



March 1965



March 1966



Keeping the Memory Alive

Vol 8 March 2011

THE TRACKERS' CROCNICLE

We've now run out of CRO supported NASA manned space flight missions of the sixties and seventies, so until we can come up with a new, suitable and lasting, theme (suggestions welcomed) the newsletter will a) continue to be somewhat patchwork in content, or b) have to be reduced in size.

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Final Patch That Never Flew

By kind permission of Eugene Dorr.

Mission Control

"As the [last Apollo] mission went forward, I felt increasingly frustrated and melancholy. I would often sit in the corner of the viewing room, silently watching the teams at work... I also thought about the legacy of my generation: trust, values, teamwork. I wanted to be a living connection between the new generation of mission controllers, reminding them of how and where it all started with my generation and where theirs might take us in the future.

"Bob McCall, in my belief the premier artist of space, had been sitting on the step to the right of the flight director console, sketching during the final Apollo EVAs. He had designed the Apollo 17 crew patch. When Bob took a break for a cup of coffee, I joined him in the cafeteria... I don't think Bob was surprised when I asked him to design an emblem for the Mission Control team.

I spoke emotionally, from my heart and gut, about the control teams and crews, and our life in Mission Control. 'We fought and won the race in space and listened to the cries of the Apollo 1 crew. With great

resolve and personal anger, we picked up the pieces, pounded them together, and went on the attack again. We were the ones in the trenches of space and with only the tools of leadership, trust, and teamwork, we contained the risks and made the conquest of space possible.'

"Over the next six months, McCall developed the emblem worn proudly by every subsequent generation of mission controller. He inscribed his final rendering of the emblem: '*To Mission Control, with great respect and admiration, Bob McCall 1973.*'"

— Gene Kranz, *Failure Is Not an Option*

Kranz must be speaking modestly here, because McCall, in his Oral History interview, recalled, "[Kranz] was very, very instrumental in [the patch]. He was the one that asked me to do it, but also the one who really did most of the design. I just brought it together and in a way that could be reproduced nicely."

The Latin legend across the top, "*Res Gesta Par Excellentiam*", which translates as "*Achievement Through Excellence*", the standard for all flight controllers' work.

The symbols on the bottom border represent the Mercury, Gemini and Apollo projects.



Embroidered Houston Mission Control emblem



Gene Kranz



McCall standing with his "History of Flight" mural at NASA's Dryden Flight Research Center in California. (McCall Studios)

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

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.

Gloria Lyon-Roberts Ross MacDonald John Mahaffey Peter Maine 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 Bill Mills 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 Ray Skender	George Small Lyn Smart (Willis) J Smith Mary 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) L Tink 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 Ray Zatorski
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The Saga Continues

To date I have not seen anything regarding the Shire's OTC building and electrical report, due to be published last October.

However, proponent Phil Youd is still optimistic. He is quoted in the October 4 2011 edition of the Gascoyne Classies — "...by this time next year

we should have a new tourist attraction ... Yes, the Carnarvon Space and Technology Museum...".

But that local is itself now in abeyance, and as I write this item Carnarvon is in danger of being flooded again.

Some things have a greater priority.

6th Picnic Day

"Five years is still a long time between drinks."

S^o...

The Perth Chapter of the CRO Trackers will be holding their sixth annual picnic / barbeque at:

Whitemans Park, Mussel Pool,

some 20 kms and 25 minutes from the Perth CBD.

Date: Sunday May 1st 2011 (1st Sunday after Easter)

Time: Kick off 11 am WST

BYO: Everything

Look out for the banner



Stamp Gallery



After a poll, ending at midnight on 20th January 2011 it was announced that the "Moon Landing" stamp, designed by Christopher Calle would represent the USA in the International Gallery Exhibit of the new William H. Gross Stamp Gallery.

The poll attracted a total of just over 13,000 votes; the winner receiving 6,497.

The stamp was originally issued on July 10th 1989 to honour the 20th anniversary of the first lunar landing.

Christopher Calle was the son of Paul Calle who produced the first postal tribute to the lunar landing, a 10-cent airmail stamp issued on September 9th 1969.

That particular stamp eventually became one of the most popular and recognisable postage stamps ever issued.

Courtesy
Smithsonian National Postal Museum

WA Premier's Book Awards

Western Australian Premier's Book Awards

"...Entry is open to books, scripts and digital narrative which have been published/produced between 1 January 2010 to 31 December 2010. To be eligible authors must be citizens or

permanent residents of Australia or whose work has Australia as its primary focus...Short listed entries will be announced in June 2011..."

On 9 December 2011 Paul Dench submitted "Carnarvon and Apollo"

Parachute Recovery

Parachutes were recovered from a number of flights, manned and unmanned; some were subsequently destroyed by the National Air and Space Museum.

At one point the Smithsonian believed it had:

Apollo 4 Main Drogue; Apollo 9 Main;
Apollo 10 Drogue; Apollo 10 Apex Cover;
Apollo 10 Main; Apollo 11 Main;
Apollo 12 Main; Apollo 15 Main;
Apollo 16 Main (3); Apollo 17 Main (3);
Skylab 4 Main, and ASATP Main (3).

