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The Global Voice of Pilots

**news**



**Smoke: Don't forget the threat**

**SLOP implementaion only 9% on the NAT**

May 2007

# SMOKIN'...

By Capt. Gavin McKellar

For the Young McKellar nothing was finer than smokin on a motorcycle or even better in a Buccaneer. But these days the word has more negative connotations...

When you were young you may have used this term for other things, but as a teenager racing moto-cross, I meant really going for it, 'hauling'. Later it meant a 727 or a Buccaneer climbing out after take off. Of course, no smoking in restaurants and commercial airliners is now the rage. For us, as pilots, it has even more serious connotations. So let's think about smokin'. Back in the 1960s as NASA raced to the moon, the Apollo programme was brought to a temporary halt by the Apollo 1 fire. Even though the first report of the impending disaster from the crew was of fire "We've got a fire in the cockpit" later pathology reports concluded that while the crew were largely protected from the white heat of the O2 fed fire by their space suits, it was asphyxiation caused by smoke inhalation that had killed them. In more earthly flight, smoke has proven time and again to be the enemy that stalks us all.

## Rapid deterioration

Unfortunately, a few years ago we heard Swissair III call "Pan, pan, pan. We have uh smoke in the cockpit, uh, request immediate turn to a convenient place". 10 minutes later this was upgraded to an emergency as presumably the smoke in the cockpit had deteriorated to a very serious situation and 10 seconds later the radio call was "Eleven heavy we start dump now and have to land immediately". As we know the CVR stopped some 6 minutes prior to the MD11 impacting the water and all 229 people on board were fatally injured.

## The cause may be unclear

In the case of the South African Airways 'Helderberg' accident, we may never know what started the smoke or fire. The

Helderberg report concluded that the 747 Combi was not under control when it crashed into the sea and the only possible causes for loss of control were one or more of the following; Pilot incapacitation from carbon monoxide and carbon dioxide poisoning, and/or smoke inhalation, or disorientation consequent on reduced cockpit visibility in smoke, or pilot distraction damage to the structure and/or to the control systems of the aircraft directly or indirectly caused by the fire.

All 159 people on board were killed.



In the Apollo 1 fire, it was smoke inhalation rather than the intense heat of the O2 fed fire that killed the crew.

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The Global Voice of Pilots

*Safety School*

# *Initial Safety Volunteer Training*

**23 - 25 May 2007  
Sydney, Australia**

Launched at the 61st Conference in Istanbul in 2006 and run for the first time in Johannesburg last September, the IFALPA Safety School (ISS) takes aspects of Accident Prevention and Airport Liaison issues and marries them with a training module that will give attendees a basic grounding in the structure of the Federation as well as ICAO.

Completing the course, new safety volunteers will be equipped with the knowledge and information to step into an external Representative role both for the Federation and their home Member Association. In addition, attendance at the ISS will also provide the foundation which the Safety volunteer can use to go forward to intermediate and advanced training leading to eventual accreditation as either an IFALPA Airport Liaison Representative or Accident Investigator.

**ACT NOW!**

Places are strictly limited and allocated on a 'first come first served' basis

*The ISS is offered by IFALPA to pilots nominated by their Member Association.  
To register or for more information about the ISS see the IFALPA website  
[www.ifalpa.org/iss](http://www.ifalpa.org/iss)*

We will probably never know if it was fire or crew incapacitation due to smoke inhalation that led to loss of the SAA 747 'Helderburg'.



survivors eyes were seen by rescue personnel to be 'frosted over' and the report mentions that the low level escape path lighting may not be seen as desired unless passengers eyes are protected. Survivors mentioned not being able to shout, due to respiratory and acidic gas burning effects on their throats. The combined physical and physiological effects of the dense black smoke atmosphere created fear and panic.

The smoke spread rapidly through the cabin and severe fire damage was possible the result of burning duty free spirits, or the dis-

charge of oxygen from the therapeutic oxygen cylinders carried in the overhead lockers. There is no doubt that aerosols are extremely hazardous if they too, are involved in an aircraft cabin fire and it was considered that aerosols in hand luggage presents an unnecessary risk. The burning of cabin materials gives off carbon monoxide gas, hydrogen cyanide gas, hydrogen chloride gas and hydrogen fluoride gas. It is measured in parts per million (ppm) and I have picked some examples to illustrate the point. Cabin windows are made of polymethylmethacrylate and give off 2200ppm carbon monoxide emissions. 2000ppm will result in death after 45 minutes. Curtains are made of modacrylic and give off 46ppm hydrogen cyanide gas emissions. 280ppm is immediately fatal, 181 fatal after 10 minutes and around 50 can be tolerated. Seals give off hydrogen fluoride gas of around 80 - 90ppm. 60ppm will give itching of the skin and irritation of respiratory tracts from exposure of 1 minute and 120ppm will give conjunctival and respiratory irritation just tolerable for 1 minute. Hydrogen chloride gas is emitted at 2000ppm from the cabin panels. 50 - 100ppm is barely tolerable and 1000ppm gives a danger of lung oedema after short exposure. Combine all the above and you see why people don't burn to death on an aircraft. The majority are rapidly incapacitated due to smoke/gas inhalation as opposed to burns.

