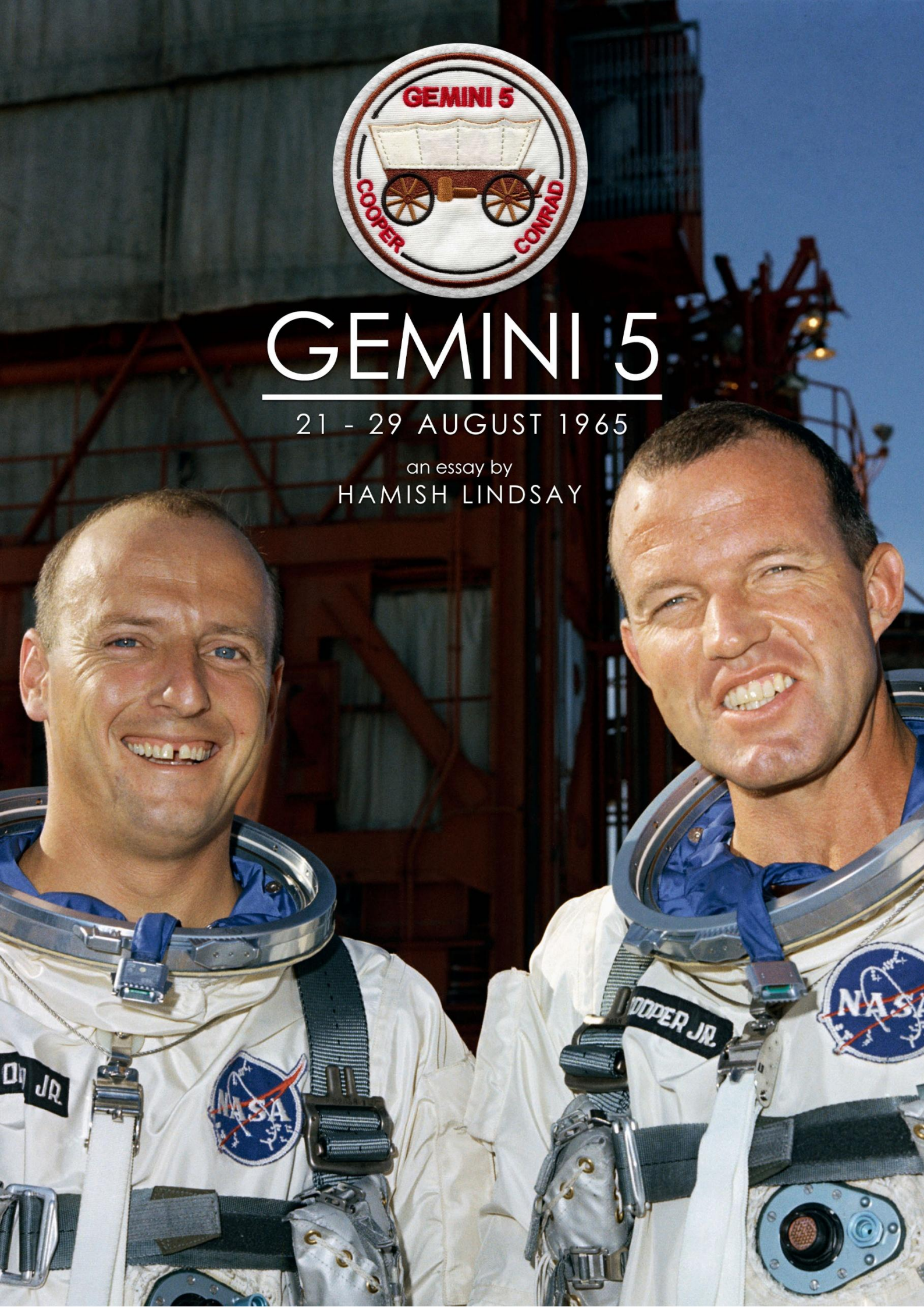


GEMINI 5

21 - 29 AUGUST 1965

an essay by

HAMISH LINDSAY

Alternate mission logo

“We didn't have anything to celebrate with on the spacecraft, only that the ground called up and congratulated us on breaking the record.”

Charles Pete Conrad

GEMINI 5

21-29 AUGUST 1965

an essay by
HAMISH LINDSAY

Extracted from content available on the
Honeysuckle Creek Tracking Station
website, developed by Colin Mackellar

www.honeysucklecreek.net

Click or scan the QR code below to see the website's
Carnarvon Tracking Station section.

GEMINI 5 (GT-5)

Ready to fly! Charles 'Pete' Conrad Jr (left) and L. Gordon Cooper Jr (foreground). Image: NASA

Mission Fact Box

Launch
Launch Complex – 19, Cape Kennedy
Saturday, 21 August 1965
0859:59 US EST / 1359:59 UTC
[Sunday, 22 August 1965, 2359:59 AEST]

Spacecraft
Rocket: Titan II GLV, S/N: 62-12560
Capsule: Gemini SC5
Callsign: *Gemini 5*

Mission duration
7 days 22 hours 55 minutes 14 seconds

Distance travelled
5,242,682 kilometres

Earth orbital data
Orbits: 120
Orbital period: 89m 35s
Inclination: 32.61°
Apogee: 350.1 kilometres
Perigee: 161.8 kilometres

Splashdown
29 August 1965, 1255:13 UTC [2255:13 AEST]
Southwest of Bermuda, 29°47'N 69°45'W
Recovery ship: USS Lake Champlain

EDITORIAL NOTES

This description of Carnarvon and the Gemini 5 mission comes from essays and content on the honeysucklecreek.net website, which is regularly updated with new content, including additions to the subject matter of this essay.

Indented & italicised quotes includes comments, interviews and air-to-ground communications.

- ONLINE CONTENT -
AUDIO – VIDEO – WEBSITE

This essay contains additional content which includes audio, video and website material, available via the internet. Click the icons or scan the QR code using your phone or tablet.

An internet connection is required.

LISTEN WATCH WEBSITE	Click these icons for a direct link to the online audio and video files, website or webpage content.
	Scan the QR icon with your phone or tablet for audio or video files, website or webpage content.

Pete Conrad (left) and Gordon Cooper (foreground) just before hatch closure on Gemini 5. Image: NASA

Gemini 5

8 days or bust

In 1965 it was not known how long a human could stay in space and experience a weightless environment. Gemini 5 was planned to see if astronauts could survive 8 days in space, the expected time for a complete lunar mission. The Russian Bykovsky had spent nearly five days with no apparent ill effects.

This was Conrad's first flight, but Cooper had flown the longest Mercury mission of over 34 hours. This was his last spaceflight.

Other objectives of the mission were to demonstrate the guidance and control systems; to support rendezvous with a Radar Evaluation Pod (REP) and controlled re-entry guidance capabilities; to evaluate the fuel cell system and rendezvous radar and to test the capability of the astronauts to manoeuvre the spacecraft in close proximity with another object, the Radar Evaluation Pod.

Mission patch

Gemini V was the first manned mission to have a symbolic patch, or insignia. Gordon Cooper, who had never been in a military organisation without one, suggested a patch to identify the mission, and chose a covered Conestoga wagon to symbolize the pioneering nature of the flight with the motto "8 days or bust!".

The NASA Administrator, James Webb, trying to de-personalise the missions, disapproved the insignia, but relented after pleading by the astronauts. However, incensed at the "8 days or bust", in case the mission failed its objective, he insisted it be removed, or at least covered over, until after the mission was successful.

The Crew

Leroy Gordon Cooper Jr
Aged 38 for the mission, was born in Shawnee, Oklahoma, on 6 March 1927. He received a BSc. in Aeronautical Engineering from the Air Force Institute of Technology in 1956, and an Honorary Doctorate of Science degree from Oklahoma City University in 1967. He has logged more than 7,000 hours flying time, 4,000 in jets.

He was selected as a Mercury astronaut in April 1959, and piloted his spacecraft Faith 7 in the last Mercury MA-9 mission, completing 22 orbits over a period of 34 hours and 20 minutes. He retired from NASA and the army in July 1970 after logging 220 hours in space.

Charles "Pete" Conrad, Jr
Aged 35, was born in Philadelphia, Pennsylvania on 2 June 1930, received a BSc. in Aeronautical Engineering from Princeton University in 1953. He joined the US Navy as a naval aviator, attending the Navy Test Pilot School at Patuxent River, Maryland. He was accepted as a NASA astronaut in September 1962, and this was his first flight.

He had been out to Carnarvon as Capcom for the Gemini III mission. He set an altitude record as the Commander of Gemini XI. He landed on the Moon as Commander of Apollo 12, and saved the Skylab mission as Commander of the first crew bringing rescue materials.

He died from injuries in a motorcycle accident in Ojai, California, in July 1999.

Backup crew
The backup crew for Gemini 5 were: (**Below right**) Neil A. Armstrong (Command Pilot) – later as commander for Gemini 8 in September 1965, and Apollo 11 in July 1969.

(**Below left**) Astronaut Elliot M. See Jr. (Pilot) – later assigned as Command Pilot for Gemini 9, died along with astronaut Charles Bassett in a NASA jet crash when flying to the McDonnell Aircraft plant in St Louis.

