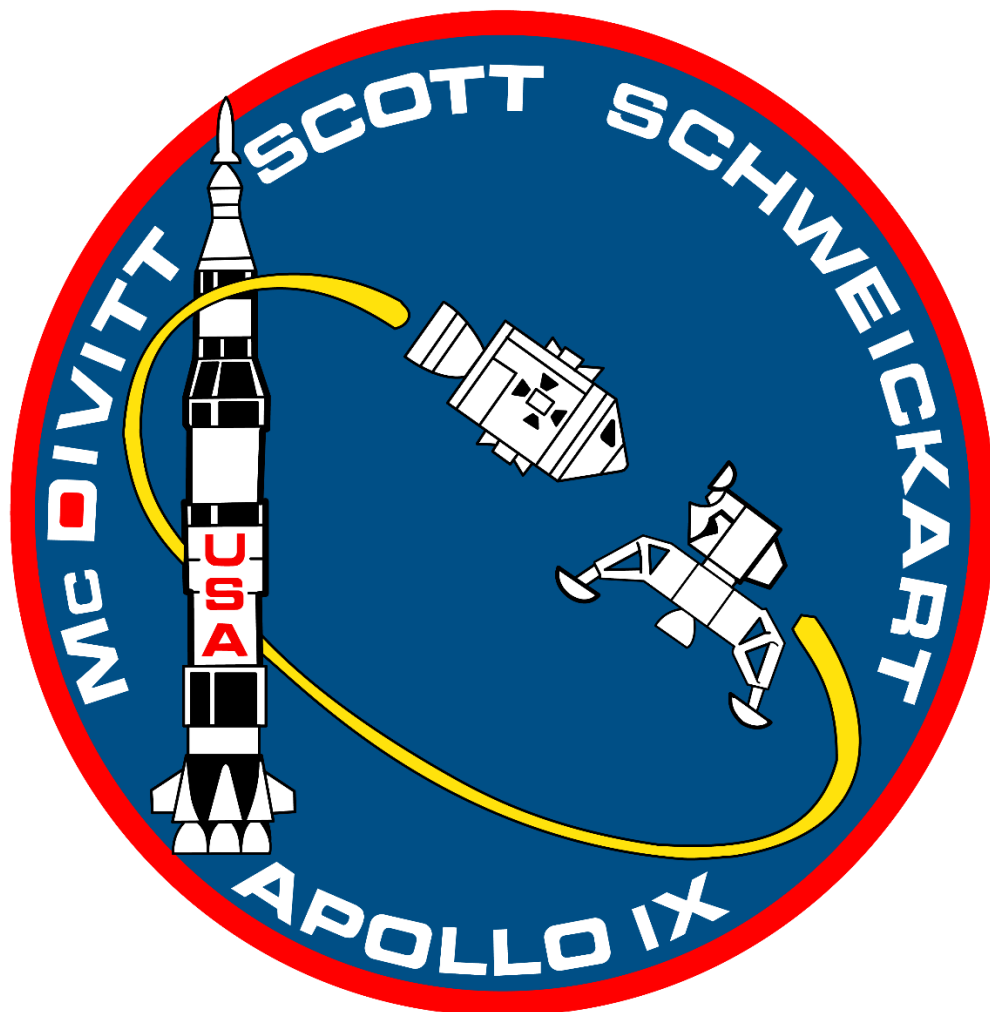


APOLLO 9

3-13 MARCH 1969

an essay by
HAMISH LINDSAY





“The wise man looks into space, and does not regard the small as too little, nor the great as too big; for he knows that there is no limit to dimensions.”

Quote by Chinese philosopher Lao-tse, flown on Apollo 9 by Rusty Schweickart.

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Extracted from content on the
Honeysuckle Creek Tracking Station
website, developed by Colin Mackellar
www.honeysucklecreek.net

EDITORIAL NOTES

This description of the Apollo9 mission includes tables listing key activities and times, plus tracking times, and duration, at Honeysuckle Creek.

Ground Elapsed Time (GET) is included for a quick sequential reference and to relate it directly to NASA's Apollo Flight Journal and Apollo Lunar Surface Journal.

Unless otherwise indicated, all times are Australian Eastern Standard Time (AEST, GMT +10), refer to the time of events in relation to the Honeysuckle Creek Tracking Station (HSK), near Canberra, Australia. Change of day is midnight HSK time.

