NASA/CR—2003-212005/PART1

Hall Effect Thruster Interactions Data From the Russian Express-A2 and Express-A3 Satellites

Acquire Express-A2 SPT-100 Based Propulsion Subsystem and Other Subsystem Flight Operation TM-Data for the Period of March 12, 2000 to and Including June 15, 2000, Task 29

N. Sitnikova, D. Volkov, I. Maximov, and V. Petrusevich
Nauchno-Proizvodstvennoe Obiedinenie Prikladnoi Mekhaniki, Krasnoyarsk region, Russia

D. Allen
Schafer Corporation, Chelmsford, Massachusetts

June 2003

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Preface

This 12-part report documents the data obtained from various sensor measurements taken aboard the Russian Express-A2 and Express-A3 spacecraft in Geosynchronous Earth Orbit (GEO). These GEO communications satellites, which were designed and built by NPO Prikladnoy Mekhaniki (NPO PM) of Zheleznogorsk, Russia, utilize Hall thruster propulsion systems for north-south and east-west station-keeping and as of June 2002, were still operating at 80° E. and 11° W., respectively. Express-A2 was launched on March 12, 2000, while Express-A3 was launched on June 24, 2000. The diagnostic equipment from which these data were taken includes electric field strength sensors, ion current and energy sensors, and pressure sensors. The diagnostics and the Hall thruster propulsion systems are described in detail along with lists of tabular data from those diagnostics and propulsion system and other satellite systems.

Space Power, Inc., now part of Pratt & Whitney's Chemical Systems Division, under contract NAS3–99151 to the NASA Glenn Research Center, obtained these data over several periods from March 12, 2000, through September 30, 2001. Each of the 12 individual reports describe, in detail, the propulsion systems as well as the diagnostic sensors utilized.

Finally, parts 11 and 12 include the requirements to which NPO PM prepared and delivered these data.

Filename	Title
CR-2003-212005-PART1.pdf	Hall Effect Thruster Interactions Data From the Russian Express-A2 and Express-A3 Satellites Acquire Express-A2 SPT–100 Based Propulsion Subsystem and Other Subsystem Flight Operation TM-Data for the Period of March 12, 2000 to and Including June 15, 2000, Task 29
CR-2003-212005-PART2.pdf	Hall Effect Thruster Interactions Data From the Russian Express-A2 and Express-A3 Satellites Acquire TM-Data for Type B Sensors for "Express-A" Number 2 Satellite for the Period of March 12, 2000 to and Including June 15, 2000, Task 25
CR-2003-212005-PART3.pdf	Hall Effect Thruster Interactions Data From the Russian Express-A2 and Express-A3 Satellites Acquire Express-A3 SPT–100 Based Propulsion Subsystem and Other Subsystem Flight Operation TM-Data for the Period of June 24, 2000 to and Including September 30, 2000, Task 30
CR-2003-212005-PART4.pdf	Hall Effect Thruster Interactions Data From the Russian Express-A2 and Express-A3 Satellites Acquire TM-Data for Type A and Type B Sensors for "Express-A" Number 3 Satellite for the Period of June 24, 2000 to and Including September 30, 2000, Task 27A

Filename	Title
CR-2003-212005-PART5.pdf	Hall Effect Thruster Interactions Data From the Russian Express-A2 and Express-A3 Satellites Acquire Express-A3 SPT–100 Based Propulsion Subsystem and Other Subsystem Flight Operation TM-Data for the Period of October 1, 2000 to and Including December 31, 2000, Task 31
CR-2003-212005-PART6.pdf	Hall Effect Thruster Interactions Data From the Russian Express-A2 and Express-A3 Satellites Acquire TM-Data for Type A and Type B Sensors for "Express-A" Number 3 Satellite for the Period of October 1, 2000 to and Including December 31, 2000, Task 27B
CR-2003-212005-PART7.pdf	Hall Effect Thruster Interactions Data From the Russian Express-A2 and Express-A3 Satellites Acquire Express-A3 SPT–100 Based Propulsion Subsystem and Other Subsystem Flight Operation TM-Data for the Period of January 1, 2001 to and Including March 31, 2001, Task 32
CR-2003-212005-PART8.pdf	Hall Effect Thruster Interactions Data From the Russian Express-A2 and Express-A3 Satellites Acquire TM-Data for Type A and Type B Sensors for "Express-A" Number 3 Satellite for the Period of January 1, 2001 to and Including March 31, 2001, Task 27C
CR-2003-212005-PART9.pdf	Hall Effect Thruster Interactions Data From the Russian Express-A2 and Express-A3 Satellites Acquire Express-A3 SPT–100 Based Propulsion Subsystem and Other Subsystem Flight Operation TM-Data for the Period of July 1, 2001 to and Including September 30, 2001, Task 33
CR-2003-212005-PART10.pdf	Hall Effect Thruster Interactions Data From the Russian Express-A2 and Express-A3 Satellites Acquire TM-Data for Type A and Type B Sensors for "Express-A" Number 3 Satellite for the Period of July 1, 2001 to and Including September 30, 2001, Task 27D
CR-2003-212005-PART11.pdf	Hall Effect Thruster Interactions Data From the Russian Express-A2 and Express-A3 Satellites Express/T-160E Project Express A2 and A3 Data Agreement Document
CR-2003-212005-PART12.pdf	Hall Effect Thruster Interactions Data From the Russian Express-A2 and Express-A3 Satellites Express/T-160E Project Express A2 and A3 Sensors Operations Procedures Document

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Abbreviations and Acronyms

A	Amps
CDU	charge-discharge unit
DK	Pressure of Xenon Feed Unit output
DKR1	Pressure of primary Xenon Feed Branch
DKR2	Pressure of redundant Xenon Feed Branch
DVK	Pressure of Xenon Feed Unit input
EV	Electrical valve
EWSK	East-West Station Keeping
Hn	Heater number "n"
HETS	Hall Effect Thruster System
I	Current
NSSK	North-South Station Keeping
PPU	Power Processing Unit
PRD	Pressure regulation device
PS	Propulsion Subsystem
PV	Pyrotechnic Valve
RT	Redundant Thruster
RTn	Redundant Thruster number “n”
RV	Reducing Valve
RVn	Reducing Valve number “n”
SA	Solar Array
SAn	Solar Array Panel number "n"
SB	Supple battery
SPT-100	Stationary Plasma Thruster with 100 mm propulsion chamber diameter
T	Thruster
Tn	Thruster number “n”
T18R	Temperature 1 of the Cylindrical Radiator
T19R	Temperature 2 of the Cylindrical Radiator
T1PK	Temperature of Xenon Feed Unit
T1SA	Temperature of Solar Array Panel number 1
T28K	Temperature of the Pressurized Container Surface
T2SA	Temperature of Solar Array Panel number 2
TBHKn	Temperature of Xenon Storage Unit number "n"
TBKn	Temperature of Thruster number "n"
TU	Thruster Unit
TUn	Thruster Unit number "n"
V	Voltage, Volts
Vn	Valve number "n"
XFU	Xenon Feed Unit
XSU	Xenon Storage Unit
XSUn	Xenon Storage Unit number "n"

Introduction

The Express-A #2 Spacecraft has been entered into geostationary orbit on March 12, 2000. The spacecraft's electric jet propulsion based on the SPT-100 stationary plasma thrusters is used to provide both the longitude and inclination orbit control.

This Report is issued in accordance with the requirements of the Task #29 under the Contract #97-1088-02 and prepared in compliance with agreed upon contents of the sections of the "EXPRESS/T160E Project Express A2 and A3 Data Agreement Document dated on October 29, 2000" document.

This Document includes the flight operational data for the SPT-100 Propulsion at level of the Express-A #2 Spacecraft for a period of March 12 to June 15, 2000 as well as some SPT-100 ground test data.

In this Document all the being measured parameters and their changes are referenced to Moscow Standard Time.

1. Express-A#2 Spacecraft Orbit Control Propulsion Subsystem based on Stationary Plasma Thrusters

1.1. Mission

The Propulsion Subsystem based on the stationary plasma thrusters is designed to produce a need thrust for drifting the spacecraft into a specified point of geostationary orbit and for longitude/latitude orbit station keeping during the spacecraft mission life.

1.2. Orbit Control Propulsion Subsystem Configuration

The Orbit Control Propulsion Subsystem has a modular design of the functional self-contained items:

- Four Orbit Control Thruster Units (TU1, TU2, TU3, TU4); a general view is provided in Fig. 1;
- Xenon Feed Unit (XFU); a general view of thee Unit is shown in Fig. 2;
- Three Xenon Storage Units (XSU1, XSU2, XSU3); a general view of the Unit is shown in Fig. 3.

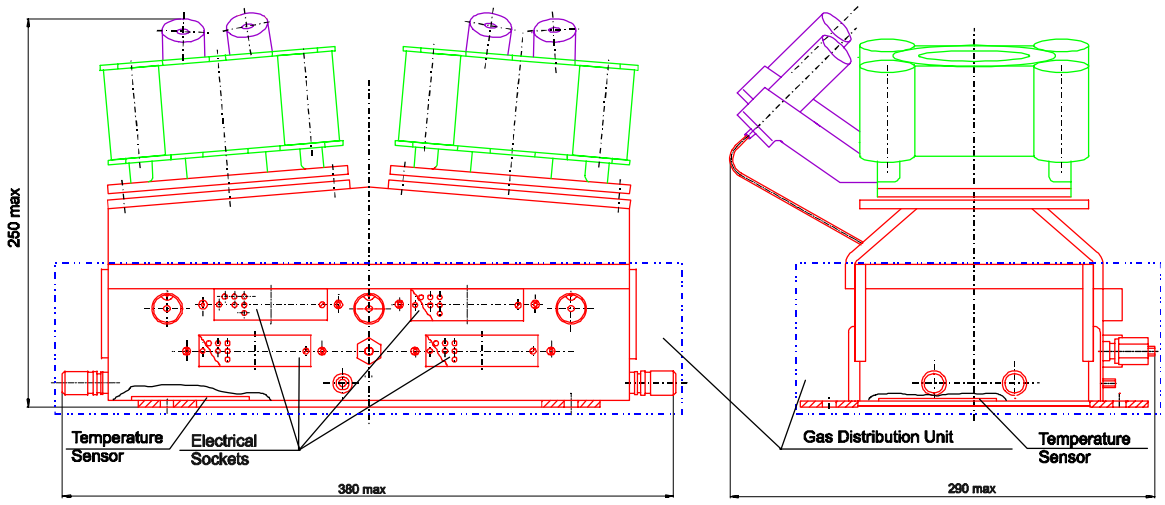

Fig. 1. Orbit Control Thruster Unit

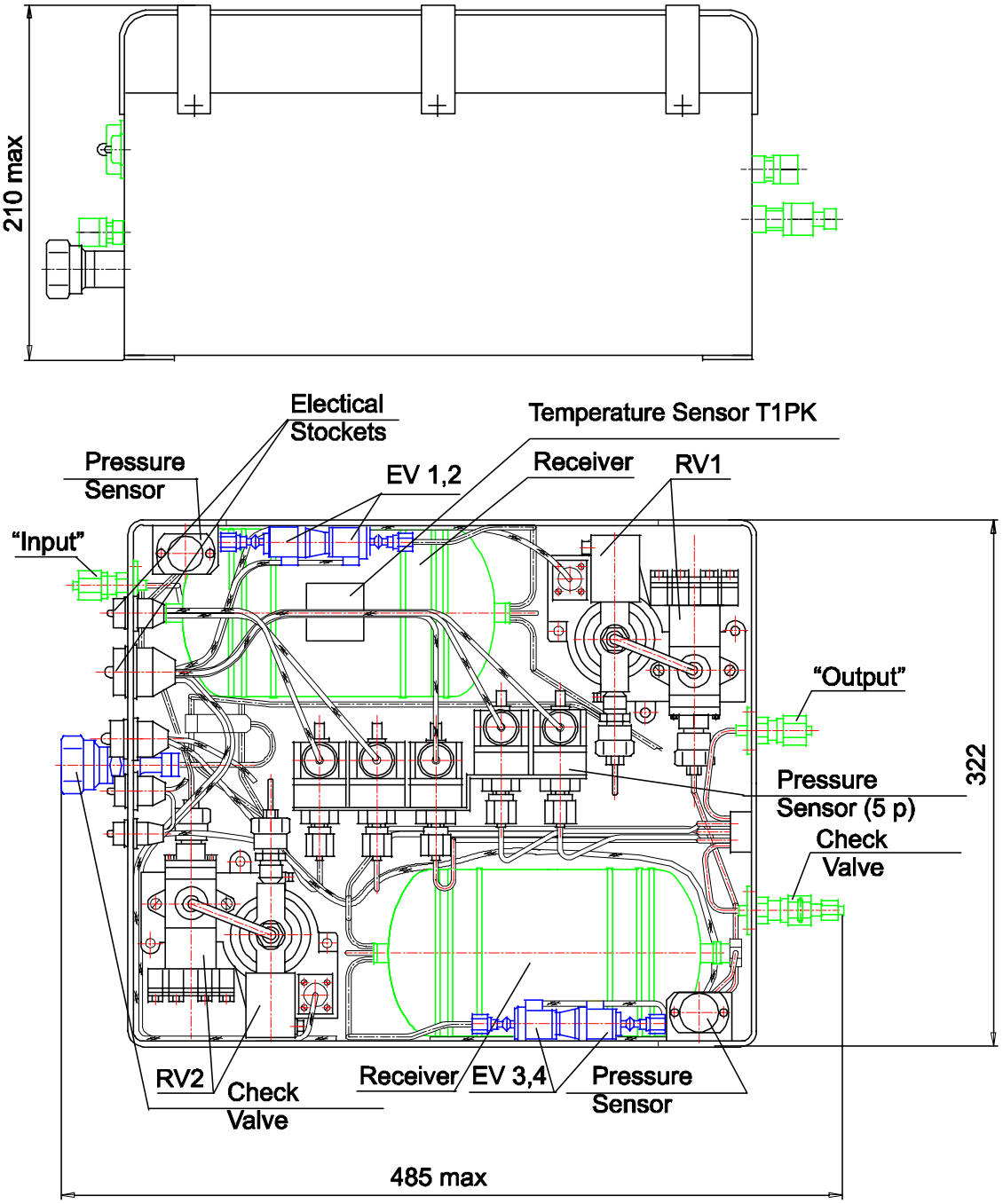

Fig. 2. General View of Xenon Feed Unit

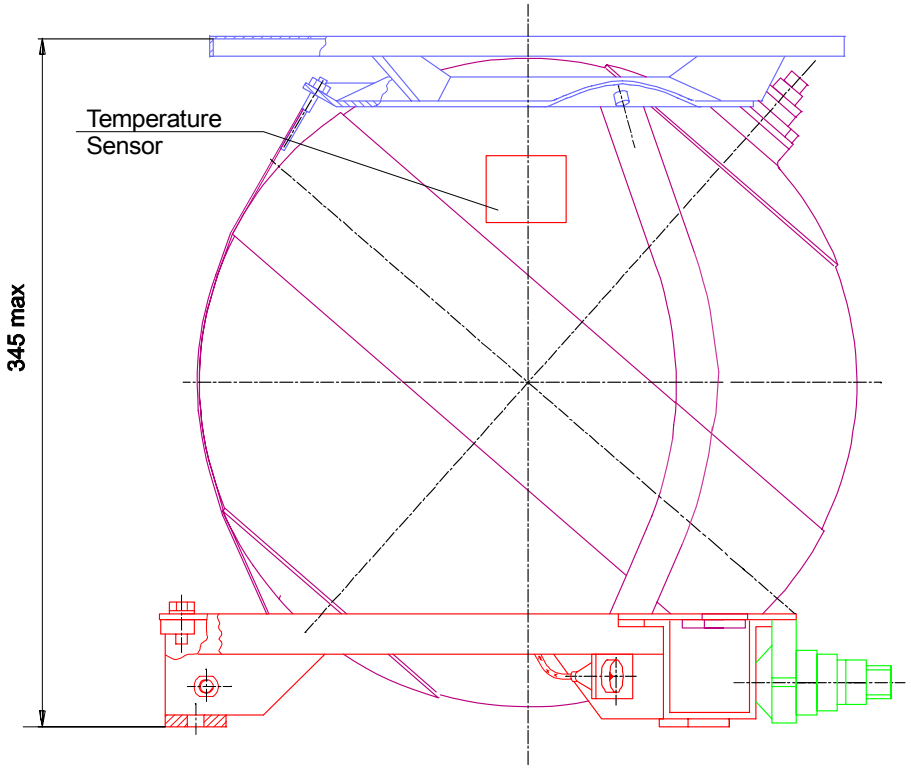

Fig. 3. General View of Xenon Storage Unit

The Units are interconnected by the pipelines.

Control of the Propulsion Subsystem Functional Items is provided by the Power Processing Unit (PPU) linked with the Propulsion Subsystem Items by electric cables.

Express-A Orbit Control Propulsion Subsystem Functional Diagram is shown in Fig. 4.

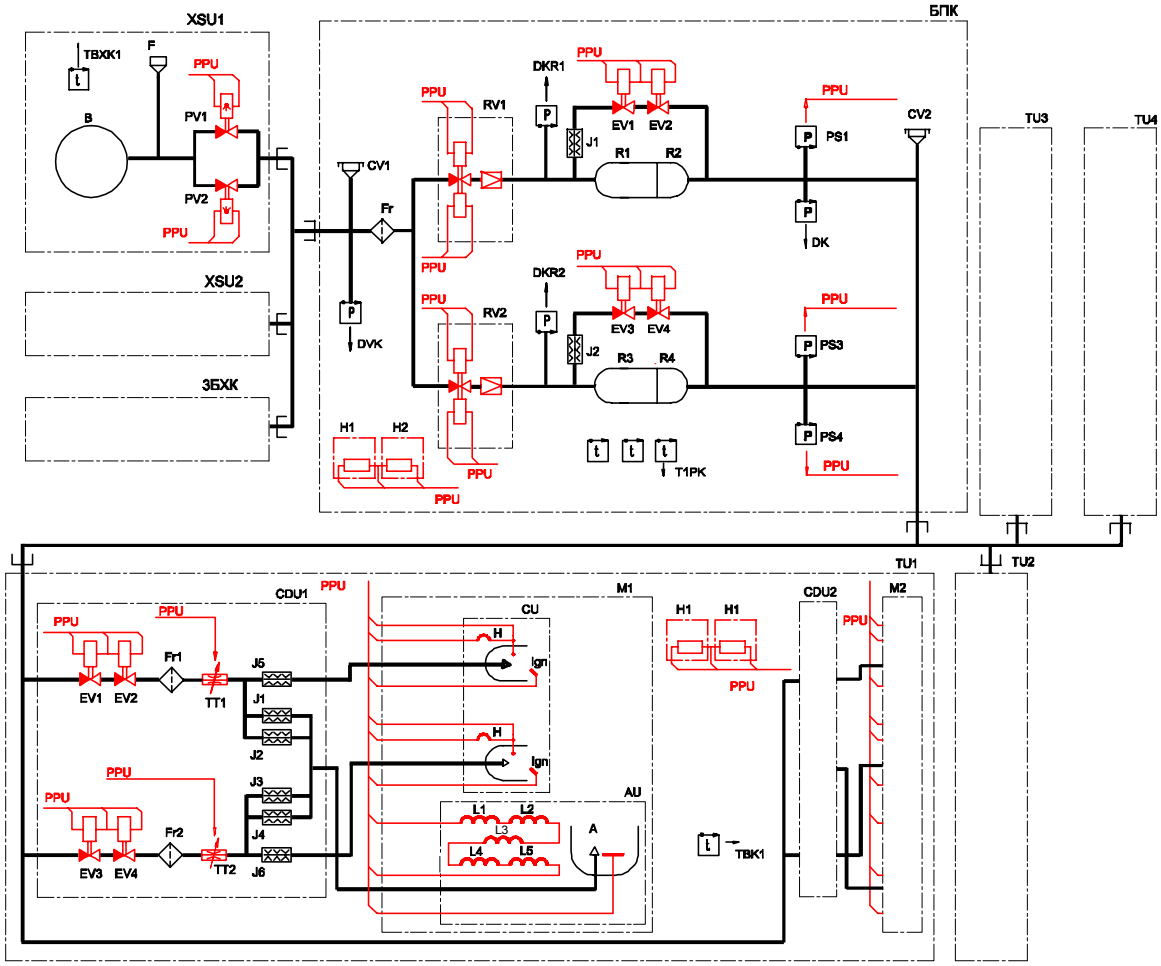

Fig. 4. Express-A Orbit Control Propulsion Subsystem Functional Diagram

In the Diagram the following notation is used:

A	–	Anode	Fr	–	Filter
AU	–	Anode Unit	RV	–	Reducing Valve
B	–	Tank	M	–	Module
GDU	–	Gas Distribution Unit	H	–	Heater
TU	–	Orbit Control Thruster Unit	PV	–	Pyrotechnic Valve
CU	–	Cathode Unit	CV	–	Check Valve
XFU	–	Xenon Feed Unit	R	–	Receiver
XCU	–	Xenon Storage Unit	PPU	–	Power Processing Unit
PS	–	Pressure Sensor	TBXK1	–	Temperature of Xenon Storage Unit #1
DVK	–	Xe Feed Unit Input Pressure	TBK1	–	Temperature of Orbit Correction Thruster Unit #1
DK	–	Xe Feed Unit Output Pressure	TT	–	Thermothrottle
DKR1	–	Xe Feed Main Branch Pressure	EV	–	Electrical Valve
DKR2	–	Xe Feed Redundant Branch Pressure	Ign	–	Ignitor
J	–	Jet	L	–	Magnet Coil
F	–	Filler	t	–	Temperature sensor

Allocation of the Orbit Correction Thruster Units on the Express-A#2 Spacecraft is shown in Fig. 5 and Fig. 6. At these pictures there are shown locations for the temperature sensors on the pressurized container and the radiator of the Thermal Control Subsystem.

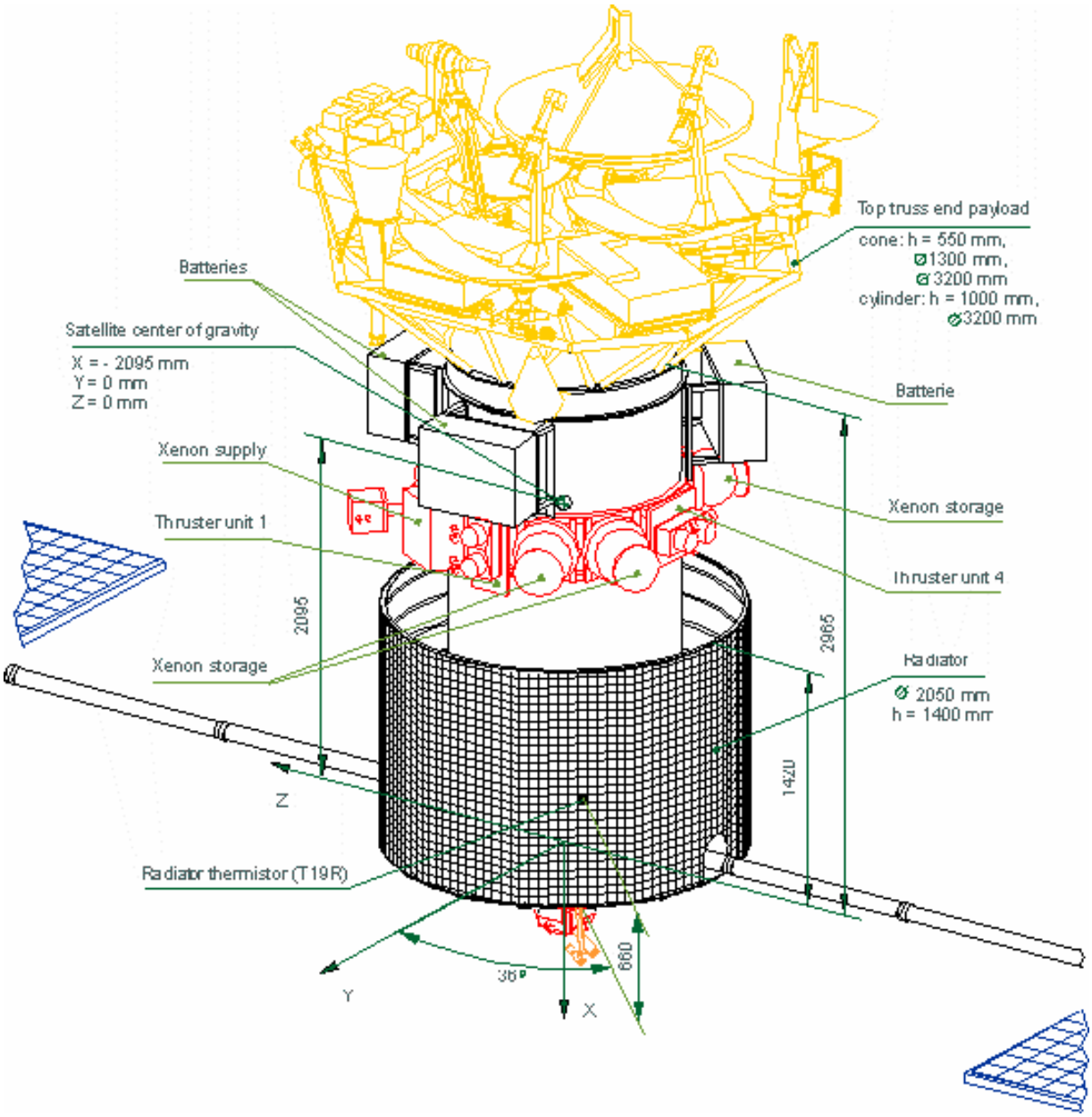

Fig. 5

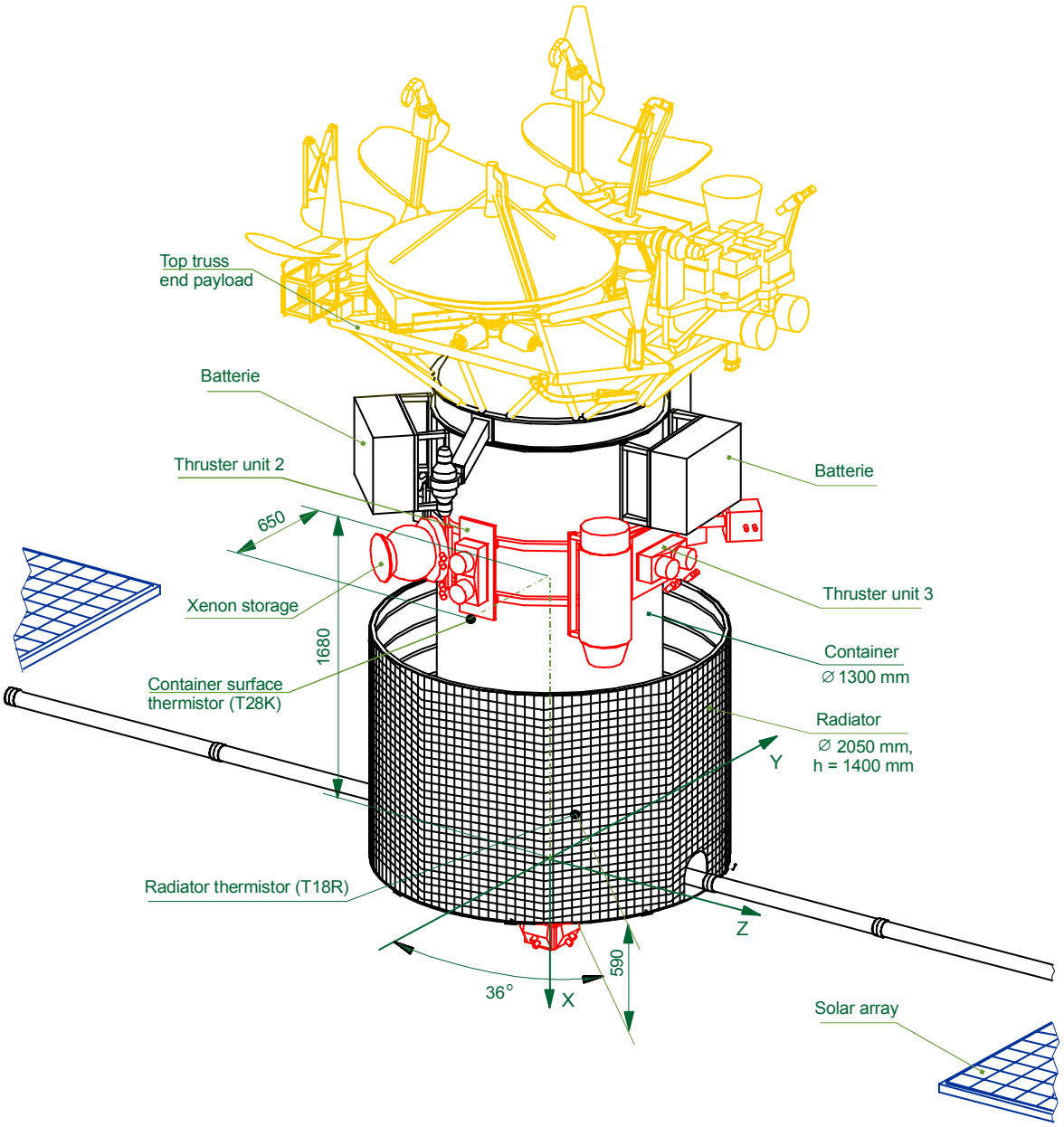
Top truss
end payload
Batterie
Thruster unit 2
650
Xenon storage
1680
Container surface
thermistor (T28K)
Batterie
Thruster unit 3
Container
∅ 1300 mm
Radiator
∅ 2050 mm,
h = 1400 mm
Y
Z
X
590
36°
Radiator thermistor (T18R)
Solar array

Fig. 6

SPT-100 allocation layout with respect to Express-A#2 Center of Gravity is shown in Fig. 7.

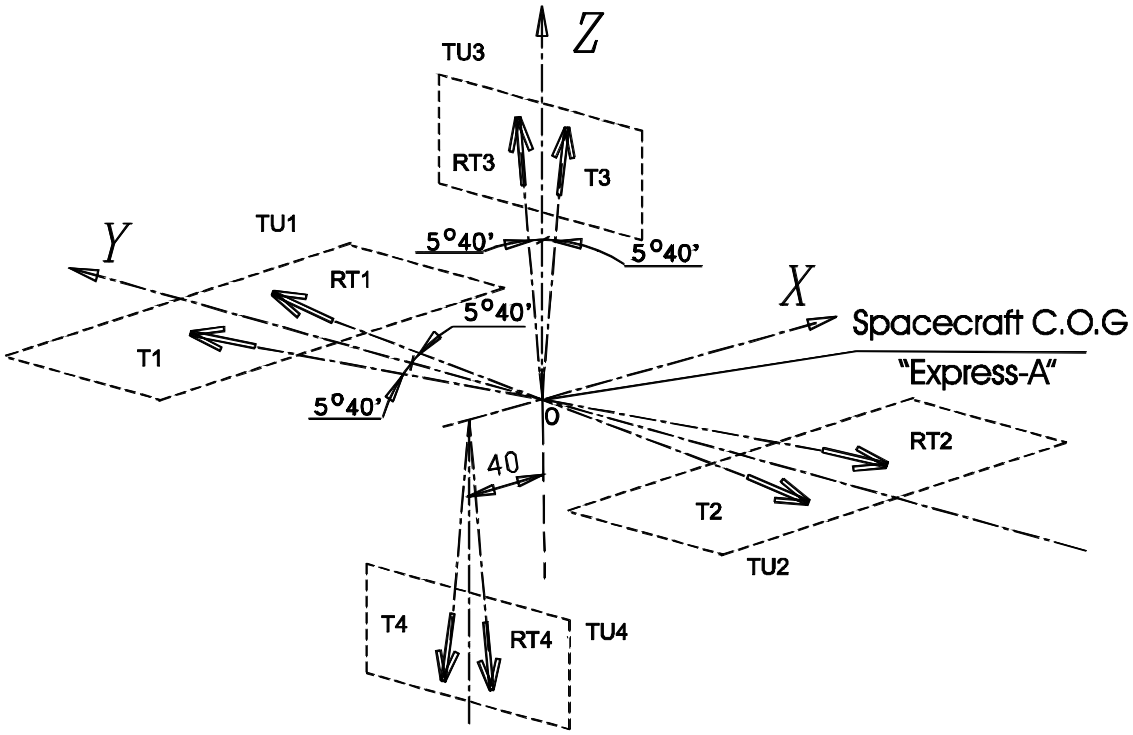

Fig. 7. SPT-100 allocation layout

1.3. Description of Differences Between the Use Conditions for the Express-A and GALS Orbit Control Propulsion Subsystems

Differences between the use conditions for the Express-A and GALS Orbit Control Propulsion Subsystems are provided in Table 1.

Table 1

GALS	EXPRESS-A	Background for modifications
Lifetime:		
not less than 5 years	not less than 7 years	Requirement of Spacecraft Specification
Configuration:		
Number of Xe Storage Units: 2	Number of Xe Storage Units: 3	Increase of Lifetime
Xe Feed Unit:		
- relief valves are installed at the RV1 and RV2 outputs; - when breaking the RV tightness, disposal of propellant will be carried out into surrounding ambience through the safety valves; - the EV1 and EV2 valves will be operated only when opening RV1; - the EV3 and EV4 valves will be operated only when opening RV2.	- pressure sensors are installed on the outputs of RV1 and RV2 valves; - no disposal of propellant will be carried into surrounding ambience through the safety valve; - the EV1 and EV2 valves will be operated only when closing RV1; - the EV3 and EV4 valves will be operated when closing RV2.	- pressure in the lines between RV and EV will be monitored; - unregulated loss of the propellant through the safety valve when breaking a tightness of RV is excluded; - dropping pressure at the output of RV1 (RV2) when breaking their tightness.
Xe Storage Unit:		
Maximum propellant load per tank is: 28 kg;	Maximum allowable propellant load per tank is: 31 kg;	Requirement of Orbit Control Propulsion Subsystem Specification
Total Impulse of Propulsion Thrust		
750000 N*sec	11200000 N*sec	Requirement of Spacecraft Specification

In addition to the above listed differences, for the Express-A spacecraft there were developed new batteries that are installed outside on a cylindrical part of the Pressurized Container. Three batteries are installed on the Express-A spacecraft. Layout of batteries allocation with respect to the SPT-100 thrusters is provided in Fig. 8 to Fig. 10. As seen from these Figures, the batteries installed along +Y- and +Z-axis are in direct vicinity of the TU-1 and TU-2, respectively.

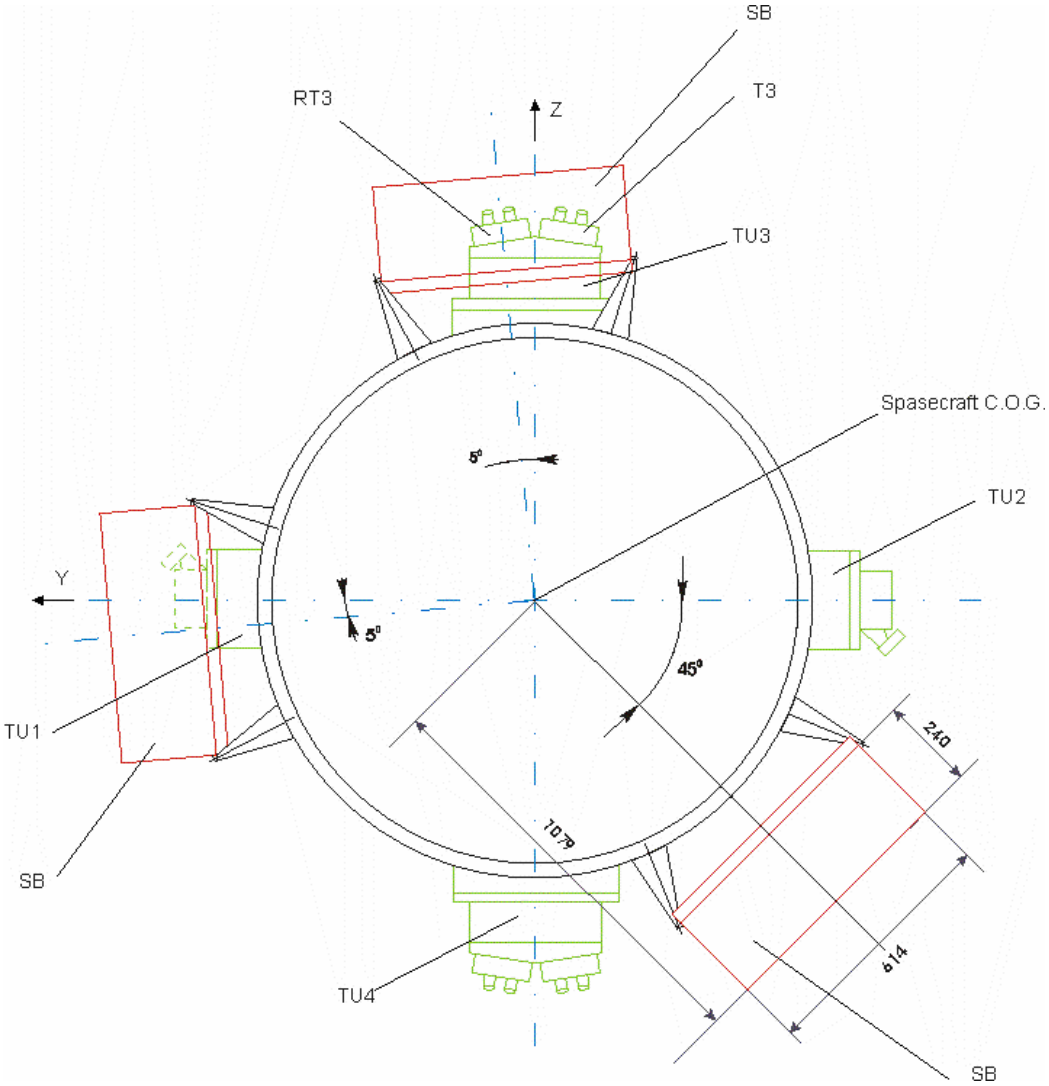
SB
RT3
Z
T3
TU3
Spasecraft C.O.G.
5°
TU2
Y
5°
45°
TU1
240
SB
1079
614
TU4
SB

Fig.8

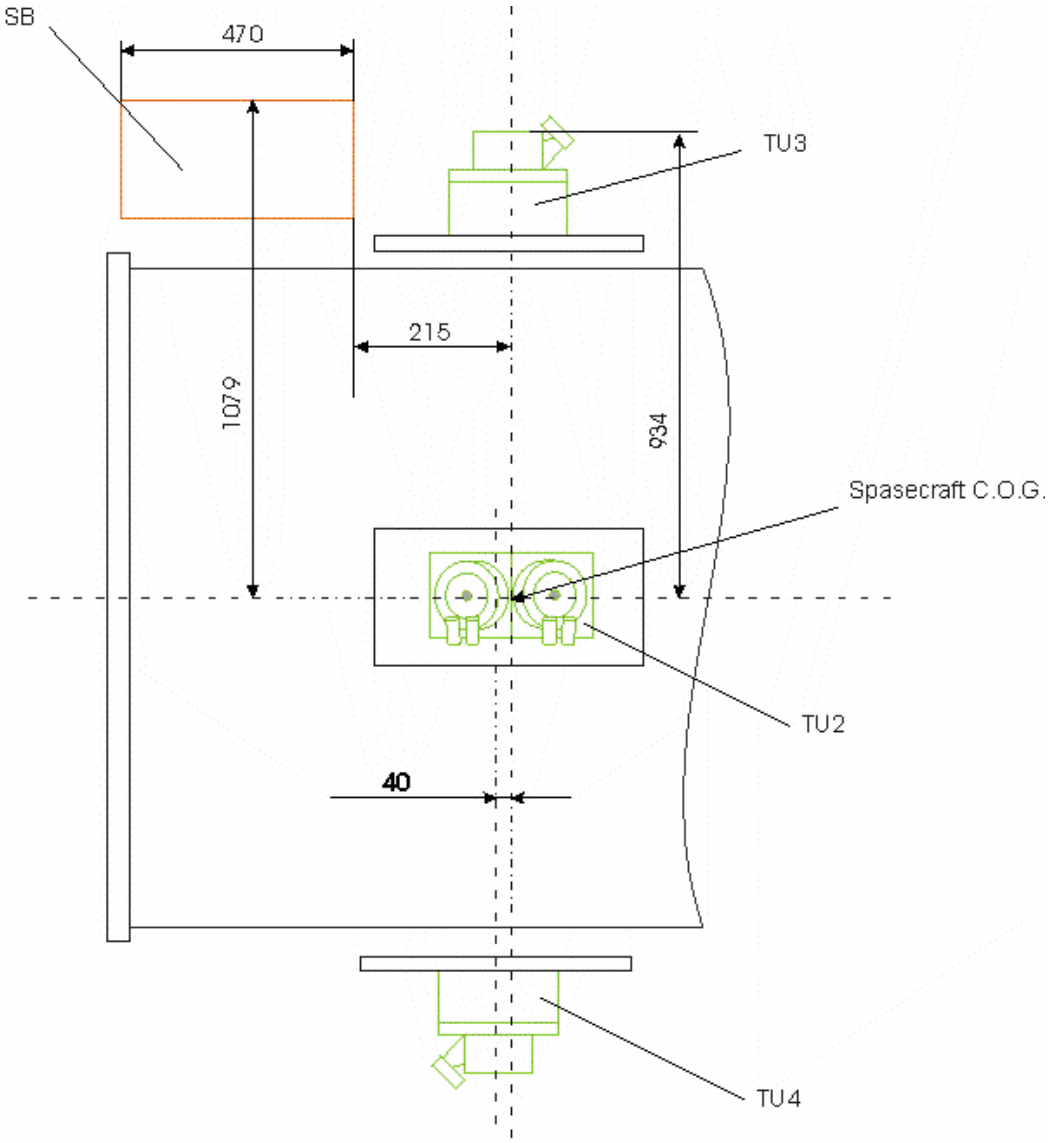

Fig. 9

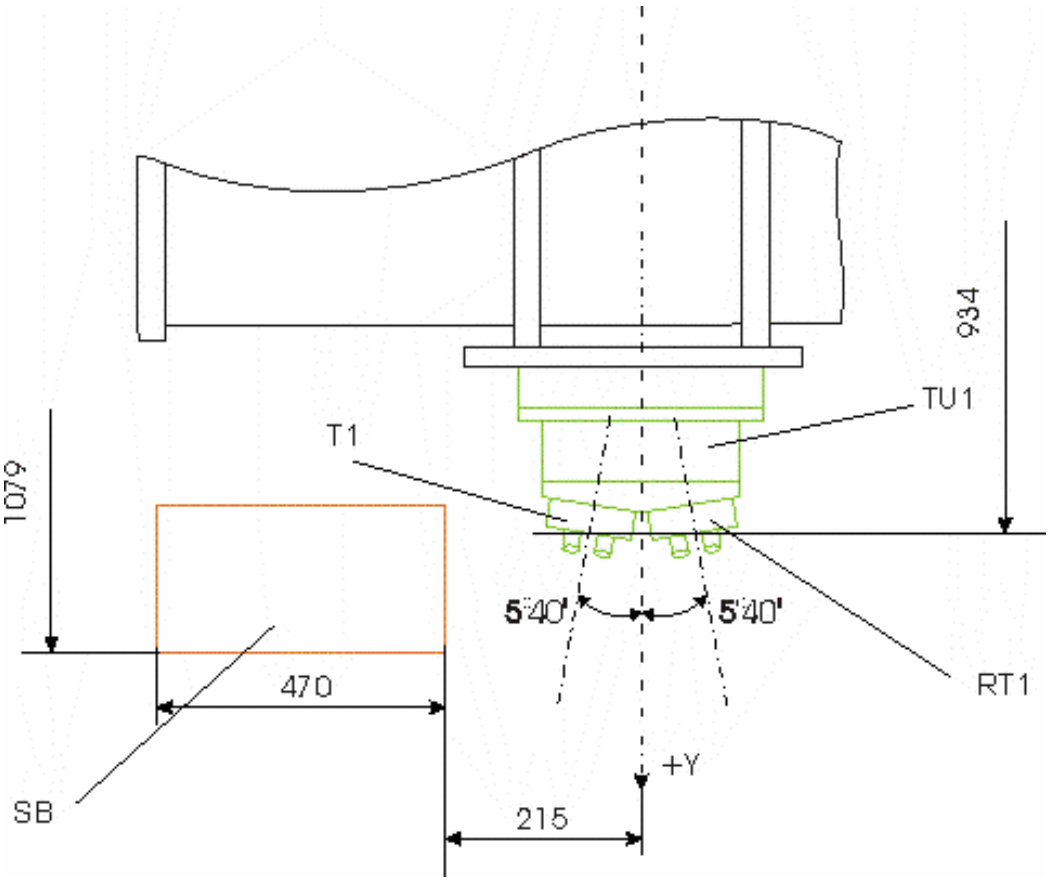

Fig. 10

1.4. Propellant Load Data for Orbit Control Propulsion Subsystem of Express-A#2 Spacecraft

Propellant Load Data for the Xe Storage Unit of the Orbit Control Propulsion Subsystem is provided in Table 2.

