effect. However, this effect was anticipated somehow, because the satellite was commissioned at the same time as the implementation of its regulatory framework with a rather large safety margin. The experience gathered will be applied when determining the criteria of the sensitivity check in the forthcoming statutory ordinance, so that the criteria support the dissemination of data.

2590 Federal Gazette (BGBl.) Year 2007 Part I No. 58, issued in Bonn on 28 November 2007

Act to give Protection against the Security Risk to the Federal Republic of Germany by the Dissemination of High-Grade Earth Remote Sensing Data (Satellite Data Security Act — SatDSiG)

of November 23, 2007

Unofficial Translation

The Federal Parliament (Bundestag) has passed the following Act:

Outline of contents

Part 1
Scope of Application

Section 1

Scope of Application

(1) This Act applies

1. to the operation of high-grade earth remote sensing systems

a) by German nationals or by legal persons or associations of persons under German law,

b) by foreign legal persons or foreign associations of persons with their head office within the territory of the Federal Republic of Germany, or

c) if inalterable sequences of instructions to command the orbital system are transmitted from within the territory of the Federal Republic of Germany;

2. to the handling of data generated by a high-grade earth remote sensing system as described in Number 1 until the moment of their dissemination

a) by German nationals or by legal persons or associations of persons under German law,

b) by foreign legal persons or foreign associations of persons with their head office within the territory of the Federal Republic of Germany, or

c) where the data are disseminated from within the territory of the Federal Republic of Germany.

(2) This Act does not apply to the operation of high-grade earth remote sensing systems by a State agency with military or intelligence duties, provided that the possibility of unauthorized third parties gaining knowledge of the generated data is excluded. This Act may not be applied to the operation of a high-grade earth remote sensing system that is permitted under the applicable law of another Member State of the European Union and the latter is comparable to

the provisions and to the protected interests of this Act. The responsible authority may waive the application of the Act if the legal provisions of a third country satisfy the requirements of Sentence 2 and if there is an international treaty between the third country and the Federal Republic of Germany which affirms the comparability of the provisions and protected interests.

Section 2

Definitions

(1) For the purposes of this Act

1. The "Operator" is the person who has the control of the earth remote sensing system under his own responsibility;

2. "Data" are signals from one or more sensor(s) of an orbital or transport system and all products derived from the same, regardless of their degree of processing and their type of storage or representation; a unit of data for the purpose of Section 27 is each individual detail;

3. The "Data Provider" is any person who disseminates data generated by a high-grade earth remote sensing system;

4. A "high-grade earth remote sensing system" is a space-based transport or orbital system, including the ground segment, by means of which data about the earth are generated, where its sensor is itself/sensors are themselves technically capable either alone or in combination with one or more other sensors of generating data with a particularly high information content within the meaning of Para (2);

5. A "sensor" is a part of a space-based earth remote sensing system, which records electromagnetic waves of all spectral ranges or gravimetric fields;

6. "Dissemination" means bringing data into circulation or making data accessible to third parties.

(2) The Federal Ministry of Economics and Technology shall determine by statutory ordinance without the consent of the

Federal Council the conditions under which data have particularly high information content. The information content shall thereby be determined according to

1. geometric resolution,

2. spectral coverage,

3. the number of spectral channels and the spectral resolution,

4. the radiometric resolution and

5. the temporal resolution.

The information content of microwave sensors or radar sensors shall also be determined according to

1. the polarization characteristics and

2. the phase history.

The provisions consider the possible effects of disseminating data with particularly high information content on the vital security interests of the Federal Republic of Germany, the peaceful co-existence of nations and the foreign relations of the Federal Republic of Germany.

Part 2

Operation of a high-grade earth remote sensing system

Section 3

Operator license

(1) The operation of a high-grade earth remote sensing system requires an operator license.

(2) Subsequent alterations of the operator license are permitted if this is necessary to ensure that the requirements for the operator license are adhered in the event of subsequent occurrences or an amended legal provision.

(3) This does not affect the requirements made by other statutes on the operation of a high-grade earth remote sensing

system. The operator license is granted without prejudice to the private rights of third parties.

(4) If a space-based earth remote sensing system is not high-grade, the responsible authority shall affirm the same on application by the operator. If the need for an operator license is subsequently dispensed with by amendment of the provisions of Section 2(2), the operator license is extinguished.

Section 4

Operator license requirements

(1) Operator license shall be granted if

1. the operator of the high-grade earth remote sensing system possesses the requisite degree of reliability,

2. the sequences of instructions to

a) command the orbital or transport system,

b) control of the sensor(s),

c) control of the transmission of data by the orbital or transport system to a ground segment of the Operator or to a person admitted under Section 11 and

d) control of the dissemination of data directly by the orbital or transport system

are produced within the Federal Republic of Germany and protected against alteration by third parties by means of a method tested and declared suitable by the Federal Office for Information Security (BSI),

3. the transmission of the data by the orbital or transport system to a ground segment of the operator or to a person admitted under Section 11, the transmission of data between various locations of the ground segment of the operator, and transmission of the data by the operator to a person admitted under Section 11, are protected from becoming known to unauthorized third parties by means of a method tested and declared suitable by the Federal Office

for Information Security (Bundesamt für Sicherheit in der Informationstechnik - BSI), and

4. the operator has taken technical and organizational measures preventing unauthorized persons from gaining access to the command installations of the high-grade earth remote sensing system and to the installations for receiving, processing and storing the data and entry to the control rooms used for the same.

(2) The operator shall arrange for persons having access to the command installations of a high-grade earth remote sensing system or to the installations for receiving, processing and storing the data of such systems to undergo a simple security check in conformity with the Security Check Clearance Act (Sicherheitsüberprüfungsgesetz - SÜG) which is performed by the responsible authority.

Section 5

Obligation of documentation

The operator of a high-grade earth remote sensing system is obliged to record

1. the sequences of instructions to command the orbital or transport system,

2. the sequences of instructions to control the sensor(s),

3. details of encryption processes, codes used and code management and

4. the time and path of the command sequences.

The records under Para. (1) shall be filed for at least five years after execution of the relevant command sequence and be made available for inspection by the relevant authority.

Section 6

Obligation of notification

(1) The operator of a high-grade earth remote sensing system shall notify the responsible authority in writing without delay of

1. Changes in facts which it is obliged to notify to the commercial register (Handelsregister) or register of associations (Vereinsregister), and

a) if the operator is organized under the legal form of a partnership, changes in the articles of partnership or

b) if the operator is organized in the legal form of a limited-liability company (GmbH), changes in the persons of the corporate members or in the extent of their participation,

2. Actual indications that a third party is transmitting or attempting to transmit the sequences of instructions to command the orbital or transport system, to control the sensor(s) or to control the transmission of data from the orbital or transport system, and

3. any changes made to the measures taken under Section 4 (1) No. 4.

(2) The operator of a high-grade earth remote sensing system shall notify the responsible authority without delay in writing of the persons admissible under Section 11 to whom he transmits data.

Section 7

Obligation to provide information

(1) The operator of a high-grade earth remote sensing system shall provide the responsible authority with information on demand and submit documents, if this is required to monitor adherence to this Act and the statutory ordinances passed under this Act.

(2) Persons obliged to provide information may refuse to answer any questions if the answers would expose those persons or relatives of those persons as defined in Section 383(1) Nos. 1 to 3 German Code of Civil Procedure (Zivilprozessordnung - ZPO) to the risk of criminal prosecution or to proceedings under the statute on administrative offenses (Gesetz über Ordnungswidrigkeiten - OWiG).

Section 8

Rights of entry and examination

The officers of the responsible authority are authorized to gain entry to the business and operating premises of the Operator of a high-grade earth remote sensing system during normal business and operating hours and to undertake the examinations required in performance of their duties; Sections 196, 197 (1) Sentences 1 and 2 and (2), Section 198, Section 199(2) and Sections 200 to 202 German Tax Code (Abgabenordnung - AO) apply mutatis mutandis.

Section 9

Measures of the responsible authorities

(1) The responsible authority can take measures that are necessary towards the operator of a high-grade earth remote sensing system in the individual case to ensure the due performance of the operator's obligations.

(2) The responsible authority can, in particular

1. temporarily prohibit the transmission of data to a ground segment or to a person admitted under Section 11 or

2. order that operation be transferred wholly or in part to a special commissioner.

(3) The operator of the high-grade earth remote sensing system pays the costs incurred for the appointment of the special commissioner including the compensation payable to the same. The responsible authority determines the amount of compensation.

Section 10

Acquisition of enterprises and participating interests in enterprises; business takeovers

(1) The acquisition of an enterprise that operates a high-grade earth remote sensing system or the acquisition of a direct or indirect participating interest in such an enterprise by

1. foreign nationals or by legal persons or associations of persons under foreign law, or

2. legal persons or associations of persons under German law in which foreign nationals or legal persons or associations of persons under foreign law hold at least 25 per cent of the voting rights

shall be notified to the responsible authority by the buyer without delay. This does not apply if, after acquiring the share, the buyer's direct or indirect share of voting rights in the relevant enterprise does not attain the level of 25 per cent. When calculating the buyer's share of voting rights, the shares of other enterprises held in the enterprise to be acquired shall be attributed to the buyer if the buyer holds at least 25 per cent or more of the voting rights in these other enterprises. The responsible authority can prohibit the acquisition within one month of receiving the complete documents governing the sale, if this is necessary to safeguard the vital security interests of the Federal Republic of Germany.

(2) The complete or partial takeover of the operation of a high-grade earth remote sensing system or parts thereof requires a permit if the takeover dispenses with the need for an operator license under Section 3(1). The acquirer shall apply for the granting of the permit. The permit shall be granted if the further operation of the high-grade earth remote sensing system or of parts of the high-grade earth remote sensing system does not endanger the vital security interests of the Federal Republic of Germany.

Part 3
Dissemination of data

Chapter 1
General requirements

Section 11

Dissemination license

(1) A data provider wishing to disseminate data requires a dissemination license.

(2) Subsequent alterations of the dissemination license are permitted if this is required in order to ensure that the requirements for the dissemination license are adhered to in the event of subsequent occurrences or an amended legal provision.

Section 12

Dissemination license requirements

(1) The dissemination license shall be granted if

1. the data provider possesses the requisite degree of reliability,

2. the data provider has taken technical and organizational measures preventing unauthorized persons from gaining access to the installations for receiving, processing or storing the data of a high-grade earth remote sensing system or entry to the control rooms used for the same.

3. The transmission of the data between various locations of the ground segment of the data provider and the transmission of the data to a different data provider are protected from becoming known to unauthorized third parties by means of a method tested and declared suitable by the Federal Office for Information Security (BSI) and

4. the dissemination of the data generated by a high-grade earth remote sensing system is guaranteed to be secure according to the state of the art.

(2) The data provider shall arrange for persons having access to the command installations of a high-grade earth remote sensing system or to the installations for receiving, processing and storing the data of such systems to undergo a simple security check in conformity with the Security Clearance Check Act (Sicherheitsüberprüfungsgesetz - SÜG) undertaken by the responsible authority.

Section 13

Obligation of notification

The data provider shall notify the responsible authority without delay in writing

1. of changes in facts which it is obliged to notify to the commercial register (Handelsregister) or register of associations (Vereinsregister), and

a) if the data provider is organized under the legal form of a partnership, any changes in the articles of partnership or

b) if the data provider is organized in the legal form of a limited-liability company (GmbH), changes in the persons of the corporate members or in the extent of their participation,

2. of any changes made to the measures taken under Section 12 (1) No. 2 and

3. of any actual indications that the security of data generated using a high-grade earth remote sensing system is not maintained.

Section 14

Obligation to provide information

(1) The data provider shall provide the responsible authority with information on demand and submit documents if this is required for monitoring adherence to this Act and the statutory ordinances passed under this Act.

(2) The data provider may refuse to answer any questions if the answers would expose that person or a relative of that person as defined in Section 383(1) Nos. 1 to 3 of the German Code of Civil Procedure (ZPO) to criminal prosecution or to proceedings under the statute on administrative offenses.

Section 15

Rights of entry and inspection

The officers of the responsible authority are authorized to gain entry to the business and operating premises of the data provider during normal operating and business hours and to undertake the examinations required in performance of their duties; Section 196, Section 197(1) Sentence 1 and 2 and (2), Section 198, Section 199(2) and Section 200 to Section 202 of the German Tax Code (Abgabenordnung - AO) apply mutatis mutandis.

Section 16

Measures of the responsible authorities

The responsible authority can order the data provider in the individual case to take the measures required for due performance of the data provider's duties. It may, in particular,

1. require the dissemination of the data to be adapted to the state of the art, or

2. temporarily prohibit the dissemination of data.