Indented and italicised text are either excerpts from interviews by Hamish Lindsay with astronauts and NASA personnel, air-to-ground conversations, or other relevant commentary and quotes.

The honeysucklecreek.net website is regularly updated with new content, which also includes additions to the subject matter of this essay.

THE APOLLO 9 CREW



David Scott, James McDivitt, Russell 'Rusty' Schweickart

This photo was actually taken in their capacity as the first backup crew for Apollo 1. Image: NASA

AS-504/CSM-104/LM3 D MISSION NCG 723

PRIME CREW

Commander: James A. McDivitt
Command Module Pilot: David R. Scott
Lunar Module Pilot: Russell 'Rusty' L. Schweickart

BACK-UP CREW

Commander: Charles 'Pete' Conrad Jr.
CM Pilot: Richard 'Dick' F. Gordon
LM Pilot: Alan L. Bean

SPACECRAFT

Command Module: **GUMDROP** CSM-104
Lunar Module: **SPIDER** LM-3
Saturn V: SA-504



Mission Fact Box

Launch from Pad 39A, Cape Kennedy
Monday, 3 March 1969
1200:00 USEST / 1600:00 UTC
[Tuesday, 4 March 1969 0200:00 AEST]

Mission duration
10 days, 1 hour, 54 seconds

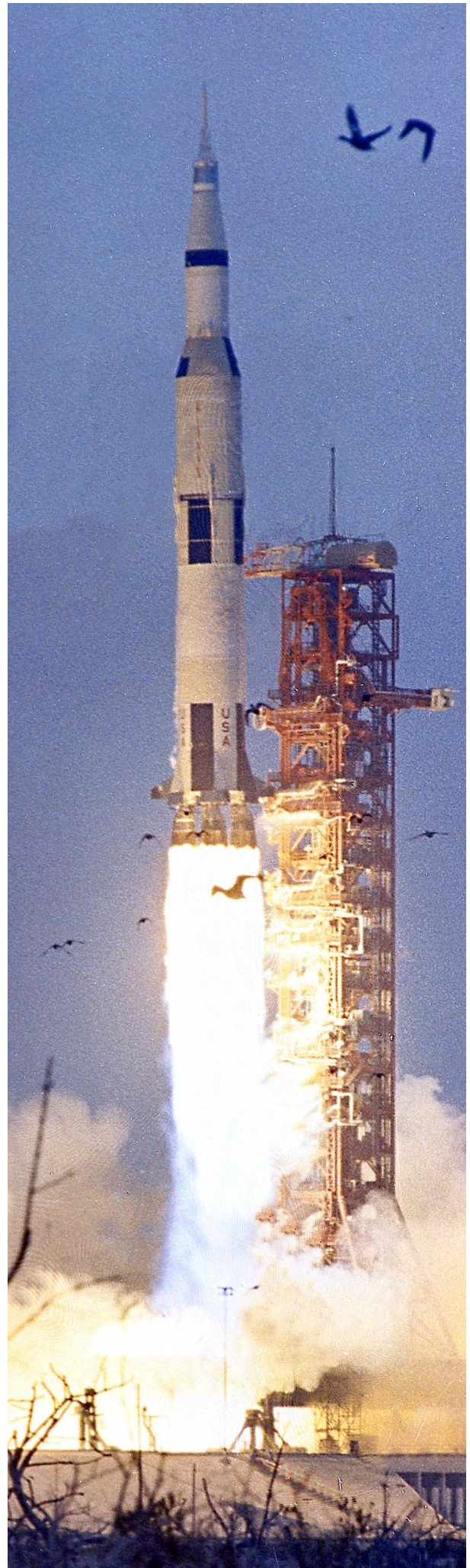
Earth orbits completed
151

Orbital data
Low Earth orbit – 497 x 204 kilometres
Inclination: 33.8°
Orbital period: 91.55 minutes

CSM/LM Docking/Undocking
Docking with Lunar Module
Docking: 3 March 1969 – 1901:59 UTC
Undocking: 7 March 1969 – 1239:06 UTC
Docking with Lunar Module ascent stage
Docking: 7 March 1969 – 1902:26 UTC
Undocking: 7 March 1969 – 2122:45 UTC

Extra Vehicular Activities (EVAs)
1 / EVA duration: 1 hour, 17 seconds

Splashdown
13 March 1969 – 1700:54 UTC
North Atlantic Ocean - 23°15'N 67°56'W
Recovery ship: USS Guadalcanal





The Apollo 9 crew - McDivitt, Scott and Schweickart. Image: NASA

Apollo 9

Apollo 9 was the first time that the complete working Saturn vehicle was to fly with an operational Lunar Module (LM) and the Apollo Portable Life Support System (PLSS) EVA pressure suit. For the first time, this mission called for astronauts to fly a spacecraft (the LM) that couldn't return to Earth. So, twelve weeks after Apollo 8, Apollo 9 was up there testing the LM in Earth orbit.

