

# CFIT Awareness and Prevention

Second Edition, November 1997

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## Additional Causes For CFIT Revealed By The 1991 DuPont G-II Crash In Malaysia

***The account of the 1991 DuPont aircraft crash in Malaysia presented in the video "CFIT AWARENESS AND PREVENTION", copyrighted and distributed by Flight Safety Foundation, is inaccurate and incomplete. Mismanagement of aviation resources by senior DuPont officers and directors was the primary cause for DuPont's disaster. Mismanagement will persist in DuPont and other aviation operations if not thoroughly investigated and accurately reported.***

—  
*Roger K. Parsons, Ph.D.*

The video "CFIT AWARENESS AND PREVENTION", copyrighted by Flight Safety Foundation (FSF), includes three case studies of circumstances that have led to controlled flight into terrain (CFIT). Two of these case studies are based on investigation reports issued by the aviation authorities in Canada and the United States. The third case study concerns the September 4, 1991, crash of a Grumman G-II (N204C) owned and operated by E. I. du Pont de Nemours and Company (DuPont), used by DuPont's Conoco, Inc. subsidiary in a safety and regulation dodging charge-back scheme.

Unlike the other two case studies, the case study on the DuPont aircraft crash is not based on any authoritative investigation. The FSF case study of the DuPont aircraft crash is the work of lawyers employed by DuPont and DuPont insurer, American International Group (AIG). After hearing essentially this same story at DuPont's 1994 trial in the United States District Court in Houston, a jury unanimously rejected it and, considering only the limited facts presented at trial, found that the negligence of DuPont's management had caused the aircraft crash.

DuPont management's knowledge about the dangers of ordering their employees and their families to fly on DuPont operated aircraft is evidenced by the letters written by a thirty-year DuPont pilot to several DuPont officers having direct authority over the DuPont aviation operations.<sup>1</sup>

1. DuPont and AIG failed to produce this revealing evidence. This is not the first or most recent case in which DuPont has tried to dodge justice. (See **DuPont Fined \$101 Million by Judge For Withholding Data In Benlate Case**; Page B2, *Wall Street Journal*, August 23, 1995.) Citing "a pattern of concealment and misrepresentation", a US District Court judge ordered record-breaking sanctions against DuPont. In his opinion, Judge Elliott wrote:

"It is clear that DuPont continues to evidence an attitude of contempt for the court's orders and processes and to view itself as not subject to the rules and orders affecting all other litigants. Put in layman's terms, DuPont cheated. And it cheated consciously, deliberately and with purpose. DuPont committed a fraud in this court, and this court concludes that DuPont should be, and must be severely sanctioned if the integrity of the court system is to be preserved."

The senior pilot's letters put DuPont management on notice about the very safety problems that eventually caused the aircraft crash in Malaysia. The pilot's letters were sent frequently, for two years prior to, and as recently as one month prior to the crash. The placatory response letters written by DuPont Chairman and CEO Edgar S. Woolard, Jr. made it clear that the warnings had reached the highest authorities in DuPont.

The FSF has placed its reputation and credibility in jeopardy with its poorly researched and inaccurate account of the DuPont disaster. A critique of the DuPont-AIG story presented in the CFIT video follows. Finally, the primary causes for DuPont's aircraft crash, concealed by DuPont and AIG are summarized.

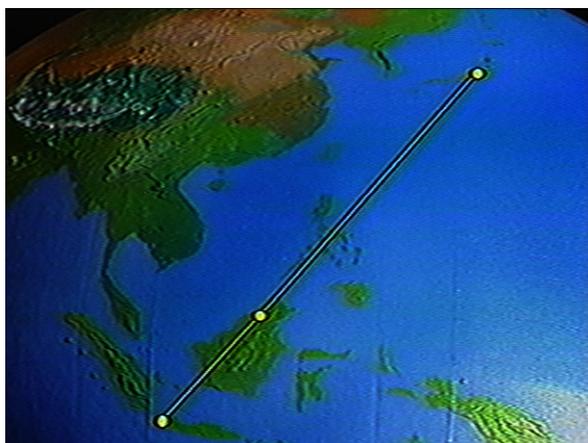
## **CAUSES CONCEALED**

The FSF account of the DuPont aircraft crash begins:

***"On September fourth nineteen ninety one, November two zero four Charlie, a G two operated by a U.S. corporation departed Tokyo, Japan for Jakarta, with a planned fuel stop in Kota Kinabalu Malaysia"*** (17:53)<sup>2</sup>

The FSF account does not reveal that DuPont's pilots left Houston planning to use Okinawa, Japan as the fuel stop along the route depicted in **EXHIBIT 1**; nor does it explore the poor planning done by DuPont's pilots for the fuel stop at Kota Kinabalu (See **Ad-lib Trip Plan.**)

### **EXHIBIT 1. TOKYO-JAKARTA (18:06)**



2. The time references appearing in parenthesis and expressed in a "minute:seconds" format, are the video index-time for "CFIT Awareness and Prevention". Quoted comments by the narrator are indented and italicized. Exhibits of video frames are referenced by the video index-time they occur.

***"The crew had previous operational experience at the Kota Kinabalu airport."*** (18:08)

This statement is misleading. Neither the pilots' previous experience at this airfield, the pilots' training, nor DuPont's operating procedures manual prepared these pilots to land the high performance aircraft at an airfield without radar control services. The N204C pilot on this trip, Kenneth Fox ("Pilot 1" in the FSF video), had been to Kota Kinabalu only once before -- as a copilot. The N204C copilot on this trip, Gary Johnston ("Pilot 2" in the FSF video), had never been to Kota Kinabalu.

