SSP 54311
Baseline

Post Increment Evaluation Report Increment 11

International Space Station Program

Baseline

June 2006

National Aeronautics and Space Administration
International Space Station Program
Johnson Space Center
Houston, Texas
Contract Number: NNJ04AA02C

REVISION AND HISTORY PAGE

REV.	DESCRIPTION	PUB. DATE
-	Initial Release (Reference per SSCD XXXXXX, EFF. XX-XX-XX)	XX-XX-XX

INTERNATIONAL SPACE STATION PROGRAM

POST INCREMENT EVALUATION REPORT
INCREMENT 11

CHANGE SHEET

Month XX, XXXX

Baseline

Space Station Control Board Directive XXXXXX/(X-X), dated XX-XX-XX. (X)

CHANGE INSTRUCTIONS

SSP 54311, Post Increment Evaluation Report Increment 11, has been baselined by the authority of SSCD XXXXXX. All future updates to this document will be identified on this change sheet.

INTERNATIONAL SPACE STATION PROGRAM

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Baseline (Reference SSCD XXXXXX, dated XX-XX-XX)

LIST OF EFFECTIVE PAGES

Month XX, XXXX

The current status of all pages in this document is as shown below:

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D-1 - D-92	Baseline	XXXXXX	Month XX, XXXX

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JUNE 2006

SSCB APPROVAL NOTICE

INTERNATIONAL SPACE STATION PROGRAM

POST INCREMENT EVALUATION REPORT
INCREMENT 11

JUNE 2006

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POST INCREMENT EVALUATION REPORT
INCREMENT 11

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INCREMENT 11

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POST INCREMENT EVALUATION REPORT
INCREMENT 11

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POST INCREMENT EVALUATION REPORT
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INTERNATIONAL SPACE STATION PROGRAM

POST INCREMENT EVALUATION REPORT
INCREMENT 11

LIST OF CHANGES

JUNE 2006

All changes to paragraphs, tables, and figures in this document are shown below:

MIOCB	Entry Date	Change	Paragraph(s)
	May 2006	Baseline	All

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FIGURE

1.0 INTRODUCTION

SSP 54311, Post Increment Evaluation Report for Increment 11, documents the as flown execution as opposed to the pre-Increment plan. This report includes a summary of actual launch dates with major milestones that occurred within the stage and comparative summaries of the resource and accommodations, including transfer of power, cargo, and propellant for the International Space Station (ISS). A listing of utilization achieved and modifications to mission requirements are also included in this report. Detailed scientific and technical results, crew consensus reports, and material that only apply to a single country's programs or operations are published separately.

1.1 SCOPE

This report covers Increment 11, and includes both joint ISS/mated vehicle operations and ISS-only continuous operational phases (i.e., stages) of the Increment. The Increment began in April 2005 with the docking of Flight 10 Soyuz (S) and the arrival of the 11th ISS crew, and ended in October 2005 with the docking of Flight 11S and the arrival of the 12th ISS crew.

1.2 PRECEDENCE

This document takes precedence over Space Station Program (SSP) 54011, Increment Definition and Requirements Document for Increment 11, since this document reflects the actual events that took place during the mission and documents those events that deviated or were deleted from the planned events.

1.3 DELEGATION OF AUTHORITY

The Space Station Control Board (SSCB) has formal control and approval of this document. All changes to this document will be processed in accordance with the procedures as specified in SSP 50123, Configuration Management Handbook.

2.0 DOCUMENTS

2.1 APPLICABLE DOCUMENTS

The following documents include specifications, models, standards, guidelines, handbooks, and other special publications. The documents listed in this paragraph are applicable to the extent specified herein. Inclusion of applicable documents herein does not in any way supersede the order of precedence identified in Paragraph 1.2 of this document.

DOCUMENT	TITLE	TYPE
SSP 50123	Configuration Management Handbook	Multilateral
SSP 50448	Station Development Test Objective (SDTO) Catalog	Multilateral
SSP 54011	Increment Definition and Requirements Document for Increment 11	Multilateral
SSP 54011-9S	Increment Definition and Requirements Document for Increment 11, Annex 1: Station Manifest, Flight 9S Descent (Post-Flight)	Multilateral
SSP 54011-10S	Increment Definition and Requirements Document for Increment 11, Annex 1: Station Manifest, Flight 10S Ascent (Post-Flight)	Multilateral
SSP 54011-18P	Increment Definition and Requirements Document for Increment 11, Annex 1: Station Manifest, Flight 18P (Post-Flight)	Multilateral
SSP 54011-19P	Increment Definition and Requirements Document for Increment 11, Annex 1: Station Manifest, Flight 19P (Post-Flight)	Multilateral
SSP 54011-LF1	Increment Definition and Requirements Document for Increment 11, Annex 1: Station Manifest, Flight LF1 (Post-Flight)	Multilateral
SSP 54310 **<TBD 2-1>**	Post Increment Evaluation Report: Increment 10	Multilateral
SSP 54312 **<TBD 2-2>**	Post Increment Evaluation Report: Increment 12	Multilateral

2.2 REFERENCE DOCUMENTS

The following documents contain supplemental information to guide the user in the application of this document. These reference documents may or may not be specifically cited within the text of this document.

DOCUMENT	TITLE	TYPE
SSP 54010	Increment Definition and Requirements Document for Increment 10	Multilateral
SSP 54011-ANX 2	Increment Definition and Requirements Document for Increment 11, Annex 2: On-Orbit Maintenance Plan	Multilateral
SSP 54011-ANX 3	Increment Definition and Requirements Document for Increment 11, Annex 3: Imagery Requirements	Multilateral
SSP 54011-ANX 4	Increment Definition and Requirements Document for Increment 11, Annex 4: Medical Operations and Environmental Monitoring	Multilateral
SSP 54011-ANX 5	Increment Definition and Requirements Document for Increment 11 Annex 5: Payload Tactical Plan	Multilateral
SSP 54012	Increment Definition and Requirements Document for Increment 12	Multilateral
SSP 54100	Increment Definition and Requirements Document Flight Program	Multilateral
NAS15-10110	Contract NAS15-10110 between the National Aeronautics and Space Administration of the United Stages of America and the Russian Space Agency of the Russian Federation for Supplies and Services Relating to MIR-1 and the International Space Station: Phase One and Selected Phase Two Activities	Bilateral

3.0 DESCRIPTION

Figure 3.0-1, Overview, is a graphical view of Increment 11 showing when and where vehicles docked to the ISS as well as other major events associated with the Increment.

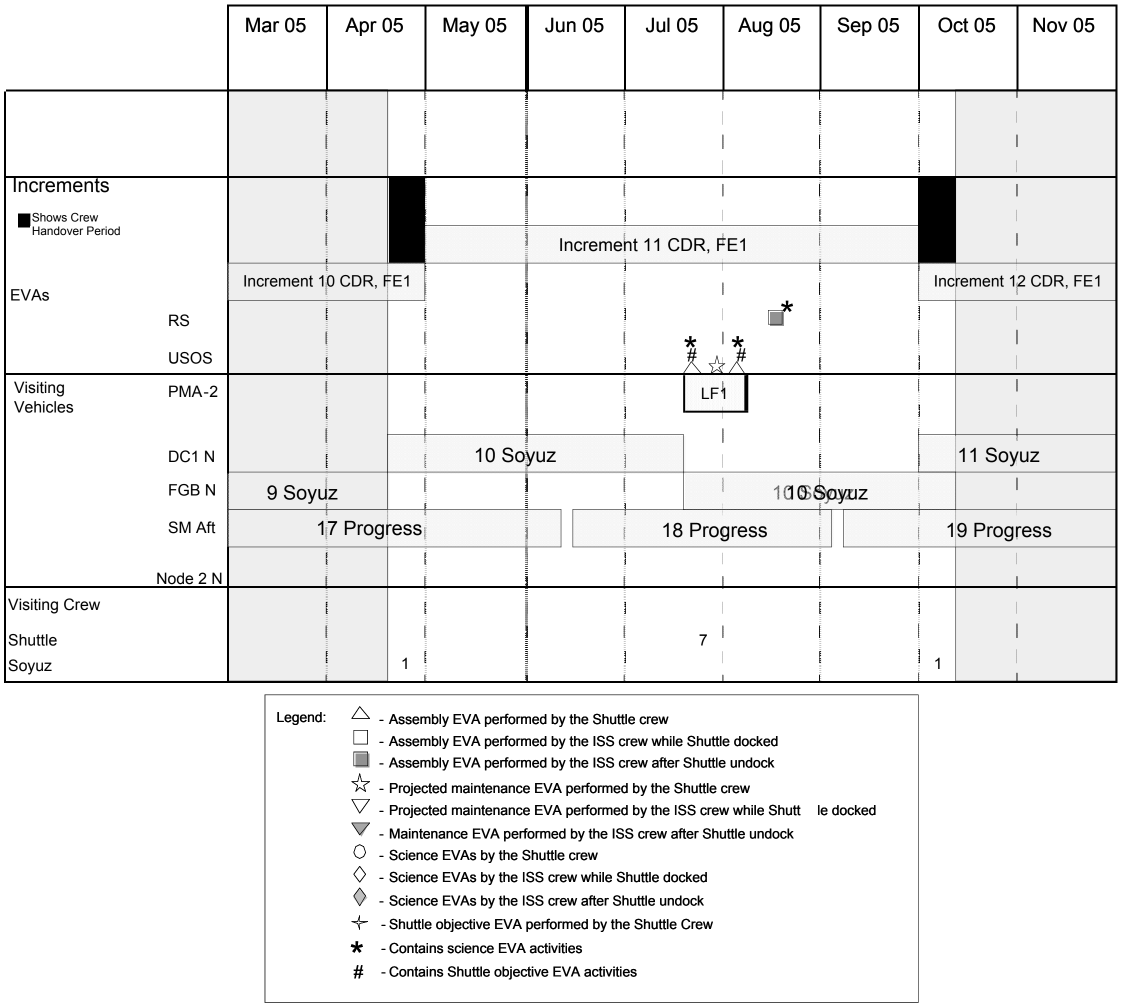

Mar 05
Apr 05
May 05
Jun 05
Jul 05
Aug 05
Sep 05
Oct 05
Nov 05
Increments
Shows Crew Handover Period
Increment 10 CDR, FE1
Increment 11 CDR, FE1
Increment 12 CDR, FE1
EVAs
RS
USOS
Visiting Vehicles
PMA-2
DC1 N
FGB N
SM Aft
Node 2 N
LF1
10 Soyuz
11 Soyuz
9 Soyuz
10 Soyuz
17 Progress
18 Progress
19 Progress
Visiting Crew
Shuttle
Soyuz
1
7
1
Legend:
- Assembly EVA performed by the Shuttle crew
- Assembly EVA performed by the ISS crew while Shuttle docked
- Assembly EVA performed by the ISS crew after Shuttle undock
- Projected maintenance EVA performed by the Shuttle crew
- Projected maintenance EVA performed by the ISS crew while Shuttle docked
- Maintenance EVA performed by the ISS crew after Shuttle undock
- Science EVAs by the Shuttle crew
- Science EVAs by the ISS crew while Shuttle docked
- Science EVAs by the ISS crew after Shuttle undock
- Shuttle objective EVA performed by the Shuttle Crew
- Contains science EVA activities
- Contains Shuttle objective EVA activities

FIGURE 3.0-1 OVERVIEW

Table 3.0-1, As Flown Flight Summary, identifies the actual dates and mission data for all flights that visited the ISS during this Increment.

TABLE 3.0-1 AS FLOWN FLIGHT SUMMARY

ISS Flight Name	Launch Vehicle Flight Name	Launch Vehicle Crew Size	Launch Date	Mission Duration (days)	Shuttle Docking Altitude (km/nmi)	Docking Date	Docked Duration (days)	Undock Date
9S [c]	Soyuz-TMA	2+1 [3]	[1]	193	-	[1]	191	24 Apr 05
17P	Progress-M	Unmanned	[1]	107	-	[1]	105	15 June 05
10S [c]	Soyuz-TMA	2+1 [3]	15 Apr 05	179	-	17 Apr 05	177	10 Oct 05
18P	Progress-M	Unmanned	16 June 05	83	-	19 June 05 [4]	80	7 Sept 05
LF1	STS-114	7	26 July 05	14	352/190	28 July 05	9	6 Aug 05
19P	Progress-M	Unmanned	8 Sept 05	[2]	-	10 Sept 05	[2]	[2]
11S [c]	Soyuz-TMA	2+1 [3]	1 Oct 05	[2]	-	3 Oct 05	[2]	[2]

NOTES:

[c] Crew Rotation Flight.

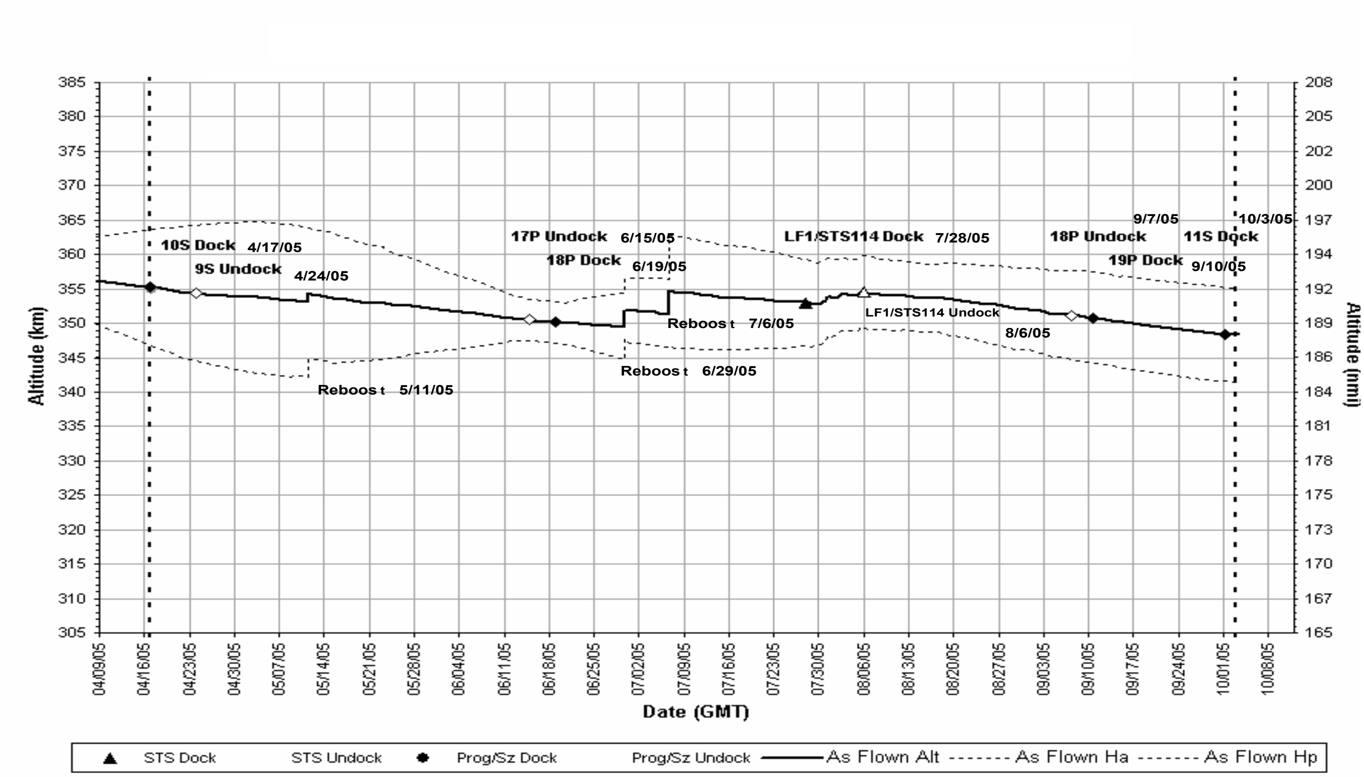
[1] Vehicle was attached to ISS from previous Increment and departed during Increment 11.

[2] Vehicle launched during Increment 11 however, some information will be documented in SSP 54312 **<TBD 2-2>**.

[3] Soyuz ascent/descent crew size is denoted using the following convention: x+y, where x=number of Expedition crew members and y = number of Soyuz crewmembers.

[4] 18P time from launch to docking is standard but launch was late enough in the day (GMT 23:10) that the docking crossed into a 3rd calendar day (GMT 00:41) from launch.

Figure 3.0-2, ISS As Flown Altitude Profile, is a graphical representation of the ISS altitude showing where specific height adjustments were made during Increment 11. The figure is derived from data recorded in real time on an irregular frequency, and as a result several days may pass between data points. It is understood that reboost events occurred on a single day as noted on the figure.



H_a = Apogee Altitude
H_p= Perigee Altitude
H_{ave}= Average Altitude

FIGURE 3.0-2 ISS AS FLOWN ALTITUDE PROFILE

4.0 ON-ORBIT RESOURCES

The following tables reflect a summary of all the on-orbit power, stowage, transfers and crew time during this Increment.

4.1 ELECTRICAL POWER TRANSFERRED

Figure 4.1-1, Electrical Power Transferred, and Table 4.1-1, Average Power Transfer, compare SSP 54011 planned power transfer from the United States On-orbit Segment (USOS) to the Russian segment versus actual power transfer from telemetry. The comparison shows that, in general, Increment Definition and Requirements Document (IDRD) power transfer allocations overestimated actual power transfer levels. . Predictions overestimated actual transfers due to worse-case planning for maximum American to Russian (Power) Converter Unit (ARCU) use. It is also important to note that actual flight attitudes did not reflect the IDRD attitudes during 10S stage, LF1 stage, and 19P. Due to Control Moment Gyroscope (CMG) concerns, ISS did not fly X-axis Perpendicular to the Orbital Plane (XPOP)/Y-Axis Pointed Along Velocity Vector (YVV) at mid-betas but instead flew in X-axis into the Velocity Vector (XVV).

Russian hardware operational conditions are a result of the power regulation hierarchy in the Russian Electrical Power System (EPS) power architecture, which causes American to Russian Converter Units (ARCUs) to saturate during eclipse periods. Saturated ARCUs transfer power at their maximum capability, so planners typically limit the number of active ARCUs which can potentially cause power transferred to the Russian Segment to be lower than Russian power transfer allocations.

Actual Russian systems operations are different than the nominal operations assumed for IDRD power transfer allocations. During Increment 11, multiple Elektron power failures and off-nominal operating power modes contributed to differences in power transferred to the Russian Segment. Further differences are caused by the IDRD assumption of life support for 3 crew for Stage ULF1.1 instead of the actual Increment 11 complement of 2 crew members.

For Increment 11, due to unique Russian hardware situations, additional details and clarifications concerning the Russian power transfer can be found at the following url: http://viperweb.jsc.nasa.gov/team_sai/PostIncrementEvaluationReportPIER.php. IDRD Allocation is in multiples of 1.8 kilowatt (kW).

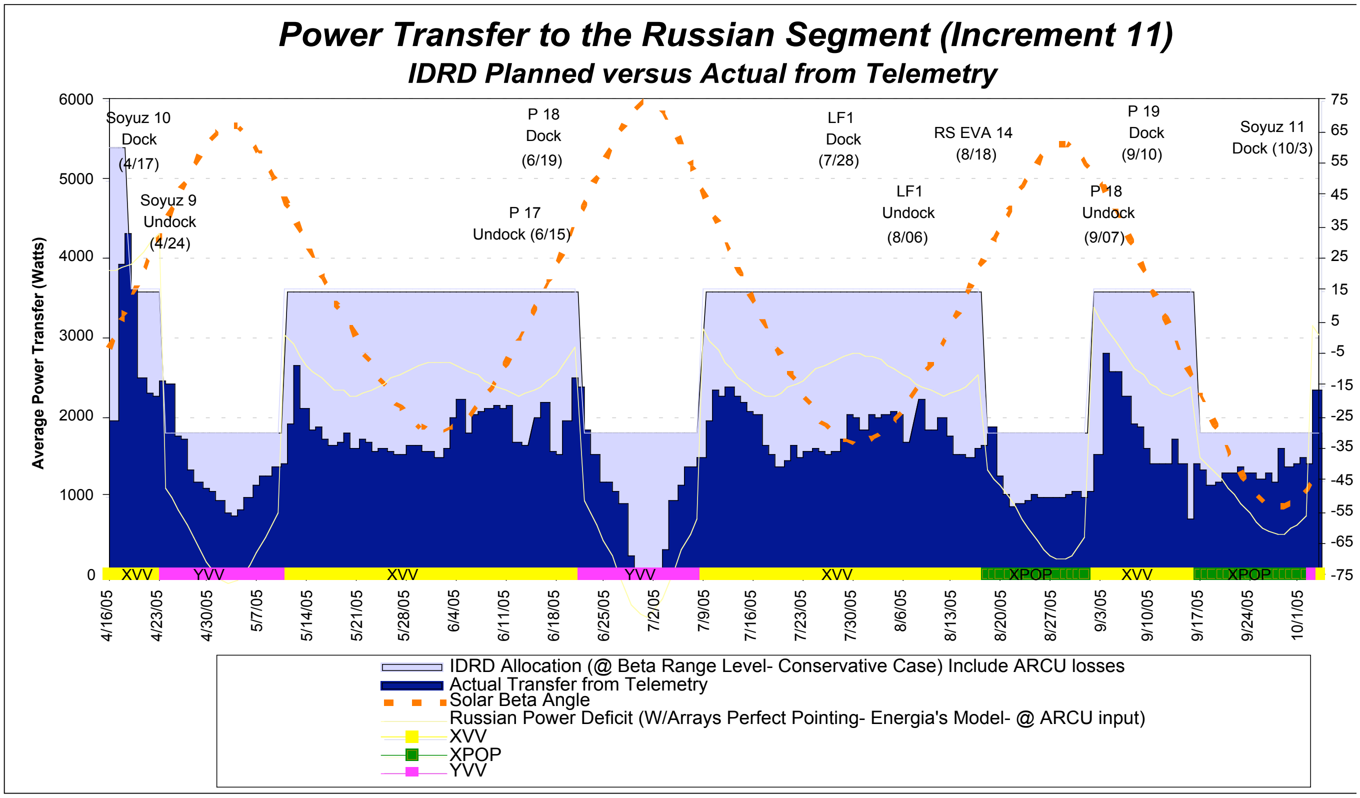


FIGURE 4.1-1 ELECTRICAL POWER TRANSFERRED

NOTE: The IDRD planned data used in this table was from the IDRD Revision A (SSP 54011) that included Flight and Stage ULF1.1.

TABLE 4.1-1 AVERAGE POWER TRANSFER

		IDRD Allocation [1]		Actual [2] [3]	
Flight/Stage	Operation	USOS to FGB Transfer (kW)	USOS to RS Transfer (kW)	USOS to FGB Transfer (kW)	USOS to RS Transfer (kW)
R Sz 10S [4]	Soyuz Rotation	0	5.4	0	3.0
S 10S [5]	Research/Standard	0	3.6/3.6/1.8	0	1.7/1.9/1.0
18 P [6]	Research/Standard	0	3.6/1.8/1.8	0	1.6/1.3/0.5
F LF1 [7]	Research/Standard	0	3.6	0	2.0
S LF1 [8]	Research/Standard	0	3.6/3.6	0	1.8/2.0
19P [9]	Research/Standard	0	3.6/3.6	0	1.3/2.0

NOTES:

[1] Insolation/Eclipse average from IDRD allocations computed during periods below.

[2] Actual data collected during periods below (from April 2005 to October 2005).

[3] YVV flown for high beta's instead of XPOP for high beta

[4] XVV Low Beta from 4/16 to 4/24

[5] XVV Low Beta from 5/19 to 5/23
XVV Mid Beta from 5/11 to 5/18
YVV High Beta from 4/30 to 5/10

[6] XVV Low Beta from 7/17 to 7/20
YVV Mid Beta from 7/6 to 7/8
YVV High Beta from 6/26 to 7/05

[7] XVV Mid Beta from 7/28 to 8/06

[8] XVV Low Beta from 8/9 to 8/14
XVV Mid Beta from 8/6 to 8/10

[9] XVV Low Beta from 9/12 to 9/16
XVV Mid Beta from 9/2 to 9/11

Note: The Allocation data in this table was from the version of the IDRD (SSP 54011) that included Flight and Stage ULF1.1.

4.2 STOWAGE

Table 4.2-1, U.S. Hardware Stowed in RS During Increment 11, provides the United States (U.S.) hardware either deployed for operations or stowed in the Russian Segment (RS) (Service Module (SM) or Docking Compartment 1).

TABLE 4.2-1 U.S. HARDWARE STOWED IN RS DURING INCREMENT 11

Type	TOTAL						FGB				Russian Seg.			
	m^3	____	Stowed		Installed		Stowed		Installed		Stowed		Installed	
			m^3	____	m^3	____	m^3	____	m^3	____	m^3	____	m^3	____
***1 TOTAL**	**0.318 / 0.956**	**6.00/ 18.03**	**0.210**	**3.96**	**0.108 / .994**	**2.04/ 18.76**	**0.000**	**0.00**	**0.000**	**0.00**	**0.210**	**3.96**	**0.108 / .994**	**2.04/ 18.76**
CHeCS	0.027	0.51	0.027	0.51							0.027	0.51		
Crew Clothing/Crew Provisions	0.113	2.14	0.113	2.14							0.113	2.14		
CSCS	0.030	0.57	0.030	0.57							0.030	0.57		
ECLSS/Water	0.020	0.38	0.020	0.38							0.020	0.38		
Hygiene/Personal and Sanitary	0.003	0.05	0.003	0.05							0.003	0.05		
ISS Ham Radio	0.000	0.01	0.000	0.01							0.000	0.01		
Laptops (stowed hardware)	0.002	0.03	0.002	0.03							0.002	0.03		
*Laptops (deployed + space)	0.108 / .746	2.04/ 14.07	0.000	0.00	0.108 / .746	2.04/ 14.07							0.108 / .746	2.04/ 14.07
L&M/Spares/IVA Tools	0.000	0.01	0.000	0.01							0.000	0.01		
ODF	0.000	0.00	0.000	0.00							0.000			
EVA	0.002	0.05	0.002	0.05							0.002	0.05		
PAO Education	0.000	0.00	0.000	0.00							0.000			
Photo TV	0.000	0.01	0.000	0.01							0.000	0.01		
Stowage Restraints and Mobility Aids	0.011	0.21	0.011	0.21							0.011	0.21		

NOTE:
*1 There are 3 U.S. laptop computers in the SM (1 in the crew quarters and 2 at the center command post). NASA does not acknowledge the computer in each of the crew quarters, since this is not stowage volume (2 Laptops = 2.04 CTBE). NASA also does not acknowledge the work area volume occupied by a potential crew member positioned in front of a computer as usable stowage volume. The Russians acknowledge the volume for each computer as being 1.02 CTBE per deployed computer and 3.67 CTBE per computer work zone in front of each deployed computer. (3 Laptops = 3.06 CTBE, 3 Laptop work zones = 11.01 CTBE; for a total of 14.07 CTBE).

Table 4.2-2, Russian Non-LSS Hardware Stowed in USOS During Increment 11, provides the non-Life Support System (LSS) Russian hardware either deployed for operations or stowed in the U.S. segment (Node, United States Laboratory (U.S. Lab), Joint Airlock and Functional Cargo Block (FGB)).

TABLE 4.2-2 RUSSIAN NON-LSS HARDWARE STOWED IN USOS DURING INCREMENT 11

Type	TOTAL						FGB				US Seg.			
	m^3	____	Stowed		Installed		Stowed		Installed		Stowed		Installed	
			m^3	____	m^3	____	m^3	____	m^3	____	m^3	____	m^3	____
TOTAL	**5.677**	**107.12**	**5.677**	**107.12**	**0.000**	**0.00**	**4.2326**	**79.8613**	**0.000**	**0.00**	**1.4446**	**27.2557**	**0.0000**	**0.0000**
Ancillary (Cables)	0.1065	2.0102	0.1065	2.0102			0.0587	1.1078			0.0478	0.9024		
Power Supply System (not FGB) (___)	0.2755	5.1990	0.2755	5.1990			0.2755	5.1990			0.0000			
EVA (___)	1.5730	29.6798	1.5730	29.6798			0.6001	11.3229			0.9729	18.3569		
Housekeeping (__ _ _ __)	0.1369	2.5838	0.1369	2.5838			0.1369	2.5838			0.0000			
IVA Tools (_____)	0.4568	8.6182	0.4568	8.6182			0.2575	4.8590			0.1992	3.7592		
Miscellaneous	0.0937	1.7687	0.0937	1.7687			0.0937	1.7687			0.0000			
Motion Control and Navigation (____)	0.0156	0.2934	0.0156	0.2934			0.0156	0.2934			0.0000			
On-Board Complex Control (____)	0.1574	2.9702	0.1574	2.9702			0.1574	2.9702			0.0000			
On-Board Computer (___)	0.1143	2.1563	0.1143	2.1563			0.0703	1.3263			0.0440	0.8300		
Payloads (___)	0.8964	16.9134	0.8964	16.9134			0.8693	16.4013			0.0271	0.5121		
Photo TV (____)	0.2898	5.4688	0.2898	5.4688			0.1987	3.7489			0.0912	1.7199		
Stowage Restraints and Mobility Aids	0.0795	1.5000	0.0795	1.5000			0.0795	1.5000			0.0000			
Structure	0.1059	1.9982	0.1059	1.9982			0.0841	1.5873			0.0218	0.4109		
Thermal Control (_____)	1.3757	25.9570	1.3757	25.9570			1.3352	25.1927			0.0405	0.7643		

Table 4.2-3, Russian LSS Hardware Stowed in USOS During Increment 11, provides LSS Russian hardware either deployed for operations or stowed in the U.S. segment (Node, U.S. Lab, Joint Airlock, and FGB).

TABLE 4.2-3 RUSSIAN LSS HARDWARE STOWED IN USOS DURING INCREMENT 11

Type	TOTAL						FGB				US Seg.			
	m^3	____	Stowed		Installed		Stowed		Installed		Stowed		Installed	
			m^3	____	m^3	____	m^3	____	m^3	____	m^3	____	m^3	____
TOTAL	**9.107**	**171.82**	**9.107**	**171.82**	**0.000**	**0.00**	**7.055**	**133.11**	**0.000**	**0.00**	**2.052**	**38.71**	**0.000**	**0.00**
Atmosphere Revitalization System (____)	1.705	32.17	1.705	32.17			1.292	24.37			0.413	7.80		
Crew Provisions/Crew Support (___)	1.499	28.28	1.499	28.28			1.393	26.28			0.106	2.01		
Fire Protection (____)	0.182	3.43	0.182	3.43			0.182	3.43			0.000			
Food Ration Container (___)	1.596	30.11	1.596	30.11			0.697	13.15			0.899	16.96		
Housekeeping	0.137	2.58	0.137	2.58			0.137	2.58			0.000			
Hygiene	0.641	12.09	0.641	12.09			0.641	12.09			0.000			
Medical Support Countermeasures/ Monitoring (_____)	0.322	6.08	0.322	6.08			0.316	5.97			0.006	0.11		
Sanitary Hygiene/Toilet (____ ___)	0.172	3.25	0.172	3.25			0.172	3.25			0.000			
Towel Napkin (____ ___)	0.980	18.50	0.980	18.50			0.980	18.50			0.000			
Waste Equipment (____)	1.297	24.46	1.297	24.46			0.672	12.69			0.624	11.78		
Water Processor/Water Supply System (___)	0.576	10.86	0.576	10.86			0.573	10.80			0.003	0.06		

Table 4.2-4, Russian LSS Hardware Stowed in RS During Increment 11, provides the Russian LSS hardware either deployed for operations or stowed in the RS (SM or Docking Compartment 1).

TABLE 4.2-4 RUSSIAN LSS HARDWARE STOWED IN RS DURING INCREMENT 11

Type	TOTAL						SM				DC-1			
	m^3	____	Stowed		Installed		Stowed		Installed		Stowed		Installed	
			m^3	____	m^3	____	m^3	____	m^3	____	m^3	____	m^3	____
TOTAL	**3.139**	**59.23**	**3.139**	**59.23**			**3.008**	**56.75**			**0.131**	**2.48**		
Atmosphere Revitalization System (____)	0.520	9.82	0.520	9.82			0.416	7.84			0.105	1.98		
Medical Support (___) (including Personal Hygiene (___))	1.017	19.18	1.017	19.18			0.997	18.82			0.019	0.36		
Crew On-Board Support (____)	0.207	3.90	0.207	3.90			0.207	3.90						
Water Processor/Water Supply System (___)	0.898	16.95	0.898	16.95			0.898	16.95						
Toilet (___)	0.359	6.78	0.359	6.78			0.359	6.78						
Food Supply System (___)	0.127	2.40	0.127	2.40			0.127	2.40						
Fire Protection (____)	0.011	0.20	0.011	0.20			0.003	0.06			0.007	0.14		

Table 4.2-5, U.S. LSS Hardware Stowed in USOS During Increment 11, provides the U.S. LSS hardware either deployed for operations or stowed in the U.S. Segment (Node, U.S. Lab, Joint Airlock, and FGB).

TABLE 4.2-5 U.S. LSS HARDWARE STOWED IN USOS DURING INCREMENT 11

Type	TOTAL						FGB				US Seg.			
	m^3	____	Stowed		Installed		Stowed		Installed		Stowed		Installed	
			m^3	____	m^3	____	m^3	____	m^3	____	m^3	____	m^3	____
TOTAL	**5.89**	**111.06**	**5.89**	**111.06**			**0.00**	**0.00**			**5.89**	**111.06**		
Battery Pantry	0.027	0.50	0.027	0.50			0.000				0.027	0.50		
CHeCS	1.185	22.35	1.185	22.35			0.000				1.185	22.35		
Crew Provisions/Crew Preference	1.093	20.62	1.093	20.62			0.000				1.093	20.62		
ECLSS	0.825	15.57	0.825	15.57			0.000				0.825	15.57		
Food	0.707	13.34	0.707	13.34			0.000				0.707	13.34		
Hygiene/Housekeeping	0.198	3.73	0.198	3.73			0.000				0.198	3.73		
Office/Printer Supply	0.170	3.20	0.170	3.20			0.000				0.170	3.20		
Towel/Napkin	0.292	5.50	0.292	5.50			0.000				0.292	5.50		
Water Transfer	1.391	26.25	1.391	26.25			0.000				1.391	26.25		

Table 4.2-6, FGB Specific Hardware Stowed in USOS During Increment 11, provides the FGB-specific hardware either deployed for operations or stowed in the U.S. segment (Node, U.S. Lab, Joint Airlock, and FGB).

TABLE 4.2-6 FGB SPECIFIC HARDWARE STOWED IN USOS DURING INCREMENT 11

Type	TOTAL						FGB				US Seg.			
	m^3	____	Stowed		Installed		Stowed		Installed		Stowed		Installed	
			m^3	____	m^3	____	m^3	____	m^3	____	m^3	____	m^3	____
[*3] TOTAL	**0.641**	**12.09**	**0.641**	**12.09**	**0.000**	**0.00**	**0.641**	**12.09**	**0.000**	**0.00**	**0.000**	**0.00**	**0.000**	**0.00**
FGB Power Supply System	0.518	9.77	0.518	9.77			0.518	9.77						
FGB Thermal	0.119	2.24	0.119	2.24			0.119	2.24						
FGB LSS	0.004	0.08	0.004	0.08			0.004	0.08						

NOTE:

*3 Table 4.2-6 is for information only and is not considered a Russian obligation.

4.3 CARGO, WATER AND PROPELLANT TRANSFER

Table 4.3-1, Mass NASA Vehicles Delivered to ISS, is the summary of the items National Aeronautics and Space Administration (NASA) vehicles have provided to the ISS each flight in this Increment, including delivery of Russian cargo, delivery of water to ISS, and providing additional altitude via Shuttle reboost.

TABLE 4.3-1 MASS NASA VEHICLES DELIVERED TO ISS

(All weights in kilograms)#

Flight - Element/Cargo	US			Russian								
	Assembly Element	Cargo	Payloads	Assembly Element	Cargo				Payloads	Water (liters)	Propellant (kg)	Gases (kg)
					FGB		Other					
					Chargeable	Non-Chargeable	Chargeable	Non-Chargeable				
LF-1	2858.2	1996.5	789.6	0.0	0.0	0.0	0.0	0.0	0.0	788.8	88.4 [1]	39.2
Increment 11 Total Mass	**2858.2**	**1996.5**	**789.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**788.8**	**88.4 [1]**	**39.2**

NOTE:
Differences between data in this table and actual manifest data are due to arithmetic round off error.
[1] Updated Propellant number supersedes the listed propellant number in Manifest Mass Summary Table.

Table 4.3-2, Mass NASA Vehicles Returned From ISS, is the summary of the items NASA vehicles have returned to the ground from the ISS for each flight in this Increment, including return of Russian cargo, payloads, and disposal of trash.

TABLE 4.3-2 MASS NASA VEHICLES RETURNED FROM ISS

(All weights in kilograms)#

US					RUSSIAN							
mbly ment	Cargo	Payloads	Disposed		Assembly Element	Cargo				Payloads	Disposed	
			Non-common	Common		FGB		OTHER			Non-common	Common
						Chargeable	Non-chargeable	Chargeable	Non-chargeable			
.4	1980.7	368.5	1.1	0.0	0.0	0.0	96.8	1190.6	25.7	0.0	0.0	0.0
.4	**1980.7**	**368.5**	**1.1**	**0.0**	**0.0**	**0.0**	**96.8**	**1190.6**	**25.7**	**0.0**	**0.0**	**0.0**

data in this table and actual manifest data are due to arithmetic round off error.

Table 4.3-3, Mass Roscosmos Vehicles Delivered to ISS, is the summary of the items Roscosmos vehicles have provided to the ISS each flight in this Increment, including delivery of NASA cargo, payloads, water, propellant and gases to ISS.

TABLE 4.3-3 MASS ROSCOSMOS VEHICLES DELIVERED TO ISS

(All weights in kilograms)#

Flight - Element/Cargo	US				Russian						
	Assembly Element	Cargo		Payloads	Assembly Element	Cargo		Payloads	Water (liters)	Propellant (kg)*	Gases
		Chargeable	Non-Chargeable			FGB	Other				
10S	0.0	25.5	0.0	6.2	0.0	0.0	41.0	36.7	0.0	0.0	0.0
18P	0.0	203.6	0.0	13.2	0.0	191.0	907.5	5.7	442.0	617.0	111.0
19P	0.0	74.3	0.0	0.0	0.0	0.3	1130.5	29.3	210.0	909.0	110.4
Increment 11 Total Mass	**0.0**	**303.3**	**0.0**	**19.3**	**0.0**	**191.3**	**2079.0**	**71.8**	**652.0**	**1526.0**	**221.4**

NOTES:
Differences between data in this table and actual manifest data are due to arithmetic round off error.
* Does not include Progress residuals.

Table 4.3-4, Mass Roscosmos Vehicles Returned From ISS, is the summary of the items Roscosmos vehicles have returned to the ground or disposed of from the ISS for each flight in this Increment, including return of NASA cargo, payloads, and disposal of trash.

TABLE 4.3-4 MASS ROSCOSMOS VEHICLES RETURNED FROM ISS

(All weights in kilograms)#

Flight - Element/ Cargo	**US**						**RUSSIAN**							
	Assembly Element	**Cargo**		**Payloads**	**Disposed**		**Assembly Element**	**Cargo**		**Payloads**	**Disposed**		**FGB Disposed [1]**	**Total Disposed**
		Chargeable	**Non-chargeable**		**Non-common**	**Common**		**FGB**	**OTHER**		**Non-common**	**Common**		
9S	0.0	2.7	0.0	0.0	0.0	81.8	0.0	0.3	9.3	37.9	10.7	81.8	0.0	174.4
17P	0.0	0.0	0.0	0.0	51.0	384.8	0.0	0.0	0.0	0.0	390.7	384.8	62.7	1274.1
18P	0.0	0.0	0.0	0.0	75.8	345.3	0.0	0.0	0.0	0.0	555.2	345.3	82.0	1403.7
Increment 11 Total Mass	**0.0**	**2.7**	**0.0**	**0.0**	**126.8**	**812.0**	**0.0**	**0.3**	**9.3**	**37.9**	**956.6**	**812.0**	**144.7**	**2852.1**

NOTES:

[1] Responsibility for FGB hardware return and disposal will be worked in the Balance of Contributions discussion and protocol.

* Differences between data in this table and actual manifest data are due to arithmetic round off error.

4.4 CREW TIME

Table 4.4-1, Crew Time, is the summary of the pre-Increment planned and actual Increment crew time spent on various mission categories. The actual Increment duration exceeded the planned preflight duration of 173 days by four days, and is based on the docking and undocking of Flight 10 Soyuz (Transportation Modified Anthropometric (TMA)-6). The Planned Crew Hours data used in this table was from the IDRD Revision A (SSP 54011) that included Flight and Stage ULF1.1.

TABLE 4.4-1 CREW TIME (PAGE 1 OF 2)

Category/Task	Planned Increment 11 Crew Hours (173 days)	Actual Increment 11 Scheduled Crew Hours (177 days)	Actual Increment 11 Task List Crew Hours (177 days)	Total Completed Increment 11 Crew Hours (177 days)
1.0 Traffic Operations	519	400.6	18.4	419
1.1 Shuttle	216	92.3	7.9	100.2
1.1.1 Preparation for Shuttle Arrival	34	18.1	2.1	20.2 [3]
1.1.2 Shuttle Pre-Pack	60 [1]	43.1	5.8	48.9 [4]
1.1.3 Shuttle Docking	30	22.9	0	22.9 [3,5]
1.1.4 Shuttle Undocking	12	4.8	0	4.8 [3]
1.1.5 Final Stow after Shuttle Departure	70 [2]	17.6	0	17.6 [3]
1.1.6 Crew Rotation - new crew familiarization	10	0	0	0
1.2 Soyuz	125	127	7.5	134.5
1.2.1 Soyuz Docking	12	19.9	0	19.9
1.2.2 Soyuz Crew Overhead	0	8.5	0	8.5
1.2.3 Soyuz Undocking	12	28.7	7.5 [6]	36.2
1.2.4 Soyuz Redocking	39	35.9	0	35.9
1.2.5 Crew Rotation - new crew familiarization	40	34.0	0	34.0
1.3 Progress	178	181.3	3.0	184.3
1.3.1 Progress Offloading	68	63.8	1.0	64.8
1.3.2 Progress Loading	48	61.3	2.0	63.3
1.3.3 Progress Docking	34	37.0	0	37.0
1.3.4 Progress Undocking	28	19.2	0	19.2
2.0 Medical Operations	152	108.7	0	108.7
3.0 Onboard Training	60	63.0	0	63.0
4.0 Routine Operations	186	247.6	14.2	262.8
4.1 Public Relations	26	46.7	0	46.7 [7]
4.2 SSC Upgrade (SSC Refresh)	4	4.2	0	4.2
4.3 IMS Activities	32	28.7	0.7	29.4
4.4 Crew Tag Ups	2	6.75	0	6.75
4.5 USOS Routine Operations	61	76.1	13.5	89.6 [8]
4.6 RS Routine Operations	61	85.1	0	85.1 [9]

TABLE 4.4-1 CREW TIME (PAGE 2 OF 2)

Category/Task	Planned Increment 11 Crew Hours (173 days)	Actual Increment 11 Scheduled Crew Hours (177 days)	Actual Increment 11 Task List Crew Hours (177 days)	Total Completed Increment 11 Crew Hours (177 days)
5.0 Maintenance	305	346.3	13.2	357.0
5.1 USOS Maintenance	63	112.9	12.7	125.6
5.1.1 Preventative	40	69.5	0.8	70.3
5.1.2 Corrective	23	19.3	8.3	27.6
5.1.3 Contingency	0	20.1	0.8	20.9
5.1.4 Software Troubleshooting		4.0	2.8	6.8
5.2 RS Maintenance	242	232.9	0.5	233.4
6.0 Assembly	75	89.2	7.6	96.8
6.1 USOS Assembly	25	22.8	7.6	30.4 [10]
6.2 RS Assembly	50	66.4	0	66.4 [11]
7.0 EVA				
7.1 EMU EVA	119	6.75	0	6.75 [12]
7.2 Orlan EVA	108	131.9	0.7	132.6 [13]
8.0 Utilization				
8.1 USOS Utilization	108	103.1	18.3	121.4
8.2 RS Utilization	108	95.9	29.3	125.3 [14]
9.0 Exercise	--	763.5	0	763.5 [15]

NOTES:

Roscosmos and NASA agree on the Utilization crew times in this table. Roscosmos and NASA may have different crew times for non-utilization categories because of the lack of a joint agreement between MCC-H and MCC-M for tracking and recording crew time. Crew time based upon Increment 11 crew activity for 9S/10S Joint Mission, Increment 11 Independent Operations (Stage 10S and Stage LF1), and 10S/11S Joint Mission timeframes.

1. Pre-flight plan included 10 hours for LF1 pre-pack remaining from Increment 10, and 50 hours for ULF1.1 pre-pack.
2. Pre-flight plan included 10 hours for USOS stowage consolidation following ULF1.1 due to anticipated stowage issues.
3. Includes time for LF1 tasks only, as ULF1.1 was deferred from Increment 11.
4. Does not include 20 hours of LF1 pre-pack performed during Increment 10, but does include 4.3 hours for ULF1.1.
5. Includes 14.2 hours associated with LF1 Shuttle Return-to-Flight requirements (e.g. RPM imagery and OBT).
6. Includes 7.5 hrs of off-duty time spent by the Commander to re-pack the Soyuz the night prior to undocking.
7. Includes 12.2 hours during 9S/10S Joint Operations and 8.6 hours during 10S/11S Joint Operations.
8. Includes 8.8 hours for PMA-2 stowage removal, 5.3 hours for Z1 ingress, and 14.8 hours for PMA-3 cargo stowage.
9. Includes 33.3 hours for daily ___ (SFOG) activations due to Elektron failure.
10. Does not include 29.9 hours of USOS Assembly performed by Increment 11 crew during LF1 Joint Operations.
11. Includes 7.2 crew hours of assembly tasks performed during RS EVA 14, and 15.7 hours for ATV1 PCE checkout.
12. USOS EVA 4 was deferred to Increment 12.
13. Includes 16.5 hours for preparation of US EVA equipment used on RS EVA 14 and for unmanned configuration of USOS.
14. Includes 2.8 crew hours of Utilization tasks performed during RS EVA 14.
15. An additional 26.5 hours of RS Utilization activity (Profilaktika) was completed during Increment 11 by the crew concurrently with exercise and are not considered in the Utilization calculations for Table 4.4-1.

5.0 UTILIZATION

Increment 11 continued to conduct pioneering research onboard the ISS. In addition to delivering and installing a new rack-level facility, existing experiments and facilities established during the previous 10 Increments were expanded in the fields of human life sciences (Bioastronautics), physical science, earth and space observation, and space product development.

The Human Research Facility (HRF) Rack 2 was delivered on flight LF1 and installed in the U.S. Lab. HRF Rack 2 expands both the human life science research equipment and capabilities of the previously installed HRF Rack 1. Also delivered was the Materials on International Space Station Experiment (MISSE) Passive Experiment Carrier (PEC) #5. This external payload was deployed, and MISSE PECs 1 and 2 were retrieved and returned to Earth on Flight LF1 for analysis. The on-orbit Protein Crystal Growth Single Thermal Enclosure System (PCG-STES) and two Russian Root modules were also retrieved from ISS and returned to Earth on Flight LF1. The PCG-STES had been on-orbit for 981 days.

The Increment 11 Bioastronautics experiment runs completed the Advanced Diagnostic Ultrasound in Microgravity (ADUM) scans and telemedicine demonstrations, which had begun in Increment 8. Data was collected for Renal Stone and Journals, which started in Increment 3 and 8 respectively. A complete data set for the Foot investigation was also completed. The Physical Science Research (PSR) and Space Product Development (SPD) activities included the on-going Microgravity Acceleration Measurement System (MAMS) and Space Acceleration Measurement System (SAMS) investigations, as well as the Fluid Merging Viscosity Measurement (FMVM) and Miscible Fluids in Microgravity (MFMG) investigations. Earth Knowledge Acquired by Middle School (EarthKAM), Space Experiment Module (SEM), Serial Network Flow Monitor (SNFM), Crew Earth Observations (CEO) and Educational Payload Operations (EPO) were completed as part of the Space Operations research area, in addition to the previously mentioned MISSE activities.

The majority of utilization objectives were met during the Increment. In order to satisfy the high priority needs of the utilization community while addressing other required tasks to maintain vehicle functionality and crew health and safety, the Increment Management Team along with the Payload Operations Integration Center (POIC), ISS Mission Evaluation Room (MER), and the Operations Teams at Mission Control Center - Houston (MCC-H) and Mission Control Center - Moscow (MCC-M) worked closely to define the relative priority of daily activities for the on-orbit crew. This teamwork provided the necessary means to ensure the continuing success of the ISS and its science programs. Details of these programs are contained in the following tables:

Table 5.0-1, NASA ISS U.S. Utilization Complement, provides information on payloads activities supported by NASA.

Table 5.0-2, Roscosmos ISS Utilization Complement, provides information on payloads supported by Roscosmos.

Table 5.0-3, Visiting Crew-8 Research Objectives, provides information on visiting crew's payloads.

Table 5.0-1, NASA ISS U.S. Utilization Complement, depicts the USOS on-orbit utilization conducted during Increment 11. For Utilization description, see SSP 54011 IDRD for Increment 11, Annex 5. The percentage of operational objectives data used in this was from the IDRD Revision A (SSP 54011) that included Flight and Stage ULF1.1.

TABLE 5.0-1 NASA ISS U.S. UTILIZATION COMPLEMENT (PAGE 1 OF 2)

Facility or Payload Name (Acronym)	Location	Delivery Flight	Return Flight	Percentage of Operational Objectives Accomplished	Notes
Facility - HRF 1	Lab 1S2	5A.1	-	90%	Intermittent operation to support activities such as GASMAP health checks, data downlinks and rack reconfiguration. 1 planned activity (RIC Autoload) was not performed due to it being a lower priority activity considering the research time allocated.
Facility - HRF 2	Lab 1P4	LF1	-	43%	Rack reconfiguration, Refrigerated Centrifuge spacer removal, and Rack c/o completed in Inc 11. Two of the six pre-increment planned activities plus the spacer removal activity (not previously planned) were completed. Due to needed changes in research priorities based on the available crew time only these activities uniquely associated with HRF rack #2 were accomplished.
Facility - ER1	Lab 1O2	6A	-	100%	Intermittent operations to support MAMS and SAMS.
Facility - ER4	Lab 1P2	7A.1	-	100%	Constantly powered rack. Actively supported PCG-STES10, SAMS-II-ICU hardware as well as the KU Receiver.
Facility - ER5	Lab 1S4	7A.1	-	-	Used for stowage of a number of payload hardware items.
Facility - MELFI		ULF1.1		0%	Due to the delay of ULF1.1, MELFI was not launched during Inc 11.
Rack Mounted Facility - EMCS		ULF1.1		0%	Due to the delay of ULF1.1, EMCS was not launched during Inc 11.
Physical Sciences Research and Space Product Development					
MAMS	ER1	6A	-	100%	MAMS is a constantly powered payload.
PCG-STES	ER4	11A	LF1	100%	Total time on ISS was 981 days.
SAMS II	ER1/ER4	6A	-	55%	The vibration acceleration (transient) environment within the ISS during visiting vehicle dockings and separations, EVA activities, reboosts, and quiescent periods were measured. The SAMS ICU (IBM 760xd laptop) experienced progressively worsening problems during the increment.

