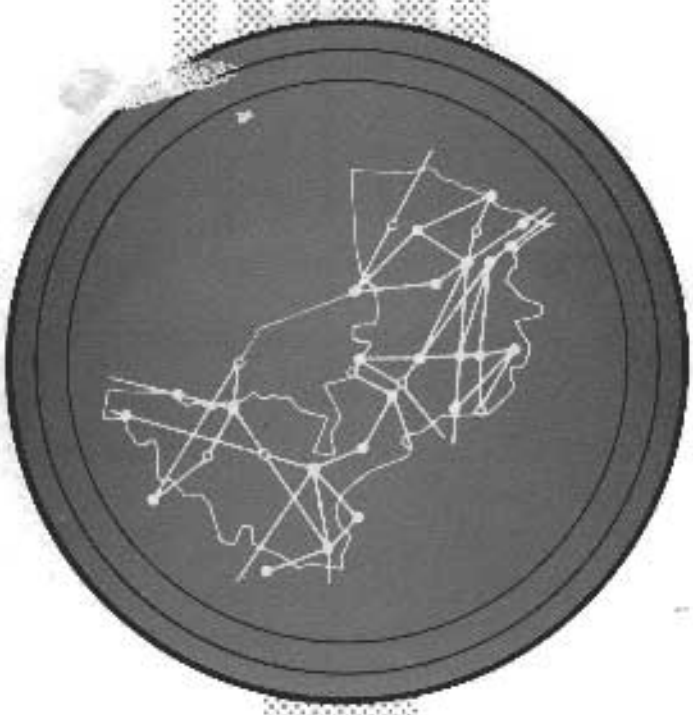

INPUT

Spring 1980

Input

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EGATS
EUROCONTROL GUILD OF AIR TRAFFIC SERVICES
A Member of IFATCA

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Output

Recent articles in "Flight International" have, intentionally or otherwise, provoked heated responses from the British CAA and from the Union Syndicale.
In these articles the views of the Managing Director of British Caledonian and of a member of the British Civil Aviation Standing Conference were made public. Although much of the articles made interesting reading I was astonished to read that it was the carefully considered opinion of these two eminent gentlemen that at the root of all the troubles besetting European ATC was - yes, you've guessed it - Eurocontrol !
In vain I searched successive issues looking for a vehement denial of these misleading articles, until the letter from the Union appeared (see page 5).
At about the same time I received a copy of the CAA newspaper Air way which further attempted to put the record straight.
But was it necessary that Eurocontrol be defended by, on the one hand, a national administration, and on the other by an employees' association ?
Is Eurocontrol management afraid of the possible consequences of committing itself to print in its own defence - or, as seems more likely - do they just not care any longer ?

This edition of INPUT is appearing at an earlier date than promised, but in a slightly different format. This has been done in an attempt to keep down costs, although a hopefully not too great sacrifice in quality has been made.
We, the editors and the EB, would appreciate your views on the subject.

I.G.

I should like to reproduce here extracts from a letter published recently in Aviation Week & Space Technology in response to an editorial concerning the modernization of Air Traffic Control. Although not having seen the editorial it is clear from the letter that it was concerned purely with the technological advances in ATC and not with the human aspects, a point which clearly upset the author but which is to be expected from a news magazine.
The letter reads : "The best Air Traffic Control equipment is only as good as the person who is operating it..... The only thing that is keeping the system going is the veteran controller, the man with 10 or 20 years in the tower and behind the scope, who knows how to control traffic by the seat of his pants when a malfunction occurs".
"Instead of giving preference to former military controllers or pilots, both of which are related fields, they (the FAA) give written exams that are not related to controlling air traffic. Conceivably, these inexperienced applicants, who do not know one end of an aircraft from the other, can, without too much luck, outscore the experienced persons who would make good controllers because they have the affinity for this highly specialized and technical field. The failure rate would be reduced as would the cost of training".
The author goes on to say that he retired just last year following 22 years as a controller at a major US airport. During that period he had assisted in the training of many "off the street" trainees who should never have been allowed through the front door. A number of these had been checked out after having received poor evaluation write-ups. They were, he considers, marginal controllers who, as the old ATC joke goes, couldn't separate two flies !
He finishes off by saying that in his experience former military controllers or aircrew made the best trainees.
Unqualified as I am to comment on this gentleman's letter I will willingly admit to concurring with a number of the views expressed. Perhaps you do too?
In Europe we have yet another source of future controller trainees - the ATC Assistant. Surely an Assistant with, say, five years experience has a firm enough grounding for possible selection

to a controller training course. That is not to say that every Assistant would be suitable material or even willing, but the source is so blatantly obvious that I fail to see why it has been so callously ignored. Let me go one step further. Was it ever really necessary to build a barrier and to place Assistants and Controllers on either side of it ? The formation of Eurocontrol provided the perfect opportunity to introduce a straight-through structure for operations personnel. That is, an "off the street" trainee would enter the profession at grade B8, for example, working his way through three Assistant Controller grades before being given the opportunity to apply for further training as a controller. Unfortunately the majority of our mentors are former military men to whom the "officers and men" pattern has become a way of life, thus preventing the application of logic. And your views ?

PJH.

I'm afraid that the gremlins got at the last edition rather badly. Amongst other great boo-boos Roger Bacon's definitions should have read :-

an ACCIDENT is ten things going wrong at once
an INCIDENT is nine things going wrong at once
AIR SAFETY is eight things going wrong at once.

I.G.

NEW EXECUTIVE BOARD FOR EGATS

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FROM THE EXECUTIVE BOARD

With a brilliant history behind us where neutral authorities and organisations praised the excellent work done by our Centre and Eurocontrol as a whole, and on the other hand the uncertain future ahead caused by nationalistic chauvinism on the part of some administrations we have been asked to take over the E.B. We have accepted this task, knowing that this can only be done when all members are willing to participate in real Guild work.
We have always been proud to be accepted as member of EGATS and would like everybody to have the same feeling.
In our programme the first concern is the future of the Maastricht UAC as an Air Traffic Control Centre. We will try to promote an interest in the technical aspects of ATC - in this respect we would like to welcome Mr. G. Gillett as a nominated official. The contacts with other associations will be intensified - Mr. J. Gordts' name is a guarantee for the success of our next Forum. Danny Grew will continue his sterling work.
We would like to use this opportunity to thank Mr. Smeeth for the work he did as President.
If you have any ideas, please put them, in writing, in the EGATS locker.
You will hear from us ; we hope to hear from you.

