

Billing Code



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DEPARTMENT OF DEFENSE

Office of the Secretary

[Transmittal No. 20-67]

Arms Sales Notification

AGENCY: Defense Security Cooperation Agency, Department of Defense.

ACTION: Arms sales notice.

SUMMARY: The Department of Defense is publishing the unclassified text of an arms sales notification.

FOR FURTHER INFORMATION CONTACT: Karma Job at karma.d.job.civ@mail.mil or (703) 697-8976.

SUPPLEMENTARY INFORMATION: This 36(b)(1) arms sales notification is published to fulfill the requirements of section 155 of Public Law 104-164 dated July 21, 1996. The following is a copy of a letter to the Speaker of the House of Representatives, Transmittal 20-67 with attached Policy Justification and Sensitivity of Technology.

Dated: December 8, 2020.

Kayyonne T. Marston,

Alternate OSD Federal Register Liaison Officer,

Department of Defense.



DEFENSE SECURITY COOPERATION AGENCY
201 12TH STREET SOUTH, SUITE 101
ARLINGTON, VA 22202-5408

October 9, 2020

The Honorable Nancy Pelosi
Speaker of the House
U.S. House of Representatives
H-209, The Capitol
Washington, DC 20515

Dear Madam Speaker:

Pursuant to the reporting requirements of Section 36(b)(1) of the Arms Export Control Act, as amended, we are forwarding herewith Transmittal No. 20-67 concerning the Navy's proposed Letter(s) of Offer and Acceptance to the Government of Finland for defense articles and services estimated to cost \$14.7 billion. After this letter is delivered to your office, we plan to issue a news release to notify the public of this proposed sale.

Sincerely,

A handwritten signature in black ink that reads "Heidi H. Grant".

Heidi H. Grant
Director

Enclosures:

1. Transmittal
2. Policy Justification
3. Sensitivity of Technology

Notice of Proposed Issuance of Letter of Offer
Pursuant to Section 36(b)(1)
of the Arms Export Control Act, as amended

(i) Prospective Purchaser: Government of Finland

(ii) Total Estimated Value:

Major Defense Equipment*	\$ 9.2 billion
Other	<u>\$ 5.5 billion</u>
TOTAL	\$14.7 billion

(iii) Description and Quantity or Quantities of Articles or Services under Consideration for Purchase:

Major Defense Equipment (MDE):

Fifty (50) F/A-18E Super Hornet Aircraft
Eight (8) F/A-18F Super Hornet Aircraft
Fourteen (14) EA-18G Growler Aircraft
One hundred sixty-six (166) F414-GE-400 Engines (144 installed and 22 spares)
Five hundred (500) GBU-53/B Small Diameter Bomb II (SDB II) All-Up Round (AUR)
Twelve (12) GBU-53/B SDB II Guided Test Vehicles (GTV)
Twelve (12) GBU-53/B SDB II Captive Carry Reliability Trainers
One hundred fifty (150) AIM-9X Block II Sidewinder Tactical Missiles
Thirty-two (32) AIM-9X Block II Sidewinder Captive Air Training Missiles (CATMs)
Thirty (30) AIM-9X Block II Sidewinder Tactical Guidance Units
Eight (8) AIM-9X Block II Sidewinder CATM Guidance Units
One hundred sixty (160) AGM-154C-1 Joint Stand Off Weapons (JSOW)
Two Hundred (200) AGM-158B-2B Joint Air-to-Surface Standoff Missile Extended
Range All Up Rounds (JASSM ER AUR)
Two (2) AGM-158B-2 JASSM Separation Test Vehicles (STV)
Two (2) AGM-158B-2 JASSM Instrumented Test Vehicles (ITV)
Two (2) AGM-158B-2 JASSM Jettison Test Vehicles (JTV)
Two (2) AGM-158B-2 Inert Joint Air-to-Surface Standoff Missile (JASSM) with
Telemetry Instrumental Kits
Two (2) AGM-158B-2 JASSM Maintenance Training Missiles (DATM)
One hundred twenty (120) BLU-117B/B 2000LB GP Bombs
One hundred twenty (120) KMU-556F/B Bomb Tail Kits (JDAM)
Three hundred (300) FMU-139D/B Fuzes
Two (2) KMU-556(D-2)/B Trainers (JDAM)
Thirty (30) BLU-109C/B 2000LB Bombs
Thirty (30) KMU-557F/B Bomb Tail Kits (JDAM)
Two (2) BLU-109(D-1)/B 2000LB Bombs
One hundred two (102) BLU-111B/B 500LB General Purpose Bombs
One hundred two (102) KMU-572F/B JDAM Bomb Tail Kits
Six (6) MK-82-0,1 500LB, General Purpose Bombs, Inert
Fifty-one (51) BLU-110B/B 1000LB General Purpose Bombs
Fifty (50) KMU-559F/B Bomb Tail Kits
Fifty-eight (58) M61A2 20MM Gun Systems
Thirty-two (32) Advanced Targeting Forward-Looking Infrared (ATFLIR)
Thirty-two (32) Sniper Targeting Pods

