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# 6 CIRCUMSTANCES RELATED TO THE TAKEOFF AND CRASH OF FLIGHT 1363

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## The Takeoff Roll – Condition of Aircraft

At 12:09:29 p.m., a flight crew member of flight 1363 advised Kenora Flight Service Station (FSS) that they were “ready to roll.” The estimated time of commencement of the takeoff roll is 12:09:40 p.m.

A number of telling observations regarding weather conditions just prior to takeoff and during the takeoff roll were made by surviving passengers. Flight attendant Sonia Hartwick testified that the snowfall intensified, particularly from the time the aircraft left the terminal to the time it arrived at the end of the runway in preparation for takeoff. Her observations as to the transformation of snow to ice during the takeoff roll were vivid:

Q. Now, you’re rolling down that runway, and what are you looking at?

A. I’m staring at the wing.

...

Because, at this time, as we rolled down the runway, the snow was now turning to ice on this wing, it was freezing to the wing.

Q. Now, let’s stop there and go over this in some detail. If you’re rolling down the runway, you, up to that point in time, have observed this layered, fluffy buildup of snow, and what happened to that layered, fluffy buildup of snow as you were rolling down the runway?

A. It crystallized and turned to ice.

Q. Describe to me what you saw.

A. At first, it was frosty, and then it turned clear, and then it was now the color of the wing and you could see a sheen on it, that it was actually ice on the wing.

Q. So you could see the transformation?

A. Yes, you could definitely see the transformation. It happens very quickly.

(Transcript, vol. 10, pp. 239–40)

Mrs Hartwick's evidence on the witness stand, as to the condition of the wing on takeoff, was consistent with a tape recording of her telephone conversation with Mr Clifford Sykes, then the director of flight operations at Air Ontario, which took place between 1:15 and 1:30 p.m. on March 10, 1989, approximately one hour after the crash. Mrs Hartwick was not aware that her telephone conversation with Mr Sykes had been tape recorded by him, and the existence of the tape was discovered by Commission staff only by chance in early August 1989 and the tape itself was eventually obtained by Commission investigators in September 1989. The relevant portion of the transcript of this tape recording reads as follows:

- Sonia: And uhm, the wings were icing up.  
Cliff: They were? After take off or before?  
Sonia: Uhm, before take off there was quite a bit of wet snow on them, as we were taking off it was freezing.

(Exhibit 126)

Mr John Biro, from his observation point in seat 11E, directly above the wing, stated:

- A. We started to roll down the runway and at this stage I was looking at the wing rather closely, hoping that as we gained speed this wet snow would slide off.

We reached flying speed at seemingly about the same time as previously. And as the nose of the aircraft lifted, the snow on the back part of the wing, about halfway up across the wing, came off with a puff, almost an explosive-type puff.

And the snow on the forward part of the wing seemed to freeze to an opaque, dull opaque ice, almost a flash freezing type thing. And it had a rough surface, not – not coarsely rough but definitely a rough surface.

(Transcript, vol. 21, p. 12)

David Berezuk, an Air Ontario Dash-8 captain, from his window seat in row 12, observed a half-inch "wet snow accumulation" on the left wing as the aircraft was taxiing towards the button. He described the snowfall as "increasing in intensity from the time we arrived at the terminal until the whole takeoff phase" (Transcript, vol. 14, pp. 79–80).

As the aircraft was on its takeoff roll, Captain Berezuk noted the snow on the wing changed in colour from white to an opaque grey, dissipated in thickness, and took on a sculptured carpet texture:

- A. ... As we gained forward speed approximately 10 to 20 percent, in my best assumption, 10 to 20 percent of the snow had blown off the wing.

- Q. Did you see that snow blow off?  
A. It is not really a question of seeing it blow off, I saw it dissipate.  
Q. When you say "dissipate," did the thickness of the snow on the wing just decrease?  
A. Yes.  
Q. Did it change in colour at all?  
A. Yes.  
Q. Can you tell me what that colour was?  
A. The parts where it was sculptured, again, I explained that it was a sculptured carpet texture, the parts that were white in colour got more of a greyish opaque colour and the parts that were greyish got more grey in intensity.

(Transcript, vol. 14, p. 84)

As the F-28 was taxiing towards the button in preparation for takeoff, Captain Murray Haines, an Air Canada pilot seated in an aisle seat in row 13, described what he could see of the wing as "thoroughly covered in wet snow" with a rough texture.

He further specified:

- Well, I could see the root of the wing. I couldn't see the leading edge. But, as much as I could see, it was covered in snow.  
Q. And was it a very smooth cover that you observed or was it –  
A. No, it was a rough texture.  
Q. Rough texture, okay. And was it – while you were taxiing, was it blowing off or falling off?  
A. No, it wasn't.

(Transcript, vol. 19, pp. 34–35)

Captain Haines then testified that, on the plane's final takeoff roll, he observed that the snow on the wings was not moving off and he saw it crystallize to ice:

- A. ... as the speed got up, the snow crystallized into ice, and it wasn't moving off the wings.  
Q. You saw the snow crystallize to ice?  
A. Yes, I was watching it all the time.

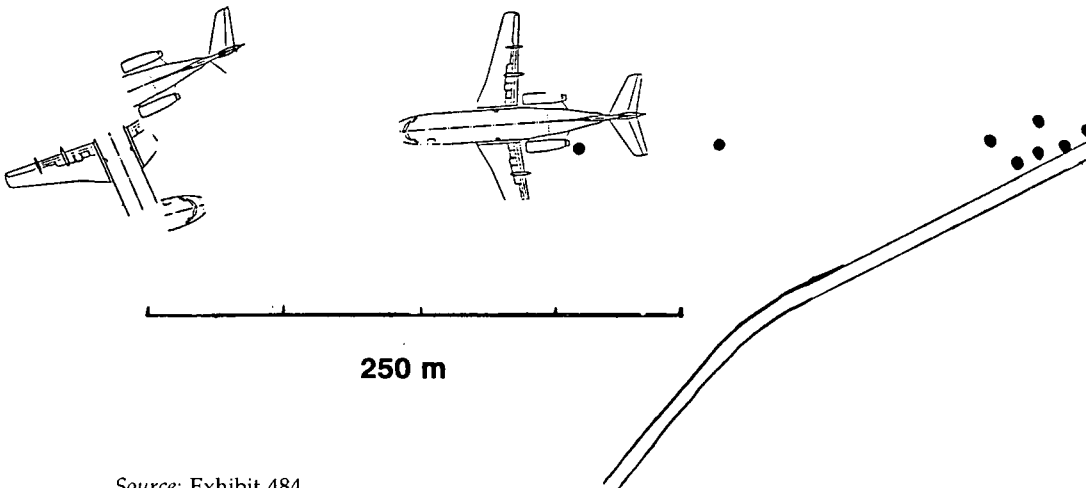
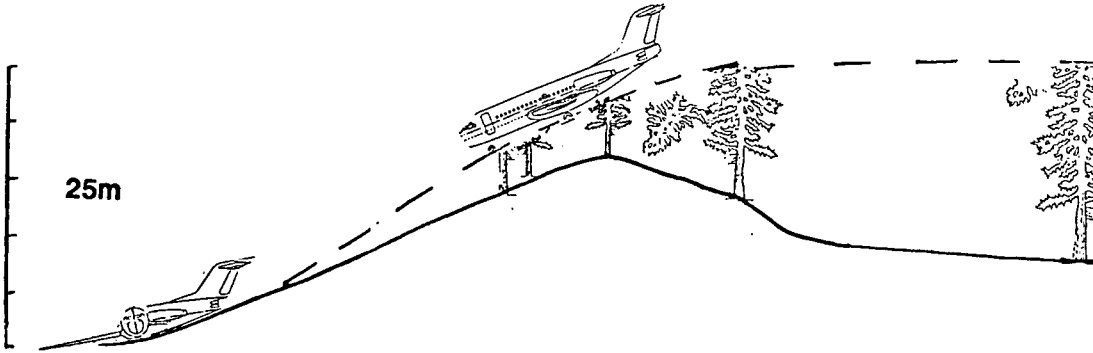
(Transcript, vol. 19, p. 37)

In testimony, passenger Brian Perozak, seated in 4E, described the front edge of the wing on the takeoff roll as looking like "a glazed donut." He described the rest of the wing as crystallized:

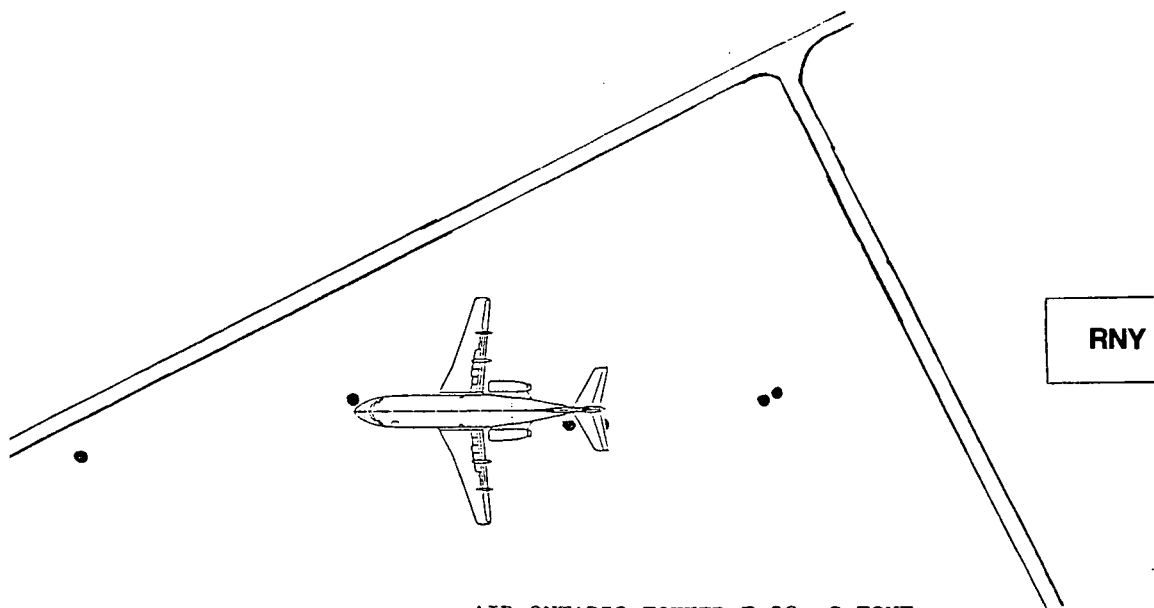
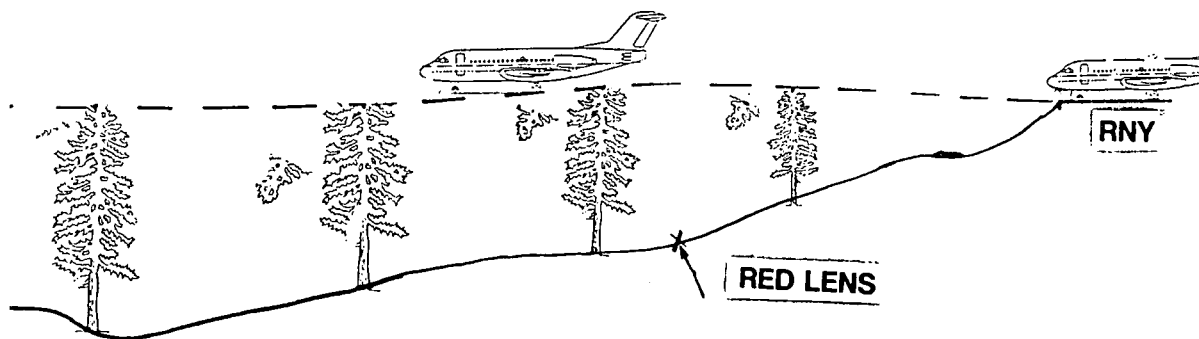
- A. ... It was not as it was before. It was not just snow on the rest of the wing, it seemed like it had crystallized on what I could see of the rest.

(Transcript, vol. 16, pp. 234, 236)

Figure 6-1 Aircraft Flight Plan Profile



Source: Exhibit 484



AIR ONTARIO FOKKER F-28, C-FONF  
DRYDEN MUNICIPAL AIRPORT  
DRYDEN, ONTARIO  
CASB ENGINEERING  
PRELIMINARY PLOTS

●●● TREE STRIKES

AIRCRAFT AND TREES NTS

## The Takeoff – Eyewitness Observations

The destruction by fire of the flight data recorder and the cockpit voice recorder resulted in heavy reliance being placed upon eyewitness observations of the takeoff. Many persons were interviewed, and evidence was adduced from ten witnesses on the ground who observed all or a portion of the takeoff roll and the takeoff itself. These witnesses were all asked to describe their observations and to note on a sketch of the runway where they recalled specific occurrences, such as the point of rotation of the aircraft and the point of liftoff, to have taken place. As well, a number of passengers on board flight 1363 made observations concerning the takeoff.

