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TO: Recipients of Apollo 9 Crew Technical Debriefing document

FROM: Mission Training Section

SUBJECT: Inflight Debriefing

The enclosed transcription of the onboard inflight portable tape recorder is to be considered an addition to the Apollo 9 Crew Technical Debriefing document dated March 20, 1969.

Contents of this transcription are particularly applicable to paragraph 4.1.2 (Separation, Transposition, and Docking) of the Crew Technical Debriefing document.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

APOLLO 9 ONBOARD VOICE TRANSCRIPTION (U)

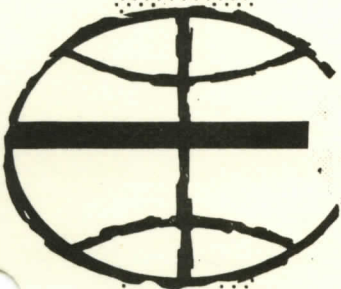
RECORDED ON THE
ONBOARD PORTABLE
TAPE RECORDER

March 1969

GROUP 4

DOWNGRADED AT 3 YEAR INTERVALS
DECLASSIFIED AFTER 12 YEARS

THIS MATERIAL CONTAINS INFORMATION AFFECTING
THE NATIONAL DEFENSE OF THE UNITED STATES
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TITLE 18, U.S.C. SECTION 793 AND 794, THE TRANS-
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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

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INTRODUCTION

This is the transcription of the Apollo 9 flightcrew communications as recorded on the onboard portable tape recorder used by the crew for significant observations. The tape cassettes were recovered after splashdown and then forwarded to the NASA Manned Spacecraft Center, Houston, Texas. The tape cassettes contained only a voice channel; the times shown in the left-hand column were derived from the contents of the text. Transcription of these tapes was managed by David M. Goldenbaum, Test Division, Apollo Spacecraft Program Office, to whom questions regarding this document should be referred.

The Apollo 9 mission was flown March 3 to 13, 1969.

Communicators in the text are identified as follows:

CDR	Commander	James A. McDivitt
CMP	Command module pilot	David R. Scott
LMP	Lunar module pilot	Russell L. Schweickart

In the text, a series of three dots (...) is used to designate those portions of the communication which could not be transcribed because of garbling. One dash (-) is used to indicate a speaker's pause or self-interruption. Two dashes are used to indicate an interruption by another speaker.

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Tape 09-03701

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00 00 01 35 CDR

And now we're recording Apollo 9. Okay, it's 01:35 in the flight. I just wanted to debrief the launch. At launch minus about T 5 or so, you could feel the engine cut on. At T minus 3, the vibration built up pretty good. By T plus - T 0, it was obviously lifted off. I had no trouble hearing. The vibrations weren't too bad at all. As a matter of fact, it was quite - kind of mild, and I could feel the spacecraft roll. We were getting some vibration or oscillations on the needles, ORB RATE needle was about 1 degree per second. As we got a little higher, things persisted and it was very quiet, and then we got into the MAX q region in about 50 seconds, and we started vibrating and making a lot of noise. Had no trouble whatsoever talking to the other crewmembers and I don't believe we would have had any trouble talking to the ground. We heard the ..., no sweat. Vibrations built up to MAX q and then went on down. The angle of attack drifted over about 10 degrees. The attitude error needle stayed practically zero and the rates never got more than about a degree per second, looked like. So much for the roll rate. At staging, we had a big bang. Oh - before that we had inboard cutoff - that cut the g's down a little bit and then - -

-- -- -- -- LMP

... engine cutoff.

-- -- -- -- CDR

Yes. Okay. Did you notice anything? Okay. There was a two-phase maximum vibration right after the inboard cutoff. At staging, though, we got a big bang, a lot of smoke and stuff around here. It threw everybody sort of forward in the straps, and then we went to the second stage, it went right on up. Got the motors on, and, let's see here, could feel S-II SEP take place and then the tower is dumped - dumped the tower. Before we dumped the tower, I could see smoke trailing around the - inside of the window. I guess the boost protective cover was burning. And upstream it was very mild throughout the rest of the flight. S-II/S-IV staging was not too bad and had a nice spin - probably the greatest rates were 100 degrees per second.

00 00 06 41 LMP

Rusty, if the Sony is recording, at 6 hours and 41 minutes.

