

RADAR RETURNS

ECHOES FROM THE PAST AND PRESENT



That men do not learn very much from the lessons of history is the most important of all the lessons that history has to teach.

Aldous Huxley— English Novelist

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EDITORIAL

Here we are again with another information packed edition of Radar Returns. This is the new, expanded edition so there is even more information, questions and radar history than ever before. But first:

THANK YOU

for your support and encouragement for the fifth year of Radar Returns. In particular, I wish to thank all those people who have been able to provide

financial assistance in keeping this show on the road. Every little bit helps and all your contributions are employed in the printing and mailing of this newsletter.

This edition holds a wide range of items—from the humorous to the puzzling. A few light hearted items have surfaced through contemporary magazines as well as unit A50 History sheets. One never knows where a smile will turn up next.

Some of our readers have raised questions about fires on supply boats, 'phantom' radars as well as the location of some of their comrades. If you can assist in any way, please drop me a line. It doesn't matter how trivial your piece of knowledge may be, it may just be the piece we need to complete the picture.

The 'Radar Archives', which began life at 3CRU Williamtown are now available for all to examine at the RAAF Museum Point Cook. Just be sure to read the visitor's rules on page 5 before you leap into research.

Persistence can pay dividends when it comes to the Gold Card. Joe Lynam has provided some insights into the question of eligibility for some of our members.

The major article in this issue concerns radar jamming. Although it is a prime concern in today's high-tech world, this form of warfare was only just emerging during World War II. After examining this topic and how it

affected the use of radar in the SWPA, I have come across some blanks in the records of this aspect of radar. Maybe you can help. See if you were one of the people caught up with this secret world of denying the radar operator a view of the target.

On a final note—the reunion in Maroochydore was a great success. Everyone who attended thoroughly enjoyed themselves, mainly due to the sterling efforts of Warren and Helen Mann and their loyal band of hard workers. The only problem is, when you make a success of an event, everyone wants more. If you are one of these people who wants some more, read the article on page three and see if you can provide some inspiration and support for another get together in the future. [It must be part of the radar ethos—always on the lookout for the next target.] I hope that you enjoy this issue and, in the next issue, I shall be looking at some of our post war radar units and their role in Australia's defence.

Pete Smith [Editor]

Please address all correspondence for Radar Returns as follows:
Postal Address:

WgCdr P.G. Smith (rtd)
18 Pandian Crescent
BELLBOWRIE QLD 4070
or

E-Mail Address
Radar_Returns@Hotmail.com



Courtesy of The Sydney Morning Herald 21 March 2000

OOPS!

In order to demonstrate that not all the amusing incidents in Air Defence happened during WWII, I offer the following item from the *Tales* section of *Australian Aviation*.

"During an air defence exercise the exercise commander, operating from a base he was not familiar with, was seen hovering around a shredding machine with a sheaf of papers in his hand.

"How does this thing work?" he asked of a passing young flight jock.

"Like this, sir" the pilot demonstrated feeding the machine.

"I'll need about six copies of each" the commander requested, as the last pages of the day's tasking program disappeared from view.

Australian Aviation JAN/FEB 2000

FIRE ON BOARD

On or about 25th October 1944, a 40ft ocean going cruiser (crewed by RAAF) was en-route from Sandy Cape to Maryborough to pick up provisions and deliver 'posted' personnel. During the journey a disabling fire broke out, causing the craft to drift for some hours before being taken in tow to Bundaberg. Extensive repairs were necessary.

Then on 11th November 1944 whilst fortuitously moored in Bundaberg pending its departure to Sandy Cape, another fire occurred causing the Fire Brigade to be present. Some control was achieved until a laden cane train passed by the wharf causing the Brigade's fire hose to be chopped into three pieces. The craft was moved into midstream where it exploded and burnt to the water line.

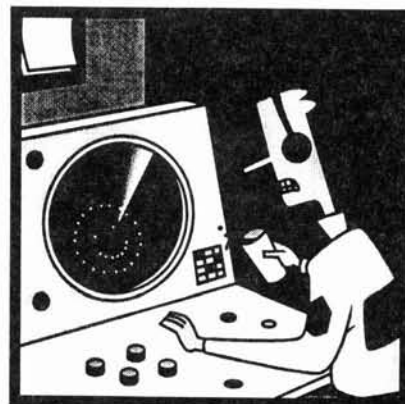
Perhaps there may be someone who can add to, or confirm, the events - particularly the first fire.
Harry Lainson (NSW)

