

RECORD

APOLLO 13

LOG

7530-290-5028
FEDERAL SUPPLY SERVICE

CDDT

1

- 3-23-70 0800 AM Galbois on
- 0800 - Seq 22-049 K 0007 VZ
- 0845 - alarm on sensor ~~0152~~ 0152
seq 23-029
- 0920 Momentary alarm on 152 - H₂ leak?
lost data
sensor 152 is hazard alarm for H₂ leak MW
~~sensor~~ valve box
- 10:00 - discovered small H₂ leak in valve box -
traced to leaking "B" nut.
IDR #18
- 12:30 leak in H₂ vent line - during L H₂ loading
IDR #20 L H₂ loading complete
- 3:00 PM LO₂ Dewar connected, purging
in prep to loading.
- 3:20 PM HORIZER ON
IDR #21 regulator for dewar vent out. Word
to pressure then. Changing out 49 panels.
- 4:40 PM are flowing O₂ now, 40% in.
- 5:15 LOX loading complete.
- 6:25 Start detanking L H₂
- 6:45 intermittent alarms on #151, one of
H₂ sensors.
- 7:10 down to 32% on tank 2, 53% on tank 1
- 8:00 down to 5% " " " 26% " " "
- 8:44 tank quantities reaching zero
- 8:52 Start LO₂ detanking
- 10:21 Filter problem - flow seems to be blocked
IDR #23 - O₂ tank down to only 83.8%
- 10:39 stopping @ 29-009 sequence number in
LO₂ detank - have to change out filter,
must change out POV.
- 11:52 USE disconnection & wetting suit wick.
- 3-24-70 12⁰⁰ Galbois ON
- 148 T-26 hrs.
- 217 Powering down for hatch installation

6:00 ^{He} Tank will be topped off at 7:00 CST

6:07 Count is T-21:53

6:15 IDR 19 Camera Lens Alignment was 90° off from camera alignment mark. (LM camera)

6:15 IDR 18 → DR 696 LMP window shade did not fit.

8:00 GOAD ON DUTY, RELIEVING GAMMON

11:18 T-12:20 SEQ 180 WRONG

13:04 ~ T-15 STATUS CHECKS BEING MADE

14:02 BILL GRUBBAM SAYS WDN'S DETAIL ^{TANK 2 OXYGEN} NORMAL FRIDAY (END OF CDDT)

~~3-25~~ - NOW READING 91.5%

3-24-70

T- 7:00 hours and enter into a hold. This hold is due to 3 vehicles catching fire due to being in O₂ atmosphere near the Pad. Estimate on hold is 3 hours.

3-25 Dodson & Jones on @ 8:00 A.M. CST

Count picked up @ T-7:00 at 9:50 CST

T-4:17 - mention of some kind of a fire in the VAB. "False Alarm," Morse

T-4:00 CSM may have seen ^{power} glitches in ECD trim monitor between 13:39 to 13:40 EST
S-14-053 of ball power and of ball heaters on
Thunderstorms reported ~~for~~ Cape tonight - forecast!

T-2:54 A no-impact CSM guidance system problem was announced.

T-00:27:00 Hold at 4:45 CST

Picked up count @ T-00:27 at 16:50

T-00:22:30 Hold until SIC overflow workaround could be arranged. Picked up at ~~17:27~~ 17:37 CST.

CSM Batteries will probably exceed the launch redlines for dry CDDT. Recommended using CDDT redlines instead of launch redlines per Don Segna
CDDT complete at 1800 HRS CST

MARCH 26

DRY CDDT 0700 CST Dodson ⁵
CHILLDOWN COMPLETE @ 09-540 Comp. - S-BAND

Battery Status

0735 CST 3/26

A. 12.51 AH.

B. 9.14 AH.

C. 7.22 AH.

At start of launch window

2 lowest 55.3 AH

3 total 87.6 AH

At end of launch window

2 lowest 49.3 AH

3 total 80.6 AH

At display acquisition (0845 CST) SHE press. was 498 psi. Pressure at 1200 HRS CST on March 25th was 324 psi, indicating a rise rate of less than 8 psi/hr.

0915 CST - Wade reported on two windows of the CM from last night's thunderstorm activity. More rain forecast for today. BPA reported as being the tightest in the program thus far.

