

The history information of QZS-1 operation

date	event	history							mass(kg) (*5)
			start(UT)	stop(UT)	duration	ΔV_x	ΔV_y	ΔV_z	
2011/2/16	orbit maintenance maneuver(*1)	no data							2290
2011/3/7	change of attitude mode(*3)	YS→ON	2011/2/16 09:59:00	2011/2/16 10:32:00					
2011/4/20	change of attitude mode(*3)	ON→YS	2011/4/20 7:40	2011/4/20 08:12:00					
2011/4/27	unloading								
2011/5/11	orbit maintenance maneuver(*1)	no data							2286
2011/8/3	unloading								
2011/9/7	change of attitude mode(*3)	YS→ON	2011/9/7 09:16:00	2011/9/7 09:50:00					
2011/10/19	unloading								
2011/10/22	change of attitude mode(*3)	ON→YS	2011/10/22 07:31:00	2011/10/22 08:04:00					
2011/11/9	orbit maintenance maneuver(*1)	YS→ON	2011/11/9 13:27:31	2011/11/9 13:30:16				2281	
		#1	2011/11/9 13:32:16	2011/11/9 13:35:27	0:03:11	-0.877	-0.034		-0.105
		#2	2011/11/9 18:30:05	2011/11/9 18:36:53	0:06:48	1.625	-0.029		-0.07
		#3	2011/11/9 23:31:14	2011/11/9 23:36:29	0:05:15	-1.449	-0.057		0.04
	ON→YS	2011/11/9 23:36:30	2011/11/9 23:40:45						
2012/1/4	unloading								
2012/3/3	change of attitude mode(*3)	YS→ON	2012/3/3 09:54:00	2012/3/3 10:27:00					
2012/3/7	unloading								
2012/4/16	change of attitude mode(*3)	ON→YS	2012/4/16 7:39	2012/4/16 08:11:00					
2012/5/2	orbit maintenance maneuver(*1)	YS→ON	2012/5/2 01:53:18	2012/5/2 01:57:04				2277	
		#1	2012/5/2 01:59:04	2012/5/2 02:00:51	0:01:47	-0.492	0.007		-0.057
		#2	2012/5/2 06:57:36	2012/5/2 07:02:20	0:04:44	1.275	-0.006		-0.041
		#3	2012/5/2 11:57:16	2012/5/2 12:02:40	0:05:24	-1.488	0.021		0.049
		ON→YS	2012/5/2 12:02:41	2012/5/12 12:04:55					
2012/7/4	unloading								
2012/9/3	change of attitude mode(*3)	YS→ON	2012/9/3 09:20:00	2012/9/3 09:53:00					
2012/10/18	change of attitude mode(*3)	ON→YS	2012/10/18 07:33:00	2012/10/18 08:06:00					
2012/11/7	orbit maintenance maneuver(*1,*2)	YS→ON	2012/11/7 13:10:37	2012/11/7 13:12:55				2274	
		#1	2012/11/7 13:14:55	2012/11/7 13:16:57	0:02:02	-0.563	-0.022		-0.067
		#2	2012/11/7 18:14:06	2012/11/7 18:17:45	0:03:39	0.993	-0.018		-0.043
		#3	2012/11/7 23:14:03	2012/11/7 23:17:49	0:03:46	-1.055	-0.041		0.029
		ON→YS	2012/11/7 23:17:50	2012/11/7 23:22:09					
2013/2/27	change of attitude mode(*3)	YS→ON	2013/2/27 9:54	2013/2/27 10:27:00					
2013/4/13	change of attitude mode(*3)	ON→YS	2013/4/13 07:44:00	2013/4/13 08:17:00					
2013/5/1	orbit maintenance maneuver(*1,*2)	YS→ON	2013/5/1 01:35:55	2013/5/1 01:39:49				2271	
		#1	2013/5/1 01:41:49	2013/5/1 01:42:54	0:01:05	-0.301	0.004		-0.035
		#2	2013/5/1 06:40:57	2013/5/1 06:43:46	0:02:49	0.763	-0.004		-0.025
		#3	2013/5/1 11:40:20	2013/5/1 11:44:22	0:04:02	-1.12	0.016		0.037
		ON→YS	2013/5/1 11:44:23	2013/5/11 01:46:32					
2013/8/30	change of attitude mode(*3)	YS→ON	2013/8/30 09:26:00	2013/8/30 10:00:00					
2013/10/11	change of attitude mode(*3)	ON→YS	2013/10/11 07:42:00	2013/10/11 08:15:00					
2013/10/30	orbit maintenance maneuver(*1,*2)	YS→ON	2013/10/30 13:20:22	2013/10/30 13:22:57				2269	
		#1	2013/10/30 13:24:57	2013/10/30 13:25:37	0:00:40	-0.181	-0.007		-0.022
		#2	2013/10/30 18:24:28	2013/10/30 18:26:07	0:01:39	0.448	-0.008		-0.02