Chapter 2

Process of data dissemination

Section 17

Sensitivity check

(1) The data provider who wishes to comply with a request for the dissemination of data of a high-grade earth remote sensing system shall examine the request for its sensitivity as defined in the statutory ordinance under Para. (3).

(2) A request is sensitive if

1. the information content of the data obtained as a result of the sensor-operating mode used and form of processing used,

2. the target area represented by the data,

3. the time of generation of the data and the period of time between generation of the data and compliance with the request and

4. the ground segments to which the data are to be transmitted,

when viewed as a whole, reveal the possibility of harm being caused to the vital security interests of the Federal Republic of Germany, to the peaceful co-existence of nations or to the foreign relations of the Federal Republic of Germany. The view as a whole according to Sentence 1 takes account of the personal characteristics of the requesting party and should take account of the persons who prospectively come into contact with the data as provided for in the request, including their usual places of residence. The data provider shall check the identity of the requesting party in suitable manner and require the names of the persons who prospectively come into contact with the data as provided for in the request, including their usual places of residence.

(3) The Federal Ministry of Economics and Technology shall, by agreement with the Federal Ministry of Defense, the Foreign Office and the Federal Ministry of the Interior, determine provisions in a statutory ordinance without the consent of the Federal Council regarding the conditions under Para (2) in which there is

a possibility of harm being caused to the aforementioned interests requiring protection. It also takes account of the decisions of the authorities concerned, regarding the security requirements that have to be updated at regular intervals, the obligations assumed and agreements entered into by the Federal Republic of Germany with the Member States of the European Union, the parties to the North Atlantic Treaty of April 4, 1949 (federal gazette BGBl. 1955 II p. 289) as amended by the Protocol of October 17, 1951 (federal gazette BGBl. 1955 II p. 293) and Australia, Japan, New Zealand and Switzerland, the state of the art with regard to the generation of data with particularly high information content, the existing rules under which the requesting party could further transmit the data and the availability of comparable data on international markets. It is necessary to define in the statutory ordinance the procedure according to which the view as a whole required by Para (2). Sentences 1 and 2 is to take place. The statutory ordinance shall not give the Data Provider any scope for own discretion as to whether a request is sensitive. The Data Provider may be notified of forthcoming amendments of the statutory ordinance. The Federal Ministry of Economics and Technology can, by agreement with the Federal Ministry of Defense and the Foreign Office, transfer the authority wholly or partly to the Federal Office of Economics and Export Control (Bundesamt für Wirtschaft und Ausfuhrkontrolle - BAFA) by statutory ordinance without the consent of the Federal Council.

Section 18

Obligation of documentation

(1) The data provider is obliged to record all requests for the dissemination of data of a high-grade earth remote sensing system. This covers

1. the actual request including the persons who prospectively come into contact with the data as provided for in the request and their usual places of residence,

2. checking the identity of the requesting party,

3. the procedure and the results of the check of the sensitivity of the request under Section 17 (1) in conjunction with the provisions of a legal ordinance under Section 17 (3),

4. the data-generation order placed with the Operator of the high-grade earth remote sensing system,

5. the receiving logs of ground segments,

6. the details of encryption processes, codes used and code management,

7. the reports of the processing sequences of the ground segment,

8. the meta data of the data, in particular, target area, time of generation of the data, sensor operating mode and data-processing parameters,

9. the transfer logs or delivery notes including delivery confirmations with regard to compliance with the request and

10. the invoices.

Sentences 1 and 2 Nos. 4 to 10 apply mutatis mutandis if data are disseminated without a request. If a request for the dissemination of data of a high-grade earth remote sensing system is executed out of an archive, a reference to the other logs and documentation suffices for the logging and documentation purposes of Sentence 2 Nos. 4 and 5.

(2) The records under Para (1) shall be filed for at least five years after generation of the relevant data and be held available for inspection by the responsible authority.

(3) The data provider is obliged to have ready similar products and documentation of third-party ground segments, which he has used in complying with the request for dissemina-

tion of data of a high-grade earth remote sensing system. Para (2) applies mutatis mutandis.

(4) The data provider shall notify the requesting party of the storage of the data and the possibility of inspection by the authorities.

Section 19

Permit

(1) If a data provider wishes to comply with a sensitive request, he requires a permit. This also applies in the event that he wishes to disseminate data of a high-grade earth remote sensing system without a request.

(2) The permit of Para (1) shall be granted if the dissemination of data in the individual case does not harm the vital security interests of the Federal Republic of Germany, does not disturb the peaceful co-existence of nations and does not substantially impair the foreign relations of the Federal Republic of Germany.

(3) The responsible authority should decide on the application for the permit within one month of its receipt at the latest.

(4) The permit is granted without prejudice to the private rights of third parties.

Section 20

Collective permit

The responsible authority may grant a collective permit if the data provider wishes

1. to make representations of data with strongly reduced information content or meta data available to anyone or

2. to comply with sensitive requests made by the same person for an indefinite number of quantities of data of a high-grade earth remote sensing system.

The collective permit is granted subject to the conditions of Section 19(2) and may only be granted if a right of revocation is reserved. A collective permit as per Sentence 1 No. 1 shall determine the maximum information content that the data may have. A collective permit under Sentence 1 No. 2 may only be granted for a specific period, which should not exceed three years.

Part 4

Priority compliance with requests from the Federal Republic of Germany

Section 21

Obligations of the Data Provider

The data provider is obliged to give priority to complying with requests for the dissemination of data from the Federal Republic of Germany, represented by the Federal Chancellery, over all other requests, in the following cases:

1. in the event of the casus foederis in accordance with Article 5 of the North Atlantic Treaty of April 4, 1949 (federal gazette BGBl. 1955 II p. 289) as amended by the Protocol of October 17, 1951 (federal gazette BGBl. 1955 II p. 293),

2. in case of defense as per Article 115 letters a to German Basic Law (GG),

3. if the requirements for the internal state of emergency as per Article 91 Basic Law are satisfied,

4. in the event of tension as per Article 80a of the Basic Law or

5. if there is a current danger to military or civil forces of the Federal Republic of Germany deployed in a foreign country or to employees of the diplomatic service employed at German foreign embassies, who are working to counter a concrete impairment to the external security of the Federal Republic of Germany.

Section 22

Obligations of the Operator

The operator of a high-grade earth remote sensing system is obliged, in the events of Section 21, to give priority treatment to orders for the generation of data for the Federal Republic of Germany over all other orders for the generation of data. Without prejudice to Sentence 1, the request for earth remote sensing from the Federal Republic of Germany, represented by the Federal Chancellery, should be made to a data provider. If the request is nevertheless made to the operator of a high-grade earth remote sensing system, the operator does not require any license under Section 11 for the dissemination of these data.

Section 23

Remuneration

(1) Without prejudice to the obligations arising under this Part, remuneration may be required for the generation of data under Section 22 and for compliance with the request under Section 21. The remuneration should correspond to the relevant average market price.

(2) All further claims against the Federal Republic of Germany are excluded.

Part 5

Implementing regulations

Section 24

Responsibility

(1) The responsible authority under this Act, subject to Paras 2 and 3, is the Federal Office of Economics and Export Control (BAFA).

(2) Responsible for performing a security check under Section 4 (2) and Section 12 (2) is the Federal Ministry of Economics and Technology.

(3) A notification under Section 10 (1) Sentence 1 is made to the Federal Ministry of Economics and Technology. The Federal Ministry of Economics and Technology, by agreement with the Foreign Office and the Federal Ministry of Defense, is responsible for prohibiting the acquisition of enterprises or shares in enterprises under Section 10 (1) Sentence 4.

Section 25

Procedure

(1) An operator license under Section 3(1), a dissemination license under Section 11(1) and a permit under Section 10(2) Sentence 1, Section 19(1) Sentences 1 and 2 and under Section 20 Sentence 1 each require submission of a written application. A notification under Section 10(1) Sentence 1 shall be made in writing. An application or a notification shall be accompanied by the documents required to examine the conditions for granting the application.

(2) The Federal Office for Information Security (BSI) shall be consulted at an early stage to determine the suitability of a method under Section 4(1) Nos. 2 and 3 and Section 12(1) No. 3. The BSI provides the applicant with documents on the contents and procedure of the examination.

(3) Orders issued by an administrative authority under this Act shall be issued and served in writing.

Section 26

Fees and expenses

The responsible authorities charge fees and expenses for official acts under this Act. The Federal Ministry of Economics and Technology is empowered to determine in a statutory ordinance without the consent of the Federal Council the fee headings, fee amounts and the expenses to be refunded and to provide for fixed rates or outline rates. The fee rates shall be set in such a way as to cover the costs associated with the official acts.

The significance, economic value or other utility value of the official act to the beneficiary will be given due consideration.

Section 27

Transmission of personal data, operating and business secrets

(1) The responsible authority can transmit personal data which have become known to it in the performance of its duties under this Act to other authorities if it believes that the knowledge of such personal data is required

1. to avert an endangerment to the vital security interests of the Federal Republic of Germany or to prevent a disturbance of the peaceful coexistence of nations or a substantial disturbance of the foreign relations of the Federal Republic of Germany or

2. to prevent or to prosecute criminal offenses.

Transmission under Sentence 1 No. 2 is permitted only if there is actual cause to assume that criminal offenses have been committed or will be committed in the future. Furthermore, the responsible authority may transmit these personal data to the federal intelligence agency (BND) if the requirements of Section 8(3) of the BND statute (BND-Gesetz) are met. The third party to whom the personal data are to be transmitted may only use these data for the purpose for which they have been transmitted.

In criminal proceedings for a breach of this Act, courts and public prosecutors may transmit personal data to the highest federal authorities only if this is required to avert an endangerment to the vital security interests of the Federal Republic of Germany or to prevent a disturbance of the peaceful coexistence of nations or a substantial impairment of the foreign relations of the Federal Republic of Germany. The personal data obtained under Sentence 1 may only be used for the purposes specified therein. The third party to whom the personal data are transmitted may only further transmit the same to a public authority not specified in Sentence 1 if the interest in the use of the per-

sonal data transmitted considerably outweighs the interest in secrecy of the person affected and the investigative purpose of the criminal proceedings cannot be endangered.

(2) Business and operating secrets are deemed equivalent to personal data.

Part 6

Administrative-fine provisions, penal provisions

Section 28

Administrative offenses

(1) A person commits an administrative offense if that person willfully or recklessly

1.operates a high-grade earth remote sensing system under Section 3(1) without an Operator license,

2.in breach of Section 10(1) Sentence 1 fails to make a notification or fails to make such notification on time or in full or correctly under Section 10(1) Sentence 1 or acts in breach of an enforceable order under Section 10(1) Sentence 4

3.without a permit

a) takes over the operation of a high-grade earth remote sensing system or parts of such a system under Section 10(2) Sentence 1,

b) complies with a sensitive request under Section 19(1) Sentence 1 or

c) disseminates data under Section 19(1) Sentence 2 without a request,

4. breaches an enforceable order under Section 9(1), (2) or Section 16.

5. disseminates data under Section 11(1) without a Dissemination license,

6. in breach of Section 17(1) in conjunction with the provisions of a statutory ordinance based on Section 17(3) fails

to examine the sensitivity of a request for the dissemination of data of a high-grade earth remote sensing system, fails to do so correctly or in full or to do so in the prescribed manner,

7. in breach of Section 5(1) or Section 18(1) Sentences 1 and 2, fails to make a record, fails to do so correctly or in full or fails to file the record or fails to do so for at least five years under Section 5(2) or Section 18(2) or

8. in breach of Section 18(3) fails to hold ready the logs and documentation specified therein.

(2) A person commits an administrative offense if

1. in breach of Section 6(1) Sentence 13 that person fails to report a crime, fails to do so correctly or in full or on time or

2. in breach of Section 7(1) or Section 14(1) fails to provide information, fails to do so correctly or in full or on time.

(3) An administrative offense as defined in Para. (1), Nos. 1 to 5 is punishable by a fine of up to five hundred thousand euros; in Para. (1), Nos. 6 to 8 by a fine of up to fifty thousand euros and in Para (2) by a fine of up to twenty-five thousand euros.

Section 29

Criminal offenses

(1) Liable to punishment of a term of imprisonment of up to five years or a fine is a person who commits a deliberate act specified in Section 28(1) Nos. 1 to 6 that is capable of substantially endangering

1. the vital security interests of the Federal Republic of Germany,

2. the peaceful co-existence of nations or

3. the foreign relations of the Federal Republic of Germany.

