

INPUT

1987-4





the magazine of the
EUROCONTROL GUILD of AIR TRAFFIC SERVICES

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Subscription Rate:

Hfl 6,-- per issue plus postage.



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INTERNATIONAL AIRSPACE AND AIRPORTS - A CRISIS OF CAPACITY

Every two years, the U.K. Guild of Air Traffic Controllers organises its own International Convention and Exhibition - CONVEX, being the only ATC event where all sections of aviation can meet together to examine contemporary problems.

The theme of this year's CONVEX, held at Windsor and attended by nearly 300 persons, although chosen more than two years ago, could not have been more topical, bearing in mind the considerable increase in Air Traffic and the consequent demand placed on ATC.

Report by Geoff Gillett

Opening.

The three day event was opened on Wednesday, 14th October, 1987, by Mr. Christopher Tugendhat, Chairman of the U.K. Civil Aviation Authority. The first paper was presented by the U.K. Guild and posed the question "Can the people fly"? With more than 2000 additional airlines expected to be added to the existing fleets in the next ten years, the question is whether ATC can meet the challenge of an investment by the airlines of around 300 billion dollars.

Flow Management Constraints

The first of many presentations by members of the Airline Industry was given by Mr. Bob Willis of DAN-AIR, in which he catalogued the current extensive list of points inbound and

outbound to and from the U.K., which are currently subject to Air Traffic Flow Management. Mr. Willis, well known to regular conference participants for his accurate, well-informed, forthright and entertaining style, also took the opportunity to draw attention to the wide-spread controller shortage in Europe. At the end of the first day, DAN-AIR generously hosted an excellent Cheese and Wine Party, where the guests were received by the Chairman, Sir Ian Pedder.

Day 2

The Thursday sessions dealt with "The Critical Concrete" and Technology factors at home and abroad. The Paris region is served by 14 airports and in 1986 the two major ones, Charles de Gaulle and Orly, handled 33.6 million passengers in 310,000 commercial flights. Mr. Guerin, Deputy General Manager, Air Traffic Operations Aeroports de Paris, presented the plans for increasing further the capacity of these two airports, which will include reductions in separation. A curfew on jet movements exists at Orly between 2330 and 0600, so the possibility of using Charles de Gaulle during periods of saturation of Orly remains a method of increasing capacity. It is interesting to compare this situation with that of London where both Heathrow and Gatwick are nearing their runway capacities.

UK PLANS FOR THE FUTURE

The controller of U.K. National Air Traffic Services (NATS) and Mr. Keith Mack, addressed the conference on planned innovations, including the



Central Control Function for the London area, with a planned implementation for 1990-1995. The replacement of the LATCC 9020D computer complex, by re-hosting the software by 1991 and an upgrading of the power supply systems will also be undertaken. It was good to hear that NATS planning forms part of the Eurocontrol Common Medium Term Plan.

THE COMMERCIAL ANGLE

On Friday morning, presentations were given by representatives of De Havilland Canada, on airport accessibility using STOL whilst the pilot's viewpoint on capacity problems was presented by Capt. A.G. Liddle of BCAL who also mentioned the ongoing problems of R/T frequency blocking and simultaneous transmissions. It was an opportune moment for your EGATS representatives to introduce a total of 15 CONVEX visitors, including Mr. Jack Ryan, FAA Director of Air Traffic Services, to the CONTRAN solution (A technical solution to the problems of CONflicting and simultaneous TRANsmissions on ATC R/T channels) and its designer Mr. Nigel Corrigan, who demonstrated the capabilities of the device, in the "live R/T" environment of the Holiday Inn.

OPEN FORUM

It is the custom at CONVEX that delegates from the floor have the opportunity to put questions to the

speakers at the end of each session. EGATS participants this year were Jan Gordts, Philippe Domogala, Roger Bartlett and Geoff Gillett, who each took the opportunity to speak on behalf of our professional interests and to plead for a more European approach to our common problems.

It was felt that ATC had come in for a lot of criticism during the presentations and it was pointed out, that in spite of the enormous increase in traffic, no reduction in safety or expedition had occurred. Some examples of "ATC delays" were quoted which had their causes in industrial action or computer failures, matters not directly related to a lack of ATC capacity. Mr. Bob Willis, however, restored the balance by expressing appreciation to the controllers for a job well done.

WEATHER EFFECT

There has been considerable evidence lately that the gods do not take kindly to ATC meetings of an international nature. In Nairobi this year at the IFATCA Conference, a tropical thunderstorm turned the streets into raging rivers and severely interrupted the closing session as rain water dripped on the head of the President. This time it was hurricane - force winds - the most violent ever recorded in Britain - which felled more than 20 % of trees in some areas and brought chaos to transport, communications and power supplies throughout the South East.

CLOSING EVENT

However, not even adverse weather can prevent controllers from enjoying themselves. A Gala Dinner Dance, where numerous prizes were distributed, brought the three day event to a close. The guest speaker was the holder of the world land speed record, Mr. Richard Noble, who astonished his audience with a description of his trip in the "lower airspace", twenty centimeters above ground level at more than 1000 kms per hour!

And so it was over. Another successful gathering of aviation minds had taken place. Let us hope that some of the wise words can be transformed into positive practical actions, to increase ATC capacity to meet the seemingly insatiable demands of the travelling world.

AIR 2000

— by Patrice Béhier —

11th April, 1987, saw the launch of Britain's new airline with two new Boeing 757-200 aircraft incorporating the latest technology.

The aircraft are powered by Rolls Royce fuel efficient RB211 535E4 engines with the quietest operating characteristics of all the big jets. Equipped with 228 specially designed British seats to ensure maximum passenger comfort, AIR 2000's aircraft ensure the travelling public get a standard of flight that is unbeatable.

AIR 2000 is a subsidiary of the Owners Abroad Group Plc, Britain's third largest aircraft seat contractor and the sixth largest tour operator in the United Kingdom. Manchester International Airport is AIR 2000's operational base - a decision taken after extensive commercial studies confirmed Manchester as the airport with the greatest growth potential in the United Kingdom over the next decade.

The AIR 2000 concept of using the most advanced techniques to provide an unequalled service has attracted a team of aviation specialists with the highest qualifications in their field - people whose track records speak for themselves. Now you know we are here

...

AIR 2000 RESPONSE

The AIR 2000 concept has engendered an electric response from the aviation industry's experienced and highly qualified staff - the people needed to create AIR 2000 giving us the opportunity to select the very best of British talent in every field.

