December 11, 1992

Federal Aviation Administration
Transport Standards Staff, ANM-110
1601 Lind Avenue, S.W.
Renton, WA 98058-4056

Re: Draft Advisory Circular (AC) 25-9A

Ladies and Gentlemen:

The Air Line Pilots Association, representing 42,000 pilots flying for 44 airlines, would like to comment on the proposed changes to the subject AC. We support the proposed changes and make further suggestions for change as outlined below.

Section 9.b, Airplane Test Conditions, should be revised to require that the lavatory smoke detectors be tested at a pressure altitude up to the pressure altitude approved for the cabin. Some smoke detector designs are negatively affected (less sensitive) at high pressure altitudes, and need to be specially calibrated for those conditions. Unfortunately, these smoke detectors will be too sensitive at low pressure altitudes. Therefore, we recommend that the units be tested to be effective at both altitudes, of sea level and maximum cabin pressure altitude.

We specifically submit comments on the change to the AC for the continuous production of smoke in evaluating the cockpit smoke evacuation capability. ALPA is very concerned that aircraft cockpits must be able to evacuate smoke effectively, so the crew can safely land the aircraft. We agree that this change will result in the test being more conservative and realistic. It is important to be able to evacuate continuous smoke if the source cannot be immediately identified. New aircraft use significantly more power in their systems, both the electrical and pneumatic/air conditioning systems. These systems have correspondingly more smoke generation capability and should thus be protected sufficiently. The continuous smoke test as proposed in the AC should accomplish this.

Accident experience supports the change to using continuous smoke in the cockpit smoke evaluation test. While the majority of the cockpit smoke incidents we have reviewed were controllable by disconnecting the damaged system, there appeared to be several failure modes where it was not possible to disconnect the damaged system. Therefore, there is a need for the continuous smoke evacuation capability. Examples of this include the leaking of hydraulic lines onto hot components, some electrical compartment failures, bombs, illegal cargo, and engine failures.

Our final comment upon review of the revisions to the AC addresses smoke evacuation, or venting, from the cabin. Specifically, the AC should provide more information on the need for evacuating smoke from post-crash and inflight fires from the aircraft cabin. This is the next best way to prevent fire propagation, second only to cooling the fire with water. Smoke evacuation in

the cabin removes the combustible and hot gasses before they can be completely burned in a flashover. This AC should present methodologies to test the cabin smoke evacuation using continuous smoke generation. Only by providing the capability to evacuate continuous smoke can the cabin survivability be prolonged.

Smoke venting in the cabin should assist the natural convective currents of hot air. It would be beneficial to have the AC address the design of aircraft air conditioning systems and their effort on fire and smoke control. Most air conditioning systems provide fresh air from the ceiling and the air collection ducts are at the floor sidewall region. This is directly opposite to the direction of a fire's convective currents. For smoke evacuation purposes, it would appear more beneficial to provide fresh air at the floor and collect waste air near the ceiling. We would like to see this addressed further in the subject AC.

Thank you for the opportunity to comment. Please feel free to call us to discuss this further; please contact Pierre Huggins at (703) 689-4211.

Sincerely,

Captain Ricky R. Davidson, Chairman
Assistant Survival Committee

000185

AIR LINE PILOTS ASSOCIATION
[illegible] HERNDON PARKWAY ☐ P.O. BOX 1169 ☐ HERNDON, VIRGINIA 22070 ☐ [illegible]
703-689-4100

December 11, 1992

cc: G. Loegstra
John Wells

FAXED 8-31-99

Federal Aviation Administration
Transport Standards Staff, ANM-110
1601 Lind Avenue, S.W.
Renton, WA 98055-4056

Re: Draft Advisory Circular (AC) 25-9A

Ladies and Gentlemen:

The Air Line Pilots Association, representing 42,000 pilots flying for 44 airlines, would like to comment on the proposed changes to the subject AC. We support the proposed changes and make further suggestions for change as outlined below.

Section 3.b, Airplane Test Conditions, should be revised to require that the lavatory smoke detectors be tested at a pressure altitude up to the pressure altitude approved for the cabin. Some smoke detector designs are negatively affected (less sensitive) at high pressure altitudes, and need to be specially calibrated for those conditions. Unfortunately, these smoke detectors will then be too sensitive at low pressure altitudes. Therefore, we recommend that the units be tested to be effective at both altitudes, of sea level and maximum cabin pressure altitude.

We specifically submit comments on the change to the AC for the continuous production of smoke in evaluating the cockpit smoke evacuation capability. ALPA is very concerned that aircraft cockpits must be able to evacuate smoke effectively, so the crew can safely land the aircraft. We agree that this change will result in the test being more conservative and realistic. It is important to be able to evacuate continuous smoke if the source cannot be immediately identified. New aircraft use significantly more power in their systems, both the electrical and pneumatic/air conditioning systems. These systems have correspondingly more smoke generation capability, and should thus be protected sufficiently. The continuous smoke test as proposed in the AC should accomplish this.

Accident experience supports the change to using continuous smoke in the cockpit smoke evacuation test. While the majority of the cockpit smoke incidents we have reviewed were controllable by disconnecting the damaged system, there appeared to be several failure modes where it was not possible to disconnect the damaged system. Therefore, there is a need for the continuous smoke evacuation capability. Examples of this include the leaking of hydraulic lines onto hot components, some electrical compartment failures, bombs, illegal cargo, and engine failures.

Our final comment upon review of the revisions to the AC addresses smoke evacuation, or venting, from the cabin. Specifically, the AC should provide more information on the need for evacuating smoke from post-crash and inflight fires from the aircraft cabin. This is the next best way to prevent fire propagation, second only to cooling the fire with water. Smoke evacuation in the cabin removes the combustible and hot gases before they can be completely burned in a flashover. The AC should present methodologies to test the cabin smoke evacuation using continuous smoke generation. Only by providing the capability to evacuate continuous smoke can the cabin survivability be prolonged.

Smoke venting in the cabin should assist the natural convective currents of hot air. It would be beneficial to have the AC address the design of aircraft air conditioning systems and their effect on fire and smoke control. Most air conditioning systems provide fresh air from the ceiling and the air collection ducts are at the floor sidewall region. This is directly opposite to the direction of a fire's convective currents. For smoke evacuation purposes, it would appear more beneficial to provide fresh air at the floor and collect waste air near the ceiling. We would like to see this addressed further in the subject AC.

Thank you for the opportunity to comment. Please feel free to call us to discuss this further; please contact Pierre Huggins, at (703) 689-4211.

Sincerely,

Captain Ricky R. Davidson, Chairman
Accident Survival Committee

RRD:jag

bcc: D. Haddad
T. Kraemer
Accident Survival Comm
HAECO
Dangerous Goods Comm.
Accident Invest. Bd.
Accident Invest. Dept.
R. Hall
R. Kessel

AMI
ALPA contacts Pierre Huggins cabin safety -4227 -4211