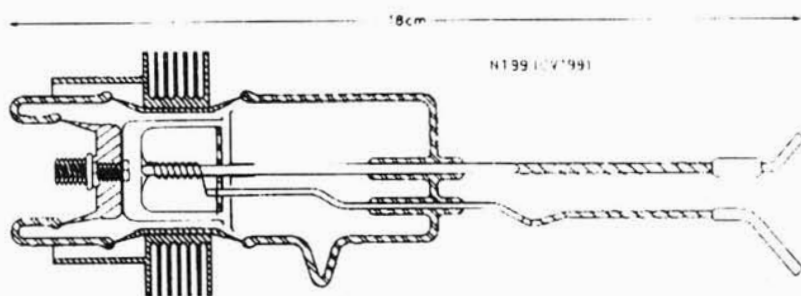
WHERE ARE THEY NOW

Alan Cross is hoping to find the whereabouts of Keith H.C. Cripps who was member of 109RS in Darwin. Keith was also a member of No 25 Radar Operator's Course at Radar School Richmond from 31/08/42 to 27/09/42.

If you know of Keith's whereabouts, you can contact Alan at:

Mr Alan Cross
3 Elvira Grove
WATTLE PARK SA 5066





A 'micropup' triode, NT99 (c. E. B. Callick and Peter Peregrinus Ltd)

Q&A

Ted Dellit NSW

How did the term 'Micropup' originate?

The VT90 valves were used in the LW/AW Mk I transmitter and were known as 'micropups'. A search of the appropriate published material and of the Internet has failed to find anything about the origin of the term. It is known that the equivalent transmitter valves in the British CH equipment were quite large (ie about 20 inches high) and caused quite a few problems (in the slang of the day they were 'dogs'). When much smaller valves had to be designed for the ASV transmitters the result was the VT90 which was termed the 'micropup' (ie 'amplifying little dog'). Can anyone come up with a better explanation?

(Editor: From some additional material I had available, the term 'micropup' seemed to have been applied to a range of triodes developed by J. Bell *et al* (Triodes for Very Short Waves - 1946)

PHANTOM RADAR INSTALLATIONS

One of our members (Athol Cotteril) has drawn my attention to a recent Channel 9 TV programme entitled "Glen Ridge Cape York Adventure" which mentioned seeing radar masts and antennae at Muttee Head and a place called Lockerbie - an abandoned cattle station.

After consulting various knowledgeable people, including Ed Simmonds and a friend from Garbutt (Townsville) Salvage Squadron, we were convinced the latter could not have been an RAAF Radar Station.

Then followed a discussion with a member of the TV crew who reiterated the claim of seeing both old installations. However he gave misleading locations. We contacted a gentleman stationed a Bamaga (near the tip of Cape York) who controls various aboriginal activities, regarding the alleged Lockerbie location, but we have not had an answer yet. We have now come to the conclusion that the Lockerbie location may have been an abandoned American radar station? We will advise of further developments on this story as they come to light.

[Joe Lynam VIC]

TALES FROM THE A50s

The following 'tales' were taken from 35 Zone Filter Centre's A50 History Sheets. This unit was based at Potshot in WA.

05 October 1944

One of our guards, who left here for Pearce on 8th September 1944 to undergo the Trade Test for remuster to Carpenter General, reported back to the Unit today. He left by aircraft and came back by sea. The round trip lasted four weeks and included a hardening course at SPD. A ready response to Monthly

Remuster Lists is expected in future from Western Australian personnel.

11 October 1944

One of our airmen was admonished yesterday and told that if it occurred again "he would be put on a PP7." Today a puzzled airman approached the Officer [concerned] and the following conversation took place:

"Sir, what is a PP7?"

"A charge form. Why?"

"I thought that's what the Americans call a Catalina."

"If you imagined that I was considering putting you on a Catalina yesterday, you were very

REUNION?

The RAAF Radar Veterans group is prepared to consider any suggestion for a further reunion. This suggestion would only be considered if it is backed up with a promise of the kind of practical, on-the-spot support which made Maroochydore possible. Any such suggestion should be specific as to the location, keeping in mind that we would need the availability of accommodation and catering facilities for an estimated 200-250 people—but no more! Also required would be a suitable meeting venue and a range of activities from which a program could be put together.

If you have suggestions for a location for a reunion (and possible timing) please send them to

Warren Mann
39 Crisp Street
HAMPTON VIC 3188
Fax No: - (03) 9521 6724

However, please only provide suggestions if you can also provide contacts for local support in the location you mention. This is very important because it does ease the burden for the organisers as well as ensuring that the reunion runs smoothly.