Fourteen (14) Advanced Electronic Attack Kit for EA-18G
Sixty-five (65) AN/ALR-67(V)3 Electric Warfare Countermeasures Receiving Sets
Sixty-five (65) AN/ALQ-214 Integrated Countermeasures Systems
Seventy-four (74) Multifunctional Information Distribution Systems – Joint Tactical Radio Systems (MIDS JTRS)
Eighty-nine (89) Joint Helmet Mounted Cueing Systems (JHMCS)
Three hundred seventy-seven (377) LAU-127E/A Guided Missile Launchers
Seventy-four (74) AN/AYK-29 Distributed Targeting Processor – Networked (DTP-N)
Twenty-five (25) Infrared Search and Track (IRST) Systems
Eight (8) Next Generation Jammer Mid-Band (NGJ-MB) Sets

Non-MDE:

Also included are AN/APG-79 Active Electronically Scanned Array (AESA) radars; High Speed Video Network (HSVN) Digital Video Recorder (HDVR); AN/AVS-9 Night Vision Goggles (NVG); AN/AVS-11 Night Vision Cueing Devices (NVCD); AN/ALE-47 Electronic Warfare Countermeasures Systems; AN/ARC-210 Communication System; AN/APX-111 Combined Interrogator Transponder; AN/ALE-55 Towed Decoys; Launchers (LAU-115D/A, LAU-116B/A, LAU118A); AN/AAQ-28(V) Litening Targeting Pod; Joint Mission Planning System (JMPS); Accurate Navigation (ANAV) Global Positioning System (GPS) Navigation; Aircraft Armament Equipment (AAE); Aircraft Ferry transportation; Foreign Liaison Officer (FLO) Support; Auxiliary Fuel Tanks, FMU-139D(D-2)/B fuzes; MK84-4 2000LB General Purpose Inert Bombs, MK83 Bomb General Purpose Inert Bombs; KMU-557C(D-2)/B tail kits; KMU-572C(D-2)/B tail kits; Detector Laser DSU-38A/B, Detector Laser DSU-38A(D-2)/B, KMU-559C(D-2)/B load trainer; Wing Release Lanyard Assemblies; AGM-154C-1 JSOW Captive Flight Vehicles, Dummy Air Training Missiles, AGM-154C-1 JSOW mission planning, integration support and testing, munitions storage security and training, weapon operational flight program software development; weapons containers; aircraft and munitions support and test equipment; communications equipment; provisioning, spares and repair parts; weapons repair and return support; personnel training and training equipment; weapon systems software, publications and technical documents; U.S. Government and contractor engineering, technical, and logistics support services; and other related elements of logistical and program support.

(iv) Military Department: Navy (FI-P-SAC; FI-P-AAN; FI-P-AAO); Air Force (FI-D-YAB; FI-D-YAE; FI-D-YAJ)

(v) Prior Related Cases, if any: None

(vi) Sales Commission, Fee, etc., Paid, Offered, or Agreed to be Paid: None

(vii) Sensitivity of Technology Contained in the Defense Article or Defense Services Proposed to be Sold: See Attached Annex

(viii) Date Report Delivered to Congress: **October 9, 2020**

*As defined in Section 47(6) of the Arms Export Control Act.