Experienced Air Crew

AIR 2000 is Britain's new airline but its experienced pilots are certainly not 'new' to the job. Selected from 854 qualified applicants, they

are a match for any in the world. Apart from the Boeing 757, the types flown by the pilots joining AIR 2000 include the Boeing 747, 767, 737, 727, Lockheed Tristar, DC10, DC9, DC8, Airbus A300, A310 and BAC 1-11. Our aircrew have flown in excess of 200,000 flying hours operating this extensive range of aircraft world-wide, including the holiday journeys that AIR 2000 is flying. The Captains, with an average age of 42, have logged average flying hours in excess of 10,000 hours, while the First Officers, with an average age of 35 years, have in excess of 6,000 hours flying each. All the pilots, including those who have already flown the Boeing 757, attended the conversion course at the Boeing Training Centre in Seattle, USA, during the early part of 1987. This course comprises intensive technical training in ground school, full flight simulator, and aircraft flying and ensures that all AIR 2000's pilots add the latest techniques to their already impressive world-wide flying experience.

CABIN CREW TRAINING ACADEMY AT MANCHESTER AIRPORT

Advertisements for AIR 2000 Cabin Crew produced an avalanche of 6,400 applications. The young people of Manchester have responded with unprecedented enthusiasm. In our first year of operation one applicant in 65 got the opportunity to provide the cabin service for which AIR 2000 will become renowned. To fly AIR 2000 they have to be the best.

AIR 2000 cabin crew training staff opened the AIR 2000 cabin crew training academy at Manchester International Airport on the 26 February 1987.

AIR 2000

In Flight Service

Experience Tomorrow Today



Breakfast Menu

*Grande Waff
 Beef Steak
 Chicken
 Grand Hashbrown
 Apple Pie
 Hot Fudge
 Assorted
 Juice*



Lunch Menu

*Grande Waff
 Beef Steak
 Chicken
 Grand Hashbrown
 Apple Pie
 Hot Fudge
 Assorted
 Juice*



Peter Madden
 Inflight Services Manager
 creates the Air 2000 special
 touch.



Dinner Menu

*Grand Waff
 Beef Steak
 Chicken
 Grand Hashbrown
 Apple Pie
 Hot Fudge
 Assorted
 Juice*

AIR 2000's INFLIGHT SERVICE BRINGS A NEW STANDARD TO HOLIDAY FLIGHTS

OUR PROFESSIONAL TEAM HAVE SPENT MANY MONTHS DEVISING THE BEST POSSIBLE SERVICE FOR ALL PASSENGERS

The food provided on board is an important element of the Air 2000 service. Illustrated here are three examples of the menus which will be served on Air 2000 flights.

- **HOT MEALS**
 On every flight we will serve a hot meal offering the highest standard of inflight cuisine from an extensive range of menus.
- **HOT ROLLS**
 Hot rolls of croissants with every meal — well why not?
- **PETT FOURS**
 To complete the Lunch and Dinner menus.
- **CHILLED WINE**
 Offered with our drinks service, a tasty change from just ordinary peanuts.
- **PEANUTS AND SESAME STICKS**
 A complimentary glass of Buckle Fizz before breakfast for a sparkling start to your day.
- **BUCKS FIZZ**
 A refreshing hot towel after every meal complimented by Nina Ricci Pleasure fragrance exclusively for Air 2000.
- **HOT TOWELS**

AIR 2000 PROGRESS REPORT

Creating an airline is a complex feat of organisation involving the approval of numerous authorities and institutions at each and every stage. Here are some of the major milestones which note our progress:

AIR 2000 IS ON SCHEDULE


The AIR 2000 concept	Agreed
Sound financial structure	Secured
Strong customer base	Created
Type of aircraft	Selected
Aircraft delivery dates	Confirmed
Satisfactory aircraft finance	Obtained
Management team	Established
Flight deck crews	Engaged
Administration office	Opened
Sales target	Achieved

Aircraft flight schedules	Approved
CAA economic approval	Obtained
Major suppliers identified	Contracted
Cabin Crew recruitment starts	05 January 1987
Operational headquarters open	19 January 1987
Flight Deck training commences	04 February 1987
Cabin Crew Training Academy opens	26 February 1987
Cabin Crew Training commences	05 March 1987
First Aircraft accepted	03 April 1987
Flying Training commences	04 April 1987
First Aircraft delivered Manchester	06 April 1987
Proving Flights operates	09 April 1987
First Commercial flight	11 April 1987

AIR 2000

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Kapdenkerweg 9C	Tegelen	Telex: 0277-32433

— MAASTRICHT UAC GETS — — THE FEMININE TOUCH —



by Arthur Krah

For more than a decade, the Brussels Sectors of the Maastricht UAC have worked without lady controllers or trainees. This cold summer was a hot one traffic wise and brought about a change. Two members of the gentle sex commenced their training. While the meteorological summer becomes shorter and shorter, the ATC summer nowadays lasts from February till November. This was exactly the time that the ladies learned a lot and we male controllers were trained to accept female decisions together with ours.

To be honest, I was one of those persons, who tended to be sceptical about women in front of a radar screen. In this tough profession, more male characteristics are needed, like firm logical decisions under time

role or the helpful, never tiring, self sacrificing colleague. Although time was short for such games, during hand over or calm traffic periods, the amazing change of working climate could also be perfumed by increased use of exotic after-shave. Luckily we men do not know jealousy and the ladies were not too much impressed by all the gallantry but looked firm towards their goal of passing their check-outs.

This was a great compliment to the girls, who integrated well and quickly in the male-dominated teams. It looks as though another male domain has gone. I hope it won't be long before the pilots will realize the change in "Maastricht Control". With our voices, because of age, becoming more and more low pitched, the sudden sound of a young female voice will brighten the radio air waves of Maastricht. With this positive, pleasant prospect, let us look forward to facing the next hot Summer!



pressure rather than female emotional ones!

The new generation of ladies, however, convinced me that I was wrong. They combine the right attitudes at the right time in a wonderful way. Those female charms, together with strict working procedures, created an astonishing change of atmosphere in the operations room. A few colleagues, with whom you experience difficulty in working because of their temperament really turned out to be charming boys. A few others played the friendly macho

**don't
forget**

(WRITE IT DOWN!)

