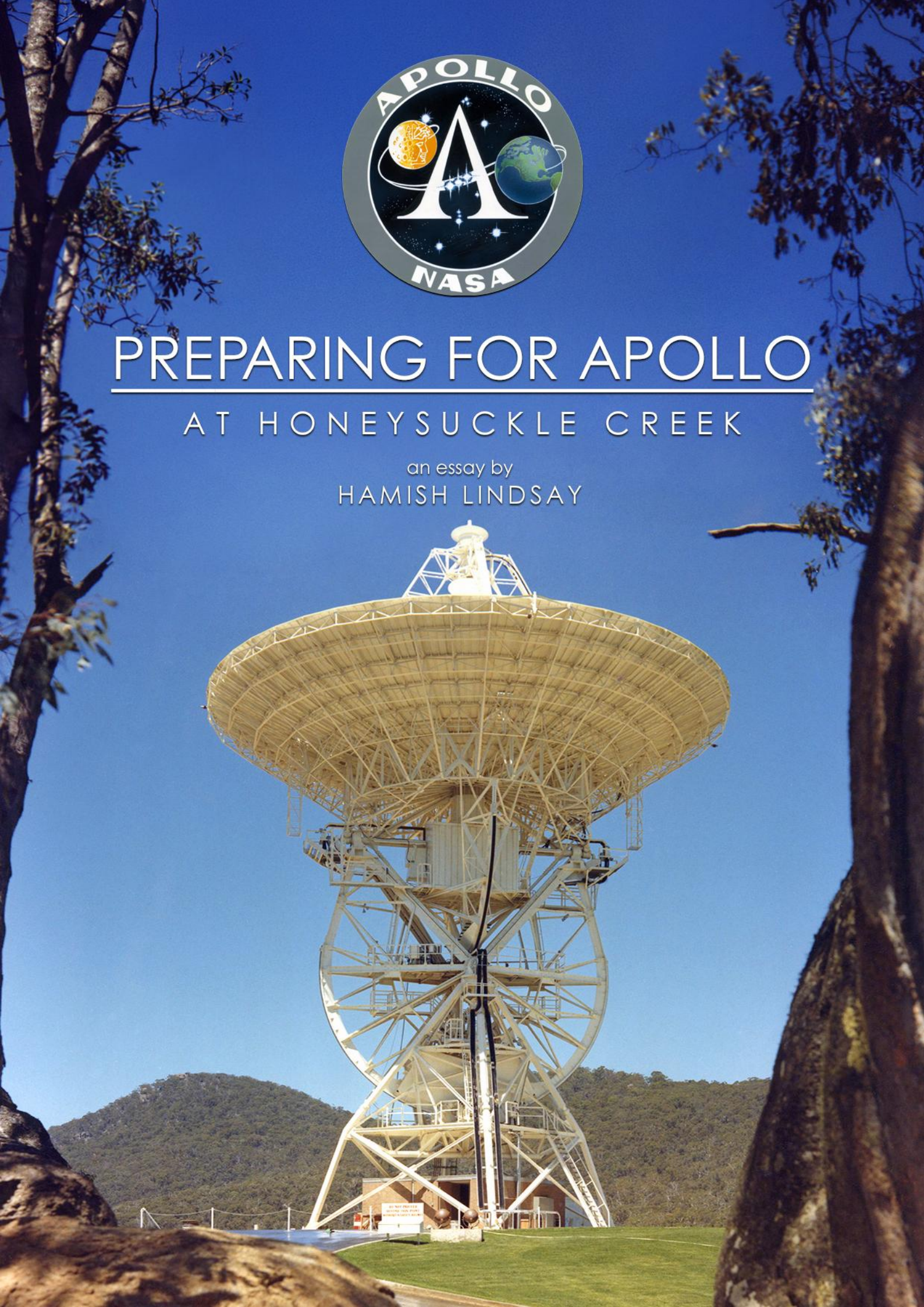

PREPARING FOR APOLLO

AT HONEYSUCKLE CREEK

an essay by

HAMISH LINDSAY

'This upstart station called Honeysuckle,
near somewhere called Canberra,
came to centre stage and performed magnificently.'