Table 2

Unit	Propellant Load (kg)
XSU1	28,50
XSU2	28,50
XSU3	28,47

Total propellant load for Express-A#2 Orbit Control Propulsion Subsystem is 85,47 kg.

1.5. Thrust Acceptance Values for SPT-100 Thrusters Installed on Express-A#2 Spacecraft

The thrust values for the SPT-100 Thrusters installed on the Express-A#2 are given in Table 3. The data are obtained during the acceptance tests when producing the Orbit Control Propulsion Subsystem.

Table 3

Thruster	Cathode	Thrust	
		mN	g·sec
T1	C1	84,80	8,64
	C2	84,60	8,62
RT1	C1	82,80	8,44
	C2	82,40	8,40
T2	C1	86,60	8,84
	C2	85,50	8,72
RT2	C1	85,50	8,72
	C2	84,50	8,62
T3	C1	84,00	8,56
	C2	83,20	8,48
RT3	C1	83,60	8,52
	C2	83,60	8,52
T4	C1	80,20	8,18
	C2	81,10	8,28
RT4	C1	84,30	8,60
	C2	83,70	8,54

Measuring a thrust for the Thrusters within the acceptance tests was performed after 25 min operation at nominal parameters of:

- Anode Voltage: 300 V,
- Anode Current: 4,5 A.

1.6. Orbit Control Propulsion Subsystem performance EXPRESS-A#2 after its injection into orbit

The initial temperatures for the Orbit Control Propulsion Subsystem Units and pressure in the Propellant Feed Subsystem following spacecraft separation from the launch vehicle upper stage are provided in Table 4 and Table 5.

Table 4

Location	**Xe Storage Unit 1**	**Xe Storage Unit 2**	**Xe Storage Unit 3**	**Xe Feed Unit**	**Thruster Unit 1**	**Thruster Unit 2**	**Thruster Unit 3**	**Thruster Unit 4**
	Temperature (°C)							
Value	15,9	16,4	17,4	16,9	15,9	18,0	17,3	18,0

Table 5

Location	**Xe Feed Unit Output**	**Primary Xe Feed Branch**	**Redundant Xe Feed Branch**
	Pressure (kgf/cm^2)		
Value	1,08	1,28	2,80

1.7. Initial Setup of the Express-A#2 Orbit Control Propulsion Subsystem

1.7.1. Evacuation of Orbit Control Propulsion Subsystem Pipelines

Evacuation of Orbit Control Propulsion Subsystem pipelines on the Express-A#2 Spacecraft was conducted on March 14, 2000 from 02:00:00 to 15:10:00.

A sequence of the commands when evacuating the Orbit Control Propulsion Subsystem pipelines and the time and date of their execution are provided in Table 6.

Table 6

Command	Time of Execution (hh:mm:ss)
Channel "plus Y"	02:00:00
RV1 opening	02:00:02
Reduce pressure	02:00:03
Channel "minus Y"	02:00:04
Reduce pressure	02:00:05
Thruster valves closing	11:10:00
Channel "plus Y"	11:10:01
Thruster valves closing	11:10:02
RV closing	11:10:03
Channel "plus Z"	11:10:04
RV2 opening	11:10:05
Reduce pressure	11:10:06
Channel "minus Z"	11:10:07
Reduce pressure	11:10:08
Thruster valves closing	15:00:00
Channel "plus Z"	15:00:01
T switching off	15:00:02
RV closing	15:00:03

Table 7 provides the variation of pressure on the XFU output (Parameter DK) and pressure in the primary and redundant Xenon feed branches (Parameters DKR1 and DKR2) during evacuation of the Orbit Control Propulsion Subsystem pipelines (on base of available TM-sessions).

Table 7

Time (hh:mm:ss)	02:00:00	02:30:00	05:00:00	07:00:00	11:00:00	11:15:00	11:30:00	12:00:00	14:30:00	15:10:00
Xe Feed Unit Output Pressure (kgf/cm^2)	1,08	0,11	0,07	0,04	0,00	1,02	0,24	0,11	0,00	0,00
Primary Xe Feed Branch Pressure (kgf/cm^2)	1,28	0,56	0,42	0,35	0,28	0,28	0,28	0,28	0,28	0,28
Redundant Xe Feed Branch Pressure (kgf/cm^2)	2,80	2,80	2,80	2,80	2,80	1,36	0,64	0,35	0,35	0,35

1.7.2. Filling-up Orbit Control Propulsion Subsystem Pipelines with Xenon

The Express-A#2 Spacecraft Orbit Control Propulsion Subsystem pipelines were filled-up by Xenon on March 14, 2000 from 15:12:00 to 15:33:00.

A sequence of the commands when filling-up the Orbit Control Propulsion Subsystem pipelines with Xenon and the time and date of their execution are provided in Table 8. Also Table 8 contains the data on change of pressure on both the XFU output (Parameter DK) and the XFU input (Parameter DVK), pressures (Parameters DKR1 and DKR2) in the Primary and Redundant Xenon Feed Branches when filling-up the Orbit Control Propulsion Subsystem pipelines (available on the existing TM-sessions).

Table 8

Command	**Time of Execution (hh:mm:ss)**	**Xe Feed Unit Input**	**Primary Xe Feed Branch**	**Redundant Xe Feed Branch**	**Xe Feed Unit Output**
		Pressure (kgf/cm^2)			
	15:12:20	4,04	0,20	0,35	0,00
XSU3 PV Popping	15:12:24	44,54	0,20	0,35	0,00
XSU1 PV Popping	15:15:16	47,28	0,20	0,35	0,00
XSU2 PV Popping	15:16:55	48,52	0,20	0,35	0,00
RV2 Opening	15:18:15	48,52	0,20	0,35	0,00
	15:18:19	48,52	0,20	4,09	0,00
	15:18:24	48,52	0,20	4,45	0,00
RV1 Opening	15:22:57	48,52	0,20	4,45	0,00
	15:23:00	48,52	3,80	4,45	0,00
	15:23:03	48,52	4,38	4,45	0,00
Channel “plus Y”	15:27:41	48,52	4,38	4,45	0,00
	15:27:45	48,52	4,38	4,45	0,11
	15:27:53	48,52	4,38	4,45	0,17
	15:27:56	48,52	4,38	4,45	0,24
	15:28:03	48,52	4,38	4,45	0,30
	15:28:07	48,52	4,38	4,45	0,37
	15:28:11	48,52	4,38	4,45	0,43
	15:28:23	48,52	4,38	4,45	0,56
	15:28:27	48,52	4,38	4,45	0,63
	15:28:31	48,52	4,38	4,45	0,69
	15:28:38	48,52	4,38	4,45	0,76
	15:28:44	48,52	4,38	4,45	0,86
	15:28:50	48,52	4,38	4,45	0,92
	15:28:54	48,52	4,38	4,45	0,99
	15:28:59	48,52	4,38	4,45	1,05
	15:29:05	48,52	4,38	4,45	1,11
	15:29:12	48,52	4,38	4,45	1,21
	15:29:20	48,52	4,38	4,45	1,27
	15:29:26	48,52	4,38	4,45	1,33
	15:29:28	48,52	4,38	4,45	1,39

Table 8 Continued

Command	Time of Execution (hh:mm:ss)	Xe Feed Unit Input	Primary Xe Feed Branch	Redundant Xe Feed Branch	Xe Feed Unit Output
		Pressure (kgf/cm^2)			
	15:29:33	48,52	4,38	4,45	1,45
	15:29:38	48,52	4,38	4,45	1,52
	15:29:46	48,52	4,38	4,45	1,58
	15:29:48	48,52	4,38	4,45	1,64
	15:29:53	48,52	4,38	4,45	1,70
	15:30:00	48,52	4,38	4,45	1,77
	15:30:03	48,52	4,38	4,45	1,83
	15:30:13	48,52	4,38	4,45	1,89
	15:30:21	48,52	4,38	4,45	1,95
	15:30:24	48,52	4,38	4,45	2,01
	15:30:30	48,52	4,38	4,45	2,07
	15:30:35	48,52	4,38	4,45	2,13
	15:30:40	48,52	4,38	4,45	2,19
	15:30:46	48,52	4,38	4,45	2,25
	15:30:49	48,52	4,38	4,45	2,32
	15:30:55	48,52	4,38	4,45	2,38
	15:31:02	48,52	4,38	4,45	2,44
	15:31:10	48,52	4,38	4,45	2,50
	15:31:14	48,52	4,38	4,45	2,59
	15:31:21	48,52	4,38	4,45	2,65
	15:31:21	48,52	4,38	4,45	2,71
	15:31:58	48,52	4,74	4,45	2,71
T Switching Off	15:32:25	48,52	4,74	4,45	2,71

1.7.3. Express-A#2 Orbit Control Propulsion Subsystem Conditions after Completion of Initial Setup

Express-A#2 Orbit Control Propulsion Subsystem conditions (temperatures of Units and pressure in Xe Feed Subsystem) after completion of initial setup is provided in Table 9 and Table 10.

Table 9

Location	Xe Storage Unit #1	Xe Storage Unit #2	Xe Storage Unit #3	Xe Feed Unit	Thruster Unit #1	Thruster Unit #2	Thruster Unit #3	Thruster Unit #4
	Temperature (°C)							
Value	0,7	6,9	3,8	7,0	1,3	18,0	5,9	12,7

Table 10

Location	Xe Feed Unit Output	Xe Feed Unit Input	Primary Xe Feed Branch	Redundant Xe Feed Branch
	Pressure (kgf/cm^2)			
Value	2,71	48,52	4,74	4,45

1.7.4.Test Firing SPT-100 Orbit Control Thrusters

Test firing SPT-100 Thrusters was conducted on March 16, 2000 from 14:00:00 to 17:30:00.

Express-A#2 Orbit Control Propulsion Subsystem conditions (temperatures of Units and pressure in Feed Subsystem) before the first test firing is provided in Table 11 and Table 12.

Table 11

Location	Xe Storage Unit #1	Xe Storage Unit #2	Xe Storage Unit #3	Xe Feed Unit	Thruster Unit #1	Thruster Unit #2	Thruster Unit #3	Thruster Unit #4
	Temperature (°C)							
Value	1,7	9,6	5,4	13,7	5,9	20,0	16,6	15,4

Table 12

Location	Xe Feed Unit Output	Xe Feed Unit Input	Primary Xe Feed Branch	Redundant Xe Feed Branch
	Pressure (kgf/cm^2)			
Value	2,71	51,00	4,74	4,59

Sequence of commands when test firing of every SPT-100 thruster with every cathode (twice – total 32 firings) and time of their execution are provided in Annex 1. In addition, Annex 1 contains operation data of thruster anode voltage and current.

Temperature variation data for the Orbit Control Propulsion Subsystem Units is provided in Table 13 when test firings.

Table 13

Time hh:mm:ss	Temperature (°C)							
	Xe Storage Unit #1	Xe Storage Unit #2	Xe Storage Unit #3	Xe Feed Unit	Thruster Unit #1	Thruster Unit #2	Thruster Unit #3	Thruster Unit #4
14:03:52	1,7	9,6	5,4	13,7	5,9	20,0	16,6	15,4
14:39:00	1,7	9,6	5,4	13,7	5,9	20,0	16,6	12,0
14:39:16	1,7	9,6	5,4	13,7	5,9	23,3	16,6	12,0
15:14:33	1,7	9,6	5,4	13,7	5,9	25,3	16,6	12,0
15:28:58	1,7	9,6	5,4	11,1	5,9	25,3	16,6	12,0
16:28:43	1,7	9,6	5,4	11,1	5,9	25,3	16,6	8,7
17:24:30	1,7	9,6	5,4	11,1	5,9	25,3	16,6	8,7

1.7.5 Conclusions based on the SPT-100 Test Firings

1.7.5.1. The serviceability of each SPT-100 thruster on each cathode is validated on base of test firing data.

1.7.5.2. Warm-up period for each thruster to reach its nominal operation performance (300 V; 4,5 A) when first test firings are given in Table 14.

Table 14

Thruster N	Cathode N	Duration (sec)	
		1st Firing	2nd Firing
T1	C1	15	Not Available
	C2	15	13
RT1	C1	11	12
	C2	18	15
T2	C1	14	14
	C2	12	11
RT2	C1	12	15
	C2	12	16
T3	C1	9	16
	C2	13	13
RT3	C1	0	9
	C2	4	8
T4	C1	8	14
	C2	13	11
RT4	C1	7	10
	C2	8	10

1.8.Daily variations of temperature for Express-A#2 Orbit Control Propulsion Subsystem Units

Daily variations of temperature for Orbit Control Propulsion Subsystem Units on March 18, 2000 are provided in Table 15 and in Fig. 11.

Table 15

Moscow Standard Time (hh:mm)	Xe Feed Unit	Xe Storage Unit #1	Xe Storage Unit #2	Xe Storage Unit #3	Thruster Unit #1	Thruster Unit #2	Thruster Unit #3	Thruster Unit #4
0:00	9,53	1,20	7,49	2,77	10,62	11,29	-0,08	0,71
0:30	10,05	-0,37	7,49	4,34	12,63	12,63	1,26	0,71
1:00	10,58	0,68	6,96	3,82	14,63	12,63	1,26	1,37
1:30	11,62	0,68	6,96	4,34	16,64	13,30	2,59	2,04
2:00	12,15	0,68	6,96	4,34	19,32	13,30	2,59	2,70
2:30	12,67	1,20	6,96	3,82	21,99	13,97	3,26	2,04
3:00	13,72	0,68	7,49	4,34	21,99	13,97	3,93	2,70
3:30	14,24	0,15	6,96	3,82	23,33	13,97	3,93	2,04
4:00	14,77	1,20	6,96	3,82	24,00	14,63	5,27	1,37
4:30	15,29	3,30	6,96	4,87	24,00	14,63	5,94	1,37
5:00	15,29	1,20	6,96	3,82	24,00	14,63	7,28	0,71
5:30	15,81	0,68	6,96	3,82	24,67	14,63	7,94	0,71
6:00	15,29	2,77	6,96	4,87	24,00	14,63	9,28	0,71
6:30	16,34	1,20	6,96	4,87	24,00	14,63	9,95	0,71
7:00	16,34	1,73	6,96	4,87	23,33	13,30	9,28	1,37
7:30	15,29	0,68	6,44	4,34	21,99	11,96	9,28	0,71
8:00	15,29	0,68	6,96	3,30	19,99	9,95	7,94	0,71
8:30	14,77	-0,37	6,44	3,30	17,98	7,94	6,61	0,71
9:00	13,72	0,15	6,44	3,30	14,63	7,28	5,27	0,71
9:30	13,19	1,20	5,92	3,82	12,63	5,27	4,60	0,04
10:00	12,15	0,68	6,44	3,30	9,95	4,60	3,93	2,04
10:30	12,15	-0,37	6,44	3,30	7,94	5,27	3,26	4,03
11:00	11,10	1,20	6,44	4,34	7,28	7,28	2,59	7,36
11:30	10,58	0,15	6,44	3,30	5,27	7,94	2,59	9,36
12:00	10,58	-1,42	6,44	2,77	3,93	10,62	2,59	11,36
12:30	10,05	-0,89	6,44	3,82	3,26	12,63	2,59	12,69
13:00	9,53	1,20	6,44	3,82	2,59	13,97	2,59	14,02
13:30	9,00	-1,42	6,44	2,25	1,92	16,64	2,59	15,35
14:00	8,48	-2,46	6,44	2,25	1,26	17,31	2,59	16,01
14:30	9,00	-0,37	6,96	2,25	0,59	18,65	2,59	16,68
15:00	9,00	-0,89	6,96	2,77	-0,08	19,99	1,92	16,01
15:30	8,48	-0,89	6,96	2,77	-0,08	20,66	1,92	16,68
16:00	8,48	0,15	7,49	3,82	-0,08	21,32	1,92	16,68
16:30	7,96	0,15	7,49	2,77	-0,75	21,32	1,92	16,01
17:00	7,96	0,68	7,49	3,30	-0,08	20,66	1,92	15,35
17:30	8,48	0,68	8,01	3,82	1,26	20,66	2,59	15,35
18:00	7,96	-2,99	7,49	2,77	3,26	19,32	2,59	14,02
18:30	7,96	-0,89	7,49	2,25	4,60	17,98	2,59	14,02
19:00	7,96	-1,42	7,49	3,30	5,94	16,64	2,59	13,35
19:30	7,96	-0,37	7,49	2,25	7,28	15,30	1,92	13,35
20:00	7,96	-0,89	7,49	2,77	7,28	13,30	2,59	12,69
20:30	7,43	-1,42	7,49	3,30	7,28	11,29	1,92	12,69
21:00	7,96	-0,89	6,96	2,77	7,94	9,28	1,26	12,02
21:30	7,96	-0,89	6,96	2,77	7,94	7,28	0,59	11,36
22:00	7,96	-1,94	6,96	2,25	7,94	5,27	0,59	11,36
22:30	7,96	-1,42	6,44	2,25	8,61	4,60	0,59	10,69
23:00	8,48	-0,89	6,44	2,25	9,28	3,93	0,59	11,36

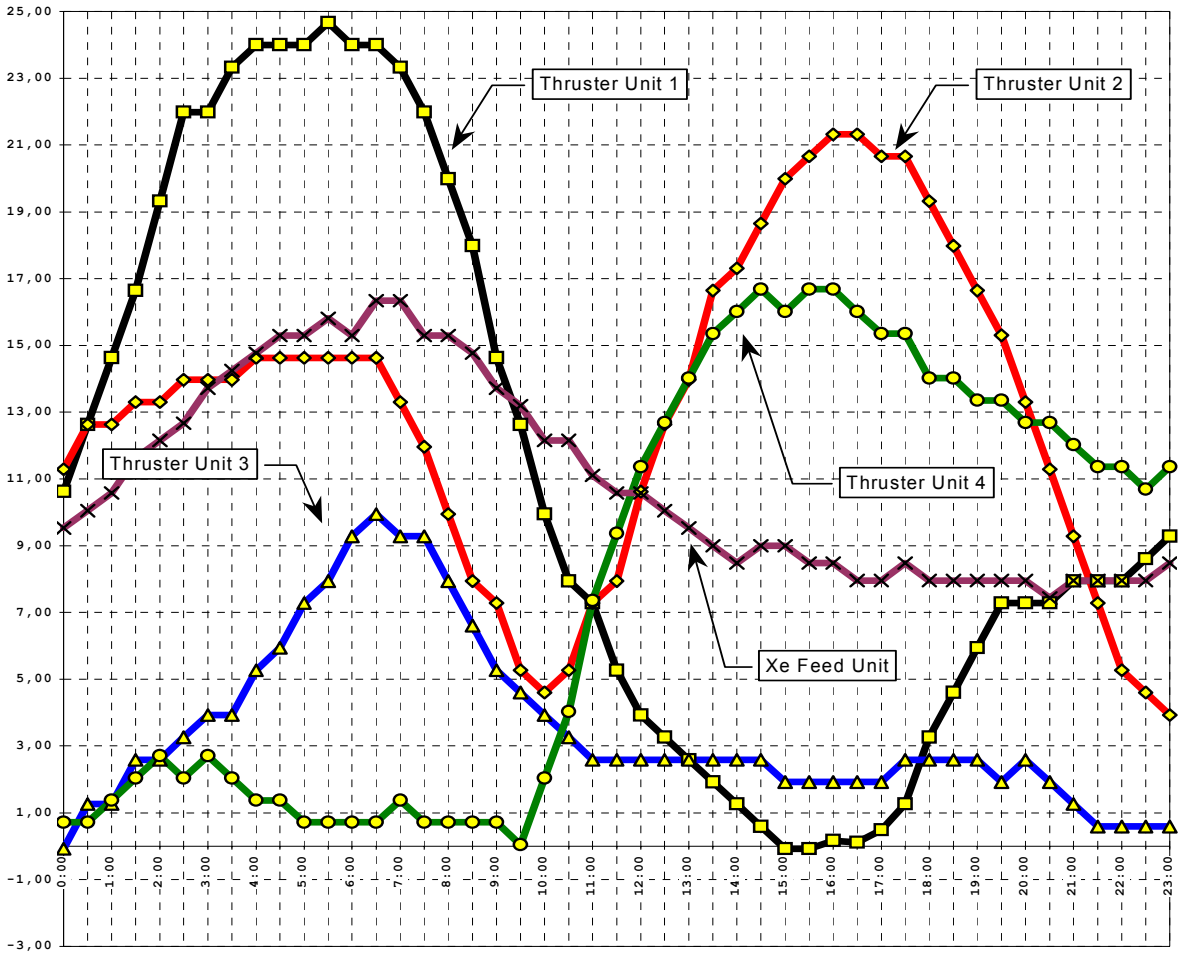
Thruster Unit 1
Thruster Unit 2
Thruster Unit 3
Thruster Unit 4
Xe Feed Unit
25,00
23,00
21,00
19,00
17,00
15,00
13,00
11,00
9,00
7,00
5,00
3,00
1,00
-1,00
-3,00
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00

Fig. 11

1.9. SPT-100 Thrusters Functioning Data

Within a period of March 12, 2000 to June 15, 2000 the firings of the SPT-100 Thrusters were performed to execute the following tasks:

- 16/03/00: twice test firing each thruster with each cathode (ref. Annex 1);
- From 17/03/00 to 19/03/00: providing a retroburn to end the Express-A#2 spacecraft drift at an interim station point;
- From 12/04/00 to 13/06/00: performing inclination station keeping operations for Express-A#2 spacecraft;
- 28/04/00: providing reorbit burn to drift the Express-A#2 spacecraft into the final station point;
- 08/05/00 and 11/05/00: providing a retroburn to end the Express-A#2 spacecraft drift at the final station point.

Total operating time and number of firings for each thruster on each cathode for the reported period is provided in Table 16.

Table 16

Thruster No	Cathode No	Firing duration, hh:mm:ss	Firing number
T1	C1	20:15:04	3
T1	C2	00:05:50	2
RT1	C1	17:50:50	3
RT1	C2	00:05:50	2
T2	C1	23:15:50	8
T2	C2	00:05:50	2
RT2	C1	36:05:50	3
RT2	C2	00:05:50	2
T3	C1	26:51:38	36
T3	C2	00:05:50	2
RT3	C1	28:00:06	33
RT3	C2	00:05:50	2
T4	C1	19:42:28	26
T4	C2	00:05:50	2
RT4	C1	06:05:50	19
RT4	C2	00:05:50	2

Data for each SPT-100 firing and its duration for the reported period are provided in Table 17.

Table 17

Date (dd/mm/yy)	Thruster No	Cathode No	Operating Time (hh:mm:ss)
16/03/00	T1	C1	00:02:55
16/03/00	T1	C2	00:02:55
16/03/00	RT1	C1	00:02:55
16/03/00	RT1	C2	00:02:55
16/03/00	T2	C1	00:02:55
16/03/00	T2	C2	00:02:55
16/03/00	RT2	C1	00:02:55
16/03/00	RT2	C2	00:02:55

Table 17 Continued

Date (dd/mm/yy)	Thruster No	Cathode No	Operating Time (hh:mm:ss)
16/03/00	T3	C1	00:02:55
16/03/00	T3	C2	00:02:55
16/03/00	RT3	C1	00:02:55
16/03/00	RT3	C2	00:02:55
16/03/00	T4	C1	00:02:55
16/03/00	T4	C2	00:02:55
16/03/00	RT4	C1	00:02:55
16/03/00	RT4	C2	00:02:55
16/03/00	T1	C1	00:02:55
16/03/00	T1	C2	00:02:55
16/03/00	RT1	C1	00:02:55
16/03/00	RT1	C2	00:02:55
16/03/00	T2	C1	00:02:55
16/03/00	T2	C2	00:02:55
16/03/00	RT2	C1	00:02:55
16/03/00	RT2	C2	00:02:55
16/03/00	T3	C1	00:02:55
16/03/00	T3	C2	00:02:55
16/03/00	RT3	C1	00:02:55
16/03/00	RT3	C2	00:02:55
16/03/00	T4	C1	00:02:55
16/03/00	T4	C2	00:02:55
16/03/00	RT4	C1	00:02:55
16/03/00	RT4	C2	00:02:55
17/03/00	T2	C1	01:00:00
17/03/00	T2	C1	07:20:00
17/03/00	T2	C1	08:20:00
19/03/00	T2	C1	02:00:00
19/03/00	T2	C1	03:40:00
12/04/00	T4	C1	02:00:00
13/04/00	RT4	C1	02:00:00
15/04/00	T4	C1	01:37:38
16/04/00	T4	C1	02:00:00
17/04/00	T4	C1	02:00:00
18/04/00	T4	C1	02:00:00
19/04/00	T4	C1	02:00:00
20/04/00	T4	C1	02:00:00
21/04/00	T4	C1	02:00:00
22/04/00	T3	C1	00:58:36
23/04/00	T3	C1	00:58:36
24/04/00	T3	C1	00:58:36
25/04/00	T3	C1	01:00:00
26/04/00	T3	C1	01:00:00
27/04/00	T3	C1	02:00:00
28/04/00	RT2	C1	36:00:00
04/05/00	T3	C1	00:15:00
04/05/00	T4	C1	00:15:00
04/05/00	T3	C1	00:15:00

Table 17 Continued

Date (dd/mm/yy)	Thruster No	Cathode No	Operating Time (hh:mm:ss)
04/05/00	T4	C1	00:15:00
04/05/00	T3	C1	00:15:00
04/05/00	T4	C1	00:15:00
04/05/00	T3	C1	00:15:00
04/05/00	T4	C1	00:15:00
04/05/00	T3	C1	00:15:00
04/05/00	T4	C1	00:15:00
04/05/00	T3	C1	00:15:00
04/05/00	T4	C1	00:15:00
04/05/00	T3	C1	00:15:00
04/05/00	T4	C1	00:15:00
04/05/00	T3	C1	00:15:00
04/05/00	T4	C1	00:15:00
04/05/00	T3	C1	00:15:00
04/05/00	T4	C1	00:15:00
04/05/00	T3	C1	00:15:00
04/05/00	T4	C1	00:15:00
04/05/00	T3	C1	00:15:00
04/05/00	T4	C1	00:15:00
05/05/00	T3	C1	00:15:00
05/05/00	T4	C1	00:15:00
05/05/00	RT3	C1	00:15:00
05/05/00	RT4	C1	00:15:00
05/05/00	RT3	C1	00:15:00
05/05/00	RT4	C1	00:15:00
05/05/00	RT3	C1	00:15:00
05/05/00	RT4	C1	00:15:00
05/05/00	RT3	C1	00:15:00
05/05/00	RT4	C1	00:15:00
05/05/00	RT3	C1	00:15:00
05/05/00	RT4	C1	00:15:00
05/05/00	RT3	C1	00:15:00
06/05/00	RT4	C1	00:15:00
06/05/00	RT3	C1	00:15:00
06/05/00	RT4	C1	00:15:00
06/05/00	RT3	C1	00:15:00
06/05/00	RT4	C1	00:15:00
06/05/00	RT3	C1	00:15:00
06/05/00	RT4	C1	00:15:00
06/05/00	RT3	C1	00:15:00
06/05/00	RT4	C1	00:15:00
06/05/00	RT3	C1	00:15:00
06/05/00	RT4	C1	00:15:00
06/05/00	RT3	C1	00:15:00
06/05/00	RT4	C1	00:15:00
06/05/00	T3	C1	00:15:00
06/05/00	T4	C1	00:15:00
06/05/00	T3	C1	00:15:00
06/05/00	T4	C1	00:15:00

Table 17 Continued

Date (dd/mm/yy)	Thruster No	Cathode No	Operating Time (hh:mm:ss)
07/05/00	T3	C1	00:15:00
07/05/00	T4	C1	00:15:00
07/05/00	T3	C1	00:15:00
07/05/00	T4	C1	00:15:00
07/05/00	RT3	C1	00:15:00
07/05/00	RT4	C1	00:15:00
07/05/00	RT3	C1	00:15:00
07/05/00	RT4	C1	00:15:00
08/05/00	RT3	C1	00:15:00
08/05/00	RT4	C1	00:15:00
08/05/00	RT3	C1	00:15:00
08/05/00	RT4	C1	00:15:00
08/05/00	T1	C1	20:09:14
11/05/00	RT1	C1	17:45:04
15/05/00	T3	C1	00:58:44
16/05/00	T3	C1	00:58:44
17/05/00	T3	C1	00:58:44
18/05/00	T3	C1	00:58:44
19/05/00	T3	C1	00:58:44
20/05/00	T3	C1	00:58:44
21/05/00	T3	C1	00:58:48
22/05/00	T3	C1	00:58:48
23/05/00	RT3	C1	02:00:00
24/05/00	RT3	C1	02:00:00
25/05/00	RT3	C1	02:00:00
26/05/00	RT3	C1	02:00:00
27/05/00	RT3	C1	02:00:00
28/05/00	RT3	C1	02:00:00
29/05/00	T2	C1	00:50:00
01/06/00	T3	C1	02:00:00
02/06/00	T3	C1	02:00:00
03/06/00	T3	C1	02:00:00
04/06/00	T3	C1	02:00:00
05/06/00	RT3	C1	02:00:00
06/06/00	RT3	C1	02:00:00
07/06/00	RT3	C1	02:00:00
08/06/00	RT3	C1	00:59:04
09/06/00	RT3	C1	00:59:04
10/06/00	RT3	C1	00:59:04
11/06/00	RT3	C1	00:59:04
12/06/00	RT3	C1	00:59:04
13/06/00	RT3	C1	00:58:56

1.10. Telemetry Data for the Start-up and Operation of Thrusters during drift (transfer) into a final satellite station point

For drifting the Express-A#2 Spacecraft into the interim station point and following transferring it into the final station point there were executed 9 firings of the +Y- and –Y- direction SPT-100 Thrusters.

Based on available telemetry data on the SPT-100 flight operations, below it is provided information for the following firings:

#1.1) one of the firings when retro burning to end a drift at an interim station point:

Thruster:	T2C1
Date and Time of Thruster Start-Up:	17/03/00 at 12:39:40
Date and Time of Switching Off:	17/03/00 at 19:59:40
Operating Time:	07:20:00
TM-data Receipt Session Date and Time:	17/03/00 from 12:35:00 to 15:29:00
	from 19:20:00 to 20:20:00.

#1.2) firing when reorbit burning to transfer into the final station point:

Thruster:	RT2C1
Start-Up date and Time:	28/04/00 at 15:59:40
Switch Off date and Time:	30/04/00 at 03:59:40
Operating Time:	36:00:00
TM-data Receipt Session Date and Time:	28/04/00 from 15:50:00 to 16:19:10
	from 17:41:00 to 18:10:00
	29/04/00 from 04:07:00 to 05:35:00
	from 14:31:00 to 15:00:00
	30/04/00 from 03:30:00 to 04:10:00

#1.3) one of the firings when retro burning to end the drift in the final station point:

Thruster:	T1C1
Start-Up Date and Time:	08/05/00 at 13:59:40
Switch Off Date and Time:	09/05/00 at 10:08:54
Operating Time:	20:09:14
TM-data Receipt Session Date and Time:	08/05/00 from 13:55:00 to 15:00:00
	from 15:41:00 to 16:28:00
	09/05/00 from 09:50:00 to 12:15:00

1.10.1. Table of Firing Commands

Sequence of the commands for Thruster Firings #1.1 through #1.3 and time of their execution are provided in Table 18.

Table 18

Command	Time of Execution			Comments
	No 1.1 17/03/00	No 1.2 28/04/00 - 30/04/00	No 1.3 08/05/00 - 09/05/00	
Channel I	12:35:00	15:55:00	13:55:00	
RV1 Opening	---	15:55:01	---	For firings #1.1 and 1.3 the command "RV1 opening" was not issued. The Valve RV1 was open.
T (RT) Preparation	12:37:00	15:57:00	13:57:00	
C1 Preparation	12:37:03	15:57:02	13:57:02	
T (RT) Opening valves	12:39:30	15:59:30	13:59:30	
Ignite	12:39:40	15:59:40	13:59:40	
C Switching Off	12:39:40	15:59:41	13:59:40	
RV Closing	---	03:49:40	---	For firings #1.2 the command "RV Closing" was issued before switching off the thruster.
T Switching Off	19:59:40	03:59:40	10:08:58	

1.10.2.TM-data Tables

#1.1) T2C1 Thruster Operation TM-data based on available TM-data receipt sessions is given in Annex 2.

#1.2) RT2C1 Thruster Operation TM-data based on available TM-data receipt sessions is given in Annex 3.

#1.3) T1C1Thruster Operation TM-data based on available TM-data receipt sessions is given in Annex 4.

1.10.3. Temperature variation for Orbit Control Propulsion Subsystem Units

#1.1) Temperature changes for Orbit Control Propulsion Subsystem Units when operating the T2C1 Thruster (based on available TM-data receipt sessions) are provided in Table 19.

Table 19

Location	Xe Storage Unit 1	Xe Storage Unit 2	Xe Storage Unit 3	Xe Feed Unit	Thruster Unit 1	Thruster Unit 2	Thruster Unit 3	Thruster Unit 4
	Temperature (°C)							
17/03/00								
12:35:00	1,2	8,0	4,3	11,1	3,9	12,0	3,3	4,0
13:05:00	1,2	8,0	4,3	11,1	3,9	15,3	3,3	4,0
13:33:57	1,2	8,0	4,3	11,1	3,9	18,7	3,3	4,0
14:05:00	1,2	8,0	4,3	11,1	0,6	22,0	3,3	4,0
14:37:00	1,2	8,0	4,3	11,1	0,6	25,3	3,3	7,4
15:30:00	1,2	8,0	4,3	8,4	0,6	25,3	3,3	7,4
No receipt of TM-data								
19:21:00	-1,4	8,5	3,8	7,4	8,0	25,3	1,3	3,4
20:14:00	-1,4	8,5	3,8	7,4	8,0	22,0	1,3	3,4

#1.2) Temperature changes for Orbit Control Propulsion Subsystem Units when operating the RT2C1Thruster (based on available TM-data receipt sessions) are provided in Table 20.

Table 20

Location	Xe Storage Unit 1	Xe Storage Unit 2	Xe Storage Unit 3	Xe Feed Unit	Thruster Unit 1	Thruster Unit 2	Thruster Unit 3	Thruster Unit 4
	Temperature (°C)							
28/04/00								
17:41:00	-0,9	6,4	2,3	8,5	4,6	28,0	10,0	12,7
18:10:00	-0,9	6,4	2,3	8,5	4,6	28,0	10,0	12,7
No receipt of TM-data								
29/04/00								
04:03:00	0,7	7,0	2,8	14,8	22,0	16,6	12,6	10,7
05:18:07	0,7	7,0	2,8	17,4	22,0	16,6	16,0	10,7
05:36:00	0,7	7,0	2,8	17,4	22,0	16,6	16,0	10,7
No receipt of TM-data								
14:31:00	-1,4	6,9	1,7	9,0	0,7	32,0	7,9	14,7
15:01:00	-1,4	6,9	1,7	9,0	0,7	32,0	7,9	14,7
No receipt of TM-data								
30/04/00								
03:30:00	1,2	6,4	2,8	15,3	22,0	16,6	11,3	11,4
04:10:00	1,2	6,4	2,8	15,3	22,0	16,6	11,3	11,4

#1.3) Temperature changes for Orbit Control Propulsion Subsystem Units when operating the T1C1 Thruster (based on available TM-data receipt sessions) are provided in Table 21

Table 21

Location	Xe Storage Unit 1	Xe Storage Unit 2	Xe Storage Unit 3	Xe Feed Unit	Thruster Unit 1	Thruster Unit 2	Thruster Unit 3	Thruster Unit 4
	Temperature (°C)							
08/05/00								
13:02:00	-0,4	5,9	1,7	11,1	3,9	21,3	16,6	12,0
14:32:30	-0,4	5,9	1,7	11,1	3,9	21,3	13,3	12,0
15:00:00	-0,4	5,9	1,7	11,1	3,9	21,3	13,3	12,0
No receipt of TM-data								
15:41:00	0,0	6,5	2,3	10,6	7,9	21,3	14,6	12,7
16:10:00	0,0	6,5	2,3	10,6	11,3	21,3	14,6	12,7
16:28:00	0,0	6,5	2,3	10,6	11,3	21,3	14,6	12,7
No receipt of TM-data								
09/05/00								
09:53:00	0,7	6,4	2,3	17,4	29,4	9,3	13,3	10,7
10:24:00	0,7	6,4	2,3	17,4	26,0	9,3	13,3	10,7

1.11. Start-up and operation of thrusters for performing station keeping operations

SPT-100 Thruster flight operation data when performing the station keeping operations is provided for the following firings:

#2.1)	Thruster:	T4C1
	Date and Time of switching on:	12/04/00 at 08:59:40;
	Date and Time of switching off:	12/04/00 at 10:59:40
	Operating Time:	02:00:00.
# 2.2)	Thruster:	RT4C1
	Date and Time of switching on:	13/04/00 at 08:59:40;
	Date and Time of switching off:	13/04/00 at 10:59:40
	Operating Time:	02:00:00.
#2.3)	Thruster:	T4C1
	Date and Time of switching on:	15/04/00 at 04:32:12;
	Date and Time of switching off:	15/04/00 at 06:09:50
	Operating Time:	01:37:38.
# 2.4)	Thruster:	T4C1
	Date and Time of switching on:	16/04/00 at 04:27:40;
	Date and Time of switching off:	16/04/00 at 06:27:40
	Operating Time:	02:00:00.
#2.5)	Thruster:	T4C1
	Date and Time of switching on:	17/04/00 at 04:23:08;
	Date and Time of switching off:	17/04/00 at 06:23:08
	Operating Time:	02:00:00.
#2.6)	Thruster:	T3C1
	Date and Time of switching on:	22/04/00 at 12:39:50;
	Date and Time of switching off:	22/04/00 at 13:38:26
	Operating Time:	00:58:36.
#2.7)	Thruster:	T4C1
	Date and Time of switching on:	04/05/00 at 18:09:40;
	Date and Time of switching off:	04/05/00 at 18:24:40
	Operating Time:	00:15:00.
# 2.8)	Thruster:	RT3C1
	Date and Time of switching on:	05/05/00 at 17:49:40;
	Date and Time of switching off:	05/05/00 at 18:04:40
	Operating Time:	00:15:00.
# 2.9)	Thruster:	RT4C1
	Date and Time of switching on:	05/05/00 at 18:14:40;
	Date and Time of switching off:	05/05/00 at 18:29:40
	Operating Time:	00:15:00.

#2.10) Thruster: RT3C1
Date and Time of switching on: 23/05/00 at 12:49:05;
Date and Time of switching off: 23/05/00 at 14:49:05
Operating Time: 02:00:00.

2.11) Thruster: RT3C1
Date and Time of switching on: 08/06/00 at 10:40:56;
Date and Time of switching off: 08/06/00 at 11:40:00
Operating Time: 00:59:04.

#2.12) Thruster: RT3C1
Date and Time of switching on: 11/06/00 at 10:29:18;
Date and Time of switching off: 11/06/00 at 11:28:22
Operating Time: 00:59:04.

1.11.1. Lists of Firing Commands

Sequence of commands for firing the thrusters #2.1 to #2.5 and date and time of their execution are provided in Table 22. Sequence of commands for firing the thrusters #2.6 to #2.12 and date and time of their execution are provided in Table 23.

Table 22

Command	Date and Time of Execution					Comments
	No 2.1 12/04/00	**No 2.2 13/04/00**	**No 2.3 15/04/00**	**No 2.4 16/04/00**	**No 2.5 17/04/00**	
Channel "minus Z"	08:55:00	08:55:00	04:27:32	04:23:00	04:18:21	
RV1 Opening	08:55:00	08:55:00	04:27:32	---	04:18:21	When switching on #2.4, RV1 was open and the command "RV1 Opening " was not issued
T (RT) Preparation	08:57:00	08:57:00	04:29:32	04:25:00	04:20:21	
C1 Preparation	08:57:02	08:57:02	04:29:34	04:25:02	04:20:23	
T (RT) Opening Valves	08:59:32	08:59:32	04:32:04	04:27:32	04:22:53	
Ignition	08:59:40	08:59:40	04:32:12	04:27:40	04:23:01	
C Switching Off	08:59:40	08:59:40	04:32:12	04:27:41	04:23:01	
RV Closing	---	10:49:40	---	06:17:40	06:13:01	When switching on #2.2, the command "RV Closing" was issued before switching off the thruster. When switching on #2.3, the command "RV Closing" was not issued and RV1 holds opened.
T Switching Off	10:59:40	10:59:40	06:09:50	06:27:40	06:23:01	
RV Closing	11:11:04					When switching on #2.1, the command "RV Closing" was issued after switching off the thruster.

Table 23

Command	Date and Time of Execution						
	No 2.6 22/04/00	**No 2.7 04/05/00**	**No 2.8 05/05/00**	**No 2.9 05/05/00**	**No 2.10 23/05/00**	**No 2.11 08/06/00**	**No 2.12 11/06/00**
Channel "i"	12:35:10	18:05:00	17:45:00	18:10:00	12:44:25	10:36:16	10:24:38
RV1 Opening	12:35:10	---	---	---	12:44:25	10:36:16	10:24:38
T (TR) Preparation	12:37:10	18:07:00	17:47:00	18:12:00	12:46:25	10:38:16	10:26:38
C Preparation	12:37:12	18:07:02	17:47:02	18:12:02	12:46:27	10:38:18	10:26:40
T (TR) Opening Valves	12:39:42	18:09:32	17:49:32	18:14:32	12:48:57	10:40:48	10:29:10
Ignition	12:39:50	18:09:40	17:49:40	18:14:40	12:49:05	10:40:56	10:29:18
C Switching Off	12:39:50	18:09:40	17:49:40	18:14:40	12:49:05	10:40:56	10:29:18
RV Closing	13:28:26	---	---	---	14:39:05	11:30:00	11:18:22
T Switching Off	13:38:26	18:24:40	18:04:40	18:29:40	14:49:05	11:40:00	11:28:22

Note: For firings #2.7 to #2.9 commands "RV1 Opening" and "RV Closing" were not issued and RV1 was open continuously.

1.11.2. Telemetry Data Tables

#2.1) Telemetry data table when operating the T4C1 Thruster on 12/04/00 is given in Annex 5.

#2.2) Telemetry data table when operating the RT4C1 Thruster on 13/04/00 is given in Annex 6.

#2.3) Telemetry data table when operating the T4C1 Thruster on 15/04/00 is given in Annex 7.

#2.4) Telemetry data table when operating the T4C1 on16/04/00 is given in Annex 8.

#2.5) Telemetry data table when operating the T4C1 Thruster on 17/04/00 is given in Annex 9.

#2.6) Telemetry data table when operating the T3C1 Thruster on 22/04/00 is given in Annex 10.

#2.7) Telemetry data table when operating the T4C1 Thruster on 04/05/00 is given in Annex 11.

#2.8) Telemetry data table when operating the RT3C1 Thruster on 05/05/00 is given in Annex 12.

#2.9) Telemetry data table when operating the RT4C1 Thruster on 05/05/00 is given in Annex 13.

#2.10) Telemetry data table when operating the RT3C1 Thruster on 23/05/00 is given in Annex 14.

#2.11) Telemetry data table when operating the RT3C1 Thruster on 08/06/00 is given in Annex 15.

#2.12) Telemetry data table when operating the RT3C1 Thruster on 11/06/00 is given in Annex 16.

1.12. Thrust based on ranging results during East-West and North-South maneuvers

Effective thrust determination results for Express-A#2 Orbit Control Propulsion Subsystem are given in Table 24.

Table 24

Ascertain Thruster Operating Period	Ascertain Thruster No	Effective Thrust, ($N*10^{-2}$)
17/03/2000 – 18/03/2000	T2C1	8,03
19/03/2000 – 20/03/2000	T2C1	7,95
28/04/2000 – 30/04/2000	RT2C1	8,15
08/05/2000 – 09/05/2000	T1C1	8,10
11/05/2000 – 12/05/2000	RT1C1	8,25
15/05/2000 – 28/05/2000	T3C1, RT3C1	7,05
01/06/2000 – 13/06/2000	T3C1, RT3C1	7,31

Thrust in the East-West direction for the T1, RT1, T2 and RT2 Thrusters was determined during drifting and transfer phases. Under that the method used to calculate the thrust is finding of such control acceleration, which when integrating the differential equations of motion at active flight phases permits to obtain the orbit parameters conforming with the ranging data after orbit control maneuver. As initial conditions for the integration were assumed the orbit parameters as determined on base of the ranging data before orbit control maneuver. Change of orbit parameters when performing orbit control maneuver is incommensurably greater than possible uncertainty of the orbit parameters based on the ranging data. Therefore, an accuracy of thrust determination in this case is sufficiently high and the uncertainty does not exceed 2 %.

For the North-South orbit control thrusters T3C1 and RT3C1, when determining a mean-integral value of effective thrust it was assumed that thrust values of all thrusters at all firings to be fell in a measurement interval are equal. In this case the measurement interval is a time period between two ranging cycles, of which there are performed SPT-100 thruster firings.

