

THE SCHEDULE OF THE STRATEGIC GOODS (CONTROL) ORDER 2009

PART II

DUAL-USE GOODS THE EXPORT, TRANSHIPMENT OR BRINGING IN
TRANSIT OF WHICH, AND TECHNOLOGY THE EXPORT OR
TRANSMISSION OF WHICH, REQUIRE A PERMIT

Division 2 – List of Dual-Use Goods

<i>Product Code</i>	<i>Item Description</i>
CATEGORY 8 — MARINE	
8A	Systems, Equipment and Components
DL8A001	<p>Submersible vehicles and surface vessels, as follows:</p> <p><u>N.B.</u> <i>For equipment for submersible vehicles, see:</i></p> <ul style="list-style-type: none"> — <i>Category 5, Part 2 ‘Information Security’ for encrypted communication equipment;</i> — <i>Category 6 for sensors;</i> — <i>Categories 7 and 8 for navigation equipment;</i> — <i>Category 8A for underwater equipment.</i> <p>a. Manned, tethered submersible vehicles designed to operate at depths exceeding 1,000 m;</p> <p>b. Manned, untethered submersible vehicles, having any of the following:</p> <ol style="list-style-type: none"> 1. Designed to ‘operate autonomously’ and having a lifting capacity of all the following: <ol style="list-style-type: none"> a. 10% or more of their weight in air; <u>and</u> b. 15 kN or more; 2. Designed to operate at depths exceeding 1,000 m; <u>or</u> 3. Having all of the following: <ol style="list-style-type: none"> a. Designed to carry a crew of 4 or more; b. Designed to ‘operate autonomously’ for 10 hours or more; c. ‘Range’ of 25 nautical miles or more; <u>and</u> d. Length of 21 m or less; <p><u>Technical Notes</u></p> <ol style="list-style-type: none"> 1. <i>For the purposes of Category Code 8A001.b., ‘operate autonomously’ means fully submerged, without snorkel, all systems working and cruising</i>

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	<p><i>at minimum speed at which the submersible can safely control its depth dynamically by using its depth planes only, with no need for a support vessel or support base on the surface, sea-bed or shore, and containing a propulsion system for submerged or surface use.</i></p> <p>2. For the purposes of Category Code 8A001.b., ‘range’ means half the maximum distance a submersible vehicle can cover.</p>
	<p>c. Unmanned, tethered submersible vehicles designed to operate at depths exceeding 1,000 m and having any of the following:</p> <ol style="list-style-type: none"> 1. Designed for self-propelled manoeuvre using propulsion motors or thrusters specified in Category Code 8A002.a.2.; <u>or</u> 2. Fibre optic data link;
	<p>d. Unmanned, untethered submersible vehicles, having any of the following:</p> <ol style="list-style-type: none"> 1. Designed for deciding a course relative to any geographical reference without real-time human assistance; 2. Acoustic data or command link; <u>or</u> 3. Fibre optic data or command link exceeding 1,000 m;
	<p>e. Ocean salvage systems with a lifting capacity exceeding 5MN for salvaging objects from depths exceeding 250 m and having any of the following:</p> <ol style="list-style-type: none"> 1. Dynamic positioning systems capable of position keeping within 20 m of a given point provided by the navigation system; <u>or</u> 2. Seafloor navigation and navigation integration systems for depths exceeding 1,000 m and with positioning accuracies to within 10 m of a predetermined point;
	<p>f. Surface-effect vehicles (fully skirted variety) having all of the following:</p> <ol style="list-style-type: none"> 1. Maximum design speed, fully loaded, exceeding 30 knots in a significant wave height of 1.25 m (Sea State 3) or more; 2. Cushion pressure exceeding 3,830 Pa; <u>and</u> 3. Light-ship-to-full-load displacement ratio of less than 0.70;
	<p>g. Surface-effect vehicles (rigid sidewalls) with a maximum design speed, fully loaded, exceeding 40 knots in a significant wave height of 3.25 m (Sea State 5) or more;</p>
	<p>h. Hydrofoil vessels with active systems for automatically controlling foil systems, with a maximum design speed, fully loaded, of 40 knots or more in a significant wave height of 3.25 m (Sea State 5) or more;</p>
	<p>i. ‘Small waterplane area vessels’ having any of the following:</p> <ol style="list-style-type: none"> 1. Full load displacement exceeding 500 tonnes with a maximum design