J. van ECK

'PAROCHIALISM HINDERS EUROCONTROL'
reproduced from FLIGHT international, 29 March 1980.

Sir - We were deeply concerned to read a quote from B. CAL managing director Alastair Pugh that "our deepest outrage is over Eurocontrol" when referring to the "recent shambles" of air traffic control and the consequent rising costs (FLIGHT, February 2, page 295).
We are in sympathy with Mr. Pugh if by Eurocontrol he is referring to the seven member states of the Eurocontrol organisation. They have allowed their national ATC systems to develop independently, despite the international convention relating to co-operation for the safety of air navigation. But we cannot accept Mr. Pugh's criticism if by Eurocontrol he means the general directorate, the executive arm of the Eurocontrol organisation.
The general directorate in the past, has proved its competence and high level of technical skills. To give but two examples of its achievements, of which we are sure Mr. Pugh is aware, we need only mention the Upper Airspace Control Centres at Maastricht in the Netherlands and at Karlsruhe in the Federal Republic of Germany. The services provided by these centres have been recognised by airlines as being as good as, if not better than, those anywhere else in the world. This fact was acknowledged by the director-general of the International Air Transport Association at a public hearing of the Transport Committee of the European Parliament in Paris last March. If the political will and spirit of constructive co-operation, which led to the drafting of the Eurocontrol Convention and the setting up of the Organisation in the early 1960s, had survived we would now be witnessing a process of harmonisation of the various national ATC systems. This would have led eventually to a homogeneous network of totally compatible systems within at least the airspace of the Eurocontrol member states. But the parochialism of national administrations (or at least some of the more influential ones) proved too strong, and the development of national systems was allowed to continue independently. Hence the "present shambles" of incompatible centres and a heterogeneous airspace structure. It is,therefore, not surprising that the airlines - and their passengers - are now paying the price for nationalism in punctuality and fuel consumption and in unnecessarily high user charges.
What is even sadder is that the member states of Eurocontrol are putting the finishing touches to an "amended" convention. If ratified by national parliaments, this will prevent, for a long time to come, any hope of a European solution to a truly European problem.

Eurocontrol Branch
European Public
Service Union
Brussels

R.C.G. JENYNS
(President)
IRENE GUBIN
(General secretary)

TOWARDS 2000 !?!

Whilst the future of UAC Maastricht has still not been finalized, various Study groups of the 2, 4, 5 and 7 Member States having come and gone, it is worthwhile taking a peep into the Ops. Room in the year 1999.
Upon entering one passes the ranks of chattering, decrepit teleprinters, attended by a few white-haired, balding, bent, aged Assistants. Passing the Super-Super Supervisor's desk, then the Super Supervisor's desk, we finally come to the Sector Supervisor's desk : all of these are "manned" by senile staff members, mostly asleep, awaiting the issue of free gruel and coffee at the next break.
Passing on to the sectors we notice the addition of the Amsterdam sector. This was added at very short notice in the mid-80's, when Sarp 2 was still not ready, and Sarp just peacefully passed away from old age. Jan van Eck and Gerrit Horsman, being ex-Amsterdam men, were placed on this sector and have been there ever since. Meals are brought to them, they alternate Night duties, and their families are allowed to visit them once a week.
The few remaining controllers still in attendance, sweating profusely, are struggling to handle the traffic, which has to be limited by a variety of flow-control measures, laid on by the UAC

Maastricht Flow Control Cell, now swollen to 32 members, and occupying 25% of the Ops. Room.
As the time neared expected peak-traffic time, the service-lift transported six invalid-chairs, attended by nurses, bringing the acknowledged"ace" controllers -- especially selected for their near-deafness (not affected by any extraneous noise), near-blindness (not affected by the mass of garbage shown on the E.C.M.s, also not affected by the many scaring conflicts and near misses), and their inability to walk, let alone run, which ensures that they remain at their positions at all times.
The numbers of available staff have been further depleted of late by the 19th. Brétigny simulation to come up with a viable Brussels West Sector Split, and the fact that the Ops.Room Soccer team was playing a match versus Geleen hospital Maternity patients -- the fact that the Ops. team lost 19-0 could no doubt be attributed to the team's average age of 59½ years !
A minor disturbance was caused by the collapse of a radar man with a serious heart condition. "Oh --- !" said the Exec. Assistant, an expletive which was gratefully noted down by the Director's secretary, who had spent all morning trying to come up with a novel 4-letter word for the code on the front door : indeed she had only broken off her efforts because she was needed to conduct a visitor to the Ops. Room - a visitor who was particularly interested in 10 cm strip-holders, both those classified as "Dangerous" and otherwise.
Faced with the demise of one of his "aces" the Super-Super Supervisor was in a quandry, but with a feeble croak of joy he hit upon the solution -- "We'll bring back Brian Easy out of medical retirement - at least he can still walk !!"

(Roy G. GERIATRIC) Evans)

BRASIL

In March I met some Brasilian controllers from Rio. Their situation is one of the worst in the world.
Who would imagine that one of the latest developing countries in South America with ultra-modern equipment - in Brasilia and Rio - has such a primitive outlook towards the staff ?
First of all, all the ATC servcies are under the control of the Air Force, the Fuerza Area.
There are some 850 military and 140 civilian controllers, all of whom perform exactly the same tasks : the civilian controllers are, however, very badly paid, with a monthly salary of 15.000 Cuzeiros ($ 300 US or £ 600) they receive less than a sergeant.
The cost of living in Rio is comparable to that of Europe, e.g. to visit a private doctor costs 10% of a controller's salary (to visit one in the public health you have to wait one or two days) and to send a letter to Europe cost 113 Cz (1% of salary).
Furthermore the minimum salary for flight-deck personnel (co-pilot Varig B727) is 100.000 Cz per month.
The educational requirement to become a civil controller in Brasil is the same as in most countries and training is carried out at a school in Sao Paulo.
The salaries paid to controllers are constant. This means that a controller will receive the same salary throughout his 35 year career then retire on 80% of that amount.
All of the controllers there are kept in the dark concerning professional developments outside Brasil. Contact through ATC associations is useless because their Association is only permitted to discuss sport and cultural events. Controllers from Rio do not know what is happening in Brasilia and vice-versa.
Most civil controllers are studying hard to get another job outside ATC because they see no future in it.
They have stated that the system in Brasil is unsafe and that procedures are arbitrarily laid down. Furthermore

