INPUT

EGATS QUARTERLY WINTER '77

Input

Egats Quarterly Magazine

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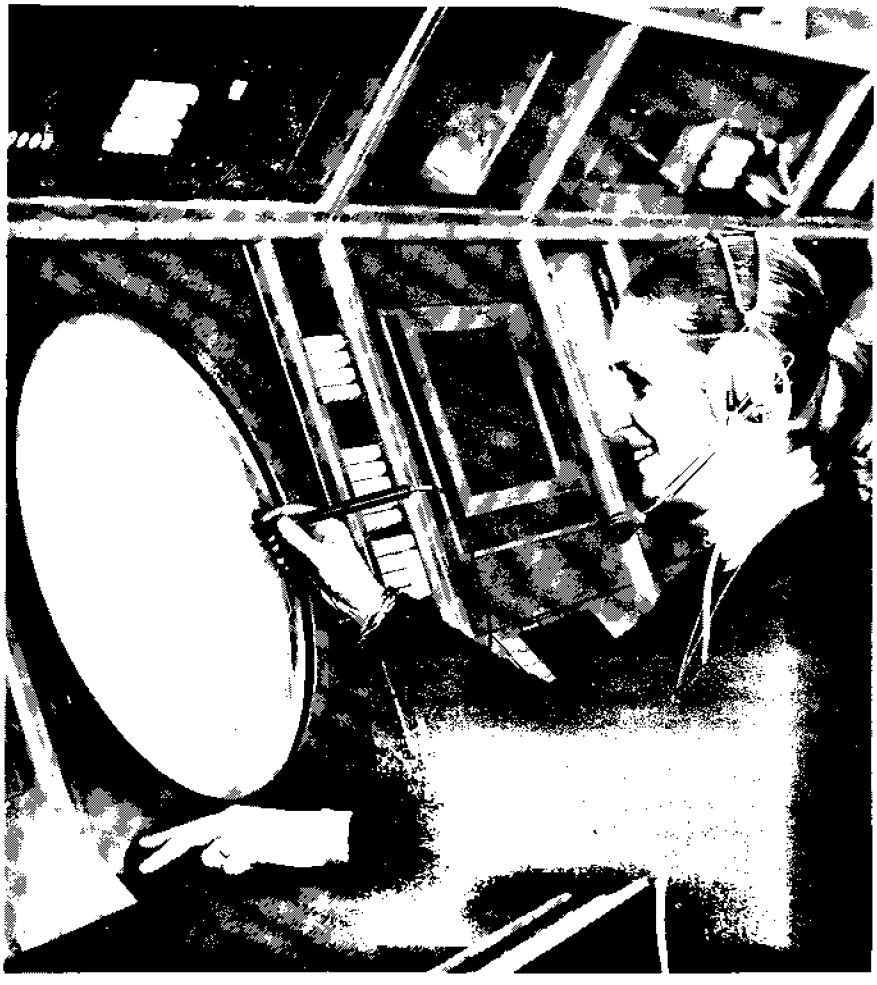

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HOLLANDSE SIGNAALAPPARATEN

Output

Whatever happened to Air Traffic Control?

Although certain aspects of flow control were covered in the Autumn INPUT, and the Forum report appears later in this issue, I make no apology for continuing on that theme. I should add that what follows are my own personal opinions, and not those of EGATS, but I think that at least some of my colleagues will agree with them.
Maastricht UAC has been right in the thick of it this Summer, with fourteen or more lists of restrictions for southbound traffic, restrictions into the U.K. via our own sectors or through us and via the Amsterdam area, restrictions for transatlantic flights, plus the odd PPO for destinations in Greece and elsewhere. There have been no limitations whatever for the Maastricht area per se, yet we have all been up to our eyeballs in flow control in almost all directions.
At times it has not been possible to pass estimates, revisions or give radar handovers because all the operational lines have been blocked by calls concerning flow control matters. I, for one, am fed up with it.
What was it I learned in basic training about the objectives of air traffic control? I seem to remember something about "to expedite and maintain a safe and orderly flow ... "There's not much expeditious in an aircraft being stuck on the ground with a five hour delay. Worse still, where is the safety in making a long distance flight hold for $1\frac{1}{2}$ hours to meet a time restriction, pushing the aircraft to the limits of its endurance or forcing it to divert? It's not really surprising that some pilots have tried cheating to beat the system – I'd do the same thing myself.
Suppose the rate of acceptance specified is two aircraft per thirty minutes. If rigidly applied, it is permissible for two aircraft to cross the point of limitation at one minute before the hour, and a further two to pass it at one minute past the hour. On paper it's correct, but effectively that's four aircraft in two minutes. Does this sort of "legal" bunching really help the unit imposing the restrictions? And if one of those preceding flights is two minutes late, the actual traffic pattern will be almost the same; but one of those aircraft will have to hold for thirty minutes, and a slot will be lost! An extreme case, maybe, but possible if the rules are strictly obeyed.
Flow control is generally applied to increase the safety factor in a given area – fair enough on the face of it. But the backlash can create great problems for adjacent ATC units and severe penalties for aircraft, especially long-haul traffic.
What disturbs me even more is the ever-increasing number of regulations being imposed on aircraft and controllers, detrimental to the airlines and relegating the controller to the ranks of bureaucrat. The "Maximum Recommended Flight Level System" is a classic example. Where this method has been made statutory, short-haul traffic is forced to occupy lower flight levels, well below optimum cruising level, in order to leave higher levels vacant for long distance flights. The controller is effectively being deprived of part of his job. He is denied the right to establish priorities in allocating flight levels even though only he knows the traffic situation and the availability of airspace. Why should aircraft be arbitrarily forced to operate uneconomically when a higher level might be available?
And why has the traffic orientation scheme been made so inflexible? It is ridiculous that we are not allowed to reroute a flight down an airway where we know slots are vacant just because the rules state that it should go another way! What difference does it make if the acceptance rates are not exceeded? The extra delays that are caused can in no way be justified.
An alarming incident was recalled during the Forum. A southbound flight had encountered severe turbulence enroute. The captain therefore requested a different routing for the return journey, explaining the reason. The new flightplan was rejected because it did not comply with the orientation regulations! The aircraft had to follow the same route back despite the severe weather conditions because the rules stated that it must go that way only.
Just where do our objectives fit into that situation? To avoid en-route bad weather, an aircraft may have to leave airways, infringe danger areas or national boundaries, and may create separation problems for ATC. Flow control is supposed enhance safety, not jeopardise it! I cannot believe that the bloody-minded attitude displayed in this particular case is commonplace, but some would have us all work that way.
What the hell happened to that famous ops manual sentence to the effect that "nothing in this book shall preclude the controller from using his initiative in the interests of safety"? Has it been replaced by "You will obey the Rules!"?
The regretable fact is that, under the present circumstances, flow control has become a necessary evil, unpopular as it may be. I have doubts as to whether it needs to be as severe as it is, and I do not like the way that controllers are being forced to refuse traffic instead of being able to find ways to accept it.
The controllers task **must** be carried out with discretion to provide a proper service. How many more restrictive interim measures must we suffer before someone finally gets round to tackling the real problem, i.e., the incompatibility and inadequacy of some ATC facilities and the partitioned spaghetti known as the European airways system?
At the moment, it only needs a few more blanket regulations to reach the stage where so few aircraft will be able to fly that there will be no more need for controllers anyway.

M. Lewis

Intercom

Letters to the Editor

Sir,

TO BE OR NOT TO BE, or better ...
0630Z, the morning shift is coming into the ops room, people are checking the position list, positions are being opened, a new working day has started; the first cigarette is lit. Suddenly, the whole ops room bursts with the sound of loud pop music: an ATS who doesn't like smoking but loves pop music has brought his radio in with him. Protests from all sides; the supervisor orders him to stop it and threatens him with removal from the ops room, dis-

missal and who knows what else if he doesn't.
Discussions about it are starting; can this be done? Why can a smoker do whatever he likes and a non-smoker not?
Of course, this has not yet happened in the ops room; it was done in a French university, though, and ever since then smoking has been forbidden during college.
Smokers want to have the freedom to smoke; they would consider a ban on smoking as an attack on their personal liberty. But non-smokers want the freedom to breathe air not polluted by soot, tar and nicotine. We cannot have it both ways; if one starts smoking, the others loose their freedom.
In a room of about 20 m^2 two cigarettes are enough to produce an amount of soot and tar in the air of about 1000 equivalents – in the centre of an industrial town like Oslo, one measures about 50 equivalents!!
In fact, non-smokers don't exist – it's a matter of TO SMOKE OR TO BE SMOKED.
The World Health Organisation published a report in '74 pointing out the serious consequences smoking has for non-smokers. In the Charter of Human Rights, there is an article about it, as is in the European Charter's art. 11, which confirms the right of protection of ones health. But for even longer – since 1883 – a Dutch law has existed concerning the right of physical integrity. Two or three years ago, the Dutch High Court ruled that fluoridation of drinking water had to be stopped because it violated the freedom to decide for oneself what to drink or inhale.
Who would like to help in the fight for a non-smoke-polluted working environment? The CAN – Club of Active Non-smokers – is looking not only for pop music lovers who want, in their way, to get a non-polluted working environment, but for others who would also like to achieve this goal – if other means fail, – even the legal way, i.e. via the Courts. CAN will provide all the help needed in this.
For more information: CAN, postbus 300, Leusden, tel. 033-41814

Dear Sir,

I should like to pass comment on that annual farce we so inaccurately refer to as a medical.
On entering the fine modern medical centre in Maastricht one is immediately aware of an atmosphere within. I have difficulty finding the words to describe this overawing "presence", but how about "like a Salvation Army rest house for destitute gastarbeiders" for starters?
First laugh of the morning comes when we are handed our relevant translations of the illnesses or diseases that we could have contracted over the preceding year. But as somebody obviously spent a great deal of time effecting these translations I guess it would be somewhat impolite to debase them as subjects of humour.
Next we climb the stairs to the sound-proofed booth (?) for the, by now, infamous hearing test. The noise in and around the building makes it virtually impossible to hear the all important tone in the headphones, therefore one has to cheat a little to avoid being pronounced stone deaf. Over the years we have all probably perfected the method of indicating that we **have** heard the tone around the time that we think we **should** have heard it. Just to add insult to injury, I was informed at this year's performance that one of the phones was u/s and would I mind turning them around to test the other ear!!
Ah! That bottle, the plastic spoon, the eye chart that you memorise prior to your eye test. I could become quite poetic about these old friends.
Having successfully negotiated the obstacle course, (we know it's successful – we did the same last year!) we are now granted an audience with His White-Coated Majesty, Doctor X.
From here on even the word farce becomes totally inadequate.
Doctor: "Any problems over the last year?"
Patient (well he has been so far!): "Yes."
At this point it becomes quite clear that our medical ace has not been programmed for such a reply, so we wait whilst he interrogates his central core in search of a solution. Allow me to quote my own case.
Doc: "Were you still able to work?"
The Hoop: "Yes, but I still got the pains."
Doc: "But did it prevent you doing your work?"
The Hoop: "No, but I still got the pains."
This non progressive rally continued for a couple more minutes, until I decided that this man was simply not interested in my aches and pains and would be much more at home in his vetinary surgery where he asked all the questions and provided all the answers!
When my next medical visit comes around I think I shall spend the morning outside Maastricht station singing disgusting rugby songs for my favourite charity – the Hooper Beer Fund! The results may be more rewarding and I'm damn sure they won't miss me.

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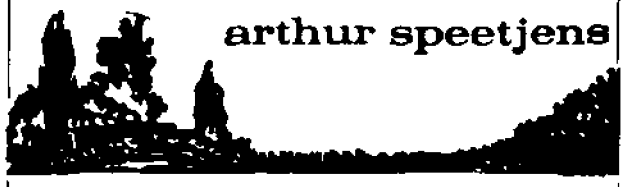

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CONCLUSIONS.
The annual medical for Maastricht personnel, conducted as it is at present, is a complete waste of our time, a complete waste of Eurocontrol's time and an even greater waste of Eurocontrol money.
ALTERNATIVES.
There must be numerous alternatives to the present system, but allow me to suggest just one or two which spring to mind without exhaustive effort.
1. That Eurocontrol *allocates* a medical room within the U.A.C. building and contracts a general practitioner to conduct medical examinations therein.
2. That Eurocontrol contracts a general practitioner to conduct medical examinations on his own premises and outside normal "spreekuren".
3. That each member of staff is permitted to arrange for his own huisarts to conduct a medical examination tailored to Eurocontrol requirements.
It could be said that one's own general practitioner could show a certain leniency towards one of his own patients, but if every doctor is considered to be bent (no, not that way!!) we would never visit one at all.
Perhaps one of our superiors would care to offer constructive comment on the subject.

