

EVAS™ = Emergency Vision Assurance System

Every day of every year an air carrier aircraft is making a diversion to an unscheduled airport because of smoke. Two other air carrier aircraft are experiencing smoke too but manage to turn back or land at destination. Although we refer to these non-fatal events as "burnt toast," any one of the 3 events (which occur every day) can go from burnt toast to a continuous smoke event in a matter of seconds. With EVAS™ the crew has the opportunity to make a safe landing. Without EVAS™ the crew will not be able to see and will lose control.

EVAS™ protects the crew, passengers and your brand name.

Lifetime warranty. Installs with a screw driver, drill and pencil. 12 pounds. Press 2 buttons once per 90 days to check.

Boeing 737-924



Gulfstream 550



Highlights

- Batteries: 2.5 to 4 hrs.
- Blower + 0.1 micron filtration.
- Test: once / 90 days.
- Factory service: once / 2 years.
- Warranty: renewable / 10 years with completion of 120 month rebuild.

Smoke Events (SDRs)

- 1,000 per year.
- 3 per day.
- 1 per day is a diversion.

Advisory Circular (AC) 25-1309-1a contains useful definitions for identifying the severity of potential events and relating them to the frequency of occurrence. Using these definitions, an in-flight fire can be characterized as a catastrophic event because it has the potential to be a "condition that would prevent continued safe flight and landing."

According to the AC, a catastrophic event must be "extremely improbable" (defined as conditions having a probability on the order of 1×10^{-9} or less). Analysis of in-flight fire events shows a greater likelihood of occurrence than that of "extremely improbable." This is consistent with an IATA study where during the 36 months examined, there occurred an average of two and a half smoke events each day. Paul Halfpenny, in his research suggests that the probability of a diversion due to cockpit smoke could be a "reasonably probable event (1×10^{-3} to 1×10^{-5})."

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EVAS™ Training Outline

What is EVAS™?

EVAS™ is an acronym for “Emergency Vision Assurance System.” EVAS™ is a self-contained system that includes a battery powered blower which draws smoky air in through a filter, filtering out the visible particles, and out to a flexible air duct, which is connected to an inflatable transparent envelope, called the “Inflatable Vision Unit” (IVU). The entire EVAS™ system is contained in an aluminum container that is approximately the size of a Jeppesen manual, and weighs approximately 6 pounds.



EVAS™ container, closed with IVU inside



EVAS™ container with cover open & IVU out

While in use, EVAS™ will inflate the IVU with filtered, clear air at a pressure slightly above that of ambient air, thus completely displacing all smoke from the volume of the IVU. As the IVU is transparent, this gives the pilot a clear vision path to the essential flight instruments and forward along the flight path. A separately powered small light is provided to illuminate the instruments and checklists, if needed.



Inflated IVU with checklists



View of instruments through inflated IVU

View EVAS™ Videos on DVD

EVAS™ units are shipped with a DVD containing two training videos, one per shipset. These items are shipped with all new and serviced EVAS™ units. The videos are also available on our website, <http://www.visionsafe.com/index.php?p=video>.

Principles of Operation

- Displaces all smoke in the vision path, regardless of density.
- Provides clear vision of basic instruments and flight path, and lights instruments.
- Allows use of check lists, approach charts, etc.
- Continuous operation for several hours. Intermittent operation conserves power and provides satisfactory performance for a more extended period.

What EVAS™ is Intended to Do

- Ensures pilot vision during emergencies when dense smoke in the cockpit can not be stopped.
- Works with oxygen system and smoke goggles (not in place of them).
- Provides view of primary flight instruments (basic "T").
- Instrument window may be shifted right or left to view adjacent instruments.
- Provides view of flight path.
- Provides the ability to read approach plates and emergency procedure checklists.
- Provides a "last ditch" chance to save the airplane (and self).

What EVAS™ is not Intended to Do

- Does not cover engine instruments and controls, electronics panels and controls, or overhead or console installations.
- Does not contemplate "normal" or prolonged flight, nor does EVAS™ provide for fine or efficient control of engines or electronics.

Note

Do not deploy the IVU during maintenance inspections. The IVU should only be deployed in an actual emergency.

Caution

Although EVAS™ should be deployed when the pilot considers it necessary, all prescribed emergency procedures must be completed without delay.

