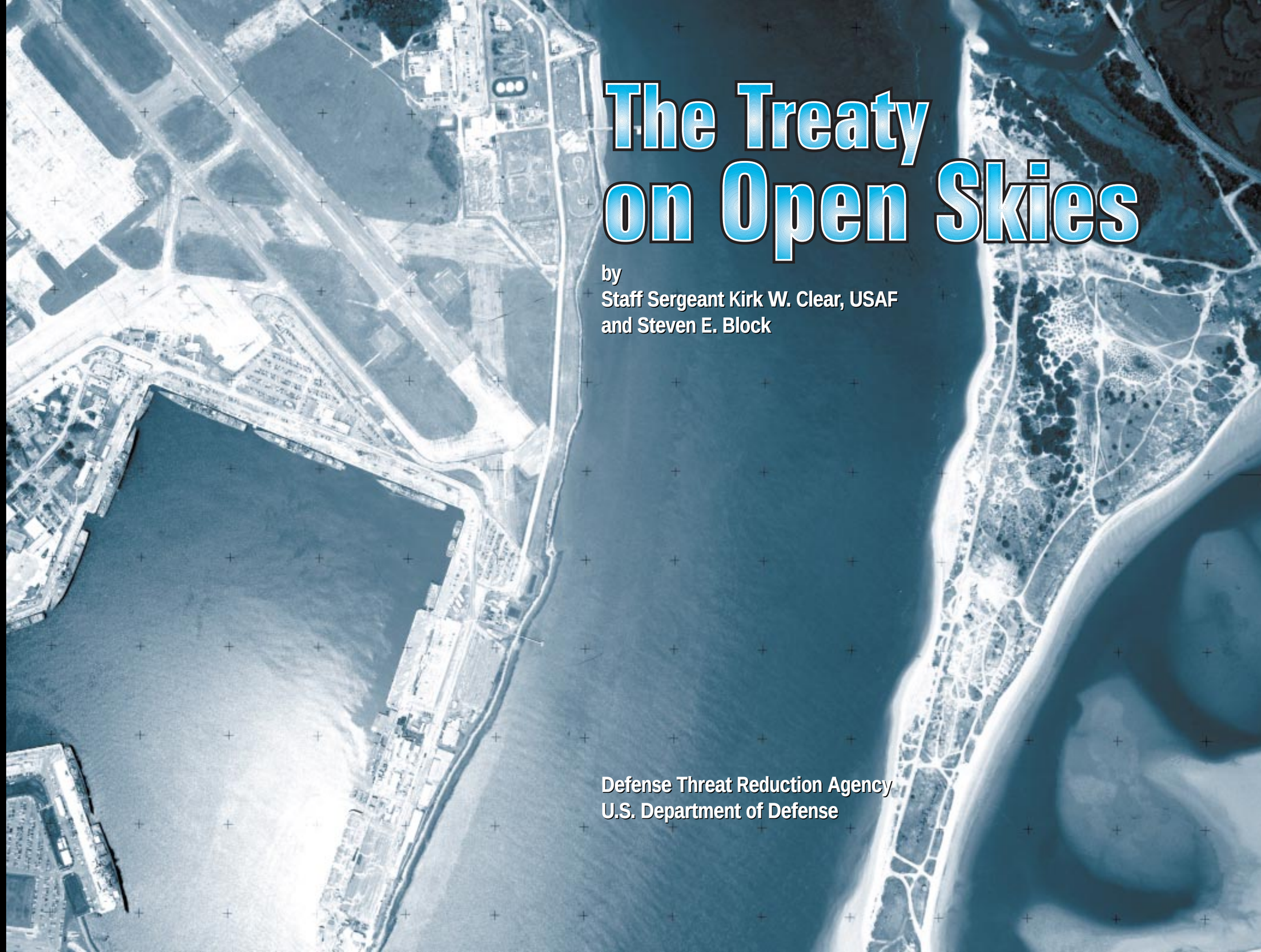


The Treaty on Open Skies

by
Staff Sergeant Kirk W. Clear, USAF
and Steven E. Block

Signed in Helsinki, Finland on March 24, 1992, the Open Skies Treaty has contributed to broader openness, cooperation, and mutual trust across the world. Although the treaty has not yet been ratified by all signatory nations, the United States, under the auspices of the Defense Threat Reduction Agency, has participated in more than 30 international joint trial flights.

Defense Threat Reduction Agency
U.S. Department of Defense

The Treaty on Open Skies

by SSgt Kirk W. Clear, USAF
and Steven E. Block

Defense Threat Reduction Agency
U.S. Department of Defense

Published by the
Defense Threat Reduction Agency
Office of History
45045 Aviation Drive
Dulles International Airport
Dulles, VA 20166-7517
U.S.A.

April 1999

Telephone: (703) 810-4433/4333
FAX: (703) 810-4654
E-mail: history@dtra.mil

Director
Defense Threat Reduction Agency
Dr. Jay Davis

Publisher
Dr. Joseph P. Harahan, Historian

Layout and Design
Tom Pearlman

Cover Photograph:

Naval Station Mayport, Jacksonville, Florida. Image taken using an AFA 4110 Framing Camera from a Russian An-30 during a Russian-U.S. Joint Trial Flight on August 1, 1997.

Foreword

As the Cold War drew toward an end in 1989, and the Berlin Wall finally came down, there was still a feeling of distrust among the former adversaries of the East and West. In 1992, a major barrier in this distrust was lifted when 27 nations signed the Treaty on Open Skies. This unprecedented display of openness has allowed former military enemies to conduct aerial observations over each other's territories. Although the treaty has yet to enter into force (as of this writing), it has already proven successful through the benefit of joint trial flights.

President George Bush assigned the oversight and implementation of this treaty to the On-Site Inspection Agency (OSIA). On October 1, 1998, OSIA was disestablished, and it's functions transferred under the control of the newly-created Defense Threat Reduction Agency (DTRA). However, from a mission standpoint, nothing has changed in how the Open Skies Treaty is implemented. Under DTRA, the On-Site Inspection Directorate, and furthermore the Open Skies Division, continues to oversee the treaty on behalf of the United States. We hope that you enjoy reading and learning about "The Treaty on Open Skies."

C. Duane Heughan
Captain, U.S. Navy
Chief, Open Skies Division

Contents

1

Signed in Helsinki, Finland on March 24, 1992, the Open Skies Treaty seeks to build an international regime based on mutual trust and a growing confidence in regard to military forces and activities of concern across the world. By definition, "The Open Skies Treaty establishes a regime of unarmed aerial observation flights over the entire territory of its 25* signatories (North Atlantic Treaty Organization Allies, Eastern European members of the former Warsaw Pact, and Russia, Ukraine, Belarus, and Georgia)."[1]

A Ukrainian An-30 aircraft arrives at Robins Air Force Base in Georgia for a joint trial flight with the United States, April 16-24, 1997. This Ukrainian aircraft was the first former Warsaw Pact military aircraft to fly over the United States.

* After Czechoslovakia split, both the Czech Republic and Slovakia signed as separate entities on January 1, 1993. Kyrgyzstan signed on December 15, 1992. Those signings raised the number of signatories up to 27.

The Open Skies Treaty includes the broadest geographical expansion of any previous treaty, stretching the area from Vancouver, Canada, eastward across the entire northern hemisphere to Vladivostok, Russia. There are very few flight restrictions as to the aerial observations. A claim of national security, for example, is not an acceptable restriction to preventing an overflight. As such, all areas of the United States may be overflown, including military installations, industrial sites, and even the White House.

Treaty Background

The idea of Open Skies was first proposed in 1955 by United States President Dwight D. Eisenhower. Originally intended to be a bilateral agreement between the United States and the Soviet Union, it allowed for aerial observation over each nation's territory. However, the proposition was rejected by Soviet Premier Nikita Krushchev, who was concerned that the United States would use Open Skies as a spy mechanism.[2] Thirty-four years after Eisenhower's initial proposal, U.S. President George Bush revived the Open Skies idea in a speech on the campus of Texas A&M University on May 12, 1989. As in 1955, the new proposal was intended to be a bilateral agreement between the United States and the Soviet Union. However, acting on the advice of Canadian Prime Minister Bryan Mulroney and Canadian Secretary of State for External Affairs Joe Clark, the United States transformed the proposal into a multinational framework. Now, the goal of Open Skies, according to Bush, "would be to increase the transparency of both sides'* military activities and thereby strengthen the emerging cooperation between East and West and enhance the security of all participating states."[3] Soviet General Secretary Mikhail Gorbachev accepted the principle of an aerial overflight regime and agreed in 1989 to begin multinational negotiations on an Open Skies treaty.

Why Open Skies?

By 1989, the Cold War was coming to an end. New arms control and reduction treaties were being implemented, or were in the final stages of negotiations. Cooperation between the United States and the Soviet

* Reference to NATO and Warsaw Pact nations.

The Treaty on Open Skies

Signatories:

Belarus
Belgium
Bulgaria
Canada
Czech Republic
Denmark
France
Georgia
Germany
Greece
Hungary
Iceland
Italy
Kyrgyzstan
Luxembourg
Norway
Netherlands
Poland
Portugal
Romania
Russia
Slovakia
Spain
Turkey
Ukraine
United Kingdom
United States

During a speech at Texas A&M University in 1989, U.S. President George Bush revived the open skies idea that was initially proposed by President Dwight D. Eisenhower in 1955.

Union was growing stronger with Gorbachev's glasnost and the effective implementation of the Intermediate-range Nuclear Forces (INF) Treaty, signed in December 1987. Changes in Gorbachev's foreign relations policies, brought many new arms control proposals to the forefront. At times, these Soviet initiatives seemed to overshadow those of the Bush administration. Consequently, revitalizing the concept of Open Skies contained an element of a political maneuver along with an arms control initiative. In his 1989 speech at Texas A&M, Bush stated, "now it is time to move past containment" and to "seek the integration of the Soviet Union into the community of nations." Bush continued, "As the Soviet Union...meets the challenge of responsible international behavior-we will match their steps with steps of our own."[4] Consequently, the Open Skies Treaty from the very beginning was meant to be a confidence building international agreement.[5]

Not only was Open Skies a political initiative to recapture momentum in the area of arms control, it was also a political test. The Bush administration, weary of Soviet pronouncements, wanted to see if the ideas of glasnost and peristroika were genuine. During early negotiations in 1989 and 1990, several NATO nations became concerned Gorbachev's stance seemed to "contradict his declared support for *glasnost* and openness in international affairs and may mean that he is positioning himself to break off negotiations in a showdown with the West."[6] Consequently, success in treaty negotiations signaled the Soviet Union's commitment towards openness and confidence-building between nations. During the first round of negotiations, representatives from 16 NATO countries and seven Warsaw Pact countries participated.

Possible Alternatives

One of the most commonly asked questions in the United States when trying to explain the concept of Open Skies is 'Can't our satellites do the same thing?' When satellites were first developed, they were revolutionary. On October 4, 1957, the Soviet Union launched Sputnik, the world's first satellite.[7] Knowing that this scientific and military technology was in the works might have caused Nikita Krushchev to reject President Eisenhower's 1955 Open Skies proposal. Meanwhile, a year prior to his proposal, Eisenhower had approved the development of a new high-altitude reconnaissance aircraft–eventually called the U-2. In July 1956, the first long-range U-2 mission flown over the USSR resulted in the U.S. obtaining, through optical imagery, key Soviet strategic information. During the next four years, the U.S. conducted 23 more U-2 missions over the Soviet Union.[8] In May 1960, U-2 pilot Francis Gary Powers was shot down over the Soviet Union and tried as a spy. Consequently, the United States ended all U-2 aerial observations over the USSR. However, that same year (1960), the first United States' intelligence-gathering satellite program, CORONA was initiated. The birth of reconnaissance satellites gave the world's two superpowers the capability to obtain more information than aerial observation flights would have given. By the late 1960s, the technology of satellites made them more effective than fixed wing aircraft, and they did not pose any potential political repercussions.[9] But, was this still the case by the late 1980s?