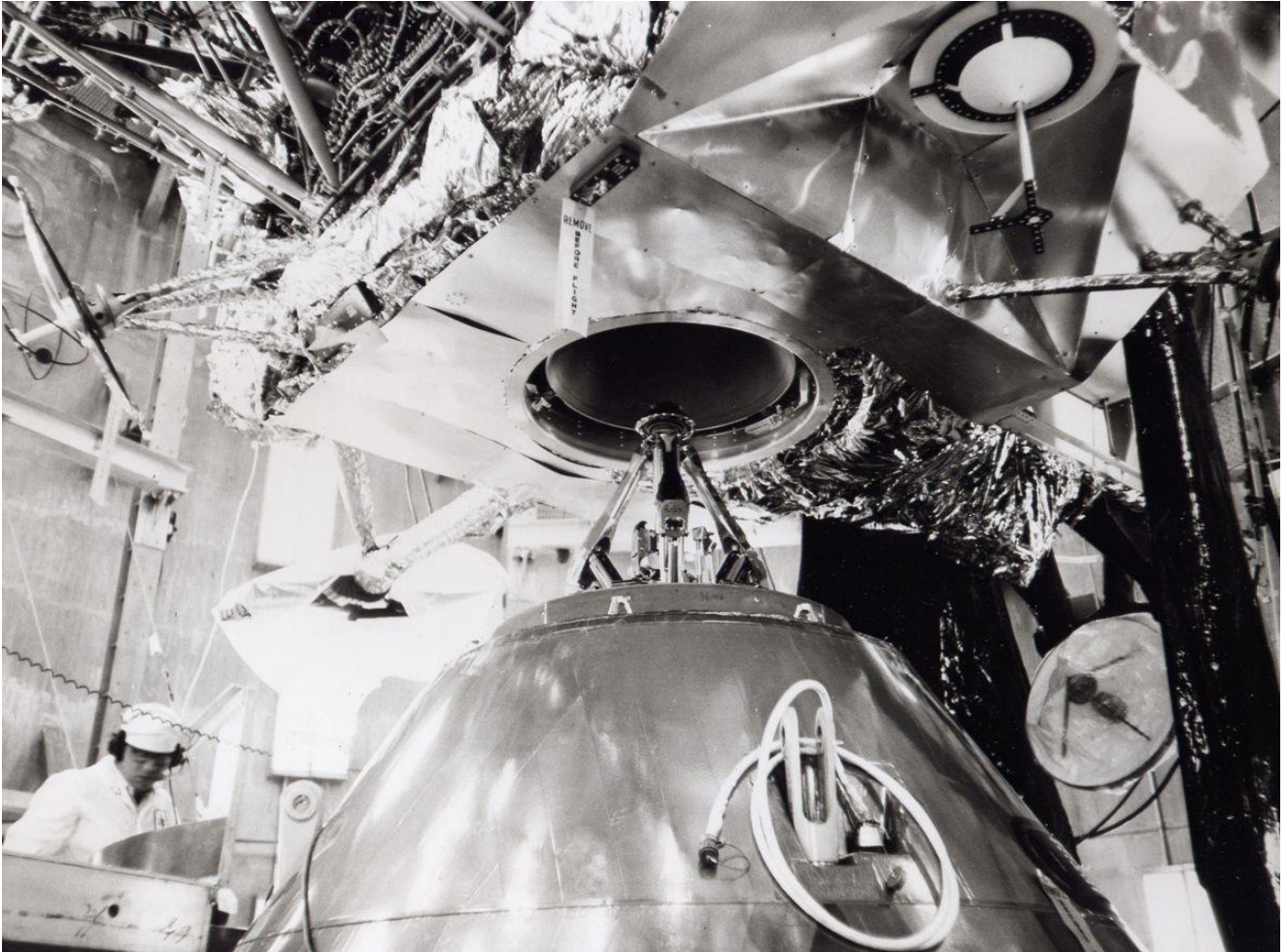
In this mission, the NASA hierarchy relented for the first time since the last Mercury mission and lifted the ban on spacecraft names as there would be two spacecraft requiring communication IDs. The crew chose Spider for the LM and Gumdrop for the Command Service Module (CSM), much to the disgust of influential NASA personnel, feeling they were not dignified enough.

