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THE "AIRSPACE MANAGER"

--- EDITORIAL------ by Patrice Béhier --

It goes without saying that the ATC profession is in a state of constant and rapid evolution because of its link to the increase of aircraft movements with a diversity of performance.

The United States of America is often considered to be the leading country in many fields of our society, especially in the aviation industry.

However, as far as ATC is concerned, it appears that in spite of their know-how, power and financial expertise, their system is not currently providing a satisfactory level of safety and efficiency, mainly due to the effects of the sacking of 11000 controllers, following the PATCO strike in 1981.

Both the U.S. Government and the Federal Aviation alike, have been faced with a tremendous challenge in trying to restore the pre-strike levels of safety and efficiency within the shortest possible time. The plan was to try to replace the controllers by computers, as quickly and as far as was possible. This was the aim of the costly, ambitious plan defined by the FAA that time; basing a system on at machines, they hoped to be rid of the men and their ever-lasting industrial and social problems.

It is noteworthy, that in the meantime, traffic movements have nearly doubled and due to the fact that sufficient numbers of controllers have not obtained their full qualifications, many are still having to work overtime.

The series of events which have taken place during these past five years has led to much brain-storming on the part of many specialised commissions, even from the Senate and from Congress, resulting in an amazing shift from a system based on computers back to centering it on the man - the controller.

If we compare what had previously been written with current thinking, the change is quite remarkable. Previously, the controller was considered as a tool, easily replaceable by machines. Now the whole system will probably be centered on him and the name of the profession might even be changed to that of 'AIRSPACE MANAGER'.

This new terminology seems much more appropriate when one considers that the problems confronting the controllers are not only to prevent collisions between aircraft, but also to manage a portion of airspace, taking into account many factors:-

- type of aircraft and performance;
- destination;
- category of flight VIP, hospital, etc...
- requested cruising level;
- top of descent time;
- prevailing weather conditions;
- ground speeds, closing speeds;-
- military activity;
- and many others.

A controller (airspace manager) has to consider each of these elements and assign them the right priorities, with the aim of enabling the airlines to operate as safely and as economically as possible. Depending on his efficiency or lack of it, some airlines might either increase their profit margins or go bankrupt.

considerations have to Many be assessed and rapidly, correctly acted upon, within a matter of minutes or sometimes seconds. The airspace manager make decisions must equitable to various airspace users, not subject to question by them. Airlines are increasingly scrutinising and questioning the efficiency of the ATC system, perhaps sometimes unaware of the difficult situations which confront the controller. With many aircraft requesting the same flight level on the same route, in close proximity to each other (the faster always behind), he will have to decide which flight will be assigned his requested level and which will get a lower available level. Depending on

circumstances, navigational intervention and rate of climb instructions will have to be made, together with complex coordination with adjacent ATC units, taking into account eventual route divergence and so on. All these decisions are of a managerial nature with considerable financial repercussions on the airspace users.

Most airspace managers perform their tasks conscientiously and willingly, proud in the knowledge that

they are helping Air Transport CO. develop profitably, thus rendering a service to our society. It goes without saying, that to enable him to perform his duties with maximum efficiency, he needs modern, fail-safe equipment in an optimised working environment. Until such conditions prevail worldwide, the airspace users will not benefit from the full potential service that progressive airspace managers could provide.





REVOLUTION OR EVOLUTION KLM VIEW POINT

by L.J. van Ameyden.

In the series of aircraft of the next generation, whether it will be revolution or evolution, we have highlighted the visions of aircraft manufacturers (Boeing, Airbus, Fokker) and authorities. We now want to reveal the point of view of the airlines, in this case by KLM's managing Director, Mr.L.J. van Ameyden at a symposium devoted this subject to at the University of Technology, Delft.

This vision will comprise the following elements:

- 1. Airline management;
- Airline development;
- 3. Aircraft development;
- Aircraft economy;
- Aircraft design criteria;
- Environmental factors.

The airline industry has become the fastest growing industry in the world. The development of the world airline industry in the course of the years is such that it is practical to show this tremendous growth in a single logarithmic diagram (figure 1).



The growth was slowed down by world war II, but afterwards traffic picked up so fast that it was as if there had been no interruption at all. In the 1945-46 period growth was 50% per year, levelling off to 20 % per year in the following years. A. Airline Management.

Yet this development was a natural thing. The growth of the airlines becomes even more spectacular if one realizes the many factors which influence the development of the airline industry and are not all within control of the airline managements.

These factors can be summarized in four main groups:

- a. demand for air traffic;
- b. technological development;
- c. airport development;
- d. air traffic control.

Leaving ad 1 for what it is, ad 2 ranges from maintenance to reduction of noise, ad 3 concerns the total infrastructure around airports and last but not least air traffic control in the eyes of an airline operator: the provision of efficient guidance of the aircraft with such a capacity that holding is reduced to a minimum (as if this is the only but one aspect of ATC). On top of that, airline management has to take into account a great many rules and regulations. Aviation is probably one of the most regulated industries -ICAO, IATA, IFALPA, ECAC, local CAA's, Unions -, all want to get their say in these matters. This is in spite of the growing tendency for deregulation in the commerical field. Therefore it is of the utmost importance to strive for close cooperation between all bodies that can influence the progress of commercial aviation to create total system coordination.

*

B. Airline development.

Watching 80 years of aircraft development (figure 2) from the beginning of the experimental period until a new starting point at the end of the second world war, the airlines grew from a product-oriented to a marketoriented situation. Then a tremendous over-capacity has been with us for some 6 years.