TABLE 5.0-1 NASA ISS U.S. UTILIZATION COMPLEMENT (PAGE 2 OF 2)

Facility or Payload Name (Acronym)	Location	Delivery Flight	Return Flight	Percentage of Operational Objectives Accomplished	Notes
FMVM	Not rack mounted	N/A	-	100%	Though not part of the ops planned for Inc 11, one run was added to and completed. All objectives of this investigation are now complete.
MFMG	Not rack mounted	N/A	-	100%	Though not part of the ops planned for Inc 14, the MFMG Thermal test 4 was conducted and completed.
Bioastronautics					
ADUM	Used Ultrasound in HRF 1		-	100%	One Scan A session was planned and completed.
Foot	stowed			125%	4 sessions planned. 5 were completed in order to get a complete data set for the increment.
Journals	-		N/A	98%	Journals is assumed to have been performed 3 times per week. 1-2 task-listed sessions were not completed.
Renal Stone	stowed			100%	All 3 runs completed successfully. 2 of 3 sample sets returned on LF1. Remaining sample set return has been requested on 11S.
Space Operations					
CEO	Camera based	N/A	N/A	100%	Handheld photography of weekly uplinked selected ground sites were completed over the entire increment.
EarthKAM	stowed	5A.1	N/A	100%	Planned sessions accomplished.
EPO	stowed			100%	Planned session accomplished.
MISSE	External - P6	LF1	13A.1	100%	PEC 5 deployed during LF1 joint phase and performed nominally during the increment. Stage activities were accomplished.
SNFM	software		N/A	100%	SNFM activities monitor EXPRESS rack Local Area Network data traffic was performed.
SEM	stowed		LF1	100%	Though not planned to be performed in Inc 11, 2 sessions were completed.
Average of Research Operational Objectives				**86%**	

Table 5.0-2, Roscosmos ISS Increment 11 Utilization Complement, depicts RS On-Orbit utilization conducted during Increment 11.

TABLE 5.0-2 ROSCOSMOS ISS INCREMENT 11 UTILIZATION COMPLEMENT (PAGE 1 OF 5)

Category	Experiment Code	Experiment Name	Hardware Description	Research Objective	Unique Payload Constraints
Commercial	KHT-2	MPAC & SEED	Equipment for catching microparticles and for exposing MPAC & SEED materials Special returnable cassette Transfer rack with interface	Study of meteoroid and man-made environment and of the outer space factor effects on exposed materials	During EVA activity
Commercial	___-29	Rokviss	ROBOTIK arm monoblock Onboard controller Transceiver with antenna on mechanical adapter	Development test for joint elements	
Commercial	NEU-3	Neurocog-3	Kogni system Gallei set Neurocog kit Control unit for EGE2 experiments	Study of the cerebral potential generated when concentrating in a virtual 3-dimensional environment in microgravity	Joint activity with ESA
Commercial	ETD-2	ETD	ETD hardware	Influence of long-term microgravity on the orientation of Listing's plane and the coordination of head and eye movements	Joint activity with ESA
Technical	___-7	Self-propagating high temperature synthesis [___]	[___] Test chamber Telescience onboard hardware Nominal hardware: Klest TV system Video control monitor [___]	Self-propagating high temperature synthesis [___] as a developmental test of the methods for obtaining highly porous refractory coating materials with unique properties	
Technical	___-9	Kristallizator	Kristallizator science hardware	Crystallization for obtaining protein monocrystals and building biocrystalline films in microgravity	
Geophysical	___-1	Relaksatsiya	"Fialka-MV-Kosmos" spectrozonal ultraviolet system	Study of chemiluminescent chemical reactions and atmospheric light phenomena that occur during high-velocity interaction between the exhaust products from spacecraft propulsion systems and the Earth's atmosphere at orbital altitudes and during the entry of space vehicles into the Earth's upper atmosphere	Using OCA
Geophysical	___-8	Uragan	Nominal hardware: Kodak 760 camera, Nikon D1X	Experimental verification of the ground- and space-based system for predicting natural and man-made disasters, mitigating the damage caused, and facilitating recovery	Using OCA

TABLE 5.0-2 ROSCOSMOS ISS INCREMENT 11 UTILIZATION COMPLEMENT (PAGE 2 OF 5)

Category	Experiment Code	Experiment Name	Hardware Description	Research Objective	Unique Payload Constraints
Biomedical	___-1	Sprut-MBI	Sprut-K set Nominal Hardware: Tsentr power supply Central Post Laptop	Study of human bodily fluids during long-duration space flight	
Biomedical	___-4	Farma	Saliva-F kit Nominal Hardware: Reflotron-4 system	Study of specific pharmacological effects under long-duration space flight conditions	
Biomedical	___-8	Profilaktika	TEEM-100M gas analyzer Accusport device Nominal Hardware: Reflotron-4 system TVIS treadmill __-3 cycle ergometer Set of bungee cords Computer Tsentr equipment power supply	Study of the action mechanism and efficacy of various countermeasures aimed at preventing human locomotor system disorders in microgravity	Time required for the experiment should be counted toward physical exercise time
Biomedical	___-9	Pulse	Pulse set Pulse kit Nominal Hardware: Computer Tenzoplus sphygmomanometer	Study of the autonomic regulation of the human cardiorespiratory system in microgravity	
Biomedical	___-15	Pilot	Right Control Handle Left Control Handle Synchronizer Unit (__) Nominal hardware: Computer	Study of the individual features of state psychophysiological regulation and crewmember professional activities during long-duration space flight	
Biomedical	___-2	Biorisk	Biorisk-KM set Biorisk-MSV containers Biorisk-MSN set	Study of space flight impact on microorganisms-substrates systems state related to space technique ecological safety and planetary quarantine	During EVA activity
Biomedical	___-4	Aquarium	Aquarium hardware ("Exposure 1" and "Exposure 2" packages)	Study of the long-term storage/revival of simulated closed environmental systems and components in microgravity conditions as components of microsystems and of promising biological life-support systems for space crews	Delivery/return as part of Rasteniya kit

TABLE 5.0-2 ROSCOSMOS ISS INCREMENT 11 UTILIZATION COMPLEMENT (PAGE 3 OF 5)

Category	Experiment Code	Experiment Name	Hardware Description	Research Objective	Unique Payload Constraints
Biomedical	___-5	Rasteniya-2	Lada greenhouse Nominal hardware: Sony DVCam Water container	Study of the space flight effect on the growth and development of higher plants	
Biomedical	___-10	Intercellular Interaction	Fibroblast-1 Kit Kriogem-03 refrigerator Glove box Container [KB-03] Nominal hardware: - Kriogem-03 refrigerator	Study of intercellular interaction in spaceflight	
Biomedical	___-11	Statoconia	Ulitka incubator Standalone temperature recorder [___] kit	Study of growth potency of statoconia in the organ of equilibrium of gastropods under conditions of microgravity	
Biomedical	___-12	Regeneratsiya	Planaria incubator [___]	Study of the effects of microgravity on regeneration processes in biological subjects using electrophysiological and morphological indicators	
Biomedical	___-1	Prognoz	Nominal Hardware for the radiation monitoring system: P-16 dosimeter __-8 dosimeters Pille-ISS Personal Radiation Dosimeter	Development of a method for the real-time prediction of dose loads on the crews of manned spacecraft	Unattended
Biomedical	___-2	Bradoz	Bradoz set Nominal hardware: Pille-ISS Dosimeter	Bioradiation dosimetry in space flight	
Biomedical	___-3	Matryoshka-R		Study of radiation environment dynamics along the ISS RS flight path and in ISS compartments, and dose accumulation in the anthropomorphic phantom, located inside and outside ISS	
	___-3-1 (1 stage)		Passive detectors assembly Phantom set (spherical phantom)		
	___-3-3_ (3 stages) (SDTO 16006A)		Matryoshka equipment (tissue-equivalent phantom)		Joint activity with ESA During EVA activity

TABLE 5.0-2 ROSCOSMOS ISS INCREMENT 11 UTILIZATION COMPLEMENT (PAGE 4 OF 5)

Category	Experiment Code	Experiment Name	Hardware Description	Research Objective	Unique Payload Constraints
Study of Earth natural resources and ecological monitoring	___-2	Diatomea	Diatomea kit Nominal hardware: Nikon F5 camera Nikon D1_ camera	Study of the stability of the geographic position and form of the world's ocean boundaries; biologically active water areas observed by space station crews	
Biotechnology	___-1	Glikoproteid	Luch-2 biocrystallizer Kriogem-03M freezer	Separation and study of E1-E2 surface glycoproteins of α-viruses under ground and microgravity conditions	
Biotechnology	___-2	Mimetik-K		Anti-idiotypic antibodies as adjuvant-active glycoproteid mimetic	
Biotechnology	___-4	Vaktsina-K		Structural analysis of protein candidates for AIDS vaccine	
Biotechnology	___-11	Biodegradatsiya	Bioproby kit	Assessment of the initial stages of biodegradation and biodeterioration of the surfaces of structural materials	
Biotechnology	___-12	Bioekologiya	Bioekologiya kit	Generation of high-efficiency strains of microorganisms to produce petroleum biodegradation compounds, organophosphorus substances, vegetation protection agents, and exopolysaccharides to be used in the petroleum industry	
Technical	___-5 (SDTO 16002-R)	Meteoroid	Nominal micrometeoroid monitoring system: MMK-2 electronics unit Stationary electrostatic sensors __1, __2, __3, and __4 Removable electrostatic sensor (___)	Recording of meteoroid and man-made particles on the ISS RS Service Module's exterior surface	Unattended
Technical	___-15 (SDTO 13002-R)	Izgib	Nominal Hardware: - ISS RS ___ accelerometers - ISS RS GIVUS - nominal temperature sensors measuring temperature within Progress vehicle compartments	Study of the effect of onboard system operating modes on ISS flight conditions	
Technical	___-20	Plazmenny Kristall	Plazmenny kristall-3 equipment Telescience flight equipment	Study of plasma-dust crystals and fluids under microgravity	
Technical	___-22 (SDTO 13001-R)	Identifikatsiya	Nominal Hardware: ISS RS ___ accelerometers	Identification of disturbance sources when the microgravity conditions on the ISS are disrupted	Unattended
Technical	___-25	Skorpion	Skorpion equipment	Development, testing, and verification of a multi-functional instrument to monitor the science experiment conditions inside ISS pressurized compartments	

TABLE 5.0-2 ROSCOSMOS ISS INCREMENT 11 UTILIZATION COMPLEMENT (PAGE 5 OF 5)

Category	Experiment Code	Experiment Name	Hardware Description	Research Objective	Unique Payload Constraints
Complex Analysis. Effectiveness Estimation	___-3	Econ	Econ kit High resolution hardware [___] Nominal Hardware: Nikon D1X digital camera Laptop No. 3	Experimental research on evaluation of ISS RS utilization possibilities for ecological monitoring	
Complex Analysis. Effectiveness Estimation	___-6	Plasma-ISS	Fialka-[__]-Kosmos multispectral ultraviolet system	Study of the plasma state on the outer surface of the ISS according to optical radiation properties	
Space energy systems	___-1_	Kromka	Tray with materials to be exposed	Study of the dynamics of contamination from liquid-fuel thruster jets during burns, and verification of the efficacy of devices designed to protect ISS exterior surfaces from contamination	During EVA activity

The Table 5.0-3, Visiting Crew-8 Research Objectives, depicts the experiments on ISS conducted by Roscosmos during Flight 10S.

TABLE 5.0-3 VISITING CREW-8 RESEARCH OBJECTIVES

Experiment Name	Experiment Code	Discipline	Research Objective	Unique Payload Constraints
CRISP-2	CSP	Biomedical	Study of the effects of microgravity on the development of neurons in insects (crickets)	
BEANS	SBS	Biomedical	Bean germination in space	Agrospace Project
SEEDLINGS	SED	Biomedical	Plant cultivation in microgravity	Agrospace Project
FRTL-5	TLF	Biomedical	Use of FRTL5 cells as a biological system to measure the effects of radiation and microgravity	
MICROSPACE	MIS	Biomedical	Effects of space flight on the survival of microbes in space	
VINO	VIN	Biomedical	Grapevines in near-Earth orbit	
HPA	HPA	Biomedical	Hand posture analyzer	Experiment performed on USOS using American resources
NGF	NGF	Biomedical	Growth factor of nerves	
VSV	VSV	Biomedical	Contribution of visceral receptors to the sense of subjective vertical	
ETD-I	ETD	Biomedical	Three-dimensional tracking device of eye position	
FTS	FTS	Biomedical	Taste-testing of food products from the Lazio region of Italy	
MOP-I	MOP ENE	Biomedical	Vestibular adjustment to gravitational change	
ENEIDE	ENE	Technical	Navigational experiment for the Italian Eneide demonstrational flight system	
LAZIO	LAZ	Technical	Study of electrojet currents in ISS orbit	
EST	EST	Technical	Electronic space testing	
E-NOSE	ENM	Technical	"Electronic nose" monitoring of air quality	
HBM	HBM	Biomedical	Heart beat monitoring	
SPQR	SPQ	Technical	Study of instantaneously obtaining the reference point and the image of the ISS	
ASIA	ASA	Technical	Analysis, experimentation and implementation of algorithms	
GOAL	GOA	Biomedical	Clothing made out of new fabrics for work in space	
BOP	BOP	Educational	Study of the effect of ATP (Adenosine 5'-triphosphate) on human osteoblasts in microgravity	
ESD	ESD	Educational	Demonstration of electrostatic attraction	
ARISS-4	ARS	Educational	HAM radio contacts between astronauts and students	

6.0 EXTRAVEHICULAR ACTIVITY

This section contains a summary table of the Extravehicular Activity (EVA) events that occurred during Increment 11. Table 6.0-1, Extravehicular Activity Summary, lists the EVA by number and shows the crew members who performed the EVA, on which mission the EVA was performed, and the date, duration and purpose of the EVA.

TABLE 6.0-1 EXTRAVEHICULAR ACTIVITY SUMMARY (PAGE 1 OF 4)

ISS EVA	Crew	Mission	Date	Duration	Purpose
LF1 - 1	Steve Robinson Soichi Noguchi	Flight LF1	July 30, 2005	6:50	EVA 1 was performed by the Shuttle Crew using EMUs from the Shuttle Airlock. The ISS Airlock EV hatch was opened by the EVA crew at the start of the EVA prior to Shuttle airlock hatch closure and repressurization. Planned tasks for the EVA included: • Thermal Protective System Techniques Detailed Test Objective (DTO) 848. • Installation of the External Stowage Platform Attachment Device (ESPAD) and pre-routing of cables. • Removal and replacement of Global Positioning System (GPS) Antenna Assembly #2. • Control Moment Gyro (CMG) 2 Patch Panel Reconfiguration. Get ahead tasks completed: • Retrieval of Material International Space Station Experiment (MISSE) 1 and 2 payload samples from the outside of the ISS airlock. • Imagery of the Orbiter front port window billowing blanket. Tasks not completed or deferred: None. Anomalies encountered: • During removal of the ESPAD, the crew had to increase the Pistol Grip Tool (PGT) torque setting in order to remove the launch bolts and then several attempts were required for the soft dock to engage. The SSRMS brakes were applied to stiffen the arm to apply additional force for docking.

TABLE 6.0-1 EXTRAVEHICULAR ACTIVITY SUMMARY (PAGE 2 OF 4)

ISS EVA	Crew	Mission	Date	Duration	Purpose
LF1 - 2	Steve Robinson Soichi Noguchi	Flight LF1	August 1, 2005	7:14	EVA 2 was performed by the Shuttle Crew using EMUs from the Shuttle Airlock. Planned tasks for the EVA included: • CMG1 removal and replacement. Get ahead tasks completed: • Flex Hose Rotary Coupler (FHRC) Multi-Layer Insulation (MLI) redress. • Return of the Payload Retention Devices to the A/L external EVA Tool Stowage Device (ETSD). • Retrieval of expired ISS tethers. • Retrieval of the Articulating Portable Foot Restraint (APFR) ingress aid. • Retrieval of the round scoop from the port EVA Tool Stowage Device (ETSD) for the Rotary Joint Motor Controllers (RJMC) task on EVA 3. • Retrieval of the pry bar/forceps caddy in case the forceps were needed for the proposed gap filler EVA task. Tasks not completed or deferred: None. Anomalies encountered: • During removal of the failed CMG-1, an unexpected ground strap was found on the Multi Layer Insulation (MLI) covering. However the strap was long enough to allow the MLI to be moved out of the way for removal. • The crew was required to revisit the four CMG bolts and found that bolt number 3 was still partially engaged. This bolt required an additional 5 turns to back out completely and then the CMG was removed successfully. • When the crew installed the failed CMG into the Orbiter payload bay for return, there were some difficulties with obtaining the correct setting on an adjustable shim but the crew verified the shim was flush with the CMG and ground controllers verified the configuration was good for return. • When the ground initiated a power up of the newly installed CMG they did not see an expected response and the crew reported that the J1 connector was not fully seated. This connector was recycled and then the Flight control team confirmed power to CMG1 was nominal.

TABLE 6.0-1 EXTRAVEHICULAR ACTIVITY SUMMARY (PAGE 3 OF 4)

ISS EVA	Crew	Mission	Date	Duration	Purpose
LF1 - 3	Steve Robinson Soichi Noguchi	Flight LF1	August 3, 2005	6:01	EVA 3 was performed by the Shuttle Crew using EMUs from the Shuttle Airlock. The ISS Airlock EV hatch was closed by the EVA crew at the end of the EVA following Shuttle airlock depressurization <u>Planned tasks for the EVA included:</u> • Installation of the ESP2 to the ESPAD on the ISS Airlock. • Removal of the ESP2 Flight Releasable Grapple Fixture (FRGF). • Installation of Materials International Space Station Experiment (MISSE) Payload Experiment Carrier (PEC) 5 on P6. • Retrieval of the S1 Thermal Radiator Rotary Joint (TRRJ) RJMC. • Removal of two Orbiter Gap Fillers protruding from the orbiter tiles. <u>Get ahead tasks completed:</u> • Imagery of the Floating Potential Probe (FPP). • Imagery of the Beta Gimbal Assembly (BGA) 4-bar linkage. • Installation of a Worksite Interface Fixture (WIF) extender onto ESP2 for ULF1.1. <u>Tasks not completed or deferred:</u> • S1 TRRJ RJMC removal. <u>Anomalies encountered:</u> • During ESP2 installation, the crew encountered a problem closing the starboard V-guide. The capture claw had to be backed off partially open, the port and nadir guide vanes were loosened, and the Space Station Remote Manipulator System (SSRMS) was taken to limp mode to get enough movement in the ESP2 to align the v-guides and successfully closed them. • The crew encountered a high running torque on one of the FRGF bolts. They increased the torque setting on the Pistol Grip Tool (PGT) to complete the removal.

TABLE 6.0-1 EXTRAVEHICULAR ACTIVITY SUMMARY (PAGE 4 OF 4)

ISS EVA	Crew	Mission	Date	Duration	Purpose
RS EVA 14 (ISS11-1)	Sergei Krikalev John Phillips	Stage LF1	August 18, 2005	4:58	RS EVA 14 was performed by ISS crew using Russian Orlan suits from the PIRS Docking Compartment. Planned tasks for the EVA included: • Retrieval of the Biorisk #1 container. • Retrieval of the MPAC/SEEDS panel #3. • Retrieval of the Matryoshka experiment. • Retrieval of the [CKK] panel #3. • Installation of [CKK] #5 panel. • Relocation of [CKK] #4. • Utilization imagery using Nikon F5 film camera and DCS 760 digital EVA camera. • Installation of the backup TV camera on the Service Module aft compartment to complete external preparations for future dockings of the European Automated Transfer Vehicle (ATV). • Imagery of Kromka thruster contamination experiment panel #3. • Jettison of the Matryoshka Multi-Layer Insulation (MLI) blanket and two towels used for wiping their gloves. Get ahead tasks completed: None. Tasks not completed or deferred: • Relocation of the Strela Adapter from the FGB to PMA-3. Anomalies encountered: • The crew had difficulty releasing the plug on the Matryoshka experiment to vent the Nitrogen.

7.0 REQUIREMENTS SUMMARY

This section lists any modifications, with rationale, to the preflight requirements documented in the SSP 54011, Increment Definition and Requirements Document (IDRD) for Increment 11, for Flight 10S, Stage 10S, Flight LF1 and Stage LF1. SSCN 9640 established a Revision B to the IDRD that removed Flight ULF1.1 and its requirements and references to establishing the Stage ULF1.1. The Stage ULF1.1 requirements from the IDRD Revision A were folded into the Stage LF1 in the IDRD Revision B. The data reflected in Section 7.4, Stage LF1 Requirements, is based on the combined set of requirements in the IDRD Revision B. SSP 54011 requirements that were pre-flight approved requirements baseline and were completed per the nominal plan are not documented in this section. However, SSP 54011 requirements that were not completed or that were modified are documented in the section.

The SSP 54011 is used to define tasks during the mission planning timeframe. After the Stage Operations Readiness Review (SORR), the ISS Management Center (IMC) uses another process, called the Current Stage Requirements Document (CSRD) to manage stage requirements during real time operations. If new requirements are identified after the SORR, ISS MER and Mission Control Center (MCC) Flight Controllers will submit their CSRD requirements via the MCC-H and MCC-M Chit process. IMC personnel consolidate and integrate these requirements with the approved SSP 54011 requirements and release a CSRD Chit for review by the real time operations community. Approval of the new integrated requirements package rests with the ISS Mission Management Team (IMMT) Chairperson.

Due to the complexities of real time operations, some tasks are required to be performed by the crew before they can be explicitly documented in the CSRD. These types of tasks are generally documented on an MCC Chit by Flight Controllers and are reviewed and approved by the IMMT Chair, the Increment Manager (IM), the Flight Director, the ISS MER Manager, and MCC-M (if applicable) before being approved for crew execution. These tasks are also documented in this section.

Task reporting for the Post Increment Evaluation Report (PIER) is sub-divided into the following categories:

1. <u>Tasks Completed in Addition to the IDRD Requirements.</u>

   These tasks are requirements that are not documented in the SSP 54011 pre-Increment, but were added real time to a particular flight or stage.

2. <u>Tasks Withdrawn.</u>

   These tasks are requirements that are documented in the SSP 54011 or CSRD, but were not accomplished due to technical problems, a lack of crew time, or other circumstances. Tasks in this category are valid only for the applicable flight or stage and cannot be deferred. It should be noted that adding a requirement to a stage or flight does not guarantee completion of the requirement due to the complexity of real time spaceflight, competing priorities, and limited on-orbit resources.

3. Tasks Deferred.

   These tasks are requirements that are documented in the SSP 54011 or CSRD, but were deferred to a later flight or stage due to various circumstances at that time.

4. Tasks Not Completed.

   These tasks are requirements that were documented in the SSP 54011 or CSRD but were not completed during real time operations due to circumstances at that time.

During the 177 day Increment 11 mission, the Expedition 11 crew addressed a total of 324 requirements. Of these, 199 were categorized as completed, 58 requirements were withdrawn, 61 requirements were deferred to a future Increment and 6 were not completed.

The flight and stage-specific requirements summary sections have summary data tables that outline the number of requirements that were completed during those timeframes. Adding the totals for each stage provides a sum of 276 requirements (including all levels of completion, deferral, not complete or withdrawn) excluding 48 Flight LF1 requirements. Subtracting the 54 duplicate stage requirements (as tracked across the stages) provides a true total of 222 stage requirements addressed for the increment. Forty-six of the stage requirements were accelerated from stages in the IDRD and added to the 10S and LF1 stages during the 10S Stage replan and the LF1 CSRD. Of the 156 completed stage requirements, 69 were IDRD baseline requirements planned prior to the start of the Increment. The remaining completed stage requirements were added during Increment 11 by CSRD (62) and real time chit (25).

This high level of real time and near real time requirement growth was due to several factors, namely the replan of the entire Increment Stages due to the Stage LF1 Flight launch delay and the ULF1.1 launch slip.

The total number of deferred requirements in the LF1 Stage (final) appears to be quite high (33). Seventeen of these requirements were deferred due to the launch delay of ULF1.1 as these requirements were directly associated with the Flight ULF1.1.

In addition to these large crew time impacts, the nature of adding real time requirements gives the impression of a high level of requirements being added, as there is a deeper level of detail in CSRD requirements than in IDRD requirements. Whereas one IDRD requirement may encompass multiple numbers of crew activities, CSRD requirements tend to encompass one single activity. Thus the nature of real time requirements documentation will appear to exponentially add to the total number of Increment requirements.

7.1 FLIGHT 10 SOYUZ

Soyuz Transportation Modified Anthropometric (TMA) 6 lifted off from Baikonur Cosmodrome in Kazakhstan on 15 April 2005 (Greenwich Mean Time (GMT) 105/00:46). The Expedition 11 Crew Commander Sergei Krikalev, Flight Engineer and NASA ISS Science Officer John Phillips, and European Space Agency (ESA) Space Flight Participant Roberto Vittori docked to the nadir port of the Docking Compartment (DC)-1 on 17 April 2005 (GMT 117/02:20) to begin the 9 Soyuz/10 Soyuz docked mission.

The 10S delivered 77.7 kilogram (kg) of Russian hardware to the ISS, including air sampling kits, the crew onboard support kit, 28.9 kg of ENEIDE experiment hardware under contract to ESA, 7.8 kg of experiment hardware in support of the Russian program, crew preference items and 12.1 kg of fresh food. The 10S also delivered 31.7 kg of U.S. hardware, including medical hardware, A31P laptop cables and power supplies, 6.2 kg of utilization hardware, 2 Lamp Housing Assemblies (LHAs) and 4 Baseplate Ballast Assemblies (BBAs).

Primary mission objectives for the 9 Soyuz/10 Soyuz joint mission included the change out of Expedition 10 crewmembers Leroy Chiao and Salizhan Sharipov, critical hardware transfer, and the activities for the ESA crewmember Science Program.

The ESA experiments which were conducted as part of the ENEIDE mission are shown in Table 5.0-3. None of the ESA experiments were performed on the USOS.

Several USOS tasks performed by the US crewmembers during the joint mission served as excellent “functional handover” for the Expedition 11 crew and contributed to their familiarization with ISS. Planned systems tasks included a filtration and flush of the Joint Airlock Cooling Loop, the replacement and checkout of the ISS Extravehicular Mobility Unit (EMU) Umbilical (IEU) #2 in the Joint Airlock, maintenance of EMU Batteries to be used as back-ups for the LF1 (EVA)s and EMU reconfiguration. The crew also performed replacement of two failed General Luminaire Assemblies (GLAs) and removal of two failed LHAs. In addition, the crew performed a standard robotics operation to maintain proficiency on the Space Station Remote Manipulator System (SSRMS), as well as pre-pack of return items on Shuttle Flight LF1. Finally, some NASA payloads activities were planned during the Joint Mission because the activities served as functional handover and would benefit from the participation of the off-going Exp-10 crew. These activities included the Advanced Diagnostic Ultrasound in Microgravity (ADUM) scan and Microgravity Sciences Glovebox (MSG) re-certification, which included a software update to the Microgravity Sciences Glovebox (MSG) Laptop Computer (MLC), a yearly re-certification of the delta pressure sensors and an inspection of the MSG recompression valve. The NASA payload Foot Reaction Forces During Space Flight (FOOT) was not performed during the Joint Mission due to timeline constraints.

On 21 April 2005 (GMT 111), the crew completed the Advanced Diagnostic Ultrasound in Microgravity (ADUM) experiment. ADUM is designed for the ISS crew to conduct ultrasound exams on one another to help develop strategies for diagnostic telemedicine in both space and on Earth and demonstrate the capability of non-medical personnel to downlink diagnostic information (ultrasound images) for evaluation by medical specialists on the ground. Two cardiac and thoracic ultrasound scans were performed by Increment 11 Science Officer John Phillips on Expedition 10 Commander Leroy Chiao. All activities were completed nominally and images were downlinked for realtime evaluation by ground specialists.

On 19 April 2005 (GMT 109) the MLC software update was successfully completed. On 20 April 2005 (GMT 110) the crew completed the MSG yearly re-certification of the delta pressure sensors and replaced the power supply (black brick) allowing the MSG laptop to receive all sensor data. On 21 April 2005 (GMT 111) the crew completed an inspection of the MSG recompression valve and reported no visible cracks or degradation. The concluded the MSG annual re-certification.

The Expedition 10 Commander noted that the Station Support Computer (SSC) client #10 (A31P S/N 1005) display screen started flickering the evening before docking of 10S, and went completely dark the morning of docking. SSC client #9 was taken from the Laboratory (Lab) and used temporarily for Soyuz Video Routing. The Commander checked the laptop connections and the fan inlet and verified all were nominal. The laptop was rebooted and the Commander was able to see the windows startup screen faintly, but only with the help of ambient light. This resulted in a loss of redundancy for SSC clients on the Ops LAN.

On 19 April 2005 (GMT 109) the crew reported that an LHA in the Laboratory (LAB) failed. Onboard troubleshooting confirmed that the LHA had failed and not the Baseplate Ballast Assembly (BBA). Lighting in the Lab remained at acceptable levels, with nine of twelve lights functional. On 20 April 2005 (GMT 110) two of the LHAs and BBAs delivered on 10S were installed in the Node, leaving six of eight lights functional.

On 19 April 2005 (GMT 109) the crew deactivated the Elektron due to increasing voltage levels in the electrolyzer unit. Russian specialists recommended that the electrolyzer voltage remain below 22.5 volts (a reduction from their standard upper limit of 26 volts) due to operational life considerations for the currently installed Liquid Unit #5. On 20 April 2005 (GMT 110) the crew re-pressurized the Elektron Liquid Unit with nitrogen, verified the position of the Liquid Unit valves, closed the Emergency Vacuum Valve, and capped the oxygen outlet. However, the 12 hour overnight leak check of the unit failed, with pressure falling from 1.2 kg/cm2 to 0.3 kg/cm2, which is below the minimum operating pressure of 0.9 kg/cm2. On 22 April 2005 (GMT 112) the crew performed a second pressure check on Liquid Unit #5 after re-pressurizing the Liquid Unit. Although the Liquid Unit was able to hold pressure, further trouble-shooting activities were deferred until after Soyuz Undock. With the Elektron in a non-functional condition, a re-pressurization from the 17 Progress oxygen tank was performed to prevent the oxygen from dropping below the flight rule limit. The oxygen partial pressure was increased by approximately 10 millimeters of Mercury (mmHg).

On 19 April 2005 (GMT 109) the crew reported that the Service Module Air Conditioner [___] 2 was not collecting condensate. They observed condensate in the transparent hose leading to the condensate pump but the condensate was not moving. At MCC-M direction, the crew activated ___1 and subsequently reported that the ___1 condensate lines were also full with little or no movement. The USOS began collecting condensate in the Lab condensate tank. On 20 April 2005 (GMT 110) the ___1 automatically shutdown due to low coolant temperatures in the heat exchanger. This auto-response is designed to prevent the condensate lines from freezing. Subsequently, the crew activated ___2 at the direction of Flight Controllers in Moscow. The crew replaced the ___2 condensate tank on the assumption that it was full, and therefore, not collecting additional condensate. However, the crew reported that the removed tank only contained 1 to 2 liters of water. ___2 performed another automatic shut down near the end of the crew day, but was restarted and continued to operate. Also on 20 April 2005 (GMT 110), the crew transferred 30.9 kg of condensate from the Lab Condensate Tank to a Contingency Water Container (CWC). On 21 April 2005 (GMT 111) the ___-2 experienced another unexpected shutdown due to an indication that the Condensate Water Processor [___-_] tanks were full. The crew checked the ___-_ lines for condensate flow and Russian specialists concluded the lines in the ___-_ were blocked and that the ___2 was operational. Further troubleshooting of the ___-_ was deferred until after the docked mission and the CKB was not reactivated until the troubleshooting on the CPB-K was completed.

On 21 April 2005 (GMT 111) the Carbon Dioxide Removal Assembly (CDRA) failed near the end of the crew day when the Multiplexer/Demultiplexer (MDM) controlling the CDRA did not recognize that the CDRA Blower was operating. The CDRA was activated shortly after 10S docking to support the metabolic need of the additional crewmembers on board during Joint 9S/10S operations. Concurrent with the CDRA failure, the ground was sending ISS Vacuum System commands to the same MDM. Flight Controllers in MCC-H performed a Passive Built-in Test (PBIT) on the CDRA and determined that it could be restarted without risk of hardware damage. The CDRA was re-activated and operated nominally until the end of the docked mission when it was deactivated.

Disposal of U.S. trash items on Soyuz TMA-5 was documented in Space Station Change Notice (SSCN) 9269 and Increment 10 chits 2683 and 2727. U.S. trash items were packed in the Soyuz habitation module per radiogram 0334.

U.S. return cargo items on Soyuz TMA-5 were prepacked according to Orbital Communications Adapter (OCA) Message 10-1061A. The items were packed in the Soyuz descent compartment per radiogram 0306.

The 9S undocking was different than previous undockings due to concerns related to the reserve battery capacity of the Soyuz vehicle. In an effort to conserve battery power, the undocking plan included keeping the Soyuz on combined power with the ISS until just prior to undocking. However, approximately 1 hour prior to undocking a test was performed while the vehicle was on autonomous power. Following the test, the ground was unable to command the vehicle back to the combined ISS power mode. The Russian Flight Director then instructed the crew to leave the vehicle in the internal power configuration for the remainder of the undocking activities. There was also some difficulty with obtaining pressure integrity on the Soyuz taxi crewmember's suit, but ultimately the issue was resolved by opening and reconnecting all pressure sealing interfaces. The 9 Soyuz undocked from the ISS on 24 April 2005 (GMT 114/18:44), beginning the planned 6-month mission for the Expedition 11 crew. 9 Soyuz landed successfully on 24 April 2005 (GMT 114/22:08) after completing 192 days on-orbit. The Soyuz TMA-5 vehicle systems operated normally during the entire undocking, deorbit and landing phases of flight.

The Increment 11 PIER Summary Task Roll-up for Flight 10S is shown below.

Flight 10S	Totals	Completed	Withdrawn	Deferred	Not Completed
IDRD	15	13	0	0	2
CSRD	N/A	N/A	N/A	N/A	N/A
Added Real-time	5	5	0	0	0
TOTALS	**20**	**18**	**0**	**0**	**2**

Thirteen of the 15 tasks identified in the IDRD were accomplished during this mission. The remaining IDRD tasks were not completed. In addition to the requirements specified in the IDRD, five requirements were added during the mission. All five of these were completed.

A. Tasks Completed in Addition to the IDRD requirements (5).

1. Perform Joint Airlock Vacuum Access Jumper (VAJ) reconfiguration.

   On GMT 113 the crew partially disconnected the VAJ and pulled the slack in the hose from the Airlock deck platform. Then the depress air return hose in Node 1 was demated from the bulkhead feedthrough and temporarily capped. These preparatory tasks were completed so that during Flight LF1 the ISS depress pump could be connected from ISS to the Orbiter and used to depress the Shuttle and the crewlock prior to the first Extravehicular Activity (EVA). The gas savings using the ISS depress pump for depress provided approximately 40lbm of Nitrogen, enough to recover margin and support Nitrogen transfer and repress of the Multi-Purpose Logistics Module (MPLM) prior to its closeout.

2. Perform Extravehicular Mobility Unit (EMU) Serial Numbers 3005, 3011 and 3013 resize.

   On GMT 111 the crew configured EMUs 3005 and 3011 for return on Flight LF1, and EMU 3013 for return on Flight ULF1.1. In addition, the crew packed EMU gloves and other ancillary hardware for return. This 60 minute procedure was defined in Flight Note 5424B and Joint Execute Package Development and Integration (JEDI) Message 10-1136 and performed by the Exp-10 Commander and Exp-11 Flight Engineer (FE)-1. The activity took longer than planned due to excess stowage in the Joint Airlock. The activity was scheduled during the docked timeframe as functional handover for the Exp-11 crew to provide familiarity with Joint Airlock and U.S. spacesuit hardware.

3. Perform Vacuum Cleaner Bag removal and packaging for return on LF1.

   This task was added to the joint mission per Increment 10 chit 2680. The 10 minute activity was scheduled during the docked timeframe and completed on GMT 109 by the Exp-10 Commander. The task was requested to assist the ISS Common Environments Team (CET) investigation of impacts to the crew from the presence of Cadmium Oxide (CdO) onboard ISS. The Johnson Space Center (JSC) Toxicology Group can not predict how much CdO oxidation is present on ISS, however CdO is a hazard to crew health at very low levels. There are countless sources of Cd plating on connectors that could be potential sources of CdO particulate. We are taking precautions by calling for testing of prefilter and/or filter material in order to make a determination of probable toxic risk to crew health. Two reliable sources of particulate accumulation have been identified: High Efficiency Particle Air (HEPA) filters and used vacuum cleaner bags. The CET approved the use of a used vacuum cleaner bag for CdO testing. Because the crew will already be removing a used vacuum cleaner bag prior to LF1, this will require less crew time then removal of a HEPA, and less stowage on the LF1 return manifest.

4. Station Support Computer (SSC) File Server Recovery.

   On GMT 112, before a planned Private Medical Conference using the Netmeeting application, the on orbit SSC file server experienced network problems that would prohibit the conference (reference Anomaly Report (AR) 00846). On GMT 112 and 113 the crew attempted to reboot the server a several times with no success and also attempted unsuccessfully to recover the failed hard drive by running Norton Utilities. The File Server log data indicated that the hard drive currently installed in the SSC File Server was experiencing bad block errors. The crew removed and replaced the hard drive with an on-orbit spare. The SSC File Server was then reloaded using a File Server Digital Video Disk (DVD) after the crew noted that File Server Reload Compact Disk #2 was damaged.

5. Digital Camera System (DCS) 760 Trouble-Shooting.

   On GMT 112, the crew captured and downlinked black and white images from three DCS 760 cameras for image quality analysis. One of the new DCS 760 cameras delivered on 17 Progress for imagery of the Orbiter during the Flight LF1 Rbar Pitchover Maneuver (RPM) failed during Exp-10. The ground developed procedures to characterize the quality of the images from three older DCS 760 cameras brought up on Flight UF2 to determine the prime and backup camera usage plan for the RPM.

B. Tasks Not Completed (2).

1. Perform a minimum of 12 hours per crewmember of ISS crew handover.

   Due to timeline constraints, Exp-11 Commander (CDR) did not receive 12 hrs of handover. He received approximately 2 hours of dedicated handover. In addition, he received approximately 9.5 hours of functional handover where he was scheduled to perform tasks concurrently with an off-going crewmember. This additional functional handover, and the fact that he is a returning ISS Expedition crew member, mitigates the impact of not completing the dedicated handover.

2. Perform an additional 4 hours per crewmember of ISS crew handover (16 hours per crewmember total).

   Due to timeline constraints, the Exp-11 CDR did not receive the additional 4 hrs of handover. The Exp-11 Flight Engineer completed nearly 8 hours of dedicated handover and more than 11 hours of functional handover.

7.2 STAGE 10 SOYUZ

Following the successful 9S/10S joint mission, the Expedition 11 crew took control of the ISS. Stage 10S began with the undocking of the 9 Soyuz vehicle on 24 April 2005 (GMT 114/18:44) and ended with the docking of Flight LF1 (Space Transportation System (STS)-114) on 28 July 2005 (GMT 209/11:17).

The EarthKAM hardware was installed and activated in the U.S. Lab and operated from 25-29 April 2005 (GMT 115-119). Although hardware difficulties necessitated the mid-run change out of the digital camera and the cable connecting the camera to the laptop, 1297 images of student selected Earth features were downlinked and made digitally available to students from 118 schools in the United States, Canada, Spain, Argentina, Japan, and other countries over 92.5 hours of operation. A second EarthKAM session was performed on 22 July 2005 (GMT 203).

With the planned arrival of Flight LF1 on 17 May 2005, the main focus of the crew in the early part of Stage 10S was completing preparations for the LF1 mission. The Expedition 10 crew had already performed some preparation activities. But due to abundant stowage issues and other factors, the Expedition 10 crew completed effectively twenty hours of pre-pack for return cargo for Flight LF1. The Expedition 11 crew was scheduled to complete the remaining thirty hours in the three weeks prior to Orbiter docking. They completed four hours of prepack on 2 May 2005 (GMT 122) and another three hours on 3 May 2005 (GMT 123), just as the Shuttle Program announced a delay in the launch date of Flight LF1 to July 2005. During the week of 10 May the crew completed another 4.75 hours of prepack, including task list activity.

On 2 May 2005 (GMT 122) the crew completed the first in a series of onboard training activities for the Orbiter R-Bar Pitch Maneuver in preparation for the LF1 Shuttle flight. This training session focused on the audio communication configuration that the ISS crew, Orbiter crew and Mission Control Houston would use during the Orbiter approach. The crew connected an audio extension cable from the FGB to a panel in the SM enabling functionality of the primary space-to-ground communication loop in the SM during Orbiter approach. This connection precluded echoes in the ground loops located in MCC-H. Although the crew indicated that the headsets were light weight and comfortable they discovered that the microphones in the headsets could not be used in the push talk mode. This capability was not available because the push to talk function is located upstream of the extension cable connection. The two available modes that the crew can utilize are the “hot mike” mode or the listen only mode. The ground team will analyze these data and make recommendations.

On 2-3 May 2005 (GMT 122-123) the Commander replaced the ten smoke detectors in the FGB since there certified life had expired. Following the successful replacement, telemetry was enabled and the smoke detectors were activated.

From 3-5 May 2005 (GMT 123-125) the Expedition 11 crew completed the first of three Renal Stone sessions planned for the Increment. The Renal Stone experiment is part of the Human Research Facility (HRF) complement of payloads that studies the effectiveness of a proven Earth based therapy designed to minimize calcium renal stone development. One of the crew members is randomly assigned to take a placebo as a control for ground analysis. The crew's activities included onboard computer based training, logging of their dietary intake, food and liquids over a 24 hour period, followed by multiple sample collections. On 5 July 2005 (GMT 186) each crewmember collected the second of three sets of samples for the experiment.

On 11 May 2005 (GMT 131) a reboost was performed using progress thrusters to set up the proper phasing for 18 Progress launch. The actual delta-velocity of 0.725 m/s was slightly under the predicted 0.75 m/s. This resulted in an altitude increase of 1.24 kilometer (km), slightly under the predicted 1.30 km. Following the reboost the ISS was maneuvered to the XVV attitude.

On 12 May 2005 (GMT 132) the NASA Science Officer performed a dry run of the Foot Reaction Forces during Spaceflight (FOOT) experiment; one of the primary NASA research activities for Increment 11. Phillips donned a special garment and shoes with implanted electrodes that measure the impact of forces on the bottom of the foot to measure daily mechanical load, neural drive to muscles, and joint activity on earth and in space, and to relate these findings to post-flight changes in muscle strength, bone mineral density, and muscle volume. On 19 May 2005 (GMT 139) the NASA Science Officer completed a typical on-orbit day while his reaction forces against the ISS structure were passively recorded to determine how much stress his legs and feet endured. In preparation for this experiment, the crew performed a set of pre-defined exercises to calibrate the system and routed a video feed from the Lab camcorder to the MSG video drawer. This configuration allowed recording of the experiment to the MSG video drawer and minimized crew interaction during playback. On 7 June 2005 (GMT 158) Phillips donned the FOOT clothing and performed the second data collection of four planned FOOT sessions scheduled for Increment 11. On 29 June 2005 (GMT 180) Phillips conducted a third FOOT session. Phillips was unable to get a reading from the load sensor on the left foot and after replacing the sole sensor with no success, the payload investigator requested that he proceed without that data. Phillips was scheduled to downlink the data from the 3rd session the following day, but he encountered difficulties with the data card. On 26 July 2005 (GMT 207) Phillips conducted a fourth FOOT session. On 16 September 2005 (GMT 259) Phillips performed the fifth FOOT session.

On 18 May 2005 (GMT 138) the crew opened the Pressurized Mating Adapter (PMA) 2 hatch and removed equipment stowed inside in preparation for LF1 docking. The hardware removed from PMA2 was temporarily stowed in the Lab and Node awaiting access to the Zenith 1 (Z1) Dome and PMA3 in the following weeks. Following the stowage activities the lab forward hatch was closed and the PMA2 was depressed to 2 psia using the crew lock depress pump. To conserve consumables, the crew routed a Vacuum Access Jumper from the Joint Airlock Crewlock to the PMA2 hatch and the air depressed from the PMA2 was introduced back into the ISS atmosphere with only a small portion of it vented overboard. The crew removed equipment from the Joint Airlock (A/L) crew lock on 17 May to preclude exposure of the hardware to low pressure during the airlock depress.

On 19 May 2005 (GMT 139) a software simulation of the Automated Transfer Vehicle (ATV) approach was completed using the SM Motion Control System [ACH] in telemetry mode. The next day the crew downloaded the data onto a laptop with a memory card that contained ATV data. A software program on the laptop allows the ACH data to interact with the ATV data to generate the signals it would normally send to the SM Maneuvering Control System (SUDN). These signals were saved on a memory card to be returned to the ground for analysis.

On 20 May 2005 (GMT 140) the Commander successfully completed a Very High Frequency (VHF) 2 test via Space-to-Ground (S/G) 1, by contacting a research vessel, the Kosmonaut Viktor Patsaev, docked at the port of Kaliningrad. The purpose of this test was to determine if this ship can serve as a potential “ground station” for communication with ISS. The crew reported that nominal communication was established.

On 20 May 2005 (GMT 140) two Solid Fuel Oxygen Generators (SFOGs) were activated as part of a checkout with Russian specialists present in MCC-M to monitor the operations. Daily activation of Russian Solid Fuel Oxygen Generators (SFOG) began on 23 May 2005 (GMT 143), and continued until 19 June 2005 (GMT 170). In total, 67 old style canisters were activated, with 15 failing to ignite. Remaining SFOG inventory on ISS at that time consisted of 39 old style and 72 new canisters.

On 23 May 2005 (GMT 143) the crew installed insulation and mufflers on several fans located behind panels in the Service Module. The crew reported that the panel 307 door could not be closed with muffler insulation installed on one of the two fans. Approximately 2 cm of additional clearance was needed to close the panel without compressing the insulation. The crew removed the insulation per ground instruction. On 25 May 2005 (GMT 145) the crew performed the Shumomer activity to measure acoustics levels in the SM cabin before and after deactivation of a fan and reported a 1 decibel reduction. It was noted that the activation of the Solid Fuel Oxygen Generator (SFOG) nearby may have affected the data. On 26 May 2005 (GMT 146) the Commander installed a new fan and additional muffler insulation in the air duct compartment of a fan in the Service Module (SM). In addition, he relocated mufflers on two fans in the SM behind panel 307 and reinstalled insulation to address the clearance issues. On 27 May 2005 (GMT 147) the crew recorded noise measurement data in the SM starboard crew quarters with the door closed and opened to measure any reduction in noise levels.

On 23 May 2005 (GMT 143) the crew performed a vacuum cleaning procedure on Video Tape Recorders (VTRs) 1 and 2 to remove contamination. The next day a blank tape was provided by the MSG team to perform a recording/playback cycle on both VTR1 and VTR2. The downlink showed an improvement in image quality and stability on both VTRs, although some dark lines were still present, and the VTRs were declared operational.

On 24 May 2005 (GMT 144) the crew performed the Fluid Merging Viscosity Measurement (FMVM) experiment to better understand the viscosity of molten materials such as honey, corn syrup, glycerin and silicone oil. The crew released several drops of honey from a syringe onto strings and recorded digital images of the drops as they coalesced to form one drop and then measure the diameters of the drops. In the second session on 25 May 2005 (GMT 145), the NASA Science Officer encountered some difficulty with strings, secured by Kapton tape, coming loose and allowing the honey to contact the grid card used for precise XY coordinate tracking of the honey droplets. The workaround was to clean and re-secure the strings and use smaller droplets. The ground team confirmed a successful 2^{nd} run with real time downlink of the video. The FMVM experiment was conceived after the loss of Columbia as a “no upmass” experiment, using only what was already on-board, and was originally planned as a lower priority reserve activity.

On 24 May 2005 (GMT 144) the Commander loaded the SM version 7.03 software files onto the central post computers (_BM) 1 and 2 and Laptop #2. Central post computer 2 and Laptop 2 were then converted to the SM 7.03 version. There was an anomaly with connectivity between central post computer #2 and Laptop #2 that is believed to be a cable problem. On 1 June 2005 (GMT 152) ground controllers in Moscow successfully completed the onboard software 7.03 transition to the SM central post computer and the Terminal computers (TBMs). The US segment experienced one minor anomaly when the Guidance, Navigation and Control (GNC) Remote Terminal (RT) address in the Command and Control (C&C) MDM was set to a default value (“No GNC”) instead of the correct address. There was no impact to the transition activities and the nominal procedure ensured the correct GNC RT address was set in the C&C MDM. The cause has been determined and understood, and Ground Controllers updated the appropriate procedures to preclude this event from repeating.

On 25 May 2005 (GMT 145) the crew worked together with ground specialists in MCC-H to transfer Lab Internal Thermal Control System (ITCS) coolant water from the Moderate Temperature Loop (MT) to the Low Temperature Loop (LT) to balance water levels between the two loops. The crew completed a transfer of 11% of the MTL accumulator to the LTL accumulator.

On 25 May 2005 (GMT 145) the NASA Public Affairs Office (PAO) completed an in-flight event with ABC News in the first test of NASA’s new digital satellite transmission system. On 1 July 2005, NASA Television (TV) began using a multi-channel digital distribution system designed to expand programming to the news media and the public. The test was successful and Phillips acknowledged the audio delay of up to 5 seconds between his answers and the interviewer’s next question.

On 26 May 2005 (GMT 146) the crew completed their final Advanced Diagnostic Ultrasound in Microgravity (ADUM) session of Increment 11. The NASA Science Officer recorded a Scan A Thoracic ultrasound with the Commander serving as the subject. Phillips successfully recorded cardiac and thoracic ultrasound images and video taped the images for downlink. The crew conducted a conference with the Payload Investigators to discuss the results.

On 30 May 2005 (GMT 150) the crew completed ingress of the Z1 dome as part of an overall stowage activity aimed at improving habitability on ISS. In this second of a three part stowage reconfiguration activity, the crew removed the Resistive Exercise Device

(RED) that is located in front of the Z1 dome hatch and entered the Z1 dome. Some items from Z1 were removed for future stowage in Pressurized Mating Adapter (PMA) 3, and some items that had previously been removed from PMA2 were stowed in Z1.

On 2 June 2005 (GMT 153) the NASA Science Officer performed Miscible Fluids in Microgravity (MFMG) thermal test 4 by injecting one syringe of tinted water slowly into a syringe of 100% honey. On 3 June 2005 (GMT 154) the Science Officer performed thermal test #3 by injecting 100% honey into a syringe of clear water. Thermal test 3 was originally performed during Increment 10 but the results were inconclusive. A camcorder connected to the MSG Video Drawer and a Digital Camera were used to capture the results that were downlinked for review. The objective of this payload is to determine if miscible fluids in a thermal gradient can exhibit transient interfacial phenomena similar to that observed with immiscible fluids. MFMG is a zero up-mass payload first executed during Increment 8 using two syringes connected with a drinking straw.

On 3 June 2005 (GMT 154) the Commander performed the European Space Agency (ESA) and Russian jointly sponsored human physiology experiment Eye Tracking Device (ETD) to evaluate the crew member’s gaze under different gravity conditions and to examine the inner ear response elicited by radial acceleration during post-flight re-adaptation. On 13 July 2005 (GMT 194) the Commander completed another monthly session in the DC-1 docking module’s center sphere.

On 3 June 2005 (GMT 154) the MCC-H Robotics officer conducted remote grapple/ungrapple operations using the SSRMS with FE1 monitoring the motion on board. This SSRMS Ground Control Commissioning Phase 2 operation was planned as a follow-up to Phase 1 where motion in free-space was demonstrated using ground control. The entirely ground-controlled operations sequence started at a pre-grapple position over Mobile Base System (MBS) Power Data Grapple Fixture (PDGF) 3 and proceeded in for a grapple. End Effector latching to PDGF 3 resulted in an aborted grapple (not unexpected) from which the ground team quickly recovered. This was followed by a nominal (“push-off”) release of MBS PDGF 3 and back-off to 1.5m. It was noticed during the back-off from PDGF 3 that 2 out of 8 of the umbilical connector covers appeared to be stuck open. The SSRMS Tip Elbow camera confirmed this. Impacts of this condition were assessed and a mitigation plan was developed. On 28 June 2005 (GMT 170) a ground controlled survey of the PDGF 3 performed using the SSRMS showed that one of the two covers that stuck open following the Ground Commissioning on 3 June 2005 (GMT 154) had closed.

On 7 June 2005 (GMT 158) the crew discharged two previously used Orlan suit oxygen bottles, adding about 1.5 mmHg of oxygen to the cabin. These 2 liter bottles are to be disposed on 17P and were found in the Lab and marked by previous crews to contain 100 atmospheres and 10 atmospheres of oxygen each.