POLICY JUSTIFICATION

Finland – F/A-18E/F Super Hornet Aircraft and Weapons

The Government of Finland has requested to buy fifty (50) F/A-18E Super Hornet aircraft; eight (8) F/A-18F Super Hornet aircraft; fourteen (14) EA-18G Growler aircraft; one hundred sixty-six (166) F414-GE-400 engines (144 installed and 22 spares); five hundred (500) GBU-53/B Small Diameter Bomb II (SDB II) All-Up Round (AUR); twelve (12) GBU-53/B SDB II Guided Test Vehicles (GTV); twelve (12) GBU-53/B SDB II Captive Carry Reliability Trainers; one hundred fifty (150) AIM-9X Block II Sidewinder Tactical Missiles; thirty-two (32) AIM-9X Block II Sidewinder Captive Air Training Missiles (CATMs); thirty (30) AIM-9X Block II Sidewinder Tactical Guidance Units; eight (8) AIM-9X Block II Sidewinder CATM Guidance Units; one hundred sixty (160) AGM-154C-1 Joint Stand Off Weapons (JSOW); two hundred (200) AGM-158B-2B Joint Air-to-Surface Standoff Missile Extended Range All Up Rounds (JASSM ER AUR); two (2) AGM-158B-2 JASSM Separation Test Vehicles (STV); two (2) AGM-158B-2 JASSM Instrumented Test Vehicles (ITV); two (2) AGM-158B-2 JASSM Jettison Test Vehicles (JTV); two (2) AGM-158B-2 Inert Joint Air-to-Surface Standoff Missile (JASSM) with Telemetry Instrumental Kits; two (2) AGM-158B-2 JASSM Maintenance Training Missiles (DATM); one hundred twenty (120) BLU-117B/B 2000LB GP Bombs; one hundred twenty (120) KMU-556F/B Bomb Tail Kits (JDAM); three hundred (300) FMU-139D/B Fuzes; two (2) KMU-556(D-2)/B Trainers (JDAM); thirty (30) BLU-109C/B 2000LB Bombs; thirty (30) KMU-557F/B Bomb Tail Kits (JDAM); two (2) BLU-109(D-1)/B 2000LB Bombs; one hundred two (102) BLU-111B/B 500LB General Purpose Bombs; one hundred two (102) KMU-572F/B JDAM Bomb Tail Kits; six (6) MK-82-0,1 500LB, General Purpose Bombs, Inert; fifty-one (51) BLU-110B/B 1000LB General Purpose Bombs; fifty (50) KMU-559F/B Bomb Tail Kits; fifty-eight (58) M61A2 20MM Gun Systems; thirty-two (32) Advanced Targeting Forward-Looking Infrared (ATFLIR); thirty-two (32) Sniper Targeting Pods; fourteen (14) Advanced Electronic Attack Kit for EA-18G; sixty-five (65) AN/ALR-67(V)3 Electric Warfare Countermeasures Receiving Sets; sixty-five (65) AN/ALQ-214 Integrated Countermeasures Systems; seventy-four (74) Multifunctional Information Distribution Systems – Joint Tactical Radio Systems (MIDS JTRS); eighty-nine (89) Joint Helmet Mounted Cueing Systems (JHMCS); three hundred seventy-seven (377) LAU-127E/A Guided Missile Launchers; seventy-four (74) AN/AYK-29 Distributed Targeting Processor – Networked (DTP-N); twenty-five (25) Infrared Search and Track (IRST) Systems; and eight (8) Next Generation Jammer Mid-Band (NGJ-MB) sets. Also included are AN/APG-79 Active Electronically Scanned Array (AESA) radars; High Speed Video Network (HSVN) Digital Video Recorder (HDVR); AN/AVS-9 Night Vision Goggles (NVG); AN/AVS-11 Night Vision Cueing Devices (NVCD); AN/ALE-47 Electronic Warfare Countermeasures Systems; AN/ARC-210 Communication System; AN/APX-111 Combined Interrogator Transponder; AN/ALE-55 Towed Decoys; Launchers (LAU-115D/A, LAU-116B/A, LAU118A); AN/AAQ-28(V) Litening Targeting Pod; Joint Mission Planning System (JMPS); Accurate Navigation (ANAV) Global Positioning System (GPS) Navigation; Aircraft Armament Equipment (AAE); Aircraft Ferry transportation; Foreign Liaison Officer (FLO) Support; Auxiliary Fuel Tanks, FMU-139D(D-2)/B fuzes; MK84-4 2000LB General Purpose Inert Bombs, MK83 Bomb General Purpose Inert Bombs; KMU-557C(D-2)/B tail kits; KMU-572C(D-2)/B tail kits; Detector Laser DSU-38A/B, Detector Laser DSU-38A(D-2)/B, KMU-559C(D-2)/B load trainer; Wing Release Lanyard Assemblies; AGM-154C-1 JSOW Captive Flight Vehicles, Dummy Air Training Missiles, AGM-154C-1 JSOW mission planning, integration support and testing, munitions storage security and training, weapon operational flight program software development; weapons containers; aircraft and munitions support and test equipment; communications equipment; provisioning, spares and repair parts; weapons repair and return support; personnel training and training equipment; weapon systems software, publications and technical documents; U.S. Government and contractor engineering, technical, and logistics support services; and other related elements of logistical and program support. The total estimated cost is \$14.7 billion.

This proposed sale will support the foreign policy and national security of the United States by improving the security of a trusted partner which is an important force for political stability and economic progress in Europe. It is vital to the U.S. national interest to assist Finland in developing and maintaining a strong and ready self-defense capability.

The proposed sale of F/A-18E/Fs and EA-18Gs and associated weapons will provide Finland with a credible defense capability to deter aggression in the region and ensure interoperability with U.S. Forces. The proposed sale will replace Finland's retiring F/A-18C/Ds and enhance its air-to-air and air-to-ground self-defense capability. Finland will have no difficulty absorbing these aircraft into its armed forces.

The proposed sale of this equipment and support will not alter the basic military balance in the region.

The principal contractors will be The Boeing Company, St. Louis, MO; Northrop Grumman, Los Angeles, CA; Raytheon Company, El Segundo, CA; Raytheon Missile Systems Company, Tucson, AZ; General Electric, Lynn, MA; and Lockheed Martin, Troy, AL. This proposal is being offered in the context of a competition. If the proposal is accepted, it is expected that offset agreements will be required. Any offset agreement will be defined in negotiations between the purchaser and the contractor(s).

Implementation of this proposed sale will require the assignment of six (6) additional U.S. contractor representatives to Finland on an intermittent basis for a duration of the life of the case to support delivery of the F/A-18E/F Super Hornet and EA-18G Growler aircraft and provide supply support management, inventory control, and equipment familiarization.

There will be no adverse impact on U.S. defense readiness as a result of this proposed sale.