The longer the measurement interval, the higher an accuracy of mean-integral thrust value calculation. This is clarified as follows: the longer the measurement interval, the greater the change of orbit parameters due to the SPT-100 thruster firings, and accordingly, the lesser an influence of possible uncertainties when determining the orbit parameters based on the ranging data.

1.13. Comments on SPT Operation

No any comments on SPT-100 operation within the period of 16/03/00 to 15/06/00 are recorded. All the operations on the Express-A#2 Orbit Control Propulsion Subsystem were performed in accordance with the specified logic and no any additional measures were taken.

2. Express-A#2 On-Board Subsystems

2.1. Power Supply Subsystem

2.1.1. Brief description of the Solar Array

Configuration of the Express-A Solar Array is provided in Fig. 12. At this picture there are shown locations for the temperature sensors on the Solar Array Panels (T1SA and T2SA).

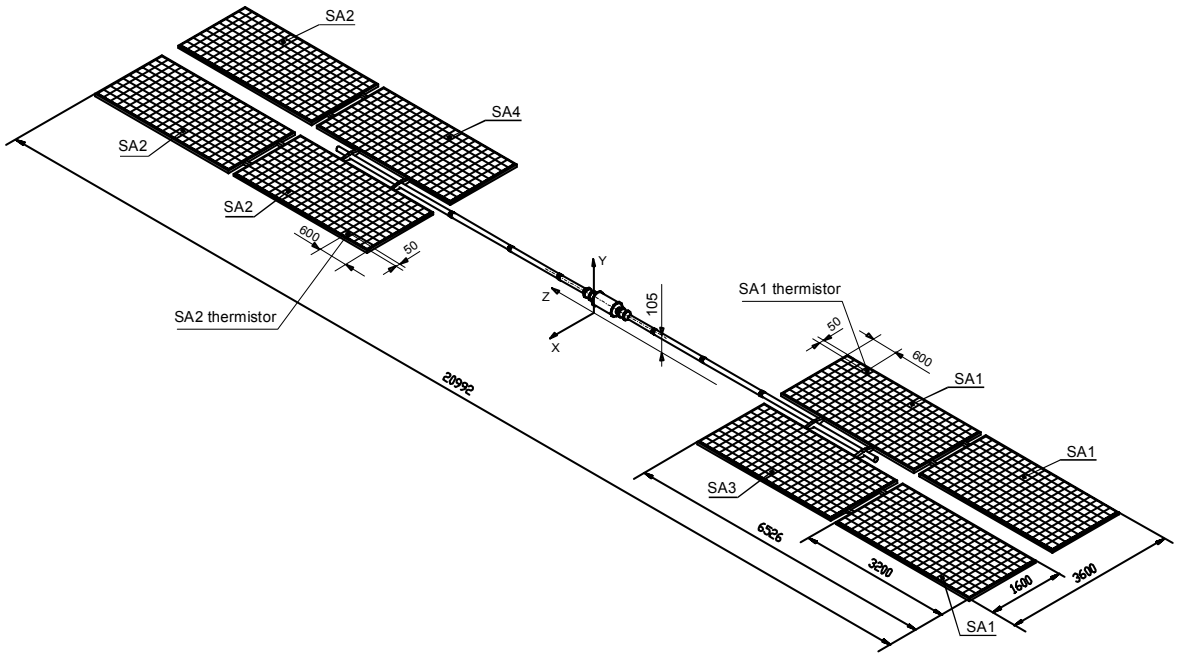

Fig. 12

A frame for the SA panels is made of aluminum shape section material. A fiberglass mesh with 9×9-mm cells covers a front surface of frame.

The solar cells are assembled into modules with size of 400×900-mm and bonded onto the polyimide film substrate. The modules are fastened to the frame mesh.

Temperature sensor is integrated into one of the solar cells. It consists of fine platinum wire bonded between the solar cell rear side and the cover glass.

A topology of measurement points for measurement of the SA current and voltage on the SA output buses is provided in Fig. 13.

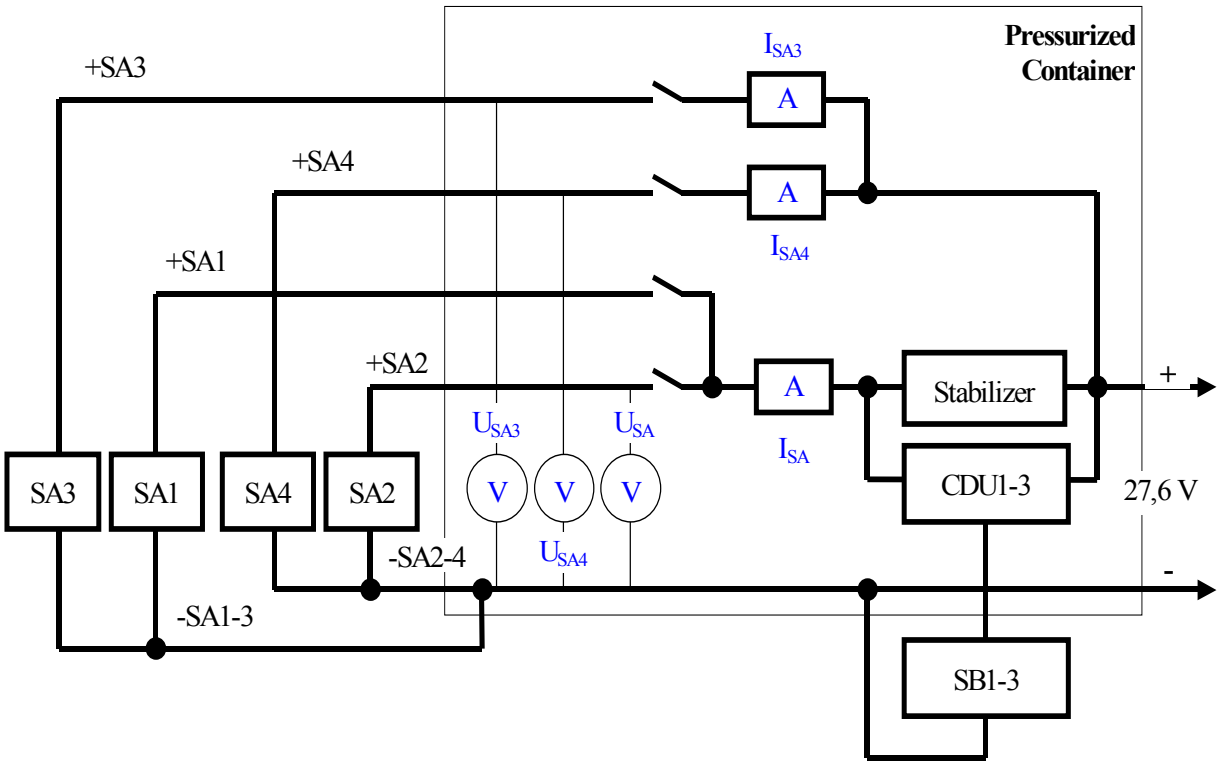

Fig. 13

2.1.2. Initial temperature of SA

The initial temperatures for the SA Panels (after injection into geostationary orbit, SA deployment and performance of Sun acquisition and Earth acquisition) are provided in Table 25.

Table 25

DATE	TIME (HR:MIN:SEC)	TEMPERATURE SA1 (°C)	TEMPERATURE SA2 (°C)
12.03.00	19:01:00	39,4	37,2
13.03.00	03:58:00	38,3	39,4
13.03.00	20:11:00	39,4	39,4

Table 26 provides the SA temperature variation data within a day of 22/03/00.

Table 26

Time		Temperature of SA Panel 2 (°C)
00:00:00	38,3	29,3
01:00:00	37,2	32,7
02:00:00	38,3	32,7
03:00:00	36,0	32,7
04:00:00	38,3	31,5
05:00:00	38,3	31,5
06:00:00	36,0	32,7
07:00:00	34,9	29,3
08:00:00	36,0	32,7
09:00:00	37,2	31,5
10:00:00	36,0	32,7
11:00:00	37,2	32,7
12:00:00	37,2	31,5
13:00:00	36,0	29.3
14:00:00	38,3	28,1
15:00:00	37,2	29,3
16:00:00	38,2	29,3
17:00:00	38,2	31.5
18:00:00	38,2	31.5
19:00:00	39,4	31,5
20:00:00	39,4	32,7
21:00:00	-162,0	-162,0
22:00:00	36,0	30,4
23:00:00	37,1	31,5
23:59:59	36,0	29,3

Temperature change data from the SA panels for 22/03/00 from 19:30:00 to 22:30:00 when satellite passes through an Earth's shadow are provided in Fig. 14.

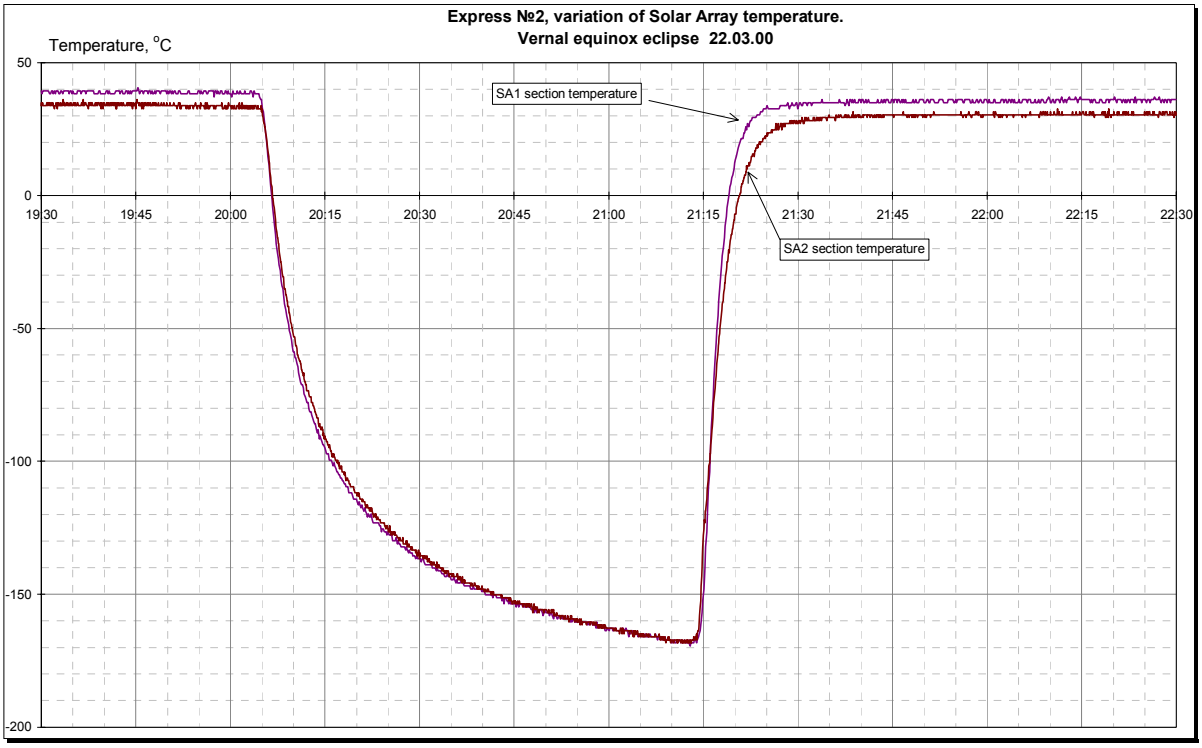

Fig. 14

2.1.3. Parameters for SA Panels

Table 27 provides information on parameters for the SA panels. They were measured once per month during a flight operation of the Express-A#2 satellite.

Table 27

Date & Time of Measurement	Panels SA1 & SA2		Panel SA3		Panel SA4	
	I_{CC} (A)	U_{OC} (V)	I_{CC} (A)	U_{OC} (V)	I_{CC} (A)	U_{OC} (V)
12/03/00 15:10:00	106,8	50,1	18,3	49,8	18,8	49,8
14/03/00 08:40:00	103,7	49,6	17,8	49,3	18,4	49,3
21/03/00 09:40:00	102,2	49,5	17,7	49,3	18,3	49,3
20/04/00 09:30:00	98,5	49,6	16,7	49,1	17,6	49,3
09/05/00 22:50:00	98,3	50,1	16,8	49,6	17,3	49,9
21/06/00 04:15:00	93,1	-	16,0	49,3	16,4	49,6

Note:

1. I_{CC} is SA output current.
2. U_{OC} is open-circuit voltage.
3. Output current for the sections SA1 and SA2 are measured at voltage of 30,3 V; for the sections SA3 and SA4 – at voltage of 27,8 V.
4. Steps of measurement are:
   - Current of Sections SA1 and SA2: 0,7 A
   - Current of Sections SA3 and SA4: 0,2 A
   - Voltage: 0.3 V.

2.2. Attitude Determination and Control Subsystem

2.2.1. Disturbing Torques when operating the SPT-100 Thrusters during drifting into the final station point (Firings #1.1 to #1.3)

Values of the disturbing torques (M_x, M_y, M_z) observable when operating the thrusters against an angular position of the Solar Array panels are provided in Table 28.

Table 28

Thruster #	Cathode #	SA Angle (degrees)	Data (dd/mm/yy)	Disturbing Torque X (N·m)	Disturbing Torque Y (N·m)	Disturbing Torque Z (N·m)
T2	C1	180	17/03/00	-8,97E-04	-4,67E-04	-9,23E-04
		255		-9,22E-04	1,32E-04	-1,17E-03
RT2	C1	180	29/04/00	-1,07E-03	-8,75E-05	7,43E-06
T1	C1	180	08/0500	1,41E-03	-5,48E-04	5,46E-03

2.2.2. Disturbing Torques when operating the thrusters during the final station point keeping (Firings #2.1 to #2.12)

Values of the disturbing torques (M_x, M_y, M_z) observable when operating the SPT-100 thrusters are provided in Table 29.

Table 29

Thruster #	Cathode #	SA Angle (degrees)	Data (dd/mm/yy)	Disturbing Torque X (N·m)	Disturbing Torque Y (N·m)	Disturbing Torque Z (N·m)
T4	C1	105	12/04/2000	-1,87E-03	-3,50E-03	-3,04E-04
T4	C1	120	12/04/2000	-2,56E-03	-2,51E-03	-2,77E-04
RT4	C1	105	13/04/2000	-1,45E-03	-2,55E-03	1,61E-05
RT4	C1	120	13/04/2000	-2,53E-03	-3,61E-03	1,98E-04
T4	C1	30	15/04/2000	1,55E-03	-9,32E-04	1,54E-04
T4	C1	45	15/04/2000	1,97E-03	-2,70E-03	9,79E-06
T4	C1	30	16/04/2000	1,69E-03	-9,43E-04	1,50E-04
T4	C1	45	16/04/2000	1,97E-03	-2,77E-03	1,86E-05
T4	C1	60	16/04/2000	1,57E-03	-3,93E-03	-1,69E-04
T4	C1	30	17/04/2000	1,73E-03	-9,67E-04	1,34E-04
T3	C1	150	22/04/2000	1,52E-03	4,14E-03	2,20E-04
T3	C1	165	22/04/2000	6,29E-04	2,38E-03	2,00E-04
RT3	C1	135	23/05/2000	3,56E-03	4,20E-03	-2,76E-04
RT3	C1	150	23/05/2000	3,42E-03	3,35E-03	-3,88E-04
RT3	C1	105	11/06/2000	2,07E-03	6,78E-03	-3,76E-04

2.2.3. Attitude Control Propulsion Subsystem

Propellant flow rate of the Express-A#2 attitude control propulsion subsystem to compensate the disturbing torques for firings of #1.1 to #1.3 and #2.1 to #2.12 is provided in Table 30.

Table 30

Firing #	Thruster No	Attitude Control Propulsion Subsystem Propellant Flow Rate (grams)
1.1	T2C1	≈ 9
1.2	RT2C1	≈ 8,5
1.3	T1C1	≈ 110
2.1	T4C1	≈ 12
2.2	RT4C1	≈ 10
2.3	T4C1	≈ 9
2.4	T4C1	≈ 8,5
2.5	T4C1	≈ 4
2.6	T3C1	≈ 2
2.7	T4C1	0
2.8	RT3C1	0
2.9	RT4C1	0
2.10	RT3C1	≈ 13
2.11	RT3C1	≈ 8
2.12	RT3C1	≈ 8

2.3. Thermal Control Subsystem

Locations for the temperature sensors (T18R, T19R и T28K) on the Radiator and the Pressurized Container are shown in Fig.5 and Fig.6. Initial values of temperature for the Radiator and the Pressurized Container after separation of the spacecraft from an upper stage of the Launcher are given in Table 31.

Table 31

Location	Cylindrical Radiator Temperature 1 (°C)	Cylindrical Radiator Temperature 2 (°C)	Pressurized Container Surface Temperature (°C)
Value	-6,3	-36,7	18,0

Table 32 provides temperature change data (Parameters T18R and T19R) for the Radiator and also for a surface of the Pressurized Container (T28K) during a day. The parameters were measured on March 25, 2000 with an interval of 60 min.

Table 32

Time (hh:mm:ss)	Cylindrical Radiator Temperature 1 (°C)	Cylindrical Radiator Temperature 2 (°C)	Pressurized Container Surface Temperature (°C)
00:00:00	-25,70	-21,48	9,45
01:00:00	-22,32	-18,11	9,45
02:00:00	-20,64	-16,42	9,78
03:00:00	-19,79	-15,58	9,78
04:00:00	-18,95	-13,89	9,78
05:00:00	-17,26	-13,05	9,78
06:00:00	-16,42	-13,89	9,78
07:00:00	-16,42	-15,58	9,78
08:00:00	-18,95	-18,95	9,45
09:00:00	-20,64	-23,17	9,45
10:00:00	-17,26	-22,32	9,78
11:00:00	-13,89	-19,79	10,44
12:00:00	-13,05	-18,95	10,77
13:00:00	-11,36	-18,95	11,10
14:00:00	-11,36	-18,95	11,75
15:00:00	-13,05	-19,79	11,75
16:00:00	-12,20	-20,64	12,08
17:00:00	-13,05	-21,48	11,75
18:00:00	-15,58	-22,32	11,42
19:00:00	-18,95	-24,01	11,42
20:00:00	-23,17	-26,54	10,44
21:00:00	-29,07	-31,60	10,11
22:00:00	-28,23	-27,39	9,45
23:00:00	-26,54	-24,01	9,45
23:59:59	-24,85	-20,64	9,45

2.4. On-Board Navigation Subsystem

Express-A#2 orbit parameters on the date of ranging session are provided below.

Date of Ranging Session	Time (Moscow Standard Time)	Greenwich Longitude	Inclination
13/03/2000	09:28:53	91.54.06 E	00.12.40,4
18/03/2000	08:51:59	96.13.16 E	00.12.07,4
20/03/2000	08:42:32	96.37.10 E	00.11.27,6
01/04/2000	07:55:14	96.39.06 E	00.09.32,9
01/05/2000	06:08:36	93.48.51 E	00.06.20,9
09/05/2000	06:24:57	81.49.56 E	00.05.28,3
12/05/2000	06:20:07	80.05.03 E	00.04.14,9
30/05/2000	05:08:50	80.12.53 E	00.03.36,7
14/06/2000	04:10:53	79.57.20 E	00.02.55,0

2.5.Communications Module

Q-factor and interference levels of spacecraft transponders were measured on 12/04/00 and 13/04/00.

The measurements were conducted before and during the firing of the SPT-100 thrusters, during operation of the SPT-100 thrusters, at switching off the SPT-100 thrusters and completing the SPT-100 thrusters operation. No any facts of anomalous communications module operation were registered.

Within a period of 16/03/00 to 15/06/00 when firing the SPT-100 thrusters, no any facts of telemetric data reception were registered.

Annex 1. Commands, time of their execution, anode current and voltage on test firings (16/03/00)

Thruster / cathode	Time, hh:mm:ss of execution	Command	Anode Current, A	Anode Voltage, V
	14:03:00		0,00	0,0
	14:03:30		0,00	0,0
T1C1	14:03:52	Channel “plus Y”	0,00	0,0
	14:04:02	T Preparation	0,00	354,0
	14:04:03		0,00	321,0
	14:04:04	C1 Preparation	0,00	321,0
	14:06:35	T Opening valves	0,00	321,0
	14:06:45	Ignite	0,00	321,0
	14:06:46	C Switching Off	3,88	307,0
	14:06:47		3,92	307,0
	14:06:50		4,02	309,0
	14:06:52		4,10	305,0
	14:06:54		4,16	305,0
	14:06:55		4,28	307,0
	14:06:56		4,37	305,0
	14:06:57		4,34	307,0
	14:06:59		4,40	307,0
	14:07:00		4,53	305,0
	14:07:01		4,50	309,0
	14:08:13		4,71	307,0
	14:08:14		4,59	317,0
	14:08:15		4,53	309,0
	14:08:32		4,77	309,0
	14:08:35		4,56	315,0
	14:08:36		4,53	305,0
	14:09:39		4,53	307,0
	14:09:40	T Switching Off	0,00	0,0
T1C2	14:09:44	Channel “plus Y”	0,00	0,0
	14:09:54	T Preparation	0,00	319,0
	14:09:56	C2 Preparation	0,00	319,0
	14:12:27	T Opening valves	0,00	319,0
	14:12:37	Ignite	0,00	323,0
	14:12:38	C Switching Off	3,49	307,0
	14:12:39		3,52	307,0
	14:12:40		3,58	305,0
	14:12:42		3,64	309,0
	14:12:42		3,73	307,0
	14:12:43		3,82	309,0
	14:12:44		3,88	307,0
	14:12:46		4,02	307,0
	14:12:47		4,10	305,0
	14:12:48		4,16	307,0
	14:12:49		4,25	309,0
	14:12:50		4,34	307,0
	14:12:51		4,46	309,0

Thruster / cathode	Time, hh:mm:ss of execution	Command	Anode Current, A	Anode Voltage, V
	14:12:52		4,53	305,0
	14:14:56		4,77	313,0
	14:14:58		4,56	307,0
	14:15:00		4,53	305,0
	14:15:31	T Switching Off	0,00	0,0
RT1C1	14:15:36	Channel “plus Y”	0,00	0,0
	14:15:46	RT Preparation	0,00	348,0
	14:15:47		0,00	319,0
	14:15:48	C1 Preparation	0,00	319,0
	14:18:19	RT Opening valves	0,00	319,0
	14:18:29	Ignite; C Switching Off	4,05	303,0
	14:18:30		4,05	305,0
	14:18:32		4,05	303,0
	14:18:33		4,19	315,0
	14:18:34		4,25	313,0
	14:18:35		4,28	303,0
	14:18:36		4,37	303,0
	14:18:37		4,53	303,0
	14:18:38		4,59	305,0
	14:18:39		4,77	303,0
	14:18:40		4,50	313,0
	14:18:42		4,77	303,0
	14:18:43		4,53	303,0
	14:19:38		4,77	317,0
	14:19:39		4,56	303,0
	14:20:43		4,74	303,0
	14:20:44		4,56	317,0
	14:20:45		4,56	303,0
	14:21:24	T Switching Off	0,00	0,0
RT1C2	14:21:28	Channel “plus Y”	0,00	0,0
	14:21:38	RT Preparation	0,00	319,0
	14:21:40	C2 Preparation	0,00	319,0
	14:24:11	RT Opening valves	0,00	319,0
	14:24:21	Ignite; C Switching Off	3,34	305,0
	14:24:22		3,55	303,0
	14:24:23		3,61	307,0
	14:24:24		3,67	305,0
	14:24:25		3,76	315,0
	14:24:26		3,76	307,0
	14:24:27		3,82	307,0
	14:24:29		3,98	303,0
	14:24:31		4,05	305,0
	14:24:32		4,28	317,0
	14:24:36		4,37	303,0
	14:24:37		4,40	303,0
	14:24:39		4,53	305,0
	14:24:40		4,56	305,0
	14:24:51		4,77	301,0
	14:24:52		4,56	303,0
	14:27:12		4,74	317,0

Thruster / cathode	Time, hh:mm:ss of execution	Command	Anode Current, A	Anode Voltage, V
	14:27:13		4,56	315,0
	14:27:15	T Switching Off	0,00	0,0
T2C1	14:27:20	Channel “minus Y”	0,00	0,0
	14:27:30	T Preparation	0,00	342,0
	14:27:31		0,00	319,0
	14:27:32	C1 Preparation	0,00	319,0
	14:30:03	T Opening valves	0,00	319,0
	14:30:13	Ignite; C Switching Off	3,70	305,0
	14:30:15		3,70	307,0
	14:30:16		3,76	309,0
	14:30:17		3,85	307,0
	14:30:18		3,92	309,0
	14:30:19		3,95	307,0
	14:30:20		4,10	307,0
	14:30:21		4,16	307,0
	14:30:22		4,19	307,0
	14:30:23		4,25	305,0
	14:30:24		4,34	305,0
	14:30:26		4,40	309,0
	14:30:27		4,50	307,0
	14:31:04		4,65	309,0
	14:31:05		4,53	307,0
	14:33:08	T Switching Off	0,00	0,0
T2C2	14:33:12	Channel “minus Y”	0,00	0,0
	14:33:22	T Preparation	0,00	319,0
	14:33:24	C2 Preparation	0,00	319,0
	14:35:55	T Opening valves	0,00	319,0
	14:36:05	Ignite	0,00	319,0
	14:36:06	C Switching Off	3,67	307,0
	14:36:07		3,76	305,0
	14:36:08		3,82	307,0
	14:36:09		3,92	305,0
	14:36:10		4,05	307,0
	14:36:12		4,10	307,0
	14:36:13		4,16	307,0
	14:36:14		4,28	305,0
	14:36:15		4,37	305,0
	14:36:16		4,46	307,0
	14:36:17		4,53	305,0
	14:37:49		4,71	307,0
	14:37:50		4,53	305,0
	14:38:39		4,77	309,0
	14:38:40		4,59	309,0
	14:39:00	T Switching Off	0,00	0,0
RT2C1	14:39:04	Channel “minus Y”	0,00	0,0
	14:39:14	RT Preparation	0,00	340,0
	14:39:15		0,00	319,0
	14:39:16	C1 Preparation	0,00	319,0
	14:41:47	RT Opening valves	0,00	319,0
	14:41:57	Ignite	0,00	319,0

Thruster / cathode	Time, hh:mm:ss of execution	Command	Anode Current, A	Anode Voltage, V
	14:41:58	C Switching Off	3,70	309,0
	14:41:59		3,73	309,0
	14:42:00		3,85	303,0
	14:42:01		3,88	303,0
	14:42:02		3,92	305,0
	14:42:03		4,28	303,0
	14:42:05		4,10	317,0
	14:42:06		4,19	303,0
	14:42:07		4,31	313,0
	14:42:09		4,53	305,0
	14:42:20		4,74	305,0
	14:42:21		4,56	305,0
	14:42:25		4,77	301,0
	14:42:26		4,56	303,0
	14:43:08		4,71	317,0
	14:43:09		4,56	303,0
	14:43:54		4,77	301,0
	14:43:55		4,59	303,0
	14:44:52	T Switching Off	0,00	0,0
RT2C2	14:44:56	Channel “minus Y”	0,00	0,0
	14:45:06	RT Preparation	0,00	319,0
	14:45:09	C2 Preparation	0,00	319,0
	14:47:39	RT Opening valves	0,00	319,0
	14:47:49	Ignite	0,00	319,0
	14:47:50	C Switching Off	3,64	307,0
	14:47:51		3,79	303,0
	14:47:53		3,88	305,0
	14:47:54		3,98	313,0
	14:47:56		4,05	303,0
	14:47:59		4,25	307,0
	14:48:00		4,31	303,0
	14:48:01		4,53	305,0
	14:48:02		4,43	307,0
	14:48:03		4,53	301,0
	14:48:49		4,77	303,0
	14:48:50		4,56	307,0
	14:49:33		4,74	301,0
	14:49:36		4,56	307,0
	14:50:08		4,77	309,0
	14:50:09		4,59	303,0
	14:50:44	T Switching Off	0,00	0,0
T3C1	14:50:53	Channel “plus Z”	0,00	0,0
	14:51:03	T Preparation	0,00	319,0
	14:51:05	C1 Preparation	0,00	319,0
	14:53:36	T Opening valves	0,00	319,0
	14:53:46	Ignite; C Switching Off	3,79	305,0
	14:53:47		3,88	307,0
	14:53:48		3,95	307,0
	14:53:49		4,05	307,0
	14:53:52		4,19	305,0

Thruster / cathode	Time, hh:mm:ss of execution	Command	Anode Current, A	Anode Voltage, V
	14:53:53		4,28	305,0
	14:53:54		4,37	305,0
	14:53:55		4,50	309,0
	14:55:24		4,65	309,0
	14:55:25		4,53	305,0
	14:56:40	T Switching Off	0,00	0,0
T3C2	14:56:45	Channel “plus Z”	0,00	0,0
	14:56:56	T Preparation	0,00	344,0
	14:56:57		0,00	321,0
	14:56:58	C2 Preparation	0,00	321,0
	14:59:28	T Opening valves	0,00	321,0
	14:59:38	Ignite	0,00	321,0
	14:59:39	C Switching Off	3,67	307,0
	14:59:41		3,79	307,0
	14:59:42		3,88	307,0
	14:59:43		4,02	309,0
	14:59:44		4,05	307,0
	14:59:45		4,00	305,0
	14:59:46		4,25	307,0
	14:59:48		4,31	313,0
	14:59:49		4,40	305,0
	14:59:51		4,53	305,0
	14:59:52		4,50	307,0
	15:01:10		4,71	307,0
	15:01:11		4,59	317,0
	15:01:43		4,46	307,0
	15:01:44		4,50	307,0
	15:02:32		4,53	309,0
	15:02:33	T Switching Off	0,00	0,0
RT3C1	15:02:37	Channel “plus Z”	0,00	0,0
	15:02:47	RT Preparation	0,00	319,0
	15:02:48	C1 Preparation	0,00	319,0
	15:05:20	RT Opening valves	0,00	319,0
	15:05:30	Ignite; C Switching Off	4,56	303,0
	15:05:31		4,28	303,0
	15:05:32		4,40	303,0
	15:05:33		4,56	301,0
	15:05:50		4,53	307,0
	15:06:00		4,77	301,0
	15:06:01		4,71	301,0
	15:06:02		4,59	301,0
	15:06:03		4,53	303,0
	15:06:48		4,77	301,0
	15:06:49		4,56	301,0
	15:08:11		4,74	317,0
	15:08:12		4,59	301,0
	15:08:24	T Switching Off	0,00	0,0
RT3C2	15:08:29	Channel “plus Z”	0,00	0,0
	15:08:39	RT Preparation	0,00	340,0
	15:08:40		0,00	319,0

Thruster / cathode	Time, hh:mm:ss of execution	Command	Anode Current, A	Anode Voltage, V
	15:08:41	C2 Preparation	0,00	317,0
	15:11:12	RT Opening valves	0,00	319,0
	15:11:23	Ignite; C Switching Off	4,22	317,0
	15:11:24		4,19	303,0
	15:11:25		4,28	303,0
	15:11:26		4,34	307,0
	15:11:27		4,50	313,0
	15:11:28		4,56	301,0
	15:11:29		4,53	301,0
	15:11:50		4,74	303,0
	15:11:52		4,59	301,0
	15:11:52		4,53	303,0
	15:13:07		4,46	313,0
	15:13:09		4,53	307,0
	15:13:10		4,77	301,0
	15:13:11		4,59	301,0
	15:13:12		4,59	301,0
	15:13:13		4,43	303,0
	15:13:14		4,53	301,0
	15:14:13		4,71	317,0
	15:14:14		4,53	301,0
	15:14:17	T Switching Off	0,00	0,0
T4C1	15:14:21	Channel “minus Z”	0,00	0,0
	15:14:31	T Preparation	0,00	319,0
	15:14:33	C1 Preparation	0,00	319,0
	15:17:04	T Opening valves	0,00	319,0
	15:17:14	Ignite; C Switching Off	4,00	307,0
	15:17:15		4,10	305,0
	15:17:17		4,16	307,0
	15:17:18		4,28	309,0
	15:17:19		4,40	307,0
	15:17:21		4,43	305,0
	15:17:22		4,50	307,0
	15:18:28		4,46	305,0
	15:18:29		4,53	305,0
	15:19:28		4,43	305,0
	15:19:29		4,53	309,0
	15:20:09	T Switching Off	0,00	0,0
T4C2	15:20:13	Channel “minus Z”	0,00	0,0
	15:20:23	T Preparation	0,00	340,0
	15:20:24		0,00	319,0
	15:20:25	C2 Preparation	0,00	319,0
	15:22:56	T Opening valves	0,00	319,0
	15:23:06	Ignite	0,00	319,0
	15:23:07	C Switching Off	3,76	307,0
	15:23:08		3,79	307,0
	15:23:09		3,85	307,0
	15:23:10		3,92	307,0
	15:23:11		3,98	307,0
	15:23:12		4,07	307,0

Thruster / cathode	Time, hh:mm:ss of execution	Command	Anode Current, A	Anode Voltage, V
	15:23:13		4,16	307,0
	15:23:14		4,22	309,0
	15:23:15		4,28	307,0
	15:23:16		4,31	305,0
	15:23:18		4,40	307,0
	15:23:19		4,50	307,0
	15:25:18		4,65	313,0
	15:25:19		4,53	307,0
	15:26:01	T Switching Off	0,00	0,0
RT4C1	15:26:05	Channel “minus Z”	0,00	0,0
	15:26:15	T Preparation	0,00	0,0
	15:26:16		0,00	321,0
	15:26:17	C1 Preparation	0,00	319,0
	15:28:49	T Opening valves	0,00	319,0
	15:28:58	Ignite; C Switching Off	4,02	307,0
	15:28:59		4,05	309,0
	15:29:01		4,22	317,0
	15:29:02		4,28	303,0
	15:29:04		4,37	313,0
	15:29:05		4,53	301,0
	15:29:06		4,46	303,0
	15:29:07		4,53	303,0
	15:29:39		4,74	313,0
	15:29:40		4,56	303,0
	15:30:39		4,77	303,0
	15:30:41		4,59	301,0
	15:30:42		4,56	303,0
	15:31:51		4,40	301,0
	15:31:52	T Switching Off	0,00	0,0
RT4C2	15:31:58	Channel “minus Z”	0,00	0,0
	15:32:07	RT Preparation	0,00	334,0
	15:32:08		0,00	319,0
	15:32:09	C2 Preparation	0,00	319,0
	15:34:40	RT Opening valves	0,00	319,0
	15:34:50	Ignite; C Switching Off	3,88	307,0
	15:34:51		3,98	309,0
	15:34:53		4,07	303,0
	15:34:54		4,16	301,0
	15:34:55		4,25	303,0
	15:34:56		4,34	313,0
	15:34:57		4,43	301,0
	15:34:58		4,77	303,0
	15:34:59		4,53	303,0
	15:36:05		4,77	303,0
	15:36:06		4,46	317,0
	15:36:07		4,46	303,0
	15:36:08		4,53	303,0
	15:37:37		4,77	309,0
	15:37:38		4,56	303,0
	15:37:44		4,59	301,0

Thruster / cathode	Time, hh:mm:ss of execution	Command	Anode Current, A	Anode Voltage, V
	15:37:45	T Switching Off	0,00	0,0
T1C1	15:50:38	Channel “plus Y”	0,00	0,0
	15:50:48	T Preparation	0,00	360,0
	15:50:49		0,00	319,0
	15:50:50	C1 Preparation	0,00	319,0
	15:51:42		0,00	319,0
		No receipt of TM-data		
	15:56:08		4,56	307,0
	15:56:18		4,59	313,0
	15:56:19		4,56	305,0
	15:56:26	T Switching Off	0,00	0,0
T1C2	15:56:30	Channel “plus Y”	0,00	0,0
	15:56:40	T Preparation	0,00	328,0
	15:56:41		0,00	319,0
	15:56:42	C2 Preparation	0,00	319,0
	15:59:13	T Opening valves	0,00	319,0
	15:59:23	Ignite	0,00	321,0
	15:59:24	C Switching Off	3,55	307,0
	15:59:25		3,61	307,0
	15:59:26		3,67	307,0
	15:59:27		3,79	307,0
	15:59:28		3,92	307,0
	15:59:29		3,98	307,0
	15:59:30		4,05	307,0
	15:59:31		4,16	309,0
	15:59:33		4,28	309,0
	15:59:34		4,34	307,0
	15:59:35		4,43	307,0
	15:59:36		4,53	305,0
	16:00:44		4,77	309,0
	16:00:46		4,53	305,0
	16:01:49		4,71	307,0
	16:01:50		4,56	305,0
	16:02:19	T Switching Off	0,00	0,0
RT1C1	16:02:22	Channel “plus Y”	0,00	0,0
	16:02:32	RT Preparation	0,00	358,0
	16:02:33		0,00	319,0
	16:02:34	C1 Preparation	0,00	319,0
	16:05:05	RT Opening valves	0,00	319,0
	16:05:15	Ignite; C Switching Off	3,55	305,0
	16:05:16		3,61	303,0
	16:05:17		3,64	305,0
	16:05:19		3,67	303,0
	16:05:20		3,79	307,0
	16:05:21		4,05	317,0
	16:05:23		3,95	303,0
	16:05:23		4,05	305,0
	16:05:24		4,10	303,0
	16:05:26		4,25	307,0
	16:05:27		4,53	303,0

Thruster / cathode	Time, hh:mm:ss of execution	Command	Anode Current, A	Anode Voltage, V
	16:05:28		4,37	313,0
	16:05:30		4,50	315,0
	16:05:55		4,77	301,0
	16:05:56		4,59	303,0
	16:07:20		4,77	317,0
	16:07:21		4,53	303,0
	16:08:10	T Switching Off	0,00	0,0
RT1C2	16:08:14	Channel “plus Y”	0,00	0,0
	16:08:24	RT Preparation	0,00	321,0
	16:08:25		0,00	319,0
	16:08:27	C2 Preparation	0,00	319,0
	16:10:57	RT Opening valves	0,00	319,0
	16:11:07	Ignite; C Switching Off	3,16	305,0
	16:11:09		3,52	305,0
	16:11:10		3,55	305,0
	16:11:11		3,61	307,0
	16:11:12		3,76	305,0
	16:11:13		3,79	309,0
	16:11:17		3,85	305,0
	16:11:18		3,95	303,0
	16:11:19		4,05	305,0
	16:11:21		4,25	303,0
	16:11:22		4,53	303,0
	16:11:23		4,37	303,0
	16:11:24		4,53	303,0
	16:12:05		4,74	313,0
	16:12:05		4,56	303,0
	16:12:59		4,77	303,0
	16:13:01		4,62	305,0
	16:13:03		4,56	307,0
	16:14:02	T Switching Off	0,00	0,0
T2C1	16:14:06	Channel “minus Y”	0,00	0,0
	16:14:16	T Preparation	0,00	360,0
	16:14:17		0,00	319,0
	16:14:18	C2 Preparation	0,00	319,0
	16:16:49	T Opening valves	0,00	319,0
	16:16:59	Ignite; C Switching Off	3,61	307,0
	16:17:00		3,64	307,0
	16:17:02		3,73	305,0
	16:17:03		3,82	305,0
	16:17:04		3,88	305,0
	16:17:05		3,92	305,0
	16:17:06		4,05	307,0
	16:17:07		4,10	307,0
	16:17:08		4,16	305,0
	16:17:10		4,28	307,0
	16:17:11		4,40	307,0
	16:17:13		4,50	309,0
	16:19:14		4,59	317,0
	16:19:16		4,65	309,0

Thruster / cathode	Time, hh:mm:ss of execution	Command	Anode Current, A	Anode Voltage, V
	16:19:16		4,53	305,0
	16:19:54	T Switching Off	0,00	0,0
T2C2	16:19:58	Channel “minus Y”	0,00	0,0
	16:20:08	T Preparation	0,00	321,0
	16:20:09		0,00	319,0
	16:20:10	C2 Preparation	0,00	319,0
	16:22:41	T Opening valves	0,00	319,0
	16:22:51	Ignite; C Switching Off	3,55	307,0
	16:22:52		3,61	307,0
	16:22:53		3,73	307,0
	16:22:54		3,82	307,0
	16:22:55		3,92	307,0
	16:22:56		4,05	307,0
	16:22:57		4,00	305,0
	16:22:58		4,25	307,0
	16:23:00		4,31	307,0
	16:23:01		4,43	307,0
	16:23:02		4,50	307,0
	16:23:03		4,59	305,0
	16:23:04		4,53	307,0
	16:24:26		4,71	307,0
	16:24:26		4,53	307,0
	16:25:46	T Switching Off	0,00	0,0
RT2C1	16:25:50	Channel “minus Y”	0,00	0,0
	16:26:00	RT Preparation	0,00	358,0
	16:26:01		0,00	319,0
	16:26:02	C1 Preparation	0,00	319,0
	16:28:33	RT Opening valves	0,00	319,0
	16:28:43	Ignite; C Switching Off	3,61	305,0
	16:28:44		3,64	303,0
	16:28:46		3,73	305,0
	16:28:47		3,79	303,0
	16:28:48		3,88	313,0
	16:28:49		3,92	305,0
	16:28:50		4,02	309,0
	16:28:51		4,05	303,0
	16:28:52		4,00	307,0
	16:28:53		4,25	303,0
	16:28:54		4,22	303,0
	16:28:56		4,28	307,0
	16:28:57		4,37	309,0
	16:28:58		4,50	315,0
	16:29:31		4,77	309,0
	16:29:31		4,65	305,0
	16:29:33		4,56	307,0
	16:30:28		4,77	303,0
	16:30:29		4,56	303,0
	16:31:11		4,71	303,0
	16:31:12		4,56	301,0
	16:31:38	T Switching Off	0,00	0,0

Thruster / cathode	Time, hh:mm:ss of execution	Command	Anode Current, A	Anode Voltage, V
RT2C2	16:31:42	Channel “plus Y”	0,00	0,0
	16:31:52	RT Preparation	0,00	319,0
	16:31:54	C2 Preparation	0,00	319,0
	16:34:25	RT Opening valves	0,00	319,0
	16:34:35	Ignite; C Switching Off	3,64	305,0
	16:34:36		3,61	303,0
	16:34:37		3,70	307,0
	16:34:38		3,79	303,0
	16:34:39		3,85	303,0
	16:34:41		3,92	303,0
	16:34:41		4,05	303,0
	16:34:42		4,07	317,0
	16:34:44		4,10	303,0
	16:34:45		4,16	303,0
	16:34:46		4,25	315,0
	16:34:47		4,31	305,0
	16:34:48		4,43	317,0
	16:34:51		4,59	303,0
	16:35:10		4,77	303,0
	16:35:10		4,59	303,0
	16:36:08		4,77	317,0
	16:36:09		4,65	305,0
	16:36:10		4,56	303,0
	16:37:30	T Switching Off	0,00	0,0
T3C1	16:37:38	Channel “plus Z”	0,00	0,0
	16:37:48	T Preparation	0,00	328,0
	16:37:49		0,00	319,0
	16:37:50	C1 Preparation	0,00	319,0
	16:40:21	T Opening valves	0,00	319,0
	16:40:31	Ignite; C Switching Off	3,55	307,0
	16:40:32		3,61	307,0
	16:40:33		3,64	307,0
	16:40:34		3,73	305,0
	16:40:35		3,79	307,0
	16:40:36		3,85	307,0
	16:40:37		3,95	309,0
	16:40:38		3,98	307,0
	16:40:39		4,07	309,0
	16:40:41		4,00	307,0
	16:40:42		4,16	307,0
	16:40:43		4,28	305,0
	16:40:44		4,31	307,0
	16:40:45		4,40	305,0
	16:40:46		4,46	305,0
	16:40:47		4,53	305,0
	16:42:31		4,62	313,0
	16:42:32		4,53	305,0
	16:43:26	T Switching Off	0,00	0,0
T3C2	16:43:30	Channel “plus Z”	0,00	0,0
	16:43:40	T Preparation	0,00	366,0

Thruster / cathode	Time, hh:mm:ss of execution	Command	Anode Current, A	Anode Voltage, V
	16:43:41		0,00	319,0
	16:43:42	C2 Preparation	0,00	319,0
	16:46:13	T Opening valves	0,00	319,0
	16:46:23	Ignite; C Switching Off	3,67	305,0
	16:46:24		3,76	307,0
	16:46:25		3,85	307,0
	16:46:26		3,95	309,0
	16:46:28		4,05	305,0
	16:46:29		4,07	305,0
	16:46:30		4,16	305,0
	16:46:31		4,22	305,0
	16:46:32		4,28	309,0
	16:46:33		4,37	307,0
	16:46:34		4,40	309,0
	16:46:35		4,43	307,0
	16:46:36		4,50	307,0
	16:47:43		4,65	307,0
	16:47:44		4,53	305,0
	16:49:18	T Switching Off	0,00	0,0
RT3C1	16:49:22	Channel “plus Z”	0,00	0,0
	16:49:32	RT Preparation	0,00	323,0
	16:49:33		0,00	319,0
	16:49:34	C1 Preparation	0,00	319,0
	16:52:05	RT Opening valves	0,00	319,0
	16:52:15	Ignite; C Switching Off	3,88	303,0
	16:52:16		4,02	303,0
	16:52:18		4,10	305,0
	16:52:19		4,19	303,0
	16:52:20		4,28	303,0
	16:52:21		4,31	305,0
	16:52:22		4,43	305,0
	16:52:24		4,53	301,0
	16:52:50		4,77	317,0
	16:52:51		4,53	303,0
	16:53:45		4,71	303,0
	16:53:46		4,56	303,0
	16:54:20		4,77	317,0
	16:54:21		4,53	303,0
	16:55:10	T Switching Off	0,00	0,0
RT3C2	16:55:14	Channel “plus Z”	0,00	0,0
	16:55:24	RT Preparation	0,00	364,0
	16:55:25		0,00	319,0
	16:55:26	C2 Preparation	0,00	319,0
	16:57:57	RT Opening valves	0,00	319,0
	16:58:07	Ignite; C Switching Off	4,05	303,0
	16:58:08		3,95	307,0
	16:58:09		4,02	303,0
	16:58:11		4,10	303,0
	16:58:12		4,19	303,0
	16:58:13		4,28	303,0