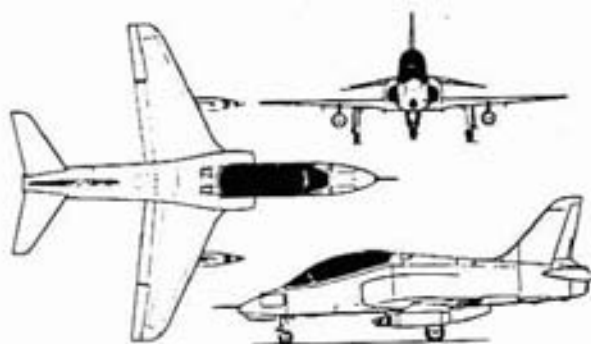
**NEXT COPY
DEADLINE:**

27 FEB 1988



„ERIKA" ACTIVE

by Captain G. Klein



Now, now what's that? Are the girls finally working or what do we understand when the above mentioned phrase is being used? Nothing of that kind, Erika, Sandy, Rosy, Gini, Kim, Lana and Gretchen as well as others along a similar line are Air-to-Air Refuelling areas in Northern Europe. A certain amount of these Gasoline Stations in the sky are established in the North German Airspace and are handled by LIPPE RADAR.

Why do we need Air-to-Air refuelling?

- to facilitate transatlantic flights of combat aircraft, the training for this task is done overland.
- to increase loitering time of fighter aircraft.
- to perform pre- and post strike refuelling to extend range of fighter-bomber and reconnaissance missions.

Due to the high speed and the close proximity of jet aircraft during the refuelling operation, there are effective rendez-vous and refuelling procedures established. The tactical situation may require the refuelling to be done at night, during marginal weather or within limited airspace.

Tanker and receiving aircraft will be in radio contact with the controlling unit until the receiver has visual contact and will be transferred to the refuelling frequency in order to complete the task visually. Altimeter is standard (29.92) and SIF identification is critical. In a refuelling area, which is usually about 60 NM long and 30 NM wide and with a vertical displacement of 4000

feet the airspace is quite congested. With new receivers approaching 2000' below the tanker, already transferred receivers holding on the wing of the tanker and aircraft breaking away, there can be ten or more aircraft in the refuelling track and correlation cannot be assured. Usually only the tanker will squawk his assigned individual code and all the receivers will have their SSR equipment on stand-by. Above the assigned refuelling FL the needed Emergency break away FL is assured.

The refuelling will be normally conducted by one of the following rendez-vous tactics:

- tanker turn on. The tanker will be guided slightly in front and above the receiving aircraft;
- receiver turn-on. The receiver will be turned slightly behind and below the tanker;
- orbiting rendez-vous. The tanker is in constant orbit while the receivers are turned into the trail of the tanker.

The job of a tanker controller is contrary to the normal task of Air Traffic Control. Usually we keep aircraft apart and now we have to guide them together. This training is done with the simulator here in the centre. The on-job training will be done under supervision and results in a special radar rating. Depending on the experience of the aircrew and on the performance of the receiving aircraft the intercept can be a piece of cake.

The tanker aircraft are either USAF, US Air National Guard or Royal Air Force planes. USAF and RAF flight crews are more familiar with tanker operations and therefore easier to handle. Air National Guard crews are US reserve troops which in their normal job work as civil airline pilots or in other air traffic related jobs. The different kind of operations, unusual task and unknown areas

create quite a workload for the aircrew. Some of the problems are the small available airspace, the bank and turn radius to stay in the pattern knowing there is someone else approaching very fast from behind adverse weather conditions and the fuel transfer within the aircraft during the refuelling operation. On the receiving side of the operation are either RAF flights served by RAF tanker or USAFE and other NATO Air Forces refuelled out of US tanker aircraft.

The RAF tanker aircraft are Victor tankers, RAF ex-transport VC10's ex-British Airways VC10's and ex BA Tristars. They are equipped with a mini Tacan on board and are therefore easy to find for the receivers. The actual refuelling is done by a MK17 remotely controlled hose- and drogue system and MK32 refuelling pods beneath each wing. There are floodlights fitted in the wings and fuselage for night-refuelling operations. This kind of refuelling equipment requires straight flight legs for the actual refuelling, turns will disrupt the connection between the tanker and the receiver. On the receiving side we have the MRCA-Tornado, the HARRIER jump-jet and the FGR.2 (UK F4).

The US tanker aircraft working in the upper airspace are the military version of the Boeing 707 and the military version of the McDonnell Douglas DC10. American tanker aircraft are not fitted with an airborne navigation aid, therefore the intercept is more dependable on the assistance of the controller and on the receivers' airborne equipment. All tanker aircraft are fitted with visual approach lights underneath the aircraft and the newly modified types have as well floodlights for night refuelling. The old workhorse of the US Forces is the KC35 (B707), a total of 732 aircraft were built between 1956 and 1966. There are tankers in operation which are older than the oldest flight crew member on board.

Nevertheless many modifications were done and all different versions of the aircraft have been upgraded. A certain amount were converted to refuel the SR71 Blackbird, others are already equipped with more economical

modern engines, which are less noisy and more powerful. A considerable number of the KC35's were exported to friendly forces.

The most modern plane used as tanker/transport is the KC10A Extender (DC10). In the Congressional hearings that proceeded authorization it was pointed out that it would need 40 KC35 to refuel a complete F-4 fighter squadron deployed from the USA to Europe plus almost as many carrying cargo, whereas the whole mission could be accomplished with the support of just 17 KC10's.

The actual refuelling can be done by either via a telescopic boom or a refuelling hosesystem and droguesystem. On the receiving side we have all kinds of modern combat aircraft of the NATO Air Forces.

Besides the described tanker aircraft there are many more different means and methods for air-to-air refuelling. Most of them will be performed in lower altitudes e.g. tankers like C130, Helicopters as tanker and receiver and the so-called Buddy-Buddy refuelling done by the MRCA's and the Tomcat (F14).

Active tanker areas will sometimes impair the free movement of civil air traffic (direct routings withdrawn or no free status in Temporary Reserved Airspace. These so-called restrictions are only imposed for a short time and aim to safeguard all the air traffic. It may not be clear to some controllers why an active refuelling area should not be crossed above. The gain in time is in most cases not more than two minutes. The vital question is: "What are we doing if a civil airliner crossing the refuelling track above is unable to hold the assigned FL out of reasons beyond human control?" Is it worth the risk?

I hope that this article will have given the answer to the last question.