By that time, several arguments emerged for the potential advantages of aerial observation instead of satellite reconnaissance. Canadian Secretary of State for External Affairs Joe Clark took the stance that satellites were inadequate for the verification needs of the future. Aircraft were able to fly lower, below clouds, while satellites could be hindered by overcast weather. Strategically, the fixed orbits of the satellites posed problems. The fixed orbits made the satellites' position predictable. Some analysts believed that the combination of satellite reconnaissance, aerial observation, and on-site inspection would provide a much stronger detection system. Air Force Brigadier General Frank A. Partlow stated that when the three monitoring systems are "applied in combination, it is much more difficult for a participation state to achieve any significant advantage undetected."[10] Consequently, Open Skies could have many purposes, such as monitoring troop maneuvers, arms build-ups, and possibly in the future, environmental conditions.[11]

Even though aerial observation might be useful for strategic intelligence purposes, it is not the Open Skies Treaty's primary objective. The purpose is to build confidence through unarmed aerial observation flights among the nations of the international community. U.S. Secretary of State, James A. Baker, claimed that Open Skies could be the "most important measure to build confidence ever undertaken."[12] Canada's Joe Clark also pointed out that nations had no choice about satellite surveillance–they couldn't stop it, so they accepted it.[13] Open Skies offers Canada and the smaller European nations an independent verification method. These same nations knew that the Soviet Union and the United States were acquiring information about them through satellite imagery, they just could not do anything about it. Open Skies gave countries, other than Russia and the United States, a chance to have a treaty-sanctioned aerial observation system. This is significant. First, it gives all signatory states the tools to observe another country's military-related activities. Secondly, it allows countries the chance to trust the motives of others overflying their territory.

2

Treaty Negotiations

In late September 1989, General Secretary Gorbachev agreed to negotiate President Bush's Open Skies Treaty proposal. This decision initiated two years of negotiations during four separate conferences. Canadian Prime Minister Mulroney offered Ottawa as the first site for negotiations. This was followed by three other conferences over a three-year period, and finally concluding with the treaty signing in Helsinki, Finland in March 1992.

Ottawa Conference: February 12-24, 1990

The Ottawa Conference, attended by all the member states of NATO and the Warsaw Pact, was held during a very historic period. The beginning of the conference was dominated by talks on the fate of German unification, rather than Open Skies. The Bush Administration was advocating a united Germany as soon as East Germany established a democratic government in its upcoming elections in March 1990. There was also an issue of whether a united Germany would take West Germany's place in NATO. While the Soviet Union saw the reunification of Germany as inevitable, Soviet Deputy Foreign Minister Viktor Karpov said that "what we are really against is including East Germany in NATO."[14] Western leaders contended that Germany would be both united and remain within NATO, but that there would not be any NATO forces stationed in East Germany. After the Germany question was resolved, Open Skies took center stage. The hope was that the treaty would be completed in three months, by May 1990. The negotiators would not be so lucky, as many disagreements slowed progress. The first objection came from the Soviet delegation regarding sensors. While all sides agreed that sensors which could monitor communications would not be allowed on the aircraft, the United States and the other NATO countries wanted optical sensors on the planes with enough resolution to be militarily useful. The Soviet Union wanted low-capability sensors that were less intrusive and less costly. They also believed that the information gathered

Hungary uses an An-26 aircraft for its Open Skies mission.

from the observations should be shared among all signatory nations. The Soviets stated that if their proposals were not implemented, western nations would use their technological advances to gather intelligence information over the former Warsaw Pact countries.[15] These issues were not resolved by the end of the conference in Ottawa; they would wait to be addressed again when negotiations resumed in Budapest, Hungary.

Budapest Conference: April 23-May 10, 1990

When talks reopened in Budapest two months later, high hopes for a quick agreement never materialized. Many of the complications involved technical aspects of the treaty. United States delegate, John Hawes, claimed that the signing deadline of mid-May was unrealistic because he, and other American diplomats, believed that the Soviet Union would not budge on any issue. However, the Soviets did concede that some equipment would be necessary for military reconnaissance, such as synthetic aperture radar and certain types of cameras.[16] On the issue of data sharing, it was the United States who held firm. John Hawes stated that the United States rejected the Soviet proposal on data sharing because it

would encourage countries to improve their camouflage, which would completely defeat the principle of Open Skies.[17]

Camera resolution also became a major topic of debate. The Soviets and the Eastern European countries wanted a maximum resolution of 30 centimeters, while the United States and the NATO countries stipulated that they would accept no less than 15 centimeters of resolution.[18] The United States, as in Ottawa, refused to accept the lower-quality resolution. The two sides agreed to disagree, which meant that the issue would be discussed at a later date. There would be another conference in the near future. The outlook was not very optimistic after Budapest. Viktor Karpov, the Soviet delegate, proclaimed that "plans to sign a treaty on May 12 [1990] were not realistic."[19]

Russia's An-30 Open Skies aircraft.

The United Kingdom uses a British Andover aircraft for its Open Skies mission.

Vienna Conference I: November 4-18, 1991

The next conference in Vienna would not be held for a year and a half. This was because of several factors, but mainly the Iraqi invasion of Kuwait in August 1990 and the Gulf War in early 1991. When talks finally opened on November 4, 1991, both the Soviet Union and the United States were surprisingly cooperative at this third conference. The Soviets agreed to open their entire territory to overflights authorized by the treaty while the United States agreed, in part, to the Soviet proposed "taxi option." The taxi option provides the observed nation with the option of requiring the use of its aircraft and equipment by an observing State Party, if they so desire. The United States continued to argue that the country conducting an overflight should be allowed to use its own aircraft if it so chooses.[20]

With major concessions being made by both sides, the first Vienna Conference on Open Skies was a major success. The American delegation characterized this Vienna Conference as a turn around in Soviet policy toward aerial observation.[21] The chief Soviet delegate, Yvgeny Golovko, told members of the conference that the first Vienna Conference marked the moment when both East and West displayed a "common approach" to Open Skies.[22] Consequently, a draft treaty was sent to each nation for final review. However, the treaty could not be signed due to technicalities regarding sensors. Representatives agreed to finalize the treaty in a fourth conference to be held again in Vienna in January 1992. The delegations also agreed that the treaty would most likely be signed in late March of 1992 in Helsinki, Finland.

Bulgaria's An-30 Open Skies aircraft.

Open Skies aircraft for the United States and Germany sit on the tarmac at Dulles International Airport.

Vienna Conference II: January 13-20 1992

Just as the first conference on Open Skies came during a historical period, so did the last. In December 1991, the Soviet Union collapsed and the Cold War ended. Fifteen new countries emerged. A new era in foreign relations was born. The second Vienna Conference opened on January 13, 1992, but with a couple of changes. Ukraine and Belarus were allowed to sit in on, however, their participation had not yet been granted. For convenience sake, Russia occupied the former Soviet Union's seat.

The second Vienna Conference could be seen as the "cleaning up conference." This time the parties tied loose ends, making sure that the final product would benefit all equally. However, there was one issue that was brought to the floor at the first Vienna Conference that was still controversial. The taxi option was again proposed by Russia, and finally the United States agreed to it. A few minor matters were left open, but all agreed that the signing of the treaty would go ahead as planned in March in Helsinki, Finland.[23]

3

Treaty Signing

Shortly after the Vienna Conference, former Soviet states were granted the privilege to be initial participants in the Open Skies Treaty if they signed before the treaty entered into force. Representatives of 24 nations initialed the treaty on March 21, 1992, including two former Soviet republics, Belarus and Ukraine. They formally signed the treaty on March 24 in Helsinki, Finland. Georgia, another former Soviet state, also signed the treaty on that same day, making 25 original signatories. These were: Belarus, Belgium, Bulgaria, Canada, Czechoslovakia, Denmark, France, Georgia, Germany, Greece, Hungary, Iceland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Russia, Spain, Turkey, Ukraine, the United Kingdom, and the United States.[24]

Another former Soviet state, Kyrgyzstan, signed the treaty on December 15, 1992. On January 1, 1993, Czechoslovakia formally separated into two countries–the Czech Republic and Slovakia. Both were considered an initial signatory states; the total was now 27 participating nations in the Open Skies agreement. Of these 27, only four have yet to ratify: Russia, Belarus, Kyrgyzstan, and Ukraine.* Upon entry into force, the ratified signatories will have agreed to:

- enhance security by means of confidence and security-building measures;
- extend security covering all territory from Vancouver, Canada to Vladivostok, Russia;
- contribute to strengthening peace, cooperative security, and stability in the area created by Open Skies;
- attempt to improve openness and transparency, and to facilitate the monitoring of compliance with existing or future arms control agreements and to strengthen the capacity for conflict prevention and crisis management in the framework of the Conference on Security and Cooperation in Europe and in other relevant international institutions;
- recognize the impact to security and stability that Open Skies could have on other parts of the globe;

* As of October 31, 1998.

- be open to the possible extension of the Open Skies regime into additional fields, such as the protection of the environment;
- seek to establish agreed procedures to provide for aerial observation of all the territories of States Parties, with the intent of observing a single State Party or groups of States Parties, on the basis of equity and effectiveness while maintaining flight safety;
- note that the operation of such an Open Skies regime will be without prejudice to States not participating in it; and
- meet periodically to evaluate the treaty, which is of unlimited duration.[25]

The Open Skies Consultative Commission (OSCC)

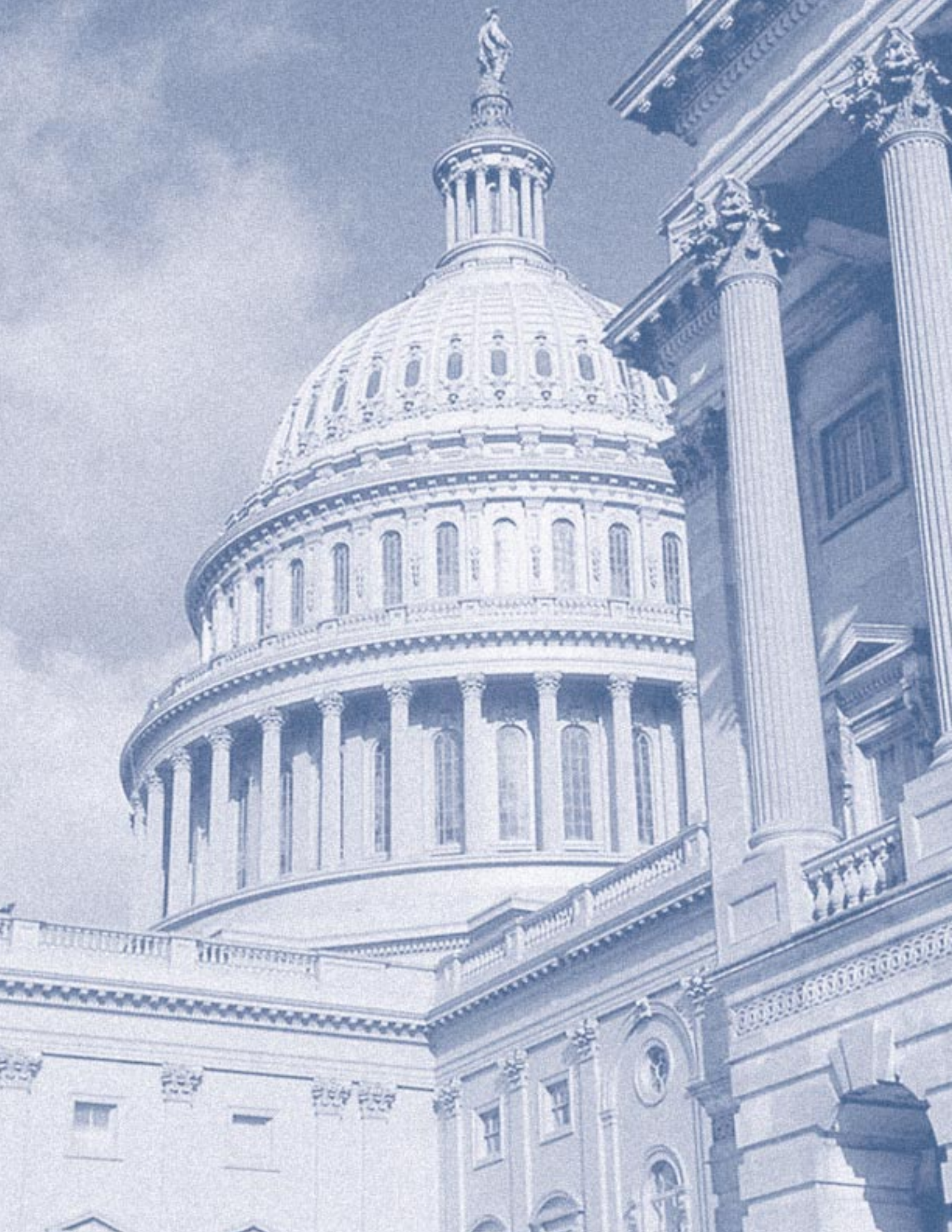
In order to facilitate implementation and promote objectives, the signatory states, in the Open Skies Treaty, created the Open Skies Consultative Commission (OSCC). The commission is comprised of one delegate from each State Party. These representatives meet four times a year in Vienna and operate on the basis of consensus. Essentially, the OSCC is a governing consortium which ensures that the treaty runs smoothly. Upon entry into force, the commission will assist in resolving compliance issues. However, to this date, the commission has dealt with inter-

Ukraine uses an An-30 aircraft for its Open Skies mission.