Paul J. Hooper.

... And to the E.B.

Dear Mr. Bartlett:

We received your letter dated May 10, 1977, and we would like to gratefully thank you for representing us in the Cyprus Conference.
About us, I will tell you that we are a small country, located in Central America, with a population of two million people; due to the fact that we are in the Tropic, we have only two seasons: summer and rainy season, during rainy season the ATC is fun, a lot of Cb's around. We have five international airports, but only two of them have ATC Services; these two airports are: El Coco or Juan Santamaría and Tobias Bolaños airport, El Coco is used for jets and the other one for small aircrafts.
At El Coco we have FIO, Tower and Approach Control positions, and at Tobias Bolaños only tower and Ground Control. We are getting a Radar and an ILS for El Coco and they will be installed sometime next year.
There are 18 Controllers at the present time and six new ones now in training in Mexico City. To live here is O.K., only a little bit expensive, compared to the USA and we can get everything there is there over here. We have just created the Air Traffic Control Association for Costa Rica and we are trying to get better working conditions with the Government.
Well, I think I gave you an idea of how everything is around here and hope like you said in your letter, to visit one another sometime.

Sincerely yours,

Isaac F. Fonseca
SITECNA Coordinator,
Alajuela, COSTA RICA.

Touché

Overheard on the r/t at 1150Z ...

DA 4194: Maastricht, DA 4194, good morning.
OEC: 4194 radar contact, and it's afternoon on the Continent.
DA 4194: But I'm not on it, I'm above it.

Short term conflict alert in Madap

INTRODUCTION

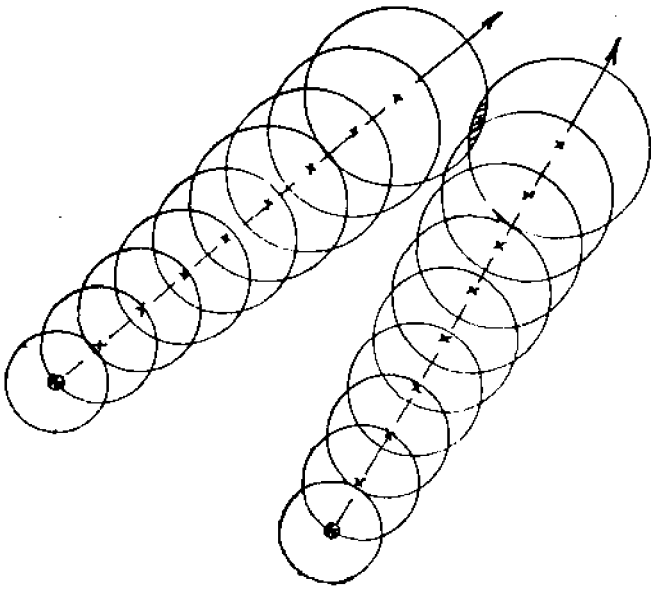
Short Term Conflict Alert (STCA) is a program which uses radar data as the basis for predicting the future position of aircraft and then examines these in order to see if any of them infringe radar separation standards, subsequently drawing the attention of the radar controller to any potential conflicts found.

A previous article on this subject discussed in general terms considerations influencing the design of such a program. Since then an Operational Requirement has been issued, a Detailed Functional Specification has been produced and a first version of the program has been subjected to limited testing. That which follows is a broad description of the STCA program which will eventually be integrated into MADAP.

BASIC PRINCIPLES

It is usual when thinking of STCA to imagine a program based on relative velocities (as in NAS for example). This approach is quite straightforward: when a pair of aircraft are examined as a possible conflict their relative velocity is calculated and a vector equivalent to X minutes of flight at the relative velocity is drawn from the position of one of the aircraft. If this vector enters a circle of Y n.m. radius drawn around the position of the other aircraft then there is a real potential conflict. X minutes represents the look-ahead or warning time, and Y n.m. the radar separation standard plus any error buffer which may be necessary.

The program written for MADAP works in a different way. Let us consider that the program consists of three parts, an extrapolation part, a conflict detection part and a display part. The program runs every 5 seconds (program cycle). First the conflict detection part, using the present radar positions checks for pairs of aircraft having less than the required separation (i.e. "now" conflicts). Next the extrapolation part using data from the tracking program extrapolates each aircraft position by a distance equivalent to 16 seconds of flight (extrapolation cycle) and the conflict detection part checks again for aircraft having less than the required separation (i.e. "now" conflicts in the extrapolated positions). This process is repeated for 8 extrapolation cycles, thus a total of 128 seconds which approximates to the 2 minutes warning time required. Finally, the display part arranges for distinctive marking or conflicting pairs on the Synthetic Dynamic Display.



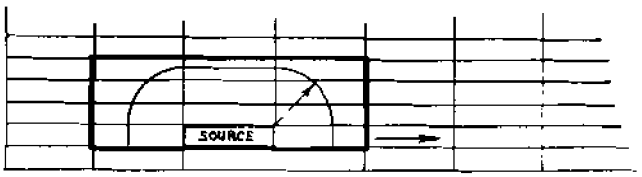
Showing the increase of the horizontal search area with each extrapolation and a conflict at the last extrapolation.

This method has two advantages, firstly the conflict detection process is identical for each extrapolation cycle and has only to look for "now" conflicts based on the positions supplied by the extrapolation part and secondly the separation standard used can be augmented by an error buffer which increases at each extrapolation cycle, i.e. with increasing uncertainty of position.

The conflict detection part consists of a series of filters. The first of these is a course geographical check to eliminate those pairs of aircraft which cannot possibly be in conflict. If we consider an average of 60 tracks in MADAP this represents 1770 pairs of positions at each extrapolation cycle, a total of 15,930 pairs of positions every 5 seconds. Obviously this first filter must be quick and efficient if STCA is not to take up a disproportionate amount of the computer's time.

THE FIRST FILTER

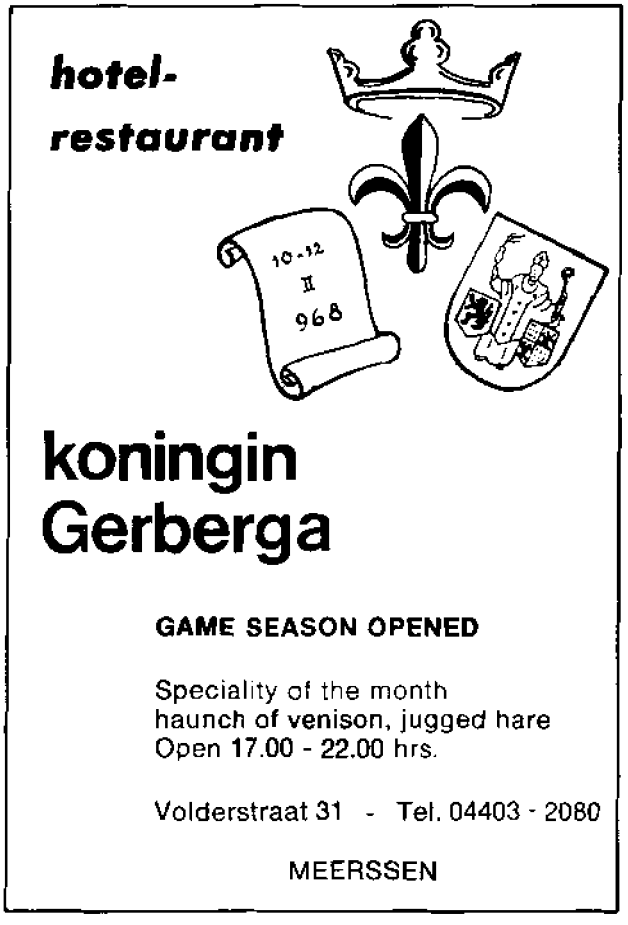
To achieve this rapid filtering the MADAP area is divided into boxes 2 n.m. (N-S) by 8 n.m. (E-W). This grid is represented in the computer by chains of data, all track positions in each line are linked (the X chains) and all the track positions in each column are linked (the Y chains). The uncertainty of position is a function of the extrapolation cycle and the speed of the aircraft concerned. By considering all aircraft as flying at 640 kts (mach 1) a maximum conflict radius can be calculated for each successive extrapolation cycle and this can be translated into a sliding window which when centred on a given box of the grid (the "source" box) will contain all the surrounding boxes which could possibly contain conflicting tracks.
As examples of the maximum conflict radius, it is 5 n.m. for the real position, 7.28 n.m. for the 4th extrapolation and 9.57 n.m. for the last extrapolation. Starting at the South West corner of the grid, moving Eastwards to the end of the line, then advancing Northwards one line and again scanning from West to East, each box in turn is taken as "source". It can be seen that scanning in this way it is not necessary to look in the boxes South of the source box which reduces the amount of data to be considered and also avoids finding conflicts twice. Conflicting pairs detected during this search are handed on to the succeeding filters; when these have completed their task the grid is loaded with the positions corresponding to the next extrapolation cycle and the process is continued until all 8 extrapolations have been treated.

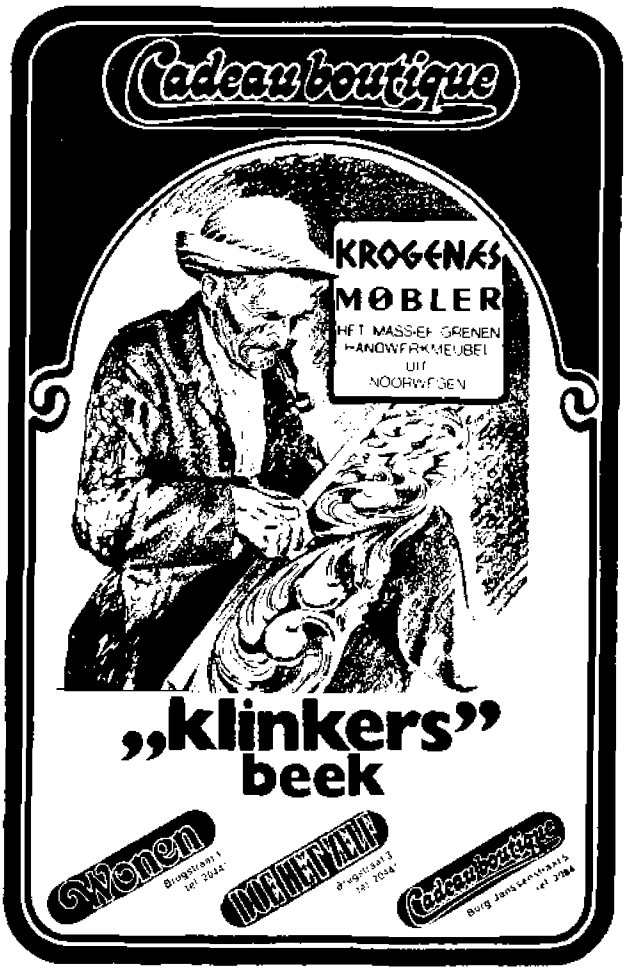


Showing how the sliding window is constructed from the maximum conflict radius.