Neither DuPont nor AIG policy required DuPont's pilots to have any experience flying into the airfields to which they were ordered to fly. Neither Fox nor Johnston had ever flown into airfields in Japan or other countries DuPont told these men to fly into on this around-the-world trip. Fox, the pilot flying, had less than 250 hours in G-II/III aircraft, and most of the thousands of hours logged by Fox and Johnston were accrued on short trips flying Conoco G-I shuttles in Oklahoma and Texas.

***"The enroute portion of the flight is believed to have been uneventful."*** (18:16)

This belief is false. The cockpit conversations captured on the cockpit voice recorder (CVR) recording indicate that the pilots may have believed the enroute portion of their last flight was uneventful. The crew operated at DuPont management-approved piloting "standards" in planning their descent and approach into this rarely visited airfield without radar control services. The inadequacy of DuPont's piloting standards is clear from the beginning of the thirty-five minute recording made by the CVR recovered from the crashed aircraft. The cockpit conversations and radio transmissions captured on the first twenty minutes of CVR recording, summarized as uneventful in the FSF account, show the following chain of fatal errors.

- The pilots failed to vocalize a formal descent or approach checklist at any time.
- The pilots failed to begin their descent soon enough to arrive at their clearance limit at an altitude even close to the 4,000' initial approach altitude. (The pilots flew over their VOR clearance limit at 15,000'.)
- The pilots failed to use standard terminology such as "I-L-S", "arc", "instrument", or even "approach" in cockpit conversations and radio communications.
- The pilots acknowledged a controller directive to slow their aircraft down to approach speed, but failed to comply with the directive.

- The pilots acknowledged a controller's statement of the expected approach time for their aircraft, but failed to tell the controller they would reach their last IFR flight plan fix and last clearance limit more than fourteen minutes earlier than expected.
- The pilots acknowledged a controller directive to descend over the VOR in the published holding/descent pattern, but failed to comply with the directive or tell the controller immediately that they did not know what to do.
- The pilots flew past their final IFR flight plan fix and last clearance limit by more than seven nautical miles before accepting, without question, a VFR clearance to "descend south of the airfield".

These errors were not caused by a simultaneous and momentary lapse in attention by the two unfortunate pilots. These errors were not caused by a freak miscommunication with the controllers. These errors epitomize the dangerous deficiencies in airmanship standards that DuPont's highest authorities had been warned about well before September 4, 1991.

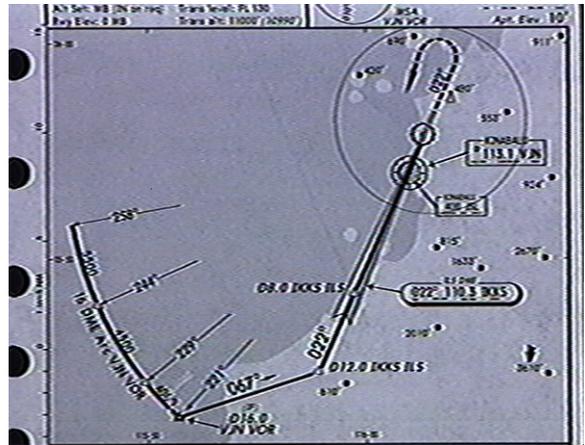
***"The instrument approach facilities included an ILS and VOR but no radar, which is typical of airports in the region."*** (18:36)

Airfields providing an operative ILS and radar control services were available at Naha, Okinawa; at Manila, Philippines; and at Bandar Seri Begawan, Brunei. These airfields were available, capable, and convenient to provide refueling services for DuPont aircraft on flights between Tokyo, Japan and Jakarta, Indonesia.

The FSF account does not question why DuPont would demand that its executives and their families fly into what DuPont and AIG now allege were inadequately staffed and equipped airfields in Malaysia when more comfortable, more convenient, and far safer means of transportation existed between Tokyo, Japan and Jakarta, Indonesia.

The quality of the air traffic control services and navigation equipment in the Asia-Pacific region were known to DuPont and AIG executives before this fatal flight.

**EXHIBIT 2. ILS APPROACH PLATE (18:39)**



The "ILS DME ARC" approach shown in **EXHIBIT 2** was inoperative on September 4, 1991. DuPont was responsible for making sure that its pilots were provided the NOTAM, published months before, stating that this approach was inoperative before these pilots departed Tokyo. If the pilots were planning to use the "ILS DME ARC" or the "VOR DME ARC" approach shown on the approach plate in the FSF video, then they should have requested their approach procedure preference by its published name. These pilots did not.

***"As the aircraft approached its clearance limit, the Kinabalu VOR, the crew repeatedly tried to obtain further clearance on the congested frequency."*** (18:45)

This is blatantly false. The pilots did not tell the controller that they were near their clearance limit until their aircraft was nearly at the clearance limit. Five minutes before the pilots reached the clearance limit, a sector controller told the pilots to slow their aircraft to approach speed and that approach control would expect their aircraft for approach in nineteen minutes. The timing of the events on the CVR recording shows that the pilots did not slow their aircraft to approach speed as they had been told to do, and consequently, arrived at their final IFR flight plan fix and clearance limit fourteen minutes too early.

