

***SUPPLEMENT***

**TO**

**THE  
DECCA  
LEGACY**

Compiled by:  
Ron Burr (with inputs from several contributors).

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# CHAPTER 1

## INTRODUCTION

(Ron Burr)

For a number of reasons, some of the events and activities which contributed to the history of the Decca, Plessey, Siemens and B.A.E. periods could not be included in THE DECCA LEGACY. One of the most significant was the story of the business which was given the name PLESSEY AIRPORTS. This was not a deliberate act of omission, but occurred because at the time of writing the DECCA LEGACY, no account of its history was available. This has now been rectified by the issue of an excellent series of notes by Ron Pearce. These have been used in Chapter 2 to provide the story of this business.

I also took the opportunity to compile a set of anecdotes relating to some interesting, and sometimes amusing experiences which salesmen and field staff enjoyed (or suffered) during their periods with the radar companies. These will be found in Chapter 3 onwards.

Then there is a note, Chapter 31, on current happenings of social meetings of many of our retired colleagues.

Finally there is the Epilogue in Chapter 33.

## CHAPTER 2

### PLESSEY AIRPORTS

(Ron Pearce)

Plessey Airports was established in 1973 with the object of providing airport development packages involving project management for the design and construction of new airports and the upgrading or extension of existing airports with ILS, DVOR and airfield radar from Plessey Radar forming part of the package. Although the Airport Development business was formed as a small team within Plessey Nav aids, it drew heavily upon skills and expertise that had been developed by Plessey Radar, especially project management. The timing of this venture was ideal because a major expansion of civil aviation was beginning, particularly in the Third World where expertise in the field was limited but where air transport was vital to economic development. An early success was achieved with the award of a contract to upgrade nine airports across Zaire. A team toured all of the sites, many of them in remote parts of the country to formulate the detail plan for the project. It was hoped that this would lead to the purchase of ILS and radar equipments from Plessey Radar. In the event, this did not happen because political manoeuvring by the Dutch resulted an edict being issued by the Zaire government that all nav aids and electronic equipment had to be supplied by Philips. The first real contract for the Airports business, won in March 1974, was for an upgrade to Cairo Airport in Egypt, valued at £3M. This was an important contract as it established Plessey Airports as a serious contender in this market.

In 1977, Plessey Nav aids was merged back into Plessey Radar Ltd. Plessey Airports remained as a separate business and continued to expand its team with the addition of specialists in a number of fields. Africa was seen as a very suitable market for business expansion and particular effort was directed to West Africa. In early 1978, the company was awarded an initial £5 million study contract for improvements to Abidjan Airport in the Ivory Coast. This was followed by a £50 million contract for the implementation of the airport expansion. Two further significant contracts were won in 1979. The first was a £30 million project to develop an international airport at Garoua in north Cameroon. The second was a £6million contract for Gabon, which involved a wider plan for improving air traffic control and navigation for the whole country. This included the supply and installation of a Plessey AR5 long range radar.

In 1982, the company became involved in the construction of Port Salines International Airport on the island of Grenada. Originally proposed by the British Government in 1954 when the island was still a British colony, Plessey Airports was contracted for the construction. On the 25 October 1983 the USA invaded Grenada and work on the construction was halted. Later the US Government funded the repair and completion of the works.

At the end of the Falklands War in 1982, the British government decided that a large permanent airbase was needed on the island. As the existing airfield at Port Stanley was not the best option, a new site at Mount Pleasant in the west was chosen. Plessey Airports had a major involvement in the project and the new airbase was opened by Prince Andrew in 1985, becoming fully operational the following year. By this time it became evident that Plessey Airports was struggling to survive on its own and it ceased to survive as a separate business. Remaining operations were merged into Plessey Radar Ltd. as part of a restructured Airport Development Group.

## CHAPTER 3

### THE PRAGUE SPRING

(Ron Burr)

After the end of the Second World War Bulgaria, Czechoslovakia, East Germany, Hungary, Poland and Rumania were under the control of the USSR. These countries were formed into an alliance which became known as the WARSAW PACT as a counterbalance to NATO.

The Prague Spring was an event which occurred in 1968 when the Soviet grip on Czechoslovakia was briefly relaxed when Alexander Dubceck became head of the Communist Society in that country. Amongst other things he arranged for the freedom of the press, freedom of association and freedom to worship.

Decca Radar decided to seek a business association with an electronics company Tesla in a town in Czechoslovakia called Pardubice approximately 140km from Prague. I was part of this very small team (three of us) and we left the UK in early July 1968. On arriving at Prague Airport we were met by Larry Petru from the Tesla Company and driven to the factory. We were given a tour of the works followed by lunch. After lunch we were taken to a pretty semi-alpine district in the east of the country where we were later given a very fine dinner at a local restaurant and thence back to our hotel in Pardubice.

The next morning I was woken up quite early and told to get dressed because that morning Czechoslovakia had been invaded by 20 divisions of Warsaw Pact troops. After breakfast the lounge in the hotel was packed with local people listening to the radio giving an account of events in Prague and elsewhere in the country. Larry joined by his wife Vera translated the news into English for us. There was much singing of patriotic songs and the National Anthem.

The Russians rapidly deposed Dubceck, took him into custody and cancelled all the reforms that he had introduced. I rang the British embassy in Prague. They told us that the Capital city was a dangerous place and we should stay where we were. Over 200 deaths had occurred in Prague as a result of the invasion. For the next few days we stayed put in the hotel. We saw one or two tanks or armoured cars passing through the town in the next 2 or 3 days, but we were not molested in any way.

After four days, our hosts arranged for a car to be filled up with petrol (not easy to get at that time) and we were taken to a frontier post on the Czech-Austria border. From there after an emotional farewell with our Czech friends, we sadly walked over a bridge to the Austrian frontier post. On the Austrian side of the border, there were a number of private cars lined up waiting to carry those who had escaped, to any place they wished to go. We elected to go to Vienna, We booked into the five star Imperial Hotel for dinner, bed and breakfast and the next day took a flight to Heathrow. The hotel did not charge any of us for this accommodation, a gesture of friendship much appreciated. This kindness was probably prompted by the concern felt in Austria for the fate suffered by Czechoslovakia. Needless to say our families were pleased to see us back home.

## CHAPTER 4

### **DESERT STORM and AFTERMATH**

(Ron Burr)

On August 2<sup>nd</sup> 1990, Iraq invaded Kuwait and after a short campaign, took over the administration of the country. Prior to this war, the government of Kuwait had placed a contract with Plessey Services to carry out an investigation on the vulnerability of the Kuwait Oil Fields to attack by terrorists. I was asked to lead this investigation. As a starter, I obtained an interview with a senior executive of British Petroleum (B.P.) who had been in charge of the Kuwait Oil Field Company whilst it was still owned by B.P. and thus had an intimate knowledge of the oil extraction and export operation. His advice was that the most vulnerable part of the oilfield complex was the pipe heads where the crude oil emerged from ground and was connected to a pipe which took the oil to storage tanks. From these storage tanks oil was taken to tanker loading terminals on the coast.

My next step was to go out to Kuwait where I was taken on a conducted tour of the oil extraction facilities, oil storage tanks and the oil tanker loading quays. This completed my Kuwait investigation and I set off for home. On returning to my hotel, I found that my clothes and other belongings had been removed from my hotel room and packed into my travelling case and was waiting for me in the hotel lounge. During my daytime absence, the king of Saudi Arabia had arrived together with his wives and entourage and a number of hotel rooms had been cleared in order to provide accommodation for them. Our local Plessey agent found accommodation for me at an Indian owned hotel 100 km outside Kuwait. Here I spent an uncomfortable night on one of 100 camp beds set up on the floor of the hotel restaurant.

The next day I caught a plane home.

Back in the UK, I contacted MOD and obtained a session with an explosives expert who told me how he thought a terrorist would set about blowing up oil heads and storage tanks. Using all the information I had gained, I then wrote a report which was submitted to the Kuwait government.

With the approval of the United Nations an alliance led by the USA was set up and an army was assembled to liberate Kuwait. This campaign, the first Gulf War (Desert Storm) was successful, but was halted before reaching Baghdad. Had the allied forces continued to Baghdad, Saddam Hussein would have been removed from power and the second Gulf War would not have been necessary. Unfortunately the terms of the UN mandate then in operation did not allow this to happen.

During the retreat from Kuwait the Iraqi forces set fire to the Kuwait oil fields by blowing up the oil heads, much as I had described in my report. Quenching this conflagration at a later date was a costly and dangerous exercise. A team led by a man known as Red. Adair was responsible for this work.

## CHAPTER 5

### THE CONFLAGRATION

(Bill Wills)

During the nationwide coal strike in 1972 businesses were instructed to limit the use of electricity to only a few hours per day. In the porta-cabins and external buildings on the test site at Cowes, only a few hours of warmth were allowed before electric fires etc had to be switched off. At that time, new sources of power were surreptitiously introduced by individuals. In one porta-cabin Alex Lawson made available for use a primus camping heater. This unit was fuelled by paraffin which was stored in several small plastic containers beneath a wooden table. This heater had to be primed by the use of methylated spirit and significant pumping by hand. An Englishman cannot be deprived of the standard “brew up” for long, so one cold morning an attempt was made to use the stove for this purpose.