Germany initially modified and used the former East German presidential aircraft, a Tupolev (Tu-154), for its Open Skies mission. Pictured here arriving at Dulles International Airport in Washington, D.C., this was the first foreign aircraft to overfly the United States during an Open Skies joint trial flight (June 1995). However, this aircraft was lost when it collided with a U.S. C-141 over the South Atlantic Ocean in September 1997, killing everyone onboard both airplanes.

nal treaty issues, namely costs and sensor proposals. Some responsibilities of the OSCC include proposing amendments to the treaty, improving the distribution of active quotas, considering updates and additions to sensor capabilities, sharing costs, handling mission reports, and other aspects of Open Skies.[26] According to Article X of the treaty, the purpose of the Open Skies Consultative Commission is to:

- consider questions relating to compliance with the provisions of this Treaty;
- seek to resolve ambiguities and differences of interpretations that may become apparent in the way this Treaty is implemented;
- consider and take decisions on applications for accession to this Treaty; and
- agree as to those technical and administrative measures, pursuant to the provisions of this Treaty, deemed necessary following the accession to this Treaty by other States.[27]



4 United States Senate Ratification

"The Open Skies Treaty represents an important advance in international cooperation in the security field and responds especially to the new demands of the post-Cold War world," said Robert L. Gallucci, Assistant Secretary for Politico-Military Affairs, U.S. Department of State in 1993.[28] Canada was the first country to ratify the treaty in July 1992. It took the United States nearly 18 months to deposit its instruments of ratification. The U.S. Senate Foreign Relations Committee held hearings on September 22, 1992, and again on March 11, 1993.[29] Because the treaty was not extremely pressing, the Senate was in no rush to ratify Open Skies. Since many of the decisions by the Open Skies Consultative Commission were made after the treaty was signed, the Senate Foreign Relations Committee was waiting to see how these resolutions would hold with the other nations before recommending ratification to the full Senate.[30] After deliberation, the United States Senate Foreign Relations Committee approved the Treaty on August 6, 1993, with two conditions and one declaration.

The first condition dealt with changes to sensors, and the second dealt with the number of observation flights and aircraft required by the United States. The Senate stipulated that should sensor capabilities be changed by the Open Skies Consultative Commission, the president must submit a report to the Senate outlining any legal, financial, and national security implications. Additionally, the Senate required 30 days to consider the proposed changes.[31] In regard to the second condition, the Senate required the president to submit a report after the treaty's first year, analyzing any problems, estimating the number of overflights the United States would conduct, and assessing the number of aircraft needed to conduct these observation flights. More specifically, the Senate required the report to include:

- an analysis of the first year of operation of the treaty, highlighting any ambiguities, differences or problems that arose in the course of implementation, as well as any benefits that have accrued to the United States by its participation in Open Skies;

- a determination of the estimated number of observation flights to be conducted annually by the United States for the duration of the Treaty; and
- an assessment of the number of observation aircraft required by the United States to carry out the observation flights, taking into consideration the potential utilization of non-United States aircraft.[32]

In addition to the two conditions, the Senate's approval of Open Skies was also made subject to one declaration. In that statement, the Senate declared that the U.S. Government must interpret the treaty "based on the Treaty Clauses of the Constitution,...."[33] With the above mentioned conditions and declaration, the United States Senate ratified the Open Skies Treaty on December 3, 1993.

The United States modified three OC-135B aircraft for its Open Skies mission. The aircraft pictured here (tail number 61-2674) was the first to be completed in April 1993.

The remaining two aircraft (61-2670 and 61-2672) were ready to fly in June 1996.

INITED STA

5 Defining the U.S. Roles, Missions, and Equipment

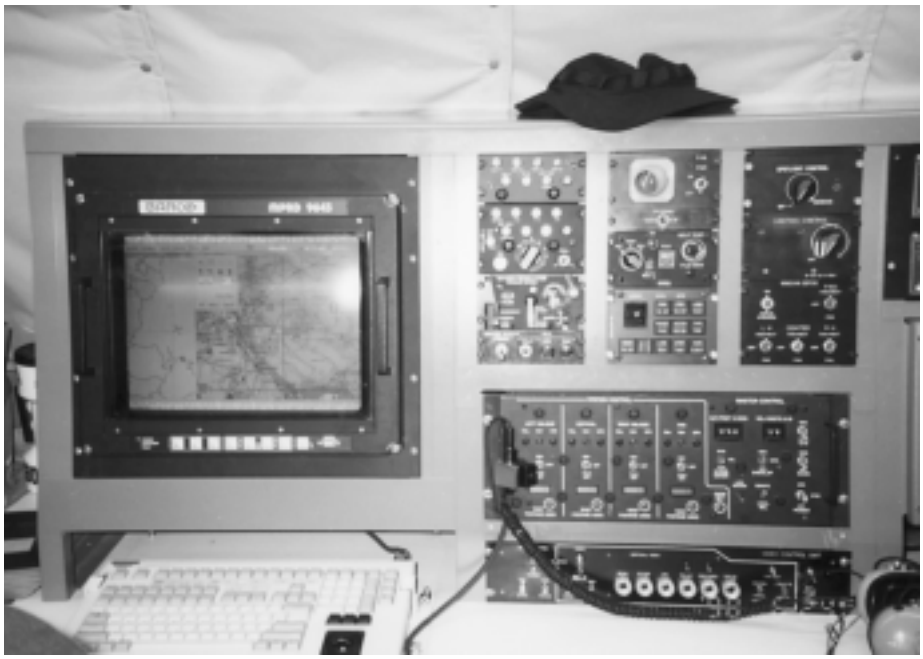
On January 15, 1988, President Ronald Reagan issued a decree for the Secretary of Defense to establish an organization to accomplish inspections for the newly signed Intermediate-Range Nuclear Forces (INF) Treaty. This action was the authorization that created the On-Site Inspection Agency (OSIA). Since then, the agency's responsibilities had grown considerably. Over its 10 years of existence, OSIA gained responsibility for inspecting and escorting under nine treaties including the Threshold Test Ban Treaty (TTBT), Conventional Armed Forces in Europe (CFE) Treaty, Strategic Arms Reduction Treaty (START), Chemical Weapons Convention (CWC), and Comprehensive Test Ban Treaty (CTBT).[34] In November 1992, President Bush assigned OSIA the mission and responsibility of ensuring that all the United States' rights were honored within the parameters of the Open Skies Treaty.[35] OSIA was disestablished on October 1, 1998, but its missions were absorbed under the newly-created Defense Threat Reduction Agency (DTRA).

DTRA, through its Open Skies Division, continues to be responsible for treaty training, coordination, support, management, and leadership of the Open Skies Treaty on behalf of the United States. DTRA provides the observation crews, mission commanders, and the escort observers who accompany other States Parties observing the United States. The U.S. Air Force provides the aircraft (OC-135) used for observation, along with the flight and maintenance crews. Other direct support for the treaty comes from the various Open Skies Airfields across the United States.

DTRA's observation crews are trained to be multi-capable individuals. For example, the sensor operators are Russian linguists as well. The deputy mission commander is not only the number two person behind the mission commander, but also the flight director during active missions. The mission commanders are not only in charge of the mission, but they are also the senior government official speaking on behalf of the United States. Air Force and DTRA crews also ensure that all flying procedures during the missions are safe and done in accordance with the treaty.

Aircraft and Sensors

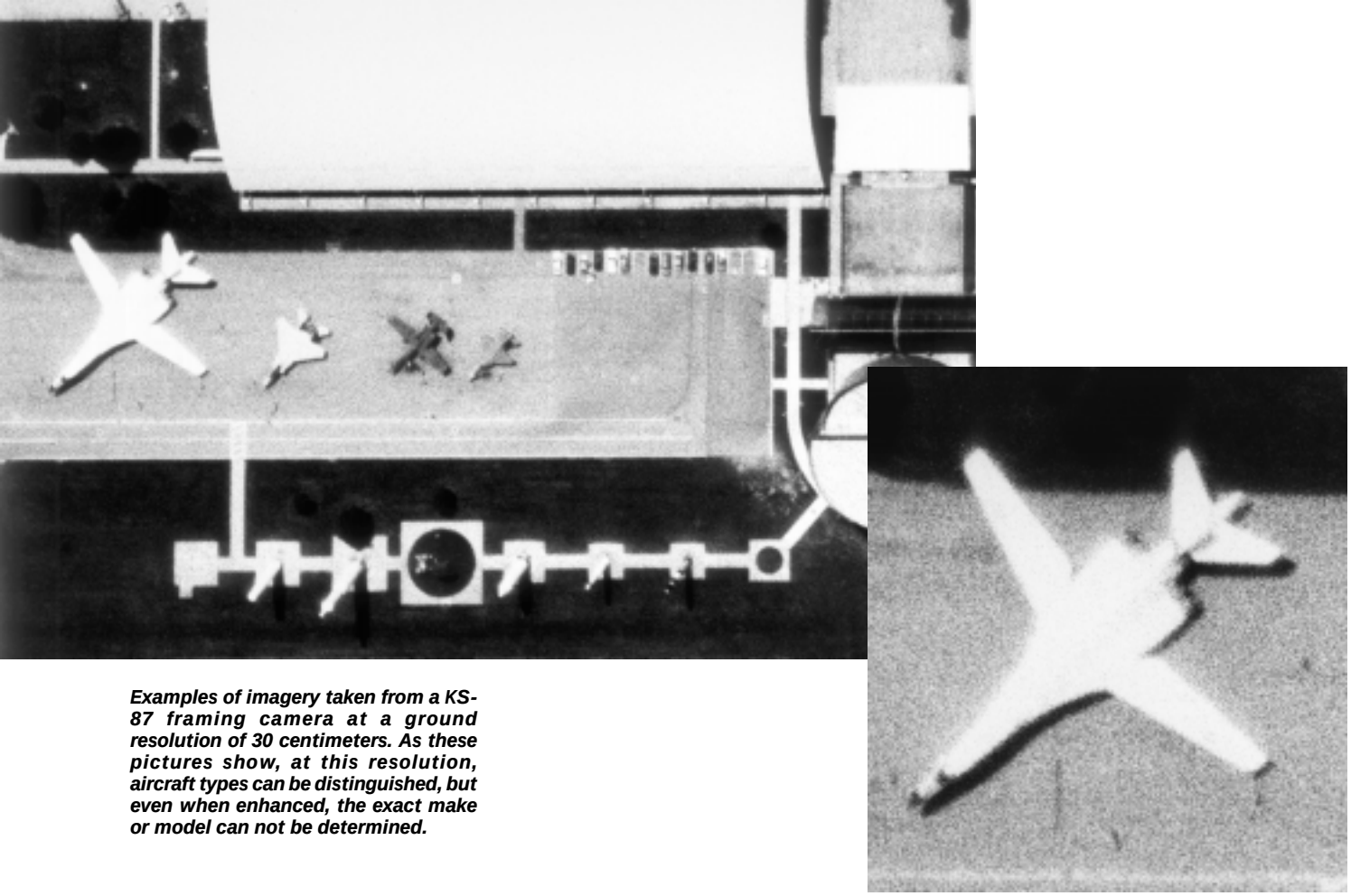
All observation flights are conducted using aircraft of the observing country, unless the observed country exercises its right to a taxi option. In that case, the observed country would provide the aircraft and flight crew. The observing party would then be required to reimburse the observed party certain goods and services related to the observation aircraft.* The type of aircraft used differs from country to country, however, the capabilities of the sensors onboard are strictly limited by the treaty. There are four different categories of sensors used: optical panoramic and framing cameras, video cameras with real-time display, infrared line-scanning devices, and sideways-looking synthetic aperture radars (SARs). The treaty limits these sensors to specific maximum allowable resolutions.[36]



A sensor control station on the OC-135B aircraft.

The optical cameras are allowed no better than 30 centimeters of resolution. This optical imagery can be obtained by no more than one panoramic camera, one vertically-mounted framing camera, and two obliquely-mounted framing cameras. In the case of the video cameras, the resolution is also limited to no better than 30 centimeters. For the infrared line-scanning devices, a ground resolution of no better than 50

* See Decision Number One in the Treaty on Open Skies for the distribution of associated costs.



