

APOLLO 13 TIMELINE OF INTEREST TO EASTERN AUSTRALIAN STATIONS.

Prepared by Bruce Window from Ben Feist's Website of Apollo 13

G.E.T	From/To	Activity, Command or Report
55 00 00		HSK SRT in progress
55 53 24	HSK/NETWORK	PA4 is RED. Heat Exchanger Fan. ETO 1 hour
55 53 18	Capcom/Crew One more thing.... Stir up the cryo tanks
		THIS CAUSED THE EXPLOSION
56 13 00	RTC/HSK	That concludes the -10 tests
56 08 21	RTC/HSK	SRT talk. You can do SYS 3 CSM and SYS 2 IU
56 41 01	HSK/Network	We're declaring our Command Computer RED can support.
56 42 50	HSK/Track	We need ACQ messages for Wing and Prime.
56 01 01	HSK/Network	PA4 is now GREEN. They've replaced the motor.
57 02 01	Network/HSK	Continue with present configuration, 3 way on CSM and we'll look at how the OPS Program goes in the next few hours.
57 16 02	Network/All Stn	The CSM is being powered down. LM may be powered up. Support is now critical.
57 34 06	HSK	HSK AOS IU
57 36 14	RTC/GDS/HSK	IU handover will be at 57:40:00. It will be on my mark.
57 36 34	Track/HSK	On successful handover you're to attempt to pull IU 1.5 mHz per the ISI

57 36 36	Track/GDS	On successful handover you're to take the Wing and configure for LM uplink.
57 40 00	RTC	Mark (counted down)
57 40 06	HSK	HSK has solid 2 way lock on IU
57 42 10	Track/HSK	Any success pulling the IU ? HSK says they're attempting to pull it now.
57 42 42	HSK	LOS IU
57 43 22	HSK	AOS IU
57 43 49	Network	HSK/GDS be aware ISI 49 is in effect now. (20 KW uplink ???)
57 44 36	Network/All Stn	LM power is about to come on. Look for LM downlink initially Downvoice Backup
57 49 34	Track/HSK	Can you maintain lock on IU?.. Yes, We've lost it and have it now, pulling to 55kHz
57 52 43	HSK/Track	We've pulled IU out to 700 kHz but keep dropping it if we go further. Staying here.
57 53 40	Track/HSK	Drop it, go to 20 KW and pull it out.
57 53 45	HSK/Track	We suggest we go to 700 kHz and stay. Track says... Agreed 700 better than none.
57 57 23	GDS	AOS LM
57 57 25	Network/GDS	Are you able to stay with LM freq. OK ?
57 58 10	GDS/Hstn Com	Remoting Backup Voice from 210, very weak.
57 58 57	GDS	Two way LM. Track asks about offset? GDS says Standby

58 00 15	HSK/Track	We're approx 66 kHz offset on IU at 20KW. Track asks if Minus or Plus?
58 01 25	HSK	Dropped IU. Trying to pick it up again.
58 05 09	Track/HSK	Can you maintain IU lock offset?
58 05 38	HSK/Track	No change. At 61 kHz.
58 06 04	GDS	LM offset 1.5 kHz.
58 06 26	HSK	Just dropped IU. We're reacquiring.
58 07 00	TIC	Commenced Low Bit Rate CSM
58 07 20	TIC	Can you see the CSM? Yes.... High bit rate.
58 09 24	Track/HSK	What is offset on your Synthesiser (IU).? HSK.... 50 kHz Negative at S Band.
58 12 49	TIC/All Stns	Standby for CSM Low Bit Rate.
58 17 27	HSK/Track	AOS CSM and LM at Wing (HSKX).
58 19 10	Track/HSK	Reconfirming configuration. SYS 1&2 on IU, SYS 3 on CSM and 4 ? HSK says 4 on LM and locked up.
58 32 18	NwkDir/Netwrk FAO loop	I talked to HSK STADIR re Parkes. 15 mile hop w/out M/wave link. 24 hrs for that. They will try to bring up Voice by phone line. How long for Voice? 6 to 8 hours. The crew have left Tidbinbilla by car (for Canberra Airport to fly to Parkes).
58 26 47	HSK/Track	We are Program Tracking as its safer. Is that OK? Track says Yes OK.