when someone does not report for duty the controller due to be relieved has to work the second duty.
They are aware that neither an Association outside Brasil nor IFATCA can help them at the present time. They are denied the right to strike, but even if they should take action they would immediately be replaced by military controllers.
All they ask is that their situation be made known outside Brasil and to the airlines flying to Brasil.
It is my hope to be able to make an exposé of this situation during the Toronto Conference in the hope that it might be heard outside the world of ATC and that it might help them in one way or another.

P. DOMOGALA

B747 - THE FIRST TEN YEARS

On January 21, 1970 the first commercial B747 operation - a Pan-Am flight from New York to London - took place. In the little more than 10 years that have passed since then the number of operators of "Jumbos" has increased to nearly 60 who, between them, operate some 420 747's, which have collectively transported approx. 270 million passengers. Nearly 123,000 people fly on this aircraft type daily.

There are now seven basic versions of the 747 available ; offering seating ranging from 360 to 550 and all-cargo versions. All models, with the exception of the 747SP are 70.5 m (231.83 ft) long. The gross TOW varies from 235,870 kg (520,000 lb) to 377,840 kg (833,000 lb), depending on the model.

The SR (Short Range) 747 with accommodation for 550 passengers is currently in service on Japanese domestic routes whilst, at the other end of the model range, the 747SP (Special Performance), which is 22 m (74 ft) shorter than the other models, regularly operates non-stop between such distant points as New York and Tokyo carrying up to 320 passengers. The 200F (Freighter) is capable of carrying loads of up to 113,400 kg (250,000 lb) and features a swing-up nose and an optional side door for loading outsize main-deck cargo. The Convertible model is also equipped with the swing-up nose and is, as its name implies, designed to carry freight or passengers or a combination of both. The Combi has the large main deck cargo door and also carries a mixture of both freight and passengers on the main deck.

The powerplants on the early versions were Pratt and Whitney JT9D turbofans generating 19,505 kp (43,000 lb) of thrust which did not endow the aircraft with a spectacular rate of climb when fully laden for a Transatlantic flight. The thrust ratings of the engines now available are in the 23,585-24,040 kp (52-53,000 lb) class and a choice is avaiable of later JT9Ds, General Electric CF6s and Rolls-Royce RB.211s.

The 747 continues to evolve. Boeing engineers are presently involved in studies to increase the number of passenger seat miles per pound of fuel burned. Among the possibilities is the concept of extending the upper deck and stretching the body of the aircraft to accommodate up to 620 passengers.

Swissair, who operate two 747s achieve the highest utilisation - 13.7 hours per day ; Branniff, with seven, achieved 13.4 hours per day in 1979.

FUEL ECONOMY

In the next issues of INPUT I will endeavour to indicate how we, as air traffic controllers, can contribute to Fuel Conservation.
The figures I assure you will be staggering, both for consumption and saving.
Just to whet your appetite consider the following :-
extra fuel costs for British Airways' Tristars (based on the increase between 1973 and 1979) -

£ 5.850.000

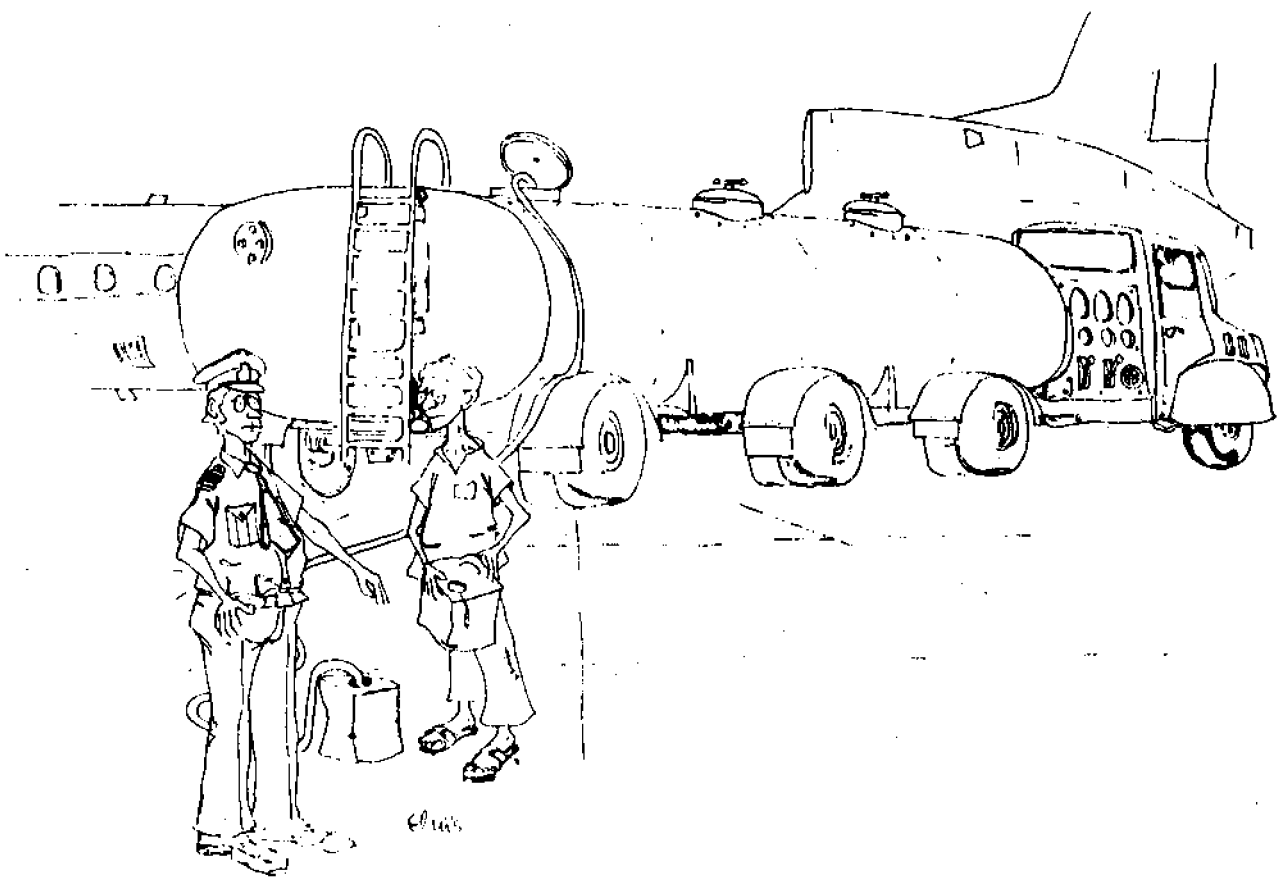
in one year as an air traffic controller you can save for one Flight Level (assuming 20 flights per day - £ 500.000 +