C. Aircraft development.

One of the basic problems on an airline remains the choice of aircraft suitable to the airlines' network. As far as this is concerned, great progress has been made in cooperation between the manufacturers and the airlines. Civil aviation no longer depends on the development of commercial aircraft from aircraft used in the military field. In KLM's case, in 66 years of its operations 50 aircraft types have been introduced of which modern aircraft have continued to mature so that depreciation could be increased from a few years to 15 - 17 years. Through this development you may notice two break-throughs, namely the construction

of scale (application of the stressed skin) and the development of turbineengines. Most important factor: the Direct Operating Costs (DOCs) per seat mile had declined by more than 50% (see figure 3). In all relevant articles you will have remarked, this trend will continue.

Another aspect of aircraft choice seems to be the ground handling. As far as the baggage and freight is concerned, the use of containers is preferable. This item was one of the main reasons why KLM chose the A310 instead of B767. Those containers were/are interchangeable with the 747 and DC10 to make fast freight through connections possible.



IMPROVEMENT IN DIRECT OPERATING COST

INPUT

D. Aircraft economy.

Figure 4 shows us the average DOC (Direct Operating Costs) per seat mile in a less optimistic picture, resulting from over-capacity per aircraft. Aircraft economy mainly deals with fuel consumption and prices.



Compare the following figures: fuel cost in 1972/73 at KLM amounted to 8 %;

fuel cost in 1984/85 at KLM amounted to 20 %.

An interesting item for all airliners: the choice of aircraft. This choice of aircraft should be based on the traffic spread versus the distance, as picture 5 will show you. The choice of aircraft directly depends on the network structure, a fleet that consists of several types of aircraft to the most economical operations get possible. How does KLM's traffic situation look like nowadays?

TRAFFIC DISTRIBUTED BY RANGE



Fig. 5 C

At about 40 % on the short-haul European stretches, 21 % of their passengers travel between Europe and USA and Canada, 9 % between Europe and the Far East and Australia, 8 % between Europe and the Near East, 5 % to Africa, 5 % to Central America and 1 % to South America.

Figure 6 tells you the frequency with which a specific connection should be operated in respect of capacity of the aircraft types. In general, aircraft with a small capacity have a higher DOC per seat mile than aircraft with a larger capacity. In practice it boils down to finding the most serviceable compromise.

CAPACITY vs FREQUENCY



E. Some important aircraft criteria.

These criteria are of an economical, operational, technical and commercial nature. The economical criteria can be divided into aerodynamic efficiency, take off/weights empty ratio and the purchase price. The aircraft should have a high aerodynamic efficiency, expressed by the parameter M.L/D. Figure 7 determines this parameter depending on the design of the wing (to a great extent). It is obvious that the design of an efficient wing must always be a compromise between lift producing aspects, drag producing aspects and the strength characteristics of materials used in the wing construction. A look at figure 8 will show you this. Further results might improve the aerodynamic efficiency. Propulsion efficiency can be expressed by two important parameters, thrust-toweight ratio and the specific fuel consumption. The thrust-to-weight ratio has improved over the years and will continue to do so in the future, as can be seen from figure 9.



RANGE PARAMETER IMPROVEMENT

١.

Fig. 7

wing technology	airfoil section	planform
1965	conventional (t/c=11%)	aspect ratio A=7.7 sweep angle A=32 ⁰
1980	supercritical (t/c=16.5%)	aspect ratio A=11 sweep angle A=16 ⁰

Fig. 8

TREND IN ENGINE THRUST/WEIGHT





Fig. 10



×.

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9

The specific fuel consumption depending on component efficiency, compressor pressure ratios and turbine inlet gas temperatures has decreased over the years (figure 10). For subsonic speeds the propfan offers potential improvement in the propulsion efficiency over the turbofan engine. Picture 11 gives you the take-off/weight empty ratio which has to be as bright as possible to gain a high useful load, fuel and payload. Throughout the years the structure weight reduced from 50 % to 20 % of the take-off weight and the useful load increased from 25 % to 60 % of the take-off weight.

Figure 12.

A very interesting point concerns a more intensive use of new materials. These new materials will not only improve above mentioned parameter in future, but will also lead to weight savings of 25 - 30 %, for the less important structural components, over their metal counterparts.

The purchase price of an aircraft should obviously be as low as possible. Depreciation and rental costs amount up to 20 - 30 % of the total operating cost.

The technical criteria consist of the following items:

 a. product support (for continuous use of the aircraft);



wider application of composite materials



Fig. 12 b. maintenance (manuals, easy to | read);

- maintainability (important in relation to the residual value of the aircraft);
- d. AIDS-system (a system to know where special attention is necessary by the maintenance department).

The operational criteria are to be described in a separate article on cock-pit reviews.

Figure 13 illustrates the avionic system evolution.

F. Environmental factors

Can be determined as air policy, traffic demand, financing, airports, ATC, etc... As airlines are somewhat reserved about a revolution in aircraft design, it is understandable they welcome a revolution in those other areas. They long for a better infra-structure, research to increase the combustion value of aircraft fuels.

Fig. 13

MEDICATION AND AIR TRAFFIC CONTROL

from the civil aviation authority aeronautical information circular

There is evidence that many flying accidents and incidents have occurred as a result of pilots flying whilst medically unfit, and we can draw a parallel in Air Traffic Control. Athough common ailments such as colds, sore throats, abdominal pain and diarrhoea may cause relatively unimportant discomfort or hazard in the normal course of events, they can be dangerous when associated with air traffic work, and the more exacting the task the more likely are minor indispositions to be serious. The ideal situation would be, that anyone requiring medication for the treatment of illness should not carry out air traffic control duties, but this is not always practicable. The illness may be relatively mild and not seriously affect the performance of these duties and the medication needed may not conflict with the standard of fitness required. However, since many common drugs and remedies have powerful side effects, all Air Traffic Control personnel should know how these may affect their work performance. The response to drugs is a very personal matter and, although there is an average response, it can vary widely from person to person.

Any form of medication whether prescribed by a doctor or purchased over the counter, and particularly if being taken for the first time, may have serious consequences in the aviation environment unless three basic questions can be satisfactorily answered:

(1) Do I really feel fit for work?

