



September 1966



July-September 1973



Keeping the Memory Alive

Vol 11 September 2013

THE TRACKERS' CROCNICLE

Included in this issue:

Extract from "From The Trench of Mission Control to the Craters of The Moon".....2

Where Are They Now.....2

Whereabouts.....3, 4

Catch the Buzz.....4

From A Carnarvon Viewpoint.....5

The Carnarvon Space Festival - ctd.....6

Tracking Antennas Explained.....7

Trackers' CROnicle Donations.....7

"The Fisherman Who Rode a Horse" - ctd.....8

Social Club News - November 1969.....9

Recollections - ctd.....10

45th Anniversary Reunion Dinner.....11

Gemini XI - Last Pass.....12

Terence (Terry) Kierans - Editor
 CRO Trackers
 PO Box 93
 QUINNS ROCKS WA 6030
 AUSTRALIA

Tel: 61 8 9304 6983
 Mobile: 0414 25 1091
 email: tk@crotrak.com
<http://www.crotrak.com>



Extract from "From The Trench of Mission Control to the Craters of The Moon"

Courtesy "Dutch" von Ehrenfried

CARNARVON



The result of a month's work with the new consoles and tracking station equipment was the writing of "The Gemini Remote Site Flight Controller's Handbook" which went to all of the tracking station remote site teams. There were also some hardware changes that had to be made to the consoles; for example the plastic covers on the communications panel would melt after being on too long.

GEMINI III

Gemini III was launched on March 23, 1965. It was just three orbits to check out everything and was the first successful manned Gemini mission. I was now 29 years old

There was, however a flight control problem at the Carnarvon remote site. Dan Hunter and astronaut Pete Conrad got into an argument about who's in charge. This became a big deal and is well documented in Gene Kranz's book. This went up to Chris Kraft and Deke Slayton to resolve. It was ugly to say the least. Dan transferred to the Goddard Space Flight Center and eventually to the Madrid tracking station for Apollo.

Where Are They Now

An email message out of the blue has provided an input for this segment.

Robert (Bob) DeWaayer

I was on the trackers soccer team, was with the volunteer fire brigade, represented the tracking station during the Carnarvon wheel barrow races, worked shift at Range & Range Rate for six months or so and my first year was with the main dish as a lowly technician. I was there for three of the Apollo flights. I also lived in the corner unit at the back of the Port Hotel. They were great times and I have wonderful memories of the 18 months I did work there.

The sad part is that my memory is not as good as it used to be and when I went travelling overseas, I failed to stay in touch with anyone in Carnarvon and

have forgotten all the names of the people I did work with. Anyway I would love to meet some of the people again and who knows maybe someone will remember me.



I drove a white MGB convertible and drove Alan Bartlett Shepard in it during the 1968 Carnarvon Parade and that was my contribution to history.

Whereabouts

As a result of Paul Dench supplying his "staffing list", augmented courtesy Brian Milne, the "Whereabouts" table of those for whom we have no contact details has expanded to more than one page. Thanks to those who have sent updates.

C Abott	Jim Crossland	Peter Hardwicke
Eric Ainsworth	Noel Cunningham	Ron Harmes
Gay Albon	F Dawes	Anne Harvey (Brookes)
Bill Arbery	Peter Dawson	D Hatch
Allan Barber	Peter Del Fante	Gail Heileman
John (Allan) Barber	Andrew Dempster	Stan Hills
Matt Barber	Jean DeVis	Ernie Hindley
Keith Barnard	Marilyn Dick	Dave Hine
Barrow	Olive Dick	A Holgate
Deidre Beaumont	Neville Dippell	Phyllis Hook (Watson)
Elizabeth Beckett	Cheryl? Dixon	J Hopkins
Keith Beveridge	L Donkin	Vivienne Lawer (Hopper)
Michael Billings	John Draper	
Denis Black	Mike Dresser	Deidre Howard
G Bond	Bruce Duff	B Hughes
S Boyce	I Dunleavy	B Hunter
Bill Boyle		D Hutchins
B Bradley	Dave Elliot	Ian Jones
Phil Brindley	J Erickson	S ??? Judd
Hans Britz		Vera Kastropil
Dave Brooks	Ian Few	John Keane
Charlie Brown	Ian Findlay	Mike Keen
T.F.A Brown	G Francis	Jim Keenan
W Brown	Ben Franklin	John Kelman
J Burdett	David Froom	Joy King
R Burdett	Jamie Gardiner	M King
Martin Burgess	L Gardner	L King
Robert Burns	S Garner	Roy Kjellgren
Joe Cabone	C George	Gloria Klarie
Joy Cameron	Joe George	Peter Kloppenburg
Geoff Cardwell	J Gerschwitz	Henry Larsen
G Carrick	G Goodlace	Russ Leighton
Brian Clarke	L Gore	G Linney
Brian Clifford	Lyn Grant	F Lippett
Keith Clifton-James	Claude Granville	Alex Liu
Barbara Cobcroft	Bob Halse	Gloria Lyon-Roberts
Bill Comstock	Geoff Hammond	Ross MacDonald
?? Coombs	R Hanes	John Mahaffey
Ron Cottis	Bea Hardman	Peter Maine