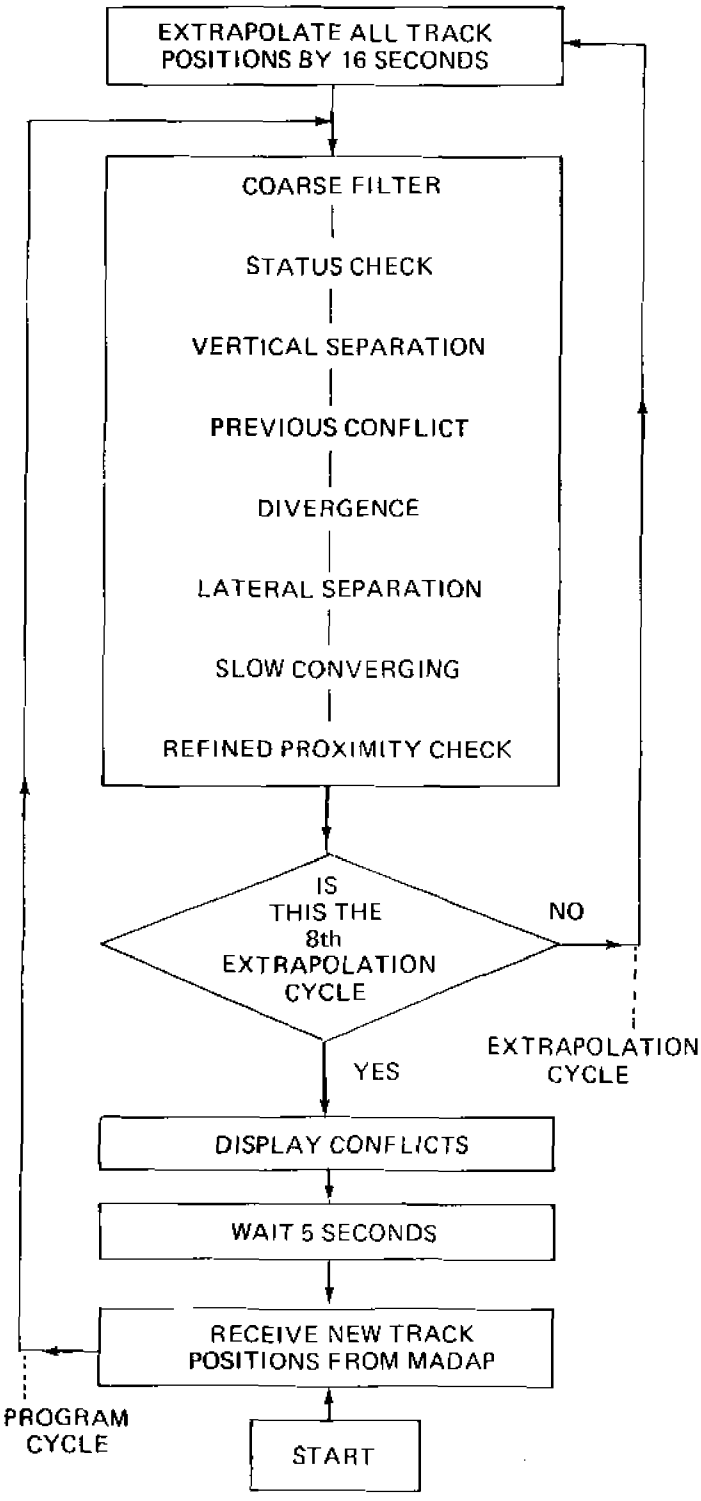
THE FOLLOWING FILTERS

Potential conflicts detected by the first filter are subjected to further checks. The second filter is a status check and the pair will be rejected if neither of the aircraft is a "source" aircraft. In the present program this means that at least one of the aircraft must be represented by a correlated track.
The next filter is the vertical separation check. An attitude monitor designates each track as climbing, descend-





ing or level depending on the evolution of the mode C Flight Level. The first (demonstration only) version of the program has a relatively unsophisticated treatment of climbing and descending flights.
For climbing aircraft the height band "occupied" at the "now" time has the current mode C value as lower limit and the upper limit is equal to current mode C plus a height increment representing the maximum change of altitude possible before the next 16 second extrapolation cycle. The upper limit is increased by this increment at each extrapolation cycle. A reversal of this procedure is applied to descending aircraft. In order to be safe the increment must represent a maximum rate of climb/descent (currently 4000 ft./min. for GAT and 6000 ft./min. for OAT and uncorrelated tracks), and this is bound to give rise to false alarms. Consequently the operational version will have a refined vertical plane logic capable of calculating a real rate of climb/descent from mode C. The height band "occupied" at each extrapolation will be limited by the lowest and highest levels atained between the current extrapolation cycle and the next extrapolation cycle, augmented in each direction by an error buffer which increases at each cycle. The vertical search may also be limited by a cleared flight level if this will be reached during the 128 second period under review. Non mode C equipped aircraft are considered as occupying all flight levels unless they are also correlated, in which case use can be made of flight level and attitude inputs made by the controller to limit the vertical search area. Non mode C aircraft, which are both uncorrelated and have a ground-speed of less than 180 kts., are considered as lower airspace traffic and ignored.



STCA BLOCK DIAGRAM

Pairs still remaining as potential conflicts are next checked to see if they were in conflict at a previous extrapolation during this program cycle. If so, the pair have already been marked as conflicting and there is no point in considering them further.

The next filter is the divergence check, traffic which is diverging and is separated by more than 3 n.m. is considered as separated and is eliminated.

The only check so far made on horizontal separation was the coarse sliding window check of the first filter, remaining pairs are now sent to a lateral separation filter. If the two positions as calculated for this cycle by the extrapolation part are separated by less than 5 n.m. then a conflict is declared, if they are separated by more than the maximum conflict radius for the current extrapolation cycle there is no conflict and they are eliminated, pairs whose separation falls between these limits are sent to the following filter.

Pairs whose separation falls within the error buffer are checked to determine the time it will take for them to reach the point at which they will have minimum separation; if this time exceeds 140 seconds they are considered as closing slowly and eliminated.

The final test for those pairs whose separation is still in doubt is a refined proximity check. In this test the error buffer is correctly calculated according to the groundspeed of the aircraft concerned and the geometry of the encounter.

This entire filtering process is repeated for each extrapolation cycle and is continued until all 8 extrapolations have been treated.

DISPLAY

Finally the display part will draw the controller's attention to conflicting tracks on the synthetic dynamic display by marking them in a conspicuous manner. At the same time a conflict alert message will show details of the conflicting pair including the present separation and the predicted minimum separation.

After all that, the program can relax until it is called again at the next 5 second cycle!

B. Martin

What was that callsign again?

British Airways BA/BE/BZ

British Airways was formed in September 1972 from the merger of British European Airways (BEA), British Overseas Airways Corporation (BOAC), Northeast Airlines, Cambrian Airways and an assortment of other companies.

From this new company emerged the callsign "BZ" which was believed, at the time, to be replacing the old BA and BE prefixes. However, this was not to be, and now we still find all three prefixes in use.

The reason for this is, very simply, that the airline operates on seperate accounts, thus maintaining a form of financial seperation between the former BEA, BOAC and regional carriers that were taken over.

Basically, all flights that previously operated for BOAC retain their "BA" prefix. Flights which were operated by the BEA European Division retain their "BE" prefix. All domestic services and those to the continent which were formerly operated by either the BEA Regional division, Northeast Airlines or Cambrian Airways now use the prefix "BZ".

An example is the former EGLL-ELLX-EGLL flights which operated as "NS" and now we see them as "BZ".

Redcoat Air Cargo Ltd (RY)

Redcoat Air Cargo is Britain's newest cargo airline which began services on 18th May of this year with a single Bristol Britannia 312F (BR31). The airline operates regular weekly single entity and split charter flights. Destinations served are mainly in Africa such as Accra, Monrovia, Freetown, Abidjan, Luanda, Lome (Toga), Banjul (Gambia), Bamako (Mali), and Nouakchott (Mauritania).

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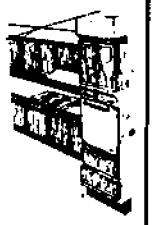

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ER, Really?

From Uncle Roger's "yuckspeak" library (FLIGHT INTERNATIONAL)

"British Airways have been working for some years with the technical Directorate of the European Organisation for the safety of Air Navigation, EUROCONTROL, on a method of organising, at the planning level, air traffic flow based on the minimisation of the state of potential conflict in a given sample of traffic. The basic principles of the method include prediction of flight paths, definition of a function characterising the probable state of conflict of the traffic sample. ..."

= Air Traffic Control

Doesn't time fly

Entry in ATS logbook, 1-10-77.
Perhaps someone should inform the airline companies that it is now October. The amount of traffic makes one wonder if they have noticed.

EGATS Forum 1977

"FLOW CONTROL IN EUROPEAN ATC" OCTOBER 20th

From 11 o'clock onwards, participants in the EGATS Forum '77 started arriving at Maastricht UAC. By late afternoon, the assembly of guests was almost complete: Controllers from Belgium, Denmark, Germany, Eurocontrol, the Netherlands, U.K., and especially welcome, four controllers from Spain; on the "consumer" side, pilots and operations staff from Danair, Lufthansa, Conair, Sterling, Maersk Air, Britannia, LTU, Skandanavian Airlines, British Airways, Braethens, Martinair, USAF, KLM, BALPA and VNV (Dutch Pilots Association). Unfortunately, not all those invited were able to attend. Notably, there was nobody from the French flow control cell CORTA. It is deeply regretted that the recent hijack of the Lufthansa B737 and the tragic murder of its captain forced representatives from Hapag Lloyd and the German Pilots Association to withdraw from the forum to attend to more urgent matters.

The German Air Force extended its hospitality by making its mess available for lunch. An excellent buffet was provided, and the lunch period was extended to accommodate late arrivals, some of whom had been de-

layed by strict border security checks. The Forum Committee had carefully prepared a programme of events for the afternoon, which in the event was modified to ensure that all participants were given a briefing on flow control, and were able to make a guided tour of the operations room and MADAP facilities.

THE FORUM

The scene for the evenings forum was the "Euromotel" opposite Maastricht UAC on the other side of Beek Airport. Slightly later than planned, Mr. Jan Gordts, chairman of the Organising Committee, welcomed all those present and handed over the proceedings to the Forum Chairman, Mr. Walter Endlich. Before introducing the panel, Mr. Endlich called upon the filled conference room to observe a minute's silence for Captain Jürgen Schumann, killed by terrorists.

Lunchtime discussions

The Panel

Capt. E.J. Williams		BALPA British Airways, Tristar Captain
Stig Erichsen		Operations Manager; Conair, Sterling, Maersk Air
Eric Sermeyn	President,	Belgian Guild of Air Traffic Controllers

The panel

Members of the audience

Capt G. Wiming	SAS, Chief Pilot, DC8
Capt van der Stroom	VNV, KLM Captain, DC8
Helmut Elsner*	Lufthansa ATS operations + international affairs
Mr Helbig*	Airfield controller
Bob Van der Flier*	EGATS, Eurocontrol controller
Chairman, Mr. W. Endlich*	Ex-controller, ex-editor IFATCA "the Controller", Deputy Head of Operations, Maastricht.

* not representing an official viewpoint

The format for the evening was a discussion on various aspects of flow control, each topic being introduced by the chairman using an array of maps, blackboards and primarily overhead projector slides. The following report is a summary of the main points and comments raised during the four hour session.

Introduction

Flow control is of great concern to many, and the subject of high level studies by ICAO, Eurocontrol etc. The object of the forum was not to compete with investigations already in progress but for pilots and controllers, being those most directly effected by flow control measures, to exchange experiences so that they might achieve a better mutual understanding of each others difficulties. If this could help reduce delays or provide a more economic routing, then the forum would have been worthwhile. Due to the complexity of the subject, it could only be given a superficial coverage in the time available.

System Capacity

The ATC system should be capable of handling normal peaks, but it is not economically feaseable to provide capacity for extreme peaks, which, although infrequent, overload the ATC system. Regulatory measures must be taken to prevent them occuring. An early appraisal of the situation could well prevent overloads: the Flightplan Coordinator in Germany has done much to smooth out

the traffic flow by distributing it more evenly, but a variety of "short term" flow control measures are currently used in Europe, some intended to increase ATC capacity, and others restrictive. What were the opinions on their effects?

R/t reduction

Useful in lightening the cockpit workload, but dependent on aircrews' confidence in the quality and efficiency of the ATC service. In poorer equipped areas, pilots would rather monitor the r/t for potential conflicts.
For Controllers, less r/t means more time for decisions.
Also noted: fully automated ACCs can give more accurate position predictions than many cockpit estimates.

Reduced Separation

i) 5 mins or 30nm longitudinal.
If the required system criteria are met, this can be applied safely. The greatest problem is the incompatibility of equipment between adjacent ATC units.
If radars are not compatible, or the next unit is only capable of procedural separation, the reduction will not be acceptable. A bottleneck will occur where standard separation must be re-established. Adequate telephone lines must also exist for coordination and radar handovers, particularly where departing aircraft are involved.
ii) Vertical Separation
No reduction practicable at present.

Provision of Airspace not Normally Available

e.g. restricted military areas.
Short cuts through restricted areas, or any direct routing is always beneficial. But civil/military coordination can be a major problem for ATC, and a prohibitive factor. In the Copenhagen area, civil and military controllers are co-located and use the same airspace, so there are no difficulties.
Short cuts are no use if aircraft must first be delayed on the ground.

