronic, reliability and maintainability) of a defense article. ...

- (5) *Engineering Analysis,* such as: Analytical methods and tools used to design or evaluate a defense article's performance against the operational requirements. Analytical methods and tools include the development and/or use of mock-ups, computer models and simulations, and test facilities. ...

- (6) *Manufacturing Know-how*, such as: information that provides detailed manufacturing processes and techniques needed to translate a detailed design into a qualified, finished defense article. …

- (3) *Basic Research. "Basic Research"* means a systemic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and observable facts without specific applications towards processes or products in mind. It does not include "*Applied Research*" (*i.e.,* a systemic study to gain knowledge or understanding necessary to determine the means by which a recognized and specific need may be met. It is a systematic application of knowledge toward the production of useful materials, devices, and systems or methods, including design, development, and improvement of prototypes and new processes to meet specific requirements.);

What the EAR says about Research

Fundamental Research under the EAR. 15 CFR 734.8(a)

Fundamental research. … The intent behind these rules is to identify as "fundamental research" basic and applied research in science and engineering, where the resulting information is ordinarily published and shared broadly within the scientific community. Such research can be distinguished from proprietary research and from industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary reasons or specific national security reasons…. Note that the provisions of this section do not apply to encryption software classified under ECCN 5D002 on the Commerce Control List (Supplement No. 1 to part 774 of the EAR), except publicly available encryption object code software classified under ECCN 5D002 when the corresponding source code meets the criteria specified in §740.13(e) of the EAR. …

Commodity Jurisdiction Determinations

Sandia National Laboratories

CJ Final Determination Listing				Last Update: 07/06/2012
Model Name	**Manufacturer**	**Description**	**Final Determination**	**Date**
G4V Family of Single Board Computers G4V-VME and G4V-VPX 101152xx-xx and 101172xx-	Curtiss-Wright Controls Electronic Systems, Inc.	General Purpose Single Board Computer	USML XI (a) (6)	01/30/2012
TSR Spectrograph software function	Research Electronics International LLC	Software spectrograph function to be added to the CCL controlled OGR spectrum analyzer.	USML XI(b)	01/11/2012
Bushido 200520-001	The KEYW Corporation	Handheld, Wi-Fi direction finding solution	USML XI(b)	03/21/2012
MIL-DTL-55181 connectors all spec sheets - M55181/1-8	Power Connector Inc. - QPD/QPL registration # 55181-112-89	power connectors - plugs and receptacles	USML XI (c)	08/04/2011
Cable, Waterproof, Military Radio 12839EA001	The Phoenix Company of Chicago, Inc.	Cable, Waterproof	USML XI(c)	10/21/2011
PRODUCT IMPROVED COMBAT VEHICLE CREWMAN (PICVC) HEADSET	BOSE CORPORATION	COMMUNICATION HEADSET - ACTIVE NOISE CANCELLING	USML XI(c)	12/09/2011
STRADAR and its associated software Software Testbed Radar	STRAD Corporation	Desktop wideband microwave transceiver for array signal processing research and development.	USML XI(d)	12/27/2011
MIMO Radar Signal Processing Research Effort	Research Support to Samsung Thales Corp (STC)	Research services to support STC in their effort to develop a MIMO Radar for the S. Korean Military	USML XI(d)	08/15/2011
Synthetic Aperture Radar (SAR) Image Resolution Research Project	Mitsubishi Electric Research Laboratories, Inc. (MERL)	Develop mathematical models (equations and algorithms) to improve SAR radar image resolution.	USML XI(d)	08/09/2011
	Los Alamos National Security LLC, Los Alamos National Laboratory	Neutron scattering data on metal structure in weld	USML XVI (e)	03/12/2012
Fundamental Research on Superconducting Photonic-Band Gap Accelerator Cavity for High-Current Accelerator Applications	Los Alamos National Security LLC	Novel RF Cavity Concept for Future Accelerators	CONTACT DOC FOR CCATS	06/25/2012

The Christian Science Monitor

Exclusive: Iran hijacked US drone, says Iranian engineer (Video)

In an exclusive interview, an engineer working to unlock the secrets of the captured RQ-170 Sentinel says they exploited a known vulnerability and tricked the US drone into landing in Iran.

By Scott Peterson, *Staff writer*, Payam Faramarzi*, *Correspondent* / December 15, 2011

This photo released on Thursday, Dec. 8, by the Iranian Revolutionary Guards, claims to show US RQ-170 Sentinel drone which Tehran says its forces downed last week, as the chief of the aerospace division of Iran's Revolutionary Guards, Gen. Amir Ali Hajizadeh, right, listens to an unidentified colonel, in an undisclosed location within Iran.

Sepahnews/AP

Enlarge

The US military has sought for years to fortify or find alternatives to the GPS system of satellites, which are used for both military and civilian purposes. In 2003, a "Vulnerability Assessment Team" at Los Alamos National Laboratory published research explaining how weak GPS signals were easily overwhelmed with a stronger local signal.

"A more pernicious attack involves feeding the GPS receiver fake GPS signals so that it believes it is located somewhere in space and time that it is not," reads the Los Alamos report. "In a sophisticated spoofing attack, the adversary would send a false signal reporting the moving target's true position and then gradually walk the target to a false position."

http://www.csmonitor.com/World/Middle-East/2011/1215/Exclusive-Iran-hijacked-US-drone-says-Iranian-engineer-Video