Chapter 1 - Introduction

Contents

Introduction

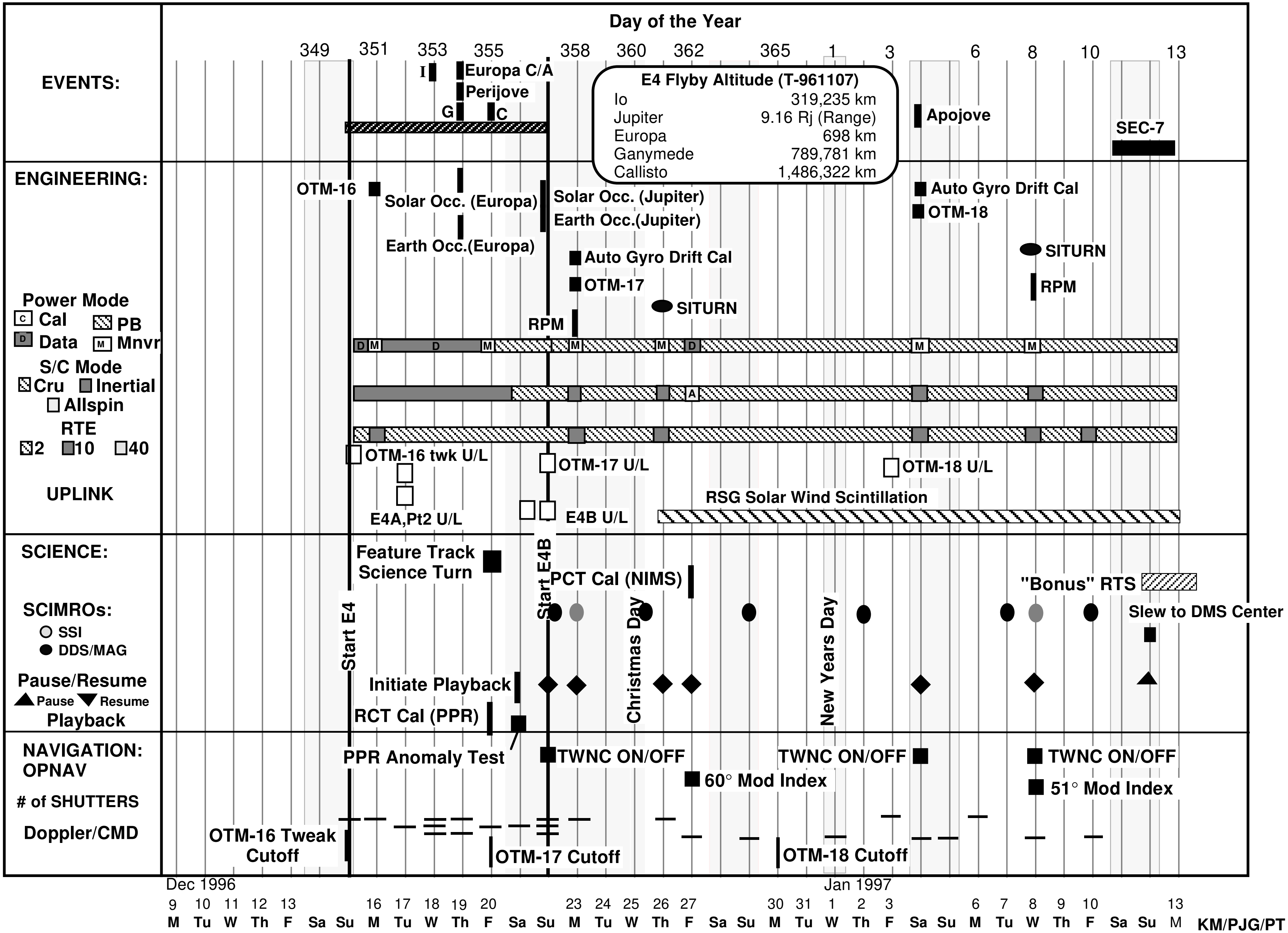
This E4 orbit is the fourth of eleven orbits in Galileo's Tour of the Jovian system. This orbit has a targetted satellite flyby of Europa and two partial eclipses of Io. NIMS will make observations of Jupiter, Io, Europa, Ganymede, Callisto and Jupiter's Ring in this orbit. NIMS will also perform some calibrations in this orbit. The E4 orbit also includes the J5 phasing orbit where Jupiter and Galileo are in conjuction with the Sun. Over a two day period at J5 perijove, NIMS will test the effects of Jupiter's radiation on the NIMS RAM memory chips.