On 6 June 2005 (GMT 157) the crew began loading the Progress vehicle with waste items and disposable hardware. On 13 June 2005 (GMT 164) the crew completed final packing of waste cargo in the Progress and began preparations for undocking the vehicle by installing a frame and docking mechanism and then demating several connectors. On 14 June 2005 (GMT 165) the crew stowed final disposal items removed the local temperature sensor switching unit and a functioning light for use on ISS, disassembled air ducts and quick disconnect screw clamps and closed the Progress and SM hatches. After hatch closure but before the leak check, MCC-M discovered that the crew did not fully close the Progress hatch, failing to trip the sensor that would have removed the inhibit on the vestibule depress valve. The crew re-opened the Service Module hatch and fully closed the Progress hatch. The vestibule was then successfully depressed and the leak check performed. The 17 Progress M (352) undocked from the ISS on 15 June 2005 (GMT 166/20:16). Structural response data was recorded during the undocking using truss sensors for downlink. Disposal of U.S. trash items in Progress 352 was documented in SSCNs 9314 and 9389, and Increment 11 chits 2797, 2885, 2914, 2928, 2929 and 2941. U.S. trash items were prepacked according to OCA Message 11- 0279A, and packed in the Progress 352 vehicle per radiogram 0489.

On 14 June 2005 (GMT 165) Flight Engineer John Phillips testified before the House Space and Science Subcommittee in Washington via space to ground audio and video connection. This was the first time an ISS crew member had testified from onboard the ISS with a Congressional subcommittee.

On 16 June 2005 (GMT 167/23:09) 18 Progress M (353) launched with a nominal orbital insertion and deploy of the arrays and antennae at GMT 167/23:20. The Progress successfully docked to the ISS on 19 June 2005 (GMT 170/00:41). The ISS Commander performed the docking manually utilizing the Teleoperator Control System [____]. Due to a loss of command, telemetry and video at the Shelkovo Russian Ground Site, Russian ground controllers were prevented from issuing the automated docking initiation command. A problem with the Baikonur ground station was previously recognized by the Russian ground controllers, but MCC-M believed they could initiate automated docking prior to entering the inactive ground stations control zone. However this did not happen due to the problems at Shelkovo, thus requiring the manual docking sequence. The docking was proceeded by the standard checkouts of the KURS and [____] systems with no anomalies noted. On 20 June 2005 (GMT 171) the crew setup the matching unit [__-21] in 18 Progress. Following MCC-M deactivation of the Service Module (SM) Onboard Telemetry Measurement (___) system, the Commander mated connectors between the Progress matching unit and the ___ telemetry system. MCC-M then reactivated the ___, allowing commanding of Progress systems through the SM. The18P delivered 442 liters of water, 512 kg of propellant, 111 kg of gas, and 913.2 kg of Russian dry cargo to the ISS, including air sampling kits, Vozdukh accessories, Elektron EMI filter and electrolyte, the crew onboard support kit, 5.7 kg of experiment hardware, crew preference items and 43 food containers. The 18P delivered 216.8 kg of U.S. hardware, including crew provisions, 16 containers and four half Cargo Transfer Bags (CTBs) of food, medical hardware, A31P laptops, cables and power supplies, 13.2 kg of experiment hardware, 3 Lamp Housing Assemblies (LHAs), a DCS 760 Camera, and Volatile Organic Analyzer (VOA) spare parts.

On 20 June 2005 (GMT 171) the crew completed a refresher session of Orbiter Rendezvous Pitchover Maneuver (RPM) imagery training for Flight LF1. During the On-board Training (OBT), the DCS 760 camera battery was not holding a charge. The crew tried both sides of the battery charger with no success. The crew was able to change out the battery with a spare and complete the remainder of the On-board Training.

On 20 June 2005 (GMT 171) the crew performed a pressurization and leak check of Pressurized Mating Adapter (PMA) 3. On 21 June 2005 (GMT 172) the crew ingressed PMA3 and stowed items that were relocated from PMA2 and Z1. The crew was required to remove a center disk cover and two Control Panel Assemblies (CPAs) to provide adequate clearance before entering the PMA3. The hardware was stowed nominally and onboard inventory control system updated to reflect the changes. The Flight Engineer removed the Positive Pressure Relief Valve (PPRV) on the Node 1 Port Hatch and replaced it with a Manual Pressure Equalization Valve (MPEV). The MPEV valve provides simpler operations and allowed for a faster depressurization during the depress of PMA-3. On 22 June 2005 (GMT 173) the final depressurization of PMA3 to vacuum was completed. First a 30 minute gross leak check was completed followed by an 8 hour fine leak check to ensure the new MPEV, installed yesterday, had a nominal seal on the hatch. During the final leak check, the crew noted that the delta pressure exceeded the allowed limit and therefore the leak check failed. The crew was instructed to close the Manual Pressure Equalization Valve (MPEV) for an overnight leak check. The overnight delta pressure was slightly above the leak check pass criteria and a decision was made to do another pressure check prior to the node port hatch restow activity. Five and a half hours after the morning pressure check, the delta pressure was 0.6 mmHg and deemed acceptable. The crew was then given a go to tear down the Vacuum Access Jumper (VAJ) and Internal Sampling Adapter (ISA) Assembly.

On 23 June 2005 (GMT 174) the crew successfully mated the network channel controller [KCK] connectors in preparations for the Automated Transfer Vehicle (ATV) Proximity Communication Equipment (PCE) test. On 27 June 2005 (GMT 178) the Commander installed the control panel, antenna feeder unit, radio and numerous cables in the SM. During the cable installation, the crew could not fit both cables through panel 413, so one cable was routed through the panel and the other through the door seam. The panel was closed, and no airflow was observed flowing through it. Upon conclusion of this activity the crew noted that this activity took longer than anticipated. On 28 June 2005 (GMT 179) the Commander installed the ____ monoblock and mated connectors to the control panel, antenna feeder unit and the ___ (Onboard Telemetry System). MCC-M performed a test of the PCE system via 1550 to 5200 Megahertz (S-Band) to verify that all cable connections made earlier were successful. The Proximity Link ISS S-Band Transponders 1 and 2 were activated and deactivated in the Carrier Wave (CW) mode. The test was described as successful. A test of the ATV control panel was completed nominally and a downlink of video was provided by the crew. On 29 June 2005 (GMT 180) MCC-M performed the Detailed Test of the PCE system using the Medium Gain 2 (WAS2) antenna and the Low Gain 3 (WAL3) antenna on the SM. The system was activated in the Carrier Wave (CW) mode and transmitted a beacon to European Space Agency (ESA) ground stations in Europe. The Maspalomas (MAS) and Villafranca (VIL) stations tracked the ISS and confirmed receipt of the signal. The test was carried out in a special Local Vertical Local Horizontal (LVLH) attitude to ensure adequate ground site coverage. The results of the test were nominal, although ground controllers noted that the signals through some of the antennae were less than the predicted values. On 1 July 2005 (GMT 182) the crew dismantled and stowed the PCE, or ____ monoblock, and related hardware.

On 23 June 2005 (GMT 174) the crew used the video camera and Russian spectrometer at the SM window to record xenon jet luminosity of the Plasma Contactor Unit (PCU) installed on the Z1 truss, and its interaction with ionosphere flow. Plazma is a geophysical experiment that studies the plasma environment and electroplasmic processes and their effects on ISS external surfaces and elements.

On 24 June 2005 (GMT 175) the crew began installation and check-out of the Centerline Berthing Camera System (CBCS) as preparation for Flight LF1. This camera is required for berthing the MPLM to the ISS. As a part of this check-out the LAB Robotic Workstation (RWS) was powered up and the CBCS overlays were placed on the monitors for testing. All steps were nominal, although during this activity, after the crew had connected the camera to a power supply on Utility Outlet Panel (UOP) 2, a Remote Power Controller (RPC) in the LAB tripped shutting off power to the camera. Ground Controllers executed the RPC malfunction procedure to regain functionality of the RPC and the crew was instructed to terminate any further operations until further analysis. On 28 June 2005 (GMT 179) the crew verified that the Ku Band Power Supply used during the checkout was failed. The power supply was replaced with a spare and the checkout of the CBCS String 1 was completed successfully. The Lab Robotic Workstation (RWS) and Space Station Remote Manipulator System (SSRMS) were powered up in support of the continued LF-1 CBCS pre-launch check-out. CBCS overlays were placed on the Lab RWS monitors for the test, and FE1 confirmed they appeared as expected.

On 27 June 2005 (GMT 178) Ground Controllers uplinked and loaded a software patch into the Guidance, Navigation and Control (GNC) Multiplexer/Demultiplexer (MDM) in preparation for the CMG2 patch panel EVA task on Flight LF1. This patch allows the GNC MDM to determine that the power for CMG2 will come from the Z13B-B RPC 18 instead of the S02B-D RPC 17. This activity required attitude handover from the US segment to the Russian segment before starting the software upload and back to US segment at the conclusion. All was nominal for this procedure.

On 27 June 2005 (GMT 178) the crew completed the Clarissa Station Development Test Objective (SDTO) with a test procedure and provided feedback to the ground. The Clarissa SDTO studies the use of a spoken dialogue system to navigate and read procedures to determine how effective such speech-based systems are in the ISS environment. The system allows astronauts to concentrate on a task with their hands and eyes, while the procedure is read and navigated step by step by voice commands.

On 27 June 2005 (GMT 178) the crew performed the Resistive Exercise Device (RED) Exercise SDTO to obtain on-orbit data required to validate both RED exercise forcing functions and ISS dynamic responses due to known exercise inputs in order to characterize and validate crew load forcing functions. The crew began this activity by setting up the camcorder and Video Tape Recorder (VTR) to record the resistive exercise while the ground recorded the movement of the Solar Array Wing (SAW) on

Port (P)6. Then the crew activated the Internal Wireless Instrumentation System (IWIS) Remote Sensing Units (RSUs) to record the dynamic response data. In addition, Ground Controllers monitored onboard sensing equipment during the duration of the activity. When the Flight Engineer performed his specific exercise protocol for the event, no torque spikes in the CMGs were observed for the duration of the exercise.

On 28 June 2005 (GMT 179) the Commander installed the Signal Recovery Devices (___-871) in the Service Module to troubleshoot an issue with loudspeaker 1 and 2 not operating on channels 1 and 2. The CDR reported he heard the loudspeakers, but only faintly on S/G and when nearby. However, when in the docking compartment or FGB he could not hear either loudspeaker.

On 29 June 2005 (GMT 180) a small reboost was performed to set up the proper phasing for Flight LF1 docking. Moscow reported the reboost was performed nominally, resulting in 1.44 m/s, slightly above the desired delta-velocity of 1.3 m/s. The reboost Time of Ignition (TIG) was moved 15 minutes earlier (to approximately 15:03 Central Daylight Time (CDT)) due to a conjunction at the previously scheduled TIG.

On 29 June 2005 (GMT 180) the crew completed parts 1 and 2 of the Mobile Servicing System (MSS) Flight LF1 pre-launch checkout with the operation of both Robotic Workstations (RWS), and the Mobile Base System (MBS) and Space Station Remote Manipulator System (SSRMS) Prime strings. The SSRMS grappled and stepped off the LAB PDGF onto MBS PDGF 1, releasing the LAB PDGF for the first time since February 2004. The “A”-end Latch End Effector (LEE) was calibrated, and a switch checkout conducted on the Cupola RWS. On 30 June 2005 (GMT 181) the crew completed the final portion of the MSS pre-LF1-launch checkout with the operation of the LAB Robotic Workstation (RWS), the Remote Servicer Mobile Base System (MBS) and Space Station Remote Manipulator System (SSRMS) Redundant strings. The SSRMS grappled the LAB PDGF and stepped back onto the U.S. Lab from MBS PDGF 1. These operations are similar to what the crew will perform during the LF1 flight for MPLM berthing. Afterwards the arm was maneuvered to the (LF1) shuttle docking viewing position.

On 5 July 2005 (GMT 186) the crew completed three separate Profilaktika sessions over a three day period. The Commander utilized the NS-01 load trainer and the Treadmill Vibration Isolation System (TVIS) treadmill, in addition to the a Russian gas analyzer with a breathing mask to provide gas analysis for specific physical exertion levels. The Russian Gas Analyzer and Electrocardiogram (ECG) data were transferred to a Laptop and a cassette tape and prepared for downlink via the Regul-Packet communication link. The purpose of this experiment is to study and evaluate physical exertion levels for preventive health maintenance.

On 5 July 2005 (GMT 186) the crew performed a compression procedure on the Service Module Rodnik Tank 1 to empty the tank into a ___ (Water Container). The crew reported that the Rodnik tank was near empty and very little water was recovered in the compression process. On 7 July 2005 (GMT 188) the crew transferred technical water from the 18 Progress Rodnik __1 tank to the SM Rodnik __1 tank.

On 5 July 2005 (GMT 186) the crew reviewed the RPM procedures and practiced photographing a 1/50 scale orbiter belly diagram. The imagery was downlinked for evaluation by ground specialists. The crew also reviewed the LF1 timeline and held a conference with ground specialists to discuss the crew activities planned during the Joint Shuttle Mission.

On 6 July 2005 (GMT 187) both crewmembers worked on the European Space Agency (ESA) Neurocog experiment with one as the subject and the other assisting. The objectives of this experiment are to analyze the effect of space flight conditions on perception and memorization of orientation and location while performing investigations in a virtual environment. Activities featured virtual rotation in free floating and fixed position “corridor” passages while recording Electroencephalography (EEG). A second session was performed on 8 July 2005 (GMT 189).

On 6-7 July 2005 (GMT 187-188) the crew successfully completed several planned activities to reconfigure the crewlock and EVA tools in preparation for the upcoming LF1 flight. The activity took longer than planned due to on-orbit stowage impacts and the activity to configure the crew lock was deferred. The crew noted that roughly 12 Cargo Transfer Bag Equivalents (CTBEs) are stowed on Lab1P4 rack front, the maximum that can be accommodated without crowding the Robotic Workstation (RWS) and the Cycle Ergometer with Vibration Isolation System (CEVIS).

On 6 July 2005 (GMT 187) a reboost was completed to support the optimization of Flight Day 3 rendezvous opportunities for the STS-114 July 2005 launch window. The reboost Time of Ignition (TIG) was 9:49 CDT and was completed at 10:06 CDT, with a total Delta-V of 1.87 meters/second.

On 7 July 2005 (GMT 188) Flight controllers in MCC-H performed a Long Active Built In Test (ABIT) test of the Carbon Dioxide Removal Assembly (CDRA) to verify its operational status in preparation for Flight LF1. The procedure activated fan and pump motor controllers, and all four absorbent/desorbent desiccant bed heaters without going through a complete activation/deactivation cycle.

On 8 July 2005 (GMT 189) the crew checked the charging of EMU Helmet Light batteries and re-initiated the charge due to expected battery passivation problems. During this activity two of the helmet light batteries did not appear to be charging.

On 11-12 July 2005 (GMT 192-193) the crew pre-packed the remaining return items for Flight LF1 and completed a conference call with the ground to verify the items on the latest revision of the prepack list. The crew also assembled a camera for the External Television Camera Group (ETVCG) that will be taken outside of the ISS during the third LF1 EVA and attached to the P1 external truss. This camera is needed during flight 12A for viewing the Solar Array Wing (SAW) deployment. A private conference between the LF1 and ISS crews was completed.

On 11 July 2005 (GMT 192) the crew downlinked digital pictures of trace marks inside the internal surface of the docking assembly on the SM aft that may have been caused by 18 Progress docking.

On 11 July 2005 (GMT 192) ground specialists in MCC-M were scheduled to transfer approximately 90 kg of fuel from the 18 Progress tanks to the SM tanks. However, there was a failure at the Shelkovo ground station that prevented commanding of the Progress vehicle. The problem was corrected and the fuel was transferred on 13 July 2005 (GMT 194). On 12 July 2005 (GMT 193) approximately 155 kg of oxidizer was transferred from the 18 Progress tanks to the SM. During the transfer an advisory message event code caused by a failed fuse associated with the ____ was annunciated although this did not preclude transfer of the oxidizer and later the fuse returned to normal. The fuse was changed at a later date.

On 13 July 2005 (GMT 194) the crew made additional preparations for Flight LF1, setting up a spare A31p laptop delivered on 18P in the Node. Final crewlock bags were configured, video connections needed for hardline video with the Orbiter during docking were completed, and a CWC was filled with LAB condensate water.

On 13 July 2005 (GMT 194) the scheduled launch of the STS-114 mission was scrubbed due to a Launch Commit Criteria (LCC) violation with the Liquid Hydrogen (LH_2) Tank Engine Cut-Off sensor #2. During the post External Tank (ET) load testing, this sensor failed “wet”. On 19 July 2005 (GMT 200) the Shuttle Program Mission Management Team (MMT) set a launch date of No Earlier Than (NET) 26 July 2005 (GMT 207).

On 14 July 2005 (GMT 195) the crew performed a procedure to check the resistance on hardware that was connected to UOP 4 during a RPC trip that occurred during Increment 10, in an effort to determine the source of the trip. The UOP 4 and other critical use hardware connected at the time had already been tested and exonerated. The hardware the crew tested also checked out and appeared not to be the cause of the trip. Due to the limited capability of onboard diagnostics, the cause of the RPC trip remained unexplained.

On 14 July 2005 (GMT 195) Russian specialists recommended the scheduling of the Soyuz relocation to the FGB nadir port on 19 July 2005 (GMT 200) due to the Shuttle launch delay. This would avoid a sleep shift for the crew and facilitate completion of Russian Segment EVA #14 during Increment 11. Ground specialists powered the SSRMS to position the Tip and Elbow cameras away from the Soyuz plume to protect the camera lens. On 15 July 2005 (GMT 196) the crew and ground participated in a Soyuz Hot Fire test in preparation for the 10S relocation and results were nominal, however communication problems developed on VHF2 during the test. On a later orbit, an additional communications test was completed and all was nominal. On 17 July 2005 (GMT 198) both crewmembers participated in an OBT session to prepare for the relocation of Soyuz 216 from DC-1 to the FGB. The OBT included Procedure review, Relocation data review, a Tag up with instructor and On board simulator training. On 18 July 2005 (GMT 199) the crew began configuring the ISS for unmanned operations for the Soyuz relocation. On 19 July 2005 (GMT 200) the crew had a lengthened workday to perform the Soyuz TMA-216 manual relocation from DC-1 to the FGB. The relocation was required to configure the vehicle for the Increment 11 Russian Segment EVA 14 performed later in the Increment. After correcting communication and hatch closure difficulties, the crew reported closure of the DC-1 Soyuz interface hatches at

GMT 200/06:52. Physical separation from the DC-1 nadir port occurred at GMT 200/10:38. The Soyuz backed out from the DC-1 port to about 25 meters, translated to the FGB port axis, and rolled to the correct docking orientation. After receiving permission from MCC-M, the Soyuz final approach was initiated and docking capture occurred at GMT 200/11:08. The crew reported at GMT 200/12:55 that both Soyuz/FGB hatches were open. Over the following two days the crew completed the final reconfiguration from unmanned to manned operations of the US and Russian segments, which include life support systems in the SM, the Ops LAN, Internal Thermal Control System (ITCS), and Communications and Laptop configurations.

On 17 July 2005 (GMT 198) the Flight Engineer prepared another Portable Computer System (PCS) hard drive using the PCS R8.003 Ghost Image Compact Disc (CD), hard drive S/N 6058 and the Lab Robotic Workstation (RWS) 760XD laptop. Following the crew activity, MCC-H loaded a software patch onto the hard drive. MCC-H previously had problems with loading the PCS R8 patch from the ground onto the Cupola PCS. Therefore, using the Lab RWS PCS was desirable.

On 21 July 2005 (GMT 202) the crew performed the remainder of the activity initiated on 27 June 2005 (GMT 178) to consolidate Russian Equipment stowed within the United States On-orbit Segment (USOS). The crew noted several differences from information contained in the Inventory Management System (IMS), and were able to free up 2 Cargo Transfer Bag Equivalent (CTBE) of stowage volume throughout the entire 3 hour activity. It was expected that 3 CTBE would be gained, however some locations contained more items than listed in IMS. Items of note included finding 30 KBO-M (Russian trash containers) (instead of 12) and two Russian EVA foot restraints in Nod1O4_B2/C2.

On 21 July 2005 (GMT 202) the Commander installed the Plasma Crystal (TEX-20) experiment hardware and recorded a television downlink message dedicated to the 60th birthday of one of the founders of this Joint Russian-Germany Experiment. On 22 July 2005 (GMT 203) the Commander performed the experiment to study dust plasma crystallization processes at a specified power of (High Frequency) HF discharge, pressure, and a varied number of particles with subsequent reduction of HF discharge power, then to observe melting of the structures formed earlier. On 25 July 2005 (GMT 206) the Commander conducted another experiment session to obtain a uniform plasma particulate cloud at different pressures and particle concentrations with or without a low-frequency harmonic electrical field applied.

On 25 July 2005 (GMT 206) the crew located the Internal Thermal Control System (ITCS) Pump Package Assembly (PPA), removed during Increment 6, in location LAB1D1 and packed it for return on LF1.

There were several hardware anomalies that required crew interaction throughout Stage 10S.

On 26 April 2005 (GMT 116) the Elektron was activated in 50 amp mode following the previous week's successful Liquid Unit (B_) 5 pressurization. The Elektron failed off approximately 3 hours later. On 27 April 2005 (GMT 117) a B_5 pressure/purge test was commanded from the ground. On 28 April 2005 (GMT 118) the Commander attempted to activate the Elektron in 50 amp mode and reported a failure due to low current in the Electrolyzer. A second attempt to activate the Elektron resulted in the same failure message. Russian specialists subsequently determined that B_5 was unrecoverable. On 5 May 2005 (GMT 124) the crew removed the __5 from the Elektron and detached its secondary purification unit [__]. This __ was then attached to __#6. __#6 was installed into the Elektron and the unit was activated. The Elektron ran for a few minutes in the 32 amp mode before the oxygen vent line liquid sensor (___2) in the __6 tripped the system off upon coming in contact with the electrolyte. The crew was instructed to open the hydrogen valve to allow for flushing and after completing this they reported no fluid leaks or abnormal odors. The Elektron was configured in a safeguarding mode and turned off. On 6 May 2005 (GMT 126) MCC-M directed the crew to disconnect hydrogen and oxygen vent line connectors from __6 and perform a visual inspection for any liquid. Although no residue was observed and no odor was detected initially, following a Nitrogen (N_2) purge the crew detected a faint odor of burned rubber from the __#6. An air sample was taken for post-flight analysis. __#6 did produce an odor during its last operation in 2004, and results of gas analysis on samples collected following that event determined that the levels of hydrocarbons present in the gas were not a hazard to the crew. On 13 May 2005 (GMT 133) the Elektron was activated during Russian VHF telemetry passes in an attempt to isolate the cause of the recent shutdowns. The purpose of this activation was to verify the functionality of the Elektron Command and Control Unit (____) and, if possible, to verify the validity of Liquid Sensor (___2) indications, thereby eliminating these elements as possible causes of Elektron failure. The system shut down due to off-nominal voltage on the electrolyzer after 2 minutes of operation. The crew was instructed to end Elektron troubleshooting for the day since MCC-M noted a different failure signature than the previous occurrences. Later in the day, an Elektron purge was performed by MCC-M and the unit was secured. Testing performed on 27 May 2005 (GMT 147) confirmed that the __-6 was failed. The Electrolyzer unit was unable to properly regulate voltage and an automatic shutdown occurred. The testing did not indicate any problems with the Elektron Command and Control Unit (____). On 3 June 2005 (GMT 154) the crew performed more testing on Liquid Unit #5, previously declared failed due to leakage, to further investigate the possibility of recovery. The liquid unit was pressurized and a 24 hour leak check initiated. The test was unsuccessful and as a result, Liquid Unit (__) 5 was again declared unrecoverable. On 9 June 2005 (GMT 160) the crew replaced Liquid Unit (__) 6 with Liquid Unit 7 and subsequently transferred 100-120 ml of electrolyte from liquid unit (__) 5 into liquid unit (__) 7. On 22 June 2005 (GMT 173) the crew transferred an electrolyte solution delivered on 18P into liquid unit #7. On 23 June 2005 (GMT 174) the crew installed new aerosol filters designed to prevent electrolyte from entering the Oxygen (O_2) and H2 outlet lines. Following installation of the filters, the crew attempted to restart the Elektron in the 50 amp mode, which failed due to an “electrolyte in H2 line” failure message. On the second attempt, the system was restarted in the 15 amp mode and ran for 24 minutes before shutting down. On 24 June 2005 (GMT 75) the crew attempted to purge the N_2 lines, however this was not successful due to a high concentration of O_2. Later the crew de-mated the connectors from the hose and examined the connectors which appeared to have condensate droplets and a white powder residue. Finally the crew re-mated the connectors while ground controllers analyzed the data. On 30 June 2005 (GMT 181) the crew completed a final activity on the Elektron system by performing an additional purge of the Elektron gas analyzer with Nitrogen. On 8 July 2005 (GMT 189) the Commander initiated a leak check of the Hydrogen vacuum line between ____ and ___ valves. The pressure in line was holding steady when checked one hour after opening of ___ manual valve.

On 27 April 2005 (GMT 117) the crew reported that a General Luminaire Assembly (GLA) in the LAB was failing. The LHA was flickering at half intensity, and the "Replace LHA" indicator light was illuminated. The failure response procedure was performed and the GLA was deactivated to preclude a failure of the BBA, as has occurred in previous instances of LHA failures. On 21 June 2005 (GMT 172) the crew reported an additional LHA failure in the LAB.

On 29 April 2005 (GMT 119) the Commander continued trouble-shooting the SM Condensate Water Processor [CPB-K] by testing a section of the plumbing lines in an attempt to isolate the blockage at the K27 connector. The Commander removed the K27 connector and cleared debris that was found inside the end of the hose. The Commander then replaced the end connector, connected the condensate removal line [___] line to the filter and activated the air conditioning system [___-2], resulting in good flow at the condensate evacuation pump. The condensate was then routed to the [___-_] for processing and a nominal water flow was observed. Beginning on 22 May 2005 (GMT 142) telemetry from the SM indicated that condensate was not being collected by the [___-1] and processed by the [___-_]. The Commander performed several trouble-shooting activities throughout the week, removing residue from the K27 inlet connector, flushing with disinfectant and installing a bypass hose on the [CPB-K]. With both [___s] deactivated, the U.S. Lab Common Cabin Air Assembly (CCAA) was collecting condensate, with the LTL flow inhibited (per the flight rule). On 26 May 2005 (GMT 146) the crew performed additional troubleshooting on the [CKB1] and the [___-_]. The crew connected a water container [___] onto the [CPB-K] connector F3 to allow water collection from the activated CKB1. The unit ran for three hours before being turned off. No residue was observed in the water collected in the [___]. On 27 May 2005 (GMT 147) the crew performed troubleshooting on the [CKB] to [CPB-K] interface connector (K27), which was found to be blocked with a long tube of gel like substance. The Commander disassembled the hose from the suspect K27 connector and cleaned the connector with a wet towel and performed a flush with disinfectant water from an [___]. Water flow was observed from the [___] to the K3 connector, but none out of the K27 connector. The crew then installed a flexible hose between the [CKB] and the [____] to bypass the K27 connector. On 30 May 2005 (GMT 150) the Commander reported that Lane 1 in the water separator [_1] in the condensate separation and pumping unit [____] of the [____] was leaking. He then switched from Lane 1 to the redundant Lane 3 and both [CKBs] were activated (in alternating fashion) and are collecting water. The Lab CCAA ceased collecting condensate water. On 29 June 2005 (GMT 180) the Commander performed a flush of the [MOK] to restore flow of condensate collected by the [CKB] through connector K27. A pump was attached and the activity was completed successfully. The crew reestablished nominal connections to the [____] and replaced the gas filter. Due to the blockage observed in the [CKB] [CPB-K] lines, a decision was made to vent 100L of US Lab condensate from the Orbiter on LF1.

During crew exercise on 6 May 2005 (GMT 126), the TVIS unexpectedly lost power. The crew downloaded the TVIS speed data from the exercise data card via the Medical Equipment Computer (MEC), which showed that the TVIS was operating at the 6 mile per hour (mph) limit for just a few minutes before decreasing unexpectedly to 4.5 mph. The crew confirmed that they did not change the TVIS speed setting nor was the change in speed noticed. The crew checked and confirmed that a circuit breaker on the TVIS had tripped and the circuit breakers in the SM were all nominal. In addition, the crew found that the TVIS Flywheel Resistance knob was not set to zero as expected. Trouble-shooting performed over the weekend confirmed the TVIS Flywheel Case Foot Wheel Resistance knob was functioning nominally. On 16 May 2005 (GMT 136), both crewmembers successfully completed a three hour in-flight maintenance procedure on the treadmill following the discovery of a broken support wire the previous Friday. The forward and aft gyroscope wire ropes were replaced and the crew verified the proper connection of the TVIS power cables. The Commander later performed a motorized exercise session on the TVIS which served as the activation and checkout of the maintenance procedure.

On 19 May 2005 (GMT 139) SM Battery #6 failed off when commanded to begin cycling. This failure was not unexpected since Battery #6 was operating at 24 amperes (amps) following a previous cycling session two weeks earlier. A SM battery is considered failed when it operates below 20 amps. On 15 June 2005 (GMT 166) SM battery 6 was removed and replaced by the ISS crew. This battery was originally installed on 17 May 2004 (GMT 138).

On 23 May 2005 (GMT 143) the LA-3 Multiplexer/De-Multiplexer (MDM) failed to unknown state during a planned uplink of a unique Diagnostic Buffer Collection List (DBCL) Pre-Positioned Load (PPL). Several systems were impacted by the MDM failure and resulting loss of insight into system status and smoke detection capability. The LA3 MDM was recovered after a power cycle and restoration of the default DBCL, and systems recovery was performed throughout the day. The PPL uplink was planned in support of trouble-shooting of the Carbon Dioxide Removal Assembly (CDRA) in conjunction with monthly Lab vacuum system valve commanding. An error in the PPL code was identified, and subsequent testing in a ground simulator resulted in the same failure response. The revised DBCL PPL was uplinked successfully.

On 24 May 2005 (GMT 144) the crew examined the Node1 Port 2 Portable Breathing Apparatus (PBA) oxygen bottle during a scheduled monthly inspection of the Portable Emergency Provisions (PEPs). The needle of the gauge was found to be in the red zone of the oxygen indicator, possibly due to leakage or a failed gauge. The crew took photographs of the gauge and downlinked the images. The next day the crew completely discharged the PBA into the cabin and replaced it with a unit from the Joint Airlock.

On 26 May 2005 (GMT 146) the crew noted and photographed damage to the Multi-Layer Insulation (MLI) of Soyuz 216 in the vicinity of the joint between the Descent

Module [__] and the Instrumentation/Propulsion Module (___). On 8 June 2005 (GMT 159) the crew was instructed to inspect and photograph Soyuz MLI under optimal lighting conditions. The crew reported that there were two "opened" areas in the MLI along the seam between the "descent module and the habitation module" in the vicinity of Planes II and IV. On 30 June 2005 (GMT 181) the crew performed another survey of the Soyuz MLI using the SSRMS camera.

On 26 May 2005 (GMT 146) the Extravehicular - Charged Particle Directional Spectrometer (EV-CPDS) boxes 2 and 3 experienced a rash of lockups from May 12 through May 17. After reviewing the telemetry data, engineering specialists suspected that the file directory might be corrupt. Ground commanding was performed to cleanup the file directory and recover the system.

On 27 May 2005 (GMT 147) ground specialists in MCC-H performed CDRA troubleshooting as part of the investigation into the anomalous shutdown during 9S/10S joint operations. The CDRA blower and pump motor controllers were powered up today and operated in conjunction with vacuum valve commanding. This was the same 9S/10S operational configuration at the time the shutdown occurred. Again on 2 June 2005 (GMT 153), during the SM 7.03 transition (while the Vozdukh Carbon Dioxide (CO_2) removal system was deactivated), the CDRA was activated in conjunction with Lab vacuum system commanding to investigate the cause of the automatic shutdown experienced during Flight 10S/9S handover. The CDRA operated nominally during the software transition and a review of downlink data gave no insight into the failure.

On 30 May 2005 (GMT 150) the crew, using some braycote lubricant, gently realigned the laterally misaligned common hatch seals in the Node, reported the seal locations and downlinked images for ground controllers to review. On 13 May 2005 (GMT 133), during a routine inspection of the hatch seals, the crew reported that there were four locations where the seals were misaligned.

On 2 June 2005 (GMT 153) the crew successfully cleaned the Node 1 Smoke Detector #2 using an EVA Connector Cleaning tool with a pressurized nitrogen cartridge to help dispel contaminants from the sensor mirror. This redundant smoke detector in the Node had exhibited increases in obscuration and scatter on several occasions in 2003 and 2004. The Expedition 10 and Expedition 11 crews had previously attempted to clean this smoke detector with minimal improvement. Telemetry confirmed that obscuration had decreased from 16.62% to 7.3% after the cleaning.

On 7 June 2005 (GMT 158) Plasma Contactor Unit (PCU) Z14B experienced an Orbital Replacement Unit (ORU) health flag in block 14. The PCU has the same firmware as other on-orbit ORUs with Electrically Erasable Programmable Read Only Memory (EEPROM) Error Correction Code (ECC) disabled, which makes it more susceptible to bit flips. An additional 512 data dump confirmed the bit flip was in an unused Block 14 memory location. The PCU was refreshed, copying the healthy Station Random Access Memory (SRAM) to the EEPROM clearing the PCU health flag.

On 12 June 2005 (GMT 163) a failure of the RS commutator occurred causing a shutdown of the Vozdukh Carbon Dioxide removal system and micropurification Unit (___). The Vozdukh was reactivated in manual mode, cycling every 10 minutes; however the BMP could not be restarted due to a lack of telemetry. On 17 June 2005 (GMT 168) MCC-M switched to the backup commutator. Data from the Vozdukh and the micropurification Unit (___) was restored almost immediately.

On 13 June 2005 (GMT 164) a RPC on the Mobile Transporter (MT) 3A_A Remote Power Controller Module (RPCM) tripped open. This RPC provides power to the Load Transfer Unit (LTU) Heater 2. This is the second trip of this RPC. The first trip occurred at the end of 2002 and resulted in an RPCM replacement during an Increment 6 stage EVA. A redundant set of LTU heaters are powered by another RPCM RPC, which remains closed without issue. Since a current spike was not observed, ground specialists suspected a Field Effect Transistor (FET) hybrid failure had occurred.

On 14 June 2005 (GMT 165) the Beta Gimbal Assembly (BGA) 4B experienced a motor stall and motor trip condition. A Service Module American to Russian Converter Unit [CHT] was transferred to the 2B channel to maintain proper power balance. Ground specialists then worked to free the 4B BGA and successfully commanded it to 130 degrees, which was the best power-generation angle. The arrays were feathered for 17P undock and all was nominal.

On 14 June 2005 (GMT 165) the crew experienced a Portable Computer System (PCS) failure in the SM. Ground specialists determined the PCS failure showing loss of file structure was caused most likely by a failed Hard Drive. The crew performed a Hard Drive repair and recovered the PCS functionality in the SM. The PCS shutdown again following the false FGB fire indication on 18 June 2005 (GMT 169). Trouble-shooting performed by the crew indicated a battery failure. The crew tried to charge 6 different batteries, with 1 battery reaching 32% State of Charge (SOC).

On 23 June 2005 (GMT 174) an advisory message was generated as a result of a fan failure in the Vozdukh. In response to the failure, the crew was instructed to perform a “Fan Failure” procedure and activate the Vozdukh in manual mode that cycles the systems every 10 minutes with a flow of 60%. Later the crew reactivated the Vozdukh in the automatic mode.

On 1 July 2005 (GMT 182) the crew relocated a 760XD Portable Computer System (PCS) laptop from the Airlock to the Cupola Robotic Workstation (RWS) in preparation for Flight LF1 robotics activities. Hard drive S/N 6054 was swapped with S/N 6026 after a failure to reboot.

On 8 July 2005 (GMT 189) the Commander reported that a TVIS harness strap broke during exercise.

On 8 July 2005 (GMT 189) the Vozdukh (Russian CO_2 removal system) registered a failure flag and shutdown. The Commander performed a recovery procedure to reactivate the system in the manual mode and monitored the Vozdukh through three cycles. The next day, the system experienced two more failures at which time MCC-M reported the ___-1 (vacuum valve) had failed. The Commander attempted to replace the valve; however, during installation he reported problems with the valve sizing and a broken cover. The crew eventually installed a different spare valve and stored the bad spare in Panel 417.

On 10 July 2005 (GMT 191) an A31P display screen on Station Support Computer (SSC) 8 in the LAB failed over the weekend. The crew observed the screen flickering and then going black, although the computer continued to function. On 21 July 2005 (GMT 202) the crew successfully restored SSC8 as a functional client using the Crew Personal Support Disk (CPSD) laptop shell. The CPSD was then using SSC4 and the former SSC8 shell was stowed for future trouble-shooting.

On 12 July 2005 (GMT 193) the POIC in Huntsville, Alabama, lost commanding capability with the ISS vehicle where the system being used could not be recovered and the POIC had to fail over to another string. There was a brief period of Loss of Signal (LOS) where the High Rate Communications Outage Recorder (HCOR) onboard was not recording and 5 minutes of data was lost. The source of the problem was identified and the POIC returned to normal capability the same day, with a prime and backup command server.

On 13 July 2005 (GMT 194) the SM Central Computer (___) Lane 3 failed, leaving the ___ in a two-lane configuration. The ___ failure had no impact on LF1 launch or docking.

On 20 July 2005 (GMT 201) the Commander reported the Service Module VPrK [__p_] air circulation system fan was powered but not working. MCC-M confirmed telemetry showed if off. On 21 July 2005 (GMT 202) the Commander performed a fan changeout with a new unit, and reported that the old unit was the original fan that was installed on the ground.

The Increment 11 PIER Summary Task Roll-up for Stage 10S is shown below.

Stage 10S	Total	Completed	Withdrawn	Deferred	Not Completed
IDRD	40	31	6	3	0
CSRD	76	47*	6	22	1
Added Real Time	12	12	0	0	0
TOTALS	**128**	**90**	**12**	**25**	**1**

NOTE:
* 20 of 47 completed requirements were added to the 10S Stage from other stages of the Pre-Mission IDRD

A. Tasks Completed in Addition to the IDRD Requirements (59).

A total of 59 completed requirements were added to the CSRD baseline, CSRD Revision A or in real time. Twenty of the 59 requirements were added to the 10S Stage CSRD from other stages in the Pre-Mission IDRD due to the LF1 launch date slip and the resulting replan of the 10S Stage. These 20 completed requirements are included in the requirement count above and are listed for completeness at the end of this section but will not be discussed in detail.

1. Node 1 Nadir Hatch Unlatch.

   This task was added per an ISS MER request, to the CSRD Chit 2757, as a preparatory task for Flight LF1. It was completed on GMT 118 when the crew performed a manual cycling of the N1 Nadir hatch mechanism in preparation for berthing of the MPLM. The procedure was used to partially unlatch the hatch to minimize the probability/effects of a hatch mechanism jam that could preclude opening the hatch once the MPLM was installed.

2. Portable Computer System (PCS) 760XD Laptop Complementary Metal-Oxide Semiconductor (CMOS) battery replacement.

   This task was added to the CSRD in Chit 2757 and was completed on GMT 132. The Flight Engineer successfully replaced the CMOS battery at the Lab Robotics Workstation (RWS) Portable Computer System (PCS) Laptop. In addition, he reset the CMOS settings. Following the changeout, the PCS was rebooted and was nominally functioning. This was the first time the Expedition 11 crew performed this procedure on orbit. FE-1 provided the ground team with some suggestions for improving the procedure in the event that additional CMOS changeouts would be required. The CMOS battery on 760XD Laptop S/N 6064 was at the end of its service life, but with the new battery installed, this computer remained an operational PCS machine.

3. Perform a food containers audit.

   Per Russian request, this activity was added to the CSRD in Chit 2757 and was completed on GMT 117 when the crew did a food ration audit and reported the content and stowage locations of unused E10 rations.

4. Change the Hard Drive in the Russian Laptop RSK1.

   Per Russian request, this activity was added to the CSRD in Chit 2757. The activity was completed on GMT 119. This Russian laptop was used for On-board simulators ([____], emergency egress, descent, etc.), Photo imagery processing (Nikon D1x and Kodak 760), Crew ballistic/navigation to support Sigma, the PILOT experiment and for Crew psychological support (DVD viewing software.

5. Perform an inventory of the Russian On-Orbit Segment (ROS) ISS light fixtures.

   Per Russian request, this activity was added to the CSRD in Chit 2757 and was completed on GMT 132. The Commander performed an audit of spare lighting assemblies stowed in the Service Module, and found that all of the spare light bulbs were failed. The Commander noted that all of the spare light bulbs had been marked “non-operational” over two years earlier by previous crews. Later ground specialists noted that additional lights would be manifested on future Progress flights.

6. Perform maintenance of cycling ergometer (VB-3) and load setting device (NS-1).

   Per Russian request, this activity was added to the CSRD in Chit 2757. The Commander completed this activity on GMT 133 by tightening a loose bolt and replacing a lost screw on the right pedal. In addition, he repaired the damaged cord in the force loader.

7. 4B Solar Array photography.

   This requirement was added to the CSRD in Chit 2757(background data is in Chit 2770) per request from the MER Structures and Mechanisms (S&M). The MER S&M requested the imagery for analysis because of concerns with the integrity of the Beta Gimbal Assembly (BGA). The activity was completed on GMT 131 in conjunction with a planned reboost for 18P docking phasing. The crew setup the Sony V10 Video System to record imagery from the Lab External Television Camera Group (ETVCG) of the P6 4B (Port) Solar Array Wing (SAW). Although the Commander was unable to detect any acceleration during the 2 minute, 55 second burn, ground specialists in MCC-H did see motion on the SAW during the downlink. Similar imagery was recorded for the 2B (Starboard) SAW in February 2005.

8. Perform monitor [___ LIV] test.

   Per Russian request, this activity was added to the CSRD in Chit 2757. The Commander completed the test of the Experimental video complex LIV monitor on GMT 131. The color, brightness, picture and volume were tested and the crew reported the checkout was nominal.

9. Perform scopemeter and pressure probe accuracy verification (NET 35 days before Launch of LF1).

   This requirement was added to the CSRD Revision A per a request from the Flight Director to clearly define the activity and add a checkout of the pressure probe as well. This is a preparatory activity required to be completed not earlier than 35 days before the launch of Flight LF1. Both instruments were used for ingress activities during the LF1 flight. The Flight Engineer completed the accuracy verification on both instruments on GMT191 and noted that one of the scopemeters tested (Hank) did not work.

10. Pressurized Mating Adapter (PMA)3 ingress and stowage reconfiguration including the following subtasks: a) Z1 dome ingress and reconfiguration, b) Arm Control Unit (ACU) imagery and c) Direct Current to Direct Current Converter Unit (DDCU)-I J3 connector imagery and inspection.

    PMA3 ingress and sub-tasks were included in the CSRD via Chit 2849 (background in Chits 2532, 1207) as a request from Mission Operations Directorate (MOD) to evaluate a plan to utilize the PMA3 for stowage and consolidate onboard stowage. Previously, the ISS Program had identified on-orbit stowage as a major concern to be addressed to avoid blocking safety *critical zones, including fire ports and improve habitability. The community was requested to evaluate the potential use of PMA 2 and/or PMA 3 as stowage locations and the items to be stowed in these locations. The intent was to select items that could tolerate the vacuum and freezing temperatures that are the nominal conditions in these locations, and in addition would not require frequent crew access because of the consumables utilized each time the PMA3 is vented to vacuum after egress. On GMT 150, the crew completed ingress of the Z1 dome and performed a swap of hardware. Items from Z1 were removed and stowed in PMA3 on GMT 172 and items that had previously been removed from PMA2 were stowed in Z1. In addition, the required imagery was taken of the ACU, which had been removed from its CTB and the foam discarded left to possible damage, and the DDCU-I J3 connectors. On the crew also completed the third and final stowage reconfiguration on GMT 172 when they ingressed PMA3 and stowed items that were relocated from PMA2. The crew was required to remove a center disk cover and two Control Panel Assemblies (CPAs) to provide adequate clearance before entering the PMA3. The hardware was stowed nominally and onboard inventory control system updated to reflect the changes.*

11. Perform Remote Power Controller Module (RPCM) SO2B-D RPC 17 steps to regain CMG2 power until LF1 arrives.

    This activity was added to the CSRD Revision A in Chit 2835 (history in Chit 2856/Flight Note 5802B) and was scheduled to be cycled every other week in an attempt to gain control of CMG2 until the RPCM was replaced on Flight LF1. This biweekly, ground commanding activity was completed on GMT 144, 158 and 172. Each time Flight Controllers cycled the RPC it failed to open and gain power to CMG2.

12. CMG-2 patch panel reconfiguration patch load.

    This requirement was added per a request from the MER to the CSRD Revision A in Chit 2835. This ground activity was required to load a software patch in the Guidance, Navigation and Control (GNC) Multiplexer/Demultiplexer (MDM) in preparation for the CMG2 patch panel EVA task on Flight LF1. The ground commanding was completed on GMT 178 and the new patch allowed the GNC MDM to recognize that power for CMG2 should come from the Z13B-B RPC 18 instead of S02B-D RPC 17.

13. Internal Sampling Adapter (ISA) nitrile seal repair and replacement.

    This task was added per a MER request to the CSRD Revision A in Chit 2835. The nitrile seals in the ISA were due to expire in July 2005. New o-rings were replaced to ensure verifiable pressure readings during leak checks for activities during Flight LF1 including docking/undocking and MPLM berthing. The seals were replaced on GMT 178.

14. Troubleshoot A31P laptops S/N 1002, 1005, 1007, 1010 Laptops.

    This requirement was added to the CSRD Revision A in Chit 2835 via a request from the MER OpsLan to continue troubleshooting the malfunctioning A31P laptops onboard. On GMT 130, the crew performed a procedure to recover Station Support Computer (SSC) laptops S/N 1005 (SSC10) and 1007 (SSC5) that were previously reported by the crew to have dark displays. The procedure utilized a healthy power supply and had the crew inspect the button near the keyboard that turns off the screen when the SSC lid is closed. It was thought that this button may be turning off the screen though the laptop was functioning, however the crew reported no change in the laptop performance. The crew reported that on Laptop S/N 1005 the detent button had broken off completely. Ground specialists determined that the power supplies originally connected to these SSCs were suspect, since the SSCs were successfully powered up using the power supply connected to another functioning laptop. Additionally, the crew verified that laptop S/N 1002 which had previously failed as SSC8, did not boot up. On GMT 137, the crew worked on troubleshooting a SSC laptop (the first A31P model deployed during Increment 7) by resetting the Basic Input/Output System (BIOS) a built in software program that determines how the laptop functions. This activity was performed at the CPSD (crew personal support disk) location of UOP-6 (Utility Outlet Panel #6), a known viable power supply source. The laptop failed to reboot completely. On GMT 151, the crew performed a procedure to remove a jammed UltraBay device from the A31P laptop S/N 1010. FE1 was able to release the UltraBay drive and reported that the T-handle release mechanism was failed. The drive itself (S/N 1028) and the laptop UltraBay appeared nominal. The 60G hard drive S/N 1005 installed in the main drive of the laptop was found to not have a functioning operating system. This hard drive was stowed and was replaced with FE1's Crew Personal Support Disk (CPSD) drive S/N 1028 to allow continued use as a CPSD. On GMT 192, an A31P display screen on SSC8, in the LAB, failed over the weekend. The crew observed the screen flickering and then going black, although the computer continued to function. This left one operational SSC and the CPSD machine in the U.S. Lab. Ground specialists worked various options to gain functionality of a second SSC in the LAB before LF1 docks. GMT 202, the crew successfully restored SSC8 as a functional client using the CPSD laptop shell. The CPSD was then using SSC4. The former SSC8 shell was stowed for future trouble-shooting.

15. Install new mass measuring unit.

    This activity was added to the CSRD Revision A in Chit 2835 per a request from the Russians. A new mass measuring unit was installed on GMT 181 per instructions in radiogram 773. The mass measuring device was required when the crew performed Russian health maintenance activities that measure body mass on-orbit. The replaced unit was packed for disposal.

16. Uplink and install SSC Client service pack for SSC Client Dynamic Onboard Ubiquitous Graphics (DOUG) V1.61.

    This requirement was added from Chit 2877 and was included in the CSRD Revision A in Chit 2835. The SSC Service Pack (SP) installs the DOUG application, version 1.61 on the A31p SSC Client load v10.00. This version of the DOUG program incorporated capabilities and configurations to support Return To Flight (RTF) Orbiter inspection and repair operations. The ISS MER recommended this SP be uplinked and implemented prior to Flight LF1 docking. This uplink was completed off the task list on GMT 163 for SSCs 1, 2, 4, 8.

17. Complete Digital Camera System (DCS) 760 troubleshooting.

    This requirement was added to the CSRD Revision A from Chit 2823. The crew completed the activity on GMT 158 when they performed troubleshooting on a camera that had shown previous anomalous signatures that included exposed imagery during its use for the EarthKAM experiment in April 2005. The crew videotaped the activities and downlinked the video and log file from the camera for further ground analysis.

18. Microgravity Sciences Glovebox (MSG) video drawer preparation.

    The MSG drawer preparation was added to the CSRD Revision A per a request in Chit 2768. The Video Tape Recorder (VTR)1 and VTR2 on orbit were inoperable and another functioning VTR was not manifested until Flight LF1. A Chit was submitted for VTR1 and VTR2 cleaning which was not implemented before LF1. In order to restore VTR record capability the MSG video drawer and its recorder (Sony GVA500 Hi-8 Recorder) were required in addition to an unused tape from POIC. The activity was completed on GMT 137 when the crew completed the MSG video test by routing the video feed from Lab camcorder to MSG video drawer. This configuration allowed recording of any video source to the MSG and minimized crew interaction during playback. The ground received results of the test and all was nominal. This videotape recorder was used to videotape the Foot Reaction Forces During Space Flight (FOOT) experiment and as an alternate operational recording capability for the VTRs.

19. Remove and dispose 3 Lamp Housing Assemblies (LHA)s.

    This requirement was added to the CSRD Revision A from Chit 2886. Three Lamp Housing Assembly (LHA) installed on-orbit reached their End of Life (failed) and required disposal on 17P. On GMT 149, the Flight Engineer, working from the task list, replaced 2 of the 3 LHAs per an In-Flight Maintenance (IFM) procedure. The remaining LHA was not replaced due to an obstruction from a Station Acceleration Measurement System (SAMS) payload bracket and was scheduled to be replaced when a spare LHA became available.

20. Beta Gimbal Assembly YVV attitude conditioning.

    This ground commanding requirement was added to the CSRD Revision A per Chit 2759. The ISS MER S&M requested a BGA conditioning trial be performed during the scheduled YVV attitude interval. Due to the deletion of XPOP periods prior to LF1, S&M requested implementation of a series of BGA commands during YVV as an attempt to replicate the conditioning motion observed during XPOP. In the past, XPOP Autotrack motion has allowed BGA performance to 'reset' or smooth out between XVV intervals. The condition was performed in two sets from GMT 116-119 and completed from GMT 123-125.

21. Removal of U.S. Lab (U.S. Lab) flexhose for return on Flight LF1.

    This activity was added real time to the CSRD Revision A per Chit 2836. A two foot long flexhose on Rack Lab1D1 in the U.S. Lab had a known slow leak. This hose was not needed for unmanned operations, and had 3 different replacements available. The hose was required to be returned to study the bio-film that was expected to be coating the interior. Return of this hardware directly supported the program's agreed upon mitigation plan for ISS Risk Management Application (IRMA) Risk 4118 - Internal Active Thermal Control System (IATCS) Coolant Impact to System Integrity. The presence of bacteria/microbes on the surfaces of the IATCS equipment in the form of biofilm presents an, as yet, unquantified risk to the crew and IATCS equipment. The presence of Legionella or opportunistic pathogens in the coolant would pose a risk to crew health. Acid producing, sulfate reducing, or iron and manganese oxidizing bacteria pose a corrosion risk to the IATCS equipment with catastrophic consequences in the case of the Interface Heat Exchanger (IFHX) heat exchanger (ammonia leak into the cabin). The referenced flexhose will give the program insight and quantification of the risk from the coolant as well as a data for a decision of whether or not to implement an early anti-microbial agent. The nature of the biofilm and microbial species it contains begins to change from the moment the flexhose is removed from the cooling loop. For this assessment to have the maximum validity, the flexhose was removed as close to undock as possible on LF-1. The hose was removed on GMT 208 and returned for evaluation on Flight LF1.