### Land ASAP

The speed at which smoke can overwhelm is illustrated by the case in the 1970s when a 707 operating a Varig service from Rio de Janeiro to Paris, was forced to land short of the runway at Orly airport, only 5 minutes after reporting a fire in the rear of the cabin. The smoke was so thick in the cockpit that the captain had to look out the opened side windows to make the crash

## Saudi ghost Tristar

In Riyadh on the 19th August 1980 an Air Saudi Lockheed Tristar experienced a cargo fire and turned back to Riyadh. The cockpit voice recordings and tower tapes give us an insight into the situation. Smoke had penetrated the cabin from the cargo hold. The aircraft landed and ran to the end of the runway. The engines were not switched off immediately although the crew said they would be doing it. Toxic gas and smoke are often the killers before a fire is even seen by passengers or crew. All 301 people on board this flight died. This accident is still on the list of Top Ten fatal aircraft accidents. A flashover can occur when cabin ventilation is minimal, when the engines are shut down and the air conditioning ceases with the doors closed. The conditions are ripe as testing after the Manchester accident showed.

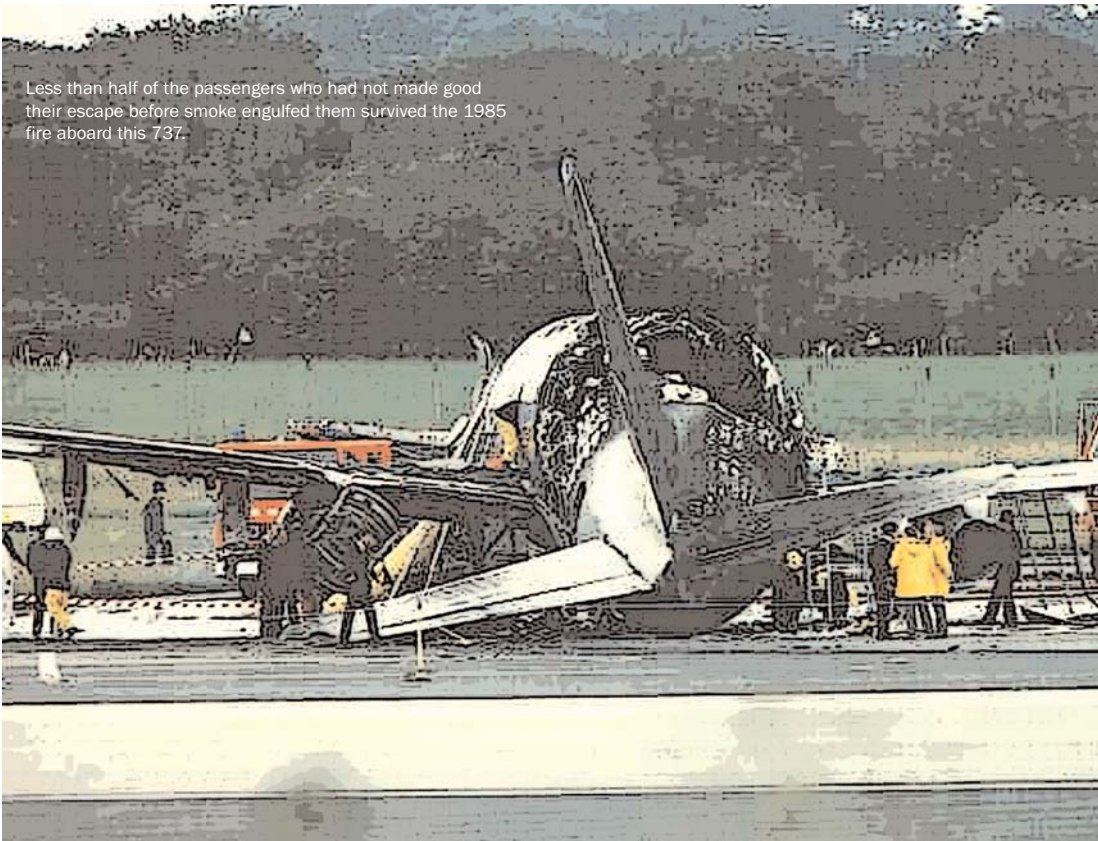
## The poisons that surround us

On the 22nd August 1985, of the I37 on board 55 people died, when a 737 had an uncontained engine failure at Manchester Airport and the resulting fire entered the cabin. The cockpit crew thought initially it was tyre failure. The accident highlighted many areas but let us look at the role that the smoke and fire played.