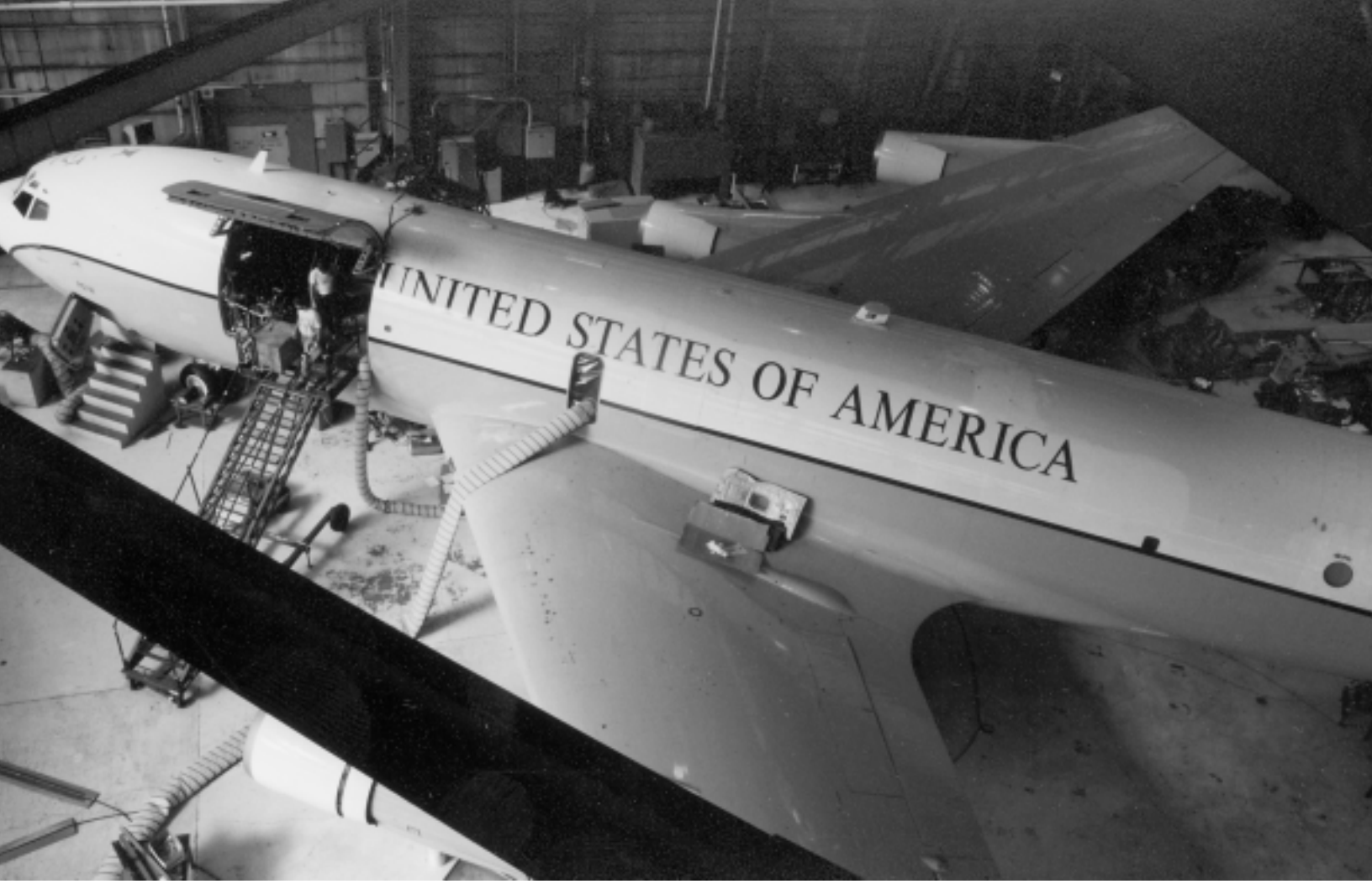
Examples of imagery taken from a KS-87 framing camera at a ground resolution of 30 centimeters. As these pictures show, at this resolution, aircraft types can be distinguished, but even when enhanced, the exact make or model can not be determined.

centimeters is the limit. And, a ground resolution of no better than three meters (300 centimeters) is allowed for the synthetic aperture radars. Detailed procedures on the use of these sensors are described in Article IV of the treaty. Additionally, all sensors must be commercially available to all other treaty signatories.[37]

The United States developed three OC-135B aircraft for conducting its observation flights. These were reconfigured Air Force WC-135B weather aircraft.[38] The first of the modified airplanes was not available until mid-1993.[39] Until these modified airplanes were available, the United States used a Convair CV-580 on training missions to collect optical and synthetic aperture radar imagery.[40]

In the meantime, the Air Force began modifying the first of three WC-135B aircraft (tail number 61-2674), in December 1992.[41] The work was done at a special Air Force modification facility in Ohio.* This was the first phase of the overall Open Skies modification. This work included installing a KA-91 panoramic camera, two KS-87B oblique-mounted framing cameras, and a KS-87B vertical-mounted framing camera. The panoramic KA-91 is used for wide-area imagery from high-altitudes of

* The Aeronautical Systems Center's Developmental Manufacturing and Modification Facility (DMMF), located at Wright-Patterson Air Force Base, Ohio, actually performed the modifications.



The U.S. Open Skies aircraft being modified in a hanger at Wright-Patterson Air Force Base, Ohio.

up to approximately 40,000 feet above the ground. The vertical KS-87B camera is used for low-altitude photography, approximately 5,000 feet above ground. The two oblique cameras, also KS-87Bs, provide low-altitude photography in conjunction with the vertical framing camera.[42]

A Data Annotation/Recording and Mapping System (DARMS) was also installed on the aircraft as well as Global Positioning Satellite (GPS) navigation equipment, flight following stations, and an upgraded cabin

Sensor control stations onboard the U.S. OC-135B Open Skies aircraft.

The video sensor control station on the OC-135B aircraft.

(galley, latrines, and seating). Additionally, the aircraft's avionics were upgraded and new storage and maintenance areas for the film canisters were constructed. The cost of this first phase also included the Open Skies Media Processing Facility (OSMPF). The Air Force spent approximately $11 million on this initial phase.[43] All modifications for the first OC-135B aircraft were completed by April 1993. A series of flight tests followed, which included an airflow evaluation, a flight systems operations check, camera testing and calibration, and optical sensor resolution tests. All testing was completed by June 30, 1993, and the aircraft was declared ready to conduct treaty overflights.[44]

The second phase of the modification began in March 1994 and included everything needed to meet full operational capability status.[45] This included modifying the remaining two OC-135B aircraft (61-2670 and 61-2672), and upgrading the first aircraft. However, shortly after this, projected budgetary reductions led to an Air Force decision to place the first aircraft (61-2674) in reserve status. This meant that it was removed from operational status, but could be brought back on-line if required in the future. When completed, the two remaining reconfigured aircraft would have all of the initial modifications plus one synthetic aperture radar (SAR), one infrared line scanner (IRLS), and one video camera. This phase also included funding for an engine hush kit (developed, but dropped when production money was pulled) and upgrades to the media processing facility. The final phase was completed in June 1996 at a cost of $51 million. This was broken down as $7 million for the upgrade to aircraft 61-2674, $18 million each for the remaining two aircraft, and $8 million for the hush kit preproduction.[46]

Aircraft Crew

A view of the camera bay under the OC-135B.

The aircraft used for Open Skies missions are assigned to the Air Force's 45th Reconnaissance Squadron, located at Offutt Air Force Base, Nebraska.* The 45th, an element of the 55th Wing, also provides the flight crews for all Open Skies missions.[47] The OC-135B is designed to support a crew of up to 36 people. Typically, an Open Skies mission has 15 people who comprise the flight and maintenance crews from the Air Force's 55th Wing. The crews consist of three pilots, two navigators, two sensor maintenance technicians, and eight maintenance personnel. The maintenance crew consists of a supervisor, two crew chiefs, and one individual for each of the five specialty areas: communications/navigation, jet engines, electronics, hydraulics, and guidance and control. The DTRA team consists of a team chief (referred to as mission commander), a deputy team chief, and two to four linguist sensor operators. There are also seats for flight monitors from the observed country and other U.S. Government representatives that frequently fly on missions.[48]

A U.S. Open Skies official describes features of the OC-135B to foreign observers during a partial aircraft certification at Wright-Patterson Air Force Base in August 1995.

During a foreign overflight of U.S. territory, treaty-knowledgeable DTRA flight monitors will fly aboard the foreign aircraft during its observation flight. The actual number of DTRA treaty/flight monitors will vary in accordance with the treaty, and will depend upon the size of the observing nation's aircraft. DTRA will usually have at least four officials onboard a foreign aircraft while it is flying on treaty missions over the United States. The treaty sets a minimum number for representatives from the observed country onboard, but it also grants waivers for smaller aircraft. In the case that the observing country uses its own aircraft, the observed party is authorized two flight monitors and one interpreter, as well as one flight monitor for each sensor control station, unless otherwise mutually agreed upon.**[49]

---

* Initially, the aircraft were assigned to the 24th Reconnaissance Squadron. The 24th was inactivated on June 30, 1994. Its assets and mission were assumed by the reactivated 45th Reconnaissance Squadron.

** See Article VI, Section III of the treaty for a list of these and other guidelines outlining the number of representatives onboard observing aircraft.

A U.S. Open Skies official gives a briefing onboard the OC-135B aircraft to foreign observers during a mock certification at Wright-Patterson Air Force Base, Ohio.

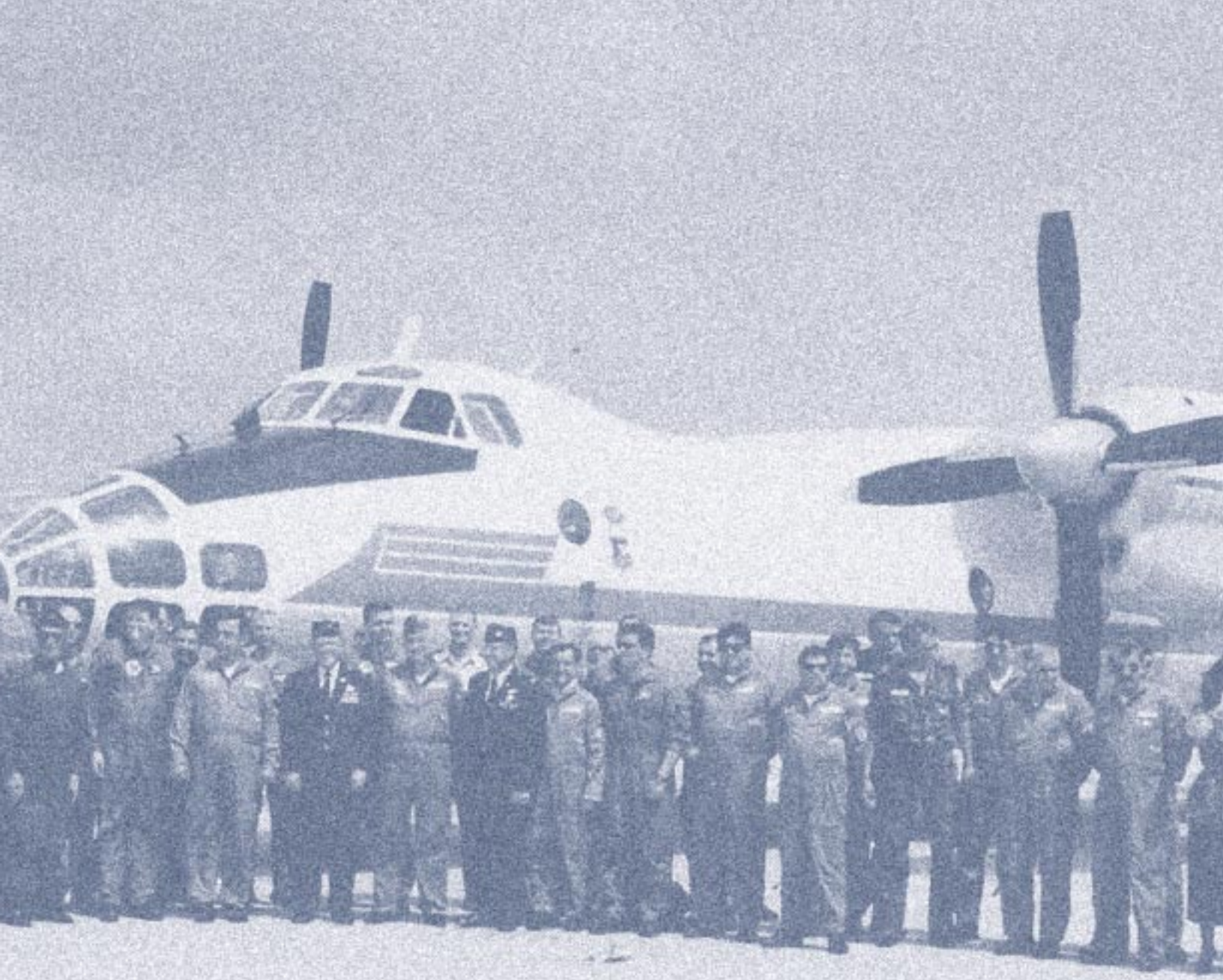
Observers from Germany and Russia inspect the SAR antenna assembly on the OC-135 during the aircraft certification process.