Program Manager is concerned about wire integrity of a gyro in the RB in 6M-7. Laubach and Mountain are working the problem.

1005 CST Wade reported running out from

under the BPC. IPR 28 was written against the previous water condition and will be amended to reflect the latest condition.

4200 & 4300 buses saw spurious glitches at 1044. Dual transmissions on loop prevented meaningful understanding of the problem being discussed. 6215 & 6221 bus also saw glitches. Thought to be noise from ground supply.

1110 CST - Program Manager exercised system by posing some question - hypothetical and otherwise -

(At 1220 hrs CST - The Program Manager posed another hypothetical question!! What would we do if we saw a momentary glitch on the main buses of 15amps. Had problems in contacting proper personnel to answer question. Spoke to Munford at 1246 CST.

She pressed 1300 hrs. was 522 or still about 8 psi/hr rise rate

Dry CDDI complete at 1312 hrs CST

COUNTDOWN

1-6-70 Hamilton on @ 0000
 CST
 0100 - SHe Tank Press - 1225 PSM, Reg Out Man. - 132 & 130 PSA Fuel Oxid
 0200 - " " " 1241 " " " " 133 & 131 "
 0400 - " " " 1265 " " " " 134 & 132
 0600 - " " " 1297 " " " " 135 & 133
 0700 " " " 1312 " " " " 135 & 135
 0730 Test crew on way to IU to vent
 SHe tank to \approx 1100 psia
 0730 Now @ T-87:29:00
 HOYLER ON @ 0800
 SHe pressure 1340 PSIA @ 8:20 AM
 VE against -21 have to crys valve 9:55 a
 Logging on PG 295 75 PSI read - ~~10:45 a~~
 GOSS on seq. no. 13-049 @ 11:22 CST
 on 14-000 & on @ 11:25
 12:05 PG 295 indicating 58 PSI
 JOHNSON ON @ 1600
 17:30 IN HVY ORD H/V
 19:50 HVY ORD COMP
 19:55 Seq. 15-084 thru 15-091 COMPLETE
 20:00 START REMOTE RESISTANCE CHECK -78
 21:50 start Seq. 21-000
 22:20 Start Seq. 83-00
 4/1/70 00:10 No press on S/c Reads 800 PSI and on
 GSE 100 PSI - Writting on IDR and
 investigating
 00:20 Problem is in GSE transducer.
 00:45 RCS-Seq. 21-000 COMPLETE
 LITHONS ON @ 0100
 01:15 seq 025-002 start
 02:15 seq 026 load Hypergals
 04:20 Minor leak on 009
 04:55 Seq. 88 start GOX servicing
 07:00 -66 hours

4/7/70

0807 Gamma on

0818 Seq 086-11 completed at 8:18

D/S GOX Tank Pressurization complete

0838 Decrease in output out LM GSE transducer
IDR 050 issued.

0848 Sequence 087-00 started

0851 SHe pressure reported 300 psi high

0854 H₂ Tank pressure high. No other comment

0902 Seq. 030-006 GHe disconnect accomplished

0927 Sequence 030-013 completed

32 complete on LM

09:44 Ascent & GOX tanks are being vented

10:21 Sequence 32 complete

10:42 Seq. 33 completed

10:55 starting seq. 31

11:20 Pad is open

11:38 J. McDevitt, J. Williams are scheduled to
make final pad inspection at 2⁰⁰ P.M. EST.

11:56 TC reports seq. 19-057 accomplished

12:57 Taking water sample in LM cabin.
Seq. 13-010

2:19 seq. 13-082 reported complete

3:26 seq 19-052 reported complete

4:00 C. H. LAUBACH

Gamma) says KSC is to pickup
the count at 5:00 CST.4:40 A DR - NUMBER 0531 WAS
WRITTEN EARLIER IN THE DAY
AGAIN SOME CRACKED FASTENERS
AND WAS REPIAIED CLOSED
AT 4:40 P.M.10:10 Shake down mks Complete LM
Report of a DR # 730 on the
front face cones - a couple of
small parts broken - replacement
part being pulled out of space -

10:10 STARTED REMOVAL OF
COOKIE CUTTER "B" - DUE
TO COMPLETE @ 12:00 MIDNIGHT.