The quest continues; the list never seems to get very much shorter.

I have been given information concerning the possible whereabouts of a few of these, but so far have not been successful in obtaining, or confirming, details. The Reunion Dinner brought out some missing persons, but there are also a few who do not wish to be contacted.

Whereabouts ctd.

Roy Mallinson Bob Marr Keith Mathieson Alec Matthews K McCarson Ian McDonald S McDonald Frank McGregor Eileen McLaughlan Don McLellan Nola Meiklejohn (O'Byrne) R Miller Ray Mills Marilyn Milner (Gobby) John Mogg Sharon Morgan (Todd) J Murray Dennis Naylor Gloria Neal Ellie Nichols K Elton Nickerson Graham Nielsen John Noble ? O'Brien Joan Oats W Oliver Denis Owens John Paddon ??? Mrs Parkinson John Parkinson Alan Paterson ? Paull Mike Pender Wendy Petersen Don Pettitt T Phillips	Diane Pitman (Housley) John Platten Gerry Plummer D Powell M.J.K Power Wendy Puccinelli Lorna Quinn Roger Ramsden A Rees Dave Rendell Frank Rice Doug Richards D Richardson Harry Richmond Ralph Richmond Dave Rickards G Riley Brian Robinson Lynne Rosser Ted Rosser Lindsay Sage Stewart Sands Ron Sargeant Russell Schwarzer Bob Scott Michael Scott-Malcolm Lorraine Scott-Malcolm (Erlandsen) Dorcas Sefton-Bellion George Sefton-Bellion D Selby Ron Shand Fred Sharland E Sharples ? Sheehan Jeff Shuttleworth P Sims	George Small Lyn Smart (Willis) J Smith P Smith Roger Smith Bill Smythe Hazel Snook (Howse) Dave Standbury John Stanton Alex Stevenson Barbara Stephenson (Vernon) Barbara Teahan Barbara Teasdale Des Terrill Alan Thomas Christine Thomas Howard Thomas Don Thompson Jack Thompson Patsy Thompson (Nolan) Larry Tomkins Frank Toomey Mike Travell Norma Turner Ernst Uhl Tony Vingerhoets Dave Walker Mrs B Ward Tom Ward N Wardle A Watermeyer Irene West Bernie Wilbourne Garnet Wilmott Brian Wilson
--	--	---

Catch the Buzz



The "Catch the Buzz!" DVD's are now available for sale at the museum. Cost is \$22.00 plus postage. It features:

- Carnarvon Airport Welcome;
- Kids Q & A;
- Cocktail Party, which includes Buzz's inspirational speech, and
- Opening of museum

It is a great memento if you were there; if you weren't ...you'll wish you were! But at least now you'll feel part of one of Carnarvon's biggest events.

Please order through our website at

<http://www.carnarvonmuseum.org.au/buzz.html>

From A Carnarvon Viewpoint

Gemini III

The first Gemini manned flight.

24 March 1965 AEST

By Hamish Lindsay

NASA PREPARES FOR THE GEMINI MANNED FLIGHTS

Getting ready for the first flight of a new project was frantically hectic. With a new spacecraft, new equipment and new procedures, the inevitable last minute changes constantly being introduced put great demands on engineers, flight controllers and astronauts alike. Though the two-man Gemini spacecraft was bigger than the original one-man Mercury version, the crew was a bit more cramped for space. But Gemini had more stowage spaces.

The science experiments were limited in Mercury, but played a bigger role in Gemini. Scientists showed up days before a launch hoping to get some last minute time with the astronauts to go over procedures for their particular experiment, but everyone's schedule was full, particularly the astronauts, who had to be quarantined against exposure to viruses. Needless to say few scientists managed to get through the doors in that period which often resulted in hurt feelings.

