

# INPUT 1987-II





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**EUROCONTROL GUILD of AIR TRAFFIC SERVICES**

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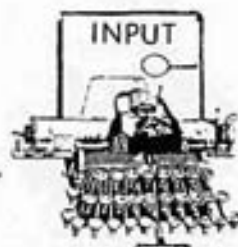
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# "WELCOME ON BOARD"!

— EDITORIAL —

by Patrice Béhier



In addition to the seasonal increase of aircraft movement figures comes the birth of many new airlines, within the European scene.

An examination of this list of the new charter airlines for 1987, not taking account of the regional or turboprop operators, reveals the striking figure of eleven new airlines flying a total of 34 aircraft! By reading the aviation press one can conclude that most of these aircraft seem to be fully booked for many months ahead. Numerous new aircraft are on order by many of the existing airlines but nevertheless, official traffic predictions until the year 2000 AD, indicate a yearly increase in aircraft movements in the region of

only 2.5 % to 3 %. So do not worry, sit back relax and enjoy the summer traffic!

AIR 2000 - UK - 2 B757  
 INTER EUROPEAN AIRWAYS - UK - 2 B737  
 MEDITERRANEAN EXPRESS - UK - 2 BA11  
 PARAMOUNT AIRWAYS - UK - 3 MD83  
 LONDON EUROPEAN - UK - 1 BA11  
 RYANAIR - IRELAND - 3 BA11  
 TRANSWEDE - SWEDEN - 1 MD83 + 4 S210  
 AIR EUROPA (AIR ESPANA) - SPAIN - 6  
     B737 coming 1 B757 + 3 b737  
 ANDALUS AIR - SPAIN - 2 B727  
 CANAFRICA - SPAIN - 2 DC8-61  
 LTE - SPAIN - 3 B757 + 3 options

P.S.: Some aviation experts tell me that there are some more, that's enough for today! \*

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**29 AUG. '87**



by Geoff Gillett



The 26th IFATCA Annual Conference was held in Nairobi from 27th - 30th April, 1987. In this article Geoff Gillett highlights the professional and social aspects of the conference. The complete, official report is expected to become available in a few weeks.

#### Departure

Any IFATCA conference is always preceded by a flurry of activity and this year was no exception. In spite of much adverse publicity concerning AIDS, EGATS dispatched a total of nineteen members and accompanying persons, the largest EGATS group ever to attend an IFATCA event.

Most of us were advised to have numerous injections for the visit to Kenya, so suitably equipped with visas and anti-malaria pills, off we flew from a variety of airports. The largest group chose to fly with LTU from Düsseldorf to Mombasa. The flight was uneventful but the passage through customs was rather turbulent and the cause of much delay whilst each of us had our baggage closely examined. Some gifts which we had taken for the Kenyan controllers had to be specially approved by the chief of customs after much lengthy discussions on the subject of importation regulations.

#### Opening ceremony

Monday morning saw the official opening of the conference by the Hon. Arthur Magugu, M.P. Minister for Transport and Communications, which

took place in the amphitheatre of the Kenyatta International Conference Centre, a huge magnificent modern building, in which we would spend most of the next four days. In a message, His Excellency, The President Hon. Daniel Arap Moi, C.G.H., M.P. extended a warm welcome to the delegates attending the first ever IFATCA conference in sub-saharan Africa. Further speeches followed from the Director of Civil Aviation, Mr. J.N. Kahuki and the Chairman of the Kenya Air Traffic Controllers' Association, Mr. B. Gatune in which the theme of the conference, "Focus on Civil Aviation in Africa" was underlined and the aims and objectives of IFATCA reiterated.

#### Down to work

For readers who may be unfamiliar with IFATCA procedures, the purpose of conference is to produce policy and information/guidance material, on all aspects of Air Traffic Control. This wide spectrum of activity is divided between three Committees:

- Committee A deals with Administration
- Committee B with Technical Matters
- Committee C with Professional Matters.

In addition, a number of Standing Committees (SC's) comprising individu-



al volunteers, continue with the day-to-day work, including production of working papers, throughout the course of the year.

- SC1 Professional and Technical Matters

- SC111 Finance

- SC1V Human Factors

- SCVI Constitution

- SCVII Legal Matters

- SC11 and SCV being no longer in existence.

IFATCA bestows upon its delegates to conference some impressive-sounding titles, so we have an illusion of sounding important, if only for the duration of the conference! Each delegation is headed by a "Director" and the committee delegates are known as "Deputy Directors". Others can have the status of delegate, observer or can participate in the accompanying-persons' programme.

The EGATS team was as follows:

Director of Delegation - G. Gillett

Committee A - K. Scholts/P. Béhier

Committee B - R. Hülscher/R. Bartlett

Committee C - F. Le Noble/K. Zipp

In addition, A. Bonne and J.

Ellermann added support to the group and P. Domogala also attended in his capacity of Regional Vice-President, Europe West.

The following is an abbreviated summary of the highlights of the Committee reports, prepared by the EGATS Deputy Directors and from whom more information can be obtained.

#### COMMITTEE A

The meeting opened at 1100 hrs. and Mr. Green (U.K.), Miss Hall (U.K.) and Mr. Chu (RVP Asia) were appointed Chairman, Secretary and Vice-Chairman respectively.

Applications for membership by St. Lucia, Guatemala and Sudan were accepted but an application by the Turkish Cypriot Association was rejected. EGATS policy is that IFATCA should retain as many Member Associations (M.A.'s) as possible and financial problems should not be the reason for the termination of affiliation. Recommendations to suspend Argentina and Zambia were not carried at the final plenary session. The fact, that the South-African delegation were unable to obtain visas and were thereby prevented from attending Conference, was strongly criticized in the following motion.

"The Conference strongly reaffirms its non-political, international, professional position and therefore expresses regret at the inability of some of its Members Associations to attend Conference".

