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OPEN SKIES: FACILITATING THE MANY DIMENSIONS OF TRANSPARENCY*

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ABSTRACT

The Treaty on Open Skies (Open Skies)[1] was signed on 24 March 1992 by 23 European nations in addition to the United States and Canada. Unlike other arms control treaties which prohibit specific weapons or weapon systems, Open Skies is intended to provide, in the words of its preamble, means "to facilitate the monitoring of compliance with existing or future arms control agreements". In addition, its objectives include the "improvement of openness and transparency for conflict prevention and crises management in the framework of the Conference on Security and Cooperation in Europe and in other relevant international institutions". The preamble also alludes to the possible extension of the Open Skies regime into additional (non-arms control) fields, such as environmental protection. Not mentioned is an objective which the treaty would appear to strive to attain: to equalize to some degree the ability of nations to obtain intelligence deemed essential to their national security. This is in fact the case since it provides such means to signatories which otherwise do not have direct access to advanced information gathering technology. "Open Skies" also contributes to monitoring or treaty verification by providing an instrument for cuing further investigation of information which might indicate impending treaty violation. Thus, while appearing unfocussed from a monitoring or treaty verification point of view, Open Skies represents substantial progress toward facilitating transparency.

INTRODUCTION

While transparency in the international context is difficult to define, its motivation is clear: I'll permit you to observe my military wherewithal, how it is deployed, and its supporting research and industrial base so that you may have confidence in the absence of any aggressive intentions on my part against your national security or that of your neighbors. Implied is a quid pro quo, i.e., you must reciprocate with the same degree of openness.

Clearly a number of questions remain. Among them are the following:

- In the context of transparency where in the range from glimpsing to examining does observing lie?
- Does transparency require that everything be opened for observation or may some things be excluded?
- Must all parties be provided equal means for observation?
- Must data uncovered by one party be shared equally among all?

This paper also explores, in the context of Open Skies, the limitations imposed on the concept of transparency so that international agreement on its practical implementation could be arrived at.

Open Skies was first proposed in 1955 by President Eisenhower as a bilateral agreement between the U.S. and the Soviet Union. It was reformulated as a multilateral proposal in 1989. Formal negotiations began in 1990. It was signed on 24 March 1992 by 23 European nations in addition to the United States and Canada. The territory of the signatories (States Parties) cover the entire European and North American land-mass from Vladivostok to Vancouver, with the exception of Sweden, Switzerland, and the Central American nations. It is based on the use of unarmed observation aircraft, on sensors aboard these aircraft and on quotas of observation flights which State Parties are entitled to conduct and are willing to accept.

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QUOTAS

The treaty allocates passive quotas, i.e., the number of observation flights which a State-Party is obligated to receive in rough proportion to the extent of its territory. Initially, from the date on which the treaty is ratified until December 31 of the year following, State Parties will be required to accept no more than only 75% of their passive quotas. Quotas, aside from being increased by 25% in the second year after treaty implementation, may be revised periodically. Table 1 displays active and passive quotas for each of the signatories. The summary block on Table 1 reveals that no state-party in the first year has indicated that it plans to make as many observational flights as its active quotas for that year would permit. Note that aside from Russian and Belarus, no nation has an active quota for overflights of the U.S.

The "Open-Skies" provision on quotas limits overflights by any state of any other state to 50% of its own active quota or 50% of the passive quota of the observed state whichever is less. Thus, hypothetically France could observe the U.S. no more than 6 times since its own active quota is 12. The United States on the other hand could conduct an "Open-Skies" overflight of Poland no more than 3 times since Poland's passive quota is 6.

At least on a superficial level it would seem that the existence of a formal agreement (of itself) by a state to Open Skies builds sufficient confidence on the part of other states so as to substantially diminish the perceived need to actually observe. There are treaty terms, discussed below, which also serve to diminish the need for overflights.

INTRUSIVENESS, TRANSPARENCY, AND COUNTERMEASURES

To obtain agreement to the treaty by those states which feared that Open Skies might expose them to excessive intrusiveness, the type of sensors which are permitted on the aircraft used for observational over-flights and their maximum ground resolution are strictly limited. For the allowed airborne sensors, the maximum ground resolutions are displayed in Table 2.

At the start of negotiations, the position of the United States was that any sensor with the exception of signals intelligence (SIGINT) would be permitted. This position was modified when it became clear that this would be unacceptable to the U.S.S.R. In Table 3, the early positions of NATO and Russia on allowed sensors and their capabilities are displayed and contrasted with what was actually included in the treaty. Of special interest is the position of NATO, actually of the U.S., on SAR resolution. The U.S. was content to limit SAR ground resolution to 3 m, although there exist SARs with ground resolutions of 1 m. The export of the latter are limited by COCOM export restrictions. In addition, the U.S. was unwilling to have the Russians over-fly North America with 1 m SAR ground resolution while the Russians were unwilling to have overflights of aircraft with SAR with better than 10 m ground resolutions.