All the witness observations were carefully reviewed by the Commission counsel and investigators, and subsequently by experts working with CASB and its successor the Transportation Safety Board of Canada (TSB). The observed locations on the runway of specific occurrences were plotted onto a scale drawing of runway 29 and then converted into distances along the runway, thereby providing a reconstruction of the takeoff roll, rotation, and liftoff of flight 1363 (see figure 6-1). Further, in support of the investigation, Mr Michael Poole of the TSB laboratory analysed the eyewitness testimony and provided the Commission with a computer-generated video flight-path reconstruction. Mr Poole's flight-path reconstruction report and the computer video reconstruction were entered as exhibits and were considered by me as evidence.

Mr Roscoe Hodgins, an experienced pilot, had observed the F-28 aircraft take off some 12 to 15 times in Dryden. On March 10, from a location at the Ministry of Natural Resources building adjacent to the button of runway 29, he heard the F-28 engines power up and saw the aircraft accelerate. It was his testimony that the acceleration of the F-28 was not as rapid as he had observed on the previous occasions. Mr Hodgins did not see the nose of the F-28 lift but stated that he saw the tail go down, at approximately the 3400-foot mark of the runway. He did not see the F-28 lift off.

Mr Stanley Kruger of the Dryden airport crash, fire-fighting, and rescue (CFR) service was in his fire truck parked on taxiway Charlie adjacent to the wind-sock when he observed the takeoff roll of flight 1363. He testified that he saw the aircraft as it accelerated from the button of runway 29 up to a point just east of taxiway Alpha. At that point, approximately the 3100-foot mark of the runway, the F-28 had not rotated.

Mr Craig Brown, a commercial pilot with Terraquest Ltd, with approximately 1250 hours of flying experience, was on the eastern side of the main ramp area when he observed the F-28. He first saw the F-28 when it was at approximately the 2300-foot mark of runway 29. He saw

the nose of the aircraft lift just west of taxiway Alpha. Mr Brown testified that the main wheels of the F-28 stayed on the ground for a considerable time thereafter until the aircraft was observed to leave the runway at approximately the 4900-foot mark.

Mr Allan Haw, who was working as a mechanic at the Dryden airport on March 10, testified that he had previously observed F-28 aircraft land and take off at least 100 times. He first observed flight 1363 when he was working outside a maintenance equipment shed located east of the terminal and south of the runway. He testified that, at approximately the 2700-foot mark of the runway, the F-28 was going considerably slower than it should have been at that point on the runway. Mr Haw expected the F-28 to abort its takeoff, and he therefore continued to watch what was transpiring closely. At approximately the 5700-foot mark of the runway, he observed the F-28 in the air: "I could see sky between the underpart of the airplane and the tree tops" (Transcript, vol. 24, p. 140). He described the takeoff as being very shallow and slightly nose up.

Mr Gary Rivard, also of the airport CFR services, was on the eastern side of the ramp area in front of the terminal when he observed the F-28 on its takeoff roll. He testified that, at approximately the 3200-foot mark of the runway, just east of taxiway Alpha, all wheels of the aircraft were on the ground.

Mr James Esh was working as a ground handler for Dryden Air Services and, as of March 10, had approximately 140 hours of flying experience as a pilot. He was walking west on the tarmac just to the west of the terminal building when he heard the F-28 throttling up. He glanced over and first observed the F-28 at about the 3600-foot mark of the runway with all wheels on the ground. Mr Esh then continued to observe the takeoff roll:

- A. ... from that point, I watched the rest of his ground run there. And he went to approximately the 11 numbers<sup>1</sup> on the west side of the runway before he rotated, and it looked like he really reefed on the controls, just, you know, hauled back.

He had an extremely high angle of attack, and the right wing dropped just a bit, and it looked like he corrected, and it also looked like he overcorrected just – just a bit. And the left wing dropped just a bit, and he corrected that.

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<sup>1</sup> The term "11 numbers" refers to the markings on the west end of the runway, approximately 350 feet from the end.

And it just looked like he was mushing along there in a high angle of attack, not gaining any altitude, and he disappeared behind the trees in the snow.

(Transcript, vol. 24, pp. 203–204)

Mr Martin Gibbs was the co-pilot of a NorOntair Twin Otter, which was the first plane to take off after flight 1363 had crashed on March 10, 1989. He had approximately 1760 hours of flying experience. While the F-28 was on its takeoff roll, he was in the airport manager's office in the terminal building looking out towards the runway; he observed the F-28 to have a "positive attitude" with the nose wheel apparently off the ground at approximately the 3800-foot mark (Transcript, vol. 23, p. 23). He testified that the aircraft was airborne at taxiway Alpha, with all wheels off the runway. Once the aircraft was past taxiway Alpha, the right wing appeared to dip, the right main gear appeared to contact the runway, and the F-28 appeared to level out.

Mr Jerry Fillier, a ground handler with Dryden Flight Centre, was standing on the ramp outside the terminal building when he first observed the F-28. He testified that, just east of taxiway Alpha, the F-28 had all wheels on the ground. He next observed it just west of taxiway Alpha when the nose wheel was off the ground and the aircraft was rotating.

Mr Christopher Pike, a maintenance employee at the airport, was also in the airport manager's office when the F-28 was taking off. He first observed the F-28 at the intersection of the runway and taxiway Alpha. He stated that it had all wheels on the ground and appeared to be going slower than it should have been at that point on the runway. At approximately the 4400-foot mark Mr Pike observed the F-28 take a "skip and hop" with the left wing coming up and the right wing dropping. Then he observed the F-28 to lift off at the 5700-foot mark of the runway. He was very certain of this observation since his line of sight of the aircraft was lined up with the first set of VASIS (visual approach slope-indicator system) lights. Mr Pike testified that the aircraft did not seem to want to fly but rather "kind of waddled through the air" (Transcript, vol. 28, p. 36).

Mr Norbert Altmann, captain of the NorOntair Twin Otter and with approximately 5000 hours' flying experience, was in the weather office located at the northwest corner of the terminal building on March 10 while the F-28 was on its takeoff roll. He observed it at approximately the 5000-foot mark of the 6000-foot runway. He noted that it had a nose-high attitude and that it was low for being so far down the runway.

Observations by passengers on board flight 1363 were of assistance in determining the movements of the aircraft during the takeoff roll and,



by and large, were consistent with the observations made by people on the ground.

Captain Berezuk testified that approximately 500 to 1000 feet past taxiway Alpha (at approximately the 4000-foot mark of the runway) the aircraft attempted to rotate and began to shudder; the nose of the aircraft was then lowered to one-half of the initial rotation angle (from an estimated 10° to 4° or 5°). Captain Berezuk testified that there was a second rotation but was unclear as to where it occurred.

Flight attendant Hartwick also recalled the aircraft initially attempting to rotate, not succeeding, and then rotating a second time. She was not able to specify where these rotations occurred, but stated that on the first attempt it felt like the aircraft bounced, came back down onto the runway, continued down the runway, bounced again, and stayed in the air. At the time of the second bounce, the aircraft jerked to the left with the left wing coming down.

Passenger Ronald Mandich, a professional engineer with aviation experience in the management of flight test programs and vibration testing for Hughes Aircraft Corporation, described the takeoff roll. Mr Mandich testified that, as the aircraft gained speed during the takeoff roll and the nose pulled up, "it didn't appear to me that the plane wanted to leave the runway as easy or as quickly as it had on the previous flights" (Transcript, vol. 17, p. 357). Mr Mandich also recalled that the aircraft left the runway for approximately two seconds and came back down onto the runway. Then there was an increase in the pitch of the engines and the aircraft left the runway. He estimated that the aircraft, as it flew over the end of the runway, was 15 feet off the ground.

## **Runway Conditions before and after Takeoff**

A number of witnesses testified as to the condition of the runway immediately before and after takeoff. Mr McGogy, the Cessna 150 pilot, described the condition of the eastern end of the runway at about 12:06:30, the time of his landing:

- A. The runway where I landed, there was approximately a quarter inch of slush on the centre of the runway and onto the north side ... had accumulated a bit more. I would say it would be 3/8 to half an inch range of slush.

(Transcript, vol. 22, p. 54)

He also testified about the condition of taxiway Alpha:

- A. Taxiway Alpha, my recollection was exactly the same as the runway was. It was approximately a quarter inch of wet slush on the taxiway.

(Transcript, vol. 22, p. 59)

It is important to note that it was continuing to snow heavily and with increasing intensity after Mr McGogy left the runway in his Cessna 150 and that the slush accumulation on the eastern portion of the runway would have continued to increase during the entire period up to and including the time of the F-28 takeoff roll.

Captain Murray Haines, a passenger on flight 1363 and an experienced Air Canada pilot, described the runway as being covered in slush, with the black of the tarmac visible through it in the centre and with the slush accumulation being more "yellowish" along the edges of the runway.

After the takeoff, personnel at the airport quickly learned that the F-28 appeared to have crashed. Gary Rivard in Red 2 noticed the F-28 on its takeoff roll, almost at taxiway Alpha, just after he finished hosing down the fuel spill in front of the terminal. He was backing up Red 2 when an employee at the airport, James Esh, ran towards him waving his arms while slipping and sliding on the slush-covered surface. Mr Rivard testified that Mr Esh was hollering: "the plane went down, the plane went down, get going ... I looked behind me and I could see all this grey, white smoke in the air" (Transcript, vol. 28, p. 219). Mr Rivard then immediately drove down taxiway Alpha onto runway 29 and proceeded to its western end. He described the condition of the runway to the west of taxiway Alpha:

- A. ... the portion of the runway that I ran on going and coming was a hundred percent bare and wet.

And I made my turn at the end with no problem and that is - when I did that, I noticed Ernie Parry was right behind me.

(Transcript, vol. 28, p. 220)

Mr Rivard further testified that he saw no tracks after he turned his vehicle around at the west end of the runway and doubled back towards the maintenance road.

Chief Ernest Parry had observed Red 2 proceeding at a high rate of speed from the ramp in front of the terminal area up taxiway Alpha. He immediately followed, staying 50 to 75 feet behind it and to the left of the centre line of the runway. He too described that portion of the runway as bare and wet going west and testified that a "very light spray" was coming from the wheels of Red 2 (Transcript, vol. 6, p. 229).

In cross-examination, Chief Parry was asked whether he saw any tracks on the runway after turning around at the west end:

- Q. And when Red 2 and yourself turned around and proceeded back, in an eastbound direction, did you see ribbons of tracks?
- A. No, sir, I didn't see any trace of any tracks at all. It was just wet pavement.
- Q. Not even your own tracks?
- A. Not even our own tracks.

(Transcript, vol. 7, p. 16)

Mr Kruger also proceeded onto the active runway in Red 1 moments after the F-28 had taken off. His observations of the runway condition to the west of taxiway Alpha support the observations of Chief Parry and Gary Rivard:

- A. Trying to look back and visualize it, I can only describe it as black and wet.

(Transcript, vol. 26, p. 110)

## Observations Shortly after the F-28 Takeoff

Mr Norbert Altmann, the NorOntair captain, testified that at approximately 12:30, only 20 minutes after the takeoff of flight 1363, he observed the ramp area in front of the terminal to be clear, black, and covered with wet slush which was one-half inch deep. Mr Altmann's Twin Otter departed Dryden at 12:50 p.m. bound for Red Lake, with Martin Gibbs as the co-pilot. The Altmann/Gibbs aircraft was the first aircraft to taxi to the east end of the runway after the departure of Air Ontario 1363.

First Officer Gibbs described the ramp and easterly portion of the runway, that is, between taxiway Alpha and the button of runway 29, as then having "about a half inch of slush on them." He testified that he was able to see the tracks created in the slush by the F-28 when it backtracked to the threshold of runway 29:

- A. ... About halfway down on the backtrack on runway 29, I noticed the F-28 tracks from his backtracking. At that point, I decided to take note of them to see how far down the runway they went, and they went right to the threshold of runway 29.
- Q. Now, how thick do you estimate the slush to be?
- A. Still, it was about a half inch, a quarter to a half inch of slush.
- Q. And was it white or could you see the tarmac or the runway?
- A. It was - it was melting. You could see the darkness of the tarmac through it. It was not white.

