

SpaceCalc					STS-129/ISS-ULF3 Countdown	
T-HH	T-MM	L-HH	L-MM	L-SS	EDT	
Fri 11/13/09						
					12:30 PM	Call to stations
47	00	73	23	00	01:00 PM	Countdown begins
33	00	63	23	00	11:00 PM	Begin 4-hour built-in hold
Sat 11/14/09						
33	00	60	23	00	02:00 AM	Clear pad for Atlas 5/Intelsat launch
33	00	59	23	00	03:00 AM	Countdown resumes
33	00	59	23	00	03:00 AM	Fuel cell reactant load preps
27	30	53	53	00	08:30 AM	MEC/SRB power up
27	00	53	23	00	09:00 AM	Clear crew module
27	00	53	23	00	09:00 AM	Begin 4-hour built-in hold
27	00	53	23	00	09:00 AM	Clear blast danger area
27	00	52	38	00	09:45 AM	Orbiter pyro-initiator controller test
27	00	52	28	00	09:55 AM	SRB PIC test
27	00	51	28	00	10:55 AM	Master events controller pre-flight BITE test
27	00	49	23	00	01:00 PM	Resume countdown
25	30	47	53	00	02:30 PM	Fuel cell oxygen loading begins
23	00	45	23	00	05:00 PM	Fuel cell oxygen load complete
23	00	45	23	00	05:00 PM	Fuel cell hydrogen loading begins
19	30	42	53	00	07:30 PM	Fuel cell hydrogen loading complete
20	30	41	53	00	08:30 PM	Pad open; ingress white room
19	00	41	23	00	09:00 PM	Begin 4-hour built-in hold
19	00	41	23	00	09:00 PM	Crew module clean and vacuum
19	00	40	53	00	09:30 PM	OMBUU demate
Sun 11/15/09						
19	00	38	23	00	12:00 AM	Remove APU vent covers
19	00	37	53	00	12:30 AM	MPS 2000 psi GSE
19	00	37	23	00	01:00 AM	Countdown resumes
19	00	37	23	00	01:00 AM	Main engine preps
19	00	37	23	00	01:00 AM	MECs 1 and 2 on; avionics system checkout
19	00	37	23	00	01:00 AM	Remove OMS engine covers, throat plugs
12	30	30	53	00	07:30 AM	Deflate RSS dock seals; tile inspection
12	00	30	23	00	08:00 AM	Tile inspection
12	00	30	23	00	08:00 AM	TSM prepped for fueling
11	00	29	23	00	09:00 AM	Begin 13-hour 3-minute hold
11	00	29	23	00	09:00 AM	L-1 engineering briefing
11	00	29	08	00	09:15 AM	Crew weather briefing
11	00	27	53	00	10:30 AM	ASP crew module inspection
11	00	27	53	00	10:30 AM	OIS communications check
11	00	25	53	00	12:30 PM	Comm activation
11	00	25	23	00	01:00 PM	Crew module voice checks
11	00	24	23	00	02:00 PM	Flight crew equipment late stow
11	00	23	08	00	03:15 PM	JSC flight control team on station
11	00	20	53	00	05:30 PM	RSS to park position
11	00	19	53	00	06:30 PM	Final TPS, debris inspection
11	00	16	53	00	09:30 PM	Ascent switch list
11	00	16	20	00	10:03 PM	Resume countdown
10	40	16	00	00	10:23 PM	Pad clear of non-essential personnel
10	40	16	00	00	10:23 PM	APU bite test
09	50	15	10	00	11:13 PM	Fuel cell activation