Weekend Routes and Temporary One-way Routes

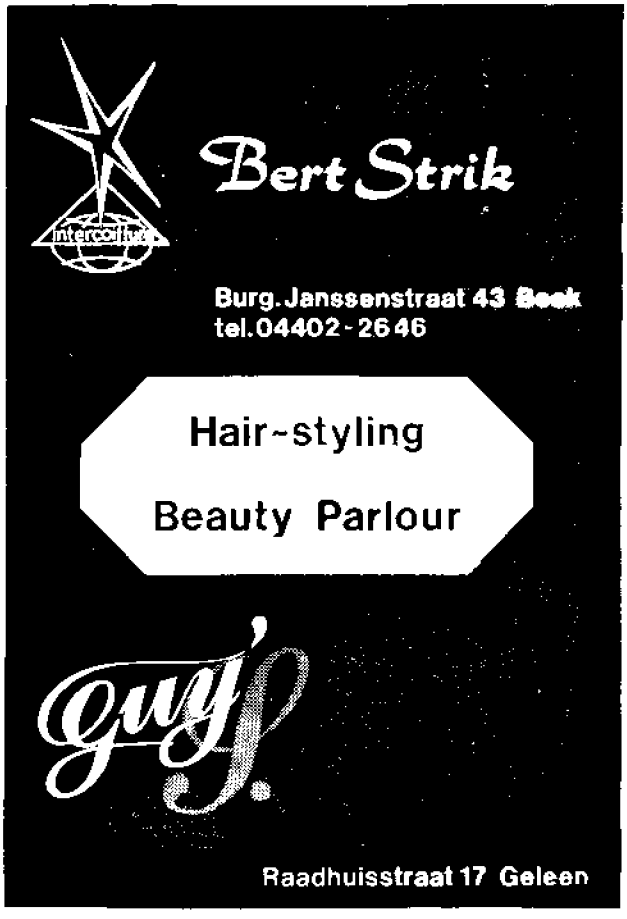
Favoured. Omnidirectional and, better still, dual airways can increase ATC capacity whilst reducing control problems with level changes.

Speed Control

i) Reduction of speed.
Unpopular. Possibly advantageous in a TMA, but highly undesirable as a means of en-route control for jet traffic. A fully laden wide-bodied jet has a maximum IAS span of between 250-300kts; a reduction of speed makes little difference to the overall flying time. The aircraft may have to adopt an awkward attitude so there will not necessarily be any fuel advantage. There should be a better answer, but a hold is a preferable method of meeting a time restriction.

ii) Upper Airspace Minimum Speed Restrictions

Regarded as unfair to aircraft and to lower airspace controllers who must handle aircraft with a wide range of speeds. Passenger comfort and range of slower traffic could be effected. Under certain circumstances, slow aircraft could penalise subsequent traffic, but acceptance of these flights should be left to controllers' discretion, depending on the situation, not subject to blanket regulations.



Maximum Recommended Flight Levels for Short Haul Jets

This system was introduced after a European meeting. The theory was that short haul traffic should not fly above certain levels, leaving higher levels available for long distance flights. It was made mandatory in Germany, forcing many aircraft to fly 8 – 10,000 ft below optimum cruising level even when higher levels were not occupied! This was seen as an unnecessary, uneconomical and puntive method whereby the controller was denied the right to establish priorities.
It was also felt that certain flights were restricted to a lower level simply because an upper airspace unit did not have flightplan details, or to reduce coordination between lower and upper units – a totally unacceptable reason.
Opinion was against such compulsory regulations.

Traffic Orientation Systems

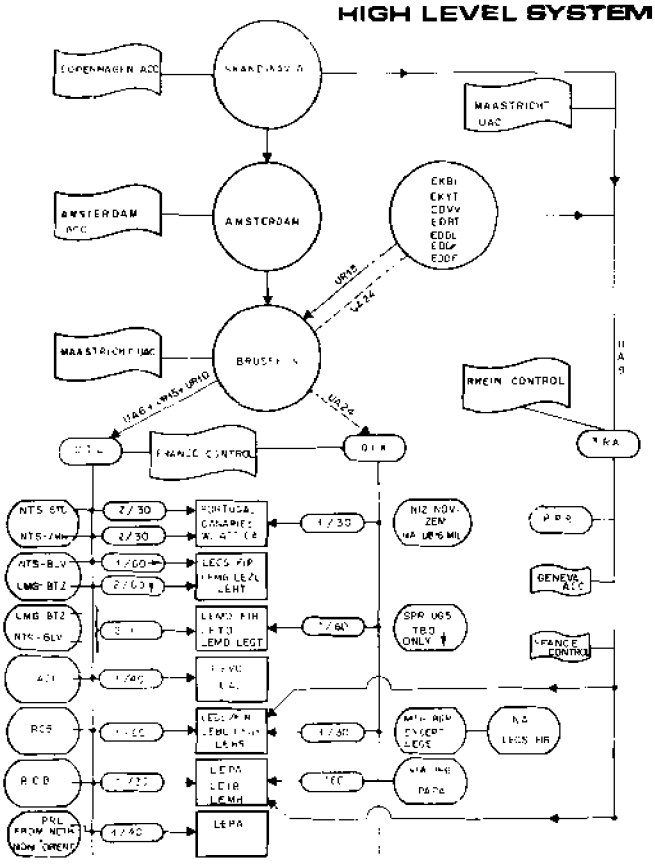
The main traffic orientation system applied in Europe has been that effecting flights overflying France and landing in or transiting Spain. Aircraft from different departure points are restricted to the use of certain routes

only. Based on statistics, the scheme was devised to distribute the overall flow through France more evenly to prevent any one ATC sector becoming overloaded, and traffic from bottlenecking at busy points. This has also influenced the traffic pattern in adjacent and far off areas.
From the airline side, the orientation system coupled with limited acceptance rates was wasteful, inflexible and unfairly applied. Skandinavian companies suffered most. From several departure points in Europe there could be a choice of alternate routings, but Skandanavia had been arbitrarily divided by the French plan so that from some airfields only one route was available. This created long delays, and reroutings were not permitted even when there was unused capacity on other airways. Companies were forced into looking for ways around the system, e.g., by first flying to an airport where a better choice of routes was allowed. Spare "slots" were wasted by the rigidity of the scheme.
ATC should allocate routes on a slot available basis. But since so many separate ATC units were involved, it would often prove impossible to coordinate all the desirable re-routings. It was felt that a single centralised flow unit with an overall knowledge of the traffic situation could better handle this task, minimising delays by using all the available capacity.

Acceptance Rates

Following a break, Mr van der Flier explained the current application of flow control measures. They could be imposed because of lack of ATC facilities in some areas,

FLOW CONTROL/SPAIN summer 1977
HIGH LEVEL SYSTEM



industrial action, limited capacity e.g. North Atlantic Tracks, etc.
A slide was used to illustrate the acceptance rates applied on the orientated routes to Spain via France during the summer. — "slot" times were applied accordingly. As the restrictions varied, it was obvious that some were better off than others.
Attempts to beat the system were explained — requesting two clearances using different callsigns for the same flight, accepting the most preferential without cancelling the second; filing for an unrestricted destination, then "diverting" when airborne; bypassing intermediate units by contacting the destination direct for clearance, etc. — all of which penalised subsequent flights. Although not condoned, such cheating was understandable due to a mistrust of flow procedures and uncertainty about onward clearance, especially for long distance flights.
There were anomolies in the application of procedures by different ATC authorities. Some allowed slot times to be requested from ATC before passengers were boarded, to avoid a long wait inside the aircraft on the ground. An emergency situation could develop inside an aircraft if passengers had to wait a long time on board before takeoff. Other authorities insisted that aircraft should be loaded, with doors closed before any startup could be requested. Meanwhile, other slots had been filled in the areas with the lenient attitude, and delay increased for the loaded aircraft. Why weren't companies in all regions allowed to call early for startup clearance?
Because restrictions varied depending upon the routes, departure times were not necessarily given in the same sequence as takeoff requests. Pilots not understanding the reasons had been known to argue with ATC on the ground frequency because aircraft behind them in calling for clearance were airborne first. Yet ATC always did its best to achieve the most beneficial clearance within the limitations imposed on it.

The efforts of some units to arrange reroutings, subject to filing a new flightplan, had been noted and were appreciated. But each unit was allocated only a limited number of slots, and was unable to know about vacant slots in other areas. It was not possible to coordinate with all other ATC units, and again slots were being wasted.
As the discussion became more heated it was suggested that ATC should stop controlling slots and start controlling aircraft! The reply was that most controllers dislike flow control measures and would willingly see them thrown out. However, the overall European ATC system is only as strong as its weakest link, forcing us to live with them albeit that current measures are obviously inefficient. One question raised — with no flow control, would there be sufficient concrete at some airports to contain all the aircraft?
It was suggested that flow control was not really a matter for ATC at all. The root cause of traffic congestion problems lay with the airline companies themselves. If all airlines took advance action by cooperating in a joint planning of schedules, knowing ATC's limitations, excessive traffic peaks should never arise. Such action had already been taken to a limited extent in the U.K., and delays had indeed been reduced.
The major point that kept recurring was the inefficiency of flow control measures as applied on a unit by unit basis. What was needed was a central executive body, fully equipped to monitor and arrange traffic on a European scale. Each flight, handled individually, could be given the optimum route and time, avoiding the present waste of airspace or unfair and unnecessary delays.

Close of the Forum

At 1120 pm the chairman brought the forum to a close with a summary of the evenings discussion. The talk continued however into the small hours of the morning in the less formal surroundings of the Avion Bar downstairs. Congratulations must go to the Organising Committee, and thanks to all those who involved themselves in many different ways to contribute to the Forum's success. The experience gained will hopefully help to make such professional gatherings a regular feature of EGATS activities in the future.

It was impossible, of course, for all opinions to be expressed, and much was left unsaid. But perhaps we should all reflect on the comments made by one member of the audience:
Flow control should ideally be handled by a single centralised authority covering as wide an area as possible. Various states have established national flow control cells but are not willing to let a multinational concern take over the task. Eurocontrol has nevertheless been investigating the single cell concept, analysing and forecasting the traffic demands over varying periods.

In parts of Europe reduced separation is possible, and sophisticated equipment is used. But the trend towards automation is accompanied by the trend towards reducing coordination, making the system too rigid. Could not more be achieved by better coordination and more negotiation between units? Has flow control gone too far? Isn't it in fact all arbitrary? Is flow control really necessary?

M.J.L.

Jersey

Jersey was once described by Victor Hugo as "A piece of France fallen into the sea and gobbled up by the British."

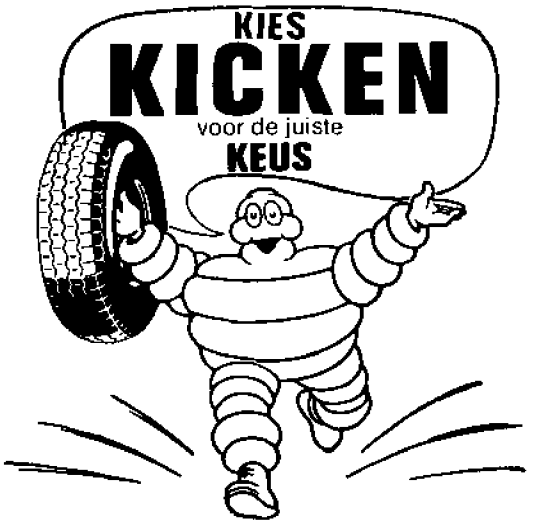
The French coast is, indeed, only twenty-two kilometres away, and many of the Jersey residents speak a Norman-French patois. Also, many places have Gallic names such as – Greve de Lecq, St Helier, Corbierre Point and Quaisne Bay. This mixture of the French and English customs coupled with its glorious weather is what makes the island so interesting and appealing.

The beaches are famous for their superb stretches of sand, and apart from swimming you can enjoy water skiing at St Brelade and St Aubin, surfing at St Quen, and skin-diving in Bouley Bay. There are also sailing and Tennis clubs, two golf courses and several riding stables.

There is also so much to see. For instance, to name but a few, Gerald Durrel's Zoo, the pottery at Gorey, the harbour of Rozel, Mont Orgueil Castle, even the lighthouse at Corbiere is well worth a visit.

There is a wealth of entertainment available in the evening – summer shows at the Opera House, cabaret at De France Lido, you can eat lobster at a variety of fish restaurants, enjoy a drink at the Portelet Inn, Moulin de Lecq, The Windmill, The Smuggler's Inn or a variety of "smugglers inns and taverns". Naturally, the hotels also provide excellent entertainment.

A car can be hired for as little as fl. 24,– per day or fl. 144, – per week (unlimited mileage).



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EGATS TRAVEL is presently making preliminary negotiations with airlines and hotels for a weekend in Jersey.

A chartered aircraft will depart Beek on Friday evening 12th May 1978. The return flight will be on Sunday evening 14th May.

All EGATS members, their families and their friends may participate. However, EGATS members will be entitled to a discount (25% – 30%).