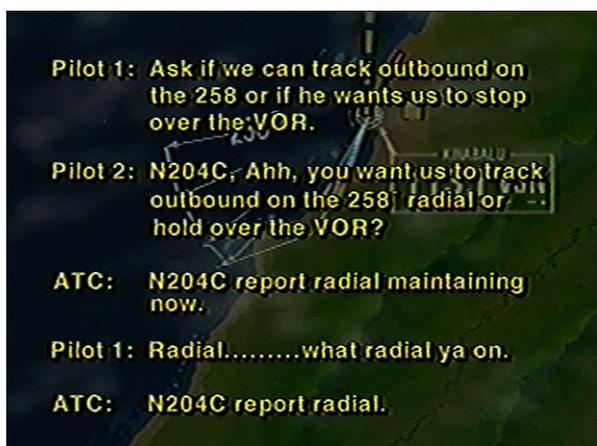
DuPont's pilots failed even to inform the controller that they did not slow their aircraft to approach speed as they were directed well before reaching their last IFR flight plan fix and clearance limit.

**EXHIBIT 3. INBOUND GROUND TRACK (18:48)**



The inbound ground track depicted is false. Positions of the DuPont aircraft reported by the pilots to the controller show that the aircraft did not track inbound to the VOR as shown in **EXHIBIT 3**. The DuPont aircraft flew inbound on the 025° VOR radial.

**EXHIBIT 4. CVR TRANSCRIPT PAGE 1 (18:55)**



Repeatedly the CVR recording is misinterpreted to mask these pilots' incompetence and to advance the DuPont-AIG story.<sup>3</sup> The poor reproduction of the CVR recording onto the audio track of the FSF video obscures the copilot's "What?" that occurs between when the pilot says: "Radial" and when the pilot says: "What radial ya on." (**EXHIBIT 4**). At this time, the controller expects the DuPont aircraft to reach the VOR more than fourteen minutes later.

3. A complete transcript of the consolidated CVR recording and ATC transcript provided by the Malaysian government, with time index, is included in Parsons, 1993.

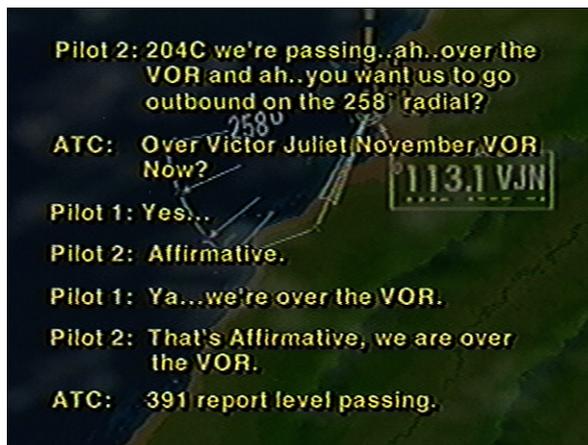
The pilots do not tell the controller that their aircraft was almost over the VOR. In this context the controller could not understand why the copilot would ask about "the two five eight degree radial".

**EXHIBIT 5. CVR TRANSCRIPT PAGE 2 (19:23)**



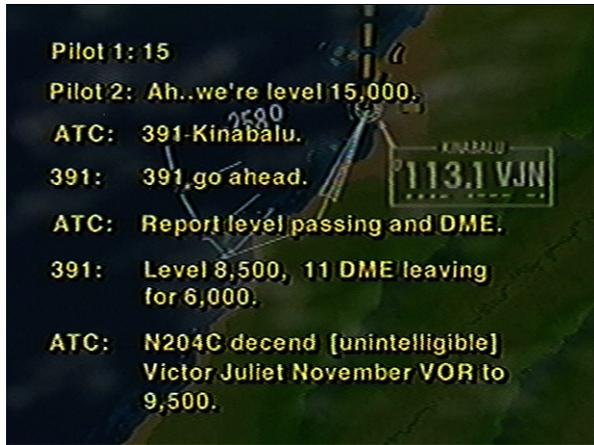
The pilot's do not ask the controller for a specific approach by ICAO-standard name or tell the controller that their aircraft is about to pass their clearance limit in a few seconds. The controller properly directs the pilots to maintain the 025° radial inbound to the VOR, expecting their arrival in fourteen minutes (**EXHIBIT 5**).

**EXHIBIT 6. CVR TRANSCRIPT PAGE 3 (19:37)**



When the controller is finally told that the DuPont aircraft is over the VOR unexpectedly early (**EXHIBIT 6**), he immediately fulfills his sole responsibility -- air traffic control. The controller requests an altitude report from the Malaysian airliner, MAS 391, on its approach to assure adequate altitude separation between the DuPont aircraft and airliner.

**EXHIBIT 7. CVR TRANSCRIPT PAGE 4 (20:05)**



DuPont's pilots mistakenly answer the controller's request to the airliner (EXHIBIT 7). In another example of bad communications skills, the DuPont copilot reports his altitude without identifying his aircraft.

At this point, the narrator of the FSF video opines:

***"The instructions to descend south of the airfield and maintain ninety-five hundred feet are, at best, ambiguous."*** (20:28)

This is false. This is not at all what is revealed by the CVR recording. The "[unintelligible]" in the FSF video transcript is clearly heard on unaltered CVR recordings as: "Descend over the...". The controller directed the pilots to descend their aircraft over the VOR in the published holding pattern.

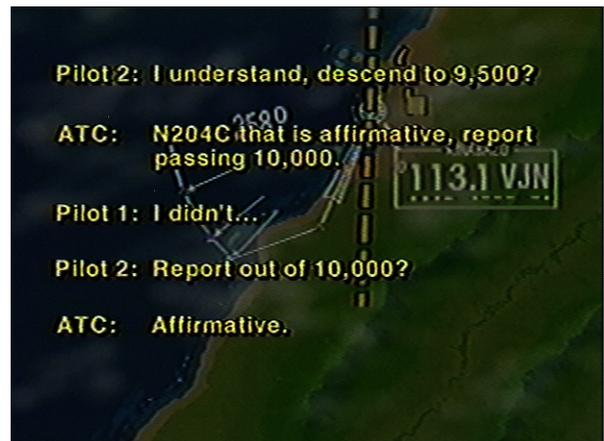
**EXHIBIT 8. OUTBOUND TRACK (20:31)**



The outbound ground track depicted is false. The outbound track from the Kota Kinabalu VOR depicted in EXHIBIT 8 is impossible for DuPont's pilots to have flown for the following reasons.

