European Space Agency
Science Operations Department
Solar System Science Operations Division

ROSETTA

Payload Boresight Alignment Details

RO-EST-TN-3305

Issue 2, Revision h
30 Nov 2015

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CHANGE RECORD SHEET

Date	Iss.	Rev.	Sec.	Description/Authority	CR No.
04FEB05	1	0	All	Initial Release	
24FEB05	1	1	DL 2	Assed person to distribution list. Added FOVs.	
25FEB05	1	2	2	Implemented corrections by experimenters: SR-NAC/WAC boresight, AL slit shape, VR-M/H slit shape, MR sub-mm/mm beam FOV.	
17MAR05	1	3	2	Added graphs of boresights and FOVs.	
21MAR05	1	4	2	Corrected y offset of MR mm beam.	
05APR05	1	5	2	Added AL-MR cooperation boresight. Changed colours in figures in order to facilitate distinction.	
22SEP06	2	–	2 2 Fig. 1 Fig. 2 All	AL Boresight: Split into 3 boresights Narrow Center, Wide Top and Wide Bottom. Modified narrow center offset from Zs/c along Xs/c axis. Added notes on dark current 'blob' for SR-NAC. Updated and added note. +Zs/c now points into the page. Updated and added note. +Zs/c now points into the page. Editorials.	
15JAN07	2	a	2, Fig. 1&2	Included VR-H boresight that was determined during PC4.	
31MAY07	2	b	2, Fig. 1&2	Improved VR-H boresight after more accurate calculation, ref. VIR-IAS-TR-010_Issue_1.doc. Also corrected slit orientation of VR-H.	
18JAN08	2	c	2, 3,Fig 1 & 2,	Improved VR-H and AL boresights. Changed naming convention for ALICE boresights. Added table with information about which version of this TN is used for which mission phase (new Sect. 3). Changed source of SR boresights.	
23FEB09	2	d	2, 3, Fig. 1	Update of AL boresight definition	
23 Feb 09	2	e	Fig. 1, 3	Correct error in Fig. 1 from previous version	
22 Jan 2014	2	f	Fig 2	Added NAV cooperative boresight “Nadir_Nav_Boresight”. Updated Fig 2 accordingly	
21 Jul 2014	2	g	Tab 1, Fig 2	Updated AL boresight (email from A.Steffl on 20/06/2014 6:21 PM) and VIR-M boresight (email from F.Tosi on	

Date	Iss.	Rev.	Sec.	Description/Authority	CR No.
				17/07/2014 12:49 PM)	
30 Nov 2015	2	h		Updated NAVCAM boresight (Mail by Sabine Kielbassa (FD) on 26 November 2015)	

Issue to issue revisions are indicated by a vertical bar at the outside border.

DISTRIBUTION LIST

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TABLE OF CONTENTS

1. General Remarks

1.1 Scope

This technical note provides the boresight details of relevant payload instruments on Rosetta.

1.2 Applicable Documents

AD01 RO-ESC-IF-5005_3_-_Science_Operations_Interface_Agreement_SOIA_2006Jan31

1.3 Reference Documents

RD01 Rosetta Project Glossary, RO-EST-LI-5012, http://www.rssd.esa.int/index.php?project=ROSETTA&page=glossary

RD02 rfddb_V10B_Ac97_31_Mar_2004.mdb

RD03 email from C.Vallat on 18/12/2013 12:13 PM “Rosetta: New cooperative boresight for checking before submission to FD”

RD04 email from A. Steffl on 20/06/2014 1:02 AM “Alice pointing change”

RD05 email from F. Tosi on 16/07/2014 12:49 PM “Updated values for the VIRTIS-M boresights”