For optical sensors, the ground resolution may be no better than 30 cm. In practical terms, a ground resolution of 30 cm provides the capability of distinguishing a tank from a truck and from other pieces of heavy equipment. It would permit distinguishing an M1 tank from an M60 tank because these objects differ substantially in size and shape. When sizes and shapes are similar, as is the case for many models of Russian tanks, distinguishing among them is not possible. Nor does it enable distinguishing among various kinds of armored personnel carriers or artillery pieces.

For airborne optical and electro-optical sensors, the ground resolution is an inverse function of the altitude. Thus specifying a limit on ground resolution implies a minimum altitude for the sensor platform. Ground resolution depends also on the camera focal length, the film or tape resolution, and contrast in the ground scene. For infra-red systems, the analog of contrast in the ground scene is temperature differential. For synthetic aperture radar ground resolution, the altitude of the sensor platform is generally not relevant to ground resolution. The relevant variable is the depression angle, i.e., the angle between the horizon and the center of the target area. The resolution is best when the target is distant from the aircraft.

In a prepared statement to the Senate Committee on Foreign Relations (9/22/92)[2], William Ingelee, Deputy Assistant Secretary for Conventional Forces and Areas Control Policy Department of Defense stated "...the sensor suite is not a spy package..." This not withstanding, the U.S. On-site Inspection Agency (OSIA), has been developing the Defense Treaty Inspection Readiness Program (DTIRP), which according to the testimony of Major General Robert W. Parker to the Senate Committee Foreign Relations, is designed to identify critical information and countermeasures to "protect our sensitive facilities and programs...It is designed to...ensure understanding enabling everyone to prepare for the possibility of a treaty inspection...DTIRP has a proactive focus in working...to assist in the protection of critical, sensitive proprietary interests. Early identification of potential vulnerabilities (at the inception of a new program) can obviate costly and unnecessary security countermeasures." An element of DTIRP, the Passive Overflight Module (POM) enables DTIRP to conduct preflight and postflight analysis to support early warning notification. OSIA is certainly transparent about DTIRP, which does not appear to be designed to facilitate transparency.

"TAXI" AIRCRAFT AND SENSOR INSPECTION

State-parties are required to conduct an on the ground and in-flight certification of all aircraft and sensor packages. All parties are permitted to participate in the certification process even to the extent of making independent measurements and to append comments to certification reports. Until comments are resolved, the aircraft may not be employed in Open Skies overflights.

To assure that "a spy package" is not substituted for sensors permitted by the treaty after certification, the sensor package is subject to inspection by the host country on arrival at an "Open Skies" airfield on its territory. As a precaution against unauthorized sensors on the "taxi" aircraft used in the overflight, Russia insisted during negotiations on the right of the host country to supply the aircraft crew. Initially opposed by the U.S., a treaty provision adopting the Russian position was agreed upon.

OVERFLIGHT COVERAGE AND RIGHTS OF REFUSAL

All parties must designate "Open-Skies" air-fields such that all of its territories may be covered by an aircraft taking off and landing at one or another of these fields. For instance, the "Open-Skies" airfields designated by the U.S. are: Washington, Dulles; Travis AFB, California; Elmendorf AFB, Alaska; and Lincoln Municipal, Nebraska. Except for Lincoln Municipal, each has facilities for aircraft and sensor inspection and sensor calibration. Maximum flight distances are specified in the Treaty for each Open-Skies airport: Washington-Dullus, 4900 km; Travis, 4000 km; Elmendorf, 3000 km; Lincoln-Municipal, 4800 km. In addition to Open-Skies airfields, each party designates entry-exit and refueling airports. In the U.S., again with exception of Lincoln Municipal, the airfields listed above are also entry-exit airfields. The refueling airports are: Honolulu, Hawaii; Malmstrom AFB, Montana; Phoenix-Sky Harbor, Phoenix; General Mitchell, Wisconsin; and McGhee Tyson, Tennessee. A simple exercise in plane geometry easily demonstrates that the territory of the entire lower-48 states is covered by a set of 3 circles, with centers at Dulles, Lincoln Municipal, and Travis, and with radius 1700 km. Given the range capability of modern commercial or military aircraft, there is very little of the U.S. which cannot be observed by Open-Skies aircraft. This technical capability augments the treaty obligation to bar no portion of the host country to Open-Skies over-flights. The only exception to this rule is when for safety considerations an overflight may be barred or diverted, i.e., an overflight of Mount St. Helens in eruption. Open-Skies overflights have priority over domestic commercial or military flights. A question which is unlikely to develop into a problem is

whether or not in the United States an Open-Skies overflight would take priority over Airforce 1.