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	<p>speed, fully loaded, exceeding 35 knots in a significant wave height of 3.25 m (Sea State 5) or more; <u>or</u></p> <p>2. Full load displacement exceeding 1,500 tonnes with a maximum design speed, fully loaded, exceeding 25 knots in a significant wave height of 4 m (Sea State 6) or more.</p> <p><i>Technical Note</i></p> <p>A 'small waterplane area vessel' is defined by the following formula: <i>waterplane area at an operational design draught less than $2 \times (\text{displaced volume at the operational design draught})^{2/3}$.</i></p>
DL8A002	<p>Marine systems, equipment and components, as follows:</p> <p><u>N.B.</u> <i>For underwater communications systems, see Category 5, Part 1 — Telecommunications.</i></p> <p>a. Systems, equipment and components, specially designed or modified for submersible vehicles and designed to operate at depths exceeding 1,000 m, as follows:</p> <ol style="list-style-type: none"> 1. Pressure housings or pressure hulls with a maximum inside chamber diameter exceeding 1.5 m; 2. Direct current propulsion motors or thrusters; 3. Umbilical cables, and connectors therefor, using optical fibre and having synthetic strength members; 4. Components manufactured from material specified in Category Code 8C001; <p><i>Technical Note</i></p> <p><i>Category Code 8A002.a.4. includes 'syntactic foam' specified in Category Code 8C001 when an intermediate stage of manufacture has been performed and it is not yet in the final component form.</i></p> <p>b. Systems specially designed or modified for the automated control of the motion of submersible vehicles specified in Category Code 8A001 using navigation data, having closed loop servo-controls and having any of the following:</p> <ol style="list-style-type: none"> 1. Enabling a vehicle to move within 10 m of a predetermined point in the water column; 2. Maintaining the position of the vehicle within 10 m of a predetermined point in the water column; <u>or</u> 3. Maintaining the position of the vehicle within 10 m while following a

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	cable on or under the seabed;
	c. Fibre optic hull penetrators or connectors;
	d. Underwater vision systems, as follows:
	1. Television systems and television cameras, as follows:
	a. Television systems (comprising camera, monitoring and signal transmission equipment) having a limiting resolution when measured in air of more than 800 lines and specially designed or modified for remote operation with a submersible vehicle;
	b. Underwater television cameras having a limiting resolution when measured in air of more than 1,100 lines;
	<p>c. Low light level television cameras specially designed or modified for underwater use and having all of the following:</p> <ol style="list-style-type: none"> 1. Image intensifier tubes specified in Category Code 6A002.a.2.a.; <u>and</u> 2. More than 150,000 “active pixels” per solid state area array; <p><i>Technical Note</i></p> <p><i>‘Limiting resolution’ is a measure of horizontal resolution usually expressed in terms of the maximum number of lines per picture height discriminated on a test chart, using IEEE Standard 208/1960 or any equivalent standard.</i></p>
	2. Systems, specially designed or modified for remote operation with an underwater vehicle, employing techniques to minimise the effects of back scatter and including range-gated illuminators or “laser” systems;
	<p>e. Photographic still cameras specially designed or modified for underwater use below 150 m, with a film format of 35 mm or larger, and having any of the following:</p> <ol style="list-style-type: none"> 1. Annotation of the film with data provided by a source external to the camera; 2. Automatic back focal distance correction; <u>or</u> 3. Automatic compensation control specially designed to permit an underwater camera housing to be usable at depths exceeding 1,000 m;
	<p>f. Electronic imaging systems, specially designed or modified for underwater use and capable of storing digitally more than 50 exposed images;</p> <p><i>Note</i></p> <p><i>Category Code 8A002.f. does not include digital cameras specially designed</i></p>