FADED ECHOES

Donald Archie McLennan Died 21st April 1999 Aged 93

The passing of Don McLennan is of special note for all those members, past and present, of 114MCRU. Don was an original member of the unit, not from its formation but was transferred from 9 Mobile Fighter Sector as the unit moved to its first operational location on Goodenough Island. He joined the unit on 17 June 1943 and remained with them until 05 May 1944. He received his initial Fighter Sector training at 2 Fighter Sector New Lambton, Newcastle, in January/February 1943.

Completing this course would have been an achievement in itself as it was made up of 10 Officers, 1 SNCO and 72 Airmen.

Don also achieved another distinction with 114. He was one of 12 unit personnel who set up a Fighter Direction post during the invasion of Los Negros. He, along with his colleagues, went ashore under fire and operated this section which controlled the fighter aircraft which were providing cover for the invasion. They remained in operation until 114MFCU arrived to assume this role. In Don's words "a great adventure but very scary!"

Alwyne Wagstaffe [Sullivan] Died 15th May 1999

Unfortunately I have been unable to track down any details of Alwyne's radar service so I would be grateful if anyone could give me some information.

Roy Francis Goon 1913 - 1999

The following excerpt may have gone unnoticed by radar veterans. However, as well as being a RAAF Fighter Pilot, Roy Goon would also be remembered by a number of radar veterans as the Commanding Officer of 111MFCU at Labuan. He held this position from 14 Feb 1943 to

07 Sep 1945.

"Famed Australian flyer Roy Goon passed away on November 15 1999. Born on September 13 1913, Roy learnt to fly in the 1930s and acquired Commercial Pilot Licence number 511. During the war he became a Squadron Leader and CO of 83 Squadron and later went on to become a CAC Test Pilot and Chief Flying Instructor and Life Member of the Royal Victorian Aero Club. Well liked, Roy Goon was summed up by one of his former students as 'a true gentleman and a great instructor'".

Australian Aviation Jan/FEB 2000

David Francis Mahony 1908 - 1999

David was born at Penshurst, Victoria, on 14th September 1908, but due to the harsh economic times, he left the family farm in 1935. He headed for Queensland and worked on building sites. In 1941 he joined the RAAF and trained as a wireless telegraphist. He spent some time on squadrons before arriving at 317RS on Sir Graham Moore Island, probably late 1944. Dave was a quite, affable man, very articulate and loved a debate - he started many of them. I well remember one early evening, hearing an uproar from the mess hut, I decided that I should investigate. The mess was filled with fellows in furious argument about the price of wool in Australia. In the middle of it all was Dave, a big smile all over his big Irish face, not saying a word. As I took in the situation, he came over to me and asked "What is the price of wool in Australia?" He was a man who was meant to be on a radar station to help keep us sane. Following his discharge, he worked for Trans Australian Airlines until 1954. He then started a long and successful career with Australian Fixed

Trusts as an on the road financial advisor. He retired at age 69 but kept up a very active life, playing competitive tennis up until a few years ago. David married Maureen Daniel in 1946 and is survived by Maureen, six children, twenty one grandchildren and one great grandchild. *[Len Ralph VIC]*

Laurence Thomas Dwyer 1923 - 1999

Laurie grew up in Weering and Cressy in southwestern Victoria, the oldest of four children. When he was four years old his father died, so his mother moved the family to Moonee Ponds in suburban Melbourne. He was educated at Assumption College Kilmore. He joined the RAAF as a radar operator and served at 53 RS Mt Surprise and at several stations in New Guinea. After the war he studied agricultural science at Dookie College. Later, he and his brother Frank returned to the family property at Weering and farmed for a number of years. Laurie married Pat Morrissey and together they had seven children. He is survived by his seven children and sixteen grandchildren. *[Len Ralph VIC]*

Dale Victor McCarthy Died 9th November 1999 Aged 75.