(Transcript, vol. 23, pp. 30-31)

In cross-examination, Mr Gibbs reiterated as follows:

Q. You indicated that you saw what you thought were the tracks of the F-28 on 29 about halfway down 29.

Can you tell me if those tracks were continuous to what you described as the threshold of 29 or were they intermittent ...

A. They were – from the point that I first observed them, they were continuous, and I believe it was the taxi portion of his departure there. I noticed them right to the threshold where they turned around. Once we straightened out, lined up for takeoff, could see his tracks and our tracks at the same time.

Q. And were these tracks straight or was there any differential to them?

A. As I recall, they were straight.

Q. Were there three tracks or two?

A. I recall three tracks.

(Transcript, vol. 23, pp. 42–43)

Captain Altmann, testifying as to the condition of the runway at this time, corroborated First Officer Gibbs's evidence and stated that there was one-half inch of slush on the runway between taxiway Alpha and the threshold of runway 29:

A. Taxiing out, we back-taxed for departure off of runway 29, which would be going westbound. On the taxi out, I taxied down the middle of the runway. I was looking for foreign objects that might have come off the jet, pieces of shrapnel, whatever, you know, the – having realized that the airplane had crashed, there might be pieces of metal and shrapnel laying on the runway, and I was looking for that.

Q. Did you observe any contamination on the runway, slush or snow?

A. No snow. I would say a thin layer of slush, half an inch thick. That's not a problem for the Twin Otter. I didn't notice the tracks of the other aircraft, the F-28. My co-pilot did notice that. However, my main concern was looking for debris on the runway so that I wouldn't run over it.

(Transcript, vol. 22, pp. 200–201)

The evidence of various witnesses clearly establishes that at the time of the takeoff of flight 1363 there was a buildup of slush, approximately one-half inch in depth, on the eastern half of runway 29 up to the vicinity of taxiway Alpha, and that the western end of the runway was bare of slush but wet.

## Findings

- A heavy snow squall covered the entire eastern half of the Dryden airport, extending from taxiway Alpha eastward, between the time flight 1363 departed the terminal area and its takeoff on March 10, 1989.
- The snowfall increased in intensity and continued to fall heavily during the entire period from the time that the F-28 entered the runway and taxied eastward to the threshold of runway 29, at approximately 12:07:00 p.m., until after its takeoff, which commenced at approximately 12:09:40 p.m.
- There was an accumulation of at least one-half inch of wet, layered snow on the wings of the F-28 as it began its takeoff roll.
- The snow on the forward part of the wings of the F-28 aircraft, the area most critical to aircraft lift, froze and crystallized to form dull, greyish opaque ice, of a rough sculptured-carpet texture, during the takeoff roll, while some of the snow on the back part of the wings was blown off.
- The usual point of rotation of the F-28 aircraft during routine takeoffs, observed on other occasions, from runway 29, was at a location prior to taxiway Alpha, some 3100 feet to the west of the threshold of runway 29.
- After a longer than normal takeoff roll, the F-28 aircraft, C-FONF, was rotated near taxiway Alpha, at approximately the 3500 foot mark. The aircraft lifted off slightly, began to shudder, and then settled back down onto the runway.
- The takeoff roll then continued and the aircraft was rotated a second time, finally lifting off at approximately the 5700 mark of the 6000 foot runway. It flew over the end of the runway approximately 15 feet above the ground. It thereafter failed to gain altitude and mushed through the air in a nose-high attitude, before commencing to strike trees.
- There was an accumulation of between one-quarter inch and one-half inch of wet slush on the runway as the F-28 aircraft entered the runway at approximately 12:07:00 p.m. and commenced back-tracking to the button of runway 29.

- At the time of commencement of the takeoff roll by C-FONF, 12:09:40 p.m., there was a runway surface accumulation of slush between one-quarter and one-half inch in depth extending from the threshold of runway 29 to taxiway Alpha. The remainder of the runway, being in the airport area to the west of taxiway Alpha, and not affected by the snow squall, was bare of slush but wet.

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# 7 THE CRASH AND THE RESPONSE

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## The Crash

Air Ontario flight 1363, after a longer than normal takeoff run, rotated and struggled into the air about 4000 feet down the runway. It settled back onto the runway and continued its takeoff run before lifting a few feet into the air virtually at the end of the runway. The aircraft was unable to gain any altitude. It began contacting trees 127 metres from the runway end and then barely cleared a treed rocky bluff some 700 metres west of the runway, before going down into a wooded area, coming to rest 962 metres from the end of the runway.

Standing on the tarmac outside the terminal building, Mr James Esh, who described the events in his testimony to the Commission, continued to watch after the aircraft left the ground:

Q. Did the aircraft climb at all?

A. No, it didn't.

Q. And what happened next?

A. Then I could remember hearing the engines still screaming away, and then there was a – about half a second of – or a second of just silence. Then there was a big orange or red fireball with a mushroom cloud of black smoke.

(Transcript, vol. 24, p. 204)

Mr Craig Brown of Terraquest Ltd saw the aircraft disappear behind trees:

A. After one- or two-second delay, there was smoke and a fireball.

He described the smoke as “very black and with orange glowing flames in it” (Transcript, vol. 5, p. 234).

After contacting the first treetop, the aircraft continued another half kilometre, striking more treetops and leaving a trail of wreckage before hitting a substantial number of trees while clearing the top of a wooded knoll. Fire broke out on the left side of the aircraft as it descended beyond the knoll, and its left side struck the ground first. It came to a stop against a stand of trees, breaking into three pieces (see figure 6-1 in the preceding chapter, Takeoff and Crash of Flight 1363). The tail section faced forward, the main section of the fuselage turned to the left of the

tail section, and the cockpit section rotated further to the left of the fuselage, so that the main wreckage formed an approximate u-shape.

The fire followed the aircraft path until the aircraft finally came to rest. After the crash, fire was confined to the crash site and to the trees along and beside the trail of wreckage. Infrared photography reveals the charring of trees that occurred during the crash fire. The fire gutted the fuselage from the interior of the cockpit back to the rear pressure bulkhead, but left part of the right side of the fuselage in place, with the exterior paint scheme charred but recognizable (see colour plates).

## **Crash Fire Rescue Response at the Terminal**

The primary objective of crash, fire-fighting, and rescue (CFR) services is to save lives in the event of an aircraft accident or an aircraft or airport fire, and the emphasis is on CFR personnel providing a fire-free escape route for passengers and crew. A secondary objective is to preserve property by containing, or extinguishing where practical, any fire resulting from an aircraft accident or incident.

As of March 10, 1989, the airport at Dryden, Ontario, was equipped and staffed according to Transport Canada's requirements for CFR services. The complement of CFR unit staff at the Dryden airport was as follows: Ernest Parry, chief of the unit, with six years' service; crew chiefs Stanley Kruger and Bernard Richter and fire-fighter Gary Galvin, each with six years' experience; and two other fire-fighters, Kenneth Peterson and Gary Rivard, each with one year's service. Three CFR vehicles were involved in the events of that day: Red 1, a rapid intervention vehicle, driven by Mr Kruger; Red 2, a tanker truck, driven by Mr Rivard; and Red 3, a utility van, driven by Chief Parry.

Red 1 had returned to the fire hall, and Mr Rivard had just finished washing down the fuel spill by the terminal building when he was told that flight 1363 had probably gone down. He immediately drove Red 2 to the end of the runway. Chief Parry noticed Red 2 proceeding at speed towards the active runway, realized that something was wrong, and drove out onto the runway behind Red 2.

Both Red 2 and Red 3 drove west at a high rate of speed on the active runway. When it became obvious that they could not reach the location of the smoke from the runway, both vehicles turned around and proceeded back towards the terminal area. Chief Parry testified that while he was still on the runway he was fairly certain that the aircraft had crashed. He left the active runway in Red 3 at taxiway Alpha. Red 2, turning at high speed, skidded off a service road, got stuck in a snow bank, and had to be pulled out by airport employee Christopher Pike using a front-end loader. Mr Rivard then topped up Red 2 with water to replace what had been used washing down the fuel spill.



Between 12:09:29, when Air Ontario flight 1363 advised the Kenora Flight Service Station that it was about to roll, and 12:12:47, there were a number of radio communications questioning the whereabouts of the flight and involving Chief Parry in Red 3, Kenora FSS, and air traffic control out of Winnipeg. At 12:12:47 Chief Parry advised that the aircraft might have gone down west of the airport, since smoke could be seen in the distance, and further advised that he was proceeding in that direction. At 12:14:00, Chief Parry advised the Town of Dryden police dispatch that he suspected the F-28 jet had gone down approximately three or four miles west of the runway and requested that the mutual aid and emergency plan be activated.

### **At the Air Ontario Counter**

After the crash of flight 1363, Mr Vaughan Cochrane, the Dryden Flight Centre general manager, went to the Air Ontario counter and called London SOC. He also told Ms Jill Brannan to “lock everything up, we just had a crash” (Transcript, vol. 20, p. 121). She testified that she gathered all papers relating to the crash, such as flight manifests and passenger lists, and locked them in a drawer at the counter. Later that afternoon, the contents of the drawer were given to Mr Cochrane, who took them to the Dryden Flight Centre office. Ms Linda Harder, the senior Dryden Flight Centre passenger agent, testified that when she arrived at the airport at about 2:00 p.m. she sealed the documents in an envelope:

- Q. And the documents which we were talking about, Mrs Harder, generally what did they constitute?
- A. The passenger manifest, the lifted ticket coupons, the messages that had been received pertaining to the flight from previous downline stations.

(Transcript, vol. 25, p. 116)

Despite the best efforts of Commission staff, these documents were never located.

### **At the Scene**

Chief Parry in Red 3, joined by Stanley Kruger in Red 1, left the airport property via the airport’s public access road and thereafter travelled westward by public highways to McArthur Road and Middle Marker Road. Chief Parry positioned Red 3 at the intersection of the two roads, unlocked the gate leading into Middle Marker Road, and waved Red 1 down that road. It was estimated that Chief Parry arrived at the

intersection at approximately 12:18 p.m. He established a command post there.

The aircraft had crashed in Wainwright Township, an area under the overall command of the Ontario Provincial Police. The fire-fighting responsibility for this location was held by the Unorganized Territories of Ontario (UT of O) Fire Department under the direction of Chief Roger Nordlund. Chief Parry, however, was the first responsible fire-fighting official to arrive near the crash site. He testified that, when he established the command post, he in fact had "no official jurisdiction" at the site, but was simply responding to the situation.

The first OPP officer to arrive at the site was Sergeant Douglas Davis, who testified that he arrived at the intersection at approximately 12:30 and assumed control of site access, egress, and security.

Two civilians, Mr Craig Brown and Mr Brett Morry, were the first persons to actually reach the crashed aircraft, making a path through the deep snow. Mr Brown and Mr Morry had left the terminal immediately on seeing the orange fireball and had driven towards Middle Marker Road. Finding the gate closed, they climbed over the fence and hurried down the road until they reached a point that seemed to be near the aircraft. They then made a trail through the waist-deep snow towards the smoke and sounds of fire. Arriving at the aircraft, they saw a number of survivors, some in quite good condition and others seriously injured.

Crew chief Kruger drove Red 1 nearly to the end of Middle Marker Road and parked. He then followed on foot the path made by Mr Brown and Mr Morry, carrying with him a portable radio and a first-aid kit weighing 11.5 kilograms. He initially estimated the distance from the road to the aircraft at 150 yards. As he came close to the crash site he encountered about 20 survivors, whom he directed to walk out to the road. These 20 to 25 survivors reached Middle Marker Road at approximately 12:32 p.m., just after Sergeant Davis arrived at the intersection. Sergeant Davis testified that he first saw them after speaking to Chief Parry, and that some of them appeared burned and had other injuries.

By the time Mr Kruger arrived at the aircraft, all but one of the surviving passengers had gotten out of the crashed aircraft. Mr Uwe Teubert and Mr Michael Kliewer, who had not yet been discovered, were trapped outside on the left side of the aircraft until approximately 1:10 p.m., when they were freed from the wreckage and attended to by rescuers including Dr Gregory Martin and Dr Alan Hamilton, both of Dryden. They were carried from the crash site and transported by ambulance to the Dryden hospital at 1:45 p.m. Mr Kliewer subsequently died.

During the hour and a half from 12:15 to 1:45, all other surviving passengers either made their own way to Middle Marker Road or were assisted by various persons from the Dryden airport CFR unit, the UT of O fire-fighting unit, the Town of Dryden fire-fighting unit, officers from the OPP, civilians, and by medical personnel from the Dryden Municipal Hospital.