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	<i>for consumer purposes, other than those employing electronic image multiplication images.</i>
	g. Light systems specially designed or modified for underwater use, as follows:
	1. Stroboscopic light systems capable of a light output energy of more than 300 J per flash and a flash rate of more than 5 flashes per second;
	2. Argon arc light systems specially designed for use below 1,000 m;
	h. “Robots” specially designed for underwater use, controlled by using a dedicated computer and having any of the following: <ol style="list-style-type: none"> 1. Systems that control the “robot” using information from sensors which measure force or torque applied to an external object, distance to an external object, or tactile sense between the “robot” and an external object; <u>or</u> 2. The ability to exert a force of 250 N or more or a torque of 250 Nm or more and using titanium based alloys or “composite” “fibrous or filamentary” materials in their structural members;
	i. Remotely controlled articulated manipulators specially designed or modified for use with submersible vehicles, having any of the following: <ol style="list-style-type: none"> 1. Systems which control the manipulator using the information from sensors which measure the torque or force applied to an external object, or tactile sense between the manipulator and an external object; <u>or</u> 2. Controlled by proportional master-slave techniques or by using a dedicated computer and having 5 degrees of ‘freedom of movement’ or more; <p><i><u>Technical Note</u></i></p> <p><i>Only functions having proportional control using positional feedback or by using a dedicated computer are counted when determining the number of degrees of ‘freedom of movement’.</i></p>
	j. Air independent power systems, specially designed for underwater use, as follows:
	1. Brayton or Rankine cycle engine air independent power systems having any of the following: <ol style="list-style-type: none"> a. Chemical scrubber or absorber systems specially designed to remove carbon dioxide, carbon monoxide and particulates from recirculated engine exhaust; b. Systems specially designed to use a monoatomic gas; c. Devices or enclosures specially designed for underwater noise reduction in frequencies below 10 kHz, or special mounting devices

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	<p>for shock mitigation; <u>or</u></p> <p>d. Systems having all of the following:</p> <ol style="list-style-type: none"> 1. Specially designed to pressurise the products of reaction or for fuel reformation; 2. Specially designed to store the products of the reaction; <u>and</u> 3. Specially designed to discharge the products of the reaction against a pressure of 100 kPa or more;
	<p>2. Diesel cycle engine air independent systems, having all of the following:</p> <ol style="list-style-type: none"> a. Chemical scrubber or absorber systems specially designed to remove carbon dioxide, carbon monoxide and particulates from recirculated engine exhaust; b. Systems specially designed to use a monoatomic gas; c. Devices or enclosures specially designed for underwater noise reduction in frequencies below 10 kHz or special mounting devices for shock mitigation; <u>and</u> d. Specially designed exhaust systems that do not exhaust continuously the products of combustion;
	<p>3. Fuel cell air independent power systems with an output exceeding 2 kW and having any of the following:</p> <ol style="list-style-type: none"> a. Devices or enclosures specially designed for underwater noise reduction in frequencies below 10 kHz or special mounting devices for shock mitigation; <u>or</u> b. Systems having all of the following: <ol style="list-style-type: none"> 1. Specially designed to pressurise the products of reaction or for fuel reformation; 2. Specially designed to store the products of the reaction; <u>and</u> 3. Specially designed to discharge the products of the reaction against a pressure of 100 kPa or more;
	<p>4. Stirling cycle engine air independent power systems, having all of the following:</p> <ol style="list-style-type: none"> a. Devices or enclosures specially designed for underwater noise reduction in frequencies below 10 kHz or special mounting devices for shock mitigation; <u>and</u> b. Specially designed exhaust systems which discharge the products of combustion against a pressure of 100 kPa or more;
	<p>k. Skirts, seals and fingers, having any of the following:</p> <ol style="list-style-type: none"> 1. Designed for cushion pressures of 3,830 Pa or more, operating in a