(2) Must I take medicins at all?

(3) Have I given this particular medication a personal trial for a least 24 hours before going on duty, to ensure that it will not have any adverse effects on my ability to work?

Confirming the absence of adverse effects may need expert advice and General Practitioners experienced in aviation matters, Medical Examiners authorised by the Civil Aviation Authority both in the United Kingdom and overseas, Royal Air Force Medical Department of the Civil Aviation Authority are all available to assist in this matter.

The following are some of the types of medicine in common use which may impair work performance.

 Sleeping tablets - these dull the senses, cause mental confusion and slow reaction times. The duration of effect is variable from person to person and



may be unduly prolonged. Controllers should have expert medical advice before using them.

(2) Fear is normal and provides a very effective alerting system, enhancing the arousal state. Many tranquillisers and sedatives depress this alerting system and have been a contributory cause of fatal accidents. You should not, therefore, work when taking them. (3) Antibiotics (penicillin and the various -mycins and -cyclines) and sulpha drugs may have short-term or delayed effects which affect work performance. Their use indicates that a fairly severe infection must be present and, apart from the effects of these substances themselves, the side-effects of the infection will almost always render a controller unfit for work.

(4) Anti-histamine drugs are widely used in 'cold cures', and in the treatment of hay fever, asthma and allergic skin conditions. Many easily obtainable nasal spray and drop preparations contain anti-histamines. Most of this group medicins tend to make you feel drowsy. Their effect combined with that of the condition, will often prevent you from answering the basic three questions satisfactorily.

Admittedly very mild states of hay fever, etc... may be adequately controlled by small doses of antiallergic drugs, but a trial period to establish the absence of side effects is essential before going on duty. When controllers are affected by allergic conditions which require more than the absolute minimun of treatment, and in all cases of asthma, one of the above mentioned sources of advice should be consulted.

(5) 'Pep' pills (e.g. containing Caffeine, Dexedrine, Benzedrine) used to maintain wakefulness are often habit forming. Susceptibility to each drug varies from one individual to another, but all of them can create dangerous overconfidence. Over-dosage may cause headaches, dizziness and mental disturbances. The use of 'pep' pills whilst working cannot be permitted. If coffee is insufficient, you are not fit for work.

(6) Drugs for the relief of high blood pressure cause a change in the mechanism of blood circulation which can be hazardous. If the blood pressure is such that drugs are needed a controller



is probably not fit for work, but this will be determined by the type of drug which is being taken. If in any doubt about your blood pressure do not hesitate to seek advice.

(7) Anti-malarial drugs in normally recommended doses do not usually have any adverse effects. However, ensure that the drug is taken in good time so that Question 3 above can be satisfactorily answered.

(8) Oral contraceptive tablets in the standard dose do not usually have adverse effects, although regular supervision is required.

Although these are common groups of drugs which may have adverse effects on performance it should be pointed out that many forms of medication, which although not usually expected to affect efficiency, may do so if the person concerned is unduly sensitive to the particular drug. You are therefore urged not to take any drugs or medicines before or during duty unless you are completely familiar with the effects of the medication on yourself. Again, the medical sources of advice mentioned earlier in this Circular should be consulted in cases of doubt.

Alcohol has similar effects to tranquillisers and sleeping tablets, and may remain circulating in the blood for a considerable time, especially if taken with food. It should be borne in mind that you may not be fit to go on duty even eight hours after drinking large amounts of alcohol. Special note should be taken of the fact that alcohol and sleeping tablets, or anti- histamines, can form a highly dangerous and even lethal combination.

Remember that, following local and general dental and other anaesthetics a period of time should elapse before returning to duty. This period will vary depending on individual circumstances, but may even extend up to 24 or 48 hours. Any doubts should be resolved by seeking appropriate medical advice.

To sum up, the effects of medication on work performance are the direct concern of the individual. This circular gives some guidance, but it cannot be comprehensive.



GOING ON A JET RIDE

by O. L. T. Klein -

Nearly every military controller likes to have a ride in a double seated military jet aircraft. However, before one gets the permission to be a jet passenger, the controller has to be in possession of the red card. This red card is to certify "that the person has met the requirements for the physiological training program". This course is held at the "Flugmedizinische Institut der Luftwaffe Fürstenfeldbruck". There you will discover, that it is not only difficult to pilot such an aircraft, but also very demanding to become a jet passenger.

The first day of the course starts with theoretical information about the oxygen system and its failure. Following laws have to be observed:

A human being is able to stay alive at 12000 feet for about 3 hours without additional oxygen. Above 12000 feet living is normally only for a short time possible. Above a height of 27000 feet life is impossible.

There is a lecture about hypoxia and hyperventilation. There are different types of hypoxia such as:

Hypoxian hypoxia : lack of oxygen in the air;

Hypaemian hypoxia : too much CO in the blood;

G-Forces and too cold;

Histotoxian hypoxia : hangover after too much alcohol and drugs.

One has to know about the time of useful consciousness T U C:

30 minutes at a height of 18000 feet;

4 minutes at a neight of 25000 feet;

45 seconds at a height of 35000 feet;

15 seconds at a height of 45000 feet.

That is the time left to check the oxygen equipment in case of malfunctioning. Prior take-off the so-called PRICE check has to be performed:

P check the pressure gage;

R check the regulator;

I check the indicator;

C check the connections;

E check the emergency assembly.

These lectures and some practical handling of the oxygen equipment sums this subject up.

One of the most important topics, however, is the ejector seat. It is a very complicated mechanical system and you have to know all about it in order to safe your life if the situation arises.



possibilities to There are **EWO** activate the propelling charge of the seat. One loop is between the knees and two further ones are to the left and right side of the head. The upper handles have to be used whenever possible and should be used simultaneous. The upper bail out device requires about three times the time the lower one would, but it provides more safety for the person in the seat. While pulling the upper loops the head is automatically pressed backwards by means of a cloth brought forward. This will bring the body in an upright position which

is vital due to the enormous power during the upwards acceleration during the bail out. Wrong positioning could break the neck - this has to be considered when pulling the lower loop, in this case the spine is curved.