Naturally, the exact cost is not yet known. However, EGATS TRAVEL is aiming for a price of fl. 320,– p.p. which will include the flight and hotel accomodation with breakfast.

START BOOKING YOUR SEATS NOW – Applications, in writing (on a card), giving details of names and type of accomodation required – to locker No 70.

ADA - a fairy tale

Once upon a time in a remote part of the forest lived a young couple called Fred and Gert Plan, and after Fred had made an input and a system parameter had elapsed Gert was delivered of a son, or as we say filed a little Plan. After much discussion Fred and Gert decided to name their son Frederick Leonard Ian Garry Harold Timothy after his mummy's friends on the night shift and so he became known as F.L.I.G.H.T. Plan or F.P. for short. Meanwhile in another part of the forest the wicked scientist was pursuing his evil experiments when suddenly a flash of lightening fused his transistor and out of the resulting mushroom shaped cloud of smoke stepped a beautiful princess covered all over in short blonde hair. "And what is your name m'dear" asked the evil scientist twirling his moustache. "Ada" she murmered coyley, "what?" said the evil scientist whose sinful life had left him hard of hearing. "Mum calls me "Our Ada" she said. "What?" he said. "OUR ADA" she screamed. "Ah" said the evil scientist "then come and sit on my knee little Radar and we will start your education immediately."

Now while Radar was being educated, and the scientist was getting more and more deaf and not seeing too well either, F.P. was growing up into a fine strapping young lad and he passed all his exams and was a credit to his father, or as we say, input operator.

One day his father took him on one side and said "My son, the time has come for you to be activated." "Activated?" said F.P., "Activated" said his father and explained that he would soon grow short stubby hair all over his body, would feel an urge to travel and a desire for spiritual union, or as we say, a bit of the other. "You mean – S.S. hair, navigate and correlate" said F.P. "Absolutely" said his dad "but watch your language in front of your mother."

Now in yet another part of this vast forest lived the Fairy MADAP who spent most of her time looking for the expert who gave her such a foolish name in order to turn him into a person. Fairy MADAP noticed that F.P. and Radar were growing up and decided to arrange for them to meet, and not only that, but to have another common interest. Accordingly she filled both F.P. and Radar with the desire to be authors but arranged that while

KLM
at
home
in
the
air

F.P. was good at detail but could never think of a good subject, Radar was full of ideas for story subjects but incapable of writing them in the necessary detail.

One sunny afternoon the next day, F.P. and Radar met while wandering through the forest. "Good Heavens" cried F.P. we have identical S.S. hair, will you correlate with me?" Blushingly Radar agreed to the union and F.P. led her tenderly towards his water-bed which he had quickly assembled behind a bush ...

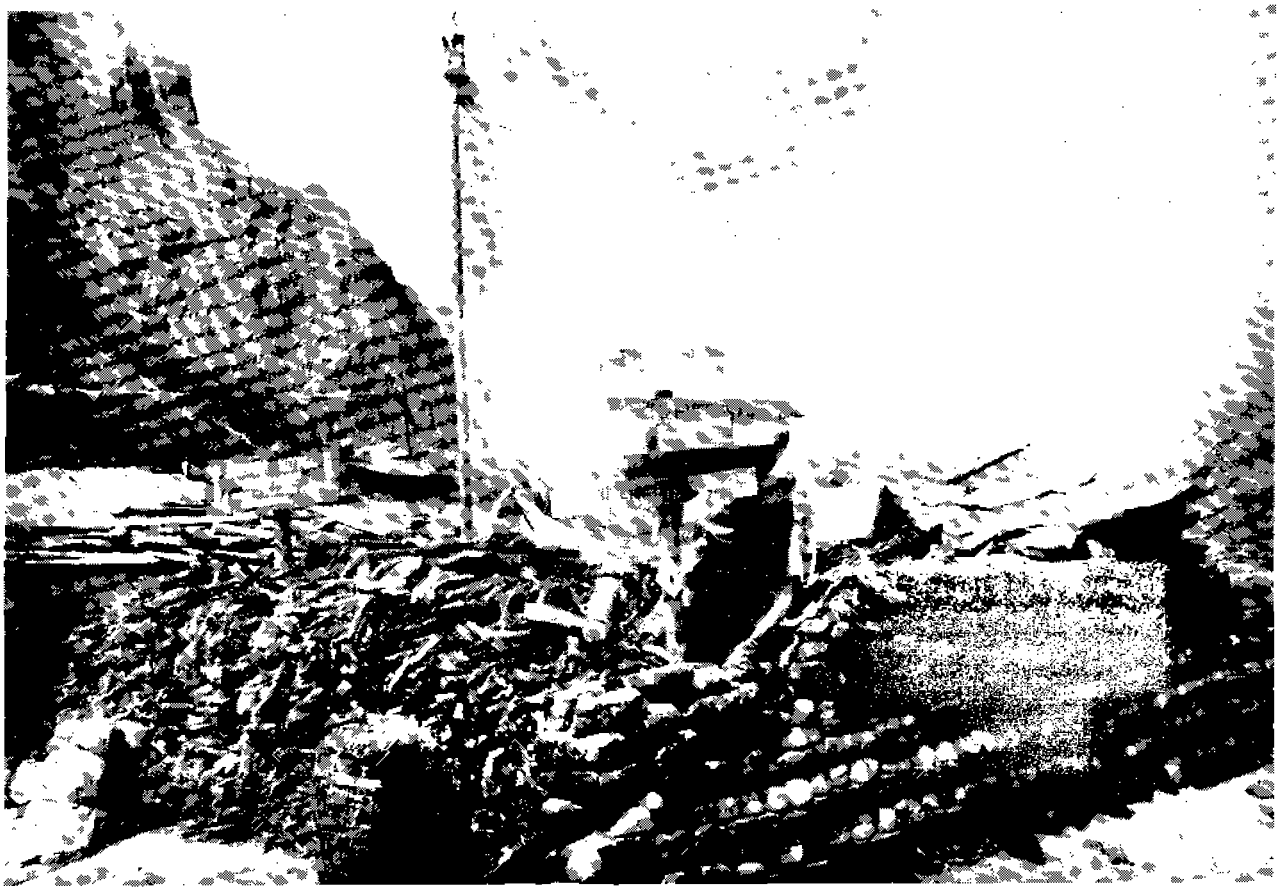
The next morning they discussed their other common interest; writing. "My problem" said F.P. "is that my subjects are either out of date or too futuristic or not close enough to what the public wants." "My problem" said Radar" is that my subjects are good but I cannot fill in all the detail."

"But Radar" cried F.P. "Why not combine your subjects with my detail to produce real up to date stories."? And that children is what they did and F.P.'s stories updated by Radar's plots were a great success and they lived happily ever after in yet another remote part of the forest.

(The Editor denies all responsibility for this article)

Nepal

The latest pictures from Mars show us a colossal mountain twenty seven kilometers high, and called Olympus Mons. Not so far away, yet in a completely different world is Mount Everest a mere nine kms. high, and not worthy in beauty to be Earths most famous mountain.



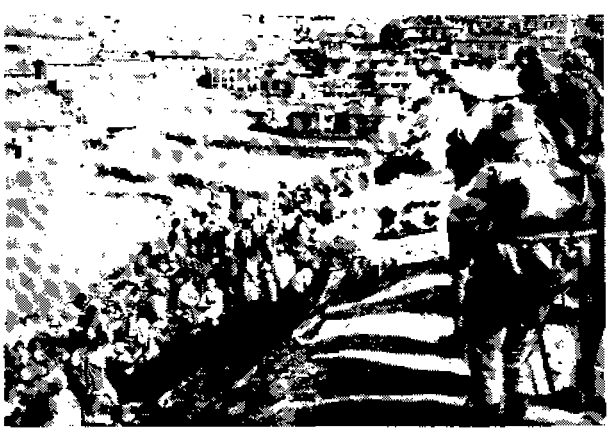
Sherpa Hotel at Pheriche, 14,000ft

Beauty it is said lies in the eyes of the beholder, so Everest to me was overshadowed by the many breath-taking views on the way to see it.

From a somewhat cloudy dream in 1975 developed an ambition, then an organised trip to visit, and see the wide wild valleys, and the lofty lonely peaks of the Himalayas. Unknown to most, that part of the world is almost uninhabitable for up to four months due to the monsoon. Between that and the severe winter at high altitude there were only two periods to choose from, late Spring or early Autumn. On March 22nd 1977 an intercontinental flight via Delhi brought us to Katmandu, capital of Nepal. Such a name as Katmandu probably conjures up a strange place. So it was to me, like a picture of a city painted by Charles Dickens. Long narrow streets just getting to know the motor car, the people and tradesmen carrying on their lives, on their doorsteps and into the streets. It was certainly a city, alive and with a strange fascination

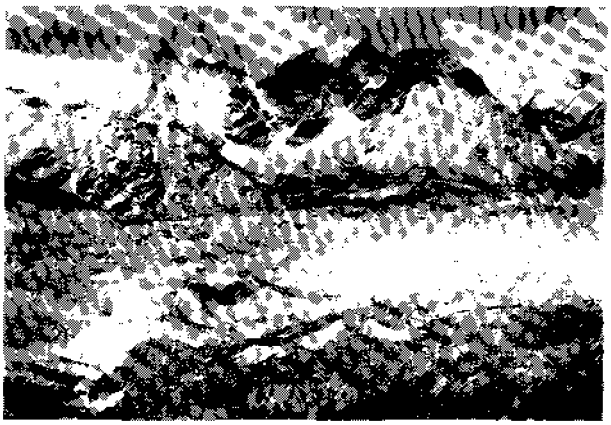
With a very knowledgeable guide to explain things to us, we visited some of the holy places and temples in the valley of Katmandu. These Buddist and Hindu shrines are signs of a vastly different way of life to ours. These however were not the main purpose of our trip so, after two days to recover from so called jet lag, we left on a Royal Nepal Airlines twin otter to Lukla, deep in the Himalayas. Lukla has a small number of houses and a new hotel, beside a grass landing strip; This was the starting point of our trek. The flight itself was spectacular, flying barely above the mountain tops and with a clear and continuous view of the whole range of snow capped peaks.

Beginning at Lukla many strange sounding names were to become familiar and memorable places. Towering mountains like Tramserku, Ama Dablam, Nuptse, and Pumo ri. Places and villages like Nanche Bazar, Pherice, Lobuche and Gorak shep. Then "namaste", the friendly greeting from almost everyone in their Nepali tongue.
For fifteen days we lived as lucky guests of Nature in one of its' still unspoiled masterpieces. We walked, stumbled, and coaxed ourselves along the main paths up to a small valley at 18,000 ft and at the foot of Everest. The sights and things we saw there and on the route to and from were fascinating and unforgettable. There were many truly spectacular scenes of breathtaking beauty, hard to appreciate because it had never been experienced before.



Saturday morning at Namche Bazar, 11,500ft

Tengboche Monastery grounds, 12,500ft, showing Bhuddist shrine & a group of Sherpani (women porters)



Everest Massif, 18,000ft

Each day we covered an average of ten to fifteen kms. and about a thousand feet in altitude, though on some days it was more. Our camp sites were decided each day by our guide and we walked alone or in small groups with sufficient time to cover the distance. Each one of us had good and not so good days. There were many things to contend with, the unusual amount of mostly uphill walking at ever increasing altitudes and decreasing oxygen in the air. Strange and new food, and contaminated water led to stomach upsets. The temperature changed very quickly from minus twenty at night to ± fifteen during the day. All said the physical effort was very noticeable most of the time but the reward was a once in a lifetime experience in splendour.

Since we were on the main path we occasionally met others, sometimes other tourists coming down, but usually the Sherpa people themselves going about their normal lives and not at all curious about us. From time to time we met a Yak train (The Yak is a member of the ox family and used in Nepal and Tibet to carry goods.) The capital of the region, called Namche Bazar, had a market day and we paid it a visit. This was where the local farmers sold what they somehow manage to grow, and then bought or bartered for their own needs. It was a fascinating sight, especially since some of those present had walked five or six hours to get there.

More and more we left signs of habitation behind us. High in the mountains only the monks live in their isolated monasteries, for them a life of prayer and meditation carrying on a long if receding tradition. At one now abandoned place we were shown a skull supposed to belong to a Yeti, as the Abominable Snowman is known there. Along the lower parts of our route we passed from time to time tea houses. Here a special brew of tea or tsjang (a local beer made from rice) could be bought for less than 25 cents.

The start of our journey brought us along a valley floor, the path following the course of a river named Dudi Kosi. It had a clear green colour of glacier water and travelled at high speed with a gushing sound. After leaving the river we arrived in more barren parts with less and less trees, and snow and ice in increasing quantities. We were always surrounded by rows of jagged peaks, an eternal

A Yeti claw, kept at the Pangboche Monastery.