(2) The attempt is punishable.

Section 30

Offenses committed in foreign countries by German citizens

Section 29 applies independently of the law of the place of the crime, also in foreign countries, if the offender was a German citizen at the time of the offense.

Section 31

Criminal proceedings and administrative-fine proceedings

(1) Where a local court (Amtsgericht) has material jurisdiction for criminal offenses under Section 29, the local court in whose district the Regional Court (Landgericht) has its seat has local jurisdiction.

(2) Section 49(2), Section 63(2) and (3) Sentence 1 and Section 76(1) and (4) Act on Administrative Offenses (OWiG) apply mutatis mutandis in criminal proceedings and in court proceedings with regard to the participation of the administrative authorities in the proceedings of the public prosecutor.

Part 7
Transitional and final provisions

Section 32

Amendment of the Federal Constitutional Protection Act (Bundesverfassungsschutzgesetz - BVerfSchG)

Section 3(2) Federal Constitutional Protection Act (BVerfSchG) of December 20, 1990 (federal gazette BGBl. I p. 2954, 2970), most recently amended by Article 6(1) of the Act of August 19, 2007 (federal gazette BGBl. I p. 1970), is amended as follows:

1. In Sentence 1, the full stop after No. 3 shall be replaced by a comma and the following No. 4 shall be appended:

" 4. in the examination of persons in other cases determined by statute."

2. In Sentence 2, the indication "Nos. 1 and 2" is replaced by the indication "Nos. 1, 2 and 4".

Section 33

Amendment of the Security Clearance Check Act (Sicherheitsüberprüfungsgesetz - SÜG)

The Security Check Act of April 20, 1994 (federal gazette BGBl. I p. 867), most recently amended by Article 10 (5) of the Act of January 5, 2007 (federal gazette BGBl. I p. 2), is amended as follows:

1. In Section 1(2), the full stop after No.3 shall be replaced by a comma and the following No. 4 is appended:

"4. is subject to a security check under other provisions, insofar as reference is made to this statute."

2. In Section 3(2) Sentence 1, the indication "under Section 3(2) No. 1" shall be replaced by the indication "under Section 3(2) Nos. 1, 2 and 4".

3. In Section 24, the phrase "to be entrusted with a security-sensitive activity at a non-state organization under Section 1(4)" shall be is replaced by the phrase "to be entrusted with a security-sensitive activity at a non-state organization under Section 1(2) No. 4 or Section 1(4)".

Section 34

Transitional rule

(1) The operation of a high-grade earth remote sensing system prevailing at the time that this Act comes into force is deemed to have an operator license until a final and non-appealable decision is given on the application for an operator license if such application is made within three months of this Act coming into force.

(2) Para (1) applies mutatis mutandis to the dissemination license as data provider. The obligations of the data provider under Section 17(1) and Section 19(1) are deemed to have been satisfied until the statutory ordinance under Section 17(3) comes into force.

Section 35

Coming into force

(1) Section 2(2), Section 17(3) and Section 26 Sentences 2 to 4 come into force on the day after their promulgation.

(2) This Act otherwise comes into force on 1 December 2007.

The constitutional rights of the Federal Council (Bundesrat) are preserved.

The above Act is hereby executed.

It shall be promulgated in the Federal Gazette (Bundesgesetzblatt).

Berlin, November 23, 2007

The Federal President
Horst Köhler

The Federal Chancellor
Dr. Angela Merkel

The Federal Minister for Economics and Technology
Michael Glos

THE U.N. GENERAL ASSEMBLY RESOLUTION 62/101 OF 17 DECEMBER 2007 ON "RECOMMENDATIONS ON ENHANCING THE PRACTICE OF STATES AND INTERNATIONAL INTERGOVERNMENTAL ORGANIZATIONS IN REGISTERING SPACE OBJECTS"*

*Kai-Uwe Schrogl*** *& Niklas Hedman****

INTRODUCTION

On 17 December 2007, the U.N. General Assembly adopted the Resolution on "Recommendations on enhancing the practice of States and international intergovernmental organizations in registering space objects."[1] This Resolution emerged from the agenda item on "Practice of States and international organizations in registering space objects," which had been debated from 2005 to 2007 in the Legal Subcommittee (LSC) of the United

* The authors present their personal views. This is an updated version of the paper "The results of the UNCOPUOS Legal Subcommittee Working Group on 'Practice of States and international organizations in registering space objects' 2005-2007", in: Proceedings of the Fiftieth Colloquium on the Law of Outer Space, International Institute of Space Law, 2008.

** Kai-Uwe Schrogl is the Director of the European Space Policy Institute (ESPI), Vienna, Austria. Until 2007 he worked as Head of the Corporate Development and External Relations Department in the German Aerospace Center DLR. He has served as chairman to various international committees (i.a. the International relations Committee of ESA). He is member of the Board of Directors of IISL and member of IAA, where he chairs the Commission on Space Policy, Economics and Regulations. He lectures as honorary professor at Tübingen University, Germany.

*** Niklas Hedman is Chief of Committee Services and Research Section of the United Nations Office for Outer Space Affairs. Before joining the United Nations in 2006, he worked in the Swedish Ministry for Foreign Affairs, in particular in the areas of Law of the Sea, Space Law and Space Affairs, as well as on issues related to disarmament and non-proliferation. He represented Sweden to UNCOPUOS for 10 years and held various positions, including Chairman of the UNISPACE III+5 report A/59/174. He is a member of the ILA Space Law Committee and IISL.

1 Recommendations on enhancing the practice of States and international intergovernmental organizations in registering space objects, G.A. Res. 62/101 (Dec. 17, 2007) [hereinafter Recommendations].

Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS). The purpose of the corresponding work plan was to enhance the adherence to the Registration Convention.[2] States had identified this as necessary since the registration practice had been rather unsatisfactory during the preceding years and new problems had arisen with the application of the Convention. Such problems had already been touched upon during the deliberations on the legal concept of the "launching State," which led to the adoption of the respective U.N. General Assembly resolution in 2004.

A Working Group dealt with the subject of registration under a multi-year work plan. In 2004, States and international organizations reported on their practice of registering space objects. In 2005, the Working Group started its work with the examination of these reports and turned in 2006 to the identification of common practices and began to draft recommendations for enhancing the adherence to the Registration Convention. In 2007 the work of the Working Group was finalized and a draft U.N. General Assembly resolution was adopted by the UNCOPUOS Main Committee containing recommendations on enhancing the adherence to the Registration Convention. This draft resolution was adopted by the U.N. General Assembly as UNGA Res. 62/101 of 17 December 2007 entitled "Recommendations on enhancing the practice of States and international intergovernmental organizations in registering space objects."[3]

This article describes the work of the Working Group and assesses its achievements as contained in the UNGA resolution. The co-authors have been chairman (Kai-Uwe Schrogl, 2006-2007) and chairman/secretary (Niklas Hedman, 2005/2006-2007) respectively of this working group.

1. Background to the Working Group

The agenda item on "Practice of States and international organizations in registering space objects" (Registration Prac-

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[2] Convention on Registration of Objects Launched into Outer Space - U.N. General Assembly resolution 3235 (XXIX), annex [hereinafter Registration Convention].

[3] Recommendations, *supra* note 1.

tice) demonstrates a concrete example of a highly productive work conducted by the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space (UNCOPUOS). The deliberations under this agenda item under a multi-year work plan can be regarded as a follow-up of the deliberations on the legal concept of the "launching State." These were conducted from 2000 to 2002 and were the first example of the successful implementation of the new tool of a multi-year work plan in the Legal Subcommittee. The good results of this mode of work[4] made the delegations confident that another effort should be taken to select a topic, appropriate to be treated in such a way. In fact, the discussions under the agenda item "launching State" had made it clear that the registration practice was an area, where an in-depth investigation seemed to be necessary.

It was the delegation of the United States, which gave the specific impetus through explaining its problems with the registration of foreign payloads on board of the Space Shuttle. Other delegations agreed on the importance of this topic and the need of the Subcommittee to continue with substantive work, and submitted in 2003 a working paper with a proposed work plan.[5] The same year the new agenda item on Registration Practice was adopted by the Legal Subcommittee and work plan was laid out.[6] This multi-year work plan contained the following steps:

"2004: Presentation by Member States and international organizations of reports on their practices in registering space objects and submitting the required information to the Office for Outer Space Affairs for inclusion on the Register.

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[4] *See* Kai-Uwe Schrogl & Charles Davies, *A New Look at the Concept of the "Launching State". The Results of the UNCOPUOS Legal Subcommittee Working Group 2000-2002*, 51, 3 ZLW 359-381 (2002). The U.N. General Assembly Resolution was adopted in 2004. *See* Application of the Concept of the 'Launching State', UNGA Res. 59/115 (Dec. 10, 2004).

[5] New Agenda Item on Practice in Registering Space Objects of States and International Organizations, Working paper submitted by Australia, Austria, Canada, the Czech Republic, France, Germany, Greece, India, Japan, the Netherlands, Sweden, Ukraine, the United Kingdom of Great Britain and Northern Ireland and the United States of America, U.N. Doc. A/AC.105/C.2/L.241 and Add.1 (2003).

[6] It might be noted that the question of registration practice was already part of the working paper submitted by Germany on behalf of nineteen other European States. *See* U.N. Doc. A/AC.105/C.2/L.211/Rev.1 (Mar. 30, 1998) on improving the Registration Convention., which initiated the agenda item on the "launching State".

2005: Examination by a working group of the reports submitted by Member States and international organizations in 2004.

2006: Identification of the working group of common practices and drafting of recommendations for enhancing adherence to the Registration Convention.

2007: Report to the Committee on the Peaceful Uses of Outer Space."

The mandate was as restricted as the mandate under the work plan on the "launching State" neither modifications of the Convention should be proposed nor an authoritative interpretation of the Convention was envisaged. The item should simply lead to non-binding recommendations on enhancing the adherence to the Convention – and not the Convention itself. As with the work plan on the "launching State" it was very much up to the Chairman of the working group to lead the discussions to any specific resulting format, with the options ranging from a mere statement to formal conclusions.

Throughout the work plan of the Subcommittee and its Working Group on this item, member States of the Committee actively participated in the discussions and several States provided background information in accordance with the work plan.[7] The Working Group had before it several background documents prepared by the Secretariat and the Chairman of the Working Group[8]:

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[7] Reports were received from the European Space Agency and the following States: Australia, Czech Republic, France, Germany, Italy, Morocco, Myanmar, Netherlands, Peru, Republic of Korea, Russian Federation and Sweden (*See* U.N. Docs. A/AC.105/C.2/L.250 and Corr.1 and Add.1, A/AC.105/C.2/2004/CRP.3 and A/AC.105/C.2/2004/CRP.7), as well as a note by the Secretariat containing replies received from Germany and Morocco on harmonization of practices, non-registration of space objects, transfer of ownership and registration/non-registration of foreign space objects (*See* U.N. Doc. A/AC.105/867 and Corr.1).

[8] *See* Practice of States and International Organizations in Registering Space Objects - Background paper by the Secretariat, U.N. Doc. A/AC.105/C.2/L.255 and Corr.1 and 2 of (Jan. 25 2005); Practice of States and International Organizations in Registering Space Objects: Benefits of Becoming a Party to the Convention on Registration of Objects, Launched into Outer Space, U.N. Doc. A/AC.105/C.2/L.262 (Feb. 9, 2006); Practice of States and international organizations in registering space objects – Working paper submitted by the Chairman of the Working Group U.N. Doc. A/AC.105/C.2/L.266 of 30 January 2007; and Information on the Activities of International Intergovernmental and Non-Governmental Organizations Relating to Space law – Note by the Secre-

The plenary of the Subcommittee and the Working Group also heard presentations by the Secretariat on the United Nations Register, by Germany on findings of the Project 2001 Plus workshop on current issues in registration of space objects,[9] and by the European Space Agency on the registration policy of ESA.

2. Problems in registration practice and legal issues addressed in the Working Group

The background paper by the Secretariat, presented to the Working Group during its first year of work, in 2005, (U.N. Doc. A/AC.105/C.2/L.255) provided the information necessary for the substantive work, thus highlighting several issues of concern in the current practice of registering space objects. The following examples taken from that report give a broad picture of the variances in registration practice.