Dale joined the RAAF after completing his teacher training and completed No 68 Radar Operators' Course in April 1943. He went on to serve at 327RS, Broome WA from its formation in 1943 through 1944. From there he was posted and served on other radar stations until the end of the war. On discharge, he returned to the primary school teaching service in Tasmania, first as a teacher, then as a Principal and, in the ten years before his retirement, as a Superintendent of Schools in north-western Tasmania. *[Jim Scott TAS]*

RADAR ARCHIVES POINT COOK

The archives at RAAF Museum, Point Cook are now accessible, after being closed for some months due to re-locating the photographic archives from Laverton to Point Cook. I spent a day there recently looking for information on 54/101RS for Ted Dellit and on 306RS for myself. I have to compliment the Research Curator, Monica Walsh for the excellent way in which all our data is stored and for the easy way in which it can be accessed. Monica requests that she be given at least 24 hours notice before arriving to look at the archives. To contact her please telephone (03) 9256 1642 or fax (03) 9256 1692.

[Len Ralph VIC]

GOLD CARD

In my role as Gold Card liaison officer for Victoria I recently came across an interesting case. One of our members rang to advise me that he had been knocked back on his application for a Gold Card. On getting his particulars – Rottne Island and Onslow by hip during the required period, I advised him to obtain his service record particulars from RAAF records to reapply for the card. He has just told me that he received a phone call from DVA (hence no written evidence) advising him that he had MADE A MISTAKE when processing his original application and that they would be forwarding his card pronto.

This is the second similar case of a DVA 'mistake' (one previously advised by Ted Dellit NSW) so I would strongly advise anyone whose application has been refused to contact their state liaison officer, making sure they fit the requirements and reapply to DVA.

[Joe Lynam VIC]

On Parade

Radar Training School

[14 June 1942 - 20 July 1942]

*Sleepily mustered in the winter light,
Bodies alert but minds asleep,
Digesting fried eggs and cold hard toast
Washed down with pallid coffee
Or strong stewed tea.*

*Learning theory and then the practice
Of strange technology;
Watching green-glowing silhouettes
Of transitory aircraft, caught by radar
On C-R tubes in darkened rooms.*

*Unyielding boiler suits chafed thighs,
Sturdy shoes trapped female feet,
Bulbous berets calmed our curls
And monumental greatcoats, tightly buttoned,
Weighed down our spines but not our spirits.*

*The first WAAAF Ops to graduate
And lucky eight, we travelled south,
To walk-in -mists on Saddleback
To sleep by day and track by night
To guard the coast.*

*The men they left and went 'up north'
And we took charge, and trained more WAAAF,
And tracked Jap subs until we too
To Fighter Sectors and to newer
Radar sites were posted on.*

*Then came the peace; we welcomed home
Husbands, lovers, scarred and changed,
As we were too. We slowly dropped
The service slang and learnt to live
In civvy street, with nylon hose and flowing skirts,
And a certain loneliness.*

*We nursed and taught and clerked and farmed,
Reared children, worked hard,
Took new paths, rose high,
Contesting inch by stubborn inch
The limits that bound women.*

*Lets join once more, and celebrate
The triumphs and the pain of years between
Regain the joy, refresh, resurge,
And gather strength
For battles still to come.*

Katherine Thomas (nee Hindson)
Veterans Affairs Poetry Prize 1991

Dedicated to the first eight WAAAF to 'man' a radar unit (18RS Kiama NSW) -[Joan Basquil, Sue Carroll, Marion Forster, June Hackworth, Rita Hunter, Joan Marsh, Joy Morant, Katherine Hindson]

A QUESTION of RADAR JAMMING

Recently I have been examining another aspect of radar history that is both intriguing and puzzling. In modern warfare Electronic Counter Measures, or ECM, has grown into industry in its own accord. Manufacturing ways of deceiving, decoying or just blinding radar has become a highly sophisticated part of the Air Defence arena. But what about the early days of radar? As usual, there have been volumes of information about electronic warfare in Europe during World War II. The Allies and Germany waged a constant cyclic battle of jamming/deception, countermeasure, counter-counter measure etc right up to the close of war. Very little seemed to have been written about the war with Japan. Did anything happen? If it did was it all one sided or were there thrust and counter thrust activities similar to Europe? I attempted to find out and now, maybe, you might be able to assist.

One authority I checked was *The History of US Electronic Warfare* by Alfred Price. This is a two-volume examination of electronic warfare from the late 1930s to the present. It contains one paragraph that is particularly significant: "Both the Japanese Army and Navy appreciated the value of intercept receivers to provide information on the types of enemy radar in use against them. Both initiated programs to develop such receivers, though their use was not widespread. In addition, the Army developed two types of airborne "wave disturber" (i.e. jamming transmitter) - the Taki 8 and the Taki 23 - to counter enemy radars operating on frequencies between 40 and 375 MHz. It would seem that by the time these jammers were working the war was in its closing stages, and very few were built. The

author has found no record of any deliberate enemy electronic jamming of Allied radars in the Pacific theatre."