There are ten autonomous reloads of the NIMS RAM code from CDS planned during the E4A encounter period with checksums of the NIMS RAM code before each reload and one reload in the E4B cruise phase. These reloads are in response to the on-going flight-anomalies where the NIMS RAM code takes some bit hits and halts the instrument during when the spacecraft is close to Jupiter. NIMS will also do a full MRO of the NIMS RAM code, in two parts during E4A. NIMS will also return realtime data on a daily basis during the E4A encounter period as a means of monitoring the instrument's status. NIMS personnel will also monitior the NIMS engineering telemetry data on a regular schedule to track the instrument's status.

The J5 phasing orbit takes place in the middle of the E4B load. Within +/- 1day of J5 perijove NIMS will do regular checksums of various segments of NIMS RAM code and store them in unused segments of NIMS memory. These checksum bytes will then be read out using MROs after Solar counjuction during the E4C load.

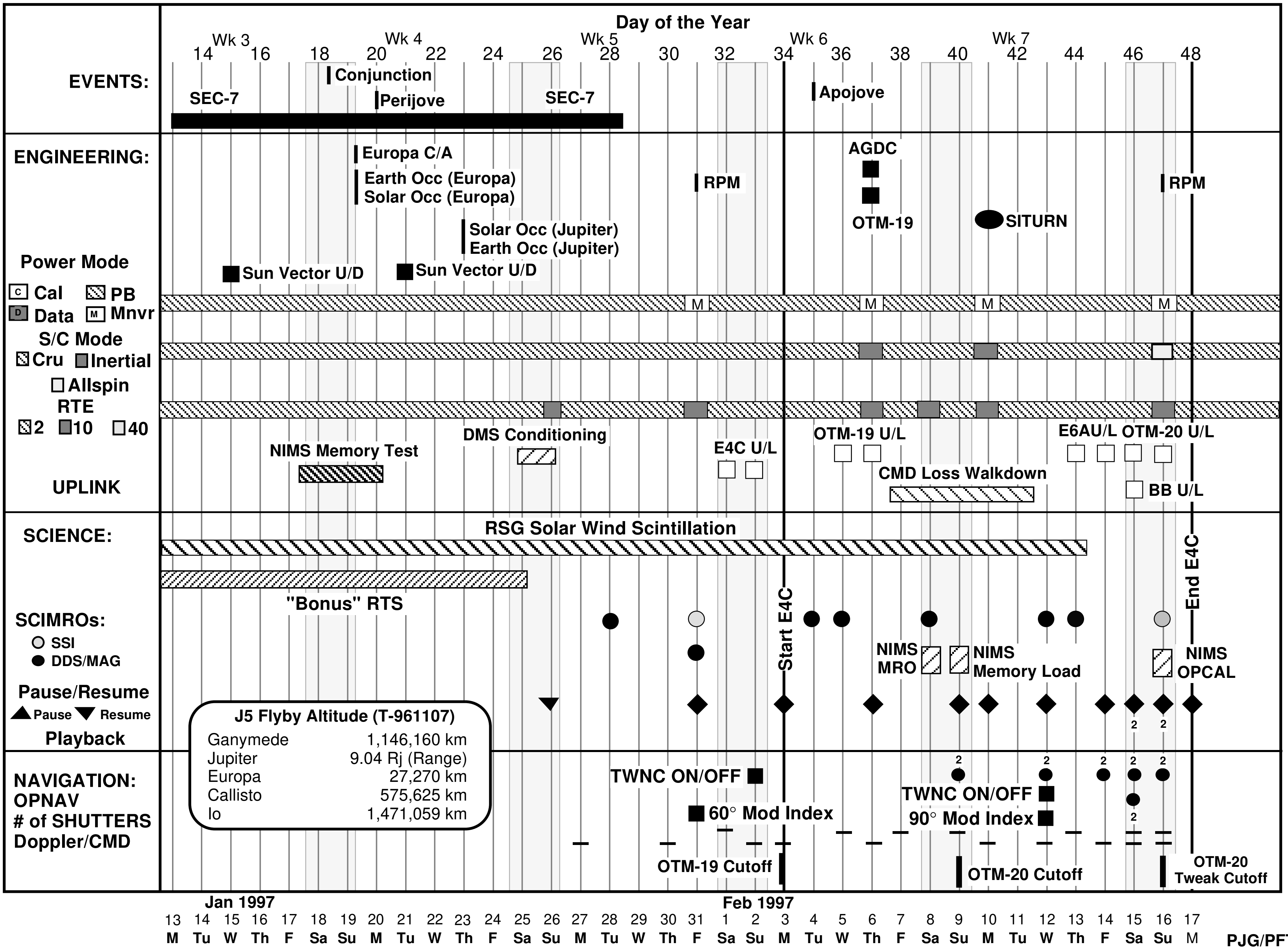
The E4 orbit is divided into 3 sequence loads: one Encounter Load (E4A) and two Orbital Cruise Loads (E4B and E4C). The Encounter Load, E4A, begins on D350 of 1996 (12/15/96) and ends on D357 of 1996 (12/22/96). This load contains the flybys of Jupiter, Europa, Io, Ganymede, Callisto and also the Ring observation. The first Cruise Load, E4B, runs from D357 to D034 and contains the J5 perijove. The second Cruise Load, E4C, runs from D034 to D048. Playback of the recorded data takes place during the two Cruise phases, E4B and E4C with playback halted during solar conjuction. A high-level overview timeline of the E4 orbit can be found on the following two pages.