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natural sculpture. Each new day brought a new feast for the eyes, each step was one nearer to the frozen valley at the foot of Everest.
Indeed it was a different world out there, a live dream of indescribable beauty, and the memory of it will probably be enough to bring me back there.

Text: A. Weymes

Photographs: A. Gleadell

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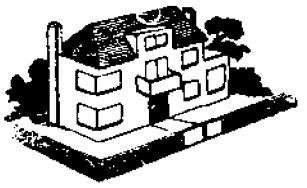

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Ten easy ways to undermine your guild

1. Never turn up for Guild meetings.
2. If you do go, try to be late.
3. Continuously criticise the work of the Board Members.
4. Under no circumstances accept any function; criticising is easier than participating.
5. Do not take part in any organised activities, but do not hesitate to say that the Board does not do anything for you.
6. When the Board asks your advice over certain matters, answer that you have nothing to say.
7. Tell everybody after a meeting that you have learned nothing new. Better still, tell them how it should have been.
8. Do nothing more than is absolutely necessary; whilst a few others are forced to do everything, complain that your Guild is run by a clique.
9. Do not pay your subscription, or at least pay it as late as possible.
10. Complain about the fact that nothing interesting is ever written in your Guild magazine, but make sure that you never write anything yourself.

ERCAN - Air traffic in danger

The last confrontation on Cyprus created appalling difficulties for the island's controllers. The Cyprus Air Traffic Controller's Association, hospitable hosts to the well-organised 1977 IFATCA Conference in Nicosia, presented a disturbing working paper to the Member Associations present. Its resolutions were accepted, and were fully supported by EGATS.

THE NICOSIA FLIGHT INFORMATION REGION

1. The Nicosia Flight Information Region was established and its boundaries were delineated at the 4th European Mediterranean Air Navigation Meeting of ICAO in 1958. Responsibility for this maritime FIR was assigned to the then Colonial Government of Cyprus and after independence in 1960 responsibility was assumed by the Government of the Republic of Cyprus as fully fledged ICAO member State.

2. During and after the Turkish invasion of Cyprus in July 1974, Turkey, apart from destroying and usurping most of the equipment used for civil aviation purposes, also interfered arbitrarily with the provision of air traffic control within the Nicosia FIR in various ways, such as the declaration of part of the FIR as danger area, the designation of new reporting points and the request to pilots to contact Ankara A.C.C. whilst operating within Nicosia FIR.

3. These arbitrary acts culminated in the recent issue of an illegal document purported to be a Notam No. A01/77, dated 21st March 1977, announcing the establishment of the so called "Ercan FIR" within the Nicosia FIR, where the Turkish Cypriots, in collaboration with Turkey, started providing air traffic advisory service within a section of the Nicosia FIR with complete disregard to aircraft safety and the advice of ICAO and IATA and against ICAO Standards and Recommended Practices concerning the provision of Air Traffic Services.

4. This action, apart from flagrant contravention of ICAO established procedures, is also fraught with grave dangers to international aviation. Two separate units are now providing air traffic services of two-grades: – advisory service by the illegal "Ercan ACC" and air traffic control service by the ICAO recognised Nicosia ACC – within the same block of airspace, without any co-ordination. Due to this anomalous situation a number of near-misses have already occurred in the area and we are afraid that, if this situation is allowed to continue, it will be further deteriorated with potentially hazardous consequences.

5. These developments have been reported to various relevant International Organizations including ICAO, IATA, IFALPA and IFATCA whose responses are quoted here below in brief:
(i) ICAO response:
"ICAO has been made aware of the intended unilateral takeover on twentyone March 1977 from Nicosia ACC of the provision of Air Traffic Services in the Northern part of FIR Nicosia through the creation of what is described as ERCAN advisory airspace stop ICAO has urged the withdrawal of such intended measures and continues to work for this purpose. The ICAO position is that (A) the allocation of responsibility for the provision of air traffic services in the airspace concerned as detailed in the air navigation plan approved by council under authority emanating from the convention on International Civil Aviation is unaffected by such intended takeover as are (B) the obligations of the Air Traffic Services units in adjacent areas of the plan to continue to cooperate and coordinate with Nicosia ACC in accordance with Established ICAO provisions and of (C) aircraft operating in the area to adhere to associated ICAO provision and procedures".

(ii) IATA response:
"Due to conflicting operational requirements now presented in the airspace as well as evident lack of coordination with adjacent centers concerned and for reasons of flight safety CMA IATA airlines unable to comply with the NOTAM as promulgated. The authorities responsible for the issuance/promulgation of subject Notam are urgently requested to postpone the effective date of implementation until such time as the serious operational problems thus imposed can be resolved.
Should this request be refused or no reply received by the presumed effective date of the Notam 1.E 21 March CMA, IATA airlines will be presented with no other alternative but to continue to operate in the airspace in conformity with existing procedures. An immediate reply to the above is requested. (Regional technical Director for Middle EAST/IATA. Your reply via FTIN LSGGXBEB or Telex 23391 IATA.")

(iii) IFALPA response:
"(a) That all affected associations be advised of the current situation.

(b) That a further cable be sent to the Turkish Cypriot Authorities advising that pilots will be operating in accordance with ICAO procedures as stated in the ICAO cable, and requesting withdrawal of Notam 01-77 due to the confused situation and possible hazards to flight safety that could arise."

(iv) IFATCA response:
"This Federation strongly condemns any ATC organization, document, and the publication of any written or verbal instructions issued from an unauthorised source which puts the safety of Air Traffic at risk. The Executive Board of IFATCA therefore, requests that the United Nations, the International Civil Aviation Organisation the International Air Transport Association, and the International Federation of Air Line Pilots Associations urgently consider what action should be taken regarding the Notice to Airmen issued by the Turkish Federated State of Cyprus. Copies of this letter are being sent to the organisations mentioned above and through this letter would ask them to ensure that pilots and companies operating in the Nicosia FIR comply only with instructions issued by Nicosia control – the legal and ICAO authorised unit.
It cannot be over emphasized that the safety and regulation of Air Traffic in the Eastern Mediterranean area can only be maintained of the Notam is cancelled. We respectfully request your most urgent assistance in this matter to ensure the safety of all who fly in the Nicosia FIR."

6. In view of the above, and in the interest of air safety in the area, this meeting is invited to adopt the following:

RECOMMENDATIONS:

1. IFATCA declares that the unauthorised operation of "Ercan A.C.C." within the boundaries of the Nicosia F.I.R. is illegal and liable to create hazardous effects to air traffic in the eastern Mediterranean.

2. IFATCA requests that ICAO, takes all the necessary steps to ensure the immediate cessation of all dangerous and illegal acts within the Nicosia F.I.R.

3. IFATCA requests IATA and IFALPA to ignore completely the so called Ercan Centre and apply normal ICAO procedures whilst operating in the Nicosia F.I.R.

"ERCAN ACC" and its consequences on Flight Safety

CASE ONE

1. **Flights Involved**
i) SV640 DC8 LIRF/OEDR via airway W15 Alasia FL330
ii) SV8252 DC10 EHAM/OEJD via airway B15 Alasia FL330

The Incident
i) SV640 – Transferred normally by Athens Control at the FIR boundary.
SV640 checked LCA at 0257 estimating Alasia at 0303 BN at 0311 FL330 on 126.3.
ii) SV8252 made first contact with Nicosia ACC at 0259 and was estimating Alasia at 0300. FL330. This aircraft was coming from Ankara FIR and was not released to Nicosia.
Nicosia instructed SV8252 to descend to FL290 immediately. In order to avoid SV640.

CASE TWO

i) LH615 B727 OSDI/EDDM via B15, Alasia (North Bound).
ii) LO517 TU134 LTBA/OLBA via B15A Alasia (South Bound.

The Incident
i) LH615 North Bound on B15 climbing to FL310 coming from Beirut FIR, as co-ordinated between Nicosia and Beirut.
ii) LOT517 South Bound on B15 at FL290 was not released by Ankara to Nicosia – Nicosia had no information on this flight until time 0616 when Beirut inquired whether they could assume control on this flight which was in contact with them, just after passing position Alasia.

Note that the North bound traffic was at that time 3 minutes North of Alasia (ALASIA 0613) maintaining already FL310.

ADDITIONAL CASES

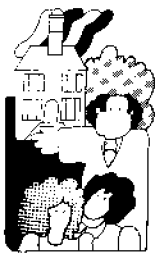
31/3/1977
1. LO6845 IL18 EPRZ/OLBA via B15 passed B15 0746 and established contact with Nicosia ACC at 0749 descending through FL245 to FL190.

2. M90026 USAF C5 OIII/EDAR cleared by "ERCAN" from FL370 to FL390 to join G18B 0903 thus conflicting with BA3891 B707 VABB/LGRD FL390 via W15N/G18 estimating G18B 0900. Avoiding action taken by Nicosia ACC clearing BA3891 to FL350.

3. ELF 566 Iranian Airforce C130 OIII/LIRA passed A28A 0826 FL230 for G18B. Next call with Nicosia ACC at 0836 FL240 as cleared by "ERCAN" well within Nicosia FIR.

De Limburgse Gemeenten helpen U aan een eigen huis

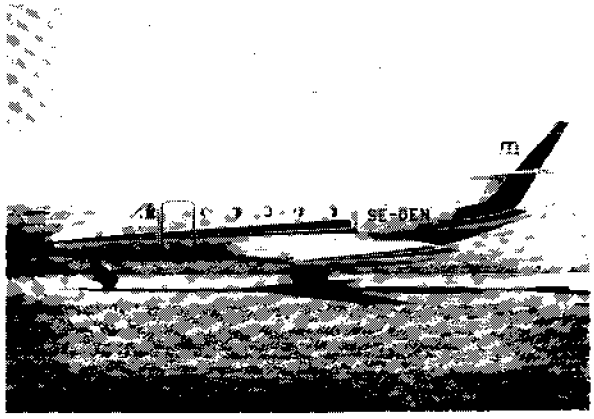
Het Bouwfonds voor Limburgse Gemeenten is een instelling van 94 Limburgse Gemeenten.
Haar doel is het bevorderen van het eigen woningbezit.
Dank zij de unieke voorwaarden werden tot nu toe maar liefst 45.000 hypothecaire leningen verstrekt voor een bedrag van zo'n 2 miljard gulden.



Geleen: Jos Klijnenlaan 288, tel. 04494-97777
Roermond: St.-Christoffelstraat 12, tel. 04750-16555

Say again your type

First of all I must make amends for the lack of a Corvette photograph in the previous issue. Its' omission was brought to my attention by a number of people, thereby proving that I was not the only one who read the article!



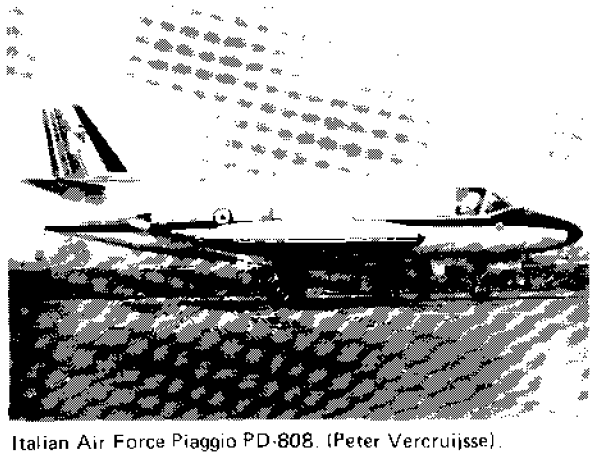
Aérospatiale SN601 Corvette. (Peter Vercruijsse).

PIAGGIO PD-808

Despite its' having seen only limited use, primarily with the Italian Air Force, the PD-808 certainly warrants inclusion in this series although its' appearance in the Maastricht UIR are few and far between.
Powered by two Rolls-Royce Viper 525 turbojets the '808 made its' first flight on August 29, 1964 and received RAI and FAA certification on November 29, 1966.
Models subsequent to the two prototypes are powered by the more powerful Viper 526s.
As previously mentioned the principal operator of the '808 is the Italian Air Force who provide a seven seat version for transport of VIPs, a ten seater for military transport and navigational duties, and an ECM version with accommodation for two pilots and three equipment operators. In addition, a small number of aircraft are used for calibration purposes.
With four passengers the PD-808 will cover more than 1100 nm at an economical cruising speed of 390 kts at 41,000 ft.