A copy of JSC shipping documentation showed three parachutes each were transferred from from CM116 and CM117 to the Smithsonian in the mid-

seventies. However an unknown number of these were subsequently declared excess and destroyed and/or transferred out of its inventory.

An assertion that the Smithsonian has (or did have) canopies from Apollo 10, 11 and 12 has to be reconciled against interviews with recovery teams who claimed they never picked up any of those 'chutes - the primary focus was crew safety and getting them returned back to the recovery platform - the parachutes rapidly sank after touch down.

It wasn't until later missions that parachute recovery became more of a focus for the teams.

Courtesy
"Scott" spaceaholic@gmail.com

Evolution of a Network

From *"Read You Loud and Clear"*—
The Story of NASA's Tracking and
Data Network

GRARR equipment was usually housed in two trailers, one accommodating receiving and the other transmitting equipment. It operated in two different frequency bands: VHF (Very High Frequency) at around 150 MHz and an Ultra High Frequency (UHF) band at about 2,500 MHz.

Two antennas were used, one for VHF and the other for UHF.

Each was used for both transmission and reception.

Angular tracking measurements could also be made by this equipment, but its accuracy was only good to within ± 0.1 degree in elevation and azimuth, sufficient for the tracking

of distant spacecraft but not always good enough for following spacecraft whose angular rates changed more rapidly. Thus, the angular information was often used as pointing or acquisition information for other instruments.

Each of the two uplink transmitters radiated at 10,000 watts of power—about 5,000 times the power of an outdoor "walkie-talkie" hand radio. Since it continuously radiated while the equipment

was on, station staff had to be cautious so as to avoid exposure, particularly at the microwave frequencies. A system of flashing red warning lights could be found around a station so that people knew when the transmitters were on.

By 1962, the initial GRARR ground elements were installed in trailers at Rosman, North Carolina; Tananarive, Madagascar; and Carnarvon, Western Australia.

The system was continually improved and used throughout the 1960s, supporting numerous Goddard satellite programs to provide range and range rate data whose accuracy would not be surpassed until the use of lasers a decade later. On Explorer 35—a so-called



Range and Range Rate Van
with VHF Antenna

"Anchored Interplanetary Platform" orbiting the Moon—its range was measured to

within 1,500 meters (4,900 feet) and the range rate accurate to within 65 centimeters (25.5 inches) per second at the lunar distance. Goddard engineers eventually considered the system reliable out to 1.3 million kilometers (800,000 miles), or three times the distance from Earth to the Moon. This was quite an accomplishment for 1960s technology.

The Fisherman Who Rode a Horse

Continuation of an extract from the autobiography of Ken Watters.

I learned to do the job required of me and the technology never ceased to amaze me. I have always had a compulsion to understand how things work and here I was confronted with the cutting edge of technology. I spent all of my spare time helping the technicians with their work trying to learn how each piece of equipment worked. They were fantastic people, proud of their knowledge and more than happy to share it with me.

After a couple of months my hands, that had developed inch thick skin pulling the fishing nets, started to shed the dead skin. I would sit at the table in the crew room reading and absent mindedly rub my two hands together, the dead skin would come off in little black balls and after half an hour I would have a little heap about half an inch high. Fishing started to occupy less of my mind as I became engrossed in electronics. I did something that six months previously I would not have believed I would ever do, I started to go up the coast to Cape Cuvier fishing off the rocks with my shift supervisor Max Garth. Here I was spending all day trying to catch what I had been catching in minutes as a professional. My life as a commercial fisherman seemed to belong to a different world and to a different person.

I still was prone to doing some of the silly things that fishermen are often prone to do. I went to a party at the old nurses quarters one night and on the way into town I noticed that the road closure barrier that had been across the road for the last couple of days was pushed off to the side of the road. The barrier had been blocking the road while the river was flowing across the causeway to Babbage Island. The party finished well after midnight and I had to crank start my Landrover as the starter motor had spat the dummy. After I had her running I took off for home. I came racing around the bend on Babbage Island road just before the causeway and there was the barrier back across the road.

"Some idiot is having fun and pulled the barrier back", I thought to myself.

Without slowing down I swung the Landrover off the side of the road and raced around the barrier. I had just bought the Landie back onto the road when, whoosh, I hit the river. It was like driving into a wall of water, the Landie pushed the water ahead forming a big wave and then the wave came crashing down onto the bonnet. Needless to say the motor died and I came to an eerily quiet stop. All that I could hear was the rushing of the water past the Landie and the cracking and popping of the rapidly cooling motor. If I had been a little under the weather I was now very sober.

I could see a hump in the racing water showing the path of the causeway ahead of me in the headlights of the car. Behind me was pitch blackness. I sat there with my feet in water trying to visualise my situation, I had memories of a little pipe railing about 8 or 10 inches high running along the down side of the causeway. I could not picture this same railing behind the Landie; I had a feeling that it cut out right about where we had stopped.