I was also able to obtain a copy of *Notes on Jamming & Anti-Jamming for Allied Radar Personnel* by Section 22 General Headquarters SWPA Dated 14 March 1944 (thanks to the support of Tim Jones in Canberra). This is an enlightening document which provides a contemporary view of radar jamming for radar operators. It contains a statement which supports Alfred Price's conclusion:

"So Far, in the Southwest Pacific area, no definite examples of jamming have been noted - though the enemy has used, at various times, decoys to mislead operators. Thus he is aware of the importance of radar, and jamming is therefore always to be expected."

The pamphlet goes on to describe three types of jamming which could be expected from the Japanese. These were:

Type 1

This interference was produced by dropping a decoy giving a false echo. Its primary use was to upset gun-laying or searchlight control radars. The operator becomes distracted, and, while he is determining the nature of this new target, the real target may escape. Bombers also dropped this decoy when they were escaping from night fighters equipped with AI radar.

Type 2

This interference is a decoy that is trailed behind an aircraft or ship. It could be expected to give two separate echoes or a composite echo. A composite echo would probably not give an accurate bearing on the real target.

Type 3

This is an extension of Type 1 interference and was used extensively in Europe. A great number of false targets are used to

clutter up radar in order to screen the real activities. Depending on which country you came from, this was referred to as either 'Window' or 'Chaff'.

The question I have is:

Did anyone observe this type of jamming on RAAF radars, and if so, what was the effect on your equipment? To date I believe that 305RS was the first RAAF radar to observe the Japanese use of Window as a deception technique. Noel Lynam was the operator on station at the time but I can only narrow the timing down to the period August to December 1943.

WINDOW or CHAFF

So what is Window and how does it work?

Window, or chaff as it is known today, is lengths of aluminium or aluminised mylar (plastic) strips, packed into boxes and then dispensed from an aircraft. Strip chaff is bundled in light cardboard packets about the size of a paperback novel. The hundreds of small individual pieces of foil scatter as soon as the slipstream tears open the surrounding cardboard. From altitudes of 20,000 feet it takes several minutes for the strips to reach the ground.

Ribbon chaff, also packed in light cardboard, is one long piece of aluminised material. It looks like a length of shiny magnetic tape from a cassette tape. One end of the ribbon is attached to a rectangular piece of cardboard that acts like a parachute, with the ribbon dangling down below as it falls to the ground.

All chaff is cut to particular lengths, according to the radio frequency band of the radar meant to be confused. The length of chaff can vary and individual packets can contain multiple lengths. The shorter lengths are intended to counter high frequency radar and the longer strips are used for lower

frequencies. Each individual strip of chaff acts as a reflecting dipole (antenna) and sends echo signals back to the radar receiver. Ribbon chaff acts similarly, but one twisting and turning the ribbon can deceive multiple radars at different frequencies. As the reflective ribbon twists and untwists in its descent, the length between the twisted segments varies, causing the reflective lengths to effect higher and then lower frequency radar. Ribbon chaff does not create the large numbers of false images on radar screens that strip chaff clouds can, but the versatility of its varied frequency reflectivity makes it more useful in some applications.

Once a bundle of chaff is tossed, or dispensed, from an aircraft, its relative velocity stops almost instantly. The 'real' radar target quickly moves away from the slowly descending chaff. The cloud of chaff continues to appear on the radar screen, unless special echo processing techniques are employed, and the aircraft's radar echo can be seen moving away from its protective chaff.

The advent of radar that discerns targets of different velocities (high, medium and low), by echo signal processing, has greatly diminished the effectiveness of chaff. This radar signal processing circuit, sometimes known as a Moving-Target-Indicators (MTI), quickly ignores stationary (or very slow moving) targets and portrays only the moving ones to the radar operator.