58 29 25	Track/All Stns	New SCM coming out soon covering your configurations.
58 35 00	Networ/GDS	What offset you have on LM? GDS says 1.5kHz. Network asks...Any trouble keeping lock while on nominal frequency?
58 36 45	Track/GDS	Try to bring LM back to nominal. Record the effect on IU interference on you.
58 36 50	Track/HSK	You watch for IU interference
58 38 30	GDS	We're bringing LM back to nominal.
58 39 28	GDS and HAW	LOS CSM.
58 41 13	HSK/Track	Do we keep SYS 3 on CSM or LM ? Track says CSM.
58 42 36	HSK	LOS IU.
58 43 33	HSK	We have reacquired IU but its affecting the LM.
58 44 40	Track/GDS	What offset you got on LM? GDS says 485 HZ. No effect to IU.
58 45 36	Network/All Stn	The CSM is powered down
58 52 28	Track/HSK	Reconfigure SYS3 to LM.
58 55 06	Track/HSK	How is the tracking on IU?
58 55 42	Track/HSK	We're holding IU at -50 kHz. Track asks...Is it better to do +ve? HSK says...NO as we will capture the LM on the way through.
59 27 31	Track/HSK	Have you still got lock on LM? HSK says YES at -132 dBm.

59 37 07	Track/HSK	Take the IU and go to +1.5 kHz on Synth. HSK says...Will try. Don't have any hope
59 41 22	Track/HSK	How's it progressing?
59 44 04	GDS/Track	It appears that HSK has captured the LM as they went through.
59 45 47	HSK/Track	Do we keep pulling the LM or take the IU Transmitter off?
59 45 50	Track/HSK	No.... Go to contingency procedure ISI 49.
59 47 18	GDS/Track	HSK still has both Transponders. Suggest HSK drop carrier to IU.
59 47 25	Track/HSK	Drop your IU uplink. HSK...Wilco.
59 52 44	Track/GDS	Any success? GDS says... Just offsetting a bit more before putting modulation ON
59 53 03	HSK/Track	Locked up LM at Wing but can't lock IU at Prime. Maybe GDS is pulling IU?
59 53 36	GDS/Track	GDS valid 2 way on LM. Track immediately says... go down 1.5 khz on the LM
59 54 57	HSK/TIC	Straight away GDS loses lock on LM, Prime is locked up on IU, Wing is locked up on LM.
60 00 05	GDS/Track	We in lot difficulty here. Suggest HSK take carrier down until we get solid LM +1.5
60 00 15	Track/GDS	HSK carrier (has been) is down. Part of difficulty is different Omni's.
60 02 12	GDS/Track	AOS LM going down to 1.5 shortly. Have only LM
60 02 44	Track/GDS	Offset at moment?
60 03 00	HSK/Track	We need IU ACQ message.

60 03 50	Track/HSK	Bring up IU carrier and attempt to take it up.
60 04 47	Track/HSK	Have you got the IU? HSK says No, we've got the LM.
60 06 10	Track/HSK	We think the IU is being pulled out by a spur on GDS uplink.
60 07 09	GDS/Track	Seems the IU is high on LM, can't confirm capture.
60 07 36	GDS/Track	Get HSK to drop carrier. Track says ... HSK has no carrier on.
60 09 23	HSK	AOS LM at -145 dBm
60 09 30	GDS	AOS LM
60 10 55	Track/GDS	GDS, go back to centre frequency and attempt to acquire LM
60 15 55	Track/GDS	GDS do you see IU. GDS says yes we do Track says See if you can grab IU and take it up to 1.5.
60 17 40	Track/GDS	Any success
60 18 41	Track/GDS	GDS take your carrier down.
60 18 49	Track/HSK	Bring carrier on and acquire LM
60 20 22	Track/HSK	Is LM drive ON? HSK says yes but we are not 2 way
60 21 52	GDS/Track	It seems that HSK has to the IU and we've got solid downlink on LM
60 22 10	Track/HSK	Drop your carrier.
60 22 18	Track/GDS	Bring your carrier up and acquire the LM.