Thruster / cathode	Time, hh:mm:ss of execution	Command	Anode Current, A	Anode Voltage, V
	16:58:14		4,40	317,0
	16:58:15		4,53	303,0
	16:58:16		4,50	317,0
	16:58:36		4,77	309,0
	16:58:37		4,59	301,0
	16:59:16		4,77	301,0
	16:59:17		4,56	303,0
	17:00:21		4,77	301,0
	17:00:21		4,56	301,0
	17:01:02	T Switching Off	0,00	0,0
T4C1	17:01:06	Channel “minus Z”	0,00	0,0
	17:01:15	T Preparation	0,00	0,0
	17:01:16		0,00	321,0
	17:01:17		0,00	319,0
	17:01:18	C1 Preparation	0,00	319,0
	17:03:49	T Opening valves	0,00	319,0
	17:03:59	Ignite; C Switching Off	3,58	307,0
	17:04:00		3,73	305,0
	17:04:01		3,79	307,0
	17:04:02		3,88	307,0
	17:04:03		4,02	307,0
	17:04:04		4,05	305,0
	17:04:06		4,19	305,0
	17:04:07		4,28	307,0
	17:04:08		4,34	305,0
	17:04:10		4,43	305,0
	17:04:13		4,53	305,0
	17:06:32		4,65	309,0
	17:06:34		4,50	305,0
	17:06:54	T Switching Off	0,00	0,0
T4C2	17:06:58	Channel “minus Z”	0,00	0,0
	17:07:08	T Preparation	0,00	358,0
	17:07:09		0,00	319,0
	17:07:10	C2 Preparation	0,00	319,0
	17:09:41	T Opening valves	0,00	319,0
	17:09:51	Ignite; C Switching Off	3,67	307,0
	17:09:52		3,76	309,0
	17:09:53		3,82	305,0
	17:09:54		3,88	307,0
	17:09:56		3,95	307,0
	17:09:57		4,07	313,0
	17:09:58		4,16	309,0
	17:09:59		4,22	309,0
	17:10:00		4,31	307,0
	17:10:01		4,43	307,0
	17:10:02		4,53	307,0
	17:11:33		4,65	309,0
	17:11:34		4,53	305,0
	17:11:54		4,71	307,0
	17:11:55		4,53	307,0

Thruster / cathode	Time, hh:mm:ss of execution	Command	Anode Current, A	Anode Voltage, V
	17:12:46	T Switching Off	0,00	0,0
RT4C1	17:12:50	Channel “minus Z”	0,00	0,0
	17:13:00	RT Preparation	0,00	325,0
	17:13:01		0,00	319,0
	17:13:02	C1 Preparation	0,00	319,0
	17:15:33	RT Opening valves	0,00	319,0
	17:15:43	Ignite; C Switching Off	3,70	307,0
	17:15:44		3,79	305,0
	17:15:45		3,85	303,0
	17:15:46		4,28	303,0
	17:15:47		4,05	303,0
	17:15:48		4,28	303,0
	17:15:49		4,25	303,0
	17:15:51		4,40	303,0
	17:15:51		4,31	307,0
	17:15:53		4,53	305,0
	17:16:33		4,77	301,0
	17:16:35		4,59	303,0
	17:17:18		4,77	309,0
	17:17:19		4,56	307,0
	17:18:13		4,71	317,0
	17:18:14		4,50	305,0
	17:18:38	T Switching Off	0,00	0,0
RT4C2	17:18:42	Channel “minus Z”	0,00	0,0
	17:18:52	RT Preparation	0,00	358,0
	17:18:53		0,00	319,0
	17:18:55	C2 Preparation	0,00	319,0
	17:21:25	RT Opening valves	0,00	319,0
	17:21:35	Ignite; C Switching Off	3,92	317,0
	17:21:36		4,05	303,0
	17:21:38		4,07	309,0
	17:21:41		4,25	307,0
	17:21:42		4,31	313,0
	17:21:43		4,37	303,0
	17:21:44		4,40	313,0
	17:21:45		4,53	301,0
	17:22:29		4,77	305,0
	17:22:30		4,53	303,0
	17:23:04		4,46	317,0
	17:23:05		4,50	317,0
	17:24:08		4,46	303,0
	17:24:09		4,50	303,0
	17:24:30	T Switching Off	0,00	0,00
	17:24:31		0,00	0,00

Annex 2. #1.1. T2C1 Thruster Operation TM-data based on available TM-data receipt sessions

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
12:35:00	0,00	0,00	0,00	2,71	
12:35:25	0,00	0,00	0,00	2,71	
12:35:54	0,00	0,00	0,00	2,71	
12:36:25	0,00	0,00	0,00	2,71	
12:36:55	0,00	0,00	0,00	2,71	
12:37:01	0,00	0,00	320	2,71	
12:37:04	12,00	0,00	320	2,71	
12:37:24	11,80	0,00	320	2,71	
12:37:54	11,60	0,00	320	2,71	
12:38:24	11,80	0,00	320	2,71	
12:38:54	11,70	0,00	320	2,71	
12:39:24	11,70	0,00	320	2,71	
12:39:39	11,80	0,00	320	2,71	
12:39:40	0,00	3,86	310	2,71	
12:39:44	0,00	4,16	310	2,68	
12:39:48	0,00	4,41	305	2,68	
12:39:54	0,00	4,41	308	2,68	
12:40:24	0,00	4,47	308	2,62	
12:40:36	0,00	4,53	308	2,59	
12:41:03	0,00	4,5	310	2,56	
12:41:10	0,00	4,65	308	2,53	
12:41:11	0,00	4,56	308	2,53	
12:41:14	0,00	4,56	308	2,62	
12:41:22	0,00	4,56	310	2,68	
12:41:25	0,00	4,53	310	2,74	
12:41:40	0,00	4,56	308	2,71	
12:41:46	0,00	4,53	308	2,68	
12:42:06	0,00	4,53	308	2,65	
12:42:21	0,00	4,56	308	2,62	
12:42:35	0,00	4,59	310	2,59	
12:43:02	0,00	4,53	308	2,53	
12:43:13	0,00	4,53	305	2,59	
12:43:20	0,00	4,53	308	2,68	
12:43:28	0,00	4,53	305	2,74	
12:43:34	0,00	4,53	308	2,77	
12:43:43	0,00	4,56	308	2,74	
12:43:51	0,00	4,53	308	2,71	
12:43:59	0,00	4,59	318	2,68	
12:44:21	0,00	4,71	308	2,65	
12:44:22	0,00	4,53	308	2,65	
12:44:28	0,00	4,53	305	2,62	
12:44:49	0,00	4,53	308	2,59	
12:45:13	0,00	4,53	305	2,56	
12:45:17	0,00	4,56	305	2,53	
12:45:42	0,00	4,53	308	2,62	
12:45:51	0,00	4,53	318	2,68	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
12:45:56	0,00	4,56	305	2,71	
12:45:57	0,00	4,53	308	2,77	
12:46:09	0,00	4,53	305	2,74	
12:46:23	0,00	4,53	305	2,71	
12:46:29	0,00	4,53	308	2,68	
12:46:50	0,00	4,53	305	2,65	
12:46:59	0,00	4,53	305	2,62	
12:47:18	0,00	4,5	308	2,59	
12:47:58	0,00	4,53	310	2,53	
12:48:13	0,00	4,53	308	2,59	
12:48:18	0,00	4,53	305	2,68	
12:48:27	0,00	4,53	308	2,77	
12:48:46	0,00	4,62	308	2,71	
12:48:47	0,00	4,53	308	2,71	
12:48:57	0,00	4,77	314	2,68	
12:48:58	0,00	4,53	314	2,68	
12:49:18	0,00	4,53	305	2,65	
12:49:22	0,00	4,53	310	2,62	
12:49:42	0,00	4,53	308	2,59	
12:50:14	0,00	4,53	308	2,53	
12:50:40	0,00	4,56	305	2,59	
12:50:49	0,00	4,56	308	2,68	
12:50:56	0,00	4,5	305	2,77	
12:51:13	0,00	4,56	314	2,71	
12:51:30	0,00	4,53	305	2,68	
12:51:47	0,00	4,53	305	2,65	
12:51:57	0,00	4,53	308	2,62	
12:52:19	0,00	4,62	318	2,59	
12:52:43	0,00	4,56	305	2,53	
12:53:08	0,00	4,56	308	2,62	
12:53:15	0,00	4,53	308	2,68	
12:53:26	0,00	4,53	308	2,77	
12:53:42	0,00	4,53	305	2,71	
12:53:53	0,00	4,53	305	2,68	
12:54:18	0,00	4,53	308	2,62	
12:54:56	0,00	4,59	308	2,59	
12:55:17	0,00	4,62	314	2,53	
12:55:18	0,00	4,5	305	2,53	
12:55:37	0,00	4,5	305	2,62	
12:55:43	0,00	4,53	318	2,68	
12:55:53	0,00	4,53	305	2,77	
12:56:08	0,00	4,53	308	2,71	
12:56:21	0,00	4,62	314	2,68	
12:56:22	0,00	4,56	308	2,68	
12:56:46	0,00	4,56	308	2,62	
12:57:07	0,00	4,53	308	2,59	
12:57:52	0,00	4,53	305	2,53	
12:58:10	0,00	4,56	308	2,68	
12:58:17	0,00	4,59	308	2,77	
12:58:39	0,00	4,62	314	2,71	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
12:58:40	0,00	4,53	308	2,71	
12:58:47	0,00	4,53	308	2,68	
12:59:13	0,00	4,53	308	2,62	
12:59:40	0,00	4,53	305	2,59	
13:00:16	0,00	4,53	305	2,53	
13:00:38	0,00	4,53	305	2,68	
13:00:44	0,00	4,62	316	2,77	
13:00:45	0,00	4,53	308	2,77	
13:01:03	0,00	4,53	310	2,71	
13:01:16	0,00	4,53	308	2,68	
13:01:41	0,00	4,56	305	2,62	
13:02:06	0,00	4,56	305	2,59	
13:02:34	0,00	4,71	308	2,53	
13:02:35	0,00	4,53	308	2,53	
13:03:05	0,00	4,53	305	2,68	
13:03:22	0,00	4,53	305	2,77	
13:03:43	0,00	4,56	310	2,68	
13:04:06	0,00	4,53	305	2,65	
13:04:30	0,00	4,5	305	2,59	
13:05:04	0,00	4,56	316	2,53	
13:05:32	0,00	4,5	305	2,68	
13:05:44	0,00	4,5	305	2,77	
13:05:58	0,00	4,77	314	2,71	
13:05:59	0,00	4,53	305	2,71	
13:06:10	0,00	4,53	305	2,68	
13:06:36	0,00	4,53	308	2,65	
13:07:01	0,00	4,53	308	2,59	
13:10:09	0,00	4,56	308	2,53	
13:10:28	0,00	4,53	308	2,68	
13:10:38	0,00	4,53	305	2,77	
13:10:52	0,00	4,53	308	2,71	
13:11:06	0,00	4,53	310	2,68	
13:11:27	0,00	4,53	305	2,65	
13:11:35	0,00	4,53	305	2,62	
13:11:56	0,00	4,53	305	2,59	
13:12:24	0,00	4,53	305	2,53	
13:12:55	0,00	4,56	305	2,68	
13:13:07	0,00	4,62	316	2,77	
13:13:08	0,00	4,56	305	2,77	
13:13:30	0,00	4,56	305	2,68	
13:13:59	0,00	4,53	305	2,62	
13:14:18	0,00	4,53	305	2,59	
13:14:42	0,00	4,56	310	2,56	
13:15:03	0,00	4,65	308	2,53	
13:15:21	0,00	4,56	318	2,68	
13:15:30	0,00	4,56	314	2,77	
13:16:00	0,00	4,53	308	2,68	
13:16:28	0,00	4,53	308	2,62	
13:16:50	0,00	4,53	305	2,59	
13:17:10	0,00	4,65	318	2,56	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
13:17:11	0,00	4,56	305	2,56	
13:17:26	0,00	4,56	305	2,53	
13:17:40	0,00	4,53	305	2,59	
13:17:48	0,00	4,56	308	2,68	
13:18:06	0,00	4,53	305	2,77	
13:18:13	0,00	4,53	308	2,71	
13:18:25	0,00	4,56	305	2,68	
13:18:51	0,00	4,53	308	2,62	
13:19:26	0,00	4,53	305	2,59	
13:19:52	0,00	4,53	308	2,53	
13:20:16	0,00	4,56	305	2,68	
13:20:25	0,00	4,56	314	2,77	
13:20:41	0,00	4,56	318	2,71	
13:20:52	0,00	4,53	308	2,68	
13:21:19	0,00	4,53	308	2,62	
13:21:46	0,00	4,53	308	2,59	
13:22:15	0,00	4,53	308	2,53	
13:22:45	0,00	4,53	305	2,68	
13:22:51	0,00	4,53	305	2,77	
13:23:10	0,00	4,53	308	2,71	
13:23:23	0,00	4,56	316	2,68	
13:23:52	0,00	4,59	314	2,62	
13:24:10	0,00	4,56	316	2,59	
13:24:50	0,00	4,56	308	2,53	
13:25:11	0,00	4,53	308	2,68	
13:25:20	0,00	4,56	305	2,77	
13:25:35	0,00	4,53	308	2,71	
13:25:49	0,00	4,62	308	2,68	
13:25:50	0,00	4,56	308	2,68	
13:26:10	0,00	4,56	316	2,65	
13:26:35	0,00	4,53	308	2,59	
13:27:07	0,00	4,56	305	2,53	
13:27:38	0,00	4,5	308	2,68	
13:27:54	0,00	4,59	310	2,77	
13:28:04	0,00	4,56	305	2,71	
13:28:16	0,00	4,56	310	2,68	
13:28:38	0,00	4,56	305	2,65	
13:28:43	0,00	4,56	305	2,62	
13:29:02	0,00	4,53	308	2,59	
13:29:26	0,00	4,53	308	2,56	
13:29:44	0,00	4,53	308	2,53	
13:30:05	0,00	4,53	308	2,68	
13:30:19	0,00	4,53	310	2,77	
13:30:35	0,00	4,56	310	2,71	
13:30:43	0,00	4,53	308	2,68	
13:31:05	0,00	4,56	305	2,65	
13:31:16	0,00	4,53	305	2,62	
13:31:27	0,00	4,65	318	2,59	
13:31:28	0,00	4,53	308	2,59	
13:31:59	0,00	4,53	308	2,53	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
13:32:31	0,00	4,56	308	2,68	
13:32:39	0,00	4,56	308	2,77	
13:32:56	0,00	4,56	310	2,71	
13:33:10	0,00	4,53	310	2,68	
13:33:32	0,00	4,56	310	2,65	
13:34:08	0,00	4,5	308	2,59	
13:34:27	0,00	4,53	305	2,53	
13:34:58	0,00	4,65	318	2,68	
13:34:59	0,00	4,53	305	2,68	
13:35:06	0,00	4,53	305	2,77	
13:35:23	0,00	4,59	310	2,71	
13:35:35	0,00	4,53	308	2,68	
13:35:57	0,00	4,59	318	2,65	
13:36:10	0,00	4,53	305	2,62	
13:36:25	0,00	4,53	305	2,59	
13:36:56	0,00	4,56	305	2,53	
13:37:25	0,00	4,56	316	2,68	
13:37:33	0,00	4,56	305	2,77	
13:37:49	0,00	4,53	308	2,71	
13:38:02	0,00	4,56	310	2,68	
13:38:48	0,00	4,56	308	2,59	
13:39:19	0,00	4,56	308	2,53	
13:39:52	0,00	4,53	305	2,68	
13:40:04	0,00	4,53	308	2,77	
13:40:20	0,00	4,53	305	2,71	
13:40:30	0,00	4,59	318	2,68	
13:41:00	0,00	4,62	305	2,62	
13:41:01	0,00	4,56	305	2,62	
13:41:25	0,00	4,56	305	2,59	
13:41:47	0,00	4,56	310	2,53	
13:42:21	0,00	4,53	308	2,68	
13:42:28	0,00	4,53	308	2,74	
13:42:45	0,00	4,53	305	2,71	
13:42:57	0,00	4,53	310	2,68	
13:43:16	0,00	4,56	305	2,65	
13:43:24	0,00	4,53	308	2,62	
13:43:47	0,00	4,56	305	2,59	
13:44:15	0,00	4,53	308	2,53	
13:44:48	0,00	4,53	305	2,68	
13:44:58	0,00	4,53	308	2,77	
13:45:16	0,00	4,71	308	2,71	
13:45:17	0,00	4,53	308	2,71	
13:45:26	0,00	4,53	305	2,68	
13:45:50	0,00	4,65	318	2,65	
13:45:51	0,00	4,53	305	2,65	
13:45:55	0,00	4,53	305	2,62	
13:46:11	0,00	4,53	308	2,59	
13:46:42	0,00	4,56	316	2,56	
13:46:53	0,00	4,56	305	2,53	
13:47:14	0,00	4,5	305	2,65	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
13:47:22	0,00	4,59	318	2,77	
13:47:53	0,00	4,53	305	2,68	
13:48:18	0,00	4,53	308	2,62	
13:48:38	0,00	4,53	308	2,59	
13:49:09	0,00	4,5	308	2,53	
13:49:42	0,00	4,56	308	2,68	
13:49:51	0,00	4,53	305	2,77	
13:50:07	0,00	4,53	308	2,71	
13:50:21	0,00	4,53	305	2,68	
13:50:41	0,00	4,53	305	2,65	
13:51:05	0,00	4,56	305	2,59	
13:51:31	0,00	4,53	305	2,56	
13:51:46	0,00	4,53	308	2,53	
13:52:08	0,00	4,53	305	2,68	
13:52:15	0,00	4,53	305	2,74	
13:52:47	0,00	4,53	308	2,68	
13:53:11	0,00	4,53	305	2,62	
13:53:44	0,00	4,56	305	2,59	
13:54:04	0,00	4,56	314	2,53	
13:54:35	0,00	4,56	305	2,68	
13:54:42	0,00	4,56	310	2,77	
13:54:59	0,00	4,53	305	2,71	
13:55:13	0,00	4,53	310	2,68	
13:55:38	0,00	4,59	318	2,62	
13:56:03	0,00	4,56	308	2,59	
13:56:24	0,00	4,56	305	2,56	
13:56:40	0,00	4,5	308	2,53	
13:57:00	0,00	4,56	316	2,68	
13:57:10	0,00	4,53	308	2,77	
13:57:28	0,00	4,56	305	2,71	
13:57:38	0,00	4,5	308	2,68	
13:58:07	0,00	4,56	308	2,62	
13:58:30	0,00	4,53	305	2,59	
13:58:54	0,00	4,53	305	2,56	
13:59:06	0,00	4,53	308	2,53	
13:59:26	0,00	4,59	318	2,68	
13:59:42	0,00	4,56	308	2,77	
14:00:04	0,00	4,53	305	2,68	
14:00:29	0,00	4,53	305	2,62	
14:00:50	0,00	4,53	308	2,59	
14:01:22	0,00	4,65	318	2,56	
14:01:23	0,00	4,5	305	2,56	
14:01:39	0,00	4,5	308	2,53	
14:01:56	0,00	4,56	308	2,71	
14:02:00	0,00	4,53	305	2,77	
14:02:30	0,00	4,5	308	2,68	
14:02:56	0,00	4,5	305	2,62	
14:03:23	0,00	4,53	305	2,59	
14:03:46	0,00	4,59	314	2,56	
14:03:56	0,00	4,53	308	2,53	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
14:04:19	0,00	4,56	318	2,68	
14:04:28	0,00	4,53	308	2,77	
14:04:44	0,00	4,71	308	2,71	
14:04:45	0,00	4,56	308	2,71	
14:04:57	0,00	4,56	305	2,68	
14:05:20	0,00	4,53	305	2,65	
14:05:44	0,00	4,56	308	2,59	
14:06:23	0,00	4,56	305	2,53	
14:06:46	0,00	4,56	308	2,68	
14:06:53	0,00	4,53	305	2,77	
14:07:18	0,00	4,56	316	2,71	
14:07:24	0,00	4,56	308	2,68	
14:07:49	0,00	4,53	305	2,62	
14:08:11	0,00	4,53	308	2,59	
14:08:35	0,00	4,53	308	2,56	
14:08:52	0,00	4,53	305	2,53	
14:09:16	0,00	4,56	316	2,68	
14:09:25	0,00	4,53	308	2,77	
14:09:38	0,00	4,53	305	2,71	
14:09:51	0,00	4,53	305	2,68	
14:10:19	0,00	4,53	305	2,62	
14:10:37	0,00	4,53	305	2,59	
14:11:10	0,00	4,62	305	2,56	
14:11:11	0,00	4,5	305	2,56	
14:11:17	0,00	4,53	308	2,53	
14:11:38	0,00	4,56	318	2,68	
14:11:46	0,00	4,56	308	2,74	
14:12:15	0,00	4,5	308	2,68	
14:12:38	0,00	4,56	308	2,65	
14:12:49	0,00	4,53	305	2,62	
14:13:08	0,00	4,53	305	2,59	
14:13:35	0,00	4,53	305	2,56	
14:13:45	0,00	4,53	305	2,53	
14:14:02	0,00	4,59	318	2,65	
14:14:10	0,00	4,53	308	2,71	
14:14:14	0,00	4,59	318	2,77	
14:14:31	0,00	4,53	305	2,71	
14:14:43	0,00	4,53	305	2,68	
14:15:04	0,00	4,53	308	2,65	
14:15:12	0,00	4,65	308	2,62	
14:15:13	0,00	4,53	308	2,62	
14:15:31	0,00	4,53	310	2,59	
14:15:58	0,00	4,53	308	2,56	
14:16:05	0,00	4,56	308	2,53	
14:16:31	0,00	4,56	316	2,68	
14:16:36	0,00	4,53	314	2,74	
14:16:57	0,00	4,56	308	2,71	
14:17:09	0,00	4,56	305	2,68	
14:17:30	0,00	4,53	308	2,65	
14:17:37	0,00	4,56	316	2,62	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
14:17:55	0,00	4,53	318	2,59	
14:18:21	0,00	4,77	314	2,56	
14:18:22	0,00	4,53	308	2,56	
14:18:35	0,00	4,53	308	2,53	
14:18:57	0,00	4,53	308	2,68	
14:19:05	0,00	4,53	308	2,77	
14:19:24	0,00	4,53	305	2,71	
14:19:35	0,00	4,71	308	2,68	
14:19:36	0,00	4,53	308	2,68	
14:19:56	0,00	4,53	308	2,65	
14:20:17	0,00	4,53	305	2,62	
14:20:27	0,00	4,53	305	2,59	
14:20:53	0,00	4,53	305	2,53	
14:21:23	0,00	4,53	308	2,68	
14:21:31	0,00	4,53	308	2,77	
14:21:49	0,00	4,56	310	2,71	
14:22:01	0,00	4,53	308	2,68	
14:22:25	0,00	4,53	305	2,65	
14:22:47	0,00	4,56	310	2,59	
14:23:13	0,00	4,53	310	2,56	
14:23:29	0,00	4,56	308	2,53	
14:23:49	0,00	4,53	308	2,68	
14:23:57	0,00	4,56	305	2,77	
14:24:14	0,00	4,5	308	2,71	
14:24:26	0,00	4,53	310	2,68	
14:24:53	0,00	4,53	305	2,62	
14:25:12	0,00	4,56	308	2,59	
14:25:44	0,00	4,5	305	2,53	
14:26:16	0,00	4,56	318	2,68	
14:26:24	0,00	4,56	305	2,77	
14:26:40	0,00	4,53	305	2,71	
14:26:56	0,00	4,53	308	2,68	
14:27:14	0,00	4,53	305	2,65	
14:27:32	0,00	4,53	308	2,62	
14:27:44	0,00	4,56	310	2,59	
14:28:15	0,00	4,53	305	2,53	
14:28:41	0,00	4,56	318	2,68	
14:28:51	0,00	4,53	308	2,77	
14:29:10	0,00	4,53	308	2,71	
14:29:20	0,00	4,53	308	2,68	
14:29:44	0,00	4,5	308	2,65	
14:29:50	0,00	4,56	318	2,62	
14:30:22	0,00	4,53	305	2,59	
14:30:46	0,00	4,53	310	2,53	
14:31:09	0,00	4,53	308	2,68	
14:31:16	0,00	4,53	308	2,74	
14:31:35	0,00	4,53	308	2,71	
14:31:46	0,00	4,53	308	2,68	
14:32:10	0,00	4,53	308	2,65	
14:32:17	0,00	4,53	308	2,62	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
14:32:33	0,00	4,53	305	2,59	
14:33:00	0,00	4,56	308	2,56	
14:33:13	0,00	4,5	308	2,53	
14:33:36	0,00	4,53	305	2,68	
14:33:40	0,00	4,53	305	2,74	
14:34:06	0,00	4,56	305	2,71	
14:34:13	0,00	4,53	305	2,68	
14:34:34	0,00	4,56	305	2,65	
14:34:49	0,00	4,56	316	2,62	
14:35:04	0,00	4,53	305	2,59	
14:35:24	0,00	4,65	314	2,56	
14:35:25	0,00	4,53	308	2,56	
14:35:42	0,00	4,53	308	2,53	
14:36:02	0,00	4,53	305	2,68	
14:36:10	0,00	4,56	316	2,77	
14:36:29	0,00	4,53	305	2,71	
14:36:40	0,00	4,56	314	2,68	
14:37:05	0,00	4,53	310	2,62	
14:37:24	0,00	4,56	310	2,59	
14:37:50	0,00	4,53	308	2,56	
14:37:58	0,00	4,56	310	2,53	
14:38:29	0,00	4,56	308	2,68	
14:38:36	0,00	4,65	318	2,77	
14:38:37	0,00	4,53	308	2,77	
14:38:56	0,00	4,53	308	2,71	
14:39:10	0,00	4,59	310	2,68	
14:39:27	0,00	4,56	318	2,65	
14:39:38	0,00	4,5	318	2,62	
14:39:53	0,00	4,56	305	2,59	
14:40:38	0,00	4,56	316	2,53	
14:40:59	0,00	4,53	305	2,68	
14:41:07	0,00	4,59	310	2,77	
14:41:21	0,00	4,56	305	2,71	
14:41:34	0,00	4,56	305	2,68	
14:41:54	0,00	4,53	308	2,65	
14:42:16	0,00	4,65	318	2,62	
14:42:17	0,00	4,56	305	2,62	
14:42:34	0,00	4,56	305	2,59	
14:42:49	0,00	4,56	305	2,53	
14:43:23	0,00	4,53	305	2,68	
14:43:30	0,00	4,53	305	2,77	
14:44:01	0,00	4,5	308	2,68	
14:44:21	0,00	4,53	308	2,65	
14:44:47	0,00	4,53	305	2,59	
14:45:15	0,00	4,5	308	2,56	
14:45:29	0,00	4,53	305	2,53	
14:45:52	0,00	4,53	308	2,68	
14:45:58	0,00	4,56	308	2,77	
14:46:15	0,00	4,53	318	2,71	
14:46:28	0,00	4,59	318	2,68	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
14:46:49	0,00	4,53	305	2,65	
14:47:15	0,00	4,56	310	2,59	
14:47:44	0,00	4,59	318	2,56	
14:47:55	0,00	4,53	308	2,53	
14:48:19	0,00	4,56	308	2,68	
14:48:23	0,00	4,56	308	2,77	
14:48:49	0,00	4,59	310	2,71	
14:48:59	0,00	4,53	305	2,68	
14:49:19	0,00	4,56	305	2,65	
14:49:41	0,00	4,53	305	2,59	
14:50:19	0,00	4,53	303	2,53	
14:50:46	0,00	4,53	305	2,68	
14:50:50	0,00	4,65	318	2,77	
14:50:51	0,00	4,56	305	2,77	
14:51:17	0,00	4,56	305	2,71	
14:51:27	0,00	4,53	305	2,68	
14:51:44	0,00	4,53	305	2,65	
14:51:58	0,00	4,56	305	2,62	
14:52:20	0,00	4,56	305	2,59	
14:52:38	0,00	4,56	305	2,56	
14:52:50	0,00	4,56	314	2,53	
14:53:13	0,00	4,56	308	2,68	
14:53:23	0,00	4,53	308	2,77	
14:53:36	0,00	4,53	308	2,71	
14:53:49	0,00	4,53	318	2,68	
14:54:10	0,00	4,5	305	2,65	
14:54:19	0,00	4,56	310	2,62	
14:54:28	0,00	4,62	318	2,62	
14:54:29	0,00	4,53	305	2,62	
14:54:37	0,00	4,53	305	2,59	
14:55:14	0,00	4,53	310	2,53	
14:55:41	0,00	4,53	305	2,68	
14:55:48	0,00	4,53	305	2,77	
14:56:03	0,00	4,56	318	2,71	
14:56:15	0,00	4,5	305	2,68	
14:56:36	0,00	4,56	305	2,65	
14:56:46	0,00	4,53	305	2,62	
14:57:02	0,00	4,53	310	2,59	
14:57:30	0,00	4,53	308	2,56	
14:57:40	0,00	4,53	308	2,53	
14:58:07	0,00	4,56	305	2,68	
14:58:11	0,00	4,53	308	2,74	
14:58:29	0,00	4,56	316	2,71	
14:58:42	0,00	4,53	308	2,68	
14:59:07	0,00	4,53	308	2,62	
14:59:29	0,00	4,53	308	2,59	
14:59:52	0,00	4,53	318	2,56	
14:59:59	0,00	4,59	310	2,53	
15:00:31	0,00	4,53	305	2,68	
15:00:46	0,00	4,53	308	2,77	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
15:00:47	0,00	4,65	318	2,74	
15:00:48	0,00	4,53	308	2,74	
15:01:05	0,00	4,53	308	2,68	
15:01:30	0,00	4,53	305	2,65	
15:01:38	0,00	4,53	305	2,62	
15:01:55	0,00	4,53	308	2,59	
15:02:24	0,00	4,53	308	2,56	
15:02:35	0,00	4,56	308	2,53	
15:03:00	0,00	4,53	305	2,68	
15:03:06	0,00	4,59	314	2,77	
15:03:30	0,00	4,53	305	2,71	
15:03:36	0,00	4,5	308	2,68	
15:03:57	0,00	4,53	308	2,65	
15:04:14	0,00	4,53	310	2,62	
15:04:28	0,00	4,59	318	2,59	
15:04:53	0,00	4,56	305	2,53	
15:05:27	0,00	4,56	308	2,68	
15:05:32	0,00	4,53	308	2,74	
15:05:37	0,00	4,56	318	2,77	
15:06:01	0,00	4,5	308	2,68	
15:06:25	0,00	4,53	308	2,65	
15:06:29	0,00	4,53	305	2,62	
15:06:50	0,00	4,56	305	2,59	
15:07:14	0,00	4,56	310	2,56	
15:07:28	0,00	4,53	305	2,53	
15:07:52	0,00	4,53	305	2,68	
15:07:57	0,00	4,53	305	2,71	
15:08:00	0,00	4,53	305	2,77	
15:08:26	0,00	4,53	305	2,71	
15:08:34	0,00	4,56	305	2,68	
15:08:51	0,00	4,53	305	2,65	
15:09:00	0,00	4,65	318	2,62	
15:09:01	0,00	4,53	305	2,62	
15:09:23	0,00	4,53	305	2,59	
15:09:45	0,00	4,71	308	2,56	
15:09:46	0,00	4,53	308	2,56	
15:09:56	0,00	4,53	305	2,53	
15:10:20	0,00	4,53	308	2,68	
15:10:24	0,00	4,5	308	2,71	
15:10:29	0,00	4,53	308	2,77	
15:10:51	0,00	4,56	310	2,71	
15:11:02	0,00	4,56	308	2,68	
15:11:21	0,00	4,53	308	2,65	
15:11:32	0,00	4,53	305	2,62	
15:11:42	0,00	4,5	308	2,59	
15:12:08	0,00	4,56	316	2,56	
15:12:27	0,00	4,53	305	2,53	
15:12:45	0,00	4,56	308	2,71	
15:12:52	0,00	4,53	305	2,74	
15:13:13	0,00	4,53	305	2,71	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
15:13:24	0,00	4,53	308	2,68	
15:13:46	0,00	4,5	308	2,65	
15:14:10	0,00	4,53	305	2,59	
15:14:40	0,00	4,53	308	2,56	
15:14:49	0,00	4,53	310	2,53	
15:15:15	0,00	4,56	308	2,68	
15:15:20	0,00	4,56	316	2,77	
15:15:43	0,00	4,53	305	2,71	
15:15:51	0,00	4,53	305	2,68	
15:16:12	0,00	4,56	308	2,65	
15:16:19	0,00	4,53	305	2,62	
15:16:37	0,00	4,53	305	2,59	
15:17:02	0,00	4,59	314	2,56	
15:17:12	0,00	4,53	308	2,53	
15:17:40	0,00	4,71	312	2,68	
15:17:41	0,00	4,53	305	2,68	
15:17:48	0,00	4,53	308	2,77	
15:18:14	0,00	4,53	305	2,71	
15:18:18	0,00	4,53	308	2,68	
15:18:39	0,00	4,56	305	2,65	
15:18:45	0,00	4,53	305	2,62	
15:19:08	0,00	4,5	308	2,59	
15:19:28	0,00	4,53	308	2,56	
15:19:34	0,00	4,56	318	2,53	
15:20:10	0,00	4,56	308	2,68	
15:20:14	0,00	4,56	305	2,74	
15:20:19	0,00	4,56	305	2,77	
15:20:45	0,00	4,53	308	2,68	
15:21:10	0,00	4,53	305	2,62	
15:21:30	0,00	4,56	316	2,59	
15:22:22	0,00	4,53	305	2,53	
15:22:38	0,00	4,53	308	2,68	
15:22:44	0,00	4,53	308	2,77	
15:23:01	0,00	4,56	308	2,71	
15:23:12	0,00	4,56	308	2,68	
15:23:33	0,00	4,62	316	2,65	
15:23:34	0,00	4,53	308	2,65	
15:23:40	0,00	4,53	308	2,62	
15:23:55	0,00	4,65	318	2,59	
15:24:34	0,00	4,5	305	2,53	
15:25:04	0,00	4,53	305	2,68	
15:25:07	0,00	4,53	305	2,74	
15:25:25	0,00	4,53	305	2,71	
15:25:38	0,00	4,59	305	2,68	
15:25:59	0,00	4,56	305	2,65	
15:26:14	0,00	4,53	305	2,62	
15:26:25	0,00	4,56	316	2,59	
15:26:59	0,00	4,53	305	2,53	
15:27:27	0,00	4,56	305	2,68	
15:27:32	0,00	4,5	308	2,77	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
15:27:59	0,00	4,53	308	2,71	
15:28:09	0,00	4,53	308	2,68	
15:28:45	0,00	4,53	305	2,62	
No receipt of TM-data					
19:21:05	0,00	4,53	303	2,62	
19:21:11	0,00	4,56	301	2,59	
19:21:34	0,00	4,53	301	2,56	
19:21:42	0,00	4,53	305	2,53	
19:22:10	0,00	4,53	303	2,68	
19:22:14	0,00	4,59	305	2,74	
19:22:35	0,00	4,56	303	2,71	
19:22:49	0,00	4,56	301	2,68	
19:23:12	0,00	4,77	310	2,62	
19:23:13	0,00	4,56	310	2,62	
19:23:43	0,00	4,56	312	2,59	
19:24:03	0,00	4,53	301	2,56	
19:24:14	0,00	4,53	301	2,53	
19:24:35	0,00	4,53	303	2,68	
19:24:40	0,00	4,53	301	2,71	
19:24:46	0,00	4,56	305	2,77	
19:25:06	0,00	4,53	303	2,71	
19:25:15	0,00	4,53	303	2,68	
19:25:36	0,00	4,65	314	2,65	
19:25:37	0,00	4,53	301	2,65	
19:25:40	0,00	4,53	301	2,62	
19:26:04	0,00	4,62	314	2,59	
19:26:05	0,00	4,56	303	2,59	
19:26:25	0,00	4,56	303	2,56	
19:26:32	0,00	4,53	303	2,53	
19:27:03	0,00	4,53	303	2,68	
19:27:07	0,00	4,65	314	2,71	
19:27:08	0,00	4,53	303	2,71	
19:27:14	0,00	4,56	305	2,77	
19:27:30	0,00	4,5	314	2,71	
19:27:41	0,00	4,56	305	2,68	
19:28:02	0,00	4,56	301	2,65	
19:28:05	0,00	4,53	303	2,62	
19:28:26	0,00	4,56	303	2,59	
19:28:58	0,00	4,53	303	2,56	
19:29:07	0,00	4,53	303	2,53	
19:29:29	0,00	4,56	312	2,68	
19:29:36	0,00	4,53	301	2,74	
19:30:01	0,00	4,53	301	2,71	
19:30:08	0,00	4,53	301	2,68	
19:30:30	0,00	4,53	301	2,65	
19:30:37	0,00	4,53	303	2,62	
19:30:57	0,00	4,53	301	2,59	
19:31:22	0,00	4,53	314	2,56	
19:31:34	0,00	4,53	301	2,53	
19:31:53	0,00	4,59	314	2,68	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
19:32:03	0,00	4,53	301	2,77	
19:32:21	0,00	4,53	301	2,71	
19:32:33	0,00	4,53	301	2,68	
19:32:54	0,00	4,53	303	2,65	
19:33:04	0,00	4,53	301	2,62	
19:33:20	0,00	4,53	301	2,59	
19:33:43	0,00	4,53	301	2,56	
19:34:05	0,00	4,53	301	2,53	
19:34:22	0,00	4,53	303	2,68	
19:34:29	0,00	4,53	303	2,77	
19:34:49	0,00	4,53	303	2,71	
19:34:59	0,00	4,56	301	2,68	
19:35:20	0,00	4,65	314	2,65	
19:35:21	0,00	4,53	314	2,65	
19:35:27	0,00	4,53	303	2,62	
19:35:47	0,00	4,56	303	2,59	
19:36:14	0,00	4,56	305	2,56	
19:36:25	0,00	4,53	301	2,53	
19:36:48	0,00	4,59	305	2,68	
19:36:54	0,00	4,62	314	2,77	
19:36:55	0,00	4,53	303	2,77	
19:37:11	0,00	4,53	301	2,71	
19:37:25	0,00	4,59	314	2,68	
19:37:48	0,00	4,53	301	2,65	
19:37:50	0,00	4,56	303	2,65	
19:38:14	0,00	4,56	303	2,59	
19:38:36	0,00	4,56	301	2,56	
19:38:49	0,00	4,53	301	2,53	
19:39:13	0,00	4,53	301	2,68	
19:39:18	0,00	4,5	303	2,77	
19:39:54	0,00	4,53	301	2,68	
19:40:15	0,00	4,56	301	2,65	
19:40:38	0,00	4,56	303	2,59	
19:41:07	0,00	4,59	305	2,56	
19:41:18	0,00	4,53	301	2,53	
19:41:40	0,00	4,53	301	2,68	
19:41:48	0,00	4,53	303	2,77	
19:42:09	0,00	4,53	301	2,71	
19:42:23	0,00	4,53	301	2,68	
19:42:38	0,00	4,56	303	2,65	
19:43:08	0,00	4,53	303	2,62	
19:43:17	0,00	4,56	312	2,59	
19:43:34	0,00	4,59	310	2,56	
19:43:43	0,00	4,53	301	2,53	
19:44:07	0,00	4,56	301	2,68	
19:44:11	0,00	4,53	303	2,74	
19:44:33	0,00	4,56	310	2,71	
19:44:44	0,00	4,53	303	2,68	
19:45:11	0,00	4,53	303	2,62	
19:45:30	0,00	4,53	301	2,59	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
19:46:13	0,00	4,53	303	2,53	
19:46:34	0,00	4,53	301	2,68	
19:46:38	0,00	4,53	303	2,74	
19:46:57	0,00	4,53	301	2,71	
19:47:07	0,00	4,53	303	2,68	
19:47:31	0,00	4,53	301	2,65	
19:47:40	0,00	4,56	305	2,62	
19:47:58	0,00	4,53	301	2,59	
19:48:26	0,00	4,53	305	2,56	
19:48:34	0,00	4,65	314	2,53	
19:48:35	0,00	4,56	301	2,53	
19:49:00	0,00	4,56	301	2,68	
19:49:05	0,00	4,65	314	2,77	
19:49:06	0,00	4,56	303	2,77	
19:49:28	0,00	4,59	303	2,71	
19:49:38	0,00	4,53	305	2,68	
19:49:59	0,00	4,56	301	2,65	
19:50:18	0,00	4,56	303	2,62	
19:50:28	0,00	4,56	301	2,59	
19:50:53	0,00	4,53	301	2,56	
19:51:03	0,00	4,53	303	2,53	
19:51:27	0,00	4,56	310	2,68	
19:51:31	0,00	4,59	301	2,77	
19:51:51	0,00	4,53	303	2,71	
19:52:02	0,00	4,53	303	2,68	
19:52:27	0,00	4,53	301	2,62	
19:52:58	0,00	4,56	312	2,59	
19:53:29	0,00	4,56	301	2,53	
19:53:50	0,00	4,53	301	2,68	
19:53:56	0,00	4,53	314	2,77	
19:54:19	0,00	4,53	301	2,71	
19:54:29	0,00	4,53	303	2,68	
19:54:49	0,00	4,65	314	2,65	
19:54:50	0,00	4,56	303	2,65	
19:54:58	0,00	4,59	305	2,62	
19:55:13	0,00	4,56	301	2,59	
19:55:50	0,00	4,59	314	2,56	
19:55:56	0,00	4,56	305	2,53	
19:56:17	0,00	4,53	303	2,68	
19:56:24	0,00	4,53	303	2,77	
19:56:49	0,00	4,65	314	2,71	
19:56:50	0,00	4,53	303	2,71	
19:57:03	0,00	4,53	303	2,68	
19:57:45	0,00	4,56	303	2,59	
19:58:20	0,00	4,53	303	2,53	
19:58:42	0,00	4,56	301	2,68	
19:58:49	0,00	4,53	301	2,77	
19:59:06	0,00	4,59	305	2,71	
19:59:21	0,00	4,53	303	2,68	
19:59:40	0,00	4,53	303	2,65	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
19:59:41	0,00	0,00	0,00	2,65	
19:59:50	0,00	0,00	0,00	2,65	
20:00:30	0,00	0,00	0,00	2,65	
20:01:00	0,00	0,00	0,00	2,65	

Annex 3. RT1C1 Thruster Operation TM-data based on available TM-data receipt sessions