The advantage, however, is the shorter time of reaction which might be of importance during low level flights. The lower handle has to be used in case the G forces are higher than 3 G, in that case you will not be able to raise your arms above your shoulders to reach the upper loops. After the theoretical part the student is trained on a bail out simulator. Depending on your body weight, you will be catapulted to a height of about 13 metres. This and a simulated flight in the pressure chamber are the program of the second day. During this flight you will be shown problems arising, connected with oxygen troubles. The chamber flight is always supervised by a flight surgeon. First the pressure in the chamber is brought in steps to a height of 42000 feet. As you will imagine all occupants of the



chamber are wearing oxygen masks. Some interesting experiments show how gas expands at greater heights, a small balloon, not blown up on the ground, is bigger than a football one at above mentioned height. Gas expands at 42000 feet 9 times its volume compared to groundlevel, that is the reason not to eat or drink things which contain or develop a lot of gas in your stomach at least 24 hours prior entering the chamber or going on a jet ride. After the climb to 42000 feet the pressure is increased to 24000 feet, at this level each person in the chamber has to disconnect his mask from the oxygen supply in order to learn the individual symptons of lack of oxygen. This is important to know as the oxygen indicator might work properly. However, you will not get enough oxygen.

After around about 3 minutes you will feel your special symptons, they could be coldness, heat or other strange phenomena. When disconnecting your mask you smell how gas expands at greater heights. There are some people who feel no special symptoms at all. The flight surgeon will advise those passengers to reconnect the mask with the oxygen system, but very often they are unable to do so. While people who experience the withdrawal symptoms are advised to reconnect and are still able to do so, the other group might not even be able to understand the flight surgeon any longer, without help this would be fatal. After all passengers are reconnected the second group might not even remember the last few minutes of the experiment.

Now follows a rapid decompression, this can happen in reality if the pressure cabin of the aircraft is destroyed at great height and the inside pressure is at once equalized with the outside pressure. The leaving of the air makes a hissing noise and the cabin is immediately fogged up.

On the third day there is a small test concerning all the things you learned the days before. Provided you pass it, you will be issued with the red card which enables you to go as a passenger on a jet ride. All you need now is the one little thing and that is the AIRCRAFT.

THE AIRSHOW

by Philippe Domogala

1971, a French Air Force Base during an open day. During that summer the base "OPEN-DAY SHOW" was to be international. In addition the to "normal" French MIRAGES, FOUGAS. VAUTOURS, MYSTERES and other ETENDARDS, the Colonel commanding the base had managed to get some Canadian STAR-LAHR FIGHTERS from (Germany) and Italian FIAT and some Portuguese F86's to participate. During the preparations, it turned out that the local Air Traffic Control would have difficulties in handling all that traffic at once and especailly in English. So they decided to ask Headquarters for somebody able to speak English to assist them "if necessary". And that is how I found myself on a bright Sunday afternoon in a small control tower, together

with 15 other persons.

The Coordinator, a captain, told me immediately: "The only thing you have to do is to answer the Canadians, if they call us in English, and to tell them: 'Your time over the field is 1505, start with a high speed low pass, you have 6 minutes for your presentation. After that, when they are finished direct them to the North and get rid of them. The Italian is a single aircraft and should speak understandable English, so we'll handle it and the Portuguese speak French so you have only to deal with the Canadians, OK? ... They will arrive after 2 CRUSADERS from the French NAVY.

I started to relax. I would have plenty of time to enjoy the show. The programme was quite interesting. The

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Canadians were first, followed by the 2 CRUSADERS, then the Italian FIAT, followed by a ballet of helicopters from the ARMY. Towards the end the "Patrouille de France" was planned for 20 minutes!...

As 3 o'clock was approaching everybody was getting very nervous. Approximately 20.000 people were gathered below invading all the taxi-ways and the parking area around the static display, all enjoying their day. Just before 3 p.m. the first call filled the tower: "Control, this is ROYAL FLUSH 305!" in what sounded to our French ears as beautiful North American accent ... Everybody shouted: "The Canadians!" and looked expectantly at me. I took the microphone and transmitted the agreed message. "Confirm time over the field 1505?" came the reply. All the heads around me were nodding, "confirmed!" was my response. The commentator announced to the crowd: "Ladies and Gentlemen, our show will begin now 2 STARFIGHTERS from the Canadian Air Force ... " he had not finished before another call in English came up "Control this is Canadian Military 3254!" The captain turned arround: "What do they want again?" After the usual exchange we heard: "we will be over your field in one minute, 500 feet QFE Mach. 9 for a high speed low pass ... " "Roger!" was our answer. Suddenly 2 smoke trails appeared low over the horizon to the North and almost simultaneously 2 other smoke trails were coming up from the West. Almost at the same time another call was received: "Control, ROYAL FLUSH 305, over field in 20 sec. Mach.95 500 feet..." The captain looked worried, "What? they are 4?" Before anybody could answer ... zoom-zoom! ... zoom-zoom!... followed by a tremendous noise. Two beautiful white French NAVY CRUSADERS crossed the path of 2 sleek Canadian starfighters just above the crowd, which was applauding and shouting: "Bravo!" The captain in the meantime turned as white as the crusaders and was trying to interfere in a radio conversation between the starfighters and the crusaders who were already arguing as to who was going to do the first presentation. The captain was also talking to himself: "Those bloody Navy people ... they called us in English!..." Then another call arrived: "Control this is Italian Air Force 25".