Handlines from UT of O fire vehicles positioned on Middle Marker Road were not brought into the crash site until between 1:50 and 2:00 p.m. At approximately 2:00 p.m., one hour and 50 minutes after the crash occurred, foam was first applied to the fire, using the handlines. Mr Raymond Godfrey, a volunteer member of the UT of O Fire Department, was one of those who took the hose in from UT of O firetruck No. 4. He testified that about 10 or 12 people were involved in taking the hose into the crash site and that the operation took 5 or 10 minutes.

## **Crew and Passenger Injuries**

Twenty-one passengers and three crew members died as a result of the crash. Forty-four passengers and one crew member survived. Most of the passengers who died were seated in the left and front portion of the aircraft. The majority of the bodies recovered at the crash site were badly burned in the subsequent aircraft fire, which made it difficult to determine the various injuries and specific causes of death. All the fatalities were investigated and their body shift, major injuries, suspected cause of death, and gross estimate of survival time were documented. Twenty-two people died at the site and two died in hospital – Mr Kliewer approximately three hours after the crash, and Mrs Nancy Ayer approximately 11 hours after the crash. Of the 45 people who survived the crash, 18 required hospitalization. Appendix H at the end of this Report is a summary of the information on the fatalities and survivor injuries.

## **The Afternoon of March 10**

Two matters of significance occurred in relation to the Dryden airport on the afternoon of March 10. The evidence is that Red 1, 2, and 3, being all of the Dryden CFR fire-fighting equipment, left the airport to attend at the crash site. The last vehicle to depart the airport was Red 2, which left at approximately 12:30 p.m. It was not until 3:46 p.m. that a notice to airmen (NOTAM) was issued by the Kenora FSS to advise that CFR coverage was not available at the Dryden airport. At 4:30 p.m., after a Town of Dryden firetruck arrived at the airport CFR fire hall, a further

NOTAM was issued by Kenora FSS, advising that CFR coverage was again available at Dryden. From approximately 12:30 p.m. until 4:30 p.m., there was no CFR coverage available at the Dryden airport, and from 12:30 p.m. to 3:46 p.m. there was no notification of this lack of coverage. There were landings and takeoffs at Dryden airport during these hours, as was shown by the evidence of several witnesses and by notations made in the daily air traffic record for that day. Mr Peter Louttit, the airport general manager, testified that the failure to issue the NOTAM in a timely manner was a technical error that should not have occurred.

At approximately 2:00 p.m. Mr Louttit asked Mr Arthur Bourre to look for debris on the runway. Mr Bourre had worked for the Town of Dryden for approximately ten years, nine years as a weather observer and most recently as an equipment operator. He drove out the maintenance road east of taxiway Alpha and onto the active runway. He travelled along the north side of the centre line to the button of runway 29, turned around, and drove back on the south side of the centre line to the button of runway 11. He testified that the runway was covered with slush, which was deeper and whiter towards the east. He estimated that the slush was from three-quarters to one and one-half inches deep. His evidence leaves no doubt that the snowfall over the eastern half of runway 29/11 did not abate until some time after the takeoff of flight 1363.

As he proceeded to the button of runway 11, the slush diminished, and he estimated that the slush at that end was at least three-quarters of an inch deep. Although Mr Bourre did not perform a James Brake Index test, it was his assessment that "it [the runway] was very slippery, and, in my estimation, the braking action was nil" (Transcript, vol. 28, p. 133). The slippery condition of the runway was reported to Mr Louttit at approximately 2:30 p.m. He took no immediate action to have the runway cleaned but simply told Mr Bourre "to stand by" (Transcript, vol. 28, p. 134).

Mr Bourre observed pieces of ice sticking out of the slush on the runway between the maintenance access road and taxiway Alpha. Although he was not certain of the origin of this ice, it was his opinion that it had come from the CFR vehicles that had driven on the runway. Evidence as to the origin of the ice was inconclusive.

## Removal of the Bodies

Sergeant Paul Miller of the OPP Technical Identification Services Unit in Kenora, Ontario, was assigned as the identification officer responsible for the Dryden crash. He arrived at the Dryden OPP detachment at approximately 6:00 p.m. on March 10, and reported to the crash site at approximately 7:30 p.m. After touring the crash scene, he formulated a plan for recording and examining the site and removing the bodies from the aircraft wreckage.

Before Sergeant Miller arrived, another OPP officer had marked the locations of 21 individual bodies in the aircraft, with another subsequently identified for a total of 22. On Saturday, March 11, Sergeant Miller initially viewed the site by air and prepared a video of his observations. He and other OPP officers arrived at the crash site at approximately 11:00 a.m. No remains were removed from the aircraft until after the Canadian Aviation Safety Board (CASB) investigators attended at the site and, in conjunction with the police investigation on March 11, photographed and documented the position of the bodies. Measurements of the wreckage were taken, and the locations of bodies were identified and marked precisely. Removal of the bodies commenced in the early afternoon. The bodies of 11 people had been removed by the time hazardous working conditions caused by darkness stopped the work on Saturday. The remaining bodies were removed from the aircraft wreckage on Sunday, March 12. All the bodies were taken to a temporary morgue set up at the Dryden arena under the security of the OPP. Because of poor weather conditions, the remains were transferred from Dryden to Thunder Bay by ground transport rather than by air. They were then transported from Thunder Bay to Toronto via an Air Ontario Convair aircraft. Sergeant Miller accompanied the remains from Dryden to Thunder Bay and Toronto.

Upon arrival at Toronto the bodies were transported to the Forensic Pathology Branch of the Ministry of the Solicitor General on Grenville Street, arriving at approximately 8:15 p.m. on March 13. It should be noted that, in addition to the bodies removed from the aircraft, the body of Michael Kliever, who died at the Dryden hospital, was also transported from Dryden to Toronto.

Post-mortem examinations were performed in Toronto between March 14 and March 22, 1989. Mrs Nancy Ayer, who survived the crash, subsequently died at Winnipeg Memorial Hospital and a post-mortem was performed in Winnipeg, Manitoba, on the morning of March 14, 1989.

## **Finding**

- The F-28 aircraft failed to gain altitude after takeoff, maintaining a flat, nose-high flight path until it began impacting trees 127 metres from the runway end. It barely cleared a treed rocky bluff 700 metres west of the runway before going down into a wooded area where it broke up into three sections, coming to rest 962 metres from the end of the runway.

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# 8

# DRYDEN AREA RESPONSE

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## Emergency Services

At 12:14 p.m. on March 10, 1989, while en route to the crash scene, CFR Fire Chief Ernest Parry made the following transmission to the Town of Dryden police dispatch:

This is Airport Red 3. We suspect we have an F-28 jet down approximately 3 or 4 miles west of the runway. Please activate the mutual aid and emergency plan.

(Dryden Dispatch Fire Tape)

In so doing he initiated the mobilization of all the emergency assistance available in the area. This one radio call resulted in the notification of the emergency to three fire departments, the Dryden Police Department, the Dryden hospital, the Dryden Ambulance Service, and the Ontario Provincial Police (OPP).

## Mutual Aid

There are three fire departments in the Dryden area, the Dryden airport crash, fire-fighting, and rescue (CFR) unit, the Town of Dryden Fire Department, and the Unorganized Territories of Ontario (UT of O) Fire Department. On March 10, 1989, the CFR unit at the Dryden airport was the only full-time, professional fire-fighting team in the area. The Town of Dryden's Fire Department is a volunteer unit and only the chief is a full-time fire-fighter. The UT of O Fire Department, which responds to fires in the townships of Aubrey, Van Horne, Wainwright, Britton, Eton, Rugby, and part of Zealand, is an entirely volunteer force. The crash site was in Wainwright Township, west of the airport and north of the town limits of Dryden, and therefore within the fire response area of the UT of O Fire Department.

The UT of O Fire Department was established in 1981 with some equipment and funds provided by the Ontario Ministry of Northern Affairs and the Office of the Ontario Fire Marshall in addition to local funds. At the present time, each landowner in the area pays a small levy to support the operation of the department.

The department has two fire halls and a complement of 23 men. Fire hall number 1, located on Highway 7 in Wainwright Township, contains a rapid attack truck, a tanker truck that carries 1000 gallons of water and a port-a-pond, and an equipment van. The port-a-pond consists of a collapsible steel framework and a canvas liner. When set up, it forms a pond into which the tanker, or other water-carrying vehicle, can quickly dump water. The attack truck can draw water from this pond and pump it onto the fire while the tanker returns to a supply point to refill. Fire hall number 2, on Highway 502 south of Dryden, contains another rapid attack truck and a pumper that carries 750 gallons of water.

At the time of the crash, agreements for mutual aid were in force between the Town of Dryden and the airport CFR unit, and between the Town of Dryden and the UT of O Fire Department. As part of the mutual aid agreement, the Town of Dryden provides dispatch services for the UT of O Fire Department. All calls from the UT of O area are received by the Dryden police dispatch, which then sounds the alarm via pagers carried by all the UT of O volunteer fire-fighters.

These three fire-fighting units, all of which responded to the crash site, were also members of the Kenora District Mutual Fire Aid System. The document describing this system outlines its purpose as follows:

The role of the fire service ... is to develop plans to improve the effectiveness of fire protection facilities within the District of Kenora, to cope with large scale fires and emergencies which are beyond the ability of a single fire department or fire protection team to control.

(Exhibit 39, p. 1)

## **The Emergency Plan**

In his radio call on the way to the crash site, Chief Parry not only called for mutual aid to fight the fire, but also asked that the Town of Dryden Peacetime Emergency Plan be activated.

Dryden had had a rudimentary emergency plan for a number of years. In 1979 the town council decided that, because both the Trans-Canada Highway and the main line of the CPR run through town and many chemicals are used in the large pulp and paper mill that is the town's major employer, the plan should be formally reviewed, updated, and approved by the council.

Dryden Fire Chief Louis Maltais undertook this task and the Peacetime Emergency Plan was adopted by council in January 1980. The aim of the plan is as follows:

To lay down a plan of action for the efficient employment of all services required in order that the following be assured:



- (a) The earliest possible response to an emergency call by all services that may be required.
- (b) An operations control facility be established at the scene and/or elsewhere according to the nature of the emergency.
- (c) Crowd control be imposed so that operations are not impeded and that additional casualties are avoided.
- (d) The rescue of trapped persons with the minimum of delay and the provision of first aid at the site.
- (e) Provisions of controlled evacuation and balanced distribution of casualties to hospitals.
- (f) Immediate action taken to eliminate all sources of potential danger in the area of the incident.
- (g) The evacuation of buildings considered to be in a hazardous situation.
- (h) Provision of such social services as may be required for personnel.
- (i) Restoration of normal services.
- (j) Factual official information be available at the earliest time to:
  - (i) officials involved in the emergency operation
  - (ii) the news media to allay anxiety and to reduce the number of onlookers at the scene
  - (iii) concerned individuals seeking personal information

(Exhibit 3, p. 2)

The Peacetime Emergency Plan outlines how it can be activated, how the control facility should be established, and who has authority over various areas within the plan. It was tested a number of times through the running of mock disasters, and amended as problems were discovered.

The emergency plan outlines the composition and responsibilities of the emergency operations control group in a section that begins as follows:

All emergency operations will be directed and controlled by a group of officials responsible for providing the essential services needed to minimized [sic] the effects of the emergency.

This is known as the emergency operations control group and is made up of the following:

1. Mayor or alternate
2. Police Chief or alternate
3. Clerk-Administrator or alternate
4. Fire Chief or alternate
5. Town Engineer or alternate
6. Hydro Manager or alternate
7. Telephone Manager or alternate
8. Building Inspector or alternate

9. Medical Office of Health, Northwestern Health Unit or representative
10. Administrator, Social and Family Services or alternate
11. Emergency Planning Officer

(Exhibit 31, pp. 2-3)

Mr Maltais was designated the emergency planning officer under the plan and was responsible for ensuring that the control centre equipment was in place and ready for any emergency.

### **Town of Dryden Police Dispatch**

The Dryden police dispatch is located in the Dryden police station and serves not only the town police, but also the ambulance and fire services of the area, including the UT of O Fire Department. When a call is received, an alert tone is transmitted, followed by an announcement of the type of emergency and its location. This announcement is repeated three times. All the volunteer fire-fighters of Dryden and the UT of O departments carry pagers that can pick up the tone and the announcement.

### **Dryden Ambulance Service**

The Dryden hospital holds a licence from the Ontario Ministry of Health to operate two ambulances that provide service to the Dryden area. The ambulance attendants are hired and paid by the hospital, which is funded by the ministry for these services.