- If the aircraft was flown over terrain along 180° VOR radial on the descent DuPont's pilots reported to the controller, then, the aircraft would have crashed more than a minute before it actually did.
- The time period between when the pilot tells the copilot: "I'm gonna turn to the right." and when the aircraft hit the trees is too short for the aircraft to have flown from the 180° VOR radial to the point of initial impact. To fly the three nautical miles from the 180° VOR radial to the crash site in the twenty-five seconds would require ground speeds exceeding 430 knots at an altitude less than 4,000 feet.

**EXHIBIT 9. CVR TRANSCRIPT PAGE 5 (20:35)**

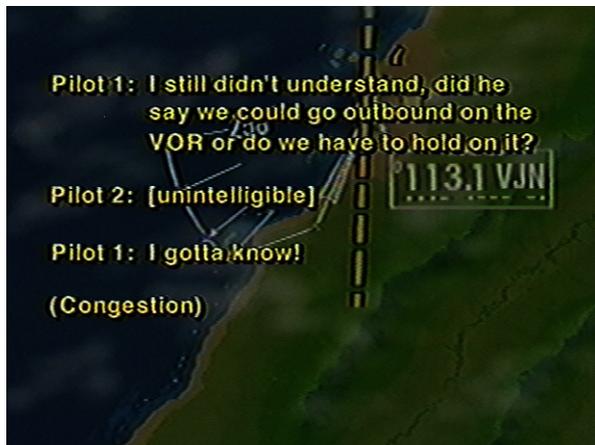


The transcript shown in EXHIBIT 9 is incorrect. In fact, the copilot says clearly: "We understand descend to nine thousand five hundred." The copilot's inflections are not questioning; rather, he indicates that he understands the controller's directive and will comply. However, the copilot's response is automatic, out of bad habit and poor training, and does not indicate true understanding.

The controller replies: "November two zero four Charley, that is affirmative. Report passing one zero thousand." The copilot, without any indication that he or the pilot is confused acknowledges: "Ok, report out of uh one zero thousand." The controller replies: "Affirmative."

The copilot's radio transmissions lead the controller to believe that DuPont's pilots understood his directives and would follow them. In fact, cockpit conversations captured on the CVR recording reveal that the pilots were rushed and confused and did not understand at all what was expected of them.

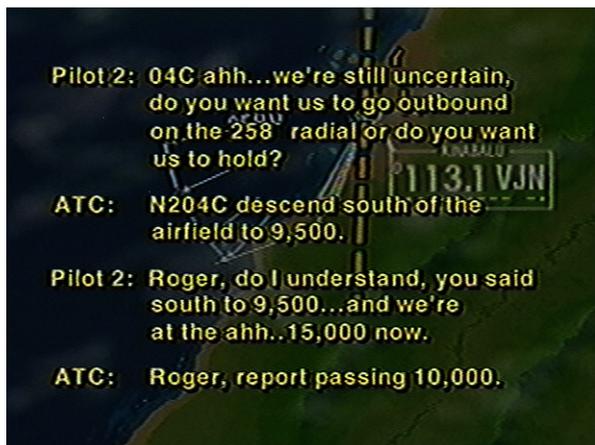
EXHIBIT 10. CVR TRANSCRIPT PAGE 6 (20:53)



The author's interpretation of the CVR again masks the inadequacies of the pilots. The "[unintelligible]" the author shows in **EXHIBIT 10** is in fact the copilot saying: "I don't know." To which the pilot exclaims, in an irritated tone: "I gotta know!" After the pilot's exclamation, the copilot is heard to say docilely: "Yeah."

Plainly DuPont's pilots are rushed and confused, but too embarrassed by their unfamiliarity with the airfield and proper international flight procedures to immediately ask the controller for explicit instructions for the approach they are expected to execute.

EXHIBIT 11. CVR TRANSCRIPT PAGE 7 (21:21)



The transcript shown in **EXHIBIT 11** is false. The copilot does not say "Roger, do I understand you said south to 9,500...". The copilot actually says, not as a question but in confirmation: "Roger, *understand* you said south to nine thousand five hundred."

During the two-minute time period between when the copilot told the controller that the DuPont aircraft was over the VOR and when the pilots accepted the VFR clearance to "descend south of the airfield", the pilots flew their aircraft outbound on the 205° VOR radial reciprocal to the VOR radial they flew inbound.

At average ground speeds in excess of 250 knots the pilots flew eight nautical miles past the VOR before finally asking the controller what to do. Having flown well past the last fix on their IFR flight plan, the pilots were no longer following their IFR flight plan and were now in VMC under VFR. The controller gave the pilots a VFR directive to "descend south of the airfield".

Without any request for clarification or any question, DuPont's pilots accepted the VFR clearance and, at their position eight nautical miles out the 205° VOR radial, apparently set the autopilot heading bug to 180°. (See comments under **EXHIBIT 8**.)

