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Subject: Revision of USML Category IV - RIN (1400-AD19)
EAR Revisions Related to USML Category IV Revisions - RIN 0694-AF56

Missile Technology Control Regime Commodities

Proposed deletion of obsolete 121.16; marking "(MT)" those proposed revised Category IV items which are judged to be on the MTCR Annex; and increased usage of MTCR language are big steps in the right direction. However, there is still much to do to be more precise as to State and Commerce jurisdiction for USML Category IV MT commodity items and CCL Category 9. Attachment 1 shows that (1) there are eight proposed category IV sub-items marked MT for which no corresponding MTCR language has been found (h)(2, 7, 10, 12, 13, 15, 24, 29); and (2) there are 13 category IV sub-items marked MT with language substantially different from that in the MTCR Annex ((b)(1), (h)(1, 6, 8, 9, 14, 17, 20, 21, 22, 25, 26, 27). Attachment 2 shows that there are 13 existing CCL Category 9 coommodity ECCNs marked completely State jurisdiction for which substantial portions are not covered by existing or proposed USML IV language (9A006 to 9A011, 9A105, 9A107, 9A109, 9A115, 9A116, 9A118, and 9A119). It would help if State and Commerce collaborated in preparation of a table showing all MTCR Annex items, together with unequivocally corresponding USML and CCL item numbers.

MT Components Containing Specified Materials

Attachment 3 gives the rationale for recommending deletion, rather than transfer to Category XIII, of materials now controlled by Category IV.f.

Specially Designed

One of the objectives of Export Control Reform (ECR) is to use technical descriptions rather than "specially designed" in the USML. This is especially important for MT items. The existing MT definition of "specially designed" will apparently continue to apply to the MT portions of items while a new definition of this term will apply to the non-MT portions of those same items. Another ECR objective is to transfer to Commerce less significant components which are identified only as "specially designed" for end-items. Attachments 2, and 4 recommend how "specially designed," and other inherently ambiguous terms, could be completely removed from CCL Category 9 commodity ECCNs and the proposed revision of USML Category IV.

Attachments 5 and 6 recommend clarification of proposed Commerce controls on production equipment and facilities and State and Commerce controls on software and technology related to USML Category IV and CCL Category 9.

Attachment 1

Revisions in MT Controls in Proposed IV(a, b, c, d, h) to Conform with MTCR

(a)(1) ~~Rockets, SLVs, and missiles capable of delivering at least a 500 kg payload to a range of at least 300 km~~ Complete rocket system (including ballistic missile systems, space launch vehicles, and sounding rockets) capable of delivering at least a 500 kg "payload" to a "range" of at least 300 km.

(a)(2) ~~Rockets, SLVs, and missiles capable of delivering less than a 500 kg payload to a range of at least 300 km.~~ Complete rocket systems (including ballistic missile systems, space launch vehicles, and sounding rockets), not specified in (a)(1),capable of a "range" equal to or greater than 300 km.

(To conform with MTCR 1.A.1 and 19.A.1. If it was intended to omit sounding rockets, the proposed language could be retained, with changes only to insert "ballistic missile systems" after "SLVs" and to put "payload" and "range" in quotation marks. Then the State jurisdiction notation should be removed from existing 9A104, or such sounding rockets should be added to 9A604; but not both.)

(b)(1) ~~Fixed launch sites and mobile launcher mechanisms for any system enumerated in paragraphs (a)(1) and (a)(2) of this category (e.g., launch tables, TOW missile, MANPADS).~~

(c) ~~Apparatus and devices "specially designed" for the handling, control, activation, monitoring, detection, protection, discharge, or detonation of the articles enumerated in paragraphs (a) and (b) of this category.~~

~~Note to paragraph (c): This paragraph includes specialized handling equipment (transponders, cranes, and lifts) "specially designed" to handle articles enumerated in paragraphs (a) and (b) of this category for preparatrion and launch from fixed and mobile sites. The equipment in this paragraph also includes "specially designed" robots, robot controllers, and robot end-effectors, and liquid propellant tanks "specially designed" for the storage or handling of the propellants controlled in USML Category V, CCL ECCNs 1C011. 1C111, and 1C608, or other liquid propellants used in the systems enumerated in paragraphs (a)(1). (a)(2), or (a)(5) of this category.~~

Apparatus and devices, designed or modified for the handling, control, activation, or launching of the systems specified in IV(a)(1) or (a)(2) or VIII(a)(5) or (a)(6) capable of a "range" equal to or greater than 300 km.

(To conform with MTCR 12.A.1. The Note to paragraph IV(c) does not appear in the MTCR. Propellant tanks are separately controlled in (h)(26) (MTCR 3.A.8).)

(d)(1) ~~Except as enumerated in paragraphs (d)(2) or (d)(3) of this category, individual rocket stages for the articles enumerated in paragraphs (a)(1), (a)(2), or (a)(5) of this category (MT for those stages usable in systems enumerated in paragraphs (a)(1) and (a)(2) of this category)~~ Individual rocket stages usable in the systems specified in IV(a)(1) or (a)(2), VIII(a)(5) or (a)(6) capable of a "range" equal to or greater than 300 km, or usable in

ECCN 9A120
(To conform with MTCR 2.A.1.a and 20.A.1.a. If a similar item were in Category VIII, no change would be needed in proposed (d)(1).)

(d)(2) ~~Solid propellant rocket motors, hybrid or gel rocket motors, or liquid propellent rocket engines having a total impulse capacity equal to or greater than 1.1 x 10^6 N.s (MT)~~ Solid propellant rocket motors, hybrid rocket motors, or liquid propellant rocket engines, usable in (a)(1), having a total impulse capacity of 1.1 x 10^6 Ns (2.5 x 10^5 lb.s) or greater
(To conform with MTCR 2.A.1.c.)

(d)(3) ~~Solid propellant rocket motors, hybrid or gel rocket motors, or liquid propellent rocket engines having a total impulse capacity equal to or greater than 8.41 x 10^5 N.s but less than 1.1 x 10^6 N.s (MT)~~ Solid propellant rocket motors, hybrid rocket motors, or liquid propellant rocket engines, not specified in (d)(2), usable in the systems specified in IV(a)(2), VIII(a)(5) or (a)(6) capable of a "range" equal to or greater than 300 km, or usable in ECCN 9A120, having a total impulse capacity equal to or greater than 8.41 x 10^5 Ns but less than 1.1 x 10^6 Ns
(To conform with MTCR 20.A.1.b.)

(d)(4) ~~Combined cycle, pulsejet, ramjet, or scramjet engines (MT)~~

(h)(14) ~~Combustion chambers specially designed for articles enumerated in paragraphs (a) and (d) of this category and specially designed parts and components therefor (MT for those articles enumerated in paragraphs (a)(1), (a)(2), (b)(1) and (d)(1) through (d)(5) of this category).~~ Ramjet/scramjet/pulse jet/combined cycle engines, including devices to regulate combustion usable in IV(a)(1) or VIII(a)(5) or (a)(6) capable of a "range" equal to or greater than 300 km
(To conform with MTCR 3.A.2, except for omission of components therefor. Recommend Commerce control of such components in 9A111 or in 9A604.c; but not both. Recommend deletion of MT from (h)(14) and addition of devices to regulate combustion to (d)(4) if not made subject to Commerce jurisdiction.)

(h)(1) ~~Flight control and guidance systems (including "guidance sets") "specially designed" for articles enumerated in paragraph (a) of this category (MT for those articles enumerated in paragraphs (a)(1) and (a)(2) or this category.~~

(h)(28) ~~Hydraulic, mechanical, electro-optical, or electro-mechanical flight control systems (including fly-by-wire systems) and attitude control equipment "specially designed" for use in the rockets or missiles enumerated in paragraph (a)(1) of this category (MT for those systems which have been designed or modified for those enumerated n paragraph (a)(1) of this category).~~
Hydraulic, mechanical, electro-optical, or electromechanical flight control systems (including fly-by-wire systems) and attitude control equipment "specially designed" for use in the rockets or missiles enumerated in paragraph (a)(1) of this category (MT for those systems which have been designed or modified for those enumerated n paragraph (a)(1) of this category).

‘Guidance sets’, usable in the systems specified in 1.A, capable of achieving system accuracy of 3.33% or less of the “range” (e.g., a ‘CEP’ of 10 km or less at a “”range” of 300 km)

(To conform with MTCR 10.A.1 and 2.a.1.d.)

(h)(2) ~~Seeker systems “specially designed” for articles enumerated in paragraph (a) of this category (e.g., radio frequency infrared) (MT for articles enumerated in paragraphs (a)(1) and (a)(2) of this category).~~

(No mention of seeker systems found in MTCR Annex.)