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
15:55:00	0,0	0,00	000	2,77	
15:57:00	0,0	0,00	338	2,77	
15:57:04	11,90	0,00	338	2,77	
15:59:40	11,90	0,00	338	2,77	
15:59:41	0,00	3,37	303	2,77	
15:59:47	0,00	3,76	303	2,77	
15:59:52	0,00	4,25	303	2,77	
15:59:59	0,00	4,5	305	2,77	
16:00:13	0,00	4,56	305	2,71	
16:00:47	0,00	4,53	301	2,65	
16:01:12	0,00	4,38	301	2,65	
16:01:25	0,00	4,38	305	2,59	
16:01:37	0,00	4,56	305	2,59	
16:01:52	0,00	4,53	310	2,59	
16:02:00	0,00	4,53	305	2,53	
16:02:28	0,00	4,53	305	2,62	
16:02:34	0,00	4,53	305	2,68	
16:02:39	0,00	4,53	305	2,74	
16:03:35	0,00	4,56	314	2,68	
16:04:08	0,00	4,56	310	2,62	
16:04:40	0,00	4,53	303	2,56	
16:04:56	0,00	4,53	305	2,62	
16:05:04	0,00	4,53	305	2,68	
16:05:11	0,00	4,56	305	2,74	
16:06:04	0,00	4,56	305	2,68	
16:06:01	0,00	4,53	310	2,62	
16:07:01	0,00	4,62	303	2,56	
16:07:02	0,00	4,53	308	2,62	
16:07:27	0,00	4,77	314	2,68	
16:07:28	0,00	4,53	305	2,68	
16:07:32	0,00	4,53	305	2,74	
16:08:25	0,00	4,59	308	2,68	
16:08:54	0,00	4,53	308	2,62	
16:09:35	0,00	4,53	308	2,56	
16:09:36	0,00	4,53	305	2,62	
16:09:45	0,00	4,53	305	2,68	
16:09:53	0,00	4,53	305	2,74	
16:10:43	0,00	4,5	305	2,68	
16:11:12	0,00	4,53	305	2,62	
16:11:24	0,00	4,53	305	2,62	
16:12:02	0,00	4,56	305	2,68	
16:12:07	0,00	4,56	303	2,74	
16:13:01	0,00	4,53	305	2,68	
16:13:29	0,00	4,53	303	2,62	
16:14:22	0,00	4,53	305	2,68	
16:14:30	0,00	4,53	305	2,74	
16:15:20	0,00	4,53	305	2,68	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
16:15:44	0,00	4,77	310	2,62	
16:15:45	0,00	4,56	305	2,62	
16:16:34	0,00	4,59	305	2,56	
16:16:36	0,00	4,53	305	2,62	
16:16:11	0,00	4,56	305	2,68	
16:16:16	0,00	4,53	305	2,74	
16:17:39	0,00	4,71	305	2,68	
16:17:40	0,00	4,56	305	2,68	
16:18:05	0,00	4,53	305	2,62	
16:18:37	0,00	4,53	308	2,56	
16:18:38	0,00	4,56	308	2,62	
16:19:00	0,00	4,53	308	2,68	
16:19:07	0,00	4,53	308	2,74	
No receipt of TM-data					
17:41:15	0,00	4,56	305	2,77	
17:41:48	0,00	4,53	301	2,71	
17:41:55	0,00	4,56	301	2,68	
17:42:17	0,00	4,56	303	2,65	
17:42:24	0,00	4,56	301	2,62	
17:42:51	0,00	4,56	303	2,59	
17:43:13	0,00	4,56	312	2,56	
17:43:23	0,00	4,53	303	2,53	
17:43:45	0,00	4,53	303	2,68	
17:43:52	0,00	4,65	303	2,74	
17:43:53	0,00	4,53	303	2,74	
17:44:23	0,00	4,53	314	2,71	
17:44:32	0,00	4,53	303	2,68	
17:44:55	0,00	4,71	314	2,65	
17:44:56	0,00	4,53	308	2,65	
17:45:03	0,00	4,53	303	2,62	
17:45:23	0,00	4,53	303	2,59	
17:45:56	0,00	4,53	303	2,56	
17:46:07	0,00	4,53	303	2,53	
17:46:26	0,00	4,56	301	2,68	
17:46:32	0,00	4,59	301	2,77	
17:47:01	0,00	4,56	310	2,71	
17:47:12	0,00	4,56	303	2,68	
17:47:36	0,00	4,56	303	2,65	
17:48:03	0,00	4,71	314	2,59	
17:48:04	0,00	4,53	303	2,59	
17:48:34	0,00	4,53	303	2,56	
17:48:45	0,00	4,53	301	2,53	
17:49:05	0,00	4,56	314	2,68	
17:49:10	0,00	4,53	314	2,77	
17:49:39	0,00	4,56	303	2,71	
17:49:57	0,00	4,53	303	2,68	
17:50:19	0,00	4,53	310	2,65	
17:50:26	0,00	4,53	314	2,62	
17:50:40	0,00	4,56	303	2,59	
17:51:03	0,00	4,53	303	2,56	
17:51:21	0,00	4,53	303	2,53	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
17:51:43	0,00	4,53	303	2,68	
17:51:51	0,00	4,77	303	2,77	
17:51:52	0,00	4,59	303	2,77	
17:52:18	0,00	4,59	301	2,71	
17:52:29	0,00	4,53	312	2,68	
17:52:50	0,00	4,59	303	2,65	
17:53:06	0,00	4,59	301	2,62	
17:53:18	0,00	4,53	303	2,59	
17:53:53	0,00	4,59	301	2,53	
17:54:22	0,00	4,53	301	2,68	
17:54:30	0,00	4,59	303	2,77	
17:55:08	0,00	4,56	314	2,68	
17:55:28	0,00	4,71	314	2,65	
17:55:29	0,00	4,53	314	2,65	
17:56:07	0,00	4,53	314	2,59	
17:56:29	0,00	4,53	310	2,56	
17:56:36	0,00	4,53	303	2,53	
17:57:00	0,00	4,59	305	2,68	
17:57:06	0,00	4,53	310	2,74	
17:57:42	0,00	4,53	303	2,71	
17:57:52	0,00	4,59	303	2,68	
17:58:14	0,00	4,53	303	2,62	
17:58:35	0,00	4,59	303	2,59	
17:59:13	0,00	4,59	305	2,53	
17:59:38	0,00	4,56	303	2,68	
17:59:47	0,00	4,53	303	2,77	
18:00:11	0,00	4,56	303	2,71	
18:00:25	0,00	4,53	305	2,68	
18:00:46	0,00	4,56	303	2,65	
18:00:53	0,00	4,77	301	2,62	
18:00:54	0,00	4,53	301	2,62	
18:01:19	0,00	4,53	301	2,59	
18:01:57	0,00	4,53	303	2,53	
18:02:16	0,00	4,56	303	2,68	
18:02:24	0,00	4,77	301	2,77	
18:02:25	0,00	4,56	301	2,77	
18:02:50	0,00	4,56	301	2,71	
18:03:03	0,00	4,53	303	2,68	
18:03:26	0,00	4,59	305	2,65	
18:03:31	0,00	4,53	303	2,62	
18:03:51	0,00	4,53	303	2,59	
18:04:13	0,00	4,53	301	2,56	
18:04:28	0,00	4,59	301	2,53	
18:04:54	0,00	4,53	303	2,68	
18:05:03	0,00	4,53	303	2,77	
18:05:30	0,00	4,74	314	2,71	
18:05:31	0,00	4,45	303	2,71	
18:05:40	0,00	4,5	303	2,68	
18:06:08	0,00	4,53	303	2,62	
18:06:28	0,00	4,56	301	2,59	
18:07:01	0,00	4,59	301	2,56	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
18:07:10	0,00	4,56	303	2,53	
18:07:32	0,00	4,56	301	2,68	
18:07:39	0,00	4,56	301	2,77	
18:08:05	0,00	4,77	301	2,71	
18:08:06	0,00	4,56	301	2,71	
18:08:19	0,00	4,59	303	2,68	
18:08:40	0,00	4,59	303	2,65	
18:08:48	0,00	4,53	303	2,62	
18:09:07	0,00	4,53	303	2,59	
18:09:35	0,00	4,53	305	2,56	
18:09:43	0,00	4,56	301	2,53	
18:10:00	0,00	4,53	312	2,53	
No receipt of TM-data					
4:07:15	0,00	4,53	303	2,56	
4:07:51	0,00	4,71	310	2,77	
4:07:52	0,00	4,53	310	2,77	
4:08:10	0,00	4,59	303	2,71	
4:08:23	0,00	4,59	303	2,68	
4:08:43	0,00	4,56	303	2,65	
4:08:52	0,00	4,56	305	2,62	
4:09:13	0,00	4,59	308	2,59	
4:09:38	0,00	4,59	316	2,53	
4:10:11	0,00	4,56	310	2,68	
4:10:17	0,00	4,77	305	2,77	
4:10:18	0,00	4,53	305	2,77	
4:10:45	0,00	4,59	303	2,71	
4:10:56	0,00	4,56	308	2,68	
4:11:22	0,00	4,56	318	2,62	
4:11:51	0,00	4,59	301	2,59	
4:12:16	0,00	4,71	303	2,53	
4:12:17	0,00	4,56	303	2,53	
4:12:42	0,00	4,56	303	2,68	
4:12:50	0,00	4,56	305	2,77	
4:13:25	0,00	4,56	308	2,68	
4:13:47	0,00	4,56	303	2,65	
4:13:57	0,00	4,59	303	2,62	
4:14:11	0,00	4,56	303	2,59	
4:14:44	0,00	4,56	303	2,53	
4:15:13	0,00	4,53	303	2,68	
4:15:19	0,00	4,53	303	2,77	
4:15:47	0,00	4,59	303	2,71	
4:16:00	0,00	4,59	303	2,68	
4:16:21	0,00	4,74	318	2,65	
4:16:22	0,00	4,56	318	2,65	
4:16:31	0,00	4,56	303	2,62	
4:16:43	0,00	4,56	310	2,59	
4:17:21	0,00	4,59	303	2,53	
4:17:49	0,00	4,59	301	2,68	
4:17:53	0,00	4,77	301	2,77	
4:17:54	0,00	4,56	301	2,77	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
4:18:26	0,00	4,56	303	2,71	
4:18:34	0,00	4,59	301	2,68	
4:19:00	0,00	4,56	301	2,62	
4:19:20	0,00	4,56	308	2,59	
4:20:03	0,00	4,56	303	2,53	
4:20:23	0,00	4,56	312	2,68	
4:20:29	0,00	4,56	308	2,77	
4:20:55	0,00	4,77	303	2,71	
4:20:56	0,00	4,56	303	2,71	
4:21:07	0,00	4,59	303	2,68	
4:21:32	0,00	4,59	303	2,62	
4:21:54	0,00	4,59	316	2,59	
4:22:25	0,00	4,56	303	2,53	
4:22:55	0,00	4,77	305	2,68	
4:22:56	0,00	4,56	305	2,68	
4:23:01	0,00	4,59	303	2,77	
4:23:38	0,00	4,56	303	2,68	
4:24:03	0,00	4,59	312	2,65	
4:24:13	0,00	4,56	318	2,62	
4:24:31	0,00	4,56	303	2,59	
4:25:07	0,00	4,59	303	2,53	
4:25:29	0,00	4,56	303	2,68	
4:25:35	0,00	4,59	308	2,77	
4:26:00	0,00	4,56	308	2,71	
4:26:13	0,00	4,59	303	2,68	
4:26:38	0,00	4,59	303	2,62	
4:26:59	0,00	4,59	316	2,59	
4:27:39	0,00	4,59	303	2,53	
4:28:00	0,00	4,59	303	2,68	
4:28:08	0,00	4,56	310	2,77	
4:28:45	0,00	4,56	305	2,68	
4:29:10	0,00	4,56	303	2,62	
4:29:39	0,00	4,56	303	2,59	
4:30:04	0,00	4,53	303	2,53	
4:30:33	0,00	4,77	301	2,68	
4:30:34	0,00	4,56	301	2,68	
4:30:41	0,00	4,59	303	2,77	
4:31:17	0,00	4,56	308	2,68	
4:31:40	0,00	4,56	303	2,65	
4:31:59	0,00	4,77	305	2,59	
4:32:00	0,00	4,56	305	2,59	
4:32:41	0,00	4,56	301	2,53	
4:33:04	0,00	4,53	305	2,68	
4:33:14	0,00	4,53	301	2,77	
4:33:36	0,00	4,56	318	2,71	
4:33:48	0,00	4,56	303	2,68	
4:34:10	0,00	4,59	303	2,65	
4:34:32	0,00	4,56	305	2,59	
4:35:04	0,00	4,56	308	2,53	
4:35:38	0,00	4,59	308	2,68	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
4:35:45	0,00	4,56	303	2,77	
4:36:10	0,00	4,56	303	2,71	
4:36:20	0,00	4,56	308	2,68	
4:36:46	0,00	4,56	303	2,62	
4:37:15	0,00	4,56	312	2,59	
4:37:41	0,00	4,56	303	2,53	
4:38:08	0,00	4,77	303	2,68	
4:38:09	0,00	4,56	303	2,68	
4:38:14	0,00	4,56	303	2,77	
4:39:13	0,00	4,59	308	2,65	
4:39:35	0,00	4,59	301	2,59	
4:40:07	0,00	4,59	303	2,53	
4:40:40	0,00	4,59	316	2,68	
4:40:46	0,00	4,65	303	2,77	
4:40:47	0,00	4,59	303	2,77	
4:41:11	0,00	4,59	303	2,71	
4:41:25	0,00	4,56	303	2,68	
4:41:50	0,00	4,59	303	2,62	
4:42:34	0,00	4,59	301	2,59	
4:42:50	0,00	4,59	310	2,53	
4:43:12	0,00	4,53	301	2,68	
4:43:20	0,00	4,59	318	2,77	
4:43:46	0,00	4,59	301	2,71	
4:43:57	0,00	4,53	303	2,68	
4:44:23	0,00	4,53	303	2,62	
4:44:40	0,00	4,56	308	2,59	
4:45:21	0,00	4,59	301	2,53	
4:45:46	0,00	4,59	318	2,68	
4:45:51	0,00	4,56	303	2,77	
4:46:17	0,00	4,56	305	2,71	
4:46:31	0,00	4,56	318	2,68	
4:46:57	0,00	4,56	303	2,62	
4:47:17	0,00	4,56	303	2,59	
4:47:48	0,00	4,56	303	2,53	
4:48:16	0,00	4,59	316	2,68	
4:48:24	0,00	4,56	303	2,77	
4:49:03	0,00	4,56	308	2,68	
4:49:27	0,00	4,56	308	2,62	
4:49:55	0,00	4,59	301	2,59	
4:50:08	0,00	4,56	303	2,56	
4:50:17	0,00	4,56	303	2,53	
4:50:48	0,00	4,56	303	2,68	
4:50:53	0,00	4,56	303	2,77	
4:51:33	0,00	4,59	301	2,68	
4:51:59	0,00	4,59	308	2,62	
4:52:18	0,00	4,56	308	2,59	
4:52:50	0,00	4,71	318	2,53	
4:52:51	0,00	4,56	318	2,53	
4:53:23	0,00	4,56	303	2,68	
4:53:29	0,00	4,56	308	2,77	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
4:53:54	0,00	4,59	308	2,71	
4:54:06	0,00	4,59	301	2,68	
4:54:25	0,00	4,59	303	2,65	
4:54:32	0,00	4,56	303	2,62	
4:56:26	0,00	4,59	303	2,74	
4:56:35	0,00	4,59	303	2,71	
4:56:44	0,00	4,59	308	2,68	
4:57:02	0,00	4,56	308	2,65	
4:57:10	0,00	4,59	301	2,62	
4:57:28	0,00	4,59	305	2,59	
4:57:55	0,00	4,56	316	2,56	
4:58:03	0,00	4,56	301	2,53	
4:58:30	0,00	4,77	305	2,68	
4:58:31	0,00	4,56	305	2,68	
4:58:39	0,00	4,56	303	2,77	
4:59:14	0,00	4,59	301	2,68	
4:59:41	0,00	4,56	303	2,62	
4:59:58	0,00	4,56	303	2,59	
5:00:34	0,00	4,56	318	2,53	
5:01:00	0,00	4,56	303	2,68	
5:01:09	0,00	4,59	301	2,77	
5:01:36	0,00	4,56	303	2,71	
5:01:53	0,00	4,77	310	2,65	
5:01:54	0,00	4,56	310	2,65	
5:02:11	0,00	4,56	305	2,62	
5:02:29	0,00	4,56	303	2,59	
5:03:13	0,00	4,59	303	2,53	
5:03:39	0,00	4,53	303	2,77	
5:04:06	0,00	4,56	303	2,71	
5:04:24	0,00	4,56	310	2,68	
5:04:41	0,00	4,59	301	2,65	
5:04:50	0,00	4,56	303	2,62	
5:05:08	0,00	4,56	305	2,59	
5:05:34	0,00	4,56	316	2,53	
5:06:10	0,00	4,59	310	2,68	
5:06:19	0,00	4,59	301	2,77	
5:06:54	0,00	4,56	303	2,68	
5:07:12	0,00	4,56	308	2,65	
5:07:20	0,00	4,56	308	2,62	
5:07:38	0,00	4,59	303	2,59	
5:08:22	0,00	4,59	301	2,53	
5:08:40	0,00	4,56	303	2,68	
5:08:49	0,00	4,56	318	2,77	
5:09:24	0,00	4,77	303	2,68	
5:09:25	0,00	4,56	303	2,68	
5:09:51	0,00	4,56	303	2,65	
5:10:00	0,00	4,56	316	2,62	
5:10:17	0,00	4,59	308	2,59	
5:10:44	0,00	4,56	305	2,53	
5:11:10	0,00	4,59	303	2,65	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
5:11:19	0,00	4,59	303	2,77	
5:11:55	0,00	4,74	318	2,71	
5:11:56	0,00	4,56	318	2,71	
5:12:03	0,00	4,56	303	2,68	
5:12:13	0,00	4,56	318	2,65	
5:12:21	0,00	4,56	303	2,62	
5:12:48	0,00	4,59	312	2,59	
5:13:23	0,00	4,56	301	2,53	
5:13:41	0,00	4,59	303	2,65	
5:13:50	0,00	4,56	316	2,77	
5:14:34	0,00	4,59	308	2,68	
5:15:00	0,00	4,56	303	2,62	
5:15:18	0,00	4,56	303	2,59	
5:15:36	0,00	4,59	176	2,56	
5:16:15	0,00	4,59	303	2,68	
5:16:20	0,00	4,56	303	2,77	
5:16:47	0,00	4,56	303	2,71	
5:16:57	0,00	4,59	303	2,68	
5:17:24	0,00	4,59	312	2,62	
5:17:44	0,00	4,59	305	2,59	
5:18:15	0,00	4,59	308	2,53	
5:18:47	0,00	4,56	308	2,68	
5:18:52	0,00	4,56	303	2,77	
5:19:32	0,00	4,56	303	2,68	
5:20:00	0,00	4,56	310	2,62	
5:20:13	0,00	4,56	301	2,59	
5:20:47	0,00	4,59	303	2,53	
5:21:18	0,00	4,59	305	2,68	
5:21:24	0,00	4,56	308	2,77	
5:21:51	0,00	4,56	303	2,71	
5:22:00	0,00	4,65	303	2,68	
5:22:21	0,00	4,77	310	2,65	
5:22:22	0,00	4,56	310	2,65	
5:22:35	0,00	4,56	303	2,62	
5:22:51	0,00	4,56	303	2,59	
5:23:27	0,00	4,56	303	2,53	
5:23:50	0,00	4,56	303	2,68	
5:23:56	0,00	4,59	303	2,77	
5:24:33	0,00	4,59	303	2,68	
5:24:59	0,00	4,56	303	2,62	
5:25:28	0,00	4,56	303	2,59	
5:25:47	0,00	4,56	305	2,56	
5:25:56	0,00	4,56	176	2,53	
5:26:22	0,00	4,56	303	2,68	
5:26:29	0,00	4,56	312	2,77	
5:27:06	0,00	4,65	303	2,68	
5:27:34	0,00	4,56	303	2,62	
5:28:26	0,00	4,59	303	2,53	
5:28:54	0,00	4,53	303	2,68	
5:29:01	0,00	4,59	303	2,77	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
5:29:25	0,00	4,71	305	2,71	
5:29:26	0,00	4,56	305	2,71	
5:29:38	0,00	4,56	303	2,68	
5:30:25	0,00	4,59	303	2,59	
5:30:59	0,00	4,56	310	2,53	
5:31:25	0,00	4,56	301	2,71	
5:31:31	0,00	4,59	303	2,77	
5:32:01	0,00	4,56	303	2,71	
5:32:09	0,00	4,56	318	2,68	
5:32:30	0,00	4,59	303	2,65	
5:33:00	0,00	4,59	308	2,59	
5:33:38	0,00	4,56	303	2,53	
5:33:50	0,00	4,56	318	2,65	
No receipt of TM-data					
14:31:25	0,00	4,56	303	2,62	
14:31:31	0,00	4,56	303	2,68	
14:31:37	0,00	4,56	303	2,77	
14:32:08	0,00	4,59	314	2,71	
14:32:20	0,00	4,56	303	2,68	
14:32:41	0,00	4,59	312	2,65	
14:33:03	0,00	4,53	303	2,59	
14:33:27	0,00	4,59	303	2,56	
14:33:35	0,00	4,53	310	2,53	
14:34:05	0,00	4,59	303	2,68	
14:34:12	0,00	4,59	303	2,77	
14:34:43	0,00	4,59	303	2,71	
14:34:55	0,00	4,56	303	2,68	
14:35:15	0,00	4,59	301	2,65	
14:35:47	0,00	4,53	303	2,59	
14:36:22	0,00	4,53	305	2,53	
14:36:40	0,00	4,62	301	2,68	
14:36:44	0,00	4,59	301	2,77	
14:37:17	0,00	4,53	301	2,71	
14:37:26	0,00	4,53	314	2,68	
14:37:48	0,00	4,59	303	2,65	
14:37:56	0,00	4,71	303	2,62	
14:37:57	0,00	4,53	303	2,62	
14:38:14	0,00	4,56	303	2,59	
14:38:41	0,00	4,56	301	2,56	
14:38:56	0,00	4,56	303	2,53	
14:39:13	0,00	4,56	303	2,68	
14:39:19	0,00	4,56	303	2,77	
14:39:48	0,00	4,59	305	2,71	
14:39:59	0,00	4,56	303	2,68	
14:40:47	0,00	4,56	310	2,59	
14:41:09	0,00	4,59	303	2,56	
14:41:29	0,00	4,59	301	2,53	
14:41:47	0,00	4,59	303	2,68	
14:41:53	0,00	4,62	310	2,77	
14:42:24	0,00	4,56	303	2,71	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
14:42:31	0,00	4,59	301	2,68	
14:42:50	0,00	4,77	303	2,65	
14:42:51	0,00	4,53	303	2,65	
14:42:57	0,00	4,56	303	2,62	
14:43:27	0,00	4,56	303	2,59	
14:43:52	0,00	4,59	303	2,53	
14:44:18	0,00	4,59	301	2,68	
14:44:25	0,00	4,59	301	2,77	
14:44:54	0,00	4,77	303	2,71	
14:44:55	0,00	4,56	303	2,71	
14:45:05	0,00	4,56	301	2,68	
14:45:31	0,00	4,56	303	2,62	
14:45:57	0,00	4,59	303	2,59	
14:46:12	0,00	4,56	303	2,56	
14:46:32	0,00	4,56	303	2,53	
14:46:55	0,00	4,59	303	2,68	
14:47:01	0,00	4,56	303	2,77	
14:47:39	0,00	4,59	303	2,68	
14:48:04	0,00	4,59	303	2,62	
14:48:30	0,00	4,59	303	2,59	
14:48:54	0,00	4,56	303	2,56	
14:49:20	0,00	4,56	303	2,53	
14:50:20	0,00	4,59	303	2,68	
14:52:25	0,00	4,56	303	2,77	
14:52:52	0,00	4,56	303	2,68	
14:53:09	0,00	4,56	303	2,65	
14:53:18	0,00	4,77	303	2,62	
14:53:19	0,00	4,56	303	2,62	
14:53:36	0,00	4,56	303	2,59	
14:54:11	0,00	4,59	301	2,53	
14:54:38	0,00	4,59	303	2,68	
14:54:47	0,00	4,56	303	2,77	
14:55:22	0,00	4,56	303	2,68	
14:55:49	0,00	4,56	314	2,62	
14:56:06	0,00	4,56	303	2,59	
14:56:42	0,00	4,56	303	2,56	
14:57:08	0,00	4,56	303	2,68	
14:57:17	0,00	4,56	303	2,74	
14:58:10	0,00	4,59	303	2,68	
14:58:28	0,00	4,59	303	2,65	
14:58:45	0,00	4,59	301	2,62	
14:58:54	0,00	4,53	303	2,59	
14:59:12	0,00	4,56	314	2,56	
14:59:21	0,00	4,59	301	2,53	
14:59:47	0,00	4,56	303	2,68	
14:59:56	0,00	4,56	301	2,74	
No receipt of TM-data					
3:30:51	0,00	4,56	301	2,62	
3:30:59	0,00	4,59	314	2,59	
3:31:19	0,00	4,59	301	2,56	
3:31:30	0,00	4,59	303	2,53	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
3:32:06	0,00	4,59	301	2,68	
3:32:11	0,00	4,59	303	2,77	
3:32:50	0,00	4,59	314	2,71	
3:33:13	0,00	4,71	303	2,65	
3:33:14	0,00	4,56	303	2,65	
3:33:19	0,00	4,56	303	2,62	
3:33:38	0,00	4,59	303	2,59	
3:34:08	0,00	4,56	303	2,56	
3:34:22	0,00	4,56	305	2,53	
3:34:43	0,00	4,59	301	2,68	
3:34:47	0,00	4,56	303	2,77	
3:35:18	0,00	4,56	303	2,71	
3:35:29	0,00	4,56	303	2,68	
3:35:50	0,00	4,56	303	2,65	
3:36:00	0,00	4,59	303	2,62	
3:36:14	0,00	4,56	303	2,59	
3:36:45	0,00	4,59	303	2,56	
3:37:00	0,00	4,59	305	2,53	
3:37:19	0,00	4,59	301	2,68	
3:37:26	0,00	4,59	303	2,77	
3:37:55	0,00	4,59	301	2,71	
3:38:07	0,00	4,59	303	2,68	
3:38:28	0,00	4,77	303	2,65	
3:38:29	0,00	4,56	303	2,65	
3:38:40	0,00	4,59	303	2,62	
3:38:56	0,00	4,59	301	2,59	
3:39:19	0,00	4,56	301	2,56	
3:39:34	0,00	4,56	314	2,53	
3:39:56	0,00	4,59	301	2,68	
3:40:01	0,00	4,56	303	2,77	
3:40:44	0,00	4,56	303	2,68	
3:41:33	0,00	4,56	303	2,59	
3:42:06	0,00	4,59	303	2,53	
3:42:36	0,00	4,53	303	2,68	
3:42:42	0,00	4,56	314	2,77	
3:43:09	0,00	4,59	303	2,71	
3:43:22	0,00	4,56	314	2,68	
3:43:43	0,00	4,56	303	2,65	
3:43:53	0,00	4,56	301	2,62	
3:44:10	0,00	4,59	301	2,59	
3:44:46	0,00	4,59	303	2,53	
3:45:13	0,00	4,59	303	2,68	
3:45:18	0,00	4,56	303	2,77	
3:45:47	0,00	4,59	314	2,71	
3:45:59	0,00	4,59	303	2,68	
3:46:25	0,00	4,59	303	2,62	
3:46:49	0,00	4,56	303	2,59	
3:47:26	0,00	4,56	301	2,53	
3:47:48	0,00	4,56	303	2,68	
3:47:54	0,00	4,59	303	2,77	
3:48:26	0,00	4,56	303	2,71	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
3:48:40	0,00	4,59	310	2,68	
3:49:01	0,00	4,59	303	2,62	
3:49:29	0,00	4,59	301	2,59	
3:49:52	0,00	4,56	312	2,53	
3:50:29	0,00	4,56	303	2,68	
3:50:33	0,00	4,59	303	2,77	
3:51:05	0,00	4,56	303	2,71	
3:51:12	0,00	4,56	303	2,68	
3:51:42	0,00	4,56	303	2,62	
3:51:58	0,00	4,74	310	2,59	
3:51:59	0,00	4,56	310	2,59	
3:52:35	0,00	4,56	303	2,53	
3:53:05	0,00	4,59	301	2,68	
3:53:10	0,00	4,56	303	2,77	
3:53:42	0,00	4,56	303	2,71	
3:53:55	0,00	4,56	303	2,68	
3:54:25	0,00	4,56	303	2,62	
3:54:48	0,00	4,56	312	2,59	
3:55:12	0,00	4,59	301	2,53	
3:55:44	0,00	4,56	303	2,68	
3:55:50	0,00	4,56	312	2,77	
3:56:20	0,00	4,56	303	2,71	
3:56:35	0,00	4,74	305	2,68	
3:56:36	0,00	4,56	305	2,68	
3:56:59	0,00	4,56	301	2,62	
3:57:18	0,00	4,56	303	2,59	
3:57:46	0,00	4,56	303	2,56	
3:57:55	0,00	4,56	310	2,53	
3:58:27	0,00	4,59	303	2,68	
3:58:33	0,00	4,56	301	2,77	
3:59:04	0,00	4,59	303	2,71	
3:59:16	0,00	4,56	303	2,68	
3:59:41	0,00	0,00	0,00	2,62	
4:00:00	0,00	0,00	0,00	2,62	

Annex 4. T1C1 Thruster Operation TM-data based on available TM-data receipt sessions