Transmittal No. 20-67
Notice of Proposed Issuance of Letter of Offer
Pursuant to Section 36(b)(1)
of the Arms Export Control Act

Annex
Item No. vii

(vii) Sensitivity of Technology:

1. The F/A-18E Super Hornet (single seat) and F/A-18F Super Hornet and EA-18G Growler (dual seat), twin engine, multi-mission fighter/attack aircraft that can operate from either aircraft carriers or land bases. The F/A-18E/F Super Hornet and EA-18G Growler fills a variety of roles and provides air superiority, fighter escort, suppression of enemy air defenses, reconnaissance, forward air control, close and deep air support, and day and night strike missions.

a. The AN/APG-79 Active Electronically Scanned Array (AESA) Radar System provides the F/A-18E/F Super Hornet and EA-18G Growler aircraft with all-weather, multi-mission capability for performing Air-to-Air and Air-to-Ground targeting and attack. Air-to-Air modes provide the capability for all-aspect target detection, long-range search and track, automatic target acquisition, and tracking of multiple targets. Air-to-Surface attack modes provide high-resolution ground mapping navigation, weapon delivery, and sensor cueing.

b. The AN/ALR-67(V)3 Electric Warfare Countermeasures Receiving Set provides the F/A-18E/F aircrew with radar threat warnings by detecting and evaluating friendly and hostile radar frequency threat emitters and providing identification and status information about the emitters to on-board Electronic Warfare (EW) equipment and the aircrew. The Operational Flight Program (OFP) and User Data Files (UDF) used in the AN/ALR-67(V)3 contain threat parametric data used to identify and establish priority of detected radar emitters.

c. The AN/ALE-47 Countermeasures Dispensing System is a threat-adaptive dispensing system that dispenses chaff, flares, and expendable jammers for self-protection against airborne and ground-based Radio Frequency (RF) and Infrared threats. The Operational Flight Program (OFP) and Mission Data Files (MDF) used in the AN/ALE-47 contain algorithms used to calculate the best defense against specific threats.

d. The AN/ALQ-214 is an advanced airborne Integrated Defensive Electronic Countermeasures (IDECM) programmable modular automated system capable of intercepting, identifying, processing received radar signals (pulsed and continuous) and applying an optimum countermeasures technique in the direction of the radar signal, thereby improving individual aircraft probability of survival from a variety of Surface-to-Air and Air-to-Air Radio Frequency (RF) threats. The system operates in a standalone or Electronic Warfare (EW) suite mode. In the EW suite mode, the AN/ALQ-214 operates in a fully coordinated mode with the towed dispensable decoy, Radar Warning Receiver (RWR), and the onboard radar in the F/A-18E/F Super Hornet in a coordinated, non-interference manner sharing information for enhanced information. The AN/ALQ-214 was designed to operate in a high-density Electromagnetic Hostile Environment with the ability to identify and counter a wide variety of multiple threats, including those with Doppler characteristics.

e. The AN/APX-111 Combined Interrogator/Transponder (CIT) with the Conformal Antenna System (CAS) is a complete MARK-XII identification system compatible with

Identification Friend or Foe (IFF) Modes 1, 2, 3/A, C and 4 (secure). A single slide-in module that can be customized to the unique cryptographic functions for a specific country provides the systems secure mode capabilities. As a transponder, the CIT is capable of replying to interrogation modes 1, 2, 3/A C (altitude) and secure mode 4. The requirement is to upgrade Finland's Combined Interrogator Transponder (CIT) AN/APX-111 (V) IFF system software to implement Mode Select (Mode S) capabilities. Beginning in early 2005 EUROCONTROL mandated the civil community in Europe to transition to a Mode S only system and for all aircraft to be compliant by 2009. The Mode S Beacon System is a combined data link and Secondary Surveillance Radar (SSR) system that was standardized in 1985 by the International Civil Aviation Organization (ICAO). Mode S provides air surveillance using a data link with a permanent unique aircraft address. Selective Interrogation provides higher data integrity, reduced Radio Frequency (RF) interference levels, increased air traffic capacity, and adds air-to-ground data link.

f. The Joint Helmet Mounted Cueing System (JHMCS) is a modified HGU-55/P helmet that incorporates a visor-projected Heads-Up Display (HUD) to cue weapons and aircraft sensors to air and ground targets. In close combat, a pilot must currently align the aircraft to shoot at a target. JHMCS allows the pilot to simply look at a target to shoot. This system projects visual targeting and aircraft performance information on the back of the helmet's visor, enabling the pilot to monitor this information without interrupting his field of view through the cockpit canopy, the system uses a magnetic transmitter unit fixed to the pilot's seat and a magnetic field probe mounted on the helmet to define helmet pointing positioning. A Helmet Vehicle Interface (HVI) interacts with the aircraft system bus to provide signal generation for the helmet display. This provides significant improvement for close combat targeting and engagement.

g. The Joint Mission Planning System (JMPS) will provide mission planning capability for support of military aviation operations. It will also provide support for unit-level mission planning for all phases of military flight operations and have the capability to provide necessary mission data for the aircrew. JMPS will support the downloading of data to electronics data transfer devices for transfer to aircraft and weapon systems. A JMPS for a specific aircraft type will consist of basic planning tools called the Joint Mission Planning Environment (JMPE) mated with a Unique Planning Component (UPC) provided by the aircraft program. In addition, UPCs will be required for specific weapons, communication devices, and moving map displays. The JMPS will be tailored to the specific releasable configuration for the F/A-18E/F Super Hornet and EA-18G Growler.

h. The AN/AVS-9 Night Vision Goggles (NVG) provide imagery sufficient for an aviator to complete night time missions down to starlight and extreme low light conditions. The AN/AVS-9 is designed to satisfy the F/A-18E/F mission requirements for covert night combat, engagement, and support. The third generation light amplification tubes provide a high-performance, image-intensification system for optimized F/A-18E/F and EA-18G night flying at terrain-masking altitudes.