60 22 50	GDS	2 way LM
60 24 23	Track/HSK	Does GDS appear to have both LM and IU locked up? HSK says can't tell.
60 25 15	Track/HSK	Taky your IU carrier down
60 30 18	Track/GDS	What SYS is uplinking? GDS says SYS 4.
60 30 45	Track/HSK	Goddard Computers will be sending you ACQ data for the IU,
60 39 42	Track/HSK	What is your Synthesizer frequency for LM. HSK reads back numbers.
60 40 29	Track/GDS	What is your masking LOS please. GDS reads figures in GMT
60 45 13	Track/HSK	Do you see IU downlink? HSK says Yes. We're locked. Track asks which side of LM
60 46 38	HSK/Track	We think the IU is locked onto an uplink spur to LM of about 30 kHz.
60 54 40	GDS/Track	We confirm IU is locked to uplink spur.
60 57 06	Track/HSK	When moving LM thru the IU frequency, were you at 20 Kw? HSK says YES.
61 00 37	Track/HSK	Drop your IU uplink power to 10 Kw,
61 12 45	Track/HSK	Confirm you got pointing data for Parkes. HSK says YES.
61 27 45	Track/HSK	They are going to do a burn. Shortly after they're going to turn LM off for 3 mins. So you get Prime Site to take IU to +1.5 mHz.
	HSK/Track	We'd prefer to go less offset as we had problems earlier.
61 27 55	Track/HSK	When LM comes on, your Wing will take the LM 2way.

61 29 15	Track/HSK	Confirm 20Kw uplink. HSK says YES,
61 32 30	HSK/Track	What uplink mode on LM. Track answers....2.01
61 41 56	GDS/Track	Advising you that we are 1 degree away from horizon.
61 42 43	Track/GDS	The Crew have been given the word to turn their Transponder OFF
61 44 18	Track/GDS	Stand by for LOS
61 44 37	GDS	LOS. LM carrier down.
61 44 41	Track/HSK	Bring IU carrier up at 20Kw and take it up 1.5
61 46 16	Track/HSK	Any luck with IU? HSK says...we are 2 way and pulling.
61 46 38	HSK	LOS IU. Just dropped the uplink. We will start again.
61 46 44	Track/HSK	How far did you pull it ?
61 48 01	HSK/Track	We are pulling it out. Recommend to 50 kHz and hold.
61 48 33	Track/HSK	The LM will be up in 1 minute. DO IT.
61 48 40	HSK/Track	At 50 kHz and holding.
61 49 20	HSK	Dropped the IU
61 49 25	Track/HSK	Go to 25 offset.
61 50 55	HSK	AOS LM

61 52 25	HSK	Valid 2 way LM.
61 53 57	Track/HSK	IU and LM Synthesier frequencies please.
62 04 18	Track/HSK	Give me signal level variations on IU please
62 05 06	HSK/Track	IU -125 to -140 dBm.
62 05 16	Track/HSK	Thanks for your support that time. HSK answers..... Roger, will keep it up.
62 10 17	Track/HSK	At the moment, you've got 20Kw up to IU and Synth. Freq xxx, therefor offset is 57.4 HSK answers.... We estimate its 60 kHz and the IU is higher than LM. Track says....What's your feeling about bringing LM down so as to bring IU down to relieve some of that? HSK says..... Let me think about that.
62 11 26	Track/HSK	Are you still 2 way on LM? HSK says..... Yes 2 way with signal level -140
62 13 15	Track/HSK	What is your status with LM? HSK says 2way with signal level -140
62 13 31	HstComTk/HSK	Are you receiving any downlink voice? HSK answers.... Negative.
62 13 44	HstComTk/GDS	Are you ? GDS says ... Yes on 210'. HstComTk counts h/over voice from HSK to GDS
62 15 14	HstComTk/HSK	When you get good voice, inform me.
60 15 32	TIC/GDS	Signal Level on 210'
62 15 51	TIC/GDS	210' signal level -127. Be advised 210' will have LOS at 0935Z
62 18 41	GDS/Track	Estimate 3 minutes to LOS on 210'

