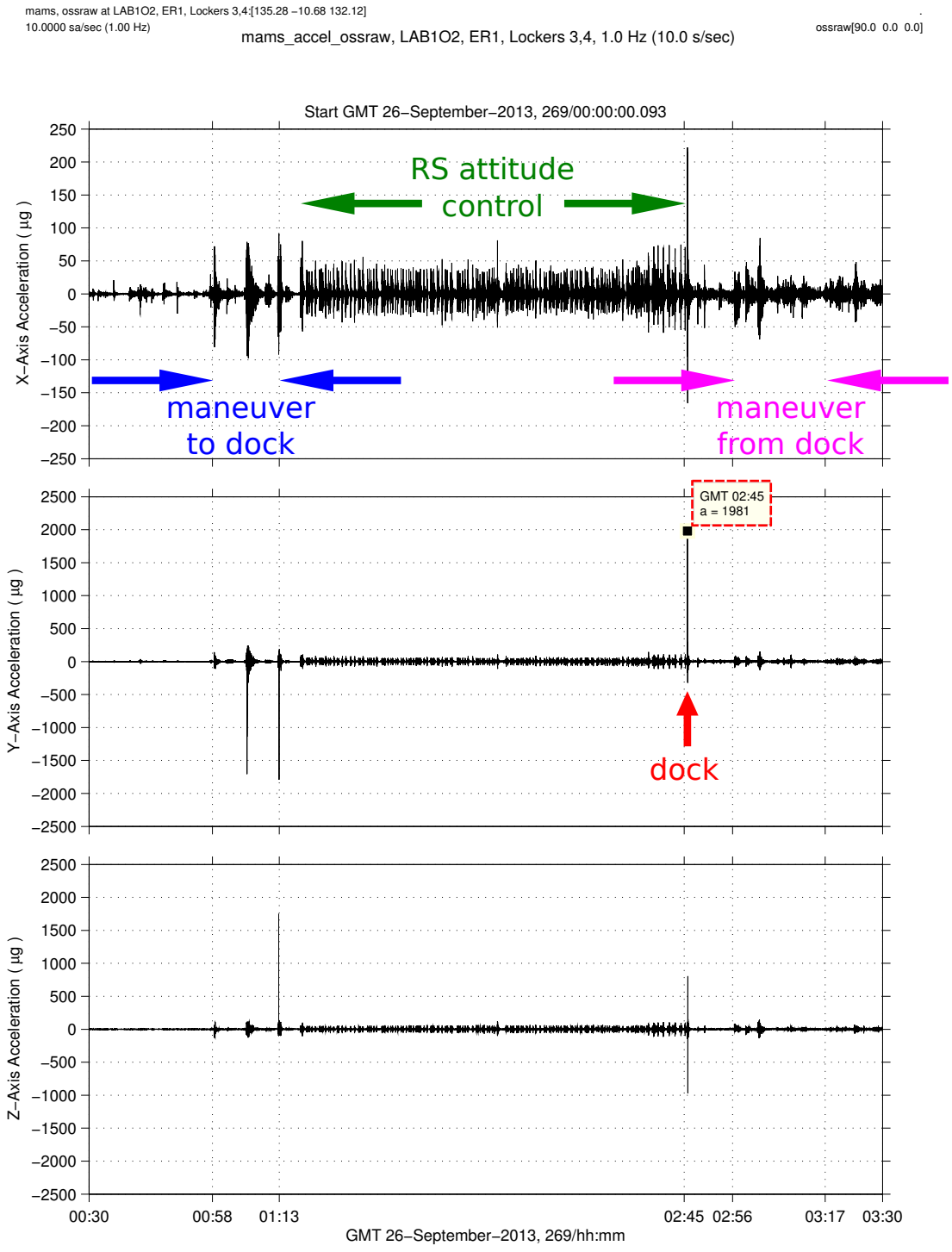


Soyuz 36S Docking Qualify

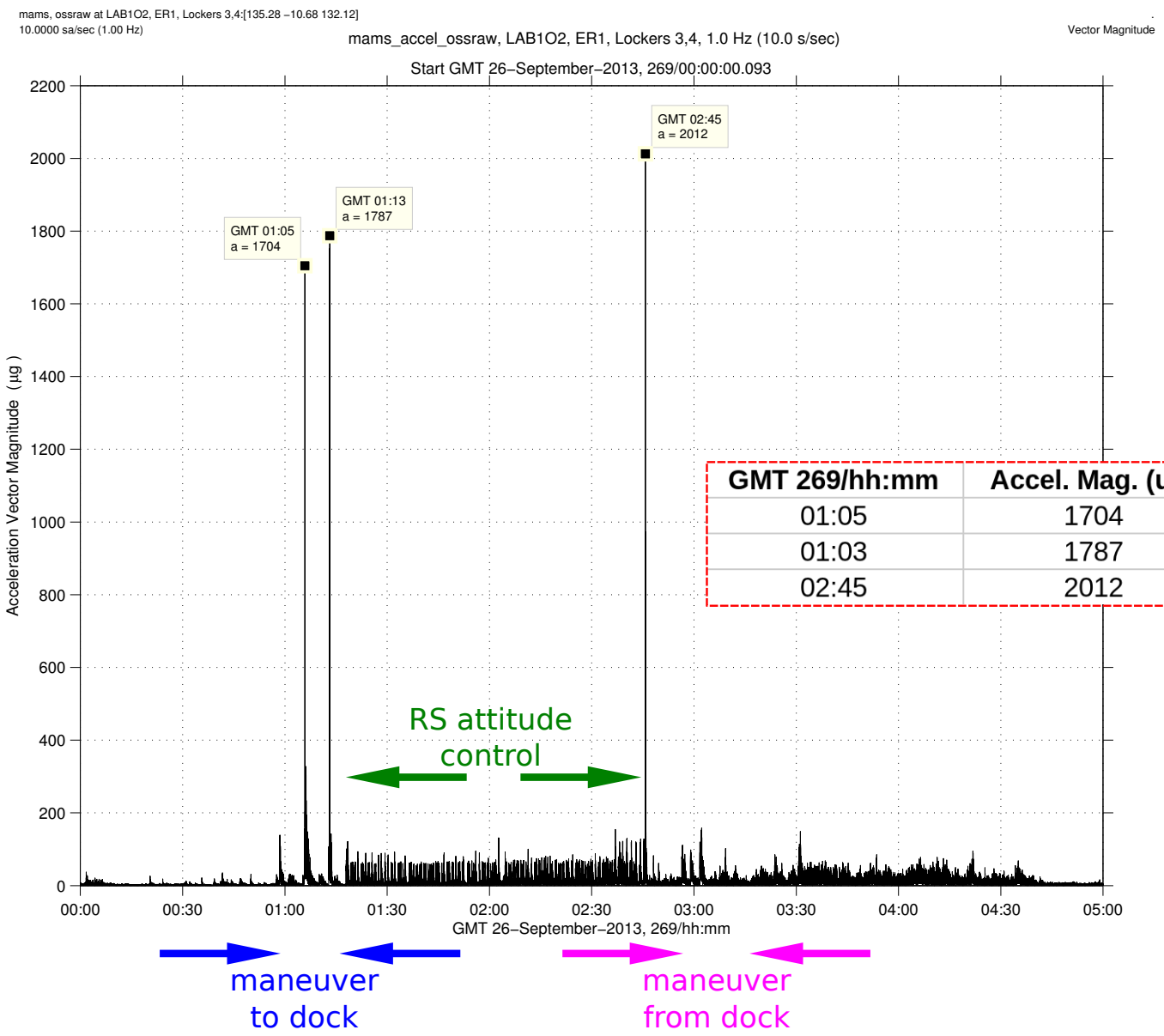
Description	
Sensor	MAMS OSS 10 sa/sec (1 Hz)
Location	LAB1O2, ER1, Lockers 3,4
Plot Type	Acceleration vs. time

Notes:

- The Soyuz 36S crew vehicle docked with the ISS on GMT 26-Sep-2013 at ~02:45.
- This 3-panel plot of MAMS quasi-steady measurements shows that the primary vibratory impact of the docking itself was registered on the Y-axis.
- NOTE: the X-axis subplots' y-scale limits are set to one-tenth that of the other 2 axes to enable a better view.
- The annotation arrows show that there was considerable vibratory impact during the Russian Segment (RS) attitude control portion of the docking sequence.