The crew chosen were Jim McDivitt, who had commanded Ed White's spacewalk Gemini IV, as Commander, David Scott from Gemini VIII and rookie Russell 'Rusty' Schweickart as Lunar Module pilot, with backups Pete Conrad, Dick Gordon, and Al Bean.

The three prime crew had been training for the first space-worthy LM since November 1966, but they worked so hard for so long to meet their launch date, they all got upper respiratory infections. With Schirra's belligerent mission still fresh in their minds, the launch had to be delayed for three days to a lift off from Pad 39A at 1100 USEST on 3 March 1969.

Once in an almost circular orbit of 190 by 192 kilometres, the CSM had to turn around to pull the LM out of the Saturn IVB. To dock the two spacecraft together the astronauts had to use a complex system of latches, probes and drogues called the docking adapter. The probe was a tube extending out of the nose of the Command Module, and the drogue a funnel-like hole in a hatch of the LM.

Once the probe was inserted in the drogue it would retract and pull the two spacecraft together and a series of twelve latches would lock and allow the probe to be removed to let the astronauts float between the two spacecraft through the tunnel.



The Lunar Module, Spider, sits above the Command Module docking assembly. Image: NASA

If the system did not work it meant the end of the lunar landing, and if it did not work coming back after a landing, the returning crew would probably not make it back alive, unless they could perform a successful EVA transfer.

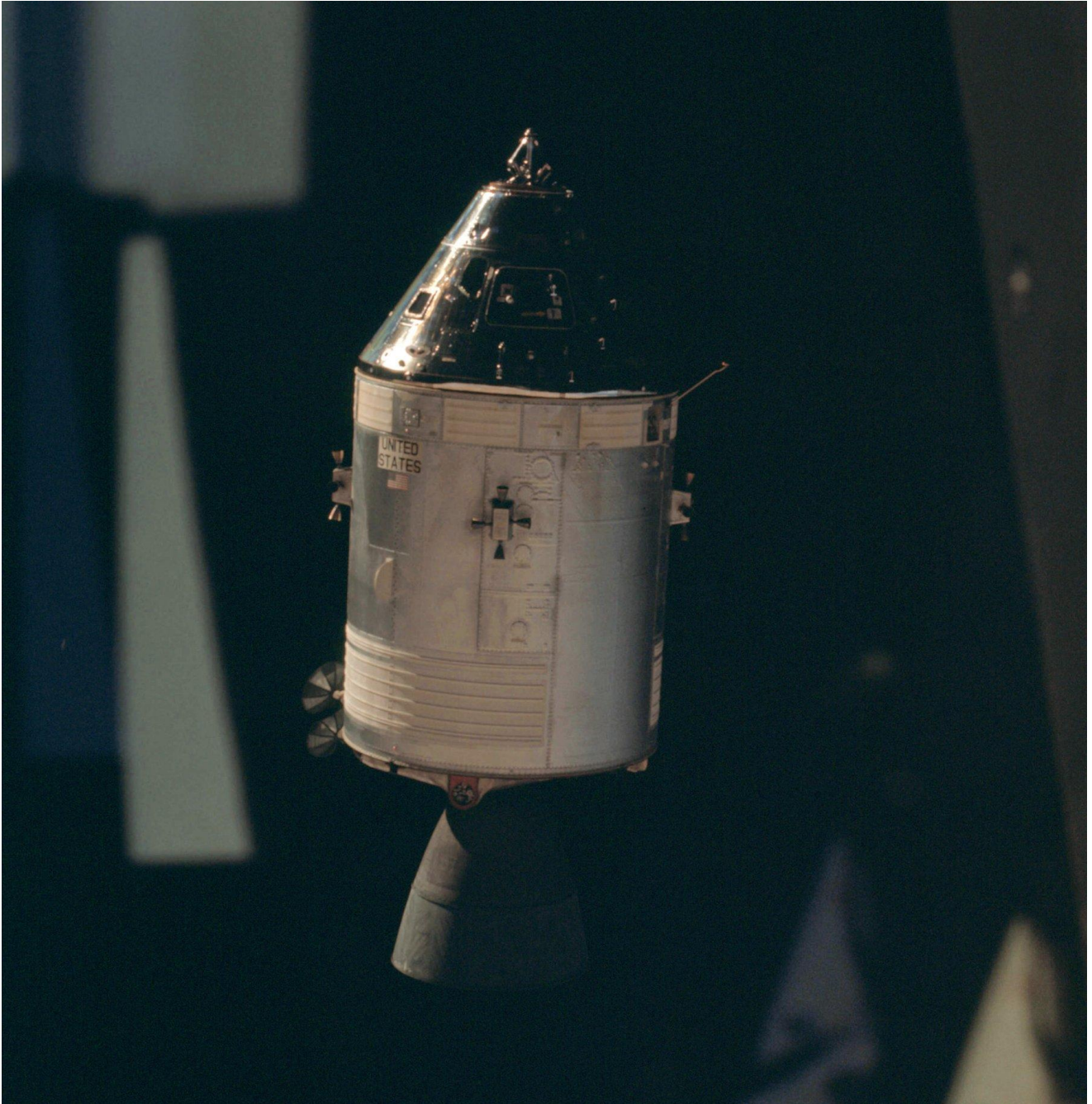
For us at Honeysuckle Creek it was back to the short grabs of Earth orbital tracking we had with Apollo 7 as the spacecraft spun overhead. While the spacecraft were separated we at Honeysuckle tracked the CSM and Tidbinbilla the LM. Our spurs experienced during Apollo 8 weren't causing any problems, so were ignored.