Mike Dinn

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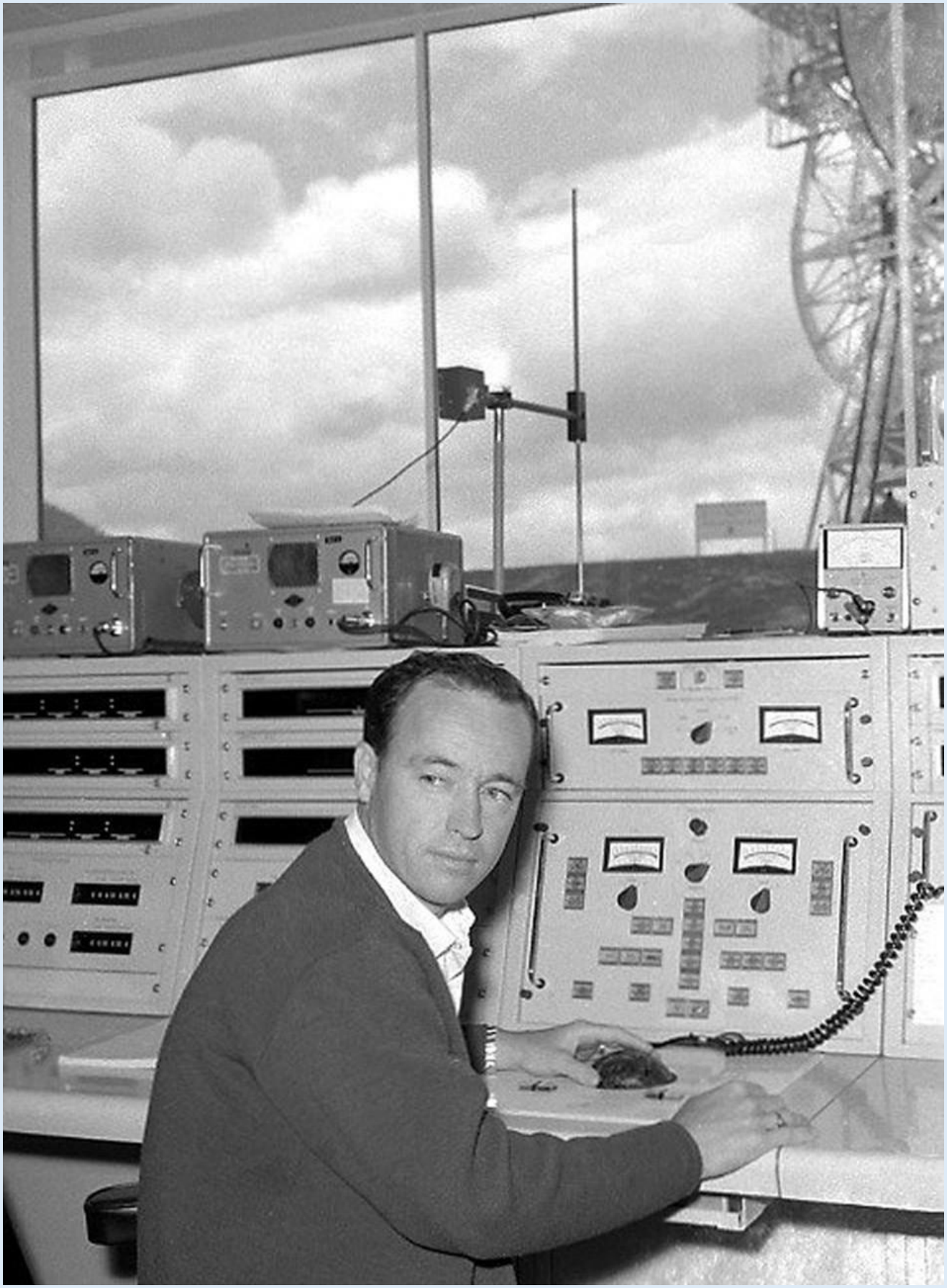
Extracted from content available on the
Honeysuckle Creek Tracking Station
website, developed by Colin Mackellar

www.honeysucklecreek.net

Click or scan the QR code below to see the website:

Editor's note: Front cover photo by Hamish Lindsay. Digitally extended by Glen Nagle



Ray Cox, supervisor of the Collins Radio team that installed all the USB equipment,
with his left hand on the ball tracker that controls the antenna movements.
The station staff worked and trained with the Collins men.

Photo: Hamish Lindsay.

The Honeysuckle antenna during construction. Photo: Frank Barrow

PREPARING FOR APOLLO

AT HONEYSUCKLE CREEK

With the station operational after the departure of Ray Cox and the Collins installation team, and the Telemetry, Computer and Communications equipment passing all the installation tests, John Talbot, the NASA installation engineer announced the station was ready for tracking spacecraft.

We began our tracking experience by using aircraft. Our first aircraft tracks began on **Sunday 11 December 1966** to check out the USB and antenna tracking systems. Using a brilliant light on the belly of a C-121 Super Constellation to locate it in the dark, it was the most accurate way of tracking the aircraft using our boresight television.

We began work at 1600 with Jack Kennedy from Collins Radio and Bob Taylor, the NASA Test Conductor, but initially we had a lot of trouble finding the aircraft.

