

**Balance Agreement Addendum**

**SECOND ADDENDUM**

**TO THE IMPLEMENTING ARRANGEMENT ENTITLED**

**“PROTOCOL INCLUDING TERMS, CONDITIONS AND ASSUMPTIONS, SUMMARY  
BALANCE OF CONTRIBUTION AND OBLIGATIONS TO INTERNATIONAL SPACE  
STATION (ISS) AND RESULTING RIGHTS OF NASA AND RSA TO ISS  
UTILIZATION ACCOMMODATIONS AND RESOURCES, AND FLIGHT  
OPPORTUNITIES” (BALANCE AGREEMENT)**

**BETWEEN**

**THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION OF THE  
UNITED STATES OF AMERICA**

**AND**

**THE FEDERAL SPACE AGENCY OF THE RUSSIAN FEDERATION**

## **Balance Agreement Addendum**

The National Aeronautics and Space Administration of the United States of America (hereinafter "NASA") and the Federal Space Agency of the Russian Federation (hereinafter "Roscosmos") (hereinafter, collectively, "the Parties"),

RECOGNIZING the Agreement between the United States of America and the Russian Federation concerning Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes of June 17, 1992,

RECOGNIZING the Agreement among the Government of Canada, Governments of Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America Concerning Cooperation on the Civil International Space Station signed on January 29, 1998, (hereinafter the "Intergovernmental Agreement"),

RECOGNIZING the Memorandum of Understanding between the National Aeronautics and Space Administration and the Russian Space Agency Concerning Cooperation on the Civil International Space Station signed on January 29, 1998 (hereinafter the "MOU"),

RECOGNIZING the implementing arrangement to the MOU entitled the Protocol Including Terms, Conditions and Assumptions, Summary Balance of Contributions and Obligations to International Space Station (ISS) and Resulting Rights of NASA and RSA to ISS Utilization Accommodations and Resources, and Flight Opportunities signed on June 11, 1996, (hereinafter the "Balance Agreement"),

RECOGNIZING the Addendum to the Balance Agreement signed on September 9, 2004, (hereinafter the "First Addendum"),

CONVINCED that implementation of the agreements governing cooperation on the International Space Station will further expand cooperation through the establishment of a long-term and mutually beneficial relationship and will further promote cooperation in the exploration and peaceful use of outer space,

Have agreed as follows:

### ARTICLE 1 – PURPOSE

The purpose of this Addendum is to adjust the balance of contributions of the Parties as previously set forth in the Balance Agreement and First Addendum, so as to maintain the balance of the Parties' respective contributions and obligations to the ISS program and the sharing of responsibilities associated with each Party's participation in accordance with the principles established in the Intergovernmental Agreement, the MOU, and the Balance Agreement. Adjustments are required at this time due to changes in the timeline for ISS assembly, programmatic changes on the part of both Parties, and the development of circumstances and plans that necessitate the exchange of goods and services not covered by the terms of the Balance Agreement. The specific objectives of this Addendum are to establish common approaches to key operational issues and effect a

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partial rebalance of the NASA and Roscosmos efforts until such time as a more complete evaluation and comprehensive rebalance can be completed through future adjustments of the Balance Agreement. In accordance with the provisions of Balance Agreement Paragraphs 3 and 4, and MOU Article 16.4, the Parties have sought to minimize the exchange of funds through the mutual provision of goods and services agreed to be of equivalent value (i.e. barter). This Addendum is also intended to provide a framework for the acquisition, through separate contractual or other arrangements between the Parties, of ISS goods and services that cannot be obtained through barter.

### ARTICLE 2 – SCOPE AND BACKGROUND CONSIDERATIONS

- A. This Addendum shall constitute an addendum to an implementing arrangement pursuant to Article 4(2) of the Intergovernmental Agreement and Article 1.1 of the MOU.
- B. All terms and provisions of the Balance Agreement, as amended by the First Addendum, remain in effect unless otherwise specified by this Addendum.