The ambulance service uses both full-time and volunteer ambulance attendants. The full-time attendants require an emergency medical care attendant certificate from a community college. The volunteer attendants must have knowledge of basic first aid and cardiopulmonary resuscitation (CPR).

When necessary, the Dryden police dispatch alerts the ambulance service by telephoning the hospital emergency desk. The on-duty emergency nurse takes the call and then dispatches the ambulance, either by telephone if the attendants are in the hospital or by radio if they are on the road. There is no one assigned full time to answer ambulance calls and dispatch the vehicles.

## **Preparing for an Emergency**

### **The Dryden Airport**

At the time of the air crash on March 10, 1989, the Dryden Municipal Airport Emergency Procedures Manual had not been approved by Transport Canada. The manual had been submitted to Transport Canada for approval, but changes to the manual suggested by the regulator were

disputed by the airport manager at Dryden. These disagreements had still not been resolved by 1989.

On January 29, 1988, Chief Parry of the Dryden airport CFR unit sent a copy of the revised emergency manual for the Dryden airport to H.J. Bell, regional director-general, Airports Authority Group, Transport Canada. The manual was reviewed by Mr Desmond Risto, regional airports disaster planning and protective services officer, who responded to it on February 12, 1988, in a memorandum addressed to the airport manager, Mr Peter Louttit. Mr Risto pointed out a number of concerns regarding the manual, including the lack of specific instructions for Kenora Flight Service Station (FSS) in case of an emergency. He also noted that Kenora should be sent a copy of the existing manual, which could then be updated as revisions took place. Mr Risto testified before me that, to his knowledge, the manual was never sent to Kenora. During an exercise in November 1988, CFR was not called out by Kenora FSS for eight minutes because a new controller was not aware of the responsibility to do so. In spite of this, the unapproved manual had not been sent to the Kenora FSS as of the time of the crash.

In his memorandum of February 12, 1988, Mr Risto had indicated that a number of required items were missing from the draft manual:

- 7) There are eleven (11) sections that the AK identifies that *must* be included in the manual as a minimum. There does not appear to be any thing covering the headings Medical Emergency, Natural Disasters, Hazardous Material Handling or Persons of Authority.

(Exhibit 209, p. 2)

In his testimony, Mr Risto was asked about the missing items referred to in his memorandum:

- Q. ... Were these matters all lacking in the existing Dryden manual?
- A. They were nonexistent.
- Q. All right. And when we talk about persons of authority, what does that mean, sir?
- A. The persons of authority identifies who, for example, would be responsibilities of the airport manager, the responsibilities in authority of the Town of Dryden Fire Department or the Fire Chief of the Unorganized Territory of Ontario, the responsibilities – there – of the head of the Ontario Provincial Police.

(Transcript, vol. 30, p. 79)

At the end of the letter, Mr Risto informed Mr Louttit that a generic manual had been developed for Red Lake that might assist him in

developing a final manual for Dryden. He promised to forward this sample manual to Dryden for their information.

On May 3, 1988, Mr Louttit acknowledged receipt of the approved Red Lake manual and advised Mr Risto as follows:

While there appear to be advantages to both approaches, we prefer our own format for the time being. We are returning the Red Lake manual to you and shall make the necessary changes in our manual, as noted by Mr Risto, and forward it for approval.

(Exhibit 212)

Throughout the correspondence between Dryden and Transport Canada, there are references to, among other things, matters of nomenclature. Transport Canada continued to request the use of nationally accepted acronyms, while the Dryden airport manager preferred to use local terms. On March 1, 1989, just 10 days before the crash, another revision was forwarded to Transport Canada. Again, Transport Canada noted problems with terminology. It appears as though this preoccupation over nomenclature overshadowed the resolution of the more important problems with the plan, and, on March 10, 1989, there was no approved emergency plan for the Dryden airport. Whatever the disputes, Transport Canada had the authority and the power, through lease and subsidy agreements, to insist that the plan be written in an acceptable manner, including the use of nationally accepted acronyms. As well, there is no logical reason why the Dryden airport management could not have agreed to the request of Transport Canada in view of the fact that it is Transport Canada that sets the standards and assesses the completeness of emergency plans.

### **Exercises Involving Crash, Fire-fighting, and Rescue**

It is the policy of Transport Canada that each airport CFR unit should test the readiness of personnel and equipment to respond to an emergency. Every two years, each airport is expected to run a full-scale exercise involving a simulated aircraft crash with response by off-airport agencies, such as police, ambulance, and local fire departments; this exercise is evaluated by Transport Canada representatives. In the alternate years, a locally evaluated exercise should be run to test individual parts of the response mechanism.

Full-scale exercises were held at Dryden in 1985 and 1988. In both cases, all responding agencies were involved in the planning and execution of the exercise. The 1985 exercise was originally scheduled for December 18, 1984. Unfortunately, the day before the planned exercise, "torrential rainfall fell throughout the whole area" rendering some roads

impassable, and the exercise was postponed. Because of a reluctance on the part of the CFR unit to carry out a training exercise in winter weather conditions, the exercise was rescheduled, finally taking place on November 23, 1985. While one can understand the reluctance to carry out training exercises in winter, the failure to do so ignores the fact that aircraft crashes can and do occur in winter weather conditions.

The November 1985 exercise was code-named Bravo Two and the scenario involved an aircraft that had problems on takeoff, came back down on the runway, and skidded to a stop at the west end of the runway, where it broke up. The exercise was organized by crew chief Stanley Kruger, and the on-site coordinator (OSC) was the senior CFR member on duty, Mr Bernard Richter. The exercise involved all of the major emergency agencies in the area, including the UT of O Fire Department, Dryden Fire Department, Dryden hospital, OPP, Dryden ambulance, the Red Cross, and the Dryden police. Chief Parry was one of the evaluators of the exercise.

Overall, Bravo Two was a beneficial exercise. Certain major problems were identified in the evaluator's report. The OSC moved from place to place and it was difficult for him to be found and identified during the emergency. It was emphasized that the OSC should remain in one place for easy identification and communication. In addition, the response of the OPP was thought to be slow. From the time of the original alarm, 40 minutes elapsed before an OPP officer was observed at the scene. He apparently had initially been sent to the wrong location. The report also noted that no body count, protection of property, photography, or identification work was undertaken or simulated.

In 1986, a local communications exercise was held. While a number of elements were tested, the most important involved the communications equipment and procedures. Significantly, the exercise critique noted that a common radio frequency was needed on which all agencies involved could be contacted. In this exercise, the airport manager was the OSC, and Chief Parry again was an evaluator.

The final report for the 1986 exercise was submitted to Transport Canada on January 14, 1987. In his covering letter to Mr Risto, Chief Parry remarked:

I see from your "Schedule of Exercises" that we are due for a full-scale exercise in 1987. With the present trend in funding this may not be possible. I'm sure your [sic] are working on the problem as it is not unique to Dryden but affects all airports. However, a policy statement on the status of exercises would be appreciated at this time, so it can be properly dealt with in the funding negotiations.

(Exhibit 229, p. 1)

No documentation was presented to the Inquiry to indicate that any planning whatsoever was done for a full-scale exercise in 1987, as mandated by the Transport Canada schedule. I am convinced that no such exercise was planned for 1987, and only a real incident allowed for any testing of the emergency systems in Dryden that year.

On November 9, 1987, the crew of an Air Ontario HS-748 cargo flight had problems lowering the undercarriage and diverted to Dryden, because of the presence of a CFR unit there, to make a wheels-up landing. This emergency was responded to by the UT of O Fire Department, Dryden ambulance, the OPP, and the airport CFR unit. Just before landing, the crew was able to lower the landing gear and a safe landing was made. This incident was then written up as a "Report on Emergency Exercise" and submitted to Transport Canada to fulfil the full-scale exercise requirement for 1987.<sup>1</sup>

Since Transport Canada did not evaluate the 1987 emergency, another full-scale exercise was scheduled for Dryden in 1988, and, on this occasion, advance planning included all the major agencies in the Dryden area. Again, the scenario involved an aircraft crash on airport property. Code-named Delta Four, the exercise was conducted on November 1, 1988, just four months before the Air Ontario crash of March 10, 1989. Ironically, because of a problem with an oil-pumping mechanism, Chief Parry was unable to fuel or ignite the fire at the practice site. As a result, the exercise did not include any fire suppression activities.

Again, in this exercise, there was a problem with identifying the OSC. He was wearing a vest that identified him as the OSC, but his vehicle carried no such marking. Mr Stanley Kruger, the OSC, spent much of his time moving about to control and coordinate, rather than having responding agencies report to him. The Transport Canada evaluator's report, prepared by Mr Risto, commented on one of the deficiencies noted:

Having two fire trucks at the scene and as a member was required to take on the duties as OSC and the fact that there was no fire, OSC

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<sup>1</sup> Exhibit 50, Transport Canada AK-13-01-002, Policy, Standards, and Guidelines for the Development of an Airport Disaster/Emergency Plan and the Conduct of Exercises at Transport Canada Airports, states as a Note to section 2.02 (b): "Should a real emergency situation occur at a Transport Canada airport (such as a real crash or an actual hijacking), which necessitates a full response to the airport from all participants included in the airport's emergency plan (i.e., police, hospitals, fire departments, coroner, etc.), the yearly requirement to hold that specific exercise will be considered to have been met."

should have relocated his vehicle closer to the only access road. This would have given him immediate identification and control.

(Exhibit 236, p. 2)

Both of the full-scale exercise reports which were put in evidence identified problems with the role of the OSC. It is unfortunate that a fire was not lit in the course of this exercise. If it had been, the problems and responsibilities of the OSC would have been identified in a much more realistic and effective manner. On the day of the crash of flight 1363, Chief Parry positioned himself at the only access road to the crash site to direct and control, as the exercise reports suggested, but, unlike the exercise, there was a fire to fight.

In his report of the 1988 exercise, Mr Risto complimented the UT of O Fire Department for its role in the exercise:

Good response of "numbers" of personnel. Handlines extended, maintained and manned throughout exercise, which was exceptional.

(Exhibit 235, p. 2)

In the local debriefing that followed the November 1, 1988, exercise, communications were again identified as being the primary problem. Chief Parry was the acting airport manager at the time of this exercise and therefore responsible for setting up the control centre in the airport terminal building. In this role he called in the various agencies that were required, and coordinated the sending of them to the site upon their arrival at the control centre. Although he was able to communicate with the town dispatcher, he was not able to contact the OSC, Mr Kruger, on the same radio frequency. Some of the verbatim comments from the local debriefing with respect to this exercise are reproduced below:

Roger Nordlund stated there [sic] biggest problem was there was no one around to direct them to the crash site and organization was lacking.

The hospital had problems responding because of no clear indication of where the incident took place and there was poor communications with the site after the ambulance did arrive there was no indication of how many casualties were involved.

Also there was a problem with the Red Cross registration, this was going to be resolved. There was a problem with the ambulance staff being able to identify the on scene commander with all of the emergency vehicles bunched in and around the scene of the accident.

John Callan spoke regarding communication with the emergency control group and the frustration caused by not being able to keep track of what is going on. He mentioned that the most obvious solution to the problem was a common frequency which would be used by everyone.

Larry Moore spoke for the OPP and their problems were also communication he was wondering whether one common frequency would be enough and could one operator be able to handle the traffic. The OPP new radio system will not be in place before April 1992.

(Exhibit 236, attachment number 3, p. 2)

This lack of a common frequency was noted by many as the single biggest problem revealed by the exercise and it was a problem that would recur on March 10, 1989.

A review of the tasks performed by the Dryden CFR unit personnel in the three exercises discussed above shows the following:

- During exercise Bravo Two in 1985, Mr Kruger organized the exercise, Chief Parry was an exercise evaluator, and Mr Richter, the senior CFR person on duty, was the OSC.
- During the local communication exercise in 1986, the airport manager was the OSC, and Chief Parry was an evaluator.
- During exercise Delta Four in 1988, Mr Kruger was the OSC and Chief Parry was the acting airport manager.

As can be seen, Chief Parry never acted as the OSC or as the chief of the Dryden CFR unit during any reported exercise between 1985 and the time of the Air Ontario crash. There was no evidence found that showed that any Dryden airport manager or Transport Canada official was concerned about the lack of training for Chief Parry in his primary role, that of the CFR chief, although there is evidence that Transport Canada was concerned with the training, in general, of the CFR unit.