The captain shouted at the local controller: "Keep him away!" which the local controller immediately translated in English as: "Italian Air Force go away!" "What do you mean go away?" said the Italian to which the local controller replied with assurance: "Italian Air Force, go away! go away! "What? ... I am a colonel of the Italian Air Force, I have flown 1000 kms. to come to your small pitiful crumpy air show and you tell me to go away! Give me your supervisor! ... " But the captain was busy on other frequencies shouting: "Get the F104's on the south side and keep them here!". Then a major from the Cavalry entered the tower, all dressed up with black boots over his trousers and white gloves. "Good afternoon!" I am the coordinator for the Alouettes Helicopter ballet, we are ready and ..." He could not finish before the captain had turned on him and declared: "Keep your ... helicopters on the ground for the moment, I am busy!". The crusaders were just finishing their



presentation: "Control, ROYAL FLUSH 1s finished, request permission to return to LANDIVISIAU and leave your frequency! ... The captain took the microphone away from my hands and replied (in French): "And you can cast your anchors as well!" then asked: "Bring in the Canadians now!". But the starfighters answered: "Thank you but we are getting low on fuel now, we have to return, thank you for the excitement ...". "Bloody Canadians", said the captain and shouted to the local controller "OK, try to get the Italian in early". "Eh ... I do not think he is still here Sir ... " "what?". "I think he went away ...". The commentator was interfering: "We have to fill-up the spaces the crowd is becoming impatient ... ". The captain then turned to the Cavalry major: "Your Alouettes are ready you said? All right take off now and fill the gap, OK?". After one minute 6 Alouettes were zooming about the airfield like working bees. The demonstration, (pardon ... ballet) was well on its way when a disrupting call filled the tower: "Control, Italian Air Force 25 is RIGHT ON TIME for its presentation 30 sec south of your field for a nigu speed low pass ... A trail of smoke was already visible in the south , moving fast "Get the helicopters down!" was the unanimous shout. Before the order could be executed ... zoom! ... the G91 had already passed 1000 feet above our heads, spraying tons of green smoke behind him, and right in the middle were the helicopters, fighting to get their stability back after the turbuand with their lence, visibility seriously impaired by the green smoke. The Cavalry major was turning green as well but for different reasons, while the crowd below was applauding cheerfully ...

The Italian FIAT made a stunning presentation, and exactly on time, according to programme when he had finished he just said "Control, I am NOW going away, good day!"

After these 25 minutes of Air traffic control stress, the show went on as planned and without further incidents. The public, and the press, went homeabsolutely satisfied and never noticed anything untoward.

In the local mess later that evening, after a few bottles of wine, some very harsch words were spoken about the



NAVY in general ...

It was then unanimously accepted that in the future, sailors should ride in boats instead of jets, and that the Army should confine itself to driving tanks instead of helicopters. As for the Canadians and the Italians they really ought to speak better French ...





by Henk van Hoogdalem - TC Chairman

"CORP" POLLING.

The information to the Operations Room personnel concerning the "Confidential Occurrence Reporting Procedure" proposal by the TC of EGATS has been handed out several weeks ago and the outcome of the polling gave a result which shows that this idea was warmly welcomed by a great majority. Figures below show that 78% of the Operations Room staff reacted and among them 87% are in favour of "CORP". But the most positive figure is the final one which shows that 54 persons are prepared to be considered as nominees for the "CORP" team, well divided over all sectors and Flight Data staff. How the elections will be organised is not yet finalised but the TC will inform you soon.

Polling results: Flight Data Group:

Total	i gu une	65
Answers		50
In favour : Yes		45
No	:	5
%	:	90 %
Nominee for CORP Team	:	15
Brussels Sectors:		
Total	:	71
Answers	:	63
In favour : Yes	:	51
No	:	12
%	:	81 %
Nominee for CORP Team	•	19
Hannover Sectors:		
Total	:	55
Answers	:	45
In favour : Yes	:	41
No	:	4
%	1	91 %
Nomines for COPP Team	21 2 4	15

Amsterdam Sector:

Total	:	22
Answers	:	11
In favour : Yes		10
No	:	1
%	:	91 %
Nominee for CORP Team		5
Other Staff:		
Total	:	9
Answers	-	5
In favour : Yes		5
No	:	0
%	:	100 %
Nominee for CORP Team	:	0

Totals:

Total	- ¹²			:	222	
Answer	s			:	174	
In fav	our :	Yes		:	152	
		No		:	22	
		%		:	87	%
Nomine	e for	CORP	Team	:	54	

CALLSIGN CONFUSION

To reduce the number of "callsign confusion's" in R/T and telephony many proposals from various origins have been made, but none of these sometimes brilliant solutions has yet reduced the confusion. In practice, some of them even created an extra handicap for pilot and controller because of their complexity. To find a system to avoid C/S confusion for all traffic worldwide is for the time being unattainable, but, on a limited basis, the TC is convinced that confusion can be avoided for traffic departing from the same airport or region.

To find out the opinion of Airline Operators a representative of the TC visited Transavia, Martinair and Air Holland with such a positive result

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Markt 11 phone 04402-72272

that further steps are to be taken in the near future. The idea is based on the following principle;

On initial creation of the C/S, the operator checks if this proposed C/S might confuse with others of aircraft departing from the same airport or region within a fixed period. This check can be made by telephone or computer terminal, linked with a central organisation such as the Central Data Bank (CDB).

In the meeting with Transavia, Martinair and Air Holland, more operational items have been discussed:

 Visit of pilots and Operations personnel to Maastricht;

 The update of requested Flight Level by Operations via AFTN or by pilots a.s.a.p. on the ATC frequency, if actual requested FL differs from the requested FL in FLightplan;

 To have pilots transmit "Top of Descent" when on the ATC frequency concerned. To increase and improve Familiarisation Flights.

All discussions took place in a relaxed and positive atmosphere and showed again that more efficient operations can be created by direct contact between pilot and controller.

Single-strip system for Hannover and Brussels Sectors.

Different proposals have been made and are now being discussed and amended by the TC. The final result will be presented to Current Operations within two months.