The stove was unpredictable. If it did not ignite, then you had to start again. On this occasion a short cut was introduced by squirting meths from a small plastic bottle onto the feeble flame. Immediately the meths caught alight and enveloped the hand holding the bottle in blue flame. The miscreant immediately dropped the bottle spilling a little meths in the process which made a small pool of flame on the floor. Someone made an attempt to extinguish the flame by stamping on the bottle resulting in a pool of flame spreading across the floor. To escape the flame, people climbed on chairs and some managed to escape via the central cabin door. I grabbed a fire extinguisher sprayed everyone and everything in sight and subdued the flames. A successful conclusion, however there remained a problem. How were we to explain the use of a fire extinguisher so that a replacement could be obtained? This was solved by the following. The stove, paraffin meths etc. were hidden except for some rags which we had used for cleaning up after the incident. These were placed in a metal waste-paper bin and small quantity of paraffin added. The bin was taken outside ignited and immediately extinguished and the bin returned to the cabin. I reported to Site Security that some one had gone outside for a cigarette and had accidentally dropped a match on the rags. This story was accepted by Management. We got a replacement fire extinguisher and tea was back on the menu again.

## CHAPTER 6

### **SOMETIMES IT WAS DIFFICULT TO GET THERE**

(Stan Milliner)

A problem had developed on an HF200 installation at a remote site in Pakistan. The radar was not performing to the proper standard. The installation people had withdrawn from the site and Pakistan demanded that the most experienced team be dispatched from the UK to sort out the problem. This turned out to be Bob Childs and Stan Milliner, from R&D, and Frank Bennett from Installation Division.

The first move was to fly to Karachi which went without a hitch. The team then discovered that it had to find their own way to the radar station which was way up in the foothills of the Himalayas. They also found that not much support could be expected from the Pakistan authorities. They were still annoyed about the malfunctioning of the radar. So no flights were available for us. Frank Bennett eventually persuaded the Military that this was not a pleasure trip and some seats miraculously became allocated to us.

The next port of call was Lahore and when we arrived there, we were stranded again. After more careful negotiations with the Military, we eventually got another forward flight to Rawalpindi. We still had a long overland trek to reach the radar site at Sakesa. No more help was forthcoming from the Militia, so the only option left to us was to hire a taxi. When it arrived our hearts sunk. It was in terrible condition. The tyres were threadbare with wires visible through the rubber and we had hundreds of miles to go. We found out later that the handbrake was kaput also. However, the gallant driver (who we were sure had never passed a driving test and never felt the need to change gear) was prepared to take us.

Most of the journey was over flat plains and farm lands but occasionally it got very wild and it meant driving through rocky dried up river beds. We were running late so the driver decided when we came to a tarred road to put his foot down. This particular road was only wide enough for one vehicle and everyone was using it and taking their farm animals along it. The taxi driver kept his hand on the horn and his foot hard down on the pedal, ignoring our protests. People and animals jumped for cover as we came through, then his luck changed and a frightened cow ran back on the road. We hit it so hard we ran off the road, but somehow the driver regained control and continued his mad progress. We looked back and saw the poor animal on its back pathetically kicking the air. There were a lot of angry peasants who had observed this. Had we been caught, the chances of escaping unscathed were minimal. Our driver had decided that his driving skill was better than his powers to negotiate and we got away as fast as possible. When we were at a safe distance, we looked back. The car which was just adequate when we had started was now half a wreck. The nearside headlamp was damaged, but the vehicle, amazingly seemed to have the wherewithal to take us to our destination. We had no choice but to continue. The right thing to do would have been to return and put matters right. This did not appeal to any of us.

After what seemed hours later, it started to get dark. But we saw lights ahead high up on the mountain and we thought we were getting close to our destination. By the time we arrived at the guard room at the base of the mountain it was very dark and the armed guards seeing unannounced people at that time of night, trained their rifles on us until we proved we were on their side. The beleaguered driver and his damaged taxi now faced an even bigger challenge.

This mountain was about 6000 feet high and changing gears was not his preferred choice.



Despite our entreaties to get him to change gear, or let one of us drive, the driver had the bit between his teeth, this was what he was born for and he was determined to get up the mountain, even if it killed us all - a likely outcome. Somehow he tugged and yanked the vehicle around bend after bend despite only having one working headlamp and progress made more difficult by our yelling at him incessantly. As we reached a very sharp bend he stalled the car and it started to slip backwards towards a black abyss. This was the time for swift action, so with the driver still trying pointlessly to brake, we jumped out of the car and together we acted as the brake while he started the car and found a low gear. When he was moving slowly we caught up with the car and jumped aboard.

When we eventually reached the safety of the upper guardhouse, we gave the driver some friendly advice about his future prospects and the different route he should take on his way home. We never saw him again and he was put up by the Station for the night.

We were on the radar site for several weeks during which time we were completely incommunicado, no messages could be sent or received. The food was awful, the highlight of the week being roasted crows legs which the cook tried to pass off as chicken. The good news was that we managed to do our job successfully and restored faith between the customer and our company.

The grateful Militia provided us with transport back to civilisation and on the way back down the mountain, when we came to the point where the taxi had stalled, we stopped and looked down at the abyss and saw it was a drop of thousands of feet.

## CHAPTER 7

### A DESERT TAXI DRIVE

(Ron Burr)

Whilst I was working for Plessey Services, I had occasion to visit Doha in Qatar on the Arabian Gulf. I stayed at a Four Star hotel with comfortable accommodation and good food. As you know the purchase and drinking of alcohol in public places is forbidden in Moslem States. At this hotel however, there was a concession to foreign visitors. There was a room set aside on the fourth floor where between five and six in the afternoon service of alcoholic drinks was permitted for Christians. A permit was required from the management to gain entry. This was provided after producing a certification signed by ones' local Christian priest showing you were indeed of that faith.

During my stay at Doha, I had to go to Abu Dhabi for short business trip. I took a Gulf Air flight to get there. When I had completed my business, I thought it might be fun to get back to Doha by taxi. There was proper road back to Doha and taxis could be hired in the town. The distance was about 150 miles. We set off at 2pm. But after 15 minutes a sand storm blew up. Visibility quickly fell to about 20 feet. Not only was there loose sand swirling about us, but also pieces of wood and empty tin cans. Our driver (who must have been a distant relative of the Pakistani driver already described in the last section.) ploughed on regardless. Our passage was punctuated by continual pleas from our brave driver to Allah to be merciful. I murmured the Lords Prayer at regular intervals and promised to go to church more often and not just at Christmas and Easter. I was terrified. I promised my self a stiff whisky if we arrived safely.

When we eventually arrived at my hotel it was five past six, and yes you are right, the bar was closed!

## Chapter 8

### IRAN MEMORIES

(Stan Milliner)

There are some things that stay in your memory even as you get very old, maybe because you have recalled them to friends as a topic of conversation. My first visit to Iran was on a sales trip during the rule of the Shah and there was little I remember that was unpleasant. I recall the very beautiful royal jewels that were on display in the museum and the fact that the Shah's photograph was always the highest of any picture in every public room, the picture of the Queen was the second highest just below. The photographs were always depicting the royal couple without a wrinkle on their faces (a nice touch, I wish mine could be the same.)

The second visit was quite different. The Shah had long gone and the Ayatollah was in power. The Company had a contract to install radar station at Tabriz and it was all hands on deck. I became involved because it included an HF200 with the newest digital sub-allocator. This device was the brainchild of Bob Mathews and may have been the first time digital techniques were used to do a computing task. It certainly used a lot of transistors! Bob had employed a high voltage supply of only 3 volts, he had reasoned that if transistors could work at that level why not use it and give transistors a long life. I cannot remember a transistor ever failing. Although failed transistors can be detected, good transistors operating from extraneous noise was a much more difficult problem. To counter this, Bob had built in clever self-check circuits, but he wasn't going to be in Tabriz during its installation stage. Instead it was yours truly who drew the short straw.

The night before I was due to fly to Tehran I went to Bob's house for a briefing and I recall his small son trying to capture his attention and only succeeding when he walked noisily along the keys of a piano. The grubby hotel at which I stayed briefly in Teheran had one wall tiled with the words "America is the great Satan". I said something a bit derogatory about that and was hastily warned by my companion that personal remarks like that could lead to serious repercussions, especially since we were always under surveillance.

Teheran was at that time very cold, I remember camels walking through the snow and dangerous ice on the roads, freezing women with babies in summer silks, selling products on the streets and legless children moving quickly along pavements on skateboards. My companion advised me that when taking a taxi I should never allow the driver to put my luggage in the boot of the car but keep it with me, so if there was an accident I could get away quickly. Iranian law would have made the passenger culpable because it was his fault that the taxi was there. Even worse, I was told that as the "guilty passenger" I could get a criminal record which meant I could be denied an exit visa. I was told that some children had been known to fling themselves deliberately in front of cars to get insurance money for their families.

I was told the pathetic story that a Marconi engineer had fallen into this trap and jailed. When he was released his Company representative had left, so he then had no job. Since he had a police record, he could not get an exit visa. Because this situation was beyond our control Company staff were advised to leave Iran before their visas ran out after three months, even if it meant popping over the border to Iraq for a weekend and reapplying for a new visa to re-enter Iran. This is not mentioned in any sales brochure. Welcome to Iran.

I remember Frank Bennett and I being driven to some military offices in Tehran, probably to deal with my visa. The military driver terrified us with his hair raising driving standard. Where he had difficulty

with traffic blocking his way he merely used the pavement. On the way back after our business was complete, he deliberately turned the wrong way into a one-way street allowing other traffic avoid us as best they could. He was also reading the Koran which was open on the dashboard. Oblivious to our state of panic he tried to reassure us by saying “Allah will protect us, this is the quickest way”. I thought later that what he may have meant was “this is the quickest way to paradise”.

I cannot remember much about the town of Tabriz, but I do remember a tall spiral tower which had a large hole in the very top floor. Looking down in excess of 100 feet could be seen a cobbled floor. I was told this was a place from which a wronged husband would push his suspected wife. If she was able to walk away she was deemed to be innocent. I wasn't told if this practice was still in operation.