45% of the passengers escaped before the thick smoke reached them. Only 47% of those engulfed in the thick smoke survived. Some were pulled to safety, other collapsed before recovering to escape. 6 to 9 of the fatalities resulted from thermal exposure and 83% (average of 80% in fire accidents) died from incapacitation.

As well as the choking and debilitating effects of the smoke many survivors spoke of the inability to see. This is due to the density of the smoke and due to chemical effects on the eyes;

Less than half of the passengers who had not made good their escape before smoke engulfed them survived the 1985 fire aboard this 737.



He could not see his instrument panel or out of the forward windshield. Of the 134 on board, only the 3 flight deck crew, 7 cabin crew and 1 passenger survived. All others were asphyxiated and burned. The accident report found the probable cause to be a fire that originated in the washbasin unit of the aft right toilet, either as a result of an electrical fault or by the carelessness of a passenger. In June 1983, an Air Canada DC9 experienced a fire and smoke in the cabin. Like the Varig 707 the seat of the fire was in one of the toilets. The crew carried out an emergency descent and landed as soon as possible at Cincinnati. Even so, 23 passengers died out of a total of 41. One of the recommendations was that flight crew take immediate action to determine the source and severity of any cabin fire and to begin an emergency descent if this cannot be quickly determined, or if prompt extinguishing of the fire is not assured. The report stated earlier detection of the fire would have prompted an earlier decision to descend and land and stressed the cabin crew's role of understanding the urgency of informing flight crews of the location, source, and severity of any fire or smoke within the cabin.

His mike clogged up with carbon. He opened the canopy after landing and stopped the aircraft. A fire truck pulled up to the cockpit so he could get on to it and away from the aircraft. He collapsed after a just a few minutes. Fortunately he is still with us, flying 747's for SAA.

The seriousness of smoke and fire in the cabin is highlighted I am sure. Smoking sure is not good in our industry. I hope we will never find ourselves in such a situation and if we do the lessons of smokin' in the past will help us survive for the future.

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## Smoke no Mirage

I was chatting to one of my colleagues who experienced smoke in the cockpit of his Mirage Jet. It was apparently coming from an inverter behind the instrument panel. He immediately headed for the nearest airport. He had of course his mask on (not like in the Top Gun movies) and selected 100% pressure oxygen to keep the air blowing through the mask. He said his sinuses started to run uncontrollably and vision was impaired due to the effect on his eyes. His throat ached and it became difficult to



*Gavin McKellar is a Captain for South African Airways flying 737s. He is the Chairman of IFALPA's Accident Analysis Committee an Accredited IFALPA Accident Investigator, Airport Liaison Representative and CRM Facilitator.*



# *Intermediate Course*

**Lisbon**

**28 June 2007**

## ***About the Intermediate Course***

This one day course is intended for those who have already attended the IFALPA ALR seminar or have completed the LRST Module of the IFALPA Safety School. The course will help participants develop the knowledge and experience they have already gained by enhancing their knowledge of the IFALPA & ICAO Annex 14s.

It will also provide a briefing on the new direction at ICAO and how this affects the work of the Federation and its pilot volunteers. In addition, attendees will receive a briefing on Safety Management Systems (SMS) and direction on how to carry out an airport survey.

Finally, attendees will have the opportunity to learn from the experiences of others with an examination of five case studies based on actual events and situations that have been encountered by Accredited IFALPA ALRs in the field.

Completion of the ALR Seminar/ LRST course and Intermediate ALR will qualify a pilot volunteer to become an Accredited IFALPA ALR and assist airports in optimising their daily operations, modifications and remedial work.