"Alert" plus Alternative Label.

To have the rate of climb/descent presented when "ALERT" is triggered, the TC will propose that the "ALERT" only, replaces the Groundspeed by "blokjes" and the rate of climb/descent remains.

XECM activates HOP.

The implementation of this TID function will take place at a later stage when recent software problems are solved.

PSSR code used.

In the latest system level, a new warning via KDS was triggered when a code was given which was already used, even in the zones not protected by MADAP.

If you have proposals, remarks or ideas, please contact the TC members: Jan van Eck, Ralf Hölscher, John Doyle, Ernst Vreede, Dieter Busch or Paul Hooper.



"OPEN" LETTER

TO	:	The INFUT Editor
FROM	:	28 Devoted Readers
SUBJECT	:	'History is tomfoolery' (Henry Ford)

Maastricht UAC, June 1986

Sir,

As enthusiastic, regular and motivated readers of your otherwise excellent magazine we hope that you do not take it ill of us, being approached so bluntly with a slight, nevertheless positively meant, undertone of criticism.

We feel the urgent need to express out anxiety about allotting so many valuable pages of 'INPUT' to articles dealing with obsolete en even forgotten flying objects such as DC 3's, DC 6's, Viscounts and what have you.... Let's face it: the very word INPUT wasn't even introduced into the English language when these noisy airborne vehicles were already sublimated into a pièce-de-résistance at locations of retrospective nostalgia (e.g. museums) or sacrificed on the altar of progress (e.g. junk yards).

We indeed share the common opinion that 'INPUT' should reflect actual and future aeronautical developments related to the ATC profession, rather than become a display of collector's items. May we suggest that you refer these antique lovers to more appropriate, typical magazines like 'Propfans', 'Double/Triplicate Wings', 'Boxer Engines' or 'Bicycles at 6.000 Feet'?

If, unfortunately, the disease cannot be banned completely, we demand that the contents of said epistles should no longer be duplicates of previous reviews with only minor modifications such as location and/or registration, but that we shall be entertained with eye witness reports concerning:

Bale-out procedures, exercised in live emergency environments;

Cocaine-raids to and from Columbia, explaining in detail:

- a) how to become a participant
 - b) how to apply for fam-flights;

3) Sex in open cockpits at 20.000 ft when the use of oxygen masks is mandatory.

By the way, rumour has it that one of our German colleagues possesses a diary as well as photographs of his grandfather who was tail chicken in the Red Baron's formation of 1914-1916. Now we are talking aviation history!

Yours sincerely, DD Nog th DH

EDITORIAL ANSWER

-by Norman Brown-----

Your communication regarding the content of our esteemed journal comes as a welcome respite from the customary indifference indigenous to that organ. There are, however, a few observations which it is behoven upon me, as delegated representative of "Input", to present for your elucidation.

To commence with your opening quotation "History is tomfoolery" which you attribute to Mr. Henry Ford. The correct quotation is in fact "History is bunk" which, had you consulted the correct opus would, no doubt, have been made clear for you.

There are one or two - even three or four - quotations regarding history which one could quote in reply.

For example try this one, which is - I believe - entirely appropriate to our periodical: "It takes a great deal of history to provide a little litterature" - Henry James.

Or how about this one from Dionysius: "History is philosophy teaching by example".

Now for my favourite: "Histories make men wise..." from Essay number 50. Of Studies, by Francis Bacon, 1st. Baron Verulam.

Do I sense a cry of "Enough!"? Thought as much. Now for the letter.

The first paragraph hints - vaguely - at literacy, but we must commiserate with your being, quote, "so bluntly approached with a slight ... undertone of criticism". We hope it causes no permanent damage. (Read it once again, with particular attention to punctuation. I refer to the comma between the words "us" and "being").

Now to the essence of your epistle. It would seem that you are adverse to the extensive historical content of our gazette. In response to this observation, I would agree that certain items, such as those concerning European aircraft manufacturing consortia, could be considered somewhat irrelevant to our vocation. The articles referring to controller's brains could indeed be misconstrued as inferring that such persons do in fact possess said organ.

It is my considered opinion, reached after twenty-two years of observing said creatures, that this phenomenon is somewhat rare in the profession. To pre-empt anticipated jobation in response to the aforementioned observation, it must be said that one possesses a similar view of those persons entitled "Assistants", "ATS" (incidentally, a totally erroneous title), or - to use R.A.F. slang - "Erks".

So, you desire relevance. Your suggestions for future articles, revealing as they do your libidenous disposition, could not possibly be included in a family ephemeris such as ours; but I offer a few suggestions.

Regarding your first request: I suggest that one of your number evacuate an aeroplane, without the aid of a parachute, taking with him a pencil and notepad. Said volunteer (for one would hope this to be so), could then record his impressions of the descent, which Input would be delighted to publish. A photograph of the author, taken before the heroic exploit, would be welcome. (Note that the photograph must be taken BEFORE the descent, postage sized photographs tend to be rather grainy when enlarged).

Your second request is rather beyond my experience. Please contact the Chairman of the Flight Department.

Point number three is obviously intended to embarass the uninitiated. Do you honestly imply that, being in a state of suspended animation with Raquel Welch, you of the super macho brigade would be unable to ascend?

One presumes that Oxygene is the brother of the celebrated Nugene Ledbetter of the State of Mississipi, U.S. of A. and, if he is anything like his brother, it serves you right for being caught with his masks, however, mandatory they may be.

Gasping for breath, one addresses the final paragraph of your communication.

This correspondent has a BOOK written about the British Army's expedition to Tibet at the beginning of this century, in which his Grandfather was an enthusiastic heliograph operator.

Who needs aviation?

Further reading:-

A Dictionary of Famous Quotations.

Rogets's International Thesaurus.

Flight Dept. folder. The walls of the Gentlemen's Convenien-

ce, Waterloo Station, London.