At the outset, the United Nations, through the United Nations Office for Outer Space Affairs (UNOOSA),[10] maintains two separate, yet complementary, registers on objects launched into outer space. One register is maintained with information provided by States in accordance with U.N. General Assembly resolution 1721 B (XVI) of 20 December 1961 and the other with

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tariat Containing Comments by the Space Law Committee of the International Law Association on Registration Issues, U.N. Doc. A/AC.105/C.2/L.265. In addition, the Secretariat prepared two Conference Room Papers: U.N. Doc. A/AC.105/C.2/2005/CRP.10 with statistical information on the number of space objects launched and registered or unregistered during the period 1957-2004, and U.N. Doc. A/AC.105/C.2/2006/CRP.5 with statistical information on States and intergovernmental (or former intergovernmental) organizations that operate or have operated space objects in Earth orbit or beyond 1957-2005.

[9] *See* Stephan Hobe, Bernhard Schmidt-Tedd, Kai-Uwe Schrogl, & Stephan Mick (eds.), *Current Issues in the Registration of Space Objects*, *in* PROCEEDINGS OF THE PROJECT 2001 PLUS WORKSHOP (Berlin Jan. 20-21, 2005). *See also* Bernhard Schmidt-Tedd & Michael Gerhard, How to Adapt the Present Regime for Registration of Space Objects to New Developments in Space Applications?, IAC-05-E.6.4.08; and Bernhard Schmidt-Tedd & Michael Gerhard, *Registration of Space Objects – Which are the Advantages for States Resulting from Registration*, *in* SPACE LAW – CURRENT PROBLEMS AND PERSPECTIVES FOR FUTURE REGULATION 121-140 (Marietta Benkö & Kai-Uwe Schrogl, eds., Utrecht 2005).

[10] Information on the U.N. registers, official registration documents and an on-line index of objects launched into Outer Space, as well as treaty status and texts of the space law treaties can be found on the website of the Office (www.unoosa.org).

information provided by States Parties to the Registration Convention.[11] The Resolution Register is today used to provide information submitted by States that are not parties to the Registration Convention. While the Registration Convention specifies the detailed information to be provided, Resolution 1721 B (XVI) does not. In the majority of cases, States provide basic orbital information similar to that requested in the Registration Convention. However, in some cases, other types of information are provided, including data sets known as "two-line elements," which, using mathematical formulae, can predict the space object's position relative to the Earth at a given time as well as the basic orbital characteristics required under the Convention. Article IV of the Registration Convention specifies the types of information to be provided on a space object and the time frame for submission.[12] States that register space objects in accordance with U.N. General Assembly resolution 1721 B (XVI) generally provide the same information as required under Article IV of the Convention. Most States that operate launch vehicles for their own use or for customers provide information on a bimonthly, quarterly or yearly basis. Others provide information on a case-by-case basis. This practice can range from immediately after the launch to months afterwards. Furthermore, the Registration Convention and resolution 1721 B (XVI) do not require provision of the geostationary satellite orbit (GSO) position. However, of the States that have registered space objects in this orbit, most provide the GSO position. In the majority of cases, GSO positions are registered with the International Telecommunication Union.

Another concern relates to the fact that as of 1 January 2005, only sixteen of the forty-five parties to the Registration Convention had informed the Secretary-General of the establishment of national registers, in accordance with Article II, paragraph 1.

In some instances, a space object has been registered by one State in compliance with the Registration Convention and also

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[11] Resolution on the International Co-Operation in the Peaceful Uses of Outer Space, G.A. Res. 1721 B (XVI) [hereinafter Resolution 1721 B (XVI)].

[12] Registration Convention, *supra* note 2, at art. IV.

registered by another State under Resolution 1721 B (XVI). Multiple launching States can also result in the registration of a space object being overlooked. Consequently, a State may refer to a space object that its launch capabilities placed in orbit as being carried on another State's national registry as opposed to its own. A common issue affecting which Party should register a space object is when ownership is transferred from a commercial entity of one State Party to a commercial entity of another State Party. It should be noted that the Registration Convention has no specific provision for the "change of ownership" of a space object. Such changes in ownership have become common for geostationary communication satellites, which are leased or even sold years after their launch, so that the original State of registry may no longer have control over the space object. In most instances, such transfers of ownership are not reported to the United Nations.

In instances where a space object is placed in orbit on behalf of another State, parties jointly determine the State of registry, pursuant to Article II of the Registration Convention.[13] In some cases, the State that provides the launch services registers the "foreign" object in its national registry. China has registered a number of space objects on behalf of its international launch clients. In cases where the State that provides the launch vehicle does not register the "foreign" functional objects, it only registers space objects associated with the launch vehicle, such as third stages and shrouds. France and the United States follow this practice. Other States include a notification in registration submissions that their launch vehicle were used to place "foreign" space objects into Earth orbit but do not include that object on its national registry. The Russian Federation follows this practice. France, in addition to registering space objects associated with the launch vehicle, also follows this practice. In other cases, States do not provide any information on such objects.

In practice, all States provide the common name of a space object. Most States provide more than one identifier for a space object. Some States also use the Committee on Space Research

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[13] *Id.* at art. II.

(COSPAR) international designator. This designator is nominally assigned by the World Warning Agency for Rockets and Satellites (SPACEWARN) on behalf of COSPAR, which has been done since 1957. The international designator is based on the year of launch, the number of successful launches and the priority/order of the space object's deployment/detection. The international designator is made publicly available through SPACEWARN bulletins, which are in turn made available by facsimile and on the Internet. Other States provide designators based on entries in their national registry, in which case the common name is also provided. Some States also use a designator assigned in a catalogue of space objects maintained by the United States Strategic Command (USSTRATCOM). The catalogue is based on observational/radar data and is made available through a US Air Force Space Command pilot programme. This numerical designator is based on the numerical sequence in which the United States space surveillance network detects an object. In a few cases, States provide the international designator, the USSTRATCOM catalogue designator and the common name.

Some States provide basic orbital parameters for the initial orbit of a space object. Other States provide parameters for the intermediate (parking) orbit and still others for the final operational orbit. Most States provide the nodal period in minutes. On occasion, the nodal period is provided in hours and minutes. This practice is most common when States register space objects in the GSO.

The majority of States use Greenwich Mean Time (GMT), also referred to as Coordinated Universal Time (UTC). GMT is the standard against which all other time zones in the world are referenced. In other cases, parties use the local time at the place of launch or the national meridian time. Most States provide detailed information on where a space object is launched. The information can be specific as the launch facility from which the object was launched. In cases where a space object is deployed from a parent object (i.e. the deployment of a satellite from the Space Shuttle or a space station), some States provide the date of launch of the parent space object, while others provide the time and date of deployment from the parent space object. A few

States indicate only the territory from which the space object was placed into Earth orbit or beyond. Instances can occur when an object that was launched from outside a State's territory is not reported as being so.

The amount of information on the function of a space object ranges from a two-word statement of its function to a detailed account of its mission objectives, the science payload and radio frequency plans. Most States provide very basic information on the space object's function. In the case of States that launch space objects frequently, a standardized list of functions has been developed by each party, which is applied to a space objects on a case-by-case basis.

Article IV, paragraph 3, of the Registration Convention requires Parties to notify the Secretary-General, to the greatest extent feasible and as soon as practicable, of space objects concerning which it has previously transmitted information, and which have been but no longer are in Earth orbit.[14] In practice, of the sixteen Parties to the Convention that have objects that have re-entered Earth's atmosphere, only eight have forwarded this information to the United Nations. Of the States that have, some provide the actual date of re-entry and others provide information on a monthly basis, that is, an objects ceased to exist by the end of a particular month. Some use GMT as a time reference, while others use national time meridians when an object is no longer in Earth orbit. It should be noted that the lack of information or non-specific dates of decay affect the ability to identify a space object that has returned to Earth.

Of the approximately 5,730 functional space objects launched into Earth orbit or beyond since 1957 (as of 1 January 2005), 390 have not been registered with the United Nations in accordance with the Registration Convention or U.N. Resolution 1721 B (XVI). Of the thirty-nine States that have launched space objects into Earth orbit or beyond, sixteen are not Parties to the Convention. The presence of multiple parties in the launch of a space object may contribute to non-registration of space objects. Cases of non-registration are also due to the un-

[14] *Id.* at art. IV (3).

derstanding by States that have acceded to the Registration Convention that registration is only required of objects launched after accession. Consequently, States may have space objects in Earth orbit that are not registered because their launch occurred prior to the State acceding to the Convention. Modules of space stations are sometimes not registered with the United Nations. This may occur even when the modules are the primary payload for the mission. Some space objects that perform national security functions have not been registered by some Parties to the Registration Convention. Probes and recoverable capsules that separate from a space object and either return to Earth or land on another celestial body are also sometimes not registered.

The examples above demonstrate the wide spectrum of registration practice. The Working Group considered not only technical issues of registration. Legal issues and concerns were on the table throughout the workplan. The main legal issues brought up related to the relationship between responsibility under Article VI of the Outer Space Treaty,[15] liability under Article VII,[16] jurisdiction and control under Article VIII,[17] and how the provisions of the Outer Space Treaty relate to the regime laid down in the Liability Convention,[18] and Registration Convention.[19] The concept of the launching State, in particular the element of procurement, also acquired attention in the debate.

In the debate of the Working Group, the view was expressed that when a space object was transferred from the jurisdiction and control of the State of registry to the jurisdiction and control of another State, the State of registry, following the transfer of ownership, would no longer bear international responsibility for the space object under article VI of the Outer Space Treaty. Another concern raised in the Working Group,

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[15] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, art. VI, Oct. 10, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205.

[16] *Id.* at art. VII.

[17] *Id.* at art. VIII.

[18] Convention on International Liability for Damage Caused by Space Objects, Sept. 1, 1972, 24 U.S.T. 2389, 961 U.N.T.S. 187.

[19] Registration Convention, *supra* note 2.

was that registration of a space object other than by a launching State was not conceivable under the Registration Convention. The obligation to register provided for by the Registration Convention had a different purpose than was provided for under article VIII of the Outer Space Treaty, which had to be linked to the liability system set up by article VII of the Outer Space Treaty and by the Liability Convention. The point was also made that, with regard to jurisdiction and control over a space object launched by multiple launching States, the State that had registered a space object would retain jurisdiction and control over that object according to article VIII of the Outer Space Treaty. In case jurisdiction and control over the space object were to be changed, an appropriate agreement had to be concluded among launching States in accordance with Article II of the Registration Convention.

As can be seen from the elements of conclusions of the Working Group, as constituted by the resolution (see below), most recommendations target practical and technical issues for enhancing registration practice. Operative paragraphs 3(a-d) and 4(a-b), however, go deeper into legal issues, and define in carefully negotiated consensus language the minimum common denominator for the interpretation of various central legal concerns related, in particular, to a case of multiple launching States and the transfer of ownership of space objects in orbit. These elements in the resolution might look simple at the outset, but in fact provide quite a strong common understanding at the political level on the application of the provisions laid down in the legal regime on outer space. There will of course be views that the resolution is without teeth in a legal sense and that the Working Group failed to provide a thorough legal analysis, but taking into consideration the political dimension involved, the text nevertheless demonstrate outstanding progress. This is furthermore shown by the development in language between paragraph 3 of the "launching State" resolution, with its recommendations on voluntary information regarding on-orbit transfer of ownership, and the detailed recommendations put forward in paragraph 4 of the new resolution on registration practice.

3. The conduct of the Working Group

The Working Group, in 2005 and 2006, was informed of different practices by States in registering space objects and in their respective implementation of the Registration Convention. In particular, the focus of attention was on the establishment and maintenance of national registries and the activities of authorities responsible for maintaining such national registries, criteria for including space objects in national registries, procedures applied in cases where more than one party was involved in the launch or where private entities or international organizations were involved, and practice relating to the registration of functional and non-functional objects.

Information provided by member States in the plenary in 2004 and during the first year of the Working Group in 2005, together with the information provided in the background paper by the Secretariat, opened for the agreement in the Working Group to focus its attention in the following year, on the following four main issues:

a) Harmonization of practices (administrative and practical);

b) Non-registration of space objects;

c) Practice with regard to transfer of ownership of space objects in orbit;

d) Practice with regard to registration/non-registration of "foreign" space objects.

On the basis of those issues, the Working Group in 2006 agreed on elements that could constitute the basis for consensus on specific recommendations and conclusions to be included in the report to be prepared by the Subcommittee in 2007.