By the time the next issue of INPUT appears (assuming 3 months interval) we will have used 60 million barrels of oil per day for 90 days -

5.400 million barrels

we have only 600 billion barrels left.
The FAA Air Traffic Control system is more fuel efficient than the fragmented European systems.

ROGER BARTLETT
with thanks to Captain Bibley and SEO Chris Baxter of the British Airways Conservation Group.



What d'ya mean - that's all we've got left of this month's allocation!

BIRTH OF THE MODERN AIRLINER

The modern transport aeroplane may be said to have been born on February 8, 1933 when the prototype Boeing 247, a twin-engined 10-passenger monoplane, made its first test flight at Seattle in the U.S.A. The 247 was a low-wing cantilever monoplane with cleanly-cowled 550hp Pratt and Whitney Wasp radials. It was of all-metal construction and featured a single fin and rudder and a retractable main undercarriage.

Before the advent of the Boeing 247 the world's air services had been operated by a wide assortment of aircraft, comprising biplanes and both high- and low-wing monoplanes. Many were built of wood and had fabric covering, although some had metal structures. The Fokker monoplanes had fabric-covered metal-framed fuselages and wooden cantilever wings, but their undercarriages were not retractable. The Junkers monoplanes were of all-metal construction but their load-bearing skins were corrugated and they, too, had non-retractable undercarriages. In the United States the Ford Tri-motors, which did much to develop air transport, were of Fokker layout but Junkers type construction. Britain had such devices as the Handley Page H.P. 42 which, although only 8 were built, established an enviable reputation for comfort, reliability and longevity out of all proportion to such a modest production. It looks, however, prompted one unkind person to dub it "A collection of aircraft spares moving around in loose formation".

Thus the Boeing 247 made a complete break with the past, representing a new breed of transport aeroplane with which the earlier types were unable to compete. It cruised at 135 knots, had a range of 420 nautical miles and a service ceiling of 18,400 feet.

Whilst the aircraft was still in the mock-up stage United Air Lines ordered sixty 247s - an unusual occurence in those days. The first of the new aircraft entered service in March 1933 and when put on the U.S. transcontinental route it cut the journey time to just under 20 hours, compared with the previous 27 hours. It suffered certain shortcomings, however; including the fact that the mainspars passed through the cabin, causing some obstruction, and that at hot and high aerodromes the take-off performance was impaired by the fixed-pitch propellers.

To overcome the performance deficiencies a new version, the 247D, was produced. This had variable-pitch propellers, increased fuel capacity, more power at higher altitudes and various other refinements which increased the cruising speed to 164 knots (304 kph) and the range to 650 NM (1200 km). Most of the original aircraft were brought up to 247D standard and a total of 75 of the 247 series was built.

TWA was anxious to acquire 247s, but Boeing was unable to deliver them quickly enough and the airline therefore issued a specification for a competitive aircraft - visualised originally as a three-engined type. Douglas decided to meet the TWA specification and designed the DC1. This was of similar layout to the 247 but proved to have superior performance and, of greater importance, had its spars beneath the floor to leave a completely unobstructed passenger cabin.

The first DC1 flew on 1 July 1933, and was delivered to TWA - making a record 13 hour 4 minutes flight from Los Angeles to New York in February 1934. TWA ordered 28 examples of a refined version, known as the DC2, and when this type, with accommodation for 14 passengers, entered service in July 1934 it was the world's most advanced passenger transport aeroplane. From its inception the DC2 was fitted with variable pitch propellers; these contributed significantly to its

performance and gave it better single-engined characteristics than had been achieved previously by any twin-engined aeroplane.

In October 1934 a DC2, operated by KLM, took part in the England - Australia air race. It won the handicap section and took only a few hours longer to reach Melbourne than did the specially-designed de Havilland Comet which won the speed event. This success, combined with its outstanding performance in airline service in the United States, led to a number of foreign orders, and the DC2 eventually served many of the major US airlines and others in Europe, South America, Australia and China. About 220 were built, of which 160 were used in airline service. The DC2 had 710 hp Wright Cyclone engines, cruised at 148 knots (274 kph) and had a range of 1030 NM (1915 km).

It was followed by the most significant transport aircraft ever built - the Douglas DC3 - which did more than any other type of aircraft create the traffic which has led to the production of today's aircraft.

The DC3 was an enlarged, direct development of the DC2. It was designed to meet a requirement of American Airlines for a sleeper aircraft to use over the US transcontinental route. At the time American Airlines was using Curtiss Condor biplanes on sleeper services, but these proved unable to compete with the Boeing 247s and DC2s and it was obvious that a new aircraft would have to be obtained if American was to attract its share of the traffic.

The DC2's fuselage was too narrow to take sleeping berths but the new design, known as the DST (Douglas Sleeper Transport), could provide berths for 14 passengers. When used for daytime operations its greater width could accommodate 21 passengers - a 50% increase in capacity compared with the DC2 for only slightly increased unit and operating costs.

The prototype first flew on 17 Dec. 1935 and both the DST (sleeper) and the DC3 (dayplane) were put into production. American Airlines began DC3 operations, between New York and Chicago, in June 1936 and DST transcontinental operations in September of that year, to a 17 hour 45 minute westbound and a 16 hour eastbound schedule.