The first two days were spent testing the docking equipment, dropping off the SIVB rocket, and running trials of the Service Propulsion System (SPS) motor. When Scott first tried to dock with the SIVB he found one set of his CM thrusters weren't firing. After sorting it out with Houston, it turned out a thruster disabling switch had been accidentally knocked by one of the astronauts. Guards were installed over critical switches in all subsequent missions.

With the LM and CSM docked, one big test was to see if the frail structure of the LM could withstand the kick from the SPS engine in a gravity free environment without collapsing. Scott gave it a five second burst and they watched for any signs of weakness, but it was fine.

With all these initial tests successful, the third day in space Rusty Schweickart first entered the LM at 0727 USCST to begin preparing for its first free flight and trials. Schweickart's friends called him "Rusty" because of the hue of his hair, but on this mission he was aptly code named Red Rover for his spacewalk.

The first problem of the mission was Schweickart getting sick. During a conversation between McDivitt and Houston on the private line it seems Schweickart had been vomiting almost from the beginning of the flight. This was a major setback. The ground crew were annoyed the problem hadn't been aired earlier as medication might have overcome Schweickart's weakness. His activities had to be curtailed.



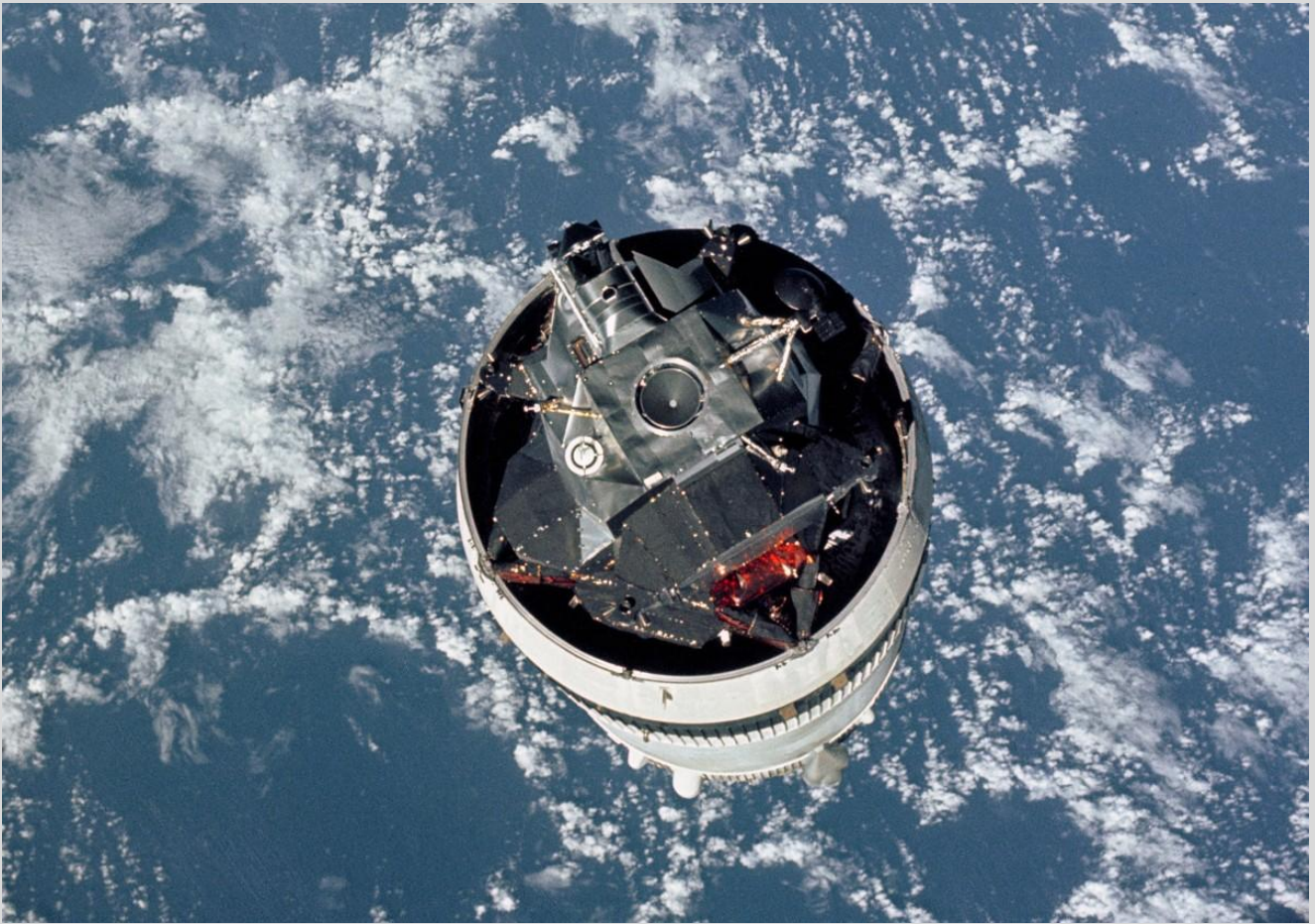
This detail from a photo taken from Spider shows the CSM, Gumdrop, with docking probe extended. Image: NASA

Instead of testing the new Portable Life Support System (PLSS) with a spacewalk (EVA) and transferring from the LM to the CSM via their hatches, the day was spent quietly in the LM, and the EVA was simplified to only opening the hatch for Schweickart to climb out onto the porch platform for a 37 minute EVA while they were above the Pacific Ocean. He slipped his boots into gold painted restraints, looked down and exclaimed, *"Boy, oh boy what a view!"*