Gemini III was the last time the original Cape Canaveral Mission Control Center was used.

Flight Director Chris Kraft had his prime flight control team with him at Cape Canaveral to run the mission, but John Hodge and his team were stationed in the new Mission Control Center at Houston, Texas, to try out the brand-new facility. Houston got the same data as Cape Canaveral, but they had advanced consoles with more capabilities. Looking around the Cape MCC a nostalgic Kraft said, "I compared surroundings, things looked small and antiquated at the Cape. We were saying goodbye to a room that was filled with history."

The tracking network prepares for Gemini.

The Goddard Space Flight Center in Maryland had organised a team of operational and engineering people to fly to the tracking stations around the world and train them all to the same standard, and also to evaluate their performance. So the first major event for the world-wide tracking network (including us at Carnarvon), was a visit from this simulation test team and a Super Constellation aircraft.

While the aircraft flew back and forth over the station behaving like a spacecraft, the ground team put the station operational staff through searching exercises to train them in the procedures to follow when the real mission was in progress. Carnarvon was the first station ready, so the brand new Gemini procedures were first tried out at Carnarvon.

The Gemini Program began with **Gemini Launch Test GLV-1** flight on 8 April 1964 to test the performance of the launch vehicle. The mission was terminated after three orbits with all objectives achieved, while the spacecraft flew on for 64 orbits over 3½ days before disintegrating in the atmosphere.

After delays because of unfavourable weather, including Hurricanes *Cleo* and *Dora*, with winds gusting up to 200 kilometres per hour and causing the launch crews to dismantle the Titan booster for protection.

The second **Gemini launch test, called GLV-2**, left pad 19 on 19 January 1965. To check its integrity, the spacecraft with a dummy crew was hurled 159 kilometres above the South Atlantic, to scorch back in to reach a temperature hotter than in any mission so far.

To be continued

The Carnarvon Space Festival ctd.

"For my thesis I adapted my experience as a fighter pilot intercepting enemy aircraft and I devised a technique for two manned spacecraft to meet in space called Manned Orbital Rendezvous. Little did anyone know, including me, just how critical this work would later be to our successfully landing on the Moon - *and coming back home.*"



Photograph Hamish Lindsay

Buzz failed his first attempt to join NASA because he was not a test pilot, but was accepted in the third intake mainly because of his rendezvous studies at MIT.

As an avid scuba diver he was the first astronaut to train under water to simulate the weightlessness of space. He flew as pilot with Jim Lovell in Gemini XII, the last mission of the Gemini Program, setting a 5½ hour record for the longest spacewalk.

As he said, "It was November 1966, and we only had three years left to accomplish Kennedy's challenge to land a man on the Moon by the end of the decade.

In all there was a team of 400,000 people working together on a common goal. The engineers and technicians were designing and building the multistage Saturn V

rocket, the rocket scientists, the aerospace industry, contractors, NASA administrators, and even the seamstresses, who sewed our spacesuits.

As you know, Carnarvon was chosen to host a NASA tracking station. Carnarvon's unique position being almost exactly 180° opposite the United States where the rockets were launched, and became the largest tracking station outside the US. It had a staff of around 200, and from what I hear performed the tasks, in sometimes not so perfect weather conditions, extremely well.

As astronauts we required commands for the computers, and instructions from Houston. To pass on and receive data and commands NASA decided it required tracking stations all around the world so the spacecraft would never be out of contact.

The site, where we are tonight, also played an important role in relaying our first steps on the Moon from NASA's Honeysuckle Creek tracking station to Perth's TV audience via Moree earth station. The first live telecast into Western Australia - so Carnarvon really does have an important history in space exploration," and the audience clapped and cheered.

"At last we reached the day when the Saturn V rocket was first rolled out from the Assembly building. The timing of the crew rotations was just right for Neil Armstrong, Mike Collins and me to be chosen as the crew for this historic mission.

And so, after training over six months, on July 16, 1969, our launch day finally arrived."

To be continued

Tracking Antennas Explained

By Paul Dench

A moving tracking antenna commonly uses one of three different mounts.

An Azimuth-Elevation, Az-El, antenna mimics a human standing looking north.

To see an object in the sky the azimuth drive – the ‘feet’ – moves around horizontally to the appropriate azimuth angle, between 0° and 360° , and the elevation drive – the ‘head’ – tilts up to the appropriate elevation angle, between 0° horizontally and 90° vertically. Az-El antennas (and humans) find that directly overhead is the most difficult area in the sky to access.