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DEFINITIONS

INTERNATIONAL

- SMGCS - Surface Movement Guidance and Control Systems Study Group.
- EARC - Elimination of Ambiguity in RTF Callsigns.
- VFOP - Visual Flight Operations Panel.
- HELIOPS - Helicopter Operations Panel.
- SICASP - SSR Improvements and Collision Avoidance Systems Panel.
- SOIR - Simultaneous Operations on Parallel Instrument Runways Study Group.
- SMR - Surface Movement Radar Study Group.
- FANS - Future Air Navigation Systems.
- MICA - Manual on Interception of Civil Aircraft.
- IFALPA - ATS Committee.



GENIUS INVENTS SAFETY DEVICE

*** STILL NOT RECOGNIZED ***

• by Philippe Domogala •

Our day to day experience as controllers tells us how potentially dangerous a "stuck mike" can be. "Crossed transmissions" are also a danger and we all have still Tenerife in our minds.

When EGATS organized the R/T Forum in Heerlen in 1985, Nigel CORRIGAN (the inventor) already demonstrated his "CONTRAN UNIT", a small black box the size of 2 packets of cigarettes, and what it could do.

Everybody present was enthusiastic... KLM was flying the device in one of their DC9s for evaluation.. What happened since?

Well, the KLM Trials showed a few "snags" that needed rectification before the device could be fully accepted by pilots.

Basically, if you remember, the CONTRAN UNIT monitors the receiver of an aircraft, and when it is in operation, prevents the transmitter from transmitting. A small lamp advises the operator of what is happening and most important of all, you can hear the message, that otherwise would have been blocked by the simultaneous transmission.

Pressing the key twice deactivates the box (for emergency cases).

Continuous on-board transmissions which exceed a preset time will turn on a visual indicator to advise the crew of a problem. Time delays selected at installation are available to allow a set period of 15, 30, 45 or 60 seconds prior to a warning.

The basic design, when evaluated showed 2 main "snags":

the first one is called "queue jumping": when a pilot wanted to be sure to be the next in line to speak, he could press his mike key while somebody else is talking, knowing that as soon as the latter had finished, he would be on the air..

To eliminate this the CONTRAN UNIT is now fitted with a device that will "lock" the receiver if you press the

key for more than 1 second during a period of reception. In this case the operator must release the key and make a further press-to-talk action when the channel is free! In the above case you will have to press again to transmit.



Nigel CORRIGAN with his invention :
"THE CONTRAN UNIT".

The other "snag" was the possibility for 2 CONTRAN UNIT stations to start transmitting exactly at the same time: to eliminate this a "random clock" has been built in, allowing only one transmission initiation every 200 milliseconds. Another modification to CONTRAN is the weight-on-wheels (WOW) option, when an aircraft is parked, should a continuous transmission of more than 60 seconds occur, the VHF transmitter will be switched off and the indicator will

flash to alert the oncoming crew to the problem.

Now TELEDYNE of the USA has taken over the project, its manufacture and marketing. But despite this, progress is slow. Safety devices that cost money and cannot directly earn revenue are difficult to sell unless they are made mandatory by Authorities.

This invention is one of the best in making VHF R/T safer than we have had in decades. Opportunities like this should not be missed.

As the number of aircraft movements increase tremendously and will continue to do so for the foreseeable future, frequencies are going to be busier and busier by the year...

Since controllers are no more psychic than pilots, plans are in hand for the installation of CONTRAN in ATC consoles. Bearing in mind that the VHF system will tolerate only one transmission at a time, then the advantages of CONTRAN are obvious whether the user is a pilot or a controller.

Incidents caused by "stuck mikes" and "crossed transmissions" are numerous. To illustrate the need of such a device, find below another incident caused by a "stuck mike":

"NEAR MISS" BY PLANES CARRYING 175 LAID TO RADIO MALFUNCTION

ATLANTA (UPI) - Two airliners carrying a total of 175 people had a close encounter Wednesday 35,000 feet over Tennessee after a blocked radio frequency kept an air traffic controller from warning the pilots, federal aviation officials said.

Neither United Airlines Flight 743 from Fort Myers, FLA., to Chicago nor Braniff Flight 515 from New York City to Dallas had to take evasive action, but the Boeing 727s were within sight of each other.

"One of the crew members spotted another aircraft at the same altitude, and it passed behind the United jet," United spokesman Chuck Novak said, calling the incident a "near miss."

Roger Myers, a spokesman for the Federal Aviation Administration in Atlanta, said an inoperative microphone caused the air traffic controller in Atlanta to lose communication with the two airliners. Myers termed the incident a "near-midair collision."

"We've learned the controller involved in working these two aircraft was trying to take corrective action when he realized he couldn't communicate because of a stuck microphone on the frequency," Myers said. "He could not communicate with the aircraft to ...ensure separation."

Myers said the FAA was investigating the incident to determine if the malfunctioning microphone was on one of the airliners or on another plane using the same radio frequency.

The Los Angeles Times,
13th November, 1986

We hope that CONTRAN UNITs will find their way into aircraft cockpits soon and before incidents like the above one turn into dramas...

Philippe Domogala —

Gardencentre -
Landscape gardening -
laying - out and maintenance

arthur speetjens

FROM OWN NURSERY:

- Conifers, all types
- Shrubs and climbing plants

EXTENSIVE ASSORTMENT:

- All types of heather
- Christmas trees (also with clod)
- Roses

LAYING-OUT OF TERRACES:

- Peat, manure and fertilizer, etc
- Greenhouses
- Renovation of existing gardens
- Plowing and harrowing



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OUT OF AFRICA

by Roger Bartlett

The Airport Guardian, a solitary Wildebeest, stood motionless on a rocky outcrop. In the far distance a backdrop of falling rain, yet on the tarmac warmed by the afternoon sun, swirled mini dust storms, as we waited, the beginning of our flight(s) out of Africa. Our ears tried to pierce the silence for the distant self announcement, of the arrival of our flight.

The day had begun at 0430, by a Masai Guard, calling at our modern style Mud Hut. The morning was dark and cool as we emerged, to be escorted to the main Lodge Complex. Coffee did not help our sleepy state and later we wish we had not, as we charged through the bush, in a Nissan Mini-Bus, towards the approaching dawn. The hair raising dash to the departure area had started. Impala, roving packs of wild dogs and rabbits darted and jumped along the track.

Now and then veering into the meter high grass only to rejoin the track for the same "helterskelter" ride later on.