The fifth day was the big day of action when Spider and Gumdrop went their separate ways.

McDivitt and Schweickart climbed into the LM. After everything checked out okay, Flight Director Gene Kranz looked across at the Capcom and announced, *"Tell them they're Go for separation."*

Scott released the LM. They circled each other for a visual check before Scott, now alone in Gumdrop, backed off to take up a steady circular orbit. Spider then headed for an orbit 24 kilometres above Gumdrop and with orbital mechanics was soon lagging 160 kilometres behind, McDivitt and Schweickart rehearsing landing and launch sequences.



The Lunar Module, Spider, waits to be extracted from atop the S-IVB. Image: NASA

Gene Kranz admitted that with two sophisticated spacecraft trying new procedures he felt he reached task saturation during this mission, and proposed Houston introduce two separate teams – one for the CSM and one for the LM.

One of the most critical moments of the mission was passed safely when McDivitt threw the switches to jettison Spider's descent stage.

Kraft: *"That separation always worried us. It simply had to work."*

Now Scott in the CSM, McDivitt and Schweickart in the LM, and Houston knuckled down to make sure the rendezvous procedures were going to work. McDivitt in Spider, now below Gumdrop, fired his ascent engine and came up to the CSM as if they were returning from the Moon's surface. In an hour they caught up to within 51.5 kilometres of Scott. Another burst from the ascent engine brought Spider next to Gumdrop to try a docking. Despite a blinding glare from the Sun in McDivitt's eyes, he brought Spider to Gumdrop for Scott to latch them together.