An X-Y antenna avoids the overhead problem, as you would do, by lying down with your ‘head’ to the north and your ‘feet’ to the south; directly overhead being denominated as 0° X and 0° Y.

The X-axis drives the antenna from east ($+90^\circ$) to west (-90°); like turning your head from left to right. The Y-axis drives the antenna from north ($+90^\circ$) to south (-90°); like tilting your head from up to down.

Lie down and try it! Tracking overhead is now easy but there are

new inaccessible areas. Depending on which axis drive is on top of the other, there will be two small ‘keyholes’ where no tracking is possible; either ‘east and west’ or ‘north and south’. This is usually designed to be ‘north and south’ for earth-orbit antennas and ‘east and west’ for deep-space antennas.

A Polar mount is commonly used for an antenna tracking objects in deep space particularly in astronomy. Here the Y-axis is tilted by the amount of the antenna’s latitude (24.900° towards the north for Carnarvon in the southern hemisphere); akin to a human lying on a tilted bed.

The X-axis now becomes an hour-angle axis and the Y-axis becomes a declination axis. This makes star tracking - star-gazing - easier because once the declination angle is set on a particular star only the hour-angle axis moves, from east to west at a rate very close to 15° per hour.

Carnarvon had several of each type of mount:-

X-Y for USB and the two R&RR antennas; Polar for the SPAN telescopes and the Jupiter Monitor antenna; and Az-El for all other movable antennas on site.

Trackers’ CRONicle Donations

My grateful thanks to all of you who have re-subscribed and / or made donations.

You feel, as I do, that this newsletter is an essential item in the process of “**Keeping the Memory Alive**” for all of us. Those who were either an active participant in that historical era, or believe in, and support, what we are trying to do.

Hopefully I will not have to send out another “*cri de coeur*” next year.

The Editor

The Fisherman Who Rode a Horse

Continuation of an extract from the autobiography of Ken Watters.

Bub, although he still got seasick occasionally, was loving the fishing and he was certainly well liked by his skipper and the rest of the fishermen. He was as lean as ever, but so was I, my grandmother always said you could never fatten a thoroughbred. If only Nana could see us now.

It is quite amazing how much the coastline around Nor West Whaling has changed since the 1960s. When I first saw the jetty it was 1963 when I came up from Perth to bring Dad a welding machine he needed on the *Winkle* and at that time they were bringing in the last of the whales. The ocean came as far as the door of the present workshops and in fact if you were to dig down immediately in front of the present factory you would find the old jetty.

Nature has reclaimed at least 100 yds of ocean in the area of the factory, the jetty has been extended half a dozen times to stay in front of the beach. It is quite the opposite on the Pelican Point road, I had to drive across three lines of sand hills to get to the beach now the ocean is lapping the road. I guess that sooner, rather than later, Pelican Point and Pickles Point will join up and the Fascine will find a new mouth to the north of Pelican Resort. This will happen despite the huge amount of money now being spent to dredge a channel out through Pelican Point.

I received word from WAIT that I had been accepted to the Electronic Engineering class to start in February 1968 and Judy and I started saving furiously towards some of the costs that I would be faced with. Nana and Pop had offered to put me up in Scarborough and I could not think of anywhere that I would rather stay in Perth, however I did not want to impose so I found accommodation with a nice lady named Mrs. Gould in South Perth who had another WAIT student named Terry Cohen staying with her and her rates were very fair.

I needed money to meet my car payments though they were not very high, I did get a good trade on my Landrover and I needed money for fuel and other things. The scholarship would pay all of my school fees and books and I was to get a small weekly allowance. Along with the ability to race back to Carnarvon and get work with a minutes notice at the Tracking Station everything seemed to be falling into place.

The year seemed to race past. I became even more keen to learn as much as I could about the equipment at the Tracking Station and I developed a real skill at controlling the antennae's position. I remember we were tracking a satellite one day that had been launched from Woomera in South Australia. It was called WRESAT and it had a very low orbit meaning that it travelled from one horizon to the other very quickly.

It travelled so fast that the automatic tracking system on the antennas could not keep up so I had to control the antennas manually. There was a rule that after all satellite acquisitions the antennas were to be put into auto-track mode to obtain the most accurate position fix. In this case the antennas would fall behind and the receivers would lose acquisition very soon after going to auto-track and all data would be lost so I kept the antennas in manual mode.

To be continued

Social Club News - November 1969

Page 3.