2. Instrument Boresight Data

No	Instrument	Offset from Zs/c along Xs/c (deg)	Offset from Zs/c along Ys/c (deg)	Description	Source
1a	Alice Narrow Center	+0.062	-0.107	FOV: Slit aligned with its long axis parallel to Xs/c, 5.53 deg long. Slit is made up of three parts with a wide top, a narrow middle and a wide bottom. The Alice Narrow Center is 2 deg long and 0.05 deg wide.	AL
1b	Alice -X Wide Bottom	-1.917	-0.126	FOV: Slit aligned with its long axis parallel to Xs/c, 5.53 deg long. Slit is made up of three parts with a wide top, a narrow middle and a wide bottom. The Alice Wide Bottom is 2 deg long and 0.1 deg wide	AL
1c	Alice +X Wide Top	+1.995	-0.113	FOV: Slit aligned with its long axis parallel to Xs/c, 5.53 deg long. Slit is made up of three parts with a wide top, a narrow middle and a wide bottom. The Alice Wide Top is 1.53 deg long and 0.1 deg wide.	AL
2a	MIRO	-0.082	-0.0067	Sub-millimeter Beam. Circular gaussian shaped beam with full width at half power (HPBW) = 0.125 deg.	MR
2b	MIRO	-0.018	-0.057	Millimeter Beam. Circular gaussian shaped beam with HPBW = 0.395 deg.	MR
3	OSIRIS NAC	-0.027	0.013	FOV: 2.18 deg × 2.18 deg. Note: SR have identified dark current 'blob' on the NAC CCD. Current solution is to use WAC boresight for NAC ops when appropriate.	SR
4	OSIRIS WAC	0.351	0.0871	FOV: 12.0 deg × 12.1 deg.	SR
5a	VIRTIS - M (GND)	0.05685	-0.005121		FDDB (RD02)
5bi	VIRTIS – M-IR	-0.071619724	-0.025926340	FOV: Slit aligned with its long axis parallel to Ys/c, 3.7 deg long, 0.014 deg wide. Scan field 3.7 deg along Xs/c.	VR
5bii	VIRTIS-M-VIS	-0.071619724	+0.032945073	FOV: Slit aligned with its long axis parallel to Ys/c, 3.7 deg long, 0.014 deg wide. Scan field 3.7 deg along Xs/c.	VR
6a	VIRTIS - H (GND)	-0.2667	0.08333		VR
6b	VIRTIS - H (FLT)	-0.0936	0.0027	FOV: Slit aligned with its long axis parallel to Ys/c, 0.100 deg long, 0.0334 deg wide.	VR
7	NAVCAM 1	-0.03347	-0.17923		Mail by

					Sabine Kielbassa (FD) on 26 November 2015
8	**NAVCAM 2**	**0.00663**	**0.12022**		**Mail by Sabine Kielbassa (FD) on 26 November 2015**
9	**AL-MR CO-OPERATION**	**-0.082**	**-0.098**	**Combination of AL slit and MR SMM beam. x-offset from MR SMM beam, y-offset from AL slit. Note: This boresight lies on the SR dark current 'blob' on the NAC CCD.**	**DI**
10	**NADIR_NAV_BORESIGHT**	**-0.052**	**-0.098**	**Combination of AL slit and MR MM beam to ride-along during MNAV slot (nadir pointing) during pre-landing phase. Shifted w.r.t to AL-MR-COOPERATION to avoid SR dark current 'blob'**	**DI**