EVAS™ Deployment Procedure

1. In the event of smoke entering the cockpit, do not wait until the smoke obscures vision seriously. Deploy EVAS™ after completing the emergency checklist, and as soon as there is the threat of vision decrease.
2. Assure EVAS™ unit is located on the side of the pilot indicated on the Cover Strap label, either Inboard or Outboard. **The label for a left pilot unit is red, and the label for a right pilot unit is green.**

1380-01 OPEN ONLY IN EMERGENCY USE ONLY WITH PROPER TRAINING LOCATION: OUTBOARD OF LEFT SEAT (PILOT) DEPLOYMENT LOCATION IS CRITICAL TO THE OPERATION AND FUNCTIONALITY OF EVAS™	1380-02 OPEN ONLY IN EMERGENCY USE ONLY WITH PROPER TRAINING LOCATION: OUTBOARD OF RIGHT SEAT (CO-PILOT) DEPLOYMENT LOCATION IS CRITICAL TO THE OPERATION AND FUNCTIONALITY OF EVAS™	1380-03 OPEN ONLY IN EMERGENCY USE ONLY WITH PROPER TRAINING LOCATION: INBOARD OF LEFT SEAT (PILOT) DEPLOYMENT LOCATION IS CRITICAL TO THE OPERATION AND FUNCTIONALITY OF EVAS™	1380-04 OPEN ONLY IN EMERGENCY USE ONLY WITH PROPER TRAINING LOCATION: INBOARD OF RIGHT SEAT (CO-PILOT) DEPLOYMENT LOCATION IS CRITICAL TO THE OPERATION AND FUNCTIONALITY OF EVAS™
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Open the Velcro® tabs and remove the metal cover (the cover is tethered to the EVAS™ unit).

3. Remove the white Inflatable Vision Unit (IVU), complete with the IVU fabric Tie-Down Strap (wrapper), from the EVAS™ container by inserting the hand into the EVAS™ container and grasping the IVU package. Place the IVU package on the glare shield so that the Velcro® on the bottom of the IVU wrapper mates with the previously installed Velcro® on the glare shield. The IVU position on the glare shield will be approximately correct if the base of the hand holding the IVU package is placed on the rear edge of the glare shield directly forward of the center of the control wheel. If vision is already impaired, pilot should feel for the location of the Velcro.
4. The flexible air duct must be positioned on the same side of the IVU as the EVAS™ location, i.e., outboard of the IVU if the EVAS™ is deployed from outboard of the pilot, and inboard of the IVU if the EVAS™ is deployed from inboard of the pilot, and should be routed to avoid interference with any airplane control.
5. Removal of the IVU package from the container pulls a lanyard, closing the lanyard switch, thereby automatically starting the blower and switching the internal light ON. If the blower does not start, EVAS™ was installed with the master switch off, and the blower must then be started manually by pushing firmly down on the master switch, located in one corner of the open side of the container. When the blower is started, the IVU is kept compressed by the wrapper.



Wrapped IVU on Glare Shield for Left pilot Inboard deployment



Wrapped IVU on Glare Shield For Left pilot Outboard deployment

6. As soon as vision assistance is needed, hold the IVU in place on the glare shield and release the IVU for inflation by sharply pulling on the tab of the wrapper.

Caution

Do not open the wrapper to inflate the IVU unless the IVU is in place on the glare shield.



Releasing the IVU wrapper



IVU on Glare Shield with wrapper open

7. With the wrapper open and one hand holding the IVU in position on the glare shield, use your other hand to tuck the wrapper ends under the IVU. After the wrapper ends are tucked away, assist deployment of the IVU as described below.
8. Gently rake towards you the nearest portion of the IVU (the instrument tunnel portion). Some IVUs are "pinched" between the windscreen and glare shield and will require more pilot assistance than others. If the tunnel portion drops down between the pilot and the yoke, push the tunnel portion of the IVU to a position forward of the yoke. If equipped with sidestick controllers and a table is in use, lift and push the tunnel portion of the IVU over the table and towards the instruments.

Note

Step 9 below may require the pilot to temporarily loosen or remove his shoulder straps, loosen his seat belt and position himself more forward on the seat in some aircraft so as to reach (or nearly reach) the forward left and right corners of the IVU where the windscreen meets the glareshield.

9. Then move both hands up to the windscreen to unfold and smooth out the windscreen portion. After you have the windscreen portion of the IVU open and laying flat on the glare shield, hold the left lower corner (as best you can reach) of the windscreen portion of the IVU against the left lower corner of the windscreen. At the same time, hold the right lower corner (as best you can reach) of the windscreen portion of the IVU against the right lower corner of the windscreen. Hold or push these lower corners in position until the air pressure is sufficient to hold these points of the IVU in place. Then move your hands slowly upwards on the windscreen and continue assistance by smoothing out any large wrinkles. If the wrapper of the IVU obstructs any of the instrumentation, fold it up onto the glare shield underneath the IVU. With the windscreen portion near full inflation, check the instrument tunnel portion to ensure the IVU covers the flight instruments. Make final adjustments to IVU as necessary. Reposition yourself in seat; ensure seat belt and shoulder harness are secure.