TRACKING STATION SOCIAL CLUB 3RD ANNUAL BALL

The Ball was held on 16th August in the Civic Centre and an estimated 500 people attended (we say estimated because we feel we may have had a few "gate-crashers"). Among those who attended were several official guests, including Hon. R.J. O'Connor and Mrs. O'Connor (who officially opened the Ball), and Capt. & Mrs. B. Freeland, the Commanding Officer of the Harold E. Holt Base, Exmouth, who was representing the U.S.A. in the area.

Everyone seemed to have a good night and the Committee received no serious complaints. Many people have said that they considered the Ball to be the best they had attended in a long while, which was most gratifying to the organisers.

The Ball Committee would like to take this opportunity of thanking all those people who helped in any way. They are too numerous to mention, so please accept this thank you personally. We would like to thank the Station Director, CSR and all Area Supervisors for their help and consideration during the organisation phase (we know they had to "turn a blind eye" occasionally when we crept away to "do a job" for the Ball) Without their co-operation we would not have been able to put on the show we did. Thanks again.

The Ball Committee would like to make special mention of the band and artists. The band, 'The Silver Platters', lived up to their reputation as the finest group in Perth and kept the Ball swinging along. The artists, Mervyn de Souza and Lexma, gave an excellent performance and were much appreciated by all at the Ball. The artists have asked us to pass the following message to all those who attended:-

"We have played to many audiences in many parts of the world, but the attention we received from Carnarvon was "fantastic". We would like to congratulate the Social Club and the people of Carnarvon on the splendid way the Ball was conducted. Many cities could learn from you."

We of the Ball committee, voice these words and thank you. We look forward to your continued support for all future functions.

The Social Club Ball Committee.

-o-o-o-o-o-o-o-

Recollections ctd.

By Alan Gilham

Christmas Day 1965 arrived and the American team were given invitations to meals and parties, we had two at dinner, Don Park and Bill Ross (whose daddy was a tail gunner on a beer truck during prohibition). We managed a traditional dinner, much to their delight, although the temperature was touching the hundred degree mark.

My job was to operate and maintain the Antenna Positioning Programmer and the Tracking Data Processor with some secondary responsibility for the pseudo random numbering range calculation system and an item of telemetry equipment which I can't remember the name of but it was the source of some disagreement between myself and the supervising engineer when during a test flight I changed the phase in the input feed to correctly get the information in and processed. I justified this later by drawing innumerable phase diagrams to prove the point. We then had a slack period whilst we waited for an actual mission.

We then moved to Babbage Island Road and new neighbours with whom we are still in contact. My wife got herself a job at the local High School as school secretary which led to her becoming a maths teacher when we returned to UK.

I suddenly found myself giving guided tours of the Tracking Station to visiting dignitaries or tourists, most notably Miss Australia 1966, this exercise gave me a much needed break from doing very little during slack periods.

The American team left a large coffee machine and for some time I ran a coffee club which for two shillings a week provided unlimited coffee for the participants of the scheme until we had a fully operational canteen. When the club closed down the money in the kitty provided for a large barbecue. The wives provided salads and sweet dishes and it proved to be a big success.

Over the next two years, if my recollection is correct, there were 5 Lunar Orbiter missions, one Surveyor mission and several Saturn V test flights. The last Gemini flight was in 1966 but we were not used to track this.

In those early days there was insufficient tracking data available for us to use and locating the moon's position was quite a headache so I obtained a Nautical Almanac and used it to locate the moon's position on the horizon, my positioning was correct but I was always 4 minutes adrift in time. I never really found out why but suspect it was the refraction caused by the Earth's atmosphere.

Locating the moon when it was away from the horizon and overhead was much more difficult to do "on the hoof" as it were, with a present day PC it would have been easy.

One of the chaps came up with an ingenious device which simply consisted of two school protractors mounted in an X and Y plane with a peashooter as a sighting tube. This worked extremely well for the few weeks we were without pointing data.

I laugh when I think that two protractors and a peashooter were used on a multi million dollar project to enable us to check out the equipment.