Mission Control Center, Houston during the Gemini 5 flight. Image: NASA/JSC

A new Fuel-Cell system for making electricity

The mission was also to be a trial run for a new way of making electricity in the spacecraft using a fuel cell, a chemical power plant which combines oxygen and hydrogen to produce water and electricity; and a rendezvous radar was to be tried for the first time using a special device they called a REP (Radar Evaluation Pod), nicknamed Little Rascal, pushed out into space at 2:13:00 GET for them to track and try to practice rendezvous procedures.

Mission Control

In Mission Control in Houston the shift teams and procedures remained much the same as for Gemini IV; that is three 8 hour shifts covering 24 hours a day. Chris Kraft, as well as Mission Director, was Flight Director of the Red Team (sometimes known as the GO team) covering the working day operations; Gene Kranz and his White Team was the Systems Shift, checking the status of the ship and its consumables; while John Hodge's Blue Team was the real-time planning shift.

Rear Admiral W.C. Abhau, Robert F. Thompson (Recovery Coordinator), and Chris Kraft. Image: NASA/JSC

The erector at Pad 19 is lowered in preparation for launch of the Gemini 5 mission.
Image: NASA/KSC

Gemini-Titan 5 mission launches from Launch Complex 19 at the Kennedy Space Center.
Image: NASA/KSC

The Gemini operations room – Agena Engineering (left), Capcom (centre) and Gemini Engineering (right). Visiting NASA engineers are at the console in this undated image. Photo: Hamish Lindsay

Launch

After weather, and a spacecraft telemetry problem, postponed an attempt on 19 August, Gemini V was successfully launched from Pad LC-19 on a GLV Titan II booster at 0859:59 USEST on Saturday 21 August 1965. At 0905:55 USEST Gemini V was inserted into a 162 by 350.1 kilometre Earth orbit with a period of 89.59 minutes and an inclination of 32.61º. The Rendezvous Evaluation Pod Little Rascal was deployed two hours thirteen minutes into the mission during the second revolution.

First pass over Carnarvon

The Capcom (Capsule Communicator) at Carnarvon was Charles "Chuck" Lewis.

Pilot Pete Conrad had been out to Carnarvon as Capcom for Gemini 3, so he sent greetings to his friends on the first pass over Carnarvon at 0:49:34 GET (0049:33 AEST Sunday 22 August),

"Hello Carnarvon, Gemini 5 here. The Pilot says hello to everybody down there."

Capcom Chuck Lewis, *"Roger Pilot."*

Lewis, *"Gemini 5, be advised that they are going to change the liftoff time to 1400:00* (UT)*."*

Cooper,
"Roger. 1400:00. That should make it easier."

At 00:57:50 (0057:49 AEST) Cooper called down,

"Carnarvon, Gemini 5. Be advised we have the lights of a large town passing on our right. I believe it is probably Perth."

Lewis, *"Roger. Copy."*

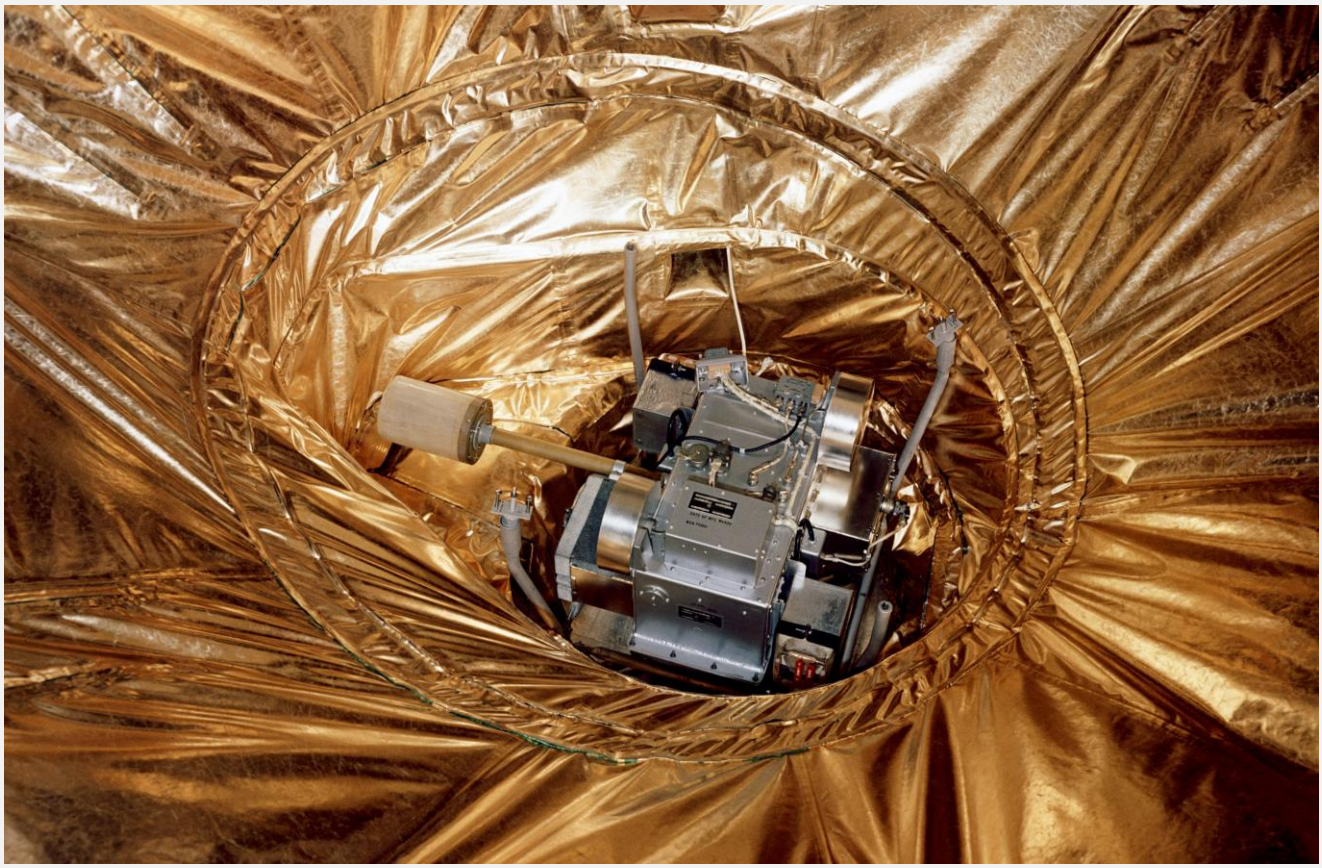
At 2:13:00 GET (0212:59 AEST, 22 August), just after the Canary Islands, Cooper yawed the spacecraft 90° and ejected the Radar Evaluation Pod, Little Rascal:

Conrad, *"Okay, let's see – we got the REP out at about 15 seconds late. And we're back on… at 4 feet a second on our radar."*

Cooper, *"2,200 feet* (670 metres) *out."*

Conrad, *"Well, I'm going to get the recorder on. You bore sighted onto it?"*

Cooper, *"Pretty well."*



The Rendezvous Evaluation Pod in the equipment section of the Gemini 5 spacecraft. Image: NASA/KSC

Just 6 minutes 44 seconds later Conrad said,

"Well, I'll tell you, we're really smoking away from him."

Cooper,
"Yes – he's at 3,300 feet (1,000 metres)*."*

Conrad, *"Listen, I'm serious. We want to be darn careful he doesn't run into us. This thing is smoking straight out of there, you know."*

Cooper, *"Yes."*

After turning on the radar, it showed the REP had moved off at a relative speed of 2 metres per second. Conrad was surprised, as he had expected it to just drift away to drop behind them. Instead, it drifted out to their side before dropping behind.

At 02:23:19 GET (0223:18 AEST) came the first signs of trouble.

From the onboard recorder Conrad said,

"Look at the oxygen. That fuel cell O2"

Cooper, *"Yes."*

Conrad, *"How the heck did that get that low with the auto heater on?"*

Cooper, *"I don't know."*

Second pass over Carnarvon

During the second pass over Carnarvon at 2:30:02 GET (0230:01 AEST 22 August) Chuck Lewis asked the spacecraft,

"Request you place your fuel cell O2 heater ON."

Cooper, *"Roger. It's been in AUTO all along."*

Lewis, *"Is the REP out?"*

Cooper, *"That's affirmative."* …

Conrad, *"Carnarvon, Gemini V – the preliminary look, it's still drifting out a little bit – looks like it got about 5.8 feet (1.8 metres)."* …

Lewis, *"Be advised this fuel cell O2 heater to go to the ON position."*

Cooper, *"We have had the heater switch in the AUTO position and now we're going to the MANUAL ON."*

Houston Capcom, *"Gemini 5, this is Houston here. We'd like you to have you check your fuel cell O2 H2 heater circuit breakers, please."*

Cooper, *"Be advised we have checked that further and we have on the O2 fuel cell heater. I can get no increase on amperage when I go to MANUAL O2 fuel cell heater, nor do I get a*

reading in amperage when I go to AUTO and the H2 heater works perfectly. Over."