### ARTICLE 3 – TERMS

- A. Crew size and composition:

Paragraph 11 of the Balance Agreement shall be amended by the following addition to the end of the article:

“11.c. Based on program status as of January 1, 2006, the Parties have reached the following understandings:

- i. Crew Until 2009: The permanent ISS crew size will be increased via flight ULF1.1 in May 2006 from two to three and remain at three until the end of April 2009, assuming nominal Shuttle operations. Flight opportunities and crew time for a three-person crew shall continue to be allocated in accordance with the previous practice through Increment 6.
- ii. Crew from 2009 until U.S. Crew Rescue Vehicle Available: By the end of April 2009, the permanent ISS crew size will expand from three to six through NASA’s provision of additional Soyuz vehicles for crew rotation and rescue and NASA habitation and logistics support of its three designated crewmembers. From the end of April 2009 after the permanent ISS crew size expands to six (1) Roscosmos shall have the rights to the flight opportunities for its three crewmembers and on-orbit crew time equivalent to three crewmembers and will retain those rights for the life of the ISS subject to Roscosmos’ provision of support of those crewmembers (rescue, rotation, habitation) to perform Russian Segment systems operations and utilization activities; and (2)

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NASA and the remaining ISS Partners shall share the remaining three flight opportunities and on-orbit crew time equivalent to three crewmembers continuous on-orbit per year and will retain those rights for the life of the ISS subject to their provision of support for those crewmembers (rescue, rotation, habitation) to perform U.S. on-orbit Segment systems operations and utilization activities until such time as a U.S. crew rescue vehicle is available. Nothing in this paragraph in any way implies that the ISS will be considered to have achieved the state of assembly complete when the permanent crew size expands from three to six. If it becomes apparent that NASA will be unable to provide habitation and logistics support required to add three crewmembers or will be unable to provide crew rescue, rotation, and logistics support for its three crewmembers after 2011, the Parties will meet to discuss appropriate action.

iii. Crew After a U.S. Crew Rescue Vehicle is Available: Following the availability of a U.S. crew rescue vehicle and when the ISS has a crew of 7, flight opportunities and crew time will be allocated in accordance with MOU Articles 8.3.c.2 and 11.1, and paragraph 11.b of the Balance Agreement.”

- B. Working Language: Translation services shall be provided by NASA only for critical operations and training documents. The transition period described in Balance Agreement paragraph 23 shall end with the expansion of the ISS permanent crew size to six persons.
- C. NASA shall purchase crew rotation, crew rescue and cargo services, as needed, from Roscosmos through 2011, pursuant to mutually agreed contractual arrangements.

### ARTICLE 4 – CHANGES IN CONTRIBUTIONS OF ROSCOSMOS AND NASA

- A. Science Power Platform and its arrays: In fulfillment of NASA and Roscosmos' respective obligations under Articles 3.3, point 5, 6.1.b.14 and 6.2.b.14 of the MOU, Roscosmos and NASA will continue to cooperate in assembling and operating the International Space Station as agreed in this Addendum. The following provisions of the Balance Agreement are superseded by the arrangements in this Second Addendum: paragraph 20; Appendix 2, page 1, items 8 and 9; and Appendix 3.
- B. Upmass:
  - 1. NASA's obligation to deliver a total of 20,500 kilograms upmass under the Balance Agreement plus an additional 707 kilograms upmass for non-Life Support Systems cargo launched by Roscosmos for NASA after February 1, 2003 was equal to 21,207 kilograms of total NASA upmass. The Parties agree to reduce the NASA obligation by 13,115 kilograms upmass and acknowledge NASA's delivery of 5,892 kilograms upmass as of January 1,

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2006. Therefore, the remaining NASA obligation to Roscosmos is 2,200 kilograms upmass.

2. Accordingly, Appendix 2, page 1, item 11 is deleted.

3. Accordingly, Appendix 2, page 3, item 8 is amended to read:

“Delivery of 2.2 metric tons of cargo for the Russian Segment: This 2.2 metric tons of cargo includes, inter alia, outfitting equipment for the Russian Multipurpose Logistics Module (MLM). The total mass of this MLM equipment includes the flight hardware and the associated flight support equipment (FSE) and shall not exceed 2.2 metric tons. NASA shall be responsible for providing the carrier for transportation on the Space Shuttle, integration of Russian hardware onto the carrier, and supplying appropriate interface documentation. Roscosmos shall be responsible for providing MLM-associated FSE.”

4. Roscosmos shall deliver 31 kilograms of cargo to the ISS for NASA in 2006, with manifesting details to be agreed through the existing processes. This cargo is in addition to that which has already been procured.