(h)(4) ~~Missile or rocket thrust vector control systems (MT for articles enumerated in paragraphs (a)(1) and (a)(2) of this category)~~ Thrust vector control sub-systems usable in (a)(1).

(To conform with MTCR 2.A.1.e.)

(h)(6) ~~Rocket or missile nozzles and nozzle throats, and “specially designed parts and components therefor (MT for those nozzles and nozzle throats usable in systems enumerated in paragraphs (a)(1) and (a)(2) of this category)~~

(h)(20) ~~Rocket motor cases and “specially designed” parts and components therefor (e.g., flanges, flange seals, end domes) (MT for those rocket motor cases usable in systems enumerated in paragraphs (a)(1) and (a)(2) of this category and for “specially designed” parts and components for hybrid rocket motors enumerated in paragraphs (d)(2) and (d)(3) of this category)~~

Rocket motor cases, ‘insulation’ components and nozzles therefor, usable in (a)(1) or (a)(2).

Specially designed components for hybrid rocket motors specified in (d)(2) and (d)(3)

(To conform with MTCR 3.A.3 and 3.A.6.

Recommend deletion of “and nozzle throats” from MT portion of (h)(6).

Recommend deletion of ““specially designed” parts and components for hybrid rocket motors enumerated in paragraphs (d)(2) and (d)(3) of this category” from MT portion of (h)(20).

Recommend addition, as a Commerce control of “Hybrid rocket motor components having characteristics described in 9A109.a or .b.” in 9A109.c or 9A604.f; but not in both.)

(h)(7) ~~Nose tips, nose fairings, or aerospikes, and “specially designed” parts and components therefor (MT for those articles enumerated in paragraphs (a)(1) and (a)(2) of this category)~~

(No mention nose tips, nose fairings, or aerospikes found in MTCR Annex, except for nose tips in 6.B.5 (2B117) production and 6.C.3 and 6.C.4 (1C107.a,b) material items.)

(h)(8) ~~Re-entry vehicle or warhead heat shields (MT for those re-entry vehicles and heat shields usable in systems enumerated in paragraph (a)(1) of this category~~.

(h)(17) ~~Re-entry vehicles and "specially designed parts and components therefor not elsewhere specified in this category (MT)~~

Re-emtry vehicles, and equipment designed or modified therefor, usable in (a)(1), as follows:

1. Heat shields fabricated of ceramic or ablative materials;
2 Heat sinks fabricated of light-weight, high heat capacity materials;
3. Electronic equipment specially designed for re-entry vehicles

(To conform with MTCR 2.A.1.b, except for omission of components of heat shields and heat sinks. Such components would be covered by 9A604.x. Recommend "fabricated of ceramic or ablative materials" be inserted after "heat shields" in (h)(8).

Recommend deletion of (h)(17), because MT re-entry vehicles are covered by (h)(8) and MTCR does not cover "specially designed parts and components" of re-entry vehicles.

Recommend MTCR 2.A.1.b.2 and 3 be covered as Commerce jurisdiction in either 9A116 or a new sub-item of 9A604; but not both. Proposed XI(c)(14) electronic components for missiles, rockets or UAVs does not mention re-entry vehicles and is defined in terms of a temperature capability.)

(h)(9) ~~Missile and rocket safing, arming, fuzing and firing (SAFF) components (to include target detection and proximity sensing devices) and "specially designed" parts therefor (MT for those safing, arming, fuzing, and firing (SAFF) components usable in systems enumerated in paragraph (a)(1) of this category).~~

(h)(25) ~~Fuzes "specially designed" for articles enumerated in paragraph (a) of this category (e.g., proximity , contact, electronic, dispenser proximity, airburst, variable time delay, or multi-option) (MT for those fuzes usable in system enumerated in paragraph (a)(1) of this category).~~

Weapon or warhead safing, arming, fuzing, and firing mechanisms, usable in (a)(1).

(To conform with MTCR 2.A.1.f. Recommend deleting MT from (h)(25) and changing "components" to "mechanisms" in (h)(9).)

(h)(10) ~~Self-destruct systems "specially designed" for articles enumerated in paragraph (a) of this category (MT for those articles enumerated in paragraphs (a)(1) and (a)(2) of this category~~

(No mention of self-destruct systems found in MTCR Annex.)

(h)(11) ~~Separation mechanisms, staging mechanisms, and interstages usable for articles enumerated in paragraph (a) of this category and "specially designed" parts and components therefor (MT for those separation mechanisms, staging mechanism, and interstages usable in systems enumerated in paragraph (a)(1) of this category)~~

Staging mechanisms, separation mechanisms, and interstages therefor, usable in (a)(1)

(To conform with MTCR 3.A.4, which does not control parts and

components.)

(h)(12) ~~Post-boost vehicles (PBV) (MT)~~

(No mention of post-boost vehicles found in MTCR Annex.)

(h)(13) ~~Engine or motor mounts "specially designed" for articles enumerated in paragraphs (a) and (b) of this category (MT for those articles enumerated in paragraphs (a)(1), (a)(2), and (b)(1) of this category~~

(No mention of motor mounts found in MTCR Annex.)

(h)(15) ~~Injectors "specially designed" for articles controlled in this category (MT for those injectors "specially designed" which are usable in systems enumerated in paragraph (a)(1) of this category~~

(No mention of injectors found in MTCR Annex, although it does appear in Wassenaar 9.A.6.e (9A006.e).)

(h)(21) ~~Solid rocket motor liners and rocket motor insulation (MT for those solid rocket motor liners usable in systems enumerated in paragraph (a)(1) of this category or "specially designed" for systems enumerated in paragraph (a)(2) of this category and rocket motor insulation usable in systems enumerated in paragraphs (a)(1) and (a)(2) of this category.~~

'Interior lining' usable for rocket motor cases in the systems specified in (a)(1) or specially designed for systems specified in IV(a)(2) or VIII(a)(5) or (a)(6) capable of a "range" equal to or greater than 300 km

'Insulation' material in bulk form usable for rocket motor cases in the systems specified in (a)(1).

(To conform with MTCR 3.C.1 and 3.C.2. Re "specially designed," see Attachment 4.)

(h)(22) ~~Radomes, sensor windows, and antenna windows "specially designed"for articles enumerated in paragraph (a) of this category (MT for those radomes usable in systems enumerated in pargraph (a)(1) of this category and for any radomes, sensor windows, or antenna windows manufactured as composite structures or laminates "specially designed" for use in the systems and components enumerated in paragraphs (a)(1), (a)(2), (d)(1), (h)(8), (h)(9), (h)(17), or (h)(25) of this category.~~

Radomes designed to withstand a combined thermal shock greater than 4.184×10^6 J/m^2 accompanied by a peak over pressure of greater than 50 kPa, usable in protecting rocket systems and unmanned aerial vehicles against nuclear effects (e.g., Electromagnetic Pulse (EMP), X-rays, combined blast and thermal effects), and usable for the systems specified in IV(a)(1) or VIII(a)(5) or (a)(6)

(To conform with MTCR 18.A.3. Recommend MT portion of (h)(22) be revised per underlined text above, changing "designed to withstand" to "withstanding")

(h)(24) ~~Rocket and missile launch canisters (MT for those rocket and missile launch canisters designed or modified for systems enumerated in paragraphs (a)(1) and (a)(2) of this category.~~

(No mention of canisters found in MTCR Annex.)

(h)(26) ~~Rocket and missile liquid propellant tanks (MT for those rocket and missile liquid propellant tanks usable in systems enumerated in paragraph (a)(1) of this category~~.

Liquid propellant tanks specially designed for the propellants controlled in category V or ECCNs 1C011 or 1C111

(To conform with MTCR 3.A.8. This would be a reasonable candidate for transfer to Commerce jurisdiction. Re "specially designed," see Attachment 4)

(h)(27) ~~Rocket and missile altimeters "specially designed" for use in articles enumerated in paragraph (a)(1) of this category (MT)~~

Radar and laser radar systems, including altimeters, designed or modified for use in (a)(1).

(To conform with MTCR 11.A.1.)

(h)(29) ~~Any part, component, accessory, attachment, equipment, or system that (MT for those articles designated as such):~~

~~(I) Is classified;~~

~~(ii) contains classified software; or~~

~~(iii) Is being developed using classified information~~

(No mention of classified found in MTCR Annex. U.S. regulations restricting distribution of classified information are more effective than export controls based on an unclassified control list.)