## ***More Information***

To get more information about the course and registration procedures, contact Anne Munday: [annemunday@ifalpa.org](mailto:annemunday@ifalpa.org)

**FREE REGISTRATION**  
Attendance at the Intermediate ALR Course  
is free to pilots who are members  
of IFALPA MAS

# SLOP use on the North Atlantic only 9.1%

The advent of very accurate navigation systems in the mid 1980s has heightened the risk of a collision especially in non-radar controlled airspace in remote regions or in Oceanic airspace. The advent of Reduced Vertical Separation Minima (RVSM) on the North Atlantic and later Pacific has served to increase this risk. For this reason the Federation argued that Strategic Lateral Offset Procedures (SLOP) should be adopted wherever possible and that pilots should take advantage of this procedure wherever it is allowed. ICAO too supports this view and SLOP is now permitted in all Oceanic airspace (with the exception of the polar region). Remarkably however, it appears that the number of pilots taking up this option remains low, according to data released by the UK National Air Traffic Service's Scottish and Oceanic Control Centre (see Table I) indicating that only 9.1% of flights on the North Atlantic employ the procedure. IFALPA is attempting to address this important issue with a pilot education programme and is currently developing a Briefing Leaflet (due for release in mid-June) which takes on board some the lessons learned by the pilot awareness programme carried out at United Airlines. The results of this programme are clear with more than 50% of the airline's crews on the North Atlantic using SLOP. Capt.

Mary McMillan who has been active the development of the education programme at United explains "The safety benefits of SLOP are enormous it is virtually a zero cost programme and it does nothing to make the life of line pilots more difficult". Simply put, when you enter Oceanic airspace offset your track 1 or 2 NM to the right of centreline and then return to the centreline when you leave Oceanic airspace.

Airline	Total Traffic	% Flying Centerline	%1nm right offset	%2nm right offset	% 1or 2nm offset	% other offset
United Airlines	3579	49.4	49.7	0.7	<b>50.5</b>	0.1
BMI	327	58.7	38.2	3.1	<b>41.3</b>	0
British Airways	3952	78.6	16.3	4.8	<b>21.2</b>	0.3
US Airways	1729	87.6	8.2	2.9	<b>11.1</b>	1.3
Atlas Air	111	91.0	9.0	0	<b>9.0</b>	0
Air France	4473	92.6	5.8	1.1	<b>6.9</b>	0.5
Austrian Airlines	466	92.3	6.0	0	<b>6.0</b>	1.7
Lauda Air	87	93.1	2.3	2.3	<b>4.6</b>	2.3
Corse Air International	135	95.6	3.0	1.5	<b>4.4</b>	0
Virgin Atlantic	3133	95.5	3.3	0.9	<b>4.2</b>	0.3
KLM	702	95.0	2.4	1.6	<b>4.0</b>	1.0
SWISS	1856	95.0	3.1	0.8	<b>3.9</b>	1.1
Tahiti Airlines	97	96.9	3.1	0	<b>3.1</b>	0
Singapore Airlines	515	96.7	1.9	0.8	<b>2.7</b>	0.6
EL AL	389	97.9	1.3	0.8	<b>2.1</b>	0
Delta	1517	98.0	1.4	0.3	<b>1.7</b>	0.3
Lufthansa	5998	97.9	1.4	0.2	<b>1.6</b>	0.5
Northwest	1868	98.7	0.8	0.3	<b>1.1</b>	0.2
American	2817	98.8	0.7	0.4	<b>1.1</b>	0.2
Emirates	212	99.1	0.9	0	<b>0.9</b>	0
Continental	4892	98.9	0.7	0.3	<b>0.9</b>	0.2
LTU	220	99.1	0.9	0	<b>0.9</b>	0
Air Canada	1422	98.9	0.3	0.6	<b>0.8</b>	0.7
Kuwait Airways	152	99.3	0	0	<b>0</b>	0
Air New Zealand	59	100	0	0	<b>0</b>	0
Egypt Air	253	100	0	0	<b>0</b>	0
Livingston	84	100	0	0	<b>0</b>	0
Thomas Cook	224	100	0	0	<b>0</b>	0
SAS	384	99.5	0	0	<b>0</b>	0.5
All	41772	90.5	8.1	1.1	<b>9.1</b>	0.5

*Note: Based on position reports at 30 & 40 deg W. Only airlines with more than 50 position reports have been included. % Other refers to all other offsets flown left or right of the centreline.*

# Elected Representative Training

2-4 July 2007  
Lisbon

Taking on the responsibility for the management of your Pilot Association is a daunting prospect for many elected representatives. The successful Association leader needs a wide range of knowledge and expertise and it's all too easy to take a few wrong turns as you develop the experience you need. For this reason IFALPA offers a three day seminar which aims to give newly elected and long serving Pilot Association leaders a grounding in the skills they will need to become effective and skilled leaders.

## Act Now

Places at the Seminar are limited and will be allocated on a first come, first served basis. To register or get more information please contact Tricia Salmon [triciasalmon@ifalpa.org](mailto:triciasalmon@ifalpa.org)

# FLAP extended at April meeting



The next stage of the Federation's restructuring programme which focuses on the CAR-SAM region came a step closer on 12 April with the Constitutive Conference held which finalised the merger of The Confederation of Latin American Pilots (COLAP) and the Ibero American Pilots' Organisation (OIP) to form the Federacion Latino American de Pilotos (FLAP).