Cooper, *"We have decided to power down the radar and we're in the process of powering down the spacecraft. Our fuel cell oxygen pickup is 170* (psi = 1,172 kPa) *and falling."*

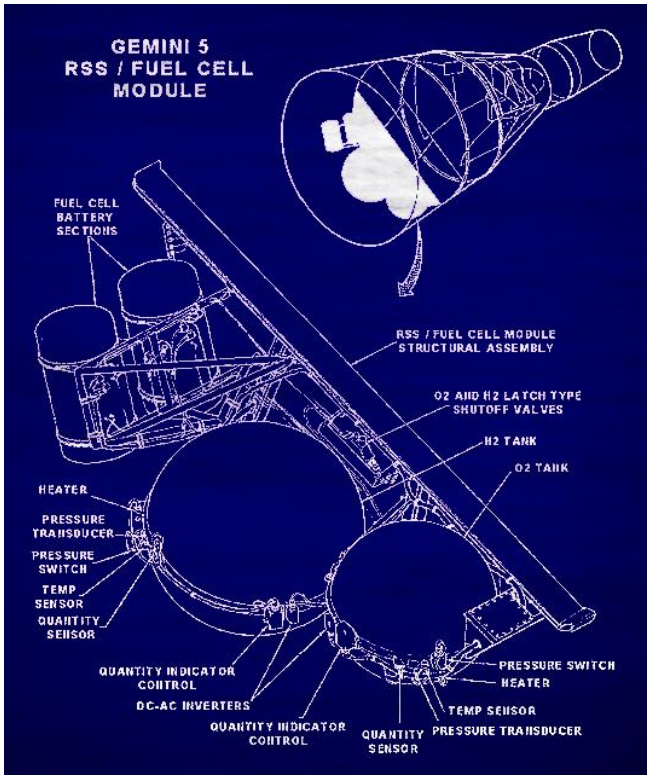
Capcom, *"Roger, we understand… understand."*

Cooper, *"You guys think about it for a while and we'll power down."*

Capcom, *"Gemini 5. Can you get any increase in your amperage when you go to H2 heater?"*

Cooper, *"When I go to H2 heater I get a shortage on the gauge. It shows that the H2 heater is working, and the O2 heater is not working."*

This Gemini V photograph (looking NE) shows the northern quarter of Cape York in Queensland.
The Great Barrier Reef is clearly visible off the eastern coast.
The yellow arrow marks the location of the town of Weipa. Image: NASA



Second pass over Hawaii

Over Hawaii at 2:52:15 GET (0252:14 AEST 22 August) Cooper explained what had happened,

"Hey, Hawaii Gemini 5. Let me give you a status on how all this came about. For the whole flight we've had the fuel cell O2 in AUTO. We did notice the pressure falling before Carnarvon, and I held the MANUAL heat for a while, but we were in the process of getting the REP out and I thought that would take care of it and stopped looking at it.

Then when they gave us the call over Carnarvon we noticed we hadn't gotten any heat back, so I made a careful check of the circuit breaker, which was closed. I then checked the fuel cell hydrogen AUTO and MANUAL would give us an indication on the main bus amp – which it did – and the fuel cell AUTO and fuel cell MANUAL showed no rise in amperage whatsoever, so the conclusion that we've drawn is that we have lost the heater."

Bill Garvin, Hawaii Capcom, *"We'd like you to keep a close look on that. We're going to let it go for now and let it stabilise – we hope it stabilises out. Okay?"*

Conrad, *"All right. Now what would you like us to do about the REP?"*

Garvin, *"There's not much we can do about it – we'd like to just take a look at it, Pete."*

Conrad,
"Okay. It drifted behind us. It went out fairly well and then it started a fairly rapid trip behind us, and we never did come very close to it."

Garvin,
"Have you done any manoeuvring at all?"

Conrad, *"No, we haven't touched anything in that way. We were right on the Flight Plan up until 2:45* (GET) *or so."*

With Cooper's report that the oxygen pressure was falling fast, it seemed the circuit breaker used to switch on the heaters in the fuel cell oxygen supply had tripped. The fuel cells required a very precise pressure balance between the oxygen and hydrogen to operate. Mission Control hopefully suggested resetting the circuit breaker and toggling the heater switch might fix the problem.

By the time Gemini V was over Hawaii the oxygen pressure was well below the level to keep the fuel cells operational, and was still heading south. The rendezvous test was abandoned, and the spacecraft was powered down as far as possible to conserve electricity.

Just after the Carnarvon pass, at 2:48:46 GET (0248:45 AEST, 22 August), Cooper announced,

"We have decided to power down the radar, and we are in the process of powering down the spacecraft. Our fuel oxygen pickup is 170 and falling."

Houston Capcom,
"Roger. We understand. Understand."

Cooper, *"You guys think about it for a while and we will power down."*

Trouble struck the mission on the second orbit when the fuel cell began to show signs of deterioration due to the oxygen not being heated fast enough to supply the fuel cell.

At GET 4:22:00 (0421:59 AEST, 22 August) the pressure dropped from 5,900 kPa to 153 kPa. Cooper finally announcing,

"The gauge is falling.... out the bottom and we decided that we are either going to have to re-enter pretty shortly, or power down."

Flight Director Chris Kraft decided to power down and let the spacecraft cruise along in what was known as the "chimp mode," where the astronauts do nothing to control the spacecraft.

The Straits of Gibraltar connecting the Mediterranean Sea with the Atlantic Ocean. Image: NASA

The radar exercises were cancelled, the astronauts only managing a brief check by the radar on the REP Little Rascal as it drifted away.

The Public Affairs commentator on the PAO line explained the problem,

"This is Gemini Control 5 hours 2 minutes into the mission. Basically, the cell – the oxygen side of the cell operates with a small conduit carrying a wire, which acts as a heater. A source of heat is needed in the cell to bring the temperature of the oxygen, which is kept in the tank, at -297 degrees, to make it rise, elevate slightly in temperature to build up pressure to drive the oxygen out of the tank and into the cell itself. It's this heater that apparently is inoperative and we've got just a small trickle of oxygen out of the tank rather than the normal flow that we should have. The decision has been made to turn off the power to one of the two sections onboard and to monitor that situation for a while to see if it has any effect. We are still watching the situation very closely. The heads are together on the problem, and we will continue to monitor it very carefully and bring you any development as it occurs."

With the possibility of the whole mission being aborted early, a Navy destroyer was sent from Hawaii's Pearl Harbour to a suspected splashdown area in the Pacific, identified as area 6-4, some 920 kilometres north of Hawaii. Six aircraft were stationed around the target area for an emergency splashdown.

The Public Affairs (PAO) loop announced,

"It would premature at this time to say that we were going to come down during the sixth revolution in that area north of Hawaii that we've already identified, because during the course of the Texas pass, Flight Director Chris Kraft got on the loop and talked to Pete Conrad and Gordon Cooper. They discussed the possibility of going another day in this powered down configuration. I'll emphasize that no decisions have been reached as yet terminating the mission or continuing it. We're still observing a very stable pressure in that oxygen tank supplying the fuel cells. It's been at 60 pounds (414 kPa) now for approximately an orbit and a half with no change observed here on the ground or in the spacecraft."

Cruising along over Carnarvon at 5:33:58 GET (0533:57 AEST, 22 August) on their third orbit, part of the conversation was on sighting the REP Little Rascal:

Conrad, *"The REP is right smack out in front of us on the horizon. He's not lower than 3 to 4,000 feet* (900 – 1,220 metres) *– matter of fact he's pretty darn close. Do you think he might hit us?"*

Cooper, *"No."*

Conrad, *"He's right out there, though, Gordo. You can't see him?"*

Cooper, *"Yes, I see him now."*

Conrad, *"See how close he is?"*

Cooper, *"Yes."*

Conrad, *"What would you say he was – about 3,000 feet* (914 metres)*?"*

Cooper, *"Yes."*

Conrad, *"Oh, what a dirty shame. We should be rendezvousing with that little bugger." …*

Conrad,
"Really be something if we ran into him!"

Cooper,
"Ha! Ha! … succeeded in our rendezvous!" …

Conrad, *"You see him now, Gordo?"*

Cooper, *"No." …*

Cooper, *"Here comes the Moon. It really doesn't look any different from up here, does it?"*

Conrad, *"No." …*

Cooper,
"Lightning flashes down there. See them?"

Conrad, *"Oh yes."*

Conrad, *"Oh boy! That was a big lightning flash."*

Cooper, *"There's the REP again – right out my window this time."*

Conrad,
"How far away is he? Just in the way again?"

Cooper, *"He's high on us. Oh, he doesn't look like he's very far away. I don't know. It's hard to say. Half a mile (0.8 kilometre) maybe. You'll see him out your window in a second – about nose-level. Yes – there he is. He's high on us. I'd say he's about two to three thousand feet* (600 – 900 metres)*, wouldn't you?"*

Conrad, *"Yes."*

Little Rascal continued to feature in the mission. During the dark part of the orbits the astronauts kept an eye open for the REP's flashing light.