Initially DC3s and DSTs had 1000 hp Wright Cyclone engines, but the 1200 hp Pratt & Whitney Twin Wasp was soon destined to become the main source of power for the DC3 series.

By the time of the Japanese attack on Pearl Harbor , Douglas had built more than 800 DC3s and about 450 of these, including 38 DSTs, had been delivered to the airlines. During the war large-scale production of military DC3s was undertaken, mainly of the C47 and C53 versions, and the Royal Air Force name for the type, Dakota, is that by which the DC3 is now widely known. A considerable number of DC3s was built in the Soviet Union under licence, first as the PS84 and later as the Lisunov Li2 ; some were built in Japan, and commercial DC3s were put back into production for a time after the end of the war. There is some disagreement about the total number produced but it was about 11.000 and this means that there were far more DC3s and its variants built than any other type of transport aeroplane.

Even after the war the DC3 remained the backbone of the US commercial air fleets and the type has been used by almost every major and very many minor airlines as well as most of the world's air forces.

The DC3 has been used for almost every type of civil and military transport duty ; it has served as a glider tug, one was actually converted to a glider, it has operated on skis, and one was a twin float seaplane. In the late thirties the Chinese expressed interest in it as a bomber and in the Vietnam conflict it was operated as a gunship.

Designed as a 21-seater aeroplane, the DC3 has for years been operating with

28 seats and some have been equipped to carry 36 or more passengers.

One DC3 is known to have achieved more than 84,000 hours flying and many are still in airline service in many parts of the world. In their original role the DC3s were replaced by more modern types but the numerous attempts to produce a "DC3 replacement" have failed and 45 years after its first appearance there are air transport tasks which still only the DC3 can economically perform. Typical present-day DC3 cruising speed and range are 155 knots (290 kph) and 1300 NM (2145 km).

Although they were of less importance than the Boeing 247 and the Douglas DC2 and DC3, mention must be made of a Lockheed series of twin-engined airliners.

Lockheed had achieved considerable success with its Air Express and Vega high-wing and Orion low-wing single-engined monoplanes, some of which entered airline service - Orions being used by Varney in the United States and Swissair in Europe. Lockheed then decided to build a clean twin-engined all-metal low-wing monoplane, the L10 Electra, which first flew in February 1934 and entered service in August of that year with Northwest Airlines. The Electra was generally similar to the Boeing 247 and the DC2 but was considerably smaller and, unlike the other types, had twin fins and rudders. It had accommodation for only 10 passengers but was considerably faster than its competitors. A total of 148 L10 Electras was built, mostly powered by Pratt & Whitney Wasp Junior engines, and the type saw service in many parts of the world.

Successor to the Electra was the Lockheed 14, known as the Super Electra. This was a slightly larger, refined version of the Electra and it incorporated a number of significant new features. These included Fowler flaps, two-speed superchargers and underfloor cargo holds. The L14 first flew on 29 July 1937, and the type was used by airlines in several parts of the world.

Developed from the L14, the 14-passenger L18 Lodestar first flew on 21 September 1939. This type was powered by two 1200 hp Wright R-1820 engines and entered service in March 1940 with Mid-Continent Airlines. More than 600 Lodestars were built and these saw wide-scale airline and military service.

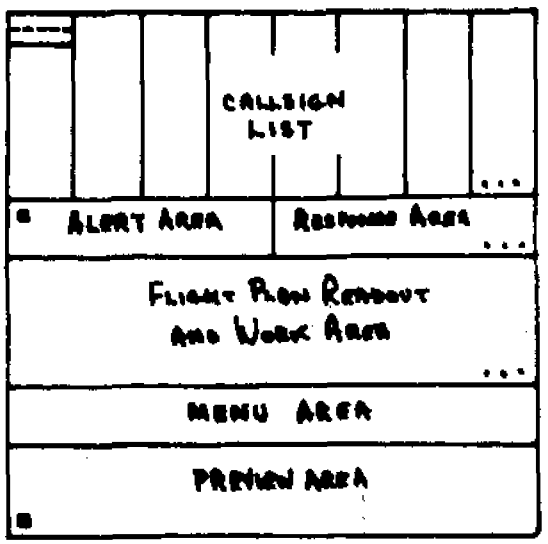
Total production of these Lockheeds was about 1000 and they provided valuable experience which was later incorporated in the four-engined Constellation and Super Constellation series.

The Boeing 247, the Douglas Commercials and, to a lesser extent, the Lockheed "twins", set the pattern for the modern transport aeroplane when they introduced the clean cantilever low-wing design with smooth stressed-skin metal covering, retractable undercarriages, flaps, variable-pitch propellers, airframe de-icing, automatic pilots and full duplicated controls and flight instruments. All these features, which we now take for granted, were pioneered in these aircraft, and their contemporaries, which brought new standards to air transport over 40 years ago.

Adapted from an article by J. Stroud in "History of Aviation".

STRIPLESS SYSTEM

The Systems Research and Development Service of the Federal Aviation Agency have recently issued a requirement for an Engineering Model of the Electronic Tabular Display Sub-system (ETABS) to be tested at NAFEC (the National Aviation Facilities Experimental Centre). The objectives of the ETABS project are to improve controller-computer interface at the en-route sector control position by replacing flight progress strips with an electronic display and to simplify the method of message entry