4-8-70 0001 GOAD ON DUTY

4-8-70 0754 TOM GRACE ON

0830 LM/SLA UMBILICAL CABLE
PULL-BACK MECHANISM QUESTIONABLE
- HAD SLACK - WILL NOT TEST
SINCE TEST INVOLVED VS
MISSION CRITICALITY DOES NOT
WARRANT.

IN THE PROCESS OF PREPARING
SHE GSE FOR LOADING.

AT 11:00 A.M. 3-8-70^{CST} GO INTO
A 16 HR HOLD. PICK UP
COUNT AT 0300 CST ON 3-9-70
WITH SHE LOADING AND TOPOFF
510 - R. Ferguson will notify
MER (5907) who will be
here for she loading - if no
one is to come, Ferguson will
give a name to call in case
of an emergency.

4/8/70 1600 J. F. DEMOSS

CSM - FC PRESS - ~~2000~~ ~~2300~~ 0030

FC WARM UP 0100 on 4/9

FC CAL 0300 on 4/9 AT

WHICH TIME COUNT WILL RESUME

AT T-48 HRS

LM - SHE TANKING TO START AT T-48 HRS

AT 1700 LM % WAS IN 057-003

SHE HEAT EXCHANGER LINE PURGE'S
SAMPLE

2130 - COMMENT ABOUT LM - ALSEP FUEL
CASK - IDR #44 ONE SCREW LOOSE
AND ONE MISSING ON BARD ABOUT CASK

2020 CSM - Seq 13 GSB Purge Complete

4/9/70 00:00 egw

02:35 START SEQ 58-000

02:55 START SEQ 59-000 D/S SHE FILL

04:16 START COLD SOAK

04:15 SHE PRESS 24 psia

20	"	"	47
25	"	"	55 - START FLOW
30	"	"	71
32	"	"	79 - STOP FLOW
35	"	"	95 - START VENT
40	"	"	95
45	"	"	103
50	"	"	111
55	"	"	119

05:00 " " 126

:15 " " 150

:30 " " 166

:45 " " 182

6:00 " " 190

6:05 " " 202 (PT 270) START VENT

6:17 " " 60 STOP VENT

6:30 " " 71

7:00 " " 79

7:30 " " 95

8:00 " " 103

DAY

CST 8:30 AM 111

9:00 " " 119

9:30 " " 134

10:00 " " 142

10:30 " " 142

11:00 " " 150

11:30 " " 158

12:00 " " 166

12:30 " " 174

1:00 " " 182

1:30 " " 190

1:54 " " 197

1:59 " " 58

2:00 " " 63

2:30 " " 71

3:00 " " 71

3:00 " " 71

see next page for log
This page for pressures

Port out fuel 62
OX 60

begin vent
end vent

see page 17

change out of BPC Hatch window
due to scratch.

9:30 Begin GN_2 purge

9:40 IDR #5 for leaking purge valve, GN_2

9:45 Begin cleaning pad for cryo loading

10:3 Begin cryo loading

11:00 Covered LM Battery station for KSC

11:17 Stop H_2 flow @ about 85%

11:58 94% Tank #1 97% Tank #2

12:00 95% " 97% "

12:05 97.5% " 98% "

1:55 Begin LO_2 load

2:25 O_2 tanks @ 101%

2:27 Stop O_2 flow

2:30 Tank 1 @ 101.0%, Tank 2 @ 101.2%

00:00 AM, Fri. SHe tank venting

0500 Topping off SHe

4/10/70

2:30 PM Call from Singshinson. Let's not change
redline on SHe pressure the day before launch when we
have a tank that looks OK (which is what we have). Besides
there are so many watching it now, when or if they
go over, there will be a meeting and decision.

