M2014 Mission Alpha Centauri Launch

	Flight	Engineer (monitored by GUIDO)	FIDO	EECOM & EECOMMC
1	i) Start FLIGHT.EXE ii) select OCESS as centre iii) confirm time sync	i) start engSThab.exe - press enter for cold start - press enter for local path - press enter to not restore state - enter 25000 for HAB fuel - enter 15000000 for AYSE fuel - press enter AFTER flight.exe starts ii) confirm time sync	i) start MIRROR.EXE ii) confirm time sync	i) start EECOM.EXE ii) confirm time sync
2		a) Complete cold start checklist		b) Complete supplies checklists
3		a) activate INS, GNC, LOS, RADAR b) activate RSCP		c) Doors test d) Static pressure tests: ~ 20% over pressure & hold 5 min ~ non-adjacent rooms simultaneous e) Verify biomed readings f) Test filters and scrubbers g) Note int. & ext. radiation levels h) ensure all air bottles are filled
4		a) activate RAD shield A @ 5% c) activate RAD shield B e) set RAD shields to 0% f) deactivate RAD shields		b) verify int rad level drops d) verify int rad level drops
5	Confirm NAV data displays function			
6	Select NAV mode “deprt ref”			
7	Confirm NAV stays in this mode			
8	a) set targ=AYSE b) set ref=earth c) orientation display to ΘPch d) display reads reference (“R”)			
9	a) confirm HAB fuel approx. 25000 d) confirm RCSP @ or apprch. 100	b) confirm HAB fuel @ 25000	c) confirm HAB fuel @ 25000 e) confirm RSCP @ or apprch. 100	

10	*** @ ***ΘHrt = 45^{o} (T+600s)*** ***			a) verify atmospheric conditions within limits for launch
11			a) set telemetry to OFF b) advance to @ ΘHrt = 18^{o} note time c) advance to @ ΘHrt = 14.5^{o} note time d) set telemetry to ON e) DISPLAY software: set event timer to time in step b) (F11) set MST to time in step c) (F12)	
12		a) activate engines (close f to m) b) activate reaction gas injectors (1 & 2) c) confirm no malfunctions		
13		a) deactivate reaction gas injectors		
14		a) confirm FC operational b) confirm BATT1 operational		
15		Isolate BUS2 & BUS3 (open o,q,p)		
16		Confirm BATT2 operational		
17		Confirm positive air intake		
18		a) confirm engine coolant set to “B” b) confirm reactor coolant set to “B”		
19		Confirm reactor connected to BUS1 (z)		
20		a) confirm radiators 1&2 retracted b) confirm radiator 3 extended c) confirm radiator 3 on loop 1 d) confirm radiator 4&5 on loop 2 e) confirm Hi & Low press pumps ON for loops 1 & 2 f) confirm loops 1 & 2 stabilizing < 20		

21		a) BATT1 to OFF b) confirm FC @ ~69A c) confirm BUS1 @ ~130A; 10000V d) confirm HAB fuel flow @ 34 kg/hr fuel supply should drop 1 kg/2 min		
22	b) Set engines to 5 %	a) confirm engine gas injectors OFF		
23			a) load flight track “launch” b) DISPLAY software: set “TARGET” to ABORT landing site in northwest Africa c) confirm AYSE alt ~560 km	
24		Confirm: a) engine temps rising b) BUS1 @ ~24400A, ~9995V fuel flow @ ~910 kg/hr fuel drops 1 kg/4s		
25	Engines to 0% when engine temps >10			
26	@ ΘHrt = 20^{o} (T-82s)	***** a) set engine gas injectors to ON *****		b) confirm crew at launch stations
27	@ ΘHrt = 19^{o} (T-67s)	** a) Radiator 3 to ISOL and retract **		
28	@ ΘHrt = 18^{o} (T-52s) a) ***Confirm ready for lift off***	b) ***Confirm ready for lift off***	c) ***Confirm ready for lift off***	d) ***Confirm ready for lift off***
29	@ ΘHrt = 17^{o} (T-37s) a) engines to 65%	b) confirm engines @ 65% d) confirm: BUS1 @ 314726A, 9921V fuel flow @ 11358 kg/hr e) note coolant, reactor, engine temps record peak temps when reached	c) confirm engines @ 65%	