Elections resulted in the following:

Mr. Ulli Windt (VDF) - Vice President, Administration

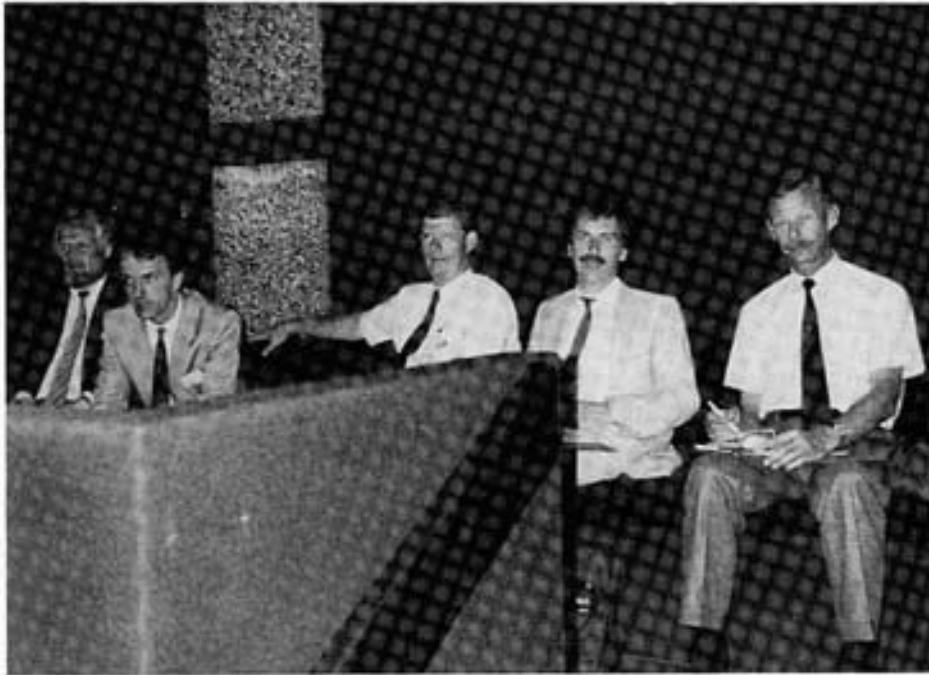
Mr. Jeff Randall (Canada) - Vice President, Technical

Mr. Wim Rooseman (The Netherlands) - Vice President, Professional.

The venue of the 1988 Conference, Brazil, was confirmed and in 1989 it will be held in Frankfurt. The secretaries, chairmen and regional vice-presidents will receive payments for attending Conference and Philippe Domogala (RVP EUR W) who has been very active this year was thanked for his good work. There was lively discussion on the payment of RVP's for attending conference. The Executive Board (E.B.) was of the opinion that their presence at Conference is not essential, however, in practice they receive



The Jomo Kenyatta Conference Centre.



Part of the EGATS delegation attending the opening ceremony.

payment for accommodation. The discussion almost lead to the resignation of the Vice President Finance.

Finally, Mr. Harry Henschler was presented with the IFATCA Scroll of Honour, in recognition of his services to the Federation.

#### COMMITTEE B

EGATS was actively involved in subjects of concern to us, especially since we had been requested to submit 2 working papers on:

- the operation of data entry devices at ATC positions
- Air Traffic Flow Management in Europe.

As IFATCA is represented on many international bodies such as ICAO, IFALPA, etc... the first items dealt with these various reports. News from ICAO is that future air navigation systems (FANS) will have a significant impact on ATC in the fields of horizontal navigation (satellites, MLS), vertical navigation (geocentric altitude), surveillance (Mode S, data link) airborne collision avoidance systems, mobile communications and emergency location.

The study on the reduction of vertical separation to 1000 feet above FL 290 is nearing completion and criteria for VOR/DME separation have been redefined. A new project in ICAO was the subject of controversy, namely the radar monitoring by ATC of suspec-

ted drug-smuggling operations.

#### Ambiguity of R/T call-signs

Several attempts to solve the problem of callsign ambiguity have in the past been unsuccessful. An additional problem is the extension of the company designators to 3 letters so the short term solutions remain; local coordination with aircraft operators, and stricter R/T discipline. In the medium term, the use of the Central Data Bank to detect possible problems could be examined.

#### Airborne Collision Avoidance Systems (ACAS)

Two papers on this subject presented differing viewpoints. The Canadians expressed concern that ACAS might be used to replace ATC, whereas



Patrice Béhier, Kees Scholts and Jürgen Ellermann at work.

present IFATCA policy encourages the development of ACAS to improve aviation safety.

#### Interception of Civil Aircraft

It was recommended that a device should be developed to allow 2 two-way communication between intercepting and intercepted aircraft on VHF and UHF simultaneously.

#### The operation of Data-Entry Devices at ATC Positions

There were two papers, one from SC1 and one from EGATS, being the first material on this subject. EGATS was congratulated on the quality of our paper which would be used for further development of IFATCA policy on ATC automation.

#### Vertical Separation

As the introduction of 1000 feet separation above FL 290 may have severe consequences on existing ATC systems, especially in regard to workload and capacity, SC1 will study the impact of this in their work programme.

#### Air Traffic Flow Management (ATFM)

This also was the subject of an EGATS working paper in which it was pointed out that CDB data have been used for the first time in connection with the Traffic Orientation Scheme and that the CDB might become the prime tool in ATFM. The RVP West reported on the recent Flow Meeting in Paris and said that States have reported considerable traffic increases in the order of 6 - 12 % and many were very concerned about the expected traffic load in 1987 .

#### Focus on Civil Aviation in Africa

Kenya presented a paper showing the problems of ATC in Africa. Help is what is needed, particularly in obtaining suitable equipment, maintenance thereof and training of personnel. An extensive work programme for the coming year includes a commitment by EGATS to study the use of SSR without primary radar.

#### COMMITTEE C

IFATCA runs a sub-committee which compiles an International Handbook which contains information on conditions, etc... within individual Associations but difficulties are encountered in obtaining replies. EGATS proposed that Member Associations should be encouraged to send in a NIL answer rather than not reply, so

that at least it would be determined that material had not been "lost".

#### Use of visual display units (VDU's)

Much work has been done in this field including that by the Institute of Occupational Health, in Dortmund (FRG) which is now studying the various consequences of working in an environment "loaded" with VDU's.

#### Night Shift Paralysis

The University of Sussex (GB) carrying out this study presented a report in which it was shown that 5 %



A relaxing moment.

of replies indicated an occurrence of night shift paralysis. Further studies continue.

#### Provision of ATC Scholarships

With the help of ILO, a test procedure was started to find out how such scholarships could be obtained and Tanzania will start with a test scheme with a suitable sponsor and a candidate.

#### Legal Matters

One interesting case among many discussed was one in which a pilot in Tanzania brought forward allegations that a controller was drunk on duty. The controller was suspended on half pay whilst the legal mills ground slowly for more than a year. Ultimately the controller was cleared, received his pay but will carry the social stigma and all its implications. The Canadians put forward a paper on how investigations should be conducted.

#### Other Business

The Surinam delegate read a statement about the IFATCA video "Blip Ride" from which he felt, the public could derive a false impression of world-wide ATC. He urged the Federation to produce a second film showing





Ralf Hölischer and Roger Bartlett in Committee B.

the situation prevailing among the less fortunate members of the ATC family.

#### CLOSING CEREMONY

To a background noise of a thundering, tropical storm, the final plenary session commenced. All reports were finalized, the various chairmen returned their gavels to the rostrum and many more speeches were made, including one by the Hon. Andrew Omanga, M.P., Minister for Tourism and Wildlife. During the final session, EGATS presented a plaque "... to the Kenya Controllers' Association, as a token of friendship and solidarity between the African and European controllers".