i. The AN/AVS-11 Night Vision Goggles (NVG) is capable of high resolution imaging. This capability allows reduced visibility weapon delivery. While the NVCD hardware is UNCLASSIFIED, this item requires Enhanced End Use Monitoring (EEUM).

j. The AN/ALE-55 Towed Decoy improves aircraft survivability by providing an enhanced, coordinated onboard/off-board countermeasure response to enemy threats.

k. The Multifunctional Informational Distribution System (MIDS) Joint Tactical Radio System (JTRS) a secure data and voice communication network using Link-16 architecture. The system provides enhanced situational awareness, positive identification of participants within the network, secure fighter-to-fighter connectivity, secure voice capability, and ARN-118 TACAN functionality. It provides three major functions: Air Control, Wide Area Surveillance, and Fighter-to-Fighter. The MIDS JTRS can be used to transfer data in Air-to-Air, Air-to-Surface, and Air-to-Ground scenarios. The MIDS Enhanced Interference Blanking Unit (EIBU) provides validation and verification of equipment and concept. EIBU enhances input/output signal capacity of the MIDS JTRS and addresses parts obsolescence.

l. LAU-127E/A Guided Missile Launchers designed to enable F/A-18E/F Super Hornet aircraft to carry and launch missiles. It provides the electrical and mechanical interface between the missile and launch aircraft as well as the two-way data transfer between missile and cockpit controls and displays to support preflight orientation and control circuits to prepare and launch the missile.

m. Accurate Navigation (ANAV) Global Positioning System (GPS) also includes Key Loading Installation and Facility Charges. The ANAV is a 24-channel SAASM based pulse-per-second GPS receiver built for next generation GPS technology.

n. The AN/ARC-210 Radio's Line-of-sight data transfer rates up to 80 kb/s in a 25 kHz channel creating high-speed communication of critical situational awareness information for increased mission effectiveness. Software that is reprogrammable in the field via Memory Loader/Verifier Software making flexible use for multiple missions. The AN/ARC-210 has embedded software with programmable cryptography for secure communications.

o. AN/PYQ-10(C) is the next generation of the currently fielded AN/CYZ-10 Data Transfer Device (DTD). The AN/PYQ-10(C) provides automated, secure and user-friendly methods for managing and distributing cryptographic key material, Signal Operating Instructions (SOI), and Electronic Protection data. This course introduces some of the basic components and activities associated with the AN/PYQ-10(C) in addition to hands-on training. Learners will become familiar with the security features of the SKL, practice the initial setup of the SKL, and will receive and distribute electronic keys using the SKL.

p. KIV-78 Dual Channel Encryptor Mode 4/Mode 5 Identify Friend or Foe (IFF) Crypto applique includes aircraft installs and initial spares, to ensure proper identification of aircraft during coalition efforts. The KIV-78 provides cryptographic and time-of-day services for a Mark XIIA (Mode 4 and Mode 5) IFF Combined Interrogator/Transponder (CIT), individual interrogator, and individual transponder.

q. Data Transfer Unit (DTU) with CRYPTO Type 1 and Ground Encryption Device (GED). The DTU (MU-1164(C)/A) has an embedded DAR-400EX and the GED (DI-12(C)/A) has an embedded DAR-400ES. Both versions of the DAR-400 are Type 1 devices.

r. High Speed Video Network (HSVN) Digital Video Recorder (HDVR) with CRYPTO Type 1 and Ground Encryption Device (GED). The HDVR has an embedded DAR-400EX and the GED has an embedded DAR-400ES. Both versions of the DAR-400 are Type 1 devices.

s. The Advanced Targeting Forward Looking Infrared (ATFLIR) pod is a multi-sensor, electro-optical targeting pod incorporating infrared, low-light television camera, laser range

finder/target designator, and laser spot tracker. It is used to provide navigation and targeting for military aircraft in adverse weather and using precision-guided weapons such as laser-guided bombs. It offers much greater target resolution and imagery accuracy than previous systems.

t. The Infrared Search and Track (IRST) is a long wave infrared targeting pod in an external fuel tank outer mold and carried on the centerline station. The IRST has an upgraded infrared receiver and processor to provide full system capability.

u. The Distributed Targeting Processor – Networked (DTP-N) will host the geo-location capability previously resident in the DTS, providing increased memory and speed, improving overall functionality. DTP-N enabled geo-registration and targeting enhancements, when used in conjunction with the advanced networking capabilities, will provide near real-time dissemination of actionable warfighting data thereby reducing kill chain times.

v. The M61A2 20MM Gun is a hydraulically, electrically or pneumatically driven, six-barrel, air-cooled, electrically fired Gatling-style rotary cannon which fires 20MM rounds at an extremely high rate. The M61 and its derivatives have been the principal cannon armament of United States military fixed-wing aircraft.

w. The F414-GE-400 Engines is a 22,000-pound class afterburning turbofan engine. The engine features an axial compressor with 3 fan stages and 7 high-pressure compressor stages, and 1 high-pressure and 1 low-pressure turbine stage. It incorporates advanced technology with the proven design base and features a Full Authority Digital Engine Control (FADEC) system - to provide the F/A-18E/F Super Hornet with a durable, reliable, and easy-to-maintain engine.

x. LAU-115D/A is a rail Launcher designed to enable F/A-18E/F Super Hornet aircraft to carry and launch missiles. The launcher is suspended from the bomb rack on wing stations. The LAU-127 launchers may be attached to the sides of the LAU-115 for carriage missiles.