Attachment 2

Recommended Revisions in CCL Category 9 Commodity ECCNs

This supersedes my January 23 comments on this same subject, which was prepared before seeing the January 31 proposed Category IV rule. In the following analyses, references to USML Category VIII are to the proposed revision of that Category pursuant to a November 7, 2011, proposed rule. References to Category XIX are to a December 6, 2011 rule. References to Category XV are to existing Category XV. These rules imply that the portions of Wassenaar or MTCR controls for aircraft, gas turbine engines, missiles, or spacecraft not clearly described as State jurisdiction are Commerce jurisdiction. If intended, such implications should be made explicit. If not intended, the USML descriptions should be revised to remove such implication.

What follows also attempts to clarify component controls and to eliminate "specially designed" and other similar ambiguous phrases.

9A001
Aero gas turbine engines, not controlled by USML XIX, having any of the following ...
Note: ~~9A001.a does not control~~ Neither 9A001 nor USML XIX controls aero gas turbine engines which meet the following: ...
a. Certified ...
b. ~~Intended to~~ To power non-military manned aircraft ...
Items:
b ~~Designed to~~ To power an aircraft designed to cruise at Mach 1 or higher ....

9A002
... and ~~specially designed~~ assemblies and components ~~therefor~~ having those characteristics

9A003
~~Specially designed~~ assemblies and components, incorporating ...

9A004
Space launch vehicles and "spacecraft" not controlled by USML IV or XV.a
MT applies to 9A004 also described in 9A104
Related Controls: Move the detail in existing 9A004 concerning DOS jurisdiction to the USML to the extent that it is still relevant under the Export Control Reform and under transfers from State to Commerce of items relevant to commercial communication satellites.

9A005
Liquid rocket propulsion systems, not controlled by USML IV, containing any of the systems or components controlled by 9A006. ~~(These items are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. See 22 CFR part 121)~~
MT applies to 9A005 also described in 9A105

9A006

Systems and components, not controlled by USML IV, ~~specially designed~~ for liquid rocket propulsion systems, having the following characteristics (See List of Items Controlled): ~~(These items are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. See 22 CFR part 121)~~

MT applies to 9A006 also described in 9A106

Related Controls: See also 9A106 and 9A108.

Items:

a. Cryogenic refrigerators, flightweight dewars, cryogenic heat pipes or cryogenic systems ~~specially designed~~ for ~~use in~~ space vehicles ~~and capable of~~ restricting cryogenic fluid losses to less than 30% per year;

b. Cryogenic containers or closed-cycle refrigeration systems ~~capable of~~ providing temperatures of 100 K (-173°C) or less for "aircraft" ~~capable of~~ sustained flight at speeds exceeding Mach 3, launch vehicles or "spacecraft";

a. Slush hydrogen storage or transfer systems;

b. High pressure (exceeding 17.5 MPa) turbo pumps, pump components or their associated gas generator or expander cycle turbine drive systems;

c. High-pressure (exceeding 10.6 MPa) thrust chambers and nozzles therefor;

d. Propellant storage systems ~~using the principle of~~ capillary containment or positive expulsion (*i.e.*, with flexible bladders);

e. Liquid propellant injectors, with individual orifices of 0.381 mm or smaller in diameter (an area of 1.14 x 10^{-3} cm^2 or smaller for non-circular orifices) ~~specially designed~~ for liquid rocket engines;

f. One-piece carbon-carbon thrust chambers or one-piece carbon-carbon exit cones with densities exceeding 1.4 g/cm^3 and tensile strengths exceeding 48 MPa.

(To conform with Wassenaar and EU)

9A007

Solid rocket propulsion systems, not controlled by USML IV, with any of the following (see List of Items Controlled) ~~(These items are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. See 22 CFR part 121)~~:

MT applies to 9A007 also described in 9A107

Items:

a Total impulse capacity exceeding 1.1 Mns;

b. Specific impulse of 2.4 kNs/kg or more when the nozzle flow is expanded to ambient sea level conditions for an adjusted chamber pressure of 7 MPa;

c. Stage mass fractions exceeding 88% and propellant solid loadings exceeding 86%;

d. Any of the components controlled by 9A008; or

e. Insulation and propellant bonding systems using direct-bonded motor designs to provide a strong mechanical bond or a barrier to chemical migration between the solid propellant and case insulation material.

Technical Note

For the purposes of 9A007.e, a strong mechanical bond means bond strength equal to or more than propellant strength.

9A008

Components, not controlled by USML IV, ~~specially designed~~ for solid rocket propulsion systems, as follows (see List of Items Controlled): ~~(These items are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. See 22 CFR part 121)~~

MT applies to 9A008 also described in 9A108

Items:

a. Insulation and propellant bonding systems using liners to provide a strong mechanical bond or a barrier to chemical migration between the solid propellant and case insulation material;

Technical Note: For the purposes of 9A008.a., a strong mechanical bond means bond strength equal to or more than propellant strength.

b. Filament-wound "composite" motor cases exceeding 0.61 m in diameter or having 'structural efficiency ratios (PV/W)' exceeding 25 km.

Technical Note: The 'structural efficiency ratio (PV/W)' is the burst pressure (P) multiplied by the vessel volume (V) divided by the total pressure vessel weight (W).

c. Nozzles with thrust levels exceeding 45 kN or nozzle throat erosion rates of less than 0.075 mm/s;

d. Movable nozzle or secondary fluid injection thrust vector control systems ~~capable of~~ any of the following:

d.1. Omni-axial movement exceeding + or - 5°;

d.2. Angular vector rotations of 20°/s or more; or

d.3. Angular vector accelerations of $40^{o}/s^{2}$ or more.

9A009

Hybrid rocket propulsion systems, not controlled by USML IV, with either of the following (see List of Items controlled): ~~(These items are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. See 22 CFR part 121)~~

MT applies to 9A009 also described in 9A109

Items:

a. Total impulse capacity exceeding 1.1 MNs; or

b Thrust levels exceeding 220 kN in vacuum exit conditions.

9A010

~~Specially designed~~ components , systems and structures, not controlled by USML IV, for launch vehicles, launch vehicle propulsion systems, or "spacecraft", as follows (see List of Items Controlled): ~~(These items are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. See 22 CFR part 121)~~

MT applies to 9A010 also described in 9A110

Items:

a. Components and structures each exceeding 10 kg. ~~specially designed~~ for launch vehicles manufactured using metal "matrix", "composite", organic "composite", ceramic "matrix" or intermetallic reinforced materials controlled by 1C007 or 1C010;

Note: The weight cut-off is not relevant for nose cones.

b. Components and structures ~~specially designed~~ for launch vehicle propulsion systems controlled by 9A005 to 9A009 ~~manufactured using~~ metal matrix, composite, organic composite, ceramic matrix or intermetallic reinforced materials controlled by 1C007 or 1C010;

c. Structural components and isolation systems ~~specially designed~~ to control actively the dynamic response or distortion of "spacecraft" structures;

d. Pulsed liquid rocket engines with thrust-to-weight ratios equal to or more than 1 kN/kg and a response time (the time required to achieve 90% of total rated thrust from start-up) of less than 30 ms.

9A011

Ramjet, scramjet, or combined cycle engines, not controlled by USML IV or XIX, and ~~specially designed~~ components ~~therefor~~ having the characteristics of such engines ~~(These items are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. See 22 CFR part 121)~~

MT applies to 9A011 also described in 9A111

(IV(d)(4) covers such engines. But 9A604.c covers such components.)

9A012

MT applies to ~~non-military unmanned air vehicle systems (UAVs) and remotely piloted vehicles (RPVs) that are capable of a maximum range of at least 300 kilometers (km), regardless of payload~~ 9A012 also described in 9A120 or 9A104.b or .d

Unit: ... ~~parts and accessories~~ components in $ value

Items:

a.1 ... ~~capability~~ ...

a.2 ... ~~capability~~ ...

b. ~~Associated~~ ...

b.1 ... ~~specially designed~~ ...

b.2 ... ~~specially designed~~ ...

b.3 ... ~~specially designed~~ ...

b.4 ... ~~specially designed or modified~~ ...

9A101

Turbojet and turbofan engines, ~~other than those~~ not controlled by 9A001 or USML IV or XIX, as follows (see List of Items Controlled)

Unit: ~~Equipment in~~ number~~; parts and accessories in $ value~~

(MTCR 3.A.1. and ECCN 9A101 do not control parts or accessories)

Items: ...

b. Engines ~~designed or modified~~ for ~~use in~~ "missiles", regardless of thrust or specific fuel consumption.