Regime:	Vibratory
Category:	Vehicle
Source:	Soyuz 36S Docking

Soyuz 36S Docking
Quantify



Description	
Sensor	MAMS OSS 10 sa/sec (1 Hz)
Location	LAB1O2, ER1, Lockers 3,4
Plot Type	Acceleration vs. time

Notes:

- This plot of MAMS quasi-steady vector magnitude vs. time shows that the 3 largest acceleration peaks occurred during the maneuver to docking attitude and at the impact of the 2 vehicles.

GMT 269/hh:mm	Accel. Mag. (ug)	Comment
01:05	1704	during maneuver to docking attitude
01:03	1787	during maneuver to docking attitude
02:45	2012	docking event

Regime:	Vibratory
Category:	Vehicle
Source:	Soyuz 36S Docking

Soyuz 36S Docking
Ancillary Information

The Soyuz 36S crew vehicle launched from the Baikonur Cosmodrome in Kazakhstan and performed a four-orbit rendezvous to then dock to the Mini-Research Module (MRM)-2 of the ISS on 26-Sep-2013 at GMT 02:45. This returned the space station to a full 6-crew complement. The new Expedition 37 crew members are Oleg Kotov (Russia), Mike Hopkins (United States), and Sergey Ryazanskiy (Russia) were greeted by Commander Fyodor Yurchikhin (Russia), Flight Engineer Karen Nyberg (United States), and Flight Engineer Luca Parmitano (Italy). Kotov, Hopkins, and Ryazanskiy are scheduled for a 5½ month stay in space, living and working inside the orbital laboratory. They are scheduled to return in March 2014, landing in Kazakhstan inside the same Soyuz spacecraft that carried them into orbit. This is Kotov's third space station mission. He served as a flight engineer for Expedition 15 in 2007. Kotov was also commander in 2010 for Expedition 23. Hopkins and Ryazanskiy are both on their first space mission. Yurchikhin, Nyberg, and Parmitano have been aboard the space station since May 28, 2013. They have seen the arrival of two international resupply ships and one commercial cargo craft. Since they began their mission, Yurchikhin has participated in three Russian spacewalks. Parmitano conducted two U.S. Spacewalks, and Nyberg captured Japan's Kounotori-4 (HTV-4) resupply ship while at the controls of the Canadarm2.

Soyuz 36S Docking

Maneuver Start-Stop GMT	Attitude Name	Ref. Frame	YPR	F/T Cfg.	Event
9/26/2013					36S Docking (M13_269_A_07.UAF)
269/00:53	-XVV	LVLH	175	MMT	Handover US to RS
—	+ZLV		357.3	THR	
	TEA		0.6		
269/00:58	-XVV	LVLH	165	THR	Maneuver to Docking Attitude
269/01:13	+ZLV		0	THR	
			0		
269/02:45	-XVV	LVLH	165	THR	Free Drift for Docking (Soyuz on MRM-2)
269/03:02	+ZLV		0	FDO	
			0		
269/02:54	-XVV	LVLH	175	THR	Maneuver to Post Docking LVLH TEA
269/03:17	+ZLV		358.2	THR	
	TEA		0.6		
269/03:45	-XVV	LVLH	175	THR	Handover RS to US Momentum Management
—	+ZLV		358.2	MMT	
	TEA		0.6		

Regime:	Vibratory
Category:	Vehicle
Source:	Soyuz 36S Docking