Early experiments in the use of chaff, or window, took place simultaneously in the US, Germany and Great Britain. In each country, the initial conclusion was the same; this type of jamming was devastatingly effective against precision radars operating on frequencies between about 200

and 600 MHz. If dropped in sufficient numbers, the strips produced scores of spurious echoes on the radar screen and made tracking of aircraft almost impossible. In each country, the most stringent steps were taken to prevent the enemy from learning of this countermeasure, including the postponement of its operational use until a counter measure could be found. In Germany, Reichmarschall Herman Goering personally banned all further testing of 'Duepell', as the foil strips were known there. In Great Britain, Lord Cherwell, the Prime Minister's chief scientific advisor, allowed tests to continue with Window but only with the strictest security safeguards. In the US, the Navy ordered a halt to the tests with chaff, and enforced this ban by posting Marine guards around the test aircraft fitted with this capability. Chaff was first employed on a large scale by the RAF in July 1943 to cover night bombing attacks. From the first week in August 1943, German night bombers attacking targets in the Mediterranean theatre, released Duepell; and on 20 December 1943, the 8th Air Force first dropped chaff in action from B-17s and B-24s attacking Bremen. Consumption of this product then went up dramatically, in February 1944 the Allies dropped 40 tons, March 125 tons, April 125 tons and May 355 tons.

Despite being one of the very first forms of radar jamming, chaff, or window, is still with us 50 years later. It is still an effective means of creating false targets on radar screens. Small clouds of the material linger in the air long enough to clutter radar screens and confuse radar operators into mixing up real targets with the false ones. It is still employed by the RAAF's

F/A-18 Hornets and F-111s. Although these aircraft contain highly advanced technology, chaff still has a use as a defensive system.

In WWII, however, one aeroplane dropping a stream of chaff bundles would form a long cloud echo pattern on a radar screen, masking aeroplanes flying through it. Several aircraft dropping multiple trails of chaff could obscure an armada of bombers. An aircraft dropping random clusters of chaff created multiple echo patterns on the radar screen. Several aeroplanes, flying along in parallel, or better yet crossing tracks, could create a screen-full of false targets.

Sorting out the real from the false echoes took time and a lot of work for radar operators. I'm sure that quite a few of our readers can relate their own experiences of chaff, or window, during the war.

An unanticipated side effect of the use of chaff came when the chaff bundles were exposed to moisture and then the low temperatures at high altitude. Aircraft, with bundles of chaff loaded into their dispenser hoppers, often sat out in the rain awaiting takeoff. The cardboard wrappers around the chaff bundles absorbed water, sometimes enough to soak the chaff within. When the aircraft climbed to altitude, where temperatures are well below freezing, the chaff packets froze solid. Chaff bundles dispensed in a frozen state tended to remain as solid bricks and the slipstream did not scatter the material as intended. These chaff 'bricks' posed an additional hazard for anyone under the chaff trail.



CLASSIFIEDS

ANZAC Day March – Victoria Branch

All Victorian Radar Branch members are requested to assemble in Flinders Street outside the Railway Station opposite Elizabeth Street at 1100 hours.

306RS History

Len Ralph has begun to compile a history of 306RS. He is presently collecting data and photographs of the unit and he would like to hear from you if you can help. Len can be contacted at;

Mr Len Ralph
96 Fawkner Street
ESSENDON VIC 3040

105RS Charles Point

Morrie Fenton is preparing a history of 105RS and would like to hear from anyone who may be able to assist with its development. 105RS was the second radar into action in Darwin, only days after 31RS went into action at Dripstone. Morrie may be contacted at;

M.E. Fenton
27 Lasscock Avenue
LOCKLEYS SA 5032

Victorian Radar Branch

Annual Reunion 2000

Monday 24th April 2000

The venue will be the Rosstown Hotel at 1200 hours. The hotel is located on the corner of Koornang Road & Dandenong Road in CARNEGIE VIC

Send all your enquiries to:

J.E. Lynam
Victorian RAAF Radar Branch
1/76 Bendigo Avenue
BENTLEIGH VIC 3204
Ph: (03) 9557 1672

No 324 Radar Station

Dean Dadds is very close to completing a history of 324RS. This history covers the entire period of the unit's existence from Mascot to Paradise & Cockatoo Is in the Kimberley WA to Papen Is in Borneo. Consisting of 130 pages of history, stories and photographs, it should be released in June 2000. Dean would like to hear from anyone who may be interested in a copy of this history at a cost of \$9.00 (postage **not** included). If you are interested in a copy, please contact him at;

Mr D.W. Dadds
107 Shorts Road
NORH COBURG VIC 3058

FENTON PUBLICATIONS

Two booklets are currently available at the usual price of \$5.00 each. The first is 317RS in Sir Graham Moore Island and the second is a 'two in one' special—109RS Nightcliff and 59RS Lee Point. Both are excellent accounts of their respective radar stations. To order copies of either booklet, use the coupon below and send to:

M.E. Fenton

**27 Lasscock Avenue
LOCKLEYS SA 5032**

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