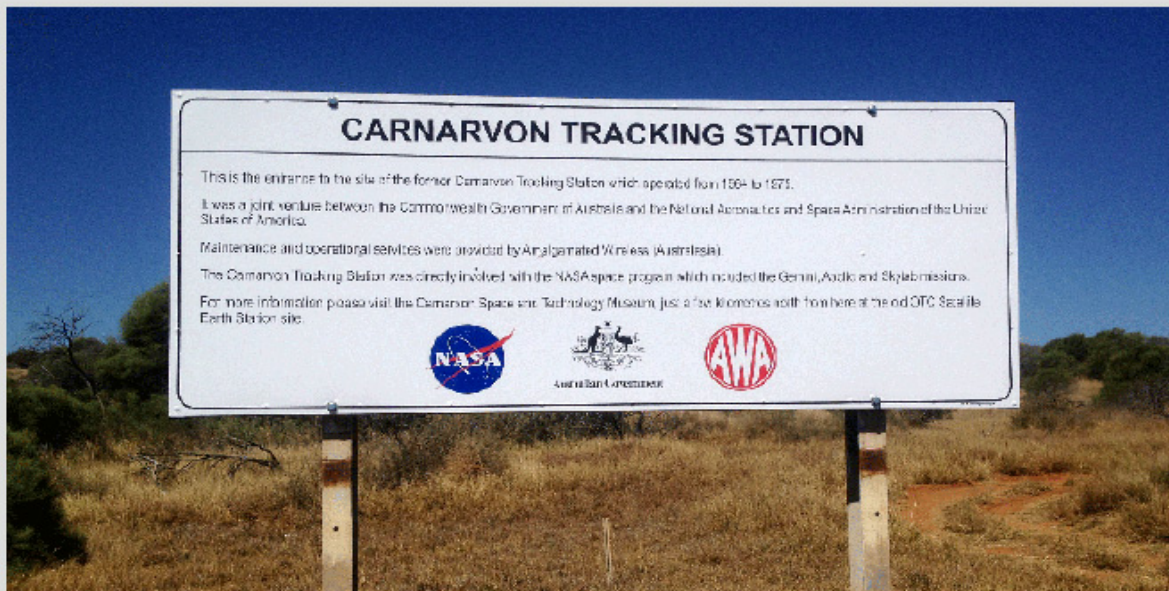
After this we were called the "Moonrakers" by the rest of the Tracking Station. The device is shown on the console in the picture.

To be continued

KEEPING THE MEMORY ALIVE



Carnarvon Tracking Station 1964 - 1975



Present Day

[Click for full size](#)

Mick and Sue Coffey's Carnarvon Steel Supplies of Cornish St Carnarvon fabricated and donated the sign

Signwriting generously donated by W&K Painting of Egan St, Carnarvon

Photograph by Phil Youd - Edited by Terence Kierans

[Click here to commence entry to the original station](#)

My sincere thanks to all of those who have contributed to the website so far; listed at: http://crotrak.com/thank_you.htm .

At long last I have included some more photographs from the 40th Anniversary Reunion Dinner, courtesy Joan & Tito Teraci. Plus a few sites have been updated with photographs from Hamish Lindsay.

A call goes out, yet again, for material. I can arrange copying, scanning, whatever, so as to get them uploaded to our website, or published in The CRONicle; you need have no fears regarding their safety.

45th Anniversary Reunion Dinner

Saturday, 19th July 2014 — It's closer than you think.
Bridgelaigh Reception Centre, Wanneroo, WA

Mark your diaries and start saving.
Tickets go on sale from November 2013.

Keeping the Memory Alive

Gemini XI - Last Pass

NASA Mission Transcripts: Gemini XI

70:18:47 CC Gemini XI, Carnarvon.
70:18:49 C Go ahead, Carnarvon. Gemini XI, standing by.
70:18:51 CC Okay. Have you got 18 minutes set up on your event timer?
70:18:54 C That 's affirmative.
70:18:55 CC Okay. I'll give you a hack then.
70:19:03 C Gemini advises the computer is in REENTRY.
70:19:06 CC Roger.
70:23:30 CC Stand by for a hack.
70:23:34 CC 3, 2, 1,
70:23:37 CC MARK.
70:23:41 C Roger. We have it.
70:23:43 P ...
70:23:45 CC Okay.
70:23:56 C Sure appreciate the help from everybody down there and our shore sure looks great from 750 miles.
70:24:02 CC Roger, Pete. The ... want to pass along their congratulations and they want to know when you're coming back.
70:24:09 C Whenever they'll let me.
70:24:15 CC Have a good trip home.
70:24:17 C Thank you. Thanks to everybody down there.
70:26:20 CC 1 minute to LOS.
70:26:22 C Roger. Thank you.

If undelivered, please return to:

CRO Trackers

PO Box 93, Quinns Rocks, WA 6030