Scott welcomed them back with, *"You're the biggest, friendliest, funniest looking Spider I've ever seen."* When the buzzer sounded to indicate the two spacecraft were docked safely, McDivitt sighed with relief, *"Wow! I haven't heard a sound that good for a long time."*

They had been separated for 6 hours and 20 minutes.

If they had been unable to dock successfully McDivitt and Schweickart would have been doomed to a fiery re-entry death, as they only had one EVA pressure suit.



Our Departmental Admin Officer, Bernard Scrivener (*left*), arranged for Perth and Brisbane to switch on all their lights during revolution 150 (after John Glenn at Muchea), but chose the wrong revolution, so the exercise was a failure.



Apollo 9's High Gain Antenna counted at the rear of the Service Module, adjacent to the SPS engine bell. Image: NASA



Apollo 9 stands on the launch pad. Image: NASA





Wearing his Extravehicular Mobility Unit (EMU) Schweickart stands in the 'golden slippers' on the LM's porch during Day 4 of the mission.

Photograph by David Scott in *Gumdrop*. Image: NASA



Wearing his Extravehicular Mobility Unit (EMU) Schweickart stands in the 'golden slippers' on the LM's porch during Day 4 of the mission.

Photographed by James McDivitt inside *Spider*. Image: NASA.



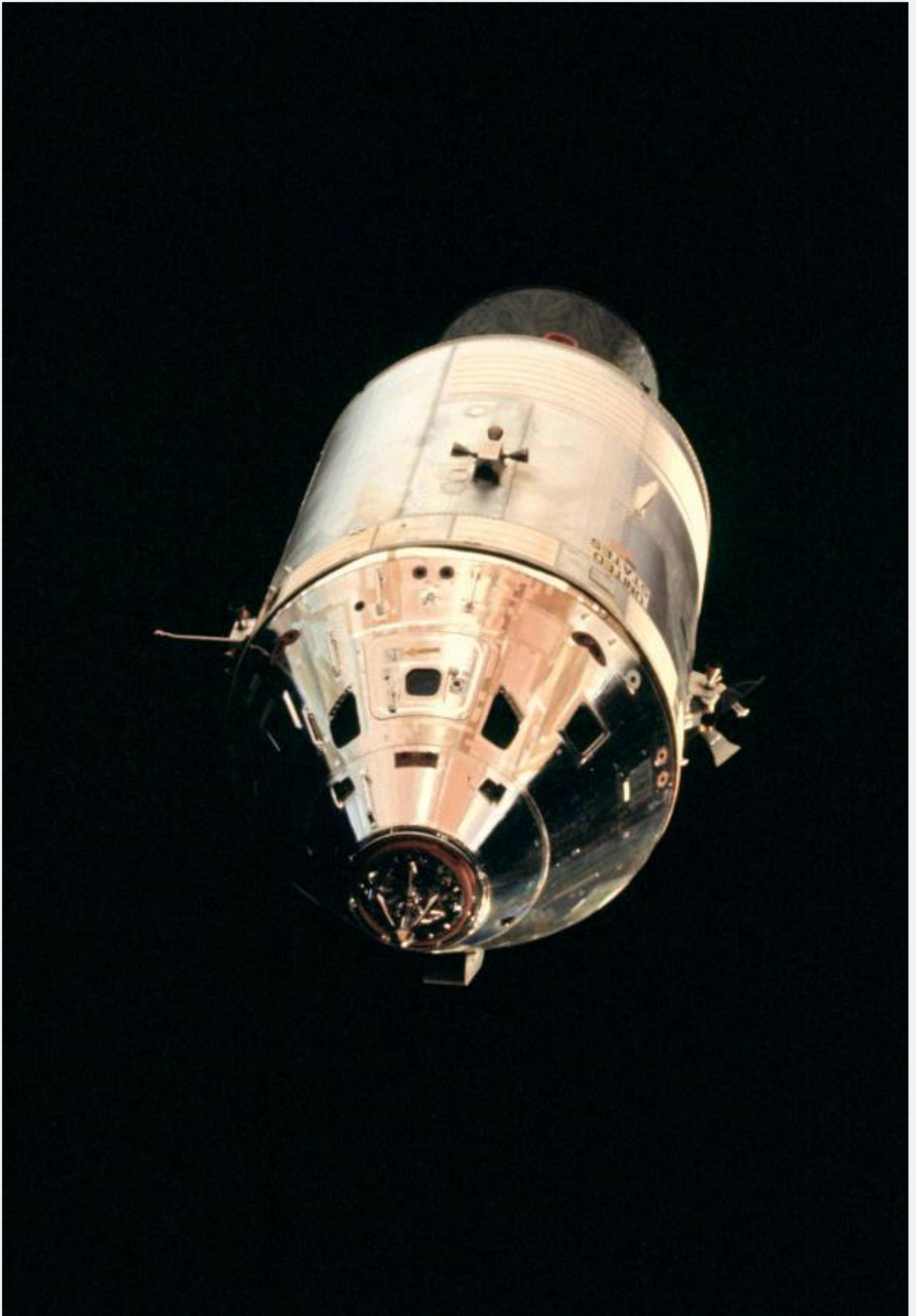
David Scott stands in the open hatch of the Command Module, *Gumdrop*, as it is docked to *Spider*.
Image: NASA