Our daily trip to the radar site was through a small village where a sign warning of an outbreak of smallpox was posted. I had understood that the world had solved that problem. The radar site was a very busy place with many activities going on at once. My specific task was to get a failing sub-allocator to work but I was having a great deal of trouble despite the good briefing by Bob Mathews, for some reason it kept failing miserably and I could not figure out why. So late one night when all sensible people were asleep I visited the site barely noticing that the operations room was littered with eerie looking objects under white sheets. My tests on the sub-allocator were successful, the problems were gone and for once it worked perfectly. Suddenly, I think a bell rung because the white sheets parted and local workers sprang to life like zombies and started praying towards Mecca. Time for me to leave! The following day my problems were back and a check on the system earth showed that there were pulses entering the sub-allocator from various sources which was not acceptable to a delicate device operating from a low voltage supply. I likened this to a violin in a brass band. The problem was later traced and corrected. I was really relieved to get out of Iran eventually and pleased to have seen first hand what skills our Service Division possessed and the difficult and sometimes dangerous situations in which they had to work.

## CHAPTER 9

### LAST OF THE SUMMER WINE

(Bill Wills)

Eddie Hill and I were invited to BTR Taplow to see their work on electro-optical techniques. We were shown around their laboratory and experiments in progress. Quite innocently a Taplow engineer opened a store cupboard to show us more equipment, closed it as quickly as he could but not before we saw several demi-johns bubbling away. This experiment was obviously associated with wine-making rather than normal electronic endeavours.

On return to Cowes, I told Peter Barton, Martin Young, Alan Morris, Roger Bee and Bob. Newcombe about what we had seen. It was unanimously decided that Cowes should have its own vinery and matters were put in hand.

A 10 gallon container was filched from the microwave production unit and a large cork water trap constructed. A hose of pure PVC (ex cable sheath) led from the water trap of the container hidden in a storage bench, around the laboratory and exhausted through a window vent. That fateful Saturday morning when we had a break, the team mixed the red wine concentrate with six gallons of water, sugar, extra yeast energiser and finally the yeast. Final tweaks to the assembly were made and the team congratulated themselves on a well conceived, procured and designed package. We went home extremely satisfied and looked forward to sampling the concoction in six weeks time. After we had left, some irascible security officer had dutifully made his way around the laboratory and closed all the windows. In so doing he had unwittingly trapped the exhaust hose.

The next Monday morning we were relieved to see that the apparatus was intact and there had been no explosion. The downside was that the whole of the laboratory building smelled like a brewery and we had immediately to inform complainants that we had poured some cleaning fluids down the sink and the drains were clearing slowly.

Strangely enough, this explanation was accepted. Over the next six weeks the assembly was regularly inspected, self congratulations made and the team went about with quiet smiles on their faces. Six weeks later the team assembled and were delighted to taste the just fermented wine which was immediately labelled "Somerton 75" and was sulphited and was left for another month or so to mature. A month later some engineers were to be seen bringing in empty bottles and taking out beautifully labelled bottles bearing the immaculate inscription "Somerton 75". It turned out to be an excellent vintage.

## CHAPTER 10

### HONG KONG WEATHER RADAR

(Stan Milliner)

A Plessey weather radar had been installed on a mountain in Kowloon, also a radio link had been established so that radar data could be directed to, and simultaneously used at, the Royal Observatory and at Kai Tak airport.

In those days satellites were unheard of and the Hong Kong region was extremely busy. It was a very dangerous place to be at if typhoons were expected. When such a threat existed, people were herded into shelters even if the typhoon was a long way off and might never make landfall. Closing down businesses unnecessarily would be an economic disaster, so early warnings of storm movements were vital, hence the need for a weather radar. However, when a storm eventually came, the weather signals were so intense that the radar and radio links were saturated and the radar shut down.

My task was to solve this problem, so I had to carry out various modifications and experiments which we hoped would do the trick. After this work had been completed, there were no further reports that there had been a re-occurrence of the difficulties.

The mountain on which the radar had been installed was called Tai Mo Shan. The access road to the radar was very steep. Cars had to go one way up and a different way down due to the narrowness of the roads. An interesting sign in English and Chinese said "It is forbidden to bury your dead here. Any dead found buried here will be dug up and deposited elsewhere".

After the modifications had been successfully tested, without actually waiting for a typhoon, before I left Kowloon, I decided to treat my Chinese engineers and their wives to a meal at a place of their choice. They were very pleased and selected a restaurant in a very dodgy part of Kowloon, live snakes could be seen in baskets outside the restaurant. Opium smokers were swiftly removed and a white sheet spread across a large table outside on the pavement. The food that was put on the table was very weird indeed and to me looked most uninviting, dried insects being typical. A soup appeared first which I was told was snake soup. I decided to avoid eating any of it. The wife of one of the Chinese engineers noticed my reluctance and eventually persuaded me to try something, I remember her saying "you will love this" without telling me what it was.

I think the closest thing I could imagine it being was a live slug. They all laughed and refused to tell me what it actually was. When I asked for the bill, I persuaded the waiter to produce a list of all the items. I thought it would amuse our Accounts Department and help me identify the slug". The waiter seemed to know what was wanted and eventually I received the bill. Unfortunately it was written in Chinese symbols from top to bottom, only the date and price being recognisable to me.

## CHAPTER 11

### **AWS1 AT MYNYDD RHIW**

(Michael Cowlard)

An AWS1 was purchased by RAE Aberporth to meet a dual operational requirement for both sea coverage and air coverage across Cardigan Bay.

Subsequently it appeared that there was only a requirement for sea coverage. The equipment was installed on the high ground (approx. 900 ft.) at Mynydd Rhiw on the Lleyn Peninsular (North Wales) overlooking Cardigan Bay.

12 inch rotating coil displays (ex Radar Dev. at Davis Road) with their "Deccaplots" were used. In the sea surveillance role the tracks of ships to and from the port of Liverpool were marked on the surface of the "Deccaplot" and from time to time positions and headings were passed to range headquarters.

My task was the final commissioning and flight trials. This was in collaboration with Colin Spraggs, a Scientific Officer from RAE Aberporth, who was the accepting officer.

Very early in the commissioning phase it became clear there were problems with the video picture shown on the displays. The effect was that after each echo there was what appeared to be a large black hole. This was reported to Chessington and Brian Graham (then based at Cowes) was sent to investigate. He found the introduction of the STC Travelling Wave Tube RF receiver (intended to reduce the system noise factor) had increased the drive through the IF strip and caused saturation in the video decoder. Adjustments were made and all was well

Both sea and air trials were carried out during March 1961. The sea trials were very simple and consisted of monitoring and tracking the vessel MV Milbourne, an RAE recovery and range safety ship. She was a small coastal vessel. Maximum detection ranges were much as expected.

Air trials were conducted using Meteor aircraft from RAE Llanbedr. It became apparent that the coverage we were measuring fell short of that we had expected based on the excellent vertical polar diagram test results which had been obtained from the aerial measurements at the Holton Heath test centre. A visual inspection showed that there was no obvious fault but it was decided that the aerial should be returned to the factory for a thorough check. At the factory it was found that at the completion of aerial measurements at Holton Heath the aerial feed horn had not been dowelled into place. This meant that at the factory where the aerial would be subject to final finishing involving separating all the components, on reassembly the horn would not be in the correct position.

The aerial was sent back to Holton Heath test range for recalibration and fixing of the horn position. The measured vertical polar diagrams were not as good as the first test, but as they were within specification, the aerial was passed OK. The aerial was returned to Mynydd Rhiw and refitted. Air trials were recommenced and the coverage found to be acceptable.

The AWS1 at Mynydd Rhiw was used as the principal demonstrator to MoD (HQ90 Group) for evaluation of what became the AR1. It is believed that at a later date the AWS1 was replaced by a marine radar to continue the surface coverage monitoring role.

## CHAPTER 12

### FLIGHT TRIALS ON AR15 - FALKLAND ISLANDS

(Stan Milliner)

After the Falklands war was ended much work was being done to develop Mount Pleasant Airport. A medium range radar (AR15) had been installed at the airport and I had been tasked to undertake final checks on the equipment and to supervise the flight trial.

I flew from RAF Lyneham and as the only civilian shared the front seat with the Colonel who was to be the new Island Commander. There was only one stop which was at the Ascension Isles. When we landed in the Falklands, the Colonel was whisked away, but I, like all the military on board passed through a large hanger where all types of bombs and land mines which had been left behind by the invading forces were on show. We were given a crash course before we were allowed to leave so that we could recognise these objects if need be.

The road 25 miles long from Port Stanley to the Airport was flanked on both sides with wire fences bearing continuous signs warning of the minefields. The military were threatened not to enter the minefields but apparently these warnings were often ignored as some soldiers played the game of “chicken“.

In order to clear the minefield and make the road safe, a large bulldozer was fitted with a flail. This had to be driven the 25 miles, so volunteers were requested. The story goes that an Irishman took the job at £1000 per day. The clearance took six weeks to complete and not one single mine was found!

The flight trials were carried out after a few days work on the radar and an operational radar successfully handed over to the Royal Air Force. For my contribution as Flight Trials Manager I was given a FIMPA (Falklands Islands Mount Pleasant Airport) tie which I treasure to this day.

I could not get a return flight to England for a few days and the Plessey site manager explained that all staff resident on the island were put on a list for helicopter flights over the islands to see the abundant wild life. Of course I could never qualify, but if wanted, I could borrow a Land Rover to go and see some of the penguins at the coast. I would have to do this on my own and take pot luck with any mines. Never one to miss out on an adventure, I gratefully accepted and was given some Wellington boots many times too big for me, fortunately as it turned out.