At the Mexico City meeting, the group which includes IFALPA Member Associations from across the region, unanimously approved the constitution document establishing and describing FLAP and elected its inaugural Executive Committee Capts

Fernando Alvarez (ASPA-Mexico) President, Capt Orlando Carrasquilla (SIPAC- Panama) and Capt. Pedro González (ACI-PLA-Uruguay) Treasurer.

FLAP, together with colleagues from Caribbean ALPA, will eventually create a wider Pan American pilots' organisation which will serve as IFALPA's representative body in the CAR-SAM region. Commenting on the FLAP, Capt. Alvarez said "It's taken over a year of very hard work to reach this point but it has been worth it and it's with great enthusiasm that I look forward to the work ahead".

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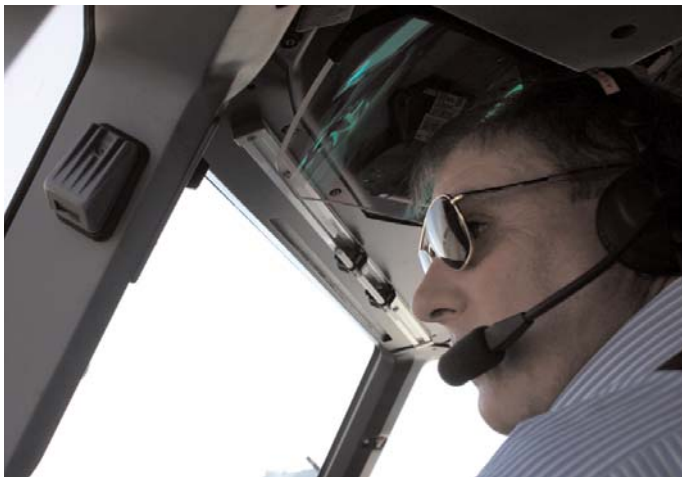
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# Free subscription to Flight Safety Foundation's *AeroSafety World* offered to IFALPA Pilots.

The Flight Safety Foundation in July 2006 launched *AeroSafety World*, a monthly magazine to provide in-depth analysis of important safety issues facing the industry and timely safety news, presented in an easily readable and appealing layout.

*AeroSafety World* editorial staff members blend their experience as pilots, writers, researchers, editors, journalists and specialists in graphics and design with the aviation safety expertise of other FSF staff, FSF members and contributing authors to deliver original articles and adaptations of accident-investigation reports and technical papers.

Previously available just to FSF members, the Foundation now is making the digital version of ASW available at no cost. Just fill out a brief subscription application and every month you will receive an e-mail with a link to download the new edition of *AeroSafety World* from the FSF website. Click [www.magnetmail.net/actions/subscription\\_form\\_FSFWeb.cfm](http://www.magnetmail.net/actions/subscription_form_FSFWeb.cfm) for the application.



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## *Dates for your Diary*

### May

23-25

#### **IFALPA Safety School**

Sydney, Australia

Contact: James Eales: [jameseales@ifalpa.org](mailto:jameseales@ifalpa.org)

29-31

#### **Human Performance Committee Meeting**

Sydney, Australia

Contact: James Eales: [jameseales@ifalpa.org](mailto:jameseales@ifalpa.org)

### June

4-6

#### **Air Traffic Services Committee Meeting**

Montreal, Canada

Contact Valerie Godfrey: [valeriegodfrey@ifalpa.org](mailto:valeriegodfrey@ifalpa.org)

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#### **International Flight Engineers Meeting**

London, United Kingdom

Contact Arnaud du Bedat: [arnauddubedat@ifalpa.org](mailto:arnauddubedat@ifalpa.org)

19-21

#### **Aircraft Design and Operations Committee Meeting**

London, United Kingdom

Contact Arnaud du Bedat: [arnauddubedat@ifalpa.org](mailto:arnauddubedat@ifalpa.org)

25-27

#### **Aerodrome & Ground Environment Committee Meeting**

Lisbon, Portugal

Contact James Eales: [jameseales@ifalpa.org](mailto:jameseales@ifalpa.org)

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#### **7th Executive Committee Meeting**

Brussels, Belgium

Contact: Heather Price [heatherprice@ifalpa.org](mailto:heatherprice@ifalpa.org)

28-30

#### **7th Executive Board Meeting**

Brussels, Belgium

Contact: Heather Price [heatherprice@ifalpa.org](mailto:heatherprice@ifalpa.org)

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