22. Perform NODE1 Port Positive Pressure Relief Valve (PPRV) removal and Manual Pressure Equalization Valve (MPEV) installation.

    This requirement was added real time to the CSRD Revision A per Chit 2917. As a get ahead task, MERLIN requested removal of the Node 1 Port PPRV and swapping it with an MPEV stowed in the Node. The PPRV was not meant to be on orbit for an extended period of time. PPRVs are replaced with MPEVs as part of nominal assembly flights. Additionally, the MPEV is simpler to operate and allows for much faster depressurization. The MPEV is used throughout the USOS across all hatches to accommodate for pressure equalization between modules. The Flight Engineer removed and replaced the valve on GMT 172 *and the MPEV valve provided simpler operations and a faster depressurization during the next day's depress of PMA-3.*

23. Prepare SSC6 Client in the Node for LF1 transfer support.

    This activity was added real time to the CSRD Revision A per Chit 2986. The task was completed on GMT 194 when the Flight Engineer set up a spare A31P laptop, that was delivered on 18P, as an SSC, for use in the Node during LF1 transfer operations.

24. Perform video survey of Soyuz Multi-Layer Insulation (MLI) with the Space Station Remote Manipulator System (SSRMS) camera.

    This video requirement was added real time to the CSRD Revision A per Chit 2962 as a request from International Partner (IP) Russia. A request for imagery of the Soyuz MLI damage in the Descent Module, orbital compartment area, was required to determine if there was further peeling back of the MLI. Ground controllers completed the activity on GMT 181 and the images were sent to the Russians for further analysis.

25. Perform Medical Equipment Computer (MEC) troubleshooting.

    This troubleshooting activity was added to the CSRD Revisions A as a real time request from the Biomedical Engineer (BME). On GMT 125 and 139 the MEC experienced several issues (lockups and not recognizing TVIS Portable Computer Memory Card International Adapter (PCMCIA) cards and what appeared to be MEC anomalies as the MEC was not in it's nominal configuration. The crew reported that there was a PCMCIA Extender card inserted into one of the card slots on the MEC and the nominal MEC 760XD shell is a -303, but the current configuration the MEC 760XD shell was a -301. This chassis did not have strain relief capability for 1553 connection. The activity was completed on GMT 182 when FE-1 replaced the failed hard drive with S/N 6115. The MEC booted up nominally, but when FE-1 attempted to download Heart Rate Watch (HRW) data to the Polar software on the MEC he received this error "Internal Error Open Comm-BAD ID". MER recommended verifying the communication port configuration and the crew acknowledged it was in the correct setting. On GMT 187, per recommendation from the Flight control team and with MER concurrence the HRW download capability was recovered by enabling the communication port.

26. Perform Intermodular Ventilation (IMV) Valve flow measurements and velocicalc check.

    This activity was added to the CSRD Revision A per Chit 2946. Flow measurements are taken at the USL Aft Port IMV diffuser to verify that the IMV flow was sufficient to control Carbon Dioxide and Humidity in the Station. These measurements would also indicate that the IMV fans were operating in a good flow condition. After the flow measurements were taken the results indicated an unexpected result of reduced flow. Since the corrective action required to restore flow was disassembly and cleaning of the ducts, which is a very time *consuming process, a check of the air velocity device (Velocicalc) and a re-measurement of the IMV flow was requested. The velocicalc was no longer in calibration and required check to verify a known flow. In addition a measurement of the inlet to the Russian BMP was requested. The measurement was taken on GMT 203 and this completed the requested MER requirement.*

27. Perform Utility Outlet Panel (UOP) power out switch troubleshooting for RPCM RPC 17 trip.

    This requirement was added real time to the CSRD Revision A from Chit 2970. RPCM N13B-A RPC 17 feeding the US Node 1 UOP-2 (N1-2) tripped over current on GMT 175. The UOP had a 15.250 to 17.250 Gigahertz (Ku-Band) power supply connected as well as the CBCS (Centerline Berthing Camera System). A fault in the "Power Out" switch of a UOP was documented before in Problem Reporting and Corrective Action (PRACA) 2422. The crew completed this activity on GMT 176 off the weekend task list.

28. Perform SDTO 14001-U Solar Array Shunt Test.

    This requirement ground commanding test was completed in September 2005 and fulfilled the requirement to for testing during the equinox.

29. Reconfigure SSC8/CPSD for use in the LAB.

    This activity was added real time to the CSRD Revision A per Chit 3065. Flight Controllers and the ISS MER coordinated to develop a procedure to transition the A31p CPSD (S/N 1010) into a SSC8. SSC4 (S/N 1004) will be the new CPSD and will limit the number of Ultrabay cycles on A31p Laptop S/N 1010 and provide CPSD capability in an alternate location. In order for this to occur, several hard drive swaps were required. The crew completed this activity on GMT 202 with minor discrepancies. The Radio Frequency (RF) Network Card (RangeLAN II) was not plugged into the CPSD; it already had a 3COM Network Card. SSC8 was located in Node 1 rather than in the LAB.

30. Perform Jeweler screwdriver onboard audit.

    This requirement was added to the CSRD Revision A in Chit 2835 per the Flight Director request. This activity was needed to close AR 590 concerning damaged screwdrivers. Rather than manifesting new Jeweler screwdrivers the crew was required to consolidate existing screwdrivers from one bag into the Intravehicular Activity (IVA) tool bag and temporarily stow the damaged screwdrivers in the Strange Tool Bag. The crew completed this over the weekend off the task list on GMT 202 and replaced 3/64 and 5/64 screwdrivers in the tool drawer. The tool drawer configuration was 6 flat tip and 4 Phillips screwdrivers. The Strange Tool Bag pouch had the 6 flat tip, two of which were damaged but probably usable.

31. Replace Treadmill Vibration Isolation System (TVIS) gyro wires.

    This activity was added to the crew's work schedule from Chit 2864. While performing the TVIS 1-month maintenance, the crew reported that the forward port gyro wire rope was severed. Photos of the gyro wire rope were provided to engineering for review and confirmed that the forward port wire rope was completely severed. The TVIS gyro wire ropes were continuously analyzed by means of a monthly inspection of the gyro wire ropes, as documented in chit 1908. Chit 1908, Change out Criteria for TVIS Gyro Wire Ropes, provides the defining criteria for gyro wire rope failure. It stated that any damage to the wire rope was considered a failure. Also, "A severed wire rope causes the gyroscope to be skewed during operation". This damages the gyroscope and clamp rope assembly, increases transmission of additional forces to the ISS structure, and potentially impacts the ability of the runner to exercise on TVIS. The crew successfully completed the replacement of the TVIS gyro wire ropes on GMT 136. While performing the In-flight Maintenance (IFM), the crew reported that 2 of the fasteners holding the clamp plate were damaged and replaced them with new fasteners. After completing the IFM and placing TVIS back in its pit, CDR performed a nominal motorized exercise session to confirm TVIS functionality.

32. Checkout NODE 1 UOP-1 and 120V IVA portable power strip.

    This activity was added to the crew's work scheduled from Chit 2887. Due to laptop troubleshooting events, a laptop did not power on when receiving power from the Node 1 UOP-1 and the 120V IVA Portable Power Strip attached to the UOP. However, the same laptop successfully powered downstream of a different UOP, different power strip, and different laptop power supply. As a result, CHIT 2868 recommended the UOP and Portable Power Strip be tagged as "Do Not Use" until checked out. There were no indications of any type of malfunction in the UOP or the RPC (RPCM N14B-C, RPC 17) that feeds power to it (i.e. no RPC trip, no UOP trip). There were also no indications of any problem with the Portable Power Strip. On GMT 165, the UOP1 troubleshooting was performed and the UOP1 was functioning properly and could be used for nominal purposes. On GMT 202, the Portable Electrical Equipment Kit (PEEK) PS120 strip was approved for use without troubleshooting because no trips occurred in the upstream RPCM, therefore the hardware did not have any additional risk in operation.

33. Reinstallation of the Interface Umbilical Assembly (IAU) bolts.

    This activity was added to the crew's work schedule from Chit 2924. During the ingress of the Z1 dome, a loose bolt was discovered on the Interface Umbilical Assembly (IUA). An inspection of the IUA spare revealed that 2 of six total bolts were missing. This spare cannot be used without all four structural attachment bolts (upper section). Prior to stowage in PMA 3, the MER requested to reinstall both IUA bolts, if available, without both missing bolts replaced, the spare would not be in a useable configuration. On GMT 166, the crew inspected the IUA *packing foam and no additional bolts were found and reinstallation of the loose IUA bolt was unsuccessful. The crew reported that for one bolt the washer had become lodged in the lower windings of the spring and for the other canister the washer appeared to be above the spring. The canisters with no bolts were taped to prevent loss of the spring or washer. The canisters with two bolts were taped per the uplinked procedure to prevent loss of those bolts. Per the procedures the crew verified that the two installed bolts were completely installed.*

The following completed requirements were requirements rolled over to Stage 10S CSRD from the previous Increment and include:

34. Perform Node 1 smoke detector cleaning.

    On GMT 137, the crew completed a cleaning procedure on the smoke detectors in attempt to recover full functionality. The primary purpose of this activity was to remove particles that collected on the smoke detectors by using small bursts of air from an empty syringe. The removal of the particles reduce the scatter, obscuration, and percent trip telemetry indications on the detectors, however the procedure did not provide significant improvement of the smoke detector's obscuration and scatter readings. The smoke detectors were inhibited for annunciation. At the time the Node had one remaining healthy smoke detector that was enabled for detection and annunciation. Ground specialists will be investigating additional cleaning alternatives that will recover full use of the smoke detectors.

35. Perform analysis of SM cabin air with [____-4_] analyzer.

    On GMT 206, The Russian Real-Time Harmful Contaminant Gas Analyzer (____-4_ [AOK]) was activated in the continuous measurement mode. The Commander mentioned that it was noisy and could be heard over the station's background noise. The crew asked permission to move the hardware away from the habitation area. MCC-M agreed that the device could be moved anywhere that fit it's cable length and to plug it in anywhere there is a socket.

36. Conduct a data transmission test via ___-__ and ____.

    This activity was completed by the Increment 10 crew on GMT 91. The crew connected the ___-__ to the EGE2 Laptop and downlinked telemetry via ____ per RG 122. The test was successfully completed and the crew was able to downlink big data files from the EGE computer via ____. Although this was completed during Increment 10, IP Russia requested that this activity be included in the baseline CSRD and Revision A to the CSRD.

37. Perform maintenance on USOS VTR system.

    During Increment 10, both VTR1 and VTR2 displayed jittery and unusable video. The Communication and Tracking Ground Controllers believed that dry head cleaning would not necessarily solve the problem. This was based on the assumption that metal oxide dust was interfering with the drum heads, and dry *head cleaning would only temporarily disturb the dust before it returned to the heads. Wet head cleaning or vacuuming would remove the dust more efficiently. The requested cleaning of VTR1 and VTR2 was completed on GMT 143. An unused tape was requested and obtained from Payload Operations Director (POD), and used for testing of the VTRs. VTR1 record and playback was completed on GMT 143. VTR2 record and playback was completed on GMT 144.*

38. Perform routine checks of __ -103U camera.

    This activity was completed on GMT 140 in conjunction with a VHF-2 test when the Commander successfully contacted a research vessel, the Kosmonaut Viktor Patsaev, docked at the port of Kaliningrad. The purpose of this test was to determine if this ship can serve as a potential "ground station" for communication with ISS. The crew reported that nominal communication was established.

39. Replacement of __1_ FGB.

    On GMT 137, the Commander completed a replacement of an FGB magnetic data recording device associated with the onboard Russian radio telemetry system. The old unit was discarded and activation of the newly installed unit is scheduled for the next day.

The following 20 requirements were added to the Stage 10S CSRD from another Stage in the Pre-Mission IDRD during the replan of the Stage and are included in the completed requirements count and listed below but will not be discussed in detail.

40. Complete 17 Progress trash loading and undock.
41. Dock 18 Progress M to SM aft port and transfer cargo.
42. Relocate 10 Soyuz-TMA to the FGB Nadir Port.
43. Perform software transition of SM 7.02 to SM 7.03.
44. Assemble equipment to set up the proximity communications equipment (____) via the ATV - ISS RS radio channel: Install the PCE (____) monoblock.
45. Install the ATV control panel (__). (ATV)
46. Install and connect the antenna switch control unit (__ __). (ATV)
47. Test for PCE control command passage. (ATV)
48. PCE Test 1, check of the PCE system, PCE (___), and ATV __ commands. (ATV)
49. Test of the PCE transmitter (___) carrier frequency. (ATV)
50. Disconnection of the onboard cable network (___) from the PCE, ATV __, and __ __. (ATV)
51. Disassembly of the PCE, ATV __, and __ __. (ATV)
52. Install the experimental set of noise reduction equipment for the cabins.

53. Install mufflers on fans ___5, ___6 in working compartment 1 [__]1, and ___8, ___9, ___10, ___11, ___12, ____1 in working compartment 2 [__]2.
54. Install mufflers in the cabin air duct of both cabins.
55. Install mufflers for fans __1__ and __2__.
56. Install the signal recovery device ___871 to improve the quality of SM telephone communications.
57. Perform SDTO 13004-U, Russian Vehicle Docking/Undocking Load on ISS for 18P docking.
58. Perform SDTO 13004-U, Russian Vehicle Docking/Undocking Loads on ISS for 17P undocking.
59. Perform SDTO 13006- U/R, Forcing Function Definition and Microgravity Allocation of Crew Resistive Exercise for nominal Interim Resistive Exercise Device (IRED) Exercise Session. [Ground] [IVA] [Imagery] [Inc11/2860] (IWIS required for either LF1 or ULF1.1 stage.)

During review of the 10S Stage CSRD Chit, the following 4 requirements were included in the CSRD as clarifications to standard activities and are not discussed in detail or added to the final requirement count.

a. Pressurize Service Module (SM) __ (Water Tank) 2 Rodnik tank prior to water transfer on 17Progress (P).
b. Transfer water from the 17P to the SM Rodnik and pressurize __ 2 Progress.
c. Perform a urine transfer to __ 1, 2 Rodnik 17P tanks.
d. Prepare TA986M mono block for return on the Shuttle.

B. Tasks Withdrawn (12)

A total of 12 tasks were withdrawn from the 10S stage.

The following tasks are tasks withdrawn from the IDRD requirements.

1. Perform Internal Thermal Control System (ITCS) fluid sampling. (No Earlier Than (NET) LF1 launch.)

   The ISS MER agreed to withdraw this requirement in lieu of adding another task to remove the ITCS flexhose as the flexhose removal and return requirement was deemed a higher priority.

2. Perform leak check of LAB1P4 Vacuum Exhaust System (VES) Quick Disconnects (QDs).

   This requirement was withdrawn per a request from the MER and this task will be reassessed at the Requirements Integration Panel (RIP) for inclusion into IDRD, Annex 2 and no longer needs to be tracked at the CSRD level.

3. Perform maintenance of the ___-1_ device.

   In order to make up for a deficiency in the Russian Gas Mask design, found in ground testing after deployment of the newer ___-1_ gas masks, MCC-M sent up a procedure to modify the Gas Masks. During Increment 10, the crew was successful in modifying 6 out of 7 ___-1_ Masks. The final ___-1_ was not completed due to a lost retaining nut. The Gas Mask that lacked the nut was written off as failed and no further work was planned (per e-mail from L. Lantsman to IMC on GMT 124). Although this activity was deferred to Increment 11 on the baseline CSRD by IP Russia, the Increment 11 crew did not perform any activities related to this requirement.

4. Perform Vacuum Access Jumper (VAJ) set up.

   This task was withdrawn because it was performed during the joint 9S/10S mission.

5. Vacuum Bag Preparation for Return.

   This requirement was withdrawn because it was performed during the joint 9S/10S mission.

6. Conduct the activities on the installation and configuration of Operating System (OS) Windows version 7.02.

   This requirement was included in the baseline 10S Stage CSRD but was subsequently withdrawn in the Revision A per the IP Russian request.

7. Perform SDTO 13004-U Russian vehicle docking/undocking loads for 10S relocation docking to the FGB nadir port.

   This ground commanding requirement was added to the 10S Stage CSRD from the ULF1.1 Stage when the replan of the 10S Stage was completed. The ISS MER and Flight Controllers were not able to collect the data during the Soyuz relocation.

8. Perform a reloading (upgrade) of the hard drive (S/N 6136) for the Version 7.02.

   This task was withdrawn as the upgrade to the 7.02 was not needed because the upgrade to 7.03 was completed during this Increment.

The following tasks were included in the IDRD but were withdrawn per Pre-Mission agreements that these tasks would not have a high probability of being completed due to the low priority and availability of crew time.

9. Perform low priority US/Russian medical operations (average 2 hrs/week).
10. Perform low priority Public Affairs Office (PAO) activities.
11. Perform remaining USOS/Russian payload operations.
12. Perform remaining Mobile Servicing System (MSS) On-orbit Checkout Requirements (OCRs) per the priorities in Appendix H.

C. Tasks Deferred (25)

1. Remove Russian stowage from USOS per allocation defined in Table 4.3-1.

   The Russian stowage in the USOS was consolidated but not removed and this requirement was rolled over to Stage LF1 CSRD.

All of the following US/Russian requirements were deferred to Stage LF1 from Stage 10S due to lack of available crew time and relative low priority.

2. Apply Yellow Tag to the Pistol Grip Tool (PGT) programming cable.
3. Perform remaining maintenance, CDRA Sock Filter installation and checkout for Bed 201 (to be performed in conjunction with Major Constituent Analyzer (MCA) maintenance).
4. Pull TV cable across FBG for TV transmissions via Ku-Band test.
5. Perform an inventory of the crew hygiene consumables.
6. Perform an installation of cargo containers behind the panel 221 FGB.
7. Perform speed regulating unit [_P__] installation onto cabin fans in SM.
8. Perform remaining maintenance, remove Baseplate Ballast Assembly.
9. Perform two operations of the SSRMS Sticky Grapple Fixture Release Test.
10. Perform Latch End Effector (LEE) A Prime String Force Moment Sensor (FMS) Saturation characterization.
11. Install new locks on doors of SM compartment.
12. Perform the following Russian resupply/outfitting for ATV tasks: Replace the color TV display (__-_) on the Simvol-Ts system liquid crystal display (__-__) to increase image quality while displaying the rendezvous process. [IVA]
13. Perform the following Russian resupply/outfitting for ATV tasks: Assemble the electric circuit and perform a test activation of the atmosphere purification filter A2 with the noise suppression filter (to support ATV operations).
14. Perform the following Russian resupply/outfitting tasks: Install a protective cover on the Vozdukh system pump and install in the atmosphere purification unit [___].
15. Install isolation mounts and air ducts with acoustic shields on fans [___1], [___2]. Replace covers on the flange of fan [____].
16. Install mufflers on the SM ventilation system: Install mufflers on fans [___10], [___11] and [____1] in working compartment 2.
17. Install mufflers on fans [___1], [___2] in working compartment 2.
18. Assemble the control circuit for fans [___1], [___2] using the command signal distribution unit (____).
19. Install the isolation mount for fan [____1].

20. Install isolation mounts for fans [___1], [___2], [___3], [___4], [___1], [___2].
21. Install soundproof cover on Vozdukh system microcompressor.
22. Resupply of Pilot hardware.
23. Perform thermal blanket imagery.
24. Remove and stow IWIS battery from Remote Sensor Unit (RSU) 1029.
25. Remove IWIS sensor from behind Temporary Early Sleep Station (TESS) rack.

D. Tasks Not Completed including IDRD (1).

The following task was not fully completed.

1. Remove Russian Stowage from USOS - ZSR unloading.

   This requirement was added to the CSRD Revision A, to clarify and prioritize the exact location of where removal of Russian hardware from the US segment was required. Although the crew was not able to complete the removal of the Russian hardware, they did complete, over two non-consecutive days GMT 178 and 202, a consolidation of the ZSR. On GMT 178, the crew reported they had completed the consolidation task and had one delta to the task that would be provided email to the ground. On GMT 202, the crew noted several differences from information contained in the Inventory Management System (IMS), and was able to free up 2 CTBE of stowage volume throughout the entire 3 hour activity. It was expected that 3 CTBE would be gained, however some locations contained more items than listed in IMS. Items of note included finding 3 KBO-M Russian trash containers (instead of 12) and two Russian EVA foot restraints in Nod1O4_B2/C2.

7.3 FLIGHT LF1

Flight LF1/STS-114 launched 26 July 2005 (GMT 207/14:39) beginning its mission to the ISS. LF1 was the first Shuttle flight since February 2003 and was considered a major milestone for Return to Flight (RTF) for the Shuttle Program since the grounding of the Shuttle fleet due to the Columbia accident. The Shuttle docked to the ISS on 28 July 2005 (GMT 209/11:17).

The primary Shuttle Program objectives of the mission were to test and evaluate Shuttle Thermal Protection System (TPS) inspection and repair capabilities. In addition Flight LF1 delivered ISS ORUs and cargo required to continue assembly and maintenance tasks on the Station.

The LF1 crew consisted of Commander Eileen Collins, Pilot Jim Kelly, and Mission Specialists Andy Thomas, Wendy Lawrence, Charlie Camarda, Steve Robinson and Soichi Noguchi. Robinson and Noguchi conducted three Shuttle-based EVAs. The first EVA demonstrated repair techniques for the Shuttle's Reinforced Carbon-Carbon (RCC) Wing Leading Edge and protective tiles. During the second EVA, the crew replaced a failed CMG. On the third EVA, an External Stowage Platform, with 3 ORUs, the Main Bus Switching Unit (MBSU), Utility Transfer Assembly (UTA), Flex Hose Rotary Coupler (FHRC), and 4 Video Stanchion Support Assemblies (VSSA) was installed. During the final EVA the crew also repaired the Shuttle heat shield by removing two gap fillers that were protruding beyond the tile surface on the underside of the Orbiter nose.

The following table summarizes the completion status of the tasks assigned to Flight LF1 via the IDRD or real time processes:

Flight LF1	Total	Completed	Withdrawn	Deferred	Not Completed
IDRD	35	32	1	2	0
Added Real Time	13	11	1	1	0
Totals	**48**	**43**	**2**	**3**	**0**

A. Tasks completed in addition to the IDRD requirements (11).

1. Flex Hose Rotary Coupler (FHRC) MLI tie down using wire tie.

   The crew tied down the lose FHRC MLI blanket with a wire tie during Flight LF1 EVA 2. Thermal analysis data had indicated that the FHRC fluid couplers would exceed the thermal limits during high Betas.

2. Remove 8 Light Housing Assemblies and one Baseplate Ballast Assembly from the MPLM.

   The crew removed 8 LHA's and one BBA from the MPLM and stowed them in the ISS as replacements/spares to be used for the failed USOS light assemblies.

3. Move the Articulating Portable Foot Restraint (APFR) ingress aid from the Crew and Equipment Translation Aid (CETA) cart to LAB Worksite Interface Fixture (WIF) #9 and obtained imagery.

   The crew performed the APFR move and imagery during LF1 EVA3. This task was performed in preparation for future EVAs.

4. Additional MPLM transfers.

   The crew performed the following additional hardware transfers from ISS to the MPLM: American Russian Converter Unit, Russian B1 Fan, Pump Package Assembly, moved a second Simplified Aid for EVA Rescue (SAFER) from the middeck to MPLM, and returned 3 additional HEPA filters.

5. Returned additional KURS unit.

   The crew stowed a 12th KURS unit for returned in the MPLM.

6. Extravehicular Mobility Unit (EMU) equipment reconfiguration.

   The crew performed the EMU reconfiguration and retained the hardware in the ISS for Expedition 12.

7. Respiratory Support Pack (RSP) checkout.

   The crew performed the RSP checkout required for use on-orbit.

8. Return additional High Efficiency Particulate Air (HEPA) filters.

   The crew removed, replaced and returned 3 additional HEPA filters on LF1.

9. Remove 2nd Baseplate Ballast Assembly (BBA) from the MPLM.

   The crew removed a second BBA from the MPLM and stowed it in the ISS for use as a spare. A failed unit from the ISS was installed in the MPLM location freed up by the unit stowed in the ISS.

10. Scavenge items from Orbiter Middeck.

    The crew scavenged items from the middeck since the next Orbiter launch was going to be delayed due to the foam departing the external tank. Some of the items transferred were cameras, Payload General Support Computer (PGSC), food, batteries, multimeter, tape, fiberscope, ultrasonic leak detector etc.)

11. Transfer additional water.

    The crew filled and transferred an additional water container 17 were planned the crew transferred 18 CWCs.

B. Tasks Withdrawn (2).

1. Transfer Oxygen to ISS.

   The crew did not perform this task due to the mission being extended one additional day and no excess Oxygen was available for transfer.

2. Rotate MPLM RSP.

   The crew did not perform the task designed to evaluate the re-designed RSP drive pins due its low priority and lack of docked crew time.

C. Tasks Deferred (3).

1. Installation of the Video Stanchion Support Assembly (VSSA) and External Television Camera Group (ETVCG) on camera port #9.

   The crew did not complete this 12A get-ahead task. The camera will be used for viewing the solar array wing deploy. This task was deferred when the task to remove the gap filler material from the Orbiter tiles was added to EVA3.

2. Materials International Space Station Experiment (MISSE) 3 and 4 clamp collar installation.

   The crew did not perform this task due to its low priority and lack of docked crew time.

3. Starboard 1 (S1) Thermal Radiator Rotary Joint (TRRJ) motor controller removal and return.

   The crew did not perform this EVA task due to its low priority and no available EVA time due to higher priority tasks.

D. Not Completed (0).

7.4 STAGE LF1

Following the successful LF1 joint mission, the Expedition 11 crew resumed independent operations. Stage LF1 was 58 days in duration and began with the undocking of the Orbiter Discovery from the ISS on 6 August 2005 (GMT 218/07:23) and ended with the docking of the 11 Soyuz vehicle on 3 October 2005 (GMT 276/05:27).

On 7 August 2005 (GMT 219) CMG1 was integrated into the steering control law and upon resumption of control by USOS momentum management all four CMGs were controlling the vehicle attitude for the first time in 1,155 days.

On 16 August 2005 (GMT 228) the Expedition 11 ISS Commander Sergei Krikalev became the world record holder among space travelers, by surpassing the previous record with 747 days in space. Upon his return to Earth on 11 October 2005 (GMT 284) he set the new record of 803 days in space.

One Russian Segment EVA (#14) was completed during the LF1 Stage on 18 August 2005 (GMT 230) by the Commander Sergei Krikalev and the Flight Engineer John Phillips. This first and only EVA of Increment 11 was conducted in Orlan spacesuits from the Pirs Docking Compartment, for a total EVA duration of 4 hrs, 58 minutes. The EVA was Krikalev's 8th overall (first on the ISS) and the first for Phillips. EVA 14 was performed by ISS crew using Russian Orlan suits from the PIRS Docking Compartment and the planned tasks for the EVA included: a) retrieval of the Biorisk #1 container, b) retrieval of the Micro-Particles Capture/Space Environment Exposure Devices (MPAC/SEEDs) panel #3, c) retrieval of the Matryoshka experiment, d) retrieval of the [CKK] panel #3, e) installation of [CKK] #5 panel, f) relocation of [CKK] #4, g) utilization imagery using Nikon F5 film camera and DCS 760 digital EVA camera, h) installation of the backup TV camera on the Service Module aft compartment to complete external preparations for future dockings of the European Automated Transfer Vehicle (ATV), i) Imagery of Kromka thruster contamination experiment panel #3 and j) jettison of the Matryoshka Multi-Layer Insulation (MLI) blanket and two towels used for wiping their gloves. No get-ahead tasks were completed and the relocation of the Strela Adapter from the FGB to PMA-3 was deferred. The only anomaly encountered was the crew had difficulty releasing the plug on the Matryoshka experiment to vent the Nitrogen.

One major Portable Computer System (PCS) R9 transition and upgrade was completed during Stage LF1. These activities converted the PCS system to A31Ps from the current 760XD laptops and installed A31P PCS compatible software. The crew ghosted the new A31P PCS hard drives which loaded the R9 software image into the A31P laptops plus one spare hard drive. The active transition occurred during a three day span and was completed on 14 September 2005 (GMT 257). During the ground controlled activities the Command and Control (C&C) Multiplexer/Demultiplexer (MDM) was transitioned through the standby and diagnostic modes for the load. All three C&C MDMs were successfully loaded with PCS R9 software. On 30 September 2005 (GMT 273) the Station Support Computer (SSC) Service Pack Service Pack 02 installation was performed successfully to update the Portable Computer System (PCS) reconfigurable files on the SSC clients. The previous recon files on the A31p Client load did not match the PCS version following the R9 transition. With this update, the situational awareness applications installed on the SSC Client like Bird's Eye View and DOUG functioned when connected to the A31p PCS.

Payload activities continued during Stage LF1 and highlights included: 9 August 2005 (GMT 221) the Human Research Facility (HRF) Gas Analysis System for Metabolic Analysis of Physiology (GASMAP) checkout was completed by the Flight Engineer when he performed a routine power up and health check by activating the client and software that then collected data for downlink. This procedure is required to protect the integrity of the high internal vacuum portion of the system. All was nominal and the data was downlinked for ground analysis. On 28 September 2005 (GMT 271) the crew and Marshall Space Flight Center (MSFC) ground controllers performed the first activation and checkout for the HRF-2 rack delivered on Flight LF1 (STS 114). The HRF-2 rack increased the on-orbit laboratory capabilities for human life science researchers to study and evaluate the physiological, behavioral, and chemical changes induced by space flight. This rack added a pulmonary function system, a refrigerated centrifuge, a body-mass measurement device, and an upgraded workstation. The rack was powered Off after the completion of ground controlled checkout activities. First operational use of the HRF2 rack is scheduled during Increment 12.

During Stage LF1, the 18 Progress successfully undocked from ISS Service Module (SM) aft docking port on Wednesday, 7 September 2005 (GMT 250). No anomalies were encountered during the undocking activities. The Commander recorded images of the Progress vehicle docking ring as it departed, and he observed both pressure seals were in tact, and no Foreign Object Debris (FOD) was visible. Later, at 9:00 AM CDT, the final deorbit burn of 18P was recorded by the onboard ISS external cameras and structural response data was recorded using truss sensors for downlink. Disposal of U.S. trash items in the Progress 353 was documented in SSCNs 9453 and 9550, and Increment 11 chits 3047, 3194, 3222, 3232 and 3269. U.S. trash items were prepacked according to OCA Message 11-0890A, and packed in the Progress 353 vehicle per radiograms 1137 and 1175.

On 8 September 2005 (GMT 251) 19P (M-354) launched from the Baikonur Cosmodrome in Kazakhstan with a nominal orbital insertion and deploy of the arrays and antennae. Ascent was nominal and all appendages were deployed. During the Orbit 2 Russian ground sites pass, the docking probe was extended, the Motion Control System and Kurs-A system were tested; all results were nominal. 19P docked on 10 September 2005 (GMT 253) and mechanically latched to the Service Module (SM) aft port. The rendezvous and docking was accelerated by approximately five minutes from the preplanned times to ensure that the docking occurred during daylight for visual observation purposes and videotaping. There were no vehicle anomalies noted during the rendezvous and docking and the pre-rendezvous and docking checkouts were successfully completed with one minor issue during the [____] system checkout. When starting the [____] test, the Commander noted that there was a red light illuminated on the Service Module [____] hand controller panel. Initial troubleshooting included verification that all buttons were in the correct configuration. Subsequently the [____]

system was re-initialized and all indicators showed nominal operation and the [____] test was successfully performed and placed in hot standby mode during docking, although was not needed for a manual docking of 19P. The leak checks were completed and the hatch to the 19P was opened. The 19P delivered 210 liters of water, 859.7 kg of propellant, 110.4 kg of gas, and 1160.1 kg of Russian dry cargo to the ISS, including 29.3 kg of payloads, an Elektron liquid unit, Vozduhk replacement parts, crew consumables and hygiene products. The 19P delivered 74.3 kg of U.S. hardware, including Compound Specific Analyzer - Combustion Products (CSA-CP) resuppy kit, TVIS harness and accessories. The cargo was offloaded and used from per instructions in r/g 1202, 1203 and 1218.

The Soyuz TMA-7 (11S) vehicle launched successfully from the Baikonur Cosmodrome at 30 September 2005 (GMT 273), with Soyuz Commander Valeri Tokarev, ISS-12 Commander Bill McArthur and Soyuz Passenger Greg Olsen onboard. Ascent and deployment of solar arrays and antennas were nominal. All Soyuz Delta-Velocity (DV) burns were nominal, as was the approach to ISS. The Soyuz docked nominally on 3 October 2005 (GMT 276).

Final preparations began for 10S packing and the crew expressed concerns regarding the lack of available time to complete the activities (because a majority of the packing was scheduled on undocking day). Ground specialists and the crew agreed on a real-time change for Increment 12 Flight Engineer Valery Tokarev to assist Increment 11 Commander Sergei Krikalev. Disposal of U.S. trash items in the Soyuz was documented in SSCN 9581, and Increment 11 chit 3262. U.S. trash items were prepacked according to OCA Message 11- 1062, and packed in the Soyuz habitation module per radiogram 1411. U.S. return cargo items were documented in NASA Fax OC8-05-198 and Increment 11 chit 3337. The cargo items were prepacked according to OCA Message 11-1063B and packed in the Soyuz descent compartment per radiogram 1433. At the 11S General Designers Review (GDR), it was reported the reserve battery voltage for 10S was showing lower than normal open circuit voltage. The backup battery was reading 27.68 volts and the prime battery had a nominal charge of 31.5 volts. The 10S Primary Battery and back-up battery were charged per nominal procedures during the Joint 10S/11S Mission. These batteries were previously charged following 10S docking and after the 10S relocation to the FGB nadir port. MCC-M reported that the backup battery had sufficient energy to support re-entry loads and no procedural changes are required for Expedition 11 crew return. The Soyuz TMA-216 (10S) performed a nominal (manual) undocking from the ISS with the issuance of the undocking command at approximately 10 October 2005 (GMT 283/21:46) and physical separation at approximately (GMT 281/21:49). The separation command initiation and physical separation were approximately 4 minutes later than originally planned due to discussions on the Descent Module pressure integrity. It was noted by Sergei Krikalev and the Russian Mission Control that the pressure in the Habitation Module (ÁÎ) was holding steady; however the pressure in the Descent Module (ÑÀ) was slowly decreasing. Subsequent evaluation determined that the pressure decrease was primarily driven by the crew's consumption of the Descent Module Oxygen (O_2) and the removal of CO_2 by the Soyuz CO_2 scrubber system. Prior to this, two other small issues were found and resolved. The first issue occurred during the leak check between the

Habitation Module and the Descent Module. Sergei Krikalev noted and audible leak during the leak check and isolated it to the pressure equalization valve between the modules. After cycling the equalization valve the leak was eliminated and the leak check was successfully completed. The second issue occurred during the pressure leak check of the crews SOKOL suits. It was noted that there was no oxygen flow to the suits. The crew re-initialized the leak check, cycled the Soyuz O_2 valve and successful O_2 flow was initiated with the suit. The de-orbit burn was nominally performed with a delta velocity of 115.2 meters per second. Just prior to separation of the modules, communication with the vehicle was lost. Following this the modules separated with no issues, atmospheric entry was nominal, and the parachutes were deployed with no issues. Shortly after parachute deploy the Russian Search and Rescue (SAR) forces were able to contact the Soyuz crew and confirm that all systems were performing nominally and that the crew was in good condition. Touchdown of the vehicle occurred at approximately 11 October 2005 (GMT 284/01:09) in Kazakhstan ending a 177 day Increment for the Expedition 11 crew. Per the SAR forces the vehicle landed on its side and a SAR helicopter landed within 8 minutes following the landing and reported approximately 10 minutes later that the crew was in good condition and extraction was underway.

Increment 11 was executed (April 2005 to October 2005) during the U.S. prime hurricane season. Several hurricanes in the 2005 season directly affected ISS ground operations. On Monday, 29 August 2005 following hurricane Katrina, a category 4 hurricane that affected the Gulf Coast and Louisiana, the Marshall Space Flight Center (MSFC) reported a temporary drop of the T1 communications line (voice only) between JSC and Huntsville (HSV). Goddard Space Flight Center (GSFC), MSFC and JSC Ground Controllers established a re-route to alleviate further dropouts. MSFC was temporarily without voice and data during the re-route activity. In addition, damage was inflicted on the Michoud Assembly Facility (MAF) near New Orleans where the Space Shuttle external tanks are processed. On 20 September 2005, in preparation for the expected arrival of Hurricane Rita to the Houston area, control of the United States On-orbit Segment (USOS) was transferred from MCC-H to the Backup Control Center (BCC) in the Houston Support Group (HSG) room in MCC-M prior to the closure of MCC-H and JSC on Wednesday, 21 September 2005 (GMT 264). Additionally, a small team of NASA Flight Directors and Operations Specialists served as the Backup Advisory Team (BAT) in Round Rock, TX. A separate team was dispatched to the Goddard Space Flight Center to manage communications coverage with NASA Tracking and Data Relay Satellites (TDRS) and the ISS. All activities went very well during the period of BCC operations until handover from HSG personnel to MCC-H was completed nominally on Monday, 26 September 2005 and JSC reopened on Tuesday 27 September 2005.

On 11 August 2005 (GMT 223) the BVK-1 vacuum valve on the Vozduhk (Russian Carbon Dioxide Removal System) failed causing the system to shut down. This valve had recently been replaced by the crew on 11 July 2005 (GMT 192). The U.S. Lab Carbon Dioxide Removal Assembly (CDRA) was activated and began CO_2 scrubbing until a diagnostic could be completed on the system. On 19 August 2005 (GMT 231) the valve package #1 (___) in lane 2 was replaced by the crew. The system was activated in manual mode 5 (and later transitioned to Automatic mode), with the successful reactivation of the Vozdukh, the CDRA was turned off.

On 18 August 2005 (GMT 230) the Remote Power Controller Modules (RPCM) in the Node 7 tripped, removing power to one of two Video Port 12 Wireless Video System (WVS) External Transceiver Assembly (WETA) heater strings. Per the Flight Rules, the camera was powered on for temperature management. Seven hours later, the RPCM that houses RPC 07 experienced a power-on reset, which removed power from N1-1 Multiplexer/Demultiplexer (MDM). The software response re-powered the N1-1 MDM and the state of these computers was back to the nominal configuration. The remaining loads on the RPCM were added back as necessary by the ground controllers. The downlink data indicates the RPCM may have experienced a hybrid field effect transistors (FET) failure. There were no impacts to the EVA. Additionally, following the reboot of the N1-1 MDM, the Lab Mass Constituents Analyzer (MCA) Sample Delivery System (SDS) Fault Detection Isolation and Recovery (FDIR) indicated a failure of the SDS valves. Telemetry indicated that the MCA continued to perform nominally and the sample location switched between the U.S. Lab, Airlock and Node as expected. This is similar to an event from 2002, and a procedure is available to clear the fault indication. On 20 September 2005 (GMT 263) the crew replaced a Node 1 Remote Power Control Module using a spare delivered on Flight LF1, thereby restoring power to the General Luminaire Assembly (GLA) NOD1OS4 on RPC 1. This RPC tripped on 22 August (GMT 234) and the RPCM experienced a Power-On-Reset (POR) shortly thereafter, indicating a Hybrid Field Effect Transistor (FET) failure. All RPCM N13B-C loads including RPC 1 were then functional. The crew subsequently activated the starboard lighting in the Node, bringing the lighting in the USOS to 100% functionality for the first time since 29 July 2003.

On 26 August 2005 (GMT 238) MCC-H reset all the US attitude filters using Russian Segment data and inhibited Global Positioning System (GPS) attitude data updates from affecting the Motion Control System (MCS), to preclude the possibility of the control system having to react to an instantaneous 4.5 degrees attitude error, which could result if GPS 2 experiencing the same problem. The USOS Space Integrated Global Positioning System (GPS)/Inertial Navigation System (INS)(SIGI) had experienced problems during the first operation of the R2 Firmware in the XPOP attitude. GPS Antenna Assembly #1 provided an incorrect attitude update that caused string 1 to diverge from string 2 by approximately 4.5 degrees, the largest ever seen on the GPS R2 firmware.

On 20 August 2005 (GMT 232) the Trace Contaminant Control System (TCCS) failed off when the flow rate through the blower dropped below the FDIR limit. Similar signatures were seen during the LF1 joint mission when the TCCS had previously failed. The TCCS was turned off and the trace contaminants were removed by the SM Harmful Contaminates Filter. The Avionics team recommended a Software Pre-Positioned Load (PPL) that would inhibit the TCCS Fault Detection Isolation and Recovery (FDIR) in low-flow conditions.

On 15 September 2005 (GMT 258) the crew successfully installed a new Liquid Unit (__) #8, in the Elektron that was delivered on 19 Progress (P). The Liquid Unit of the Elektron had failed during the joint 9S/10S mission and oxygen from the Progress vehicles was repressurized into the ISS atmosphere. Final activation of the Elektron was completed on 19 September 2005 (GMT 262) to optimize the required Russian Ground Site and satellite coverage opportunities. Following activation the Liquid unit's primary micro-pump went offline and the system transitioned to the back-up pump. The Elektron remained operational on the backup pump and was providing oxygen for the ISS atmosphere.

On 8 September 2005 (GMT 251) the crew completed a two day removal and replacement of the TVIS treadmill assembly which was removed from its "pit" in the SM before being disassembled and components replaced. The activities concluded with a successful activation and checkout, with the crew noting one occurrence of a gyroscope under speed event. The Flight Engineer reported that the new Treadmill "…feels just like the old TVIS to me. Maybe a bit quieter."

On 7 September 2005 (GMT 250) The crew confirmed, during the evening conference, that the flexible duct in either the FGB or the SM collapsed causing a reduced flow rate measured by telemetry during an oxygen repress from the Progress vehicle. In the weeks following Flight LF1, ground specialists monitored various sources of data which indicated the potential for a reduced IMV flow between the Russian Segment and the United States On-orbit Segment (USOS). Ground controllers recommended cleaning the IMV fans in the Node and U.S. Laboratory as they suspected lint and dust had accumulated over time and inhibited the air flow. Due to the degraded IMV air flow, the Lab CCAA began collecting condensate. Ground controllers decided to keep the CCAA running on the wet cycle and collecting condensate, in order to reduce the frequency of the wet/dry cycling. On 23 September 2005 (GMT 266), the crew performed the Node 1 Intermodule Ventilation (IMV) cleaning and found minor Foreign Object Debris (FOD) in the fan inlet. Later ground teams reported that the cleaning did not improve the air flow significantly. The CCAA separator continued to collect water until the IMV fan cleaning was performed on 28 September 2005 (GMT 271) when the crew removed a substantial layer of lint dust on the fan grille and subsequently obtained Velocicalc readings which confirmed that nominal intermodular ventilation were restored in the USOS.

The following table summarizes the completion status of the tasks assigned to Stage LF1 through the IDRD and real time processes:

Stage LF1	Total	Completed	Withdrawn	Deferred	Not Completed
IDRD	72	25	27#	20^	0
CSRD	47	15	17	12	3
Added Real Time	9	8	0	1	0
TOTALS	**128**	**48**	**44**	**33**	**3**

NOTES:

14 of the withdrawn requirements were moved to 10S Stage during real-time and completed due to the slip in Flight LF1.

^ 17 of the deferred requirements from the Pre Mission IDRD are associated with Flight ULF1.1.

A. Tasks Completed in Addition to the IDRD Requirements (23).

A total of 48 requirements were completed in the Stage LF1 including 23 that were added during the CSRD review or real time. Fourteen completed requirements were clarifications to existing tasks requirements and are listed at the end of this section but are not included in the final count above or discussed in detail below.

1. Install Quick Disconnect (QD) pressure caps on the spare Pump Package Assembly (PPA) S/N D0009.

   This PPA was flown on 11 Progress as an onboard spare and the original caps were removed and placed on another failed unit that was returned on LF1. On GMT 221, the crew completed the final stowage configuration of the PPA by installing three QD pressure caps. The caps prevented the sealing surfaces from being contaminated with Foreign Object Debris (FOD) and precluded fluid from leaking out.

2. Matroyska hardware close-out operations.

   Matryoshka is an International experiment designed to measure crew exposure to ionizing radiation in the Extravehicular Activity (EVA) environment using a phantom torso. This torso was brought inside by the crew during the Russian EVA #14 on GMT 230. The additional requirement to add preparations and close out for returning the hardware was added to the LF1 CSRD during review of the CSRD Chit 3021. On GMT 257, the crew completed the Matryoshka experiment hardware teardown and pre-pack for return to the ground and downlinked video of the disassembly activities.

3. RS EVA #14 replace CKK #3-SM with CKK #5 SM.

   Per IP Russia request, during review of the LF1 CSRD Chit 3021, this EVA payload activity was added to the EVA timeline and approved at the EVA readiness review. On GMT 230, during the RS EVA #14 it was completed.

4. RS EVA #14 relocate CKK #4-SM on handrail 2745 to its nominal location.

   Per IP Russia request of during review of the LF1 CSRD Chit 3021, this EVA payload activity was added to the EVA timeline and approved at the EVA readiness review. On GMT 230, during the RS EVA #14, this activity was completed.

5. Perform internal network card activation on RS A31p Station Support Computers (SSC).

   The Crew reported failures of the PC10 RJ-45 connectors and one of the 3-com Network Interface Card (NIC) dongles on the RS SSC's. IP Russia requested to migrate the SSC's in the RS to the internal RJ-45 port on the back of the laptop. On GMT 270, the crew completed the procedure that configured an A31p SSC Client in the Service Module using the RJ-45 cable directly connected to the RJ-45 port.

6. Remove, replace and dispose of Lamp Housing Assemblies (LHA).

   On GMT 246 and 261 the crew restored optimal lighting conditions to the US segment by replacing a failed LHAs in the LAB. All the lights in the US segment were functioning except in the Node. This node light was not functioning due to a failed RPC which would be scheduled for future repair and replacement.

7. Remove and stow ISS Wireless Instrumentation System (IWIS) battery from Remote Sensing Unit (RSU) 1029.

   RSU 1029 was a broken unit and is to be manifested for return on a future Shuttle flight so it can be repaired on the ground and reflown. The battery pack attached to RSU 1029 did not need ground repair and was removed and left on-orbit for use in another RSU for IWIS data takes. In addition, there is a very limited number of IWIS battery packs on-orbit. On GMT 254, the crew completed this task off the task list and noted that there was no corrosion on the battery pack.

8. Perform SSC Service Pack update for Portable Computer System (PCS) - Data Acquisition System (DAS).

   The SSC A31p laptop Client Service Pack 02 installation updated the PCS recon files on the SSC clients. The previous recon files on the A31p Client load did not match the PCS load version following the PCS A31p R9 transition. If these files had not been updated, some of the situational awareness applications installed on the SSC Client like Bird's Eye View and DOUG would no longer function when used in a configuration connected to the A31p. This activity was completed on GMT 273.

9. Perform Intermodule Ventilation (IMV) duct cleaning in the Node 1.

   Data from IMV measurements, oxygen repress analysis, and recent condensate collection indicated that the IMV flow from the Russian segment to the US segment was low (25% to 30% of normal flow). This had impacts to the carbon dioxide removal, trace contaminant removal, and water collection and transfer. The water collection imposes a risk of failure to the Common Cabin Air Assembly (CCAA) water separator. Low Intermodule Ventilation (IMV) flow may possibly shorten the life two inline IMV fans. On GMT 266, the Crew performed the Node 1 IMV cleaning. Although the crew found a minor Foreign Object Debris (FOD) in the fan inlet and removed it, ground teams reported that the cleaning did not significantly improve the air flow.

10. Perform IMV duct cleaning in the LAB.

    On GMT 271, the crew removed a substantial layer of lint dust on the fan grille and subsequently obtained Velocicalc readings which confirmed that nominal intermodular ventilation was restored in the USOS. The crew informed MCC-H flight controllers that this task was relatively simple and would only take approximately 30 to 45 minutes to complete. A preliminary assessment of *historical data indicated that a significant reduction in IMV flow may have occurred as a result of the Flight LF1 mission.*

11. Perform RPCM Remove and Replace (R&R) N13BC (Node LHA).

    On GMT 263, the Flight Engineer successfully replaced a Node 1 Remote Power Control Module using a spare delivered on Flight LF1, thereby restoring power to the General Luminaire Assembly (GLA) NOD1OS4 on RPC 1. This RPC tripped on GMT 234, and the RPCM experienced a Power-On-Reset (POR) shortly thereafter, indicating a Hybrid Field Effect Transistor (FET) failure. All RPCM N13B-C loads including RPC 1 were then functional. The crew subsequently activated the starboard lighting in the Node, bringing the lighting in the USOS to 100% functionality for the first time since July 29, 2003. Approximately 50 food containers had to be temporarily relocated to enable access to the RPCM.

12. Transfer STS-114 Wireless Video System (WVS) files from 760XD laptop to file server to enable downlink.

    On GMT 262, the Crew completed the file transfer and downlink of the WVS data, to recover LF-1 flight data from a laptop that was transferred to ISS. Later specialists reported that the expected telemetry files were not present.

13. Perform inspection and labeling of IVA wrenches used during RS EVA 14.

    On GMT 254 the Crew completed this activity and reported that only the 14 mm wrench was taken to vacuum as the 12 mm was not needed. There was no visible damage on 14 mm wrench.

14. Perform Floating Potential Probe (FPP) imagery using SM Window 13.

    The Floating Potential Probe (FPP) was installed on the Zenith face of the P6 Truss, and was known to have negative structural margins. NASA requested IP Russia concurrence to obtain imagery of the FPP, on a non-interference basis, from SM Window 13, until the FPP removal during an upcoming USOS EVA. On GMT 265 the crew completed this task and downlinked images.

15. Metal Oxide (METOX) regeneration.

    On GMT 272, the crew performed the Metal Oxide (METOX) regeneration in preparation for Increment 12 USOS EVA 4. The METOX canisters are designed to remove the Carbon Dioxide from within the EMU Suits during EVA activities. In order to maintain the airlock temperature below Flight Rule limits, the MCC-H Flight Control team lowered the Internal Thermal Control System (ITCS) LTL temperature to control the airlock atmosphere. As a planned part of this METOX regeneration procedure, the crew took Velocicalc readings due to anticipated Airlock temperature increases. No immediate action was required based on these readings, and systems experts are currently evaluating the Velocicalc readings and Airlock telemetry.

16. Perform Medical Equipment Computer (MEC) recovery.

    On GMT 236, the Flight Engineer successfully recovered the MEC using the 760XD laptop taken from Express Rack (ER) #3. A fully functioning MEC was required to successfully activate the Treadmill after it was refurbished in September.

17. Perform Pressurized Mating Adapter (PMA)3 leak check.

    As a follow-up to the PMA3 ingress a second leak check of the PMA3 was completed on GMT 234 and the reading was nominal. No further action was required.

18. Perform repair of leaking CWC delivered on LF1.

    On GMT 237, the crew applied duct seal to all 5 leaking CWCs that were filled during the LF1 flight. The procedure was executed nominally, although the crew was not certain the repair was effective.

19. Perform Elektron repair and activation.

    On GMT 258, a new Liquid Unit, (__) #8 was installed in the Elektron. The activation of the system was completed on GMT 262 and the Elektron was functioning on the back up pump.

20. Verify and inspect for missing METOX barcode.

    On GMT 240, the crew searched the METOX regenerator for a missing METOX canister barcode. The Bar code label was not found although the crew noted that there was a red, spotted residue on the canister and it appeared that the glue had dried on the canister and thus the label had fallen off.

21. Remove and replace Baseplate Ballast Assemblies.

    On GMT 239, the crew completed the removal and replacement of a BBA in the U.S. Lab and noted part numbers for the ground controllers to update IMS and the on-orbit lighting information.

The following completed 2 requirements were added to the LF1 Stage CSRD from the Russian response to the CSRD as new RS EVA #14 requirements.