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	<p>significant wave height of 1.25 m (Sea State 3) or more and specially designed for surface effect vehicles (fully skirted variety) specified in Category Code 8A001.f.; <u>or</u></p> <p>2. Designed for cushion pressures of 6,224 Pa or more, operating in a significant wave height of 3.25 m (Sea State 5) or more and specially designed for surface effect vehicles (rigid sidewalls) specified in Category Code 8A001.g.;</p> <p>1. Lift fans rated at more than 400 kW and specially designed for surface effect vehicles specified in Category Code 8A001.f. or 8A001.g.;</p> <p>m. Fully submerged subcavitating or supercavitating hydrofoils specially designed for vessels specified in Category Code 8A001.h.;</p> <p>n. Active systems specially designed or modified to control automatically the sea-induced motion of vehicles or vessels specified in Category Code 8A001.f., 8A001.g., 8A001.h. or 8A001.i.;</p> <p>o. Propellers, power transmission systems, power generation systems and noise reduction systems, as follows:</p> <p>1. Water-screw propeller or power transmission systems, as follows, specially designed for surface effect vehicles (fully skirted or rigid sidewall variety), hydrofoils or small waterplane area vessels specified in Category Code 8A001.f., 8A001.g., 8A001.h. or 8A001.i., as follows:</p> <p>a. Supercavitating, super-ventilated, partially-submerged or surface piercing propellers rated at more than 7.5 MW;</p> <p>b. Contrarotating propeller systems rated at more than 15 MW;</p> <p>c. Systems employing pre-swirl or post-swirl techniques for smoothing the flow into a propeller;</p> <p>d. Light-weight, high capacity (K factor exceeding 300) reduction gearing;</p> <p>e. Power transmission shaft systems, incorporating “composite” material components and capable of transmitting more than 1 MW;</p> <p>2. Water-screw propeller, power generation systems or transmission systems designed for use on vessels, as follows:</p> <p>a. Controllable-pitch propellers and hub assemblies rated at more than 30 MW;</p> <p>b. Internally liquid-cooled electric propulsion engines with a power output</p>

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	exceeding 2.5 MW;
	c. “Superconductive” propulsion engines, or permanent magnet electric propulsion engines, with a power output exceeding 0.1 MW;
	d. Power transmission shaft systems, incorporating “composite” material components and capable of transmitting more than 2 MW;
	e. Ventilated or base-ventilated propeller systems rated at more than 2.5 MW;
	3. Noise reduction systems designed for use on vessels of 1,000 tonnes displacement or more, as follows:
	a. Systems that attenuate underwater noise at frequencies below 500 Hz and consist of compound acoustic mounts for the acoustic isolation of diesel engines, diesel generator sets, gas turbines, gas turbine generator sets, propulsion motors or propulsion reduction gears, specially designed for sound or vibration isolation and having an intermediate mass exceeding 30% of the equipment to be mounted;
	b. Active noise reduction or cancellation systems, or magnetic bearings, specially designed for power transmission systems, and incorporating electronic control systems capable of actively reducing equipment vibration by the generation of anti-noise or anti-vibration signals directly to the source;
	p. Pumpjet propulsion systems having a power output exceeding 2.5 MW using divergent nozzle and flow conditioning vane techniques to improve propulsive efficiency or reduce propulsion-generated underwater-radiated noise;
	q. Self-contained, closed or semi-closed circuit (rebreathing) diving and underwater swimming apparatus. <i>Note</i> <i>Category Code 8A002.q. does not include an individual apparatus for personal use when accompanying its user.</i>
8B	Test, Inspection and Production Equipment
DL8B001	Water tunnels, having a background noise of less than 100 dB (reference 1 µPa, 1 Hz), in the frequency range from 0 Hz to 500 Hz and designed for measuring acoustic fields generated by a hydro-flow around propulsion system models.
8C	Materials
DL8C001	‘Syntactic foam’ designed for underwater use and having all of the following:

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	<p><u>N.B.</u> See also Category Code 8A002.a.4. a. Designed for marine depths exceeding 1,000 m; <u>and</u> b. A density less than 561 kg/m³. <u>Technical Note</u> ‘Syntactic foam’ consists of hollow spheres of plastic or glass embedded in a resin matrix.</p>
8D	Software
DL8D001	“Software” specially designed or modified for the “development”, “production” or “use” of equipment or materials specified in Category 8A, 8B or 8C.
DL8D002	Specific “software” specially designed or modified for the “development”, “production”, repair, overhaul or refurbishing (re-machining) of propellers specially designed for underwater noise reduction.
8E	Technology
DL8E001	“Technology” (according to the General Technology Note) for the “development” or “production” of equipment or materials specified in Category 8A, 8B or 8C.
DL8E002	Other “technology”, as follows:
	a. “Technology” for the “development”, “production”, repair, overhaul or refurbishing (re-machining) of propellers specially designed for underwater noise reduction;
	b. “Technology” for the overhaul or refurbishing of equipment specified in Category Code 8A001, 8A002.b., 8A002.j., 8A002.o. or 8A002.p.