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
13:55:00	0,00	0,00	0,00	2,65	
13:55:30	0,00	0,00	0,00	2,65	
13:56:00	0,00	0,00	0,00	2,65	
13:56:30	0,00	0,00	0,00	2,65	
13:57:00	0,00	0,00	0,00	2,65	
13:57:10	11,90	0,00	320	2,65	
13:57:30	11,70	0,00	322	2,65	
13:58:00	11,70	0,00	320	2,65	
13:58:30	11,80	0,00	320	2,65	
13:59:00	11,80	0,00	322	2,65	
13:59:30	11,60	0,00	320	2,65	
13:59:40	11,60	0,00	320	2,65	
13:59:50	0,00	4,07	310	2,65	
14:00:00	0,00	4,56	308	2,59	
14:00:10	0,00	4,53	308	2,62	
14:00:20	0,00	4,53	308	2,62	
14:00:30	0,00	4,56	310	2,65	
14:00:40	0,00	4,53	308	2,74	
14:00:50	0,00	4,53	318	2,74	
14:01:00	0,00	4,50	305	2,74	
14:01:10	0,00	4,50	305	2,74	
14:01:20	0,00	4,50	305	2,74	
14:01:30	0,00	4,50	305	2,68	
14:01:40	0,00	4,59	308	2,65	
14:01:50	0,00	4,53	305	2,65	
14:02:00	0,00	4,53	308	2,59	
14:02:10	0,00	4,53	308	2,59	
14:02:20	0,00	4,53	308	2,56	
14:02:30	0,00	4,56	305	2,53	
14:02:40	0,00	4,50	308	2,56	
14:02:50	0,00	4,53	308	2,59	
14:03:00	0,00	4,53	305	2,68	
14:03:10	0,00	4,53	318	2,74	
14:03:20	0,00	4,53	314	2,74	
14:03:30	0,00	4,53	308	2,74	
14:03:40	0,00	4,62	308	2,74	
14:03:50	0,00	4,53	310	2,68	
14:04:00	0,00	4,53	308	2,68	
14:04:10	0,00	4,59	308	2,65	
14:04:20	0,00	4,53	305	2,65	
14:04:30	0,00	4,56	305	2,62	
14:04:40	0,00	4,56	305	2,62	
14:04:50	0,00	4,56	305	2,62	
14:05:00	0,00	4,56	310	2,59	
14:05:10	0,00	4,53	305	2,56	
14:05:20	0,00	4,56	305	2,53	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
14:05:30	0,00	4,56	305	2,53	
14:05:40	0,00	4,56	308	2,71	
14:05:50	0,00	4,77	308	2,74	
14:06:00	0,00	4,53	305	2,74	
14:06:10	0,00	4,53	305	2,71	
14:06:20	0,00	4,53	305	2,68	
14:06:30	0,00	4,53	308	2,68	
14:06:40	0,00	4,53	308	2,68	
14:06:50	0,00	4,59	318	2,62	
14:07:00	0,00	4,53	308	2,62	
14:07:10	0,00	4,53	308	2,59	
14:07:20	0,00	4,56	318	2,59	
14:07:30	0,00	4,56	310	2,56	
14:07:40	0,00	4,56	303	2,56	
14:07:50	0,00	4,53	308	2,53	
14:08:00	0,00	4,65	308	2,56	
14:08:10	0,00	4,65	308	2,56	
14:08:20	0,00	4,65	308	2,56	
14:08:30	0,00	4,59	318	2,74	
14:08:40	0,00	4,53	308	2,74	
14:08:50	0,00	4,53	308	2,74	
14:09:00	0,00	4,53	305	2,68	
14:09:10	0,00	4,56	308	2,68	
14:09:20	0,00	4,53	305	2,65	
14:09:30	0,00	4,53	308	2,62	
14:09:40	0,00	4,53	308	2,65	
14:09:50	0,00	4,65	314	2,59	
14:10:00	0,00	4,53	308	2,59	
14:10:10	0,00	4,53	308	2,59	
14:10:20	0,00	4,62	308	2,53	
14:10:30	0,00	4,53	305	2,56	
14:10:40	0,00	4,53	305	2,56	
14:10:50	0,00	4,59	310	2,68	
14:11:00	0,00	4,53	305	2,74	
14:11:10	0,00	4,53	308	2,74	
14:11:20	0,00	4,53	305	2,71	
14:11:30	0,00	4,53	308	2,71	
14:11:40	0,00	4,53	308	2,71	
14:11:50	0,00	4,53	308	2,71	
14:12:00	0,00	4,53	305	2,65	
14:12:10	0,00	4,65	314	2,62	
14:12:20	0,00	4,53	308	2,59	
14:12:30	0,00	4,65	318	2,59	
14:12:40	0,00	4,56	308	2,59	
14:12:50	0,00	4,53	305	2,59	
14:13:00	0,00	4,53	308	2,53	
14:13:10	0,00	4,53	308	2,56	
14:13:20	0,00	4,53	305	2,62	
14:13:30	0,00	4,53	305	2,77	
14:13:40	0,00	4,56	305	2,77	
14:13:50	0,00	4,53	305	2,74	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
14:14:00	0,00	4,56	308	2,74	
14:14:10	0,00	4,53	305	2,68	
14:14:20	0,00	4,53	305	2,68	
14:14:30	0,00	4,59	310	2,68	
14:14:40	0,00	4,53	308	2,62	
14:14:50	0,00	4,56	310	2,62	
14:15:00	0,00	4,53	310	2,59	
14:15:10	0,00	4,53	310	2,59	
14:15:20	0,00	4,53	310	2,59	
14:15:30	0,00	4,53	305	2,56	
14:15:40	0,00	4,53	308	2,53	
14:15:50	0,00	4,53	308	2,53	
14:16:00	0,00	4,65	318	2,68	
14:16:10	0,00	4,53	308	2,74	
14:16:20	0,00	4,53	310	2,74	
14:16:30	0,00	4,53	305	2,74	
14:16:40	0,00	4,56	316	2,74	
14:16:50	0,00	4,56	308	2,68	
14:17:00	0,00	4,53	308	2,71	
14:17:10	0,00	4,56	310	2,65	
14:17:20	0,00	4,56	310	2,62	
14:17:30	0,00	4,56	308	2,62	
14:17:40	0,00	4,56	308	2,62	
14:17:50	0,00	4,56	308	2,62	
14:18:00	0,00	4,59	310	2,59	
14:18:10	0,00	4,56	318	2,53	
14:18:20	0,00	4,56	318	2,53	
14:18:30	0,00	4,50	308	2,62	
14:18:40	0,00	4,53	308	2,68	
14:18:50	0,00	4,53	308	2,68	
14:19:00	0,00	4,53	308	2,68	
14:19:10	0,00	4,65	310	2,74	
14:19:20	0,00	4,65	318	2,68	
14:19:30	0,00	4,53	308	2,68	
14:19:40	0,00	4,53	310	2,68	
14:19:50	0,00	4,53	308	2,62	
14:20:00	0,00	4,53	305	2,65	
14:20:10	0,00	4,53	308	2,62	
14:20:20	0,00	4,53	308	2,59	
14:20:30	0,00	4,53	308	2,59	
14:20:40	0,00	4,62	314	2,56	
14:20:50	0,00	4,56	308	2,53	
14:21:00	0,00	4,65	314	2,53	
14:21:10	0,00	4,53	305	2,62	
14:21:20	0,00	4,56	308	2,74	
14:21:30	0,00	4,53	305	2,77	
14:21:40	0,00	4,53	305	2,77	
14:21:50	0,00	4,62	308	2,74	
14:22:00	0,00	4,53	308	2,68	
14:22:10	0,00	4,53	308	2,71	
14:22:20	0,00	4,56	308	2,65	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
14:22:30	0,00	4,62	308	2,62	
14:22:40	0,00	4,53	308	2,62	
14:22:50	0,00	4,65	308	2,62	
14:23:00	0,00	4,77	314	2,59	
14:23:10	0,00	4,65	318	2,59	
14:23:20	0,00	4,56	310	2,56	
14:23:30	0,00	4,56	310	2,56	
14:23:40	0,00	4,53	308	2,59	
14:23:50	0,00	4,53	308	2,68	
14:24:00	0,00	4,53	305	2,74	
14:24:10	0,00	4,53	308	2,74	
14:24:20	0,00	4,53	308	2,74	
14:24:30	0,00	4,53	305	2,71	
14:24:40	0,00	4,56	305	2,68	
14:24:50	0,00	4,53	308	2,71	
14:25:00	0,00	4,53	308	2,71	
14:25:10	0,00	4,53	308	2,71	
14:25:20	0,00	4,65	314	2,62	
14:25:30	0,00	4,65	308	2,59	
14:25:40	0,00	4,56	308	2,62	
14:25:50	0,00	4,62	308	2,56	
14:26:00	0,00	4,53	308	2,53	
14:26:10	0,00	4,56	310	2,53	
14:26:20	0,00	4,56	308	2,59	
14:26:30	0,00	4,56	308	2,71	
14:26:40	0,00	4,53	308	2,74	
14:26:50	0,00	4,62	314	2,74	
14:27:00	0,00	4,56	305	2,74	
14:27:10	0,00	4,56	314	2,71	
14:27:20	0,00	4,56	310	2,68	
14:27:30	0,00	4,56	308	2,65	
14:27:40	0,00	4,53	318	2,65	
14:27:50	0,00	4,53	308	2,62	
14:28:00	0,00	4,53	308	2,62	
14:28:10	0,00	4,53	305	2,62	
14:28:20	0,00	4,53	305	2,59	
14:28:30	0,00	4,53	305	2,59	
14:28:40	0,00	4,53	305	2,59	
14:28:50	0,00	4,53	305	2,56	
14:29:00	0,00	4,53	310	2,65	
14:29:10	0,00	4,53	308	2,74	
14:29:20	0,00	4,71	308	2,74	
14:29:30	0,00	4,62	308	2,74	
14:29:40	0,00	4,53	305	2,71	
14:29:50	0,00	4,56	308	2,68	
14:30:00	0,00	4,53	310	2,68	
14:30:10	0,00	4,59	314	2,68	
14:30:20	0,00	4,59	318	2,62	
14:30:30	0,00	4,56	308	2,62	
14:30:40	0,00	4,53	308	2,62	
14:30:50	0,00	4,56	305	2,59	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
14:31:00	0,00	4,65	308	2,59	
14:31:10	0,00	4,53	305	2,56	
14:31:20	0,00	4,53	308	2,53	
14:31:30	0,00	4,62	318	2,62	
14:31:40	0,00	4,53	305	2,68	
14:31:50	0,00	4,53	310	2,77	
14:32:00	0,00	4,53	310	2,77	
14:32:10	0,00	4,53	310	2,77	
14:32:20	0,00	4,56	308	2,71	
14:32:30	0,00	4,65	318	2,68	
14:32:40	0,00	4,53	308	2,68	
14:32:50	0,00	4,53	305	2,62	
14:33:00	0,00	4,53	305	2,65	
14:33:10	0,00	4,53	305	2,59	
14:33:20	0,00	4,56	310	2,59	
14:33:30	0,00	4,53	305	2,59	
14:33:40	0,00	4,53	308	2,56	
14:33:50	0,00	4,53	308	2,56	
14:34:00	0,00	4,53	308	2,56	
14:34:10	0,00	4,65	318	2,62	
14:34:20	0,00	4,53	314	2,74	
14:34:30	0,00	4,50	308	2,74	
14:34:40	0,00	4,53	308	2,74	
14:34:50	0,00	4,56	310	2,74	
14:35:00	0,00	4,53	305	2,68	
14:35:10	0,00	4,56	308	2,68	
14:35:20	0,00	4,53	308	2,65	
14:35:30	0,00	4,53	308	2,65	
14:35:40	0,00	4,53	308	2,65	
14:35:50	0,00	4,53	308	2,62	
14:36:00	0,00	4,65	314	2,59	
14:36:10	0,00	4,56	308	2,59	
14:36:20	0,00	4,56	308	2,59	
14:36:30	0,00	4,56	305	2,56	
14:36:40	0,00	4,59	310	2,59	
14:36:50	0,00	4,56	308	2,68	
14:37:00	0,00	4,53	305	2,74	
14:37:10	0,00	4,53	308	2,74	
14:37:20	0,00	4,50	308	2,74	
14:37:30	0,00	4,59	314	2,71	
14:37:40	0,00	4,62	318	2,68	
14:37:50	0,00	4,56	305	2,68	
14:38:00	0,00	4,53	305	2,65	
14:38:10	0,00	4,50	308	2,65	
14:38:20	0,00	4,56	310	2,62	
14:38:30	0,00	4,53	305	2,59	
14:38:40	0,00	4,53	310	2,59	
14:38:50	0,00	4,56	314	2,59	
14:39:00	0,00	4,53	305	2,53	
14:39:10	0,00	4,53	305	2,53	
14:39:20	0,00	4,53	305	2,53	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
14:39:30	0,00	4,56	305	2,74	
14:39:40	0,00	4,53	305	2,74	
14:39:50	0,00	4,53	305	2,74	
14:40:00	0,00	4,56	310	2,74	
14:40:10	0,00	4,53	308	2,68	
14:40:20	0,00	4,53	308	2,68	
14:40:30	0,00	4,56	310	2,68	
14:40:40	0,00	4,62	314	2,65	
14:40:50	0,00	4,53	310	2,62	
14:41:00	0,00	4,53	310	2,59	
14:41:10	0,00	4,53	305	2,62	
14:41:20	0,00	4,65	314	2,59	
14:41:30	0,00	4,65	314	2,59	
14:41:40	0,00	4,53	308	2,56	
14:41:50	0,00	4,56	305	2,56	
14:42:00	0,00	4,50	308	2,65	
14:42:10	0,00	4,65	318	2,74	
14:42:20	0,00	4,56	305	2,74	
14:42:30	0,00	4,53	310	2,74	
14:42:40	0,00	4,53	310	2,74	
14:42:50	0,00	4,53	310	2,74	
14:43:00	0,00	4,53	305	2,68	
14:43:10	0,00	4,62	308	2,65	
14:43:20	0,00	4,77	314	2,65	
14:43:30	0,00	4,56	305	2,62	
14:43:40	0,00	4,53	305	2,59	
14:43:50	0,00	4,53	308	2,59	
14:44:00	0,00	4,56	310	2,59	
14:44:10	0,00	4,53	308	2,53	
14:44:20	0,00	4,53	305	2,53	
14:44:30	0,00	4,56	305	2,62	
14:44:40	0,00	4,62	318	2,68	
14:44:50	0,00	4,62	305	2,77	
14:45:00	0,00	4,56	316	2,74	
14:45:10	0,00	4,56	316	2,71	
14:45:20	0,00	4,62	318	2,74	
14:45:30	0,00	4,53	305	2,68	
14:45:40	0,00	4,62	318	2,68	
14:45:50	0,00	4,56	305	2,62	
14:46:00	0,00	4,56	308	2,62	
14:46:10	0,00	4,56	308	2,62	
14:46:20	0,00	4,56	308	2,62	
14:46:30	0,00	4,56	316	2,59	
14:46:40	0,00	4,56	316	2,59	
14:46:50	0,00	4,56	305	2,56	
14:47:00	0,00	4,56	308	2,53	
14:47:10	0,00	4,56	305	2,62	
14:47:20	0,00	4,53	305	2,74	
14:47:30	0,00	4,50	305	2,74	
14:47:40	0,00	4,53	305	2,74	
14:47:50	0,00	4,62	314	2,71	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
14:48:00	0,00	4,56	318	2,68	
14:48:10	0,00	4,53	305	2,68	
14:48:20	0,00	4,56	305	2,68	
14:48:30	0,00	4,56	310	2,65	
14:48:40	0,00	4,53	308	2,65	
14:48:50	0,00	4,56	305	2,59	
14:49:00	0,00	4,53	308	2,62	
14:49:10	0,00	4,65	308	2,56	
14:49:20	0,00	4,53	310	2,53	
14:49:30	0,00	4,53	308	2,53	
14:49:40	0,00	4,53	308	2,53	
14:49:50	0,00	4,53	308	2,53	
14:50:00	0,00	4,65	318	2,74	
14:50:10	0,00	4,53	305	2,74	
14:50:20	0,00	4,53	308	2,74	
14:50:30	0,00	4,62	305	2,71	
14:50:40	0,00	4,56	310	2,68	
14:50:50	0,00	4,56	318	2,68	
14:51:00	0,00	4,56	305	2,68	
14:51:10	0,00	4,53	308	2,62	
14:51:20	0,00	4,59	310	2,65	
14:51:30	0,00	4,53	308	2,59	
14:51:40	0,00	4,53	305	2,59	
14:51:50	0,00	4,53	305	2,59	
14:52:00	0,00	4,50	308	2,56	
14:52:10	0,00	4,50	305	2,53	
14:52:20	0,00	4,65	308	2,59	
14:52:30	0,00	4,53	308	2,71	
14:52:40	0,00	4,56	310	2,74	
14:52:50	0,00	4,56	305	2,74	
14:53:00	0,00	4,53	310	2,74	
14:53:10	0,00	4,53	310	2,74	
14:53:20	0,00	4,53	310	2,74	
14:53:30	0,00	4,56	310	2,68	
14:53:40	0,00	4,53	308	2,65	
14:53:50	0,00	4,56	308	2,62	
14:54:00	0,00	4,53	308	2,62	
14:54:10	0,00	4,56	310	2,62	
14:54:20	0,00	4,56	310	2,62	
14:54:30	0,00	4,56	308	2,59	
14:54:40	0,00	4,53	310	2,53	
14:54:50	0,00	4,65	318	2,56	
14:55:00	0,00	4,53	305	2,68	
14:55:10	0,00	4,53	305	2,74	
14:55:20	0,00	4,53	310	2,77	
14:55:30	0,00	4,53	310	2,74	
14:55:40	0,00	4,53	310	2,71	
14:55:50	0,00	4,53	310	2,68	
14:56:00	0,00	4,53	305	2,68	
14:56:10	0,00	4,59	305	2,65	
14:56:20	0,00	4,53	308	2,65	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
14:56:30	0,00	4,53	308	2,62	
14:56:40	0,00	4,53	308	2,62	
14:56:50	0,00	4,53	308	2,62	
14:57:00	0,00	4,53	305	2,56	
14:57:10	0,00	4,53	308	2,56	
14:57:20	0,00	4,53	308	2,53	
14:57:30	0,00	4,56	305	2,59	
14:57:40	0,00	4,65	310	2,71	
14:57:50	0,00	4,56	316	2,74	
14:58:00	0,00	4,77	314	2,74	
14:58:10	0,00	4,56	308	2,71	
14:58:20	0,00	4,56	305	2,71	
14:58:30	0,00	4,56	305	2,68	
14:58:40	0,00	4,53	308	2,68	
14:58:50	0,00	4,53	305	2,62	
14:59:00	0,00	4,53	308	2,62	
14:59:10	0,00	4,53	305	2,59	
No receipt of TM-data					
15:41:50	0,00	4,59	310	2,62	
15:42:00	0,00	4,53	303	2,71	
15:42:10	0,00	4,53	305	2,77	
15:42:20	0,00	4,56	310	2,74	
15:42:30	0,00	4,56	310	2,74	
15:42:40	0,00	4,65	318	2,74	
15:42:50	0,00	4,65	310	2,68	
15:43:00	0,00	4,53	305	2,68	
15:43:10	0,00	4,56	316	2,65	
15:43:20	0,00	4,53	305	2,62	
15:43:30	0,00	4,62	314	2,62	
15:43:40	0,00	4,53	305	2,62	
15:43:50	0,00	4,53	310	2,59	
15:44:00	0,00	4,53	305	2,56	
15:44:10	0,00	4,53	310	2,56	
15:44:20	0,00	4,53	308	2,53	
15:44:30	0,00	4,53	308	2,53	
15:44:40	0,00	4,53	308	2,53	
15:44:50	0,00	4,53	310	2,74	
15:45:00	0,00	4,56	310	2,71	
15:45:10	0,00	4,65	318	2,74	
15:45:20	0,00	4,56	308	2,68	
15:45:30	0,00	4,50	308	2,68	
15:45:40	0,00	4,53	308	2,68	
15:45:50	0,00	4,53	308	2,68	
15:46:00	0,00	4,56	305	2,62	
15:46:10	0,00	4,56	308	2,62	
15:46:20	0,00	4,62	305	2,62	
15:46:30	0,00	4,53	305	2,59	
15:46:40	0,00	4,53	305	2,53	
15:46:50	0,00	4,56	308	2,56	
15:47:00	0,00	4,65	318	2,59	
15:47:10	0,00	4,53	308	2,68	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
15:47:20	0,00	4,56	308	2,74	
15:47:30	0,00	4,56	316	2,74	
15:47:40	0,00	4,62	305	2,77	
15:47:50	0,00	4,53	305	2,74	
15:48:00	0,00	4,53	305	2,74	
15:48:10	0,00	4,53	305	2,74	
15:48:20	0,00	4,53	305	2,74	
15:48:30	0,00	4,65	318	2,62	
15:48:40	0,00	4,50	305	2,62	
15:48:50	0,00	4,56	310	2,62	
15:49:00	0,00	4,56	308	2,62	
15:49:10	0,00	4,53	308	2,56	
15:49:20	0,00	4,50	308	2,56	
15:49:30	0,00	4,56	316	2,56	
15:49:40	0,00	4,59	310	2,59	
15:49:50	0,00	4,56	305	2,71	
15:50:00	0,00	4,56	305	2,74	
15:50:10	0,00	4,53	305	2,74	
15:50:20	0,00	4,56	310	2,71	
15:50:30	0,00	4,53	305	2,71	
15:50:40	0,00	4,56	305	2,68	
15:50:50	0,00	4,56	308	2,68	
15:51:00	0,00	4,56	310	2,62	
15:51:10	0,00	4,53	305	2,62	
15:51:20	0,00	4,50	305	2,62	
15:51:30	0,00	4,53	305	2,59	
15:51:40	0,00	4,53	305	2,59	
15:51:50	0,00	4,65	308	2,59	
15:52:00	0,00	4,53	305	2,56	
15:52:10	0,00	4,59	310	2,56	
15:52:20	0,00	4,56	303	2,65	
15:52:30	0,00	4,71	308	2,74	
15:52:40	0,00	4,53	308	2,74	
15:52:50	0,00	4,50	314	2,74	
15:53:00	0,00	4,62	308	2,74	
15:53:10	0,00	4,53	305	2,68	
15:53:20	0,00	4,53	305	2,68	
15:53:30	0,00	4,53	305	2,68	
15:53:40	0,00	4,53	308	2,62	
15:53:50	0,00	4,53	308	2,62	
15:54:00	0,00	4,56	316	2,62	
15:54:10	0,00	4,65	310	2,59	
15:54:20	0,00	4,56	308	2,56	
15:54:30	0,00	4,53	308	2,56	
15:54:40	0,00	4,56	305	2,53	
15:54:50	0,00	4,53	305	2,59	
15:55:00	0,00	4,53	305	2,59	
15:55:10	0,00	4,53	305	2,59	
15:55:20	0,00	4,53	308	2,74	
15:55:30	0,00	4,56	305	2,71	
15:55:40	0,00	4,56	308	2,71	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
15:55:50	0,00	4,53	318	2,68	
15:56:00	0,00	4,59	310	2,68	
15:56:10	0,00	4,59	310	2,65	
15:56:20	0,00	4,56	305	2,65	
15:56:30	0,00	4,53	308	2,59	
15:56:40	0,00	4,53	305	2,59	
15:56:50	0,00	4,62	308	2,62	
15:57:00	0,00	4,53	305	2,59	
15:57:10	0,00	4,56	305	2,53	
15:57:20	0,00	4,62	314	2,53	
15:57:30	0,00	4,53	308	2,62	
15:57:40	0,00	4,53	305	2,71	
15:57:50	0,00	4,53	312	2,74	
15:58:00	0,00	4,53	308	2,74	
15:58:10	0,00	4,53	308	2,74	
15:58:20	0,00	4,53	318	2,74	
15:58:30	0,00	4,53	318	2,74	
15:58:40	0,00	4,53	318	2,74	
15:58:50	0,00	4,65	318	2,62	
15:59:00	0,00	4,62	308	2,65	
15:59:10	0,00	4,59	314	2,59	
15:59:20	0,00	4,53	308	2,59	
15:59:30	0,00	4,53	308	2,59	
15:59:40	0,00	4,53	308	2,59	
15:59:50	0,00	4,53	305	2,53	
16:00:00	0,00	4,56	305	2,53	
16:00:10	0,00	4,56	305	2,65	
16:00:20	0,00	4,53	310	2,74	
16:00:30	0,00	4,53	310	2,74	
16:00:40	0,00	4,53	308	2,77	
16:00:50	0,00	4,53	308	2,71	
16:01:00	0,00	4,53	305	2,68	
16:01:10	0,00	4,53	305	2,68	
16:01:20	0,00	4,53	305	2,68	
16:01:30	0,00	4,53	305	2,68	
16:01:40	0,00	4,53	310	2,62	
16:01:50	0,00	4,65	308	2,59	
16:02:00	0,00	4,53	305	2,59	
16:02:10	0,00	4,56	316	2,56	
16:02:20	0,00	4,53	308	2,56	
16:02:30	0,00	4,56	305	2,53	
16:02:40	0,00	4,56	305	2,59	
16:02:50	0,00	4,56	316	2,68	
16:03:00	0,00	4,53	310	2,74	
16:03:10	0,00	4,53	310	2,77	
16:03:20	0,00	4,56	305	2,74	
16:03:30	0,00	4,56	310	2,74	
16:03:40	0,00	4,53	305	2,68	
16:03:50	0,00	4,53	305	2,68	
16:04:00	0,00	4,53	305	2,65	
16:04:10	0,00	4,56	305	2,62	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
16:04:20	0,00	4,50	305	2,62	
16:04:30	0,00	4,56	308	2,59	
16:04:40	0,00	4,53	308	2,62	
16:04:50	0,00	4,53	308	2,62	
16:05:00	0,00	4,53	308	2,62	
16:05:10	0,00	4,53	308	2,53	
16:05:20	0,00	4,56	305	2,62	
16:05:30	0,00	4,53	305	2,71	
16:05:40	0,00	4,62	308	2,77	
16:05:50	0,00	4,56	305	2,74	
16:06:00	0,00	4,62	314	2,71	
16:06:10	0,00	4,56	308	2,71	
16:06:20	0,00	4,56	308	2,71	
16:06:30	0,00	4,65	314	2,68	
16:06:40	0,00	4,56	305	2,62	
16:06:50	0,00	4,56	308	2,62	
16:07:00	0,00	4,56	310	2,59	
16:07:10	0,00	4,53	308	2,62	
16:07:20	0,00	4,65	318	2,62	
16:07:30	0,00	4,53	308	2,56	
16:07:40	0,00	4,53	305	2,53	
16:07:50	0,00	4,53	310	2,53	
16:08:00	0,00	4,56	305	2,62	
16:08:10	0,00	4,53	310	2,77	
16:08:20	0,00	4,53	310	2,77	
16:08:30	0,00	4,53	310	2,77	
16:08:40	0,00	4,53	308	2,74	
16:08:50	0,00	4,62	318	2,68	
16:09:00	0,00	4,53	310	2,68	
16:09:10	0,00	4,53	305	2,65	
16:09:20	0,00	4,53	305	2,65	
16:09:30	0,00	4,50	308	2,62	
16:09:40	0,00	4,56	308	2,59	
16:09:50	0,00	4,53	308	2,59	
16:10:00	0,00	4,53	310	2,56	
16:10:10	0,00	4,56	305	2,56	
16:10:20	0,00	4,53	305	2,53	
16:10:30	0,00	4,56	308	2,59	
16:10:40	0,00	4,65	318	2,65	
16:10:50	0,00	4,56	318	2,74	
16:11:00	0,00	4,53	305	2,77	
16:11:10	0,00	4,56	305	2,74	
16:11:20	0,00	4,53	308	2,71	
16:11:30	0,00	4,53	308	2,71	
16:11:40	0,00	4,50	308	2,65	
16:11:50	0,00	4,50	308	2,65	
16:12:00	0,00	4,50	308	2,65	
16:12:10	0,00	4,56	305	2,62	
16:12:20	0,00	4,62	318	2,62	
16:12:30	0,00	4,53	305	2,59	
16:12:40	0,00	4,53	305	2,56	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
16:12:50	0,00	4,53	308	2,53	
16:13:00	0,00	4,56	308	2,56	
16:13:10	0,00	4,56	305	2,59	
16:13:20	0,00	4,56	305	2,68	
16:13:30	0,00	4,62	305	2,74	
16:13:40	0,00	4,65	318	2,74	
16:13:50	0,00	4,56	316	2,71	
16:14:00	0,00	4,56	305	2,74	
16:14:10	0,00	4,53	305	2,68	
16:14:20	0,00	4,53	305	2,68	
16:14:30	0,00	4,56	305	2,62	
16:14:40	0,00	4,53	308	2,65	
16:14:50	0,00	4,56	308	2,62	
16:15:00	0,00	4,53	308	2,59	
16:15:10	0,00	4,53	305	2,62	
16:15:20	0,00	4,53	305	2,62	
16:15:30	0,00	4,53	305	2,62	
16:15:40	0,00	4,56	310	2,56	
16:15:50	0,00	4,53	308	2,62	
16:16:00	0,00	4,53	305	2,74	
16:16:10	0,00	4,50	308	2,74	
16:16:20	0,00	4,56	310	2,74	
16:16:30	0,00	4,53	308	2,71	
16:16:40	0,00	4,53	308	2,71	
16:16:50	0,00	4,65	314	2,68	
16:17:00	0,00	4,59	310	2,65	
16:17:10	0,00	4,53	305	2,62	
16:17:20	0,00	4,56	316	2,65	
16:17:30	0,00	4,56	308	2,62	
16:17:40	0,00	4,53	305	2,59	
16:17:50	0,00	4,56	308	2,59	
16:18:00	0,00	4,56	314	2,56	
16:18:10	0,00	4,71	308	2,53	
16:18:20	0,00	4,53	308	2,59	
16:18:30	0,00	4,50	308	2,68	
16:18:40	0,00	4,56	305	2,74	
16:18:50	0,00	4,56	305	2,74	
16:19:00	0,00	4,56	305	2,74	
16:19:10	0,00	4,53	308	2,74	
16:19:20	0,00	4,56	305	2,68	
16:19:30	0,00	4,53	305	2,68	
16:19:40	0,00	4,53	308	2,65	
16:19:50	0,00	4,56	308	2,65	
16:20:00	0,00	4,65	308	2,62	
16:20:10	0,00	4,62	314	2,62	
16:20:20	0,00	4,53	305	2,62	
16:20:30	0,00	4,65	318	2,56	
16:20:40	0,00	4,53	308	2,56	
16:20:50	0,00	4,53	308	2,53	
16:21:00	0,00	4,53	305	2,59	
16:21:10	0,00	4,50	305	2,68	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
16:21:20	0,00	4,53	318	2,74	
16:21:30	0,00	4,53	305	2,74	
16:21:40	0,00	4,62	316	2,74	
16:21:50	0,00	4,62	316	2,74	
16:22:00	0,00	4,50	308	2,68	
16:22:10	0,00	4,53	308	2,68	
16:22:20	0,00	4,59	314	2,65	
16:22:30	0,00	4,59	314	2,65	
16:22:40	0,00	4,59	314	2,65	
16:22:50	0,00	4,56	318	2,59	
16:23:00	0,00	4,56	316	2,62	
16:23:10	0,00	4,53	305	2,59	
16:23:20	0,00	4,53	310	2,53	
16:23:30	0,00	4,56	308	2,53	
16:23:40	0,00	4,56	303	2,65	
16:23:50	0,00	4,56	305	2,71	
16:24:00	0,00	4,59	310	2,74	
16:24:10	0,00	4,50	305	2,74	
16:24:20	0,00	4,50	305	2,74	
16:24:30	0,00	4,56	316	2,68	
16:24:40	0,00	4,65	318	2,68	
16:24:50	0,00	4,53	305	2,65	
16:25:00	0,00	4,53	310	2,62	
16:25:10	0,00	4,65	318	2,62	
16:25:20	0,00	4,53	308	2,59	
16:25:30	0,00	4,53	310	2,62	
16:25:40	0,00	4,77	314	2,59	
16:25:50	0,00	4,53	310	2,59	
16:26:00	0,00	4,53	310	2,59	
16:26:10	0,00	4,53	310	2,59	
16:26:20	0,00	4,62	308	2,68	
16:26:30	0,00	4,50	308	2,77	
16:26:40	0,00	4,53	305	2,74	
16:26:50	0,00	4,53	308	2,74	
16:27:00	0,00	4,53	308	2,74	
16:27:10	0,00	4,62	314	2,68	
16:27:20	0,00	4,62	314	2,68	
16:27:30	0,00	4,62	314	2,68	
16:27:40	0,00	4,53	305	2,62	
16:27:50	0,00	4,53	305	2,62	
16:28:00	0,00	4,53	305	2,59	
No receipt of TM-data					
09:53:40	0,00	4,53	305	2,74	
09:53:50	0,00	4,53	308	2,74	
09:54:00	0,00	4,56	305	2,74	
09:54:10	0,00	4,56	305	2,74	
09:54:20	0,00	4,56	305	2,74	
09:54:30	0,00	4,53	308	2,74	
09:54:40	0,00	4,56	305	2,68	
09:54:50	0,00	4,53	305	2,68	
09:55:00	0,00	4,53	308	2,65	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
09:55:10	0,00	4,56	308	2,65	
09:55:20	0,00	4,65	308	2,62	
09:55:30	0,00	4,62	314	2,62	
09:55:40	0,00	4,53	305	2,62	
09:55:50	0,00	4,65	318	2,56	
09:56:00	0,00	4,53	308	2,56	
09:56:10	0,00	4,53	308	2,53	
09:56:20	0,00	4,53	305	2,59	
09:56:30	0,00	4,50	305	2,68	
09:56:40	0,00	4,59	310	2,74	
09:56:50	0,00	4,50	305	2,74	
09:57:00	0,00	4,50	305	2,74	
09:57:10	0,00	4,56	316	2,68	
09:57:20	0,00	4,65	318	2,68	
09:57:30	0,00	4,53	305	2,65	
09:57:40	0,00	4,53	310	2,62	
09:57:50	0,00	4,65	318	2,62	
09:58:00	0,00	4,53	308	2,59	
09:58:10	0,00	4,53	310	2,62	
09:58:20	0,00	4,77	314	2,59	
09:58:30	0,00	4,53	310	2,59	
09:58:40	0,00	4,53	310	2,68	
09:58:50	0,00	4,53	310	2,77	
09:59:00	0,00	4,56	305	2,74	
09:59:10	0,00	4,53	308	2,71	
09:59:20	0,00	4,53	308	2,71	
09:59:30	0,00	4,50	308	2,65	
09:59:40	0,00	4,50	308	2,65	
09:59:50	0,00	4,50	308	2,65	
10:00:00	0,00	4,56	305	2,62	
10:00:10	0,00	4,62	318	2,62	
10:00:20	0,00	4,53	305	2,59	
10:00:30	0,00	4,53	305	2,56	
10:00:40	0,00	4,53	308	2,53	
10:00:50	0,00	4,56	308	2,56	
10:01:00	0,00	4,53	308	2,62	
10:01:10	0,00	4,53	305	2,74	
10:01:20	0,00	4,56	305	2,74	
10:01:30	0,00	4,56	305	2,71	
10:01:40	0,00	4,56	305	2,71	
10:01:50	0,00	4,53	308	2,68	
10:02:00	0,00	4,53	310	2,68	
10:02:10	0,00	4,53	308	2,65	
10:02:20	0,00	4,53	305	2,65	
10:02:30	0,00	4,53	305	2,62	
10:02:40	0,00	4,53	305	2,62	
10:02:50	0,00	4,53	308	2,59	
10:03:00	0,00	4,53	310	2,59	
10:03:10	0,00	4,53	308	2,56	
10:03:20	0,00	4,50	308	2,56	
10:03:30	0,00	4,56	316	2,56	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
10:03:40	0,00	4,59	310	2,59	
10:03:50	0,00	4,56	305	2,71	
10:04:00	0,00	4,56	305	2,74	
10:04:10	0,00	4,53	305	2,74	
10:04:20	0,00	4,56	310	2,71	
10:04:30	0,00	4,53	305	2,71	
10:04:40	0,00	4,56	305	2,68	
10:04:50	0,00	4,56	308	2,68	
10:05:00	0,00	4,56	310	2,62	
10:05:10	0,00	4,53	305	2,62	
10:05:20	0,00	4,50	305	2,62	
10:05:30	0,00	4,53	305	2,59	
10:05:40	0,00	4,53	305	2,59	
10:05:50	0,00	4,65	308	2,59	
10:06:00	0,00	4,53	305	2,56	
10:06:10	0,00	4,59	310	2,56	
10:06:20	0,00	4,59	310	2,65	
10:06:30	0,00	4,50	305	2,74	
10:06:40	0,00	4,50	305	2,74	
10:06:50	0,00	4,56	316	2,68	
10:07:00	0,00	4,65	318	2,68	
10:07:10	0,00	4,53	305	2,65	
10:07:20	0,00	4,53	310	2,62	
10:07:30	0,00	4,65	318	2,62	
10:07:40	0,00	4,53	308	2,59	
10:07:50	0,00	4,53	310	2,62	
10:08:00	0,00	4,77	314	2,59	
10:08:10	0,00	4,53	310	2,59	
10:08:20	0,00	4,53	310	2,59	
10:08:30	0,00	4,53	310	2,59	
10:08:40	0,00	4,62	308	2,68	
10:08:50	0,00	4,50	308	2,74	
10:09:00	0,00	0,00	0	2,74	
10:09:40	0,00	0,00	0	2,74	
10:09:50	0,00	0,00	0	2,74	
10:10:00	0,00	0,00	0	2,74	

Annex 5. Telemetry data table when operating the T4C1 Thruster on 12/04/00

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
08:55:00	0,00	0,00	0,00	2,53	
08:55:10	0,00	0,00	0,00	2,74	
08:55:30	0,00	0,00	0,00	2,74	
08:56:00	0,00	0,00	0,00	2,74	
08:56:30	0,00	0,00	0,00	2,74	
08:57:00	0,00	0,00	0,00	2,71	
08:57:10	11,80	0,00	320	2,71	
08:58:00	11,80	0,00	320	2,71	
08:58:30	11,90	0,00	320	2,71	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
08:59:00	11,70	0,00	320	2,74	
08:59:30	11,60	0,00	320	2,71	
08:59:50	0,00	4,47	308	2,71	
09:00:00	0,00	4,50	308	2,68	
09:00:30	0,00	4,47	308	2,65	
09:01:00	0,00	4,50	308	2,59	
09:01:30	0,00	4,50	308	2,68	
09:02:00	0,00	4,53	308	2,62	
09:02:30	0,00	4,53	305	2,59	
09:03:00	0,00	4,59	310	2,71	
09:03:30	0,00	4,53	310	2,62	
09:04:00	0,00	4,71	308	2,62	
09:04:30	0,00	4,56	305	2,68	
09:05:00	0,00	4,53	305	2,62	
09:05:30	0,00	4,56	316	2,59	
09:06:00	0,00	4,56	310	2,65	
09:06:30	0,00	4,53	305	2,59	
09:07:00	0,00	4,59	318	2,65	
09:07:30	0,00	4,53	305	2,62	
09:08:00	0,00	4,53	310	2,59	
09:08:30	0,00	4,59	310	2,68	
09:09:00	0,00	4,53	308	2,62	
09:09:30	0,00	4,53	305	2,59	
09:10:00	0,00	4,53	303	2,68	
09:10:30	0,00	4,56	308	2,62	
09:11:00	0,00	4,53	305	2,59	
09:11:30	0,00	4,53	305	2,68	
09:12:00	0,00	4,53	305	2,62	
09:12:30	0,00	4,53	305	2,59	
09:13:00	0,00	4,65	314	2,74	
09:13:30	0,00	4,56	305	2,68	
09:14:00	0,00	4,53	305	2,62	
09:14:30	0,00	4,53	308	2,56	
09:15:00	0,00	4,53	308	2,68	
09:15:30	0,00	4,53	308	2,65	
09:16:00	0,00	4,56	305	2,59	
09:16:30	0,00	4,56	305	2,74	
09:17:00	0,00	4,62	308	2,71	
09:17:30	0,00	4,77	310	2,62	
09:18:00	0,00	4,56	310	2,59	
09:18:30	0,00	4,65	314	2,53	
09:19:00	0,00	4,71	308	2,74	
09:19:30	0,00	4,59	310	2,71	
09:20:00	0,00	4,56	305	2,65	
09:20:30	0,00	4,65	318	2,59	
09:21:00	0,00	4,53	305	2,53	
09:21:30	0,00	4,53	305	2,74	
09:22:00	0,00	4,56	305	2,68	
09:22:30	0,00	4,56	308	2,62	
09:23:00	0,00	4,65	310	2,59	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
09:23:30	0,00	4,53	308	2,53	
09:24:00	0,00	4,53	305	2,74	
09:24:30	0,00	4,62	305	2,71	
09:25:00	0,00	4,62	318	2,62	
09:25:30	0,00	4,56	305	2,62	
09:26:00	0,00	4,56	308	2,53	
09:26:30	0,00	4,62	314	2,68	
09:27:00	0,00	4,53	305	2,59	
09:27:30	0,00	4,71	308	2,59	
09:28:00	0,00	4,56	305	2,68	
09:28:30	0,00	4,56	305	2,59	
09:29:00	0,00	4,53	308	2,59	
09:29:30	0,00	4,59	310	2,68	
09:30:00	0,00	4,65	318	2,62	
09:30:30	0,00	4,53	308	2,59	
09:31:00	0,00	4,62	305	2,68	
09:31:30	0,00	4,56	310	2,59	
09:32:00	0,00	4,59	318	2,59	
09:32:30	0,00	4,56	305	2,68	
09:33:00	0,00	4,53	305	2,59	
09:33:30	0,00	4,56	305	2,62	
09:34:00	0,00	4,56	305	2,65	
09:34:30	0,00	4,53	308	2,62	
09:35:00	0,00	4,65	318	2,62	
09:35:30	0,00	4,59	308	2,65	
09:36:00	0,00	4,77	314	2,59	
09:36:30	0,00	4,53	305	2,62	
09:37:00	0,00	4,56	310	2,62	
09:37:30	0,00	4,71	308	2,59	
09:38:00	0,00	4,56	305	2,62	
09:38:30	0,00	4,53	310	2,62	
09:39:00	0,00	4,56	303	2,59	
09:39:30	0,00	4,56	310	2,65	
09:40:00	0,00	4,56	305	2,74	
09:40:30	0,00	4,71	308	2,65	
09:41:00	0,00	4,62	305	2,59	
09:41:30	0,00	4,65	310	2,56	
09:42:00	0,00	4,56	305	2,68	
09:42:30	0,00	4,56	308	2,74	
09:43:00	0,00	4,59	310	2,68	
09:43:30	0,00	4,65	318	2,62	
09:44:00	0,00	4,62	305	2,53	
09:44:30	0,00	4,53	305	2,71	
09:45:00	0,00	4,65	314	2,71	
09:45:30	0,00	4,53	305	2,65	
09:46:00	0,00	4,56	305	2,62	
09:46:11	0,00	4,65	314	2,62	
09:46:11	0,00	4,56	305	2,59	
09:46:12	0,00	4,56	308	2,59	
09:46:12	0,00	4,56	305	2,59	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
09:46:13	0,00	4,62	308	2,59	
09:46:13	0,00	4,53	308	2,62	
09:46:14	0,00	4,53	305	2,59	
09:46:14	0,00	4,65	318	2,62	
09:46:15	0,00	4,53	305	2,62	
09:46:16	0,00	4,62	305	2,59	
09:46:16	0,00	4,56	305	2,56	
09:46:17	0,00	4,53	308	2,56	
09:46:17	0,00	4,56	305	2,59	
09:46:18	0,00	4,56	305	2,59	
09:46:18	0,00	4,56	318	2,56	
09:46:30	0,00	4,59	310	2,53	
09:47:00	0,00	4,65	310	2,74	
09:47:30	0,00	4,56	305	2,71	
09:48:00	0,00	4,53	305	2,62	
09:48:30	0,00	4,56	318	2,62	
09:49:00	0,00	4,71	318	2,53	
09:49:00	0,00	4,56	305	2,53	
09:49:30	0,00	4,65	314	2,74	
09:50:00	0,00	4,53	305	2,71	
09:50:30	0,00	4,56	308	2,62	
09:51:00	0,00	4,56	305	2,62	
09:51:30	0,00	4,53	305	2,53	
09:52:00	0,00	4,56	305	2,74	
09:52:30	0,00	4,53	305	2,68	
09:53:00	0,00	4,53	305	2,62	
09:53:30	0,00	4,62	308	2,56	
09:54:00	0,00	4,56	305	2,68	
09:54:30	0,00	4,53	318	2,59	
09:55:00	0,00	4,77	314	2,53	
09:55:30	0,00	4,56	305	2,77	
09:56:00	0,00	4,56	310	2,68	
09:56:30	0,00	4,56	305	2,62	
09:57:00	0,00	4,56	316	2,62	
09:57:30	0,00	4,56	316	2,56	
09:58:00	0,00	4,53	308	2,74	
09:58:30	0,00	4,65	310	2,68	
09:59:00	0,00	4,56	305	2,62	
09:59:30	0,00	4,56	305	2,62	
10:00:00	0,00	4,62	318	2,59	
10:00:00	0,00	4,56	305	2,59	
10:00:30	0,00	4,56	308	2,71	
10:01:00	0,00	4,65	310	2,68	
10:01:30	0,00	4,65	314	2,62	
10:02:00	0,00	4,77	314	2,59	
10:02:30	0,00	4,56	305	2,59	
10:03:00	0,00	4,53	305	2,74	
10:03:30	0,00	4,53	308	2,68	
10:04:00	0,00	4,56	305	2,62	
10:04:30	0,00	4,53	305	2,59	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
10:05:00	0,00	4,53	305	2,68	
10:05:30	0,00	4,56	305	2,71	
10:06:00	0,00	4,59	305	2,68	
10:06:30	0,00	4,65	318	2,59	
10:07:00	0,00	4,56	305	2,53	
10:07:30	0,00	4,53	305	2,68	
10:08:00	0,00	4,56	305	2,71	
10:08:30	0,00	4,59	305	2,65	
10:09:00	0,00	4,65	310	2,62	
10:09:30	0,00	4,53	308	2,53	
10:10:00	0,00	4,56	308	2,71	
10:11:30	0,00	4,65	314	2,59	
10:12:00	0,00	4,59	305	2,56	
10:12:30	0,00	4,62	308	2,77	
10:13:00	0,00	4,65	310	2,71	
10:13:30	0,00	4,59	305	2,62	
10:14:00	0,00	4,62	308	2,59	
10:14:30	0,00	4,65	308	2,53	
10:15:00	0,00	4,56	305	2,74	
10:15:30	0,00	4,62	314	2,68	
10:16:00	0,00	4,56	310	2,62	
10:16:07	0,00	4,62	308	2,62	
10:16:30	0,00	4,71	318	2,62	
10:17:00	0,00	4,77	314	2,53	
10:17:30	0,00	4,62	308	2,74	
10:18:00	0,00	4,53	305	2,68	
10:18:30	0,00	4,56	305	2,62	
10:19:00	0,00	4,77	314	2,59	
10:19:30	0,00	4,77	314	2,56	
10:20:00	0,00	4,71	318	2,74	
10:20:30	0,00	4,59	305	2,68	
10:21:00	0,00	4,53	305	2,62	
10:21:30	0,00	4,56	305	2,59	
10:22:00	0,00	4,59	308	2,59	
10:22:30	0,00	4,65	310	2,77	
10:23:00	0,00	4,56	316	2,68	
10:23:30	0,00	4,59	318	2,62	
10:24:00	0,00	4,71	308	2,56	
10:24:30	0,00	4,56	305	2,62	
10:25:00	0,00	4,65	318	2,74	
10:25:30	0,00	4,56	314	2,68	
10:26:00	0,00	4,53	308	2,59	
10:26:30	0,00	4,62	308	2,59	
10:27:00	0,00	4,56	316	2,68	
10:27:30	0,00	4,53	305	2,71	
10:28:00	0,00	4,65	310	2,68	
10:28:30	0,00	4,62	308	2,62	
10:29:00	0,00	4,53	305	2,56	
10:29:30	0,00	4,53	305	2,74	
10:30:00	0,00	4,77	310	2,71	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
10:30:30	0,00	4,56	305	2,65	
10:31:00	0,00	4,56	305	2,62	
10:31:30	0,00	4,59	305	2,56	
10:32:00	0,00	4,56	305	2,77	
10:32:30	0,00	4,53	305	2,68	
10:33:00	0,00	4,56	305	2,62	
10:33:30	0,00	4,56	308	2,59	
10:34:00	0,00	4,56	305	2,56	
10:34:30	0,00	4,56	305	2,74	
10:35:00	0,00	4,56	305	2,71	
10:35:30	0,00	4,56	318	2,62	
10:36:00	0,00	4,62	314	2,56	
10:36:30	0,00	4,56	305	2,53	
10:37:00	0,00	4,59	305	2,74	
10:37:30	0,00	4,59	314	2,68	
10:38:00	0,00	4,56	305	2,62	
10:38:30	0,00	4,53	305	2,62	
10:39:00	0,00	4,53	305	2,62	
10:39:30	0,00	4,53	305	2,74	
10:40:00	0,00	4,62	318	2,68	
10:40:30	0,00	4,53	310	2,65	
10:41:00	0,00	4,56	308	2,56	
10:41:30	0,00	4,56	305	2,62	
10:42:00	0,00	4,59	305	2,74	
10:42:30	0,00	4,62	305	2,68	
10:43:00	0,00	4,56	305	2,59	
10:43:30	0,00	4,56	308	2,56	
10:44:00	0,00	4,56	305	2,65	
10:44:30	0,00	4,56	305	2,71	
10:45:00	0,00	4,53	305	2,65	
10:45:30	0,00	4,65	308	2,62	
10:46:00	0,00	4,65	308	2,53	
10:46:30	0,00	4,53	308	2,74	
10:47:00	0,00	4,56	305	2,74	
10:47:30	0,00	4,62	318	2,68	
10:48:00	0,00	4,62	318	2,59	
10:48:30	0,00	4,65	308	2,53	
10:49:00	0,00	4,59	305	2,74	
10:49:30	0,00	4,56	316	2,68	
10:50:00	0,00	4,65	318	2,65	
10:50:30	0,00	4,56	305	2,59	
10:51:00	0,00	4,59	310	2,53	
10:51:30	0,00	4,56	305	2,74	
10:52:00	0,00	4,53	308	2,68	
10:52:30	0,00	4,59	305	2,62	
10:53:00	0,00	4,53	305	2,59	
10:53:30	0,00	4,59	305	2,53	
10:54:00	0,00	4,56	303	2,74	
10:54:30	0,00	4,62	305	2,68	
10:55:00	0,00	4,59	305	2,62	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
10:55:30	0,00	4,59	305	2,59	
10:56:00	0,00	4,56	308	2,59	
10:56:30	0,00	4,62	308	2,77	
10:57:00	0,00	4,56	308	2,65	
10:57:30	0,00	4,56	305	2,62	
10:58:00	0,00	4,56	318	2,59	
10:58:30	0,00	4,56	310	2,62	
10:59:00	0,00	4,59	305	2,71	
10:59:30	0,00	4,53	305	2,68	
11:00:00	0,00	0,00	0	2,62	
11:00:30	0,00	0,00	0	2,62	
11:01:00	0,00	0,00	0	2,62	
11:01:30	0,00	0,00	0	2,65	

Time hh:mm:ss	**Xe Feed Unit Input**	**Primary Xe Feed Branch**	**Redundant Xe Feed Branch**	**Xe Storage Unit 1**	**Xe Storage Unit 2**	**Xe Storage Unit 3**	**Xe Feed Unit**	**Thruster Unit 4**
	Pressure (kgf/cm^2)			**Temperature (°C)**				
08:01:00	49,76	4,70	4,59	1,2	6,9	4,3	16,9	13,4
09:02:10	49,76	4,59	4,59	1,2	6,9	4,3	16,9	13,4
09:15:23	49,76	4,38	4,59	1,2	6,9	4,3	16,9	13,4
09:32:00	49,76	4,38	4,59	1,2	6,9	4,3	14,2	13,4
10:09:09	49,76	4,38	4,59	1,2	6,9	4,3	14,2	16,7
10:58:37	49,76	4,38	4,59	1,2	6,9	4,3	14,2	20,0
11:07:27	49,76	4,38	4,59	1,2	6,9	4,3	14,2	20,0

Annex 6. Telemetry data table when operating the RT4C1 Thruster on 13/04/00

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
08:55:00	0,00	0,00	0	2,62	
08:55:30	0,00	0,00	0	2,62	
08:56:00	0,00	0,00	0	2,65	
08:56:30	0,00	0,00	0	2,62	
08:57:00	0,00	0,00	0	2,65	
08:57:10	12,00	0,00	320	2,62	
08:57:30	11,90	0,00	320	2,65	
08:58:00	11,80	0,00	320	2,62	
08:58:30	11,80	0,00	320	2,62	
08:59:00	12,10	0,00	320	2,62	
08:59:30	11,90	0,00	320	2,62	
08:59:40	11,90	0,00	320	2,62	
08:59:50	0,00	4,16	310	2,62	
09:00:00	0,00	4,56	303	2,62	
09:00:30	0,00	4,56	303	2,59	
09:01:00	0,00	4,56	314	2,74	
09:01:30	0,00	4,56	308	2,65	
09:02:00	0,00	4,62	303	2,62	
09:02:30	0,00	4,56	303	2,59	
09:03:00	0,00	4,71	305	2,74	
09:03:30	0,00	4,65	303	2,71	
09:04:00	0,00	4,62	314	2,65	
09:04:30	0,00	4,50	303	2,59	
09:05:00	0,00	4,53	303	2,56	
09:05:30	0,00	4,77	314	2,71	
09:06:00	0,00	4,59	303	2,65	
09:06:30	0,00	4,47	308	2,59	
09:07:00	0,00	4,41	303	2,62	
09:07:30	0,00	4,56	303	2,74	
09:08:00	0,00	4,41	303	2,68	
09:08:30	0,00	4,50	316	2,62	
09:09:00	0,00	4,53	301	2,62	
09:09:30	0,00	4,71	318	2,56	
09:10:00	0,00	4,74	310	2,77	
09:10:30	0,00	4,56	303	2,68	
09:11:00	0,00	4,59	303	2,62	
09:11:30	0,00	4,59	303	2,62	
09:12:00	0,00	4,62	303	2,59	
09:12:30	0,00	4,62	303	2,59	
09:13:00	0,00	4,56	303	2,74	
09:13:30	0,00	4,59	301	2,68	
09:14:00	0,00	4,56	301	2,62	
09:14:30	0,00	4,62	308	2,59	
09:15:00	0,00	4,53	303	2,56	
09:15:30	0,00	4,62	310	2,62	
09:16:00	0,00	4,62	308	2,74	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
09:16:30	0,00	4,56	303	2,65	
09:17:00	0,00	4,77	305	2,65	
09:17:30	0,00	4,56	334	2,59	
09:18:00	0,00	4,65	301	2,56	
09:18:30	0,00	4,56	303	2,65	
09:19:00	0,00	4,71	303	2,77	
09:19:30	0,00	4,56	301	2,68	
09:20:00	0,00	4,53	303	2,62	
09:20:30	0,00	4,56	310	2,59	
09:21:00	0,00	4,56	310	2,53	
09:21:30	0,00	4,65	303	2,65	
09:22:00	0,00	4,65	303	2,74	
09:22:30	0,00	4,53	303	2,68	
09:23:00	0,00	4,74	310	2,65	
09:23:30	0,00	4,65	303	2,59	
09:24:00	0,00	4,56	308	2,53	
09:24:30	0,00	4,56	303	2,65	
09:25:00	0,00	4,56	308	2,74	
09:25:30	0,00	4,56	303	2,68	
09:26:00	0,00	4,53	303	2,62	
09:26:30	0,00	4,65	303	2,59	
09:27:00	0,00	4,59	308	2,53	
09:27:30	0,00	4,56	303	2,74	
09:28:00	0,00	4,53	303	2,71	
09:28:30	0,00	4,56	303	2,68	
09:29:00	0,00	4,53	303	2,62	
09:29:30	0,00	4,65	303	2,62	
09:30:00	0,00	4,56	314	2,56	
09:30:30	0,00	4,62	303	2,77	
09:31:00	0,00	4,56	308	2,71	
09:31:30	0,00	4,71	305	2,65	
09:32:00	0,00	4,71	305	2,59	
09:32:30	0,00	4,56	303	2,56	
09:33:00	0,00	4,56	303	2,56	
09:33:30	0,00	4,65	301	2,74	
09:34:00	0,00	4,62	305	2,68	
09:34:30	0,00	4,59	301	2,62	
09:35:00	0,00	4,62	308	2,62	
09:35:30	0,00	4,56	303	2,56	
09:36:00	0,00	4,65	303	2,68	
09:36:30	0,00	4,56	303	2,71	
09:37:00	0,00	4,74	310	2,68	
09:37:30	0,00	4,65	303	2,62	
09:38:00	0,00	4,65	303	2,62	
09:38:30	0,00	4,53	301	2,56	
09:39:00	0,00	4,71	305	2,77	
09:39:30	0,00	4,59	303	2,71	
09:40:00	0,00	4,65	303	2,65	
09:40:30	0,00	4,53	308	2,59	
09:41:00	0,00	4,53	316	2,59	
09:41:30	0,00	4,59	303	2,62	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
09:42:00	0,00	4,53	314	2,77	
09:42:30	0,00	4,50	303	2,68	
09:43:00	0,00	4,53	303	2,62	
09:43:30	0,00	4,56	308	2,62	
09:44:00	0,00	4,56	310	2,56	
09:44:30	0,00	4,53	314	2,68	
09:45:00	0,00	4,65	305	2,74	
09:45:30	0,00	4,77	305	2,68	
09:46:00	0,00	4,56	303	2,62	
09:46:30	0,00	4,53	303	2,62	
09:47:00	0,00	4,71	310	2,53	
09:47:30	0,00	4,53	303	2,74	
09:48:00	0,00	4,56	310	2,68	
09:48:30	0,00	4,56	308	2,65	
09:49:00	0,00	4,50	308	2,62	
09:49:30	0,00	4,62	308	2,62	
09:50:00	0,00	4,62	310	2,62	
09:50:30	0,00	4,53	303	2,74	
09:51:00	0,00	4,56	301	2,68	
09:51:30	0,00	4,53	301	2,62	
09:52:00	0,00	4,53	301	2,59	
09:52:30	0,00	4,50	305	2,56	
09:53:00	0,00	4,53	303	2,77	
09:53:30	0,00	4,56	301	2,71	
09:54:00	0,00	4,56	301	2,65	
09:54:30	0,00	4,56	318	2,62	
09:55:00	0,00	4,71	310	2,59	
09:55:30	0,00	4,56	303	2,56	
09:56:00	0,00	4,62	310	2,74	
09:56:30	0,00	4,47	314	2,68	
09:57:00	0,00	4,53	303	2,65	
09:57:30	0,00	4,53	303	2,59	
09:58:00	0,00	4,77	305	2,56	
09:58:30	0,00	4,56	303	2,65	
09:59:00	0,00	4,77	303	2,74	
09:59:30	0,00	4,50	303	2,68	
10:00:00	0,00	4,50	301	2,62	
10:00:30	0,00	4,53	303	2,59	
10:01:00	0,00	4,53	301	2,53	
10:01:30	0,00	4,47	303	2,77	
10:02:00	0,00	4,53	303	2,71	
10:02:30	0,00	4,50	303	2,68	
10:03:00	0,00	4,53	303	2,62	
10:03:30	0,00	4,53	303	2,59	
10:04:00	0,00	4,65	303	2,53	
10:04:30	0,00	4,53	303	2,74	
10:05:00	0,00	4,44	303	2,68	
10:05:30	0,00	4,53	303	2,65	
10:06:00	0,00	4,50	308	2,59	
10:06:30	0,00	4,53	305	2,56	
10:07:00	0,00	4,50	314	2,62	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
10:07:30	0,00	4,53	303	2,74	
10:08:00	0,00	4,53	301	2,68	
10:08:30	0,00	4,53	308	2,65	
10:08:56	0,00	4,56	308	2,56	
10:09:00	0,00	4,53	303	2,62	
10:09:30	0,00	4,50	308	2,56	
10:10:00	0,00	4,50	303	2,68	
10:10:30	0,00	4,59	301	2,71	
10:11:00	0,00	4,77	303	2,68	
10:11:30	0,00	4,53	308	2,62	
10:12:00	0,00	4,50	303	2,59	
10:12:30	0,00	4,53	308	2,53	
10:13:00	0,00	4,44	301	2,77	
10:13:30	0,00	4,50	305	2,74	
10:14:00	0,00	4,53	308	2,68	
10:14:30	0,00	4,50	305	2,59	
10:15:00	0,00	4,59	301	2,59	
10:15:30	0,00	4,65	303	2,56	
10:16:00	0,00	4,50	305	2,74	
10:16:30	0,00	4,47	303	2,68	
10:17:00	0,00	4,53	301	2,62	
10:17:30	0,00	4,56	303	2,62	
10:18:00	0,00	4,59	303	2,56	
10:18:30	0,00	4,53	303	2,62	
10:19:00	0,00	4,50	318	2,74	
10:19:30	0,00	4,53	303	2,68	
10:20:00	0,00	4,53	303	2,62	
10:20:30	0,00	4,59	301	2,59	
10:21:00	0,00	4,53	303	2,56	
10:21:30	0,00	4,59	308	2,68	
10:22:00	0,00	4,53	303	2,74	
10:22:30	0,00	4,50	303	2,68	
10:23:00	0,00	4,53	301	2,62	
10:23:30	0,00	4,50	310	2,59	
10:24:00	0,00	4,53	305	2,56	
10:24:30	0,00	4,50	303	2,74	
10:25:00	0,00	4,56	305	2,71	
10:25:30	0,00	4,53	301	2,68	
10:26:00	0,00	4,56	303	2,59	
10:26:30	0,00	4,50	303	2,59	
10:27:00	0,00	4,71	310	2,53	
10:27:30	0,00	4,62	310	2,74	
10:28:00	0,00	4,53	301	2,68	
10:28:30	0,00	4,50	308	2,65	
10:28:53	0,00	4,56	314	2,59	
10:29:00	0,00	4,56	303	2,59	
10:29:30	0,00	4,62	303	2,59	
10:30:00	0,00	4,65	303	2,62	
10:30:30	0,00	4,71	305	2,74	
10:31:00	0,00	4,65	301	2,68	
10:31:30	0,00	4,59	303	2,62	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
10:32:00	0,00	4,47	308	2,59	
10:32:30	0,00	4,56	303	2,53	
10:33:00	0,00	4,56	303	2,68	
10:33:30	0,00	4,56	303	2,74	
10:34:00	0,00	4,62	305	2,68	
10:34:30	0,00	4,59	301	2,62	
10:35:00	0,00	4,56	303	2,59	
10:35:30	0,00	4,47	303	2,56	
10:36:00	0,00	4,53	303	2,74	
10:36:30	0,00	4,53	303	2,71	
10:37:00	0,00	4,77	303	2,68	
10:37:30	0,00	4,44	303	2,59	
10:38:00	0,00	4,56	308	2,56	
10:38:30	0,00	4,56	303	2,56	
10:39:00	0,00	4,77	305	2,74	
10:39:30	0,00	4,56	303	2,68	
10:40:00	0,00	4,50	308	2,62	
10:40:30	0,00	4,53	303	2,59	
10:41:00	0,00	4,56	305	2,53	
10:41:30	0,00	4,53	308	2,62	
10:42:00	0,00	4,53	308	2,77	
10:42:30	0,00	4,47	303	2,68	
10:43:00	0,00	4,62	303	2,62	
10:43:30	0,00	4,56	303	2,59	
10:44:00	0,00	4,53	303	2,56	
10:44:30	0,00	4,59	305	2,71	
10:45:00	0,00	4,59	305	2,74	
10:45:30	0,00	4,53	326	2,68	
10:46:00	0,00	4,59	301	2,62	
10:46:30	0,00	4,56	303	2,59	
10:47:00	0,00	4,56	308	2,53	
10:47:30	0,00	4,47	308	2,77	
10:48:00	0,00	4,59	301	2,71	
10:48:30	0,00	4,71	310	2,68	
10:49:00	0,00	4,59	301	2,59	
10:49:30	0,00	4,47	305	2,59	
10:50:00	0,00	4,41	303	2,59	
10:50:30	0,00	4,62	305	2,77	
10:51:00	0,00	4,62	305	2,68	
10:51:30	0,00	4,50	303	2,68	
10:52:00	0,00	4,56	303	2,62	
10:52:30	0,00	4,53	303	2,56	
10:53:00	0,00	4,59	301	2,68	
10:53:30	0,00	4,53	303	2,74	
10:54:00	0,00	4,50	308	2,68	
10:54:30	0,00	4,50	316	2,62	
10:55:00	0,00	4,53	303	2,59	
10:55:30	0,00	4,50	310	2,53	
10:56:00	0,00	4,50	310	2,74	
10:56:30	0,00	4,62	305	2,74	
10:57:00	0,00	4,53	303	2,65	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
10:57:30	0,00	4,53	303	2,62	
10:58:00	0,00	4,53	301	2,59	
10:58:30	0,00	4,56	301	2,56	
10:59:00	0,00	4,53	303	2,74	
10:59:30	0,00	4,59	314	2,68	
11:00:00	0,00	0,00	0	2,68	
11:00:30	0,00	0,00	0	2,68	
11:01:00	0,00	0,00	0	2,68	