SHE PRESSURES CONTINUED FROM P. 15

	SHE	MANIFOLD		PT 270	PT 313
3:30	79	56	54	82	51.7
1600	79	56	54	87	53.1
1630	87	56	54	90	55.1
1700	87	56	54	97	56.4
1730	95	56	54	102	57.3
1800	95	57	55	107	59.2
1830	103	58	55	107	63.5 60.5
1900	103	59	58	112	61.6
1930	111	60	59	11	62.7
2000	111	62	60	119	64.1
2030	119	63	61	122	65.2
2100	119	64	63	126	66.3
2130	126	65	64	131	67.6
2200	126	66	65	136	68.7
2230	No Reading Given				
2300	134	69	67	140	444
2330	142	70	67	145	444
2400	149				
0605	62.8	60	59	67	50.6
0130	71	60			52.7
0230	74				
0400	87	60	59		62.7
0600	80/120				
0700	126				
0815	134				
0930	142				
1030	150				

* Backup TV scan conversion equipment here at MSC is out. Man on way from west coast to try to fix. No more than 70% chance it can be repaired. Have located unit at KSC in ^{press} ATU pool. Plan to take action at about 8:00^A 4/11 to bring to MSC. Will use as back up. Brief JAM and if no serious objections will move out.

KSC Stan Sebar - 784-0230
 X3420 Polaris Rem. #16 MSC Patton - Transportation will look at equipment in morning and make arrangements to move to Houston.

4-11-70

0843 - went into scheduled hold - T-4 hrs (9:13^{AM} CST) Fuel Cells activated and are sharing load

0943 - pick up count at T-3:30

T-01 48 SIC Ox vent ^{close} indication lost! Recycling did not obtain close signal. This is a no go for launch! Alarm is intermittent - Valve appears to be frozen in the open position. Will try to raise the temperature to free valve

T-1:34

Master Alarm on hi O₂ flow

T-024

Valve problem cleared

Liftoff 1:13 PM CST

The Mission Evaluation Room
 lost data voice communications and
 data three times. Once before liftoff
 and twice after launch. Last time, about
 T+ 00:06:30, data recovered but no
 comm. Comm. recovered about T+ 00:20:00
 Circuit breaker was changed at about
 T+ 00:30:00.

T+ 00:05:21 Inboard engine cut-off
 early
 S+II cut-off at T+ 00:10:00
 Insertion of T+ 00:12:34

Two latches were not cocked and were
 reset. 03:56:20

205-453-2815

Huntsville - MER.

D He PT

SR-5016P

PTC RefMat 5:34 GET

111.7 - Sun ☉

210.0° - ♀

14.1 - EARTH ☉

238.1° - ♀

GET 6:17

Signal strength about 6db low

3rd truck

Reference L-8 SMEAR

I disagree with both Hammack & F/c on what pressures we can live with at 58 hrs.

Sheets TIME		PREDICTED	ACTUAL
End of Topoff	T-31 hrs (actual)	129	119
outime Launch	8 th /hr	368	356
End of launch window		400	
IVT (58 hrs)	6 th /hr	960- 1000	
IVT (83 hrs)		1310- 1350	
IVT (97 hrs)		1510- 1560	
PDI (103:30)		1600- 1650	

Predicted values based on -

8 psi/hr pre launch

6.5 psi/hr below 600 psia

14 psi/hr above 600

5100 # extra
on S-WB.

1165
732
792
678

1st shift

T+22:18 Batt. B charge complete. - Batt. A recharge later today

Fuel cell condenser exit temp. is cycling, but more rapidly than was observed on previous missions. Change in frequency is attributed to higher load on this mission.

T+ 23:19 Crew got about 5 1/2 hrs of good sleep. 8.57° S. 33 W
GET 77:41

SIV B impact was not confirmed. More talk to follow later. SIV B stage is tumbling.

T+ 24:05 Impact prediction is moving about 8° N.

2nd EMS ΔV post MCC₂ - 3.8 fps

C & W TRIPPED - H₂ TANK 1 pressure low, while both tanks in auto. Recommended that if this happens again place TANK 1 in auto and TANK 2 to off.

First Shift

MER Manager is not satisfied with the quality or extent of the Daily Report. Team Managers and Assistant Managers will maintain a log, herein, to be used to keynote significant events to be included in the Daily Report! etc

NOTE!

No Battery information was included with the two hour reports on the 3rd shift!

List of Significant Items for Daily Report

1. Condenser exit temperature fluctuations.

2. Accelerometer response in CSM to longitudinal accelerations of STH center engine

3. Potable quantity indication was erratic during checkout and during flight. Similar situation was seen on Apollo 12

488-4145
4. Optics Shaft fluctuation was seen on Apollo 12 and again on Apollo 13. The WSR has requested that the Crew perform a special test in order to determine nature of the problem

591-3655
A procedure has been written to request the crew to time the SHe meter change rate in order to determine the rate of pressure rise in SHe tank.