Once Roy Benson, our USB Engineer, said triumphantly *"I've got it!"* but it turned out to be one of our own signals on the ground someone had inadvertently forgotten to turn off.

After a couple of tracks the aircraft was running low on fuel, so returned back to base in Sydney.

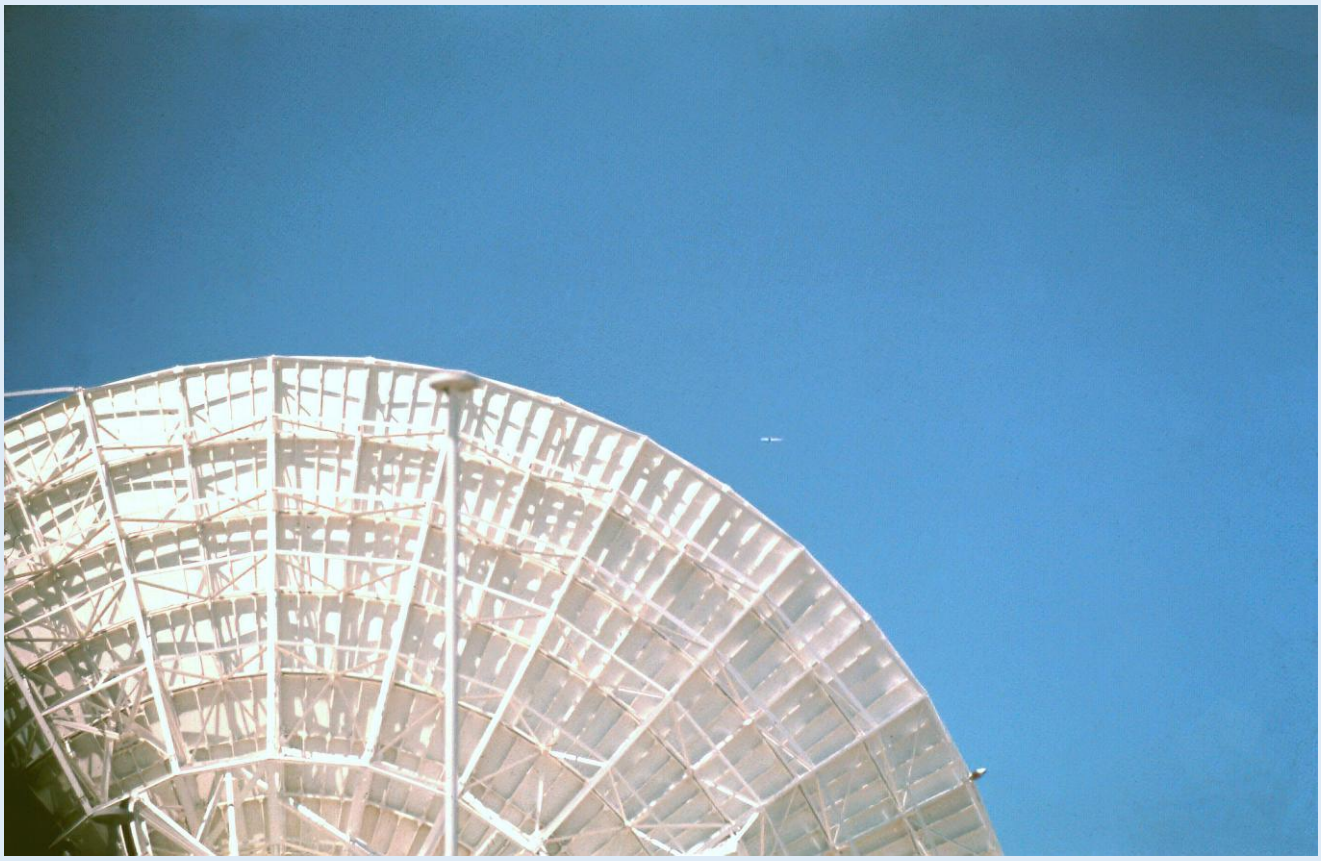
The next day wasn't much better when cloud came down, and we couldn't see each other at all. When we heard them fly right overhead but their DME and RDF had them 24 kilometres away they decided they were lost and the day's exercises were scrubbed.

The third day it was raining, so again the tests were scrubbed – but things improved after that.

With our inexperience and troubles trying to find the aircraft at one stage we tried Ian Anderson standing outside the window where we could see him pointing at the aircraft with his arm!!

It was a time of UFOs and Canberra residents rang us on the telephone in droves querying if this bright light ranging back and forth south of the city was a UFO or flying saucer.

The same light and aircraft were seen as flying saucers by the Americans in **March 1967** when flying over the Goddard Space Flight Center's Test and Training Facility in Maryland.



Bruce Withey took this photo of the Honeysuckle antenna tracking the Super Constellation NASA 421.