22. Perform Russian Segment EVA #14, replace [CKK] #3-SM with [CKK] #5-SM. (EVA)
23. Perform Russian Segment EVA #14, retrieve Biorisk container #1. (EVA)

During review of the LF1 CSRD Chit, the following 14 completed requirements were included in the LF1 Stage CSRD as clarifications to existing requirements and are not discussed in further detail or added to the final requirements count.

a. Perform prepack and preparations for departure of 10 Soyuz TMA.
b. Kurs system teardown.
c. Perform preparation for Flight 11 Soyuz TMA arrival.

d. Prepare DC-1 for docking.

e. Perform high priority payload operations of final operations on MPAC/SEED hardware.

f. Perform high priority payload operations of FOOT session #3.

g. Perform high priority payload operation of Renal Stone #3.

h. Perform high priority payload of HRF Gasmap Health checkout.

i. Perform high priority payload Journals session.

j. Perform high priority Russian payloads. (Nuerocog, ETD, Rokviss, CBC, Farma, Biodegradation, Relakstsiya, Profilaktica, Pilot)

k. Remaining high priority payloads HRF Rack 2 checkout.

l. Remaining high priority payloads HRF Rack 1 Personal Computer (PC) BIOS configuration setup.

m. Remaining high priority payloads HRF Rack 2 refrigerated centrifuge space removal.

n. Remaining high priority payloads Russian Plants-2, Statakonia, Glikoproteid, Vaccina-K, Mimatic-K, Crystallizor.

B. Tasks Withdrawn including IDRD tasks (44).

There were a total of 44 tasks withdrawn during this Stage. Eighteen of the 44 withdrawn tasks were included in the Pre-Mission IDRD Stage LF1 but were officially withdrawn to be added to the CSRD Stage 10S during the replan of the stage after the delay of Flight LF1.

The following tasks were included in the Pre-Mission IDRD Stage LF1 but were not completed and withdrawn due to low priority and crew time availability.

1. Reboost ISS with Progress as required.
2. Perform low priority USOS/Russian medical operations.
3. Perform low priority PAO activities.
4. Perform remaining USOS/Russian payload operations.

The following were tasks in the Pre-Mission IDRD Stage LF1 and withdrawn.

5. Perform SDTO 13006-U/R, Forcing Function Definition and Microgravity Allocation of Crew Resistive Exercise for nominal Force Loader [HC]-1 Exercise Session. [Ground] [IVA] [Imagery] (IWIS required for either LF1 or ULF1.1 stage.)

   This requirement was withdrawn because of limited life concerns with the IWIS batteries. ISS MER has determined that there are approximately enough battery power for several more data takes. The remaining IWIS data takes are scheduled for Flight 12A and/or reserved for any unplanned contingency.

6. Perform SDTO 15003-U Microgravity Environment Definition for nominal SM ergometer Exercise session. [Ground] [IVA] [Imagery] (IWIS required for either LF1 or ULF1.1 stage.)

   This requirement was withdrawn because of limited life concerns with the IWIS batteries. ISS MER has determined that there are approximately enough battery power for several more data takes. The remaining IWIS data takes are scheduled for Flight 12A and/or any unplanned contingency.

The following requirements were added to the Stage LF1 via the CSRD and later withdrawn.

7. Prepare location and install cargo containers behind FGB panel 221.

   This requirement was rolled over from the 10S Stage and later deleted per Russian input.

8. Install new locks on SM compartments.

   This requirement was rolled over from the 10S Stage and later deleted per Russian input.

9. Perform an inventory of the crew hygiene consumables.

   This task was rolled over from the 10S Stage and was not completed and withdrawn per Russian inputs.

10. Perform reloading (upgrade) of the hard drive (S/N 6136) for the version 7.02

    This requirement was a roll over from Stage 10S and withdrawn per the Russian inputs.

11. Apply Yellow Tag to the Pistol Grip Tool (PGT) programming cable. (Inc 9/2133)

    The PGT tool was returned to the ground on Flight LF1 and this task was withdrawn from the LF1 Stage as it was no longer required.

The following 14 outfitting tasks were included in the IDRD Revision A Stage ULF1.1 and then moved to the Stage10S CSRD Revision A, then deferred into the LF1 Stage and then withdrawn per Russian inputs due to low priority and crew time availability.

12. Install protective cover on Vozdukh system pump and install in the atmospheric purification unit.
13. Install isolation mounts and air ducts with acoustic shields on fans ___1, ___2. Replace covers on the flange of fan ____.
14. Install mufflers on the SM ventilation system: Install mufflers on fans ___10, ___11 and ____1 in working compartment 2.
15. Install mufflers on fans ___1, ___2 in working compartment 2.

16. Assemble the control circuit for fans ___1, ___2 using the command signal distribution unit (____).
17. Install the isolation mount for fan ____1.
18. Install isolation mounts for fans ___1, ___3, ___1, ___2.
19. Install soundproof cover on Vozdukh system microcompressor.
20. Perform routine checks of __-103_ camera.
21. Perform speed regulating unit (_P__) installation onto cabin fans in SM.
22. Perform inspection of SM body shell condition near TVIS.
23. Change the fuse in the __12_ cap on ____ instrument.
24. Perform the following Russian resupply/outfitting for ATV tasks: Replace the color TV display (__-_) on the Simvol-Ts system liquid crystal display (__-__) to increase image quality while displaying the rendezvous process. [IVA]
25. Perform the following Russian resupply/outfitting for ATV tasks: Assemble the electric circuit and perform a test activation of the atmosphere purification filter A2 with the noise suppression filter (to support ATV operations).

The following 18 IDRD tasks were included in either the IDRD Revision A or the IDRD Revision B for Stage LF1 and withdrawn from the LF1 Stage and added to (and completed in) the 10S Stage.

26. Complete 17 Progress trash loading and undock.
27. Dock 18 Progress M to SM aft port and transfer cargo.
28. Assemble equipment to set up the proximity communications equipment [____] via the ATV - ISS RS radio channel: Install the PCE [____] monoblock.
29. Install the ATV control panel (__).
30. Install and connect the antenna switch control unit (__ __).
31. Check the standing wave ratio [___] of the PCE antenna feeder unit (___) feed channels.
32. Test for PCE control command passage.
33. PCE Test 1, check of the PCE system, PCE (___), and ATV __ commands.
34. Test of the PCE transmitter (___) carrier frequency.
35. Disconnection of the onboard cable network (___) from the PCE, ATV __, and __ __.
36. Disassembly of the PCE, ATV __, and __ __.
37. Perform SDTO 13004-U, Russian vehicle docking /undocking load on ISS for 18P docking.
38. Perform SDTO 13004-U, Russian Vehicle Docking/Undocking Loads on ISS for 17P undocking.

39. Perform SDTO 13006- U/R, Forcing Function Definition and Microgravity Allocation of Crew Resistive Exercise for nominal IRED Exercise Session. [Ground] [IVA] [Imagery] (IWIS required for either LF1 or ULF1.1 stage.)

40. Install the experimental set of noise reduction equipment for the cabins:

    Install mufflers on fans ___5, ___6 in working compartment 1 [__]1, and ___8, ___9, ___10, ___11, ___12, ____1 in working compartment 2 [__]2.

41. Install mufflers in the cabin air duct of both cabins.

42. Install mufflers for fans __1__ and __2__.

43. Install the signal recovery device ___871 to improve the quality of SM telephone communications.

The following task was added to Stage LF1 in the IDRD Revision B but had been previously added to Stage 10S in the CSRD and withdrawn.

44. Perform SDTO 13004-U Russian vehicle docking/undocking loads for 10S relocation docking to the FGB nadir port. [Ground]

C. Tasks Deferred (33).

Of the 33 deferred tasks 17 requirements were included in the Pre-Mission IDRD Stage LF1 and were associated with Flight ULF1.1. These tasks were then deferred to Increment 12 when the ULF1.1 Flight was delayed and subsequently removed from Increment 11 and will not be discussed in detail.

1. Perform survey of S1 and P1 Heat Rejection System (HRS) radiators from RS windows (to be performed once, 6 months after completion during Increment 10).

   This imagery requirement required rotation of the S1 and P1 Thermal Radiator Rotary Joints (TRRJ), however the S1 TRRJ could not be rotated due to a failed S1 Rotary Joint Motor Controller (RJMC). Because there was no spare RJMC onboard during Increment 11, and due to other restrictions imposed by this imagery requirement, this survey was deferred.

2. Perform SDTO 25006-U Payload Holographic Test.

   Due to crew time availability and low priority this task could not be completed and was deferred to Increment 12.

3. Perform yellow tagging of the Shuttle hardware (to be scheduled in conjunction with first activity access of each bag.

   This requirement was not completed as the crew stowed the Shuttle hardware bags into permanent locations before the ground was able to change the stowage message with the yellow tag information. This was deferred to Increment 12.

4. Relocate Strela adaptor from the FGB to the PMA3 Flight Releasable Grapple Fixture (FRGF).

This requirement was not performed due to a lack of available time at the end of the EVA. This relocation is required prior to Flight 12A.1 when the final set of Service Module Debris Panels (SMDP) will be delivered and stowed on the PMA3 and was deferred to be completed on a future RS EVA.

5. Perform SSC file server reload with Increment 12 load.

   This requirement was added via Requirement Request Form 2005-06-009 and was added with the crew time available disclaimer. Increment 11 crew did not have available time to reload the SSC and SSC file server with the Increment 12 load delivered on LF1. This requirement was not completed was deferred to Increment 12.

6. Perform Volatile Organic Analyzer (VOA) repair and activation.

   In July 2003, the thermal fuses in the VOA burned out and a repair and replacement was required before the VOA could provide real-time atmospheric monitoring. Because this repair required a significant amount of crew time the IMMT Chair decided that this activity would not be scheduled and it was deferred to Increment 12.

7. Perform Carbon Dioxide Removal Assembly (CDRA) sock filter installation and checkout for Bed 201.

   This requirement was deferred to Increment 12 and was to be completed in conjunction with the CDRA blower/pre-cooler repair and replacement scheduled for December 2005.

8. Pull a TV cable across FGB for TV transmission via Ku-Band test.

   This Russian task was not completed due to low priority and available crew time and was deferred to Increment 12.

9. RS light fixtures audit.

   This Russian task was not completed due to low priority and available crew time and was deferred to Increment 12.

10. Upgrade Ops LAN A31p -301 to -302 configuration.

    This requirement was withdrawn as it was determined by flight controllers that this activity was not needed for the current A31p onboard as it was already above it's minimum predicted failure on-orbit.

11. Perform RPCM R&R N1RS1 A (WETA Heater String).

    This requirement was scheduled for 21 September 2005 (GMT 264) but was aborted when the MCC-H Flight Control Team was evacuated due to JSC closure because of hurricane Rita. This was deferred to Increment 12.

The following US requirements were deferred to Increment 12 and not accomplished due to low priority and crew time availability.

12. Perform two operations of the SSRMS sticky grapple fixture release test.

13. Perform LEE A Prime String FMS Saturation characterization.
14. Perform SSRMS thermal blanket imagery.
15. Remove IWIS sensor from behind TESS rack.
16. Perform remaining USOS/Russian payload operations, install collars on MISSE PEC 3 and 4 handrail clamps.

The following tasks were deferred to Increment 12 due to the launch slip of Flight ULF1.1 and are associated with the ULF1.1 flight.

17. Perform imagery of Orbiter TPS during rendezvous Rbar Pitch Maneuver (RPM) and downlink data.
18. MSS prelaunch checkout (ULF1.1 Preparation).
19. Install and checkout CBCS (ULF1.1 Preparation).
20. Prepack for ULF1.1 (ULF1.1 Preparation).
21. Destow ZSR at LAB 1O4 (ULF1.1 Preparation).
22. Prepare Lab Starboard Common Cabin Air Assembly (CCAA) Heat Exchanger (H/X) for removal (ULF1.1 Preparation).
23. Clear PMA 2 and NODE1 D2 of stowage (ULF1.1 Preparation).
24. Destow 4 lockers in EXPRESS Rack 3 (ULF1.1 Preparation).
25. Destow 4 lockers in EXPRESS Rack 5 (ULF1.1 Preparation).
26. EVA preparation Airlock unstow (ULF1.1 Preparation).
27. EVA Tool Configuration (ULF1.1 Preparation).
28. SAFER checkout (ULF1.1 Preparation).
29. Perform Joint Airlock cooling loop/EMU scrubbing and re-iodinization (ULF1.1 Preparation).
30. Perform Recharge Oxygen Orifice Bypass Assembly (ROOBA) installation and leak check (ULF1.1 Preparation).
31. Perform Internal Thermal Cooling Loop (ITCS) fluid sampling not earlier than ULF1.1 launch if not in the Flight ULF1.1 timeline.
32. Perform NOD1 nadir Common Berthing Mechanism (CBM) checkout.
33. Perform SDTO 13005-U, ISS Structural Life Validation and Extension for ULF1.1 docking.

D. Tasks Not Completed (3).

1. Perform EVA reconfiguration and Russian stowage removal from USOS.

   On GMT 249, the Flight Engineer spent approximately 4 hours cleaning up the stowed cargo in Node 1 and the Joint Airlock in preparation for Expedition 12 crew arrival. Stowage specialists in MCC-H provided some suggestions for final *stowage locations that were well received by the crew. The crew commented that the area was cleaned up, although the Russian stowage removal was not completed.*

2. SM panel 425 fixture items removal.

   On GMT 263, the crew began work on repairing the cable bundle on the Vozdukh and the closeout of this panel. The Commander reported that no repair further repair was needed as the bundle was covered with gray tape.

3. Perform troubleshooting on A31p laptop displays.

   When the crew attempted to recover one of the failing laptops display problems they could not complete the activity since the procedures did not include a bulb light failure procedure.

APPENDIX A

ACRONYMS AND ABBREVIATIONS

APPENDIX A - ACRONYMS AND ABBREVIATIONS

___	(Russian) Service Module Toilet
ÁÎ	(Russian) Soyuz Habitation Module
BMP	(Russian) Micropurification Unit
__	(Russian) Water Tank
___-__	(Russian) Signal Switch Router
____	(Russian) SM Onboard Telemetry Measurement System
___	(Russian) Onboard Measurement System
___	(Russian) Air Conditioning System
___-_	(Russian) SM Condensate Water Processor
EDV	(Russian) Water Collection Device
___	(Russian) Water Container
HC-1	(Russian) Force Loader
___ LIV	(Russian) Video System
____-4_	(Russian) Real-Time Harmful Contaminant Gas Analyzer
___-1_	(Russian) Gas Masks
KHT	(Russian) Hardware
KURS	(Russian) Automatic Rendezvous and Docking System
__ -103U	(Russian) TV camera assembly
MOK	(Russian) Condensate Removal Line
ÑÀ	(Russian) Soyuz Descent Module
ODNT	(Russian) Lower Body Negative Pressure
ORLAN	(Russian) EVA Suit
___	(Russian) Transfer Compartment
PIRS	(Russian) Docking Compartment
____	(Russian) Manual Rendezvous and Docking System
Vozdukh	(Russian) Carbon Dioxide Removal System
VB-3	(Russian) Russian Cycle Ergometer
___	(Russian) Transfer Compartment
___	(Russian) Air Decontamination Assembly
__1_	(Russian) Magnetic Data Recording Device
ABIT	Active Built In Test
ACU	Arm Control Unit
ADUM	Advanced Diagnostic Ultrasound in Microgravity
A/L	Airlock
amps	amperes
APFR	Articulating Portable Foot Restraint
AR	Anomaly Report
ARCU	American to Russian (Power) Converter Unit
ARIS	Active Rack Isolation System
ATV	Automated Transfer Vehicle
BAT	Backup Advisory Team
BBA	Baseplate Ballast Assembly
BCC	Backup Control Center

BGA	Beta Gimbal Assembly
BIOS	Basic Input/Output System
BME	Biomedical Engineer
C&C	Command and Control
CBCS	Centerline Berthing Camera System
CBM	Common Berthing Mechanism
CCAA	Common Cabin Air Assembly
CD	Compact Disc
CdO	Cadmium Oxide
CDR	Commander
CDRA	Carbon Dioxide Removal Assembly
CDT	Central Daylight Time
CEO	Crew Earth Observation
CET	Common Environments Team
CETA	Crew and Equipment Translation Aid
CEVIS	Cycle Ergometer with Vibration Isolation System
CHeCs	Crew Health Care System
CMG	Control Moment Gyroscope
CMOS	Complementary Metal-Oxide Semiconductor
CO_2	Carbon Dioxide
CPA	Controller Panel Assembly
CPSD	Crew Personal Support Disk
CSA	Canadian Space Agency
CSA-CP	Compound Specific Analyzer - Combustion Products
CSCS	Contingency Shuttle Crew Support
CSRD	Current Stage Requirements Document
CTB	Cargo Transfer Bag
CTBE	Cargo Transfer Bag Equivalent
CW	Carrier Wave
CWC	Contingency Water Container
DAS	Data Acquisition System
DBCL	Diagnostic Buffer Collection List
DC	Docking Compartment
DCS	Digital Camera System
DDCU	Direct Current to Direct Current Converter Unit
DOUG	Dynamic Onboard Ubiquitous Graphics
DQA	Document Quality Assurance
DTO	Detailed Test Objective
DV	Delta-Velocity
DVD	Digital Video Disk
EarthKAM	Earth Knowledge Acquired by Middle School
ECC	Error Correction Code
ECG	Electrocardiogram
ECLSS	Environmental Control and Life Support System

EEG	Electroencephalography
EEPROM	Erasable Programmable Read Only Memory
EMCS	European Modular Cultivation System
EMU	Extravehicular Mobility Unit
EPO	Educational Payload Operations
EPS	Electrical Power System
ER	EXPRESS Rack
ESA	European Space Agency
ESP	External Stowage Platform
ESPAD	External Stowage Platform Attach Device
ET	External Tank
ETD	Eye Tracking Device
ETSD	EVA Tool Stowage Device
ETVCG	External Television Camera Group
EV	Extravehicular
EVA	Extravehicular Activity
EV-CPDS	Extravehicular - Charged Particle Directional Spectrometer
EXPRESS	EXpedite the PRocessing of Experiments to the Space Station
FDIR	Fault Detection Isolation and Recovery
FE	Flight Engineer
FET	Field Effect Transistor
FGB	Functional Cargo Block
FHRC	Flex Hose Rotary Coupler
FMS	Force Moment Sensor
FMVM	Fluid Merging Viscosity Measurement
FOD	Foreign Object Debris
FOOT	Foot Reaction Forces During Space Flight
FPP	Floating Potential Probe
FRGF	Flight Releasable Grapple Fixture
GASMAP	Gas Analysis System for Metabolic Analysis of Physiology
GCF	Grenada Crystallization Box
GDR	General Designer's Review
GLA	General Luminaire Assembly
GMT	Greenwich Mean Time
GNC	Guidance, Navigation and Control
GPS	Global Positioning System
GSFC	Goddard Space Flight Center
Ha	Apogee Altitude
Have	Average Altitude
HEPA	High Efficiency Particle Air
HF	High Frequency
Hp	Perigee Altitude
HRF	Human Research Facility
HRS	Heat Rejection System

HRW	Heart Rate Watch
HSG	Houston Support Group
HSV	Huntsville
H/X	Heat Exchanger
IATCS	Internal Active Thermal Control System
IBM	International Business Machines
ICU	Interim Control Unit
IDRD	Increment Definition and Requirements Document
IEU	ISS EMU Umbilical
IFHX	Interface Heat Exchanger
IFM	In-Flight Maintenance
IM	Increment Manager
IMC	ISS Management Center
IMMT	ISS Mission Management Team
IMS	Inventory Management System
IMV	Intermodular Ventilation
Inc	Increment
INS	Inertial Navigation System
IP	International Partner
IRED	Interim Resistive Exercise Device
IRMA	ISS Risk Management Application
ISA	Internal Sampling Adapter
ISS	International Space Station
ITCS	Internal Thermal Control System
IUA	Interface Umbilical Assembly
IVA	Intravehicular Activity
IWIS	Internal Wireless Instrumentation System
JEDI	Joint Execute Package Development and Integration
JSC	Johnson Space Center
kg	kilogram
kg/cm^2	kilograms per square centimeter
km	kilometer
Ku-Band	15.250 to 17.250 Gigahertz
kW	kilowatt
L	Liter
L-	Launch Minus
Lab	Laboratory
LAB	Laboratory
LCC	Launch Commit Criteria
LEE	Latch End Effector
LH_2	Liquid Hydrogen
LHA	Lamp Housing Assembly
L&M	Logistics and Maintenance

LOS	Loss of Signal
LSO	Lightning and Sprites Observation
LSS	Life Support Systems
LTL	Low Temperature Loop
LTU	Load Transfer Unit
LVLH	Local Vertical Local Horizontal
m^3	Cubic Meters
MAF	Michoud Assembly Facility
MAMS	Microgravity Acceleration Measurement System
MAS	Maspalomas
MBS	Mobile Base System
MBSU	Main Bus Switching Unit
MCA	Major Constituent Analyzer
MCC	Mission Control Center
MCC-H	Mission Control Center - Houston
MCC-M	Mission Control Center - Moscow
MCS	Motion Control System
MDM	Multiplexer/Demultiplexer
MEC	Medical Equipment Computer
MELFI	Minus Eighty Degree Laboratory Freezer for ISS
MER	Mission Evaluation Room
METOX	Metal Oxide
MFMG	Miscible Fluids in Microgravity
min	minute
MIOCB	Mission Integration and Operations Control Board
MISSE	Materials International Space Station Experiment
MLC	Microgravity Sciences Glovebox (MSG) Laptop Computer
MLI	Multi-Layer Insulation
mm	millimeter
mmHg	millimeters of Mercury
MMT	Mission Management Team
MOD	Mission Operations Directorate
MPAC	Micro-Particles Capture
MPAC/SEED	Micro-Particles Capture/Space Environment Exposure Device
MPEV	Manual Pressure Equalization Valve
mph	mile per hour
MPLM	Multi-Purpose Logistics Module
MSFC	Marshall Space Flight Center
MSG	Microgravity Sciences Glovebox
MSS	Mobile Servicing System
MT	Mobile Transporter
MTL	Moderate Temperature Loop
N_2	Nitrogen
N/A	Not Applicable

NASA	National Aeronautics and Space Administration
NET	No Earlier Than
NIC	Network Interface Card
nmi	nautical mile
No.	Number
O_2	Oxygen
OBT	On-board Training
OCA	Orbital Communications Adapter
OCR	On-orbit Checkout Requirements
ODF	Operations Data File
ORU	Orbital Replacement Unit
OS	Operating System
P	Port
	Progress
PAO	Public Affairs Office
PBA	Portable Breathing Apparatus
PBIT	Passive Built-in Test
PC	Personal Computer
PCE	Proximity Communication Equipment
PCG-STES	Protein Crystal Growth - Single Thermal Enclosure System
PCMCIA	Portable Computer Memory Card International Adapter
PCS	Portable Computer System
PCU	Plasma Contactor Unit
PDGF	Power and Data Grapple Fixture
PEC	Passive Experiment Carrier
PEEK	Portable Electrical Equipment Kit
PEP	Portable Emergency Provision
PGSC	Payload General Support Computer
PGT	Pistol Grip Tool
PIER	Post Increment Evaluation Report
PMA	Pressurized Mating Adapter
POD	Payload Operations Director
POIC	Payload Operations Integration Center
POR	Power-On-Reset
PPA	Pump Package Assembly
PPL	Pre-Positioned Load
PPRV	Positive Pressure Relief Valve
PRACA	Problem Reporting and Corrective Action
psia	pounds per square inch absolute
PSR	Physical Science Research
QD	Quick Disconnect
RCC	Reinforced Carbon-Carbon
RED	Resistive Exercise Device

RF	Radio Frequency
RIC	Rack Interface Controller
RIP	Requirements Integration Panel
RJMC	Rotary Joint Motor Controller
ROOBA	Recharge Oxygen Orifice Bypass Assembly
ROS	Russian On-Orbit Segment
Roscosmos	Russian Aviation and Space Agency
RPC	Remote Power Controller
RPCM	Remote Power Controller Module
RPM	Rbar Pitch Maneuver
R&R	Remove and Replace
RS	Russian Segment
RSC-E	Rocket Space Corporation - Energia
RSP	Respiratory Support Pack
RSU	Remote Sensor Unit
RT	Remote Terminal
RTF	Return to Flight
RWS	Robotic Workstation
S	Soyuz
S1	Starboard 1
SAFER	Simplified Aid for EVA Rescue
SAMS	Space Acceleration Measurement System
SAR	Search and Rescue
SAW	Solar Array Wing
S-Band	1550 to 5200 Megahertz
SBS	Space Beans for Students
SDS	Sample Delivery System
SDTO	Station Development Test Objective
SED	SEEDLINGS
SEED	Space Environment Exposure Device
SEM	Space Experiment Module
SFOG	Solid Fuel Oxygen Generators
S/G	Space-to-Ground
SIGI	Space Integrated Global Positioning System/ Inertial Navigation System
S&M	Structure and Mechanism
SM	Service Module
SMDP	Service Module Debris Panel
S/N	Serial Number
SNFM	Serial Network Flow Monitor
SOC	State of Charge
SORR	Stage Operations Readiness Review
SP	Service Pack
SPD	Space Product Development
SRAM	Station Random Access Memory

SSC	Station Support Computer
SSCB	Space Station Control Board
SSCN	Space Station Change Notice
SSP	Space Station Program
SSRMS	Space Station Remote Manipulator System
STS	Space Transportation System
TBD	To Be Determined
TBR	To Be Resolved
TCCS	Trace Contaminant Control System
TDRS	Tracking and Data Relay Satellites
TESS	Temporary Early Sleep Station
TIG	Time of Ignition
TM	Transfer Module
TMA	Transportation Modified Anthropometric
TPS	Thermal Protection System
TRRJ	Thermal Radiator Rotary Joint
TV	Television
TVIS	Treadmill Vibration Isolation System
UF	Utilization Flight
ULF1.1	Utilization Logistics Flight 1.1
UOP	Utility Outlet Panel
U.S.	United States
U.S. Lab	United States Laboratory
USOS	United States On-orbit Segment
UTA	Utility Transfer Assembly
VAJ	Vacuum Access Jumper
VES	Vacuum Exhaust System
VHF	Very High Frequency
VIL	Villafranca
VOA	Volatile Organic Analyzer
VSSA	Video Stanchion Support Assembly
VSV	Visceral Sense Vertical
VTR	Video Tape Recorder
WETA	Wireless Video System (WVS) External Transceiver Assembly
WIF	Worksite Interface Fixture
WVS	Wireless Video System
XPOP	X-Axis Perpendicular to the Orbital Plane
XVV	X-Axis pointed along the Velocity Vector
YVV	Y-Axis Pointed Along Velocity Vector
Z1	Zenith 1
ZSR	Zero-Gravity Stowage Rack

APPENDIX B

GLOSSARY OF TERMS

APPENDIX B - GLOSSARY OF TERMS

ASSEMBLY ELEMENT

Includes both the assembly element and items (i.e., racks, installed spares/backups), which are part of the initial outfitting of an element even if they are launched separate from the element. Cargo packing material mass may be included.

CARGO

Any item (including spares for corrective or preventative maintenance) that is not installed as part of the first-time outfitting task.

CHARGEABLE

A cargo item that is an entry against the balance of contribution account. Typically, chargeable items are requested by an International Partner (IP) to be delivered or returned by another IP's vehicle.

CHIT

Mission Action Request System. A formal written request for information made during real time operations from one organization or discipline that requires a response from another organization or discipline. Also used for coordination.

EXECUTED

To carry out according to a plan. Note: Because it is difficult to determine if an experiment has been completed due to the continuous evaluation of data and new responses to that data, the term executed is used. Executed indicates that an experiment (i.e., SDTO) was performed during the Increment as originally planned pre-Increment.

NON-CHARGEABLE

A cargo item that is not subject to balance of contribution accounting.

NON-STANDARD STOWAGE

Onboard areas that do not conform to certification requirements for permanent stowage, but are multi-laterally accepted by relevant IPs to be used as temporary locations for stowage.

STANDARD STOWAGE

Onboard areas that are multi-laterally accepted by relevant IPs as conforming to certification requirements for permanent stowage purposes.

TASKS COMPLETED IN ADDITION TO THE IDRD REQUIREMENTS

These tasks were requirements that were not documented in the applicable IDRD, but were later added to a particular stage or flight.

TASKS DEFERRED

These tasks were requirements that are documented in the applicable IDRD or CSRD, but were deferred to a later flight or stage due to various circumstances at that time.

TASKS NOT COMPLETED

These tasks were requirements that were documented in the applicable IDRD or CSRD but were not completed during real time operations due to circumstances at that time.

TASKS WITHDRAWN

These tasks were requirements are documented in the applicable IDRD or CSRD but were not accomplished due to technical problems, a lack of crew time, or other circumstances. Tasks in this category are valid only for the applicable flight or stage and cannot be deferred. It should be noted that adding a requirement to a stage or flight does not guarantee completion of the requirement due to the complexity of real time spaceflight, competing priorities and limited on-orbit resources.

APPENDIX C

OPEN WORK

APPENDIX C - OPEN WORK

Table C-1 lists the specific To Be Determined (TBD) items in the document that are not yet known. The TBD is inserted as a placeholder wherever the required data is needed and is formatted in bold type within brackets. The TBD item is numbered based on the section where the first occurrence of the item is located as the first digit and a consecutive number as the second digit (i.e., **<TBD 4-1>** is the first undetermined item assigned in Section 4 of the document). As each TBD is solved, the updated text is inserted in each place that the TBD appears in the document and the item is removed from this table. As new TBD items are assigned, they will be added to this list in accordance with the above described numbering scheme. Original TBDs will not be renumbered.

TABLE C-1 TO BE DETERMINED ITEMS

TBD	Section	Description	Status
2-1	2.1	PIER 10 not baselined at release of this document.	Open
2-2	2.1, Table 3.0-1	PIER 12 not baselined at release of this document.	Open

Table C-2 lists the specific To Be Resolved (TBR) issues in the document that are not yet known. The TBR is inserted as a placeholder wherever the required data is needed and is formatted in bold type within brackets. The TBR issue is numbered based on the section where the first occurrence of the issue is located as the first digit and a consecutive number as the second digit (i.e., **<TBR 4-1>** is the first unresolved issue assigned in Section 4 of the document). As each TBR is resolved, the updated text is inserted in each place that the TBR appears in the document and the issue is removed from this table. As new TBR issues are assigned, they will be added to this list in accordance with the above described numbering scheme. Original TBRs will not be renumbered.

TABLE C-2 TO BE RESOLVED ISSUES

TBR	Section	Description	Status

APPENDIX D

MANIFEST DETAILS

APPENDIX D - MANIFEST DETAILS

TABLE D-1 FLIGHT 9S RETURN HARDWARE

Flight 9S Return Hardware					
Line No.	Name	Qty Down	Unit Mass (Kg)	Return Total Mass (Kg)	Notes
1	***SOYUZ 215***			***224.59***	
2	**____ 215**				
3					
4	**TOTAL RUSSIAN CARGO**			**9.29**	
5	______ ______				
6	***LIFE SUPPORT SYSTEM (___)***			***9.19***	
7	___				
8	***WATER SUPPLY SYSTEM***			***1.16***	
9	________ _______________				
10	***CONDENSATE WATER RECOVERY SYSTEM (___-_2_)***			***1.16***	
11	**_______ ___________ ____ __ __________ ___-_2_**				
12	WATER SAMPLE FROM WATER SUPPLY EQUIPMENT IN A 100 ML DRINKING BAG	1	0.12	0.12	21
13	_____ ____ __ ___-3_ _ ______ ___ _________ _______ 100 __				
14	WATER SAMPLE FROM CONDENSATE WATER PROCESSOR "HOT" TAP IN 100 ML DRINKING BAG	1	0.12	0.12	22
15	_____ ____ __ _____ "___." ___- _2_ _ _____ ___ ________ _______ 100 __				
16	SAMPLE OF CONDENSATE PRIOR TO PURIFICATION COLUMN UNIT IN 100 ML DRINK BAG	1	0.12	0.12	23
17	_____ __________ _____ ___ _ ______ ___ ________ _______ 100 __				
18	SAMPLE OF CONDENSATE IN A 100 ML DRINKING BAG	2	0.23	0.47	24
19	_____ __________ _ ______ ___ ________ _______ __ 100 __				
20	WATER SAMPLE FROM CONDENSATE WATER PROCESSOR "WARM" TAP IN 100 ML DRINK BAG	1	0.12	0.12	25
21	_____ ____ __ _____ "____." ___-_2_ _ _____ ___ ________ _______ 100 __				

Flight 9S Return Hardware

Line No.	Name	Qty Down	Unit Mass (Kg)	Return Total Mass (Kg)	Notes
22	SAMPLE CONTAINER	1	0.22	0.22	22
23	________ ____ ____				
24	***ATMOSPHERE REVITALIZATION SUBSYSTEM (____)***			***1.50***	
25	____				
26	AK-1M SAMPLER KIT	6	0.25	1.50	
27	________ _ ______________ __-1_				
28	***SANITARY HYGIENE SUPPORT (____)***			***0.80***	
29	________ _________- _______________ ___________ (____)				
30	DUST COLLECTOR (KIT)	1	0.30	0.30	
31	_____________ (_______)				
32	DUST FILTER CARTRIDGE	1	0.50	0.50	
33	________ ________ ____________				
34	***EQUIPMENT CLEAN UP & AMBIENT ATMOSPHERE CONTROL***			***0.80***	
35	________				
36	EKOSFERA KIT	1	0.80	0.80	
37	________ _________				
38	***MEDICAL SUPPORT SYSTEM (CMO)***			***0.10***	
39	___				
40	ISS PERSONAL RADIATION DOSIMETER (__-3 ___)	2	0.05	0.10	
41	_______________ _________ __-3 ___				
42	***EQUIPMENT CLEAN UP & AMBIENT ATMOSPHERE CONTROL***			***0.28***	
43	________				
44	SAMPLE TUBE KIT (SURFACES)	1	0.14	0.14	
45	________ _ ___________ (______.)				
46	TEST TUBE KIT (OPER)	1	0.14	0.14	
47	________ _ ___________ (____.)				
48	***CREW ONBOARD SUPPORT KIT (____)***			***4.50***	
49	____				
50	CREW PREFERENCE	2	1.50	3.00	
51	_______ ____				
52	CREW PREFERENCE	1	1.50	1.50	
53	_______ ____				
54	***CARDIORECORDER 90205***			***0.05***	
55	**_________________ 90205**				
56	CARDIORECORDER CASSETTE	1	0.05	0.05	
57	________ ___________________ 90205				

Flight 9S Return Hardware

Line No.	Name	Qty Down	Unit Mass (Kg)	Return Total Mass (Kg)	Notes
58	***CREW ONBOARD SUPPORT KIT (___)***			***0.10***	
59	____				
60	APPENDIX FOR VISITING CREW-8 ODF (EXPERIMENT LOGBOOK)	1	0.10	0.10	
61	__________ _ _____________ __-8 (_____ ___ _____________"LogBook")				
62					
63	**TOTAL RUSSIAN PAYLOADS**			**37.91**	
64	________ ___.________				
65	BAIKONUR COMMEMORATIVE	1	0.50	0.50	
66	___. "______ _____"				
67	RUSSIAN COMMEMORATIVE	1	0.70	0.70	
68	___. "_________ _________"				
69	***PAYLOADS***			***36.21***	
70	________ ___.________				
71	***CONTRACT EXPERIMENT (___)***			***36.21***	
72	___				
73	GCF-02 CRYSTALLIZATION EQUIPMENT	3	1.60	4.80	
74	__________ ___________ GCF-02				
75	HDD RETURN KIT	1	0.45	0.45	
76	_______ "_______ _______ ______"				
77	GALLEY-INF KIT	1	0.55	0.55	
78	_______ "______-___"				
79	CONTAINER "ETD HARD DISK"	1	0.30	0.30	
80	_________ "ETD _______ ____"				
81	KIT PAS-01	1	0.78	0.78	
82	_______ PAS-01				
83	DESCENT CONTAINER	1	0.41	0.41	
84	_________ ______				
85	KIT-1	1	0.75	0.75	15
86	_______-1				
87	KIT-3 (MICROSPACE EXPERIMENT)	1	0.75	0.75	
88	_______-3 (_-_ MICROSPACE)				
89	ASIA KIT	1	3.03	3.03	
90	_______ ASIA				
91	ETD CONTAINER HARD DISK	1	0.32	0.32	
92	_________ ETD _______ ____				
93	AES CONTAINER	1	0.28	0.28	16
94	_________ ___ AES				
95	KIT FOR ISS-11 (ORANGE COVER)	1	0.39	0.39	
96	_______ ___ ___-11 (_________ _____)				
97	**CASE FOR EST RETURN**	**1**	**0.53**	**0.53**	

Flight 9S Return Hardware

Line No.	Name	Qty Down	Unit Mass (Kg)	Return Total Mass (Kg)	Notes
98	**_____ ___ ________ EST**				
99	EST ELECTRONICS UNIT	1			
100	____ ___________ EST				
101	EST PEN	1			
102	_________ EST				
103	EST 256 MB MEMORY CARD	1			
104	_____ ______ 128 __ EST				
105	EST 256 MB MEMORY CARD	1			
106	_____ ______ 128 __ EST				
107	**GOAL KIT (GOAL EXPERIMENT)**	**1**		**0.28**	
108	**_______ GOAL (_-_ GOAL)**				
109	PCMCI_ CARD	1	0.05	0.05	
110	_____ PCMCIA				
111	SONY DVCAM-40ME VIDEO CASSETTE	1	0.02	0.02	
112	____________ DVCAM40ME				
113	SONY DVCAM-60ME EST	1	0.03	0.03	
114	____________ Sony DVCAM-60ME EST				
115	PCMCI_ 256 MB MEMORY CARD	1	0.05	0.05	
116	_____ ______ PCMCIA 256 MB				
117	PCMCIA 256 MB	1	0.05	0.05	
118	_____ ______ PCMCIA 256 MB				
119	FLOPPY DISK	1	0.01	0.01	
120	______ ____				
121	FLOPPY DISK	1	0.01	0.01	
122	______ ____				
123	PAS EMBLEMS	3	0.01	0.02	
124	_______ PAS				
125	EUROPEAN CONSTITUTION	1	0.05	0.05	
126	___________ ___________				
127	SALIVA-A.NGF KIT (NGF EXPERIMENT)	2	0.13	0.26	
128	_______"______-_.NGF" (_-_ NGF)				
129	CRI TRANSPORT CONTAINER (CRISP-2 EXPERIMENT)	1	2.00	2.00	
130	____________ _________ CRI (_-_ CRISP-2)				
131	FRTL-5 KIT (FRTL-5 EXPERIMENT)	1	1.20	1.20	
132	_______ FRTL-5 (_-_ FRTL-5)				
133	VINO TRANSPORT CONTAINER (VINO EXPERIMENT)	1	1.35	1.35	
134	____________ _________ VINO (_-_ VINO)				
135	RETURN CONTAINER (BOP EXPERIMENT)	1	1.90	1.90	

Flight 9S Return Hardware

Line No.	Name	Qty Down	Unit Mass (Kg)	Return Total Mass (Kg)	Notes
136	_________ ________ (__________ BOP)				
137	KB-03 CONTAINER	1	2.60	2.60	
138	_________ ____________ __-03				
139	MEMORY CARD CF 2 MB	2	0.02	0.04	
140	_____ ______ CF 2 MB				
141	SIMVOLIKA P (COMMEMORATIVE) KIT	1	0.25	0.25	
142	_______ "________ 9_"				
143	SALIVA-F KIT	1	0.13	0.13	
144	_______ "______-_ _____"				
145	PROFILAKTIKA DATA KIT	1	0.05	0.05	
146	_______ "____________-______"				
147	LOGBOOK SHEETS	1			13
148	_____ _/_______				
149	PULSE DATA KIT	1	0.05	0.05	
150	_______ "_____-______"				
151	ERYTHROCYTE KIT	1	0.25	0.25	
152	_______ _________				
153	RASTENIYA [PLANTS] KIT	1	0.70	0.70	
154	_______ "________"				
155	ULITIKA CONTAINER	1	1.00	1.00	
156	_________ ______				
157	SELF-CONTAINED TEMPERATURE LOGGER [APT] IN A CASE ("BIOEKOLOGIYA" EXPERIMENT)	1	0.30	0.30	
158	__________ ___________ __________ _ _____				
159	KB-03 CONTAINER	1	2.60	2.60	
160	_________ ____________ __-03				
161	THE LOOSE LEAF "FILTERS"	1	0.10	0.10	17
162	_______ "_______"				
163	PLANARIYA INCUBATION CONTAINER (REGENERATSIYA EXPERIMENT)	2	0.50	1.00	
164	_____________ _________ "________" (_."___________")				
165	SELF-CONTAINED TEMPERATURE LOGGER [APT] IN A CASE ("BIOEKOLOGIYA" EXPERIMENT)	1	0.30	0.30	
166	__________ ___________ __________ _ _____				
167	MINI DV VIDEO CASSETTE	2	0.08	0.16	
168	____________ mini DV				
169	3.5" FLOPPY DISK	3	0.03	0.09	

Flight 9S Return Hardware

Line No.	Name	Qty Down	Unit Mass (Kg)	Return Total Mass (Kg)	Notes
170	_______ 3.5"				
171	REMOVABLE CASSETTE-CONTAINER (CKK)	1			
172	_______ _______-_________ (___)				
173	TRANSPORT COVER	1	2.33	2.33	
174	__________________ _____				
175	LUCH-2 HARDWARE	1	0.85	0.85	
176	_______ ___-2				
177	BIOSAMPLE KIT	1	0.22	0.22	
178	_______ ________				
179	BIO ECOLOGICAL KIT	1	0.30	0.30	18
180	_______ "___________"				
181	BIO ECOLOGICAL KIT	1	0.30	0.30	19
182	_______ "___________"				
183	SELF-CONTAINED TEMPERATURE LOGGER [APT] IN A CASE ("BIOEKOLOGIYA" EXPERIMENT)	1	0.30	0.30	
184	__________ ___________ __________ _ _____				
185	**PLAZMENNYY KRISTALL KIT**	**1**		**0.90**	
186	_______ __________ ________				
187	HI-8	10	0.09	0.88	
188	____________ Hi-8				
189	PCMCIA CARD	1	0.02	0.02	
190	_____ PCMCIA				
191	DIGITAL MEMORY CARD	2	0.02	0.04	
192	________ _____ ______ Compact flash				
193	**CASE FOR HARD DRIVE**	**1**	**0.10**	**0.27**	
194	______ ___ ________ _____				
195	SM-FOTO HARD DRIVE	1	0.17	0.17	
196	_______ ____				
197	35 MM FILM IN A CASE	9	0.03	0.27	
198	_____ _ ___________ 35__				
199	DV-CAM VIDEO CASSETTES	6	0.08	0.48	
200	____________ DVCAM (mini-DV)				
201	***PAYLOADS***			***0.50***	
202	________ ___.________				
203	**EKON KIT**	**1**	**0.17**	**0.17**	
204	_______ "____"				
205	HDD DISK	1	0.13	0.13	
206	_______ ____ HDD (_."______")				
207	REMOVABLE HARD DISK DRIVE	1	0.20	0.20	
208	_______ _______ ____				
209					

Flight 9S Return Hardware

Line No.	Name	Qty Down	Unit Mass (Kg)	Return Total Mass (Kg)	Notes
210	**TOTAL FGB CARGO**			**0.28**	
211	***EQUIPMENT CLEAN UP & AMBIENT ATMOSPHERE CONTROL***			***0.28***	
212	_______				
213	SAMPLE TUBE KIT (SURFACES)	2	0.14	0.28	Z
214	_______ _ __________ (______.)				
215					
216	**TOTAL US CARGO**			**2.73**	
217	____________ ____________				
218	***CHECS EHS HARDWARE***			***2.31***	
219	____-__ ________ _____ ________ (EHS) _______ ______ ________ _______ (CHECS)				
220	CREW PASSIVE DOSIMETER (CPD) ASSEMBLY	1	0.01	0.01	
221	______________ _________ ________ _______ (CPD)				
222	DUAL SORBENT TUBE ASSEMBLY	6	0.08	0.48	
223	________ ______________ ______				
224	DUAL SORBENT TUBE ASSEMBLY	1	0.08	0.08	
225	________ ______________ ______				
226	DUAL SORBENT TUBE ASSEMBLY	2	0.08	0.16	
227	________ ______________ ______				
228	CONTROL ASSEMBLY	1	0.23	0.23	
229	___________ ________ ______________ ______				
230	FORMALDEHYDE MONITOR ASSY	1	0.14	0.14	HZ
231	_______ ____________ _____________				
232	VALVE ASSEMBLY, GRAB SAMPLER	1	0.50	0.50	
233	_________-_____________ Grab				
234	BAG ASSY., TOC WATER SAMPLE (300 ML)	1	0.27	0.27	9,HZ
235	_____ ___ ____ ____ ___ _______ __ _____ _______ (300 __)				
236	BAG ASSY., TOC WATER SAMPLE (300 ML)	1	0.27	0.27	10,HZ
237	_____ ___ ____ ____ ___ _______ __ _____ _______ (300 __)				
238	RADIATION AREA MONITOR (RAM) ASSEMBLY	17	0.01	0.17	
239	_________ ____________ ________ (RAM)				

Flight 9S Return Hardware					
			Unit	Return Total	
Line	Name	Qty	Mass	Mass	
No.		Down	(Kg)	(Kg)	Notes
240	***ITCS COOLANT SAMPLING***			***0.23***	
241	_____ ____ _____________ __________ _______ __________________ (ITCS)				
242	**RETURN ZIPLOCK BAG ASSY**	**1**	**0.14**	**0.23**	**Q**
243	________ _______ ziplock ___ ________				
244	**FLUID SAMPLE BAG ASSY**	**1**	**0.05**	**0.09**	
245	_____ ___ ______ ____ _____________				
246	FLUID SAMPLE BAG	1	0.04	0.04	
247	_____ ___ ____ _____________				
248	***CHECS CMS HARDWARE***			***0.19***	
249	________ ____________ ___________ ___________ (CMS) _______ CHECS				
250	BEARING, GYROSCOPE, GYROSCOPE ASSY - TVIS SYSTEM	2	0.09	0.18	14
251	_________ ________ _________ _________ TVIS d5,1x15.2				
252	ZIP-LOC BAG, 6X6	1	0.01	0.01	11
253	_____ Zip-loc, 6_6 ______				
254					
255	**TOTAL COMMON WASTE**			**163.68**	
256	_____ _____				
257	**TOTAL US COMMON WASTE**			**81.84**	
258	**TOTAL RUSSIAN COMMON WASTE**			**81.84**	
259	EDV	5	26.50	132.50	
260	_______ ___ ____ ___				
261	KTO	1	11.50	11.50	
262	___				
263	COLLECTOR	1	3.30	3.30	
264	________				
265	FUR-LINED BOOTS	7	0.30	2.10	
266	______				
267	WHITE BAG	3	4.76	14.28	
268	_____ _____				
269					
270	**TOTAL RUSSIAN NON-COMMON WASTE**			**10.70**	
271	__________ ______				
272	WHITE BAG	1	7.70	7.70	
273	_____ _____				
274	APDG (TVS)-1/2 SWITCH	1	0.40	0.40	
275	_____________ ____ (___)-1/2				

Flight 9S Return Hardware					
			Unit	Return Total	
Line No.	Name	Qty Down	Mass (Kg)	Mass (Kg)	Notes
276	SOFT TRASH BAGS (___-_)	1	2.60	2.60	
277	_________ ___ _______ _______ ______ ___-_				

NOTES LEGEND

HZ	ITEM CONTAINS CHEMICAL, BIOLOGICAL, OR RADIOACTIVE MATERIALS OR BATTERIES
Q	LOGISTICS & MAINTENANCE (L&M) ALLOCATION – INCLUDES SYSTEM SPARES AND IVA TOOLS
Z	FGB HARDWARE

FLIGHT SPECIFIC NOTES

9	Sample from SVO-ZV
10	Sample from SRV-K
11	Contains TVIS Debris ________ ___________ _______ __ _______ TVIS
13	9 sheets (9 __.)
14	This is the same as "Flywheel bearing from TVIS gyroscope" __ __ _____, ___ _ "_________ _________ _________ TVIS"
15	Microspace
16	Agrospace
17	(_.____________ ______________)
18	_4
19	_7
21	Water sample from Water Supply Equipment [___-__] - _____ ____ __ ___-3_
22	Water sample from Condensate Water Processor [___-_2_] "hot" tap - _____ ____ __ _____ "___." ___-_2_
23	Sample of condensate prior to the Purification Column Unit (_KO) - _____ __________ _____ ___
24	Sample of condensate - _____ __________
25	Water sample from the Condensate Water Processor [___-_2_] "warm" tap - _____ ____ __ _____ "____." ___-_2_

TABLE D-2 FLIGHT 10S LAUNCH HARDWARE

Flight 10S Launch Hardware						
				Unit	Launch Total	
Line	Name	Qty	Qty	Mass	Mass	
No.		Up	Down	(Kg)	(Kg)	Notes
1	***SOYUZ 216***				***109.39***	
2	**____ 216**					
3						
4	**TOTAL RUSSIAN CARGO**				**40.96**	
5	______ ______					
6	***LIFE SUPPORT SYSTEM (___)***				***24.92***	
7	___					
8	***ATMOSPHERE REVITALIZATION SUBSYSTEM (____)***				***0.40***	
9	____					
10	KIT WITH ABSORBERS FOR THE AK-1M AIR SAMPLING ABSORBER	2	0	0.20	0.40	
11	_______ _ _____________ _ __-1_					
12	***FOOD SUPPLY SUBSYSTEM***				***12.08***	
13	_______ ___________ ________ (___)					
14	SELECTION OF FRESH PRODUCE	1	0	12.08	12.08	
15	_____ ______ _________					
16	***MEDICAL SUPPORT SYSTEM (CMO)***				***0.50***	
17	___					
18	SET OF MEASURING STRIPS	1	0	0.50	0.50	
19	_-_ _______ ____________ _________-4					
20	***MEDICAL SUPPORT SYSTEM (CMO)***				***0.14***	
21	___					
22	***RADIATION MONITORING SYSTEM (CPK)***				***0.14***	
23	___					
24	MEMORY CARD CF 2 MB	3	0	0.05	0.14	
25	_____ ______ CF 2 MB					
26	***MEDICAL SUPPORT SYSTEM (CMO)***				***0.10***	
27	___					
28	***RADIATION MONITORING SYSTEM (CPK)***				***0.10***	
29	___					
30	CD DISK	1	0	0.10	0.10	
31	CD-____					
32	***HYGIENE MAINTENANCE SYSTEM (___)***				***7.20***	
33	___					
34	COLLECTOR WITH CLAMP	1	0	7.20	7.20	
35	_______ _ _______ ___					
36	***FLIGHT CREW EQUIPMENT***				***4.50***	
37	____					

Flight 10S Launch Hardware						
				Unit	Launch Total	
Line No.	Name	Qty Up	Qty Down	Mass (Kg)	Mass (Kg)	Notes
38	CREW PREFERENCE	3	0	1.50	4.50	
39	______ ____					
40	***CREW ONBOARD SUPPORT KIT (____)***				***3.30***	
41	____					
42	**COMPLETE SET OF RUSSIAN DOCUMENTATION**	**1**	**0**	**3.30**	**3.30**	
43	________ __________ _/____________					
44	RECOMMENDATIONS ON CREW ROTATION	1	0			
45	____________ __ _________ _____					
46	CHANGE LOG FOR PART 3, BIOTECHNOLOGY	1	0			
47	_________ _________ __ 17__.0000_-0__81 _.3 ____________					
48	CHANGE LOG FOR PART 8, BIOLOGICAL EXPERIMENTS	1	0			
49	_________ _________ __ 17__.0000_-0__81 _.8 ____________ ___________					
50	CHANGE LOG. PHOTOGRAPHIC EQUIPMENT	1	0			
51	_________ _________. _____________					
52	VISITING CREW-8 ODF	1	0			
53	_____________ __-8					
54	APPENDIX FOR VISITING CREW-8 ODF (EXPERIMENT LOGBOOK)	1	0			
55	__________ _ ______________ __-8 (_____ ___ _____________ "LogBook")					
56	COMPACT DISK	2	0			
57	CD-____					
58	ORBITAL FLIGHT	1	0			3
59	___________ _____					
60	***MOTION CONTROL SYSTEM***				***0.02***	
61	___					
62	MEMORY CARD CF 128 MB	1	0	0.02	0.02	
63	_____ ______ CF 128 MB					
64	***ONBOARD EQUIPMENT CONTROL SYSTEM (____)***				***12.32***	
65	____					
66	***HARDWARE FOR ENEIDE***				***12.32***	
67	**___ __________ _-__ ENEIDE**					

