

SpaceCalc			STS-129 Ascent Abort Boundaries			
Flight Data		EST	L-MM:SS	Terminal Countdown		
STS-129	1:39:11 PM	L-49:00	T-9 hold begins			
16-Nov-09	2:19:11 PM	L-09:00	Resume countdown			
02:28:11 PM	2:20:41 PM	L-07:30	Orbiter access arm retraction			
Win Close	2:23:11 PM	L-05:00	Auxilliary power unit start			
02:33:11 PM	2:23:16 PM	L-04:55	Liquid oxygen drainback begins			
-2:10:55	2:24:11 PM	L-04:00	Purge sequence 4 hydraulic test			
	2:24:11 PM	L-04:00	IMUs to inertial			
SLF Max Wind:	2:25:16 PM	L-02:55	Oxygen tank at flight pressure			
TBD	2:25:36 PM	L-02:35	Fuel cells to internal			
Wind Direction:	2:25:41 PM	L-02:30	Clear caution-and-warning			
TBD	2:26:14 PM	L-01:57	Hydrogen tank at flight pressure			
SLF Crosswind:	2:27:40 PM	L-00:31	Shuttle computers control countdown			
TBD	2:27:50 PM	L-00:21	Booster steering test			
TBD	2:28:10 PM	L-00:06.6	Main engine ignition			
Abort Data		L+MM:SS	Ascent Events Timeline		MPH	FPS
0:02:38 RTLS ONLY	2:28:11 PM	T+0:00	LAUNCH			
	2:28:21 PM	T+00:10	START ROLL MANEUVER		921	1,350
	2:28:29 PM	T+00:18	END ROLL MANEUVER		1,016	1,490
	2:28:45 PM	T+00:34	START THROTTLE DOWN (72%)		1,241	1,820
	2:28:57 PM	T+00:46	START THROTTLE UP (104.5%)		1,411	2,070
	2:29:11 PM	T+01:00	MAX Q (731 psf)		1,630	2,390
	2:30:15 PM	T+02:04	SRB STAGING		3,655	5,360
	2:30:25 PM	T+02:14	START OMS ASSIST (1:20 duration)		3,778	5,540
0:02:51 TAL	2:30:44 PM	T+02:33	2E TAL MORON (104.5%, 2s)		4,023	5,900
	2:30:49 PM	T+02:38	2E TAL ZARAGOZA (104.5%, 2s)		4,091	6,000
	2:31:00 PM	T+02:49	2E TAL ISTRES (104.5%, 2s)		4,228	6,200
	2:32:03 PM	T+03:52	NEGATIVE RETURN (104.5%, 3s)		5,523	8,100
0:01:50 ATO	2:33:13 PM	T+05:02	PRESS TO ATO (104.5%, 2s, 160 u/s)		7,432	10,900
	2:33:36 PM	T+05:25	DROOP ZARAGOZA (109%,0s)		8,183	12,000
	2:33:40 PM	T+05:29	1E OPS-3 ZARAGOZA (109%,0s,2EO SIMO)		8,387	12,300
	2:33:57 PM	T+05:46	ROLL TO HEADS UP		9,014	13,220
	2:34:08 PM	T+05:57	1E TAL ZARAGOZA (104.5%,2s,2EO SIMO)		9,342	13,700
MECO Ha/Hp 136 X 36 sm OMS-2 Ha/Hp 142 X 98 sm	2:34:16 PM	T+06:05	PRESS TO MECO (104.5%, 2s, 160 u/s)		9,683	14,200
	2:34:16 PM	T+06:05	1E TAL MORON (109%,0s,2EO SEQ,1st EO @ VI)		11,115	16,300
	2:34:16 PM	T+06:05	1E TAL ISTRES (109%,0s,2EO SEQ,1st EO @ VI)		11,524	16,900
	2:35:05 PM	T+06:54	1E PRESS-TO-MECO (104.5%, 2s, 610 u/s)		12,001	17,600
	2:35:30 PM	T+07:19	NEGATIVE MORON (2@67%)		13,501	19,800
	2:35:52 PM	T+07:41	LAST 2E PRE-MECO TAL ZARAGOZA (67%)		14,865	21,800
	2:35:52 PM	T+07:41	NEGATIVE ISTRES (2@67%)		14,865	21,800
	2:35:58 PM	T+07:47	LAST 1E PRE-MECO TAL ZARAGOZA (104.5%)		15,342	22,500
	2:36:04 PM	T+07:53	23K		15,683	23,000
	2:36:04 PM	T+07:53	LAST 3 ENG PRE-MECO TAL ZARAGOZA (67%)		15,683	23,000
	2:36:29 PM	T+08:18	LAST TAL DIEGO GARCIA		17,252	25,300
	2:36:33 PM	T+08:22	MECO COMMANDED		17,552	25,740
	2:36:39 PM	T+08:28	ZERO THRUST		17,606	25,820
	Compiled by William Harwood				Inertial Velocity	