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			start(UT)	stop(UT)	duration	ΔV_x	ΔV_y	ΔV_z	
		#3	2013/10/30 23:23:46	2013/10/30 23:26:07	0:02:21	-0.838	-0.033	0.023	
		ON→YS	2013/10/30 23:26:49	2013/10/30 23:31:14					
2014/2/24	change of attitude mode(*3)	YS→ON	2014/2/24 09:50:00	2014/2/24 10:23:00					
2014/4/9	change of attitude mode(*3)	ON→YS	2014/4/9 07:40:00	2014/4/9 08:14:00					
2014/4/30	orbit maintenance maneuver(*1,*2)	YS→ON	2014/4/30 01:14:28	2014/4/30 01:18:30					2267
		#1	2014/4/30 01:20:30	2014/4/30 01:20:42	0:00:12	0.055	0	0.002	
		#2	2014/4/30 06:20:15	2014/4/30 06:20:56	0:00:41	0.184	-0.001	-0.006	
		#3	2014/4/30 11:19:06	2014/4/30 11:22:05	0:02:59	-0.82	0.012	0.027	
		ON→YS	2014/4/30 11:22:06	2014/4/30 11:24:12					
2014/8/26	change of attitude mode(*3)	YS→ON	2014/8/26 09:31:00	2014/8/26 10:05:00					
2014/10/11	change of attitude mode(*3)	ON→YS	2014/10/11 07:43:00	2014/10/11 08:16:00					
2014/10/29	orbit maintenance maneuver(*1,*2)	YS→ON	2014/10/29 13:06:42	2014/10/29 13:09:09					2265
		#1	2014/10/29 13:11:09	2014/10/29 13:12:07	0:00:58	0.266	-0.005	0.008	
		#2	2014/10/29 18:11:15	2014/10/29 18:12:00	0:00:45	-0.199	-0.008	-0.009	
		#3	2014/10/29 23:10:28	2014/10/29 23:12:47	0:02:19	-0.634	-0.025	0.017	
		ON→YS	2014/10/29 23:12:48	2014/10/29 23:17:17					
2015/2/20	change of attitude mode(*3)	YS→ON	2015/2/20 09:53:00	2015/2/20 10:26:00					
2015/4/6	change of attitude mode(*3)	ON→YS	2015/4/6 07:41:00	2015/4/6 08:15:00					
2015/4/22	orbit maintenance maneuver(*1,*2)	YS→ON	2015/4/22 01:23:38	2015/4/22 01:27:45					2263
		#1	2015/4/22 01:29:45	2015/4/22 01:31:27	0:01:42	0.468	-0.002	0.02	
		#2	2015/4/22 06:29:57	2015/4/22 06:31:15	0:01:18	-0.354	0.005	-0.005	
		#3	2015/4/22 11:29:28	2015/4/22 11:31:44	0:02:16	-0.626	0.009	0.038	
		ON→YS	2015/4/22 11:31:45	2015/4/22 11:33:44					
2015/8/23	change of attitude mode(*3)	YS→ON	2015/8/23 9:34:00	2015/8/23 10:06:00					
2015/10/7	change of attitude mode(*3)	ON→YS	2015/10/7 07:47:00	2015/10/7 08:20:00					
2015/10/21	orbit maintenance maneuver(*1,*2)	YS→ON	2015/10/21 13:14:45	2015/10/21 13:17:06					2261
		#1	2015/10/21 13:19:06	2015/10/21 13:21:32	0:02:26	0.673	-0.012	0.02	
		#2	2015/10/21 18:18:55	2015/10/21 18:21:42	0:02:47	-0.754	-0.03	-0.034	
		#3	2015/10/21 23:19:31	2015/10/21 23:21:06	0:01:35	-0.435	-0.017	0.012	
		ON→YS	2015/10/21 23:21:07	2015/10/21 23:25:44					
2016/2/16	change of attitude mode(*3)	YS→ON	2016/2/16 09:54:00	2016/2/16 10:27:00					
2016/4/1	change of attitude mode(*3)	ON→YS	2016/4/1 07:45:00	2016/4/1 08:18:00					
2016/4/20	orbit maintenance maneuver(*1,*2)	YS→ON	2016/4/20 01:07:34	2016/4/20 01:11:48					2258
		#1	2016/4/20 01:13:48	2016/4/20 01:16:46	0:02:58	0.817	-0.004	0.034	
		#2	2016/4/20 06:13:44	2016/4/20 06:16:48	0:03:04	-0.835	0.012	-0.033	
		#3	2016/4/20 11:14:24	2016/4/20 11:16:10	0:01:46	-0.483	0.007	0.016	
		ON→YS	2016/4/20 11:16:11	2016/4/20 11:18:07					
2016/8/18	change of attitude mode(*3)	YS→ON	2016/8/18 09:39:00	2016/8/18 10:12:00					
2016/10/3	change of attitude mode(*3)	ON→YS	2016/10/3 7:51:00	2016/10/3 8:25:00					
2016/10/5	orbit maintenance maneuver(*1,*2)	YS→ON	2016/10/5 13:48:07	2016/10/5 13:50:19					2255
		#1	2016/10/5 13:52:19	2016/10/5 13:56:24	0:04:05	1.131	-0.02	0.035	
		#2	2016/10/5 18:51:45	2016/10/5 18:56:58	0:05:13	-1.412	-0.055	-0.064	
		#3	2016/10/5 23:54:11	2016/10/5 23:54:33	0:00:22	-0.098	-0.004	0.003	