Flight 10S Launch Hardware						
				Unit	Launch Total	
Line No.	**Name**	**Qty Up**	**Qty Down**	**Mass (Kg)**	**Mass (Kg)**	**Notes**
68	LAPTOP COMPUTER ASSY, IBM A31P	1	0	3.67	3.67	13,HZ
69	__________ ______ IBM A31P					
70	POWER SUPPLY ASSEMBLY-28VDC POWER SUPPLY	1	0	2.01	2.01	13
71	_________ ________ __ ____. ___________ 28 _					
72	CABLE ASSEMBLY, A31P 16V DC POWER	1	0	0.20	0.20	13
73	______ ________ ___________ A31P __ ___________ 16 _ _____. _____					
74	POWER CABLE	1	0	0.24	0.24	
75	______ ________					
76	LAPTOP COMPUTER ASSY, IBM A31P	1	0	3.70	3.70	13,HZ
77	__________ ______ IBM A31P					
78	POWER SUPPLY ASSEMBLY-28VDC POWER SUPPLY	1	0	2.05	2.05	13
79	_________ ________ __ ____. ___________ 28 _					
80	CABLE ASSEMBLY, A31P 16V DC POWER	1	0	0.20	0.20	13
81	______ ________ ___________ A31P __ ___________ 16 _ _____. _____					
82	**CASE FOR HARD DISK DRIVE**	**1**	**0**	**0.25**	**0.25**	
83	**______ ___ _________ _____**					
84	60 GB HARD DRIVE, A31P	1	0			13
85	____ 60 _____ ___ ___________ A31P					
86	***FLIGHT CREW EQUIPMENT***				***0.40***	
87	**____**					
88	AA BATTERY	16	0	0.03	0.40	
89	_______ ________ __					
90						
91	**TOTAL RUSSIAN PAYLOADS**				**36.74**	
92	**_________ ___.________**					
93	***CONTRACT WITH ESA***				***28.90***	
94	**_________ _ EKA**					
95	***ENEIDE EXPERIMENT***				***4.57***	
96	**____________ ENEIDE**					
97	PCMCI_ CARD	1	0	0.10	0.10	
98	_____ PCMCIA					
99	1553 MEMORY CARD	1	0	0.10	0.10	
100	_____ ______ 1553					
101	***CREW ONBOARD SUPPORT KIT (____)***				***4.37***	

Flight 10S Launch Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
102	____					
103	**CAMERA BAG**	**1**	**0**	**3.07**	**3.07**	**9**
104	_____ ___ _________ ____________					
105	NIKON D1X DIGITAL STILL CAMERA SET	1	0			
106	___________ Nikon D1X					
107	INCLUDING STORAGE BATTERY EN-4 NIKON	1	0			
108	_______ ___________ Nikon EN-4					
109	AF-S DX NIKKOR F=17-55 MM LENS	1	0			
110	________ AF-S DX Nikkor 17-55 mm					
111	NIKON SB-28DX PHOTO FLASH	1	0			4
112	___________ NIKON SB-28DX					
113	STANDARD AA ALKALINE BATTERY	4	0			
114	_______ _______ ___ __ Alkaline					
115	DIGITAL MEMORY CARD	1	0			2
116	________ _____ ______ Compact flash					
117	**CAMERA BAG**	**1**	**0**	**1.30**	**1.30**	**10**
118	_____ ___ _________ ____________					
119	NIKON MH-17 BATTERY CHARGER	1	0			10
120	________ ___________ _H-17 Nikon					
121	AF-S DX NIKKOR F=10 MM LENS	1	0			
122	________ AF-DX Nikkor 10 mm					
123	STORAGE BATTERY EN-4 NIKON	1	0			11
124	______________ _______ _N-4 Nikon					
125	STANDARD AA ALKALINE BATTERY	8	0			
126	_______ _______ ___ __ Alkaline					
127	PC CARD ADAPTER	1	0			
128	PC Card Adapter					

Flight 10S Launch Hardware						
Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
129	MICROPHONE ECM-55S	1	0			
130	_________ ___-55S					
131	***ESD EXPERIMENT***				***1.56***	
132	**___________ ESD**					
133	**ELECTROSTATIC SELF-ASSEMBLY DEMONSTRATION KIT (ESD)**	**1**	**0**	**1.56**	**1.56**	
134	**_______ "____________ ___________________ __________" (ESD)**					
135	POUCH	1	0			
136	_____					
137	CUBE CONTAINER	1	0			
138	___-_________					
139	CUBE CONTAINER	1	0			
140	___-_________					
141	CUBE CONTAINER	1	0			
142	___-_________					
143	VIDEO CASSETTE	1	0			
144	____________					
145	DVCAM-40ME VIDEO CASSETTE	1	0			
146	____________ DVCAM-40ME					
147	PACKET WITH TWO MARKED SHEETS	1	0			
148	_____ _ _____ ______________ _______					
149	ADAPTER	1	0			
150	_______					
151	***EST EXPERIMENT***				***1.35***	
152	**___________ EST**					
153	**EST KIT**	**1**	**0**	**1.35**	**1.35**	
154	**_______ EST**					
155	EST TRANSPORT CASE	1	0			
156	____________ _____ EST					
157	EST ELECTRONICS UNIT	1	0			
158	____ ___________ EST					
159	EST BATTERY UNIT	1	0			
160	____ _______ EST					
161	EST POWER CABLE	1	0			
162	______ _______ EST					
163	EST BONDING CABLE	1	0			
164	______ ___________ EST					
165	EST PEN	1	0			
166	_________ EST					

Flight 10S Launch Hardware						
				Unit	Launch Total	
Line	Name	Qty	Qty	Mass	Mass	
No.		Up	Down	(Kg)	(Kg)	Notes
167	PACKET NO.1 FOR USED EST BATTERIES	1	0			
168	_____ _1 ___ _______________ _______ EST					
169	PACKET NO.2 FOR USED EST BATTERIES	1	0			
170	_____ _2 ___ _______________ _______ EST					
171	CASE FOR EST RETURN	1	0			
172	_____ ___ ________ EST					
173	EST 128 MB MEMORY CARD	1	0			
174	_____ ______ 128 __ EST					
175	EST 256 MB MEMORY CARD	1	0			
176	_____ ______ 128 __ EST					
177	EST 256 MB MEMORY CARD	1	0			
178	_____ ______ 128 __ EST					
179	SONY DVCAM-40ME EST VIDEO CASSETTE	1	0			
180	_/_______ Sony DVCAM-40ME EST					
181	***VSV EXPERIMENT***				***3.72***	
182	**___________ VSV**					
183	CONTAINER VSV	1	0	3.72	3.72	
184	_________ VSV					
185	***HBM EXPERIMENT***				***0.58***	
186	**___________ HBM**					
187	HBM KIT	1	0	0.58	0.58	
188	_______ HBM					
189	***ENM EXPERIMENT***				***1.43***	
190	**___________ ENH**					
191	ENM KIT	1	0	1.43	1.43	
192	_______ ENM					
193	***NGF EXPERIMENT***				***0.20***	
194	**___________ NGF**					
195	SALIVA-A.NGF KIT (NGF EXPERIMENT)	2	0	0.10	0.20	
196	_______ "______-_.NGF" (_-_ NGF)					
197	***GOAL EXPERIMENT***				***1.05***	
198	**___________ GOAL**					
199	GOAL KIT (GOAL EXPERIMENT)	1	0	1.05	1.05	
200	_______ GOAL (_-_ GOAL)					
201	***VINO EXPERIMENT***				***1.50***	
202	**___________ VINO**					
203	VINO TRANSPORT CONTAINER (VINO EXPERIMENT)	1	0	1.50	1.50	

Flight 10S Launch Hardware						
				Unit	Launch Total	
Line No.	**Name**	**Qty Up**	**Qty Down**	**Mass (Kg)**	**Mass (Kg)**	**Notes**
204	_____________ _________ VINO (_-_ VINO)					
205	***BOP EXPERIMENT***				***4.30***	
206	**___________ BOP**					
207	DELIVERY CONTAINER	1	0	3.90	3.90	
208	_________ ________					
209	RETURN CONTAINER (BOP EXPERIMENT)	1	0	0.40	0.40	
210	_________ ________ (___________ BOP)					
211	***FRTL-5 EXPERIMENT***				***1.20***	
212	**___________ FRTL-5**					
213	FRTL-5 KIT (FRTL-5 EXPERIMENT)	1	0	1.20	1.20	
214	_______ FRTL-5 (_-_ FRTL-5)					
215	***CRISP-2 EXPERIMENT***				***2.00***	
216	**___________ CRISP-2**					
217	CRI TRANSPORT CONTAINER (CRISP-2 EXPERIMENT)	1	0	2.00	2.00	
218	_____________ _________ CRI (_-_ CRISP-2)					
219	***FTS EXPERIMENT***				***0.92***	
220	**___________ FTS**					
221	FTS CONTAINER	1	0	0.92	0.92	
222	_________ FTS					
223	**LAUNCH CONTAINER**	**1**	**0**	**0.45**	**0.45**	
224	_________ _______					
225	POSTER	1	0			
226	______					
227	DESCENT CONTAINER	1	0			
228	_________ ______					
229	***MICROSPACE EXPERIMENT***				***4.07***	
230	**___________ MICROSPACE**					
231	KIT-3 (MICROSPACE EXPERIMENT)	1	0	0.75	0.75	
232	_______ -3 (_-_ MICROSPACE)					
233	"DOVE OF PEACE" KIT	1	0	0.50	0.50	
234	_______ "______ ____"					
235	HARD DISK DRIVE RETURN	1	0	0.32	0.32	
236	_______ "_______ _______ ______"					
237	GALLEY-PM KIT	1	0	2.50	2.50	
238	_______ "______-__"					
239	***PAYLOADS***				***0.35***	
240	________ ___.________					
241	***MICROSPACE EXPERIMENT***				***0.35***	

Flight 10S Launch Hardware

				Unit	Launch Total	
Line No.	**Name**	**Qty Up**	**Qty Down**	**Mass (Kg)**	**Mass (Kg)**	**Notes**
242	**___________ MICROSPACE**					
243	SIMVOLIKA P (COMMEMORATIVE) KIT	1	0	0.30	0.30	
244	_______ "_________ 9_"					
245	MICROCOSMOS KIT	1	0	0.05	0.05	
246	_______ ___________					
247	***PAYLOADS (___)***				***4.57***	
248	________ ___.________ (___)					
249	***RUSSIAN PROGRAM***				***4.57***	
250	__________ _________					
251	PROFILAKTIKA KIT	1	0	0.77	0.77	
252	_______ ___________					
253	FIBROPLAST-1 KIT	1	0	1.00	1.00	
254	_______ "__________-1"					
255	PLANARIYA INCUBATION CONTAINER (REGENERATSIYA EXPERIMENT)	2	0	0.50	1.00	
256	______________ _________ "________" (_."___________")					
257	SELF-CONTAINED TEMPERATURE LOGGER [APT] IN A CASE ("BIOEKOLOGIYA" EXPERIMENT)	1	0	0.30	0.30	
258	__________ ___________ __________ _ _____					
259	***COMPLEX TBU (UNIVERSAL BIOTECHNOLOGICAL THERMOSTAT)***				***1.50***	
260	________ ___ (_________ __________________ ___________)					
261	ADAPTER GCF	1	0	0.95	0.95	
262	_______ GCF					
263	SELF-CONTAINED TEMPERATURE LOGGER [APT] IN A CASE ("BIOEKOLOGIYA" EXPERIMENT)	1	0	0.40	0.40	
264	__________ ___________ __________ _ _____					
265	POWER SUPPLY KIT	1	0	0.15	0.15	
266	_______ "________ _______"					
267	***PAYLOADS (___)***				***2.42***	
268	________ ___.________ (___)					
269	***RUSSIAN PROGRAM***				***1.47***	
270	__________ _________					
271	PLAZMENNYY KRISTALL KIT	1	0	1.00	1.00	
272	_______ "__________ ________"					

Flight 10S Launch Hardware						
Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
273	ERYTHROCYTE KIT	1	0	0.08	0.08	
274	_______ _________					
275	HDD DISK	2	0	0.13	0.26	
276	_______ ____ HDD (_."_____")					
277	EKON KIT	1	0	0.13	0.13	
278	_______"____"					
279	**CASE FOR HARD DRIVE**	**1**	**0**	**0.25**	**0.25**	
280	**______ ___ ________ _____**					
281	SM-FOTO HARD DRIVE	1	0			
282	_______ ____					
283	DIGITAL MEMORY CARD	2	0	0.03	0.06	
284	________ _____ ______ Compact flash					
285	35 MM FILM IN A CASE	23	0	0.03	0.64	
286	_____ _ ___________ 35__					
287	***PAYLOADS (___)***				***0.50***	
288	**________ ___.________ (___)**					
289	FLAGS	1	0	0.50	0.50	
290	_____					
291						
292	**TOTAL US CARGO**				**25.51**	
293	**____________ ____________**					
294	***CHECS HMS HARDWARE***				***1.97***	
295	**________ ________ ___________ ______ (HMS) _______ CHECS**					
296	ISS MEDICAL ACCESSORY KIT ASSEMBLY	1	0	1.00	1.00	
297	_______ _ ____________ ________________ ___ ___					
298	ISS MEDICAL ACCESSORY KIT ASSEMBLY	1	0	0.97	0.97	HZ
299	_______ _ ____________ ________________ ___ ___					
300	***CHECS EHS HARDWARE***				***0.01***	
301	**____-__ ________ _____ ________ (EHS) _______ ______ ________ _______ (CHECS)**					
302	CREW PASSIVE DOSIMETER (CPD) ASSEMBLY	1	0	0.01	0.01	R
303	______________ _________ ________ _______ (CPD)					
304	**CTB, HALF-SIZE**	**1**	**0**		**6.32**	
305	**__________ _____ ___**					
306	PACKING MATERIAL	1	0	0.38	0.38	

Flight 10S Launch Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
307	____________ _________					
308	***CHECS EHS HARDWARE***				***0.14***	
309	**____-__ ________ _____ ________ (EHS) _______ ______ ________ _______ (CHECS)**					
310	FORMALDEHYDE MONITOR KIT ASSY	1	0	0.14	0.14	HZ,R
311	_______ ___________ ____________ _____________ (FMK)					
312	***CHECS HMS HARDWARE***				***0.56***	
313	**________ ________ ___________ ______ (HMS) _______ CHECS**					
314	PORTABLE CLINICAL BLOOD ANALYZER	1	0	0.56	0.56	
315	__________ ____ _____ (PCBA)					
316	SPECIAL CUSHION, PCBA	1	0	0.65	0.65	
317	___________ _________ ___ PCBA					
318	***CHECS EHS HARDWARE***				***1.37***	
319	**____-__ ________ _____ ________ (EHS) _______ ______ ________ _______ (CHECS)**					
320	DUAL SORBENT TUBE ASSEMBLY	8	0	0.08	0.64	R
321	________ ______________ _______					
322	CONTROL ASSEMBLY	1	0	0.23	0.23	R
323	___________ ________ ______________ ______					
324	VALVE ASSEMBLY, GRAB SAMPLER	1	0	0.50	0.50	R
325	_________-_____________ Grab					
326	DIVIDER ASSY, CTB	1	0	0.10	0.10	
327	___________ _____ CTB					
328	***CHECS HMS HARDWARE***				***0.39***	
329	**________ ________ ___________ ______ (HMS) _______ CHECS**					
330	SUBPACK ASSY, PROPHONICS MOLDED EAR PLUG SET	4	0	0.05	0.18	
331	________ ___________ ___________ ________ _________ "Prophonics"					
332	ETYMOTIC EAR PLUG SET	4	0	0.02	0.08	
333	________ _______ "Etymotic"					
334	EC8+ CARTRIDGE ASSEMBLY	15	0	0.01	0.09	

Flight 10S Launch Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
335	________ ______ __8+					
336	CREATININE CARTRIDGE ASSEMBLY	7	0	0.01	0.04	
337	________ ______ ___ _______ __ _________					
338	***CHECS EHS HARDWARE***				***0.17***	
339	**____-__ ________ _____ ________ (EHS) _______ ______ ________ _______ (CHECS)**					
340	RADIATION AREA MONITOR (RAM) ASSEMBLY	17	0	0.01	0.17	R
341	_________ ____________ ________ (RAM)					
342	***PCS/SSC***				***2.57***	
343	**_______ ___________ ___________ (PCS)/ _______________ _________ ___ (SSC)**					
344	BATTERY PACK ASSEMBLY, A31P	3	0	0.30	0.90	BT,HZ,R
345	____ _______ ___ __________ _31_					
346	IBM A31P LAPTOP KIT	3	0	0.11	0.33	BT,R
347	_______ ___ __________ _31_ IBM					
348	**PALLET DETAIL ASSEMBLY PSYCH CD CASE**	**1**	**0**	**0.78**	**1.34**	
349	**______-_______ ___ _______-______ _______________ _________**					
350	EXPRESS LAPTOP RELEASE 4 W/O ARIS	1	0	0.17	0.17	
351	___ (______ R4) ___ _______ ______ EXPRESS ___ _______ ARIS					
352	ASSEMBLY, PCS/OCA WRITABLE CD	2	0	0.02	0.03	
353	____________ _______ _____ (CD), ________ ___ ___________ PCS/OCA					
354	ASSEMBLY, PCS/OCA WRITABLE CD	6	0	0.02	0.10	
355	____________ _______ _____ (CD), ________ ___ ___________ PCS/OCA					
356	ASSEMBLY, PCS/CMG DISKETTE	2	0	0.02	0.03	

Flight 10S Launch Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
357	_______ ___ __________ PCS/CMG					
358	WRITEABLE DVD ASSEMBLY	13	0	0.02	0.22	
359	________ ____________ ________ ___________ (DVD)					
360	***PCS/SSC***				***6.80***	
361	**_______ ___________ ___________ (PCS)/ _______________ _________ ___ (SSC)**					
362	CABLE ASSEMBLY, A31P 16V DC POWER	3	0	0.23	0.68	R
363	______ _______ __________ A31P __ __________ 16 _ _____. ____					
364	120V DC POWER SUPPLY	2	0	2.04	4.08	14
365	________ _______ __ ____. __________ 120 _					
366	POWER SUPPLY ASSEMBLY-28VDC POWER SUPPLY	1	0	2.04	2.04	R
367	________ _______ __ ____. __________ 28 _					
368	***LOGISTICS & MAINTENANCE***				***10.40***	
369	**____________ ___ ______ ______________ _____ SPCU (TCS-ITCS)**					
370	LAMP HOUSING ASSEMBLY, GENERAL	4	0	1.25	5.00	
371	__________ ______ _________					
372	BASEPLATE BALLAST ASSEMBLY	2	0	2.70	5.40	12,Q
373	____ __________ ________ (___ _____________ __________)					
374						
375	**TOTAL US PAYLOADS**				**6.18**	
376	**________ ___.________**					
377	***HRF RENAL STONE***				***1.28***	
378	**___________ "________ ______" (HRF)**					
379	TUBE DISPENSER ASSY, URINE ASSY	1	0	1.28	1.28	12,R
380	______ (______) __ ________- ___________ ___ ____ _____					
381	***HRF RENAL STONE***				***4.90***	***1,R***
382	**___________ "________ ______" (HRF)**					
383	BAG ASSY, URINE CONTAINMENT	1	0	0.80	0.80	12,R

Flight 10S Launch Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
384	__________ ___ _________ ________ _____					
385	**URINE COLLECTION KIT ASSEMBLY**	**1**	**0**	**1.50**	**1.50**	**12,HZ,R**
386	**_______ _-__________ (UCK)**					
387	HRF URINE COLLECTION POUCH	1	0			12,HZ
388	_____ ________ _- __________, ____________ HRF					
389	UCD ASSEMBLY (BELLOWS CATH, LICL) MALE	20	0			12
390	_-_________ (______________ ______, LiCL), _______					
391	BAG ASSEMBLY, RUBBER STOPPER/QUICK DISCONNECT	2	0			12
392	_____ _ __________ _______ ___ _________________ ___________					
393	BAG ASSEMBLY, GAUZE	1	0			12
394	_____ _ __________ ___________					
395	BAG ASSEMBLY, BIOCIDE WIPES	1	0			12
396	_____ _ _________________ ___________					
397	**HRF POTASSIUM CITRATE/PLACEBO KIT**	**2**	**0**	**1.30**	**2.60**	**12,R**
398	**_______ _ ___________ ________ _____/_______, ____________ HRF**					
399	ZIP-LIP BAG	2	0			12
400	_____ Zip-lip					

Flight 10S Launch Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
401	HRF POTASSIUM CITRATE/PLACEBO PALLET ASSEMBLY	12	0			12
402	________ ________ _______ _____ / _______, ___________ HRF					

Notes Legend

NOTES	
BT	ITEM INCLUDES BATTERIES
HZ	ITEM CONTAINS CHEMICAL, BIOLOGICAL, OR RADIOACTIVE MATERIALS OR BATTERIES
Q	LOGISTICS & MAINTENANCE (L&M) ALLOCATION – INCLUDES SYSTEM SPARES AND IVA TOOLS
R	THIS HARDWARE CAN BE OPERATED IN THE RUSSIAN SEGMENT ONLY AFTER CERTIFICATION AND ACCEPTANCE IS COMPLETE.

FLIGHT SPECIFIC NOTES	
1	To be included if mass and volume allow
2	1 GB Compack Flash card
3	Chapter 2
4	Number 4
9	_1
10	_2
11	_8
12	Included if mass and volume allow (________________ ___ _______ _____ _ ______).
13	US Hardware flown as Russian Chargeable Cargo
14	Both A31P 120VDC Power Supplies (S/N 1004 and 1005) were labeled with the wrong part number. SEG33116412-301 should actually be a (-302). See DR #'s 3Q0530073 and 3Q0530074.

TABLE D-3 FLIGHT 17P RETURN HARDWARE

Flight 17P Return Hardware					
Line No.	Name	Qty Down	Unit Mass (Kg)	Return Total Mass (Kg)	Notes
1	*PROGRESS 352*			*1274.06*	
2	________ 352				
3					
4	**TOTAL COMMON WASTE**			**769.68**	
5	_____ ______				
6	**TOTAL US COMMON WASTE**			**384.84**	
7	**TOTAL RUSSIAN COMMON WASTE**			**384.84**	
8	*PERSONAL HYGIENE AIDS (___ ____)*			*100.86*	
9	________ _________- ______________ ___________ (___ ____)				
10	PERSONAL HYGIENE ARTICLES-WET NAPKINS	12	0.90	10.80	
11	___ (________ _______)				
12	SANITARY NAPKINS FOR SURFACES (10)	3	0.90	2.70	
13	________ __________ ___ ____________ (10__.)				
14	PERSONAL HYGIENE ARTICLES-WET TOWELS	18	0.90	16.20	
15	___-_ (_________ _______)				
16	PERSONAL HYGIENE ARTICLES-DRY TOWELS	1	0.40	0.40	
17	___-_ (_________ _____-_)				
18	DENTAL HYGIENE AIDS	4	0.40	1.60	
19	___ (___ _______ ___)				
20	SPARE COVERALLS	4	1.20	4.80	
21	__________ _______				
22	LIGHT-WEIGHT SET	4	0.90	3.60	
23	________ ___________				
24	LIGHT CLOTHING	13	0.67	8.71	
25	________ ___________				
26	FOOTWEAR MODEL 270M	2	0.60	1.20	
27	_____ ______ 270_				
28	SLEEPING BAG INSERT	2	0.39	0.78	
29	_______ _ _________ _____				
30	CAMELIA-CM UNDERWEAR	27	0.35	9.45	
31	_____ _______-__				
32	CAMELIA-C UNDERWEAR	36	0.35	12.60	
33	_____ _______-_				
34	CAMELIA-A UNDERWEAR	10	0.50	5.00	
35	_____ _______-_				
36	BAG WITH FILM	1	2.00	2.00	

Flight 17P Return Hardware

Line No.	Name	Qty Down	Unit Mass (Kg)	Return Total Mass (Kg)	Notes
37	_____ _ _/_________				
38	MORFEI RESTRAINT SYSTEM	1	0.20	0.20	
39	________ ________ _______				
40	COMFORT-1M CASE	1	1.00	1.00	
41	______ ________-1_				
42	COMFORT SET-1M	2	1.60	3.20	
43	_____ ___ ______ _______ _______-1_				
44	SET FOR PERSONAL HYGIENE COMFORT-3M	2	1.60	3.20	
45	_____ ___ ______ _______ _______-3_				
46	AELITA KIT	1	0.70	0.70	
47	________ ______				
48	OPERATOR'S COVERALLS	3	1.20	3.60	
49	___________ _________				
50	HEAVY COVERALLS	1	1.60	1.60	
51	__________-__________				
52	PENGUIN-3 SUIT	1	3.00	3.00	
53	_______ ________-3				
54	BOXER SHORTS	40	0.11	4.40	
55	_______ ______				
56	SLEEPING MASK	3	0.04	0.12	
57	_______ __ ______				
58	***SANITARY HYGIENE SUPPORT (____)***			***278.50***	
59	________ _________- _______________ ____________ (____)				
60	KTO	8	11.50	92.00	
61	___				
62	TOILET (ACY) INSERTS	6	1.00	6.00	
63	________ ___				
64	SOFT TRASH BAGS (___-_)	6	8.00	48.00	
65	_________ ___ ________ ________ ______ ___-_				
66	EDV URINE COLLECTION UNIT (EDV-U BUCKET)	5	26.50	132.50	
67	_______ ___ ____ _ ______ (______ ___-_)				
68	SELECTION OF FRESH PRODUCE	4	1.00	4.00	
69	_____ _______ __________				
70	FOOD RATIONS CONTAINERS	81	1.00	81.00	
71	__________ _ __________ ________				
72	US NON-COLLAPSIBLE FOOD CONTAINER	31	1.72	53.32	

Flight 17P Return Hardware

Line No.	Name	Qty Down	Unit Mass (Kg)	Return Total Mass (Kg)	Notes
73	_____________ _________________ _______ __________				
74	URINE IN RODNIK TANKS	1	252.00	252.00	
75	_____ _ _____ ________ "_______"				
76					
77	**TOTAL NON-COMMON RUSSIAN WASTE**			**390.68**	
78	___________ ______				
79	***PAYLOADS (___)***			***50.99***	
80	________ ___.________ (___)				
81	CALF VOLUME METER (____) KIT	1	0.20	0.20	
82	___________ _______ _______ ____				
83	**CARDIOCOG KIT**	**1**	**0.70**	**0.70**	
84	________ _________				
85	CONTAINER WITH COSMIC SAMPLES ON MOUNTING PLATFORM	1	5.75	5.75	
86	__________ ____a_____				
87	GALLEY-PM KIT	1	2.31	2.31	
88	________"_______-__"				
89	CARDIOCOG ASSEMBLY	1	0.57	0.57	
90	_________"__________"				
91	**BLOOD PRESSURE MEASURING KIT**	**1**	**1.00**	**1.00**	
92	________"___________ __"				
93	THERMAL INSULATED TRANSPORT CONTAINER	3	2.00	6.00	
94	_____________ __________GCF-01				
95	ELECTROSTATIC SELF-ASSEMBLY DEMONSTRATION KIT (ESD)	1	1.56	1.56	
96	________"_____________ _____________________ ___________" (ESD)				
97	POUCH	1			
98	_____				
99	CUBE CONTAINER	1			
100	___-__________				
101	CUBE CONTAINER	1			
102	___-__________				
103	CUBE CONTAINER	1			
104	___-__________				
105	PACKET WITH TWO MARKED SHEETS	1			
106	_____ _ _____ _______________ _______				
107	EST KIT	1	1.35	1.35	

Flight 17P Return Hardware					
			Unit	Return Total	
Line	Name	Qty	Mass	Mass	
No.		Down	(Kg)	(Kg)	Notes
108	_______ EST				
109	AES PLASTIC BAG1	1	0.35	0.35	
110	___________ _____ 1 AES				
111	DELIVERY CONTAINER	1	3.90	3.90	
112	_________ ________				
113	VINO TRANSPORT CONTAINER (VINO EXPERIMENT)	1	1.50	1.50	
114	____________ _________ VINO (_-_ VINO)				
115	POWER SUPPLY KIT	1	0.50	0.50	
116	_______ "________ _______"				
117	KIT-1	1	0.35	0.35	
118	_______-1				
119	KIT-3 (MICROSPACE EXPERIMENT)	1	0.75	0.75	
120	_______ -3 (_-_ MICROSPACE)				
121	**TOPAZ CUBE EXPERIMENT INCUBATOR**	**1**	**13.50**	**13.50**	
122	**_________ _____-_____**				
123	**TRANSPORT CONTAINER / MINUS TKV**	**1**	**10.70**	**10.70**	
124	**____________ _________/_________ ___-_:**				
125	***INDIVIDUAL PROTECTION GEAR (___)***			***64.42***	
126	***___***				
127	ORLAN-M SPACESUIT SLEEVE SET	2	3.35	6.70	
128	_______ _______ ___ (_____-_)				
129	ORLAN-M SHORTENED SLEEVE, LEFT	1	3.35	3.35	
130	___________ _____ «_____-_», _____				
131	ORLAN-M SHORTENED SLEEVE, RIGHT	1	3.35	3.35	
132	___________ _____ «_____-_», ______				
133	LIQUID COOLING GARMENT [KBO-M]	2	3.46	6.92	
134	______ _________ ___________ ___-_				
135	OXYGEN UNIT __-3_	5	5.10	25.50	
136	____ ____________ __-3_				
137	ABSORBER CARTRIDGE __-9	4	2.60	10.40	
138	______ ______________ __-9				
139	WATER CONTAINER	3	1.80	5.40	
140	_______ 5__				
141	SET OF UNDERWEAR	4	0.70	2.80	

Flight 17P Return Hardware					
Line No.	Name	Qty Down	Unit Mass (Kg)	Return Total Mass (Kg)	Notes
142	_________ ______				
143	***LIFE SUPPORT SYSTEM (___)***			***154.93***	
144	___				
145	DUST COLLECTOR REPLACEABLE FILTER	2	0.23	0.46	
146	________ _______ _____________ (__)				
147	FILTER	1	0.50	0.50	
148	_______ ___-1				
149	VOZDUKH FAN __5-15_ (MICROCOMPRESSOR)	1	9.05	9.05	
150	____________ ____________.__5-15_				
151	NITROGEN PURGE UNIT	1	12.15	12.15	
152	_____ _________ _______ ___-_				
153	FAN	1	0.38	0.38	
154	___________				
155	CO2 ABSORBER	3	7.00	21.00	
156	____________ CO2				
157	SFOG (___) CASSETTES	84	1.10	92.40	
158	________ ___				
159	WATER PURIFICATION COLUMN UNIT (___)	1	17.69	17.69	
160	_____ ________ ________ ____				
161	BAG	7	0.10	0.70	
162	______				
163	FILTER-INSERT	4	0.15	0.60	
164	_______-________				
165	***ITEMS FOR USE IN SOYUZ***			***5.60***	
166	_______ ___ _____________ _ _____				
167	THERMAL PROTECTION JACKET __K-14	4	1.40	5.60	
168	_______________ _______ ___-14				
169	***SANITARY HYGIENE SUPPORT (____)***			***18.73***	
170	_________ _________- _______________ ____________ (____)				
171	URINE RECEPTACLE WITH HOSE	4	1.65	6.60	
172	_-_________ __ ________				
173	HOSE	1	0.73	0.73	
174	______				
175	PRETREAT CONTAINER WITH A HOSE	1	4.40	4.40	
176	________ _ _____________ _-_ __ ________				
177	COVER	13	0.50	6.50	

Flight 17P Return Hardware

Line No.	Name	Qty Down	Unit Mass (Kg)	Return Total Mass (Kg)	Notes
178	_____				
179	COVER	1	0.50	0.50	
180	_____				
181	***THERMAL CONTROL SYSTEM (COTP)***			***17.50***	
182	________ ___________ _________ ______ (____)				
183	DUST FILTER CARTRIDGE	8	0.50	4.00	
184	_______ _______ ___________				
185	FAN	1	3.50	3.50	
186	__________				
187	CONDENSATE CONTAINER	1	10.00	10.00	
188	_______ __________				
189	***DOCKING AND INTERNAL TRANSFER SYSTEM (____)***			***2.31***	
190	____				
191	EXTENSION	3	0.77	2.31	
192	__________				
193	***ONBOARD MEASUREMENT SYSTEM (___)***			***8.50***	
194	_______ ________ _________ (___)				
195	MEMORY UNIT	1	8.50	8.50	
196	____________ __________ (__) __025_				
197	***IN-FLIGHT MAINTENANCE (____)***			***2.00***	
198	____				
199	TOOL BELT	4	0.50	2.00	
200	____ ______________				
201	***MOTION CONTROL SYSTEM***			***2.38***	
202	___				
203	CABLE	1	0.23	0.23	
204	______				
205	CABLE	1	0.23	0.23	
206	______				
207	CABLE	1	0.23	0.23	
208	______				
209	CABLE	1	0.25	0.25	
210	______				
211	CABLE	1	0.27	0.27	
212	______				
213	CABLE	1	0.26	0.26	
214	______				
215	CABLE	1	0.22	0.22	
216	______				
217	CABLE	1	0.52	0.52	
218	______				

Flight 17P Return Hardware

Line No.	Name	Qty Down	Unit Mass (Kg)	Return Total Mass (Kg)	Notes
219	CABLE	1	0.17	0.17	
220	______				
221	***TOILET (ACY)***			***15.00***	
222	______________-__________ __________ (___)				
223	COLLECTOR	1	15.00	15.00	
224	_______				
225	***FLIGHT CREW EQUIPMENT***			***4.00***	
226	____				
227	***OPERATIONS DATA FILE (OLD SHEETS)***			***2.00***	
228	________ ____________ (______ _____)				
229	ISS-13 EVA, RS EVA	1			
230	___ __ ___ ___-13				
231	CHANGE LIST FOR "BIOLOGICAL EXPERIMENTS"	1			
232	_____________ ____________ (_________ _________)				
233	SM IVA IFM	1			
234	___ _____ __				
235	SM IVA IFM RESUPPLY	1			
236	___ _____ __ ___________				
237	LIFE SUPPORT SYSTEM	1			
238	___				
239	ACTIVATION/DEACTIVATION	1			
240	______________ / ___________				
241	GENERIC CARGO TRANSFER OPERATIONS (4 EA.)	1			
242	___(4__.)				
243	SOFT CONTAINER	10	0.20	2.00	
244	__________ ______				
245	***STRUCTURAL ELEMENTS***			***1.50***	
246	________ ___________				
247	HARDWARE DELIVERY FRAME	1	1.50	1.50	
248	____ ___ ________ ____________				
249	THINKPAD A22P LAPTOP	1	4.50	4.50	
250	______ Think_ad _22_				
251	CONTAINER WITH CASSETTES	2	10.00	20.00	
252	_________ _ _________				
253	CASSETTE CASE	1	0.02	0.02	
254	______ ___ ______				
255	CONTAINER FOR BUCKETS	1	3.80	3.80	
256	_______ ___ _____ **)				
257	WAL 4 ANTENNA COVER	1	12.00	12.00	
258	______ _______ WAL 4				

Flight 17P Return Hardware

Line No.	Name	Qty Down	Unit Mass (Kg)	Return Total Mass (Kg)	Notes
259	WAL 5 ANTENNA COVER	1	1.20	1.20	
260	______ _______ WAL 5				
261	WAL 6 ANTENNA COVER	1	1.20	1.20	
262	______ _______ WAL 6				
263	M34 PLUG	1	0.10	0.10	
264	________ _34				
265	LOW-FREQUENCY CONNECTOR COVER [ACH]	4			
266	______ _/_ ___ (___)				
267					
268	**TOTAL FGB WASTE**			**62.70**	
269	**______ ___**				
270	***FIRE PROTECTION EQUIPMENT (____)***			***29.00***	
271	**____**				
272	SMOKE DETECTOR ___-2	10	2.90	29.00	
273	__________ ____ _______- ____________ ___-2				
274	***ONBOARD MEASUREMENT SYSTEM***			***8.70***	
275	**_______ ________ _________ (___)**				
276	MEMORY UNIT	1	8.70	8.70	
277	____________ __________ __ 1_- __025_;__ 2_-__025_				
278	***THERMAL CONTROL SYSTEM (COTP)***			***25.00***	
279	**________ ___________ _________ ______ (____)**				
280	INTERNAL HYDRAULIC LOOP REPLACEABLE PUMP PANEL	1	25.00	25.00	
281	_______ ______ _______ ___________ _______________ _______ ___ ___				
282					
283	**TOTAL US NON-COMMON WASTE**			**50.99**	
284	**U.S. ______**				
285	LAMP HOUSING ASSEMBLY, GENERAL	4	1.25	5.00	
286	__________ ______ _________				
287	**CLAMSHELL HOLDER**	**2**	**0.03**	**0.05**	
288	______ ___ _______ _______ ______ _ ________ _____				
289	CUSHION, TORSO KIT/TEPC/SWITCH BOX	2	0.68	1.36	
290	________ ___ _______ TORSO/________ TEPC/_______ ______________				

Flight 17P Return Hardware					
			Unit	Return Total	
Line	Name	Qty	Mass	Mass	
No.		Down	(Kg)	(Kg)	Notes
291	FOAM CUSHION FOR PACKING EQUIPMENT IN CTB	1	0.09	0.09	
292	__________ ___________ __ _____________ ___ _______ ____________ _ ___				
293	SPECIAL CUSHION, PCBA	1	0.05	0.05	
294	___________ _________ ___ PCBA				
295	SPECIAL CUSHION, SOLID SHIM	1	0.02	0.02	
296	___________ _________ ___ ___________ _____				
297	SEAT TRACK ADAPTER ASSY	1	0.92	0.92	
298	________ _____________ ___________ _____				
299	CUSHION	1	1.10	1.10	
300	_________-__________				
301	CLIO PDA ASSEMBLY	1	1.45	1.45	
302	__________ ____________ __________ (PDA), ______ CLIO				
303	BATTERY PACK ASSY	1	0.68	0.68	
304	____ ________				
305	PCMCIA SLIMSCSI 1460D ASSEMBLY	1	0.15	0.15	
306	____ 1460D ___ SlimSCSI PCMCIA				
307	ASSEMBLY, PCS/OCA WRITABLE CD	10	0.02	0.17	
308	____________ ________ _____ (CD), _________ ___ ___________ PCS/OCA				
309	EMU ADVANCED BATTERY	2	6.67	13.34	
310	_________________ ________ _ __ EMU				
311	ELEMENT, CATALYST - ORU	2	4.58	9.16	
312	______________ ________ - ________ ____ ORU				
313	TNC RF TERMINATION (ECOMM RFPDB)	2	0.57	1.13	
314	__________ __________ TNC RF (ECOMM RFPDB)				
315	CSLM-2 FOAM INSERT	4	0.42	1.68	
316	_____________ ________ CSLM-2				
317	BAG ASSY, URINE CONTAINMENT	1	10.50	10.50	
318	__________ ___ _________ ________ _____				
319	ZCG AUTOCLAVE SPECIAL CUSHION	1	0.36	0.36	
320	___________ _________ __________ ___ ___________ ___________ ________ (ZCG)				
321	CRPCM FOAM	12	0.06	0.67	

Flight 17P Return Hardware					
Line No.	Name	Qty Down	Unit Mass (Kg)	Return Total Mass (Kg)	Notes
322	_____________ ___ CRPCM				
323	FOAM	1	0.72	0.72	
324	FOAM				
325	FOAM	1	0.68	0.68	
326	FOAM				
327	RIVNUT TOOL	2	0.45	0.90	
328	___________ Rivnut				
329	RIVNUT NUTS	100	0.00	0.20	
330	_____ Rivnut				
331	SOFT TRASH BAGS (___-_)	3	0.20	0.60	
332	_________ ___ _______ _______ ______ ___-_				

TABLE D-4 FLIGHT 19P LAUNCH HARDWARE

Flight 19P Launch Hardware					
Line No.	Name	Qty Up	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
1	***PROGRESS 354***			***1234.35***	
2	________ 354				
3					
4	**TOTAL RUSSIAN CARGO**			**1130.54**	
5	______ ______				
6	***LIFE SUPPORT SYSTEM (___)***			***986.76***	
7	___				
8	***ATMOSPHERIC REVITALIZATION SYSTEM***			***245.38***	
9	____				
10	CONTAINER WITH O2 CANDLES	2	22.22	44.44	
11	_________ _ ___				
12	CONTAINER WITH FILLINGS/NOZZLES O2 CANDLES	11	0.88	9.68	
13	_________ _ _________ ___				
14	***GAS ANALYZER HARDWARE***			***7.74***	
15	_________________ __________				
16	CO2 FILTER UNIT	9	0.86	7.74	
17	____ _________ __ __2				
18	***REAL-TIME GAS MONITORING ANALYZER (AOK) ____-4_***			***0.24***	
19	__________ ____________ ________ (___) ____-4_				
20	KIT ACCESSORIES FOR AOK	1	0.24	0.24	
21	_______. _____________ _ ___				
22	***HARMFUL CONTAMINANTS REMOVAL SYS (___)***			***7.48***	
23	_______ ________ _______ ________ ___:				
24	SET OF CATALYTIC CARTRIDGES PKF-T	1	7.48	7.48	
25	________ _______ ____________________ ___-_				
26	***VOZDUKH CARBON DIOXIDE REMOVAL SYSTEM***			***16.30***	
27	_______ ________ ___________ ____ ______				
28	BACKUP PRESSURE SENSOR	1	0.30	0.30	
29	________ ______ ________				
30	SPARE VACUUM VALVE UNIT	2	8.00	16.00	
31	________ ____ _________ ________ ___				
32	***ELEKTRON-VM SYSTEM***			***159.50***	
33	_______ "_______-__"				
34	LIQUID UNIT	1	159.50	159.50	

Flight 19P Launch Hardware					
			Unit	Launch Total	
Line No.	Name	Qty Up	Mass (Kg)	Mass (Kg)	Notes
35	____ __________ __				
36	***WATER SUPPLY SYSTEM (CBO)***			***95.54***	
37	___				
38	WATER CONTAINER	1	3.52	3.52	
39	________ ___ ____ __				
40	WATER CONDITIONING UNIT WATER PURIFICATION COLUMNS (__ ___)	1	3.74	3.74	
41	____ _______ _____ __________-_______ ____ __ ___				
42	GAS-LIQUID MIXTURE FILTER	1	5.40	5.40	
43	______ _____________ _____ ___				
44	WATER PURIFICATION COLUMN UNIT (___)	4	17.20	68.80	
45	____ _______ _______ ___				
46	SEPARATOR	3	4.28	12.84	
47	__________ ____				
48	RECEIVING DEVICE	1	0.46	0.46	
49	________ __________				
50	PERSONAL MOUTHPIECE	9	0.01	0.09	
51	________ ______________				
52	HOSE	1	0.28	0.28	
53	_____ _-_3				
54	CONNECTOR	2	0.12	0.24	
55	_________				
56	SEMI-CONNECTOR	1	0.17	0.17	
57	_________				
58	***SANITARY HYGIENE SUPPORT (____)***			***103.38***	
59	________ _________-______________ __________ (____)				
60	***TOILET (ACY)***			***103.38***	
61	______________-__________ __________ (___)				
62	T-JOINT HOSE (_-_-_3-__7)	1	0.76	0.76	
63	_____-________ _-_-_3-__7				
64	TOILET (ACY) INSERTS	5	1.04	5.20	
65	________ ___				
66	SOLID WASTE CONTAINER KTO	5	3.50	17.50	
67	_________ _______ _______ ___				
68	EDV	6	5.15	30.90	
69	_______ ___ ____ ___				
70	EDV ADAPTER	1	0.30	0.30	
71	__________ ___				
72	EDV FILL INDICATOR	1	0.01	0.01	
73	_________ _________ ___				
74	COLLECTOR WITH CLAMP	1	7.70	7.70	
75	_______ _ _______ ___				

Flight 19P Launch Hardware					
			Unit	Launch Total	
Line No.	Name	Qty Up	Mass (Kg)	Mass (Kg)	Notes
76	PRETREAT CONTAINER WITH A HOSE	1	9.50	9.50	
77	_______ _ ____________ _-_ __ _______				
78	URINE RECEPTACLE WITH HOSE	4	1.66	6.64	
79	_-________ __ _______				
80	TOILET PAPER PACKAGE	8	0.61	4.88	
81	_______ ________				
82	RECEPTACLE	2	2.09	4.18	
83	________				
84	INDICATOR	1	0.59	0.59	
85	____________				
86	HOSE	1	1.12	1.12	
87	_____				
88	HOSE	1	0.68	0.68	
89	_____				
90	HOSE	1	0.66	0.66	
91	_____				
92	HOSE	1	0.74	0.74	
93	_____				
94	T-JOINT	1	0.22	0.22	
95	_______				
96	ANGULAR PIPE CONNECTOR	1	0.26	0.26	
97	______ _______				
98	COVER	2	0.56	1.12	
99	_____				
100	FILTER-INSERT	4	0.16	0.64	
101	______-_______				
102	SOFT TRASH BAGS (___-_)	10	0.78	7.84	
103	_________ ___ _______ _______ ______ ___-_				
104	DUST COLLECTOR (KIT)	1	1.94	1.94	
105	____________ (_______)				
106	***FOOD SUPPLY SYSTEM (___)***			***392.53***	
107	___				
108	FOOD RATIONS CONTAINERS	60	6.14	368.40	
109	_________ _ _________ _______				
110	NAPKINS FOR SPP	10	0.20	2.00	
111	________ ___ ___				
112	FOOD WASTE BAGS	130	0.04	5.20	
113	______ ___ _______ _______				
114	SELECTION OF FRESH PRODUCE	1	4.26	4.26	11
115	_____ ______ ________				
116	SELECTION OF FRESH PRODUCE	1	3.72	3.72	12
117	_____ ______ ________				
118	SELECTION OF FRESH PRODUCE	1	4.10	4.10	13
119	_____ ______ ________				

Flight 19P Launch Hardware

Line No.	Name	Qty Up	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
120	SELECTION OF FRESH PRODUCE	1	4.67	4.67	14
121	_____ _______ __________				
122	RUBBER TIES / STRAPS	100	0.00	0.18	
123	_________ _____				
124	***PERSONAL HYGIENE AIDS (___ ____)***			***102.89***	
125	________ _________-______________ ___________ (___ ____)				
126	PERSONAL HYGIENE ARTICLES- WET NAPKINS	22	0.95	20.79	
127	___ (_________ _______)				
128	PERSONAL HYGIENE ARTICLES- WET TOWELS	40	0.85	34.00	
129	___-_ (__________ _______)				
130	PERSONAL HYGIENE ARTICLES- DRY NAPKINS	5	0.26	1.30	
131	___-_ (_________ _____)				
132	PERSONAL HYGIENE AIDS- DRY TOWELS	5	0.33	1.65	
133	___-_ (__________ _____)				
134	PERSONAL HYGIENE ARTICLES- DRY TOWELS	12	0.42	5.04	
135	___-_ (__________ _____-_)				
136	COMFORT SET-1M	1	1.46	1.46	
137	_____ ___ _______ ________ ________-1_				
138	COMFORT-1M CASE	2	0.97	1.94	
139	______ ________-1_				
140	SET FOR PERSONAL HYGIENE COMFORT-3M	2	1.15	2.30	
141	_____ ___ _______ ________ ________-3_				
142	AELITA KIT	2	0.64	1.28	
143	________ _______				
144	CAMELIA-A UNDERWEAR	11	0.50	5.50	
145	_____ ________-_				
146	CAMELIA-CM UNDERWEAR	32	0.36	11.52	
147	_____ ________-__				
148	CAMELIA-C UNDERWEAR	3	0.35	1.05	
149	_____ ________-_				
150	SPARE COVERALLS	4	1.25	5.00	
151	___________ ________				
152	HEAVY COVERALLS	2	0.94	1.88	
153	___________-___________				
154	LIGHT-WEIGHT SET	4	0.78	3.12	3
155	_________ ____________				
156	LIGHT CLOTHING	3	0.51	1.53	4
157	_________ ____________				
158	THIN SOCKS	18	0.06	1.01	
159	_____ ______				

Flight 19P Launch Hardware					
			Unit	Launch Total	
Line No.	Name	Qty Up	Mass (Kg)	Mass (Kg)	Notes
160	ASSEMBLER'S KIT	2	0.57	1.14	
161	________ __________				
162	MORFEI RESTRAINT SYSTEM	3	0.22	0.66	
163	_______ _______ ______				
164	SLEEPING MASK	24	0.03	0.72	
165	_______ __ _____				
166	***MEDICAL SUPPORT SYSTEM (CMO)***			***32.16***	
167	___				
168	***COUNTERMEASURES SYSTEM (_____)***			***20.63***	
169	_____				
170	***CYCLE ERGOMETER __-3***			***3.11***	
171	**____________ __-3**				
172	SET OF ADAPTER PLATES	1	3.10	3.10	
173	________ _______				
174	PLATE ASSEMBLY	1	0.01	0.01	
175	________ _ _____				
176	***BD-1 HARDWARE***			***0.30***	
177	**____________ ___ __-1**				
178	CONNECTING CABLE	1			
179	______ ______________				
180	CD DISK	1			
181	CD-____				
182	DISKETTE	3			
183	_______				
184	THERMAL PROTECTION JACKET __K-14	2	1.71	3.42	
185	_____________ ______ ___-14				
186	PENGUIN-3 SUIT	4	2.92	11.68	
187	_______ _______-3				
188	STRAP	2	0.46	0.92	
189	_____				
190	***TONUS-3 ELECTROSTIMULATOR***			***1.20***	
191	**_________________ _____-3**				
192	SET OF ELECTRODES	1	1.20	1.20	
193	________ __________ (_ _____)				
194	***MEDICAL KITS***			***4.29***	
195	**____**				
196	NUTRITIONAL SUPPLEMENT KIT	1	0.52	0.52	
197	_______ _ ________ _________				
198	MEDICAL KIT PV-1	1	0.45	0.45	
199	_______ ___________ __-1				
200	PREVENTIVE REMEDIES MEDICAL KIT P-1	1	0.54	0.54	
201	_______ ___________ _-1				
202	PREVENTIVE REMEDIES MEDICAL KIT P-2	1	0.46	0.46	
203	_______ ___________ _-2				

Flight 19P Launch Hardware

			Unit	Launch Total	
Line No.	**Name**	**Qty Up**	**Mass (Kg)**	**Mass (Kg)**	**Notes**
204	MEDICAL KIT PV-2	1	0.50	0.50	
205	________ ____________ __-2				
206	EMERGENCY MEDICAL KIT	1	1.82	1.82	
207	___________ __-2				
208	***MEDICAL MONITORING EQUIPMENT***			***0.78***	
209	___				
210	CALF VOLUME METER (____) KIT	2	0.24	0.48	
211	___________ _______ _______ _____				
212	***CARDIORECORDER 90205***			***0.15***	
213	**__________________ 90205**				
214	SET OF ACCESSORIES	1	0.15	0.15	
215	_________ ________________ ____________________ 90205				
216	***KARDIOCASSETTE 2000***			***0.15***	
217	**______________ 2000**				
218	SET OF CONSUMABLES	1	0.15	0.15	
219	_________ __________ ___________ ______________-2000				
220	***RADIATION MONITORING SYSTEM***			***1.70***	
221	**________ ______________ ________ (___)**				
222	**LYULIN-ISS SET**	**1**		**1.70**	
223	**_________ ______-___**				
224	DOSIMETER	4	0.25	1.00	
225	_________				
226	INTERFACE CONTROL UNIT	1	0.50	0.50	
227	_____ ___________ _____________ (___)				
228	COVER	1	0.20	0.20	
229	_____				
230	***EQUIPMENT CLEAN UP & AMBIENT ATMOSPHERE CONTROL***			***4.76***	
231	________				
232	SANITARY NAPKINS FOR SURFACES (10)	4	0.93	3.72	
233	_________ ___________ ___ _____________ (10__.)				
234	TEST TUBE KIT (OPER)	1	0.14	0.14	
235	________ _ ___________ (____.)				
236	SAMPLE TUBE KIT (SURFACES)	1	0.14	0.14	
237	________ _ ___________ (______.)				
238	***EKOSEFERA SET***			***0.76***	
239	**_________ "_________"**				
240	EKOSFERA KIT	1	0.76	0.76	
241	________ _________				
242	***FIRE PERSONAL PROTECTION EQUIPMENT(PPE)***			***4.88***	