The bay recommended was miles away from anywhere and very wild. I drove as close as I could, ran out of any kind of road and put on my outsize Wellington boots. I could see the penguins miles away on the beach so I took what appeared to be a direct route through a valley which had some very green clumps of grass between patches of mud and these clumps got further and further apart until I lost my footing and stepped on the mud. Immediately my foot sank fast, quickly I changed my weight to the other leg and just managed to pull my foot clear of the sinking boot. It took all my strength to pull it out and then I realised I was in a dangerous peat bog and would be better off some where else.

I got back to my starting point and decided that the only safe way to the beach was through a colony of giant birds bigger than swans. I would have to go into the surrounding cliffs then climb over the rocks down to the beach. Normally when you approach birds they fly away. These birds had their own agenda and far from being afraid of me they warned me noisily to clear off. It wasn't long ago since I had seen Alfred Hitchcock's film about a lot of smaller creatures than these causing problems. I was again filled



with misgivings about my current role here. I was due some luck and surprisingly as long as I got out of their immediate airspace the birds did not see me as a threat and carried on with their relentless business of squawking at each other. So I made it to the beach at last. When I appeared in sight every single penguin fled into the sea, in one way that was encouraging, I was beginning to feel I was insignificant and I decided to wash my very smelly Wellington's in the waves and that was yet another mistake. There were streams of water running out of the hills towards the sea and I saw no reason why I shouldn't paddle, after all I was wearing Wellington boots. Suddenly my foot went down as though I had stepped off a rock and the oversized boot saved me yet again. I jumped out of it with fantastic speed and leapt out of what was quicksand but this time my boot was gone for good.

Enough was enough, I gave up and again and had to run the bird gauntlet with one boot. The good thing being I never came across any mines on this trip.

Haley's Comet had been seen in England early in the year. At the time I thought it was disappointing, just a fuzz with no tail, now it was returning from its trip around the sun and in the Falklands it was the brightest object in the Southern sky with a long tail. This enabled me to identify the time when I was there and everybody was amazed and delighted to see it.

## CHAPTER 13

### HOW, AND WHY, I DROVE A ROLLS ROYCE

(Bob Newcombe)

The Plessey Works were at the top of a hill in Cowes, the road to work was the Newport Road. I lived in Cowes at the bottom of the hill, my trip to work, if the weather was fine, involved a cycle ride, a bit of a hard ride up the hill.

At the time I was working for Bob. Mathews, a very enlightened and likeable engineer/scientist who happened to own a 1927 Rolls Royce, in working order and a splendid sight to be seen on the ordinary roads around Cowes. He would drive through the main gate of the site and would take the vehicle around the back to avoid using the company car park at the front and walking round.

I had been taking driving lessons in a Ford Anglia, a relatively modest car, and I was confident enough to drive it as a learner when I had the instructor at my side. On this occasion I was on my way to work on my cycle when I was overtaken on the hill by Bob in his Roller. He stopped a few yards ahead of me and suggested that I should put the bike in the pannier on the rear of the car. I got in and we proceeded up the hill and stopped at the Plessey main entrance. At this point, Bob got out put his head through the window and told me to drive the car to the back of the site and park it in his usual parking spot.

Before I had time to protest about my lack of driving experience, he had walked off out of earshot. I had no choice but to steel myself and have a go. The car was so grand I couldn't see the edge of the road from my lofty position, so with great care I drove the monster, as he suggested and managed to park it in the right spot. I didn't have to worry about the gears as it didn't seem to matter which one I put it in, it went anyway. The experience was a lesson to me. Here was a man who would trust me not to damage his prized car, and give me the chance to overcome my discomfort by putting me firmly in the driving seat. This was also his way in the workplace; those who worked for him were trusted to carry out tasks to the very best of their ability.

## CHAPTER 14

### WHY THE SUB-ALLOCATOR DIDN'T WORK

(Gill Hughes)

The Sub-Allocator was innovative and in 1966 ahead of its time. Its function in a height finder radar system was to allocate priority of selection between 20 or more radar console positions, each of whom could request access to access one, or sometimes two, heightfinder radars. Data was fed in turn to a Height-Range display from which the operator dispensed aircraft height data to the requesting consoles. The sub-allocator also drove binary-coded decimal height readout signals to individual display units mounted on each display console. It worked in conjunction with a remote head-selector unit known as the Main Allocator.

The first Sub-Allocator was mounted in a 5ft. equipment rack, and was installed at the underground display building at RAF Neatishead, Norfolk. It was installed by Plessey Radar Installation and Service (ISD) with a team headed by Frank Bennett. As with all new systems, it had amassed a variety of teething troubles, and was frequently attended by members of the Cowes Design Authority, including Stan Milliner, Brian Salter, and the Sub-Allocator designer Bob. Mathews.

It is an ill wind that blows nobody any good, when it was realised with horror that there were two HF200 to cater for, and not, as Cowes Engineering had first thought, only one. This of course had a huge impact on the design, the cost and the delivery schedule, on a programme which was already running late.

What happened next was tragic, but in some ways fortunate. An act of sabotage by a disgruntled civilian worker at RAF Neatishead resulted in a fire which totally gutted the 3-storey building, in which was the first Sub-Allocator. Tragic, because the local civilian fire brigade insisted on dealing with the blaze themselves, and would not permit the very capable RAF Neatishead to assist. The local fire brigade had no conception of the magnitude or the layout of the building. This was a fatal error, which resulted in the deaths of four of the of the civilian fire brigade. The RAF Neatishead underground was never revisited.

Somewhat exonerated, Cowes Design Authority now focussed its attention on RAF Boulmer, in Northumberland, the second recipient of the new Sub-Allocator, this time housed in a 7ft equipment rack, housing an extra frame of hard-wired units to cater for the multi-height finder configuration. It was at this point that I became involved as assistant QA (Quality Assurance) engineer based at Cowes. The ISD team included Peter Carnduff, John Lunn, Stan Martin and Michael Lawes under Site Manager, Brian Shopland. Dave Watson and I represented QA.

The new giant-sized Sub-Allocator had a few less problems than its predecessor, but it was still very unreliable and would frequently halt or its programme would go into a “closed loop” from which it could not emerge. To overcome this situation, the Design Authority invented a new printed circuit board which sensed the lack of output activity, and reset the entire system. At least it would stay running despite all of the lost requests for height data. Little by little the problems were (mostly) solved.

In the spring of 1968 the system at RAF Boulmer was handed over but two and a half years late. A second system was installed at RAF Partington in South Yorkshire, served remotely by the two height finders at RAF Staxton Wold, The remoting brought its own new set of challenges.

The two systems were not very reliable and I was called out to RAF Boulmer and RAF Partington out a few times to attempt to restore serviceability. Although I managed to get them working, I could never

pin-point a specific problem on this equipment, which by rights, being digital, ought have been the most reliable piece of equipment Plessey Radar had ever produced.

Project MARTIN followed. Managed on site by Bill Mayhew and Frank Bennett, MARTIN was a big contract which would supply a new AR5 search radar and a second Heightfinder, with a totally new display system, for the Imperial Air Force at Tabriz in the Azerbaijan province of Iran. The dual Heightfinder system was served by a Sub-Allocator. It also proved unreliable during commissioning, so I worked painstakingly with Peter Carnduff, in order to find out why the performance was so unreliable. Finally it was agreed with Cowes (by telex, remember those?) that Stan Milliner would come out to Iran and deal with system problems, plus a look at the Sub-Allocator.

Just before he was due to arrive, two things happened. One of them was an incident in my career of which I am not very proud. The other was that Peter Carnduff and I cracked the Sub-allocator's main problem. The double-sided printed boards on the Sub-allocator had gold plated contacts which engaged into edge-connector sockets. Spring contacts gripped each side of the board. The two contact halves were also gold plated and were pressed together before being moulded into their socket. Wires were soldered into a "V" groove at the back of the socket. No problem so far. Then, the Cowes inspector would examine the soldered joint, and if satisfactory, would apply a dab of red marker dye known as "Tintalite". This was the problem. The Tintalite would soak through, and between the two contact halves and act as a perfect insulator, preventing continuity across the board. Disengaging the printed board and re-inserting it sometimes appear to clear a fault, but it would soon re-appear. Wrapping and soldering a fuse wire round the contact to bond both contact halves together permanently solved the problem, but how many contact pins were affected? There must have been thousands. And what about the RAF Sub-allocators, this must also be the reason for their unreliability?

The site transport from the ISD team house and the Asia hotel in Tabriz, consisted of two Volkswagen Kombis. For a while, a team, a team, including Peter Sanford was visiting from Plessey Display Division at Addlestone. The daily appearance of our two Volkswagens became a familiar sight to the duty gate keepers at the radar site and more often than not we were waved through, nobody even checked our site passes.

One morning, a new gatekeeper decided he wanted to see our passes. This was a problem; most of the Addlestone contingent did not have theirs. Of the five people in the vehicle, only Frank Bennett and I could produce one. With my limited knowledge of Farsi, I tried to appeal to the gatekeeper to let us in promising, we would all bring our passes the next day. A little knowledge is a dangerous thing. I added the words which when translated meant something like "don't be a silly old donkey". This was really meant as a joke, but I could see immediately that it had misfired. I was ordered out of the driving seat and into the security booth at the site entrance. Phone calls were made. At that point I had a sense of foreboding that my life's routine was about to change abruptly.

An officer appeared, Major Sarket, and although I knew him well, I could see that this morning he was less than jovial. He finally allowed the vehicle to pass, but said he would refer my insults to the IIAF head offices in Teheran.