9A102

'Turboprop engine systems,' not controlled by USML IV or XIX, ~~specially designed~~ for

complete rocket systems ~~capable of~~ with a "range" of at least 300 km ~~and specially designed components therefor,~~ having a maximum power greater than 10 kW (achieved uninstalled at sea level standard conditions) and components having any of those characteristics, excluding civil certified engines and civil certified components
Related Definition: For the purpose of 9A102, a 'turboprop engine system' incorporates all of the following:
a Turboshaft engine; and
b Power transmission system to transfer the power to a propeller.

(New 9A102, not now in the CCL, is to conform with MTCR 3.A.9.)

9A103
liquid propellant tanks, not controlled by USML IV, ~~specially designed~~ for the propellants controlled in ECCNs 1C011, 1C111 or other liquid propellants ~~used in~~ for "missiles. ~~(These items are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. See 22 CFR part 121)~~

(While proposed IV(h)(26) would clearly cover such tanks, this item would reasonably be transferred to Commerce for consistency with ECCNs 2B350(c) and 2B352(a).)

9A104
Rocket and unmanned air vehicle systems, as follows (see List of Items Controlled)(also see 9A120) (These items are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. See 22 CFR part 121)
Items:
a. Complete rocket systems (including ballistic missile systems, space launch vehicles, and ~~S~~sounding rockets) ~~capable of~~ delivering at least a 500 kg payload to a range of at least 300 km;

(To conform with MTCR 1.A.1.)

b. Complete unmanned air vehicle systems (including cruise missile systems, target drones and reconnaissance drones), ~~capable of~~ delivering at least a 500 kg payload to a maximum "range" of at least 300 km

(To conform with MTCR 1.A.2.)

c. Complete rocket systems (including ballistic missile systems, space launch vehicles, and sounding rockets), not controlled by 9A104.a, ~~capable of~~ a "range" of at least 300 km;

(To conform with MTCR 19.A.1.)

d` Complete unmanned air vehicle systems (including cruise missile systems, target drones and reconnaissance drones), not controlled by 9A104.b, ~~capable of~~ a maximum "range" of at least 300 km

(To conform with MTCR 19.A.2.)

(Portions of 9A104 should perhaps become Commerce jurisdiction in connection with transfer of commercial communication satellite jurisdiction now being considered.)

9A105

Liquid propellant rocket engines, not controlled by 9A005 or USML IV, as follows: ~~(These items are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. See 22 CFR part 121)~~

Items:

a. Liquid propellant rocket engines, for "missiles", having a total impulse capacity of 1.1 MNs or greater;

b. Liquid propellant rocket engines, not controlled by 9A105.a, for rockets or UAVs with a "range" of 300 km or greater or UAVs described in 9A120, not controlled by 9A105.a, having a total impulse capacity of 0.841 MNs or greater.

(To conform with MTCR 2.A.1.c and 20.A.1.b. 9A105 would clearly remain State jurisdiction under proposed IV(d)(2) and (d)(3); but portions should perhaps become Commerce jurisdiction in connection with transfer of commercial communications satellite jurisdiction now being considered.)

9A106

~~Liquid r~~Rocket propulsion systems or components, ~~other than those~~ not controlled by 9A006, 9A008, or USML IV, ~~usable in~~ for "missiles", as follows ...

Unit: ~~Equipment and components in~~ number; ~~parts and accessories in $ value~~

(MTCR 2.A.1.e and 3.A.5 and ECCN 9A106 do not control parts or accessories)

a. ~~Ablative liners for thrust combustion chambers;~~

~~b. Rocket nozzles;~~

~~c.~~ a. Thrust vector control subsystems: ....

~~d.~~ b. Liquid or slurry propellant (including oxidizers) control systems ...

Note: 9A106.b includes flight control servo valves ~~designed or modified~~ for ECCN 7A116 operating in a vibration environment of more than 10 g rms over the entire range between 20 Hz and 2 kHz.

(To conform with MTCR 2.A.1.e, 3.A.5, and 10.A.3. 9A106.a would clearly be State jurisdiction per proposed IV(h)(4); but a portion should perhaps become Commerce jurisdiction in connection with transfer of commercial

communications satellite jurisdiction now being considered. Liquid slurry propellant control systems (3.A.5) are, probably inadvertently, omitted not only from proposed IV and related 600 series but also from proposed V and 1C608.)

9A107

Solid propellant rocket ~~engines~~ motors, ~~other than those~~ not controlled by 9A007 or USML IV, as follows: ~~(These items are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. See 22 CFR part 121)~~

Items:

a. Solid propellant rocket motors, in for "missiles", having a total impulse capacity of 1.1 MNs or greater;

b. Solid propellant rocket motors, not controlled by 9A107.a, for rockets or UAVs with a "range" of equal to or greater than 300 km or UAVs described in 9A120 having a total impulse capacity of 0.841 MNs or greater.

(To conform with MTCR 2.A.1.c and 20.A.1.b. 9A107 would clearly be State jurisdiction per proposed IV(d)(2) and (d)(3); but portions should perhaps become Commerce jurisdiction in connection with transfer of commercial communication satellite jurisdiction now being considered.)

9A108

~~Solid rocket propulsion components~~ Rocket motor cases, 'insulation' components and nozzles therefor, ~~other than those~~ not controlled by 9A008 or USML IV, ~~usable in rockets with a range capability of 300 km or greater~~ for "missiles" ~~(These items are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. See 22 CFR part 121)~~

(To conform with MTCR 3.A.3. 9A108 would be State jurisdiction per proposed IV(h)(6) and (h)(20); but portions thereof should perhaps become Commerce jurisdiction in connection with transfer of commercial communication satellite jurisdiction now being considered.)

9A109

~~Hybrid rocket motors, usable in rockets with a range capability of 300 km or greater, other than those controlled by 9A009 for "missiles", and specially designed components therefor (These items are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. See 22 CFR part 121)~~

Hybrid rocket motors, not controlled by 9A009 or USML IV, and components therefor, as follows:

Items:

a. Hybrid rocket motors, for "missiles", having a total impulse capacity of 1.1 MNs or greater;

b. Hybrid rocket motors for rockets or UAVs with a "range" equal to or greater than 300 km or UAVs described in 9A120 having a total impulse capacity of 0.841 MNs or greater;

c. Hybrid rocket motor components having characteristics described in 9A109.a or .b

(To conform with MTCR 2.A.1.c, 20.A.1.b, and 3.A.6. 9A109.a and .b would clearly be State jurisdiction per proposed IV(d)(2) and (d)(3); but portions should

perhaps become Commerce jurisdiction in connection with transfer of commercial communication satellite jurisdiction now being considered.)

9A110

Composite structures, laminates, and manufactures thereof, ~~other than those~~ not controlled by ~~entry~~ 1A002, 1A102, 1C010, 1C210, 9A010, or USML IV, ~~specially designed~~ for ~~use in "missiles" or the subsystems controlled by entries 9A005, 9A007, 9A105.a, 9A106 to 9A108, 9A116 or 9A119~~ 7A117, 9A104, 9A105, 9A106.a, 9A107, 9A116, 9A119.a, 9A119.b, or 9A121

(To conform with MTCR 6.A.1. 1C010 Related Controls describes overlap with 9A110. MTCR 6.A.1 covers composite structures, laminates, and manufactures thereof for MTCR 1.A, 19.A.1, 19.A.2, 2.A, and 20.A, which omit the portions of 9A005 and 9A007 not also described in 9A105 or 9A107 and omit 9A106.b, 9A108, 9A117, 9A118, and 9A119.c; but which include 7A117, 9A104, 9A105.b, and recommended new 9A121)

NP applies to composite structures also described in 1A202

Related Controls: .. ~~(2) composite structures, laminates, and manufactures thereof specially designed for use in missile systems are under the licensing authority ot the U.S. Department of State, except those specially designed for non-military unmanned air vehicles controlled by 9A012.~~

9A111

Pulse jet engines, not controlled by 9A011, USML IV or XIX, ~~usable in~~ for ~~rockets, missiles, or unmanned aerial vehicles capable of achieving a "range" equal to or greater than 300 km~~ 9A104.a, .b, or .d, and ~~specially designed~~ components ~~therefor~~ having those characteristics ~~(These items are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. See 22 CFR part 121)~~

(To conform with MTCR 3.A.2.)