The exercises at Dryden normally involved an aircraft accident scenario, and the primary goal of such aircraft accident responses should be the preservation of life and property. On an airport, or in the immediate vicinity, this response is provided by the CFR fire-fighters, including the chief. Having the chief or one of his crew chiefs act as the OSC for an exercise does not allow the entire CFR unit to benefit, as fire-fighters, from the exercise. In the case of an emergency, it is not in the best interests of the occupants of the crashed aircraft, or in the advancement of aviation safety (preservation of evidence), to divert fire-fighters to duties other than those directly related to fire-fighting and evacuation. It is somewhat unfortunate that neither the Dryden airport supervisors, including the airport manager and the CFR chief, nor Transport Canada evaluators saw this as a problem. Had the duties and responsibilities of an OSC been defined better in the emergency plan, and those persons who could act as the OSC been named, it is unlikely that Chief Parry would have been acting as the OSC on March 10, 1989. He would have been acting as a fire-fighter and directing other fire-fighters, as required



by Transport Canada CFR policy documents, to fight the fire on C-FONF.

### **Town of Dryden**

In his testimony, the mayor of Dryden, Mr Thomas Jones, was justifiably proud of the fact that he and other members of his council had attended the Emergency Preparedness College at Arnprior, Ontario. In fact, 16 municipal employees of the Town of Dryden, in addition to the elected members, had attended at least one of the courses at the college. In order to test its emergency plan, the Town of Dryden cooperated fully in planning and executing the exercises at the airport. Its participation in the Delta Four exercise resulted in a number of changes that assisted in the town response to the crash on March 10. In his testimony, Fire Chief Louis Maltais related what was learned from their participation in that exercise:

At the November exercise ... we used a building – a room off of the police station as Emergency Control Room. And it was found at that time it was inadequate. There was too much traffic: security was a problem and a decision was made after this exercise to move to a room in the fire hall.

And it was also identified at the time of this exercise that we did not have enough telephone phones, outside lines. So, from that, we installed extra telephones in this other room.

We also found that radio communications were very poor. We couldn't ... contact the airport from where they ... had a command post. So that was recognized.

So, we established a communications committee who, in turn, worked with the amateur radio group and from there we established them as a group of people that we would certainly be using in the event of an emergency.

(Transcript, vol. 4, pp. 100–101)

Having learned some lessons in November before the accident in March, the Town of Dryden had moved the location of their control centre to the fire-fighter's lounge in the fire hall, installed new telephone communications, and was working to improve the radio communications.

### **Observations**

I am struck by the difference between the Town of Dryden and the CFR unit at the Dryden airport in reaction to the problems encountered in the Delta Four exercise. The town made changes based on deficiencies noted during the exercise. The CFR unit was to make many of the same mistakes again.

It seems that Transport Canada, despite the fact that it subsidizes airports such as Dryden, is reluctant to use its fiscal power to ensure that problems identified in exercises are corrected by the personnel involved. In 1988 during Delta Four, some of the same problems were identified as in the Bravo Two exercise of 1985. In an area as critical as crash, fire-fighting, and rescue, there should be no reason for professionals to make the same mistakes in two consecutive exercises.

Evidence was produced which showed that, at both Thunder Bay and Dryden, real incidents were substituted for exercises for reporting purposes. Although this substitution is permitted, in the case of the Dryden HS-748 incident there was, in fact, no accident. Emergency services were called out to deal with an anticipated problem, but the aircraft landed safely. Accordingly, there was no need for any site coordination, fire-fighting, or rescue. Based on the evidence, if this emergency had not occurred, Dryden would not have had even this limited test of its emergency response systems in 1987.

The evidence before me indicated that Chief Parry never assumed a fire-fighting role during the exercises. He usually acted as an evaluator, and on the one occasion he was a participant in an exercise, he was the acting airport manager and was therefore removed from the actual exercise "crash site." It would seem that, if an exercise is meant to simulate a real event, all personnel should play the roles that they are expected to fulfil in an emergency.

During the hearings, I heard a great deal of testimony regarding the responsibilities of various agencies within the critical rescue and fire-fighting access area (CRFAA) and I expected that, if Dryden had had an approved airport emergency manual, it would have delineated these responsibilities. However, I have reviewed the Thunder Bay Airport Emergency Procedures Manual (Exhibit 202), which has been approved by Transport Canada, and could find no reference to the CRFAA. In fact, in referring to off-airport crashes, the manual states:

- A) Airport [sic] crashes off airport will be under the authority of the Municipal Authority or the Police Force for that area.

The clear impression I received from reading this approved manual was that the airport CFR unit would only be responsible for aircraft crashes on the airport property itself. Indeed, the manual shows a series of five-mile-diameter rings around the airport and describes what equipment may be sent from the airport CFR depending on the distance. It notes that CFR will respond "if requested" to a crash in the immediate vicinity but off the airport, and only "if it has been determined that the crash site is accessible and CFR can provide a useful service."

Although Transport Canada clearly defines what a CRFAA is, that by definition there is a CRFAA at every airport, and that there are prescribed requirements regarding the responsibilities of the CFR unit within a CRFAA, it is apparent that Transport Canada has not been rigid in requiring that airport managers adhere to the principles and practices regarding CRFAAs. As well, at least in the example in evidence, Transport Canada did not require that information pertaining to the CRFAA be included in airport emergency manuals. As the basis for the CRFAA is that most aircraft accidents occur within the area so described, it is my opinion that the response to aircraft crashes that occur within the CRFAA should be clearly delineated in all related documentation, including the airport emergency response plans.

## **The Emergency, March 10, 1989**

### **Implementing the Emergency Plan**

The Emergency Plan for the Town of Dryden is very clear on how an emergency should be declared and by whom:

- (a) This plan will be implemented as soon as an emergency occurs or is expected which is considered to be of such magnitude as to warrant its implementation.
- (b) This decision shall be made by the member of the Emergency Operations Control Group who received the initial warning and/or arrives first on the scene of the emergency.
- (c) At this time, this official will activate the alerting system, in whole or in part, be [sic] calling the Town of Dryden Police dispatcher, identifying himself, and giving all necessary and pertinent information and requesting that Operations Control Group be alerted.

(Exhibit 31, pp. 4-5)

The chief of the CFR unit at the Dryden airport is not listed in the emergency plan as one of those with authority to activate it. Chief Parry's radio transmission on March 10 was heard, however, by the Dryden fire chief, Mr Maltais, and the police chief, Mr Russell Phillips. Both of these men were members of the control group and, recognizing that the emergency was the type envisaged by the Peacetime Emergency Plan, they immediately activated the plan. Given the remoteness of the crash site from the town centre, the immediate call by Chief Parry to the Dryden police dispatch resulted in coordinated aid reaching the site in the shortest possible time. In this action, Chief Parry reacted in a responsible manner to be expected of a fire chief.

Within 10 minutes of Chief Parry's call, the police dispatch had called the Dryden and UT of O fire-fighters, the police chief had begun notifying other agencies, the emergency control room had been set up, the control group had been assembled, and the control group had made contact with Chief Parry at the crash site.

All calls by telephone or radio that are received by the Dryden police dispatch are recorded on an eight-track Dictalogue tape system. There are individual tracks, or channels, for all incoming and outgoing police telephone calls, 911 emergency calls, police radio calls, and fire department radio transmissions. The Dryden Fire Department radio frequency, called the fire channel, was the frequency to use for any mutual aid requirement. On the day of the crash, this frequency was used by the majority of the agencies that responded to the crash. The OPP, unfortunately, do not have the equipment to broadcast or receive on this frequency. A separate tape track records time, which when played against the other tracks allows the timing of events. The fire channel tape was checked against the time track and, unless otherwise noted, this record (Exhibit 1282) has been used to verify times used throughout this Report.

### **Chief Maltais and the Dryden Fire Department**

Fire Chief Maltais testified as to his actions after he heard Chief Parry's transmission at 12:14 p.m., a time when he was at his home for lunch. On hearing the radio transmission, he drove to the fire hall and went upstairs, where he knew most of the people who would make up the control group were assembled for a lunch. He called Mr John Callan, the town administrator, out of the meeting and informed him of the emergency. Mr Maltais then proceeded to the police office and ascertained that the chief of police was also informed. Proceeding to the fire-fighter's lounge, Chief Maltais began organizing the control centre, and he called the Dryden Telephone Company to ask for delivery of the telephone hand sets.

Chief Maltais then used the radio in a fire department vehicle to make contact with Red 3 at the site. In his initial transmission, made at 12:24 p.m., just 10 minutes after the original call declaring the emergency, Chief Maltais reported: "We have the control centre set up. You can make requests if you wish" (Exhibit 1282, p. 2). The radio in the truck remained the point of radio contact between the site and the town for the balance of the day.

At 12:27 p.m. Chief Maltais, at the request of Chief Parry, dispatched the Town of Dryden pumper truck, the suburban van that was usually driven by the chief and which contained rescue equipment, and 10 men to the crash site. These two vehicles, Dryden Fire 3 and Dryden Fire 5, arrived at the McArthur Road location at 12:44 p.m.

### **The UT of O Fire Department**

Since the crash occurred in an area serviced by the UT of O Fire Department, Dryden dispatch called out the volunteers of that department. The fire-fighters responded quickly to the announcement. The chief, Mr Roger Nordlund, was at his place of business next door to fire hall number 1 when the announcement came. He opened the hall and, shortly after, two fire-fighters left it with the rapid attack unit. Mr Gerald McCrae then arrived at the fire hall and was dispatched with the tanker truck. Other members of the department proceeded directly to the scene in their private vehicles.

Chief Nordlund testified that he heard the alerting message only once and, since it was not repeated two more times as was the procedure in an emergency, he assumed that this was an exercise. On that assumption, he returned to his place of business, where he received a telephone call from Dryden dispatch asking for confirmation that the message had been received. Now convinced that this was an emergency, he got into his private vehicle and proceeded to the scene.

Many others who responded to the scene also felt they were attending an exercise. The scenario for the exercise that had been held the previous November involved an aircraft crash at the airport. Following that exercise, there had been some discussion of holding another exercise without giving the participants advance warning.

The first of the UT of O fire trucks reached Middle Marker Road at approximately 12:34 p.m., and the tanker truck driven by Mr McCrae arrived at approximately 12:40 p.m. Leaving their trucks parked on McArthur Road, the fire-fighters of the UT of O then proceeded to the crash site, where they assisted the survivors. Mr McCrae, in fact, after helping to carry Mrs Nancy Ayer out of the bush, ended up driving the ambulance that carried her to the hospital, leaving the site at 1:05 p.m.

It was sometime after 1:30 p.m. before the UT of O trucks were driven down Middle Marker Road and set up to begin fire suppression activities. A handline was taken through the bush from the UT of O pumper and the first foam was put on the fire at approximately 2:00 p.m.

### **The Ontario Provincial Police**

The radio log of the Dryden Detachment of the OPP for Friday, March 10, shows that the first officer dispatched to the scene was Sergeant Douglas Davis at 12:17 p.m. The detachment had been notified of the crash by a telephone call from the Dryden police dispatch.

Sergeant Davis was in his vehicle when he received the dispatch. He immediately proceeded to the airport since, during the exercise that had been held in November 1988, the OPP had established a command post at the terminal. He arrived at the airport terminal at 12:25 p.m. and went

inside to speak with Mr Peter Louttit, the airport manager. After a brief conversation, Sergeant Davis proceeded to the crash site.

At 12:30 p.m., while en route to Middle Marker Road, Sergeant Davis asked his dispatch to find out if the local ham radio club had been notified. As a result of the November 1988 exercise, a demonstration of the club's capabilities to assist in such an emergency was scheduled for later in March, but Sergeant Davis decided they should be called on for this emergency. Coincidentally, the same decision was reached at the control centre and the Reverend Ken Rentz of the ham radio club was asked to gather the members.

On reaching the intersection of McArthur Road and Middle Marker Road at about 12:30 p.m., Sergeant Davis noted that injured passengers from the aircraft were arriving at the intersection. Private vehicles began to arrive and the injured were put in these cars and trucks for transport to the Dryden hospital.

At 12:34 p.m., Sergeant Davis asked that check points be established at both ends of McArthur Road to restrict vehicular access to the site. He spoke to Chief Parry while he was at the intersection, and at 1:00 p.m. he took a portable OPP radio and went into the bush to the crash site. At this point, he no longer had any method of direct communication with Chief Parry.