The breakthrough on the road to a General Assembly resolution occurred in early 2007. Following the presentations by States and international organizations and the strategic layout of the work during the first two years supported by highly valued background analyses prepared by the Secretariat, the work-

ing group held intersessional consultations (during January 2007 in Berlin),[20] paving the way for adopting concrete recommendations in the regular session of the Legal Subcommittee in March/April of this year. It was only for the second time in recent history that the Subcommittee stimulated such intersessional consultations, but it proved to be useful for the chairman and the secretariat to prepare a comprehensive set of recommendations and finalize them in the form of the draft U.N. General Assembly resolution already after only three years of deliberations (while the translation of the recommendations from the working group on the "launching State" into a General Assembly resolution took two more years). This speedy conclusions were made possible through an interim agreement at the Legal Subcommittee session and a finalization at the Main Committee session in June on the basis of a paper presented by the Chairman of the working group,[21] which reflected the agreement that the results from this endeavour was substantive enough for a U.N. General Assembly resolution, which was consequently adopted by the General Assembly on 17 December 2007 without a vote.

4. The U.N. General Assembly resolution 62/101

The U.N. General Assembly resolution (see the Annex to this paper) reflects all issues discussed in the course of the work plan and contains concrete recommendations where an agreement could be reached. The resolution is composed of a preamble (preamble paragraphs 1-12), four sets of recommendations (paragraphs 1-4), and a set of requests addressed to UNOOSA (paragraph 5) as well as a concluding recommendation (paragraph 6).

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[20] *See* Practice of States and International Organizations in Registering Space Objects, U.N. Doc. A/AC.105/C.2/L.266 (Jan. 30, 2007). Working paper submitted by the Chairman of the Working Group on the Practice of States and International Organizations in Registering Space Objects.

[21] Practice of States and International Organizations in Registering Space Objects, U.N. Doc. A/AC.105/2007/CRP.5 (June 5, 2007). Elements of conclusions of the Working Group.

The preamble contains in preamble paragraph 7 the most important benefits for States of becoming parties to the Registration Convention (utility of the Register, identification of space objects). Following the noting in preamble paragraph 8 of the obligations of States parties to the Convention (furnishing of information, establishing a registry), preamble paragraph 9 provides a picture of what positive effects a universal accession and acceptance, implementation, and observance of the provisions of the Registration Convention could have (i.a. contribution to common procedures). Preamble paragraph 10 then leads to a central statement by highlighting the actual framework conditions, which lead to need for action (in particular the emergence of non-governmental actors). This paragraph – taken from the preamble of the U.N. General Assembly resolution on the "launching State" – is important in the way that it reiterates the joint assessment of the States, how space activities have changed during the past years. Preamble paragraphs 11 and 12 finally contain the desire of States to achieve a most complete registration and to enhance the adherence to the Convention.

The first set of recommendations (paragraph 1) calls upon States to ratify and accede to the Convention and for international intergovernmental organizations to declare their acceptance of the rights and obligations under the Convention. The second set of recommendations (paragraph 2) contains a number of concrete proposals in order to achieve a harmonization of practices (i.a. specific rules with regard to the uniformity in the type of information, suggestions for additional information, and transparency in the designation of focal points for the registries). These two sets of recommendations aim at making the Register and the registries more up to date and more uniform so that they can stay a relevant source of information besides their legal consequence.

The third set of recommendations (paragraph 3) provides the core element of the resolution, since it tackles four areas, which have been the causes for incomplete registration in the recent past. They comprise first the registration of space objects operated by international intergovernmental organizations, where a general fallback option is proposed (such organizations

– respectively the responsible States – have in the course of their privatizations drastically neglected the registration of their space objects). Secondly, it deals with the growing number of providers of launch facilities, which should not lead to situations where it is too complicated or where it is "forgotten" to determine the State that should register the space object. In addition, it suggests a way to deal with joint launches of space objects and finally proposes a way to find appropriate States to register in the nowadays broad sector of private space activities. With this set of recommendations the identification of the changed space environment is dramatically highlighted. This set of recommendations has only declaratory character and is non-binding for States, but if the application of existing international law will not be uniform in the future, formal amendments of the treaties might actually be inescapable. This would then be the only way of maintaining the basic principles of the space law regime (responsibility, liability) in a level-playing field, where flags of convenience will be made impossible. The States will then have to be more courageous than simply drafting U.N. General Assembly resolutions with restricted scope.

Another epitome of the new situation is contained in the third set of recommendations. It deals with the issue of transfer of ownership of space objects in orbit, already identified by the U.N. General Assembly resolution on the "launching State" (paragraph 4). For the cases of "changes in the supervision of a space object in orbit" (this legal expression relating to Article VI of the Outer Space Treaty was used in the text instead of "transfer of ownership") some proposals are made about the content of information to be provided and who should be in charge of that.

The second last operative paragraph deals with a request to UNOOSA to make available registration forms and provide transparency on information to be provided by the States on their contact points and national registries. Finally, States and international organizations are recommended to report on new developments relating to their practice in registering space objects.

The perspectives for the resolution are that States will consider reflecting the recommendations in their national regulatory practice. Since numerous States are currently working on

such regulation, it was very timely to agree on specific elements. The recommendations aiming a greater transparency might also be implemented soon by the respective actors (States, international organizations and UNOOSA). The high visibility of a U.N. General Assembly resolution will certainly help to keep track of the developments in this field.

Another positive impact is the proof that multi-year work plans are useful and successful tools for the UNCOPUOS Legal Subcommittee. The agenda items on the "launching State" and the Registration Practice have both lead to U.N. General Assembly resolutions containing substantive recommendations. While they cannot replace real law-making, they can at least highlight – through this kind of soft law – the needs for development in the practice of implementing the provisions of space law. In this spirit, the successful conclusion of the agenda item on Registration Practice was the impetus for the adoption of a new agenda item, which will also be dealt with under a multi-year work plan (2008-2011) in the framework of a working group. The topic will be "General exchange of information on national legislation relevant to the peaceful exploration and use of outer space". This item will bring together recommendations by the both preceding agenda items and although the title is formulated in the most cautious possible way ("General exchange of information") it will again be up to the Chairperson and the joint will of member States of the Committee, whether they will aim for and accept meaningful and substantive results.

ANNEX

U.N. General Assembly Resolution 62/101 of 17 December 2007: "Recommendations on enhancing the practice of States and international intergovernmental organizations in registering space objects"

The General Assembly,

Recalling the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including

the Moon and Other Celestial Bodies[22] (Outer Space Treaty), in particular articles VIII and XI,

Recalling also the Convention on Registration of Objects Launched into Outer Space,[23]

Recalling further its resolution 1721 B (XVI) of 20 December 1961,

Recalling its resolution 41/66 of 3 December 1986,

Taking note of the report of the Committee on the Peaceful Uses of Outer Space on its fiftieth session[24] and the report of the Legal Subcommittee on its forty-sixth session, in particular the conclusions of the Working Group on the Practice of States and International Organizations in Registering Space Objects, annexed to the report of the Legal Subcommittee,[25]

Noting that nothing in the conclusions of the Working Group or in the present resolution constitutes an authoritative interpretation of or a proposed amendment to the Registration Convention,

Bearing in mind the benefits for States of becoming parties to the Registration Convention and that, by acceding to, implementing and observing the provisions of the Registration Convention, States:

(*a*) Enhance the utility of the Register of Objects Launched into Outer Space established under article III of the Registration Convention, in which information furnished by States and international intergovernmental organizations conducting space activities that have declared their acceptance of the rights and obligations under the Registration Convention is recorded;

(*b*) Benefit from additional means and procedures that assist in the identification of space objects, including, in particular, in accordance with article VI of the Registration Convention,

Noting that States parties to the Registration Convention and international intergovernmental organizations conducting

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[22] United Nations, *Treaty Series*, vol. 610, No. 8843.

[23] Ibid., vol. 1023, No. 15020.

[24] *Official Records of the General Assembly, Sixty-second Session, Supplement No. 20* (A/62/20), paras. 209-215.

[25] A/AC.105/891, annex III, appendix.

space activities, having declared their acceptance of the rights and obligations under the Convention, shall furnish information to the Secretary-General in accordance with the Convention and shall establish an appropriate registry and inform the Secretary-General of the establishment of such a registry in accordance with the Convention,

Considering that universal accession to and acceptance, implementation and observance of the provisions of the Registration Convention:

(*a*) Lead to increased establishment of appropriate registries;

(*b*) Contribute to the development of procedures and mechanisms for the maintenance of appropriate registries and the provision of information to the Register of Objects Launched into Outer Space;

(*c*) Contribute to common procedures, at the national and international levels, for registering space objects with the Register;

(*d*) Contribute to uniformity with regard to the information to be furnished and recorded in the Register concerning space objects listed in the appropriate registries;

(*e*) Contribute to the receipt of and recording in the Register of additional information concerning space objects on the appropriate registries and information on objects that are no longer in Earth orbit,

Noting that changes in space activities since the Registration Convention entered into force include the continuous development of new technologies, an increase in the number of States carrying out space activities, an increase in international cooperation in the peaceful uses of outer space and an increase in activities carried out by non-governmental entities, as well as partnerships formed by non-governmental entities from more than one country,

Desirous of achieving the most complete registration of space objects,

Desirous also of enhancing adherence to the Registration Convention,

1. *Recommends*, with regard to adherence to the Registration Convention,[2] that:

(*a*) States that have not yet ratified or acceded to the Registration Convention should become parties to it in accordance with their domestic law and, until they become parties, furnish information in accordance with General Assembly resolution 1721 B (XVI);

(*b*) International intergovernmental organizations conducting space activities that have not yet declared their acceptance of the rights and obligations under the Registration Convention should do so in accordance with article VII of the Convention;

2. *Also recommends*, with regard to the harmonization of practices, that:

(*a*) Consideration should be given to achieving uniformity in the type of information to be provided to the Secretary-General on the registration of space objects, and such information could include, inter alia:

(i) The Committee on Space Research international designator, where appropriate;

(ii) Coordinated Universal Time as the time reference for the date of launch;

(iii) Kilometres, minutes and degrees as the standard units for basic orbital parameters;

(iv) Any useful information relating to the function of the space object in addition to the general function requested by the Registration Convention;

(*b*) Consideration should be given to the furnishing of additional appropriate information to the Secretary-General on the following areas:

(i) The geostationary orbit location, where appropriate;

(ii) Any change of status in operations (inter alia, when a space object is no longer functional);

(iii) The approximate date of decay or re-entry, if States are capable of verifying that information;

(iv) The date and physical conditions of moving a space object to a disposal orbit;

(v) Web links to official information on space objects;

(*c*) States conducting space activities and international intergovernmental organizations that have declared their acceptance of the rights and obligations under the Registration Convention should, when they have designated focal points for their

appropriate registries, provide the Office for Outer Space Affairs of the Secretariat with the contact details of those focal points;

3.*Further recommends*, in order to achieve the most complete registration of space objects, that:

(*a*) Due to the complexity of the responsibility structure in international intergovernmental organizations conducting space activities, a solution should be sought in cases where an international intergovernmental organization conducting space activities has not yet declared its acceptance of the rights and obligations under the Registration Convention, and a general backup solution should be provided for registration by international intergovernmental organizations conducting space activities in cases where there is no consensus on registration among the States members of such organizations;

(*b*) The State from whose territory or facility a space object has been launched should, in the absence of prior agreement, contact States or international intergovernmental organizations that could qualify as "launching States" to jointly determine which State or entity should register the space object;

(*c*) In cases of joint launches of space objects, each space object should be registered separately and, without prejudice to the rights and obligations of States, space objects should be included, in accordance with international law, including the relevant United Nations treaties on outer space, in the appropriate registry of the State responsible for the operation of the space object under article VI of the Outer Space Treaty;[1]

(*d*) States should encourage launch service providers under their jurisdiction to advise the owner and/or operator of the space object to address the appropriate States on the registration of that space object;

4. *Recommends* that, following the change in supervision of a space object in orbit:

(*a*) The State of registry, in cooperation with the appropriate State according to article VI of the Outer Space Treaty, could furnish to the Secretary-General additional information, such as:

(i) The date of change in supervision;

(ii) The identification of the new owner or operator;

(iii) Any change of orbital position;

(iv) Any change of function of the space object;

(*b*) If there is no State of registry, the appropriate State according to article VI of the Outer Space Treaty could furnish the above information to the Secretary-General;

5. *Requests* the Office for Outer Space Affairs:

(*a*) To make available to all States and international intergovernmental organizations a model registration form reflecting the information to be provided to the Office for Outer Space Affairs, to assist them in their submission of registration information;

(*b*) To make public, through its website, the contact details of the focal points;

(*c*) To establish web links on its website to the appropriate registries that are available on the Internet;

6. *Recommends* that States and international intergovernmental organizations should report to the Office for Outer Space Affairs on new developments relating to their practice in registering space objects.