9A115

Launch support equipment, not controlled by USML IV, ~~designed or modified for "missiles"~~, as follows (see List of Items Controlled): ~~(These items are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. See 22 CFR part 121)~~

Items:

a. Apparatus and devices ~~designed or modified~~ for the handling, control, activation and launching of "missiles" or rocket systems or UAVs with a "range" equal to or greater than 300 km and individual rocket stages or rocket motors or engines therefor having a total impulse capacity equal to or greater than 8.41×10^5 Ns but less than 1.1×10^6 Ns.;

b. Vehicles ~~designed or modified~~ for the transport, handling, control, activation and launching of "missiles".

(To conform with MTCR 12.A.1 and 12.A.2. The January 31, 2103 proposed IV(b)(1) and (c) cover such apparatus and devices but not such vehicles. The December 6, 2011 proposed VII(c) "mission system" might be construed to cover these vehicles; but this would not be a "bright line" for State jurisdiction of MTCR 12.A.2. Accordingly, it would be reasonable to conclude that 9A115.b was Commerce jurisdiction.)

9A116

Reentry vehicles equipment, not controlled by USML IV, ~~usable in~~ for "missiles"~~, and equipment designed or modified therefor~~, as follows (see List of Items Controlled). ~~(These items are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. See 22 CFR part 121)~~

Items:

a. Heat shields~~, and components thereof~~ fabricated of ceramic or ablative materials and components having those characteristics;

b. Heat sinks ~~and components thereof~~ fabricated of light-weight, high heat capacity materials and components having those characteristics;

c. Electronic equipment ~~specially designed~~ having characteristics for reentry vehicles.

(To conform with MTCR 2.A.1.b.)

9A117

Staging mechanisms, separation mechanisms, and interstages therefor, ~~usable in~~ for "missiles" not controlled by USML IV. ~~(These items are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. See 22 CFR part 121)~~.

(IV(h)(11) would cover 9A117. But portions should perhaps become Commerce jurisdiction in connection with transfer of commercial communications satellite jurisdiction now being considered.)

9A118

Devices, not controlled by USML IV or VIII.b, to regulate combustion ~~usable~~ in engines ~~which are usable in rockets~~ for "missiles" or UAVs with a "range" ~~capability~~ equal to or greater than 300 km ~~or greater~~, controlled by 9A011 or 9A111 and components having those characteristics ~~(These items are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. See 22 CFR part 121)~~

(For consistency with the "including" portion of MTCR 3.A.2.)

9A119

Individual rocket stages, ~~other than those~~ not controlled by 9A005, 9A007, 9A009, 9A105, 9A107, ~~and~~ 9A109, or USML Ivor VIII, for any of the following (see List of Items Controlled). ~~(These items are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. See 22 CFR part 121)~~

a. "missiles";

b. rockets or UAVs with a "range" equal to or greater than 300 km; or

c. UAVs controlled by 9A120

(To conform with MTCR 2.A.1.a and 20.A.1.a. Proposed IV(d)(1) covers 9A119.a and the rockets portion of 9A119.b. The November 7, 2011 proposed rule on category VIII does not cover the UAV portions of 9A119.)

9A120

Complete unmanned aerial vehicles systems, not ~~specified in~~ controlled by 9A012 or USML

VIII, having all of the following (see List of Items Controlled)
Unit: ~~Equipment in~~ number~~; parts and accessories in $ value~~
(MTCR 19.A.1. and 19.A.2. do not cover parts or accessories)
Items:
a Having any of the following:
a.1 ~~An~~ autonomous flight control and navigation ~~capability~~; or
a.2 ~~Capability of~~ controlled flight out of the direct vision range involving a human operator; and
b Having any of the following:
b.1 Incorporating an aerosol dispensing system/mechanism with a capacity greater than 20 liters; or
b.2 ~~Designed or modified to incorporate~~ Equipped for later incorporation of an aerosol dispensing system/mechanism with a capacity greater than 20 liters

9A121
Weapon or warhead safing, arming, fuzing, and firing mechanisms ~~usable in~~ for "missiles"
(To conform with MTCR 2.A.1.f. Proposed IV(h)(9) covers 2.A.1.f. A new ECCN is nevertheless desirable in order to have a cross reference available, e.g., in 9B105, 9B006, 9B115, 9B116)

9A191
Items, not controlled by USML IV or VIII, otherwise described in 9A102 through 9A111. 9A115 through 9A119, 9A121, or the MT portions of 9A004 through 9A011 for "missiles," but with a "range" between 25 and 300 kilometers to China or between 150 and 300 kilometers to Iraq

9B001
Equipment, tooling and fixtures ~~specially designed~~ for manufacturing gas turbine blades, vanes or tip shroud castings, as follows (see List of Items Controlled)
MT applies ~~only to equipment for engines that meet the characteristics described in 9A001~~ to 9B001 also described in 9B115 or 9B116
Related Controls: For ~~specially designed~~ production equipment ... ~~usable in~~ for "missiles."

9B002
MT applies ~~only to equipment for engines that meet the characteristics described in 9A001~~ to 9B002 also described in 9B115 or 9B116
a. ~~Specially designed~~ ...

9B003
Equipment ~~specially designed~~ ... ~~designed~~ ... and ~~specially designed~~ components ~~or accessories therefor~~ having those characteristics
MT applies ~~only to equipment for engines that meet the characteristics described in 9A001~~ to 9B003 also described in 9B115 or 9B116

9B004

MT applies ~~only to equipment for engines that meet the characteristics described in 9A001~~ to 9B004 also described in 9B115 or 9B116

9B005
... ~~specially designed~~ for ~~use with~~ any of the following ...
~~MT applies to entire entry MT Column 1~~
(MTCR 15.B.2. controls specified wind tunnels but not control systems, instrumentation, or data processing equipment therefor)
a ... ~~designed~~ ...
Note: ... ~~specially designed~~ ...
c ... ~~capable of~~ ...

9B006
... ~~capable of~~ ... ~~specially designed~~ ...
MT applies to 9B006 also described in 2B116 or 9B106
(9B006 overlaps 2B116 and 9B106.)

9B007
... ~~specially designed~~ ...
MT applies to ~~entire entry~~ 9B007 also described in 9B115 to 9B117
(9B007 is broader than MTCR 2.B.1, 2.B.2, 20.B.1. and 20.B.2, which are limited to equipment to produce specified types of rocket motors)

9B008
... ~~specially designed~~ ...

9B009
Tooling ~~specially designed~~ for producing turbine engine powder metallurgy rotor components ~~capable of~~ operating at stress levels of ... and metal temperatures of ...
Unit: ~~Equipment in~~ number~~; parts and accessories in $ value~~

9B010
... ~~specially designed~~ ... ~~associated~~ ...

9B105
Wind tunnels, not controlled by 1B018.b, for speeds of Mach 0.9 or more ~~usable~~ for rockets, missiles, or unmanned aerial vehicles and their subsystems described in 7A117, 9A105, 9A106, 9A107, 9A108, 9A116, or 9A121
(To conform with MTCR 15.B.2.)

9B106
Environmental chambers and anechoic chambers, not controlled by 2B018.b, 2B116, or 9B006, ~~usable~~ for rockets, missiles, or unmanned aerial vehicles and their subsystems described in 7A117, 9A105, 9A106, 9A107, 9A108, 9A116, or 9A121 as follows:

(To conform with MTCR 15.B.4, which overlaps Wassenaar 9.B.6. and ML 18.b and MTCR 15.B.1(*i.e.*, 2B116.)

9B115
See Attachment 5

9B116
See Attachment 5

9B117
Test benches and test stands, not controlled by 2B018, for solid or liquid propellant rockets or rocket motors for MT portions of 9A004 to 9A007 and all of 7A117, 9A104 to 9A107, 9A116, 9A119, 9A121 having either of the following characteristics:

(MTCR 15.B.3. is limited to test equipment for MTCR 1.A, 2.A, 19.A.1, 19.A.2, or 20.A.)

9C101
'Interior lining' ~~usable~~ for rocket motor cases in 1A104
Related Definition: In 9C101, 'interior lining' suited for the bond interface between the solid propellant and the case or insulating liner is usually a liquid polymer based dispersion of refractory or insulating material, *e.g.*, carbon filled HTPB or other polymer with added curing agents to be sprayed or screeded over a case interior.

(To conform with MTCR 3.C.1. Addition to proposed IV(h)(21) of the MTCR Technical Note describing 'interior lining' would clarify this U.S. control.)

9C102
'Insulation' material in bulk form ~~usable~~ for rocket cases in "missiles."
Related Definition: In 9C102, 'insulation' intended to be applied to the components of a rocket motor, *i.e.*, the case, nozzle inlets, case closures, includes cured or semi-cured compounded rubber sheet stock containing an insulating or refractory material. It may also be incorporated as stress relief boots or flaps specified in 9A108.