Ops Supervisor John Saxon:

"The first spacecraft we tracked was Lunar Orbiter. Someone called from Goddard early in the New Year of 1967 and asked if we could support. I said we would be happy to do that, and we'd look forward to it. I was then roundly criticised by Wes Moon (the Chief Engineer at the time) for accepting the track, as it would "interfere with the preparations for the station opening ceremonies"!

We did try to support, but ran into problems as they sent us predicts for a 9 metre site in the Northern hemisphere.

So, after lots of fruitless searching, we sent the intrepid Ian Anderson up the antenna to look along the boresight and direct the servo operator where to move to point at the Moon. I remember lots of "up a bit" and "left, left a bit" etc. followed by Ian's immortal words, which were to haunt him for years, "It's soo close it hurts" (has to be said with a strong Scottish accent). I don't think we managed to find it that day – but once GSFC got the predicts sorted out, we had no trouble tracking at lunar distances."

Looking forward to our first Apollo mission with Gus Grissom, Ed White, and Roger Chaffee, we were all stunned by the news of a fire killing all three astronauts on **27 January 1967** during a countdown simulation test at the Cape. We knew this would put the brakes on the project for a long time, and realised it would give us plenty of time to prepare for the first Apollo manned mission, but we did wonder about President Kennedy's 1969 deadline.

On **10 June 1967** we had our first Apollo simulation with the network, beginning at 1900 AEST.

It began as a bit of a shambles but began to settle down as we went through the night. It was a long spell for us, as we didn't finish until 1500 the following afternoon. The Station Director held a de-briefing in the computer room, and I cringed when he said we had been asked to support another simulation the next night.

"I told them we would not support it as we had been up all night, and we were all too tired."

In those days at Honeysuckle, I had just come from Carnarvon and was the only person with previous experience of MSFN procedures.

Neville Eyre took this photo of NASA 421 on the tarmac at Canberra Airport.

I knew you NEVER, NEVER told NASA you were too tired to support any of their requests.

On **20 June 1967** we adjusted the antenna sub-reflector focussing using the signal from the Lunar Orbiter spacecraft. I operated the X-Y recorder while Jim Kirkpatrick and Ian Anderson went up and down in the cherry picker with spanners to move the sub-reflector up and down. In the end we only moved it 1.6 millimetres!!

The next day, **Wednesday 21 June 1967** George Harris and the Goddard Simulation team arrived in the Super Constellation NASA 421 to check our mission procedures out. In the USB area we had Rod Fischer as observer, helped by Jerry Brennan.

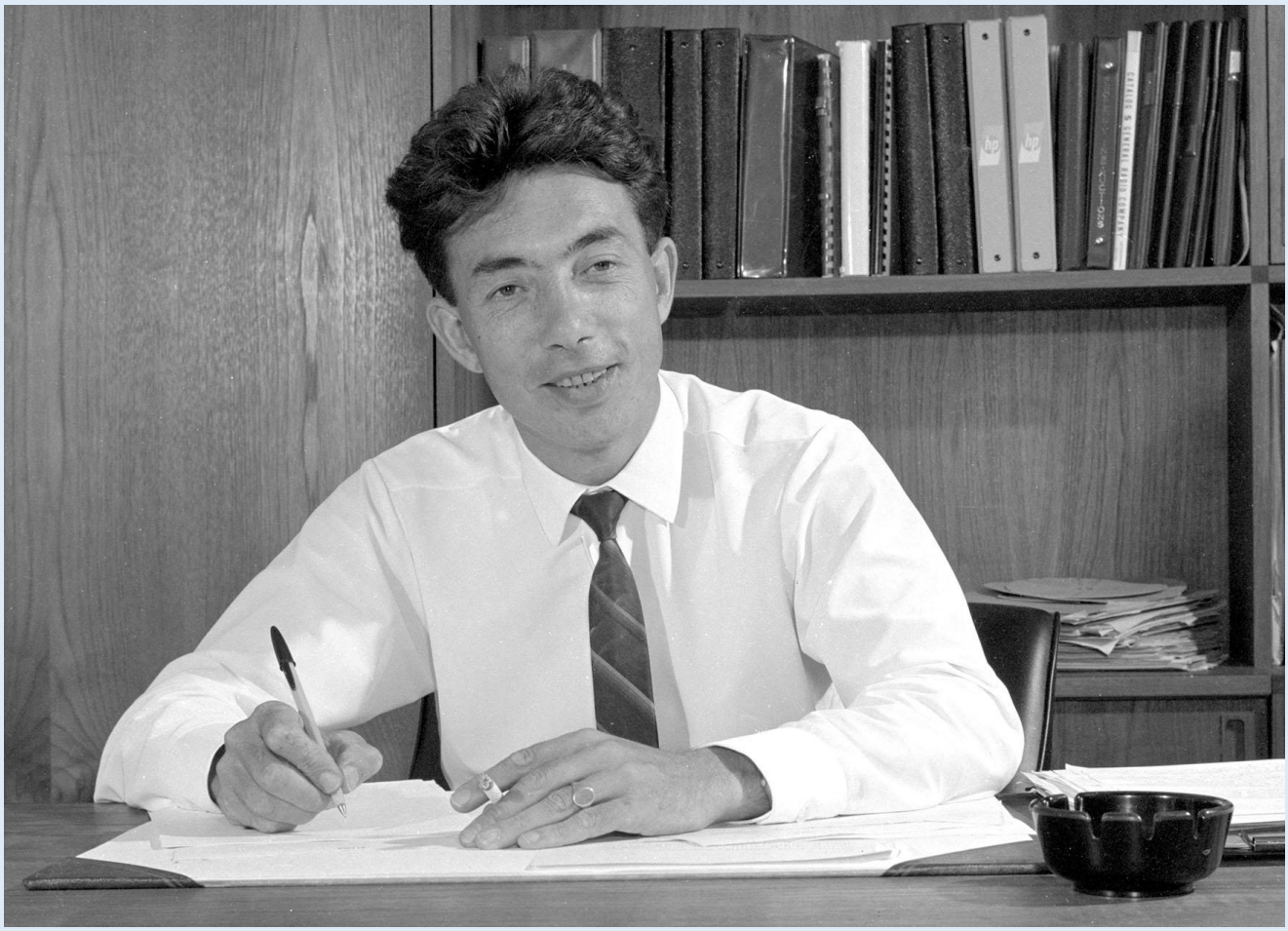
First of all, we did a Phase 1 Site Readiness Test (SRT) which we were to become very familiar with, as we had to perform one before every manned flight pass. There were lots of conferences and discussions between the hierarchy, but we troops had little idea of what was really going on, except to know we were not doing very well. This was made very clear to us at a meeting in the crew room.