At 10:10:57 GET (1010:56 AEST, 22 August) Conrad reported,

"I haven't seen it this pass, though. That doesn't mean it's not out there, but it was close to us before. Even when we couldn't see it, it would illuminate the spacecraft with the flashes, and we knew it was around us all the time."

Houston Capcom Buzz Aldrin,

"Roger, understand. The spec. value on the battery lifetime for the light expired about two hours ago."

At 9 hours into the mission, the spacecraft on its sixth revolution, in a press conference Flight Director Chris Kraft confirmed the mission would go for at least another 18 revolutions.

At 12:23:00 GET (1222:59 AEST 22 August) on its eighth revolution over Hawaii, Flight Director Gene Kranz requested Conrad to power up the spacecraft and do a 360° sweep and look for the Rendezvous Evaluation Pod.

Artist's concept of the 'Little Rascal' REP in orbit, approached by a Gemini spacecraft. Image: NASA

Conrad, *"Have you got any suggestions where to look for it?"*

Houston Capcom retorted, *"You're closer to it than we are."*

Conrad, *"Thanks a lot, Bill."*

Capcom, *"Any time, Pete."*

Flight Director Kranz,
"The REP should be to his south – due south."

Capcom,
"Flight recommends you look due south for it."

Over RKV (Rose Knot Victor ship) off the west coast of Peru, Conrad advised though they did a 360º horizon sweep they never saw the REP.

With 76.2 psi (525.4 kPa) and 95.7 % oxygen in the tank, at 14:32:00 GET (1431:59 AEST 22 August) Red Leader Chris Kraft, White Leader Gene Kranz and Blue Leader John Hodge had a meeting and decided to power up the spacecraft periodically and monitor the pressure on the fuel cell.

If the pressure remained steady they would try some of the on-board experiments, which one's to be performed chosen as the flight progresses.

Astronaut Sleep Concerns

At 20 hours 32 minutes (2031:59 AEST 22 August) into the mission on the 13th orbit, the Houston medicos were getting concerned about the astronauts' lack of sleep. As Gemini 5 passed over Carnarvon, the station surgeon called,

"Gemini V. Carnarvon Surgeon. Houston surgeon is a little concerned about your lack of sleep. We'd like a status report on each of you at this time concerning fatigue level. Over."

Conrad, *"Ah roger. We have just been cat-napping – about 40 minutes on and 40 minutes off and 40 minutes on and 40 minutes off."*

Surgeon, *"Roger. You have a busy flight plan ahead. We recommend you try to sleep during your programmed sleep periods if you can, so as not to get behind on the fatigue curve. Carnarvon Surgeon out."*

Conrad, *"We're trying to, but you guys keep giving us something to do."*

Listen to discussion on fatigue

GET 20:05:10 – Flight Surgeon at Carnarvon discusses fatigue levels with the crew.
Preserved: Hamish Lindsay. Edit: Colin Mackellar

LISTEN

800kb mp3 file. Running time – 1m 29s

At 21:38:40 GET (2138:39 AEST 22 August) over Carnarvon, Conrad reported seeing the lights of Perth,

"Are we supposed to be passing to the north of you now?"

Capcom Lewis, *"Stand by one."*

Houston Flight, *"That's affirmative."*

Lewis, *"That's affirmative, Gemini 5."*

Conrad, *"Are you guys clear down there?"*

Lewis, *"Roger, we've got clear skies and an optical sighting of the spacecraft." …*

Conrad,
"Okay. We see you, and we see Perth, but I don't see Geraldton – looks like it's under clouds."

Listen to the exchange over CRO

GET 21:35:47 – The exchange between Conrad, Carnarvon Capcom Lewis and Houston.
Preserved: Hamish Lindsay. Edit: Colin Mackellar

LISTEN

1.9mb mp3 file. Running time – 3m 41s

More on the Sleep Concerns

At 25:26:37 GET (0126:36 AEST, 23 August), Houston Capcom called,

"We have another person who would like to talk to you for a couple of minutes."

Surgeon, *"Gemini-5, this is Surgeon. Gordo, tell me about this sleep story here for a second. We're having trouble trying to get straight on the ground what both of you have done with sleep. As we figure it from your reports so far, it appears that you have had roughly 2 hours apiece. Is that affirm? Or have you had more than that?"*

Cooper, *"That's about right. Maybe a little bit of a catnap in addition to that."*

Surgeon, *"Gordo, what seems to be bothering the sleep? Are you having trouble if the other guy is transmitting? Does this seem to be bothering the sleep?"*

Cooper,
"Flight plans haven't been arranged where one guy could sleep. It's been where both of us have been having to do some of these tasks."

Gemini 5's view of Florida with Cape Canaveral and the Kennedy Space Center. Image: NASA

At this stage of the mission the two astronauts were alternating their sleep periods, but the sleeping pilot was constantly woken by the activities of the duty pilot. It was so quiet in the spacecraft cabin, and the two astronauts were so close together, any activity by the duty pilot would wake the sleeping pilot. Later they synchronized the sleep periods, which improved the rest the astronauts were getting.

Surgeon changed the subject,

"Okay, then, let's check the food parts, another area that we seem to have trouble getting straight records here. Pete said on the last pass that you have had at least parts of two meals, and I take it that's Meal A and Meal B from the first day. Now is that all you have eaten today?"

Cooper, *"That's affirmative."*

Surgeon continued, *"Okay, fine. One other question we ought to get some answers on. Are you using the exerciser for any times other than during the medical data passes? Are you using it just for general exercise?"*

Cooper, *"We didn't have time yet."*

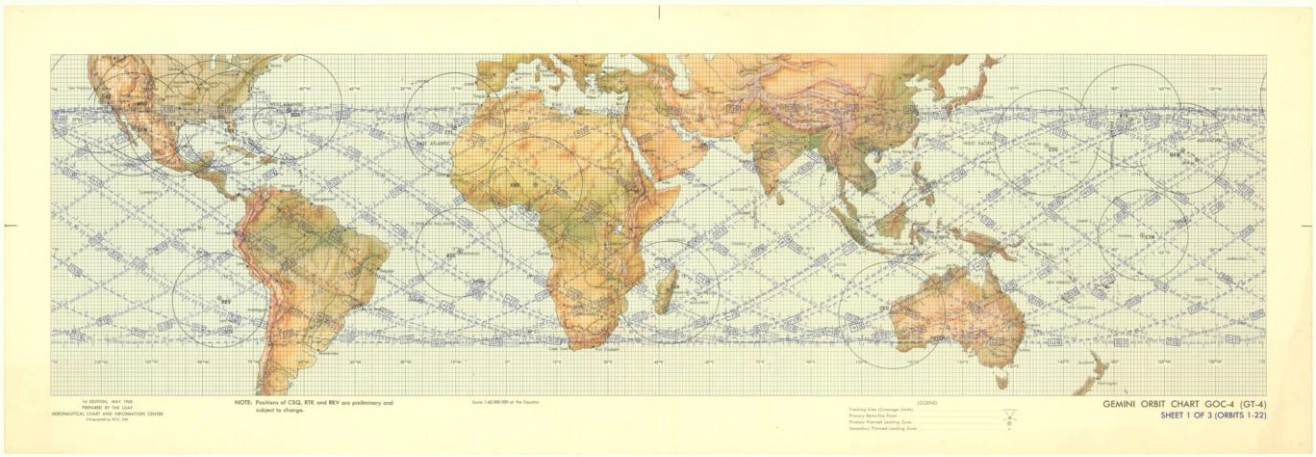
Houston Capcom,

"Gee, I thought you were just loafing up there. All this comfort time to do nothing!"

Cooper joked, *"Pete has been pumping the foot generator pretty hard."*

Capcom, *"You should have one onboard."*

At 26:39:40 GET (0239:39 AEST 23 August) during the 17th revolution there was a discussion with



Above: A Gemini5 groundtrack chart signed by Carnarvon Capcom Chuck Lewis. Preserved and Scanned: Hamish Lindsay.

See a larger version of the chart

A larger (5.36mb .jpg) version of this chart is available on the honeysucklecreek.net website.

WEBSITE

Houston about trying to rendezvous with the REP, but Houston decided to wait for a few days. By now the pod was dead, the beacons were off, the lights weren't flashing, the radar beacon was down, and it was 695 kilometres ahead of them.

In the spacecraft, the pressure in the oxygen tank began to build up to around 80 psi (550 kPa) over the next couple of hours. By 31 hours the pressure steadily improved to 86.2 psi (594.3 kPa) and they were able to draw more power.

At 34:20:00 GET (1019:59 AEST 23 August) Gordon Cooper slept soundly through passing his Project Mercury 22-orbit flight record in Faith Seven. He was to have been congratulated when he woke up over the tracking ship RKV (Rose Knot Victor), but…

RKV Capcom, *"Is the Command Pilot sleeping at this time?"*

Conrad, *"He woke up a few minutes ago. He's gone back to sleep again."*

Capcom, *"Roger. When he wakes up we'd like to pass on our congratulations to Gordo for surpassing his previous flight record."*

Conrad, *"Sure will."*

At 37 hours 32 minutes in the 24th revolution, (1331:59 AEST 23 August) the crew tried a Human Otolith Function experiment where they donned lightproof goggles to try and orient themselves with the horizon without visual references.