Later an apologetic Frank Bennett told me that, rather than have the Air Force ask me to leave the country, I had better take the initiative and in Plessey Radar's interest it would be better for me to leave right away. This was sad blow. I urgently needed a meeting with Stan Milliner to discuss some system problems, also to demonstrate to him the Sub-allocator problem and its likely solution.

I returned to Teheran. Stan would be arriving by BOAC late that same evening. I was due back to the UK the next morning. I went back to Meherabad Airport to meet Stan. There was a problem. Recent

snow had threatened to close the airport. Stan's flight was held up pending weather conditions improving. His flight finally landed at 4 am! Stan was exhausted from travel and bewildered at my unfortunate predicament with the IIAF, but it was imperative to brief him on our latest findings before either of us could retire. I left Iran for the last time later that morning (after a total of four years in that country).

The rest is history, and hitherto unreliable equipment now had the potential to be as reliable as it ought to be, and a credit to its designers.

## CHAPTER 15

### **THE FAIREY FLIGHT**

(Michael Cowlard)

Prior to the installation of the AWS1 at Mynydd Rhiw and the DASR1 at Llanbedr I was required to go and meet Colin Spraggs of RAE Aberporth. The arrangement had been made by HID. I was given precise instructions, for the journey and the rendezvous by Peter Skelton. I was to fly from Farnborough to Aberporth on the morning ferry (a Devon aircraft). At Aberporth Colin was to join the aircraft and then we would fly to Llanbedr for the meeting. All seemed very straightforward but, like many good plans it went wrong. Colin did not join the aircraft so I ended up at Llanbedr on my own.

I was taken to meet the Officer charge, who, after a few pleasantries checked with Aberporth to find out where the meeting was to be held. No surprise now to learn that it was at Aberporth. He said he could arrange for me to go back to Aberporth, providing I was willing to fly in their “Fairey Firefly” aircraft. I said yes without being too sure of what the Firefly was. Anyhow, I was handed a headset and then strapped in the rear cockpit of the aircraft. Start up, take-off, low level flight to Aberporth, about 40 miles or so. Two attempts at landing, pilot did not like the first approach (because of severe tail wobble), the second one was OK. Then on to the RAE site for the meeting. The return journey to Farnborough was uneventful.

The Fairey Firefly was a naval aircraft designed in the early 1940s. It was a carrier based fighter with a crew of two. The first version went into service in 1943. The one at Llanbedr was a much later mark and had been used as either a target tug or, as a remote controlled pilot-less vehicle for use on the Aberporth guided missile range. It was replaced by the Australian designed “Jindivik” pilot-less target. This particular Firefly aircraft was the last survivor at Llanbedr and had been restored so it could be used as an occasional communication aircraft.

Whilst we were trialling the radars, Meteor 7s were being used to shepherd the Jindiviks.

## CHAPTER 16

### **ALL IN A DAYS WORK**

(Mike Chambers)

In the late 1960s, the Somerton site was pushed for space. Fortunately the DMLS (Doppler Microwave Landing System) program had no classified aspects, so the whole of the Cowes project team was relocated to the old Sparshatts building at Prospect Road. Being remote from the main site, we enjoyed a certain amount of freedom from restrictions of security and general management interference. Nevertheless a large sign over the door proudly identified the premises as PLESSEY and this gave rise to an interesting incident.

Late one summer morning there was a ring at the bell (we did have some security you see). On the doorstep was a deputation of elderly citizens one of whom was holding what appeared to be some kind of early “Walkman”, at any rate it was a box with wires attached. “Are you really Plessey” they wanted to know? We guardedly admitted that we were. “Oh good” they chorused, “can you make this work please” At which point they handed over the “device” that turned out to be a muscle stimulator made by Plessey Medical Division. We explained that we were unfamiliar with the item and unlikely to be of help but they pleaded with us to try. Their companion, they explained was sitting in their car and was in great pain without his stimulator.

To placate them we finally agreed to have a go and asked them to call back in an hour. The thing consisted of a box about the size of 20 cigarettes sprouting a pair of wires with electrode pads on the ends. When we spread it out on the bench it was obvious that one of the wires had been tugged and disconnected from its pad. It was that very flexible type of wire consisting mostly of string with a few fine copper strands woven in. We fixed it back on its pad using some silver loaded epoxy that we usually reserved for mysterious microwave purposes.

The party duly returned, tested the thing on their companion, declared that it worked perfectly, showered us with thanks and praise and went on their way to resume their interrupted holiday. The reputation for Plessey customer service thus boosted, we went back to work. Sometimes it is the little things that deliver the most satisfaction. The DMLS team was a happy bunch of engineers, never more so than on the day we did our bit for “help the aged”.

## CHAPTER 17

### SOMERTON SHORT STORIES

(Bob Newcombe)

#### WHAT ABOUT THOSE SINE WAVES

It was the day of a VIP to see the radar system in all its shiny cabinet glory. The MD was there, marketing was there in their best suits. The technical staff were assembled and all was going well. The VIP was treated to an extravagant explanation of the functions of the radar system, moving from aerial control, receivers, signal processing, displays and all. In the corner of the room sat an oscilloscope with its input leads hanging loosely. The `scope had picked up the characteristic 50Hz signal from the mains and was displaying it at full stretch on the screen. As they moved from each sub-assembly, the VIPs gaze was seen to wander at each explanation to the coloured trace on the `scope, and before long the speaker was beginning to lose patience. "Excuse me Mr. VIP" he said, gesturing towards the `scope, "that is an oscilloscope displaying sine waves". "yes yes" muttered the VIP, "I knew there were sine waves, but until now I never realised they were green!" This story originated from John Flounders.

#### THE PATTERN ON THE TABLE

One of the senior secretaries in the engineering unit was a very good seamstress. She liked to use her lunch break in a productive manner. Being a seamstress of course involved cutting out from a pattern and when a particularly large one was involved she needed a particularly large flat surface to cut out the material. What better than a conference room table. Here she could work undisturbed in the lunch break and as she controlled the conference room bookings, she was best placed to use the facility.

Dressmaking tracing paper is a special waxed carbon paper that transfers markings like seam lines and grain lines, this is placed between the pattern and the fabric to be marked. Tracing wheels having serrated edges are used to outline the pattern by tracing around the outline and mark the cloth underneath.

The conference room table was perfect for this task, and on one particular occasion, when the material beneath was very thin, the tracing wheel's route was transferred permanently to the table surface. When the light was shining from the window on a good day and at the right angle, conference room users were treated to a full size dress outline. That may have caused visiting customers some concern when discussing the progress of their equipment design.

#### TRASH and CARRY

The AR3D development radar system achieved a degree of fame as "a state of the art" radar system .On one notable occasion its presence was felt locally at the Cash and Carry store less than a mile from the Somerton site.

In order to protect the local population from unwanted radiation from the radar, a system of sector blanking was used to inhibit the transmitter for safety reasons, and this was set up manually from the control panel. On one particular day, the sectors were wrongly assigned so that the blanking was not applied to an area that included the local Cash and Carry store. Imagine their surprise when the tills suddenly stopped working due to radiation from the AR3D.



## **SUB-ALLOCATOR RESET BUTTON**

During the days of the development of the Sub-allocator, used with the HF200, the prototype gear was mounted in a 6ft. P.O. rack. This type of rack was an open metal frame that allowed easy access to the equipment whilst monitoring the performance. On the front of the equipment were many twinkling lights. Not LEDs, this was before them, showing the numbers being processed by the electronics. As chronicled by Gill Hughes in another story, the kit had the habit of stopping without reason, so as an interim measure, a Reset Button was fitted to restart or boot the kit into operation. This rack was in a major walkway through the laboratory, and the reset button, which was red and very prominent, was clearly accessible from the front of the rack. The button was a most tempting device and might well have said "Push Me" if it could speak.

It became obvious that the reset was being applied more often than needed, and by personnel that had no connection with the testing. An electro-mechanical counter was fitted to the button to see how many pushes it got in a day. At the end of the day the design team had a good laugh to see what the tally was on the counter. In order to stop this pushing, a capacitor was fitted in such a way that an excess of volts was applied to the capacitor when the button was pressed. The next morning, the first occasion the button was pushed resulted in the capacitor exploding producing a loud report. From then on unauthorised resetting stopped.

## CHAPTER 18

### BEYOND THE IRON CURTAIN

(Ron Burr)

This is the story of an extraordinary visit I and two others paid to Moscow during the period of the “Cold War”. Jack Wheeler (remember him?) together with myself and a Decca Radar H.O. man who spoke Russian fluently, were asked to go to Moscow to give a presentation (effectively a sales talk) on a range of the company’s radar products. Of course the selection did not include any which were classified “SECRET”.

After the selection was made, we enquired what presentation equipment would be available. Of course we did not expect “power point” facilities in those days, but at least slide projection equipment we thought would be available. To our astonishment, we were informed by the Soviet authorities in England, that Moscow did not have such equipment. It was therefore decided that we would utilise a number of 4ft. by 3ft. Plywood boards on which would be pasted blown-up pictures of the radar equipments selected. The idea was that two members of our party would hold these boards up in turn in front of the audience whilst I gave the description of the equipments.

During our stay we were accompanied by a guide (i.e. “minder”). I do not recall his name, but he spoke good English. Let us call him Ivan. On the morning of the presentation to an audience of about 300 people, I did my best to give my talk. After the conclusion, we were taken out and given a quite satisfactory lunch. During the meal, I was asked why we had used this primitive method of presentation. I explained the reason and then I was told that indeed they did possess quite modern presentation equipment. We were then taken back to the building where the talk had been given and shown presentation equipment in another room the equal to anything used in the UK.