While at the scene, Sergeant Davis called for "CFFP [Canadian Pacific Forest Products] Ltd. personnel with chainsaws." He also radioed that "medical staff at scene require helicopter to scene asap re medical drop." At about the same time, similar requests were being made through the control centre. Because the OPP radios could not be connected to the frequency being used by Chief Parry and the Dryden control centre, there were two groups separately looking for the same kinds of resources. In addition, unknown to either Sergeant Davis or Chief Parry, a rescuer, Mr Mark Beasant, using a portable VHF aviation band radio, contacted Kenora FSS and asked them to relay his requests for certain supplies. These various independent requests resulted in more materials being requested than were actually required. Other than causing some congestion on McArthur Road, these duplicate requests did not affect the outcome of the rescue or fire-fighting efforts on the day of the crash.

### **Dryden Ambulance Service**

When the call was received by the hospital emergency desk regarding the crash, ambulance unit 644, driven by Mr Ernest Kobelka with Mr Harold Rabb, the supervisor of the ambulance service with him, was on the road; they drove immediately to the accident area. The second Dryden ambulance, unit 645, was driven to the site by ambulance attendant Sandra Walker who, after receiving the call at her residence, proceeded to the hospital and loaded the ambulance with required

supplies. She left the hospital at 12:42 p.m. with doctors Alan Hamilton and Gregory Martin, and arrived at the scene at 12:55 p.m.

All times quoted in this section are based on three sources: the tachograph charts that were taken from the ambulances at the end of the day, notes made by Mr Kobelka and by Ms Walker, and the dispatch recording of the fire channel. From a comparison of these sources, it has been concluded that the tachograph chart from ambulance 644 was approximately nine minutes fast. Applying the estimated nine-minute error, the first ambulance, unit 644, arrived at the intersection at 12:35 p.m.

While a number of injured passengers were transported to the hospital in private vehicles, the most seriously injured were transported by ambulance. In the case of the two passengers who subsequently died from their injuries, Mrs Nancy Ayer was transported in unit 645, accompanied by attendant Walker, leaving the scene at 1:05 p.m. and arriving at the hospital at 1:15 p.m. Mr Michael Kliever was also transported in unit 645, leaving the site at 1:45 p.m. and arriving at the hospital at 2:00 p.m.

### **Response Times**

A number of people in Dryden at first assumed that the accident was an exercise. Given their initial incredulous reaction, the response from the responding emergency agencies seems remarkable.

Within 10 minutes of the emergency being declared, all required emergency services were notified, the control centre was established, radio contact was established with the accident scene, and the chief of airport CFR and one fire-fighting vehicle were on the scene. Within 20 minutes of the emergency call, the OPP were on the scene, road blocks had been established, and the first UT of O fire truck and the first ambulance had arrived at the intersection.

## **At the Scene**

### **On-Site Coordinator**

At the time of the accident, the Dryden Airport Emergency Manual was unapproved by Transport Canada, but it was still the only manual available. The manual described the duties of the on-site coordinator (OSC) for an aircraft crash on the airport; however, there is no description for the duties of an OSC in the case of an off-airport crash, nor is there any mention of the position of OSC in the Town of Dryden emergency plan. The duties of the OSC as listed in the airport Emergency Procedures Manual are as follows:

*Action of On-Site Co-ordinator (OSC)*

1. Assess situation and report to E.C.C. [Emergency Co-ordination Centre] via radio. Request any necessary resources.
2. Establish command post at suitable vantage point.
3. O.S.C. is responsible for overall command of site and responding agencies on site.
4. Direct activities of responding agencies through proper chain(s) of command.
5. Maintain record of all survivors and casualties leaving site and of all significant events.
6. Liason [sic] with O.P.P. site command post.
7. Turn over command of site to O.P.P. when area is secured from fire or other hazards.

(Exhibit 51, p. 9)

Section 3.00 of the manual comments on jurisdiction for off-airport crashes as follows:

Aircraft accidents/incidents outside of the airport boundaries are the responsibility of the O.P.P. and the site will be under their command.

(Exhibit 51, p. 14)

When Chief Parry arrived at the intersection of McArthur Road and Middle Marker Road, he opened the gate and sent crew chief Stanley Kruger in Red 1 down Middle Marker Road towards the crash site. As the first professional fire-fighter on the scene, Chief Parry remained at the intersection, assuming the position of the OSC, with his vehicle, Red 3, serving as the command post and marker for other responding vehicles and persons. He established communications with other agencies using the radio in his vehicle, set on the mutual aid frequency. At 12:19 p.m. Chief Parry contacted Dryden police dispatch by radio and gave directions to responding agencies. He then asked dispatch to let the OPP know that the aircraft was back in the bush and that helicopters, snow machines, snowshoes, and similar equipment would be needed.

At 12:24 p.m. he made the same requests of Mr Loutitt at airport control, remarking, "We can't get in with our vehicles at all" (Exhibit 1282, p. 2). In the next few minutes, contact was made with Chief Maltais at the control centre in town and Chief Parry requested men and fire-fighting equipment. In another call to the airport control, Chief Parry asked for some of the "field maintenance guys ... and at least a [front-end] loader," as well as blankets from the emergency kit in the fire hall.

When Sergeant Douglas Davis of the OPP arrived at the intersection at about 12:30 p.m., he had a brief conversation with Chief Parry and was informed he was the first OPP officer on the scene. Sergeant Davis



then assumed traffic control and began to assist with arranging transportation of the injured to the hospital. This is the traditional role assumed by the police at a fire scene until the fire is extinguished. Until that time, unless security or preservation of life is involved, the police leave the site in the control of the fire department.

At 12:34 p.m. the first UT of O fire truck arrived, followed closely by the first ambulance and the second UT of O truck. From their testimony, it seems clear that, for everyone who arrived on the scene, first aid and preservation of life was the first instinct. Chief Parry called for blankets and ambulances. Sergeant Davis put people in his car and arranged for private vehicles to take the injured to the hospital. The UT of O fire-fighters, according to the testimony of Mr Kobelka, gave first aid to the injured who gathered at their truck on McArthur Road. Mr McCrae, the driver of the second UT of O truck, took backboards and blankets into the woods and then drove an ambulance to the hospital.

A second fire chief, Mr Nordlund of the UT of O, arrived on the scene at approximately 12:45 p.m. On his arrival, Chief Nordlund had a brief conversation with Chief Parry to ascertain what had been done and then, as he related in his testimony, he went towards the crash site "to assess the fire" so his men could most efficiently combat it.

From the evidence, Chief Parry was doing an effective job as the OSC in informing others, requesting supplies, and coordinating activities at the intersection. However, he did not, at any time, direct the activities of the CFR or other fire-fighters.

Much time was spent during the hearings discussing the question of jurisdiction and the boundaries of the critical rescue and fire-fighting access area (CRFAA). It seems clear from the evidence that those persons responding to the accident saw the security of the site as an OPP responsibility. The responsibility for fire suppression rested with the UT of O Fire Department. Because an aircraft was involved and the accident was close to the airport boundaries, the airport CFR had an obligation to respond to the crash. Because they were first on the scene, the CFR chief assumed the responsibility for coordination and communication while he sent his crew chief to the crash site. On March 10 Chief Parry remained in or around Red 3 acting as the OSC, and explained that he did so based on experiences from past exercises.

Sergeant Davis testified that, when he arrived at the scene, there was no question in his mind that the accident site was "within OPP territory." As the senior officer and the first officer at the site, he was therefore in command until relieved. His first priority, in accordance with OPP policy, was the "preservation of life, [and] assistance to the injured" (Transcript, vol. 6, pp. 11, 13). Since injured passengers were coming out of the bush, he found shelter for some and arranged transportation to the hospital in private vehicles for others. At 12:34 p.m.

he called for roadblocks to be established and requested the assistance of other officers to ensure site security. Sergeant Davis did not address the issue of jurisdiction, nor did Chief Parry ask Sergeant Davis to relieve him as the OSC. In fact, the actions taken by each of these men may have been as a result of training and, in the case of the OPP, assuming the accepted role of the police at a fire scene. During each of the exercises held at the airport, a member of the CFR crew acted as on-site coordinator. In each of those exercises, the evaluator criticized the OSC for not remaining in one place, and preferably near the access road to the site.

From his testimony, we know that when Chief Parry did leave his command post at about 3:30 p.m., it was to turn over command of the site to Staff Sergeant D.O. Munn of the OPP.

The roles of Chief Parry and Sergeant Davis were accepted by all persons who responded to the crash, and, at the time, no one questioned their roles. Without criticizing what Chief Parry did as the OSC, as discussed in chapter 9 of this Report, Crash, Fire-fighting, and Rescue Services, or what Sergeant Davis did as the first OPP officer at the scene, it is my opinion that Chief Parry should have devoted his time and talents to fulfilling his responsibilities as the chief of Dryden airport CFR, as outlined in documentation pertaining to airport CFR services.

### **Communications**

Various Transport Canada witnesses testified that one area that consistently causes problems in disaster response exercises is that of communications, and communications had been identified as a problem in the various exercises held at the Dryden airport. Following the Delta Four exercise at Dryden, a committee had been set up to improve communications. A mutual aid frequency had been designated, and all agencies were to switch to the mutual aid frequency in case of an emergency. Chief Parry switched to this mutual aid frequency on his way to the crash site. It was on this frequency that he requested Dryden dispatch to activate the mutual aid and emergency plan.

All radio communications between Chief Parry and the control centre were made through the Dryden Fire Department truck parked outside the fire hall. A runner then relayed requests between the truck and the control group. Since the crash, the Dryden Amateur Radio Club has installed permanent antennas on the fire hall, the airport terminal building, and at the hospital. Direct communications among the control group at the fire hall and the other two locations are now available.

The tape recording from Dryden dispatch shows that Chief Parry was able to communicate with the Dryden control centre, Dryden Fire Department vehicles, Dryden Fire Department portable radios at the site, and the airport control. By using another radio in his vehicle, he could

also speak with Kenora Flight Services and, later in the afternoon, directly with helicopters as they arrived in the area. However, the on-scene communications can best be described as chaotic in a number of respects. Chief Parry should also have been able to speak directly with his crew chief, Stanley Kruger, but Mr Kruger was using a different radio channel (see chapter 9, *Crash, Fire-Fighting, and Rescue Services*) and neither Chief Parry nor Mr Kruger switched channels in an effort to make contact, vital to the orderly control of this operation.

Throughout the emergency, the OPP operated on their own radio frequency, unable to communicate on the mutual aid frequency, and therefore unaware of the decisions of the control group. This problem was not unique to this situation. In any emergency situation that might have involved cooperation between the OPP and the Dryden Police Force, there was no way for the two to coordinate their activities on one frequency. The OPP plans to install a new radio system in Dryden in 1992 that should eliminate this shortcoming.

There was no direct communication by anyone with the members of the UT of O Fire Department, or their chief, throughout the afternoon. Although the UT of O had portable radios on order, they had not yet been delivered. (The portable radios were delivered to the UT of O Fire Department the week after the crash.) When the UT of O set up its port-a-pond, brought a handline through the woods, and began to suppress the fire, they had to use OPP portable radios at each end of the line to order the flow turned on and off.

On his way to the site, Sergeant Davis asked to have the ham operators alerted to assist in communications between agencies. As the emergency developed, Chief Parry had difficulty receiving information from the crash site. His crew chief was on the wrong channel, and the UT of O fire-fighters had no radios. At 1:01 p.m. the control centre dispatched a ham operator to try to plug this communications gap. Unfortunately, as the ham operator was going into the site to establish radio contact with Chief Parry, he was turned back by an OPP officer who was not aware that the operator had been sent to assist. Since the arrangement for this operator had been made on the mutual aid frequency, the OPP had no knowledge of the arrangement and assumed the operator was not authorized to enter the scene. This misunderstanding was soon rectified, and the ham operator was allowed into the scene.

If the OPP had relieved Chief Parry as the on-site coordinator, the police would have had to use Red 3 as their command vehicle or borrow radios in order to maintain direct communications with the majority of the rescue workers, the control centre in Dryden, and the airport control.

Had Mr Kruger and Chief Parry established radio contact when Mr Kruger first arrived at the crash site, handlines may have reached the wreckage and been used on the fire earlier than they were. The plight

of Messrs Kliewer and Teubert may have been eased, and perhaps the flight recorders would have been saved from destruction by the fire; certainly more of the aircraft wreckage would have been saved as evidence. This scenario, of course, presupposes that action in response to Mr Kruger's request for handlines would have been timely.

## **Fire Suppression**

This section deals primarily with the response by fire-fighters to the crash. A detailed description of the aircraft fire and the activity of the fire-fighters regarding the fire is discussed in chapter 9, *Crash, Fire-fighting, and Rescue Services*, and chapter 11, *Aircraft Crash Survivability*.