62 20 38	HSK/HstComTk	We're 3db above voice threshold & feel we'd have good voice if was any down voice. HstComTk says.... HSK will get voice after GDS 210' has LOS.
62 21 50	HSK/Track	We think we are best to stay as we are (re offsets), and gave reasons. Track... OK
63 23 57	HstComTk/HSK	HSK to Remote D/Link Voice NOW.... GDS you're to inhibit it.
62 27 28	HSK/HstComTk	Last uplink went out incorrectly, double keying, but we saw no Downlink Voice
62 31 54	HSK/Track	Like a Parkes ACQ Msg. cover 1000-1200Z, Do have ACQ but covers too many hours.
62 39 17	Track/HSK	A 2-hour ACQ message for Parkes is on its way.
62 43 43	GDS	Final LOS
63 08 43	HstComTk/HSK	Any Parkes Downlink Voice? HSK says Negative
63 12 45	HSK/HstComTk	The last uplink didn't get to the spacecraft. Double keying,
63 20 44	HstComTk/HSK	Any uplink dropouts? HSK says last 2 were solid..
63 27 01	HSK/Network	Parkes has acquired S Band but don't have voice circuit configured. ETO 15 mins.
63 28 08	HstComTk/HSK	Give me a quality report on Parkes down-voice. HSK says Can't, not configured yet
63 30 43	HSK/HstComTk	Estimate its 15 mins for Voice from Parkes.
63 47 22	HstComTk/HSK	Any estimate on Parkes?
63 47 55	HSK/HstComTk	Can't give a report. Parkes is tied up.
63 56 44	HSK/HstComTk	We have downlink voice from Parkes. Its noisy because of lashup. Better at Wing

64 04 17	HSK/Network	Parkes has had LOS
64 24 29	Track/HSK	How far off nominal is IU set now? HSK says.... Uplink is approx 60kHz off nominal.
64 46 35	Track/HSK	In few mins they're going conduct test on S/C, you'll see mode 4 D/L, LM PA off to save power. See if you can hold low bitrate, and monitor it closely.
64 55 01	HSK/HstComTk	We're remoting downlink BUVoice, quality as you would expect with low signal -138.
65 05 02	HSK/HstComTk	We're copying S/C intercom on down voice at same level as down voice. Netcom says at Handover, LM will switch off and then back on.
65 11 13		Interesting discussion on CCATS[TM] between Track and INCO about handover from HSK to MAD.
65 20 40	HSK/HstComTk	We confirm we are copying Capcom on LM downlink voice.
65 26 41	Track/MAD	Complex Handover briefing involving LM Txr off, HSK drag IU to nominal, HSK Txr off MAD Txr on, capture IU and drag to 57 khz, Crew put LM Txr on, MAD capture LM.
65 43 24	MAD	AOS IU
65 53 30	MAD	AOS LM
66 00 19	Capcom/Crew	Turn S Band Txr off NOW. Crew take 16 seconds to do that. Then HSK reports LOS LM
66 01 53	RTC/HSK	Turn LM uplink Txr OFF. HSK says he needs to tune IU back to nominal. RTC ...GO
66 02 42	Track/HSK	Expedite tuning IU.
66 03 35	HSK	Ready for handover..... RTC immediately starts handover countdown ...5..4..3..2..1

66 03 45	RTC	Mark
66 04 58	MAD	Valid 2 way on IU. Track says Let us know when you have the offset
66 05 56	MAD	IU pulled off as required.
66 07 48	MAD	Valid 2 way on LM
66 08 01	HSK	AOS LM 3 way.
66 15 10	Netwk/Comtek	Crew say the uplink is noisy
66 22 21	HstnComTk	Taking HSK down voice to Net1..... Lots of discussion as to cause of noise
66 35 13	Track/Ndtwork	Think MAD has got locked onto sideband. Might have to get them break lock/re-lock
66 36 50	Track/MAD	Want you to break lock on LM and reacquire. You're on a sideband.
66 40 58	Track/Procedures	Track complains he was not aware LM PA being turned On/Off. Let Track know.
66 40 50	Track/Network	MAD has reacquired. All OK now. Downlink clear.
66:58:43	HSK	FINAL LOS
80 54 56	HSK/Track	Post SRT discussion about RF System configuration
81 17 34	Track/HSK	Discussion about Parkes estimated LOS..... HSK says approximately 11.40Z Someone? tells Track it is 88:27
81 18 19	Track/Netcom	Goddard gave Parkes LOS as 88:27 is that be right? No says Netcon....87:29 is good