y. LAU-116B/A Guided Missile Launchers designed to enable F/A-18E/F Super Hornet aircraft to carry and launch missiles. Two launchers, one left hand and one right hand, are installed in the underside of the aircraft fuselage at stations 4 and 6. The launchers are recessed in cavities within the aircraft fuselage, allowing the missiles to be semi recessed for aerodynamic purposes. Both versions of the LAU-116 are ejection launchers.

z. LAU-118A Guided Missile Launchers designed to enable F/A-18E/F Super Hornet aircraft to carry and launch missiles. It provides the electrical and mechanical interface between the missile and launch aircraft, as well as the two-way data transfer between missile and cockpit controls and displays to support preflight orientation and control circuits to prepare and launch the missile.

aa. The Advanced Electronic Attack Kit for the EA-18G Growler consists of the ALQ-218(V)2 Tactical Jamming Receiver, ALQ-227(V)1 Communication Countermeasure Set, CN-1717/A Interference Cancellation System, CP-2640/ALQ Electronic Attack Unit, R-2674(C)/A Joint Tactical Terminal Receiver (JTTR) and associated hardware required for installation.

bb. Next Generation Jammer Mid-Band (NGJ-MB) Sets provides a mid-band jamming

capability for the EA-18G. On aircraft, two NGJ-MB pods, referred to as a shipset, work in conjunction with one another to provide full-uninterrupted azimuth coverage. NGJ-MB is designed to operate as a symmetric loadout, with one each on stations 3 and 9.

cc. The SNIPER Pod is a multi-sensor, electro-optical targeting pod incorporating infrared, low-light television camera, laser rangefinder/target designator, and laser spot tracker. It is used to provide navigation and targeting for military aircraft in adverse weather and using precision-guided weapons such as laser-guided bombs. It offers much greater target resolution and imagery accuracy than previous systems.

dd. AN/AAQ-28(V) Litening Targeting Pod is a multi-sensor, electro-optical targeting pod incorporating infrared, low-light television camera, laser rangefinder/target designator, and laser spot tracker. It significantly increases the combat effectiveness of the aircraft during day night and other weather conditions in the attack of air and ground missions. The targeting pod contains high resolution forward looking infrared sensors that displays and infrared image of the target to the aircrew.

ee. Cartridge Actuated Devices (CADs) are designed for the F/A-18E/F Super Hornet as small explosive devices used to eject stores from launched devices, actuate other explosive systems, or provide initiation for aircrew escape devices. Propellant Actuated Devices (PADs) are a tool or specialized mechanized device or gas generator system that is activated by a propellant or releases or directs work through a propellant charge. Weapons release, aircraft ejection, life support, and fire-suppression systems are some facets that rely heavily on CADs and PADs.

ff. Books and Other Publications includes flight manuals, technical manuals and support of technical data and updates, release and distribution of classified publications for the operation and/or maintenance of the F/A-18E/F aircraft or systems.

gg. Software provides for initial design and development of the Electronic Warfare Software suite which encompasses AN/ALQ-214, AN/ALE-47, ALE-55, ALR-67, as part of the System Configuration Set (SCS) builds.

hh. Technical Data provides for the F/A-18E/F post-production of classified test reports and other related documentation.

ii. Training Aide and Devices provides for upgraded classified lessons, hardware and installation for the Tactical Operational Flight Trainers (TOFT), Low Cost Trainers (LCT), Aircrew courseware and spares for delivery and installation of Systems Configuration Sets (SCS).

2. The AIM-9X Block II Sidewinder Missile is a supersonic, short-range Air-to-Air (A/A) guided missile which employs a passive Infrared (IR) target acquisition system, proportional navigational guidance, and a closed-loop position servo Fin Actuator Unit (FAU). It represents a substantial increase in missile acquisition and kinematics performance over the AIM-9M and replaces the AIM-9X Block I Missile configuration. The missile includes a high off-boresight seeker, enhanced countermeasure rejection capability, low drag/high angle of attack airframe and the ability to integrate the Helmet Mounted Cueing System. The software algorithms are the most sensitive portion of the AIM-9X missile. The software continues to be modified via a pre-planned product improvement (P3I) program in order to improve its counter-countermeasure capabilities. No software source code or algorithms will be released.

a. AIM-9X BLK II Captive Air Training Missile (CATM) is a flight certified inert mass simulator with a functioning Guidance Unit (GU). The CATM is the primary aircrew training device providing all pre-launch functions as well as realistic aerodynamic performance that equate to carrying a tactical missile. The CATM provides pilot training in aerial target acquisition and use of aircraft controls/displays.

b. AIM-9X BLK II Tactical GU, WGU-57/B, provides the missile tracking, guidance, and control signals. The GU provides counter-countermeasures, improved reliability and maintainability over earlier Sidewinder models. Improvements include: (1) upgrade/redesign to the Electronics Unit Circuit Card Assemblies, (2) a redesigned center section harnessing, and (3) a larger capacity missile battery.

c. AIM-9X BLK II CATM GU, WGU-57/B, is identical to the tactical GU except the GU and Control Actuation System (CAS) batteries are inert and the software Captive. The software switch tells the missile processor that it is attached to a CATM and to ignore missile launch commands. The switch also signals software to not enter abort mode because there is no FAU connected to the GU.