COMMENTARY

LOST IN SPACE:

A PRACTITIONER'S FIRST-HAND PERSPECTIVE ON REFORMING THE U.S.'S OBSOLETE, ARROGANT, AND COUNTERPRODUCTIVE EXPORT CONTROL REGIME FOR SPACE-RELATED SYSTEMS AND TECHNOLOGIES

Mike N. Gold[1*]

I. INTRODUCTION

In Science Fiction, Earth is often faced with a variety of space-based menaces, from evil alien robots to rogue asteroids. However, in reality, the greatest threat to developing a new and

[1] Michael N. Gold has served as Corporate Counsel and head of Bigelow Aerospace's Washington, DC area office since 2003. In this capacity Mr. Gold has overseen and been responsible for export control compliance for the company's interactions with all foreign parties. More specifically, Mr. Gold supervised and managed all technical interactions between Bigelow Aerospace and ISC Kosmotras which took place in Dnepropetrovsk, Ukraine, Moscow, and Yasny, Russia. Mr. Gold is a graduate of the University of Pennsylvania Law School, where he founded and served as the first Coordinating Editor of the Journal of Constitutional Law. Mr. Gold is a member of the New York and District of Columbia State Bars.

[*] I would like to dedicate this article to: Robert T. Bigelow, whose vision and courage have made dreams possible; my wife, for tolerating my long working hours at home and extended absences abroad; and to my newborn son, it is for him and his generation that we are trying to build a better, brighter, and more peaceful future.

robust space industry in America is none other than the U.S. Government itself, a force so powerful that it would leave even invading Martians weak with fear and dread.

Specifically, the obsolete and poorly enforced International Traffic in Arms Regulations (ITAR) have become an albatross around U.S. companies' necks, hindering innovation and stunting development.[2]

The great irony is that, in stark contrast to U.S. export control's twin policy goals of maintaining domestic preeminence in the aerospace field and supporting national security, the ITAR is having exactly the opposite effect.[3] Since 1999, when all space-related systems were returned to the United States Munitions List (USML), America's leadership in commercial space capabilities has eroded, while Russian, European, and Asian entities have expanded and deepened their growing dominance.

All too often explicit criticism of the ITAR is either overly vague or made by those who have not had substantive interactions with the regulations. This has led to many government officials either dismissing various complaints outright or failing to identify proper solutions to act upon. This article is intended to provide a critique of the failings of the U.S. export control regime based on the first-hand experiences of the author. Moreover, each example of export control breakdowns are accompanied by a suggested means of remedying or at least ameliorating future problems.

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[2] Center for Strategic and International Studies, *Briefing of the Working Group on the Health of the U.S. Space Industrial Base and the Impact of Export Controls,* at 10, Executive Summary, Findings 10 & 11 (Feb. 2008) [hereinafter CSIS].

> Finding 10: The U.S. share of the global space markets is steadily declining, and U.S. companies are finding it increasingly difficult to participate in foreign space markets. Finding 11: Export controls are adversely affecting U.S. companies' ability to compete for foreign space business, particularly in the 2nd and 3rd tier. And it is the 2nd/3rd tier of the industry that is the source of much innovation, and is normally the most engaged in the global market place in the aerospace/defense sector."

Id.

[3] "There are rapidly emerging foreign space capabilities and the U.S. does not control their proliferation.", *Id*. at 8, Finding 4. "The current export control policy has not prevented the rise of foreign space capabilities and in some cases has encouraged it (ITAR-free space products)." *Id*. at Finding 6.

II. A BRIEF HISTORY OF COMMERCIAL SPACE EXPORT CONTROL

In the 1980s the commercial space field was still in its infancy. Commercial launches were few and infrequent and revenues were low.[4] During this period, space systems, such as satellites, were controlled by the Department of State and, just as they are now, were under the auspices of the ITAR.[5] However, toward the end of the decade, when the field began to blossom, permission was given to expand launch opportunities overseas. For example, in 1988, the Reagan Administration approved the sale and launch of communications satellites to China, to be placed into orbit over the course of nine launches.[6]

By the early 90s, the export control regime for commercial satellites was further liberalized. Under the first President Bush dual-use items, including some telecommunication satellites, were removed from the USML.[7] Jurisdiction over these systems was similarly transferred from the Department of State to the Department of Commerce.[8] Although this was certainly a positive change, the U.S. export control regime was already on the verge of obsolescence. As a matter of fact, part of the reason the transfer from State to Commerce took place was that the U.S. had become the *only* nation that still treated commercial telecommunication satellites as munitions.[9]

Later on in the decade (by 1996), under President Clinton after some internal governmental debate, export control jurisdiction for all communication satellites (commsats) was transferred away from State and placed exclusively under the jurisdiction of the Department of Commerce.[10]

However, Commerce's purview over commsats was soon undone by events that had occurred even before Commerce had assumed regulatory control. In 1995 and 1996 China suffered

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[4] FAA - Commercial Space Data – Historical Launch Data, http://www.faa.gov/about/office_org/headquarters_offices/ast/launch_data/historical_launch/.

[5] Ryan Zelnio, *A Short History of Export Control Policy*, THE SPACE REV. (Jan. 9, 2006), http://www.thespacereview.com/article/528/1.

[6] *Id*.

[7] *Id*.

[8] *Id*.

[9] *Id*.

[10] *Id*.

two Long March rocket failures. The ill-fated Long March rockets carried, respectively, commsats produced by Hughes and Loral.[11] Subsequently, both Hughes and Loral produced launch failure analyses that were required for insurance purposes. The Department of Commerce approved the full transfer of this information to the Chinese and the insurers under the auspices of a previous license granted in 1994.[12] This move created a great deal of controversy, and resulted in the following situation, best described below in an excerpt from *The Space Review*:

> This analysis created a major controversy, as it was unclear whether Commerce had the authority to approve such an export. A [C]ongressional review determined that these launch failure reviews were conducted without required Department of State export licenses, and communicated technical information to the PRC in violation of ITAR. This investigation led to the inclusion of a provision in the Strom Thurmond National Defense Authorization Act in 1998 in that [it] returned control of all satellites and related technologies to the Department of State. This was accomplished by the removal of said items from the Commerce list of dual-use items in the Export Administration Regulations and placing them on the State Department's United States Munitions List, controlled under section 38 of the Arms Export Control Act. In addition, a provision was added that the President must certify to Congress 15 days in advance that any transfer of satellite technology to China would not harm US launch companies and/or help Chinese missile technology. – Ryan Zelnio, *The Space Review*, January 9th, 2006

Under pressure from the then GOP-controlled Congress,[13] the Clinton Administration was essentially forced to accept a Department of State regime that placed *all* space-related equipment and hardware on the USML, bringing space technology squarely under the auspices of the ITAR.

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[11] *Id*.
[12] *Id*.
[13] Taylor Dinerman, *Fixing ITAR: The Saga Continues*, THE SPACE REV. (May 16, 2005), http://www.thespacereview.com/article/374/1.

Since this move was completed in 1999, the once dominant U.S. commsat manufacturing sector has seen its control of the market drop from a comfortable eighty three percent to fifty percent.[14] European competitors such as Alcatel Alenia have doubled their market share, U.S. entities are withdrawing from international contracts, and China has of course continued to purchase the same or better technology from European and Israeli suppliers, costing U.S. companies as much as $3 billion in Chinese-related business alone.[15] *In short, if the objective of the 1998 export control reforms expanding the ITAR were to cripple domestic U.S. capabilities, lose billions of dollars, and bolster European competition all without impacting China, then we should rest assured that the mission has been accomplished.*

The purpose of the space-related provisions of the ITAR/USML is to prevent enemy and potential unfriendly nations from gaining and developing advanced space technology. Instead, as it's currently implemented, the only nation whose aerospace capabilities have been blunted by ITAR is the U.S. itself. Not only does ITAR fail to accomplish its stated goals, the regulations have just the opposite effect,[16] serving as a fine example of a completely counterproductive and ignorant national policy.

Of course, Washington has not exactly excelled of late in effectively tackling complex international issues. Moreover, important matters such as the ill-advised quagmire in Iraq and increasing difficulties in Afghanistan are justifiably dominating policy makers' time. However, the good news is that we don't necessarily need to turn to Washington, or at least Capitol Hill, for a solution. Instead, despite being under the USML, ITAR, and State, much can be done to dramatically improve the current regulatory regime via relatively modest reforms that could be enacted unilaterally by the Directorate of Defense Trade

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[14] Ryan Zelnio, *The Effects of Export Control on the Space Industry*, THE SPACE REV. (Jan. 16, 2006), http://www.thespacereview.com/article/533/1.

[15] *Id*.

[16] CSIS, *supra* note 2, at 8, Finding 6. "The grand strategic intent of the space export controls is not being achieved … In some cases, the space export control policy is running counter to the national space policy".

Controls (DDTC) and the Defense Technology Security Administration (DTSA).

What follows is a description of challenges, organized by legal vehicle/activity, and based on real-life examples that the author encountered while supporting the Genesis I and Genesis II programs which took place (from an export control perspective) over the course of 2004 - 2007.[17] As mentioned previously, after describing each difficulty a potential remedy is proposed that could prevent future problems from occurring.

III. TECHNICAL ASSISTANCE AGREEMENTS

PROBLEM: Timing

The Technical Assistance Agreement (TAA)[18] to collaborate with our Russian/Ukrainian launch provider ISC Kosmotras was filed on March 15, 2004 and was approved on July 8th of the same year. Adding the few days to a week that it took to actually receive the paperwork, the review and approval process lasted three full months. Although DDTC claims that it usually processes TAAs in 60 days or less, I have rarely found this to be the case. However, even 90 days wouldn't be too onerous, if in fact the process were over after those 90 days. Unfortunately, receiving TAA approval is often not the end but just the beginning of a fairly lengthy process.

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[17] The Genesis I and Genesis II pathfinder spacecraft were developed by Bigelow Aerospace ("BA"), an entrepreneurial company dedicated to revolutionizing space commerce by producing low-cost, next-generation orbital habitats. Genesis I and II are subscale prototypes designed to test and validate BA's engineering concepts and operations. Both spacecraft flew on the Dnepr launch vehicle, a converted SS-18 rocket (the SS-18 is otherwise used to deliver nuclear warheads and many are still in service today), which literally made this a 'swords into plowshares' program. The launch vehicles were sold to BA by ISC Kosmotras, a joint Russian-Ukrainian company based in Moscow. Kosmotras was also responsible for conducting the launch. Both launches took place from an active nuclear Russian Strategic Rocket Forces Base near the town of Yasny in the Orenburg Region of Russia. Genesis I was the first payload to be launched from what is now referred to as the Yasny Space and Missile Complex.

[18] A TAA provides a company with the authority to transmit technical information (or "defense services" in the misleading parlance of the ITAR regime) to a foreign entity. Nominally, TAAs identify the parties involved in the project, what the effort is going to entail, the purpose of the collaboration, and a description as to the type of information that will be shared. The TAA is a relatively broad and general document.

In the international aerospace arena, TAA approvals inevitably come with five or more pages of standard provisos which are caveats that limit the powers of the license. Often, these provisos are overly broad, too restrictive, or just plain wrong, and, after approval, a licensee will need to work with the DDTC to rectify any such problems. In my experience, this process can take an additional month to three months depending on DDTC's response time and the complexity of the issue.

Furthermore, a common proviso, particularly for working with a Russian entity, is to draft and implement a Technology Transfer Control Plan (TTCP).[19] Developing a TTCP can also be a lengthy and prolonged process, although since the TTCP is handled directly by the DTSA Space Directorate and not the DDTC, response times are much shorter and the feedback is often more sophisticated and accurate. However, even with the enhanced efficacy of DTSA, TTCP development and approval can take an additional one to three months. In summary, to go from no license through drafting a TAA, getting it approved, dealing with any problematic provisos, drafting a TTCP, and gaining approval for the TTCP, it can take six months to a year, or longer, depending on the activity and what nations and organizations are involved.

REMEDY: Hard Deadlines

The DDTC should set hard deadlines for TAA reviews and responses. Sixty days would be a reasonable requirement. If a response was received from the DDTC in 60 days, the next month could be spent resolving any errors or conflicts, allowing a company to proceed with a TTCP at the end of three months instead of four or five. If the resources don't exist to enforce such a deadline, *at the very least*, at the end of a two month period, companies with pending licenses should be informed as to: (1) why additional time is being taken, (2) when a response is

[19] Whereas a TAA provides broad, general authority to share information, the TTCP represents a much more detailed and comprehensive plan as to specifically how information will be shared with a foreign entity, what protections will be in place to prevent abuse, and to document all technology transfers.

likely to occur, and (3) the contact information for the relevant case officer to discuss any issues or questions.