Once again the planned working time had been exceeded and only at 1930 hours did we arrive back at our hotels, after wading through streets turned into rivers, by the tropical downpour, apparently a record, even for Nairobi.

#### FAREWELL PARTY

The serious business was ended and now we were entertained by various tribal dancers performing amazing feats of limbo-dancing, fire-eating and other attractions, in various styles of tribal un-dress ....

#### IN CONCLUSION

Many people might ask "What benefit does IFATCA bring to EGATS?" but a more appropriate question would be to ask what contribution can EGATS and other associations offer to the less fortunate members, but that theme could be the subject of a future article. In the meantime, the Eurocontrol Guild has been there and contributed, via the committee work, to the present and future of the Federation. It was an educational experience for us all. To be made aware of the problems of other controllers, makes one even more conscious of our fortunate position in the ATC world. It was a pleasure and a privilege to be part of the team.\*







# THE EAGLE:

## KING OF THE SKY

by Major Klaus Schnell



Major Klaus Schnell is the Senior Operations Officer of Flugsicherungssektor A "Lippe Radar". His article is a description of a rare adventure, flying as a jet-passenger in the F-15 Eagle.

It is also meant as an "opener" for further participation of the military ATC-controllers in this magazine, to underline the good spirit and cooperation which exists with the civil colleagues of UAC Maastricht.

With deafening thunder, shrill screaming and violently vibrating air, the sky trembles ... all of a sudden they are visible ... two of the most powerful and most elegant fighter aircraft ever built. They are riding on two long, orange firebeams, vertically into the dark blue third dimension. Slightly sideways displaced and flying a tight right turn, they disappear in the gleaming sunlight. Like the old fighter pilots' rule says: "escape into sun or attack out of sun is the best camouflage and leaves the enemy without any chance". This had been my dream of a spectacular arrival in Bitburg, the home of

the 36th Tactical Fighter Wing. My dream was unpleasantly ruined!

"..... in the westerly area of Palatinate, fog with a visibility of less than 50 meters ...." reported the road information service via the WDR radio-channel. This fog calmed down the normally very busy NATO-base to a peaceful and quiet place. I can't believe it ... , what miserable weather today! Impossible to fly, with such limited visibility - even the birds are walking. My mood was zero - just like the visibility.

No engine was roaring and the sky was not shaking, at least not to my senses. Not even the picturesque Eifel landscape was to be seen, the fog painted everything in a monotonously grey colour. A call to the "frogs" in the MET-Office didn't contribute very much to improve my mood, but there was hope after all that in the afternoon the sun would break through. And so it happened and immediately the airbase became busy. In the meantime, under specialist's supervision, I was given a complete briefing in the flight simulator of the F-15. This was to make sure, that in a critical moment, I should not mix up the "Airspeed-Indicator" with the "Fuel-Flow Indicator" or the "Flight-Attitude" with the "Intake-Air Temperature". Thereafter my first "solo flight" followed.

It was not very professional I must confess, because the simulated landing was exactly 75 feet too low! The loud command of my instructor "PULL-PULL-PULL" came too late. The crash was clearly heard by all surrounding people and indicated by a loud ringing and by a red flashing sign "all systems off". Discretely I was told, that there was hardly a better reason to celebrate than to have survived a crash. I agreed with

this unwritten law and offered a drink  
.....

Then at last the "Adler" appeared for the first time in full size. A long-extended, voluminous body on thin legs, it looked aggressive and awful but at the same time very elegant. The grey camouflage of the F-15 matched the foggy landscape but is primarily designed to decrease detection in the air and against the glittering clouds, it gives an optimal protection. In the cockpit under fragile glass sits the pilot, master of that concentrated powerpack. The badge on this right arm "Eagle Driver", with the grim eagle head tells the insider: here comes the Primus inter Pares amongst the USAF-Pilots.

My name was listed on the flight schedule board for the next day. Planned, was aerial combat training (ACT) with 4 F15's. But still a lot of training and introduction had to be undergone in order to be ready for the flight. Meanwhile, I had to pass a thorough ejector-seat training followed by procedures for canopy-drop, adjustment of oxygen-regulator, connection of the anti-G pressure-suit and further operations which have to be done automatically because rapidity and the correct sequence of the functions can be a matter of life and death. Besides, it is important to know, that during abrupt flight manoeuvres, one never should use the ejector-seat release-handle as a grip to hold. This fatal mistake, would lead to an immediate ejections and consequently terminate the flight prematurely. Experienced ejector-seat users know, that the first seconds are lost for the memory because of the

enormous acceleration generated by the seat-rockets. Thus the last drop of blood rushes out of your brain. The legs, however, are well supplied during this time.

At last, this morning looks more promising. As mentioned before, the weather in the Eifel area is badly predictable or better - predictably bad. But the necessary minimum weather conditions - visibility and cloud base - are within reach. The birds are still walking, but for the "Tigers" of the 51st TFS, (one of the three squadrons of the 36th TFW) conditions will permit them to fly. The pre-flight briefing is detailed. For our mission a slot is reserved in the temporary reserved airspace TRA 302, a special exercise area for the kind of extraordinary flight manoeuvres which we shall be performing. After distribution of the roles, I was again reminded of the ejector-seat procedure. Anti-G suit, helmet, fitting of the oxygen mask and then we jump into the jeep. Off we go, straight to the shelter, where the aircraft, protected against curious looks from above and enemy attacks, stands ready for the flight. Strapping in, connect the anti-G suit, put on the helmet, link the oxygen hose and finally plug in the headset with the microphone. Everything goes smoothly and slowly the canopy comes down. A thought came to my mind - get out ??? .....

No, take it easy! It has taken too long to prepare myself, now I want to know! The right turbine is starting .... 40, 50, 60, 65 % power, immediately followed by the left engine .... 60, 65 %. Warming up for a couple of minutes. One instrument after the other is ready, all systems work normally. With idle power the Eagle taxis to the runway, the other three of our 4-ship formation follow while we roll to number one position. The last chance check and then full power. We start in elements two by two. Tremendous power, tons of thrust shoot us forward. Lift off, speed and altitude increase rapidly. Houses, streets and fields become tiny and suddenly disappear. We break through a 2.000 feet thick cloud layer. "Bravo" seems to be glued to our left wing. Not even a paper fits between the wing tips! His eyes are focussed on our