Time hh:mm:ss	Xe Feed Unit Input	Primary Xe Feed Branch	Redundant Xe Feed Branch	Xe Storage Unit 1	Xe Storage Unit 2	Xe Storage Unit 3	Xe Feed Unit	Thruster Unit 4
	Pressure (kgf/cm^2)			Temperature (°C)				
08:00:24	49,76	4,38	4,59	1,2	6,9	3,8	17,4	1,4
08:59:45	49,76	4,38	4,59	1,2	6,9	3,8	14,5	1,4
09:05:39	49,76	4,23	4,59	1,2	6,9	3,8	14,5	1,4
09:42:09	49,76	4,23	4,59	1,2	6,9	3,8	14,5	4,7
09:50:12	49,76	4,30	4,59	1,2	6,9	3,8	14,5	4,7
10:23:26	49,76	4,30	4,59	1,2	6,9	3,8	14,5	8,0
10:47:50	49,76	4,30	4,59	1,2	6,9	3,8	14,5	11,4
10:55:54	49,76	4,09	4,59	1,2	6,9	3,8	14,5	11,4
11:21:35	49,76	4,09	4,59	1,2	6,9	3,8	12,2	11,4

Annex 7. Telemetry data table when operating the T4C1 Thruster on 15/04/00

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
04:26:00	0,00	0,00	0,00	2,68	
04:26:30	0,00	0,00	0,00	2,68	
04:27:00	0,00	0,00	0,00	2,68	
04:27:30	0,00	0,00	0,00	2,68	
04:28:00	0,00	0,00	0,00	2,68	
04:28:30	0,00	0,00	0,00	2,68	
04:29:00	0,00	0,00	0,00	2,68	
04:29:30	0,00	0,00	0,00	2,68	
04:29:40	12,10	0,00	320	2,68	
04:30:00	11,60	0,00	322	2,68	
04:30:30	11,80	0,00	320	2,68	
04:31:00	11,80	0,00	320	2,68	
04:31:30	11,70	0,00	322	2,68	
04:32:00	11,60	0,00	320	2,68	
04:32:10	11,60	0,00	320	2,68	
04:32:20	0,00	4,50	308	2,68	
04:32:30	0,00	4,50	305	2,65	
04:33:00	0,00	4,53	308	2,62	
04:33:30	0,00	4,53	308	2,59	
04:34:00	0,00	4,56	314	2,74	
04:34:30	0,00	4,53	308	2,68	
04:35:00	0,00	4,53	308	2,62	
04:35:30	0,00	4,53	305	2,59	
04:36:00	0,00	4,53	305	2,56	
04:36:30	0,00	4,59	318	2,68	
04:37:00	0,00	4,53	308	2,65	
04:37:30	0,00	4,47	310	2,59	
04:38:00	0,00	4,50	308	2,68	
04:38:30	0,00	4,53	305	2,62	
04:39:00	0,00	4,59	314	2,59	
04:39:30	0,00	4,53	305	2,68	
04:40:00	0,00	4,53	308	2,62	
04:40:30	0,00	4,56	308	2,59	
04:41:00	0,00	4,53	305	2,68	
04:41:30	0,00	4,53	308	2,65	
04:42:00	0,00	4,62	305	2,56	
04:42:30	0,00	4,50	310	2,68	
04:43:00	0,00	4,53	305	2,62	
04:43:30	0,00	4,56	308	2,59	
04:44:00	0,00	4,56	308	2,68	
04:44:30	0,00	4,50	314	2,62	
04:45:00	0,00	4,53	305	2,56	
04:45:30	0,00	4,53	308	2,68	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
04:46:00	0,00	4,53	303	2,59	
04:46:30	0,00	4,62	308	2,56	
04:47:00	0,00	4,53	305	2,68	
04:47:30	0,00	4,56	305	2,59	
04:48:00	0,00	4,53	305	2,56	
04:48:30	0,00	4,56	314	2,74	
04:49:00	0,00	4,56	305	2,68	
04:49:30	0,00	4,50	308	2,62	
04:50:00	0,00	4,56	308	2,59	
04:50:30	0,00	4,56	314	2,53	
04:51:00	0,00	4,56	305	2,74	
04:51:30	0,00	4,53	305	2,68	
04:52:00	0,00	4,53	305	2,62	
04:52:30	0,00	4,53	310	2,59	
04:53:00	0,00	4,56	305	2,59	
04:53:30	0,00	4,56	305	2,74	
04:54:00	0,00	4,59	318	2,68	
04:54:30	0,00	4,56	308	2,62	
04:55:00	0,00	4,56	305	2,59	
04:55:30	0,00	4,56	305	2,62	
04:56:00	0,00	4,56	305	2,77	
04:56:30	0,00	4,53	308	2,68	
04:57:00	0,00	4,56	305	2,62	
04:57:30	0,00	4,56	305	2,59	
04:58:00	0,00	4,65	318	2,65	
04:58:30	0,00	4,56	305	2,74	
04:59:00	0,00	4,56	305	2,68	
04:59:30	0,00	4,53	305	2,62	
05:00:00	0,00	4,56	305	2,56	
05:00:30	0,00	4,56	305	2,68	
05:01:00	0,00	4,56	305	2,71	
05:01:30	0,00	4,65	314	2,68	
05:02:00	0,00	4,53	308	2,59	
05:02:30	0,00	4,56	326	2,56	
05:03:00	0,00	4,56	305	2,71	
05:03:30	0,00	4,53	305	2,74	
05:04:00	0,00	4,62	318	2,65	
05:04:30	0,00	4,53	305	2,59	
05:05:00	0,00	4,56	305	2,53	
05:05:30	0,00	4,53	305	2,74	
05:06:00	0,00	4,77	310	2,74	
05:06:30	0,00	4,62	308	2,65	
05:07:00	0,00	4,56	305	2,62	
05:07:30	0,00	4,56	305	2,53	
05:08:00	0,00	4,62	308	2,74	
05:08:30	0,00	4,53	305	2,68	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
05:09:00	0,00	4,56	308	2,65	
05:09:30	0,00	4,56	316	2,59	
05:10:00	0,00	4,59	310	2,53	
05:10:30	0,00	4,62	305	2,77	
05:11:00	0,00	4,53	305	2,68	
05:11:30	0,00	4,56	308	2,62	
05:12:00	0,00	4,56	305	2,59	
05:12:30	0,00	4,56	305	2,53	
05:13:00	0,00	4,53	305	2,74	
05:13:30	0,00	4,53	305	2,68	
05:14:00	0,00	4,53	305	2,65	
05:14:30	0,00	4,56	316	2,62	
05:15:00	0,00	4,71	308	2,59	
05:15:30	0,00	4,53	305	2,74	
05:16:00	0,00	4,71	308	2,68	
05:16:30	0,00	4,56	305	2,62	
05:17:00	0,00	4,56	305	2,56	
05:17:30	0,00	4,53	308	2,62	
05:18:00	0,00	4,53	305	2,74	
05:18:30	0,00	4,53	305	2,68	
05:19:00	0,00	4,65	318	2,62	
05:19:30	0,00	4,77	314	2,56	
05:20:00	0,00	4,53	308	2,65	
05:20:30	0,00	4,53	305	2,71	
05:21:00	0,00	4,56	305	2,68	
05:21:30	0,00	4,56	305	2,59	
05:22:00	0,00	4,53	310	2,53	
05:22:30	0,00	4,53	303	2,68	
05:23:00	0,00	4,65	310	2,71	
05:23:30	0,00	4,62	308	2,68	
05:24:00	0,00	4,65	310	2,56	
05:24:30	0,00	4,56	305	2,53	
05:25:00	0,00	4,53	305	2,74	
05:25:30	0,00	4,62	318	2,71	
05:26:00	0,00	4,56	308	2,62	
05:26:30	0,00	4,53	305	2,59	
05:27:00	0,00	4,53	305	2,50	
05:27:30	0,00	4,65	314	2,74	
05:28:00	0,00	4,53	305	2,71	
05:28:30	0,00	4,62	308	2,68	
05:29:00	0,00	4,65	310	2,56	
05:29:30	0,00	4,56	305	2,53	
05:30:00	0,00	4,53	305	2,74	
05:30:30	0,00	4,62	318	2,71	
05:31:00	0,00	4,56	308	2,62	
05:31:30	0,00	4,53	305	2,59	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
05:32:00	0,00	4,53	305	2,50	
05:32:30	0,00	4,65	314	2,74	
05:33:00	0,00	4,53	305	2,68	
05:33:30	0,00	4,56	305	2,62	
05:34:00	0,00	4,62	318	2,59	
05:34:30	0,00	4,62	308	2,53	
05:35:00	0,00	4,62	318	2,74	
05:35:30	0,00	4,56	305	2,68	
05:36:00	0,00	4,62	305	2,62	
05:36:30	0,00	4,56	308	2,59	
05:37:00	0,00	4,53	305	2,59	
05:37:30	0,00	4,56	305	2,74	
05:38:00	0,00	4,59	305	2,68	
05:38:30	0,00	4,59	305	2,65	
05:39:00	0,00	4,53	305	2,59	
05:39:30	0,00	4,56	318	2,62	
05:40:00	0,00	4,65	314	2,74	
05:40:30	0,00	4,56	305	2,68	
05:41:00	0,00	4,59	305	2,59	
05:41:30	0,00	4,56	305	2,53	
05:42:00	0,00	4,53	305	2,68	
05:42:30	0,00	4,56	305	2,71	
05:43:00	0,00	4,62	308	2,68	
05:43:30	0,00	4,65	310	2,56	
05:44:00	0,00	4,56	305	2,53	
05:44:30	0,00	4,53	305	2,74	
05:45:00	0,00	4,62	318	2,71	
05:45:30	0,00	4,56	308	2,62	
05:46:00	0,00	4,53	305	2,59	
05:46:30	0,00	4,53	305	2,50	
05:47:00	0,00	4,65	314	2,74	
05:47:30	0,00	4,53	305	2,68	
05:48:00	0,00	4,56	305	2,62	
05:48:30	0,00	4,62	318	2,59	
05:49:00	0,00	4,62	308	2,53	
05:49:30	0,00	4,62	318	2,74	
05:50:00	0,00	4,56	305	2,68	
05:50:30	0,00	4,62	305	2,62	
05:51:00	0,00	4,56	308	2,59	
05:51:30	0,00	4,53	305	2,59	
05:52:00	0,00	4,56	305	2,74	
05:52:30	0,00	4,59	305	2,68	
05:53:00	0,00	4,59	305	2,65	
05:53:30	0,00	4,53	305	2,59	
05:54:00	0,00	4,56	318	2,62	
05:54:30	0,00	4,65	314	2,74	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
05:55:00	0,00	4,56	305	2,68	
05:55:30	0,00	4,59	305	2,59	
05:56:00	0,00	4,56	305	2,53	
05:56:30	0,00	4,53	305	2,68	
05:57:00	0,00	4,56	305	2,71	
05:57:30	0,00	4,62	308	2,68	
05:58:00	0,00	4,65	310	2,56	
05:58:30	0,00	4,56	305	2,53	
05:59:00	0,00	4,53	305	2,74	
05:59:30	0,00	4,62	318	2,71	
06:00:00	0,00	4,56	308	2,62	
06:00:30	0,00	4,53	305	2,59	
06:01:00	0,00	4,53	305	2,50	
06:01:30	0,00	4,65	314	2,74	
06:02:00	0,00	4,53	305	2,68	
06:02:30	0,00	4,56	305	2,62	
06:03:00	0,00	4,62	318	2,59	
06:03:30	0,00	4,62	308	2,53	
06:04:00	0,00	4,62	318	2,74	
06:04:30	0,00	4,56	305	2,68	
06:06:00	0,00	4,62	305	2,62	
06:06:30	0,00	4,56	308	2,59	
06:06:00	0,00	4,53	305	2,59	
06:06:30	0,00	4,56	305	2,74	
06:07:00	0,00	4,59	305	2,68	
06:07:30	0,00	4,59	305	2,65	
06:08:00	0,00	4,53	305	2,59	
06:08:30	0,00	4,56	318	2,62	
06:09:00	0,00	4,65	314	2,74	
06:09:30	0,00	4,56	305	2,68	
06:10:00	0,00	0,00	0	2,62	
06:10:30	0,00	0,00	0	2,62	
06:11:00	0,00	0,00	0	2,62	

Time hh:mm:ss	Xe Feed Unit Input	Primary Xe Feed Branch	Redundant Xe Feed Branch	Xe Storage Unit 1	Xe Storage Unit 2	Xe Storage Unit 3	Xe Feed Unit	Thruster Unit 4
	Pressure (kgf/cm^2)			Temperature (°C)				
04:21:44	49,76	4,09	4,59	2,8	6,4	3,8	16,3	2,0
04:27:40	49,76	4,20	4,59	2,8	6,4	3,8	16,3	2,0
06:09:44	49,76	4,20	4,59	2,8	6,4	3,8	16,3	2,0

Annex 8. Telemetry data table when operating the T4C1 Thruster on 16/04/00

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
04:23:00	0,00	0,00	0	2,59	
04:23:10	0,00	0,00	0	2,74	
04:23:30	0,00	0,00	0	2,74	
04:24:00	0,00	0,00	0	2,74	
04:24:30	0,00	0,00	0	2,74	
04:25:00	0,00	0,00	0	2,74	
04:25:10	11,80	0,00	320	2,74	
04:25:30	11,60	0,00	320	2,74	
04:26:00	11,80	0,00	322	2,74	
04:26:30	11,80	0,00	320	2,74	
04:27:00	11,70	0,00	320	2,74	
04:27:30	11,60	0,00	320	2,77	
04:27:40	11,60	0,00	322	2,74	
04:27:50	0,00	4,53	305	2,71	
04:28:00	0,00	4,53	310	2,68	
04:28:30	0,00	4,56	305	2,62	
04:29:00	0,00	4,56	305	2,59	
04:29:30	0,00	4,53	305	2,71	
04:30:00	0,00	4,56	310	2,74	
04:30:30	0,00	4,53	305	2,65	
04:31:00	0,00	4,53	305	2,59	
04:31:30	0,00	4,50	305	2,56	
04:32:00	0,00	4,65	310	2,74	
04:32:30	0,00	4,53	305	2,74	
04:33:00	0,00	4,53	308	2,65	
04:33:30	0,00	4,53	308	2,59	
04:34:00	0,00	4,56	310	2,56	
04:34:30	0,00	4,59	318	2,74	
04:35:00	0,00	4,53	305	2,71	
04:35:30	0,00	4,59	310	2,62	
04:36:00	0,00	4,53	308	2,59	
04:36:30	0,00	4,53	310	2,53	
04:37:00	0,00	4,53	305	2,77	
04:37:30	0,00	4,56	305	2,71	
04:38:00	0,00	4,53	305	2,62	
04:38:30	0,00	4,71	308	2,59	
04:39:00	0,00	4,56	310	2,53	
04:39:30	0,00	4,56	310	2,77	
04:40:00	0,00	4,56	308	2,68	
04:40:30	0,00	4,56	308	2,65	
04:41:00	0,00	4,56	318	2,59	
04:41:30	0,00	4,56	308	2,53	
04:42:00	0,00	4,56	310	2,74	
04:42:30	0,00	4,65	308	2,68	
04:43:00	0,00	4,62	305	2,62	
04:43:30	0,00	4,53	305	2,59	
04:44:00	0,00	4,56	308	2,56	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
04:44:30	0,00	4,53	305	2,74	
04:45:00	0,00	4,53	308	2,68	
04:45:30	0,00	4,53	308	2,62	
04:46:00	0,00	4,56	305	2,56	
04:46:30	0,00	4,59	308	2,53	
04:47:00	0,00	4,62	308	2,74	
04:47:30	0,00	4,56	314	2,68	
04:48:00	0,00	4,59	310	2,62	
04:48:30	0,00	4,56	305	2,59	
04:49:00	0,00	4,56	305	2,59	
04:49:30	0,00	4,62	318	2,74	
04:50:00	0,00	4,59	310	2,68	
04:50:30	0,00	4,56	305	2,62	
04:51:00	0,00	4,56	305	2,56	
04:51:30	0,00	4,56	303	2,62	
04:52:00	0,00	4,56	305	2,71	
04:52:30	0,00	4,62	318	2,68	
04:53:00	0,00	4,62	308	2,65	
04:53:30	0,00	4,50	314	2,56	
04:54:00	0,00	4,56	305	2,62	
04:54:30	0,00	4,62	318	2,74	
04:55:00	0,00	4,56	305	2,68	
04:55:30	0,00	4,56	305	2,62	
04:56:00	0,00	4,59	318	2,56	
04:56:30	0,00	4,53	305	2,65	
04:57:00	0,00	4,71	308	2,62	
04:57:30	0,00	4,56	314	2,59	
04:58:00	0,00	4,53	305	2,77	
04:58:30	0,00	4,56	308	2,71	
04:59:00	0,00	4,56	305	2,62	
04:59:30	0,00	4,56	305	2,59	
05:00:00	0,00	4,56	305	2,56	
05:00:30	0,00	4,65	310	2,74	
05:01:00	0,00	4,56	305	2,71	
05:01:30	0,00	4,53	305	2,62	
05:02:00	0,00	4,53	308	2,59	
05:02:30	0,00	4,62	308	2,53	
05:03:00	0,00	4,56	314	2,74	
05:03:30	0,00	4,56	308	2,68	
05:04:00	0,00	4,71	318	2,62	
05:04:30	0,00	4,53	305	2,59	
05:05:00	0,00	4,71	308	2,53	
05:05:30	0,00	4,56	303	2,74	
05:06:00	0,00	4,56	316	2,68	
05:06:30	0,00	4,53	305	2,62	
05:07:00	0,00	4,56	305	2,62	
05:07:30	0,00	4,56	305	2,53	
05:08:00	0,00	4,77	310	2,77	
05:08:30	0,00	4,62	318	2,68	
05:09:00	0,00	4,62	308	2,62	
05:09:30	0,00	4,62	308	2,59	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
05:10:00	0,00	4,62	318	2,53	
05:10:30	0,00	4,53	305	2,74	
05:11:00	0,00	4,71	308	2,68	
05:11:30	0,00	4,53	305	2,59	
05:12:00	0,00	4,56	316	2,59	
05:12:30	0,00	4,53	305	2,53	
05:13:00	0,00	4,65	310	2,77	
05:13:30	0,00	4,56	316	2,68	
05:14:00	0,00	4,56	310	2,62	
05:14:30	0,00	4,65	316	2,59	
05:15:00	0,00	4,53	305	2,56	
05:15:30	0,00	4,59	310	2,77	
05:16:00	0,00	4,56	308	2,65	
05:16:30	0,00	4,71	318	2,62	
05:17:00	0,00	4,56	305	2,62	
05:17:30	0,00	4,56	305	2,59	
05:18:00	0,00	4,53	305	2,74	
05:18:30	0,00	4,56	308	2,68	
05:19:00	0,00	4,59	305	2,62	
05:19:30	0,00	4,56	305	2,56	
05:20:00	0,00	4,56	310	2,59	
05:20:30	0,00	4,59	305	2,77	
05:21:00	0,00	4,53	305	2,68	
05:21:30	0,00	4,56	310	2,62	
05:22:00	0,00	4,56	308	2,59	
05:22:30	0,00	4,59	305	2,59	
05:23:00	0,00	4,56	305	2,74	
05:23:30	0,00	4,56	308	2,68	
05:24:00	0,00	4,56	308	2,62	
05:24:30	0,00	4,59	305	2,59	
05:25:00	0,00	4,56	305	2,53	
05:25:30	0,00	4,59	305	2,74	
05:26:00	0,00	4,77	314	2,68	
05:26:30	0,00	4,59	318	2,62	
05:27:00	0,00	4,62	308	2,56	
05:27:30	0,00	4,56	305	2,68	
05:28:00	0,00	4,53	305	2,77	
05:28:30	0,00	4,53	305	2,68	
05:29:00	0,00	4,59	310	2,59	
05:29:30	0,00	4,62	318	2,56	
05:30:00	0,00	4,65	310	2,71	
05:30:30	0,00	4,65	316	2,71	
05:31:00	0,00	4,65	318	2,68	
05:31:30	0,00	4,56	310	2,59	
05:32:00	0,00	4,56	305	2,53	
05:32:30	0,00	4,65	308	2,65	
05:33:00	0,00	4,53	305	2,74	
05:33:30	0,00	4,56	310	2,68	
05:34:00	0,00	4,56	305	2,62	
05:34:30	0,00	4,56	305	2,53	
05:35:00	0,00	4,56	305	2,68	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
05:35:30	0,00	4,77	314	2,71	
05:36:00	0,00	4,56	305	2,65	
05:36:30	0,00	4,53	308	2,62	
05:37:00	0,00	4,56	308	2,56	
05:37:30	0,00	4,62	318	2,74	
05:38:00	0,00	4,62	318	2,71	
05:38:30	0,00	4,53	308	2,62	
05:39:00	0,00	4,62	308	2,59	
05:39:30	0,00	4,59	305	2,53	
05:40:00	0,00	4,62	308	2,74	
05:40:30	0,00	4,53	305	2,68	
05:41:00	0,00	4,56	308	2,62	
05:41:30	0,00	4,53	303	2,62	
05:42:00	0,00	4,53	305	2,53	
05:42:30	0,00	4,56	305	2,74	
05:43:00	0,00	4,56	316	2,68	
05:43:30	0,00	4,53	305	2,62	
05:44:00	0,00	4,59	305	2,59	
05:44:30	0,00	4,53	305	2,53	
05:45:00	0,00	4,56	305	2,71	
05:45:30	0,00	4,56	305	2,68	
05:46:00	0,00	4,56	305	2,62	
05:46:30	0,00	4,56	305	2,59	
05:47:00	0,00	4,53	310	2,53	
05:47:30	0,00	4,56	308	2,74	
05:48:00	0,00	4,65	308	2,68	
05:48:30	0,00	4,65	310	2,65	
05:49:00	0,00	4,56	305	2,59	
05:49:30	0,00	4,53	305	2,53	
05:50:00	0,00	4,62	318	2,74	
05:50:30	0,00	4,56	305	2,68	
05:51:00	0,00	4,56	308	2,65	
05:51:30	0,00	4,77	314	2,56	
05:52:00	0,00	4,59	318	2,59	
05:52:30	0,00	4,65	310	2,74	
05:53:00	0,00	4,56	316	2,65	
05:53:30	0,00	4,56	305	2,62	
05:54:00	0,00	4,65	305	2,56	
05:54:30	0,00	4,71	308	2,65	
05:55:00	0,00	4,59	318	2,74	
05:55:30	0,00	4,56	310	2,68	
05:56:00	0,00	4,56	305	2,62	
05:56:30	0,00	4,56	305	2,56	
05:57:00	0,00	4,56	305	2,62	
05:57:30	0,00	4,53	305	2,74	
05:58:00	0,00	4,53	305	2,65	
05:58:30	0,00	4,62	318	2,59	
05:59:00	0,00	4,59	318	2,56	
05:59:30	0,00	4,56	308	2,68	
06:00:00	0,00	4,56	305	2,74	
06:00:30	0,00	4,56	314	2,68	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
06:01:00	0,00	4,53	308	2,59	
06:01:30	0,00	4,62	308	2,53	
06:02:00	0,00	4,62	308	2,68	
06:02:30	0,00	4,56	305	2,74	
06:03:00	0,00	4,56	305	2,68	
06:03:30	0,00	4,53	305	2,59	
06:04:00	0,00	4,53	305	2,56	
06:04:30	0,00	4,56	308	2,74	
06:05:00	0,00	4,56	305	2,71	
06:05:30	0,00	4,56	305	2,65	
06:06:00	0,00	4,56	305	2,59	
06:06:30	0,00	4,65	310	2,53	
06:07:00	0,00	4,53	308	2,74	
06:07:30	0,00	4,53	305	2,74	
06:08:00	0,00	4,53	308	2,65	
06:08:30	0,00	4,62	318	2,59	
06:09:00	0,00	4,62	305	2,56	
06:09:30	0,00	4,77	314	2,77	
06:10:00	0,00	4,53	305	2,74	
06:10:30	0,00	4,59	310	2,65	
06:11:00	0,00	4,53	305	2,62	
06:11:30	0,00	4,56	305	2,56	
06:12:00	0,00	4,53	318	2,74	
06:12:30	0,00	4,59	318	2,68	
06:13:00	0,00	4,56	305	2,62	
06:13:30	0,00	4,53	305	2,59	
06:14:00	0,00	4,59	305	2,53	
06:14:30	0,00	4,65	310	2,77	
06:15:00	0,00	4,71	308	2,68	
06:15:30	0,00	4,56	305	2,62	
06:16:00	0,00	4,56	305	2,59	
06:16:30	0,00	4,59	305	2,56	
06:17:00	0,00	4,56	308	2,74	
06:17:30	0,00	4,65	303	2,68	
06:18:00	0,00	4,53	318	2,62	
06:18:30	0,00	4,65	308	2,62	
06:19:00	0,00	4,53	305	2,53	
06:19:30	0,00	4,56	305	2,77	
06:20:00	0,00	4,56	303	2,68	
06:20:30	0,00	4,59	305	2,62	
06:21:00	0,00	4,56	305	2,56	
06:21:30	0,00	4,77	314	2,56	
06:22:00	0,00	4,62	318	2,74	
06:22:30	0,00	4,53	305	2,68	
06:23:00	0,00	4,56	308	2,65	
06:23:30	0,00	4,65	310	2,59	
06:24:00	0,00	4,56	305	2,59	
06:24:30	0,00	4,62	305	2,74	
06:25:00	0,00	4,62	314	2,68	
06:25:30	0,00	4,65	310	2,62	
06:26:00	0,00	4,56	305	2,62	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
06:26:30	0,00	4,56	305	2,59	
06:27:00	0,00	4,53	305	2,74	
06:27:30	0,00	4,56	305	2,68	
06:28:00	0,00	0,00	0,00	2,65	
06:28:30	0,00	0,00	0,00	2,65	
06:29:00	0,00	0,00	0,00	2,65	

Time hh:mm:ss	Xe Feed Unit Input	Primary Xe Feed Branch	Redundant Xe Feed Branch	Xe Storage Unit 1	Xe Storage Unit 2	Xe Storage Unit 3	Xe Feed Unit	Thruster Unit 4
	Pressure (kgf/cm^2)			Temperature (°C)				
04:21:44	49,76	4,59	4,59	1,2	6,9	2,8	16,9	13,4
05:25:46	49,76	4,59	4,59	1,2	6,9	2,8	16,9	16,7
06:21:38	49,76	4,50	4,59	1,2	6,9	2,8	16,9	16,7
06:24:40	49,76	4,44	4,59	1,2	6,9	2,8	16,9	16,7
06:27:40	49,76	4,38	4,59	1,2	6,9	2,8	16,9	20,0

Annex 9. Telemetry data table when operating the T4C1 Thruster on 17/04/00

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
04:18:00	0,00	0,00	0	2,53	
04:18:30	0,00	0,00	0	2,53	
04:19:00	0,00	0,00	0	2,53	
04:19:30	0,00	0,00	0	2,53	
04:20:00	0,00	0,00	0	2,53	
04:20:30	12,00	0,00	320	2,53	
04:21:00	11,80	0,00	320	2,53	
04:21:30	12,00	0,00	320	2,53	
04:22:00	11,80	0,00	320	2,53	
04:22:30	12,00	0,00	322	2,53	
04:23:00	11,90	0,00	320	2,53	
04:23:10	0,00	4,53	310	2,53	
04:23:30	0,00	4,53	310	2,62	
04:24:00	0,00	4,53	308	2,71	
04:24:30	0,00	4,53	305	2,68	
04:25:00	0,00	4,53	308	2,62	
04:25:30	0,00	4,56	305	2,68	
04:26:00	0,00	4,56	308	2,74	
04:26:30	0,00	4,59	318	2,65	
04:27:00	0,00	4,53	305	2,59	
04:27:30	0,00	4,53	310	2,53	
04:28:00	0,00	4,50	308	2,77	
04:28:30	0,00	4,56	305	2,74	
04:29:00	0,00	4,53	308	2,62	
04:29:30	0,00	4,56	305	2,62	
04:30:00	0,00	4,71	308	2,53	
04:30:30	0,00	4,53	305	2,74	
04:31:00	0,00	4,53	308	2,71	
04:31:30	0,00	4,56	308	2,62	
04:32:00	0,00	4,65	318	2,62	
04:32:30	0,00	4,56	303	2,53	
04:33:00	0,00	4,53	305	2,74	
04:33:30	0,00	4,53	305	2,71	
04:34:00	0,00	4,53	308	2,62	
04:34:30	0,00	4,53	305	2,59	
04:35:00	0,00	4,53	308	2,53	
04:35:30	0,00	4,53	305	2,74	
04:36:00	0,00	4,53	305	2,71	
04:36:30	0,00	4,56	308	2,62	
04:37:00	0,00	4,53	305	2,62	
04:37:30	0,00	4,56	308	2,53	
04:38:00	0,00	4,53	305	2,74	
04:38:30	0,00	4,53	308	2,71	
04:39:00	0,00	4,56	308	2,62	
04:39:30	0,00	4,56	305	2,59	
04:40:00	0,00	4,56	308	2,53	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
04:40:30	0,00	4,56	305	2,77	
04:41:00	0,00	4,56	308	2,68	
04:41:30	0,00	4,53	308	2,62	
04:42:00	0,00	4,56	305	2,59	
04:42:30	0,00	4,56	305	2,53	
04:43:00	0,00	4,56	305	2,74	
04:43:30	0,00	4,59	310	2,74	
04:44:00	0,00	4,56	305	2,62	
04:44:30	0,00	4,59	305	2,62	
04:45:00	0,00	4,59	308	2,53	
04:45:30	0,00	4,65	318	2,77	
04:46:00	0,00	4,59	314	2,68	
04:46:30	0,00	4,56	305	2,62	
04:47:00	0,00	4,56	305	2,62	
04:47:30	0,00	4,56	303	2,56	
04:48:00	0,00	4,77	314	2,77	
04:48:30	0,00	4,56	305	2,68	
04:49:00	0,00	4,62	305	2,65	
04:49:30	0,00	4,56	305	2,59	
04:50:00	0,00	4,56	314	2,56	
04:50:30	0,00	4,53	305	2,74	
04:51:00	0,00	4,53	305	2,68	
04:51:30	0,00	4,59	305	2,62	
04:52:00	0,00	4,62	314	2,62	
04:52:30	0,00	4,56	308	2,53	
04:53:00	0,00	4,65	310	2,74	
04:53:30	0,00	4,59	305	2,68	
04:54:00	0,00	4,56	305	2,62	
04:54:30	0,00	4,56	305	2,59	
04:55:00	0,00	4,53	308	2,59	
04:55:30	0,00	4,53	308	2,74	
04:56:00	0,00	4,56	305	2,68	
04:56:30	0,00	4,59	305	2,62	
04:57:00	0,00	4,71	308	2,59	
04:57:30	0,00	4,59	305	2,59	
04:58:00	0,00	4,56	314	2,74	
04:58:30	0,00	4,59	305	2,68	
04:59:00	0,00	4,59	305	2,65	
04:59:30	0,00	4,56	305	2,59	
05:00:00	0,00	4,65	308	2,62	
05:00:30	0,00	4,56	305	2,74	
05:01:00	0,00	4,53	308	2,65	
05:01:30	0,00	4,65	310	2,59	
05:02:00	0,00	4,53	305	2,59	
05:02:30	0,00	4,59	305	2,62	
05:03:00	0,00	4,65	310	2,74	
05:03:30	0,00	4,56	305	2,68	
05:04:00	0,00	4,56	305	2,59	
05:04:30	0,00	4,56	305	2,59	
05:05:00	0,00	4,53	305	2,68	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
05:05:30	0,00	4,59	305	2,74	
05:06:00	0,00	4,62	305	2,68	
05:06:30	0,00	4,56	305	2,59	
05:07:00	0,00	4,53	310	2,53	
05:07:30	0,00	4,56	310	2,68	
05:08:00	0,00	4,77	314	2,71	
05:08:30	0,00	4,56	310	2,68	
05:09:00	0,00	4,56	310	2,59	
05:09:30	0,00	4,56	305	2,53	
05:10:00	0,00	4,59	305	2,68	
05:10:30	0,00	4,62	305	2,74	
05:11:00	0,00	4,53	308	2,65	
05:11:30	0,00	4,59	318	2,59	
05:12:00	0,00	4,59	305	2,56	
05:12:30	0,00	4,56	308	2,71	
05:13:00	0,00	4,56	305	2,74	
05:13:30	0,00	4,53	305	2,65	
05:14:00	0,00	4,56	308	2,62	
05:14:30	0,00	4,59	310	2,56	
05:15:00	0,00	4,53	310	2,71	
05:15:30	0,00	4,56	308	2,74	
05:16:00	0,00	4,56	305	2,65	
05:16:30	0,00	4,59	305	2,59	
05:17:00	0,00	4,56	305	2,56	
05:17:30	0,00	4,56	305	2,74	
05:18:00	0,00	4,53	305	2,74	
05:18:30	0,00	4,65	310	2,62	
05:19:00	0,00	4,56	308	2,59	
05:19:30	0,00	4,56	305	2,56	
05:20:00	0,00	4,59	305	2,77	
05:20:30	0,00	4,56	308	2,68	
05:21:00	0,00	4,65	305	2,62	
05:21:30	0,00	4,56	318	2,59	
05:22:00	0,00	4,53	305	2,53	
05:22:30	0,00	4,56	305	2,74	
05:23:00	0,00	4,65	310	2,68	
05:23:30	0,00	4,59	318	2,62	
05:24:00	0,00	4,59	305	2,59	
05:24:30	0,00	4,59	305	2,53	
05:25:00	0,00	4,59	308	2,74	
05:25:30	0,00	4,56	310	2,71	
05:26:00	0,00	4,56	310	2,62	
05:26:30	0,00	4,56	305	2,59	
05:27:00	0,00	4,59	305	2,59	
05:27:30	0,00	4,56	308	2,71	
05:28:00	0,00	4,56	305	2,68	
05:28:30	0,00	4,56	305	2,62	
05:29:00	0,00	4,77	310	2,59	
05:29:30	0,00	4,53	305	2,59	
05:30:00	0,00	4,56	303	2,74	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
05:30:30	0,00	4,56	305	2,68	
05:31:00	0,00	4,56	308	2,62	
05:31:30	0,00	4,56	303	2,59	
05:32:00	0,00	4,56	314	2,62	
05:32:30	0,00	4,53	305	2,74	
05:33:00	0,00	4,56	308	2,65	
05:33:30	0,00	4,59	305	2,59	
05:34:00	0,00	4,53	308	2,59	
05:34:30	0,00	4,62	318	2,68	
05:35:00	0,00	4,59	318	2,71	
05:35:30	0,00	4,53	303	2,68	
05:36:00	0,00	4,59	310	2,62	
05:36:30	0,00	4,65	305	2,56	
05:37:00	0,00	4,56	305	2,68	
05:37:30	0,00	4,56	305	2,71	
05:38:00	0,00	4,59	305	2,65	
05:38:30	0,00	4,56	305	2,62	
05:39:00	0,00	4,56	316	2,56	
05:39:30	0,00	4,56	305	2,71	
05:40:00	0,00	4,56	305	2,71	
05:40:30	0,00	4,59	305	2,65	
05:41:00	0,00	4,62	318	2,62	
05:41:30	0,00	4,71	318	2,56	
05:42:00	0,00	4,53	305	2,77	
05:42:30	0,00	4,56	305	2,71	
05:43:00	0,00	4,56	305	2,62	
05:43:30	0,00	4,56	308	2,62	
05:44:00	0,00	4,62	318	2,56	
05:44:30	0,00	4,56	308	2,74	
05:45:00	0,00	4,53	303	2,71	
05:45:30	0,00	4,59	310	2,62	
05:46:00	0,00	4,53	305	2,59	
05:46:30	0,00	4,56	308	2,53	
05:47:00	0,00	4,56	305	2,74	
05:47:30	0,00	4,56	305	2,68	
05:48:00	0,00	4,56	305	2,62	
05:48:30	0,00	4,62	305	2,62	
05:49:00	0,00	4,59	305	2,53	
05:49:30	0,00	4,53	305	2,74	
05:50:00	0,00	4,56	308	2,68	
05:50:30	0,00	4,56	308	2,62	
05:51:00	0,00	4,59	305	2,62	
05:51:30	0,00	4,53	305	2,56	
05:52:00	0,00	4,56	310	2,74	
05:52:30	0,00	4,56	305	2,68	
05:53:00	0,00	4,71	308	2,65	
05:53:30	0,00	4,56	305	2,59	
05:54:00	0,00	4,62	314	2,53	
05:54:30	0,00	4,56	305	2,74	
05:55:00	0,00	4,77	310	2,68	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
05:55:30	0,00	4,56	308	2,62	
05:56:00	0,00	4,59	305	2,59	
05:56:30	0,00	4,56	305	2,56	
05:57:00	0,00	4,59	305	2,74	
05:57:30	0,00	4,56	308	2,68	
05:58:00	0,00	4,56	305	2,62	
05:58:30	0,00	4,53	305	2,56	
05:59:00	0,00	4,56	310	2,62	
05:59:30	0,00	4,56	310	2,74	
06:00:00	0,00	4,53	305	2,68	
06:00:30	0,00	4,56	305	2,62	
06:01:00	0,00	4,59	318	2,59	
06:01:30	0,00	4,56	305	2,59	
06:02:00	0,00	4,53	308	2,74	
06:02:30	0,00	4,53	305	2,68	
06:03:00	0,00	4,56	308	2,62	
06:03:30	0,00	4,56	305	2,62	
06:04:00	0,00	4,62	314	2,62	
06:04:30	0,00	4,56	305	2,74	
06:05:00	0,00	4,77	314	2,68	
06:05:30	0,00	4,65	318	2,56	
06:06:00	0,00	4,56	305	2,56	
06:06:30	0,00	4,56	316	2,65	
06:07:00	0,00	4,56	305	2,74	
06:07:30	0,00	4,71	308	2,68	
06:08:00	0,00	4,53	305	2,59	
06:08:30	0,00	4,62	308	2,53	
06:09:00	0,00	4,59	318	2,71	
06:09:30	0,00	4,56	305	2,74	
06:10:00	0,00	4,62	308	2,68	
06:10:30	0,00	4,65	318	2,59	
06:11:00	0,00	4,56	305	2,53	
06:11:30	0,00	4,71	318	2,71	
06:12:00	0,00	4,53	305	2,71	
06:12:30	0,00	4,71	308	2,65	
06:13:00	0,00	4,56	308	2,59	
06:13:30	0,00	4,56	305	2,53	
06:14:00	0,00	4,71	308	2,71	
06:14:30	0,00	4,62	318	2,71	
06:15:00	0,00	4,56	305	2,65	
06:15:30	0,00	4,65	310	2,59	
06:16:00	0,00	4,59	305	2,53	
06:16:30	0,00	4,56	308	2,74	
06:17:00	0,00	4,56	305	2,71	
06:17:30	0,00	4,53	305	2,65	
06:18:00	0,00	4,65	310	2,59	
06:18:30	0,00	4,56	305	2,56	
06:19:00	0,00	4,56	308	2,74	
06:19:30	0,00	4,77	314	2,71	
06:20:00	0,00	4,56	305	2,65	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
06:20:30	0,00	4,53	308	2,62	
06:21:00	0,00	4,65	305	2,53	
06:21:30	0,00	4,59	305	2,74	
06:22:00	0,00	4,65	310	2,71	
06:22:30	0,00	4,65	318	2,65	
06:23:00	0,00	4,62	318	2,62	
06:23:30	0,00	0,00	0,00	2,59	
06:24:00	0,00	0,00	0,00	2,62	
06:24:30	0,00	0,00	0,00	2,59	

Time hh:mm:ss	Xe Feed Unit Input	Primary Xe Feed Branch	Redundant Xe Feed Branch	Xe Storage Unit 1	Xe Storage Unit 2	Xe Storage Unit 3	Xe Feed Unit	Thruster Unit 4
	Pressure (kgf/cm^2)			Temperature (°C)				
04:23:22	49,76	4,38	4,59	1,7	6,4	4,4	17,4	13,4
05:21:24	49,76	4,38	4,59	1,2	6,9	4,4	16,9	16,7
06:11:39	49,76	4,38	4,59	1,2	6,9	4,4	16,9	20,0
06:16:20	49,76	4,17	4,59	1,2	6,9	4,4	16,9	20,0
06:21:30	49,76	4,02	4,59	1,2	6,9	4,4	16,9	20,0