PROBLEM: Insufficient Reviews/Last-Minute Demands

Within Bigelow Aerospace's (BA's) Genesis I TAA, which, again, was initially filed on March 15, 2004, an entire attachment was enclosed that described, in explicit detail, the fact that Kosmotras is a joint Russian-Ukrainian venture wherein not just Russians but Ukrainian nationals serve as company employees, officers, and officials. Additionally, BA included Ukraine as one of only four nations (the others were Russia, the U.S., and Kazakhstan) wherein technical services could be provided. BA's view at the time was that the Ukrainian/Yuzhnoye employees were part of the overall Kosmotras team (which they are) and therefore would not require a separate TAA for BA to have interactions with them. This was the very reason that BA included the attachment describing the joint Ukrainian-Russian nature of the Kosmotras entity. However, despite the inclusion of this attachment, which we expect, in reality, was likely ignored, nearly a year after TAA submission, and, even worse, a scant few days[20] prior to our first meeting with Kosmotras in Moscow, BA was informed by DTSA that no Ukrainians could participate in our upcoming conference. The reason given was that, in the view of our assigned DTSA monitor, Yuzhnoye needed to be a separate signatory to the TAA. Subsequently, the value of the meeting was compromised since key Ukrainian officials could not be exposed to 'technical data'.

BA still believes that it was not necessary for Yuzhonye to become a separate signatory to the TAA. However, for the sake of argument, even if this point were conceded, DDTC/DTSA's failure to raise the issue for nearly a year, and to do so just before a critical meeting, put BA in an extraordinarily difficult position. This is just one example of how a broken system can

[20] My memory may not be entirely accurate in regard to the exact date, but I believe BA was contacted by the DTSA official in regard to this matter on a Thursday afternoon directly before our scheduled Sunday flight to Moscow, leaving virtually no time to deal with the issue or make an appeal.

unreasonably punish companies even if they make every effort to comply with the rules.

REMEDY: Alleviate Staff Workload by Removing Widely Available Commercial Technologies from the Auspices of the USML and the ITAR

BA acknowledges that due to a lack of staff and a constantly increasing workload, DDTC and DTSA may not have the time to thoroughly review TAA submissions. However, it's critical that at least some level of review be done, even for attachments, in order to avoid eleventh hour demands such as the one experienced here by BA. A solution to this problem would be to remove items that can be purchased commercially on the international marketplace from the auspices of the USML and the ITAR.[21] Such an action would eliminate superfluous work and allow DDTC staff to focus their time and effort on conducting thorough and quality reviews of applications and all related materials. It's difficult to blame DDTC staffers for delays or mistakes when they are so completely overworked and overwhelmed. Action must be taken to alleviate their burden by allowing all export control officials, both at DDTC and DTSA, to focus exclusively on technologies that actually warrant protection. It should be noted that this solution would enhance the quality of application reviews without costing the tax payer a single cent.

In any event, both the DDTC and DTSA need to be extremely sensitive about making last minute demands that substantially impact previously planned activities. For example, in this situation, a waiver could have been granted to allow the Ukrainian officials access to the simple, benign 'technical data' that BA wished to share, which in this case was the anticipated mass and external dimensions of the Genesis I spacecraft. As a matter of fact, it's still unclear whether such basic information should have been treated as 'technical data' at all.

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[21] For example, in December of 2007, BA filed a commodity jurisdiction request asking the DDTC to confirm BA's contention that its space habitat technology should be under the auspices of the Commerce Control List ("CCL") and not the ITAR.

PROBLEM: The Failure to Distinguish Between Benign, Commercially Available Civilian Technologies and Those that are Actually Sensitive and Have Military Applications

The failure to effectively distinguish between benign, commercially available technologies and those with actual military relevance is at the very heart of the ITAR problem. *A system that attempts to treat all space hardware/data, regardless of form, complexity, or function, in exactly the same manner, is inherently and deeply flawed.* The BA expandable habitats are an excellent example of this. BA's primary objective is to dramatically lower the costs of space-based activities. To this end, BA utilizes as much off-the-shelf, commercially available technology as possible. Although BA's design work is, of course, business proprietary, there is nothing on a BA module that could not be purchased on the global market or fabricated using commercially available components and practices. BA's Genesis I contained long understood electronics such as cameras, commonly available solar array technology, and did not contain a propulsion system. A majority of the Genesis I launch campaign DTSA monitors confidentially expressed the view that, due to the simplistic nature of the spacecraft, their presence was a waste of time and valuable government resources.

The most egregious example of a failure to differentiate between technologies that actually have military relevance and those that have no value whatsoever is the treatment of the Genesis I stand. The Genesis I stand is essentially a simple metal structure designed to support the spacecraft in a vertical position. If the Genesis I stand were placed upside down, covered with a nice checkered tablecloth, and you put a couple of plates on it, one would be hard pressed to distinguish the stand from any other table already commonly available at Moscow's local IKEA outlet.

However, since the stand had been crafted to fit the spacecraft, it fell under the auspices of the ITAR and was therefore treated accordingly. Specifically, due to one of the afore mentioned provisos to Genesis I's TAA, *BA was required to keep this metal coffee table under guard on a 24/7 basis*. One can only imagine the repercussions of Russian agents gaining access to

the Genesis I stand. Its secrets could have easily been sold to Iran or North Korea, where America's enemies could someday use such technology to serve sandwiches *or even tea* on.

In order to avoid the 24/7 guarding requirement, BA drafted and submitted a General Correspondence (GC) letter on April 26, 2006, and, roughly a month later, was granted a waiver from the TAA proviso requiring monitoring of the stand as well as two other similarly non-technical metallic objects (although, due to the nature of the response to our letter, an additional GC had to be filed to gain clarification on several points, adding more work and a few more months to an already bizarre process). However, the fact that BA had to spend the time, effort, and money to file paperwork to get permission not to guard a metal table, and that even with the exemption, the table was still considered ITAR-controlled, is representative of the overly broad and irrational nature of the current implementation of the regulations.

This is one of the major differences I have observed between Russian and American export control, the Russians tend to focus only on systems that really are sensitive, while we in the States spend a good amount of our time worrying about metal coffee tables.

REMEDY: Judicious Use of Provisos and/or Expedited TAA Processing

Too often, a 'boilerplate' set of provisos is used for any TAA dealing with space hardware. As the Genesis I example illustrates, simply because a piece of technology is space-related does not mean that a company should bear the burden of extreme demands such as 24/7 in-person security. A simple means to avoid such overly harsh and irrational requirements would be to instruct DDTC case officers reviewing TAAs to be more judicious in their use of provisos. Case officers must take the time to determine if an application actually involves militarily sensitive systems, or if, as was the case with Genesis I, the project utilizes largely off-the-shelf commercially available technologies. If the answer to this question is the latter, then highly burdensome provisos such as the mandatory presence of

multiple DTSA monitors for launch campaigns and 24/7 security *should not* be part of the TAA. Moreover, the DDTC should consider establishing an expedited process for the review and rapid approval of TAAs that are space-related but do not involve sensitive technologies. Finally, the DDTC should issue guidance exempting all non-technical objects from the ITAR. Hooks, dollies and stands do not provide any technical information worth protecting and the fact that they are covered by the ITAR is an excellent example of the regulations' overly broad and burdensome nature.

Of course, if, as discussed previously, such items were removed from the auspices of the USML and the ITAR entirely, judicious use of provisos would be irrelevant since TAAs would no longer be necessary in the first place.

IV. TAA AMENDMENTS

PROBLEM: Timing and a Lack of Transparency

If a company is requesting to amend their TAA, the chances are excellent that an urgent problem with the agreement has been discovered and that time is of the essence. Therefore, even more so than with the original TAA itself, the need for an expeditious review of a requested amendment is absolutely vital. Continuing our own example, after being told that BA would need to amend its TAA to include Yuzhnoye (a decision which our company still views with some skepticism), BA filed the relevant application on March 15th, 2005. BA's next in-person meeting was scheduled to take place at Yuzhnoye's Ukrainian facilities in early June leaving nearly three months for this extremely simple amendment to gain approval.

At the time of filing, we were quite confident that the application would be approved well before the Ukrainian meeting would take place, however, the month of March ended with no approval. April went by and, again, no approval for the amendment was forthcoming. In May, BA made numerous attempts to contact the DDTC. These efforts resulted in no information being gained beyond the standard response that DDTC was overwhelmed with a large backlog and that the amendment

would be reviewed as soon as possible. As May ended, BA officials were forced to begin to consider postponing its critical meeting in the Ukraine due to the lack of a response to what was believed to be an extraordinarily simple and standard amendment. Given the fact that BA disagreed with the need for the amendment in the first place, our company's level of frustration was quite high. Numerous calls to a variety of officials at the DDTC went unanswered. Eventually, BA was forced to seek support from NASA, who, due to its interest in the success of the technology and the Genesis I mission, was willing to attempt to facilitate contact with the DDTC.

When June arrived and there was still no word from the DDTC and no calls were being returned, as a last resort, a BA representative went to the DDTC determined to physically remain in their office lobby until someone supplied information in regard to the amendment. Ironically, shortly after arriving at the Department of State, NASA contacted BA with the news that the amendment was being cleared and would be issued before the end of the week. Despite filing the amendment in March, approval was not granted until June 7th, a mere three days before the travel to Ukraine was set to begin. Had the amendment taken just a few days longer, the meeting would have needed to be canceled, creating a nontrivial financial burden for BA, and setting back the Genesis I launch schedule substantially. To this day, BA remains uncertain as to why such a simple amendment took so long to approve. *As a matter of fact, it took nearly as long to gain approval to add Yuzhnoye as a signatory to the TAA as it did to gain approval for the original TAA itself.*

REMEDY: Direct Contact with Case Officers

Again, the ideal solution would be to remove superfluous items from the USML and the ITAR allowing the DDTC staff to dedicate more time and effort to individual applications and license amendments. If this cannot be accomplished there are other options that would help reduce confusion, and, if nothing else, allow companies to do a better job of planning and scheduling their activities. Specifically, when a TAA amendment is

submitted, DDTC should e-mail a notification to the company that contains: 1) the name, e-mail address, and phone number of the case officer assigned to the amendment and 2) the anticipated amount of time it will take to process the amendment (based on the current backlog and complexity of the requested change). These two simple pieces of information would be of incredible value to any company that is attempting to cope with a problematic TAA approval letter, and the burden imposed upon DDTC to transmit such a notification is relatively minimal.

V. DSP-5S

PROBLEM: Blatant Errors

A DSP-5 is the form filed to request the permanent export of unclassified Defense Articles. It is also the form that is commonly used to support the employment of a foreign national in the U.S. It was for this latter purpose that BA filed its first, and, for the time being, last DSP-5. Specifically, BA wanted to employ a Canadian citizen to act as a "Space Architect". In this position the Canadian would help design the interior of future full-scale BA habitats by determining the placement of sleeping quarters, work stations, the galley, etc.

This particular saga began on April 12, 2005 when BA submitted a DSP-5 to support the Canadian citizen's employment. After nearly two months went by, BA began contacting the DDTC to attempt to discover why a relatively simple DSP-5 with a Canadian citizen was taking longer than 60 days to complete. When a license application or TAA is overdue, after checking ELLIE NET (a rudimentary DDTC website that gives only basic information such as when the application was received, if it has been staffed out, the initials or code for the case officer, etc.), a company's only avenue to gain information is to call the DDTC "Response Team". The purpose of the Response Team is ostensibly to "*facilitate your defense trade solutions while affording licensing and other officers in DDTC more time for casework. By handling telephone calls from industry and the public, it supports the work of licensing and compliance officers*

by allowing them to focus on their core activities."[22] Despite the best intentions of the employees who take the Response Team calls, the only feedback I have ever received is that my license or application is delayed due to a large backlog. In my more cynical moments, I've felt that the entire operation could probably be replaced by a single recorded voice message that would simply tell anyone who calls that their application is delayed due to a large backlog.

However, while I have never received substantive information of any sort from the Response Team, what they can help with is to assist in using the clues provided by ELLIE NET (in some instances, the individual's initials) to identify the case officer. More often than not, I would be given a facsimile number and asked to draft a letter of inquiry and fax it to the DDTC. Occasionally I would get lucky and obtain an e-mail address or direct phone number for a case officer.