Meeting our pilot was an unexpected experience. In the middle of Africa, you would at least expect your Hot Air Balloon Pilot to resemble something from a Haggard novel. Not for us, but a cool handsome Englishman, pilot white shirt, trimmed with four gold rings!

This daunting experience which I had been persuaded to undertake, over a bottle of wine and some unknown African liquid was now laid before me. Somewhat inoffensive, in a deflated condition was the balloon connected by a few pieces of string to the "bread basket".

Madness I thought, as the sky became lighter and the stillness was blasted by a propane burner.

This heat reflected on my sunburnt head and hands as we drifted upwards. How different from my piloting days in

a Cessna 150 or the rough ride of a glider from a grass strip in my youth. This was magic and effortlessly relaxing.

The challenge had been met, trepidation changed to complete pleasure. The sun rose and we floated over herds of Cape Buffalo and to everyone's surprise four Rhinoceroses. There are only 18 Rhino' in the Masai Marra. Even in the adjoining Serengeti in Tanzania, the number is less than 200.



The "bread basket" twisted and turned as the pilot vented air from the balloon, so we all could share a ring side seat. The ground below reflected the shadow of the balloon, the basket and its seven occupants, as we drifted and descended. This

returned my mind to the fear of the landing. Pre-landing checks I reflected, no Lions, trees, rivers, in fact no one except us!! Eyes closed, take Astronaut positions, basket tumbling helplessly to earth.....Well that's it, the pilot echoed. I peered over the side to see terra firma, we had arrived vertical, no Lions and safe.

Moments later a shattering explosion, this time of Champagne and a Colonial Style breakfast in the middle of the bush-bush.

That was the end of the first flight of the day, our second flight never turned up, so we hitched a lift on a DC3 of Sunbird Airlines, that happened by an hour later, to Nairobi Wilson Airport.

For the interested a short history of the DC3 appears after this article.

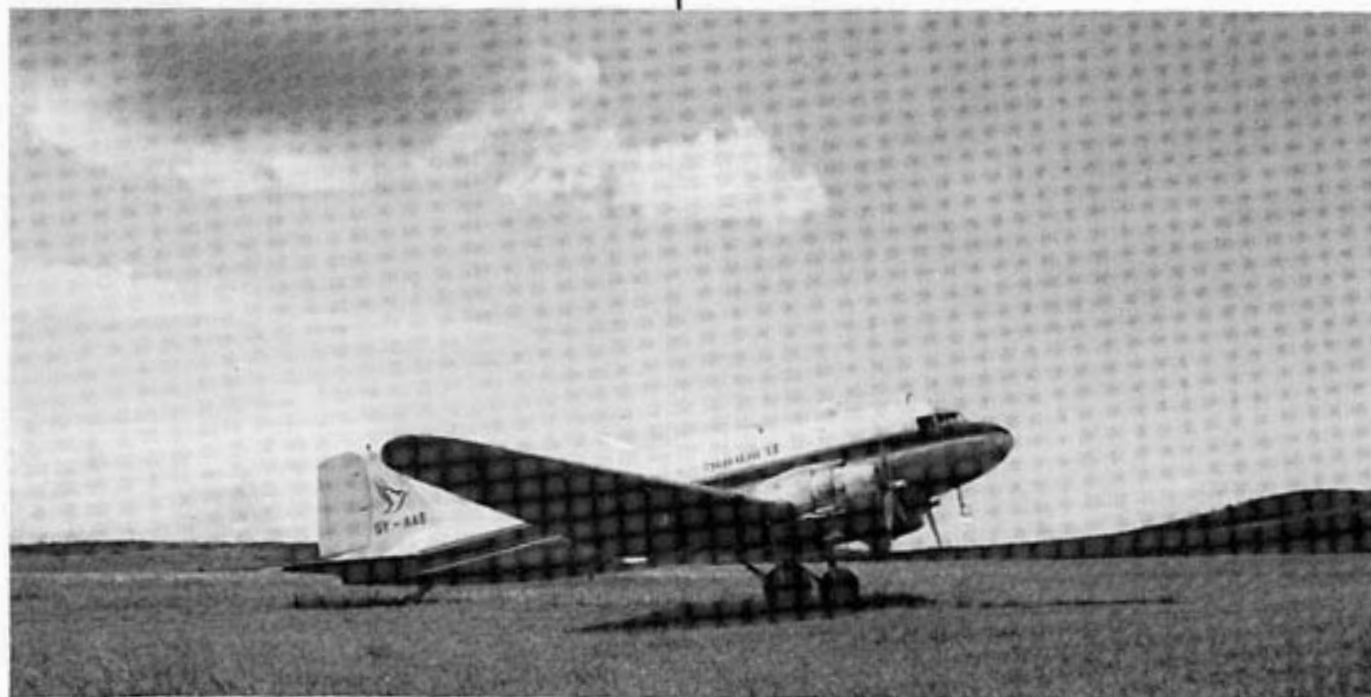
Wilson Airport is a paradise for the Airspotter, over 200 resident light aircraft and many old wrecks litter the edges of the field.