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THE DC 6 IS OLDER THAN ME by Paul Hooper.

If ever an excuse is needed for a celebration there is normally an anniversary close at hand to provide it. The aviation industry can call up anniversaries on an almost daily basis, much to the satisfaction of the celebrating employees and, doubtless, the liquor trade! One event which has so far gone unheralded by the aviation world in 1986 is the fortieth anniversary of the first flight of the DC6. So, ladies and gentlemen, please raise your glasses to the DC6! The DC6 owed its development to the DC4E project of 1938. This aircraft, first flown on June 7, 1938, was quite a revolutionary piece of machinery for its time; perhaps too much so. It featured a retractable tricycle landing gear, triple fin and rudder configuration, power controls, an APU, cabin pressurization, air conditioning and accommodation for 52 passengers. After almost a year of flight testing the DC4E was handed over to United Airlines for U.S. coast to coast route proving. It soon became evident that the aircraft was too large and too costly to operate and was returned to Douglas. The one and only DC4E is believed to have ended its days ignominiously in the waters of Tokyo Bay. The design was subsequently scaled down to a 42 passenger unpressurized aircraft with a single fin and rudder, taking to the air for the first time on February 14, 1942, as the DC4A - but that's another story. As calm was gradually being restored to the world after six years of hostilities the Douglas company was wasting no time in developing the new generation of commercial airliners. The DC6 was projected as a development of the basic DC4 incorporating features of the abandoned DC4E. This resulted in a stretched DC4 fuselage accomodating 52 passengers, or 26 for nighttime operations, in comfortable pressurized conditions. The basic wing of the DC4 was retained but now utilized thermal de-icing, double slotted flaps and the power of the inimitable Pratt & Whitney R2800. In this configuration the prototype made its first flight on February 15, 1946, and was later handed over to the U.S. Army Air Force with the designation XC112A, later to become YC112A. Maiden flight of the first production DC6 took place on June 29, 1946.

In the meantime American Airlines and United Air Lines had placed substantial orders for the aircraft, eventually taking delivery of line numbers one and two respectively and inaugurating DC6 services simultaneously on April 27, 1947. By this time the Constellation had been in service with TWA on its transcontinental routes for fourteen months.

TWA's owner, one Howard Hughes, had been instrumental in developing certain specifications for the Lockheed aircraft, and when the time came to sign contract he insisted on a clause precluding other operators from acquiring the aircraft for use on their transcontinental routes for a specific period of time. Thus, to retain their competitive positions American and United were pressed into purchasing the DC6. Douglas no doubt appreciated the big favour Hughes had done the company. Conver.ely, Lockheed was probably more than a little miffed at the sizeable orders it so obviously lost.

The DC6 had a good run but faded from favour quite rapidly with the

introduction of jets in the late fifties. Nevertheless the aircraft continued to see active service throughout the sixties and well into the seventies with the smaller companies and charter operators. These days a DC6 with seats in is a rarity indeed and is enough to attract those weird enthusiast people half way around the world! A surprising number of 6s do still exist, albeit in varying states of repair. Several still fly the Caribbean and South American cargo routes whilst many others have found favour as water or chemical bombers, some as close to home as the south of France.

A toast to a total of 703 DC6s of all models!



The Twilight Years



Still displaying its United colours N37582 was broken up shortly after this photo was taken at Fort Lauderdale, Florida in 1979.



★ The one that didn't get away! Cl18 0-33245 sits out its final days within the desert confines of the Davis Monthan graveyard.



★ An all too common sight amongst the current DC6 community is the aircraft in cargo configuration and minus all traces of paint. Seen at Fort Lauderdale in December 1982 N779TA is operated by Trans Air Link and visited Beek just a few years ago. Its early life was spent in Brazil.



* Mackey International was one of the last carriers to operate DC6s on passenger schedules. N4354B was delivered to American Airlines in 1951. Mackey ceased ops. shortly after they went jet in the early eighties. Fort Lauderdale 1979.



* N2816J was photographed at West Palm Beach in November 1979 impounded after having been caught transporting naughty substances. The aircraft is a former USAF CI18.



THE MAKING OF AN AIRLINE ... NETHER-

Netherlands Airlines for European Commuter Services", is the full name, headed by Mr. Leen Jansson, a former architect of ATHO - a construction company - and now an aviation pioneer with a clear vision towards regional air transport. How it all started is well known, but an analysis of today's aviation industry was necessary in order to answer the question as to whether there would be room for such an months market Eighteen airline. research conducted that there would be.

Profile of a young Dutch Airline.

Leen Jansson: "We are first of all a commuter-airline that gives a service to all who travel with us". Regional carriers' traffic is growing at a faster rate than that of the major airlines. At the end of July this year a total of 100.000 passengers had been carried in the first year.

The cream of the market.

Leen Jansson, indicating where the cream of the market lies: "KLM's subsidiary NLM operates services inside and outside Holland. Some of these services are marginally profitable. This was the case with the NLM flights from Amsterdam to Enschede and Groningen. The causes of this are the relatively high capital investment and the overheads. In our opinion planes with a maximum of 18 passengers should be able to reach the break-even point when only 50 % of the seats are occupied". Netherlines has an average load factor of 65 %, with 196 % and 214 % growth of the number of passengers to respectively Groningen en Enschede, compared with the NLM figures in 1984. So, by using smaller aircraft and taking over routes which the larger airlines find unprofitable can be regarded as the basis for Leen Jansson's success.

Netherlines clearly fulfills a feeder function for airlines based at Schiphol using the best type of aircraft for their services - the Jetstream 31 (BA31).

The choice for BA31

The potential market has been clearly defined by Netherlines - all areas within two hours flying time in Europe. Several aircraft were researched to find the optimum economic possibilities. A well-tried passenger aircraft, the turboprop Jetstream 31 (18 seats) was chosen, being pressurized, fast, comfortable and up to 20 % more fuel efficient. Operating at 25.000 feet, these drastic costcuts in fuel make it possible to have a 7 % lower direct cost.