# CDK-Bank

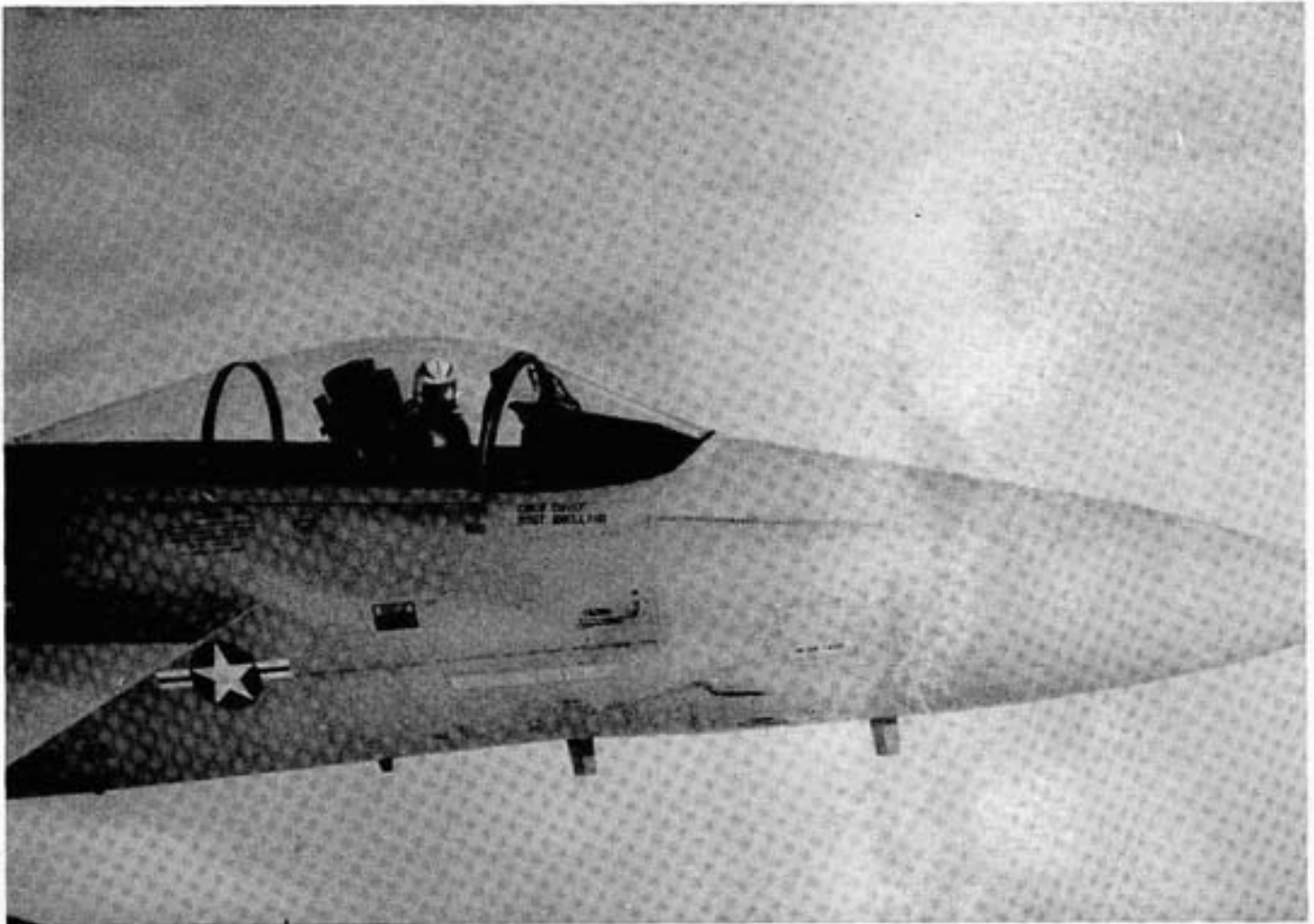
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wing tip to keep the distance. In doing so, he totally relies on the skills of the formation leader.

Suddenly a changed world. Dazzling sunlight and a dark blue sky. Below, a large, white sea of clouds. "Charley" and "Delta" are at our right wing. A slight turn to the left and then straight up. Completely stable and apparently without any gravity we rise vertically. The engines growl monotonously. Four white contrails are painted behind us, a dreamlike picture. A feeling of superiority arises.

We are handed over from "Eifel" to "Lippe" passing FL 220 and after identification, a direct clearance to Hopsten-Tacan is received. The professionals of "Lippe" know, that for the fighter-aircraft, fuel means everything, including the saving of one's life. We reach the TRA 302; change to "Lippe-Monitor". The controller will ensure that we don't leave the area in the heat of the moment, whilst engaged during inflight combat.

Everybody takes his pre-briefed position. "Charley" and "Delta" fly the attack and we, "Alpha" and "Bravo", act as interceptors. On opposite

tracks the formation splits. Two points appear on the radar approaching with high velocity. Since they fly with speeds close to supersonic, we approach each other with 30 km per minute - 500 meters per second! All of sudden, they are visible as two small dots on the horizon. After only some seconds they pass us and we follow. Because I leave my eyes for a moment too long, focussed on the radar-screen, I miss my pilot pulling hard at the control stick to initiate an extremely tight turn to the right. With nose up, he tries to bring us into an optimum shooting position, Immediately the feeling of non-gravity abruptly ends. I feel just the opposite. With almost six "Gs" we fly the turn. Pushed back by six times my body weight into the ejector-seat, it was impossible to move anything but my eyes. Only in clenching the body by muscular exertion - in my case by the unexpected movements anyhow automatically initiated - helps to slow down the sinking of the blood from one's head. Thus, the brain remains functional and the dangerous "blackout" is delayed. Instantly we have the target



on the screen again. But the "Eagle-Driver" in the aircraft in front has also learned his lessons. He tries to get rid of us, moving like a snake. Up to the left, down to the right, he makes many manoeuvres and numerous combinations at the same time. My stomach undergoes a severe test and to calm it down I swallow my chewing gum. That works for the time being. Before the take-off I had put a motion-sickness bag in my left breast pocket so I check that it's still there and as a precautionary measure I keep it handy. Meanwhile the "enemy" wants to escape with full power out of the reticule. In a nutshell, he turns and proves the enormous manoeuvrability of this bird. But in vain; we closely follow.

The Air-to-Air missile "Sidewinder" ignites and within seconds the target disappears from the screen. A terrified glance out of the cockpit puts me at ease again, the "launch" was fortunately only simulated. However, the installed video camera records every important detail for the debriefing session which will follow and excuses will not count.

The lead pilot calls for a fuel check and everyone reports fuel remaining. Enough for another two runs. This time the game is repeated with changed roles. After another straining 30 minutes, the 4-ship formation rejoins for recovery. At FL 290 we are transferred to 248,4 MHz, Lippe-West sector and after identification, immediately receive radar vectors for separation to cross the busy UB5-UB1 area. It becomes very obvious that even after 1 hour of exhausting physical exertion, utmost concentration and sharp reaction are still necessary in order to complete the mission successfully. Sitting in the commander's chair, in a wet, sweat-soaked flying suit, still calls for mental alertness and adherence to given ATC instructions. There is no one to talk to, no co-pilot to take over when weariness arises and no charming stewardess to serve a coffee. Just a one-man-show!