THE SUNBIRD

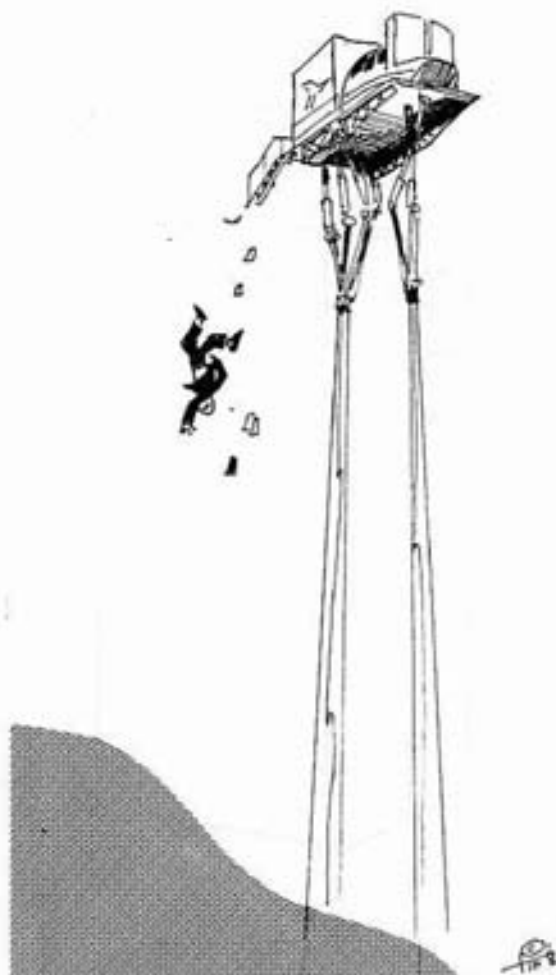
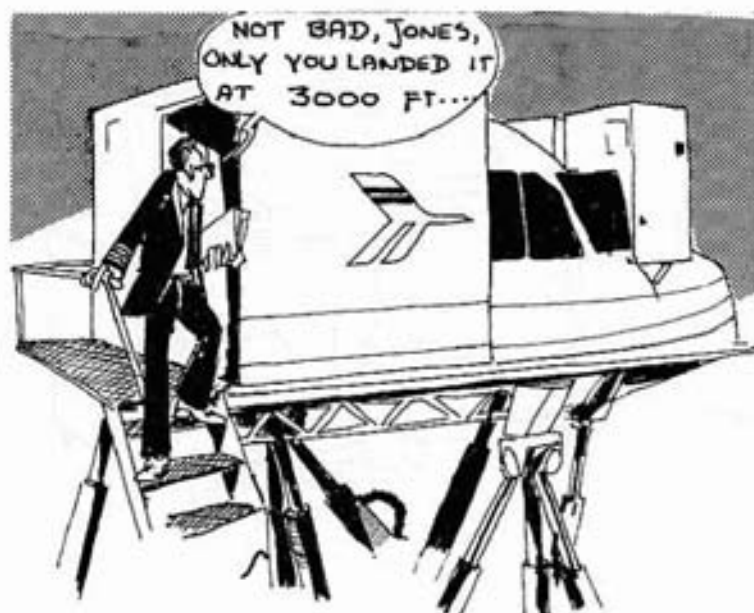
5Y-AAE is a Dakota MkIV, constructed for the RAF in 1944, and at present flying for Sunbird Aviation Ltd, operating from Nairobi and Mombassa.

1944 - built in Oklahoma
serial no
16096/32844.

11th March	1945	- delivered to the RAF in Montreal.
14th March	1945	- accepted by RAF as KN 418.
23rd March	1945	- joined No 187 Squadron at Merryfield and involved in trooping flights to India.
23rd May	1946	- joined No 525 Squadron carrying mail and newspapers to the continent.
10th November	1946	- assigned to 1318 Training Conversion Unit.
3rd November	1947	- joined No 1, Parachute Training School, at Ringway (Glasgow).
26th July	1950	- mothballed at RAF Silloth.
25th February	1952	- bought by East African Airways as VP-KJQ named "Lord Delamere".
August	1964	- re-registered 5Y-AAE.
	1977	- bought by Caspair Ltd.
	1979	- company name changed to "Sunbird Aviation Ltd".



one day in a flight- simulator



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**ANNUAL GENERAL
MEETING**

08 MARCH 1988

EUROMOTEL

19.30 H



SOAP BOX MEETING — 14th JANUARY
LIPPE BUILDING — 16.30 H

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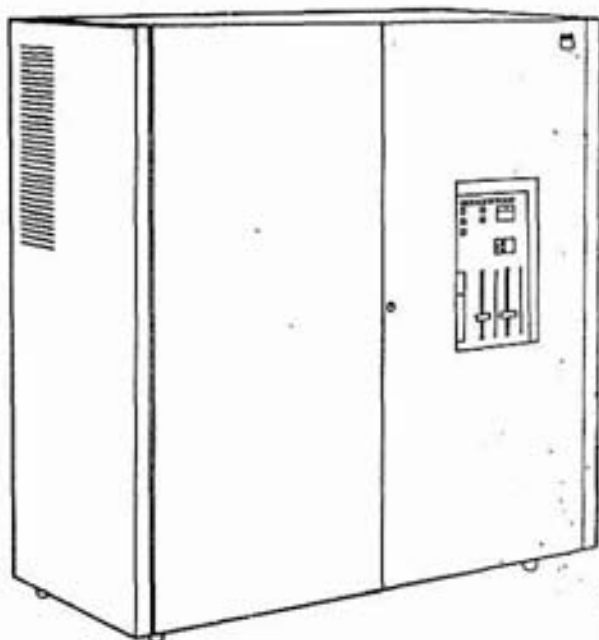
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THE NEW MAASTRICHT UAC MAIN COMPUTER COMPLEX

— by H. Klenner —



IBM 4381 Processor Complex



Since March 30th this year, the Maastricht Automatic Data Processing and Display System (MADAP) is running on-line on the new IBM System 4381, which is a much more powerful and faster system, than the old IBM 370/155. It contains some of the most advanced and innovative technology available today. For example, so-called LSI-chips (large scale integrated chips) containing thousands of microscopic integrated circuit elements on one block. This gives the system such a significant computing speed and system throughput, that you don't even notice, when a copy-disk is processed, which takes now less than 10 seconds. Before, this was more than 1 minute and during that time, all inputs were blocked.

The new MC-complex consists of 3 system-units. 2 Models 13 (used as on-line and stand-by machine) which have a processing speed of 3.6 MIPS (= Millions of Instructions per second). Main storage : 8 Mega bytes. Control storage : 128 Kilo bytes. To connect peripheral devices (IMUX, DSI, Magne-

tic Tape Units, etc...). 12 Channels are available.

The third unit, a Model 14 (used as off-line/batch machine) DUAL is even faster. It is "Dual-Processor"-equipped, that means two central processor units are sharing the workload. Processing speed: 5.7 MIPS. Main storage : 16 Mega bytes. 2 x 9 Channels are available to connect peripheral devices.

THE MAGNETIC DISC COMPLEX

The new disc-system complex is the BASF-6085 disc storage system, replacing the old IBM-2319 disc drives. It combines high storage capacity and superfast access speeds with a high data transmission rate of 3 Mega bytes per second. The overall system complex comprises 32 physical volumes of 630 Mega bytes each. Enough "space" to hold on one unit as ORG- and on another a copy-disk, the MADAP package, databanks, extended flight stores, etc... being on-line. Also stand-by versions, fall-back levels, test levels, etc... are resident on

other volumes. The medium data access time for read and write actions is 16 milli-seconds.

The third element in the new family is the SMC-computer, a DIGITAL MICRO PDP 11/83 MODEL

This dual system, replacing the old T-1600 system, is a supermicro system of low cost medium-to-high performance category.