In one eyepiece was a moveable horizontal line and the astronaut had to adjust it to where he thought the horizon was, and a scale measured how close he was to the real horizon.

There was an amusing little conversation at 49:27:17 GET (0127:16 AEST 24 August) over Bermuda when Conrad was busy with antenna checks over Bermuda demanding a lot of verbal test counts:

Houston Capcom Jim McDivitt,
"You sure do talk a lot."

Conrad, *"Say again."*

McDivitt, *"I said you sure do talk a lot."*

Conrad, *"What did I say?"*

McDivitt, *"Shifting antennas."*

Conrad,
"What do you want me to do, sing you a song?"

McDivitt, *"Think you can?"*

Cooper wasn't sure this was a good idea, complaining, *"He sings off key."*

Conrad sang, ♫*"Over the Ocean … Over the Blue … Here's Gemini 5 singing to you."*♫

McDivitt, *"Stand by, go on back to talking."*

Rendezvous trials with an imaginary target

Due to these problems, using the primary rendezvous Guidance & Navigation system with the REP objective was not achieved, and no

attempt was made to rendezvous with the Little Rascal. Instead, the crew tried a simulated rendezvous with an imaginary target, with fellow astronaut – 'Dr Rendezvous' – Buzz Aldrin working out the procedures.

Although a number of orbital manoeuvring experiments were planned, many were cancelled due to problems with the spacecraft's Orbital Attitude Manoeuvring System (OAMS) as it became more and more erratic as the flight continued.

With a long 13 minute pass over the Eastern Test Range, Houston Capcom Dave Scott passed up the details of the simulated Agena rendezvous procedures.

There were four principal manoeuvres to be performed during revolutions 32, 33, and 34 beginning at 50:56:00 GET (0255:59 AEST, 24 August):

- An altitude adjustment. On orbit 32 perigee, a retrograde 20 second adjusting burn over New Mexico to adjust the orbit down to 312.2 by 166.7 kilometres. (After the burn actual figures were 312.2 by 167.2 km)
- A phasing adjustment. On Orbit 33 an apogee posigrade manoeuvre over the Indian Ocean using the aft thrusters for 20 seconds to make another orbit change adjustment to 312.2 by 183.5 kilometres giving an orbital period of 94.9 minutes.
- A slight plane change. On orbit 33 perigee, a 19 second burn using the aft thrusters.
- A co-elliptic manoeuvre on Orbit 34 apogee, a 22 second burn of the aft thrusters giving a final orbit of 311.5 by 198.2 kilometres.

The Phantom Agena had a perigee of 226.9 kilometres, and an apogee of 337.9 kilometres.

Setting up their calculations as though the simulated Agena target was in a different orbit, the Flight Controllers passed up their information, then using both ground and spacecraft computations Cooper manoeuvred Gemini V to a rendezvous with this imaginary moving point in space. Such precise manoeuvres were new to manned space flight, but Cooper brought his spacecraft almost to the exact position specified by the procedures.

At 61:41:08 GET (1341:07 AEST, 24 August), over Canton Island, Houston Capcom passed up the results,

> *"On your phantom Agena rendezvous today, the results were quite encouraging. We had your perigee within 2 nautical miles* (3.7 kilometres) *of being co-elliptic, and your 0.2 nautical mile* (0.4 of a kilometre) *and your apogee within 0.3 nautical mile* (0.6 of a kilometre). *This would have given about a 2 minute difference in the initiation time for terminal phase."*

The mystery of orbital mechanics had been conquered, and mission planners were confident they could now meet all their orbital manoeuvring objectives. Cooper and Conrad considered this day the highlight of the whole mission.

The Mission Control Center during Gemini 5. Gene Kranz in the foreground. Image: NASA/JSC

Pete Conrad onboard Gemini 5. Image: NASA

The Astronauts Feel Cold

At 68:32:10 GET (2032:09 AEST, 24 August) over Texas during the 44th revolution, Cooper queried Houston,

"I say, how's the weather back there in Houston?"

Houston Capcom Dave Scott,

"Oh, it's real nice. Just hot and sunny as usual. No rain in particular. Every once in a while a little thunderstorm. We've noticed that the temperature up there is a little cooler than we expected. How is your comfort?"

Cooper, *"Cold."*

Scott joked,
"Cold, huh? Have any rain up there?"

Cooper, not amused, *"We're taking the inlet hose off our suits everyone in a while to warm up. We've got quite cold."*

Scott, *"Roger. Understand."*

Gemini V sees the Aurora Australis

At 70:56:06 GET (2256:05 AEST, 24 August) over Carnarvon Conrad reported seeing the Aurora Australis,

"What are we seeing there? Are we seeing some Northern Lights out there on the horizon? Look at that! I mean – not Northern Lights – Aurora."

Cooper, *"That's the airglow."*

Conrad,
"Yes, but it's all jagged over here on my side."

Cooper, *"Uh-huh!"*

Conrad, *"It's not airglow. I think it's the Aurora. Can you see out my window right where my finger is pointing?"*

Cooper, *"No, I can't see that far."*

Conrad,
"You see how bright it is out mine? Where you can see how bright the airglow is out mine."

They passed out of Carnarvon's range and headed for New Zealand.

Conrad, *"I believe I'm seeing some Aurora, and the Aurora is located right under Canopus in a straight line down through the Magellanic Clouds, and it's very bright."*

Cooper, *"That's the Milky Way, isn't it?"*

Conrad, *"No, I can't distinguish any colour, except that it is very bright and it's sort of a greenish colour, if anything. And it's changing – it's brightening and dimming and it occupies about 15° across the horizon."*

Cooper, *"Let me yaw right and see if I can take a look at it. You've got to yaw faster because we'll be leaving it pretty quick."*

Conrad, *"Yes, that's the Aurora. You see how jagged it is? You see how it's disrupted the airglow? It's changing and it's sort of green. Turn out your light."*

Cooper, *"Well, it's on the ground. That's actually the ground on the horizon you're seeing there, I think then you're fading on to where there are same clouds underneath this other place, which kind of tend to take away…"*

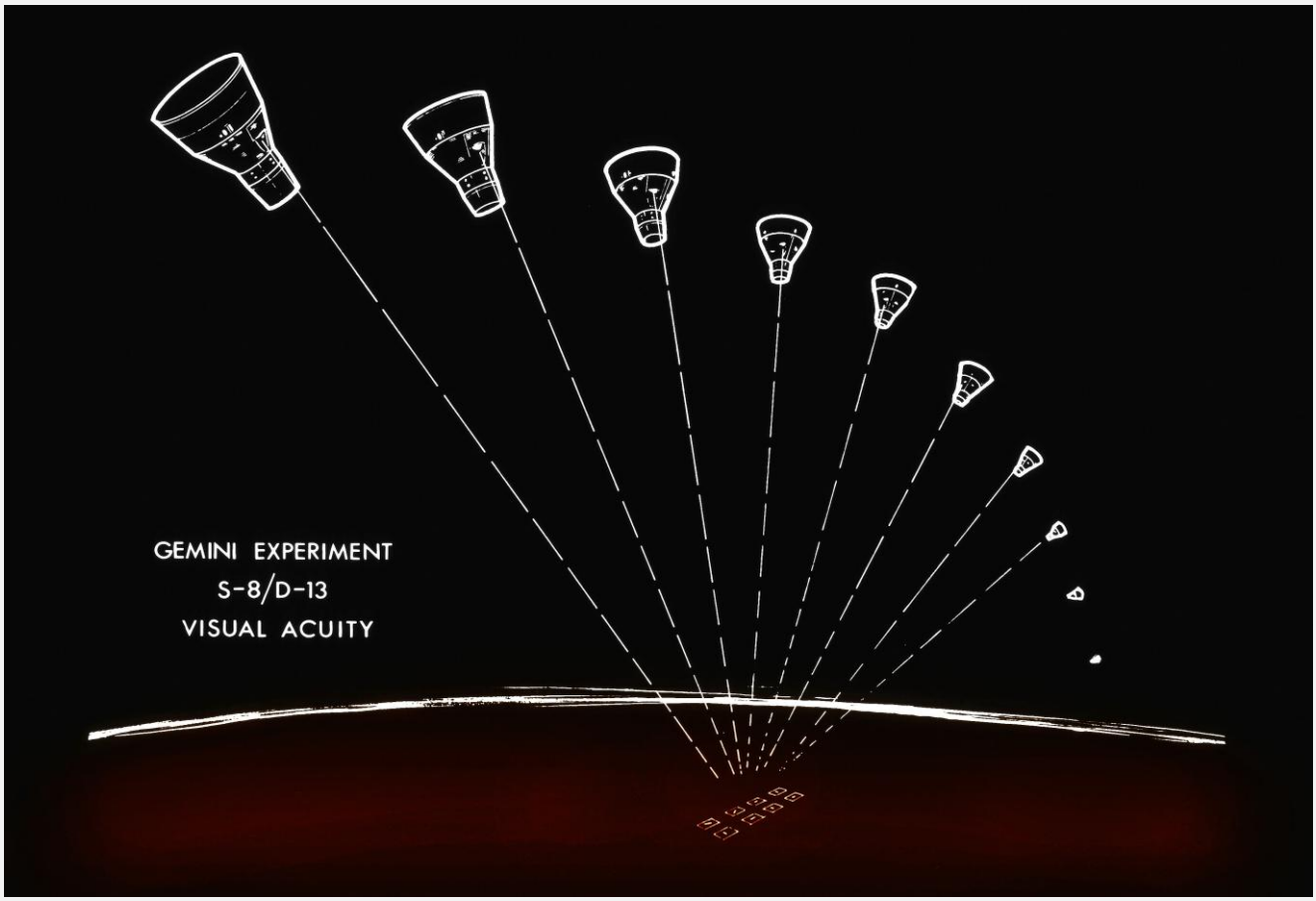
Conrad, *"No – now look at that! Now it's just smooth green demarcation all the way across."*

Cooper, *"Maybe you're right."*

Conrad,
"Yes, that's Aurora. You see how it changes? Look, we're passing over Sydney right now, and there's nothing south of here but water."