587-0165
6. O₂ tank #2 quantity readout full scale at 46'45. Talk with crew indicated that transducers went out when coyo's were stirred. Will use press. temp. readings to manage system in conjunction with the readouts for Tank #1

Note!

23

Of crew goes into LM prior to
TH 55 hrs (8:13 CST) Notify
Rob't Langley at 658-8089 ALVIN

Entered LM at \approx 54:20
LM Pwr ON 54:46

Rocking \approx 2" index

720
356-720 Reset

364
PGNS
B Bar
D Bar

Sec

AC-2-0J

MAIN A - UNDERVOLT 5 - 25.5 V

MAIN B - 4.0 V

Noticed something venting overboard thru
window #1 (56:13)

NEED PUR PLAN FOR NO F/C.

LM - OK Pure

OK Water

Problem on LiOH

GET 67:00 Dr. Paine requested, thru
Petrone, that all disciplines be supported
as required by the Apollo 13 Mission. He
has requested that the names of supporting
contractor personnel be sent to him.

10:30 AM thermal briefing from Craig

CM temp history -- when power
up today - what thermal means
will be req'd.

Where can heat be applied in
CM to best utilize power avail.

Water remaining in CSM potable
tank - what is plan for entry
water utilization

TIME

DATE	GET	CST	REPORT NO.	EVENT
4/11	-00:13	1:00 pm		Go/No Go Lift Off
	00:00	1:13 pm		Lift Off
1st Shift	02:20	3:33 pm	1	Go/No Go TLI
	02:35	3:48 pm		TLI
	03:06	4:19 pm		CSM/SIVB SEP
2nd Shift	03:16	4:29 pm	2	Dock
	04:20	5:33 pm	3	
	06:20	7:33 pm	4	
	08:20	9:33 pm	5	
	10:20	11:33 pm	6	
4/12	12:20	1:33 am	7	
	14:20	3:33 am	8	
3rd Shift	16:20	5:33 am	9	
	18:20	7:33 am	10	
	20:20	9:33 am	11	
1st Shift	22:20	11:33 am	12	
	24:20	1:33 pm	13	
	26:20	3:33 pm	14	
	28:20	5:33 pm	15	Go/No Go MCC-2
2nd Shift	30:20	7:33 pm	16	MCC2
	30:40	7:53 pm	17	
	32:20	9:33 pm	18	
	34:20	11:33 pm	19	
4/13	36:20	1:33 am	20	
	38:20	3:33 am	21	
3rd Shift	40:20	5:33 am	22	
	42:20	7:33 am	23	
	44:20	9:33 am	24	
1st Shift	46:20	11:33 am	25	
	48:20	1:33 pm	26	
	50:20	3:33 pm	27	
	52:20	5:33 pm	28	
2nd Shift	54:20	7:33 pm	29	IVT to LM
	56:20	9:33 pm		
	58:05	11:18 pm		
	58:20	11:33 pm		
4/14	59:35	0:48 am	30	IVT to CSM
	60:20	1:33 am	31	
3rd Shift	62:20	3:33 am	32	
	64:20	5:33 am	33	
	66:20	7:33 am	34	
	68:20	9:33 am	35	
1st Shift	70:20	11:33 am	36	
	72:20	1:33 pm	37	
	74:20	3:33 pm	38	Status all systems for
	76:50	6:03		Go/No Go for LOI
	77:24	6:37 pm		LOI
2nd Shift	79:35	8:48 pm	39	
	81:10	10:23 pm	40	Go/No Go CSM DOI
	81:35	10:48 pm		
	82:15	11:28 pm		Stay/Bailout