					Mon 11/16/09	
09	00	14	20	00	12:03 AM	Booster joint heater activation
08	30	13	50	00	12:33 AM	MEC pre-flight bite test
08	15	13	35	00	12:48 AM	Tanking weather update
07	30	12	50	00	01:33 AM	Final fueling preps; launch area clear
07	00	12	20	00	02:03 AM	Red crew assembled
06	15	11	35	00	02:48 AM	Fuel cell integrity checks complete
06	00	11	20	00	03:03 AM	Begin 2-hour built-in hold (T-minus 6 hours)
06	00	11	10	00	03:13 AM	Safe-and-arm PIC test
06	00	10	20	00	04:03 AM	External tank ready for loading
06	00	09	57	00	04:26 AM	Mission management team tanking meeting
06	00	09	20	00	05:03 AM	Resume countdown (T-minus 6 hours)
06	00	09	20	00	05:03 AM	LO2, LH2 transfer line chilldown
05	50	09	10	00	05:13 AM	Main propulsion system chill down
05	50	09	10	00	05:13 AM	LH2 slow fill
05	20	08	40	00	05:43 AM	LO2 slow fill
05	15	08	35	00	05:48 AM	Hydrogen ECO sensors go wet
05	10	08	30	00	05:53 AM	LO2 fast fill
05	07	08	27	00	05:56 AM	Crew medical checks
05	00	08	20	00	06:03 AM	LH2 fast fill
03	45	06	25	00	07:58 AM	LH2 topping
03	00	06	20	00	08:03 AM	LH2 replenish
03	00	06	20	00	08:03 AM	LO2 replenish
03	00	06	20	00	08:03 AM	Begin 2-hour 30-minute built-in hold (T-minus 3 hours)
03	00	06	20	00	08:03 AM	Closeout crew to white room
03	00	06	20	00	08:03 AM	External tank in stable replenish mode
03	00	06	05	00	08:18 AM	Astronaut support personnel comm checks
03	00	05	35	00	08:48 AM	Pre-ingress switch reconfig
03	00	04	53	00	09:30 AM	NASA TV coverage begins
03	00	04	20	00	10:03 AM	Final crew weather briefing
03	00	04	15	00	10:08 AM	Crew suit up begins
03	00	03	50	00	10:33 AM	Resume countdown (T-minus 3 hours)
02	55	03	45	00	10:38 AM	Crew departs O&C building
02	25	03	15	00	11:08 AM	Crew ingress
01	35	02	25	00	11:58 AM	Astronaut comm checks
01	10	02	00	00	12:23 PM	Hatch closure
01	10	01	30	00	12:53 PM	White room closeout
00	20	01	10	00	01:13 PM	Begin 10-minute built-in hold (T-minus 20m)
00	20	01	00	00	01:23 PM	NASA test director countdown briefing
00	20	01	00	00	01:23 PM	Resume countdown (T-minus 20m)
00	19	00	59	00	01:24 PM	Backup flight computer to OPS 1
00	15	00	55	00	01:28 PM	KSC area clear to launch
00	09	00	49	00	01:34 PM	Begin final built-in hold (T-minus 9m)
00	09	00	24	00	02:04:11 PM	NTD launch status verification
00	09	00	09	00	02:19:11 PM	Resume countdown (T-minus 9m)
00	07	00	07	30	02:23:11 PM	Orbiter access arm retraction
00	05	00	05	00	02:23:11 PM	Launch window opens
00	05	00	05	00	02:23:11 PM	Hydraulic power system (APU) start
00	04	00	04	55	02:23:16 PM	Terminate LO2 replenish
00	04	00	04	00	02:24:11 PM	Purge sequence 4 hydraulic test
00	04	00	04	00	02:24:11 PM	IMUs to inertial
00	03	00	03	55	02:24:16 PM	Aerosurface profile
00	03	00	03	30	02:24:41 PM	Main engine steering test
00	02	00	02	55	02:25:16 PM	LO2 tank pressurization
00	02	00	02	35	02:25:36 PM	Fuel cells to internal reactants
00	02	00	02	30	02:25:41 PM	Clear caution-and-warning memory

00	02	00	02	00	02:26:11 PM	Crew closes visors
00	01	00	01	57	02:26:14 PM	LH2 tank pressurization
00	00	00	00	50	02:27:21 PM	SRB joint heater deactivation
00	00	00	00	31	02:27:40 PM	Shuttle GPCs take control of countdown
00	00	00	00	21	02:27:50 PM	SRB steering test
00	00	00	00	07	02:28:04 PM	Main engine start (T-6.6 seconds)
00	00	00	00	00	02:28:11 PM	SRB ignition (LAUNCH)
						Prepared by William Harwood