Conrad, *"Now we're going by New Zealand. That's Aurora, bigger than heck."*

Cooper, *"Yes, I believe you're right. I think it is."*



Orientation of the Gemini spacecraft over prepared ground observation sites.
Diagram: NASA. Adapted by Glen Nagle

Pete Conrad takes pictures of through a window in the fuselage of an aircraft, while flying over Laredo, Texas, during training for Gemini 5's visual acuity experiment. Image: NASA

Visual Acuity Test over Laredo, Texas

Next came the Visual Acuity Test over Laredo in Texas. Although they saw the smoke markers, they never saw the square white Styrofoam panels.

At 71:34:22 GET (2334:21 AEST, 24 August) Conrad reported,

> *"We had the smoke, but we could not pick up the squares. As a matter of fact, we had the smoke from about 200 miles (370 kilometres) out and we tracked right on the smoke and never picked up the squares. Now the sun angle is pretty bad for the pass although the pass was right smack over the site."*

The spacecraft was powered down again and we all resigned ourselves to more drifting through space. They saw some smoke at Laredo, Texas, but couldn't see the checkerboard pattern that had been laid out. The crew had a quiet session of uninterrupted sleep, Cooper sleeping 7 hours and Conrad managed 5 hours.

During the afternoon of the second day the fuel cell had recovered enough to keep the astronauts so busy Cooper was prompted to call down:

> *"You might have a little talk with the flight planning people. They're filling us just a little bit too full."*

Then the fuel cell began to drown it its own water. As there was no way to dump the fuel cell's excess water, the storage tank had a bladder – one side held drinking water and the opposite side acidic liquid from the fuel cell. As the crew drank the water, more room for the fuel cell discharge was made available. The fuel cells were producing 20% more fluid than expected. But an analysis by Gene Kranz and his team calculated there would still be enough space at the end of the mission.

LGM-30F Minuteman II launch from Vandenberg AFB

Missile Spotting

On the 47th orbit a Minuteman missile was timed to fire as Gemini V passed over Texas, conducting an experiment to find out how well a crew in space could sight an object launched from the Vandenberg Air Force Base, and keep their spacecraft tightly aligned on it and get photographs of it. It was the second attempt as the astronauts never saw the first launch. Though the weather was overcast, the two astronauts had no trouble spotting the missile, launched at 0237:28 AEST, 25 August. The missile climbed to a height of 926 kilometres, 249 kilometres north of the path of the spacecraft. It had come within 322 kilometres of Gemini V, before landing in the west Pacific Ocean.

At 74:37:31 GET (0237:30 AEST 25 August) an excited Conrad yelled,

"He's off – I see it!… I see it!"

Cooper, *"Where?"*

Conrad, *"There… it's coming! See it Gordo?"*

Cooper, *"Where?"*

Conrad, *"Right through that hole in the clouds."*

Cooper, *"Oh, yes. I got it."*

Conrad, *"There he comes – bigger than heck. See him – there he is over the water, Jim. We can still see his climb very, very clearly down there, even against the cloud background."*

Cooper, *"Yes. I can see him going above us."*

Capcom, *"You say he's going above you, right?"*

Cooper, *"Right, we saw him way out going higher than the horizon."*

Conrad told me: *"We could see the solid propellant smoke you could find a missile at the end of that when it got up into the air. It was going in the opposite direction to us."*

Recovery of the Gemini 5 booster. Image: NASA

Launch Vehicle Second Stage returns to Earth

The second stage of the launch vehicle re-entered the atmosphere around 74 hours into the mission. An observer in Pretoria, Africa, witnessed the break-up of the rocket casing into four or five pieces, with the impact point estimated to be somewhere in the eastern side of the Indian Ocean about 15 minutes later.

Another Visual Acuity Test at Laredo, Texas

A second attempt to see the patterns laid out on the ground over the Laredo site in Texas produced better results.

At 76:15:52 GET (0415:51 AEST 25 August) Gordon Cooper announced,

"Have targets in sight."

Conrad, *"Okay, we saw the targets and we think we might have marked about two of them and that's about it."*

Houston Capcom, *"Okay – can you tell me what they were? It wasn't the big 'E' huh?"*

Conrad, *"No. I think the third one in the second row was a '2'. We think that the second row, second one was a '2' and the third one was a '2' and that's about it. We were well past it before we really picked it up good."*

Capcom, *"Okay so you think the second one and the third one in the second row was – do you think they were '2s'."*

Conrad, *"That's right."*

Capcom, *"Okay, very good."*

At 81:56:04 GET (0956:03, 25 August) Conrad said to Cooper, as they were coming up to Kano Tracking Station,

"Hey – I'll tell you what we'll do. You know that letter we were going to write to the President? We'll take a page out of the Flight Plan – when we pass the Russians – we'll write a letter on that. We'll tell him that we are mailing it to him in the envelope and since……two 1-dollar bills to certify the record. How's that?"

Cooper, *"Well, it's not a very good envelope."*

Conrad,

"Well, I know, but we didn't bring one, did we?"

Hamish Lindsay at the Gemini voice receivers during Gemini 5. Scan: Colin Mackellar

Cooper, *"I don't know. He might not feel as strong about trying to set records as Mr. Webb* (the NASA Administrator) *does."*

Conrad, *"I doubt it."*

Cooper, *"I kind of doubt it too."*

Conrad, *"You should put the letter in your hip pocket, and we'll find out which way he goes."*

Cooper, with a laugh, *"I think maybe it might be the same to mail him the regular letter."*

Author (Hamish Lindsay):

"On August 26, Cooper said something from the spacecraft that both our Capcom and Houston missed, and as I was the voice receiver's technician they asked me to play the voice tape back. My reel-to-reel tape recorder chose that moment to break down and stop pulling the tape through. Houston and our Capcom did not know that I was holding the tape drive wheel on the tape by hand with a screwdriver each time it was played back to them!"

Gemini V suffers thruster failures

At 118:31:50 GET (2231:49 AEST, 26 August) during Rev 75 over Carnarvon, Pete Conrad radioed down,

"Carnarvon, are you ready to copy a little problem?"

Lewis, *"Go ahead."*

Conrad, *"Roger. Our yaw left number 7 OAMS attitude thruster is out."*

Lewis,
"Roger. I've got a continuous indication here on the ground of the OAMS yaw left thruster."

Conrad, *"Okay, well, it's not working at all, and we powered the radar down; the gyros; and everything but the platform. Standing by to see what Flight wants to do."*

The OAMS system thrusters controlling the spacecraft grew sluggish and yaw left thruster #7 quit working. Kraft cancelled all experiments that required fuel, and turned off the electrical system to help reduce the water build-up. After a sleep, the astronauts found the OAMS system had become erratic; now yaw left thruster #8 had also failed. With two faulty thrusters, Gemini V had no choice but to drift for the rest of the mission, only turning the systems on occasionally to stop excessive tumbling.

The crew began to feel cold as they drifted around the Earth, even with the coolant turned off. Seeing the stars spin past the windows as they drifted became a little unsettling until Cooper put covers over the windows. Their maximum spin reached 12° per second, mostly in the yaw direction, but they periodically stabilized their spin down to about half a degree per second. Cooper noted that while they spun around items that were flying around gravitated to the sides of the cockpit. "We sat and stared at each other with glassy eyes for days with nothing to do. To keep our spirits up we cracked jokes and sang all the time," said Cooper afterwards. Conrad wished he had brought music or a book to read.

America takes the lead away from the Russians

On the fifth day of the mission, 26 August, Gemini V celebrated a major milestone passing the Russian record for the longest time in space of five days set by Valery Bykovsky in Vostok 5 in June 1963. It was the first time the Americans took the lead from this point they never looked back again.

Conrad told me: *"We didn't have anything to celebrate with on the spacecraft, only that the ground called up and congratulated us on breaking the record."*

At 119:06:00 GET (2305:59 AEST, 26 August) in the 76th revolution Flight Director Chris Kraft looked up at the GET clock in Mission Control and grinning from ear to ear murmured *"Zap!"* as they passed the Russians for a world record for a spaceflight.