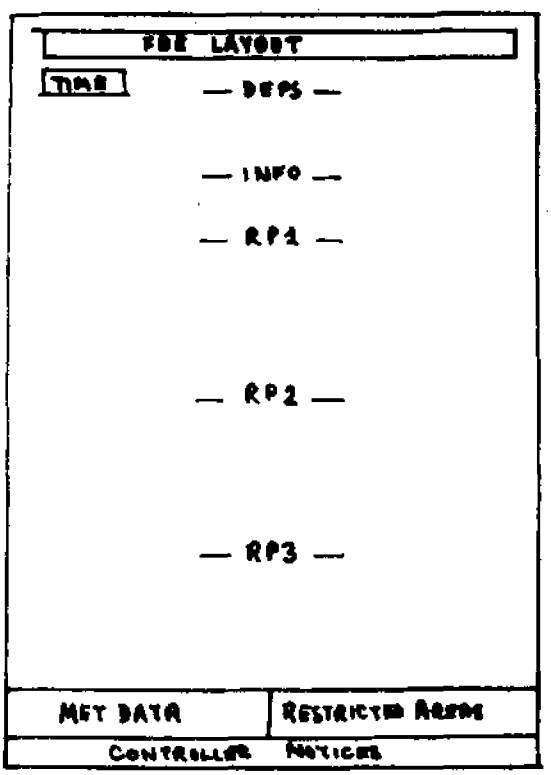
Interactive Display

at the D controller position. In addition, the system will provide a flexible means of incorporating future improvements and will provide operational support to the sectors when the Central Computer Complex is unavailable. ETABS is designed to operate in a two-man sector, the R controller being equipped with processed radar as currently in use and the D controller being equipped with an Interactive Display and a Tabular Display; both controllers have a keyboard.

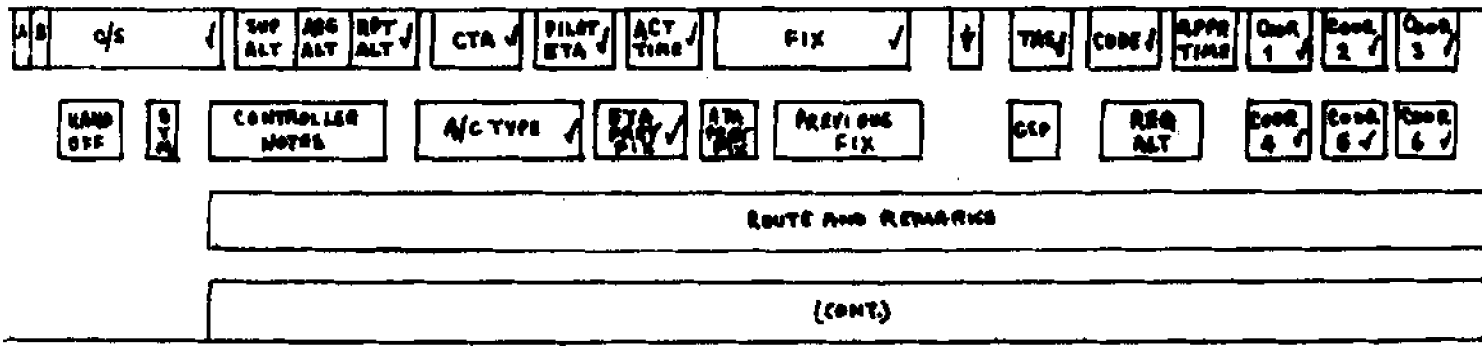
The Interactive Display is, as its name implies a touch-sensitive input/display device. The requirement calls for a display capacity of about 1900 characters overlaid by a grid giving a potential of 256 touch-sensitive points (16 lines and 16 columns). The type of touch device, i.e. touch wire, digitatron etc., is not specified. For comparison MADAP TIDs have 19 touches and a display capacity (for the Input part) of 350 characters.

The Tabular Display, the main purpose of which is to display Flight Data Entries, is required to present flight information equivalent to the contents of 40 Flight Progress Strips. Each Flight Data Entry (FDE) contains the data pertinent to one flight. Several examples of possible FDE layouts are described, the bulkiest consisting of 4 lines each of 100 characters which implies a total capacity for the tabular display in excess of 16,500 characters. (A MADAP EDD has a display capacity of 3,800 characters and the display area of a TID 2,600 characters so that, calculating on a sector basis, we have a roughly equivalent display capacity).

The Tabular Display may consist of a single screen or two or four screens grouped together. Similarly the Interactive Display may be a separate screen or an area set aside on one of the screens forming the Tabular Display. The final arrangement will depend on the proposals made by Industry, and the results of experimentation.



Tabular Display



FDE LEVEL 3 FORMAT - 100 CHARACTER DISPLAY.

The Interactive Display is divided into six areas. The Callsign Area lists in alphabetical order the Callsigns of all flights displayed on the Tabular Display. Each entry consists of two lines, the first line for the Callsign and the second for an Update Indicator, an Alert Indicator and the Hand-off status. The Alert Area is used for the display of warnings, e.g. Conflict Alert, certain of these also trigger the display of the Alert Indicator in the Callsign List. The messages are not displayed automatically, they are preceded by a Message Waiting Indicator which when touched triggers the display of the waiting message. The Response Area displays Reject, Error or Accept Messages following an input and may also display the Wind or Route Readout. The Flight Plan Readout and Work Area displays a Flight Data Message in a form similar to an FDE (see below) whenever a Callsign in the Callsign List is touched, or guidance data for the input of new Flight Plans. The Menu Area is used for the display of input functions and data similar to those available in the MADAP TID orders. The Preview Area is for the display of composed messages prior to input and also may show a Posting Waiting Indicator which, when touched, triggers the display of an abbreviated FDE for the new entry on the bottom line of the Preview Area and inserts the full FDE into the list on the Tabular Display. Inputs are made by touching a Callsign, a Field in the Flight Data Message and selecting the appropriate data from the automatically displayed Menu. Functions not linked to a particular flight are started by touching the appropriate function in the Initial State Menu (rest picture). The alphanumeric keyboard may be used in conjunction with some inputs.

On the Tabular Display, some 500 characters are used for the display of MET Data, Restricted Area Information, Controller Notices and a Time field, the other 16,000 or so characters are devoted to the display of FDEs. Each FDE is equivalent to a Flight Progress Strip. They are sorted in time order in the following lists ; DEPS - pending departures, INFO-aircraft of interest but not under the control of the sector concerned, and Posting Fixes (strip-points).
Three levels of FDE format will be available, each successive level providing an increased amount of data. The selection of these levels is made using the Interactive Display. Selection of a different level modifies the format of all FDEs displayed at the sector concerned.
The requirement gives several examples of FDE formats ranging from a Level 1 format (minimum data) of 3 lines of 50 characters for display in two columns (split display), to a level 3 format (maximum data) of 4 lines of 100 characters. Final choice will presumably depend on the physical characteristics of the Tabular Display and the results of trials at NAFEC.
FDEs may be posted, sorted and updated automatically or the controller may manually trigger these events following the display of appropriate

warning indicators, depending on the operating mode chosen.
From the engineering point of view, ETABS is independent of the NAS Central Computer Complex. The two systems exchange messages and data via an interface but ETABS has its own processors, disk stores, etc. so that the system will continue to operate in a reduced mode during failure of the Central Computer Complex. ETABS itself has the necessary redundancy to provide the required degree of reliability.
The Engineering Model is required to support 6 sectors, but must be extensible to 120 sectors.