A Canadian official inspects a sensor during a mock certification.

6 Observation Flight Quotas: Active and Passive

An observation flight under the Open Skies Treaty is called a quota. Each State Party, or group of States Parties, is assigned a certain number of observation flights that they ***must accept*** each year. These are called passive quotas. States Parties with a large geographical area, such as the United States or Russia, are given more passive quotas than those with less terrain, such as Portugal or Iceland. However, each signatory nation has at least one passive quota during the first year of the treaty. The number of observation flights a State Party is allocated to conduct are called active quotas. Active quotas directly correspond to the number of passive quotas. Each member nation has the right to conduct a number of observation flights over any other State Party equal to the number of flights which that other State Party has the right to conduct over it. The distribution of active quotas are reviewed and determined each year by the Open Skies Consultative Commission (OSCC).[50]

The Open Skies Treaty will enter into force 60 days after 20 States Parties have ratified, including all 10 having eight or more passive quotas. Those 10 countries are: Belarus, Canada, France, Germany, Italy, Russia, Turkey, Ukraine, United Kingdom, and the United States. (See Appendix A for a listing of State Party quotas.) Three of the four countries that have not yet ratified-Russia, Belarus, and Ukraine-have eight or more quotas and must ratify for the treaty's entry-into-force (EIF) phase to begin. Belarus, itself, does not actually have eight separate passive quotas. Its quotas are counted together with Russia as one State Party, however, Belarus is still required to ratify for treaty EIF.[51]



7

A Typical Open Skies Mission

When a State Party wants to conduct an observation flight, it is required to give 72 hours notice to the country they wish to observe. They send a message, called a Format 12, to the hosting country with its arrival time and a list of the people who will conduct the mission. The host nation must respond with a Format 13, an acceptance reply. The observed country quickly acquires visas, sets up lodging, and gets everything in place for the observing nation's arrival.[52]

Upon arrival, the observing State Party has 96 hours to complete the observation mission. Immediately after arrival, the visiting nation's team will go through point of entry procedures–a variety of briefings required by the treaty. These include weather updates, safety hazards, and any other special rules or information. The teams then travel to the Open Skies Airfield, if different than the entry point. An initial inspection of the observation aircraft is then conducted at the Open Skies Airfield. During a passive quota in the United States, inspection of the foreign aircraft will be conducted by DTRA's Technical Equipment Inspectors.

A Russian An-30 arrives at Dulles International Airport in Washington, D.C. for a Russia–U.S. joint trial flight, July 28-August 4, 1997.

They look to ensure that the aircraft and sensors comply with those previously certified in accordance with the treaty. A technical equipment inspection can last up to eight hours, but it must be completed at least four hours prior to the scheduled commencement of an observation flight.[53]

Next, the observing nation's team chief, or mission commander, submits his mission plan to the other country. This is done at least 24 hours before the scheduled takeoff. The observed country reviews the plan to make sure it fully complies with the treaty. They have four hours to review the plan and accept or propose changes. If there are any major concerns, the two parties have up to eight hours to reconcile the flight plan. In the unlikely event that the two parties can not reach agreement, the observing party may cancel the mission. They must then file and submit a written explanation to all other States Parties. A demonstration flight could be flown after the pre-flight inspection. A demonstration flight consists of the observing party flying a racetrack pattern over a target, operating the cameras and equipment to be used for the actual mission flight. If a demonstration flight is added, the observing State Party is given an additional 24 hours, on top of the 96 hours, to complete the mission.[54]

Left: A United Kingdom sensor operator changes the film onboard the British Andover as an American Open Skies official observes the process during a joint trial flight over Scotland in 1996.

Bottom: The U.S. observer initials that he had witnessed the change-out of film.

Open Skies Mission

TIMELINE

96 Hours to Conduct Mission Upon Arrival (May Add 24 hrs if Observed Party Requests a Demonstration Flight)

- **72 hr Notice, 24 hrs to Reply**
- **Arrival Procedures**
- **Submit/ Negotiate Mission Plan (8 hrs Max)**
- **Technical Equipment Inspection (8 hrs Max)**
- **Demonstration Flight (if requested)**
- **Conduct Observation Flight**
- **Depart within 24 hrs from Mission Completion**

Top: A U.S. Open Skies team reviews and discusses a flight plan for a mission over the United States.

Middle: U.S. and the Czech Republic crews pose with the Czech An-30 aircraft, preparing for a demonstration flight over the Czech Republic in July 1996.

Left: U.S. technical equipment inspectors layout their equipment which will be used to inspect the Bulgarian An-30 aircraft prior to a trial flight.

The actual mission consists of flying the accepted route and altitude. In some of the larger countries such as Russia and the United States, the mission may require several takeoffs and landings from pre-designated Open Skies refueling airfields to complete the total mission. Such cases may take two or more days of flying. The maximum flight distances of observation flights commencing from Open Skies airfields varies, depending on the size of the observed nation. For example, the maximum

A U.S. official greets members of the Ukrainian Open Skies crew after arriving at Robins Air Force Base, Georgia, in April 1997.

A Ukrainian technician operates a sensor onboard an An-30 aircraft, while a U.S. Open Skies team chief looks on during a joint trial flight over Ukraine in June 1998.

U.S. officials observe a Bulgarian sensor operator at a sensor control station onboard an An-30 aircraft during a demonstration flight over Dayton, Ohio, July 27, 1998.

distance you can fly from declared airfields in Bulgaria during one mission is 660 kilometers, while in Russia, flights up to 6,500 kilometers are allowed.[55] Typically, most European nations will require only one day of flying. The 96 hours allowed provides extra days for multiple flights in the larger countries. Additionally, if the weather on the scheduled flying day is not suitable for acquiring the desired imagery, the observing nation may use the extra days to wait for better weather.[56]

Upon landing after an observation flight, the parties might go immediately to process the film and make duplicates–the treaty requires that a copy of the imagery will always be provided to the country being observed. The observing country has the option of processing the film back in its own country. If this option is chosen, the observed nation is authorized to send two people back with the team from the observing nation to monitor the processing of the film, the duplication process, and then take copies back to their country. For processing in the United States, DTRA uses the Open Skies Media Processing Facility (OSMPF) located at Wright-Patterson Air Force Base (AFB), Ohio.[57]

Joint Trial Flights

German officials, and a Belgian observer, watch operations at a sensor control station onboard the OC-135B aircraft during a U.S.–Germany joint trial flight, July 14-25, 1995.

Joint Trial Flights (JTFs) are Open Skies missions conducted between two or three States Parties outside the normal quota of either country. While awaiting entry-into-force (EIF) of the treaty, JTFs are routinely being performed between the signatory nations. These flights are designed to look exactly like Open Skies Treaty missions. The most significant difference is in the detailed mission planning stage. During a joint trial flight, there is more planning and discussion between the participating countries. Before each flight, DTRA will generally send the designated team chief and two other representatives to the country that the U.S. intends to fly with. There, they sit down with that country's representatives and develop the plans and schedules for the mission. The mission dates are set; all the payment rules are established such as who pays for hotel rooms; how jet fuel will be purchased; and how the aircraft will be serviced. Visas and customs are also discussed in these planning sessions. By contrast, in an actual treaty mission the observing country is only required to give 72-hour notice prior to arriving.[58]

Planning usually happens months ahead of the actual joint trail flight. Then, about four weeks before the mission, the combined U.S. mission

A Ukrainian An-30 Open Skies aircraft on the tarmac at Borispol in Kiev, Ukraine in June 1998.

U.S. and Russian officials greet each other after the United States Open Skies team arrives at Kubinka for a joint trial flight, August 1997.

planning team finalizes the route to fly and areas to be imaged. Alternate routes are also developed in case of bad weather or if other circumstances arise. Well before 72 hours prior to arriving, the observing party will send a message to the hosting country listing arrival times and mission personnel. The rest of the JTF mission is conducted like an actual Open Skies Treaty mission. One other difference is that after a joint trial flight, only the two nations involved share the imagery produced. For actual quota missions under the treaty, any signatory nation of the treaty can request a copy of the imagery.

On July 10-12, 1993, the United States flew its first joint trial flight. Conducted over Hungary, and with 12 nations observing, the U.S. Convair CV-580* conducted two flights over several Hungarian CFE (Conventional Armed Forces in Europe) Treaty sites.[59] During the mission, the U.S. collected mostly optical images, however, some synthetic aperture radar (SAR) imaging was also captured. Since then, while awaiting the treaty's entry-into-force, the United States has conducted 34 JTFs with other nations.[60] Eleven of these have been flown over the United States, while 23 have been over foreign territories. (See Appendix E for a detailed breakdown of these JTFs.)

The Russian Open Skies team stands beside their An-30 aircraft shortly after arriving for the first time in the United States for a joint trial flight, July 28–Aug 4, 1997.

* This was the only JTF conducted in which the United States used the CV-580. After this mission, the U.S. began using the OC-135B aircraft.

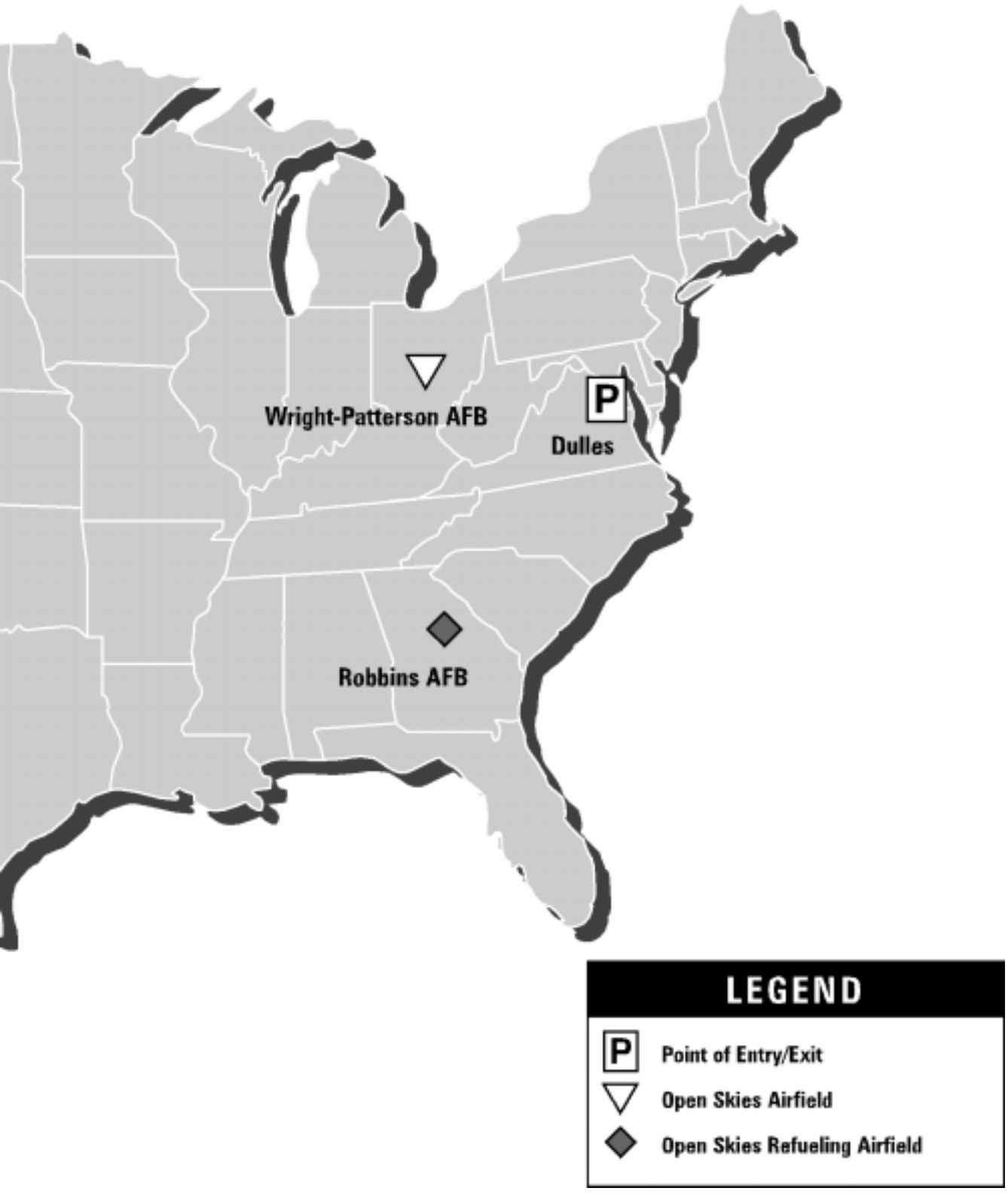

USAF

8

U.S. Open Skies Airfields

Since the United States is a geographically large country, there are several airfields across the country designated for the Open Skies mission. There are two point of entry and point of exit locations for all observing nations arriving in the United States. One is at the Washington-Dulles International Airport near Washington, D.C., and the other is at Travis Air Force Base (AFB), California. There are three designated Open Skies Airfields (OSAs). They are located at Travis AFB, Wright-Patterson AFB in Ohio, and Elmendorf AFB in Alaska. These are the only places within the United States that Open Skies observation flights can start and end. Finally, there are four Open Skies Refueling Airfields (OSRAs) in the United States. These are located at Ellsworth AFB in South Dakota, Tinker AFB in Oklahoma, Robins AFB in Georgia, and the Honolulu International Airport in Hawaii.[61] For conducting active quota missions in Europe and Asia, the United States has two staging bases. One is at Royal Air Force (RAF) Station, Mildenhall, England, and the other is Yokota Air Base (AB), Japan. The OC-135 is flown to one of those sites and the aircraft is checked over by U.S. Air Force personnel and any needed maintenance is performed. The crew uses this time to rest and adjust to the time change.[62]