Shortly after Houston Capcom Jim McDivitt announced to the crew,

"The Flight Director would like to speak to you for a minute."

Conrad, *"Roger."*

Kraft, *"Good morning Gordo."*

Cooper, *"Chris, how are you?"*

Kraft, *"How does it feel for the United States to be the new record holder?"*

Cooper, *"At last, huh!"*

Kraft, *"Roger, congratulations."*

A frame from Department of Supply footage taken from a light aircraft in late August 1965, shows the Visual Acuity Test at Woodleigh Station. Screen capture: Colin Mackellar

The Visual Acuity Test at Carnarvon

On a sheep station called 'Woodleigh' near Shark Bay, 145 kilometres to the south of Carnarvon, a bulldozer shoved piles of white sea shells into carefully chosen patterns to try and find the smallest pattern the astronauts could see through the window of their spacecraft. It was part of an experiment called the Visual Acuity/Astronaut Visibility Test in an attempt to gauge and calibrate astronauts' vision from space. A similar test site was located at Laredo, Texas, [see above] using Styrofoam boards.

Author (Hamish Lindsay):

"As the station photographer I had spent months before the mission, helped by Tito Teraci, photographing samples of the shells to record the effect of weather on the shell's whiteness. I processed the films in my bathroom darkroom, and the results were sent to NASA."

When the moment came for the tests on the August 26, Gemini 5 was drifting along powered down, unable to maintain a stable view of the ground due to the fuel cells making more water than they could store. The astronauts could see the smoke markers identifying the site, but saw nothing of the experimental patterns due to the spacecraft's attitude, though Conrad reported it was fantastically clear.

At 139:12:26 GET (1912:25 AEST 27 August) during the 89th revolution an attempt at the Woodleigh visual acuity test failed again.

Capcom Lewis, *"Think you'll have a chance at that visual acuity?"*

Conrad,
"I don't know, We're looking straight up again." …

Lewis, *"They've got three columns of smoke running west from the site towards the coast."*

Conrad, *"Okay. Shark's Mouth Bay is just coming into sight… but we're pitching up again."*

Lewis, *"Smoke is blowing from south to north."*

Conrad, *"Well, my side of the spacecraft is towards the BEF and we're pitching up, and I just saw Shark's Mouth Bay and that was it."*

Lewis, *"Roger."*

Conrad, *"Gordo has the smoke in sight right now on his side, but we're pitching up and I'm afraid we'll lose it."*

Cooper, *"I had the smoke in sight, but we just pitched by."* …

Conrad, *"Visibility was really good down there. Too bad we weren't in the right position."*

Capcom Lewis, *"Roger, Pete. Yeah, the weather here's beautiful."*

Conrad, *"Is it too cold to swim?"*

Lewis, *"They filled the swimming pool at The Port* [Hotel] *today. But it's a little too cool yet."*

Conrad, *"I keep forgetting it's winter."*

Listen to the pass over Carnarvon

GET 139:12:26 –as recorded at Carnarvon (CRO).
Preserved: Hamish Lindsay. Edit: Colin Mackellar

LISTEN

2.4mb mp3 file. Running time – 5m 51s

Conrad reported later,

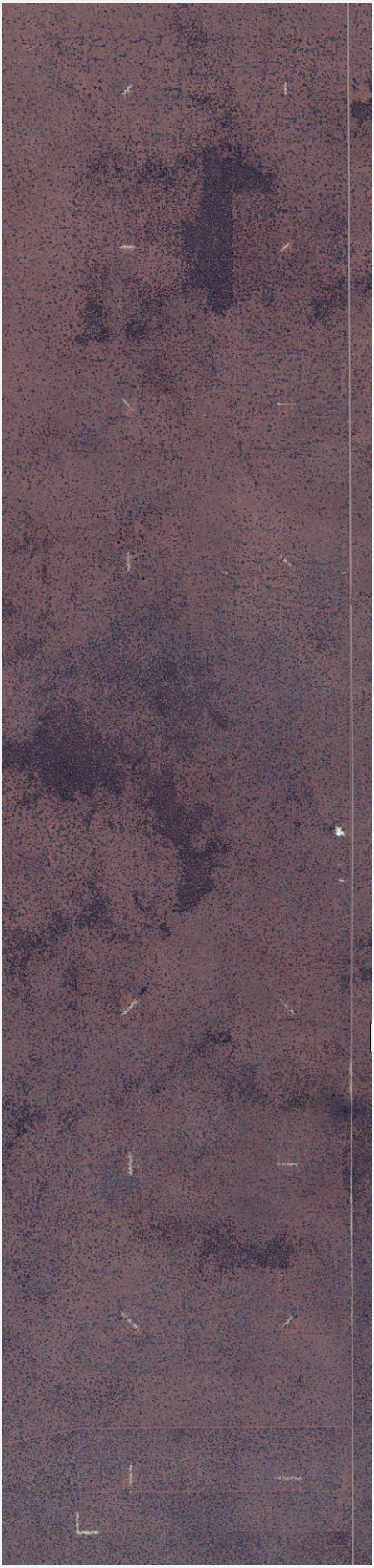
"Very unfortunately it was a beautiful day in Australia, and we were just not in the right position to see the S-8/D-14 (Visual Acuity Test). We saw Shark Bay – that's the last thing we saw. We were pitching up and then we saw the smoke streams 300 miles (550 kilometres) *past over our shoulder. So, I am sure we would have seen it."*

Lewis, *"I lost a bet on that one, Pete."*

Conrad, *"What was that?"*

Lewis, *"I bet you'd be looking at it."*

Conrad, *"We came pretty close."*



The markings for the Visual Acuity Experiment are still visible today, in this Google Maps view. Image: © Google Earth 2026

At another attempt on 28 August, it was cloudy, so the Carnarvon experiment was declared a write-off, while the Laredo experiment was only partially successful.

At 143:13:26 GET (2313:25 AEST, 27 August) over Bermuda there was a discussion on the status of the astronauts' beards:

Capcom, *"Gordo, is your beard longer than your hair now?"*

Cooper, *"Yes – even Pete's is."*

Capcom, *"Hey! Who's got the longest beard right now?"*

Cooper, *"I guess I win that contest."*

Capcom, *"Okay, we've got about another ten seconds here and then we'll say adieu."*

Conrad, *"In Texas we say, 'So long, Partner'."*

Gemini V completes
100 revolutions around the Earth

At 157:24:40 GET (1324:39 AEST, 28 August) over the ship RKV (Rose Knot Victor), the Capcom congratulated Gemini V's crew on their 100th revolution around the Earth:

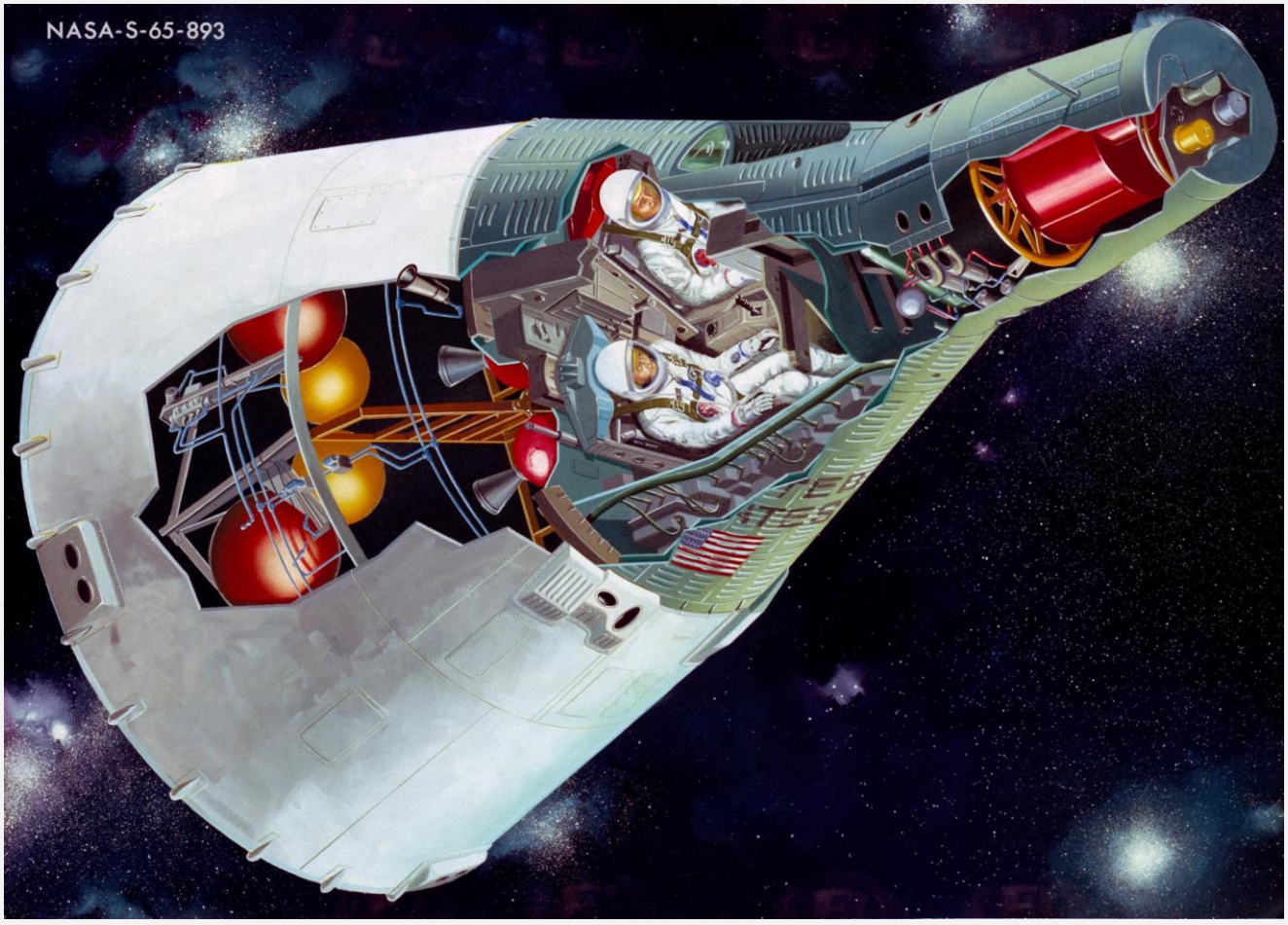
"As of 0324:39 (GMT) you started your hundredth revolution, and congratulations are extended to both of you from all the flight controllers throughout the world."