Main memory : 2 Mega bytes. Cache memory : 8 Kilo bytes. Winchester disc drive : model "RD 52". Storage capacity : 31 Mega bytes.

This "System Monitoring and Control Computers" are designed to operate as a centralized tool to control and supervise all system actions, monitoring of MADAP and all sub-systems, hardware switching actions of all peripheral systems, etc...

It also provides and updates the synoptic displays of all relevant system status data.

This briefly described system complex will provide us for the next decade or longer with a sufficiently large data capacity, with fast and highly reliable data handling, for a safe operation of the complete MADAP environment.

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NIEUW MILLINGEN MILITARY AIR TRAFFIC CONTROL CENTRE: 40 YEARS OF SERVICE

— by Willem Pieneman —

In the Netherlands, after World War 2, when both civil and military air traffic began to grow, the need was felt for increased coordination between the ATC partners.

On 1st July, 1947 Cpt. Barkema was asked to set up the CMV (Centralized Military ATC). This CMV, consisting of 3 controllers, a wireless operator and a technician, was co-located with civil ATC in the tower at Amsterdam-Schiphol.

Working methods at the time were rather rudimentary: most of the military aircraft had no radio and very basic navigation equipment. Position-fixing (direction finding) was sometimes possible (HF and VHF) via the 4 navigation-stations who then telephoned the bearings to Schiphol.

By mid 1949, most military aircraft were equipped with radio and a tote-board was installed indicating

departure and arrival times.

After 1950 a certain degree of sophistication was reached on the ground and in the air and from a military point of view another location to house the CMV had to be found.

On 15th May, 1953 CMV (now renamed: CVV Centrale Vluchtvoorlichting- en verbindingsgroep) was relocated in a villa in Hilversum.

New tasks were given to FIC Hilversum (callsign: "STOVEPIPE") such as Fixer-service (an automatic VHF fixer triangulation system was available), Recovery Service, Alerting Service, Aeronautical Information Service and Flight Information Service.

FIC Hilversum was manned 24 hours a day, 7 days a week and the users were initially Hunters, Harvards, Dakotas and T33's, later on followed by F86's, F84's, F100's, etc.

In 1960 FIC Hilversum was one of the most modern military ATC centers within NATO, with a UHF fixer system, direct access telephone possibilities to all the airbases and tote-boards with magnetic display.

In order to facilitate civil-military coordination, military controllers were posted to Amsterdam ACC during certain periods.

Developments not only at technical level but also operationally (adaptation of airways system, etc.) followed each other very quickly. TACAN came into existence and there was a need for something called: "RADAR".

Some experienced GCA Controllers were sent to the first radar-course at Kaufbeuren, FRG and subsequently the radar station was installed at Nieuw Milligen on 1st July, 1964 FIC Hilversum ceased to exist and MILATCC Nieuw Milligen was born; the callsign "STOVEPIPE" was changed into "DUTCH MIL".

The first five years of operation was done from a wooden shack, handling traffic such as F104's, F5's, Friendship, Canberra's, Vulcans, etc.

In 1969 DUTCH MIL went underground, together with AIR Defence Control, in the so-called OPS-bunker.

New radar-scopes were installed and radar-monitoring became radar-control. Fixer service remained, but with electronic display on the scopes.

Time passed and at the end of the sixties, certain staff went to Sweden in preparation for a new system.

After a period of shadow operation from Amsterdam ACC, the PHAROS (Plan Handling and Radar Operating System) system became operational in 1972 and a new era started with automation: digitized displays, simulation possibilities, etc.

In the meantime the installation of an upper and lower sector changed the airspace structure. The tasks of

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the controllers were now well defined and the days of the "wetfinger system" were definitely over.

Organizationally the Nieuw Milligen ATCC now consists of:

- Current Operations (60 control staff: Supervisors, planning, executive and assistant controllers)
- Flight Data Section (10 staff members)
- Training and Evaluation Section
- AIS/Notam Office
- Aeronautical Publications Section.

In the mid-eighties plans were started for a new OPS-room; the "old" one being not up to the standards expected from a modern control centre. At the end of 1986, construction started for a new bunker which should be ready by the end of 1987.

The PHAROS system now in operation since several years needs renewal to meet the requirements of the nineties.

This resulted on the 22nd September 1986 in tendering 8 manufacturers of ATC systems, which subsequently will result in an contract award by the end of 1987.

About thirty months after the exchange of contracts, the new system should be available for training, shadowing, acceptance tests, etc....

Thirty six months after contract exchange the new system (PHAROS-2) is planned to be fully operational.

Summarizing the main improvements that PHAROS-2 will bring about:

- Automatic flight plan treatment.
- Improved Controller/Computer dialogue by means of a lightpen/keyboard combination.
- Multi radar tracking.
- Automation in METAR/SPECI display.
- Possibility to receive and present weather information on Plan View Displays (radar screen).
- Implementation of sectorisation concept.
- ATSAL (Air Traffic Services at Airbase Level System)
- Automatic data exchange with other ATC-systems.



YANKEE RIT

OVERHEARD ON APP FREQUENCY IN LOUISVILLE:

ATC: Evergreen One Three Three, follow the Delta tri-jet for the visual.

Evergreen: No thanks, we'll find it ourselves.

A CONVERSATION BETWEEN TRAINEES BOTH IN THE COCKPIT AND IN THE TOWER SOMEWHERE IN CALIFORNIA:

Tower: Cardinal Zero Two Victor, turn right two seven zero, position and hold.

02V: Uh ... do you want me to turn right to two seven zero on the ground and then taxi into position and hold?

Tower (snappy and impatient): Zero Two Victor, are you IFR proficient?

02V: Tower, I'm instrument rated and current. As to my proficiency, I'll let someone else decide. Now, are you ATC proficient? Was that supposed to be an amended clearance? Maybe you meant "Zero Two Victor, after takeoff turn right to heading two seven zero degrees, taxi into position and hold." If not, I'm ready to copy.

Tower (rather quietly): Readback correct. Clear for takeoff.

CESSNA 57Q ASSIGNED ON A HEADING OF 150 DEGREES:

Approach: Cessna Five Seven Quebec, turn left heading 150 degrees for spacing.

75Q: Is that what you call a rotary vector?

Approach: Nossir, that's a great circle routing.

A/C ON FINALS FOR KINGSTON (JAMAICA):

Tower: You look a little low, Forty Victor.

40V (with accent): Hey, we're landing, mon!





SECONDARY COCKPIT TASKS

by Hauptmann Höreth

with approval from Flugsicherheit" Magazine of the German Air Force.