Flight 19P Launch Hardware

Line No.	Name	Qty Up	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
243	____				
244	SMOKE ALARM	8	0.61	4.88	
245	______ ___________ _____ __-7_				
246	***CREW ONBOARD SUPPORT KIT (____)***			***10.00***	
247	____				
248	***FLIGHT PROCEDURES AND ANCILLARY MATERIALS***			***10.00***	
249	_/___ _ _____				
250	PARCEL FOR ISS CREW (CREW CARE PACKAGE)	2	5.00	10.00	
251	_______ ___ _______				
252	***THERMAL CONTROL SYSTEM (COTP)***			***47.53***	
253	________ ___________ _________ ______ (____)				
254	***REPLACEABLE PUMP PANEL***			***27.16***	
255	_______ ______ _______ (___)				
256	STATIONARY PANEL	1	11.63	11.63	
257	______ ____________				
258	REPLACEMENT UNIT	2	6.04	12.08	
259	____ _______				
260	JUMPER	3	1.15	3.45	
261	_____				
262	FAN	2	2.63	5.26	
263	__________				
264	ISOLATION MOUNT	6	0.75	4.50	
265	_____________				
266	CONDENSATE CONTAINER	1	3.12	3.12	
267	_______ __________				
268	DUST FILTER CARTRIDGE	15	0.30	4.50	
269	_______ _______ ___________				
270	***WATER SUPPLY SYSTEM FOR WATER RESERVES***			***2.99***	
271	________ _______________ __ _______ ____ (___-3_)				
272	AIR LINE WITH ACOUSTIC SCREEN	1	1.47	1.47	
273	__________ _ ____________ _______				
274	AIR LINE WITH ACOUSTIC SCREEN	1	1.47	1.47	
275	__________ _ ____________ _______				
276	CROSSPIECE	1	0.05	0.05	
277	_________				
278	***SM AUDIO SUBSYSTEM (CTTC)***			***1.44***	
279	____				
280	LOW-NOISE HEADSET	3	0.48	1.44	
281	_________ ______ _____ ___-_-23-1				
282	***ONBOARD COMPUTER SYSTEM (___)***			***9.32***	

Flight 19P Launch Hardware

Line No.	Name	Qty Up	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
283	________ ______________ _ _______ (___)				
284	UNIT	1	3.02	3.02	
285	____ __-__				
286	IN TRANSPORTATION CONTAINER	1	6.30	6.30	
287	_ ___________________ ___________				
288	***POWER SUPPLY SYSTEM (___)***			***77.55***	
289	___				
290	800A STORAGE BATTERY	1	77.55	77.55	
291	_______________ ________ (____ 800A)				
292	***MAINTENANCE AND REPAIR EQUIPMENT***			***4.46***	
293	____				
294	TOOL BELT	1	0.50	0.50	
295	____ _________________				
296	EXTENSION	1	0.34	0.34	
297	___________				
298	**OPERATING ELECTRICAL CONNECTOR MOCK-UP**	**1**	**0.44**	**0.44**	
299	___.-____________ ______ __________________				
300	OUTLET	1			
301	________				
302	PLUG	1			
303	_____				
304	BAG FOR CONTAINER	2	0.09	0.18	
305	_____ ___ __________				
306	BAG FOR CONTAINER	2	0.09	0.18	
307	_____ ___ __________				
308	BAG FOR CONTAINER	2	0.09	0.18	
309	_____ ___ __________				
310	BAG FOR CONTAINER	2	0.09	0.18	
311	_____ ___ __________				
312	BAG FOR CONTAINER	1	0.09	0.09	
313	_____ ___ __________				
314	BAG FOR CONTAINER	1	0.09	0.09	
315	_____ ___ __________				
316	BAG FOR CONTAINER	1	0.09	0.09	
317	_____ ___ __________				
318	BAG FOR CONTAINER	1	0.09	0.09	
319	_____ ___ __________				
320	BAG FOR CONTAINER	3	0.10	0.30	
321	_____ ___ __________				
322	BAG FOR CONTAINER	3	0.10	0.30	
323	_____ ___ __________				
324	BAG FOR CONTAINER	3	0.10	0.30	
325	_____ ___ __________				

Flight 19P Launch Hardware

Line No.	Name	Qty Up	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
326	BAG FOR CONTAINER	3	0.10	0.30	
327	_____ ___ ___________				
328	BAG FOR CONTAINER	3	0.10	0.30	
329	_____ ___ ___________				
330	BAG FOR CONTAINER	3	0.10	0.30	
331	_____ ___ ___________				
332	BAG FOR CONTAINER	3	0.10	0.30	
333	_____ ___ ___________				
334	***CREW ONBOARD SUPPORT KIT (____)***			***3.48***	
335	____				
336	***FLIGHT PROCEDURES AND ANCILLARY MATERIALS***			***3.48***	
337	_/___ _ ______				
338	SET OF CREW PROCEDURES (BOOKS AND CDS)	1	3.00	3.00	
339	_________ _/_____________ (_____ _ _D-_____)				
340	***VIDEO AND PHOTO EQUIPMENT***			***0.48***	
341	_____ _ ____/__________				
342	AA BATTERIES	16	0.03	0.48	
343	__________ Alkaline ___ __				
344					
345	**TOTAL RUSSIAN PAYLOADS**			**29.28**	
346	_________ ___-_________				
347	***VIDEO AND PHOTO EQUIPMENT***			***0.87***	
348	_____ _ ____/__________				
349	35 MM FILM IN A CASE	10	0.03	0.30	
350	_____ _ ____________ 35__				
351	CD-ROM	7	0.08	0.57	
352	CD-____/DV-____				
353	***COMMEMORATIVE***			***1.40***	
354	__________				
355	VALAAM ICON KIT	1	1.40	1.40	
356	________ ___________ ______				
357	***CONTRACT EXPERIMENT (___)***			***1.44***	
358	___				
359	***GOLF EXPERIMENT***			***1.44***	
360	____________ ______				
361	GOLF CLUB	2	0.40	0.80	
362	_______				
363	GOLF BALL	4	0.02	0.08	
364	______ ____ _______				
365	***RBO EXPERIMENT***			***1.36***	
366	___				
367	***MATRESHKA-R EXPERIMENT***			***1.36***	
368	__ _________-_				

Flight 19P Launch Hardware					
			Unit	Launch Total	
Line No.	Name	Qty Up	Mass (Kg)	Mass (Kg)	Notes
369	**KIT WITH ACCESSORIES**	**1**	**1.36**	**1.36**	
370	________ _ __________________				
371	***EXPERIMENT BEO***			***0.63***	
372	___				
373	RASTENIYA [PLANTS] KIT	1	0.63	0.63	
374	________ "________"				
375	***EXPERIMENT (___)***			***2.55***	
376	___				
377	***CRYSTALLIZER EQUIPMENT***			***1.70***	
378	___________ "______________"				
379	MODULE 1 IN CONTAINER	1	0.80	0.80	
380	______-1 _ ___________				
381	MODULE 3 IN CONTAINER	1	0.90	0.90	
382	______-3 _ ___________				
383	LUCH-2 HARDWARE	1	0.85	0.85	
384	________ ___-2				
385	***GEOPHYSICAL EXPERIMENTS***			***0.60***	
386	___				
387	***VOLNY EXPERIMENT***			***0.20***	
388	__"_____"				
389	**MOLNIYA-SM KIT**	**1**		**0.20**	
390	________ _______-__				
391	REMOVABLE HARD DISK DRIVE	1	0.20	0.20	
392	________ ________ ____				
393	***RELAKSATSIYA KIT***			***0.40***	
394	________ __ ___________				
395	3.5" FLOPPY DISK	5	0.03	0.15	
396	________ 3.5"				
397	MINI DV VIDEO CASSETTE	4	0.06	0.25	
398	_____________ mini DV				
399	***BIO-MEDICAL RESEARCH EXPERIMENT (___)***			***2.90***	
400	___				
401	SALIVA-F KIT	1	0.10	0.10	
402	________ "_______-_ ______"				
403	SET OF CONSUMABLES	1	0.15	0.15	
404	_________ __________ ___________ ______________-2000				
405	PULSE KIT	1	0.22	0.22	
406	________ ______				
407	KB-03 CONTAINER	1	2.43	2.43	
408	__________ _____________ __-03				
409	***PILOT EXPERIMENT***			***0.84***	
410	____________ ______				
411	**KIT**	**1**	**0.84**	**0.84**	
412	________				

Flight 19P Launch Hardware

Line No.	Name	Qty Up	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
413	DATA INPUT UNIT	1			
414	-____ ______ ___________ ___				
415	CABLE 4	1			
416	______ 4				
417	MATCHING & CONTROL UNIT	1			
418	____ _____________ _ ___________ ___				
419	CABLE 5	4			
420	______ 5				
421	WITH ECHO OCULOGRAM SENSOR	4			
422	_ _________ ____				
423	CD	1			
424	CD-____				
425	CD	1			
426	CD-____				
427	***SPACE TECHNOLOGIES EXPERIMENT***			***8.64***	
428	___				
429	***SELF-PROPAGATING HIGH-TEMPRATURE SYNTHESIS***			***8.64***	
430	________________________ ____________________ _______				
431	***IK SVS EQUIPMENT***			***8.64***	
432	___________ "__ ___"				
433	KIT	1	5.46	5.46	
434	________				
435	REPLACEMENT CONTAINER	1			
436	__________ ________				
437	KIT	1	1.80	1.80	
438	________				
439	POWER SUPPLY & CONTROL UNIT	1			
440	____ ________ _ ___________				
441	KIT	1	1.38	1.38	
442	________				
443	CABLE	1			
444	_______				
445	CABLE	1			
446	_______				
447	CABLE	1			
448	_______				
449	CABLE	1			
450	_______				
451	CABLE	1			
452	_______				
453	CABLE	1			
454	_______				
455	CABLE	1			

Flight 19P Launch Hardware

Line No.	Name	Qty Up	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
456	______				
457	VIDEOCASSETTE HI-8	1			
458	____________ Hi-8				
459	VIDEOCASSETTE HI-8	1			
460	____________ Hi-8				
461	***TEX***			***8.05***	
462	___				
463	***RADIOSKAF EXPERIMENT***			***6.95***	
464	___________ _________				
465	**SOFT CONTAINER**	**1**	**6.95**	**6.95**	
466	______ _________				
467	***KROMKA-1 EXPERIMENT***			***1.10***	
468	___________ ______-1				
469	**SEMI-RIDGID CONTAINER**	**1**	**1.10**	**1.10**	
470	_________ ___________				
471	SET OF TRAY PACKAGES	1			
472	________ _______ ________				
473					
474	**TOTAL FGB CARGO**			**0.28**	
475	___-_________				
476	***FGB LIFE SUPPORT SYSTEM (___ ___)***			***0.28***	
477	**C__ ___**				
478	SAMPLE TUBE KIT (SURFACES)	2	0.14	0.28	
479	_______ _ __________ (______.)				
480					
481	**TOTAL US CARGO**			**74.25**	
482	____________ ____________				
483	***US PROVIDED FOOD AND CREW PROVISIONS***			***43.05***	
484	_______________ ________-_ ________ ________ _______ _ _____ ________-_ _______				
485	***FOOD SUPPLY SYSTEM (___)***			***16.70***	
486	___				
487	***AMERICAN FOOD***			***16.70***	
488	____________ ________ _______				
489	**FOOD KIT, 1/2 CTB**	**2**	**8.35**	**16.70**	**1,R**
490	__________ _____ ___ _ _________ _______				
491	***CREW PROVISIONS***			***26.35***	
492	___				
493	TOKAREV CREW PREFERENCE	1	0.95	0.95	RB
494	________ ____________ _______, _______				
495	MCARTHUR CREW PREFERENCE	1	1.00	1.00	RB

Flight 19P Launch Hardware					
			Unit	Launch Total	
Line No.	Name	Qty Up	Mass (Kg)	Mass (Kg)	Notes
496	________ ____________ _______, ________				
497	***HYGIENE PANTRY***			***3.95***	
498	________ _________ _______				
499	**HYGIENE**	**1**	**0.05**	**2.50**	**R**
500	________ _______				
501	TOWEL ID CLIP	2	0.00	0.01	R
502	_____ _ _______________ ___ _________				
503	CLIP, BOOK ASSEMBLY	2	0.02	0.04	R
504	_____ ___ ____				
505	TOOTHPASTE, CREST	1	0.11	0.11	R
506	______ _____ Crest				
507	TOOTHPASTE, COLGATE	1	0.13	0.13	R
508	______ _____ Colgate				
509	BRUSH, HAIR BOARS (BRISTLE)	2	0.06	0.12	R
510	_____ ___ _____ BOARS				
511	HAIR COMB	2	0.05	0.10	R
512	________				
513	DEODORANT, GILLETTE POWER STRIPE	2	0.10	0.20	R
514	__________ Gillette Power Stripe				
515	DEODORANT, CREW PREFERENCE BAN	2	0.10	0.20	R
516	__________ BAN, ________ ____________ _______				
517	PANASONIC ELECTRIC RAZOR ASSY	1	0.15	0.15	R
518	_____________ PANASONIC				
519	RAZOR, NORELCO	1	0.14	0.14	R
520	__________ ______ NORELCO				
521	TOOTHBRUSH, ORAL B-40 (SOFT)	5	0.01	0.05	R
522	______ _____, ______ ORAL B-40 (______)				
523	TOOTHBRUSH, TEK HARD BRISTLE	5	0.01	0.05	R
524	______ _____ TEK, _______				
525	MACH3 TURBO RAZOR ASSY	2	0.05	0.10	R
526	__________ ______ MACh3 TURBO				
527	MACH 3 TURBO CARTRIDGE ASSY	26	0.02	0.55	R
528	________ ______ _ ________ ___ ______ MACH3 TURBO				
529	HAND CREAM, ALOE GEL	6	0.05	0.30	HZ,R
530	____ ___ ___, ____, ____				
531	SHAVE CREAM, EDGE, TUBE	2	0.10	0.20	R
532	____ ___ ______ Astro-Edge				
533	SHAMPOO, NO RINSE	5	0.29	1.45	R

Flight 19P Launch Hardware

Line No.	Name	Qty Up	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
534	_______ ___ ______ _____				
535	***OFFICE SUPPLY PANTRY***			***10.50***	
536	________ _______ _______________				
537	**OFFICE SUPPLY**	**1**	**0.25**	**1.15**	**R**
538	___________ ______				
539	MECHANICAL PENCIL ASSY	2	0.01	0.02	R
540	____________ ________				
541	FLIGHT, PEN, DATA RECORDER	2	0.02	0.04	R
542	_________ ___ ___________ ______				
543	FLIGHT, PEN, HIGHLIGHTER, YELLOW	1	0.01	0.01	R
544	_________ _ _________ ________, ______				
545	FLIGHT PEN LIME RETRACTABLE	1	0.01	0.01	R
546	_________ _ _________ ________, ____ - ________				
547	FLIGHT PEN RED RETRACTABLE	1	0.01	0.01	R
548	_________ _ _________ ________, _______				
549	FLIGHT PEN BLUE RETRACTABLE	1	0.01	0.01	R
550	_________ _ _________ ________, _____				
551	FLIGHT PEN GREEN RETRACTABLE	1	0.01	0.01	R
552	_________ _ _________ ________, _______				
553	FLIGHT PEN ORANGE RETRACTABLE	1	0.01	0.01	R
554	_________ _ _________ ________, _________				
555	FLIGHT PEN TURQUOISE RETRACTABLE	1	0.01	0.01	R
556	_________ _ _________ ________, _________				
557	FLIGHT PEN BERRY RETRACTABLE	1	0.01	0.01	R
558	_________ _ _________ ________, __________				
559	FLIGHT PEN BLACK RETRACTABLE	1	0.01	0.01	R
560	_________ _ _________ ________, ______				
561	TAPE DISPENSER WITH TAPE	4	0.07	0.28	R
562	_______ _____ _ __________ ___ ______				
563	STOWAGE, HELMET BAG	1	0.14	0.14	R
564	_____ ___ ________ _____				
565	GRIP MASTER- BLACK	1	0.08	0.08	R

Flight 19P Launch Hardware

Line No.	Name	Qty Up	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
566	_________ _________ Gripmaster, _______				
567	ATHLETIC EXERCISE BAND	2	0.05	0.10	R
568	_____ ____________ ____________				
569	EYEWEAR RETENTION DEVICE (CROAKIE)	1	0.00	0.00	R
570	___________ _____ ___ _____ (CROAKIE)				
571	BOOK, TETHER ASSEMBLY (12")	2	0.01	0.03	R
572	___ ___ ____ (12 ______)				
573	BOOK, TETHER ASSEMBLY (36")	2	0.01	0.03	R
574	___ ___ ____ (36 ______)				
575	CREWMEMBER MICROCASSETTE TAPE, SPARE	4	0.02	0.08	R
576	________ ____________ ___ ________				
577	A4 PRINTER PAPER	3	2.45	7.35	R
578	______ ___ ________, _______ _4				
579	**PRINTER SUPPLIES / BATTERIES**	**1**	**0.52**	**2.00**	**R**
580	**___________ _________ ___ ________ / ________ ________**				
581	BATTERY, ALKALINE	45	0.02	1.10	BT,HZ,R
582	________ ________ ________				
583	COLOR INK CARTRIDGE	3	0.07	0.22	R
584	________ _ ________ _________ ___ ________				
585	BLACK INK CARTRIDGE	3	0.05	0.15	R
586	________ _ ________ _________ ___ ________				
587	T-SHIRTS	1	3.15	3.15	RB
588	________				
589	BRIEFS / TROUSERS	1	5.45	5.45	RB
590	_____ / _____				
591	GLOVES / SOCKS / HEADBANDS / STOWAGE BAGS	1	1.35	1.35	RB
592	________ / _____ / __________ _______ / _____ ___ ________				
593	***EVA EQUIPMENT***			***0.80***	
594	***___________ ___ _____***				
595	DISPOSABLE INSUIT DRINK BAG	6	0.13	0.80	1,R
596	___________ _______ ___ ________ ____ __ EMU				
597	***CHECS EHS HARDWARE***			***3.25***	
598	**____-__ ________ _____ ________ (EHS) _______ ______ ________ _______ (CHECS)**				
599	CSA-CP RESUPPLY KIT	1	3.25	3.25	HZ,R

Flight 19P Launch Hardware

Line No.	Name	Qty Up	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
600	_______ ___________ ___________ _________ _______ (CSA-CP)				
601	**CTB, HALF-SIZE**	**1**	**0.70**	**4.55**	
602	**__________ _____ ___**				
603	***CHECS EHS HARDWARE***			***1.13***	
604	**____-__ ________ _____ ________ (EHS) _______ ______ ________ _______ (CHECS)**				
605	PACKET ASSY, SURFACE SAMPLER	10	0.06	0.64	1,R
606	_____ _______ ___ ______ ____ _ ____________ _________				
607	PACKET ASSEMBLY, PETRI DISH	5	0.10	0.50	1,R
608	**________ _ _______ _____**				
609	***CHECS CMS HARDWARE***			***0.17***	
610	**________ ____________ ___________ ___________ (CMS) _______ CHECS**				
611	SUBPACK ASSEMBLY	4	0.04	0.17	1,R
612	_____ _ ________________ [___ _________ __/___]				
613	***CHECS EHS HARDWARE***			***0.28***	
614	**____-__ ________ _____ ________ (EHS) _______ ______ ________ _______ (CHECS)**				
615	BAG ASSY., WASTE, LARGE, 1L	4	0.03	0.12	1,R
616	_____ ___ ______ _______, _______				
617	SMALL STORAGE BAG	8	0.02	0.16	1,R
618	_____ ___ ________, _____				
619	***CHECS CMS HARDWARE***			***2.27***	
620	**________ ____________ ___________ ___________ (CMS) _______ CHECS**				
621	TREADMILL HARNESS	1	2.27	2.27	1,R
622	____________ ____________- ___________ ______ ___ _______ _______				
623	**CTB, HALF-SIZE**	**1**	**0.20**	**7.35**	
624	**__________ _____ ___**				
625	***CHECS CMS HARDWARE***			***0.23***	
626	**________ ____________ ___________ ___________ (CMS) _______ CHECS**				
627	**GYROSCOPE MOUNT/CABLE SPARE PARTS KIT**	**1**	**0.23**	**0.23**	**1,Q,R**
628	**_______ ___.______ __________ _________ _________ _ ______ ___ _________ TVIS**				

Flight 19P Launch Hardware

Line No.	Name	Qty Up	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
629	***CHECS EHS HARDWARE***			***0.83***	
630	**____-__ ________ _____ ________ (EHS) _______ ______ ________ _______ (CHECS)**				
631	CAPTURE DEVICE ASSY., MICROBIAL	6	0.02	0.11	1,R
632	__________________ _______				
633	ADAPTER ASSEMBLY, AIR FILTER, 0.22µm	4	0.04	0.18	1,R
634	________ ___________ _______, 0,22 __				
635	BAG ASSY,. WASTE, SMALL (FLUSH 300 mL)	2	0.18	0.36	1,R
636	_____ ___ ______ _______, _____ (______ ____, 300 __)				
637	BAG ASSY., MICRO SAMPLE ANALYSIS (300ML)	2	0.02	0.04	1,HZ,R
638	_____ ___ ___________________ ________ ____ ____ (300 __)				
639	ZIPLOCK, 9"x15"	3	0.05	0.14	1,R
640	_____ ZIPLOCK (9 ______ x 15 ______)				
641	***CHECS CMS HARDWARE***			***2.27***	
642	**_________ ____________ ___________ ___________ (CMS) _______ CHECS**				
643	ROLLER AND TREAD BELT, SPARE PARTS KIT	5	0.45	2.27	1,Q,R
644	______ _ ________ _________ TVIS, ________ _ _________ ________				
645	***CHECS EHS HARDWARE***			***3.83***	
646	**____-__ ________ _____ ________ (EHS) _______ ______ ________ _______ (CHECS)**				
647	RESUPPLY KIT ASSEMBLY (CARBON DIOXIDE MONITOR KIT ASSEMBLY)	1	2.59	2.59	1,5,HZ,R,W
648	_______ ___________ (_______ ________ ___________ ___________ ____)				
649	WATER SAMPLE COLLECTION KIT	2	0.62	1.24	1,HZ,R
650	________ ___ _______ ____ ____				
651	**CTB, HALF-SIZE**	**1**	**1.19**	**4.55**	
652	**___________ _____ ___**				
653	***CHECS EHS HARDWARE***			***3.30***	
654	**____-__ ________ _____ ________ (EHS) _______ ______ ________ _______ (CHECS)**				
655	MICROBIOLOGY WATER ANALYSIS KIT	3	0.18	0.54	1,R
656	_______ ___ ___________________ ________ ____				
657	SYRINGE ASSEMBLY, MEDIA	10	0.00	0.05	1,R

Flight 19P Launch Hardware

Line No.	Name	Qty Up	Unit Mass (Kg)	Launch Total Mass (Kg)	Notes
658	_______ _______ _ ___________ ______				
659	MCD STOWAGE BAG	6	0.01	0.04	R
660	_____ ___ ________ ___________________ _______ (MCD)				
661	INCUBATION BAG ASSEMBLY	2	0.07	0.14	1,R
662	____________ _____				
663	WIPES, BENZALKONIUM	10	0.00	0.03	1,R
664	________ _ _______________ _________				
665	WIPES, BENZALKONIUM	3	0.00	0.01	1,R
666	________ _ _______________ _________				
667	VALVE ASSEMBLY, GRAB SAMPLER	5	0.50	2.49	1,R
668	_________-____________ Grab				
669	***CHECS CMS HARDWARE***			***0.06***	
670	**________ ___________** **___________ ___________ (CMS)** **_______ CHECS**				
671	PCMCIA CARD ASSY	2	0.03	0.06	1,5,R,W
672	_____ PCMCIA				
673	**CTB, HALF-SIZE**	**1**	**1.16**	**10.70**	
674	**__________ _____ ___**				
675	***CHECS EHS HARDWARE***			***9.54***	
676	**____-__ ________ _____ ________** **(EHS) _______ ______ ________** **_______ (CHECS)**				
677	AIR IN SEIVE PACK 1 ASSY	1	1.70	1.70	1,Q
678	____________ ______ (_______) ___________ _______ ___________ __________ (VOA)				
679	RECIRCULATION SEIVE PACK 2 ASSY	1	2.57	2.57	1,Q
680	____________ ______ (_______________) ___________ _______ _______. ______. (VO				
681	POWER BOARD FAN	1	0.53	0.53	1,Q
682	__________ _____ _______				
683	GC COOLING FAN	1	0.53	0.53	1,Q
684	__________ __________ ________________ (GC)				
685	NITROGEN DRYER	1	1.71	1.71	1,Q
686	____________ ______ _____ ______ _____				
687	DECAL, HAZARDOUS MATERIAL/NONHAZARDOUS LOGO IVA, GREEN	1	0.01	0.01	

Flight 19P Launch Hardware					
			Unit	Launch Total	
Line No.	**Name**	**Qty Up**	**Mass (Kg)**	**Mass (Kg)**	**Notes**
688	_______ ________ ___ ____________ _____ _ _________ _______/_________ __________				
689	INLET NOZZLE FILTER	1	0.20	0.20	1,Q
690	_______ ______				
691	PUMP	4	0.47	1.88	1,Q
692	_____				
693	VOA HARD DISK	1	0.16	0.16	1,5,Q,W
694	____ ___ ___________ VOA				
695	OXYGEN SCRUBBER	1	0.26	0.26	1,HZ,Q
696	___________ ______ [___________ VOA]				
697	DECAL, HAZARDOUS/NONHAZARDOUS LOGO IVA, YELLOW	1	0.01	0.01	
698	______ ________ ___ ____________ _____ _ _________ _______/_________ __________				

Notes Legend

NOTES	
BT	ITEM INCLUDES BATTERIES
HZ	ITEM CONTAINS CHEMICAL, BIOLOGICAL, OR RADIOACTIVE MATERIALS OR BATTERIES
Q	LOGISTICS & MAINTENANCE (L&M) ALLOCATION – INCLUDES SYSTEM SPARES AND IVA TOOLS
R	THIS HARDWARE CAN BE OPERATED IN THE RUSSIAN SEGMENT ONLY AFTER CERTIFICATION AND ACCEPTANCE IS COMPLETE.
RB	CONTENTS OF THE BAG TO BE USED IN THE RUSSIAN SEGMENT
W	REQUIRED ON-ORBIT POWER
FLIGHT SPECIFIC NOTES	
1	Included if mass and volume allow (_______________ ___ _______ _____ _ ______).
3	2 shirts, 1 shorts
4	1 shirt, 1 shorts
5	Installed during Increment
11	Container # 1
12	Container # 2
13	Container # 3
14	Container # 4

TABLE D-5 FLIGHT 18P LAUNCH AND RETURN HARDWARE

Flight 18P Launch and Return Hardware							
				Unit	Launch Total	Return Total	
Line No.	Name	Qty Up	Qty Down	Mass (Kg)	Mass (Kg)	Mass (Kg)	Notes
1	***PROGRESS 353***				***1342.95***	***1403.65***	
2	**________ 353**						
3							
4	**TOTAL RUSSIAN CARGO**				**907.45**		
5	______ ______						
6	***LIFE SUPPORT SYSTEM (___)***				***733.94***		
7	___						
8	***ATMOSPHERIC REVITALIZATION SYSTEM***				***148.59***		
9	____						
10	CONTAINER WITH O2 CANDLES	5	0	22.30	111.50		
11	_________ _ ___						
12	***GAS ANALYZER HARDWARE***				***0.74***		
13	_______________ __________						
14	AK-1M SAMPLER KIT	4	0	0.18	0.74		
15	_______ _ _____________ __-1_						
16	***REAL-TIME GAS MONITORING ANALYZER (AOK) ____-4_***				***0.34***		
17	**__________ __________ ________ (___) ____-4_**						
18	KIT ACCESSORIES FOR AOK	1	0	0.34	0.34		
19	_______._____________ _ ___						
20	***VOZDUKH CARBON DIOXIDE REMOVAL SYSTEM***				***8.80***		
21	**_______ ________ ___________ ____ ______**						
22	FILTER CO2	1	0	0.40	0.40		
23	______ __2						
24	RPM REGULATOR {SWITCH)	1	0	0.80	0.80		
25	_________ _______ ________ (_____________) ___-1						
26	SOUNDPROOF COVER	1	0	7.60	7.60		
27	_____ ________________						
28	***ELEKTRON-VM SYSTEM***				***12.54***		
29	**_______ "_________-__"**						
30	VISUAL PRESSURE MONITORING DEVICE	1	0	0.40	0.40		
31	____ ___________ ________ ________ ____						
32	LIQUID UNIT	2	0	2.18	4.36		
33	______ ___________						
34	SIGNAL AND COMMAND MATCHING UNIT	1	0	2.98	2.98		

Flight 18P Launch and Return Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Return Total Mass (Kg)	Notes
35	____ _____________ _________ _ ______ ____						
36	EMI FILTER	1	0	2.30	2.30		42
37	______ __________ _____						
38	CONTAINER WITH ELECTROLYTE	1	0	2.50	2.50		
39	_______ _ ____________						
40	***OXYGEN SUPPLY SYSTEM ASSEMBLIES***				***14.67***		
41	________ ___						
42	NITROGEN PURGE UNIT	1	0	14.67	14.67		
43	____ ________ ______ ___-_						
44	***WATER SUPPLY SYSTEM (CBO)***				***45.20***		
45	___						
46	GAS-LIQUID MIXTURE FILTER	1	0	5.48	5.48		
47	______ ______________ _____ ___						
48	WATER PURIFICATION COLUMN UNIT (___)	2	0	17.00	34.00		
49	____ ________ _______ ___						
50	HOSE	1	0	0.15	0.15		
51	_____ __-_						
52	SUCTION TIP	3	0	0.02	0.05		
53	__________						
54	EDV	1	0	27.52	5.52		13
55	_______ ___ ____ ___						
56	***SANITARY HYGIENE SUPPORT (____)***				***129.93***		
57	________ _________- ______________ ___________ (____)						
58	***TOILET (ACY)***				***81.71***		
59	______________-__________ __________ (___)						
60	TOILET (ACY) INSERTS	4	0	1.02	4.08		
61	________ ___						
62	**SOLID WASTE CONTAINER KTO**	**9**	**0**		**31.77**		
63	_________ _______ _______ ___						
64	SOLID WASTE CONTAINER – BODY	9	0	2.58	23.22		
65	______ __________ _______ _______						
66	SOLID WASTE CONTAINER (KTO) LID	9	0	0.95	8.55		
67	______						
68	**EDV**	**9**	**0**		**45.54**		

Flight 18P Launch and Return Hardware							
				Unit	Launch Total	Return Total	
Line No.	Name	Qty Up	Qty Down	Mass (Kg)	Mass (Kg)	Mass (Kg)	Notes
69	_______ ___ ____ ___						
70	EDV BUCKET	9	0	1.66	14.94		
71	______						
72	EDV LID	9	0	3.40	30.60		
73	______						
74	EDV ADAPTER	1	0	0.28	0.28		
75	_________ ___						
76	EDV FILL INDICATOR	1	0	0.04	0.04		
77	_________ _________ ___						
78	PRETREAT AND WATER DISPENSER	1	0	6.34	6.34		
79	_______ _________ _ ____ ____						
80	URINE RECEPTACLE WITH HOSE	3	0	1.64	4.92		
81	_-________ __ _______						
82	TOILET PAPER PACKAGE	7	0	0.60	4.20		
83	_______ ________						
84	HOSE	1	0	0.36	0.36		
85	_____						
86	COVER	2	0	0.56	1.12		
87	_____						
88	INDICATOR	1	0	0.57	0.57		
89	____________						
90	HOSE	1	0	0.95	0.95		
91	_____						
92	HOSE	1	0	0.66	0.66		
93	_____						
94	HOSE	1	0	0.66	0.66		
95	_____						
96	HOSE	1	0	0.78	0.78		
97	_____						
98	T-JOINT	1	0	0.25	0.25		
99	_______						
100	ANGULAR PIPE CONNECTOR	1	0	0.22	0.22		
101	______ _______						
102	PRETREAT CONTAINER WITH A HOSE	2	0	9.30	18.60		
103	_______ _ ____________ _-_ __ _______						
104	FILTER-INSERT	2	0	0.15	0.29		
105	______-_______						
106	SOFT TRASH BAGS (___-_)	10	0	0.83	8.30		
107	_________ ___ _______ _______ _______ ___-_						
108	***FOOD SUPPLY SYSTEM (___)***				***279.17***		
109	___						
110	FOOD RATIONS CONTAINERS	43	0	5.96	256.20		

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Return Total Mass (Kg)	Notes
	Flight 18P Launch and Return Hardware						
111	_________ _ _________ _______						
112	***UTENSILS:***				***22.97***		
113	________ ______ ____						
114	UTENSILS	3	0	0.08	0.24		
115	___-1						
116	NAPKINS FOR SPP	10	0	0.20	2.00		
117	________ ___ ___						
118	FOOD WASTE BAGS	100	0	0.06	5.55		
119	______ ___ _______ _______						
120	SELECTION OF FRESH PRODUCE	1	0	14.98	14.98		
121	_____ ______ _________						
122	RUBBER TIES / STRAPS	100	0	0.00	0.20		
123	_________ _____						
124	***PERSONAL HYGIENE AIDS (___ ____)***				***75.65***		
125	________ _________-_____________ __________ (___ ____)						
126	PERSONAL HYGIENE ARTICLES-WET NAPKINS	21	0	0.93	19.63		
127	___ (________ _______)						
128	PERSONAL HYGIENE ARTICLES-WET TOWELS	37	0	0.83	30.86		
129	___-_ (_________ _______)						
130	PERSONAL HYGIENE ARTICLES-DRY NAPKINS	2	0	0.24	0.49		
131	___-_ (________ _____)						
132	PERSONAL HYGIENE AIDS- DRY TOWELS	3	0	0.37	1.11		
133	___-_ (_________ _____)						
134	PERSONAL HYGIENE ARTICLES-DRY TOWELS	5	0	0.37	1.83		
135	___-_ (_________ _____-_)						
136	DENTAL HYGIENE AIDS	2	0	0.55	1.11		
137	___ (___ _______ ___)						
138	AELITA KIT	2	0	0.61	1.22		
139	________ ______						
140	CAMELIA-A UNDERWEAR	4	0	0.48	1.92		
141	_____ _______-_						
142	CAMELIA-C UNDERWEAR	10	0	0.31	3.10		
143	_____ _______-_						
144	CAMELIA-CM UNDERWEAR	24	0	0.34	8.16		
145	_____ _______-__						
146	LIGHT-WEIGHT SET	4	0	0.80	3.20		47
147	________ ___________						
148	SPARE COVERALLS	2	0	1.18	2.36		

Flight 18P Launch and Return Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Return Total Mass (Kg)	Notes
149	___________ ________						
150	FUR STOCKINGS	2	0	0.33	0.66		
151	______ ________						
152	***MEDICAL SUPPORT SYSTEM (CMO)***				***39.65***		
153	___						
154	***COUNTERMEASURES SYSTEM (_____)***				***6.89***		
155	_____						
156	PENGUIN-3 SUIT	2	0	2.96	5.92		
157	_______ _______-3						
158	STRAP	2	0	0.46	0.92		
159	_____						
160	REPAIR KIT	1	0	0.05	0.05		
161	_______ _________						
162	***MEDICAL KITS***				***3.66***		
163	____						
164	BURNS AND WOUNDS (POT) KIT	1	0	0.50	0.50		
165	__________ ___						
166	ANTI-INFLAMMATORY AGENTS MEDICAL KIT	1	0	0.50	0.50		
167	__________ __-2						
168	ANTI-INFLAMMATORY AGENTS MEDICAL KIT	1	0	0.50	0.50		
169	__________ __-3						
170	ANTI-INFLAMMATORY AGENTS MEDICAL KIT	1	0	0.50	0.50		
171	__________ __-4						
172	MEDICAL KIT WITH OINTMENTS	1	0	0.50	0.50		
173	_______ _ ______						
174	SET OF PREVENTIVE MEDICAL OXYGEN MASKS	1	0	1.16	1.16		
175	_______ _ __________ __________ ________________ __________ _____						
176	***MEDICAL MONITORING EQUIPMENT***				***23.89***		
177	___						
178	***GAMMA-1M" SET***				***3.26***		
179	**__________ "_____-1_"**						
180	BP DATA OUTPUT DEVICE	1	0	0.44	0.44		
181	___ __						
182	ECG DATA OUTPUT DEVICE	2	0	0.50	1.00		
183	___ ___						
184	DATA OUTPUT DEVICE	1	0	0.21	0.21		
185	___ ___-1						
186	DATA OUTPUT DEVICE	1	0	0.14	0.14		
187	___ ___						

Flight 18P Launch and Return Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Return Total Mass (Kg)	Notes
188	(REG-1) DATA OUTPUT DEVICE	1	0	0.28	0.28		
189	___ ___-1						
190	(REG-2) DATA OUTPUT DEVICE	1	0	0.28	0.28		
191	___ ___-2						
192	(VENOUS AND ARTERIAL PULSOGRAM-KINETOCARDIOGRAM) DATA OUTPUT DEVICE	2	0	0.46	0.91		
193	___ ___-___						
194	DATA OUTPUT DEVICE BETA-08	2	0	0.34	0.68		
195	___ ____-08						
196	**MASS MEASUREMENT DEVICE**	**1**	**0**		**19.95**		
197	**________ "__________ ____"**						
198	INTERFACE DEVICE	1	0	1.65	1.65		
199	__________ ___________						
200	RACK WITH COVER	1	0	9.45	9.45		43
201	______ _ _____ 5_6.832.086						
202	SPECIAL COMPUTING DEVICE	1	0	2.20	2.20		
203	__________ ___________________ ______________ ___						
204	BAG W KIT	1	0	0.94	0.94		
205	_____ _ ________						
206	BAG W KIT	1	0	3.60	3.60		
207	_____ _ ________						
208	PLATFORM	1	0	2.11	2.11		
209	_________						
210	***EQUIPMENT CLEAN UP & AMBIENT ATMOSPHERE CONTROL***				***5.21***		
211	_______						
212	SANITARY NAPKINS FOR SURFACES (10)	4	0	0.91	3.64		
213	________ __________ ___ ____________ (10__.)						
214	FUNGISTAT KIT	3	0	0.29	0.87		
215	________ _________						
216	***EKOSEFERA SET***				***0.70***		
217	**________ "________"**						
218	EKOSFERA KIT	1	0	0.70	0.70		
219	________ ________						
220	***CREW ONBOARD SUPPORT KIT (____)***				***15.75***		
221	____						
222	***FLIGHT PROCEDURES AND ANCILLARY MATERIALS***				***15.75***		
223	***_/___ _ _____***						

Flight 18P Launch and Return Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Return Total Mass (Kg)	Notes
224	PARCEL FOR ISS CREW (CREW CARE PACKAGE)	1	0	6.45	6.45		18
225	_______ ___ _______ ___						
226	PARCEL FOR ISS CREW (CREW CARE PACKAGE)	1	0	3.85	3.85		19
227	_______ ___ _______ ___						
228	PARCEL FOR ISS CREW (CREW CARE PACKAGE)	1	0	5.45	5.45		20
229	_______ ___ _______ ___						
230	***INDIVIDUAL PROTECTION GEAR (___)***				***61.57***		
231	___						
232	OXYGEN UNIT __-3_	5	0	6.10	30.50		
233	____ __________ __-3_						
234	ABSORBER CARTRIDGE __-9	4	0	2.47	9.86		
235	______ _____________ __-9						
236	WATER CONTAINER	2	0	6.64	13.28		44
237	_______ 5__						
238	SPARE PARTS KIT ___-2_	1	0	2.66	2.66		
239	___-2_						
240	REPLACEABLE ELEMENTS KIT	1	0	3.99	3.99		
241	_______ _______ ________						
242	SET OF UNDERWEAR	2	0	0.64	1.28		
243	________ _____						
244	***THERMAL CONTROL SYSTEM (COTP)***				***9.34***		
245	________ __________ ________ ______ (____)						
246	DUST FILTER CARTRIDGE	20	0	0.29	5.76		
247	_______ _______ ___________						
248	FITTING	1	0	0.39	0.39		
249	________ __________						
250	***WATER SUPPLY EQUIPMENT (___-__)***				***3.19***		
251	__-__ _/__.						
252	MUFFLER KIT	1	0	2.12	2.12		
253	_______ _ ___________						
254	VPF KIT	1	0	1.07	1.07		
255	_______ ___ ___						
256	***ONBOARD EQUIPMENT CONTROL SYSTEM***				***0.19***		
257	____						
258	**KIT WITH CABLES**	**1**	**0**	**0.19**	**0.19**		
259	_______ _ ________						
260	CABLE	3	0				
261	______						
262	ADAPTER-CONNECTOR	1	0				
263	______-_______						

Flight 18P Launch and Return Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Return Total Mass (Kg)	Notes
264	***TELEVISION SYSTEM (TBC)***				***9.88***		
265	**______________ ________ (___)**						
266	TV CAMERA ASSY. ATV	1	0	8.18	8.18		
267	__________ ___________ (ATV)						
268	COVER	1	0	0.40	0.40		
269	_____						
270	RATCHET WRENCH	1	0	0.35	0.35		
271	____ _ __________						
272	TETHER	1	0	0.95	0.95		
273	___						
274	***FLIGHT DATA TELEMETRY SYSTEM (____2-12)***				***0.08***		
275	**____2-12**						
276	TEMPERATURE SENSOR __ 168-04	4	0	0.01	0.05		
277	______ ___________ __ 168-04						
278	PROTECTIVE DEVICES (CAPS) KIT	2	0	0.02	0.03		
279	_________ _______ _________						
280	***POWER SUPPLY SYSTEM (___)***				***77.10***		
281	**___**						
282	800A STORAGE BATTERY	1	0	77.10	77.10		
283	_______________ ________ (____ 800A)						
284	***CONTAMINATION MONITORING EQUIPMENT***				***3.20***		
285	**___**						
286	REMOVABLE CASSETTE-CONTAINER (CKK)	1	0	1.75	1.75		
287	________ ________-__________ (___)						
288	TRANSPORT COVER	1	0				
289	___________________ ______						
290	TIGHT CONTAINER SKK NO.	1	0	0.65	0.65		
291	____________ __________ ___ No.						
292	POLYETHYLENE BAG	1	0				
293	_______________ ______						
294	TIGHT CONTAINER SKK NO.	1	0	0.80	0.80		
295	____________ __________ ___ No.						
296	POLYETHYLENE BAG	1	0				
297	_______________ ______						
298	TRANSPORT COVER	1	0				
299	___________________ ______						
300	***MAINTENANCE AND REPAIR EQUIPMENT***				***5.63***		
301	**____**						
302	CARTRIDGE BELT WITH TOOLS	1	0	1.40	1.40		
303	__________ _ _____________						
304	CARDRIDGE BELT WITH EXTENSION PIECES	1	0	0.72	0.72		

Flight 18P Launch and Return Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Return Total Mass (Kg)	Notes
305	__________ _ ____________						
306	BAG FOR CONTAINER	2	0	0.10	0.20		
307	_____ ___ _________						
308	BAG FOR CONTAINER	2	0	0.10	0.20		
309	_____ ___ _________						
310	BAG FOR CONTAINER	2	0	0.10	0.20		
311	_____ ___ _________						
312	BAG FOR CONTAINER	2	0	0.10	0.20		
313	_____ ___ _________						
314	BAG FOR CONTAINER	1	0	0.10	0.10		
315	_____ ___ _________						
316	BAG FOR CONTAINER	1	0	0.10	0.10		
317	_____ ___ _________						
318	BAG FOR CONTAINER	1	0	0.10	0.10		
319	_____ ___ _________						
320	BAG FOR CONTAINER	1	0	0.10	0.10		
321	_____ ___ _________						
322	BAG FOR CONTAINER	3	0	0.11	0.33		
323	_____ ___ _________						
324	BAG FOR CONTAINER	3	0	0.11	0.33		
325	_____ ___ _________						
326	BAG FOR CONTAINER	3	0	0.11	0.33		
327	_____ ___ _________						
328	BAG FOR CONTAINER	3	0	0.11	0.33		
329	_____ ___ _________						
330	BAG FOR CONTAINER	3	0	0.11	0.33		
331	_____ ___ _________						
332	BAG FOR CONTAINER	3	0	0.11	0.33		
333	_____ ___ _________						
334	BAG FOR CONTAINER	3	0	0.11	0.33		
335	_____ ___ _________						
336	***STRUCTURAL ELEMENTS***				***1.26***		
337	_________ ___________						
338	***INTERNAL***				***1.26***		
339	__________						
340	DOOR STOPPER	2	0	0.63	1.26		
341	________ _____						
342	***CREW ONBOARD SUPPORT KIT (____)***				***4.82***		
343	____						
344	***FLIGHT PROCEDURES AND ANCILLARY MATERIALS***				***4.82***		
345	_/___ _ _____						
346	SET OF CREW PROCEDURES (BOOKS AND CDS)	1	0	4.82	4.82		
347	_-_ _/__________						

Flight 18P Launch and Return Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Return Total Mass (Kg)	Notes
348	***CREW ONBOARD SUPPORT KIT (____)***				***0.38***		
349	____						
350	AA BATTERIES	16	0	0.02	0.38		
351	_________ Alkaline ___ __						
352	***CREW ONBOARD SUPPORT KIT (____)***				***0.05***		
353	____						
354	***VIDEO AND PHOTO EQUIPMENT***				***0.05***		
355	_____ _ ____/__________						
356	LENS CLEANING SET	1	0	0.05	0.05		
357	________ ___ _______ ________________						
358							
359	**TOTAL RUSSIAN PAYLOADS**				**5.74**		
360	________ ___.________						
361	***CREW ONBOARD SUPPORT KIT (____)***				***0.58***		
362	____						
363	MAI-75 SYMBOLIC KIT	1	0	0.58	0.58		
364	_______ "___-75" _ __________ _________						
365	***PAYLOADS***				***0.50***		
366	________ ___.________						
367	**HARD DISK DRIVE (HDD) IN A CASE**	**2**	**0**		**0.50**		
368	**_______ ____ HDD _ _______**						
369	CASE FOR HARD DRIVE	2	0	0.10	0.20		
370	______ ___ ________ _____						
371	SM-FOTO HARD DRIVE	2	0	0.15	0.30		
372	_______ ____						
373	***PAYLOADS***				***4.66***		
374	________ ___.________						
375	***VIDEO AND PHOTO EQUIPMENT***				***1.05***		
376	_____ _ ____/__________						
377	35 MM FILM IN A CASE	10	0	0.03	0.35		
378	_____ _ ___________ 35__						
379	CD-ROM	7	0	0.10	0.70		45
380	CD-____/DV-____						
381	***CONTRACT EXPERIMENT (___)***				***1.86***		
382	___						
383	***SCIENTIFIC EQUIPMENT MPAC & SEED***				***1.86***		
384	**_______ ___________ MPAC&SEED**						
385	SPECIAL RETURN CASSETTE (SRC-nA, SRC-nB)	1	0	1.86	1.86		

Flight 18P Launch and Return Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Return Total Mass (Kg)	Notes
386	-___________ ____________ _______ (SRC-nA, SRC-nB)2__. _ _____						
387	***EQUIPMENT STATKONIJA***				***1.30***		
388	**__________ _________ (___.064.000.000)**						
389	ULITIKA CONTAINER	1	0	1.00	1.00		
390	_________ ______						
391	SELF-CONTAINED TEMPERATURE LOGGER [APT] IN A CASE ("BIOEKOLOGIYA" EXPERIMENT)	1	0	0.30	0.30		
392	__________ ___________ __________ _ _____						
393	***BIO-TECHNOLOGY EXPERIMENT***				***0.45***		
394	**___**						
395	***BIODEGRADATSIYA EXPERIMENT***				***0.21***		
396	**___________ "_____________"**						
397	BIOSAMPLE KIT	1	0	0.21	0.21		
398	_______ ________						
399	***NEUROCOG EXPERIMENT***				***0.24***		
400	**___________ "________"**						
401	HALLEY SHKO KIT	1	0	0.24	0.24		
402	_______ "______-___"						
403							
404	**TOTAL FGB CARGO**				**191.04**		
405	**___-_________**						
406	***FGB LIFE SUPPORT SYSTEM (___ ___)***				***8.27***		
407	**C__ ___**						
408	DUST COLLECTOR REPLACEABLE FILTER	12	0	0.21	2.52		
409	_______ ______ ____________ (__)						
410	SANITARY NAPKINS FOR SURFACES (10)	6	0	0.91	5.46		
411	________ __________ ___ ____________ (10__.)						
412	FUNGISTAT KIT	1	0	0.29	0.29		
413	________ _________						
414	***FGB FIRE DETECTION AND SUPPRESSION SYSTEM (_____ ___)***				***7.47***		
415	**_____ ___**						
416	ISOLATION GAS MASK INSTALLATION KIT IPK-1	3	0	2.49	7.47		
417	___________ __________ ___-1						

Flight 18P Launch and Return Hardware							
				Unit	Launch Total	Return Total	
Line No.	Name	Qty Up	Qty Down	Mass (Kg)	Mass (Kg)	Mass (Kg)	Notes
418	***FGB THERMAL CONTROL SYSTEM (____ ___)***				***23.40***		
419	____ ___						
420	INTERNAL HYDRAULIC LOOP REPLACEABLE PUMP PANEL	1	0	23.40	23.40		
421	_______ ______ _______ __________ _______________ _______ ___ ___						
422							
423	**FGB POWER SUPPLY SYSTEM (___ ___)**				**151.90**		
424	___ ___						
425	800A STORAGE BATTERY	2	0	75.95	151.90		
426	______________ _______ (____ 800A)						
427							
428	**TOTAL US CARGO**				**203.56**		
429	____________ ____________						
430	***US PROVIDED FOOD AND CREW PROVISIONS***				***158.71***		
431	_______________ ________-_ ________ ________ _______ _ _____ _______-_ _______						
432	***CREW PROVISIONS***				***30.86***		
433	___						
434	**HYGIENE PANTRY-2**	**1**	**0**		**2.60**		**48**
435	________ _______ -2						
436	PACKING MATERIAL	1	0	0.80	0.80		
437	___________ ________						
438	DEODORANT, GILLETTE POWER STRIPE	2	0	0.10	0.20		R
439	__________ Gillette Power Stripe						
440	DEODORANT, RIGHT GUARD	2	0	0.10	0.20		R
441	__________ Right Guard						
442	MACH 3 TURBO CARTRIDGE ASSY	26	0	0.02	0.60		R
443	________ ______ _ ________ ___ ______ MACH3 TURBO						
444	SHAMPOO, NO RINSE	3	0	0.27	0.80		HZ,R
445	________ ___ ______ _____						
446	**OFFICE SUPPLY PANTRY-2**	**1**	**0**		**2.60**		**48**
447	____________ ______________, ________-2						
448	GENERAL PURPOSE TAPE,POLYETHYLENE/COTTON	1	0	1.05	1.05		R