30	@ ΘHrt = 14.5° (T+0) b) confirm lift off	a) ignite SRBs	c) confirm lift off d) commence monitoring flight track report major deviations from track	
31				a) confirm biomed readings nominal
32	a) select NAV mode “manual” c) select target = “earth”		b) confirm NAV mode “manual” d) confirm target = “earth”	
33	@ Qmax (~27.2 5.2km, T+16s) a) engines to 90%		b) confirm engines @ 90%	c) confirm ambient pressure drop
34	@ alt = 25 km (T+41s) a) initiate 2°/s ccw roll c) engines to 50%		b) confirm ccw roll d) confirm engines @ 50%	
35	@ Q <0.005 (~90 km, T+76s) b) engines to 60%	a) extend radiator 3 radiator 3 to loop 1 radiators 4&5 to loop 2 d) confirm temps < critical	c) confirm engines @ 60%	e) confirm ambient pressure = 0
36	@ ΘPch = 90° (~115km, T+88s) a) select NAV mode “ccw prg”	c) confirm tems < critical	b) confirm NAV mode “ccw prg”	
37	@ SRB OFF (~178 km, T+120s) b) engines to 90%	a) extend radiators 1&2 radiator 1 to loop 1 radiator 2 to loop 2 d) confirm temps < critical	c) confirm engines @ 90%	
38				confirm compartment pressures stable
39				monitor CO2 and H2O levels scrub when levels generate a warning do NOT scrub below safe levels

40	a) monitor apoapsis		b) monitor apoapsis call out apoapsis @ 500 call out apoapsis @ 10km intervals	
41	@ apoapsis = 560km a) MECO	b) confirm MECO d) confirm temps dropping	c) confirm MECO	
42	a) monitor altitude		b) monitor altitude call out altitude @ 500km call out altitude @ 10km intervals	
43	@ altitude = 560 km a) engines to 100%	c) confirm: BUS1 @ 482138A 9879V fuel flow = 17386 kg/hr	b) confirm engines to 100%	
44	@ Vtan = ref Vo a) MECO	b) confirm MECO	c) confirm MECO d) confirm alt ~565 km	
45	Circularize orbit a) NAV mode to “app targ” c) ±10% engines to zero out Vcen d) NAV mode to “ccw prg” f) ±10% engines to set Vtan=ref Vo g) evaluate Vcen&Vtan repeat steps as needed		Monitor apoapsis, periapsis, alt b) confirm NAV mode “app targ” e) confirm NAV mode “ccw prg” h) evaluate Vcen&Vtan	
46	a) set NAV mode = “ccw prg” b) select target = “AYSE”		c) confirm HAB is behind AYSE and distance to AYSE is <50 km & stable	
47				Confirm with EECOMMC that interior radiation levels are safe. Evaluate need for RAD shields.
48	*** Complete AYSE docking checklist ***			

49		Extend RAD6 Set RAD6 to loop 2 Set all HAB systems to loop 2 only		
50		Link BUS1 and AYSE BUS (F1&F2)		
51		Evaluate AYSE reactor status.		
52		Link BUS1 & BUS2 & BUS3		
53		a) disconnect FC b) shut down FC (7) c) confirm switches f to m and s OPEN		
54		Confirm AYSE reactor is feeding power to BUS1: a) open switch F1 and confirm: HAB reactor current increases AYSE reactor current decreases b) close switch F1 and confirm: HAB reactor current decreases AYSE reactor current increases		
55		a) disconnect HAB reactor from BUS1 b) shut down HAB reactor fuel pumps c) monitor HAB reactor temp d) when reactor temp < 30 open switches d & e		
56		a) open switch t b) confirm AYSE fuel flow < 1 kg/h c) close switch t		
57				Confirm with EECOMMC that interior radiation levels are safe. Evaluate need to RAD shields.
58		a) set F6,F7,F8,F9,F10 to ON b) confirm radiators 7&8 on loop3		

59	Set NAV mode = “ccw prg” Set target = “A-CEN A” Set NAV display to target date (l) Monitor ΘPch			
60	@ ΘPch = 0° a) Select NAV mode “app targ” b) Set engines to 90%	c) confirm: BUS3 ~866600A, 99974V AYSE reactor fuel flow ~56900 kg/h AYSE reactor temp within limits loop 3 temps within limits		
61			a) Record initial and ending engine accel. b) Est. average engine acceleration for: Alpha Cen arrival Alpha Cen departure Earth arrival c) Est. burn durations for: Alpha Cen arrival Alpha Cen departure Earth arrival	
62	MECO @ Vcen=2.883×10^7 m/s	b) confirm MECO	c) confirm MECO d) confirm Vtan=2.883×10^7 m/s e) calculate transit time to Alpha Cen	
63	a) NAV mode = “ccw prg” b) ±10% engines to zero out Vcen		c) confirm Vcen=0, Vtan=2.883×10^7	
64	a) coast for 10 hours b) evaluate stability of Vcen d) correct Vcen if needed e) evaluate, with FIDO and GUIDO, the frequency of required Vcen corrections during hibernation		c) evaluate stability of Vcen	
65		Shut down all non-essential systems.		

66		a) Evaluate fuel used for Earth departure b) Estimate fuel used for: Alpha Cen arrival Alpha Cen departure Earth arrival c) confirm fuel flow <1 and note value d) calculate fuel use for A-Cen transit in both directions e) calculate fuel reserves for mission procedures while in A-Cen system in terms of HAB fuel loads		
67	Evaluate viability of mission profile in terms of fuel use.			
68	Complete hibernation checklist.			