On **Sunday 9 July**, the Goddard team's last day, we tried an H-140 count, beginning with a Phase 1 and 3 SRT before going into a pass. Then we did an H-30 count which was full of drama as the Sim Team observers made Brian Bell, the Servo Operator controlling the antenna, have a sudden attack of appendicitis and Paul Mullen, sitting alongside making notes, had to jump into his place. USB Engineer Mike Evenett replaced Paul.

The Chief Engineer, Wes Moon, was in the chair as the M&O (Maintenance & Operations Supervisor), which Mike Dinn later changed to the simpler titles of Ops 1 and Ops 2, but Wes was having a hard time getting his time hacks on the right time as well as announcing LOS (Loss of Signal) a minute early.

As a result of our poor performance in these simulations we suffered a major staffing shake up, beginning with a new Station Director.

Tom Reid was transferred from Orroral Valley to replace Bryan Lowe and Deputy Director Bert Forsyth was replaced by Michael Dinn from the Tidbinbilla station.



Honeysuckle's first Station Director, Bryan Lowe. Photo: Hamish Lindsay. Scan: Colin Mackellar.

On **Monday 7 August 1967** Tom Reid arrived, just as the new road was opened, and we prepared for a second session with George Harris.

On **Monday 18 September 1967** George Harris and the Simulation Team arrived from Carnarvon and on Thursday we had an H-140 count, interfacing with the Wing at Tidbinbilla for the first time. After our previous efforts we all had a better idea of what was required, but Reid very cunningly requested George Harris to be M&O (Ops 1), assisted by Ken Lee as AM&O (Ops 2). This time we followed the procedures a lot better than before. These simulations were so intense that Eric Stallard in Telemetry was asleep in bed at home and, during the dead of night, startled his wife by suddenly sitting up and calling out,

"Decoms in Lock!".

John Saxon remembers,

"Later, when we got better, we used to involve the outside world and places such as Sydney video. We actually managed to tie up most of the communications around the east coast of Australia – often Channel 7 didn't get their news at the right time because we had all the television feeds tied up."