"TIGER 41-flight resume own navigation to "BARON", (Baron being the codename for Bitburg Initial Approach Fix) comes the order from the ground station. Upon hand-over to

"EIFEL Approach", the formation splits into single elements. A GCA-landing had been briefed before. When reaching the landing field, the lowering of the landing gear as well as the speed brakes on the upside of the fuselage indicate the imminent end of this adventure. We lose airspeed rapidly and dive again into the grey wall. Without any orientation and with the assistance of the GCA-final Controller we landed safely at the rainy airfield. Almost unbelievable flexibility and manoeuvrability make the enemy a playball for the F-15. Specially developed for aircombat, the F-15 is for the moment at least, the best air-superiority fighter, a matchless airplane.

For 99 minutes I flew with the "ADLER", a dream aircraft for every jet-pilot but a nightmare threat for an opposing enemy.\*



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# MAASTRICHT AIRPORT NEWS

— by Norman Brown and Kees Scholts —

On a morning cold enough to freeze the you-know-whats off a brass monkey, your dedicated scribe and his equally dedicated money-grabber (i.e. Secretary and Treasurer) attended the reception organised by the Airport to accept delivery of their brand new fire engine.

Fire engine to some, MAC-11 to others. Built by Saval-Kronenburg in the Netherlands, it is quite some machine.

### The Company

First something about Saval-Kronenburg. They have nothing to do with the famous Alsatian Beer of similar name. This came as a surprise to me, as it would seem to me to be the ideal extinguishant for major aircraft fires. Extinguishing the blaze and comforting the victims simultaneously.

Seriously (no, please, don't go away) Saval-Kronenburg is one of the few specialists in the world in the field of development and production of fire vehicles (it says here), used ONDER ANDERE at airports and the petro-chemical industry. Some 80 to 90 percent of their production is exported.

### The Wagon.

The MAC-11 fire vehicle can be numbered among the most modern in the world. MAC stands for Major Airport Crash-truck, and the 11 stands for the capability of the water and foam tanks it carries, in cubic meters.

The specs (if you're interested):-

Length . . . . . 10.2 mtr.  
 Width . . . . . 2.7 mtr.  
 Height . . . . . 3.65 mtr.  
 Total weight . . . . . 33000 kg.  
 Engine . . . . . 548 pk/12.1 ltr.  
 0-80 K/hr . . . . . 32 seconds  
 Top speed . . . . . 110 K/hr (WOWEEE)  
 Six-wheel drive.

The vehicle is designed for optimum performance in aircraft fires, and developed in accordance with the requirements if ICAO recommendations. Thus it complies quite sufficiently with the requirements of Maastricht Airport.

The vehicle is developed for use under heavy cross-country conditions at top-speed, with comparative ground holding. Full pump capacity can be maintained whilst under way in all gears and at any speed.\*



# NEW KENYA INTEGRATED AIR TRAFFIC CONTROL RADAR SYSTEM

by Roger Kahane (of Thomson CSF)

## Introduction

The new integrated A.T.C. Radar System currently being implemented in Kenya by THOMSON-CSF under the terms of a contract concluded in 1985, will provide modern air traffic control, information and alerting facilities throughout the very extensive national airspace, a portion of which extends out over the Indian Ocean.

## System Configuration and Operational Organization

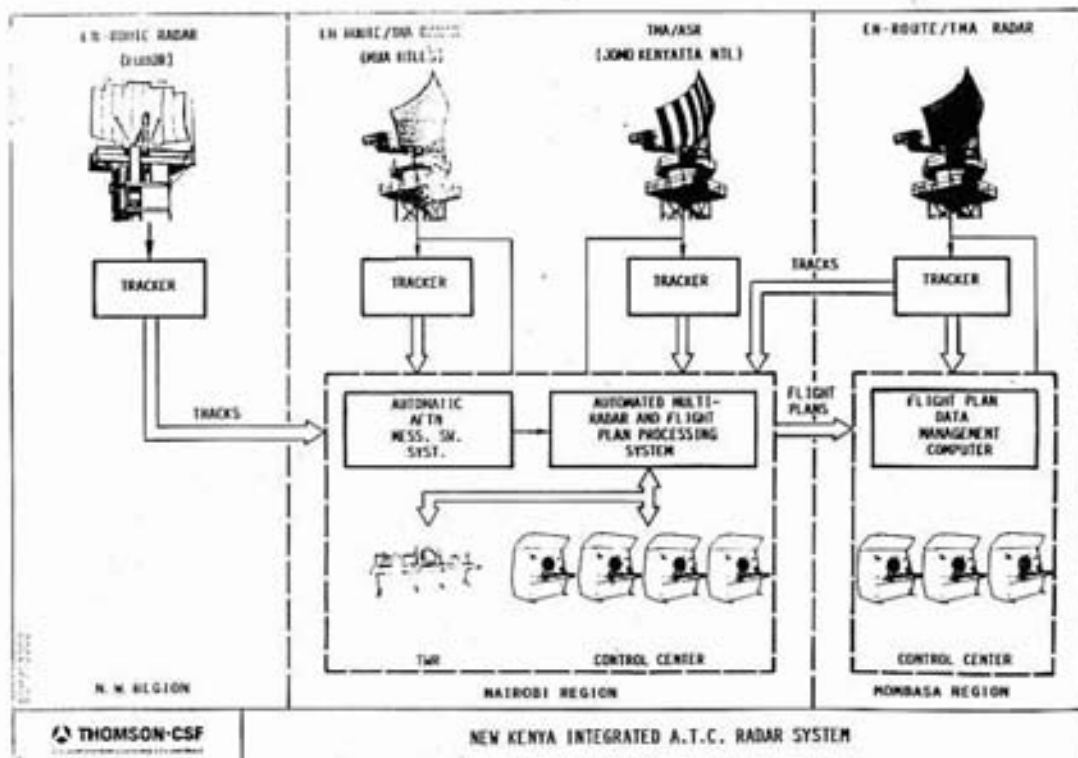
The provision of ATS is shared between the main centre at NAIROBI and the sub-centre at MOMBASA. Nairobi centre incorporates the two en-route sectors covering the northern and southern halves of the airspace, and Nairobi TMA Control. Mombasa sub-centre provides en-route radar control within the portion of the southern en-route sector which surrounds MOMBASA, as well as having responsibility for Mombasa TMA.

In view of this airspace organization and to meet the requirements for extensive automated radar control, the new system will be composed of four radar stations, two air traffic control centres and one automatic AFTN message switching system (see geographical layout map and system block diagram).

The four radar stations are distributed as follows:

- one airport radar on the Jomo Kenyatta International Airport of Nairobi;
- two medium range radars, one on Mua Hills site and the other one on the Arap Moi International Airport of Mombasa;
- one long range radar on Poror site.