(To conform with MTCR 3.C.2. Addition to proposed IV(h)(21) of the MTCR Technical Note describing 'insulation' would clarify this U.S. control.)

9C110
Resin impregnated fiber prepregs and metal coated fiber preforms ~~therefor~~, not controlled by 1C010, for ... 9A110 ... (To conform with MTCR 6.C.1.)

Attachment 3

USML Categories IV.f, XIII.d, and XIII.f

It is recommended that:

- XIII.d, in the May 18, 2012 proposed category XIII rule, be deleted;
-statements in ECCNs for State jurisdiction for 1A102 and 1C102 and for1D002, 1E001, and 1E101 for 1A102 be deleted; and
-the United States propose to MTCR deletion of "designed" and "usable in" from 6.A.2 and 6.C.2.

These recommendations are based on the following rationale:

1. IV.f now controls ablative materials from advanced composites, including carbon/carbon, for Category IV articles.
2. XIII.d now controls carbon/carbon billets and preforms for defense articles.
3. XIII.f now controls structural materials, including carbon/carbon, for defense articles.
4. The May 18, 2012 proposed rule for Category XIII would move IV.f to become XIII.d.1; delete "for defense articles" from existing XIII.d (new XIII.d.2); and delete XIII.f.
5. MTCR 6.A.2 (ECCN 1A102) controls resaturated pyrolized (*i.e.*, carbon/carbon) components for rockets with a "range" equal to or greater than 300 km.
6. MTCR 6.C.2 (ECCN 1C102) controls resaturated pyrolized (*i.e.*, carbon/carbon) materials for rockets with a "range" equal to or greater than 300 km
7. The January 31, 2013 proposed rule for Category IV.h omits controlling components based on resaturated pyrolized (i.e., carbon/carbon) contents.
8. The January 31, 2013 proposed rule for ECCN 0A604.x would control components of Category IV defense articles not controlled elsewhere on the CCL or the USML.

Therefore:

a. MTCR 6.A.2 components would become Commerce jurisdiction (because of being omitted from proposed USML IV.h) and State jurisdiction should be deleted from Related Controls for 1A102 and for 1D002, 1E001, and 1E101 for 1A102.
b. Proposed XIII.d.1 should be deleted as an empty box, because the components with such materials would be Commerce jurisdiction and not defense articles.
c. Proposed XIII.d.2 would also have become an empty box were it not for deletion from existing XIII.d of "for defense articles." However, the omission of those words deprives XIII.d.2 of the usual rationale for State jurisdiction and no other rationale is given.
d. So proposed XIII.d.2 should also be deleted and State jurisdiction should be deleted from Related Controls for 1C102.

"Designed" and "usable in" should be deleted from 6.A.2 and 6.C.2 as being unnecessarily ambiguous.

Attachment 4

Specially Designed in Proposed USML Category IV

It is recommended that:

-"and "specially designed" parts and components therefor" or "and "specially designed" parts therefor" be deleted 12 times, from IV(h)(3, 5, 6, 7, 9, 11, 14, 17, 18, 19, 20 (2x));

(To conform with the objective of the Reform to transfer to Commerce components of no identified military significance.)

-"specially designed" be deleted once from Note 3 to paragraph (b) where it modifies what is not controlled;

(No definition of "specially designed" can reasonably modify both what is controlled and what is not controlled.)

-"specially designed" be deleted 17 times, from IV(c), Note to paragraph (c) (3x), and (h)(1, 2, 10, 13, 14, 15 (2x), 21, 22 (2x), 25, 27, 28); design be deleted from Note 1 to paragraph (a); designed be deleted from Note 4 to paragraph (a); specialized be deleted from Note to paragraph (c); and designed or modified be deleted from (h)(24); and

(Technical language is adequate to determine the scope of control and "specially designed" and other similar expressions provide an unnecessary argument that some items fulfilling those technical conditions are not controlled because of not meeting the definition of "specially designed" or an interpretation of other similar but undefined terms.)

-capable of and capability be deleted from Note 1 to paragraph (a).

(The actual characteristics, rather than some theoretical capability, should determine the scope of control.)

Attachment 5

MTCR Production Equipment

It is unclear why the January 31 Commerce rule proposes to include some MTCR "production equipment" and "production facilities" in 9B604.a and .d while others would remain in 9B115 and 9B116. Existing 9B115 and 9B116 include proposed IV(d)(1, 2, 3, 4), (h)(4, 6, 8, 9, 11, 17, 20, 26), i.e., not just (d)(2, 3, 4) and (h)(17). They do this by citing 9Axxx ECCNs. Most of these ECCNs, including all of them for (d)(2, 3, 4) and (h)(17), are now marked as completely subject to State jurisdiction. So that was apparently not the basis for determining which should be switched to 9B604.

The following are omitted from both 9B604 and proposed revised 9B115 and 9B116:

(h)(14) MTCR 3.B.1 and 3.B.2 for 3.A.2 (9A118)

(h)(25) MTCR 2.B.1 and 2.B.2 for 2.A.1.f)

However, (h)(14) refers to combustion chambers, rather than to devices to regulate combustion, per MTCR 3.A.2 and 9A118, and (h)(25) refers to fuzes rather than to safing, arming, fuzing, and firing, per MTCR 2.A.1.f and IV(h)(9). Therefore, rather than adding these to 9B604.d or to 9B115 and 9B116, it would be preferable to delete (h)(14 and (h)(25) from IV and to revise (d)(4) to include devices to regulate combustion. If the intent of omission of such devices from (d)(4) is to transfer jurisdiction to Commerce, they should be added to 9A604 or excluded from State jurisdiction in 9A118, rather than be added to IV(d)(4).

"Production facilities" for IV(a)(1) in 9B604.a would remedy a 25 year-old omission from U.S. controls. Congratulations! However, "production facilities" for IV(a)(2) in 9B604(a)(2) should be deleted. MTCR does not include a 19.B entry (IV(a)(2) comes from MTCR 19.A.1).

The following three entries in 9B604.d should also be deleted:

(d)(7) This is a basket entry, which is not marked MT

(h)(7) Listed components of MTCR controlled vehicle re-entry vehicles in 2.A.1.b.1, 2, and 3 do not include noses. However, see comment on 6.B.5 in Attachment 5, below.

(h)(28) Flight control entry (h)(28) does not use the defined words "production facilities" or "production equipment." This is recognized by listing (h)(28) in 9B604.b.

(h)(1) should also be deleted from 9B604.d, unless it is intended to include in CCL Category 9 what is now covered in other CCL Categories. "Guidance sets" are controlled in Category 7.

The complete list of CCL Category 9 MT "production equipment" and "production facilities" related to USML Category IV is as follows (the ECCNs, as revised per Attachment 2, provide useful cross-references within the CCL and would control whatever might not be controlled by USML IV, now or later):

"Production facilities" only:

MTCR 1.B.1 for:

1.A.1: IV(a)(1) (9A104.a)

Both “production facilities” and “production equipment”
MTCR 2.B.1/2.B.2 for:
2.A.1.a - IV(d)(1) (9A119.a)
2.A.1.b - IV(h)(8, 17) (9A116)
2.A.1.c - IV(d)(2) (9A105.a, 9A107.a, 9A109.a)
2.A.1.e - IV(h)(4) (9A106.a)
2.A.1.f - IV(h)(9) (9A121 recommended new ECCN)
MTCR 3.B.1/3.B.2 for:
3.A.2 - IV(d)(4) (9A111, 9A118)
3.A.3 - IV(h)(6) (9A108)
3.A.4 - IV(h)(11) (9A117)
3.A.6 - IV(h)(20) (9A109.c)
3.A.8 - IV(h)(26) (9A103)
3.C.1 - IV(h)(21) (9C101 recommended new ECCN)
3.C.2 - IV(h)(21) (9C102 recommended new ECCN)
MTCR 20.B.1/20.B.2 for
20.A.1.a - IV(d)(1) (9A119.b)
20.A.1.b - IV(d)(3) (9A105.b, 9A107.b, 9A109.b)
Recapitulation of both “production facilities” and “production equipment”:
in IV order: (d)(1, 2, 3, 4) (h)(4, 6, 8, 9, 11, 17, 20, 21, 26)
in ECCN order: 9A103, 9A105.a,b, 9A106.a, 9A107.a,b, 9A108, 9A109.a,b,c, 9A111, 9A116, 9A117, 9A118, 9A119.a,b, <u>9A121, 9C101, 9C102</u> (recommended new ECCNs underlined)