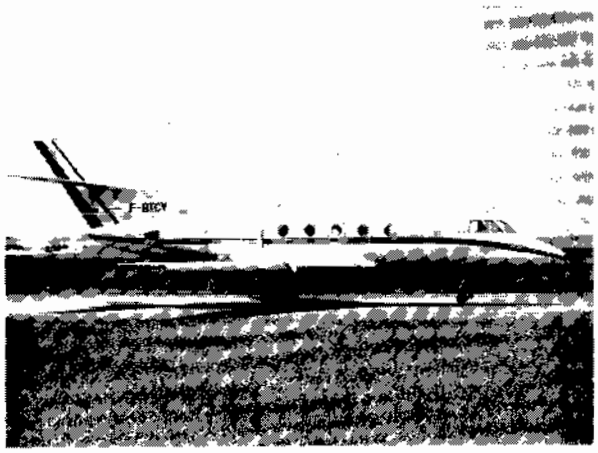
DASSAULT MYSTÈRE SERIES

Since the first flight of the Mystère 20 on May 4, 1963 a whole family of biz-jets has evolved from this aircraft, although two projects, namely the 30 passenger Mystère 30 and the 40 passenger Mystère 40, never reached the production line. The 10 and 50 though did materialise, but more of them later. For the first flight the Mystère 20 was pow-



Italian Air Force Piaggio PD-808. (Peter Vercruijsse).

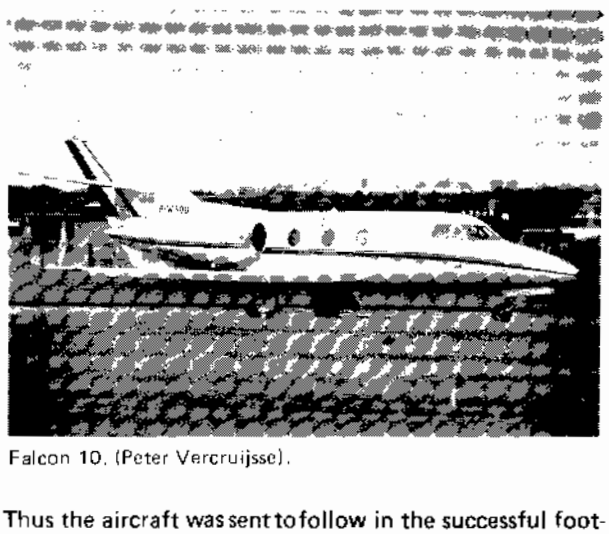
ered by two Pratt & Whitney JT12A turbojets. This powerplant was subsequently replaced by the General Electric CF700 turbofan which has powered all production models since. The United States Coast Guard has specified the Garrett-Air Research ATF-3 for the 41 Mystère 20s that it currently has on order. As from October 1979 this engine, complete with thrust reversers, will also be available for retro-fitting to CF700 powered civil models and, at a later date, will be applied to production aircraft.
In August 1963 the Business Jets Division of Pan Am, as Western hemisphere distributors, ordered 54 Mystère 20s to be marketed under the name Fan Jet Falcon. In addition the company took an option for a further 106 aircraft. 10 years later the Business Jets Division was succeeded by the Falcon Jet Corporation, a company formed jointly by Dassault-Breguet and Pan Am.
The Mystère 20 accommodates between 8 and 14 passengers distributed either side of a "trench" aisle which allows a maximum cabin height of 1,73 m.



Mystère/Falcon 20. (Peter Vercruijsse).

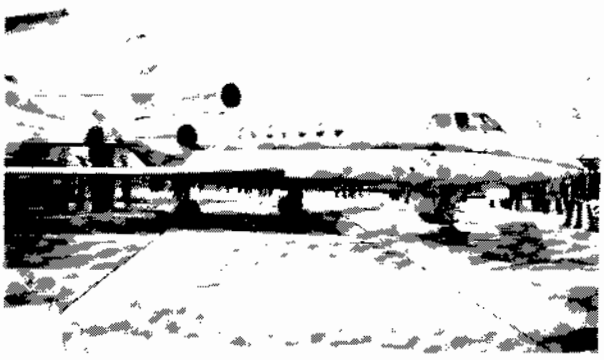
Worthy of mention is the Falcon Cargo Jet conversion performed by Little Rock Airmotive and operated by Federal Express on its' extensive parcels services within the United States. To meet a Pan Am contract Little Rock Airmotive removed the cabin door of a standard aircraft and replaced it with an upwards opening hydraulically activated cargo door, 1,88 x 1,44 m. The prototype first flew on March 28, 1972. Federal Express currently operates a fleet of 32 Falcon Cargo Jets consisting of new and second-hand converted aircraft.
At an economical cruise speed of 405 kts the Mystère 20 will carry 8 passengers up to 1930 nm. Range, naturally, is decreased when operating at maximum TAS of 465 kts at 40,000 ft.

The Falcon 10 is basically a scaled down version of the Mystère/Falcon 20 accommodating up to seven passengers and powered by two AiResearch TFE731 turbofans.
The '10 made its' first flight on December 1, 1970 powered by two General Electric CJ610 turbojets. It is worth noting that on June 1, 1971 this aircraft, following modifications to the mainplanes, set up a 1000 km closed circuit speed record for its class of a creditable 502,05 kts.
Subsequent prototypes were powered by the TFE731 and the first flight in this form took place on October 15, 1971.
Once again Pan Am's Business Jets Division placed an order similar in size to its' initial order for the Falcon 20.



Falcon 10. (Peter Vercruijsse).

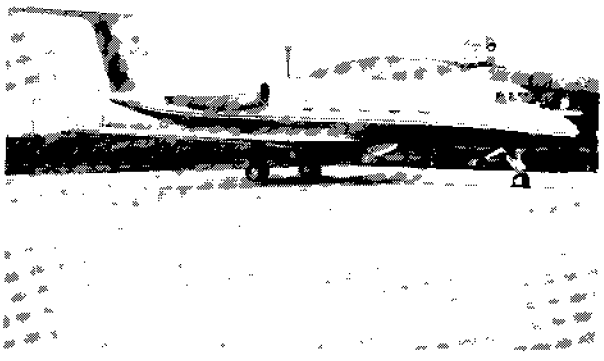
Thus the aircraft was sent to follow in the successful footsteps of its' larger predecessor.
With four passengers and standard fuel reserves the Falcon 10 has a range of over 1900 nm. Maximum TAS is 494 kts or MO,87 – quite a hot ship!
A three-engined Falcon first came to light in 1973 when the Falcon 30T was projected as a derivative of the now defunct Falcon 30. By the end of May 1974 the project had been re-designated and announced as the Falcon 50.
More so than the other family members the Falcon 50 is a computer based design. Initial intentions were to employ a wing similar to that of the Falcon 10 but computer predictions showed that performance advantages could be gained by adopting a section resembling a NASA supercritical aerofoil. With its' new wing the design became known as the 50B.
In this form the Falcon 50B took to the air for the first time on November 7, 1976 powered by three AiResearch TFE731s.
To improve field performance the centre engine will be supplied with a Grumman thrust reverser as standard fit. This unit can be used during ground roll out right down to standstill. Reversers for the outer engines are available as per customer requirements.
With eight passengers aboard the Falcon 50B has a range in excess of 3000 nm at 430 kts. This means, of course, that the 50B does have transatlantic capability, albeit somewhat limited. Eastbound flights would have to commence from Gander and New York – London would only be possible during favourable times of the year. Maximum cruising speed is 470 kts.



Falcon 50. (Peter Vercruijsse).

GRUMMAN GULFSTREAM 2 & 3

The Gulfstream 2 was announced by Grumman on May 17, 1965. As no prototype was built the first flight of the G2 was made by the first production aircraft on October 2, 1966 powered by two Rolls-Royce Spey turbofans.
The type received FAA certification on October 19, 1967 and the first delivery was made a few weeks later on December 6.
The Gulfstream 2 was the first of the biz-jets to have transatlantic capabilities and, indeed, was for a considerable time the largest biz-jet on the market with accommodation for up to 19 passengers. Range has recently been further increased to 3200 nm or more by the addition of wing tip-tanks.
These tanks will be offered as optional extras although each aircraft will be fitted with the necessary plumbing regardless.
The G2's maximum cruising speed is 505 kts and sea level rate of climb is 4350 fpm.



Grumman Gulfstream 2. (Paul J. Hooper).

Sales of the Gulfstream 2 passed the 200 mark earlier this year.
Design work on the Gulfstream 3 was discontinued during 1977 when it was realised that the unit price would be such that it would discourage, rather than encourage, prospective customers. The price of technology!!
The aircraft was to have had a new supercritical wing along with Whitcomb vertical winglets at each tip. The Spey powerplants were to have been retained.
Using the knowledge gained from the Gulfstream 3 project Grumman is now studying areas in which improvements can be embodied in the Gulfstream 2.

I would like to make it clear that the purpose of this series of articles is to give you a **general** idea of the performance characteristics of business jets. I am optimistic enough to think that you may be encouraged to seek further, detailed information. If this is indeed the case I think it goes without saying that JANE'S ALL THE WORLD'S AIRCRAFT is undoubtedly the finest reference work available. And, should you think there is a similarity between some of my figures and those published in JANE'S, you're quite correct, although I hasten to add that JANE'S is not my only source of reference.

Paul J. Hooper.

UP-TO-DATE

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„JACQUES" MODES

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Martinair to replace its last DC8

A fourth DC-10 will be added to the Martinair Holland fleet. For the fourth time the company chose a plane of the type DC-10-30CF convertible for freight or passenger transport. The American aircraft factory of McDonnel Douglas is expected to deliver the new wide body in October of next year. The new addition represents an expenditure of 95 million guilders.
The new wide body will replace Martinair's last DC8-55F, the PHMAU. The latter will be resold to McDonnel Douglas. Although this does not mean a numerical change in the Martinair fleet, its actual capacity will be considerably increased.
This in turn will bring about a strengthening of the company's market position, as well as an even further modernization of its fleet.
Martinair's policy is mainly directed to diversification. There is no question of being dependent on one single market. The company wishes to spread its activities over such markets as holiday travel, freight transport, flying for third parties and intercontinental passenger transport. The convertible version of the DC-10 was therefore the obvious choice. The new wide body has a seating capacity of 371 or a freight capacity of 70 tons.
The fourth DC-10 will be mainly financed by the company's own resources. For the remainder, loans have been applied for to various Dutch banks.

(Martinair Mail)

ICAO PRESS RELEASE + PRESS RELEASE + ICAO PRESS RELEASE ICAO PRESS RELEASE

Ammended definitions (DOC 4444)

Air Traffic Controller; A cynic (subsidised by the railways) dedicated to the task of discouraging travel by air.
Holding Pattern; The laughable term applied to a dogfight in progress over the radio facility serving an airfield.
I.M.C.; Meteorological conditions under which pilots cannot see how closely they have just missed, or conditions under which the other fellow is always at your level.
Seperation; The condition acheived when two or more aircraft fail to collide.
Cruising Flight Level; Any level, other than the level requested by the pilot alternatively Any Level, maintained by the pilot, other than that approved by the controller.
ATC Tower; A glass solarium, from which tired and worn-out controllers regard aviation with amazement.
Perimeter Track; That part of an airfield reserved for performance testing of controllers cars.
Control Instructions; An impossible solution to an insoluble problem issued by an incoherent controller to an uncomprehending pilot.

Luxembourg was never like this!

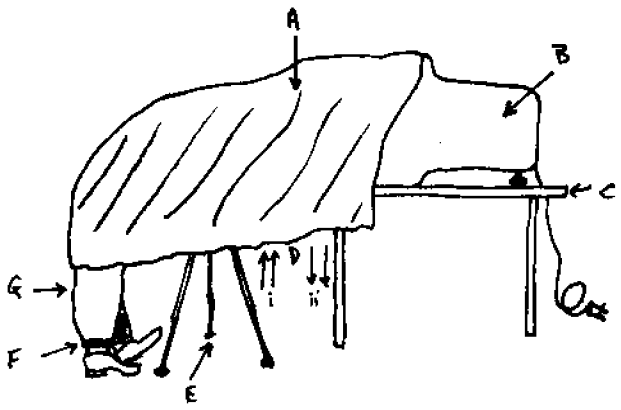
MADAP LXXXIII

Our spy on the spot reports. ...

Despite many rumours, nobody is really certain about the future of Eurocontrol. A senior official was recently observed at the BPC ostensibly taking photographs. It is believed that he may, in fact, have been conducting secret trials on a revolutionary new system designed for maximum controller utilisation at minimum financial outlay. Roving Eurocontrollers of no fixed licence or percentage factor may be sent out with their own collapsible centre as a stop-gap measure whilst various international committees refuse to make up their minds over a nice lunch.