United States Open Skies Airfields


Wright-Patterson AFB
P
Dulles
Robbins AFB
LEGEND
P
Point of Entry/Exit
Open Skies Airfield
Open Skies Refueling Airfield

9

Training of DTRA Open Skies Personnel

Personnel in the DTRA Open Skies Division are required to have certain base-level qualifications before they are even assigned to the organization. Basically, there are three different categories of Open Skies personnel: team chiefs, deputy team chiefs, and linguist sensor operators (LSOs). The Open Skies Treaty is unique because it is the only treaty that requires the use of an aircraft. As such, each member of the DTRA Open Skies team has to come from a flying career field and have ample experience as aircrew members. Utilizing highly-experienced aircrew personnel reduces the amount of training time required when new personnel are assigned to the division.[63]

The linguists, which are all enlisted personnel, are also the sensor operators. Since they perform both duties, this reduces the manpower required for missions. In addition to being flyers, before the linguists are assigned to the Open Skies Division, they have to be level-3 Russian speakers. The deputy team chiefs are all pilots or navigators who have had extensive flight experience. Deputies are very familiar with air traffic control (ATC) procedures, because while flying aboard foreign aircraft in the United States, they need to be able to relay or explain ATC instructions to the flight crews. The team chiefs also have to be aviators, but their main focus is on treaty knowledge, leadership, and people skills. They also need a general knowledge of all the aspects of the linguist sensor operators' and deputies' duties. The team chiefs must have a thorough knowledge of all aspects of the Open Skies Treaty as they are the senior United States Government representative on treaty missions.[64] They have to be able discuss specifics of a mission, protect U.S. treaty rights, and negotiate contentious issues within the treaty guidelines.

As far as specific training is concerned within DTRA, linguist sensor operators are given a list of items to read and study when they are initially assigned to the Open Skies Division. They first need to learn the basics of the treaty. Then, they extensively study all the technical aspects of the cameras and sensors. This is paramount because they will not only be operating the sensors on the OC-135B aircraft, but may be required

to interpret certain specifics of the equipment or aspects of the processes to foreign aircrew members. Again, since they may be needed to interpret, the linguists are required to have a knowledge of the aircraft systems itself, as well as a more detailed knowledge of flying procedures. DTRA personnel are also trained on film processing procedures at the Media Processing Facility at Wright-Patterson AFB. The team chiefs and the deputies are required to have a basic knowledge of the process, but the linguist sensor operators are required to know more specifics, again, because they will have to explain to the foreign team what the processes are while they are going through it. Altogether, the linguists will go through language training, ground training, and flying training, and then be evaluated.

Ukrainian officials inspect the American's technical equipment that will be used for inspection of the Open Skies aircraft, during the point-of-entry procedures. (Ukraine–U.S. joint trial flight, April 16-24, 1997.)

The team chiefs and deputies also have required reading and study materials. Additionally, to be considered a fully qualified team chief or deputy team chief, they must undergo formal flight and ground training, which includes the successful completion of an initial in-flight evaluation. There is also continuation training for the whole team, usually every other week on a different aspect of the treaty. During these training sessions, an instructor, with thorough knowledge on a particular topic, will put together a lecture and presentation on the subject matter. After that, the linguists accomplish specific treaty language training on that particular subject. Another aspect of training for Open Skies personnel is to keep everyone current in their flying continuation training and qualifications. This includes a requirement for all team members to complete periodic in-flight and ground evaluations. Because of the personnel turnover rate at DTRA, every couple of years experts from the different sensor manufacturers are invited to give instruction on the particular sensor their company built and has onboard the OC-135. These lectures and presentations are also placed on video for newly assigned personnel to study.

Training for the Flight Crew

The flight crew of the 55th Wing, which operates the United States' OC-135B Open Skies aircraft, are also required to undergo certain treaty-related training. Since they also fly other missions out of Offutt AFB, they get their flying training from Air Force military commands. However, to qualify to fly an Open Skies mission, the 55th flight crew personnel are required to first take the formal treaty course given by DTRA. Additionally, together with DTRA personnel, the 55th flight crews will fly training sorties that are similar to Open Skies missions. This is so they can get used to the profiles and type of flying required under the treaty.[65]

The framing camera onboard the Bulgarian An-30 aircraft.


BEFORE FLIGHT

10 Costs and Funding for Open Skies

Funding for the Open Skies Treaty comes out of several different budget allocations. Part goes to DTRA for implementing the treaty. The Air Force gets a large portion of the funding, mainly to operate the OC-135B treaty airplanes. Other portions go to the Open Skies Media Processing Facility at Wright-Patterson AFB and to the Open Skies supporting airfields. The costs of each observation mission varies, depending on where the mission is taking place, what nation's aircraft and equipment is being used, where the media processing will be performed, and several other factors. Just to operate the OC-135B aircraft, it costs the Air Force about $2,500 per hour. The United States has been flying joint trial flights (JTFs) routinely since 1994. From 1994 to 1997, the total Open Skies budget has been approximately $7 million a year.[66]

It costs the United States Air Force about $2,500 per hour to operate the OC-135B aircraft.

11 Future Possibilities

Although the Open Skies Treaty has not yet entered into force, through the benefit of conducting numerous multinational and bilateral joint trial flights, it has already been a success and appears to have overwhelming support of the participating nations.[67] In some cases, when these overflights have occurred, it has marked the first time a particular nation's military aircraft has overflown a former adversary's territory. This display of openness, cooperation, and trust is unprecedented. When the governments of Belarus, Russia, and Ukraine ratify the treaty and deposit their instruments of ratification, the treaty will enter into force 60 days later. During the next six months, any other nation participating in the Conference on Security and Cooperation in Europe may apply for accession into the treaty. In fact, several countries, such as Sweden and Finland, have shown interest in participating in the treaty and conducting overflights.[68]

Other possibilities for the Open Skies forum have also been addressed and discussed. These include observation flights to monitor the environment, to facilitate compliance with existing or future arms control agreements, or to strengthen the capacity for conflict prevention and crisis management.[69] In fact, some of this has already been tested. In November 1997, the United States was an observing party as the Russian Federation overflew Bosnia with their An-30, observing peacekeeping operations in the region. There has also been considerable talk about using the Open Skies platform in a similar fashion over the country of Kosovo. In December 1998, the U.S. Open Skies team also overflew Central America to collect imagery for assessing and analyzing damage incurred from Hurricane Mitch, which struck the region in November 1998. Along with these ancillary missions, the signatory nations continue to conduct trial flights while awaiting the entry into force of the Treaty on Open Skies.

12 Notes

[1] *Treaty on Open Skies,* U.S. Senate Treaty Doc. 102-37, U.S. Government Printing Office, Washington, 1992.

[2] Kevin Ruffner, editor, CORONA: America's First Satellite Program, History Staff, Center for the Study of Intelligence, Central Intelligence Agency, Washington, D.C., 1995, p. xi.

[3] Jonathan B. Tucker, "Negotiating Open Skies: A Diplomatic History," in Krepon and Smithson (eds.), *Open Skies, Arms Control and Cooperative Security*, St. Martin's Press, New York, 1992, p. 5.

[4] David Hoffman, "Bush Urges Soviets to Broaden Reforms," *The Washington Post*. May 13, 1989, Front Page.

[5] Ibid.

[6] Paul Lewis, "Soviet Position at 'Open Skies' Talks Puzzles West," *New York Times*, February 25, 1990, p. 11.

[7] Richard G. Hewlett and Jack M. Holl, *Atoms for Peace and War*, 1953-1961, University of California Press, Berkley and Los Angeles, 1989, p. 464.

[8] Gregory W. Pedlow and Donald E. Welzenbach, *The CIA and the U-2 Program, 1954-1974*, Central Intelligence Agency, Washington, D.C., 1998.

[9] David Thomson, "Treaty on Open Skies," Center for National Security Studies, Los Alamos National Laboratory, July 25, 1994.

[10] Frank A. Partlow, "The Verification Triad: National Technical Means, On-Site Inspections, and Aerial Inspections," in Krepon and Smithson (eds.), *Open Skies, Arms Control and Cooperative Security*, St. Martin's Press, New York, 1992, p. 52.

[11] Joe Clark, "Don't Dismiss Open Skies," *New York Times*, June 5, 1989.

[12] Paul Lewis, "U.S. Presents Plan for German Unity," *New York Times*, February 13, 1990, p. A10.

[13] Clark, *New York Times*, June 5, 1989.

[14] Lewis, *New York Times*, p. 11.

[15] Ibid.

[16] Celestine Bohlen, "'Open Skies' Talks Hit Snag, Cutting Chances of Pact in May," *New York Times*, April 26, 1990, p. A14.

[17] Ibid.

[18] Mark David Gabriele, "The Treaty on Open Skies and Its Practical Applications and Implications for the United States," RAND Graduate School, 1998. p. 3. During the

Ottawa Conference, the Soviets stated that they would accept a no better resolution on cameras than two to three meters. The United States, unwilling to accept that proposal, held off on the resolution issue until the second conference in Budapest.

[19] Clestine Bohlen, *New York Times.* (Quoting Viktor Karpov), p. A14.

[20] Treaty on Open Skies, p. 11.

[21] Michael Z. Wise, "Soviets Back 'Open Skies' Pact, Hi-Tech Flights," *New York Times*, November 6, 1991, p. A20.

[22] Ibid.

[23] Thomson, "Treaty on Open Skies," p. 3. The two questions left to be resolved after the Vienna talks included: (1) the degree of sensor capability and; (2) the costs associated with observed parties aircraft. NATO members did not want to pay when a nation forced the "taxi option" upon them. Russia disagreed. A follow-on negotiation rejected Russia's plea for shared costs on that matter.

[24] Ibid, p. 3,12.

[25] *Treaty on Open Skies*, pp. x, 2.

[26] "Treaty on Open Skies," U.S. Senate Foreign Relations Committee Report, Executive Report 103-105, August 2, 1993.

[27] Ibid., p. 26.

[28] Ibid., p. 7.

[29] Thomson, "Treaty on Open Skies," p. 6.

[30] Interview with Francis X. Stenger, Deputy Chief, Open Skies Division, by SSgt Kirk W. Clear and Steven E. Block, Historians, Washington, D.C., June 26, 1998.

[31] "Treaty on Open Skies," Resolution of Ratification, United States Senate in Executive Session, Congressional Record, S10800-10804, August 6, 1993.

[32] Ibid.

[33] Ibid.

[34] MSgt David M. Willford, USAF, "A Brief History of the On-Site Inspection Agency," OSIA, U.S. Department of Defense, 1997, pp. 39-43.

[35] Interview, Stenger.

[36] *Treaty on Open Skies.*

[37] Ibid., Article IV.

[38] Fact Sheet, "Open Skies OC-135B Observation Aircraft," OSIA Public Affairs, May 1996.

[39] Interview with Lt Col Scott Simmons, Open Skies Team Chief, by SSgt Kirk W. Clear, Historian, Washington, D.C., July 7, 1998.

[40] Report, "United States of America Open Skies Imagery Portfolio," OSIA, November 1994, p. i.

[41] Fact Sheet, "Open Skies OC-135B Observation Aircraft," May 1996.

[42] Aeronautical Systems Center History Office, *Against the Wind*, February 1994, p. 143; Fact Sheet, "4950th Test Wing Modifies Open Skies Aircraft," Aeronautical Systems Center Public Affairs Office, 1993.

[43] *Against the Wind*, p. 143.