MT “production facilities” and “production equipment” in a CCL Category other than 9 related to USML Category IV are as follows:
Both “production facilities” and “production equipment”:
MTCR 2.B.1/2.B.1 (7B103) for
2.A.1.d - (IV)(h)(1) (7A117)

CCL Category 9 MT “production facilities” and “production equipment” related to USML Categories other than IV are as follows:
“Production facilities” only
MTCR 1.B.1 for
1.A.2 - VIII(a)(5,6) (9A120) (related items but without MTCR 1.A.2 language)
Both “production facilities” and “production equipment”:
MTCR 3.B.1/3.B.2 for:
3.A.1 - XIX (9A101)
3.A.5 - no USML entry found for liquid and slurry propellant control systems (9A106.b)
3.A.9 - XIX (9A102 recommended new ECCN)

MT “production equipment” in CCL Categories other than 9 which may or may not be regarded as related to USML Category IV are as follows:
“Production equipment” only:

4.B.1/4.B.2 (1B115) for:
    4.C V (1C111)
9.B.1 (7B102) for: (no USML entries found)
    9.A.1 (7A103.b)
    9.A.2 (7A104)
    9.A.3 (7A101)
    9.A.4 (7A102)
    9.A.5 (7A001.c, 7A002.b)
    9.A.6 (7A103.a)
    9.A.7 (7A103.c)
    9.A.8 (7A107)

MT production equipment not using defined terms “production facilities” or “production equipment” which may, or may not, be regarded as related to USML Category IV (Note that four of them are CCL Category 9 and that no mention of all but two of them have been found in the existing or proposed USML)
6.B.1 (1B101)
6.B.2 (1B116)
6.B.3 (2B104)
6.B.4 (2B105)
6.B.5 (2B117)
10.B.1 (7B001) for
    10.A.1 IV(h)(28) (7A116)
    10.A.2 IV(h)(28) (7A116)
    10.A.3 no USML (9A106.b Note)
15.B.1 (2B116)
15.B.2 (9B105)
15.B.3 (9B117)
15.B.4 (9B106)
15.B.5 (3A101.b)
17.B.1 (6B108)

Attachment 6

Software and Technology for USML Category IV and CCL Category 9

Proposed IV(i) "Technical data ... directly related to ... paragraphs (a) through (h) ... (MT for ,,, articles designated as such)" does not provide enough information. It is recommended that IV(i) be replaced by the following:

IV(i)

"Software" as follows:

(1) "Software" "required" for the "use" of paragraphs (a) through (i) except for the MT portions of (d)(1) or (h)(6, 20, 21, 22, 26)

(Commerce rather than State should control "development" or "production" software, for consistency with Commerce control of production equipment. MTCR does not cover any "software" for MTCR 2.A.1.a, 20.A.1.a, 3.C.1, 3.C.2, 18.A.3, or 3.A.8 or any "use" software for 3.A.3.)

(2) "Software" that coordinates the function of more than one subsystem "required" for "use" in IV(a)(1) or (a)(2).

(To conform with MTCR 1.D.2 and 19.D.1.)

(3) "Software" which processes post-flight, recorded data, enabling determination of vehicle position throughout its flight path, "required" for (a)(1) or (a)(2) (MT).

(To conform with MTCR 12.D.2. Category VIII should contain a similar entry for UAVs with a "range" equal to or greater than 300 km)

(4) "Software" "required" for modeling, simulation, or design integration of (a)(1); (d)(1, 2, 3); (h)(4, 8, 9, 17)

(To conform with MTCR 16.D.1.)

(5) "Software" "required" for modeling, simulating or evaluating military weapon systems or operational scenarios.

(To conform with Wassenaar ML 21.b.1,2.)

(6) "Software" "required" for enabling equipment not specified by the Munitions List to perform the military functions of equipment specified by the Munitions List.

(To conform with Wassenaar ML 21.c.)

IV(j)

"Technology" as follows:

(1) "Technology" "required" for the "use" of paragraphs (a) through (i) except for the MT portion of (h)(26)

(Commerce rather than State should control "development" or "production" software, for consistency with Commerce control of production equipment. MTCR does not cover any "technology" for MTCR 3.A.8. The except clause should be omitted if tanks were transferred to Commerce jurisdiction.)

(2) "Technology" "required" for the design of, the assembly of components into, and the operation, maintenance and repair of, complete production installations for items specified by the Munitions List, even if the components of such production installations are not specified.

(To conform with Wassenaar ML22.b.1.)

0D604
It is recommended that:
- "specially designed" be changed to "required" in the heading and in sub-item .a;
  -the following be added at the end of the heading and at the end of sub-item .a:
  or "development" or "production" of related defense articles controlled under USML Category IV
  -In "Related Controls" (1), change "directly related to" to ""required" for the "use" of"

0E604
It is recommended that:
  -the following be added at the end of the heading and at the end of sub-item .a:
  or "development" or "production" of related defense articles controlled under USML Category IV

9D001
Wassenaar controls software for development of all 9A001 to 9A012. Many of the Wassenaar sub-items of 9.A.5 to 9.A.11 have no corresponding coverage in the USML now or as yet proposed. The only MTCR software which is for development is 3.D.3 for 3.A.2, 3.A.3, or 3.A.4 and the software portion of "production facilities. Proposed Category IV(d)(4), (h)(6, 11, 14, and 20) control most, but not all, of 3.A.2, 3.A.3, and 3.A.4 (9A011, 9A108, 9A111, 9A117, 9A118). They do not control 9A118 regulation of combustion. Portions of the others may be transferred to Commerce for commercial communication satellites now under consideration. Therefore, it is recommended that:
  -the heading of 9D001 be revised to read: "Software," not controlled by USML Categories IV, VIII, or XIX "required" for the "development" of equipment or "technology" controlled by 9A001 to 9A012, 9A108, 9A111, 9A117, 9A118, 9B001 to 9B010, 9B116, or 9E003
  -MT applies be revised to read: MT applies to software for 9A011 for MT reasons and for 9A108, 9A111, 9A117, 9A118, and 9B116
  -proposed Related Controls be deleted.

9D002
Wassenaar controls software for production of all 9A001 to 9A012. Many of the Wassenaar sub-items of 9.A.5 to 9.A.11 have no corresponding coverage in the USML now or as yet proposed. There is no MTCR software for production. Therefore, it is recommended that:
  -the heading of 9D002 be revised to read: "Software," not controlled by USML Categories IV, VIII, or XIX "required" for the "production" of equipment controlled by ECCNs 9A001 to 9A012 or 9B001 to 9B010
- MT applies be deleted from 9D002
- the proposed Related Controls for 9D002 be deleted

9D003
Wassenaar controls software for FADEC related to all 9A001 to 9A012. Many of the Wassenaar

sub-items of 9.A.5 to 9.A.11 have no corresponding coverage in the USML now or as yet proposed. There is no MTCR software for FADEC. Therefore, it is recommended that:

-the heading of 9D003 be revised to read: “Software,” not controlled by USML Categories IV, VIII, or XIX incorporating “technology” specified in ECCN 9E003.h and used in “FADEC systems” for propulsion systems controlled by ECCNs 9A001 to 9A012 or 9B001 to 9B010

- MT applies be deleted from 9D003
- Parts (2) and (3) of proposed Related Controls for 9D003 be deleted

9D004

MT applies to ~~entire entry except 9D004.g and .f~~:
9D004.a also described in 9D101 for 9B105;
9D004.b also described in 9D104 for 9A001 or 9A101;
9D004.c also described in 9B116; and
9D004.e also described in 9D104 for 9A012.
b ... ~~specially designed~~ ... ~~capable of~~ ...

9D101

“Software,” not controlled by 9D004, ~~specially designed or modified~~ “required” for the “use” of goods controlled by 9B001 to 9B005, 9B007, 9B105, 9B106, 9B116 or 9B117 for MT reasons

(To conform with MTCR 1.D.1, 2.D.1, 3.D.1, 15.D.1, and 20.D.1. No portion of 9D101 would be DOS jurisdiction, because of recommendations in Attachment 2 to exclude from all the referenced ECCNs what is controlled by State.)