Key:

A. Day and Night Waterproof Canopy.
Equipment can be used in all weathers without the expense of a surrounding building.



B. BPC Screen.
Synthetic Data Display. Automatic callsign correlation. Full mode "C" and planned flight level labelling. Automatic label separation. Tied to minicomputer gives automatic conflict detection, time updates, projected flight paths and many other refinements. Considered by many authorities as nonessential.

C. Table.
Optional extra.

D. Silent Airconditioning.
Operates as follows:
i) controller breathes in
ii) controller breathes out

E. Tripod.
Chin and heavy headset rest.
Contains built-in antenna with Tx/Rx switch.

F. Bicycle Clips.
For a quick getaway.
Also fulfils anti-wasp function and traps falling objects.

G. Disposable Controller.
Just add Article 41.

A & E. Built-in Dormitory.
No need to provide further rest facilities. Controller can sleep at position without even being noticed.

Literature: George Orwell, "1984"

A PLEA FOR JUSTICE

In conjunction with similar action by other Guilds, as part of a coordinated appeal by IFATCA, the following letter was sent by EGATS on a predetermined date.

To his Excellency
The Ambassador of Yugoslavia
Groot Hertoginnelaan 30
's Gravenhage

25 August 1977

Your Excellency,

Re. Gradimir Tasic
Mid-Air Collision near Vrbovec, Yugoslavia
10th September 1976.

We understand that a petition is to be presented to President Tito by IFATCA in an effort to persuade him to reverse the decision of the Zagreb district Court which, on 16th May 1977, imposed a sentence of seven years imprisonment on the above named Gradimir Tasic.
We wish your Excellency to know that the members of this Association view this matter with the utmost concern and would be most grateful if Your Excellency could indicate to the Authorities in Belgrade that we most wholeheartedly support the request for speedy action by President Tito, in accordance with the request made in the said Petition.

Yours faithfully,

T. van Hal
Secretary

RIDING ON AIR

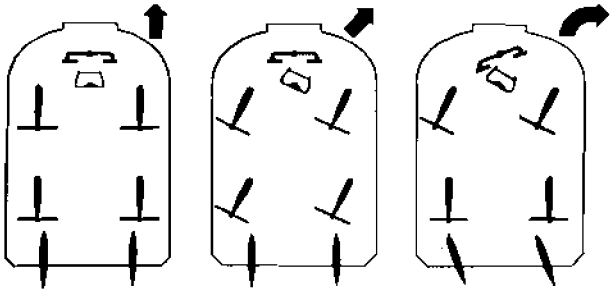
Far below Eurocontrol's area of jurisdiction, several scheduled flights operate daily across the English Channel without any supervision by Air Traffic Control. These are the hovercraft services of British Rail (Seaspeed) and the independent company Hoverlloyd.

Hoverlloyd was formed in 1966 by two shipping companies, Swedish Lloyd and Swedish American Line (now both members of the Brostom group) to operate a cross channel car and passenger ferry service between Ramsgate and Calais.

Despite analogies with other vehicles, the hovercraft is a unique means of transport. Sir Christopher Cockerell introduced the idea of an air-cushion vehicle which could travel on either land or water, and from its first public trial in 1959 the hovercraft has been acclaimed as a major transport innovation, being particularly well suited to fill the transport gap which exists between surface vehicles and aircraft.

As an amphibious vehicle there is much scope for the hovercraft over land and over water. Over land the craft is especially useful in difficult terrain such as swamps, deserts and icefields, but its most promising commercial potential seems to be in transport over water. During the course of its development, while technical knowledge was still limited, experimental hovercraft ferry services were operated in sheltered coastal waters and inland waterways. The hovercraft travels parallel to, or "profiles", the surface over which it passes and is therefore strongly influenced by surface irregularities. The early craft with only a nine-inch clearance was hampered by the chop of the waves. Before it could be seriously considered as a competitive means of transport in open water, the effect of wave impact had to be overcome. This was done by fitting the hovercraft with a flexible rubber "skirt" to absorb wave shock and local abrasion. Working in open water was further perfected by the development of larger craft which had a greater hovering height and were therefore more independent of wave undulations. Interest from Britain and overseas aided further rapid development. Today, more than fifty British Hovercraft Corporation (BHC) craft are in everyday service with commercial and military operators throughout the world. Hoverlloyd have been using three BHC SRN4 Mk.11 widened Mountbattens which carry 280 passengers and 37 vehicles at speeds of up to 60 knots on a cushion of air 8ft deep. These were joined by a fourth craft in June, similar to the existing three in service but updated to the latest standards which include many improvements. This additional craft, worth in excess of £5 million increased Hoverlloyd's Cross Channel carrying capacity to a total of 15,680 passengers and 2,070 cars per day during the peak summer season.

The basic principles of the hovercraft are quite simple. The air on which they ride is supplied by lift fans which pump air into a cavity around the lower periphery of the craft. This cavity is known as the "plenum" (from the Latin word meaning full). The main problem during the early development of the hovercraft was that the plenum had to be supplied with a high mass flow of air-that is to say, more air than the volume which escaped from beneath the edges. This required a large power source; furthermore the air had to escape evenly all round the edges; any inbalance meant more air would escape from one side of the plenum than the other, with a subsequent loss of craft stability.



The solution to these original problems of instability and costly power consumption was found in a device called a "momentum curtain". The air supply to the plenum was fed through slots or jets so arranged around the outside edge at an angle such that air was directed downwards and inwards – some circulating under the craft to form the air cushion and some escaping outwards in a controlled manner, according to the pressure in the slot or jet. With this arrangement, less power was required to provide the lift, and the rate of flow to each side was controllable by the commander who could maintain stability.

It can be seen that the actual cushion on which the hovercraft rides is contained only by an air curtain and is sustained at low pressure. This is one of the most remarkable physical facts about the hovercraft.

With these developments it was found that there was still too much power being used to provide an adequate hover height; if hovercraft were to become economically viable, further improvements were necessary. Thus the "skirt" was devised - a shaped, flexible curtain fitted below the bottom edges of the plenum. The plenum extended when the hovercraft rose the hover, thus retaining a deeper cushion of air, bringing an added bonus in the form of increased passenger comfort as well as improvements in overall craft efficiency.

The upper half of the skirt now in use on all BHC craft is a double-walled structure, built up in segments, which runs around the periphery of the craft. This is known as the bag and is the most rigid part of skirt structure. Attached to the bag is a series of flexible extensions, which have contact with the surface over which the craft is travelling to form an air seal for the cushion. These extensions are known as fingers.

The whole skirt system, and the fingers, in particular, acts as a giant "shock absorber", accepting any impact from obstacles or waves before it can be transmitted to the hard structure. This not only gives a smother ride but also enables relatively high cruising speeds to be maintained in rough conditions. The fingers also flex in sympathy with undulations in the surface over which the craft is travelling – reducing losses from the air cushion and ensuring that the craft continues in level flight.

To reduce pitch, there is a "captured air bubble" in the bow skirt and rolling is reduced by the very shape of the skirt itself, which bulges outboard of the solid structure. Craft stability is further improved by a cruciform arrangement of flexible keels in the cushion area.

The first generation of hovercraft were driven by piston engines. Today, lighter, more powerful gas turbines are found to be more satisfactory. The SRN4 is powered by four Rolls-Royce Proteus gas turbines which have been modified for marine use. These engines were fitted to the Bristol Britannia and have a high record of reliability. Each engine drives a lift fan and a propulsion propeller through the medium of an integrated transmission system. Although the air pressure in the air cushion is not much

greater than atmospheric pressure, the lift fans and air intakes have to be carefully designed to achieve maximum efficiency. The fan also has to be accurately balanced to reduce vibration which would damage the structure. The SRN4 lift fan measures 11ft 6ins in diameter and has twelve fixed blades.
The hovercraft is extremely manoeverable – a safety factor of great importance when craft are operating at high speed in busy shipping lanes, or at lower speeds in congested harbour areas. The methods of directional control vary from craft to craft, but on the SRN4 the two used are propeller pitch and pylon/fin movement. The cockpit rudder bar and handwheel are similar in layout to those in an aircraft.

Propeller pitch, i.e. the angle of the propeller blades in relation to the hub, is used to control the speed of the craft. In a state of zero pitch, the craft simply stands still as in the case of lift-off when the air cushion is being built up. However, by pushing the control wheel forward, positive pitch is induced to move the craft forward. Forward speed can then be varied by pulling the wheel back for slower speeds, or by pushing it forwards for higher speeds. Negative pitch is applied to reverse the craft, as is sometimes necessary when manoevering at terminals, or for braking whilst in operation.

The pylons carrying the propellers, and the fins at the rear of the craft, move through + 35° and ± 30° respectively to give directional control. Various combinations of pylon angle and fin may be achieved by use of the handwheel and rudder bar to allow turns without drift or unnecessary manoevering in confined spaces. Operation of these controls is carried out in conjunction with the variation of propeller pitch.

The SRN4 services of Hoverlloyd are operated with a flight deck crew of three – Captain, First and Second Officers; five car deck crew and six stewardesses to attend to the passengers and operate the sale of duty-free goods on board. The craft have to satisfy stringent government safety requirements. If one or more engines should fail at sea, the craft would still be able to proceed at reduced speed to base. In the unlikely event of all engines failing, the hovercraft would still float on its buoyancy tank.
For accurate navigation, Hoverlloyd craft are equipped with a Decca navigator and flight log to supply constant information as to the craft's position. Because of their high speed and greater manoeverability, hovercraft must provide their own separation with normal shipping. The Ramsgate-Calais route crosses the major shipping lanes at right angles, and, where practical, a hovercraft will pass at least one mile ahead and half a mile astern of conventional shipping. The Second Officer operates two Decca Marine Radars to provide the necessary collision avoidance information about all other shipping. Crossings can therefore be made safely under "IMC".

All flight crew employed by Hoverlloyd are already expert Mariners before joining the company and hold Department of Trade certificates of competency. All hovercraft Captains are Master Matiners.
Flight crew join Hoverlloyd as Navigators and begin by attending radar courses on the radar navigation and collision avoidance systems. This is followed by basic navigational training which includes from 30 to 40 hours on the craft.

The next progression is to First Officer, who is the Flight Engineer. He must attend technical courses at the British Hovercraft Corporation, and at Rolls Royce. He then goes through a further period of training, including about 30 hours on the craft, before being checked out as First Officer.

The further training to actually pilot the hovercraft is a practical training on the craft itself. The Captain is not allowed to pilot it alone until he has completed a minimum of 50 hours at the controls and has passed a written examination.

All flight crew are awarded "Type Rating Certificates" to either command, act as First Officer, or navigate the SRN4 hovercraft. These are issued by Hoverlloyd on behalf of the Department of Trade.
It was in 1969 that the International Hoverport was opened in Pegwell Bay, Ramsgate. This was an ideal location for the terminal because of the sheltered and shallow water and the wide expanse of coast. It had never been developed before as it lies behind the Goodwin Sands and their dangerous shallows – these are no handicap to the hovercraft which simply skims over the top of them. Occupying 12½ acres below the cliffs at the north end of Pegwell Bay, the site is raised 8 ft above the level of the beach, so that operations are not affected by the tides. The Hoverport consists of a group of long low buildings running parallel to the cliffs. Between the buildings and the cliffs is a car park and the car reception area which is joined to the main Ramsgate-Sandwich road by an access road built up the cliff face. In front of the buildings is a large concrete apron with a ramp leading down from it to the sea. The hovercraft makes the most convenient approach, parks on the apron while it loads and unloads, then departs from the most suitable point.
Ramsgate has good road and rail connections with London making it easily accessible. The train service is frequent and travel time short. The crossing between Ramsgate and Calais takes only 40 minutes and there are up to twenty return trips a day in summer, with a minimum of four a day in the winter. Hoverlloyd also provides daily coach connections between London and Paris, and London/Kortrijk and Brussels.

Passengers must check in only half an hour before departure, as compared to at least an hour at the major ports, and can enjoy at the Hoverport all the facilities of a modern airport, including duty-free shops, cafes, bars, a restaurant, bank and a currency exchange bureau. Tickets are available through travel agents or by direct booking with the Hoverport. Similar facilities are available at Calais.

Would-be travellers (or non-sailors) to England who have not yet discovered the advantages of a hovercraft crossing will certainly find it an interesting new experience.
(Input expresses its sincere thanks to Hoverlloyd, without whose assistance this article would not have been possible. Diagrams reprinted From a British Hovercraft Corporation publication, "How a Hovercraft works".)