[44] Fact Sheet, "OC-135B Modification Testing Completed," ASC Public Affairs Office, 1993; Fact Sheet, "Open Skies Aircraft Modification," ASC Public Affairs Office, Aug. 1994; *The Arms Control Reporter*, Institute for Defense & Disarmament Studies, 1993, sec. 409.

[45] Bobbie Mixon, "Second Open Skies aircraft undergoes conversion here," *Skywrighter*, April 8, 1998, p.7.

[46] E-Mail, R.K. Price to SSgt K.W. Clear, "Open Skies Mod Cost," August 14, 1998.

[47] Interview, Simmons.

[48] Fact Sheet, "Open Skies OC-135B Observation Aircraft," May 1996; Fact Sheet, "Open Skies Aircraft Modification," August 1994.

[49] Interview, Simmons; *Treaty on Open Skies*, Article VI, Section III.

[50] *Treaty on Open Skies*, Article III.

[51] Ibid.; Thomson, "Treaty on Open Skies," pp. 12-13.

[52] Briefing, "Treaty on Open Skies," Capt. P. Callahan, OSIA, c. 1992; Briefing, "Active and Passive Notifications," OSIA, March 1998; Interview, Simmons.

[53] Briefing, "Treaty on Open Skies," c. 1992; *Treaty on Open Skies*; Briefing, "Pre-Flight Inspection," OSIA, Oct. 1997.

[54] Briefing, "Treaty on Open Skies," c. 1992; Interview, Simmons.

[55] *Treaty on Open Skies.*

[56] Interview, Simmons.

[57] Ibid.; Briefing, "Media Processing, Duplication, Process Monitoring & Dissemination," OSIA, October. 1997.

[58] Interview, Simmons.

[59] *The Arms Control Reporter*, Institute for Defense & Disarmament Studies, 1993, sec. 409.

[60] Chart, "Open Skies History," OSIA Open Skies Directorate, August 1998.

[61] Briefing, "Treaty on Open Skies," c. 1992.

[62] Interview, Simmons.

[63] Interview, with Lt Col Mike Bridges, OSIA Open Skies Training Officer, by SSgt Kirk W. Clear, OSIA Historian, Washington, D.C., August 11, 1998.

[64] Ibid.

[65] Ibid.

[66] Interview, with Lt Col Bill Milot, OSIA Interagency Affairs, by SSgt Kirk W. Clear, OSIA Historian, Washington, D.C., August 11, 1998; Interview with Capt. Daniel Mosqueda, OSIA Open Skies, by SSgt Kirk W. Clear OSIA Historian, Washington, D.C. August 24, 1998.

[67] Interview, Stenger.

[68] Interview, Milot.

[69] *Treaty on Open Skies.*

A

Appendix

Treaty Members Ratification Status & Annual Passive Quotas (as of October 31, 1998)

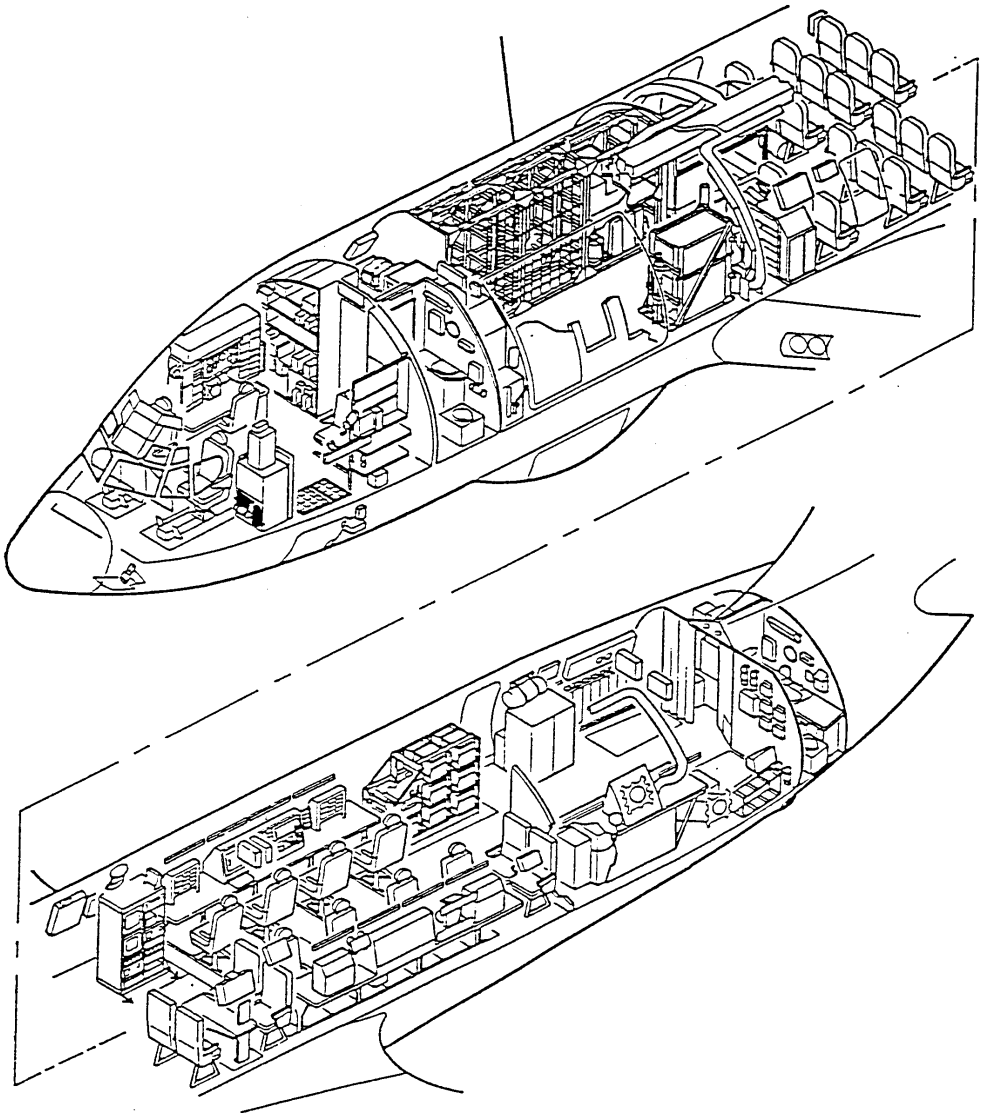
State Party	Ratified Treaty	Deposited Instrumentsof Ratification	Passive Quota
Germany	yes	January 27, 1994	12
United States Of America	yes	December 2, 1993	42
Russia/Belarus	-		42
Benelux*	yes	June 28, 1995	6
Bulgaria	yes	April 15, 1994	4
Canada	yes	July 21, 1992	12
Denmark	yes	January 21, 1993	6
Spain	yes	November 18, 1993	4
France	yes	July 30, 1993	12
United Kingdom	yes	December 8, 1993	12
Georgia**	yes	June 19, 1998	0
Greece	yes	September 9, 1993	4
Hungary	yes	August 11, 1993	4
Iceland	yes	June 24, 1993	4
Italy	yes	October 28, 1994	12
Kyrgyzstan***	-		0
Norway	yes	July 14, 1993	7
Poland	yes	May 17, 1995	6
Portugal	yes	January 22, 1994	2
Romania	yes	June 5, 1994	6
CzechRepublic & Slovakia****	yes	December 21, 1992	4
Turkey	yes	November 30, 1994	12
Ukraine	-		12

* For the purposes of the Open Skies Treaty, Belgium, the Netherlands, and Luxembourg are considered one State Party, referred to as Benelux.
** Georgia was not an original signatory; signed Treaty on March 24, 1992.
*** Kyrgyzstan was not an original signatory; signed Treaty on December 15, 1992.
**** Czech and Slovak Republics each signed after separating January 1, 1993.