***"It's possible that the controller expected the crew to maintain VMC or for the aircraft to descend southwest over the water. If these were his expectations he certainly did not clearly communicate them to the pilots. Since the controller and crew spoke different primary languages the message received by the pilots may have been different than what ATC intended."***

***"It's believed the aircraft complied with the clearance and departed the Kinabalu VOR on a one eight zero degree track."***

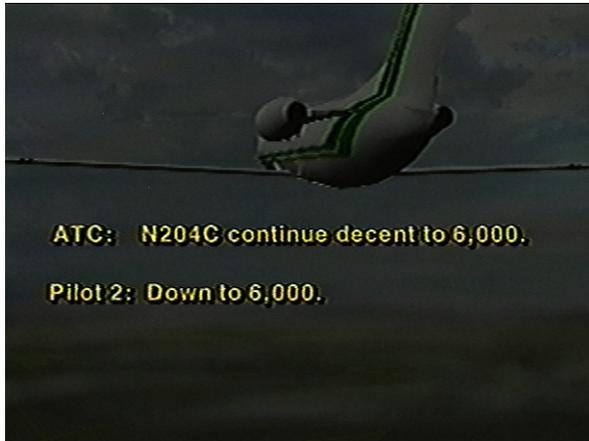
***"As the aircraft progressed south the controller continued to issue descent clearances."*** (21:56)

It is possible that these pilots' experience in airspace providing radar control services, lead them to expect the controllers to know where their aircraft was and assume the pilots' responsibility under Malaysian aviation law for aircraft-terrain clearance. The pilots' certainly failed to communicate the exact position of their aircraft, the meteorological conditions they were experiencing, and the closeness of the hills to their flight path.

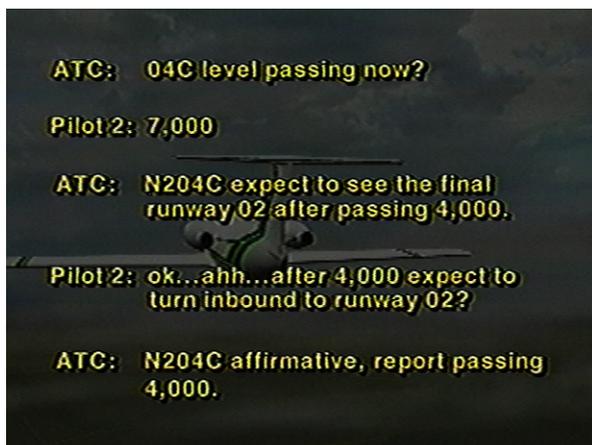
Because the controllers spoke ICAO-standard English and DuPont's pilots spoke a colloquial Texas-Oklahoma dialect, there may have been semantical differences. Training in safe international flight procedures teaches pilots to cope with such differences. DuPont neither gave its pilots the training nor the experience they needed to safely fly the missions ordered by DuPont management. The egregious errors in communications by DuPont's copilot could cause a disaster anywhere; in outright misrepresentations, the copilot told controllers that he understood directives that he did not understand.

The “belief” that the aircraft “departed the Kinabalu VOR on a one eight zero degree track” is wrong. It would be impossible for DuPont’s pilots to have flown their aircraft along the 180° VOR radial on the descent reported to the controller. (See comments under **EXHIBIT 8**.)

**EXHIBIT 12.** CVR TRANSCRIPT PAGE 8 (22:41)



**EXHIBIT 13.** CVR TRANSCRIPT PAGE 9 (22:49)

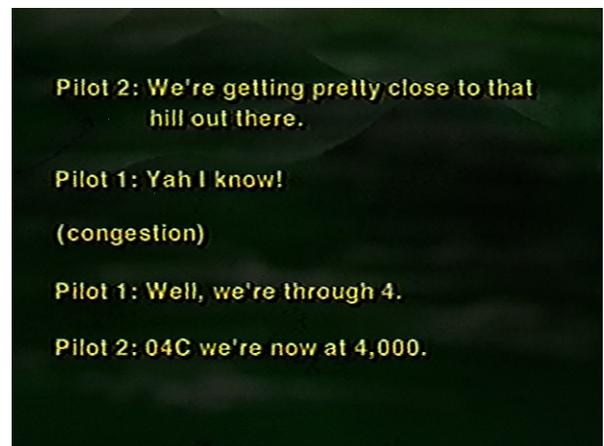


The CVR recording has been cut-and-pasted to present a distorted version of the events leading to this crash. If the recording must be cut-and-pasted into an abridged version of what actually occurred, then the transcript should at least indicate the times that statements are made. The fact that nothing happens in the cockpit for the minute and forty-five seconds between the segment of CVR recording transcript shown in **EXHIBIT 12** and the segment shown in **EXHIBIT 13**, not even conversation between the pilots, reveals that these pilots flew their aircraft to disaster in relaxed ignorance.

In particular, for two minutes following the controller advising the pilots that he would clear the aircraft to turn inbound on the runway center-line when their aircraft reached four thousand feet (**EXHIBIT 12**), DuPont’s pilots failed to bring their aircraft closer to the runway center-line for timely compliance with the expected directive. Instead, DuPont’s pilots continued to fly their 180° heading farther from the runway center-line. From where they were when the directive was given to turn inbound, the aircraft was over three minutes flying-time to the closest point on the runway center-line.