Our hotel was situated in the RED SQUARE. We took dinner in the large restaurant in the hotel. The meal was satisfactory (just) but the service was very slow. It took at least four hours to be served and eaten. We noticed that amongst the ladies taking a meal there was only 3 or 4 different types of dress materials used. The next day we visited a fairly large department store, and saw that the store only stocked the same four different types of dress material. Presumably, the dresses we saw ladies wearing had been made at home from material purchased from the store.

Our visit to Moscow was timed only to last three days, so we decided to try and get seats at the renowned “Moscow State Circus”. This proved to be quite a difficult exercise. We asked at the reception desk of the hotel if they could reserve seats for us. After making a phone call they said that there were no seats available for that evening and we should try again the next morning. Early the next day we called again at the desk, but this time we were told they could not get a booking for that evening and that we should have made the request the day previously!

So Jack Wheeler and I together with Ivan went by taxi to the place where the performance is performed, and pressurised Ivan to use his influence to get us tickets for the evening performance that day. We duly arrived in the evening and were pleased to find that we had been allocated front row seats right opposite the place where the various “turns” emerged. I well remember the sight of bears skating on a central area which included an ice rink. During the interval we repaired to the entrance lobby for refreshments and found ourselves surrounded by numerous Russians anxious to try out their English speaking abilities. In particular they wanted to know why we had been given VIP seats normally only allocated to high

ranking Russian officials or special foreign visitors. Ivan must have been quite senior in the Soviet system!

On the day of our departure, at the airport I tried to get my Russian roubles (which I had purchased on arrival) converted back to English currency. They tried very hard to get me to accept Italian lira, at that time one of the weakest European currencies. After much persuasion, I eventually managed to get the cash in French francs.

## CHAPTER 19

### JAVA AND THE HF200

(Don Brooks)

Decca Radar had sold to Java (Indonesia) an assembly of radar equipments comprising an HF200 and a back to back aerial surveillance radar. The latter was installed a short distance outside Jakarta. There were also other surveillance radars installed in the vicinity. A large number of display units of the “cartwheel” type for the rotating antennae and height finder displays sat in a large cinema style tiered theatre, the control centre.

A visit to the site had been organised, the purpose of which was to assess the existing equipment with a view to obtaining further business in Indonesia. Some 20 years before this visit, all Decca personnel left Java in a hurry because of internal civil unrest after the delivery and installations of the radar systems. We made a report indicating that over the preceding difficult years the display equipment which utilised thermionic valves had been superseded by solid state technology and would have to be replaced. A depressing sight was the feed horns of the antennae which had been pecked and punctured by large numbers of sea birds so that little of the protective foam was left. Also, under the turning gear a large sheet had been suspended to catch oil leaking from the gearbox. It was concluded that it was necessary that help be provided to update all the equipment.

We were asked to visit an HF200 sited near Surabaya at the eastern of Java, which was reached by a 450 mile flight along the northern coast from Jakarta with a view of countless volcanoes lying far below on the starboard side of the aircraft. The following day we found ourselves looking at an HF200 which had been taken down, carried all the way from Jakarta and rebuilt at Nglyp on the south coast, not many miles from Bali. The trip from Surabaya to Nglyp was made in an exciting two hour drive in a car with bald tyres driven on dreadful roads at high speed with hosts of local population being parted out of the path of the speeding car, rather like the bow of a ship cutting through the water, “just in time”.

The HF200 had been installed well and the only problem they were concerned about was with the transmitter which would not run up. After a quick investigation, I determined that the modulator valve needed aging and gave instructions how to do this. Before we left the site the transmitter was up to full power and they were delighted. Whilst we were there, one of the technicians made the comment that very little air traffic came their way. A few minutes later a squadron of fighter aircraft zoomed over at low altitude and everybody ran out to see this rare sight. Back in the hotel in Jakarta a couple of days later, the pilots of these aircraft appeared in their flying gear.

## CHAPTER 20

### UNIDENTIFIED FLYING OBJECT

(Stan Milliner)

Many years ago I was asked to visit Santiago Chile with a sales representative. Unfortunately, I cannot remember his name but he was born in Argentina and spoke perfect Spanish. (This was probably Paul Acke MJC). Although I can get by these days I could speak no Spanish at that time.

The Company had been asked to send representatives to be guests of the head of the Chilean government a five star General Gonzales I think he was, or became Chilean president before Pinochet. I was asked to be the person to go because I was heading the team on HF200 radars. It was a very long journey but flying into Santiago over South America's highest mountain was unforgettable and certainly a great treat.

Our first meeting with the General was at his grand office at the top of a marble staircase where we were lead by the General's Aide into his own huge office, his desk was enormous and there were comfortable chairs for his visitors. Behind his desk was an array of flags and he was wearing full uniform with all the brass and badges befitting his rank. Of course we weren't all that impressed, we were used to that sort of thing. The General himself was very tall and distinguished and reminded me of General de Gaulle. I was glad to discover that he spoke perfect English because I couldn't have argued with a man like that in Spanish. The reason for the visit was to describe our radar system without giving him any information that might be classified. There was a possibility that we could sell to Chile three complete radar stations and for our stay there of many days, his office was our office, so to speak, during which time we got to know him and quite liked him, it certainly seemed we had a good chance of successful business contract.

We poured over site plans, met many of their senior officers and we even became, well, sort of friends. For example, on a shelf in his office was a wooden statue of a Mohai which is one of the huge stone figures on Easter Island. Seeing my interest in it the General asked me if I would like to own it. He said it would be mine if I agreed before he described its history. I thought it was time to humour him and agreed, thinking he was joking and was about to point out that there was a Voodoo curse on it.

Apparently, this statue had been carved from the last tree on Easter Island and was the last of its kind ever made because to everyone's knowledge at the time this type of tree was now extinct. My colleague said quietly "that could be worth a lot money". So I decided not to mention it again. Eventually we came to the end of our technical discussions and it became our salesman's business to explain where the financial banking had been arranged and so forth. I was no longer involved. I don't think it could have been in our honour, but the evening before we left Chile there was a cocktail party where senior staff and their wives would display all their finery, we were invited and the General picked us up in his own car and introduced us like royalty. As you will have gathered we were used to this sort of thing. The trouble was I hardly ever drink (alcohol) and everyone was speaking Spanish. I stood by whilst my host was talking to a group of high ranking generals in what seemed like a very serious tone, but since it was in Spanish, it was all lost on me although our salesman heard everything. At the end of this discussion, General Gonzales flung his arms apart in a wild gesture and said "whoosh". The other generals agreed with serious faces.

When I had a chance, I asked our salesman what it was all about. Apparently the military camps had been visited on several occasions at night by some odd sightings in the sky, these would appear as ring of lights motionless and silent for considerable periods of time and local personnel were getting very concerned and alarmed. On this particular occasion General Gonzales himself was brought over to see.

His response was to scramble jet fighters and a attack but as the aircraft approached, the lights split from the circle and noiselessly sped away much faster than aircraft ever could - "Whoosh".

The day we were about to leave Chile, we said our goodbyes to the General at his office and were walking for the last time down those marble stairs when the General's Aid came rushing to me with a crude cardboard box in which was the Mohai statue. He said "The General wants you to take this Mr. Milliner".

We never did land the contract. Some other company abroad offered better financial terms. When I returned home, I presented my wife with a Mohai in a rough cardboard box and it went down like a lead balloon. "Don't let that ugly thing near me" sort of reaction. It found its use as a door stop in the garage until one day when I was away on another jaunt my wife saw something on the telly which showed things in quite a different light, some person owned two small Mohai statues and offered them to Christies for auction. "Useless" was the response "but we will give it our best". At auction the statues sold for hundreds of thousands of pounds to the Museum of Ancient Art.

When I returned home, my Mohai was in pride of place freshly polished. This Mohai was bigger than the ones sold and might even be more valuable. Christies was contacted and they suggested I write the history and send them photographs with sizes, weights etc. After a short time they replied saying that museum Curator had been advised, but they were only interested in ancient art. My Mohai was relatively new and probably worthless. I still have my Mohai as a door stop.

## CHAPTER 21

### **DECCA, PLESSEY and RAM** (Michael Cowlard)

My first introduction to the Plessey Group was in 1955 (or was it 1956?) when I was working in Radar Development at Davis Road. Plessey was investigating materials that would reduce radar reflections and needed a device to measure the reflection characteristics of the materials.

Plessey purchased from Decca, a Marine radar (Type 12 or Type 45) for this purpose.

The radar was to be installed at the Plessey Laboratory at Towcester. The aerial was not required to rotate and was to remain fixed. A test range was created in the old chapel on the site. The distance between the radar aerial and the test material and the test material was about 30 yards. We were invited to the site to view the set- up but were not able to see any testing in process.

Presumably all went sufficiently well, because as we know, what became known as RAM (Radar Absorbent Material) was important in many aspects of the radar business. Not least at Cowes where the modern materials are extensively used in the indoor aerial testing room.

## CHAPTER 22

### **DEPORTED** (Michael Cowlard)

Sometime around 1988 the Company made bid to replace the radar at Meherabad Airport, Teheran with a Watchman Radar. Supporting the bid required visits. The first one went OK, but the second one not so good. Visas were required for entry into Iran. These were usually arranged locally, through the Civil Aviation Authority, by the agent and lodged with immigration for issue on arrival.

So we three intrepid emissaries arrived at Teheran Airport at 2 o'clock in the morning. This bit was quite normal. We joined the immigration queue and when face to face with the Immigration Officer said we had visas waiting for us. We were asked to sit down whilst the visas were found. After some time we were asked to go to an office (this did not happen on the first visit) where after some quizzing, we were told that there were no visas. We were also told that it was not possible to make contact with anyone at that hour of the morning. Thus we were denied entry and were put back onto the same aircraft that had brought us to be returned to the UK. i.e. deported.