B. MARTIN

SHORT TERM CONFLICT ALERT

Since the introduction of radar the amount of traffic has both vastly increased and changed in nature. Current commercial aircraft operate at levels in the region of flight level 330 (33.000 ft, 10.000 m), which means that climbs last for up to 200 NM and descents start about 100 NM out from the destination airfield.

In addition forward speeds vary from ± 350 kts in climb to ± 500 kts in level cruise. All this means that the executive (radar) controller has to assimilate a vast amount of rapidly changing data, sift it for potential conflicts and take timely action to avoid hazardous situations by applying good radar control techniques.

Given the pressures under which radar controllers work, the availability of the necessary data and the financial consequences of a midair collision (not to speak in terms of human suffering), it is reasonable to attempt to provide the controller with a safety-net, that is to say a program which will not interfere with his normal work nor demand additional computer inputs but will detect (predict) situations in which if the aircraft concerned maintained their present heading, speed, height and vertical attitude they would have less than the permitted minimum separation (5 NM horizontally, 1000/2000 ft vertically) and bring them to the attention of the controller timely enough to assess and if necessary remedy the situation.

A program of this sort has been developed by the Systems Division of the Maastricht UAC. It has been made available to both the civil and military control staff of all sectors with MADAP release 32 on 14th February, 1980.

Essentially STCA is an autonomous function performing two tasks :

- to notify the responsible Executive Controllers (current and next EC's) immediately whenever a 'now' conflict is detected i.e. when an infringement of both horizontal and vertical separation standards actually exists.
- to alert the responsible EC(s) a certain time in advance (the warning time) of an impending violation of separation standards.

The alert is visualized on the Synthetic Dynamic Display (SDD) of the control positions concerned by framing the first label line of the relevant tracks. Additional information about the (potential) conflict is provided as a single line of tabular data (CAM, conflict alert message), also on the SDD. The contents of the CAM is renewed at every program cycle.

The 'short term' characteristic stems from the relative short warning time provided. Factors affecting the choice of the proper warning time are :

- the time required by the controller to perceive the warning, formulate

his strategy and communicate it to the aircraft concerned and for the aircraft to react to the control instructions (aircraft inertia, passenger comfort)
- the level of confidence in the model of aircraft motion adopted
- the precision of the radar derived estimates of aircraft position and speed vector (three-dimensional).

Studies conducted by the FAA and confirmed in real-time simulation at the Eurocontrol Experimental Centre indicate that 2 minutes may be considered as the optimum warning time.

STCA runs every 5 seconds and inspects the profiles of all tracked targets for the next 128 seconds period. Besides the existing multi-radar tracking system in the horizontal plan an additional height tracker using Mode C data from SSR replies was developed in order to provide the speed component in the third dimension. The tracks are linearly extrapolated in incremental steps of 16 seconds. Flight data in the form of a PFL or IFL are used to clip the vertical profile. A dynamic buffer is placed around each track to take into account the uncertainty of the predicted position. Subsequently a search is made for infringements of the separation parameters. This process is repeated 8 times, thus covering a time slot of 128 seconds approximating the required warning time.

From "INFO"