*“After obtaining limited visual contact with the ground, the crew became concerned with their proximity to the nearby terrain which rose to five thousand feet.”* (23:16)

**EXHIBIT 14.** CVR TRANSCRIPT PAGE 10 (23:25)

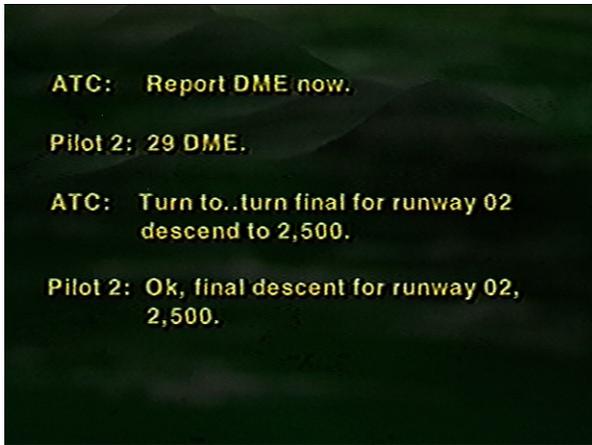


The CVR transcript shown in **EXHIBIT 14** is false. The copilot says “We’re getting pretty close to the hills here.” The pilot responds: “Yeah, I know. Tell’em we’re through four.” As close as their aircraft was to eye-level “hills”, the pilot should have known that he was violating US and Malaysian regulations on aircraft-terrain clearance<sup>4</sup> and he should have immediately aborted his descent. Then, the pilot should have reported his position and altitude to the controller and asked for help.

The pilot’s lethargic response to seeing that his aircraft was dangerously close to high terrain may be a sign of the glucose metabolism disorder that DuPont’s aviation management was warned to have checked by the pilot’s FAA examining physician the previous year.

4. United States Federal Aviation Regulations (FARs) §91.703 (a) (2), require US operators of aircraft in Malaysian airspace to comply with Malaysian aviation regulations. The Malaysian aviation regulations place all of the responsibility for aircraft-terrain separation on the operator’s pilots when flying in airspace without radar control.

EXHIBIT 15. CVR TRANSCRIPT PAGE 11 (23:38)

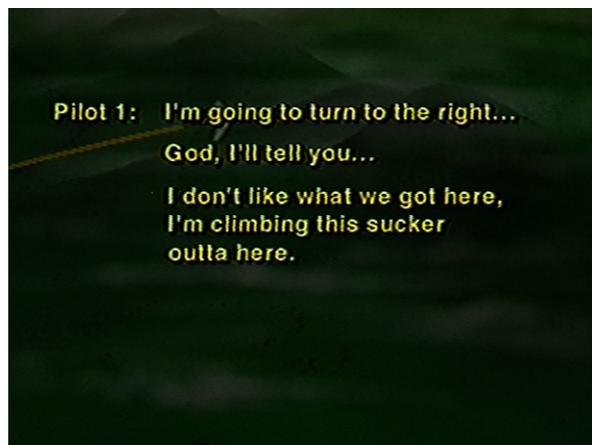


The CVR transcript shown in **EXHIBIT 15** is incorrect. Once the DuPont aircraft descended to four thousand feet the controller tells the pilots: "You are cleared to... join final for runway zero two, descend to two thousand five hundred."

***"As the crew turned to intercept the final approach course, they initiated a climbing turn."***  
[Showing Exhibit 17.] (23:54)

Immediately after seeing hills dangerously close to his aircraft, the pilots should have put altitude between the aircraft and the terrain. Finding the final approach course was of secondary importance in this situation. The pilots would have had to have flown for another three minutes from where they were to reach the closest point on the center-line for runway. The reasons for their turn should have been to avoid the hills they were flying into and not "to intercept the final approach course", which is the author's interpretation.

EXHIBIT 16. CVR TRANSCRIPT PAGE 12 (24:14)



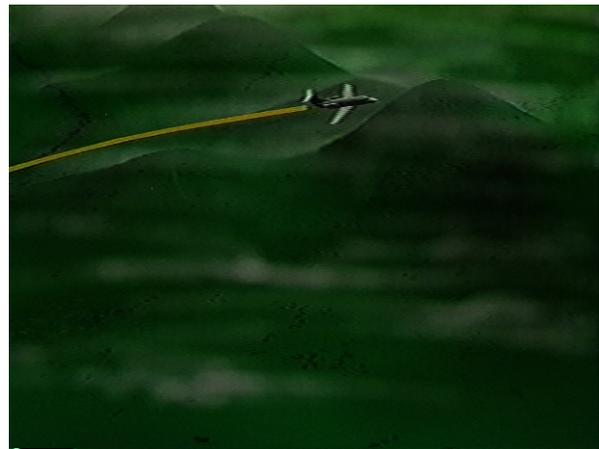
***"Unfortunately the climb wasn't steep enough to clear the terrain and the aircraft crashed only one hundred feet below the top of a ridge located thirty-two miles south of the VOR."*** (24:19)

The aircraft hit tree tops on the shoulder of the ridge 30.80 nautical miles south and 2.99 nautical miles west of the VOR. The ground elevation on the ridge crest is 4,000', but the aircraft never passed over the crest. Instead, the aircraft hit trees along the ridge shoulder to one side of the ridge crest.

Analysis of the tree-cut pattern and debris distribution at the crash site shows that the impact with trees along the ridge shoulder, lasting about one second, ripped the right wing and then the left wing from the fuselage, broke the tail section from the fuselage, and destroyed the cockpit, killing the pilots and flight mechanic. The passenger-compartment and tail section continued over the ridge shoulder, over a valley, and, after a nine-second free-fall, crashed into the side of an adjacent ridge over one-half kilometer from the point of first impact.