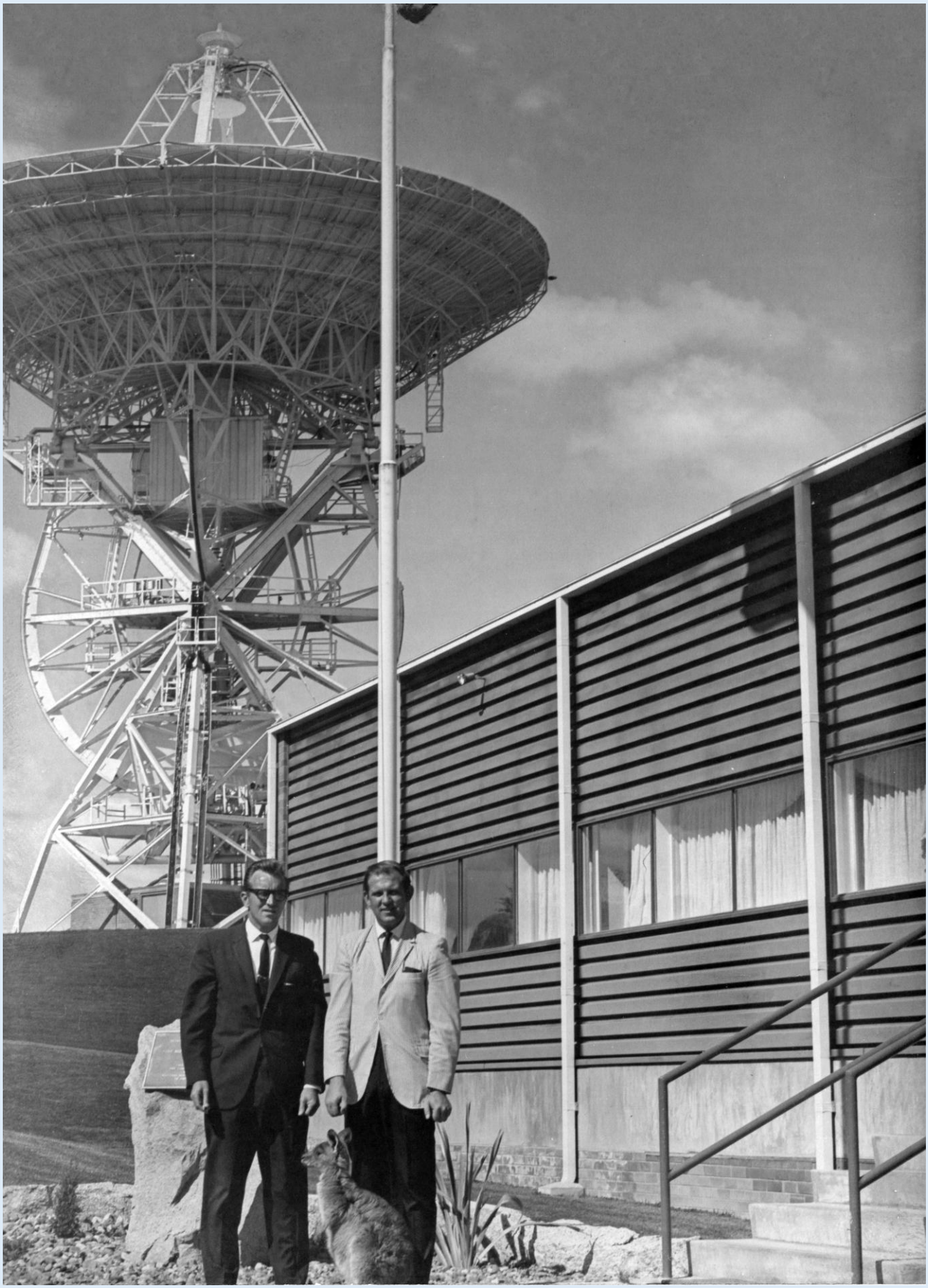
After many practice runs NASA 421 and the Sim Team left on **Friday 29 September** and left us to lick our wounds.

The staff shake out continued with the contractor's Chief Engineer Wes Moon was replaced by Bill Kempees from Orroral Valley, the company manager John Matthews replaced by Tony Cobden, the USB Engineer Roy Benson by Gordon Carlisle, and Telemetry Engineer Geoff Seymour was brought in from Woomera.

Electronic consoles inside NASA 421. Pic: Bob Burns

Above and Below: Station Director Tom Reid (left) presented Goddard Simulation Team Leader George Harris with a pair of sandals mounted on a plaque with the inscription, *'To Mr G. Harris Jnr, in the hope that his feet will be dry when walking on the water. Station Director and Staff, Honeysuckle.'*

The station's mascot at the time, a pet kangaroo, helps hold the plaque up for the photograph. The kangaroo became so lazy that when food was brought to it, it wouldn't bother getting up, but just ate lying down. Photos by Hamish Lindsay. Scans by Colin Mackellar.



Station Director Tom Reid (left) and Goddard Simulation Team Leader George Harris with the station mascot. Photo by Hamish Lindsay. Scan: Glen Nagle (Tidbinbilla Archives)

Station Director Tom Reid (left) watches as Goddard Simulation Team Leader George Harris is farewelled by the station mascot. Photo: Hamish Lindsay. Scan: Colin Mackellar.