TIME

DATE	GET	CST	REPORT NO.	EVENT	
4/16	83:35	0:48 am	41		
3rd	85:30	2:43 am	42		
Shift	87:30	4:43 am	43		
	89:25	6:38 am	44		
	91:20	8:33 am	45		
1st	93:10	10:23 am	46		
Shift	95:00	12:13 pm	47		
	96:50	2:03 pm	48	IVT to LM	
	98:45	3:58 pm	49	Status systems for undock and SEP Sep	
	99:12	4:25 pm		Go/No Go for Undock	
2nd	99:16	4:29 pm		Undock	
	100:35	5:48 pm		CSM Circularization	
Shift	100:45	5:58 pm	50		
	102:45	7:58 pm	51		
	103:20	8:33 pm		Go/No Go PDI	
	103:30	8:43 pm		PDI	
	103:42	8:55 pm		Touchdown	
	103:50	9:03 pm		Stay/No Stay	
	104:40	9:53 pm	52		
	106:40	11:53 pm	53		
	4/16	107:50	1:03 am		Go/No Go EVA-1
	3rd	108:35	1:48 am	54	
Shift	110:35	3:48 am	55		
	112:30	5:43 am	56		
	113:42	6:55 am		SPS Plane Change #1	
	114:30	7:43 am	57		
	116:25	9:38 am	58		
1st	118:25	11:38 am	59		
	120:25	1:38 pm	60		
	122:25	3:38 pm	62		
	124:20	5:33 pm	63	Status Systems for 2nd EVA	
2nd	126:20	7:33 pm	64		
Shift	127:35	8:48 pm		Go/No Go EVA-2	
	128:15	9:28 pm	65		
	130:15	11:28 pm	66		
4/17	132:15	1:28 am	68		
	134:10	3:23 am	69		
	136:10	5:23 am	70	Status Systems in prep for lift-off	
3rd	137:09	6:22 am		APS Lift-off	
Shift	137:16	6:29 am		Lunar Orbit Insertion	
	138:06	7:19		RCS CSI	
	138:10	7:23	71		
	138:35	7:48 am		RCS Plane Change	
	139:04	8:17 am		RCS CDH	
	139:45	8:58 am		RCS TPI	
	140:05	9:18 am	72		
1st	140:50	10:03 am		Docking	
Shift	142:05	11:18 am	73		
	143:04	12:17 pm		LM Jettison	
	143:09	12:22 pm		CSM Sep <i>man.</i>	
	144:00	1:13 pm	74		
	144:32	1:45 pm		LM Deorbit	
	146:00	3:13 pm	75		

TIME

DATE	GET	CST	REPORT NO.	EVENT
	147:55	5:08 pm	76	
2nd Shift	149:55	7:08 pm	77	
	151:55	9:08 pm	78	
	153:50	11:03 pm	79	
	154:13	11:26 pm		Plane Change #2
4/18	155:50	1:03	80	
	157:45	2:58 am	81	
3rd Shift	159:45	4:58 am	82	
	161:45	6:58 am	83	
	163:40	8:53 am	84	
1st Shift	165:40	10:53 am	85	
	167:28	12:41 pm		TEI
	168:00	1:13 pm	86	
	170:00	3:13 pm	87	
	172:00	5:13 pm	88	
2nd Shift	174:00	7:13 pm	89	
	176:00	9:13 pm	90	
	178:00	11:13 pm	91	
4/19	180:00	1:13 am	92	
3rd Shift	182:00	3:13 am	93	
	184:00	5:13 am	94	
	186:00	7:13 am	95	
	188:00	9:13 am	96	
1st Shift	190:00	11:13 am	97	
	192:00	1:13 pm	98	
	194:00	3:13 pm	99	
	196:00	5:13 pm	100	
2nd Shift	198:00	7:13 pm	101	
	200:00	9:13 pm	102	
	202:00	11:13 pm	103	
4/20	204:00	1:13 am	104	
	206:00	3:13 am	105	
3rd Shift	208:00	5:13 am	106	
	210:00	7:13 am	107	
	212:00	9:13 am	108	
1st Shift	214:00	11:13 am	109	
	216:00	1:13 pm	110	
	218:00	3:13 pm	111	
	220:00	5:13 pm	112	
2nd Shift	222:00	7:13 pm	113	
	224:00	9:13 pm	114	
	226:00	11:13 pm	115	
4/21	228:00	1:13 am	116	
3rd Shift	230:00	3:13 am	117	
	232:00	5:13 am	118	
	234:00	7:13 am	119	
	235:00	9:13 am	120	
1st Shift	238:00	11:13 am	121	
	240:00	1:13 pm	122	
	240:34	1:47 pm		Status Systems for CM/SM SEP
	240:49	2:02 pm		CM/SM SEP
	241:03	2:16 pm		Entry Interface
				Splashdown