Remains of the flight mechanic were recovered near the initial impact point. The bodies of the nine passengers were found in and around the passenger compartment. According to DuPont, the remains for neither the pilot nor copilot were ever collected for forensic tests by the authorities.<sup>5</sup>

EXHIBIT 17. ANIMATION (24:20)



The topography depicted in **EXHIBIT 14**, **EXHIBIT 15**, **EXHIBIT 16**, and **EXHIBIT 17** is greatly exaggerated. The actual topography along the DuPont aircraft flight path is less steep. The average slope along the last six nautical

5. Video of the site made a few days after the crash occurred shows that the pilots' remains could have been recovered. This fact was confirmed by the observation of human skeletal remains in the vicinity of the cockpit debris four months later -- after the remains of all passengers were recovered.

miles of the flight path is less than 20° and, because the aircraft flew over a shoulder of one ridge and up the crest of another ridge, the average slope along the last four nautical miles of the flight path is less than 6°.

The Ground Proximity Warning System (GPWS) that was available for, but not installed on, DuPont's G-II; or the GPWS that was installed on DuPont's G-IV, would have given a trained and an alert crew enough warning to make an effective escape maneuver.

***“The circumstance that this crew ran into are not unusual when pilots and controllers speak different primary languages. Any instance where the clearance does not fit the situation may be grounds for inquiry.”*** (25:51)

#### **EXHIBIT 18. HONG KONG AIRPORT SCENES (26:00)**



***“Furthermore, since technology varies world-wide, you may encounter a wide range of ATC capabilities.”*** (26:05)

***“Understanding the limitations of approach control radar and language differences in your area of operation is critical to flight safety.”*** (26:13)

These cautions by the video narrator, aimed at pilots, are important; however, the factors cautioned about did not “cause” DuPont’s disaster any more than did the existence of hills in Malaysia “cause” DuPont’s disaster.

The lessons learned from DuPont’s disaster need to be directed, not to pilot briefing rooms where the underlying causes for DuPont’s crash are understood, but to the board rooms of corporate aircraft operators and their insurers where safety judgments of pilots are often overruled by officers’ unreasonable demands to fly trips of questionable safety.

Jerome Lederer has written<sup>6</sup>:

*““Every accident, no matter how minor, is a failure of organization.” This quotation delivered in 1953 by Professor Kenneth R. Andrews of the Harvard Graduate School of Business Administration, carries the implication that an accident is a reflection on management’s ability to manage, except for acts of God. Accident prevention is a management function. Even minor incidents are symptoms of management incompetence that may result in a major loss.”*

### **CAUSES REVEALED**

The CVR recording recovered from DuPont’s crashed aircraft indicates that the pilots behaved like they were complying with DuPont’s lax aviation policy. Why were these two pilots, obviously deficient, ordered to fly this extensive international trip? In fact, the crash in Malaysia is only one symptom of the factors that persist in Houston and Wilmington today.

### **Organized For Disaster**

Prior to 1988, DuPont contracted aviation service from Atlantic Aviation Corporation (AAC), a corporation owned by DuPont director Edward B. du Pont. In 1988, as part of his overhead cost reduction efforts, DuPont CEO Edgar Woolard ordered the consolidation of the aviation services DuPont contracted from AAC and the aviation operations run by Conoco, Inc., an oil and gas company DuPont acquired in 1980.

Woolard made a deal with du Pont to transfer to DuPont many of the pilots Woolard had contracted for many years from AAC. Woolard put the transferred AAC pilots and Conoco pilots into “DuPont Corporate Aviation”, headquartered in Delaware, and with flight operations in Delaware, Pennsylvania, Texas, and Oklahoma.

While pilot training and aircraft equipment were cut to meet Woolard’s budget reduction objectives, the demands by corporate officers for the perquisite of the personal aviation services increased. DuPont’s officers freely spent stockholder money to maintain a facade of company success, insisting that company officers fly wherever they traveled on the superficially glossy high-performance aircraft DuPont operated, but refused to budget for cockpit warning devices and pilot training that did not show, but which are critical to flight safety. Lesser employees, ordered to pilot or be passengers in the poorly equipped and piloted aircraft, followed the policy or were fired.

6. Forward to *Modern Accident Investigation and Analysis* (Ferry, 1988).

Woolard's actions spawned concerns among many pilots who had served DuPont executive management under the safer operating standards established by AAC. Many pilots vocalized concern for the diminishing safety standards. Woolard and his lieutenants responded with punitive firings.

One thirty-year DuPont pilot wrote letters to the three Directors of Aviation Woolard appointed between 1988 and 1991, to a DuPont Chief Counsel, and to Woolard himself, warning these men that a fatal accident would certainly occur if DuPont continued to require poorly trained and ill-prepared pilots to fly demanding trips of questionable safety. The pilot's letters cited cases of near disaster caused by the breakdown of common-sense safety standards and procedures. The letters warned these men frequently, for several years prior to, and as recently as one month prior to DuPont's disaster in Malaysia, about the very problems that lead to DuPont pilots crashing the aircraft loaded with passengers. The pilot's warnings were ignored.

### **Too Many Demands**

Originally, two DuPont "Captain"-rated pilots were scheduled to fly the ill-fated trip using a DuPont G-III. However, Constantine S. Nicandros (Conoco CEO and DuPont Executive Vice President) backed out of the trip on short notice, and appropriated "his" G-III and its crew to fly his mother, his wife, and himself to Greece.

Nicandros ordered the ill-fated trip to proceed without him using the G-II aircraft (N204C) and a different crew. Nicandros forced his aviation operations to fly at least three extensive international missions simultaneously: his personal trip to Greece, a business trip to Russia, and the ill-fated trip. Nicandros failed to staff his aviation operations with enough trained and experienced pilots, and safe aircraft to make all of these trips safely.