What happened:

- collision of two USAF F-15 during UHF frequency change;
- collision of two RNLA F-104 during concentration on airborne radar
- collision of two USAF F-15 during a routine cockpit-check
- collision
- collision

None of the cases was an "EMERGENCY"; other traditional factors like weather, technical problems etc... were excluded.

All aircraft were properly maintained, pilots were physically and mentally fit, well trained and capable for their respective duties.

The accidents occurred during routine phases of their missions and were caused solely by wrong or unsatisfactory selection of priorities of their tasks and a lack of consciousness for the necessities of the situation.

This is a short description of a very complex problem, which caused many causalities among the pilots and several tens of millions of material

damage. Although some efforts have been made, still too few research and analysis programs have been started, to tackle this problem.

The actual problem of this phenomenon is the necessity for the pilot to split his concentration very carefully between the direct control over the aircraft and his secondary tasks in the cockpit.

The USAF has analysed the time consumption of a number of typical tasks. For this purpose they had a video camera installed in an A-10, which allowed the measurement of time to the tenth of a second.

Eight experienced A-10 flying instructors had to fly the aircraft primarily at a constant height of 5000 feet, whilst being requested to execute as well a number of secondary tasks.

These tests concentrated namely on:

- alterations in height
- timescale of the secondary tasks.

Analysed secondary tasks are typical routines and are divided into four categories:

* Little time consuming tasks such as:
selection of a TACAN channel
operation of weapon controls.

* More time consuming tasks such as:
UHF frequency change
change of IFF code

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* Very time consuming tasks such as:

look up a checklist

(The checklist was on the right side of the console and the pilots were requested to look up a certain emergency procedure).

search for "letdown-chart"

(The "letdown"-manual was stored together with other publications in the rear part of the cockpit. In order to grab the container, the hand on the controls had to be changed).

"letdown-book" search

(A seldom used procedure had to be found in the manual).

* Mental jobs

a "Time-to-Bingo" calculation

(The pilots were told that the runway at their destination was blocked and asked to calculate their endurance).

a "fuel-to-distance" calculation

(The pilots were asked to calcu-

INPUT

magazine

late the fuel consumption for a distance of 100 NM on the basis of the current fuel-flow).

The table shows an overview on the times needed for the execution of the different tasks as well as the height diversions encountered during their execution. Remarkable is the difference between the maximum and minimum times need for specific tasks.

Surprisingly the operation of the weapon controls took more time than expected, as they are positioned very ergonomically. Actually it took the same time as executing a UHF or IFF-code change. Another surprise was the time consumption during mental jobs. One pilot was so involved in his calculations that he descended 900 ft without realizing!

During the second part of the experiments a total occupation by the secondary tasks was simulated. The pilots were asked to watch a certain point in the cockpit, but in no case the directional instruments. This procedure was executed three times, namely with bank-angles of 0, 30 and 60 degrees.

The outcome can be easily interpreted from the diagrams. The diagonal results from all registered values and represents the boundary of the unfavourable data.

How disastrous a loss of only 500 ft of altitude can be is obvious, even if the actual flying altitude is higher than 500 ft. However, a short concentration on other than primary flight tasks of a few seconds only is obviously not relevant. Serious is a longer occupation by a secondary task even when flying wings-level.

The results were also analyzed taking into account optimized trimming and techniques by the different pilots. The differences were, however,

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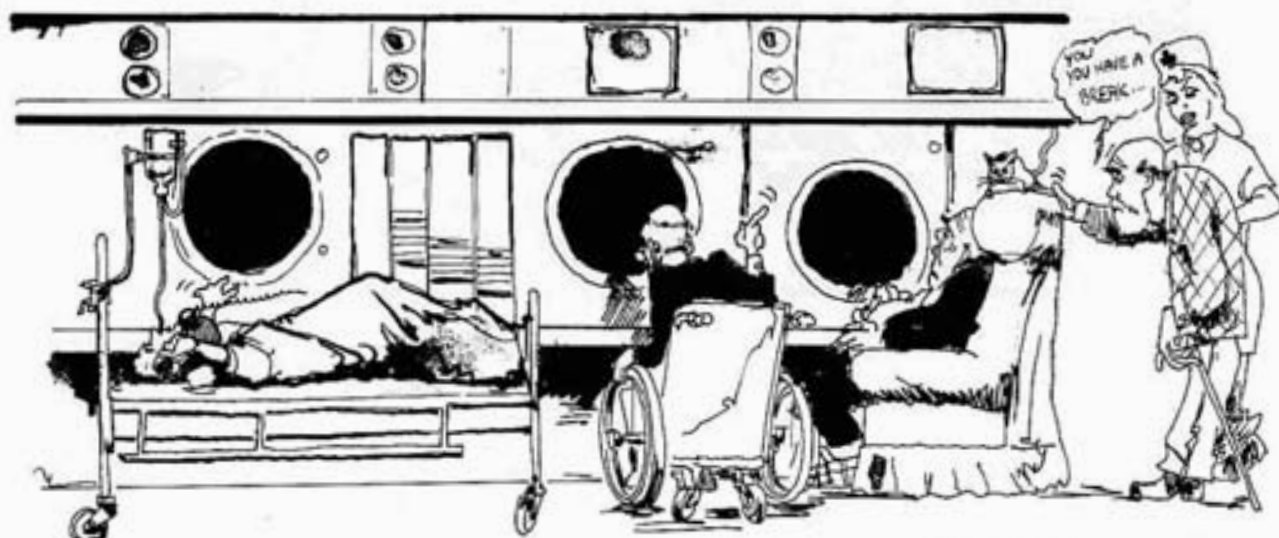
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AH... WELL ...

I THINK, IT'S TIME
TO START THINKING
ABOUT RECRUITING
SOME NEW ASSISTANTS
AND CONTROLLERS,
DON'T YOU ?.



not relevant. It looks as if the capacity of the pilots is equally impaired as soon as the instruments are not anymore observed carefully enough. During the first part of the experiment the pilots were applying very personal techniques to minimize the loss of height. This, however, had no relevant effect either.

As it is impossible to avoid distraction of pilots by secondary tasks, a careful split of the concentration on primary and secondary tasks becomes very much essential.

The experiment demonstrates clearly the increased risks if the distraction lasts longer than a few seconds. Realizing this, we have to accept the fact, that the concentration on the first priority - flying the aircraft - may not be distracted for more than a few seconds only. —