### C. Habitation:

1. Appendix 2, page 2, item 6 is replaced in its entirety with:

“During the time when only 2 crewmembers are onboard the ISS, Roscosmos shall continue to provide habitation services for 1 equivalent NASA designated crewmember continuously on orbit per year until expansion of crew size to three persons, or April 2009, whichever comes first. After expansion of the crew to a total of 3 crewmembers on orbit, Roscosmos shall provide habitation services for 1.5 equivalent NASA designated crewmembers continuously on orbit per year until expansion of crew size to six persons or the end of April 2009, whichever comes first. This obligation is separate from the paragraph 16 obligation that NASA and Roscosmos are responsible for providing food, supplies, and personal items for their respective designated crewmembers. This obligation is also separate from the responsibility of NASA and Roscosmos for the collection, stowage, and disposal of waste commensurate with their respective designated crewmembers.”

2. The following text is added as a new Appendix 2, page 1, item 11:

“NASA will continue to provide limited support for habitation, consistent with NASA’s previous practice through Increment 6, until expansion of the permanent crew size to 6 persons or the end of April 2009, whichever comes first.”

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### D. Electrical Power:

1. NASA agrees that pursuant to its original obligation under MOU Article 6.1.b.20, NASA is obligated to provide electrical power (in agreed amounts and subject to the limits of the US power system) to augment Roscosmos-generated power to support essential Roscosmos-provided flight element core systems, which is defined to include overall Russian Segment operations and utilization, throughout the remaining life of ISS. Therefore, pursuant to NASA's original obligations under Article 6 of the MOU to support Roscosmos' original plans to augment its own electrical power system and to provide adequate electrical power for the Russian Segment, NASA shall continue to provide to Roscosmos electrical power in accordance with the power transfer schedule and conditions below. Appendix 2, page 1, item 1 will be provided according to the schedule below. Appendix 2, page 3, item 1 is included in the power transfer quantities set forth in the power transfer schedule below.

		Power per Appendix 2, Page 1, Item 1, continuous (kW)	Power pursuant to Article 6 of MOU, continuous (kW)	Continuous power transfer limit (kW) (includes Col 1)	Contingency/ Peak power transfer limit (kW) (includes Col 1)	Est'd Amt Remaining of 615,000 kWh
2006						615,000
	until ft 12A.1	1.5	1.7	3.2	5.4	601,536
	post-12A.1	1.5	2.7	4.4	7.2	599,268
2007		1.5	2.7	4.4	7.2	575,397
2008						
	until arrival of MLM	1.5	2.7	4.4	7.2	553,815
	post-MLM	1.5	4.5	12	14.4	550,035
2009						
	until expansion to 6 crew	1.5	8	12	14.4	526,923
	post expansion to 6 crew	0	10.9	12	14.4	462,831
2010		0	10.6	12	14.4	369,756
2011		0	10.6	12	19.4	276,681
2012		0	10.7	12	19.4	182,730
2013		0	10.7	12	19.4	88,779
2014		0	10.7	12	19.4	0
2015		0	10.8	12	19.4	0

2. The figures in the above power transfer schedule do not include power to support the Automated Transfer Vehicle (ATV) docked to the Russian Segment.

3. NASA accepts loss of power in the power cables during transmission to the Russian power converters, while Roscosmos accepts loss of power due to conversion in the Russian power converters. Therefore, power quantity shall be measured at the inlet to Russian power converters.

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4. The estimated amount of power transferred to the Russian Segment may be reallocated annually based on Roscosmos' request, within the bounds of the continuous/peak limits above, subject to the 615,000 kilowatt hour limit. The Parties have also agreed to provide for overall assessment of power usage from 2006 through 2009 and reallocate unused amounts to later periods. Or, upon mutual agreement of the Parties, the Parties may exchange excess kilowatt hours for other resources using a conversion factor of USD \$718 per kilowatt hour.

E. Stowage: NASA shall provide stowage for total Russian cargo in the Zarya Control Module (FGB) (excluding .75 cubic meters for launch of FGB stowage enclosures) in the amount of 9.18 cubic meters in 2006, 7.18 cubic meters in 2007 and 2008 and 0.25 cubic meters in 2009 through 2011. NASA shall also provide stowage of 2.5 cubic meters as NASA's total portion of the Russian Life Support System consumables through April 2009. The amount of Roscosmos stowage, including NASA's total portion of Russian Life Support System consumables, shall not exceed 12.5 cubic meters in 2006, 10.5 cubic meters in 2007 and 2008 respectively, 3.5 cubic meters from January 1, 2009 through April 30, 2009, and 1.0 cubic meter from May 1, 2009 through December 31, 2011. Following the removal of items as identified on the return manifest of ISS flight ULF.1.1, Russian stowage in the USOS and FGB in excess of the above limits will require additional compensation, assuming not less than 4 Shuttle flights in a 12-month period beginning with the flight of ULF 1.1.