The shortage of "Captain"-rated pilots in Houston who had both international and G-II experience, and the pressure to meet Nicandros' perquisite demands, lead to the ill-fated trip being assigned to a pilot with only 250 hours of G-II/III pilot-in-command experience and even less international experience, and, a copilot who could not qualify as a G-II/III pilot-in-command. Inexperience, inadequate training, and poor preparation of this crew was one cause of DuPont's aircraft crash in Malaysia.

### **Ignored Health Problems**

Kenneth Fox ("Pilot 1" in the video), the pilot flying N204C on September 4, 1991 was told by the physician conducting his FAA Medical Certificate exam in August 1990 that Fox should have a glucose challenge test to

determine if the high triglyceride concentrations revealed by his hematological test were a symptom of a glucose metabolism disorder. The physician reported his recommendation in writing to Fox and to DuPont's aviation management. DuPont produced no evidence that this physician's recommendation was followed.

In August 1991, less than a month before his death, Fox's hematological test showed that his triglyceride concentrations were even higher (315 mg/ml) than those measured the year before (265 mg/ml) when the physician suspected that Fox may have a glucose metabolism disorder. The dangers in flying long trips, many time-zones from home, with glucose metabolism disorders (hypoglycemia or hyperglycemia), are well established.

Neither DuPont nor AIG demanded that any remains for either pilot be recovered for forensic testing. DuPont claims that no remains were found. However, during my trip to the crash site in December 1991, human skeletal remains were observed in the area of the cockpit debris. Undoubtedly the unrecovered remains belonged to one or both DuPont pilots. DuPont and AIG certainly knew in the days after the crash that the pilots' remains would be valuable evidence in answering questions regarding the lethargic attitude Fox demonstrated on the CVR recording after his copilot pointed out the hills close to their flight path. Fox's lethargic and untimely reaction to his copilot's warning may have been caused by a severe glucose metabolism disorder.

### **Ad-lib Trip Plan**

Recordings made by Universal Weather & Aviation (UW&A), Inc. of telephone conversations between Fox and UW&A technicians show that Fox had very little confidence planning the extensive around-the-world trip his management ordered him to fly.

The recorded conversations reveal that Fox departed Houston on September 29 not even expecting to land at Narita, Japan. Fox left Houston on August 29 planning to carry out the following itinerary to Jakarta:

#### **29 August 1991**

***Houston, TX -- San Jose, CA***

***San Jose, CA -- Kona, HI***

#### **30 August 1991**

***Kona, HI -- Wake I.***

***Wake I. -- Sendai, Japan***

#### **4 September 1991**

***Sendai, Japan -- Okinawa, Japan***

***Okinawa, Japan -- Jakarta, Indonesia.***

The recorded telephone conversations between Fox and UW&A technicians after Fox reached Hawaii reveal that Fox was granted a landing slot at Narita on August 31. Fox chose to accept the slot and built a new trip plan around the Narita landing slot. The new plan, made in Hawaii on August 29, was as follows:

**29 August 1991**

***Houston, TX -- San Jose, CA***

***San Jose, CA -- Kona, HI***

**30 August 1991**

***Kona, HI -- Majuro***

***Majuro -- Saipan***

**31 August 1991**

***Saipan -- Narita, Japan***

**4 September 1991**

***Narita, Japan -- Kota Kinabalu, Malaysia***

***Kota Kinabalu, Malaysia -- Jakarta, Indonesia.***

In making the changes, either Fox did not request a briefing kit containing all NOTAM's for Kota Kinabalu, or Fox did not understand or remember the NOTAM, issued two months before this trip, stating that the Instrument Landing System (ILS) at Kota Kinabalu was out of service.

### **CONCLUSION**

Adopting, unchecked the false DuPont-AIG story of DuPont's CFIT in Malaysia and publishing that story in its materials on aviation safety impairs the credibility and reputation of the FSF. Only when a full and correct analysis of this crash is published can all of the lessons from the disaster be learned. The primary cause for this crash was executive mismanagement -- a problem which will continue to plague corporate aviation in America until the true cause is disclosed and these critical safety issues are fully discussed.

### **REFERENCES**

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### **ABOUT THE AUTHOR**

Roger K. Parsons holds a Ph.D in theoretical physics obtained under the direction of Nobel laureate physicist P. A. M. Dirac. In 1980, before DuPont acquired Conoco, Parsons joined Conoco to do research on algorithms to image subsurface mechanical properties using seismic acoustic data -- the miles-scale version of ultrasound medical imaging. Parsons eventually supervised DuPont-Conoco research and development efforts in Ground Penetrating Radar (GPR) technologies for use at DuPont's mineral mining operations and at DuPont and Conoco groundwater and soil contamination sites. In 1986, Parsons was named group leader of Conoco's Theoretical Geophysics Group. Parsons is author of several professional papers, internal research reports, and patents.

In 1989, Parsons moved into executive staff positions. First, as Executive Assistant to DuPont Vice President and Conoco Executive Vice President for Worldwide Exploration, Dr. Max G. Pitcher. Parsons' last position at Conoco was Exploration Coordinator -- Scandinavia, East Africa, Middle East and Libya.

In January 1992, Conoco fired Parsons after he began investigating Conoco and DuPont executive management's role in allowing two unprepared, inappropriately trained, and probably unhealthy pilots to fly an extensive overseas trip. Ann Parsons, Roger Parsons' wife and a manager with Conoco, was one of the twelve people killed in the DuPont disaster in Malaysia.

Since 1991, Parsons has investigated and analyzed of the causes for the DuPont disaster in Malaysia, including spending seven days at the crash site surveying the debris field. Parsons authored a detailed report on his analysis of the ground track for the DuPont aircraft during the time captured on CVR and ATC voice recorders.