On returning to the office, new arrangements were set in hand. Three days later we were on our way. Arriving at Teheran, 2 o'clock (again!) in the morning, we joined the immigration queue, presented our passports saying we had visas waiting. With a big smile the immigration officer said "You have been here before". It was the same officer. Anyway this time all was well, visas were obtained, so we entered Teheran.

We held our meetings and in due course a contract was signed. Regrettably it was never ratified.

Although we enquired we did not discover why the visas had not been available as promised. It could have been a simple oversight or, perhaps some one in the chain was upset with us. Whatever the reason we three had an unnecessary journey. It is worth saying that at all times we were treated with great courtesy.



## CHAPTER 23

### **RADAR IN COLOUR**

(Bob Newcombe)

During the heydays of the AR1 radar system, when customers were wooed at Somerton to purchase equipments, the demonstration radar on the site was shown to potential customers in conjunction with aircraft from a flying school on the mainland. The flying school provided an aircraft and pilot to show the radar in its air traffic control mode.

On one occasion the demonstration party had concluded a morning session with some success and had adjoined to Cowes, the Holmwood hotel in particular, for lunch. This venue was good for viewing naval craft entering and leaving Southampton Water.

After a good lunch and no doubt some suitable liquid refreshment, the marketing executive noticed that there was a tanker with a red and green funnel leaving Southampton and suggested that this would be a very good marker when the demonstration resumed.

Back at Somerton and all seated, radio contact was again made with the pilot who asked from where he should start his dummy landing approach. In order to identify the aircraft correctly, the pilot was asked to position himself above a tanker in the Sound and to be more specific the ground controller suggested that a spot above the tanker with the red and green funnel would good.

“What said the astounded pilot, you mean you can see it all in colour now “

*(This story is attributed to Ron Day as related to Bob Newcombe.)*

## CHAPTER 24

### **PROBLEMS WITH THE TYPE 80**

(Alan Styles)

The first cabinet was manufactured in the Model Shop at Fox & Nichols (Tolworth). It was to be sent by Decca Transport to Malden Way. I completed the paper work entering the destination as “The White City”. A few hours later I had a phone call from the driver who had arrived at the White City Dog Track, telling me that reception there had refused to accept it. (White City was the jocular name given to part of the factory at Malden Way).

On another occasion, I was told that the rotating joint at Bard Hill (the prototype Type 80 test site in Norfolk) was giving trouble and I was asked to go and investigate the cause of the failure. The unit was completely burnt out inside and it was impossible to tell what had caused the problem. I asked the airman on duty why he had not stopped the destruction before it failed completely so that some evidence of the cause could be observed and asked “Did he not see some signs of overheating”. His reply was “Yes, but my sergeant told me to wipe it off”

One cold and foggy November day I was asked to go to the Ventnor site to sort out a problem in company with two others. Arriving at about 4 pm we checked in at a cold and miserable hotel, went to the site on Boniface Down, introduced ourselves to the guards and were given access to the radar. Having determined the cause of the problem, we decided go to the hotel for dinner and come back to the site to work until the job was done. We informed the guards that we would be back later. On our return we drove through the gates, waved to the guards and drove to the radar. On getting out of the car we were confronted by three armed guards with dogs who chased us at the double and lined us up with our backs to the wall demanding to know who we were and what we thought we were doing. Unknown to us, during our absence the guards had been changed and the new guards had not been told of our intended return.

## CHAPTER 26

### COMMUNICATIONS KIT (Mike Chambers)

#### **45 foot Dish**

In the 1960s we built a 45 ft. dish to provide a cheap antenna for access to a commercial telephone network such as the Comsat system. It was the brain child of Clem. Richards. The mechanics were made simple and cheap *using* a limited movement “equatorial” axis mount as opposed to the usual expensive full elevation over elevation over azimuth rotation systems .Unfortunately we failed to break into that market.

The dish remained at Somerton for several years with it pointing south and low elevation overlooking the Northwood village. The dish was made from fibre-glass shiny white panels and on occasions it caught the sunlight and looked very bright in the direction of Northwood. On several occasions we had complaints from Northwood residents about the bright light and one lady complained bitterly that she had to use sunglasses to do her washing-up.

#### **Mini-Mars**

Cowes had good connections and products in the naval world and decided to use this marketing and technical skill to enter the Naval Sat-Com market. Under the leadership of Dr. Ken Milne we established a joint programme with the Admiralty Research Establishment (led by Dr. Glanvill Harris) at Portsdown Hill (now part of QinetiQ) to build a prototype equipment for testing at sea on HMS Wakeful. The object was to provide a single voice channel to enable the Captain of the warship to speak to Whitehall wherever the ship was located. Needless to say some Captains were dubious about the benefits of this.

For cheapness the experimental 6-foot dish was mounted on a 3-axis gun-mount manufactured by Bofors of Sweden which included the various servo systems needed to drive the dish to any pointing angle in a hemisphere (plus more to allow for ships motion). At first the system was unstable due to the low weight of the dish compared with the gun which the mount was designed to take. With true British engineering innovation we overcame the problem by hanging heavy weights on top of the mount.

## CHAPTER 26

### MEMORIES of GROUP CAPTAIN SIR EDWARD FENNESSEY

(Ron Burr)

In 1946 Mr. Stanley Tanner was recruiting engineers to form a team to develop a marine radar. I applied for a post in this team and after an interview I was offered a job at a salary of £550 p.a. (a fairly good salary those days). This team was to be financed by the DECCA NAVIGATOR COMPANY. The Managing Director was Group Captain Fennessey. All prospective members of this team had also to be interviewed by him.

After the interview he informed Stanley Tanner that he did not think I was a suitable choice for this team. However Mr. Tanner insisted that I should join the team and in due course I did become a member of the team. The rest is history. I never did find out why the Group Captain was against my joining. I suspect it may have been because I had no previous Armed Forces experience and certainly no radar involvement.

Some years latter when Fennessey and I got to know each other well, I asked him why he had initially rejected me. He never told me but remarked that “even Group Captains sometimes make a mistake”.

During the time that I was Chief Engineer of the Heavy Radar Division on the Isle of Wight, I had occasion to pick up Fennessey from the ferry terminal at Cowes and take him to the Somerton site. On arrival at the Main Gate we were asked to show our passes. I had no problem, but the Group Captain of course did not possess one. The Group Captain informed the Gate Keeper that he was the Managing Director of Decca Radar. The Gate Keeper said “That is as maybe, but without a proof of identify I can’t let you in“. I then rang up Jack Shepherd (the site manager) who came to the gate and vouched for him. I heard later on that Fennessey recommended that the Gate Keeper should be given a rise in salary as a reward for his vigilance.

As is recorded in THE DECCA LEGACY, the first experimental Decca Radar marine radar was mounted on the Company’s boat and was taken out into the North Sea for sea trials. It was a fine day with calm seas. The boat was moored to a buoy in the centre of the North Sea. We stripped off (except Tanner) and went for a swim. I think I am probably the only Decca employee who had ever seen Fennessey in the buff!

During the later stages of the development of the Type 80, the Group Captain and I were required to visit The Air Ministry in London with the purpose of explaining the progress that had been made. I possessed a ROTOR pass which allowed me access to any ROTOR site in the UK. The Group Captain did not have such a pass. On arriving at the Air Ministry I presented my ROTOR pass and gained entry, Fennessey however had to fill in the appropriate form to get past the gate. Once inside he said “You may have got in that way, but you won’t get out as easily” but I did!

Afterwards he told me he was minded to write to MOD and complain about the alarming lack of security at the Air Ministry. I do not know if he did so, but I was never in any trouble from this incident.

The SNERI site at Limours near Paris was being prepared for a demonstration of the Experimental HYDRA RADAR to a series of visitors from SHAPE. This radar in the full production version would use two 2.5 MW transmitters feeding a back-back aerial system. This demonstration version however

utilised one 2.5 MW transmitter and one 750 KW transmitter. The 2.5 MW transmitter had been designed using company funds and was entirely different from the 2.5 MW transmitter design used in the Type 80 Mk 3. The commercial version included a Pulse Transformer designed by Jack Balcombe – a Decca Radar employee. Early in the radar setting up period the pulse transformer failed. It was sent back to the UK, by air freight repaired and the sent back to Limours. Twice more it failed, so the decision was made to “borrow” a (delete then) transformer from a Type 80 transmitter and fit it into the HYDRA transmitter. This was done without obtaining permission from MOD or RRE. The Group Captain knew of this and promised to take full responsibility if I was brought to task over this. G.H.R. Smith (my opposite number at RRE.) who was present at one of the demonstration days did not believe that we had designed a new 2.5 MW transmitter so soon after the end of the MOD financed Type 80 programme. He demanded that I unlock he door to the HYDRA transmitter cabinet claiming that he believed the cabinet contained a Type 80 transmitter. This I refused to do on the grounds that opening the cabinet door would expose dangerous high voltage equipment. Some time later I told George Smith about the borrowed Type 80 pulse transformer. He said that he knew at the time there was something “fishy” going on.