F. Communication Services: NASA shall provide Tracking and Data Relay Satellite System (TDRSS) S-Band and Ku-band services for Russian Segment systems and utilization activities on a noninterference basis, consistent with procedures and operational prioritization applicable to USOS usage, through December 31, 2011.

### G. Propellant:

1. Paragraph 17 of the Balance Agreement is amended by adding the following final sentences:

"However, as part of the balance of contributions reached in the Second Addendum to this Agreement, NASA and Roscosmos agree to reduce the Roscosmos obligation to deliver 56,000 kilograms of propellant for NASA over the life of the Station by 16,325 kilograms; it is acknowledged that Roscosmos has delivered 13,857 kilograms of propellant for NASA through Dec. 31, 2005, thus the remaining Roscosmos obligation is to deliver 25,817 kilograms of propellant for NASA. Roscosmos also has an obligation to deliver 32,000 kilograms of propellant, in addition to its obligation to deliver propellant for NASA; through Dec. 31, 2005, it has delivered 5,813 kilograms, leaving a remaining balance of 26,187 kilograms. NASA has an obligation to deliver a total of 24,000 kilograms of propellant; through Dec. 31, 2005, it has delivered 4,961 kilograms and has a remaining balance of 19,039 kilograms of propellant.

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The Parties recognize the need to determine the updated requirement for propellant, appropriate performance, and remaining obligations against assembly and assembly complete obligations with due consideration for changes in the configuration of the Russian and American segments and the impacts of those changes on propellant requirements and the Parties' obligations. Because the analysis is on-going among the NASA and Roscosmos technical specialists to determine the overall propellant requirements for the ISS both assembly and assembly complete, the Parties agree to document performance to date against the total obligation for each Party. Upon completion of the necessary analysis, the Parties shall document the agreed remaining obligations for propellant delivery for assembly and assembly complete in a separate arrangement.

H. Waste Removal Services: Roscosmos shall reduce NASA's total remaining debt for waste removal by 0.9 metric tons.

I. Water: NASA's obligation is to provide a total of 8 metric tons of water to the ISS, 3 metric tons during Assembly and 5 metric tons after Assembly Complete, as stated in Appendix 2, page 1, item 10 and Appendix 2, page 3, item 9. The remaining NASA obligation is 2 metric tons as of January 1, 2006.

J. Liaison Office and Travel Support: NASA will provide \$680,000 of funding for support of the Roscosmos Houston liaison office and agreed travel for Russian personnel. The Parties will pursue mutually agreeable long term arrangements to continue this support beyond this funding level.

### ARTICLE 5 – CONSISTENCY WITH DOMESTIC LAWS

All activities under this Addendum shall be conducted in a manner consistent with the respective laws and regulations of each Party.

### ARTICLE 6 - AMENDMENT

This Addendum may be amended by the mutual written agreement of the Parties.

### ARTICLE 7 - ENTRY INTO FORCE AND DURATION

This Addendum shall enter into force upon signature.

This Addendum shall remain in force until such time as the MOU ceases to be in force unless it is superseded by a later agreement.

### ARTICLE 8 – WITHDRAWAL AND TERMINATION

If the United States or Russia gives notice of withdrawal from the Intergovernmental Agreement in accordance with Article 28 thereof, its corresponding Party shall be

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deemed to have withdrawn from this Addendum effective from the effective date of such withdrawal.

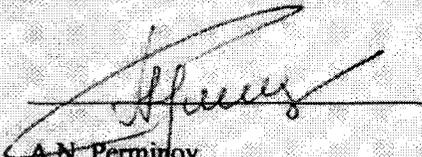
DONE at Kennedy Space Center, Florida, this 1st day of July, 2006, in two originals in the English and Russian languages, each text being equally authentic.

FOR THE NATIONAL AERONAUTICS  
AND SPACE ADMINISTRATION OF  
THE UNITED STATES OF AMERICA:

FOR THE FEDERAL SPACE AGENCY  
OF THE RUSSIAN FEDERATION:



Michael Griffin  
Administrator



A.N. Perminov  
Head