9D103

"Software" ~~specially designed~~ for modeling, simulation or design integration of ~~"missiles", or the subsystems controlled by 9A005, 9A007, 9A105.a, 9A106, 9A108, 9A116 or 9A119~~ 7A117, 9A105.a,b, 9A106.a, 9A107.a,b, 9A116. 9A119.a,b, 9A121, and MT portions of 9A005, 9A006, and 9A007 ~~(This entry is subject to the export licensing authority of the U.S. Department of State,Office of Defense Trade Controls. See 22 CFR part 121.)~~

(To conform with MTCR 16.D.1. MTCR 1.A (recommended 9A104.a and .b) is omitted, because all of recommended 9A104 is DOS jurisdiction. MTCR 2.A, and 20.A subsystems omit 9A005 and 9A007 portions not overlapping 9A105 or 9A107 and omit 9A106.b, 9A108, and 9A119.c. But they include 7A117 and recommended new 9A121. No portion of 9D103 would be DOS jurisdiction, because all the referenced ECCNs, as revised per Attachment 2, would exclude the DOS jurisdiction portions.)

9D104

It is recommended that:

-The heading of 9D104 be revised to read: “Software,” not controlled by USML Categories IV, VIII, or XIX, “required” for the “use” of ECCNs 9A101, 9A102, 9A105.a,b, 9A106.a,b, 9A107.a,b, 9A109.a,b, 9A111, 9A115.a, 9A116.c, 9A117, 9A118, 9A121, or 9B116 (new ECCNs underlined)

-9D104 Related Controls be deleted.

(To conform with MTCR:
1.D.1 for 1.B.1 (9B116)
2.D.1 for 2.B.1 (9B116)
2.D.2 for 2.A.1.c (9A105.a, 9A107.a, 9A109.a);
2.D.4 for 2.A1.b.3 (9A116.c) (This was not picked up in proposed USML XI or 3A611);
2.D.5 for 2.A.1.e (9A106.a);
2.D.6 for 2.A.1.f (9A121);
3.D.1 for 3.B.1 (9B116);
3.D.2 for 3.A.1 (9A101);
3.A.2 (9A111, 9A118);
3.A.4 (9A117);
3.A.5 (9A106.b);
3.A.6 (9A109.c);
3.A.9 (9A102);
10.D.1 for 10.A.3 (9A106.b);
12.D.1 for 12.A.1 (9A115.a);
20.D.1 for 20.B.1 (9B116);
20.D.2 for 20.A.1.b (9A105.b, 9A107.b, 9A109.b).
(Wassenaar does not control software for "use."
MTCR does not control software for:
9A103 tanks;
9A108 motor cases;
9A110 composite structures;
9A115.b vehicles for handling missiles;
9A116.a heat shield components;
9A116.b heat sinks;
9A119.a,b,c individual rocket stages;
9A120 UAVs, or
9B115 "production equipment."
1.D.2 for 1.A and 19.D.1 for 19.A.1 are recommended above as IV(i)(2).
2.D.3 for 2.A.1.d guidance sets is separately controlled by 7D103.
(It is recommended that 7D103 be revised to include "not controlled by USML IV, VIII, or XIX" and to delete the statement that it is now State jurisdiction.)
Proposed IV does not control:
9A106.b liquid and slurry propellant control systems;
9A116.c electronic equipment for re-entry vehicles;
9A118 regulation of combustion.
Portions of 9A105 through 9A109, and 9A117 may become Commerce jurisdiction as part of the transfer of commercial communication satellites now under consideration. The above includes new ECCNs 9A102 (MTCR 3.A.9) and 9A121 (MTCR 2.A.1.f). No portion of 9D104 would be DOS jurisdiction, because all the recommended revisions in Attachment 2 of the referenced ECCNs exclude the DOS jurisdiction portions.)

9D105
See recommended IV(i)(2) above.

9D604
It is recommended that:

- "specially designed" be changed to "required" in the heading and in sub-item .a;
- the following be added at the end of the heading and at the end of sub-item .a: or "development" or "production" of related defense articles controlled under USML Category IV
- In "Related Controls" (1), change "directly related to" to ""required" for the "use" of"

9E001
ITAR "technology" should be limited to "use," for consistency with EAR jurisdiction for commodities for production of USML defense articles. Wassenaar controls technology for development of all 9A004 to 9A012. Many of the Wassenaar sub-items of 9.A.4 to 9.A.12 have no corresponding coverage in the USML now or as yet proposed. MTCR does not control "technology" for the "development" of 19.D.1 (9D105). Therefore, it is recommended that:

-the heading of 9E001 be revised to read: "Technology" according to the General Technology Note for the "development" of equipment or "software" controlled by ECCNs 9A001.b, 9A004 to 9A012, 9B001 to 9B010, 9B105. 9B106, 9B115 to 9B117, 9D001 to 9D004, 9D101, 9D103, or 9D104

-revise MT applies to read: MT applies to "technology" for equipment or "software" controlled by 9A001.b, 9A004 to 9A012, 9B001 to 9B004, 9B006, 9B007, 9D001, or 9D004 for MT reasons and by 9B105. 9B106, 9B105, 9B106, 9B115 to 9B117, 9D101, 9D103, or 9D104

-delete proposed Related Controls (2)

9E002
ITAR "technology" should be limited to "use," for consistency with EAR jurisdiction for commodities for production of USML defense articles. Wassenaar controls technology for production of all 9A004 to 9A011. Many of the Wassenaar sub-items of 9.A.4 to 9.A.11 have no corresponding coverage in the USML now or as yet proposed. Therefore, it is recommended that:

-the heading of 9E001 be revised to read: "Technology" according to the General Technology Note for the "production" of equipment controlled by ECCNs 9A001.b, 9A004 to 9A011, 9B001 to 9B010, 9B105. 9B106, or 9B115 to 9B117

-revise MT applies to read: MT applies to "technology" for equipment controlled by 9A001.b, 9A004 to 9A011, 9B001 to 9B004, 9B006, or 9B007 for MT reasons and by 9B105. 9B106, 9B105, 9B106, or 9B115 to 9B117

-delete proposed Related Controls (2)

9E003
Other "technology," <u>not controlled by USML IV or XIX,</u> as follows
Related Controls: ~~(1) ... (2) ...~~ <u>N/A</u> (USML should describe details of USML controls.)
a.2.a ... ~~designed~~ ...

a.3.a ... ~~designed~~ ...
a.4 ... ~~designed~~ ...
a.8 Technical Note ... ~~designed~~ ...
f,3 ... ~~specially designed~~ ... ~~capability~~ ...
i ... ~~designed~~ ...
i.2 ... components ~~unique to~~ of the adjustable flow path system ~~and~~ that maintain ...
i.3 ... ~~unique to~~ of the adjustable flow path system ~~and~~ that maintain engine stability

9E101
ITAR "technology" should be limited to "use," for consistency with EAR jurisdiction for commodities for production of USML defense articles. MTCR controls "technology" for "development" or "production" of all MT A, B, C, and D items except 3.A.7 (2A101 ball bearings), 3.A.8 (9A103 tanks), 19.A.3 (9A120 UAVs), and 19.D.1 (9D105 coordination of missile sub-system functions). 9E001 controls "technology" for "development" of MT ECCNs 9B1xx and 9D1xx. 9E002 controls "technology" for "production" of MT ECCNs 9B1xx. Therefore, it is recommended that:

-9E101 heading be revised to read: "Technology" according to the General Technology Note for the "development" of 9A101, 9A102 (turboprop engines), 9A104 to 9A111, 9A115 to 9A119, 9A121 (SAFF), 9C101 (liners), 9C102 (insulation), or 9C110 or for the "production" of 9A101, 9A102 (turboprop engines), 9A104 to 9A111, 9A115 to 9A119, 9A121 (SAFF), 9C101 (liners), 9C102 (insulation), 9C110, 9D101, 9D103, or 9D104

9E102
MT controls now annotated as entirely State jurisdiction have many portions not identified on the existing, or proposed, USML and other portions which may be construed as for commercial communications satellites, for which transfer to Commerce jurisdiction is under consideration. MTCR controls "technology" for "use" of all MT A, B, C, and D items except 3.A.7 (2A101 ball bearings), 3.A.8 (9A103 tanks), 19.A.3 (9A120 UAVs), and 19.D.1 (9D105 coordination of missile sub-system functions). Therefore, it is recommended that:

-9E102 heading be revised to read: "Technology," not controlled by USML Categories IV, VIII, or XIX, for the "use" of commodities or "software" controlled by 9A001, 9A004 to 9A012, 9B001 to 9B004, 9B007, 9D001. 9D004 for MT reasons or by 9A101, 9A104 to 9A111, 9A115 to 9A119, 9B105. 9B106, 9B115 to 9B117, 9D101, 9D103, or 9D104

-proposed Related Controls (2) be deleted.

9E604
It is recommended that:

- the following be added at the end of the heading and at the end of sub-item .a:
  or "development" or "production" of related defense articles controlled under USML Category IV
  -In "Related Controls" (1), change "directly related to" to ""required" for the "use" of"