***Footnotes.***

- 1. SNERI (Societe de Nouvelle Electroniques et Radio Industrie) later became part of T-CSF.*
- 2. The flight trials of the HYDRA system were conducted by the French Air Ministry 'Centre d'Essais'. The aircraft used were the Super Mystere B2 and the Canberra. Frequently Jaqueline Auriol, the daughter of the then French President, was flying as pilot in the Canberra.*

*MJC*

## CHAPTER 27

### **MORE ABOUT EARLY DECCA MARINE RADARS**

(John Beattie)

A recent issue of the DEHS (Defence Electronics History Society) publication TRANSMISSION LINES contained a LETTER TO THE EDITOR which with the consent of the author is reproduced below:-

#### THE DECCA LEGACY

I was very interested to read the Review of the “The Decca Legacy, A View From inside the Radar Company” in Vol. 16, No1, and the note by Peter Butcher in Vol.16, No.2. I worked on the marine side of Decca Radar (and Racal) from 1957 till 1993 and then consulted for the latter. I worked at first in the Trials Section, as the sailor in the Radar Development Laboratories at Davis Road, Chessington, with Mike Cowlard, one of the contributors. I met Ron. Burr, now the Editor of this fine book, when he was working in what we now called “heavy radar”.

This book is clearly an outstanding account of the “heavy radar and display side” but only tells half the story of the Decca Legacy. After the sale of the “heavy radar” to Plessey in 1965 a new company was registered as Decca Radar Ltd.(1965) and this note is about some of the work of the Marine Radar Division and some of the other main activities. It also corrects some errors in the book. The Marine Radar Division had sold over 100,000 radars by 1981 and was awarded a record six Queen’s Awards to Industry, the first company to appear in the Guinness Book of Records with six between 1969 and 1979. They won another three after Racal took over in 1980.

Amongst its long list of firsts was the first transistor marine radar, the Decca D2002, of which 8000 were sold and the small boat radar the Decca 101 of which 21,000 were sold. They produced the first colour ARPA display. For naval radar over 2000 Type 974s and 650 Type 978s were sold some with the “TRACK MASTER” True Motion system. They also supplied about 10 Type 979 Survey radars and the current S band 1009 with colour ARPA display.

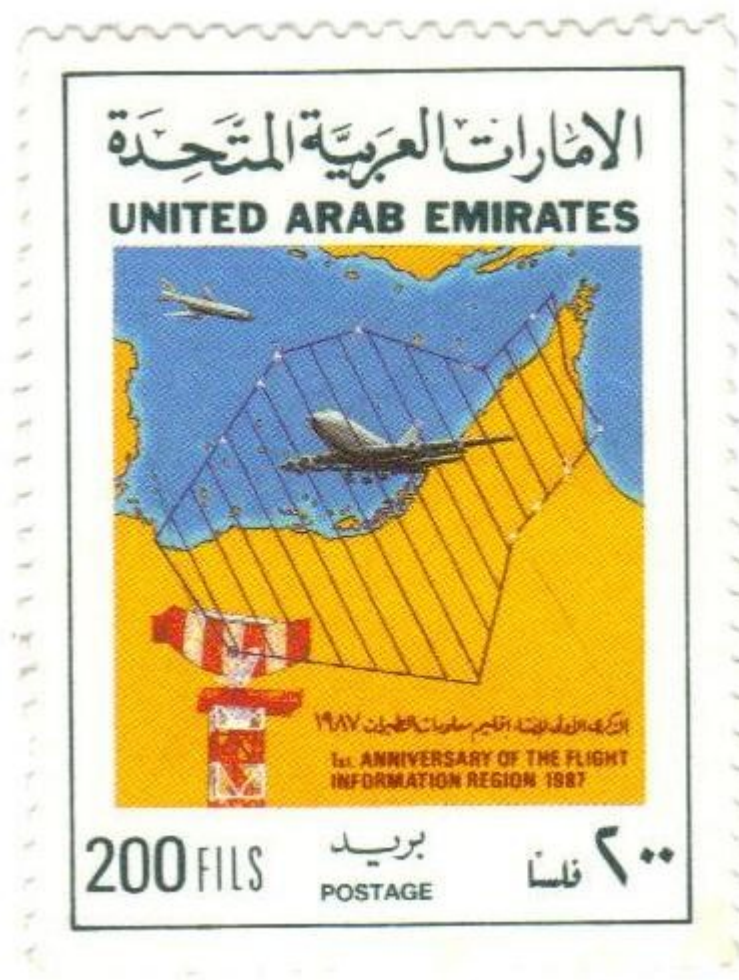
Other innovations were the 2459 a combined X and S Aerial array and correlation colour display system with the first strike “RED” feature. They also supplied the CAAIS display with a hybrid rotating and fixed coil system, the work of the late Peter Skinner, a brilliant engineer.

## CHAPTER 28

### AR5 POSTAGE (Michael Cowlard)

Really self explanatory.

A UAE (Abu Dhabi) stamp celebrating the first anniversary of the establishment of the Flight Information Region which includes a picture of the AR5. The FIR (Flight Information Region) largely came about because of the AR5 and its long range coverage. Previously control of the region was exercised from Bahrain.



*Stamp actual size is 30mm x 40mm.*

## CHAPTER 29

### THE 'FRIENDSHIP' LEGACY (Michael Cowlard)

1. Introduction.
2. Addlestone/Chessington Reunions.
3. Cowes Reunions
4. Cowes Radar Ex-Employees Association.
5. Chessington Engineering & Project Management Group.
6. Chessington/Addlestone Sales & Commercial.
7. Mount Pleasant Airport Group.
8. MADAP Group.
9. Plessey Ex Directors

#### **1. Introduction**

The 'Decca Legacy' concentrated on Company origins and the very wide range of radar products designed and manufactured during the 60 years or so. There is however another most important legacy. That is the friendships that were made and endure. There are several groups of colleagues who meet to enjoy each others company. Most of the groups are quite informal in their arrangements to meet. There is one group which does have a formal structure. A short note on each of the groups is given below.

#### **2. Addlestone/Chessington Reunions**

These reunions are probably the oldest and the largest. Started about 15 years ago, the first meeting was at the Sports & Social Club on the Addlestone site, when about 300 colleagues attended. Since then they have been held on a 3 year basis with the most recent ones being held at the Weybridge Social Club. At the last meeting there were about 200 colleagues present including many who had moved on to other companies. These reunions have been organised by Tony Shore. Tony proposes that the next gathering will be on 20<sup>th</sup> April 2012 and then on a 2 year cycle.

#### **3. Cowes Reunions**

The first major reunion of Cowes personnel took place in May 2008 at the Isle of Wight Community Club. The gathering was jointly supported by the Cowes Radar Ex-Employees Association and BAE Insyte (the current owners of the Cowes facility).







REUNION 2006

Some 70 ex colleagues attended, with some coming from considerable distances. All enjoyed the afternoon catching up with old friends. It was at this gathering that the idea that a Company history ought to be written was floated. After a lot of work the 'Decca Legacy' was produced with an initial print run of 300 copies.

A second reunion took place in May 2011 again with a large attendance.



REUNION 2011



REUNION 2012

The occasion was the Reunion of Radar Company Employees held at Cowes on 22nd March 2012, 90 members attended. The 'principles' brought forward to support Ron Burr (front row, second right) in the photograph are Les Gregory (far left) who is currently BAE's Director responsible for the Radar Company, Dave Maners an authority on Radar Antenna Designs and Peter Bradsell (far right) an authority on Advanced Radar Systems and specialist designer of the worlds first MTI System that was brought into production in 1963.

#### **4. Cowes Radar Ex-Employees Association**

This group has regular monthly meetings at the Isle of Wight community Club (previously the joint Cowes /Company Sports and Social Club) frequently with guest speakers. They also have the occasional lunch at the IoW College restaurant and make visits to interesting places. Details about membership and meetings can be found on [www.northwoodvillage.org.uk](http://www.northwoodvillage.org.uk) and go to 'Village Diary'.

#### **5. Chessington Engineering and Project Management Group**

This is a well established but very informal group. The meeting takes place on the first Thursday of each month at the 'Cap in Hand' pub at Hook on the A3. Typically 10 or 12 people attend but 20 present has been known. The main theme is friendly conversation whilst enjoying a pie and a pint.





'CAP IN HAND' 7 JULY 2011

## **6. Chessington/Addlestone Sales & Commercial**

This group is nomadic with no permanent base. The group meets about every six weeks for lunch with one of the members acting as coordinator for the day. The volunteer chooses a restaurant, informs everybody of the date and location and on the day takes responsibility for making sure the bill is paid. Attendance is quite variable, anywhere from 8 to 18. Twice a year, winter and summer, the members' ladies join the group. Locations for lunch range mainly through Surrey and Hampshire but have sometimes strayed into Sussex.



'NOAH'S ARK', LURGASHALL. 28 SEPTEMBER 2011

## **7. Mount Pleasant (Falklands) Airport Group.**

This is probably the smallest of the groups. It meets informally at lunchtime on the ship pub the PS Tattershall Castle on the River Thames. Mainly comprising colleagues from the 'Airports' team and MoD responsible for the development and maintenance of the new airport at Mount Pleasant on the Falklands Islands. It meets a couple of times a year, usually in July and December.

## **8. MADAP Group.**

Also quite a small group with members who are mainly from Addlestone and Chessington Engineering who were responsible for the software design for MADAP (the Air Traffic Control Centre at Maastricht) which was also used in the KARLDAP (Karlsruhe) ATCC project. The group meets occasionally.

## **9. Plessey Ex Directors.**

Last, but not least, is the occasional gathering of ex Plessey directors who meet for lunch

## CHAPTER 30

### **THE EPILOGUE**

(Ron Burr)

Those who strive creatively in the Sciences and the Arts, derive much satisfaction from the successful conclusion of their endeavours. I have been very fortunate to have worked with many highly talented engineers during my career. There is bond between us which has been forged by overcoming obstacles. This bond has been demonstrated by the friendship shown to each other during the reunions which have been occurred in recent years. The previous section written by Michael Cowlard amply demonstrates this. On a personal level I can state that I cannot remember any time when harsh words were used between myself and any of my staff. During the time when I had management responsibilities the loyalty to me and our aims was outstanding.