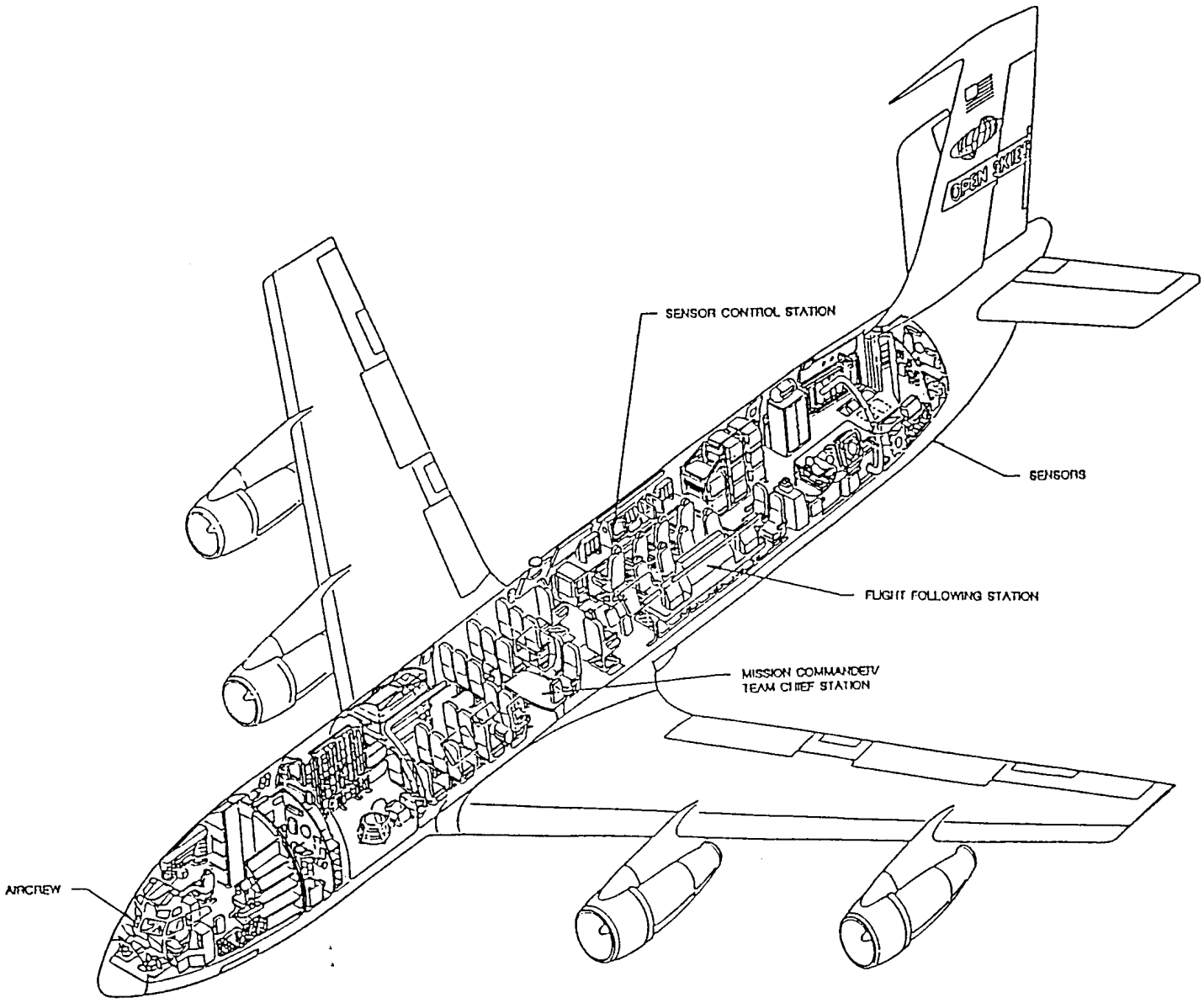
B

Appendix

OC-135B Aircraft Arrangement



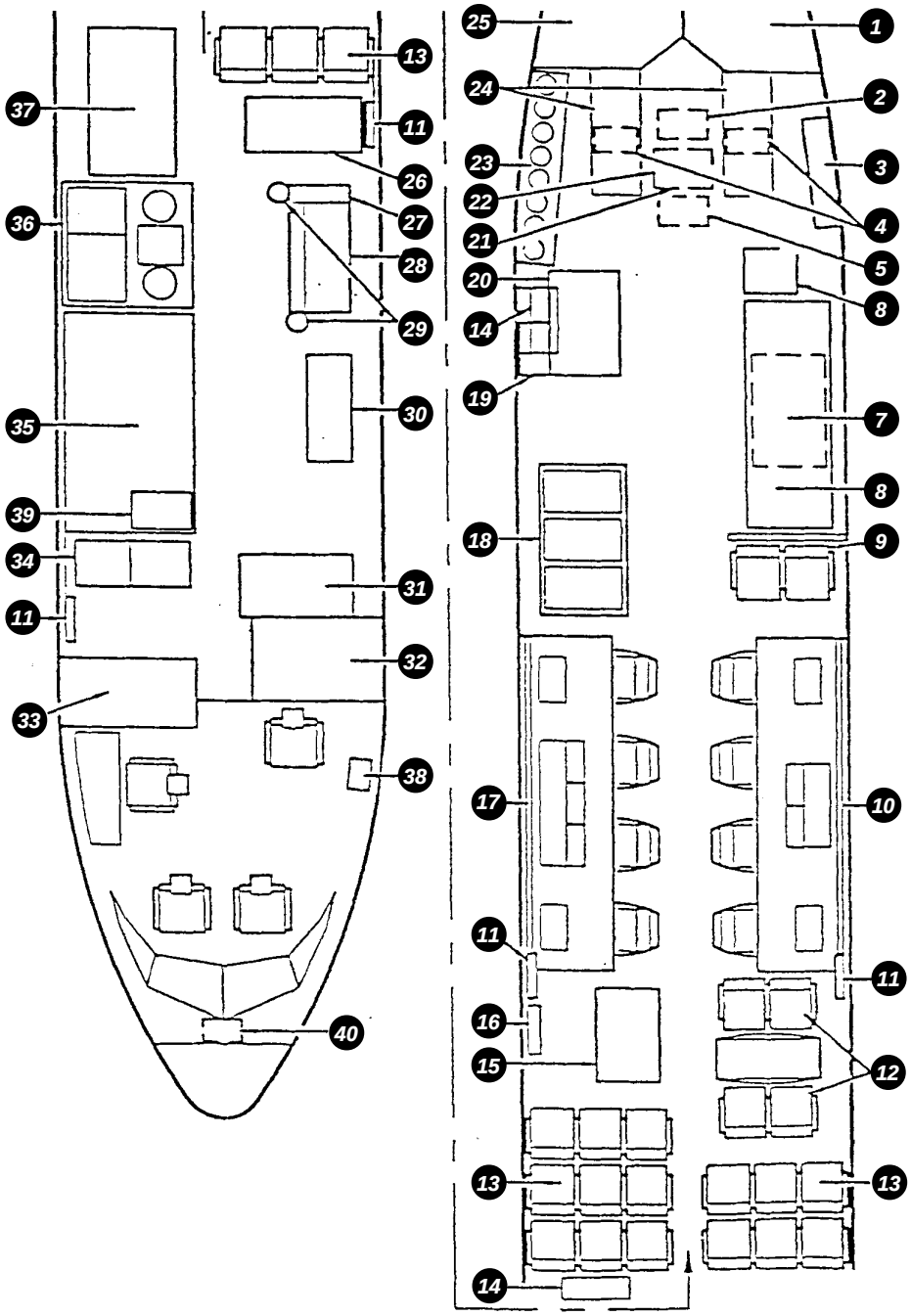
OC-135B Aircraft Arrangement



OC-135B Aircraft Arrangement

Diagram Key

1. *Aft Latrine*
2. *Center Mounted KS-87*
3. *Camera Magazine Rack*
4. *Oblique Camera (2 Places)*
5. *IRLS Receiver*
6. *IRLS Pallet*
7. *APU*
8. *Film Changing Table*
9. *Sensor Maintenance Station Seats*
10. *Deputy Mission Commander*
11. *Interphone Junction Box (4 Places)*
12. *Mission Commander Seats (2 Places)*
13. *Passenger Seats (18 Places)*
14. *Life Raft (2 Places)*
15. *Data Annotation, Recording and Mapping System (DARMS) Rack*
16. *Power Junction Box*
17. *Sensor Operator Station*
18. *Film Cooler Rack*
19. *Escape Slide*
20. *Small Parts Storage*
21. *Center Mounted KA-91*
22. *Vertical Looking Video Camera*
23. *Oxygen Rack*
24. *Camera Bay Doors (2 Places)*
25. *Aft Storage Area*
26. *Water T.O. Storage*
27. *Oil and Hydrolic Fluid Storage*
28. *Tool Box*
29. *Aircraft Tail Stand*
30. *Cargo Pallet*
31. *Galley*
32. *Forward Latrine*
33. *Electronic Equipment Rack*
34. *SAR Rack*
35. *Baggage Compartment*
36. *Aircraft Spare Parts*
37. *Crew Bunks*
38. *Aircraft Battery*
39. *SAR Air Conditioner*
40. *Forward Looking Video Camera*



C

Appendix

United States Joint Trial Flights (JTFs) (as of October 31, 1998)

Dates	Observing Nation	Observed Nation	Aircraft[1]
1993			
10-12 Jul 93	United States	Hungary	CV-580
1994			
4-12 Feb 94	United States	Germany	61-2674
20-25 Mar 94	United States	Canada	61-2674
14-22 Apr 94	United States	Greece	61-2674
11-17 Jul 94	United States	Ukraine	An-30
24 Aug - 1 Sep 94	Ukraine	United States	61-2674[2]
4-9 Dec 94	United States	Canada	61-2674
1995			
23 Feb - 6 Mar 95	United States	United Kingdom	61-2674
17-23 Jun 95	Germany	United States	Tu-154[3]
14-25 Jul 95	United States	Germany	61-2674
1996			
22-27 Apr 96	United States	Canada	61-2674
5-17 Jul 96	United States	Czech Republic	61-2672[4]
27 Jul - 3 Aug 96	United States	United Kingdom	Andover
11-24 Oct 96	United States	Ukraine	61-2672
25 Oct - 2 Nov 96	United States	Hungary	61-2672

[1] If one of the U.S. OC-135B aircraft was used, the tail number is listed.
[2] Ukraine used the OC-135B for this first JTF in the United States.
[3] First foreign Open Skies aircraft to overfly the United States.
[4] First JTF using OC-135B, tail number 61-2672.

Dates	Observing Nation	Observed Nation	Aircraft[1]
1997			
3-8 Feb 97	Poland	United States	61-2672
9-16 Mar 97	Slovakia	United States	61-2670[5]
16-24 Apr 97	Ukraine	United States	An-30
9-20 May 97	United States	Poland	61-2670
28 May - 3 Jun 97	Hungary	United States	61-2672
5-21 Jul 97	United States	United Kingdom	61-2672[6]
28 Jul - 4 Aug 97	Russia	United States	An-30
15-27 Aug 97	United States	Russia	An-30
22 Aug - 2 Sep 97	United States	Slovakia	61-2672
21-28 Sep 97	Turkey	United States	61-2670
1998			
10-17 Jan 98	United States	Turkey	61-2672
1-7 Feb 98	Czech Republic	United States	61-2672
17-26 Apr 98	United States	Czech Republic	An-30
21-29 May 98	United States	Georgia	61-2672
29 May - 6 Jun 98	United States	Bulgaria	61-2672
12-28 Jun 98	United States	Ukraine	61-2672
26-31 Jul 98	Bulgaria	United States	An-30
10-15 Aug 98	Canada	United States	C-130
2-9 Oct 98	United States	Germany	61-2672

United States Totals: (as of October 31, 1998)

“Active” JTFs (flown over foreign territories)	23
“Passive” JTFs (flown over the United States)	11
Total JTFs	**34**

[5] First JTF using OC-135B, tail number 61-2670.

[6] Time frame for this mission was so long because after the JTF in the United Kingdom, the OC-135 flew to Denmark to participate in an air show as a static display.

D

Appendix

Glossary of Terms

AB	Air Base
AFB	Air Force Base
ATC	Air Traffic Control
CFE	Conventional Armed Forces in Europe [Treaty]
CTBT	Comprehensive Test Ban Treaty
CWC	Chemical Weapons Convention
DARMS	Data Annotation/Recording and Mapping System
DTRA	Defense Threat Reduction Agency
EIF	Entry-Into-Force
GPS	Global Positioning Satellite
INF	Intermediate-range Nuclear Forces [Treaty]
IRLS	Infrared Line Scanner
ITP	Interim Training Platform
JTF	Joint Trial Flight
LSO	Linguist Sensor Operator
NATO	North Atlantic Treaty Organization
NTM	National Technical Means
OSA	Open Skies Airfield
OSCC	Open Skies Consultative Commission
OSIA	On-Site Inspection Agency
OSMPF	Open Skies Media Processing Facility
OSRA	Open Skies Refueling Airfield
POE	Point of Entry
POX	Point of Exit
RAF	Royal Air Force
SAR	Synthetic Aperture Radar
SFRC	Senate Foreign Relations Committee
START	Strategic Arms Reduction Treaty
TEI	Technical Equipment Inspector
TTBT	Threshold Test Ban Treaty
US	United States

Further References

Aeronautical Systems Center History Office. *Against the Wind: 90 Years of Flight Test in the Miami Valley*. Ohio: Air Force Materiel Command, 1994.

Hewitt, Richard G. and Jack M. Holl. *Atoms for Peace and War, 1953-1961*. Berkley and Los Angeles: University of California Press, 1989.

Krepon, Michael and Amy E. Smithson (eds.). *Open Skies, Arms Control and Cooperative Security*. New York: St. Martin's Press, 1992.

Thomson, David B. "The Treaty on Open Skies." Center for National Security Studies, Los Alamos National Laboratory. New Mexico: 1994.

U.S. Congress. Senate. *Treaty Document 102-37: Message from the President of the United States Transmitting the Treaty on Open Skies:* 102d Congress, 2d Session. Washington, D.C.: U.S. Government Printing Office, 1992.

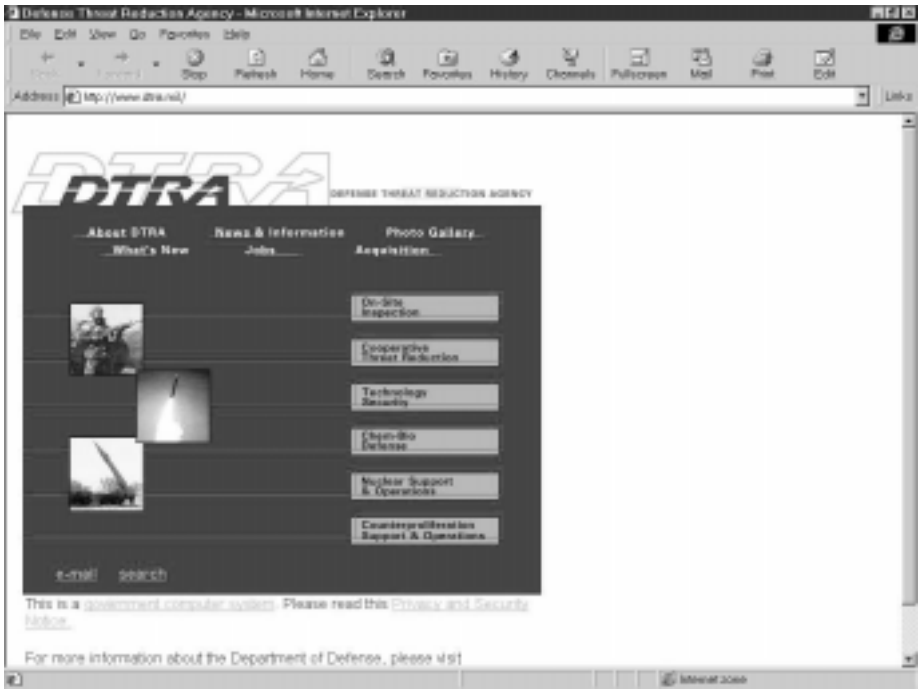
U.S. Congress. Senate. Committee on Foreign Relations. *Executive Report 103-105*. "The Treaty on Open Skies." Washington, D.C.: U.S. Government Printing Office, August 2, 1993.

U.S. Congress. Senate. *Congressional Record*. 10800-10804. "Treaty on Open Skies." Washington, D.C.: U.S. Government Printing Office, August 6, 1993.

DTRA Web Site

For more information on the Defense Threat Reduction Agency, visit the DTRALink, the Agency's web site on the Internet.

The address is *http://www.dtra.mil*.



DTRA History Publications

In addition to this report, the following publications may also be obtained from the Defense Threat Reduction Agency History Office:

- *On-Site Inspections Under the INF Treaty* (Washington D.C.: U.S. Government Printing Office, 1993)
- *On-Site Inspections Under the CFE Treaty* (Washington D.C.: U.S. Government Printing Office, 1996)
- Russian-language edition of *On-Site Inspections Under the INF Treaty* (Washington D.C.: U.S. Government Printing Office, 1997)
- *A Brief History of the On-Site Inspection Agency* (Washington D.C.: On-Site Inspection Agency, 1998)
- Russian-language edition of *A Brief History of the On-Site Inspection Agency* (Washington D.C.: On-Site Inspection Agency, 1998)

To request copies, please contact:

Defense Threat Reduction Agency
Office of History
45045 Aviation Drive
Dulles, VA 20166-7517

Phone: (703) 810-4433
E-mail: history@dtra.mil


USAF
OPEN SKIES
12674
UNITED STATES OF AMERICA