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Date: Tue, Feb 8, 2011 7:55 AM
Subject: "Notice of Inquiry - CCL"

February 7, 2011

U.S. Department of Commerce

Regulatory Policy Division

Bureau of Industry and Security

Room 2705

Washington, DC 20230

Subject: Commerce Control List: Revising Descriptions of Items and Foreign Availability, [Docket No. 101112562-0577-01]

The following is a response to the request for public comments on the availability of certain items outside of certain countries (Foreign Availability) as requested in the Federal Register notice published on December 9, 2010.

In this response, foreign availability of inertial systems and the technology to create those systems, as controlled in category 7, ECCNs 7A001 through 7A003 and 7A101 through 7A103, are identified below.

These systems are now available within Wassenaar and MTCR partner countries. Major commercial suppliers of commercial inertial sensors and inertial systems include the following:

* Thales (France), which is developing the Air Data Inertial Reference System for the Airbus A350;
* JAE Electronics (Japan), which has for three decades been making high performance quartz hinge accelerometers;
* Silicon Sensing Systems (Japan), which has been making MEMS gyros used in a variety of commercial inertial and military systems; and
* Colibrys (Switzerland), which has also been producing and selling MEMS accelerometers.

The request asks for known availability of controlled items, which are available from outside the US or 37 other listed countries. The following are offered:

Item 1) Fiber Optic Gyros produced by Fizoptika Corporation in Russia. Reference the link: http://www.fizoptika.com/products/index.html

Technical assessment: The VG910 series advertised bias stability of as good as 2 deg per hour and scale factor stability of as good as 0.1 percent. Angle random walk of 0.04 deg/sqrt hr is specified. Rate range is specified as up to 300 degrees per second.

Based on the information supplied it does not appear this gyro meets the requirements to be controlled in 7A002. Its specified rate range is not 500 deg/sec and so the controls of 7A002.c do not apply. The specified bias and angular random walk do not place this gyro in 7A002.a or 7A002.b. This gyro does not appear to meet the requirements stated in 7A102 for 0.5 degree per hour drift rate stability.

This gyro appears to align with ECCN 7A994, however if the electronics in this gyro were modified to achieve 500 degrees per second, the specified bias stability and ARW appear to be sufficient that this gyro would then be controlled in 7A002.c.

Item 2) Quartz Hinge Accelerometers, dynamically tuned gyros, AHRS and IFOG based Inertial Measurement Units produced by Bricett ,

Reference the link: http://bricett.com/

These items are advertized by Bricett with offices in Turkey, with production facilities in "Asia" as identified in the advertising brochures. The following statement prominently displayed on the webpage: "Bricett does not require export licenses"

From parties that have contacted Bricett, it is said the "Asia" production facility is in China. The website provides this description of the intended end use:

Bricett's servo accelerometers INN-202 and INN-203 are designed both for commercial and military use in strap-down inertial navigation, orientation, and stabilization systems (INS - Inertial Navigation Systems, IMU - Inertial Measurement Units, AHRS - Attitude Heading

Reference Systems, IRU - Inertial Reference Units, IGS - Inertial Guidance Systems) providing advanced performance in critical Guidance, Navigation, and Control for aircraft, marine, land and other applications.

Technical Assessment:

A) Innalabs INN-202 (transferred to Bricett): Datasheets from Innalabs website in 2010 provide the data used for the assessment. The specified bias repeatability is specified as better than 80 ug for one year bias repeatability. The one year scale factor repeatability is specified as better than 50 PPM.

These specifications are sufficient that the INN-202 accelerometer would be controlled in 7A001 where the bias stability requirement is better than 130 ug and scale factor stability were better than 130 ppm. These requirements from 7A001.a which is the tighter requirement of the two performance based requirements in 7A001, the other being for accelerometers specified to operate at over 15g range. The input range stated is plus/minus 50g, and therefore this accelerometer is controlled for both 7A001.a and 7A001.b.

b) The quartz gyro technology (INN-105, 106, 107 in one, two or three axis versions) advertised appears not to be controlled in 7A002.c for bias and scale factor stability for sensors able to perform at 500 degree/second, There are versions of this quartz gyro specified at 100 deg/sec and at 3000 deg/sec each with differing specified performance. Even at 100 deg/second, the bias stability is insufficient to be controlled under 7A002.c. being specified at 216 deg/hr against a control level of 40 deg/hour. The angular random walk control in 7A002.c is also not met, being specified at 1 deg/root-hour vs a control level of 0.2 deg/root-hour.

The quartz gyro also does not appear to be controlled in 7A102 for having a drift rate stability of better than 0.5 deg/hour. The specified bias stability of the quartz gyro is at best 0.02 deg/second which correlates to 72 degrees per hour. Therefore this gyro family appears to align with ECCN 7A994.

c) An IMU is also offered by Bricett. Insufficient information is available to determine if this IMU is controlled under 7A003.d which is based on the quality of the installed sensors. Innalabs had previously posted specifications for an Inertial Reference Unit (IRU) which was available either as a 2 nautical mile per hour or 1 nautical mile per hour navigation system. This would indicate that this unit uses navigation grade sensors and so would be controlled under 7A003.d.

Item 3) Inertial Sensor and System technology from Innalabs (Russia),

Reference the link: http://www.innalabs.com/

The accelerometers, dynamically tuned gyros, IMUs and AHRS offered by Bricett were originally developed in Russia by Innalabs and that technology was sold to Bricett. This is clearly stated in the Innalabs website referenced above.

Innalabs offers a coriolis type MEMS based gyro with advertized bias stability as low as 0.1 deg/hour and ARW as low as 0.01 deg/root-hour.

Regards,

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