The ATC main centre operates with the information from all four radar heads while the ATC sub centre, operates exclusively with the information from the Mombasa radar head. The





Automatic Message Switching System is located within the Nairobi ATC main centre and is linked to the ATC processing system. Furthermore, the Mombasa sub-centre processing system is connected to the Nairobi main centre processing system in order to receive flight plan data.

#### The Radar Stations

The following configurations will be provided at the different locations.

##### North-West Area - POROR Site

A long range (200 NM) radar head based upon the LP 23 K klystron-powered primary radar and the RS 870 SSR, the data of which will be transmitted to the Nairobi main ATC centre under digitized form over an existing narrow band voice channel link.

##### Nairobi Area - MUA HILLS Site

A medium range (150 NM) radar head, composed of a Thomson-CSF TR 23 K klystron-powered primary radar and an RS 870 secondary surveillance radar. The data of these radars will be transmitted to Jomo Kenyatta Area Control Centre, under raw (primary) and digitized (primary and secondary) form, over a microwave link.

##### - JOMO KENYATTA Site

An airport radar head based upon the TR 23 MA magnetron-powered primary radar and the RS 870 Secondary Surveillance Radar. The data of both these radars will be transmitted to Nairobi ATC Centre under raw (P) and digitized (P + S) form over cables.

##### Mombasa Area - ARAP MOI Site

A dual purpose 150 NM radar head (ATC/TMA) based upon the TR 23 K primary radar and the RS 870 secondary radar; this radar head is identical to that planned for the MUA HILLS site. Its data will be routed in raw and digitized form to Mombasa Sub-Centre, and in digitized form to Nairobi main centre.

Each of these radar stations will be equipped with primary radar and SSR plot extractors, and mono-radar

tracking processors.

#### Control Centres Overview

The Nairobi ATC main centre with its multi-radar environment is based upon the AIRCAT 500 high capacity processing and display system covering the operational needs of ACC, TMA and TWR control, while the Mombasa ATC sub-centre will use a medium sized processing and display system of the AIRCAT 200 type, adapted to the mono-radar environment of this centre.

Both centres will be equipped with integrated voice communications systems (air/ground and ground/ground), and an automatic AFTN message switching system at Nairobi centre will enable enhanced flight plan processing at that centre, with automatic centre-to-centre transmission of flight plans.

#### Nairobi Centre - Organization and Functions

The AIRCAT 500 system includes a powerful duplicated 32 bit computer system performing the radar and flight plan processing functions and connected interactively to the operator work stations, namely:

- two en-route control sectors (north and south), each comprising one radar and one assistant position;
- two approach control positions (arrivals, departures) and one approach coordination position;
- three FIC positions (north, south, coordination);
- operational supervisor position;
- flight data operator position;
- one tower position with a daylight radar display.

The main functions of the AIRCAT 500 system are:

##### a) Radar Processing

- multi-radar tracking of the 4





- radar inputs, for the en-route traffic situation presentation;
- mono-radar tracking of the approach radar (or back-up radar) for ARR/DEP control;
- radar situation display management;
- radar by-pass mode.

b) Flight Plan Processing

The main functions of the flight plan processing are:

- reception and processing of flight plans coming from the AFTN;
- manual entry of local flight plans (LPL);
- storage of repetitive flight plans on disk files (RPL);
- automatic allocation of SSR codes;
- code/call-sign correlation;
- assistant controller display management;
- editing of strips, and management of strip printing at each sector;
- controller inputs management;
- re-sectorization;
- sending of flight plans to Mombasa ATC Sub-centre;
- off-line generation of data base, maps and RPL files.

c) AFTN Message switching

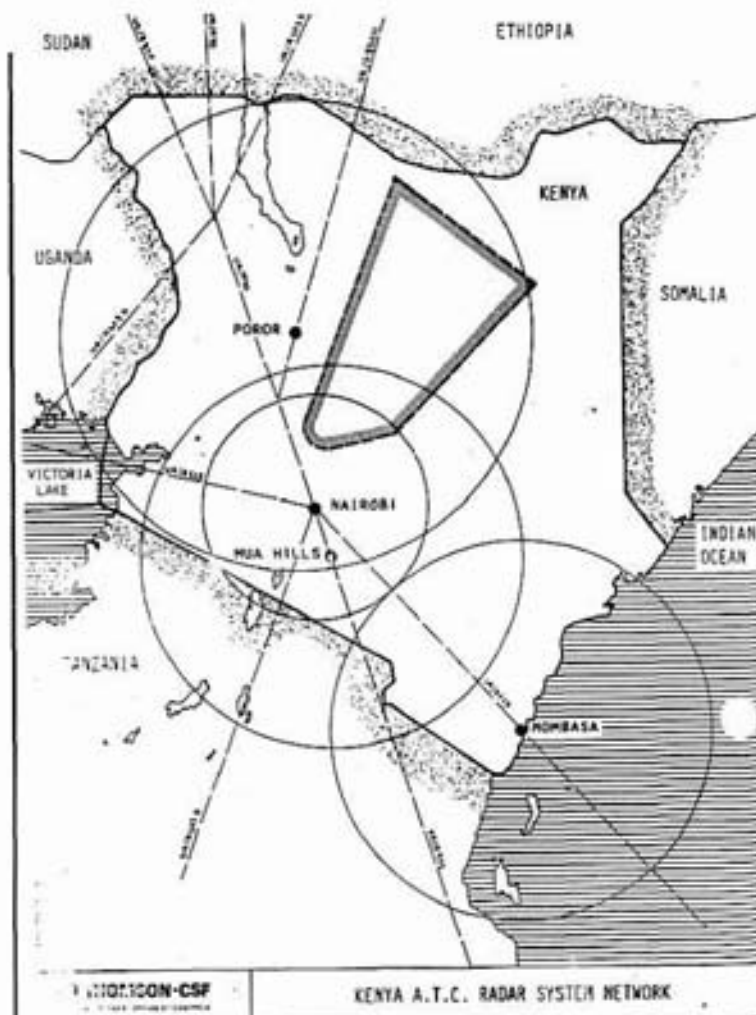
The automatic Message Switching System will handle AFTN traffic in compliance with ICAO formats and procedures.

The services to be provided by this system are:

- routing of messages exchanged over the AFTN between international, national and local subscribers;
- broadcasting of NOTAM messages;
- compilation and broadcast of bulletins as per OPMET procedure;
- OPMET data bank function;
- connection of AFTN centre to Public Telex Network with automatic dialling;
- connection to SITA network with automatic transcoding ICAO-IATA;
- connection to the meteorological system KLB5-A with AFTN procedure;
- operator facilities to maintain correct operation of the system.