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-- -- -- -- CMP

The T&D started out just about as planned. We pitched around and, when we got around facing the S-IVB, we're directly lined up just exactly right according to the angles on the ball, although we seemed to be a little bit high in pitch - needed some pitchup to get to the needle, and it looked like we were lined up relative to the COAS; and the vent seemed to be somewhat more than we expected. The S-IVB started closing and I had about 6 tenths of a foot per second in at the separation, and when we turned around I never took any out, and the S-IVB closed the gap naturally. And I guess we were something like 50 feet away when we turned around and we were facing it. In the process of trying to get lined up with the target, we noted there was no left translation, and we started drifting over some to the right, packed off to keep clearance from the S-IVB; continued to close, and tried to find the problem and after a while it became apparent there definitely was no left translation; and we cycled the switches for RCS AUTO control - changed AC roll all up to BUS A - all the rest were on BUS B - and nothing seemed to work there. We got no translation in SCS, RATE COMMAND, or any control mode for that matter. We drifted out to our right of the S-IVB and I yawed left to try and get back in by translating forward, which put us across the front of the S-IVB to the left side and about that time we figured out the problem and discovered that the quad C primary and secondary propellant isolation valves were talkback - talkbacks were barber pole; and that the quad D secondary isolation valve talkback was barber pole. Another thing we had tried prior to discovering the talkbacks was the DAP - to see if that might be a problem, and it seemed to be working all right except for the translation to the left. Back to the talkbacks - when Jim closed the isolation valves - or opened the isolation valves - the talkbacks were gray, we then got a definite translation capability to the left, and went to CMC, HOLD, and realigned with the COAS - and on the target on the S-IVB - and about the time we got realigned visually - the needles - had preset with a VERB 62 - we were lined up almost exactly which - so that the preflight-calculated angles were just right. And we needed no closing velocity, the S-IVB closed the gap with the

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Tape 09-03701

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venting, and we proceeded on in and contacted it approximately 3 tenths of a foot per second. And capture occurred immediately and there were no postcontact dynamics to speak of. It drifted up a little bit and yawed left a little bit - which would have been an apparent pitch down yaw left, but then it centered and we went to CMC, FREE, on contact and it seemed to damp out in a position misaligned by a couple of degrees in pitch and about 1 in yaw. I attempted to align with the translational thrusters just MINIMUM IMPULSE. It didn't seem to do much good, so I went to SCS, MINIMUM IMPULSE, on the rotational controller and that seemed to work all right - aligning the COAS with the target. And one thing that was noticeable with the COAS full bright - it was very difficult to see the illuminated reticle against the white target background, as by this time the sun was pretty much over our shoulders and the target was very bright. Once we got aligned with the target - the standoff cross - I initiated retraction, and it took 8 to 10 seconds to retract. The vehicles went straight in, and it sounded like we got two sets of latches, almost straight with a very short time in between, but it sounded like you could hear two groups of latches going. And dynamics were very slight, felt like a good solid lock. I guess that was about the size of it. Jim, you want to go through what you saw?

-- -- -- -- CDR

There's very little I can add to what Dave has already said except that when we extended the probe, it only took just a second or so for it to get out, and there was a definite thunk and the talkbacks changed, and every indication was that it had gone out immediately. When we came back in, I was watching the talkbacks and they both changed to gray at the same time, which would indicate that all of the latches had been closed together, and when we checked the tunnel - found all the latches had secured and everything looked okay after that. There didn't seem to be any problem. I didn't get a chance to examine the drogue to see if it had any damage on it because we were in a little bit of hurry. I couldn't see up there very well at the time. We'll get to that tomorrow.

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Tape 09-03701

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-- -- -- -- CMP

Okay, the daylight star check started out about 10 seconds prior to the official sunrise and counted through to about 19 stars - the last few of which were in the Big Dipper - the Big Dipper was the last one to remain visible starting from the upper right quadrant going counterclockwise. As the sun came up, it filled the inside of the quad and one of the jets on the LM quad which is pitched down - the one that points to about - looks like - about minus X, and as soon as that filled up with light, it washed out everything but a couple - three stars of the Big Dipper. I can still see a few stars, and right now it's - how late, Rusty?

00 07 06 15 LMP

06:15.

00 07 06 16 CMP

06:15. And at 07:06:15, I can still see a couple of stars in the Big Dipper. Another thing that was noticeable - the moon was probably about 4 or 5 degrees above the field of view, and it reflected on the prism on the telescope and - gave a light gray band right across the center.

-- -- -- -- CMP

Okay, on the - 5 minutes after sunrise - I got the horizon and - no stars at all and the quads are now very bright - got a - cloud cover - seems to me the earth is mostly blue with white clouds, but it's not a dense cover of white clouds. It's cumulus and the sky is black and there are no stars visible at all, and I can still see the prism split - the reflection of the prism split which gives me a light band across the center of the field of view. And that's about the size of it.

03 22 31 50 CMP

Does the Sony still work after the long burn? Sony says "yes." Okay, we are GET 94:31:50 and - the reticle on the sextant is starting to fade and the LM still appears as a fixed image. It's a bright visual object - can even tell it's a LM.

03 22 36 -- CMP

Okay, 94:36 and waiting a solution for P34, and the telescope is wiped out by that prism split and the sun reflection or the earth - reflection off of it - goes right across the centerline of the reticle.

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03 22 45 46 CMP

Okay, we're - Okay, GET of 94:45:46. Range is 40.92, range rate is minus 118.7, and just entering sunset and AUTO optics is tracking the LM very well. I can see the flashing light and the LM image. No problem. Very interesting. The reticle is now black and the LM's a dark image on a light background.

-- -- -- -- CMP

Okay. Now, loss of light, just after staging for CSI and went through the P76 maneuvers. - The CSI and CDH - after picking the LM up postCDH in daylight - It was about 1 degree below the center of the sextant.

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