While much of the original Honeysuckle Creek Tracking Station has been lost to time, many features still remain to hint at the station that once was. Visitors to the site today can still find the remains of the first few steps leading into the building, its foundations, the carpark and road leading to the pad where the antenna once stood. The Honeysuckle plaque (on the rock next to Harris), and antenna are now at the Canberra Deep Space Communication Complex.

From left: Ian Grant, John Saxon and Mike Dinn at the Honeysuckle Ops console with a member of the Goddard Simulation team during later Apollo missions. Photo: Hamish Lindsay. Scan: Colin Mackellar.

We now felt responsible enough to face a real manned Apollo mission.

But first NASA had to try out the Saturn V rocket.

On **Thursday 9 November 1967**, Apollo 4 rattled the brand new Launch Control Center at Cape Kennedy and the roof of the Press Center collapsed with the pressure waves when it lifted off from Pad 39A.

It put a Command and Service Module (CSM), at the time a record 126,500 kilograms, into orbit. The CSM was kicked out to 17,300 kilometres to fire its rocket to hurl itself back into the atmosphere at 40,000 kilometres per hour, to simulate a spacecraft returning back from the Moon. It was hoisted aboard the USS Bennington where the engineers found everything had worked perfectly.

On **Monday 22 January 1968** the Saturn 1B that was to have launched Gus Grissom, and his crew sent an early version of the Lunar Module (LM) into orbit as Apollo 5.

The LM's rocket engines were fired but when the descent engine was fired it only lasted 4 seconds due to a computer programming error, and shut down. When the ascent stage separated from the descent stage it went into a wild dance, again due to a computer error.

Despite these anomalies the LM was passed as spaceworthy as it melted into a fireball on the sixth orbit.

On **Thursday 4 April 1968**, Apollo 6 tested the Saturn V again for its navigation systems and the engines themselves, with a final test of the Command Module's heat shield. At Honeysuckle Creek we started the day at our normal time of 0830 and went into a CADFISS (Computation and Data Flow Integrated Subsystem). Our computers were in trouble for a while when the 1218 went RED cannot support.

The launch of Apollo 4. Image: NASA/KSC

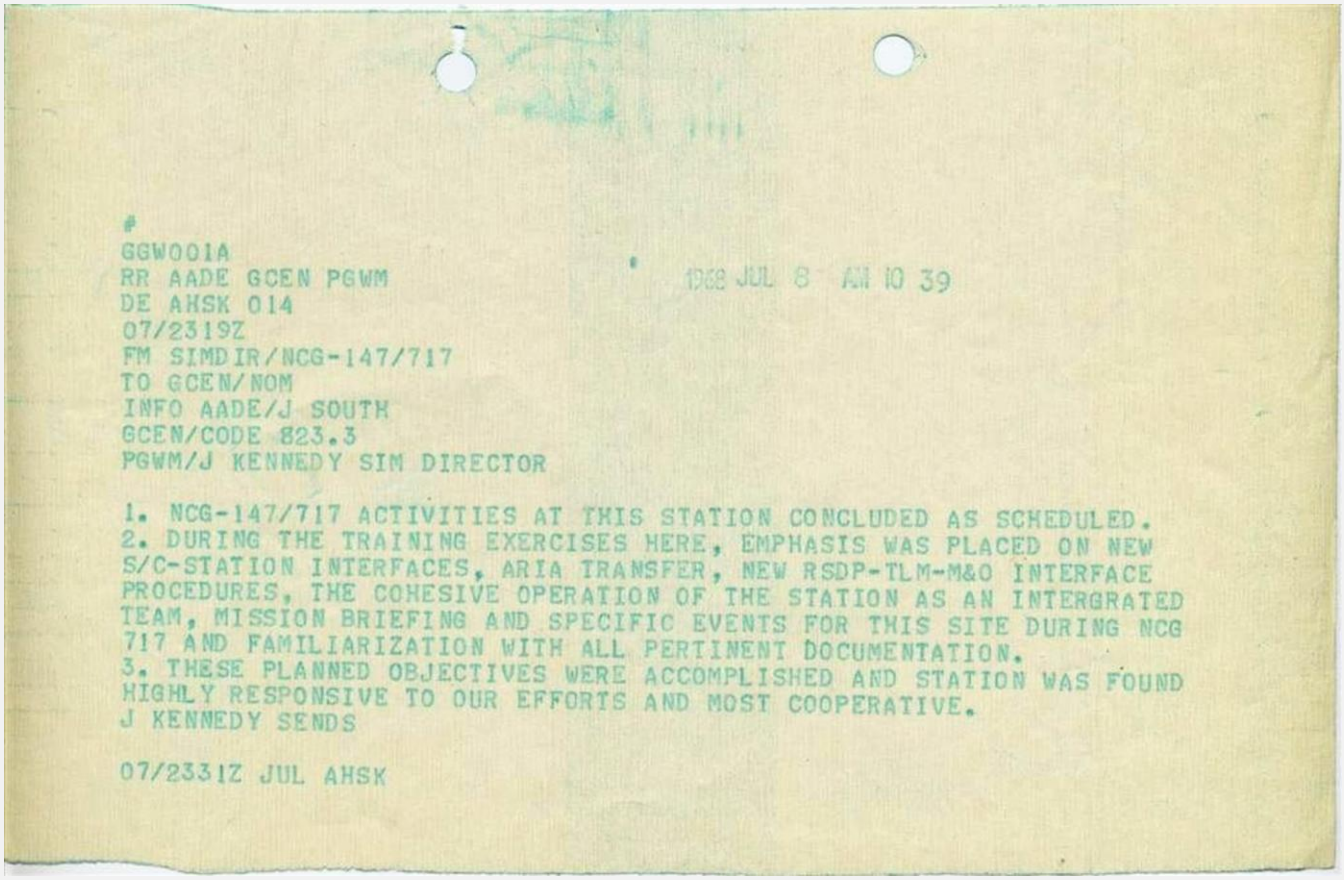
Deputy Station Director, Mike Dinn. Photo: Hamish Lindsay. Scan: Colin Mackellar