In this particular instance I eventually penetrated the veil of secrecy and got a phone number for the case officer. Calls and faxes would both go unanswered and myself and my deputy fell into a pattern of leaving daily messages in an attempt to engender a response from the DDTC. After roughly two weeks of trying, the case officer apparently made the error of picking up the phone and explained to me that the reason for the delay is that the DDTC wanted to require a proviso wherein the Canadian citizen would have to become a signatory to our existing TAA with Kosmotras. After recovering from my initial surprise at such an odd request, I patiently explained to the case officer that the Kosmotras TAA related exclusively to launch activities for our sub-scale demonstrator program and had nothing whatsoever to do with the architectural planning for our full-scale habitats that the Canadian citizen would be working on. The case officer told me that they understood and that DDTC would approve the DSP-5 with the proviso that the Canadian could not be exposed to technical data related to our TAA with Kosmotras. This seemed like an excellent solution since the Kosmotras

[22] DDTC Homepage, http://www.pmddtc.state.gov/response_team.htm.

launch operations were in no way related to the Canadian space architect's work.

However, roughly another two weeks went by and still I had received no approval from the DDTC. I began calling the case officer again, and, as before, would leave messages on at least a daily basis and would receive no response. Finally, I again managed to get the case officer on the phone, and, when I inquired about the delay I was told that the problem was that the Canadian would need to become a signatory to the Kosmotras TAA. With our previous conversation apparently forgotten, I repeated my argument that such a proviso would be nonsensical since the space architect's duties had nothing to do with our Russian/Ukrainian launch operations as embodied in the Kosmotras TAA. This time, the case officer seemed less convinced, but, in the end, again agreed that a proviso preventing the Canadian from sharing in the launch operation data under the Kosmotras TAA would be sufficient. Yet another two to three weeks passed and I still had received no word from the DDTC. I began calling and again left daily messages for the case officer, all of which were ignored. If memory serves, after about two weeks of doing this, I never got the case officer to respond again, but, near the end of July, I did receive a license approval in the mail that, of course, included a proviso requiring the Canadian space architect to become a signatory to the Kosmotras TAA!

At this point I gave up trying to work with the case officer and, instead, my outside counsel and I drafted a formal modification request to the Director of the DDTC Licensing Division asking for the removal of the proviso requiring the Canadian space architect to become a signatory to the Kosmotras TAA. We sent the request off in early August, shortly after receiving the license, and nearly *four months* after we had filed the initial DSP-5.

Fortunately, the Canadian space architect in question was married to an American and by November had obtained a green card making her the equivalent of a U.S. citizen in the eyes of the ITAR. On November 7th, 2005, I transmitted a letter to the DDTC, informing them that the Canadian was now a green card holder and I was therefore returning the license.

However, the return of the license did not deter the DDTC. Ignoring the fact that we had effectively canceled the license, in late November (after the Thanksgiving holiday), I opened a letter dated November 21st from the Director of the DDTC Licensing office implicitly conceding our point that the space architect did not need to become a signatory to the TAA, and, instead, the proviso would be modified to simply prevent the Canadian from receiving technical data under our launch operations TAA with Kosmotras. This of course was exactly the prescribed action that the case officer verbally agreed to in June (before forgetting the conversation).

To this day I keep the modification letter on file in case I ever need to remind myself how insane the export control bureaucracy can be. The entire process took up the better part of eight months and absorbed a great deal of time, effort, and money to prepare applications, attempt to solicit information, and file appeals.

Regrettably, this was not an isolated incident. We have also had pages ignored on DSP-73[23] applications (requiring time consuming and stress inducing amendments), and, while this situation with the DSP-5 is an extreme example, it's emblematic of the sorts of problems that occur and the overwhelming costs that companies are forced to pay, both in terms of time and money, to deal with DDTC's own errors.

REMEDY: A Real, Effective Team of Ombudsmen

Unfortunately, due to no fault of the individual employees, the efficacy of the DDTC "Response Team" is negligible. Instead, in order to deal with their own shortcomings, as well as companies' mistakes (we in the private sector are just as capable of errors as the DDTC), the Response Team should be replaced by a cadre of knowledgeable ombudsmen. These ombudsmen, who, ideally will have served previously as DDTC case officers and/or DTSA monitors, could provide real information to applicants in regard to delays and could help act as an

[23] A DSP-73 is an application for the temporary export of space-related hardware. These were the licenses that Genesis I and II were shipped to Russia under.

interface between a company and a case officer to correct any mistakes quickly and easily without wasting months of time on formal, written modification requests. Had such an ombudsman existed, in the case of our DSP-5, I'm sure the issue could have been properly resolved in June instead of November.

No organization is perfect,[24] and, due to the limitations of time and personnel, mistakes will be made. One cannot blame DDTC or specific personnel at DDTC for such errors, since they are an inevitable byproduct of their work. However, given the inevitability of mistakes, the system itself must find a way to try and reduce their impact as much as possible. This is the vital role that a team of ombudsmen could play. Whether it is a simple misreading of a DSP-5 application, or a controversial decision by a DTSA monitor, an alternative means of recourse must be developed. Just as in physical engineering, any pressure-filled system needs an escape valve that can be utilized in the event that something goes wrong. A team of ombudsmen could serve in such a critical capacity and would ultimately save both the government and the private sector a great deal of time and money.

VI. COSTS

PROBLEM: The Excessive Cost of Export Control-Related Monitoring and Document Review

As described above, the export control process can often be a grueling one. However, not only are companies forced to cope with this demanding and often irrational system, but they pay a great deal of money to do so. Specifically, companies are forced to pay for DTSA monitoring of all technical interchanges, both over the phone and in person, and any written communication containing technical data (electronic or otherwise) must be reviewed in advance by DTSA. Although, like all other corporations and citizens, aerospace companies pay their taxes, we are still expected to pay the government again for the privilege of having our overseas activities monitored. Most of my foreign

[24] With the potential exception of the 2004 Boston Red Sox.

colleagues would likely find this quite amusing, that here in America we actually pay our government officials to enforce even the worst aspects of our obsolete export control regulations.

Although paying any amount would be bad enough, the actual size of export control payments can be quite startling and are often too onerous for most small businesses. When companies receive a bill from DTSA, they are only provided a top-level number with no information as to how the figure was arrived at. In our own case, after making several inquiries, BA was able to obtain a spreadsheet that allowed us to determine some rough cost approximations.

BA estimates that in Fiscal Year 2007 our company was paying a rate of more than $130 per hour for monitoring and/or document review services. Even if one were to concede that this monitoring is necessary in the first place, and that some sort of fee is required, such high hourly rates seem excessive. This begs the question as to why the monitoring fees are so high and what this money is going toward. I have yet to see any DTSA monitors driving around in Lamborghinis or Corvettes, so it's safe to assume that they are not receiving the funds. The salary levels for GS-12s, 13s or 14s certainly can't account for such exorbitant fees, and since the company is also responsible for paying monitors' travel expenses (*e.g.*, airline tickets and hotel rooms), it's a mystery why these costs are so high and where the money is going.

In total, for FY 2006, the year of the Genesis I campaign, BA paid $161,896.50 in export control related monitoring fees. The following year, FY 2007, which included the launch of the Genesis II spacecraft, BA paid $147,173.44.

Such fees create a significant barrier to entry for small or entrepreneurial businesses. Due to the financial wherewithal provided by Robert Bigelow, BA was still able to take advantage of the proven and highly cost effective Dnepr launch system[25] for

[25] Beyond offering the most affordable launch prices globally, the Dnepr, a converted nuclear ICBM, supports Russia's peaceful demilitarization efforts by taking weapons of war and transforming them into tools for peaceful commerce. Again, the Dnepr is the literal embodiment of a "swords into plowshares" program.

the Genesis campaigns, despite the expense and trouble of export control. However, many companies, particularly small businesses, are prevented from competing in the global marketplace and/or taking part in international efforts (which dominate the space world) due to the high costs of mandatory export control monitoring. This in turn forces small businesses out of the trade space or bankrupts them entirely. The loss of small businesses in the field blunts the U.S.'s ability to innovate and compete, bolstering foreign providers who, after our own domestic capabilities atrophy and die, America becomes dependent upon. This is yet another example of the counterproductive nature of the ITAR.

REMEDY: Fee Elimination

Ideally, companies should not be asked to both dig their own graves *and* jump into them. In other words, aerospace firms should not have to pay for their own monitoring, particularly under the current nonsensical regime. However, if financial realities make this impossible, at a minimum, fees should be eliminated or substantially reduced for small businesses attempting to support international missions or projects.

Additionally, along with any invoice, DTSA should automatically include a breakdown of their costs, removing the 'black box' effect of the charges. This breakdown should be simple, clear, and show the hourly rates being charged for monitoring services. Such billing information could even be made available on Spacelink which will be discussed further in the next section of this article.

VII. WHAT DOES WORK

Despite all of the problems described previously, there are aspects of the export control system that function in a rational and efficient fashion. Although the primary purpose of this article is to point out the failures of America's export control regime, it's just as important to recognize at least a few of its suc-

cesses which can help inform any attempt to implement reforms.

A. The DTSA Space Directorate

While far from perfect, and, like any organization, it has both strong and weak personnel, the DTSA Space Directorate (SD)[26] should be complimented for, on the whole, acting in a largely rational and efficient fashion. DTSA SD and its officers are charged with enforcing a broken export control regime[27] yet still manage to generally make things work. As opposed to TAAs, the TTCPs and associated security, transportation, and joint operations plans (which, again, all fall under the purview of DTSA SD) are reviewed in a relatively expeditious fashion, and, most important of all, DTSA SD personnel are almost always available to discuss their concerns, edits, or suggestions over the phone or in person. In stark contrast to the TAA or DSP-73 process, DTSA SD personnel work directly with company officials, and will always pick up the phone and respond quickly to questions and feedback. There is no mystery when interacting with DTSA SD. Additionally, since DTSA SD officers are on the front-lines and serve as monitors for both launch campaigns and technical interchange meetings, these individuals are usually quite knowledgeable and can even often make helpful suggestions.

B. Spacelink

Spacelink is the name of the Web portal used to submit technical information to DTSA SD for review. Until 2006, the Spacelink interface was extremely arcane and confusing. At the time, using Spacelink was like trying to solve a Rubik's Cube while blindfolded in a dark room. However, DTSA SD recog-

[26] The Space Directorate is the division of DTSA responsible for monitoring meetings, launch campaigns, and reviewing "technical" interchanges.

[27] As a matter of fact, many DTSA SD officials see the same problems that we in industry do, and will, at least privately, acknowledge the obsolescence and in some cases utter insanity of the current export control regime. Of course, since DTSA SD is responsible for enforcing policy instead of making it, there is very little they can do.

nized this problem, and replaced the old system with a much more simple, easy, and intuitive interface. The current Spacelink Web portal is a good example of efficient and effective government. Review and responses occur relatively quickly, and it's not unknown for simple or short documents to be reviewed and approved for transfer/export in 24 hours or less. As a matter of fact, Spacelink is the only government system that BA interacts with where decisions have been made in less than one working day.

C. DDTC Leadership

This article should in no way be construed as an attack against individuals within the DDTC, DTSA, or other officials working in the export control bureaucracy. Mistakes have certainly occurred, and the regime is unquestionably broken, however, the fault lies largely with bad policy and an unwarranted overburdening of personnel. The fact of the matter is there are many quality people, particularly in supervisory and leadership roles within the DDTC, that despite the poor environment, struggle to find ways to keep the system moving and bring rationality to the process. It's due to the good work of such individuals that the system manages to function. I would probably do more harm than good by listing their names or titles here, but, it's important to acknowledge that, by and large, the staff and workforce are excellent, it's the rules themselves that create a majority of the problems and lead to the excessive workload.

VIII. CONCLUSION

Via the Genesis I and II campaigns, BA has been on the front-lines of export control in a way that few other entrepreneurial or small companies have. However, the problems and criticisms cited in this article are quite common and are shared by many organizations, both large and small, though most would never discuss such issues publicly for fear of retribution. As a privately funded corporation with little to no interest in ever becoming a government contractor, BA is uniquely able to speak freely about ITAR and other policy issues.

The obsolescence of America's export control regime is the white elephant in the room. Everyone knows it's there, even many regulators, yet nothing is done. Every year that the status quo continues is a year where the American aerospace sector falls further and further behind its international competition. If no action is taken, ultimately, the export control problem will resolve itself, since, eventually, America simply won't produce any aerospace technology worth exporting, leaving the nation vulnerable to economic domination that will be a much more real and pernicious threat than anything ever dreamed of in Science Fiction.

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[*] P.J. Blount is Research Counsel and Instructor of Law at the National Center for Remote Sensing, Air, and Space Law, University of Mississippi School of Law.

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