E4 OVERVIEW (Part 1)



KM/PJG/PT
11/25/96

E4 Overview (Part 2)



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The following table lists the major events during E4, including NIMS Real Time observations, in UTC.

12/15/96	96-350/00:00:00	E4 Encounter Start
12/17/96	96-352/10:35:24	NIMS R/T Health 01
12/17/96	96-352/20:14:56	NIMS R/T Io 01
12/18/96	96-353/04:02:45	NIMS R/T Health 02
12/18/96	96-353/04:30:23	NIMS RAM Reload 01
12/18/96	96-353/11:25:57	NIMS R/T Jupiter
12/18/96	96-353/12:59:59	NIMS RAM Reload 02
12/18/96	96-353/16:59:37	NIMS RAM Reload 03
12/19/96	96-354/00:10:21	NIMS RAM Reload 04
12/19/96	96-354/03:22:00	Jupiter Closest Approach (PJ4)
12/19/96	96-354/04:30:12	NIMS RAM Reload 05
12/19/96	96-355/06:54:00	Europa Closest Approach (E4)
12/19/96	96-354/09:29:30	NIMS RAM Reload 06
12/19/96	96-354/15:30:28	NIMS RAM Reload 07
12/19/96	96-354/16:09:54	NIMS R/T Io 02
12/20/96	96-355/06:29:20	NIMS RAM Reload 08
12/20/96	96-355/07:59:20	NIMS R/T Health 04
12/20/96	96-355/10:08:45	NIMS RAM Reload 09
12/20/96	96-355/15:19:10	NIMS RAM Reload 10
12/22/96	96-357/10:44:00	Start E4 Playback
12/25/96	96-360/18:59:42	NIMS R/T PCT CAL
01/10/97	97-010/22:14:00	Start Solar Conjuction
01/18/97	96-018/23:48:40	NIMS MEMCHK start
01/20/97	96-020/00:28:00	Jupiter Closest Approach (PJ5)
01/21/97	96-021/00:58:00	NIMS MEMCHK stop
01/28/97	97-028/15:09:00	End Solar Conjuction
02/09/97	97-040/07:27:00	NIMS RAM Reload 11
02/16/97	97-047/18:19:55	NIMS R/T OPCAL
02/17/97	97-048/00:00:00	End E4 Playback