Annex 10. Telemetry data table when operating the T3C1 Thruster on 22/04/00

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
12:35:00	0,00	0,00	0,00	2,53	
12:35:30	0,00	0,00	0,00	2,77	
12:36:00	0,00	0,00	0,00	2,74	
12:36:30	0,00	0,00	0,00	2,74	
12:37:00	0,00	0,00	0,00	2,74	
12:37:20	11,60	0,00	320	2,74	
12:37:30	11,80	0,00	320	2,71	
12:38:00	11,70	0,00	322	2,74	
12:38:30	11,70	0,00	322	2,71	
12:39:00	11,80	0,00	320	2,71	
12:39:30	11,80	0,00	320	2,71	
12:39:50	11,70	0,00	320	2,71	
12:40:00	0,00	4,19	308	2,68	
12:40:30	0,00	4,50	305	2,65	
12:41:00	0,00	4,53	305	2,59	
12:41:30	0,00	4,53	308	2,68	
12:42:00	0,00	4,53	310	2,74	
12:42:30	0,00	4,53	308	2,68	
12:43:00	0,00	4,53	308	2,62	
12:43:30	0,00	4,53	308	2,59	
12:44:00	0,00	4,56	305	2,59	
12:44:30	0,00	4,56	305	2,74	
12:45:00	0,00	4,53	305	2,68	
12:45:30	0,00	4,53	305	2,65	
12:46:00	0,00	4,53	305	2,59	
12:46:30	0,00	4,56	308	2,62	
12:47:00	0,00	4,53	305	2,74	
12:47:30	0,00	4,59	314	2,68	
12:48:00	0,00	4,56	305	2,62	
12:48:30	0,00	4,53	308	2,59	
12:49:00	0,00	4,53	310	2,62	
12:49:30	0,00	4,50	314	2,74	
12:50:00	0,00	4,59	310	2,68	
12:50:30	0,00	4,56	305	2,62	
12:51:00	0,00	4,53	305	2,59	
12:51:30	0,00	4,53	305	2,59	
12:52:00	0,00	4,53	305	2,74	
12:52:30	0,00	4,50	305	2,68	
12:53:00	0,00	4,53	305	2,62	
12:53:30	0,00	4,53	310	2,59	
12:54:00	0,00	4,53	305	2,56	
12:54:30	0,00	4,53	305	2,74	
12:55:00	0,00	4,53	305	2,68	
12:55:30	0,00	4,56	310	2,65	
12:56:00	0,00	4,62	305	2,62	
12:56:30	0,00	4,53	308	2,53	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
12:57:00	0,00	4,65	314	2,74	
12:57:30	0,00	4,56	305	2,71	
12:58:00	0,00	4,53	305	2,62	
12:58:30	0,00	4,56	305	2,62	
12:59:00	0,00	4,50	308	2,62	
12:59:30	0,00	4,53	305	2,74	
13:00:00	0,00	4,56	305	2,68	
13:00:30	0,00	4,53	308	2,62	
13:01:00	0,00	4,53	305	2,56	
13:01:30	0,00	4,62	318	2,56	
13:02:00	0,00	4,56	305	2,74	
13:02:30	0,00	4,53	305	2,68	
13:03:00	0,00	4,53	305	2,62	
13:03:30	0,00	4,53	305	2,62	
13:04:00	0,00	4,65	310	2,53	
13:04:30	0,00	4,56	305	2,77	
13:05:00	0,00	4,62	314	2,68	
13:05:30	0,00	4,65	310	2,62	
13:06:00	0,00	4,53	308	2,59	
13:06:30	0,00	4,53	310	2,65	
13:07:00	0,00	4,53	305	2,74	
13:07:30	0,00	4,56	310	2,68	
13:08:00	0,00	4,56	305	2,62	
13:08:30	0,00	4,50	310	2,56	
13:09:00	0,00	4,53	305	2,59	
13:09:30	0,00	4,56	310	2,74	
13:10:00	0,00	4,56	305	2,65	
13:10:30	0,00	4,62	308	2,62	
13:11:00	0,00	4,65	308	2,59	
13:11:30	0,00	4,53	308	2,56	
13:12:00	0,00	4,56	305	2,74	
13:12:30	0,00	4,53	305	2,68	
13:13:00	0,00	4,62	318	2,65	
13:13:30	0,00	4,53	305	2,59	
13:14:00	0,00	4,50	308	2,53	
13:14:30	0,00	4,53	310	2,74	
13:15:00	0,00	4,56	316	2,71	
13:15:30	0,00	4,56	305	2,62	
13:16:00	0,00	4,71	308	2,56	
13:16:30	0,00	4,56	305	2,53	
13:17:00	0,00	4,77	314	2,74	
13:17:30	0,00	4,53	305	2,71	
13:18:00	0,00	4,53	308	2,65	
13:18:30	0,00	4,53	305	2,59	
13:19:00	0,00	4,56	308	2,56	
13:19:30	0,00	4,53	308	2,74	
13:20:00	0,00	4,56	308	2,71	
13:20:30	0,00	4,53	305	2,65	
13:21:00	0,00	4,53	308	2,59	
13:21:30	0,00	4,56	314	2,53	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
13:22:00	0,00	4,53	305	2,68	
13:22:30	0,00	4,56	305	2,71	
13:23:00	0,00	4,59	310	2,68	
13:23:30	0,00	4,77	310	2,62	
13:24:00	0,00	4,53	305	2,59	
13:24:30	0,00	4,53	305	2,65	
13:25:00	0,00	4,56	316	2,74	
13:25:30	0,00	4,62	314	2,68	
13:26:00	0,00	4,53	305	2,62	
13:26:30	0,00	4,53	310	2,59	
13:27:00	0,00	4,56	305	2,62	
13:27:30	0,00	4,56	308	2,74	
13:28:00	0,00	4,53	308	2,68	
13:28:30	0,00	4,65	314	2,62	
13:29:00	0,00	4,53	305	2,56	
13:29:30	0,00	4,53	308	2,56	
13:30:00	0,00	4,62	318	2,74	
13:30:30	0,00	4,56	305	2,71	
13:31:00	0,00	4,56	308	2,65	
13:31:30	0,00	4,56	305	2,59	
13:32:00	0,00	4,53	305	2,56	
13:32:30	0,00	4,56	308	2,74	
13:33:00	0,00	4,53	308	2,68	
13:33:30	0,00	4,56	308	2,62	
13:34:00	0,00	4,59	310	2,59	
13:34:30	0,00	4,53	305	2,53	
13:35:00	0,00	4,56	305	2,74	
13:35:30	0,00	4,65	318	2,71	
13:36:00	0,00	4,56	305	2,68	
13:36:30	0,00	4,56	308	2,62	
13:37:00	0,00	4,53	308	2,53	
13:37:30	0,00	4,62	314	2,74	
13:38:00	0,00	4,53	305	2,71	
13:38:30	0,00	0,00	0	2,68	
13:39:00	0,00	0,00	0	2,68	
13:39:30	0,00	0,00	0	2,68	
13:40:00	0,00	0,00	0	2,68	

Time hh:mm:ss	Xe Feed Unit Input	Primary Xe Feed Branch	Redundant Xe Feed Branch	Xe Storage Unit 1	Xe Storage Unit 2	Xe Storage Unit 3	Xe Feed Unit	Thruster Unit 3
	Pressure (kgf/cm^2)			Temperature (°C)				
12:22:44	49,76	4,38	4,52	1,7	6,9	3,3	11,6	13,3
13:29:33	49,76	4,30	4,52	1,7	6,9	3,3	11,6	13,3
13:32:13	49,76	4,23	4,52	1,7	6,9	3,3	11,6	13,3
13:37:24	49,76	4,09	4,52	1,7	6,9	3,3	11,6	13,3
13:39:33	49,76	4,09	4,52	1,7	6,9	3,3	11,6	13,3

Annex 11. Telemetry data table when operating the T4C1 Thruster on 04/05/00

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
18:06:00	0,00	0,00	0,00	2,71	
18:06:30	0,00	0,00	0,00	2,71	
18:07:00	0,00	0,00	0,00	2,71	
18:07:30	11,90	0,00	320	2,71	
18:08:00	11,80	0,00	320	2,71	
18:08:30	11,80	0,00	320	2,71	
18:09:00	12,10	0,00	320	2,71	
18:09:30	11,90	0,00	320	2,71	
18:10:00	0,00	4,56	310	2,74	
18:10:30	0,00	4,56	310	2,68	
18:11:00	0,00	4,47	310	2,62	
18:11:30	0,00	4,56	310	2,59	
18:12:00	0,00	4,38	308	2,53	
18:12:30	0,00	4,53	305	2,74	
18:13:00	0,00	4,59	310	2,68	
18:13:30	0,00	4,53	308	2,65	
18:14:00	0,00	4,59	318	2,59	
18:14:30	0,00	4,50	308	2,53	
18:15:00	0,00	4,41	308	2,74	
18:15:30	0,00	4,50	310	2,71	
18:16:00	0,00	4,53	305	2,68	
18:16:30	0,00	4,56	305	2,59	
18:17:00	0,00	4,53	305	2,56	
18:17:30	0,00	4,56	305	2,71	
18:18:00	0,00	4,59	314	2,74	
18:18:30	0,00	4,53	305	2,68	
18:19:00	0,00	4,53	308	2,62	
18:19:30	0,00	4,53	308	2,56	
18:20:00	0,00	4,53	305	2,62	
18:20:30	0,00	4,65	310	2,74	
18:21:00	0,00	4,59	310	2,68	
18:21:30	0,00	4,53	305	2,62	
18:22:00	0,00	4,56	310	2,59	
18:22:30	0,00	4,53	305	2,59	
18:23:00	0,00	4,56	305	2,77	
18:23:30	0,00	4,53	310	2,71	
18:24:00	0,00	4,53	308	2,62	
18:24:30	0,00	4,56	305	2,59	
18:25:00	0,00	0,00	0,00	2,56	
18:25:30	0,00	0,00	0,00	2,56	

Time hh:mm:ss	Xe Feed Unit Input	Primary Xe Feed Branch	Redundant Xe Feed Branch	Xe Storage Unit 1	Xe Storage Unit 2	Xe Storage Unit 3	Xe Feed Unit	Thruster Unit 4
	Pressure (kgf/cm^2)			Temperature (°C)				
18:09:00	48,45	4,38	4,52	1,2	7,0	2,3	9,0	14,7
19:10:00	48,45	4,38	4,52	1,2	7,0	2,3	9,0	14,7

Annex 12. Telemetry data table when operating the RT3C1 Thruster on 05/05/00

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
17:45:00	0,00	0,00	0	2,53	
17:45:30	0,00	0,00	0	2,74	
17:46:30	0,00	0,00	0	2,74	
17:47:00	0,00	0,00	0	2,74	
17:47:30	12,00	0,00	322	2,74	
17:48:00	11,80	0,00	322	2,74	
17:48:30	11,90	0,00	322	2,77	
17:49:00	11,90	0,00	320	2,74	
17:49:30	11,80	0,00	320	2,74	
17:50:00	0,00	4,56	308	2,74	
17:50:30	0,00	4,65	326	2,65	
17:51:00	0,00	4,71	301	2,59	
17:51:30	0,00	4,56	303	2,56	
17:52:00	0,00	4,77	318	2,59	
17:52:30	0,00	4,59	303	2,71	
17:53:00	0,00	4,56	303	2,68	
17:53:30	0,00	4,62	305	2,65	
17:54:00	0,00	4,59	303	2,59	
17:54:30	0,00	4,62	303	2,56	
17:55:00	0,00	4,56	303	2,68	
17:55:30	0,00	4,56	318	2,74	
17:56:00	0,00	4,62	314	2,68	
17:56:30	0,00	4,56	301	2,65	
17:57:00	0,00	4,59	303	2,59	
17:57:30	0,00	4,50	318	2,53	
17:58:00	0,00	4,53	303	2,77	
17:58:30	0,00	4,50	303	2,71	
17:59:00	0,00	4,59	301	2,65	
17:59:30	0,00	4,62	305	2,59	
18:00:00	0,00	4,56	303	2,56	
18:00:30	0,00	4,53	308	2,74	
18:01:00	0,00	4,62	305	2,71	
18:01:30	0,00	4,77	301	2,65	
18:02:00	0,00	4,59	301	2,59	
18:02:30	0,00	4,56	303	2,56	
18:03:00	0,00	4,59	303	2,68	
18:03:30	0,00	4,56	303	2,74	
18:04:00	0,00	4,77	301	2,68	
18:04:30	0,00	4,56	308	2,62	
18:05:00	0,00	0,00	0	2,62	
18:05:30	0,00	0,00	0	2,62	

Time hh:mm:ss	Xe Feed Unit Input	Primary Xe Feed Branch	Redundant Xe Feed Branch	Xe Storage Unit 1	Xe Storage Unit 2	Xe Storage Unit 3	Xe Feed Unit	Thruster Unit 3
	Pressure (kgf/cm^2)			Temperature (°C)				
17:45:00	48,45	4,38	4,52	1,2	7,0	2,8	9,0	13,3
18:10:00	48,45	4,38	4,52	1,2	7,0	2,8	9,0	13,3

Annex 13. Telemetry data table when operating the RT4C1 Thruster on 05/05/00

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
18:11:00	0,00	0,00	0	2,74	
18:11:30	0,00	0,00	0	2,77	
18:12:00	0,00	0,00	0	2,74	
18:12:30	11,80	0,00	320	2,74	
18:13:00	11,90	0,00	320	2,77	
18:13:30	11,90	0,00	320	2,74	
18:14:00	12,00	0,00	322	2,74	
18:14:30	11,80	0,00	320	2,74	
18:14:50	0,00	4,22	308	2,71	
18:15:00	0,00	4,62	308	2,71	
18:15:30	0,00	4,53	308	2,68	
18:16:00	0,00	4,59	301	2,62	
18:16:30	0,00	4,53	303	2,62	
18:17:00	0,00	4,65	301	2,53	
18:17:30	0,00	4,53	305	2,68	
18:18:00	0,00	4,56	303	2,74	
18:18:30	0,00	4,56	318	2,68	
18:19:00	0,00	4,77	310	2,62	
18:19:30	0,00	4,65	301	2,59	
18:20:00	0,00	4,62	305	2,56	
18:20:30	0,00	4,59	303	2,74	
18:21:00	0,00	4,59	303	2,71	
18:21:30	0,00	4,59	303	2,65	
18:22:00	0,00	4,56	303	2,62	
18:22:30	0,00	4,56	308	2,53	
18:23:00	0,00	4,62	316	2,74	
18:23:30	0,00	4,56	303	2,71	
18:24:00	0,00	4,77	318	2,71	
18:24:30	0,00	4,77	318	2,59	
18:25:00	0,00	4,77	303	2,56	
18:25:30	0,00	4,56	303	2,59	
18:26:00	0,00	4,71	305	2,74	
18:26:30	0,00	4,65	305	2,68	
18:27:00	0,00	4,53	326	2,62	
18:27:30	0,00	4,56	303	2,59	
18:28:00	0,00	4,77	305	2,56	
18:28:30	0,00	4,56	303	2,74	
18:29:00	0,00	4,53	303	2,71	
18:29:30	0,00	4,56	310	2,68	
18:30:00	0,00	0,00	0	2,62	
18:30:30	0,00	0,00	0	2,62	

Time hh:mm:ss	**Xe Feed Unit Input**	**Primary Xe Feed Branch**	**Redundant Xe Feed Branch**	**Xe Storage Unit 1**	**Xe Storage Unit 2**	**Xe Storage Unit 3**	**Xe Feed Unit**	**Thruster Unit 4**
	Pressure (kgf/cm^2)			**Temperature (°C)**				
18:15:00	48,45	4,38	4,52	1,2	7,0	2,8	9,0	16,0
18:15:00	48,45	4,38	4,52	1,2	7,0	2,8	9,0	16,0

Annex 14. Telemetry data table when operating the RT3C1 Thruster on 23/05/00

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
12:45:00	0,00	0,00	0	2,65	
12:45:30	0,00	0,00	0	2,68	
12:46:00	0,00	0,00	0	2,68	
12:46:30	0,00	0,00	320	2,68	
12:46:40	11,70	0,00	320	2,68	
12:47:00	11,90	0,00	320	2,68	
12:47:30	11,80	0,00	320	2,68	
12:48:00	11,80	0,00	320	2,68	
12:48:30	11,90	0,00	320	2,65	
12:49:00	11,90	0,00	320	2,68	
12:49:20	0,00	4,62	314	2,62	
12:49:30	0,00	4,50	303	2,62	
12:50:00	0,00	4,44	308	2,59	
12:50:30	0,00	4,62	316	2,59	
12:51:00	0,00	4,50	308	2,65	
12:51:30	0,00	4,56	308	2,62	
12:52:00	0,00	4,59	303	2,59	
12:52:30	0,00	4,56	314	2,68	
12:53:00	0,00	4,59	303	2,65	
12:53:30	0,00	4,53	303	2,59	
12:54:00	0,00	4,62	314	2,68	
12:54:30	0,00	4,56	308	2,62	
12:55:00	0,00	4,59	301	2,59	
12:55:30	0,00	4,53	301	2,68	
12:56:00	0,00	4,59	301	2,65	
12:56:30	0,00	4,56	305	2,56	
12:57:00	0,00	4,59	301	2,68	
12:57:30	0,00	4,56	301	2,62	
12:58:00	0,00	4,56	303	2,59	
12:58:30	0,00	4,59	301	2,68	
12:59:00	0,00	4,59	301	2,62	
12:59:30	0,00	4,56	308	2,59	
13:00:00	0,00	4,59	301	2,68	
13:00:30	0,00	4,65	301	2,68	
13:01:00	0,00	4,77	305	2,59	
13:01:30	0,00	4,59	301	2,59	
13:02:00	0,00	4,71	303	2,68	
13:02:30	0,00	4,65	303	2,62	
13:03:00	0,00	4,65	301	2,59	
13:03:30	0,00	4,59	316	2,74	
13:04:00	0,00	4,59	303	2,68	
13:04:30	0,00	4,62	305	2,62	
13:05:00	0,00	4,56	308	2,59	
13:05:30	0,00	4,59	303	2,56	
13:06:00	0,00	4,71	310	2,74	
13:06:30	0,00	4,56	301	2,68	
13:07:00	0,00	4,56	301	2,65	
13:07:30	0,00	4,56	326	2,62	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
13:08:00	0,00	4,62	303	2,65	
13:08:30	0,00	4,59	301	2,74	
13:09:00	0,00	4,65	301	2,68	
13:09:30	0,00	4,59	308	2,62	
13:10:00	0,00	4,59	308	2,59	
13:10:30	0,00	4,65	301	2,71	
13:11:00	0,00	4,56	301	2,74	
13:11:30	0,00	4,56	301	2,68	
13:12:00	0,00	4,59	308	2,62	
13:12:30	0,00	4,62	310	2,59	
13:13:00	0,00	4,59	301	2,62	
13:13:30	0,00	4,56	301	2,68	
13:14:00	0,00	4,65	301	2,62	
13:14:30	0,00	4,74	310	2,59	
13:15:00	0,00	4,53	301	2,68	
13:15:30	0,00	4,56	301	2,59	
13:16:00	0,00	4,62	310	2,62	
13:16:30	0,00	4,56	301	2,68	
13:17:00	0,00	4,56	303	2,62	
13:17:30	0,00	4,59	301	2,56	
13:18:00	0,00	4,62	314	2,68	
13:18:30	0,00	4,53	301	2,65	
13:19:00	0,00	4,62	303	2,59	
13:19:30	0,00	4,53	301	2,68	
13:20:00	0,00	4,74	310	2,65	
13:20:30	0,00	4,59	308	2,59	
13:21:00	0,00	4,59	301	2,71	
13:21:30	0,00	4,56	308	2,71	
13:22:00	0,00	4,56	301	2,68	
13:22:30	0,00	4,56	301	2,62	
13:23:00	0,00	4,62	308	2,56	
13:23:30	0,00	4,62	301	2,62	
13:24:00	0,00	4,74	310	2,77	
13:24:30	0,00	4,56	301	2,68	
13:25:00	0,00	4,53	301	2,62	
13:25:30	0,00	4,56	310	2,59	
13:26:00	0,00	4,62	301	2,59	
13:26:30	0,00	4,56	301	2,74	
13:27:00	0,00	4,56	301	2,68	
13:27:30	0,00	4,59	301	2,62	
13:28:00	0,00	4,56	303	2,59	
13:28:30	0,00	4,59	308	2,53	
13:29:00	0,00	4,77	301	2,74	
13:29:30	0,00	4,62	310	2,71	
13:30:00	0,00	4,62	303	2,62	
13:30:30	0,00	4,56	301	2,59	
13:31:00	0,00	4,56	314	2,53	
13:31:30	0,00	4,59	301	2,77	
13:32:00	0,00	4,53	308	2,74	
13:32:30	0,00	4,65	301	2,65	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
13:33:00	0,00	4,56	318	2,59	
13:33:30	0,00	4,56	301	2,56	
13:34:00	0,00	4,77	305	2,71	
13:34:30	0,00	4,56	301	2,74	
13:35:00	0,00	4,65	301	2,68	
13:35:30	0,00	4,71	310	2,65	
13:36:00	0,00	4,56	303	2,56	
13:36:30	0,00	4,59	301	2,71	
13:37:00	0,00	4,56	301	2,74	
13:37:30	0,00	4,59	301	2,68	
13:38:00	0,00	4,62	310	2,62	
13:38:30	0,00	4,65	303	2,56	
13:39:00	0,00	4,62	310	2,65	
13:39:30	0,00	4,77	301	2,74	
13:40:00	0,00	4,65	301	2,68	
13:40:30	0,00	4,56	301	2,62	
13:41:00	0,00	4,56	301	2,59	
13:41:30	0,00	4,59	301	2,56	
13:42:00	0,00	4,56	301	2,77	
13:42:30	0,00	4,56	303	2,71	
13:43:00	0,00	4,59	318	2,65	
13:43:30	0,00	4,59	301	2,59	
13:44:00	0,00	4,77	303	2,56	
13:44:30	0,00	4,56	314	2,74	
13:45:00	0,00	4,56	310	2,71	
13:45:30	0,00	4,53	301	2,65	
13:46:00	0,00	4,56	310	2,59	
13:46:30	0,00	4,65	301	2,56	
13:47:00	0,00	4,62	310	2,71	
13:47:30	0,00	4,62	308	2,74	
13:48:00	0,00	4,59	301	2,68	
13:48:30	0,00	4,62	308	2,62	
13:49:00	0,00	4,59	301	2,56	
13:49:30	0,00	4,71	303	2,68	
13:50:00	0,00	4,62	308	2,77	
13:50:30	0,00	4,65	303	2,68	
13:51:00	0,00	4,59	301	2,62	
13:51:30	0,00	4,56	303	2,56	
13:52:00	0,00	4,56	301	2,62	
13:52:30	0,00	4,74	310	2,77	
13:53:00	0,00	4,59	314	2,68	
13:53:30	0,00	4,56	318	2,62	
13:54:00	0,00	4,53	301	2,59	
13:54:30	0,00	4,65	303	2,56	
13:55:00	0,00	4,56	305	2,74	
13:55:30	0,00	4,62	303	2,74	
13:56:00	0,00	4,56	301	2,62	
13:56:30	0,00	4,59	301	2,59	
13:57:00	0,00	4,65	301	2,56	
13:57:30	0,00	4,59	301	2,77	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
13:58:00	0,00	4,56	316	2,71	
13:59:00	0,00	4,56	308	2,62	
13:59:30	0,00	4,56	303	2,53	
14:00:00	0,00	4,56	308	2,74	
14:00:30	0,00	4,56	303	2,74	
14:01:00	0,00	4,62	305	2,68	
14:01:30	0,00	4,56	318	2,59	
14:02:00	0,00	4,62	308	2,59	
14:02:30	0,00	4,59	303	2,68	
14:03:00	0,00	4,62	303	2,74	
14:03:30	0,00	4,65	301	2,68	
14:04:00	0,00	4,56	318	2,65	
14:04:30	0,00	4,53	301	2,59	
14:05:00	0,00	4,59	301	2,62	
14:05:30	0,00	4,59	301	2,77	
14:06:00	0,00	4,56	314	2,68	
14:06:30	0,00	4,56	303	2,62	
14:07:00	0,00	4,62	303	2,59	
14:07:30	0,00	4,53	303	2,56	
14:08:00	0,00	4,65	301	2,74	
14:08:30	0,00	4,59	314	2,71	
14:09:00	0,00	4,56	308	2,65	
14:09:30	0,00	4,56	301	2,59	
14:10:00	0,00	4,56	303	2,56	
14:10:30	0,00	4,59	301	2,74	
14:11:00	0,00	4,56	308	2,71	
14:11:30	0,00	4,62	310	2,65	
14:13:00	0,00	4,53	303	2,74	
14:13:30	0,00	4,65	303	2,74	
14:14:00	0,00	4,59	318	2,68	
14:15:30	0,00	4,59	301	2,62	
14:16:00	0,00	4,56	318	2,74	
14:16:30	0,00	4,59	301	2,65	
14:17:00	0,00	4,59	301	2,62	
14:17:30	0,00	4,56	308	2,56	
14:18:00	0,00	4,56	318	2,62	
14:18:30	0,00	4,53	318	2,77	
14:19:00	0,00	4,56	303	2,68	
14:19:30	0,00	4,56	303	2,62	
14:20:00	0,00	4,65	301	2,62	
14:20:30	0,00	4,56	308	2,59	
14:21:00	0,00	4,62	303	2,77	
14:21:30	0,00	4,56	301	2,68	
14:22:00	0,00	4,65	318	2,65	
14:22:30	0,00	4,53	305	2,59	
14:23:00	0,00	4,56	305	2,56	
14:23:30	0,00	4,56	305	2,71	
14:24:00	0,00	4,56	308	2,71	
14:24:30	0,00	4,56	308	2,68	
14:25:00	0,00	4,59	305	2,62	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
14:25:30	0,00	4,56	305	2,56	
14:26:00	0,00	4,62	303	2,74	
14:26:30	0,00	4,59	305	2,74	
14:27:00	0,00	4,56	308	2,62	
14:27:30	0,00	4,56	308	2,59	
14:28:00	0,00	4,77	314	2,56	
14:28:30	0,00	4,62	308	2,74	
14:29:00	0,00	4,71	308	2,74	
14:29:30	0,00	4,56	308	2,62	
14:30:00	0,00	4,53	305	2,62	
14:30:30	0,00	4,56	305	2,53	
14:31:00	0,00	4,53	305	2,74	
14:31:30	0,00	4,77	314	2,71	
14:32:00	0,00	4,56	305	2,65	
14:32:30	0,00	4,56	305	2,59	
14:33:00	0,00	4,56	308	2,53	
14:33:30	0,00	4,56	310	2,74	
14:34:00	0,00	4,56	303	2,71	
14:34:30	0,00	4,56	310	2,62	
14:35:00	0,00	4,56	305	2,59	
14:35:30	0,00	4,53	303	2,53	
14:36:00	0,00	4,56	310	2,74	
14:36:30	0,00	4,65	314	2,68	
14:37:00	0,00	4,62	308	2,62	
14:37:30	0,00	4,56	305	2,62	
14:38:00	0,00	4,53	305	2,56	
14:38:30	0,00	4,56	305	2,74	
14:39:00	0,00	4,56	314	2,68	
14:39:30	0,00	4,56	305	2,62	
14:40:00	0,00	4,59	305	2,59	
14:40:30	0,00	4,53	305	2,53	
14:41:00	0,00	4,56	310	2,74	
14:41:30	0,00	4,59	305	2,68	
14:42:00	0,00	4,56	318	2,62	
14:42:30	0,00	4,65	310	2,59	
14:43:00	0,00	4,53	305	2,56	
14:43:30	0,00	4,53	305	2,74	
14:44:00	0,00	4,56	305	2,68	
14:44:30	0,00	4,53	305	2,62	
14:45:00	0,00	4,65	308	2,59	
14:45:30	0,00	4,56	308	2,53	
14:46:00	0,00	4,65	314	2,74	
14:46:30	0,00	4,59	305	2,68	
14:47:00	0,00	4,71	318	2,65	
14:47:30	0,00	4,62	308	2,56	
14:48:00	0,00	4,59	305	2,59	
14:48:30	0,00	4,56	314	2,74	
14:49:00	0,00	4,65	318	2,65	
14:49:30	0,00	0,00	0	2,62	
14:50:00	0,00	0,00	0	2,62	

Time hh:mm:ss	Xe Feed Unit Input	Primary Xe Feed Branch	Redundant Xe Feed Branch	Xe Storage Unit 1	Xe Storage Unit 2	Xe Storage Unit 3	Xe Feed Unit	Thruster Unit 3
	Pressure (kgf/cm^2)			Temperature (°C)				
12:45:00	48,45	4,16	4,45	0,7	6,4	3,3	9,5	18,3
13:40:00	48,45	4,16	4,45	0,7	6,4	3,3	6,9	21,3
14:43:10	48,45	4,11	4,45	0,7	6,4	3,3	6,9	21,3
14:47:40	48,45	3,98	4,45	0,7	6,4	3,3	6,9	21,3

Annex 15. Telemetry data table when operating the RT3C1 Thruster on 08/06/00

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
10:36:00	0,00	0,00	0	2,68	
10:36:30	0,00	0,00	0	2,68	
10:37:00	0,00	0,00	0	2,68	
10:37:30	0,00	0,00	0	2,68	
10:38:00	0,00	0,00	0	2,68	
10:38:10	0,00	0,00	0	2,68	
10:38:20	12,00	0,00	322	2,68	
10:38:30	11,90	0,00	322	2,68	
10:39:00	12,00	0,00	320	2,68	
10:39:30	11,70	0,00	322	2,68	
10:40:00	11,90	0,00	320	2,68	
10:40:30	11,90	0,00	320	2,68	
10:41:00	0,00	4,16	303	2,68	
10:41:30	0,00	4,65	318	2,62	
10:42:00	0,00	4,77	303	2,59	
10:42:30	0,00	4,77	303	2,59	
10:43:00	0,00	4,77	303	2,59	
10:43:30	0,00	4,77	303	2,59	
10:44:00	0,00	4,59	308	2,59	
10:44:30	0,00	4,62	305	2,59	
10:45:00	0,00	4,77	316	2,65	
10:45:30	0,00	4,56	305	2,65	
10:46:00	0,00	4,59	305	2,62	
10:46:30	0,00	4,56	305	2,68	
10:47:00	0,00	4,56	308	2,62	
10:47:30	0,00	4,56	310	2,59	
10:48:00	0,00	4,59	305	2,68	
10:48:30	0,00	4,59	310	2,59	
10:49:00	0,00	4,56	305	2,62	
10:49:30	0,00	4,56	305	2,65	
10:50:00	0,00	4,56	310	2,59	
10:50:30	0,00	4,59	305	2,68	
10:51:00	0,00	4,59	305	2,62	
10:51:30	0,00	4,65	305	2,59	
10:52:00	0,00	4,62	305	2,68	
10:52:30	0,00	4,56	305	2,62	
10:53:00	0,00	4,62	305	2,56	
10:53:30	0,00	4,56	305	2,74	
10:54:00	0,00	4,65	305	2,68	
10:54:30	0,00	4,56	308	2,62	
10:55:00	0,00	4,65	305	2,56	
10:55:30	0,00	4,62	305	2,59	
10:56:00	0,00	4,65	305	2,74	
10:56:30	0,00	4,59	305	2,71	
10:57:00	0,00	4,56	310	2,62	
10:57:30	0,00	4,59	305	2,62	
10:58:00	0,00	4,71	318	2,53	
10:58:30	0,00	4,53	308	2,74	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
10:59:00	0,00	4,56	314	2,74	
10:59:30	0,00	4,53	314	2,65	
11:00:00	0,00	4,53	305	2,59	
11:00:30	0,00	4,47	314	2,56	
11:01:00	0,00	4,50	314	2,74	
11:01:30	0,00	4,53	305	2,74	
11:02:00	0,00	4,47	303	2,68	
11:02:30	0,00	4,44	303	2,65	
11:03:00	0,00	4,44	308	2,56	
11:03:30	0,00	4,65	305	2,74	
11:04:00	0,00	4,44	305	2,71	
11:04:30	0,00	4,68	318	2,68	
11:05:00	0,00	4,38	318	2,59	
11:05:30	0,00	4,50	303	2,53	
11:06:00	0,00	4,35	305	2,68	
11:06:30	0,00	4,41	305	2,65	
11:07:00	0,00	4,28	316	2,56	
11:07:30	0,00	4,38	305	2,68	
11:08:00	0,00	4,38	303	2,62	
11:08:30	0,00	4,50	303	2,71	
11:09:00	0,00	4,53	305	2,71	
11:09:30	0,00	4,38	308	2,68	
11:10:00	0,00	4,38	310	2,62	
11:10:30	0,00	4,38	318	2,74	
11:11:00	0,00	4,59	305	2,71	
11:11:30	0,00	4,32	308	2,68	
11:12:00	0,00	4,35	305	2,62	
11:12:30	0,00	4,35	303	2,59	
11:13:00	0,00	4,38	305	2,77	
11:13:30	0,00	4,38	305	2,74	
11:14:00	0,00	4,35	310	2,65	
11:14:30	0,00	4,35	305	2,59	
11:15:00	0,00	4,53	305	2,53	
11:15:30	0,00	4,35	305	2,68	
11:16:00	0,00	4,44	305	2,74	
11:16:30	0,00	4,41	303	2,68	
11:17:00	0,00	4,50	305	2,62	
11:17:30	0,00	4,35	305	2,62	
11:18:00	0,00	4,65	305	2,53	
11:18:30	0,00	4,38	303	2,77	
11:19:00	0,00	4,44	308	2,71	
11:19:30	0,00	4,38	305	2,65	
11:20:00	0,00	4,90	316	2,62	
11:20:30	0,00	4,38	305	2,65	
11:21:00	0,00	4,50	318	2,65	
11:21:30	0,00	4,38	305	2,59	
11:22:00	0,00	4,35	305	2,68	
11:22:30	0,00	4,32	305	2,62	
11:23:00	0,00	4,47	308	2,62	
11:23:30	0,00	4,50	318	2,68	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
11:24:00	0,00	4,47	308	2,62	
11:24:30	0,00	4,38	303	2,62	
11:25:00	0,00	4,47	310	2,68	
11:25:30	0,00	4,38	305	2,65	
11:26:00	0,00	4,38	308	2,59	
11:26:30	0,00	4,50	305	2,62	
11:27:00	0,00	4,50	305	2,65	
11:27:30	0,00	4,41	305	2,62	
11:28:00	0,00	4,53	305	2,68	
11:28:30	0,00	4,44	305	2,62	
11:29:00	0,00	4,47	305	2,59	
11:29:30	0,00	4,47	308	2,68	
11:30:00	0,00	4,56	308	2,62	
11:30:30	0,00	4,35	305	2,62	
11:31:00	0,00	4,38	305	2,68	
11:31:30	0,00	4,38	310	2,62	
11:32:00	0,00	4,47	305	2,56	
11:32:30	0,00	4,35	308	2,68	
11:33:00	0,00	4,32	305	2,62	
11:33:30	0,00	4,41	314	2,59	
11:34:00	0,00	4,32	305	2,62	
11:34:30	0,00	4,41	310	2,59	
11:35:00	0,00	4,28	308	2,68	
11:35:30	0,00	4,53	305	2,62	
11:36:00	0,00	4,38	305	2,59	
11:36:30	0,00	4,50	305	2,68	
11:37:00	0,00	4,28	308	2,62	
11:37:30	0,00	4,32	305	2,56	
11:38:00	0,00	4,38	305	2,68	
11:38:30	0,00	4,35	310	2,62	
11:39:00	0,00	4,50	310	2,59	
11:39:30	0,00	4,35	305	2,68	
11:40:00	0,00	0,00	305	2,65	
11:40:30	0,00	0,00	0	2,62	
11:41:00	0,00	0,00	0	2,59	

Time hh:mm:ss	Xe Feed Unit Input	Primary Xe Feed Branch	Redundant Xe Feed Branch	Xe Storage Unit 1	Xe Storage Unit 2	Xe Storage Unit 3	Xe Feed Unit	Thruster Unit 3
	Pressure (kgf/cm^2)			Temperature (°C)				
10:31:00	51,00	4,31	4,45	1,2	7,5	3,8	12,7	19,3
11:34:34	51,00	4,04	4,45	1,2	7,5	3,8	12,7	19,3
11:37:32	51,00	3,91	4,45	1,2	7,5	3,8	12,7	19,3

Annex 16. Telemetry data table when operating the RT3C1 Thruster on 11/06/00

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
10:25:00	0,00	0,00	0	2,53	
10:25:30	0,00	0,00	0	2,53	
10:26:00	0,00	0,00	0	2,53	
10:26:30	0,00	0,00	0	2,53	
10:26:40	0,00	0,00	0	2,53	
10:26:50	12,00	0,00	320	2,53	
10:27:00	11,80	0,00	320	2,53	
10:27:30	11,80	0,00	320	2,53	
10:28:00	11,90	0,00	320	2,53	
10:28:30	11,90	0,00	320	2,53	
10:29:00	12,00	0,00	320	2,53	
10:29:30	0,00	4,53	310	2,65	
10:30:00	0,00	4,56	318	2,59	
10:30:30	0,00	4,77	303	2,53	
10:31:00	0,00	4,53	301	2,68	
10:31:30	0,00	4,56	303	2,65	
10:32:00	0,00	4,77	303	2,59	
10:32:30	0,00	4,62	318	2,68	
10:33:00	0,00	4,59	301	2,62	
10:33:30	0,00	4,77	303	2,59	
10:34:00	0,00	4,77	301	2,68	
10:34:30	0,00	4,59	318	2,62	
10:35:00	0,00	4,65	308	2,59	
10:35:30	0,00	4,56	303	2,65	
10:36:00	0,00	4,59	303	2,59	
10:36:30	0,00	4,56	303	2,53	
10:37:00	0,00	4,59	318	2,68	
10:37:30	0,00	4,56	314	2,59	
10:38:00	0,00	4,62	314	2,59	
10:38:30	0,00	4,56	303	2,62	
10:39:00	0,00	4,62	303	2,62	
10:39:30	0,00	4,59	303	2,65	
10:40:00	0,00	4,77	301	2,62	
10:40:30	0,00	4,59	303	2,53	
10:41:00	0,00	4,56	301	2,65	
10:41:30	0,00	4,53	318	2,62	
10:42:00	0,00	4,56	308	2,68	
10:42:30	0,00	4,71	303	2,62	
10:43:00	0,00	4,65	303	2,59	
10:43:30	0,00	4,59	303	2,68	
10:44:00	0,00	4,65	318	2,62	
10:44:30	0,00	4,56	314	2,56	
10:45:00	0,00	4,59	314	2,68	
10:45:30	0,00	4,65	303	2,59	
10:46:00	0,00	4,59	303	2,53	
10:46:30	0,00	4,56	303	2,68	
10:47:00	0,00	4,59	303	2,59	
10:47:30	0,00	4,77	301	2,62	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
10:48:00	0,00	4,56	301	2,65	
10:48:30	0,00	4,56	301	2,62	
10:49:00	0,00	4,56	301	2,62	
10:49:30	0,00	4,59	301	2,62	
10:50:00	0,00	4,65	301	2,59	
10:50:30	0,00	4,59	301	2,65	
10:51:00	0,00	4,53	301	2,62	
10:51:30	0,00	4,59	303	2,59	
10:52:00	0,00	4,62	30	2,68	
10:52:30	0,00	4,56	308	2,62	
10:53:00	0,00	4,53	301	2,56	
10:53:30	0,00	4,50	301	2,68	
10:54:00	0,00	4,53	301	2,62	
10:54:30	0,00	4,50	301	2,56	
10:55:00	0,00	4,56	301	2,68	
10:56:30	0,00	4,53	301	2,62	
10:57:00	0,00	4,53	301	2,53	
10:57:30	0,00	4,53	303	2,74	
10:58:00	0,00	4,50	301	2,68	
10:58:30	0,00	4,53	301	2,62	
10:59:00	0,00	4,50	301	2,59	
10:59:30	0,00	4,53	308	2,59	
11:00:00	0,00	4,56	301	2,77	
11:00:30	0,00	4,59	303	2,68	
11:01:00	0,00	4,62	301	2,62	
11:01:30	0,00	4,62	308	2,59	
11:02:00	0,00	4,59	308	2,62	
11:02:30	0,00	4,56	305	2,74	
11:03:00	0,00	4,56	305	2,68	
11:03:30	0,00	4,56	303	2,62	
11:04:00	0,00	4,56	303	2,59	
11:04:30	0,00	4,59	301	2,74	
11:05:00	0,00	4,53	303	2,74	
11:05:30	0,00	4,53	308	2,68	
11:06:00	0,00	4,77	303	2,62	
11:06:30	0,00	4,53	301	2,56	
11:07:00	0,00	4,71	308	2,74	
11:07:30	0,00	4,56	301	2,71	
11:08:00	0,00	4,56	301	2,65	
11:08:30	0,00	4,62	301	2,62	
11:09:00	0,00	4,56	301	2,62	
11:09:30	0,00	4,53	303	2,77	
11:10:00	0,00	4,56	303	2,68	
11:10:30	0,00	4,65	301	2,62	
11:11:00	0,00	4,56	303	2,59	
11:11:30	0,00	4,65	301	2,71	
11:12:00	0,00	4,56	305	2,74	
11:12:30	0,00	4,56	308	2,68	
11:13:00	0,00	4,56	310	2,62	
11:13:30	0,00	4,59	303	2,59	

Time, hh:mm:ss	Cathode Current, A	Anode Current, A	Anode Voltage, V	Xe Feed Unit Output, (kgf/sm^2)	Comments
11:14:00	0,00	4,59	303	2,62	
11:14:30	0,00	4,56	308	2,77	
11:15:00	0,00	4,56	314	2,68	
11:15:30	0,00	4,56	308	2,62	
11:16:00	0,00	4,65	303	2,62	
11:16:30	0,00	4,59	310	2,53	
11:17:00	0,00	4,74	310	2,74	
11:17:30	0,00	4,59	303	2,71	
11:18:00	0,00	4,59	303	2,65	
11:18:30	0,00	4,62	318	2,59	
11:19:00	0,00	4,62	303	2,56	
11:19:30	0,00	4,62	301	2,74	
11:20:00	0,00	4,59	310	2,74	
11:20:30	0,00	4,62	301	2,68	
11:21:00	0,00	4,56	303	2,62	
11:21:30	0,00	4,59	303	2,59	
11:22:00	0,00	4,62	303	2,65	
11:22:30	0,00	4,56	301	2,74	
11:23:00	0,00	4,56	301	2,68	
11:23:30	0,00	4,62	301	2,62	
11:24:00	0,00	4,59	301	2,59	
11:24:30	0,00	4,56	301	2,53	
11:25:00	0,00	4,62	301	2,74	
11:25:30	0,00	4,56	301	2,71	
11:26:00	0,00	4,56	301	2,62	
11:26:30	0,00	4,65	303	2,59	
11:27:00	0,00	4,56	303	2,56	
11:27:30	0,00	4,59	303	2,74	
11:28:00	0,00	4,56	318	2,71	
11:28:30	0,00	0,00	0	2,71	
11:29:00	0,00	0,00	0	2,71	
11:29:30	0,00	0,00	0	2,71	

Time hh:mm:ss	Xe Feed Unit Input	Primary Xe Feed Branch	Redundant Xe Feed Branch	Xe Storage Unit 1	Xe Storage Unit 2	Xe Storage Unit 3	Xe Feed Unit	Thruster Unit 3
	Pressure (kgf/cm^2)			Temperature (°C)				
10:29:30	51,00	4,31	4,45	1,2	7,5	3,8	12,7	19,3
11:21:16	51,00	4,23	4,45	1,2	7,5	3,8	12,7	19,3
11:27:30	51,00	4,09	4,45	1,2	7,5	3,8	12,7	19,3

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6. AUTHOR(S)

N. Sitnikova, D. Volkov, I. Maximov, V. Petrusevich, and D. Allen

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Nauchno-Proizvodstvennoe Obiedinenie Prikladnoi Mekhaniki (NPO PM)
52 Lenin Street, Zheleznogorsk-2
Krasnoyarsk region, 662990, Russia

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N. Sitnikova, D. Volkov, I. Maximov, and V. Petrusevich, Nauchno-Proizvodstvennoe Obiedinenie Prikladnoi (NPO PM) 52 Lenin Street, Zheleznogorsk-2, Mekhaniki, Krasnoyarsk region, 662990, Russia. D. Allen, Schafer Corporation, 321 Billerca Road, Chelmsford, Massachusetts 01824–4191. Project Manager, John Dunning, Power and Propulsion Office, NASA Glenn Research Center, organization code 6900, 216–433–5298.

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13. ABSTRACT ***(Maximum 200 words)***

This 12-part report documents the data obtained from various sensor measurements taken aboard the Russian Express-A2 and Express-A3 spacecraft in Geosynchronous Earth Orbit (GEO). These GEO communications satellites, which were designed and built by NPO Prikladnoy Mekhaniki (NPO PM) of Zheleznogorsk, Russia, utilize Hall thruster propulsion systems for north-south and east-west stationkeeping and as of June 2002, were still operating at 80° E. and 11° W., respectively. Express-A2 was launched on March 12, 2000, while Express-A3 was launched on June 24, 2000. The diagnostic equipment from which these data were taken includes electric field strength sensors, ion current and energy sensors, and pressure sensors. The diagnostics and the Hall thruster propulsion systems are described in detail along with lists of tabular data from those diagnostics and propulsion system and other satellite systems. Space Power, Inc., now part of Pratt & Whitney's Chemical Systems Division, under contract NAS3–99151 to the NASA Glenn Research Center, obtained these data over several periods from March 12, 2000, through September 30, 2001. Each of the 12 individual reports describe, in detail, the propulsion systems as well as the diagnostic sensors utilized. Finally, parts 11 and 12 include the requirements to which NPO PM prepared and delivered these data.

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