d. AIM-9X BLK II Multi-Purpose Training Missile (MPTM) is a ground training device used to train ground personnel in aircraft loading, sectionalization, maintenance, transportation, storage procedures, and techniques. The missile replicates external appearance and features of a tactical AIM-9X-2 missile. The MPTM will physically interface with loading equipment, maintenance equipment, launchers, and test equipment. The missile is explosively and electrically inert and is NOT flight certified.

e. AIM-9X BLK II Dummy Air Training Missile (DATM) is used to train ground personnel in missile maintenance, loading, transportation, and storage procedures. All components are completely inert. The missile contains no programmable electrical components and is not approved for flight.

f. AIM-9X BLK II Active Optical Target Detector (AOTD) is newly designed for Block II. The AOTD/Data Link (AOTD/DL) uses the latest laser technology allowing significant increases in sensitivity, aerosol performance, low altitude performance, and Pk (Probability of Kill). The AOTD/DL design includes a DL for 2-way platform communication. The AOTD/DL communicates with the GU over a serial interface which allows the GU to receive and transmit data so that a target position and status communication with a launching platform is possible during missile flight.

3. The GBU-53/B Small Diameter Bomb Increment II (SDB II) is a 250-lb class precision-guided, semi-autonomous, conventional, air-to-ground munition used to defeat moving targets through adverse weather from standoff range. The SDB II has deployable wings and fins and uses GPS/INS guidance, network-enabled datalink (Link-16 and UHF), and a multi-mode seeker (millimeter wave radar, imaging infrared, semi-active laser) to autonomously search, acquire, track, and defeat targets. The SDB II employs a multi-effects warhead (Blast, Fragmentation, and Shaped Charge) for maximum lethality against armored and soft targets. The SDB II weapon system consists of the tactical all-up round (AUR) weapon, a 4-place common carriage system, and mission planning system munitions application program (MAP). The carriage system is the BRU-61B/A. The BRU and the MAP are not further described here. Two other operable configurations, two maintenance training configurations, and two containers of the system are described as follows:

a. SDB II Guided Test Vehicle (GTV) is an SDB II configuration used for land or sea range-based testing of the SDB II weapon system. The GTV has common flight characteristics of an SDB II AUR, but in place of the multi-effects warhead is a Flight Termination, Tracking, and Telemetry (FTTT) subassembly that mirrors the AUR multi-effects warhead's size and mass properties, but provides safe flight termination, free flight tracking and telemetry of encrypted data from the GTV to the data receivers. The SDB II GTV can have either inert or live fuzes. All other flight control, guidance, data-link, and seeker functions are representative of the SDB II AUR.

b. SDB II Captive Carry Vehicles (CCVs), formerly known as Captive Carry Reliability Test (CCRT) vehicles are an SDB II configuration primarily used for reliability data collection during carriage. The CCV has common characteristics of an SDB II AUR but with an inert warhead and fuze. The CCV has an inert mass in place of the warhead that mimics the warhead's mass properties. The CCV is a flight capable representative of the SDB II AUR but has not yet been approved for release from any aircraft. Since all other flight control, guidance, data-link, and seeker functions are representative of the SDB II AUR, with flight release approval, this configuration could be used for any purpose where an inert round without telemetry or termination capability would be useful.

c. The SDB II Weapon Load Crew Trainer (WLCT) is a mass mockup of the tactical AUR used for load crew and maintenance training. It does not contain energetics, a live fuze, or any classified or hazardous material. It is not flight certified.

d. The SDB II Practical Explosive Ordinance Disposal Trainer (PEST) is an EOD training unit with sections and internal subassemblies which are identical to, or correlate to, the external hardware, sections and internal subassemblies of the tactical AUR. The PEST does not contain energetics, a live fuze, classified or hazardous material. It is not flight certified.

e. The SDB II single round container, nomenclature CNU-714/U, is airtight sealable and contains a BIT harness assembly that allows for BIT testing and software reprogramming without the need for removing the cover assembly. The base assembly contains a humidity indicator, a breather valve, and a desiccant port/BIT access cover on the aft side of the container. There are also two forklift pockets located on the base assembly. Internally, the CNU-714/U contains separate upper and lower cradle assemblies. The lower cradle assembly is attached to the base assembly on top of four wire rope shock insulators, which provide shock isolation during transport. The upper cradle assembly provides an interface with standard Air Force loading equipment. The CNU-714/U lower cradle assembly contains indexing blocks that allow multiple lower cradle assemblies to be placed on the ground, side-by-side, for quick loading of a BRU-61.

f. The SDB II dual round container, nomenclature CNU-715/U, is airtight sealable and contains two BIT harness assemblies that allow for BIT testing and software reprogramming without the need for removing the cover assembly. The base assembly contains a breather valve and a desiccant port/BIT access cover on the aft side of the container. The dual container has two separate lower cradle assemblies. Each lower cradle assembly is attached to the base assembly on top of four wire rope shock insulators, which provide shock isolation during transport. The lower cradles of the CNU-715/U are not detachable from the base assembly. The cover assembly contains a humidity indicator and four latch assemblies to aid in the stacking of CNU-715/U containers on top of each other. There are also two sets of forklift pockets, laterally and longitudinally, located on the base assembly.