Mombasa Centre - Organization and Functions

The AIRCAT 200 system is essential-



ly a distributed processing system comprising a flight plan data management computer (16-bits) connected interactively to the operator workstations, namely:

- one en-route control sector, with one radar and one assistant position;
- two approach control positions (arrivals, departures), which can be reconfigured as needed to provide a training position, and one coordination position;
- two FIC positions (controller, coordination).

By virtue of the centre-to-centre flight plan transmission link, this centre is endowed with operational facilities which are on a par with those of Nairobi ATC main centre.

Conclusion

It is most appropriate that this new air traffic control system should commence its entry into operational service in 1987, the year when IFATCA's Annual Conference comes to Nairobi. One could not imagine a more auspicious send-off to a new era of even safer and more expeditions air transportation in Kenya.\*

the R/T callsign in spite of the requirements of ICAO in Annex 10 Vol. 2 para. 5.2.1.6333. But it must be repeated that incidents occurring as a result of these frequent omissions of callsign are relatively rare.

Although I cannot claim much experience in this field, I am at least left with the impression that simulator training tends to encourage sloppiness in ATC communications in favour of check-list efficiency which is a training opportunity lost. Both for the experienced captain and the senior controller, a higher level of R/T efficiency could be achieved. I frequently monitor ATC channels and feel that much could be learned if users of the frequencies were made to listen to recordings of their own transmissions, so often peppered with "umms" and "errrs" and other time-consuming trivia. Bearing in mind the



overloading of R/T channels we posed the question "Can we reduce R/T"?

It was stressed at the Forum that the rate of delivery is often too fast and one example was quoted by a pilot who measured 90 words being broadcast in 28 seconds. I seem to recall a recommended rate of 150 words per minute. The subject of "courtesy comments", (good morning, good evening, etc...) was discussed and both pilots and controllers were in favour of retaining these since they tend to be used only when there is time available. One sample of R/T analysis produced 70 unnecessary "greetings words" in a 45 minute sample. It was interesting to note, though not surprising, that the most frequently used word is "Roger", closed followed by "Flight Level".

I understand from conversations with cabin staff that the most frequently used words on the flight deck are "She's new isn't she?""!!!

If I may quote from Miss Robertson's vital statistics, a study by Mr. Pierre Falzon showed that a typical French ATC vocabulary contained some 46 words compared with 247 in the English, which represents only about 10 % of a normal educated English vocabulary. It is not surprising, therefore, that there is a tendency to revert to one's mother tongue in times of high stress.

#### ONE LANGUAGE PREFERRED

Pilots answering a question on the use of more than one language in ATC communications were unanimous in their condemnation of this, whilst controllers were more flexible. It is only fair to mention that French pilot response to the questionnaire was minimal and with more, the outcome might well have been rather different.

A pilot is clearly disadvantaged by the use of more than one language, in that he cannot create a mental picture of the traffic situation around him from monitoring the R/T. Controllers, when occupying a seat on the flight deck, feel a compulsive need to do this, at least for those aircraft at, or in proximity to, the level at which they are flying. There was once a pilot (I do not think he was English) who insisted on a translation of everything that was said on the frequency which was not in English. Perhaps that was something of an exaggeration but it illustrates the point.

#### BLOCKED FREQUENCIES - A TECHNICAL SOLUTION

Firstly, in order to clarify what we are referring to, there are two different categories.

a) When an aircraft is unintentionally transmitting for a given period of time - let us call this a "stuck microphone" problem

and

b) when two or more stations transmit simultaneously resulting in a squeal or whistle.

Both of these problem areas have been studied for years by pilot and controller organizations and there would appear to be a possible technical solution to both, but until it is implemented, a procedural solution is being sought but on ad-hoc basis.

It is worthwhile to repeat yet again, that primary radar, SSR, Mode C, telephones, computers and displays are only some of the tools of our trade.

EFFECTIVE TWO-WAY RADIO COMMUNICATION REMAINS THE PRIMARY METHOD OF PREVENTING AIRCRAFT FROM COLLIDING

One sunny afternoon in Africa, a DC10 and a DC8 missed each other at FL 350, opposite direction, by only 30 feet. During a previous flight, a check pilot had used the observer seat behind the captain and both VHF1 and 2 were left in the "ON" position. During the subsequent flight, the captain had put his briefcase on the empty observer seat and it eventually came to rest against the transmit button, keeping it in the "send" position. This effectively blocked the frequency for further use by the controller who was unable to apply the required separation. Many other examples have been recorded but let us look at pilot reactions, if and when they realize they have lost contact on their current frequency.

And now the controllers. Incidentally, did you know that old controllers never die - they just lose their frequency???

A British avionics engineer, formerly working in Singapore, Mr. Nigel Corrigan, has produced a technical solution which it is claimed, could resolve both types of frequency blocking. A most convincing demonstration of the prototype model known as "CONTRAN" - Elimination of CONflict TRANsmissions and UNIntentional Transmissions, was given at the EGATS Forum, together with a presentation by a Singapore Airline B747 captain, Derek Ellis. Trials have been conducted by KLM and the latest information I have is that an American Corporation, Teledyne Controls, has undertaken to produce the units and that a ground station evaluation is planned. The FAA has instructed the Radio Technical Commission for Aeronautics to study the problem of Frequency Blocking and Mr. Corrigan is a member of this committee.

ADDITIONAL PROBLEMS

In order not to exceed my slot time, I will summarize some remaining points.

- The lack of VHF communications facilities worldwide and the overloading of R/T channels in many countries still not equipped with radar facilities, was highly criticized. It is questionable whether the installation of public telephone facilities in some passenger aircraft can be justified when these same aircraft might have no possibility of voice communication with ATC. If all normal ATC communications fail, the captain can always telephone the ATC Centre for a clearance!!!

- The phrase "go ahead" remains official instead of "pass your message" although the former has accounted for hundreds of airfield incidents.

- In some areas, ATC units are inspected by radio-car and sloppy R/T is immediately detected.

IN CONCLUSION

The 1985 EGATS Forum was a rare, if not unique occasion where specialists from aircrew, ATC and the Communications Industry could exchange views of common problems which have again been identified. No doubt in the future, a Mode S data link will provide automatic position reporting to ATC, transmit clearances and will remove the need for a common language or will it? How can we know our intended instructions have been



received and understood and will be complied with?

How efficient will the speech recognition systems be, that are currently under development? Will the satellite stations, which in the future will enable long range communications and access to data base services, be technically dependent and what of their vulnerability to sabotage or interference?