The BA31 can fly for some 20 years with approximately 25.000 hours flying time in total. At the moment the fleet consists of 6 Jetstreams (PHKJA, JB, JC, JD, JF and JG).



Friendly reception in Netherlines BA 31 cabin



Founder/President Netherlines

Netherlines' growth has exceeded expectations. Leen Jansson sees the future with great confidence: "If we are going on at the rate we started with passengers and we can get all licences we need for flying to other destinations, we will be growing faster than we imagined". Indeed, the growth was faster than foreseen. The fleet has to be extended. Several types seem worthwhile considering such as the Dash 8 and the F50. The best aircraft would be one with the price of the Brasilia (E120), the systems of the Saab Fairchild and the field-support of De Havilland Canada. At the moment Netherlines will opt for the F50 or ATR42. To operate at maximum profit and get the maximum from investment, the management are thinking of chartering or leasing their aircraft to other customers. Until now, everything has been selffinanced, even without the government's offer of 4 million guilders.

Maintenance

In fact, Netherlines is the first to operate the Jetstream in Holland (the company also considers the purchase of a stretched version of the

Jetstream offering 27 seats) and this gives some extra problems. For maintenance, Leen Jansson looked for a contract with one of the biggest companies in Holland - Schreiner but they failed to come to an agreement. At first, they weren't too happy to have their aircraft handled by another airline, as this has proved not so practical in the past, but then KLM came with an acceptable offer. Now Netherlines and KLM have agreed that the maintenance of the Jetstream will be done in KLM Helicopters hangars. KLM employees have been made available for support during the first two years and four Netherlines technicians have completed their special training with Britisch Aerospace. Most of the work will be carried out on an immediate basis, so that Netherlines does not have to wait. Thereby small turn-overs of the aircraft are done during the week-end whilst more extensive maintenance work aircraft will be done in the KLM hangar.

In two years, Leen Jansson wants to start doing their own maintenance on the aircraft within two years in order less dependent to be on others. Although he makes it clear that in Europe it would be foolish to do all maintenance themselves since costs would be far too high.

Netherlines Organisation

With total staff now comprising some 110 (including 36 pilots) and increasing steadily, the company has decided to go for a brandnew head office at Eindhoven Airport, Holland's highly sophisticated southern regional airport, which offers a more industrial background than that at Maastricht. Though concentrating their activities on Schiphol, Netherlines already operates Eindhoven-Vienna and envisages to open other routes from Eindhoven shortly. Also their own hangar is now under construction, designed not only to accomodate J-31 type aircraft, but also the bigger transport expected shortly . Netherlines attaches great value to the United Kingdom as an important area for further development of regional traffic with the Netherlands. The Airline has set up its own organisation for which Luton Airport was chosen to be an attractive based. The set-up comprises a sales department for which UK sales manager Tina Andersen holds responsibility, assisted by Julia Hobbs. Further,

a reservation unit was created to optimize accessibility to Netherlines for travel agents and business houses. Toll-free telephone lines ascertain optimal and free-of-cost communication with the computerized reservations unit where Lynne Patrick and staff are standing by for a professional reservation procedure and queries. Netherlines believes that the Luton region has an important enough growth potential to be served with bigger aircraft (30-36 seaters) in the not too distant future.

Netherlines does not show any interest in the London Stolport because of weight take-off limitations reducing the number of passengers.

European Costs

Most travellers in Europe complain about the high costs of air-transport. There are several reasons which an operator cannot escape. Landing fees, even for local fields, are rather high. Average cost per seat-mile is some twenty Dutch guilders, all inclusive. The cost of a return ticket for a passenger from Amsterdam to Luxembourg is some six hundred guilders. But flying with Netherlines remains cheaper than with one of the big airlines (via Paris or Frankfurt) to Luxembourg (some 1.000 guilders) and is faster.

Competition

Holland Aerolines, RLM (subsidiary of Air Holland), Schreiner Airways and Netherlines. Isn't there too much competition in this small area? Leen Jansson is of the opinion that in the regional aviation market the margins are very small. In his eyes there is only room for 1 or 2 regional companies, with some regulation by the civil authorities. It is remarkable that when the question of competition is put forward, the greatest competitor is deemed to be car reimbursement costs which, for many businessman, is an additional source of income. But if one can choose between going by car or by air from Amsterdam (or Groningen) to Luxembourg, which would you prefer? Both routes are difficult driving by car and takes about five hours. By air it takes only one hour plus half an hour for checking in and out.

New destination : Soutthampton. Subject to approval : Amsterdam-Lyon. Amsterdam-Turin. On the Vienna route Netherlines operates for Philips staff. There is a limit of 12 passengers per flight.

Netherlines is making use of KLM's Corda reservation system that gives everyone, all over the world, the possibility of checking in on a Netherlines flight or any of the connections. Although this service is not free for Netherlines, (the cost is one US dollar per ticket) it links them with the rest of the world. Besides that Leen Jansson sees it as an interaction between the airline and commuters.

Financing

Expansion of the fleet has also called for the increase of risk-bearing capital. Therefore at the beginning of October last year Dfl. 10 million was added to Netherlines' capital. This injection of capital came from a consortium of the investment company Hermes, the insurance company Aegon, the development company Brabant (subsidiary of the insurance company AMEV), and the investment company Finoro and the stockbrokers Kempen and Co. Even though the purchase of new aircraft could be financed with commercial bank credit, the concerns which had financed the first aircraft (Pierson-Amro and Europese Investeringsbank) were of the opinion that strengthening the risk capital was preferable. Mr. Jansson is anticipating launching the company this year on the Amsterdam parallel market.



Jetstream 31: Comfortable, fuel efficient, pressurized, 18 seats