SHARING TECHNOLOGY AND DATA: LEVELING THE PLAYING-FIELD

The disparities in technological attainments of the various parties to "Open-Skies" and the differences in their economic status would, without a deliberate leveling of the playing field, be reflected in their ability to realize the benefits from Open-Skies. The treaty recognizes this and provides for such leveling by requiring that any sensor package used in its implementation be commercially available and that all raw data acquired in "Open Skies" overflights be made available for sale to any party to the treaty.

This does not completely level the playing field since the observing party alone controls the flight path of the observing aircraft. This limitation may be partially overcome by two parties to the treaty agreeing to share an observing over-flight. This is permitted by the treaty with certain restrictions. It is the path chosen by Russia and Belarus, which share all active quotas as well as passive quota. The U.S. and Canada share one active quota over Ukraine, while Turkey and Italy also share an active quota over Ukraine. The usefulness of such arrangements depends on the conjunction of interests vis-a-vis the observed party on the part of those who share an active quota.

USES OF OPEN SKIES

Open Skies is a confidence building measure but is not designed for treaty monitoring. As a confidence building measure, it facilitates investigation of military activities in the territory of the party being observed. The probability of locating a military activity, here-to-fore unknown, during an over-flight is very low. Thus, its effectiveness in investigating military activities is dependent on cuing information obtained in some other fashion.

The usefulness of Open Skies could possibly be enhanced by adding additional types of sensors, for instance, air sampling devices. New sensors could be agreed upon by consensus in the Open Skies Consultative Commission and would not require further Senate action.

SUMMARY: OPEN SKIES AND TRANSPARENCY

In the context of Open Skies, given the limitations on the sensor package, transparency is much closer to glimpsing than examining. There is no requirement that objects be opened for observation and given advance notice of impending flights. It would not be surprising that sensitive objects normally exposed, might be covered. The extent to which this will be done depends on the risk of loss of sensitive information and the difficulty and expense of covering. Open Skies explicitly provides for levelling the playing field between states which are technologically advanced and wealthy and those which are not. This is a sine qua non for transparency in either the bi-lateral or multi-lateral context.

REFERENCES

1. "Treaty on Open Skies", Senate Treaty Document 102-37, 102nd Congress 2nd Session, U.S. Government Printing Office, Washington: 1992.

2. "Treaty on Open Skies Hearing Before the Committee on Foreign Relations United States Senate, September 22, 1992," U.S. Government Printing Office: 1992.

TABLE 1

Observed	Germany	US	UK	Russia	Bene-lux	Can-ada	Den-mark	France	Italy	Norway	Poland	Ukraine	Turkey
Germany				3							1	1	
US				4									
Russia and Belarus	3	8	3		1	2	1	3	2	2	1		2
Benelux				2									
Canada				2									1
Denmark				2									
France				3									
U.K.				3									
Italy				2									
Norway				2									
Poland					1	1	1			1			
Ukraine	1	1	1		x	1*			1		1		2**
Turkey				2									
Total (1st Year)	4	9	4	26	2	4	2	4	4	3	3	5	4
Allowed (1st Year)	9	31	9	31	4	9	4	9	9	5	4	9	9

* Shared with US

** 1 Shared with Italy

SELECTED ACTIVE QUOTAS: INITIAL DISTRIBUTION (FIRST YEAR)

TABLE 2

AIRBORNE SENSOR LIMITS		
TYPE	MAX. GROUND RESOLUTION	MAXIMUM
Optical, Panoramic, and Framing Cameras	30 cm	50 Km each side of Group 1
Video Camera	30 cmi	-
Infra-Red Line Scanning	50 cm	-
Sideways-Looking Synthetic Aperture	3 m	25 Km (either side of aircraft)

TABLE 3

NEGOTIATIONS AT A GLANCE

SENSOR LIMITS				
PROPOSED			IN-TREATY	
PROPOSER	TYPE	GROUND RESOLUTION	TYPE	GROUND RESOLUTION
NATO	Optical	7.5 cm	Optical	30 cm
	SAR	3 meters	SAR	3 meters
	Infra-red Linescanning	50 cm	Infra-red Linescanning	50 cm
	Electro-optical		EXCLUDED	
	Infra-red Forward Looking			
	Air Sampling			
	Multisprectal			
	Gravimeters			
	Magnetometers			
	Low Light TV			
	Laser Spectrometer			
USSR	Optical	30 cm		
	SAR	10 meters		

END

DATE
FILMED
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