Old problems will be resolved and new ones will provide an ongoing challenge. For all of us, our very existence depends on good communications, in the widest sense of the word, in the desire to understand, in the will to help and to teach coupled with a need to care and an inclination to forgive.\*





" SINCE YOU RETURNED FROM YOUR SKI HOLIDAYS  
I'VE RECEIVED LOTS OF COMPLAINTS ABOUT YOU.... "



# EGATS E COMMITTEE H

— by Henk van Hoogdalem —

## CORP

After a thorough investigation, pollings and discussions, the CORP (Confidential Occurrence Reporting Procedure) is alive now and its four (elected) members are:

Henk Heepke	- Amsterdam Sector
Jean Paul Vriamont	- Brussels Sectors
Norman Brown	- Flight Data
Dieter Busch	- Hannover Sectors

This group will inform you soon about the procedures concerning the handling of written or verbal reports and the TC expects that the confidence shown by the operations room personnel, will be followed by your actions to improve safety via feedback from CORP.

## Callsign Confusion

The TC visited the Central Data Bank in Brussels on March 12th, and was well received and informed by Mr. Brian Martin, about the activities and the results of the CDB's work. The CDB collects information on aircraft movements from different sources, such as time-tables, operators and flight data and after analysis, produces figures of predicted traffic for airways or airports. An efficiency-check last year showed an accuracy in prediction of 80 % concerning airways traffic load and it is expected that this figure will rise in the near future. Lists of reporting points and intersections, including their latitude and longitude position and a full detailed list of aircraft performances were available there and the TC will find a way to make this information available for control staff.

The main goal of this visit was to

find out if the CDB could be the selective body to check aircraft callsign ambiguity which could cause confusion in the area of aircraft handling, flight data handling and/or on R/T. It was explained that because of its political situation, the CDB can not act as a correcting organization. Besides that, a new computer program for this function, including its criteria, will be more complicated than foreseen and the CDB has not authority to advise companies to change their planned callsigns. The TC is aware that callsign confusion is still a frequently occurring phenomenon and continues to find ways of preventing incidents and accidents from happening due to these sometimes frightening confusions.

A Dutch airline company recently sent us a printout of its traffic, planned in week 20/7 - 26/7/1987 as a good example of the summer schedule. This plan was checked by the TC and 9 pairs of confusing callsigns are found. Most of them are ambiguous as "RT callsign" and some in the field of aircraft; or flightdata-handling. This simple check shows that even in a relatively small company confusion can



easily take place. The actual call-signs of Lufthansa are a daily problem for pilots and controllers. A meeting between the TC and Lufthansa representatives could probably clarify Lufthansa's call-sign-philosophy.

#### Field 18 information

Now a "?" is triggered and presented in the ECM and on the planning strip after a RTE input is made in field 18, but the overall benefit is rather poor because the majority of route-changes are not of direct concern to the controllers. Therefore the TC will investigate the possibilities to use this feature in a more operational way by presenting essential information via Field 18 to Planners and Radar Controllers. As essential information we consider;

1. Oceanic Entry Points
2. Hospital Flights
3. Route discrepancies of various kinds
4. Flights by Heads of State
5. Dangerous cargo
6. Operator, if not obvious or misleading
7. Unusual type of a/c
8. Name of departure or destination, if not self-evident
9. Aircraft equipment serviceability status.

Your comments are expected and welcome, verbal or written.

TC members: Paul Hooper, Ernst Vreede, Hermann Mertz, John Doyle, Ralf Hölischer, Jan van Eck and Henk van Hoogdalem. //

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# KENYA CALLING

by Geoff Gillett

The holding of the 1987 IFATCA conference enabled many people to have their first visit to the wonderful country of KENYA, a land of contrasts, surprises and new experiences for all.

Many delegates flew from various parts of the world to Nairobi's Jomo Kenyatta International airport whilst others chose Mombasa as their initial destination. Mombasa offers the perfect facilities for tourism with a warm sunny climate all the year round, though in April, May and June, heavy rainfall occurs and hotel prices reflect this, their "low season".

There are many excellent hotels, the best of which lie on Mombasa's South Coast where the Alliance Group operates 3 superb hotels managed by Mr. Chris Modigell. The latest addition to this chain, the Safari Beach, was officially opened on December 15th, 1986, by President Daniel Arap Moi and reflects traditional African architecture in its design with superb modern comfort and facilities. It was possible to construct the buildings in only 9 months, whilst preserving the already existing trees, including some mighty Boababs, believed to be more





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Gardencentre -  
 Landscape gardening -  
 laying - out and maintenance

## arthur speetjens

### FROM OWN NURSERY:

- Conifers, all types
- Shrubs and climbing plants

### EXTENSIVE ASSORTMENT:

- All types of heather
- Roses
- Flowerbulbs

### LAYING-OUT OF TERRACES:

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



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than 700 years old. Each of the 186 spacious, comfortable, air conditioned bedrooms and suites have full size beds, radio, telephone, minibar and bathroom with separate bath and shower facilities as well as private terrace or balcony. Connecting rooms and family suites are also available. Self-contained conference facilities make the hotel an ideal venue for business and pleasure. Numerous bars and restaurants offer a wide variety of African national dishes and colourful delicious fruit drinks and night people have access to the Safari Beach Club discotheque free of charge.

For the sports enthusiasts, there are flood-lit tennis and squash



View of the Safari Beach Hotel



Typical Safari Beach Hotel Accomodation

courts, deep-sea fishing, diving, windsurfing and sailing facilities available at reasonable costs. In the unlikely event that you should become bored with all this luxury the Safari Beach Hotel operates a shuttle bus service to the nearby sister hotels, the Jardini Beach and the Africana Sea Lodge where you can choose from four a la carte restaurants or simply relax with a drink in the numerous bars and discotheques.

The management of the Safari Beach Hotel is in the hands of Mr. Jan van der Heijden who can be justly proud of his courteous, friendly and efficient staff who greet you with "Jambo", the swahili word for "Hello". When one replies with "Jambo" their eyes light up in response. Though the national language of Kenya is swahili, English is also widely spoken in addition to some German.

There are at present two LTU and one LTS charter flights operating from Germany and Italy and a hotel shuttle bus service or car hire can be arranged.

No trip to Kenya would be complete without a Safari and the visitor can

choose between an air safari, a balloon trip or the more traditional and less expensive minibus. To watch the sunrise from the foothills of Kilimanjaro, Africa's highest mountain nearly 6,000 meters high, is an unforgettable experience and witnessing the animals and birdlife in the National Game reserves, from the comfort of one of the many luxurious Lodges leaves a lasting impression.

Anyone visiting Kenya for the first time is left breathless by the everchanging scene. Whether in the city or out on safari, a new fascinating view exists around every corner and one wants to capture it all in memory or on film, though one must respect the wishes of the people most of whom do not wish to be photographed in the belief that one's soul is captured in part by the taking of a photograph. But any visitor will be able to take away an abundance of impressions and memories of a visit to Kenya and I suspect most would wish to return once again to say "Jambo" and to receive the hospitality and warm response of the people and their unforgettable country.\*