10. IVU will fully inflate in approximately thirty (30) to sixty (60) seconds.



IVU inflating



Both pilot IVUs inflated

11. Place any necessary emergency procedure/approach plate in a pocket on the side and/or the bottom of the IVU.
12. The blower will operate continuously for several hours, and will compensate for any air that may be forced out of the IVU by control wheel movement. The blower may be switched OFF and ON as needed, to extend battery life.

Note

During emergency egress steps 13-15 may be ignored.

13. When EVAS™ is no longer needed, actuate the master switch in the open end of the container to switch the blower off, and deflate the IVU by manual pressure.
14. Remove the IVU to a convenient temporary storage place.
15. EVAS™ units deployed in an emergency should be reported to VisionSafe Corporation Quality Assurance Department at 1-800-441-9230 as soon as practical. The units must be removed from the aircraft immediately and returned to VSC for a Special Inspection.

End of Training Outline

EVAS™ - Ask the Factory

14 September 2010

VisionSafe Corporation, manufacturer of the Emergency Vision Assurance System (EVAS™), is pleased to announce that "Ask the Factory" access is available for all customers, OEMs, MROs and training agencies.

All inquiries concerning EVAS™, including orders for new equipment, are being handled **directly by VisionSafe personnel**. Please refer to the table below for the person who can best handle your inquiry.

EVAS™ Inquiry	Factory Contact Person / Location	E-mail	Telephone
Sales	Colleen Hanson, Hawaii	sales@visionsafe.com	1-800-441-9230 extension 22
Sales in Europe	Manfred Zboril, Europe	mzboril@visionsafe.com	49-089-908-35-40 Fax: 49-089-608-34-18
Service	Dionne Siu, Hawaii	bus.services.ar@visionsafe.com	1-800-441-9230 extension 10
Quality	Jean Hood, Hawaii	jhood@visionsafe.com	1-800-441-9230 extension 23
Technical Training	L. Carey Howard, Texas	carey.howard@visionsafe.com	1-936-340-0954
Operations	MaryAnn Omerod, Hawaii	nomerod@visionsafe.com	1-800-441-9230 extension 12

For more information and EVAS™ videos, please check out our website, www.visionsafe.com.



EVAS™...when you cannot see, you cannot fly.

VisionSafe Corporation • 46-217 Kahuhiipa Street, Kaneohe, HI 96744 • Voice 808-235-0849 • Fax 808-247-6313

EVAS™ = Emergency Vision Assurance System

IVU = Inflatable Vision Unit



IVU
Test Buttons / lights
Blower
Filter
Battery Power (2.5+ hrs)
Switch (on from factory)

Smoke Events Per Day

3 Events per day
1 Diversion per day

"Drop Dead Items"

1. **KNOW** how much O₂ you have !
2. **EVAS™** units are "seat" specific. Install correctly !
3. **IVU**: Your hand goes from the box to the glareshield Velcro !
4. **IVU on glareshield**: "Confirm, ducting is on same side as the box !"
5. **Open wrapper, assist IVU. Fly the aircraft, Fly the aircraft !**

<www.visionsafe.com>

EVAS Quiz - Sim Techs

9. How do you know where to install the EVAS power unit in the sim?
10. The sim session is done and now you must re-fold the IVUs. Where can you find the instructions on how to re-fold and pack the IVU?
11. Revision 9 is the current version of the Instructions for Continued Airworthiness Manual (ICA).
Yes No (circle one).
12. What is an EVAS test tool?

End of quiz.

VisionSafe website: < www.visionsafe.com >

EVAS Quiz - Pilots

Name: _____

Date: _____

Location: _____

Corrected score: 100%

1. How many EVAS units do you have in your aircraft and where are they?
2. When does the pilot remove the IVU (inflatable vision unit) from the EVAS power unit?
3. What is the sanity check (exact wording) after the IVU is in position on the glare shield. Fill in the blanks below.
"I have a _____ with a _____ and I can _____."
_____.
4. What does the AFMS say about EVAS?
5. We are having a bad day. In addition to all the smoke in the cockpit, the only attitude reference that is working now is the standby ADI. Will EVAS work with the standby ADI? If so, what do you do?
6. We have smoke in the cockpit and our O2 mask is on. How many minutes of oxygen do you have available?
7. Your diet Coke spilled into the top of EVAS. What do you do?

End of quiz.

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