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			start(UT)	stop(UT)	duration	ΔV_x	ΔV_y	ΔV_z	
		ON→YS	2016/10/5 23:54:34	2016/10/5 23:59:29					
2017/2/17	change of attitude mode(*3)	YS→ON	2017/2/17 08:47:00	2017/2/17 09:14:00					
2017/3/27	change of attitude mode(*3)	ON→YS	2017/3/27 7:57:10	2017/3/27 08:29:21					
2017/4/4	unloading	UNLD	2017/4/4 06:00:23	2017/4/4 06:04:39					2255
2017/4/7 -4/9	orbit maintenance maneuver(*1,*2)	UNLD	2017/4/7 10:11:03	2017/4/7 10:13:11					2251
		YS→ON	2017/4/7 10:13:16	2017/4/7 10:14:58					
		#1	2017/4/7 10:21:09	2017/4/7 10:25:36	0:04:27	-1.462	0.013	-0.051	
		ON→YS (*4)	2017/4/7 19:15:00	2017/4/7 23:18:58					
		YS→ON	2017/4/8 15:14:36	2017/4/8 15:19:30					
		#2	2017/4/8 18:22:17	2017/4/8 18:24:28	0:02:11	0.710	-0.008	-0.014	
		ON→YS	2017/4/8 18:36:01	2017/4/8 18:41:38					
		YS→ON	2017/4/9 16:16:36	2017/4/9 16:21:54					
		#3	2017/4/9 18:23:11	2017/4/9 18:23:34	0:00:23	0.125	-0.001	-0.002	
2017/8/20	change of attitude mode(*3)	YS→ON	2017/8/20 9:41:00	2017/8/20 10:07:01					
2017/9/22	orbit maintenance maneuver(*1,*2) (Out-of-plane maneuver)	UNLD	2017/9/22 0:41:09	2017/9/22 0:47:17				2250	
		#1	2017/9/22 00:52:27	2017/9/22 00:57:32	0:05:05	0.001	-2.000		0.025
2017/9/23 -9/25	orbit maintenance maneuver(*6) (In-plane maneuver)	UNLD	2017/9/23 23:55:17	2017/9/23 23:57:25				2248	
		#1	2017/9/24 00:15:08	2017/9/24 00:19:47	0:04:39	-1.531	-0.030		-0.032
		#2	2017/9/25 07:46:12	2017/9/25 07:48:44	0:02:32	0.829	0.004		-0.028
		#3	2017/9/25 13:17:16	2017/9/25 13:17:39	0:00:23	0.126	0.001		-0.004
2017/9/27	change of attitude mode(*3)	ON→YS	2017/9/27 8:03:48	2017/9/27 8:34:56					
2018/2/12	change of attitude mode(*3)	YS→ON	2018/2/12 09:48:38	2018/2/12 10:17:32					
2018/3/15 -3/16	orbit maintenance maneuver(*6) (In-plane maneuver)	UNLD	2018/3/15 11:35:15	2018/3/15 11:38:43				2244	
		#1	2018/3/15 11:55:42	2018/3/15 12:01:09	0:05:27	-1.875	0.049		-0.068
		#2	2018/3/15 19:26:06	2018/3/15 19:30:45	0:04:39	1.613	-0.046		-0.034
		#3	2018/3/16 00:08:48	2018/3/16 00:09:02	0:00:14	-0.081	0.002		-0.003
2018/3/23	change of attitude mode(*3)	ON→YS	2018/3/23 07:49:21	2018/3/23 08:20:47					

(*1)
The attitude change operation is also carried out in the orbit maintenance maneuver period.
The orbit maintenance maneuver is basically carried out by ON attitude mode.
The ΔV information shows the planned value.

(*2)
Since November 7 2012, the unloading operation is basically performed during the orbit maintenance maneuver operation period.

(*3)
The attitude change operation will take about 20 to 30 minutes until finishing the attitude change.
QZS will rotate very slowly at the change rate of about 0.01 deg/s during the attitude change operation.

(*4)
The change from ON to YS attitude mode was conducted by wheel control operation.
The another attitude change operation was conducted by thruster control.

(*5)
This information includes the analysis error.

(*6)
The attitude change operation was not carried out in the orbit maintenance maneuver period.
The ΔV information shows the planned value.