(To be continued)

Apollo/Advanced Range Instrumentation Aircraft



and trajectory of ballistic missiles — using VHF, UHF, and Unified S-Band frequencies, with simultaneous recording and two-way voice link with ground stations via HF. Quantitative system testing was performed at Douglas Aircraft, Tulsa, Okla.; operational evaluations included coverage of Gemini 12, a Polaris ballistic

The National Aeronautics and Space Administration required a platform to provide tracking and telemetry to fulfill Apollo requirements in remote locations across the world. This platform would also be tasked to fulfill Department of Defense requirements.

In 1966 the Apollo Range Instrumentation Aircraft program was born.

The A/RIA system is designed to provide voice and telemetry data communication with Apollo and other spacecraft, with a capability to relay all communications to the Manned Spaceflight Network, and record all telemetered data on board.

The system includes a basic C-135A aircraft, modified to accept and support the electronics equipment and automatic tracking antenna required to perform the mission.

The purpose of the Category II flight test program was to verify that the system could acquire and track an orbiting space vehicle —

missile, and simulated Apollo coverage through use of a NASA C-121 Apollo Simulator.

During the Gemini 12 flight, the A/RIA became the first aircraft to communicate directly with an orbiting spacecraft.

The original eight ARIA were model EC-135As constructed by Boeing Aircraft. The EC-135A aircraft were modified KC-135 aircraft derived from the prototype Boeing model 367-80. There were four additional aircraft modified for use for airborne telemetry. However, they were not equipped with the Apollo radio equipment. These were TRIA, Telemetry Range Instrumentation Aircraft. In later years, two of these EC-135B T/RIA aircraft were used in the ARIA mission.

Later, additional aircraft were modified for the ARIA program; Boeing 707-320C aircraft. The Boeing 707 is also based on the Boeing 367-80.

Courtesy <http://www.flyaria.com/> and A/RIA System. Category 2 Final Test Report. Volume 1

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STATION NOTES

The decrease in Apollo activity over the past year has caused many superficial changes on the Station but in spite of this, we have continued to find more than enough activity to occupy us. Logistics in particular have been hard at it with a marathon stock-check of all their 35,000 line items and Facilities have been busy refitting some of the Power House and in sorting out those multitude of things that can go wrong.

The Tropospheric Scatter Link has been dismantled and taken away. This equipment was a reminder of the times when communications to Perth were dependent on an overhead route of telephone wires which was constantly being knocked down by trucks or cars or blown down by gales.

The housing position is looking up again with a second lot of 18 R&I Bank houses due for completion during the next few weeks. There are a few alterations compared with the first 10 but they are still of a good high standard.

We welcome all the new arrivals and in particular, those from the U.K. who are our first recruits direct from the U.K. in over 5 years. Carnarvon can never be said to be a beautiful place but it is friendly and the climate is good. I hope you enjoy your stay with us.

The new arrangements for the canteen have resulted in improved meals being available. I hope that the alterations which are scheduled. will be complete by March.

The Social Club has been very active this year and is to be congratulated on the constant procession of rallies, parties, outings which have contributed considerably to the morale of the station. I hope that the Christmas arrangements go with their customary smoothness.

I expect 1971 to be a fairly busy year operationally with two Apollo launches and a host of scientific launches to keep us in practice. Beyond that again, I expect the Station to become even busier, possibly more busy than it has ever been. when Skylab is launched.

A Merry Christmas and A Happy New Year to everyone.

R.P. JACOMB
STATION DIRECTOR

KEEPING THE MEMORY ALIVE



Carnarvon Tracking Station 1964 - 1975



Click on picture to enter

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

There is a lot to come including more photographs from the 40th Anniversary Reunion Dinner, courtesy Trevor Housley, Tito & Joan Teraci, Margaret Hall and Max Garth. Just wish I had more than two hands - need to get them done before the next dinner

I can arrange copying, scanning, whatever, so as to get them up on our website; you need have no fears regarding their safety.

Where Are They Now



Mavis and Colin Winrow Enjoying Sunny Sydney

Keeping the Memory Alive

Random Quotes

"The legacy of Apollo has spoiled the people at NASA. They believe that we are entitled to this kind of thing forever, which I gravely doubt. I believe that there may be too many people in NASA who at the moment are waiting for a miracle, just waiting for another man on a white horse to come and offer us another planet, like President Kennedy."

- Wernher von Braun

"The Vision for Space Exploration is the law of the land."

- NASA Administrator Michael Griffin (remarks to the National Space Club)

"I fully expect that NASA will send me back to the moon as they treated Sen. Glenn, and if they don't do otherwise, why, then I'll have to do it myself. "

- Pete Conrad

"I believe that the Good Lord gave us a finite number of heartbeats and I'm damned if I'm going to use up mine running up and down a street. "

- Neil Armstrong

"...the United States was not built by those who waited and rested and wished to look behind them. This country was conquered by those who moved forward, and so will space."

- John F. Kennedy, 1962

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