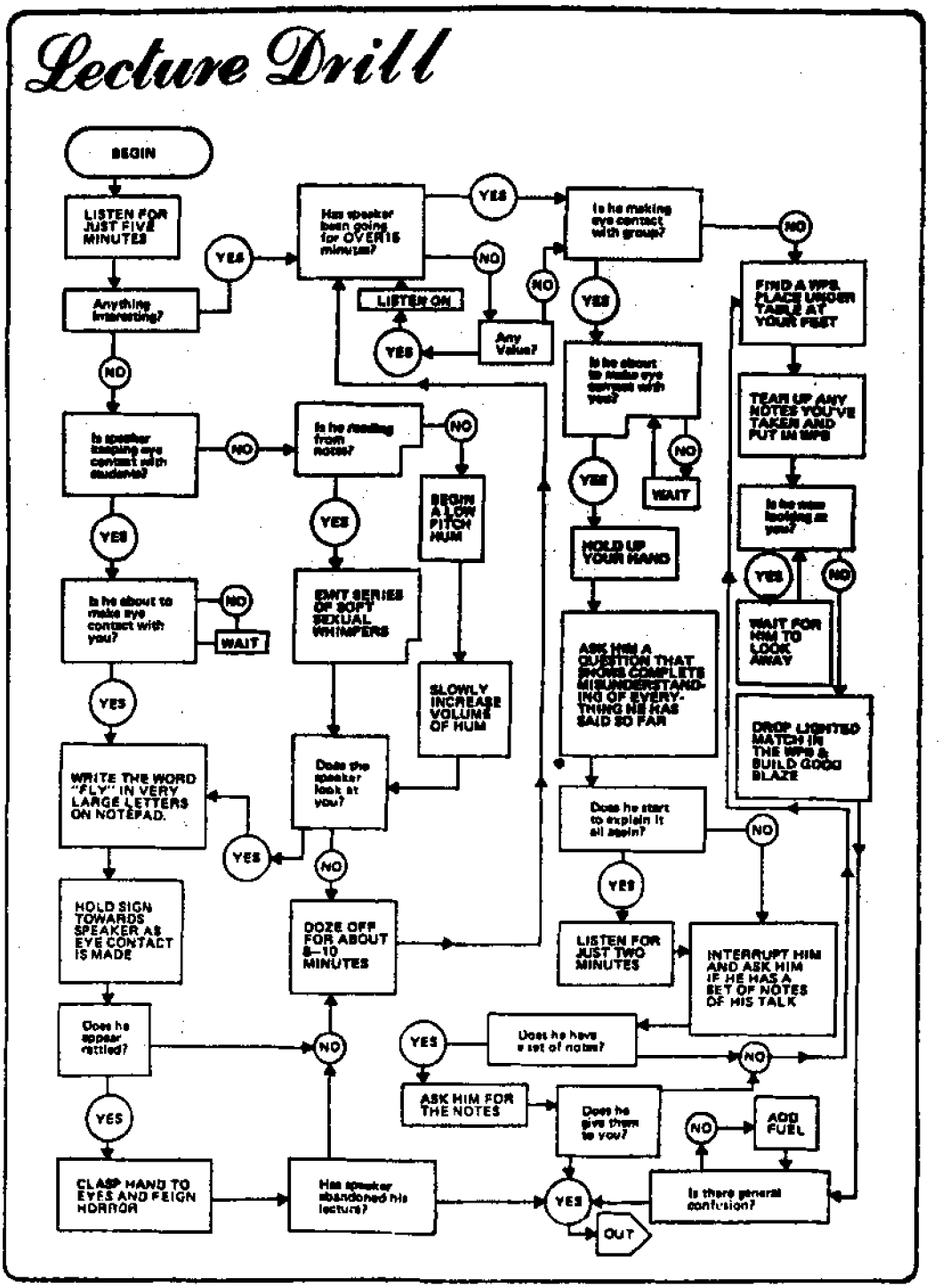
The hoop's column

The British airlines' domination of the Beek Inclusive Tour market declined somewhat in 1962 when Condor appeared on the scene to operate the weekly Palma flight with their fleet of Convair 240s. The airline was relatively new at that time, its formation having resulted from the merger of two Lufthansa subsidiaries in November 1961.

One can only assume that the tour operators had become a little concerned at the lack of financial stability and operating efficiency of the British Independents and that possibly a Lufthansa associate might prove to be more independable. In that they could hardly be blamed, the track record of British companies being nothing to brag about. The period 1960-62 had seen the demise of Air Condor, Air Safaris, Continental, Falcon, Orion (a name recently resurrected !), Overseas, Pegasus, Tradair (later in '62), Trans European and World Wide Aviation. Imagine the consternation of the British tour operators when it came to letting the season's contracts !!

Despite being in the hands of a receiver and under threat of closure, British Independent Tradair continued to serve Beek on an almost daily basis throughout the summer months. The airline's Vickers Vikings could be seen as many as five times per day at the airport operating charters from Southend and Manchester.

First "heavy" to visit Beek in 1962 was on January 12 when a Canadair Argonaut, OY-AAI, of the Danish company Flying Enterprise stopped off en route Copenhagen - Palma. The aircraft must have encountered technical problems as its departure from Beek was delayed by almost three and a half hours. The company's aircraft appeared at the airport



To be used as therapy during less than fascinating monologues on the subject of the future operation of the Brussels West Sector, or during Executive Board meetings.
(from "The Australian Air Pilot")

weekly through the first quarter of the year except for a couple of occasions when diversions were initiated due Beek weather. Two unusual visitors during January were Bristol Freighters G-ANVS and G-AMLP operating for British United between Düsseldorf and Southend.

Apart from the occasional Dove, including the former Limburg Airways machine, PH-VLC, by then in the hands of Martin's Air Charter, the airport saw very little activity before the second week in May. First noteworthy movement of that month was the Royal Friendship, PH-PBF, which arrived from Ypenburg on the 8th and departed the following day for Amsterdam with Prince Bernhard in command. A few days later, on Saturday the 12th, the summer season got under way when Condor Convair 240, D-BOBA, arrived from Frankfurt at 0837, departing for Palma at 0946. That same day another Condor aircraft, Viking D-BORA, visited en route Southend-Frankfurt.

The Palma flights continued at weekly intervals through October 5. On May 20 the Palma was operated by Constellation OE-IFA which departed Beek at 1012 with 86 passengers. The aircraft had arrived from Palma the previous evening with 26 pax.

OE-IFA operated a series of flights to the same destination throughout the season, albeit at somewhat irregular intervals. On June 24 the aircraft routed Copenhagen-Beek-Palma whilst two weeks later the reverse route was flown. On another occasion the northern departure point was Malmö.

Whilst sifting through the year's movements I was a little surprised to come accross the name Kozubski as occasional pilot in command of OE-IFA. Marian Kozubski had been a regular visitor to Beek back in 1960 in command of the Handley Page Hermes' of Falcon Airways, the company he presided over at that time.

The first Tradair flights of the year were operated on May 18 when Viking G-AKTV routed from and to Southend whilst G-AIXR served Manchester in both directions. These services continued throughout the season, on average six days per week, until October 18 when the operation became a weekly one through November 1.

At this stage Tradair's days were numbered and on December 31 the airline became a wholly owned subsidiary of Channel Airways having failed to achieve the profitable operation demanded by the receiver installed the previous year. A number of DC3s visited the airport during the year including those of Martin's Air Charter, Fairways Rotterdam, RLD (PH-PBA on calibration duties), Tyne Tees Airways and Starways.

The Tyne Tees machine, G-AMNV, appeared at Beek on October 3 arriving from Newcastle and returning there the following day. The Starways aircraft, G-AMSN, also made a one off appearance on August 10 arriving from Liverpool, its home base, and departing for Hannover one hour later.

It was the Fairways DC3 that initiated a series of flights to Aix-en-Provence between the months of June and September. Presumably this aircraft was operating for Martin's as all subsequent flights were operated by that company.

Only other activity worthy of note during the summer months was the visit by KLM Convair 340, PH-CGB, and DC7C, PH-DSC, on August 6, both aircraft arriving from Heathrow London. Both returned to Heathrow the following morning.

The final quarter of 1962 brought about a slight resurgence in activity at the airport, producing three visits by Adria DC6s, continued erratic appearances by OE-IFA, a spate of British United DC3s in November and a Skyways Constellation, G-ANUR, to see the year out in fine style !

Beek Traffic Figures 1979

	1978	1979
Aircraft movements	40,424	68,298
Total passengers	100,398	99,047
Cargo (Kgs.)	13,608,022	20,243,429
Jet A1 (Lts)	5,978,835	9,356,530