The LM with McDivitt and Schweickart on board approaching Scott in the CSM.
Image: NASA



The LM with McDivitt and Schweickart on board. Image: NASA



The Command Service Module seen from the Lunar Module. Image: NASA



The CSM seen from the LM with a distinctive Earth cloud pattern below. Image: NASA



The Lunar Module ascent stage coming in to dock with the Command Service Module.
Image: NASA



CDR

James A. McDivitt

CMP

David R. Scott



LMP

Russell L. Schweickart



Don Gray, then Station Director at Tidbinbilla:

“The Apollo 9 mission had been planned for the Australian end that Honeysuckle Creek would track the CSM and Tidbinbilla the LM. There was a problem from Tidbinbilla’s point of view – its antenna was much slower than Honeysuckle’s as it was a deep space station, most of its life only needing to move at sidereal rates. But there came a period where there was a requirement for both the CSM and LM to be tracked while they were separated, and in particular they needed to get commands into the LM. Honeysuckle Creek’s antenna couldn’t see both spacecraft at the same time and the Tidbinbilla antenna wasn’t capable of following either of them at the high speeds in Earth orbit.

We sat down at Tidbinbilla – one of the things we had on our antenna was an acquisition antenna with a very much wider beamwidth than the main dish, we also had a pretty good high powered transmitter and so we came up with a scheme and put it to NASA that we would use that acquisition antenna with its very wide beamwidth we would drive the antenna under computer control from horizon to horizon at its maximum possible rates across the sky we would catch the LM in the leading edge of the antenna beam the spacecraft would fly through the antenna beamwidth and out the other side. The LM would be in the

antenna beam long enough for the required commands to be blasted in.

NASA accepted that as the operational procedure and that, in fact, was one of the best things we ever did we knew our equipment well enough in Australia to be able to make those proposals to NASA, and they trusted us well enough to accept our word for it – mind you, they did send an aircraft out here and check it out for hours on end to see that we could do it.”

On day 10 plus one hour, after 152 orbits, Apollo 9 splashed down in the Atlantic at noon on 13 March to be recovered from the ocean by the USS Guadalcanal.

All the equipment worked to specifications, so the mission was declared a big success, so much so that the E mission to try a high earth orbit test of the LM was cancelled. Now there was only Apollo 10 to check out the LM at the Moon and other lunar manoeuvres before actually attempting a landing, scheduled for Apollo 11.

The deadline of 1969 was still looking good.

Essay by Hamish Lindsay.

Images, illustrations and captions by Hamish Lindsay and Colin Mackellar.
PDF formatted by Glen Nagle.

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Apollo 9 Command Module descending on main parachutes for a splashdown in the North Atlantic Ocean.
Image: NASA/KSC



Schweickart, Scott and McDivitt on the red carpet on the USS *Guadalcanal*. Image: NASA/KSC



ABOUT THE AUTHOR



Hamish Lindsay (1937-2022) worked at the Muecha, Carnarvon and Honeysuckle Creek space tracking stations between 1963 and 1981.

He wrote many essays on the history of human spaceflight, and was the author of the book, *Tracking Apollo to the Moon*.