Cooper, *"Thank you very much."*

Capcom, *"Incidentally, if you turn on your HF receiver following the next test, we'll send you about 15 minutes of uninterrupted music."*

Cooper,
"That would be very, very nice. Thank you."

Before launch the two astronauts had expressed a preference for Dixieland music. A comment from the Public Affairs Officer said the Houston Capcom, Jim McDivitt, was the first space disc jockey.



This is an artist's concept of the two-man Gemini spacecraft in flight, showing a cutaway view.
Image: NASA

The music was piped through the Capcom's console, the Capcom holding his push-to-talk switch on.

At 166:50:47 GET (2250:46 AEST, 28 August) there was a domestic moment when Jane, Conrad's wife, sent a message through the Houston Capcom,

"I was talking to both Jane and Trudy this morning. They both went outside and saw you, and Jane sent up a little poem here, Pete. It goes:

Twinkle, twinkle Gemini V
How I want you back alive
Up above the world so high
I saw you today as you went by
Twinkle, twinkle, Gemini V
Tomorrow you take a great big dive
Leaning towards the ocean blue
And I send my love to you."

Capcom,
"Oh, also, Pete, Jane said that Gemini horoscope for today in the paper said that you should get your house in order and the evening was good for dining out. In case you're interested."

Conrad, *"Okay."*

Approaching the final hours of the mission, during the pass over Carnarvon at 167:47:33 GET (2347:32 AEST, 28 August) the conversation went like this:

Cooper, *"Thank you very much Carnarvon."*

Lewis, *"Roger."*

Conrad,
"We've been waiting for it for seven days."

Lewis, *"Ha! Ha! So have we. Our congratulations."*

Cooper, *"Thank you. Same to you. Good show down there."*

Lewis, *"Thank you. I'll bring you a can of Swan lager back to Houston."*

Cooper,
"Very good. That's the spirit. Be sure to give our best to all of those fine people over there."

Lewis, *"Will do, Gordo."*

Gemini V talks to SeaLab II under the Pacific Ocean

On the last day Conrad and Cooper spoke to ex-Mercury astronaut Scott Carpenter on the floor of the Pacific Ocean, 61 metres below the surface in SeaLab II off La Jolla, California.

SeaLab II was a 45-day experiment to test the viability of saturation diving and humans living in isolation for extended periods of time. Image: OAR/National Undersea Research Program (NURP); US Navy

The first of three Sealab II teams, which included astronaut Scott Carpenter (front row, 2nd from left).
Image: OAR/National Undersea Research Program (NURP); US Navy

At 184:33:31 GET (1633:30 AEST, 29 August) Cooper called SeaLab II through the Antigua tracking station,

"Hello, SeaLab. Gemini V here."

Carpenter, *"Roger. SeaLab transmitting from 200 feet* (61 metres) *down off La Jolla. How do you read Gordo?"*

Cooper, *"Good. How are you doing, Scott?"*

Carpenter, *"I read you, Gordo. You're doing a great job. We almost missed you this time. We just got down this afternoon and I'm glad we got a chance to tell you what a great job that you guys are doing. Hope you have a very pleasant re-entry shortly. Over."*

Cooper,
"Right. Very shortly. How are things going?"

Carpenter, *"Roger, Gordo. Things are going very well. We just occupied SeaLab about six hours ago……eight hours ago. It took a while to get up and going. We have a lot of sea life to study. The SeaLab is in good condition and we're looking forward to pleasant days down here."*

Cooper, *"He's fading out I can't hear him."*

Capcom,
"You have about 20 seconds to LOS, Gordo."

By this time the cabin of Gemini V was beginning to get cluttered up with what seemed to be every object on board, much of it floating around.

Gordon Cooper and Pete Conrad in their Gemini spacesuits. Image: NASA

Conrad said to me: *"We were getting pretty rank and I was ready to come home. We'd lost several thrusters; we were in drifting flight; we couldn't do all the experiments it got to be a real drag."*

Actually, only one of the 17 experiments had to be cancelled.

During the last pass over Carnarvon at 189:57:44 GET (2157:43 AEST, 29 August) Pete Conrad called down,

"Okay, we're right on the button, Carnarvon. Thank you very much. We appreciate your help and we'll see you back in Houston and say hello to everybody."

Lewis, *"Roger, will do."*

Splashdown

The Navy were ready with 10 ships spaced around the Atlantic, led by the carrier USS Lake Champlain and five destroyers. There were additional ships on standby in the Pacific.

On the 118th orbit the astronauts began stowing their gear ready for splashdown, and retrofire occurred over Hawaii at GET 190:27:43 (2227:42 AEST 29 August) during Rev 120.

Houston Capcom, *"Enjoy the view."*

Conrad, *"It's dark out here."*

Capcom, *"Oh – that's right."*

A diver jumps into the ocean as part of the recovery efforts for Gemini 5. Image: US Navy Recovery

The astronauts controlled the re-entry, creating drag and lift by rotating the spacecraft. Cooper peered out of his window at the night sky and felt he was sitting in the middle of a fire with the attitude thrusters spewing flames in front and retro-rockets firing behind him.

The Sun reached the spacecraft at 190:37:05 GET, though they had no horizon and the Earth was still in darkness below. An excited Conrad described the sight:

"This is a fantastic sight out here. I don't know what all the stuff is – I guess pieces of the retro

Above: Pete Conrad is raised towards the helicopter, while Gordon Cooper waits in the raft.
Image: NASA/US Navy Recovery
Below: Gordon Cooper gets his turn being hoisted from the ocean.

Conrad teases Cooper about his beard. Image: NASA

adapter or whatever is following along with us, but it's all lit up in the sunlight in a complete black void."

The spacecraft slowed from 27,358 kilometres per hour to 1,126 kilometres per hour as it entered a four minute communications blackout period at an altitude of 300,000 feet. The drogue parachute burst out at 50,000 feet.

They had to rely on their instruments – there was no way they could see any landmark before the spacecraft dropped into the sea 1,287 kilometres east of Jacksonville, Florida, at 190 hours 55 minutes 14 seconds GET (2255:13 AEST, Sunday 29 August), 130 kilometres short of the target.

The weather was fine with an 8-knot breeze blowing from the south-west, a maximum wave height of a metre, and a water temp of 27°C.

More Gemini 5 audio from Carnarvon

Hamish Lindsay worked on the Voice Receivers at Carnarvon and preserved audio recorded during the Gemini 5 mission in August 1965. Digitised and edited by Colin Mackellar. The audio files of each pass are unaltered, however periods of silence between passes have been removed or reduced.

WEBSITE

Cooper and Conrad were reasonably comfortable. Cooper was content to stay with his spacecraft as it was a nice calm summer's day, at around 8 o'clock in the morning, but when he was told the carrier was still 120 kilometres away, he accepted a lift by helicopter.

Divers from the recovery ship USS DuPont collected the astronauts and they were then transferred by 'copter to the USS Lake Champlain.

Due to a computer programmer entering the incorrect rotation speed of the Earth they landed 164.8 130 kilometres short of the target.

Summary

There were 17 experiments planned, with only experiment D-2, Nearby Object Photography (photographing the REP) cancelled. All the medical experiments were completed, the mission confirming that 8 days in space in the confines of a spacecraft was safe.

Essay by Hamish Lindsay, 2012-2014.
Images, illustrations and captions by
Hamish Lindsay, Colin Mackellar, and Glen Nagle.
Onboard images courtesy Arizona State University School of Earth and Space Exploration's 'March to the Moon' Image Gallery.
Unless specified, audio and video recorded, edited and encoded by Colin Mackellar.
PDF formatted by Glen Nagle.

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ABOUT THE AUTHOR

Hamish Lindsay (1937-2022) worked at the Muchea, 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.