4. The AGM-158B Joint Air-to-Surface Standoff Missile Extended Range (JASSM ER) is an extended range low-observable, highly survivable subsonic cruise missile designed to penetrate next generation air defense systems en-route to target. It is designed to kill hard, medium-hardened, soft and area type targets. The extended range over the baseline was obtained by going from a turbo jet to a turbo-fan engine and by reconfiguring the fuel tanks for added capacity. Classification of the technical data and information on the AGM-158's performance, capabilities, systems, subsystems, operations, and maintenance will range from UNCLASSIFIED to SECRET.

a. The AGM-158B Joint Air-to-Surface Standoff Missile (JASSM) software-in-the-Loop (SIL) testing assets are required for software development, integration, and test in the lab environment as well as ground mount operations before STV or Live Fire assets can be loaded on the aircraft to execute Airworthiness, Flight Test, and Live Fire events. These assets are for testing in the contiguous United States and will not be exported. Software development will be to the extent necessary to produce Engineering Releases needed to conduct airworthiness, integration and live fire testing. Testing equipment is CLASSIFIED.

b. The AGM-158B-2 JASSM Separation Test Vehicle (STV) is equipped with Intelligent Test Instrumentation Kit (iTik). These assets will be used as part of the airworthiness data collection process to ensure safe separation of the munition from the aircraft. These missiles will be handled and stored in custom individual containers. These two (2) missiles are for testing in the contiguous United States and will not be exported. Software development will be to the extent necessary to produce Engineering Releases needed to conduct airworthiness, integration and live fire testing.

c. The AGM-158B-2 (JASSM) Instrumented Test Vehicle (ITV) is equipped with iTik. This asset will be utilized to capture flight data information in a "Captive Carry" configuration. The information collected will ensure the munition can be safely carried and is required as part of the airworthiness process prior to launch of the STV, JTV, and the Live Fire asset. These missiles will be handled and stored in custom individual containers. This missile is for testing in the contiguous United States and will not be exported. Software development will be to the extent necessary to produce Engineering Releases needed to conduct airworthiness, integration and live fire testing.

d. The AGM-158B-2 JASSM Jettison Test Vehicle (JTV) is not equipped with an iTik. These assets will be used as part of the airworthiness data collection process to ensure safe jettison of the munition from the aircraft. These missiles will be handled and stored in custom individual containers. These two (2) missiles are for testing in the contiguous United States and will not be exported. Software development will be to the extent necessary to produce Engineering Releases needed to conduct airworthiness, integration and live fire testing.

e. The AGM-158B-2 JASSM Maintenance Training Missile (DATM) is a missile for maintenance (Weapon Load Crew) training with container.

5. The GBU-31 Joint Direct Attack Munition (JDAM) is a 2,000-lb Internal Navigation System/Global Positioning System (INS/GPS) guided precision air-to-ground munition. The GBU-31 consists of a KMU-556 warhead specific tail kit, and MK-84 bomb body.

6. The GBU-38 Joint Direct Attack Munition (JDAM) is a 500-lb Internal Navigation System/Global Positioning System (INS/GPS) guided precision air-to-ground munition. The

GBU-38 consists of a KMU-572 warhead specific tail kit, and MK-82 bomb body.

7. The GBU-54 Laser Joint Direct Attack Munition (LJDAM) is a 500-lb JDAM which incorporates all the capabilities of the JDAM guidance tail it and adds a precision laser guidance set. The LJDAM gives the weapon system an optional semi-active laser guidance in addition to the Internal Navigation System/Global Positioning System (INS/GPS) guidance. This provides the optional capability to strike moving targets. The GBU-54 consists of a laser guidance set, KMU-572 warhead specific tail kit, and MK-82 bomb body.

8. The AGM-154 JSOW is used by Navy, Marine Corps, and Air Force, and allows aircraft to attack well-defended targets in day, night, and adverse weather conditions. The JSOW C and C-1 utilize GPS/INS guidance and an uncooled imaging infrared seeker for terminal guidance, Autonomous Acquisition, and provides a precision targeting, 500-lb-class tandem warhead that is the Navy's primary standoff weapon against hardened targets. The JSOW C-1 added the Link-16 datalink enabling a robust and flexible capability against high-value stationary land targets and moving maritime target capability. JSOW C-1 can fly via two dimensional and three dimensional waypoints to the target, offering the optimal path around Integrated Air Defense Systems (IADS).

The JSOW incorporates components, software, and technical design information that are considered sensitive. The following JSOW-C components being conveyed by the proposed sale include the GPS/INS, IIR seeker, INS OFP software and missile operational characteristics and performance data. These elements are essential to the ability of the JSOW-C missile to selectively engage hostile targets under a wide range of operational, tactical, and environmental conditions.

9. The highest level of classification of defense articles, components, and services included in this potential sale is SECRET.

10. If a technologically advanced adversary were to obtain knowledge of the specific hardware or software elements, the information could be used to develop countermeasures that might reduce weapon system effectiveness or be used in the development of a system with similar or advanced capabilities.

11. A determination has been made that Finland can provide substantially the same degree of protection for the sensitive technology being released as the U.S. Government. This sale is necessary in furtherance of the U.S. foreign policy and national security objectives outlined in the Policy Justification.

12. All defense articles and services listed in this transmittal have been authorized for release and export to Finland.