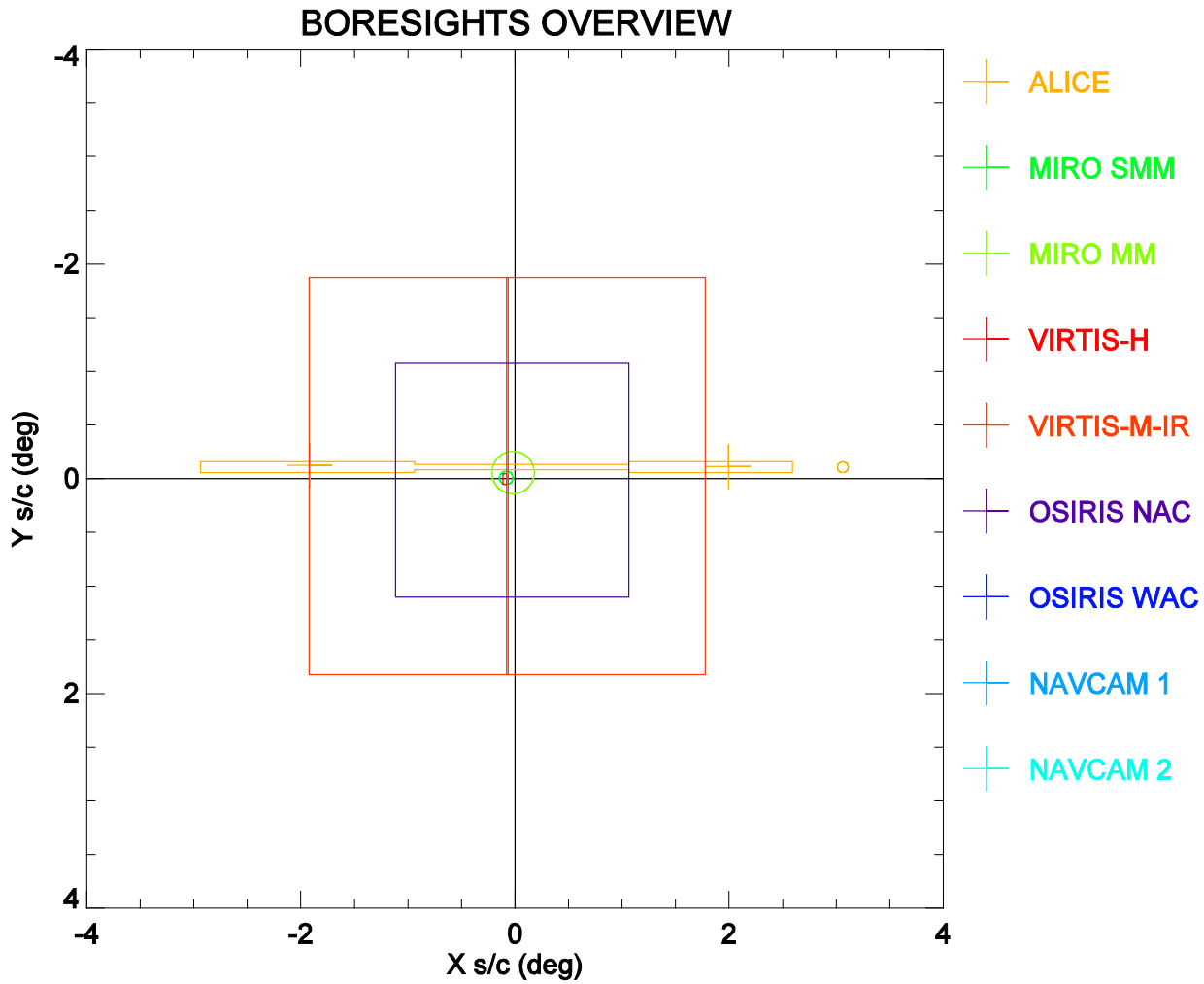

Figure 1: Overview of instrument boresights and FOVs. +Zs/c points into the page, +Xs/c points to the right, and +Ys/c points down.