Additional comments on **'Preparing for Apollo at Honeysuckle Creek'** from Mike Dinn:

"We tracked all three of these missions [Apollos 4, 5 & 6], which gave us SOME experience working with the MSFN network and Houston, and SOME practice acquiring and tracking spacecraft in Earth orbit. With all the simulations and real spacecraft tracks we felt we knew our equipment pretty well and had developed into a confident team. However, we still felt we were junior members of the MSFN, not having UHF comms, not having been part of Gemini, and not having tracked many earth orbit activities.

Apollo 7 was our first real opportunity to perform consistently in earth orbit tracking. And this went very well – no signs of the early problems.

But finally with Apollo 8 we came into our own, and this upstart MSFN station called Honeysuckle, near somewhere called Canberra, came to centre stage and performed magnificently, along with all other parts of this incredible mission."



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1. NCG-147/717 ACTIVITIES AT THIS STATION CONCLUDED AS SCHEDULED.
2. DURING THE TRAINING EXERCISES HERE, EMPHASIS WAS PLACED ON NEW S/C-STATION INTERFACES, ARIA TRANSFER, NEW RSDP-TLM-M&O INTERFACE PROCEDURES, THE COHESIVE OPERATION OF THE STATION AS AN INTERGRATED TEAM, MISSION BRIEFING AND SPECIFIC EVENTS FOR THIS SITE DURING NCG 717 AND FAMILIARIZATION WITH ALL PERTINENT DOCUMENTATION.
3. THESE PLANNED OBJECTIVES WERE ACCOMPLISHED AND STATION WAS FOUND HIGHLY RESPONSIVE TO OUR EFFORTS AND MOST COOPERATIVE.
J KENNEDY SENDS

07/2331Z JUL AHSK

This TWX is dated July 8th (local time) 1968 – prior to Apollo 7 (i.e. NCG-717).
With thanks to Jim Kennedy for the scan.

It reads: 1. NGC-147/717 activities at this station concluded as scheduled.

2. During the training exercises here, emphasis was placed on new S/C-station interfaces, ARIA transfer, new RSDP-TLM-M&O interface procedures, the cohesive operation of the station as an integrated team, mission briefing and specific events for this site during NCG717 and familiarisation with all pertinent documentation.

3. These planned objectives were accomplished, and station was found highly response to our efforts and most cooperative.

Launch was 1 second late and two engines of the second stage did not fire properly putting the CSM and IU into slightly different orbit, so instead of seeing only one pass for 4 minutes, we tracked two passes – the first of 7 minutes and a 2 minute, low elevation pass only 5 degrees above the horizon.

We successfully tried a WPEP (Wing Prime Evaluation Plan) Test, handing over two-way on the CSM to the Wing and back.

Three main problems were found on the Saturn vehicle, so more than a thousand engineers and technicians knuckled down to ferret out the causes, and in a month answers were found.

We tracked all three of these missions, which gave us good experience working with the MSFN network, and lots of practice acquiring and tracking spacecraft, plus a real live handover in Earth orbit.

With all the simulations and real spacecraft tracks we felt we knew our equipment and had developed into a confident team.

The Apollo Flight and Ground teams were now ready to send astronauts into space.

Essay by Hamish Lindsay, 2012-2014.
Unless specified images are from NASA.
Unless specified, illustrations and captions by Hamish Lindsay, Colin Mackellar, and Glen Nagle.
PDF formatted by Glen Nagle.

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.