Flight 18P Launch and Return Hardware							
				Unit	Launch Total	Return Total	
Line No.	Name	Qty Up	Qty Down	Mass (Kg)	Mass (Kg)	Mass (Kg)	Notes
449	_______ _____ ______ ___________, ___________, _/_ ______						
450	KAPTON TAPE	2	0	0.08	0.15		R
451	___________ _____						
452	COLOR INK CARTRIDGE	6	0	0.08	0.45		HZ,R
453	________ _ _________ _________ ___ _________						
454	BATTERY, ALKALINE	38	0	0.03	0.95		BT,HZ,R
455	________ _______ ________						
456	***CREW CLOTHING***				***12.01***		
457	______ _______						
458	***KRIKALEV CLOTHING***				***4.90***		***48***
459	______ _________						
460	KRIKALEV CLOTHING-3	1	0	4.90	4.90		48,RB
461	________ ______						
462	***PHILLIPS CLOTHING***				***7.11***		***48***
463	______ ________						
464	PHILLIPS CLOTHING-3	1	0	7.11	7.11		48,RB
465	________ ______						
466	A4 PRINTER PAPER	5	0	2.45	12.25		R
467	______ ___ _________, _______ _4						
468	BATTERY, ALKALINE	40	0	0.03	1.20		BT,HZ,R
469	________ _______ ________						
470	PANASONIC ELECTRIC RAZOR ASSY	1	0	0.20	0.20		R
471	______________ PANASONIC						
472	***U.S. SUPPLIED FOOD***				***127.85***		
473	_____________ _____						
474	FOOD KIT, 1/2 CTB	4	0	6.48	25.91		12,46,R
475	___________ _____ ___ _ _________ ________						
476	US NON-COLLAPSIBLE FOOD CONTAINER	16	0	6.37	101.94		R
477	_____________ _________________ _______ __________						
478	***U.S. HARDWARE OTHER THAN FOOD AND CREW PROVISIONS***				***58.01***		
479	_____________ _____________ (_____ ____ _ ______ ____________ ________)						
480	***CHECS HMS HARDWARE***				***0.76***		
481	________ ________ ____________ ______ **(HMS)** _______ **CHECS**						

Flight 18P Launch and Return Hardware							
				Unit	Launch Total	Return Total	
Line No.	Name	Qty Up	Qty Down	Mass (Kg)	Mass (Kg)	Mass (Kg)	Notes
482	ISS MEDICAL ACCESSORY KIT ASSEMBLY	1	0	0.76	0.76		HZ
483	_______ _ _____________ __________________ ___ ___						
484	***LOGISTICS & MAINTENANCE***				***3.45***		
485	**_____________ ___ _______ _______________ _____ SPCU (TCS-ITCS)**						
486	LAMP HOUSING ASSEMBLY, GENERAL	3	0	1.15	3.45		11,48,HZ,Q
487	___________ _______ __________						
488	***PHOTO/TV EQUIPMENT***				***1.88***		
489	**_____________ ___ ____/ __-______**						
490	DCS 760 CAMERA ASSEMBLY	1	0	1.88	1.88		BT,HZ,R
491	_____a _____________ DCS 760						
492	***LOGISTICS & MAINTENANCE***				***0.45***		
493	**_____________ ___ _______ _______________ _____ SPCU (TCS-ITCS)**						
494	PORTABLE MICROPHONE	1	0	0.45	0.45		Q
495	___________ _________						
496	**CTB, HALF-SIZE**	**1**	**0**	**1.36**	**3.70**		
497	**___________ ______ ___**						
498	***CHECS HMS HARDWARE***				***0.34***		
499	**_________ _________ ____________ _______ (HMS) _______ CHECS**						
500	**VARIABLE OXYGEN SYSTEM (VOS)**	**1**	**0**	**0.18**	**0.34**		**49**
501	**___________ ________ _ _____________ __________ ___________**						
502	VOS SPARE PARTS	1	0				
503	___ _____________ VOS						
504	VOS INTUBATED PATIENT ASSEMBLY	1	0	0.16	0.16		
505	________ ___ ______________						
506	VOS NON-INTUBATED PATIENT ASSEMBLY	1	0				
507	_________ _____________ VOS ___ ___________________ _________						
508	***CHECS EHS HARDWARE***				***2.00***		

Flight 18P Launch and Return Hardware							
				Unit	Launch Total	Return Total	
Line No.	Name	Qty Up	Qty Down	Mass (Kg)	Mass (Kg)	Mass (Kg)	Notes
509	**____-__ ________ _____ ________ (EHS) _______ ______ ________ _______ (CHECS)**						
510	VALVE ASSEMBLY, GRAB SAMPLER	4	0	0.50	2.00		HZ
511	_________-_____________ Grab						
512	**CTB, HALF-SIZE**	**1**	**0**	**1.28**	**4.35**		
513	**__________ _____ ___**						
514	***PCS***				***0.06***		
515	**_______ ___________ ___________ PCS**						
516	ULTRAPORT CAMERA ASSEMBLY, A31P	1	0	0.06	0.06		11,49
517	______ Ultra Port						
518	***CHECS EHS HARDWARE***				***0.31***		
519	**____-__ ________ _____ ________ (EHS) _______ ______ ________ _______ (CHECS)**						
520	***WATER MICROBIOLOGY KIT (WMK)***				***0.31***		
521	**____________ ___ ___________________ _______ ____**						
522	WIPES, BENZALKONIUM	13	0	0.00	0.04		48,HZ,R
523	________ _ _______________ _________						
524	CAPTURE DEVICE ASSY., MICROBIAL	7	0	0.02	0.13		49,HZ,R
525	__________________ ______						
526	ADAPTER ASSEMBLY, AIR FILTER, 0.22µm	3	0	0.05	0.14		49,R
527	_______ __________ _______, 0,22 __						
528	***CHECS CMS HARDWARE***				***0.65***		***49***
529	**________ ____________ ___________ ___________ (CMS) _______ CHECS**						
530	IRED INTEGRATION SPACER	18	0	0.04	0.65		11,48
531	_________ ___ __________ _________ IRED						
532	***CHECS CMS HARDWARE***				***1.40***		***48***
533	**________ ____________ ___________ ___________ (CMS) _______ CHECS**						

Flight 18P Launch and Return Hardware							
				Unit	Launch Total	Return Total	
Line	Name	Qty	Qty	Mass	Mass	Mass	
No.		Up	Down	(Kg)	(Kg)	(Kg)	Notes
534	IRED INTEGRATION SPLINE	18	0	0.06	1.06		11,49
535	______ ___ __________ _________ IRED						
536	SUBPACK ASSEMBLY	8	0	0.04	0.34		11,48,HZ,R
537	_____ _ ________________ [___ _________ __/___]						
538	***CHECS HMS HARDWARE***				***0.01***		***48***
539	**________ ________** **___________ ______ (HMS)** **_______ CHECS**						
540	EYE PAD	6	0	0.00	0.01		48
541	________ ________						
542	***CHECS EHS HARDWARE***				***0.63***		***48***
543	**____-__ ________ _____** **________ (EHS) _______** **______ ________ _______** **(CHECS)**						
544	***WATER MICROBIOLOGY KIT (WMK)***				***0.63***		
545	**____________ ___** **___________________** **_______ ____**						
546	SMALL STORAGE BAG	8	0	0.02	0.16		48,R
547	_____ ___ ________, _____						
548	WATER SAMPLER ASSY POTABLE, STERILE	1	0	0.03	0.03		49,R
549	_____________, ___-_						
550	BAG ASSY., WASTE, LARGE, 1L	2	0	0.03	0.06		48,R
551	_____ ___ ______ _______, _______						
552	MCD STORAGE BAG	4	0	0.01	0.02		48,R
553	_____ ___ ________ ___________________ _______ (MCD)						
554	BAG ASSY, WASTE, SMALL (FLUSH 300 mL)	2	0	0.18	0.36		49,R
555	_____ ___ ______ _______, _____ (______ ____, 300 __)						
556	***ECLSS***				***0.00***		***48***
557	**____-__ _________-___** **__________ __________** **_____ _ _______-_** **_________-__ ECLSS**						

Flight 18P Launch and Return Hardware							
				Unit	Launch Total	Return Total	
Line No.	Name	Qty Up	Qty Down	Mass (Kg)	Mass (Kg)	Mass (Kg)	Notes
558	1.0 GAMAH FITTING NITRILE O- 2.0 RING	6	0	0.00	0.00		11,48,Q
559	___________ __________ ___________ _______ Gamah 1.0						
560	***CHECS CMS HARDWARE***				***0.01***		***48***
561	**________ ____________ ___________** **___________ (CMS) _______ CHECS**						
562	HEART RATE MONITOR BATTERY	2	0	0.00	0.01		11,48,HZ,R
563	_______ _______ ________ ___						
564	**CTB, HALF-SIZE**	**1**	**0**	**1.41**	**3.70**		
565	**__________ _____ ___**						
566	***CHECS EHS HARDWARE***				***0.58***		
567	**____-__ ________ _____** **________ (EHS) _______** **______ ________ _______** **(CHECS)**						
568	***WATER MICROBIOLOGY KIT (WMK)***				***0.58***		
569	**____________ ___** **___________________** **_______ ____**						
570	SYRINGE ASSEMBLY, MEDIA	8	0	0.00	0.04		49,HZ,R
571	_______ _______ _ ___________ ______						
572	MICROBIOLOGY WATER ANALYSIS KIT	3	0	0.18	0.54		49,HZ,R
573	_______ ___ ___________________ _______ ____						
574	***CHECS EHS HARDWARE***				***1.39***		
575	**____-__ ________ _____** **________ (EHS) _______** **______ ________ _______** **(CHECS)**						
576	***MICROBIAL AIR SAMPLER (MAS)***				***0.53***		
577	**_____________ ___** **___________________ _______** **_______**						
578	PLASTIC BAG, 6 X 6	2	0	0.01	0.01		48,49,R
579	___________ _____, 6 _ 6						
580	PACKET ASSEMBLY, PETRI DISH	5	0	0.10	0.50		48,49,HZ
581	________ _ _______ _____						

Flight 18P Launch and Return Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Return Total Mass (Kg)	Notes
582	STOWAGE BAG ASSEMBLY, PETRI DISH, SAB W/CH	1	0	0.01	0.01		48,49
583	_____ ___ ________, _____ _____ __ ______ ______ _ ______						
584	PETRI DISH STOWAGE BAG ASSY	1	0	0.01	0.01		48,49
585	_____ ___ ________ _____ _____						
586	***SURFACE SAMPLER KIT (SSK)***				***0.86***		
587	_____ _______ ___ ______ ____ _ ___________ _________						
588	PACKET ASSY, SURFACE SAMPLER	8	0	0.06	0.51		49,HZ
589	_____ _______ ___ ______ ____ _ ___________ _________						
590	PACKET ASSY, CHEMICAL SAMPLE, POST-FLIGHT ANALYSIS	6	0	0.06	0.35		49,R
591	_____ _______ ___ ______ __________ ____ ___ ______________ _______						
592	***CHECS EHS HARDWARE***				***0.16***		
593	**____-__ ________ _____ ________ (EHS) _______ ______ ________ _______ (CHECS)**						
594	***SURFACE SAMPLER KIT (SSK)***				***0.03***		
595	_____ _______ ___ ______ ____ _ ___________ _________						
596	INCUBATION BAG ASSY	1	0	0.03	0.03		48,R
597	_____________ _____						
598	***MICROBIAL AIR SAMPLER (MAS)***				***0.03***		
599	____________ ___ ___________________ _______ _______						
600	INCUBATION BAG ASSY	1	0	0.03	0.03		48,R
601	_____________ _____						
602	***WATER MICROBIOLOGY KIT (WMK)***				***0.11***		
603	____________ ___ ___________________ _______ ____						

Flight 18P Launch and Return Hardware							
				Unit	Launch Total	Return Total	
Line	Name	Qty	Qty	Mass	Mass	Mass	
No.		Up	Down	(Kg)	(Kg)	(Kg)	Notes
604	BAG ASSY., MICRO SAMPLE ANALYSIS (300ML)	6	0	0.02	0.11		48,HZ,R
605	_____ ___ ____________________ ________ ____ ____ (300 __)						
606	***CHECS HMS HARDWARE***				***0.02***		
607	**________ ________** **___________ ______ (HMS)** **_______ CHECS**						
608	TEMPADOT ORAL DISPOSABLE THERMOMETERS 35.5-40.4 C	18	0	0.00	0.02		48
609	___________ _______ _________ TEMPADOT __ 35,5-40,4 °C						
610	***PCS***				***0.14***		
611	**_______ ___________** **___________ PCS**						
612	WRITEABLE DVD ASSEMBLY	1	0	0.05	0.05		48
613	________ ____________ ________ ___________ (DVD)						
614	ASSEMBLY, PCS/OCA WRITABLE CD	2	0	0.05	0.09		48
615	____________ _______ _____ (CD), ________ ___ ___________ PCS/OCA						
616	***PCS***				***9.71***		
617	**_______ ___________** **___________ PCS**						
618	CABLE ASSEMBLY, A31P 16V DC POWER	1	0	0.20	0.20		11,48
619	______ _______ __________ A31P __ ___________ 16 _ _____. _____						
620	120V DC POWER SUPPLY	1	0	2.05	2.05		11,48
621	________ _______ __ ____. __________ 120 _						
622	LAPTOP COMPUTER ASSY, IBM A31P	1	0	3.70	3.70		11,48,HZ
623	_________ ______ IBM A31P						
624	LAPTOP COMPUTER ASSY, IBM A31P	1	0	3.70	3.70		48,BT,HZ,W
625	_________ ______ IBM A31P						
626	STANDBY BATTERY, NIMH, RECHARGEABLE	5	0	0.01	0.05		HZ
627	_________ ______________ _______, ______- _______________ (NIMH)						
628	BACKUP BATTERY, LITHIUM	5	0	0.00	0.01		HZ

Flight 18P Launch and Return Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Return Total Mass (Kg)	Notes
629	__________ ________, _________						
630	***CHECS CMS HARDWARE***				***0.06***		
631	**________ ____________ ___________ ___________ (CMS) _______ CHECS**						
632	PCMCIA CARD ASSY	2	0	0.03	0.06		11,R,W
633	_____ PCMCIA						
634	**CTB, HALF-SIZE**	**1**	**0**	**1.48**	**5.76**		
635	**__________ _____ ___**						
636	***CHECS CMS HARDWARE***				***4.28***		
637	**________ ____________ ___________ ___________ (CMS) _______ CHECS**						
638	IRED FLEXPACK ASSEMBLY , RH	8	0	0.53	4.28		11,48
639	______ _____ _____ Flexpack _________ IRED, ______						
640	**CTB, HALF-SIZE**	**1**	**0**	**1.48**	**5.76**		
641	**__________ _____ ___**						
642	***CHECS CMS HARDWARE***				***4.28***		
643	**________ ____________ ___________ ___________ (CMS) _______ CHECS**						
644	IRED FLEXPACK ASSEMBLY, LH	8	0	0.53	4.28		11,48
645	______ _____ _____ Flexpack _________ IRED, _____						
646	**CTB, HALF-SIZE**	**1**	**0**	**0.24**	**4.45**		
647	**__________ _____ ___**						
648	***CHECS HMS HARDWARE***				***4.21***		
649	**________ ________ ___________ ______ (HMS) _______ CHECS**						
650	MULTIFUNCTION ELECTRODE	6	0	0.01	0.05		49
651	_____________ __________						
652	ECG ELECTRODE	7	0	0.01	0.06		49
653	_________ ___						
654	EC8+ CARTRIDGE ASSEMBLY	15	0	0.01	0.09		49,HZ
655	_________ _______ __8+						
656	CREATININE CARTRIDGE ASSEMBLY	7	0	0.01	0.04		49,HZ
657	________ ______ ___ _______ __ _________						
658	DECAL, BIO-HAZARD CREW INTERFACE ANALYSIS	11	0	0.00	0.01		48
659	________ ___ ____________ _______ __________						

Flight 18P Launch and Return Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Return Total Mass (Kg)	Notes
660	DECAL, HAZARDOUS/NONHAZARDOUS LOGO IVA, YELLOW	3	0	0.01	0.02		48
661	______ ________ ___ ___________ _______ __________, _______ 2 (_______ CCPK)						
662	DECAL, HAZARDOUS/NONHAZARDOUS LOGO IVA, RUBY RED	4	0	0.01	0.02		48
663	_______ ________ ___ ___________ _______ __________, _______ 4 (_______ CCPK)						
664	SODIUM CHLORIDE 0.9% 500 ML	2	0	0.56	1.12		48,49,HZ
665	0,9% _______ _______ ______, 500 __						
666	CLOTH (PIG MAT)	22	0				48,49
667	_____ (_____________)						
668	SODIUM CHLORIDE 0.9% 1 LITER	2	0	1.10	2.20		48,49,HZ
669	0,9% _______ _______ ______, 1 ____						
670	CLOTH (PIG MAT)	44	0				48,49
671	_____ (_____________)						
672	D5W (DEXTROSE) 500 ML	1	0	0.60	0.60		48,49,HZ
673	___________ _______ (D5W), 500 __						
674	CLOTH (PIG MAT)	11	0				48,49
675	_____ (_____________)						
676	***CHECS EHS HARDWARE***				***0.82***		
677	**____-__ ________ _____** **________ (EHS) _______** **______ ________ _______** **(CHECS)**						
678	VOLATILE ORGANIC ANALYZER REPAIR KIT	1	0	0.50	0.50		Q
679	_______ ___ _______ ___________ _______ ____________ __________						
680	CRIMP TOOL, ADJUSTABLE	1	0	0.30	0.30		Q
681	________ _________, ____________						
682	CRIMP TOOL POSITIONER	1	0	0.02	0.02		Q
683	___________ _______ _________ ___________						
684							
685	**TOTAL US PAYLOADS**				**13.16**		

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Return Total Mass (Kg)	Notes
686	_______ _____________						
687	***HRF RENAL STONE***				***2.56***		
688	**___________ HRF, ___________ RENAL STONE (________ ______)**						
689	TUBE DISPENSER ASSY, URINE ASSY	2	0	1.28	2.56		48,HZ,R
690	______ (______) __ ________- ___________ ___ ____ _____						
691	***UTILIZATION***				***5.90***		
692	_______ _____________						
693	***HRF RENAL STONE***				***5.90***		
694	**___________ HRF, ___________ RENAL STONE (________ ______)**						
695	BAG ASSY, URINE CONTAINMENT	1	0	0.85	0.85		48,R
696	_________ ___ ________ _______ _____						
697	**URINE COLLECTION KIT ASSEMBLY**	**1**	**0**	**1.50**	**1.50**		**48,HZ,R**
698	**_______ _-__________ (UCK)**						
699	**HRF URINE COLLECTION POUCH**	**1**	**0**				
700	**_____ _______ _- __________, ___________ HRF**						
701	UCD ASSEMBLY (BELLOWS CATH, LICL) MALE	20	0				HZ
702	_-________ (_____________ ______, LiCL), ________						
703	BAG ASSEMBLY, RUBBER STOPPER/QUICK DISCONNECT	2	0				
704	_____ _ _________ _______ ___ ________________ __________						
705	BAG ASSEMBLY, GAUZE	1	0				
706	_____ _ _________ __________						
707	BAG ASSEMBLY, BIOCIDE WIPES	1	0				HZ
708	_____ _ ________________ __________						

Flight 18P Launch and Return Hardware							
				Unit	Launch Total	Return Total	
Line No.	Name	Qty Up	Qty Down	Mass (Kg)	Mass (Kg)	Mass (Kg)	Notes
709	**HRF URINE SYRINGE ADAPTER PALLET ASSY**	**1**	**0**	**0.25**	**0.25**		**48,R**
710	**_________ _ __________ _______ ___ ______ ____ _____**						
711	BAG ASSEMBLY	1	0				
712	_____						
713	ZIP LOCK BAG	3	0				
714	_____ Ziplock						
715	PALLET ASSEMBLY, ADAPTER	2	0				
716	_________ _ __________ _______						
717	LOG BOOK ASSY, SAMPLE	2	0	0.10	0.20		48,R
718	______ ___________ ________						
719	LOG BOOK ASSY. FOOD, FLUIDS AND ACTIVITY	2	0	0.10	0.20		48,R
720	______ ___________ ______ ____, _________ _ __________ __________						
721	**HRF POTASSIUM CITRATE/PLACEBO KIT**	**2**	**0**	**1.45**	**2.90**		**48,HZ,R**
722	**_______ _ __________ _______ _____/_______, __________ HRF**						
723	ZIP-LIP BAG	2	0				
724	_____ Zip-lip						
725	HRF POTASSIUM CITRATE/PLACEBO PALLET ASSEMBLY	12	0				HZ
726	________ ________ _______ _____ / _______, ___________ HRF						
727	***UTILIZATION***				***4.70***		
728	***_______ _____________***						
729	***HRF RENAL STONE***				***4.70***		
730	**___________ HRF, ___________ RENAL STONE (________ ______)**						
731	BAG ASSY, URINE CONTAINMENT	2	0	0.85	1.70		
732	_________ ___ ________ _______ _____						
733	**URINE COLLECTION KIT ASSEMBLY**	**2**	**0**	**1.50**	**3.00**		**HZ**
734	**_______ _-_________ (UCK)**						

Flight 18P Launch and Return Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Return Total Mass (Kg)	Notes
735	HRF URINE COLLECTION POUCH	2	0				
736	_____ ________ _- __________, ___________ HRF						
737	UCD ASSEMBLY (BELLOWS CATH, LICL) MALE	40	0				HZ
738	_-________ (______________ _______, LiCL), ________						
739	BAG ASSEMBLY, RUBBER STOPPER/QUICK DISCONNECT	4	0				
740	_____ _ __________ ________ ___ __________________ ___________						
741	BAG ASSEMBLY, GAUZE	2	0				
742	_____ _ __________ ___________						
743	BAG ASSEMBLY, BIOCIDE WIPES	2	0				HZ
744	_____ _ __________________ ___________						
745							
746	**TOTAL COMMAON WASTE**					**690.65**	
747	_____ ______						
748	**TOTAL US COMMON WASTE**					**345.33**	
749	**TOTAL RUSSIAN COMMON WASTE**					**345.33**	
750	PERSONAL HYGIENE ARTICLES- WET NAPKINS	0	1	0.90		0.90	
751	___ (_________ ________)						
752	PERSONAL HYGIENE ARTICLES- DRY NAPKINS	0	1	0.40		0.40	
753	___-_ (_________ _____)						
754	DENTAL HYGIENE AIDS	0	3	0.70		2.10	
755	___ (___ ________ ___)						
756	PERSONAL HYGIENE ARTICLES- WET TOWELS	0	8	0.45		3.60	
757	___-_ (__________ ________)						
758	PERSONAL HYGIENE ARTICLES- DRY TOWELS	0	1	0.40		0.40	
759	___-_ (__________ ______-_)						
760	PERSONAL HYGIENE AIDS- DRY TOWELS	0	4	0.32		1.28	

Flight 18P Launch and Return Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Return Total Mass (Kg)	Notes
761	___-_ (_________ _____)						
762	LIGHT-WEIGHT SET	0	2	0.76		1.52	
763	________ __________						
764	CAMELIA-CM UNDERWEAR	0	18	0.32		5.76	
765	_____ _______-__						
766	CAMELIA-C UNDERWEAR	0	9	0.30		2.70	
767	_____ _______-_						
768	SLEEPING BAG INSERT	0	6	0.40		2.40	
769	_______ _ _________ _____						
770	KTO	0	6	11.50		69.00	
771	___						
772	US NON-COLLAPSIBLE FOOD CONTAINER	0	25	1.72		43.00	
773	____________ ________________ _______ _________						
774	FOOD RATIONS CONTAINERS	0	15	1.00		15.00	
775	_________ _ _________ _______						
776	SOFT CONTAINER	0	4	0.15		0.60	
777	_________ ______						
778	EDV URINE COLLECTION UNIT (EDV-U BUCKET)	0	7	26.50		185.50	
779	_______ ___ ____ _ _____ (_____ ___-_)						
780	SOFT TRASH BAGS (___-_)	0	2	8.00		16.00	
781	_________ ___ _______ _______ ______ ___-_						
782	CONTAINER WITH FRESH PRODUCE	0	1	1.00		1.00	
783	_____ ______ _________						
784	FOOD WASTE BAGS	0	1	0.90		0.90	
785	_____ ___ _______ _______						
786	PENGUIN-3 SUIT	0	1	2.59		2.59	
787	_______ _______-3						
788	URINE IN RODNIK TANKS	0	2	168.00		336.00	
789	_____ _ _____ _______"______"						
790							
791	**TOTAL RUSSIAN NON-COMMON WASTE**					**555.17**	
792	_________ ______						
793	INTERFACE HOLDER	0	1	2.60		2.60	
794	____________ _________						
795	RETENTION LOCK	0	2	0.45		0.90	
796	_____ ________						
797	URAGAN PCMCIA CARD	0	1	0.06		0.06	
798	"______" ____I_ _____						
799	MOLNIYA-SM EXPERIMENT KIT	0	2	0.50		1.00	
800	_______ __ "______-__"						

Flight 18P Launch and Return Hardware

				Unit	Launch Total	Return Total	
Line No.	**Name**	**Qty Up**	**Qty Down**	**Mass (Kg)**	**Mass (Kg)**	**Mass (Kg)**	**Notes**
801	KEYBOARD	0	1	0.25		0.25	
802	___________						
803	MAGNETO-OPTICAL DISK DRIVE	0	1	0.25		0.25	
804	_________ __________________ ______						
805	HPA TRANSPORTATION CONTAINER	0	1	0.11		0.11	
806	____________ _________ HPA						
807	PROFILAKTIKA KIT	0	2	1.50		3.00	HZ
808	_______ ____________						
809	PULSE SPARES KIT	0	1	0.21		0.21	
810	___. "_____-___"						
811	FLEXIBLE DISK KARDIOKASSETA 2000 DATA	0	3	0.07		0.21	
812	______ ____ "_____________ 2000 ______"						
813	CARDIOCASETTE DATA 3.5" DISKETTE	0	4	0.07		0.28	
814	_______ 3,5" "_____________ _______"						
815	**Pulse Kit**	**0**	**1**	**0.21**		**0.21**	
816	**_______ "_____-__"**						
817	PULSE KIT	0	1	0.21		0.21	
818	_______ _____						
819	SET OF CONSUMABLES	0	1	0.14		0.14	
820	________ _________ __________ _____________-2000						
821	SPRUT-K DATA DISKETTE	0	1	0.05		0.05	
822	_______"_____-_ _______"						
823	MBI PROTECTION KIT	0	1	0.16		0.16	
824	_______ _______-___						
825	SET OF CONSUMABLES	0	2	0.05		0.10	
826	________ _________ __________ "______-03"						
827	ARTERIAL PRESSURE MEASUREMENT KIT	0	1	0.60		0.60	
828	_______"___________ __"						
829	ARTERIAL PRESSURE MEASUREMENT UNIT	0	1	0.10		0.10	
830	____ _________ __						
831	CUFF	0	1	0.20		0.20	
832	_______						
833	ADHESIVE BANDAGE	0	1	0.01		0.01	
834	________						
835	POWER SUPPLY FOR TENZOPLUS	0	1	0.10		0.10	
836	_________ ________ ___ __________						
837	AA BATTERIES	0	6	0.70		4.20	
838	__.________ _____ __						
839	BMI-04 STRAP	0	1	0.05		0.05	
840	______ __I-04						

Flight 18P Launch and Return Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Return Total Mass (Kg)	Notes
841	ORGANIZER	0	1	0.14		0.14	
842	___________						
843	EDUCATIONAL EXPERIMENT CASE	0	1	0.14		0.14	
844	______ "________________ ____________"						
845	CONSUMABLES 2 KIT	0	1	2.55		2.55	
846	________ "____________ __________ 2"						
847	DCCO CAMERA MOUNT	0	1	1.55		1.55	
848	DCCO __________ _______						
849	REFLOTRON KIT	0	1	0.72		0.72	
850	________ __________-4						
851	BATTERY KIT (___) FOR THE M-1100	0	1	0.44		0.44	
852	_________ __________ ________ (___) ___ _-1100						
853	CASES FOR ROOT MODULE RETURN KIT	0	1	0.59		0.59	
854	________ "_____ ___ ____________ __"						
855	MPAC&SEED PANEL IN TRANSPORTABLE PACKAGE	0	1	25.50		25.50	
856	_______ __________ _ ________						
857	WHITE BAG	0	3	0.15		0.45	
858	______ ______						
859	WIRE CLAMP	0	6	0.15		0.90	
860	____________ _________						
861	BAG WITH FILM	0	3	0.15		0.45	
862	______ _ _/________						
863	BAG WITH FILM	0	1	0.15		0.15	
864	______ _ _/________						
865	CREW PACKAGE	0	1	3.68		3.68	
866	________ ____ ________						
867	YELLOW RUBBER BAG	0	1	2.00		2.00	
868	Bag _______ __________ ______						
869	SFOG (___) CASSETTES	0	11	1.10		12.10	
870	________ ____						
871	LIQUID UNIT	0	1	158.00		158.00	
872	_____ ____________ __						
873	LIQUID UNIT	0	2	1.50		3.00	
874	_______ ____________						
875	WATER PURIFICATION COLUMN UNIT (___)	0	2	17.69		35.38	
876	_____ ________ ________ ____						
877	GAS-LIQUID MIXTURE FILTER	0	1	5.50		5.50	
878	_______ _________________ ______ ____						
879	ANTI-FOG PASTE	0	2	0.15		0.30	
880	_______ ____________						
881	TOILET (ACY) INSERTS	0	1	1.03		1.03	

Flight 18P Launch and Return Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Return Total Mass (Kg)	Notes
882	_________ ___						
883	TOILET PAPER PACKAGE	0	2	0.61		1.22	
884	________ _________						
885	URINE RECEPTACLE WITH HOSE	0	1	1.65		1.65	
886	_-________ __ ________						
887	SOFT TRASH BAGS (___-_)	0	1	0.86		0.86	
888	_________ ___ ________ ________ _______ ___-_						
889	URINE RECEPTACLE KIT	0	1	0.90		0.90	
890	________ _-_________						
891	UROLUKS KIT	0	1	0.40		0.40	
892	________ ________						
893	FILTER-INSERT	0	1	0.15		0.15	
894	_______-________						
895	VALSALVA DEVICE	0	1	0.05		0.05	
896	___________ ___________						
897	T-JOINT HOSE (_-_-_3-__7)	0	1	0.70		0.70	
898	______-________ _-_-_3-__7						
899	INTERFACE DEVICE	0	1	1.70		1.70	
900	___________ ____________						
901	ANTI-INFLAMMATORY AGENTS MEDICAL KIT (__-4)	0	1	0.58		0.58	
902	________ __-4						
903	_-2 KIT (PREVENTATIVE REMEDIES)	0	1	0.52		0.52	
904	________ _-2						
905	MEDICAL KIT WITH OINTMENTS	0	1	0.70		0.70	
906	________ _ _______						
907	MEDICAL KIT	0	1	0.57		0.57	
908	________ ____________ (__)						
909	_-1 KIT (PREVENTATIVE REMEDIES)	0	2	0.61		1.22	
910	________ _-1						
911	ANTI-INFLAMMATORY AGENTS MEDICAL KIT	0	1	0.36		0.36	
912	___________ __-3						
913	______ KIT	0	1	0.56		0.56	
914	________ ______						
915	_-3 KIT	0	1	0.51		0.51	
916	________ _-3						
917	DATA OUTPUT DEVICE BETA-08	0	4	0.30		1.20	
918	___ ____-08						
919	EKOSFERA KIT	0	2	0.75		1.50	
920	________ _________						
921	EMERGENCY FIRST AID-2 KIT SYRINGE	0	2	0.01		0.02	
922	______ __-2						
923	FUNGISTAT KIT	0	5	0.31		1.55	

Flight 18P Launch and Return Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Return Total Mass (Kg)	Notes
924	_________ __________						
925	IM STAND	0	1	8.82		8.82	
926	_______ __						
927	SPECIAL COMPUTING DEVICE	0	1	2.25		2.25	
928	___________ ____________________ _______________ ___						
929	BAG WITH KIT	0	1	1.80		1.80	
930	______ _ _________						
931	BAG W KIT	0	1	3.90		3.90	
932	______ _ _________						
933	PLATFORM	0	1	2.10		2.10	
934	__________						
935	800A STORAGE BATTERY	0	2	74.50		149.00	
936	________________ ________(_____ 800A)						
937	FAN	0	1	2.48		2.48	
938	___________						
939	DUST FILTER CARTRIDGE	0	6	0.30		1.80	
940	________ ________ ____________						
941	DUST COLLECTOR REPLACEABLE FILTER	0	2	0.23		0.46	
942	________ _______ _____________(__)						
943	FILTER IK-0702	0	2	3.80		7.60	
944	_______ __-0702						
945	PRETREAT CONTAINER WITH A HOSE	0	1	3.50		3.50	
946	________ _ _____________ _-_ __ ________						
947	LAMP WITH CABLE	0	2	0.35		0.70	
948	___________ __1-7 _ ________						
949	FLANGE	0	1	0.10		0.10	
950	_______						
951	SD1-5M POWER SUPPLY	0	2	0.60		1.20	
952	_____ ________ __1-5_						
953	825M3 UNIT	0	4	5.80		23.20	
954	_____ 825_3						
955	825M1 STORAGE BATTERY	0	4	5.73		22.92	
956	________________ _____ 825_1						
957	GP-10 PRESSURE GLOVES (PACK)	0	2	2.25		4.50	
958	______________ (______)						
959	OXYGEN UNIT __-3_	0	3	5.25		15.75	
960	_____ ____________ __-3_						
961	ABSORBER CARTRIDGE __-9	0	2	2.49		4.98	
962	_______ ________________ __-9						
963	WATER CONTAINER	0	1	1.50		1.50	
964	________ 5__						
965	REPLACEABLE ELEMENTS KIT	0	1	3.80		3.80	
966	________ ________ __________						

Flight 18P Launch and Return Hardware							
				Unit	Launch Total	Return Total	
Line No.	**Name**	**Qty Up**	**Qty Down**	**Mass (Kg)**	**Mass (Kg)**	**Mass (Kg)**	**Notes**
967	REPLACEABLE ELEMENTS KIT	0	2	0.35		0.70	
968	_______ _______ _________						
969	FOR-4 FILTERS	0	2	0.11		0.22	
970	_______ ___-4,						
971	BOS BAG	0	4	0.45		1.80	
972	_______ ___						
973	FILTER	0	2	0.45		0.90	
974	______ ___-1						
975	SPARE PARTS KIT ___-2_	0	1	2.70		2.70	
976	___-2_						
977							
978	**FGB WASTE**					**82.00**	
979	______ ___						
980	800A STORAGE BATTERY	0	1	74.50		74.50	
981	______________ _______ (____ 800A)						
982	GAS MASK	0	3	2.50		7.50	
983	___-1						
984							
985	**TOTAL US NON-COMMON WASTE**					**75.83**	
986	**U.S. ______**						
987	**CLAMSHELL HOLDER**	**0**	**3**	**0.03**		**0.09**	
988	______ ___ _______ _______ ______ _ ________ _____						
989	OCA JUMPERS FOR CONNECTORS	0	8	0.14		1.12	
990	LAMP HOUSING ASSEMBLY, GENERAL	0	3	1.25		3.75	
991	__________ ______ _________						
992	STANDBY BATTERY, NIMH, RECHARGEABLE	0	3	0.01		0.04	HZ
993	_________ ______________ _______, ______- _______________ (NIMH)						
994	BACKUP BATTERY, LITHIUM	0	3	0.00		0.01	HZ
995	_________ ________, _______						
996	BRACKET ASSY, MULTI-USE	0	3	0.14		0.42	
997	_____________ _________						
998	PACKING MATERIAL	0	1	0.32		0.32	
999	___________ ________						
1000	IRED CANISTER CORD ASSEMBLY	0	6	0.14		0.84	
1001	_______ ______ _ __________ _________ IRED						
1002	**BAG ASSY, URINE CONTAINMENT**	**0**	**1**	**10.50**		**10.50**	
1003	_________ ___ ________ _______ _____						
1004	ASSEMBLY, IBM THINKPAD FLIGHT LAPTOP COMPUTER SYSTEM MODEL 760XD	0	2	2.70		5.40	HZ

Flight 18P Launch and Return Hardware

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Launch Total Mass (Kg)	Return Total Mass (Kg)	Notes
1005	______ IBM Thinkpad, ______ 760XD, ______ _______						
1006	CLIO BATTERY POUCH ASSEMBLY	0	4	0.15		0.60	
1007	IVA 12V NIMH BATTERY	0	1	0.68		0.68	
1008	_______ ______- _______________ ___ _____, 12 _						
1009	DC POWER SUPPLY ASSEMBLY	0	2	1.13		2.27	
1010	________ _______ ____. ____						
1011	ASSEMBLY, BATTERY PACK - PCS	0	6	0.36		2.18	HZ
1012	____ ______________ _______ ___ __________ PCS						
1013	ASSEMBLY, REMOVABLE FLOPPY DIS - PCS (760)	0	1	0.45		0.45	
1014	_______ ________ ___ ______ __________ PCS (760)						
1015	SWAGED WIRE ROPE ASSY, GYROSCOPE ASSEMBLY	0	1	0.10		0.10	
1016	________ _______, _________ _ _________						
1017	IRED SUPPORT BLOCK & PAD ASSY., AFT-RIGHT	0	1	2.31		2.31	
1018	_______ ____ _ _________ ___ _________ IRED, ______ ______						
1019	IRED SUPPORT BLOCK & PAD ASSY., FWD	0	1	2.81		2.81	
1020	_______ ____ _ _________ ___ _________ IRED, ________						
1021	TEST STRIP BAG ASSY - NH3	0	5	0.03		0.15	
1022	ASSEMBLY, REMOVABLE HARD DISK (760XD) - PCS	0	3	0.22		0.66	
1023	__________ __ _______ _________ _____ (____), _______ (760XD) - ___ PCS						
1024	ASSEMBLY, PCS/OCA WRITABLE CD	0	8	0.02		0.14	
1025	________ ____________ _______- ______ ___ ________ [OCA] __ ____ __________ PCS						
1026	ELEMENT ASSY, BACTERIA FILTER	0	3	2.03		6.08	
1027	___________ _______ ___________________ ________						
1028	PROPELLANT CARTRIDGE, CONNECTOR CLEANER TOOL	0	1	0.14		0.14	
1029	_______ __________ ________, __________ ___ _______ ________						
1030	OPERATIONS DATA FILE ASSEMBLY OPS	0	2	14.00		28.00	

Flight 18P Launch and Return Hardware								
				Unit	Launch Total	Return Total		
Line No.	Name	Qty Up	Qty Down	Mass (Kg)	Mass (Kg)	Mass (Kg)	Notes
1031	________ ____________ ___ __ _________ ______						
1032	PACKING MATERIAL	0	1	0.11		0.11	
1033	___________ ________						
1034	PACKING MATERIAL	0	1	0.18		0.18	
1035	___________ ________						
1036	PACKING MATERIAL	0	1	0.05		0.05	
1037	___________ ________						
1038	PACKING MATERIAL	0	1	0.82		0.82	
1039	___________ ________						
1040	BOOK, TETHER ASSEMBLY (12")	0	1	0.01		0.01	
1041	___ ___ ____ (12 ______)						
1042	PACKING MATERIAL	0	1	0.23		0.23	
1043	___________ ________						
1044	PACKING MATERIAL	0	1	1.10		1.10	
1045	___________ ________						
1046	PACKING MATERIAL	0	4	0.64		2.55	
1047	___________ ________						
1048	SOFT TRASH BAGS (___-_)	0	2	0.86		1.72	
1049	_________ ___ _______ _______ ______ ___-_						

Notes Legend

NOTES	
BT	ITEM INCLUDES BATTERIES
HZ	ITEM CONTAINS CHEMICAL, BIOLOGICAL, OR RADIOACTIVE MATERIALS OR BATTERIES
Q	LOGISTICS & MAINTENANCE (L&M) ALLOCATION – INCLUDES SYSTEM SPARES AND IVA TOOLS
R	THIS HARDWARE CAN BE OPERATED IN THE RUSSIAN SEGMENT ONLY AFTER CERTIFICATION AND ACCEPTANCE IS COMPLETE.
RB	CONTENTS OF THE BAG TO BE USED IN THE RUSSIAN SEGMENT
W	REQUIRED ON-ORBIT POWER

FLIGHT SPECIFIC NOTES	
11	Install On-Orbit during increment
12	Contains Food Rations (________ _______ _____).
13	Part includes disinfecting solution
18	_________ _1
19	_________ _2
20	_________ _3
42	___ __-64
43	_ _____ 5_6.832.086
44	With water. (_______ 5__ _ _____)

45	CD and DVD Disk
46	The 4 half CTBs contain 5 food containers equivalent of food
47	2 ________, 1 ______
48	In a ZIPLOCK BAG
49	In an ESD ZIPLOCK

TABLE D-6 FLIGHT LF1 RUSSIAN CARGO

Flight LF1 Russian Cargo							
Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Return Total Mass (Kg)	System	Notes
1	**TOTAL RUSSIAN CARGO**				**1313.11**		
2	______ ______						
3							
4	**TOTAL RUSSIAN CHARGEABLE CARGO**				**1190.58**		**F**
5	______ ______						
6	PACKING MATERIAL	0	1	101.39	101.39	FCE-STOW	
7	___________ ________						
8	***KURS***				***75.26***		
9	___________ _______ ____						
10	***PROGRESS KURS EQUIPMENT***				***5.90***		
11	___________ _______ ____ _______ ________						
12	KURS AMPLIFIER 2_4-___	0	1	1.09	1.09	C&T	102
13	_________ ________ 2_4-___						
14	KURS AMPLIFIER 2_4-___	0	1	1.04	1.04	C&T	102
15	_________ ________ 2_4-___						
16	KURS AMPLIFIER 2_4-___	0	1	1.04	1.04	C&T	102
17	_________ ________ 2_4-___						
18	KURS AMPLIFIER 2_4-___	0	1	1.00	1.00	C&T	102
19	_________ ________ 2_4-___						
20	KURS SCANNING ANTENNA ELECTRONIC COMMUTATOR 2___1-___	0	1	1.73	1.73	C&T	102
21	_________ ________ 2___1-___						
22	***SOYUZ KURS EQUIPMENT***				***69.35***		***101***
23	___________ _______ ____ _______ ____						
24	KURS AMPLIFIER 2_4-___	0	1	1.04	1.04	C&T	
25	_________ ________ 2_4-___						
26	**KURS ELECTRONIC CONTROL UNIT**	**0**	**1**	**68.06**	**68.31**	**C&T**	
27	**_________ ___________ _1-___-03**						
28	TEMPERATURE REGULATOR (ATTACHED TO _1-___-03)	0	1	0.25	0.25	C&T	
29	_________ ___________ _______ __-___						
30	DATA BANK	0	1	13.47	13.47	CDH	
31	____ _______ (__) __985_						
32	ELECTRIC PUMP ASSEMBLY	0	1	6.02	6.02	STRUC	
33	___________ _______						
34	FAN UNIT B1	0	1	1.24	1.24	STRUC	

Flight LF1 Russian Cargo

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Return Total Mass (Kg)	System	Notes
35	____ _____________						
36	***KURS***				***828.09***		
37	_____________ ________ _____						
38	**KURS ELECTRONIC CONTROL UNIT**	**0**	**1**	**70.84**	**70.84**	**C&T**	**112**
39	__________ ____________ _1-___-03						
40	TEMPERATURE REGULATOR (ATTACHED TO _1-___-03)	0	1			C&T	112
41	__________ ____________ ________ __-___						
42	***PROGRESS KURS EQUIPMENT***				***613.00***		***91***
43	_____________ ________ _____ ________ _________						
44	KURS AMPLIFIER 2_4-___	0	1	1.02	1.02	C&T	
45	__________ _________2_4-___						
46	KURS AMPLIFIER 2_4-___	0	1	1.03	1.03	C&T	
47	__________ _________2_4-___						
48	KURS AMPLIFIER 2_4-___	0	3	1.04	3.12	C&T	
49	__________ _________2_4-___						
50	KURS AMPLIFIER 2_4-___	0	8	1.05	8.40	C&T	
51	__________ _________2_4-___						
52	KURS AMPLIFIER 2_4-___	0	5	1.06	5.30	C&T	
53	__________ _________2_4-___						
54	KURS AMPLIFIER 2_4-___	0	10	1.07	10.70	C&T	
55	__________ _________2_4-___						
56	KURS AMPLIFIER 2_4-___	0	7	1.08	7.56	C&T	
57	__________ _________2_4-___						
58	KURS AMPLIFIER 2_4-___	0	1	1.09	1.09	C&T	
59	__________ _________2_4-___						
60	**KURS ELECTRONIC CONTROL UNIT**	**0**	**1**	**70.57**	**70.57**	**C&T**	
61	__________ ____________ _1-___-03						
62	TEMPERATURE REGULATOR (ATTACHED TO _1-___-03)	0	1			C&T	
63	__________ ____________ ________ __-___						
64	**KURS ELECTRONIC CONTROL UNIT**	**0**	**1**	**70.62**	**70.62**	**C&T**	
65	__________ ____________ _1-___-03						
66	TEMPERATURE REGULATOR (ATTACHED TO _1-___-03)	0	1			C&T	
67	__________ ____________ ________ __-___						

Flight LF1 Russian Cargo							
				Unit	Return Total		
Line No.	**Name**	**Qty Up**	**Qty Down**	**Mass (Kg)**	**Mass (Kg)**	**System**	**Notes**
68	**KURS ELECTRONIC CONTROL UNIT**	**0**	**1**	**68.14**	**68.14**	**C&T**	
69	**__________ ____________ _1-___-03**						
70	TEMPERATURE REGULATOR (ATTACHED TO _1-___-03)	0	1			C&T	
71	__________ ____________ ________ __-___						
72	**KURS ELECTRONIC CONTROL UNIT**	**0**	**1**	**70.76**	**70.76**	**C&T**	
73	**__________ ____________ _1-___-03**						
74	TEMPERATURE REGULATOR (ATTACHED TO _1-___-03)	0	1			C&T	
75	__________ ____________ ________ __-___						
76	**KURS ELECTRONIC CONTROL UNIT**	**0**	**1**	**70.35**	**70.35**	**C&T**	
77	**__________ ____________ _1-___-03**						
78	TEMPERATURE REGULATOR (ATTACHED TO _1-___-03)	0	1			C&T	
79	__________ ____________ ________ __-___						
80	**KURS ELECTRONIC CONTROL UNIT**	**0**	**1**	**70.60**	**70.60**	**C&T**	
81	**__________ ____________ _1-___-03**						
82	TEMPERATURE REGULATOR (ATTACHED TO _1-___-03)	0	1			C&T	
83	__________ ____________ ________ __-___						
84	**KURS ELECTRONIC CONTROL UNIT**	**0**	**1**	**70.63**	**70.63**	**C&T**	
85	**__________ ____________ _1-___-03**						
86	TEMPERATURE REGULATOR (ATTACHED TO _1-___-03)	0	1			C&T	
87	__________ ____________ ________ __-___						
88	**KURS ELECTRONIC CONTROL UNIT**	**0**	**1**	**70.61**	**70.61**	**C&T**	
89	**__________ ____________ _1-___-03**						
90	TEMPERATURE REGULATOR (ATTACHED TO _1-___-03)	0	1			C&T	

Flight LF1 Russian Cargo							
				Unit	Return Total		
Line No.	Name	Qty Up	Qty Down	Mass (Kg)	Mass (Kg)	System	Notes
91	__________ ____________ ________ __-___						
92	KURS SCANNING ANTENNA ELECTRONIC COMMUTATOR 2___1-___	0	1	1.74	1.74	C&T	
93	___________ _________2___1-___						
94	KURS SCANNING ANTENNA ELECTRONIC COMMUTATOR 2___1-___	0	1	1.78	1.78	C&T	
95	___________ _________2___1-___						
96	KURS SCANNING ANTENNA ELECTRONIC COMMUTATOR 2___1-___	0	3	1.79	5.37	C&T	
97	___________ _________2___1-___						
98	KURS SCANNING ANTENNA ELECTRONIC COMMUTATOR 2___1-___	0	1	1.80	1.80	C&T	
99	___________ _________2___1-___						
100	KURS SCANNING ANTENNA ELECTRONIC COMMUTATOR 2___1-___	0	1	1.81	1.81	C&T	
101	___________ _________2___1-___						
102	***SOYUZ KURS EQUIPMENT***				***143.19***		***92***
103	**_____________ ________ ____ ________ _____**						
104	KURS AMPLIFIER 2_4-___	0	1	1.04	1.04	C&T	
105	__________ _________2_4-___						
106	KURS AMPLIFIER 2_4-___	0	1	1.06	1.06	C&T	
107	__________ _________2_4-___						
108	**KURS ELECTRONIC CONTROL UNIT**	**0**	**1**	**70.50**	**70.50**	**C&T**	
109	**__________ ____________ _1-___-03**						
110	TEMPERATURE REGULATOR (ATTACHED TO _1-___-03)	0	1			C&T	
111	__________ ____________ ________ __-___						
112	**KURS ELECTRONIC CONTROL UNIT**	**0**	**1**	**70.59**	**70.59**	**C&T**	
113	**__________ ____________ _1-___-03**						
114	TEMPERATURE REGULATOR (ATTACHED TO _1-___-03)	0	1			C&T	
115	__________ ____________ ________ __-___						
116	KURS AMPLIFIER 2_4-___	0	1	1.06	1.06	C&T	112
117	__________ _________2_4-___						

Flight LF1 Russian Cargo

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Return Total Mass (Kg)	System	Notes
118	LIQUID UNIT	0	1	154.90	154.90	LSS	
119	____ ___________ __						
120	***ONBOARD EQUIPMENT CONTROL SYSTEM***				***4.15***		
121	____						
122	___ ARRAY MATCHING DEVICE UNIT (____)	0	1	4.15	4.15	OCCS	
123	____ __________ _ _______________ __________ ____						
124	REPLACEMENT UNIT	0	1	4.11	4.11	STRUC	
125	____ ________						
126	TV BROADCASTING CAMERA KL-152	0	1	0.47	0.47	C&T	
127	___________ __-152						
128	TV BROADCASTING CAMERA KL-152	0	2	0.49	0.98	C&T	
129	___________ __-152						
130	TV BROADCASTING CAMERA KL-152	0	1	0.50	0.50	C&T	
131	___________ __-152						
132							
133	**TOTAL RUSSIAN NON-CHARGEABLE CARGO**				**25.74**		**A,F**
134	______ ______						
135	PACKING MATERIAL	0	1	9.12	9.12	FCE-STOW	N
136	___________ _________						
137	***POWER SUPPLY SYSTEM (___)***				***16.62***		
138	___						
139	VOLTAGE AND CURRENT STABILIZER	0	1	16.62	16.62	EPS	122,N
140	_____________ ___________ _ ____						
141							
142	**TOTAL NON-CHARGEABLE FGB CARGO**				**96.79**		
143	***MOTION CONTROL & NAVIGATION SYSTEM (____)***				***22.66***		
144	____						
145	**GIVUS M34-30 GRYOSCOPIC ANGULAR VELOCITY MEASURING DEVICE**	**0**	**1**	**22.66**	**22.66**	**MCS**	**121,N,Z**
146	**________________ __________ ________ _______ _________ _____ _34-30**						
147	ATTACHMENT BRACKET	0	1			MCS	
148	______________ ____ _						
149	**K1-BKA-02 ELECTRONICS CONTAINER**	**0**	**1**	**74.13**	**74.13**	**C&T**	**121,N,Z**

Flight LF1 Russian Cargo

Line No.	Name	Qty Up	Qty Down	Unit Mass (Kg)	Return Total Mass (Kg)	System	Notes
150	**_________ ___________ K1-BKA-02**						
151	TEMPERATURE REGULATOR (ATTACHED TO _1-___-03)	0	3			C&T	Z
152	_________ ___________ _______ __-___						

Notes Legend

NOTES	
A	SEE PART 2 FOR MORE DETAIL
F	SEE PART 3 FOR MORE DETAIL
N	DELIVERY/RETURN NOT CHARGEABLE TO BALANCE OF CONTRIBUTION OBLIGATION
Z	FGB HARDWARE

FLIGHT SPECIFIC NOTES	
92	Soyuz KURS: 211 (5S), 212 (6S)
101	Soyuz KURS: 213 (7S)
102	From the set of Progress KURS: 246 (8P), 258 (9P), 247 (10P), 259 (11P), 248 (12P), 249 (14P), 350 (15P); 351 (16P)
112	Progress KURS 352 (17P) with 1 of 5 Amplifiers
121	Charged to US / Agreement OC-03-003 dated 01/15/2003
122	Charged to US / Fax F-I/106-4095 dated 09/18/2003