81 30 02	HSK	AOS LM
81 58 01	Track/HSK	When will Wing be at 5 deg.? HSK says Wing horizon 9 deg at 0523Z
81 12 14	Track/GDS	Signal level please. GDS says -138 dBm
82 30 46	Track/HSK	What RCVR sending us AGC? HSK says ... Should be 5 as Wing has AOS
83 11 50	Track/GDS/HSK	Standby for LM mode 8
83 12 12	CRO	AOS LM
83 58 03	RTC/GDS/HSK	Handover will be at 84:00 GET
83 58 45	Com/GDS/HSK	On handover, we want GDS to remote D/L voice and HSK inhibit it.
83 59 56	RTC	Starts Handover countdown
84 00 00	RTC	Mark
84 00 14	HSK	Valid 2 way lock LM
84 17 27	HSK/Track	Parkes has AOS (on the offset feed)
84 14 54	HSK	LOS LM
84 20 58	HSK	AOS LM
84 22 29	HstnCom/HSK	?Quality of Voice from 210'? HSK says its offset feed. We'll wait for Main Feed to assess it.
84 29 36	HSK/TIC	Parkes data on at this time. (Main Feed)
84 32 36	TrackHSK	Confirm you not attempting RNG. We see LM PRN in status word. HSK says Negative to RNG

84 34 38	HSK/Track	We're sending Parkes data but it has dropouts from the Microwave link
85 01 25	Track/HSK	What is the quality of Down Voice from Parkes? HSK says.... Wing might be better. Track says... GDS 210' better than Parkes. HSK says ... I would expect so.
85 10 12	HSK/TIC	Problem with PRN is failed flipflop.Want us to Power Off to fix it. TIC says NO..
85 11 40	HSK/Track	We need another ACQ msg for Parkes.
85 35 06	TIC/HSK	Dropouts on Parkes data. Weather or something? HSK says...Think its carrier switching on Link
85 48 08	TIC/HSK	We confirm its reset itself. (RNG bit ???)
86 04 47	HSK and GDS	LOS LM
86 04 55	GDS	AOS LM..... No AOS from HSK heard on any loop.
86 09 26	RTC/HSK	Signal level LM ? HSK says Wing -140dBm, Parkes -128 dBm
86 16 02	HstnCom/HSK	We're losing GDS 210' at 86:19. How's Parkes Voice?
86 16 19	HSK/HstnCom	Parkes voice is worse than Wing. We're working on it. Will remote the best down voice.
86 18 51	GDS/Track	GDS 210' LOS. HSK says remoting Downlink Voice from HSK
86 32 50	HSK/HstnCom	Remoting Parkes Voice now. Consider its more readable.
86 39 33	GDS	Final LOS
86 48 54	HSK/HstnCom	Now remoting Wing voice. Have difficultly deciding re quality. Parkes has higher frequency components making it more readable in our opinion. What do you prefer?
86 58 50	HSK/TIC	We think we see a 5khz subcarrier on the Biomed. Did GDS see that? TIC says the Crew happened to turn off Biomed in the spacecraft. Will check

87 08 37	TIC/HSK	Don't think Biomed will be on for next few hours. Re 5khz, no explanation.
87 22 49	TIC/HSK	Please remote 85' data so we can evaluate.
87 23 30	HSK/TIC	You have the 85' data
87 25 05	TIC/HSK	At 87:35 put back Parkes data.
87 27 07	TIC/HSK	We saw one Wing RCVR LOS , the one providing TLM. Why way that?
87 28 58	HSK/TIC	We had a few seconds LOS on Wing RCVR if you're doing comparison
87 35 22	TIC/HSK	We're back to Parkes data.
87 44 33	HSK/TIC	We tracked down the phantom Biomed 5khz. It came from a 15k spur on Parkes Mww/Link
88 02 11	HSK	Parkes LOS
89 41 50	MAD	AOS LM
89 51 09	RTC/MAD/HSK	Handover on my mark at 90:00. LM is on Omni as per SCM
90 00 00	RTC	MARK (handover)
90 00 24	MAD	Valid 2 way on LM
90 00 51	TIC/MAD	Please remote Data from the Wing
90 03 25	MAD/RTC	On handover, we think we locked onto uplink spur. Can we reacquire? RTC says.... Break lock and reacquire.
90 04 48	MAD	We have reacquired and believe its OK
90 17 35	Network/HSK	When was last time you had a problem with CMD computer that is RED can support.

90 20 43

HSK/Network

Quite a while. Been OK since we cleaned contacts and pins on the boards.
Network says its almost 24 hours, so we think you can call it GREEN.

90 56 45

HSK

Final LOS LM