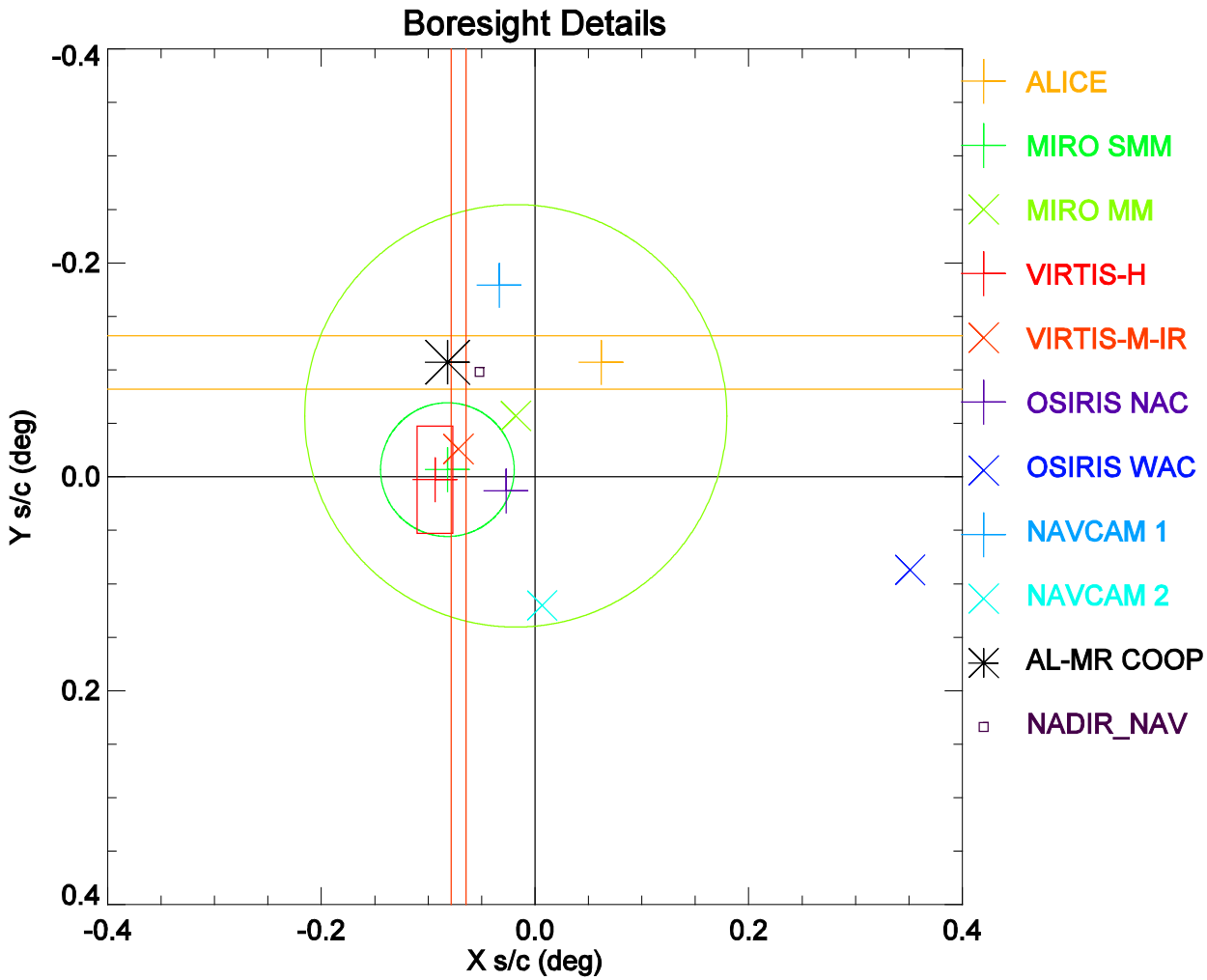

Figure 2: Detail of instrument boresights and FOVs. +Zs/c points into the page, +Xs/c points to the right, and +Ys/c points down.

3. Versions of this document used during the Rosetta mission

Mission phase	Date	Version of RO-EST-TN-3305 used, Iss./Rev.
Earth Swingby 1	**Feb. – March 2005**	**1/0**
Deep Impact Observations	**June – July 2005**	**1/5**
PC 4	**Nov. – Dec. 2006**	**1/5**
Mars Swingby and Jupiter Observations	**Feb. – May 2007**	**2/a**
PC 6	**Sep. – Oct. 2007**	**2/b**
Earth Swingby 2	**Nov. 2007**	**2/b**
PC 8	**July 2008**	**2/c**
Asteroid Steins flyby	**Sep. 2008**	**2/c**
PC 10	**Sep. 2009**	**2/e**
Earth Swingby 3	**Nov. 2009**	**2/e**
Comet phase (up to MTP006)	**Jan 2014**	**2/f**
Comet phase (from MTP007 for AL boresight, from MTP008* for VIRTIS-M_IR boresight)	**Jul 2014**	**2/g**
From MTP018 (Jul 2015) for archive data product generation	**Jul 2015**	**2/h**

**: New VR-M boresight values are based on measurements made during MTP004/MTP006*
Later mission phases use the latest version of this document (Iss. 2, Rev. g) until a new revision is distributed.