Transport Canada CFR standards document AK-12-03-001 states:

The primary objective of Crash Firefighting and Rescue Services (CFR) is to save lives in the event of an aircraft accident/incident or fire at an airport. This will be accomplished by providing a fire-free escape route for the safe evacuation or rescue of passengers and crew. A secondary objective is to preserve the property involved by containing or extinguishing, where practical, any fire resulting from an aircraft accident or incident.

(Exhibit 243, p. 1)

The following timeline sets out when fire-fighting vehicles and fire-fighters arrived on the scene:

- 12:18 Chief Ernest Parry arrives at the corner of McArthur Road and Middle Marker Road in Red 3.
- 12:19 Red 1 arrives at end of Middle Marker Road, driven by CFR crew chief Stanley Kruger.
- 12:34 UT of O rapid attack truck arrives and parks on McArthur Road.
- 12:40 UT of O tanker truck arrives.
- 12:43 Red 2 arrives.
- 12:44 Dryden Fire 5 and Dryden Fire 3 arrive.
- 12:45 UT of O Fire Chief Roger Nordlund arrives.

Throughout the CFR portion of the hearings, the question of the timeliness of the arrival and use of handlines at the fire scene was discussed. It is important to determine the earliest time that handlines could have arrived at the scene, and whether earlier use of the handlines would have affected the fate of any of the passengers or crew.

From the evidence regarding the fire-fighting capabilities of the vehicles that responded, there is no doubt that by 12:45 p.m. there were enough equipment and personnel in the area of the crash to deal effectively with the fire. However, no one attempted to use any of the

equipment until approximately 1:30 p.m., when the UT of O pumper truck was moved down Middle Marker Road.

The UT of O rapid attack vehicle (pumper truck), the first fire-fighting vehicle to reach the scene that could have had an effect on the fire, arrived at the intersection of McArthur Road and Middle Marker Road at approximately 12:34 p.m. Mr Nordlund, the UT of O fire chief, stated in testimony that it would take one fire-fighter and two or three volunteers less than five minutes to extend 500 feet of hose, in four 100-foot and two 50-foot lengths, to the crash site. Mr Stanley Kruger, in his testimony, estimated that it would have taken up to half an hour to lay such a line through the deep snow, but reduced this estimate to 15 minutes if sufficient help was available. Assuming that other fire-fighters and volunteers assisted in this task and allowing time for the vehicle to reach the site and an assessment to be made, I estimate that a handline could have reached the aircraft wreckage by about 12:50 p.m. at the earliest. This estimate may be optimistic, since the trail to the wreckage was through deep snow.

I therefore considered the evidence regarding the state of the passengers at 12:50 p.m. to determine whether, if fire suppression had begun at that time, any deaths might have been prevented.

Two persons who survived the crash died later because of their injuries. Mrs Nancy Ayer died in a Winnipeg hospital of extensive burns received in the aircraft fire, but she was out of the aircraft wreckage before the first fire-fighter even arrived at the scene. In her case, the use of a handline by 12:50 p.m. would not have affected her fate. Mr Michael Kliever died in the Dryden hospital with his cause of death listed in his autopsy report as massive trauma, which he sustained in the crash. Again, the use of a handline would not have saved his life; however, the timely use of the handline may have reduced his burn injuries. A third person, Mr Alvin Rossaasen, died in the wreckage, his autopsy indicating that he died from smoke inhalation (carbon monoxide poisoning) and burns. The lethal level of carbon monoxide that was found in his body can be reached over a time period of 2 to 30 minutes. Mr Rossaasen was trapped beneath another passenger on the left side of the aircraft, where the fire was the most intense. As the crash occurred at 12:11 p.m., there is little doubt that Mr Rossaasen was dead before 12:50 p.m. Finally, Mr Uwe Teubert, who survived the crash and was found trapped under Mr Kliever at about 1:10 p.m., may have suffered less had the handlines been in use earlier.

The autopsy reports for the other deceased persons indicate that, while a number of the deceased showed evidence of smoke inhalation, all of these persons were dead within minutes of impact. Therefore, the issue of handlines is not relative to their fate.

Dr Martin testified that he arrived at Middle Marker Road in ambulance unit number 645, whose tachograph indicates the arrival time to be 12:55 p.m. He then proceeded to the scene, and he testified he did not believe that there was anyone, besides Mr Kliewer and Mr Teubert, still alive in the aircraft. In their testimony, Sergeant Davis and Chief Nordlund, who arrived at the scene at approximately 12:30 p.m. and 12:45 p.m., respectively, state that besides Mr Kliewer and Mr Teubert, no other passengers were alive in the wreckage.

Although the earlier use of the handlines would not have affected the fate of the passengers who died as a result of the crash and fire, it is obvious that had the handlines been used earlier to suppress the fire, more of the important physical evidence could have been saved, including cockpit instrumentation and probably the information in the flight recorders.

To remove the recorders from the wreckage, the fire-fighters would have to have known their location. The UT of O fire-fighters who eventually did run the handline to the wreckage had no training regarding the location of various critical areas on an aircraft. Their primary responsibility in the case of a fire at the airport was fighting structural fires. CFR was to be responsible for aircraft fires. Unfortunately, even the CFR fire-fighters did not know the location of the flight recorders on the F-28 aircraft. In fact, the CFR unit did not have a crash chart for the F-28 that would have shown the location of the recorders. Even if the fire-fighters did not know the location of the recorders, simply spraying the entire aircraft to put out the fire may have cooled the recorders enough so that their tapes and the recorded information would have survived the heat.

The evidence indicates that the fire-fighters at the scene of the crash became distracted by the injured passengers to the extent that they overlooked their responsibility to fight the fire.

Crew chief Stanley Kruger, the first professional fire-fighter to reach the aircraft, gave up his fire-fighter's jacket to flight attendant Hartwick so she could keep a baby warm. This was a humanitarian act, but this jacket was an important part of his fire-fighting equipment if Mr Kruger had to approach the fire for either rescue or fire suppression.

Chief Nordlund of the UT of O Fire Department testified that he went in to the scene "to assess the fire," yet on the way to the fire he stopped to assist others. When he arrived at the wreckage, he assisted in the rescue of Mr Kliewer and Mr Teubert, even though at that time there were between 20 and 30 other fire-fighters on the scene. Chief Nordlund did not even don his fire-fighting clothing to go into the fire area.

There was a concerted effort on the part of all the fire-fighters to assist and provide comfort to the survivors. Most assumed when they arrived

at the crash that anyone who was not out of the wreckage was not going to get out. As Mr Kruger testified:

- Q. Mr Kruger, from your own observations and your own professional opinion as a fire-fighter who has been doing this work for some time, would you give the Commissioner your best opinion on whether there could have been any live passengers inside that fuselage at the time that you came upon it.
- A. I would have to state emphatically that, when I got there, there were no survivors in that aircraft, from my visual observations.  
(Transcript, vol. 26, p. 133)

If Mr Kruger's conviction was shared by all who arrived on the scene, it is understandable that the fire-fighters saw no need to provide "a fire-free escape route for the safe evacuation or rescue of passengers and crew." Nevertheless, the fire-fighters, and especially the members of the CFR unit, had a responsibility to "preserve the property involved by containing or extinguishing, where practical, any fire resulting from an aircraft accident or incident." Their inaction in responding to this part of their mandate probably cost the investigators the irreplaceable evidence contained in the flight recorders that would have been of value in the aircraft accident investigation and for the prevention of future aviation accidents.

## **Provision of the Passenger List**

The time taken to compile a list of names of both victims and survivors of the crash was a subject of controversy both at the time of the crash and during the hearings of this Commission. Initially, for the rescuers, the total number on board the flight was an important piece of information. An accurate number, 69, was given to Chief Ernest Parry by the airport manager at 12:46 p.m., 35 minutes after the crash. This number was immediately available when requested by Chief Parry.

The first list of passenger names, sent by Air Ontario to the OPP, was received at approximately 4:00 p.m. on March 10. This list contained 57 names and was not an accurate list of the passengers on board at the time of the crash. An accurate list was received by the OPP at 8:00 p.m. the same day. This list was compiled by obtaining the names of the Air Ontario and Air Canada passengers who boarded in Thunder Bay, adding the names of those from the cancelled Canadian Partner flight who joined flight 1363 in Thunder Bay, and then checking for the names of passengers who left or joined the flight in Dryden.

A more timely provision of the passenger list at Dryden would have assisted the hospital in the treatment of injuries and the Red Cross, which was dealing with family inquiries. However, since this list was

also used to notify the families of the deceased prior to the removal of the bodies from the wreckage, it was important that it be accurate. Even with the care taken to ensure accuracy, the media reported that one man, who had the same name and province of residence as one of the passengers, was incorrectly notified of that passenger's death.

Given the fact that passengers from another airline were added to the flight in Thunder Bay and that some passengers left and others joined the flight in Dryden, Air Ontario clearly required time to verify the list. Since it was to be used to notify next of kin, any requirement for speedy provision of the list must be balanced by the need for accuracy before families are contacted.

Of greater concern was the length of time taken to release the passenger names to the public. There can be no argument that the next of kin must be notified before any list of the deceased is circulated. In this case, however, all next of kin had been notified by late Saturday, March 11. A partial list of passengers was published in the *Toronto Star*, on March 15, five days after the crash, but, even then, it was not released by the OPP. Inspector Frank Harvey of the OPP refused to release the names until positive identification had been made at the post-mortem. In addition, he told the media that the list was the property of Air Ontario. It appears that, in the end, the list published was inadvertently released to the media by the OPP.

In the case of any accident, the release of the names of the victims is the responsibility of the investigating police agency. Once the police have contacted the next of kin, there should be no reason for withholding the names of the victims. In this case, the unreasonable delay in releasing the names resulted in the media's publishing their own partial list before an accurate one was made available.

## **Other Dryden Agencies and Businesses**

Evidence was heard in Dryden regarding the significant contributions that were made by the Red Cross, the Dryden Welfare Office, the staff of the Dryden hospital, many Dryden businesses, and many individuals. All were part of a coordinated town response of which the citizens of Dryden can feel proud.

Of course, as with any disaster for which there is planned response, some things happen that were not anticipated in the emergency planning. The Town of Dryden held a number of meetings after the crash to discuss the various responses to the emergency and to learn from their experience. Attached as appendix I are the minutes of the meetings held on March 13 and 16. At these meetings, the citizens of Dryden explained the problems they encountered and assessed the effectiveness of the response to the disaster. These minutes, more than



any report I could write, demonstrate the involvement of the town and the problems the townspeople encountered. I recommend that officials of other Canadian towns and cities read these minutes with their own emergency plans in mind and learn from the experiences of the Town of Dryden.

## **Findings**

- The Dryden Municipal Airport Emergency Procedures Manual, first submitted to Transport Canada on January 29, 1988, had not been approved by Transport Canada on March 10, 1989. The manual had not been approved because the Dryden airport officials had refused to implement changes to the manual suggested by Transport Canada, and Transport Canada had not insisted that the manual be prepared to Transport Canada standards.
- Because the Dryden Municipal Airport Emergency Procedures Manual had not been approved, a copy of it, even in draft form, was not in the hands of appropriate agencies, such as the Kenora Flight Service Station.
- The Dryden airport CFR unit apparently was reluctant to carry out training exercises in winter, a reluctance that ignores the fact that aircraft crashes can and do occur in winter weather conditions.
- The crash of Air Ontario F-28 C-FONF occurred within the boundaries of the Dryden airport CRFAA.
- Transport Canada defines a CRFAA. By definition there is a CRFAA at every airport and there are prescribed requirements regarding the responsibilities of the CFR unit within a CRFAA, but it is apparent that Transport Canada has not been rigid in requiring airport managers to adhere to the principles and practices regarding CRFAAs. As well, Transport Canada does not require that information pertaining to the CRFAA be included in airport emergency manuals.
- The chief of the Dryden airport CFR unit did not assume a fire-fighting role during the various exercises in which the Dryden CFR unit participated from 1985 to 1988. He acted as an evaluator, and on one occasion he was the acting airport manager. Accordingly, neither the CFR unit nor the chief himself benefited fully from the exercises. The CFR fire chief, because he acted either as an evaluator or was the airport manager at the time that a full-scale exercise took place, was

neither tested nor exercised as a fire-fighter or as an on-site commander.

- Transport Canada did not ensure that during exercises the chief of the Dryden airport CFR unit occupied a role that he would be expected to fulfil in an emergency.
- During exercises in which the Dryden airport CFR unit participated, CFR crew chiefs acted in the role of on-site coordinator rather than as fire-fighters.
- The role of the on-site coordinator was not clearly defined by Transport Canada.
- Transport Canada allowed CFR unit fire-fighters to act as on-site coordinators, diverting them from their roles as fire-fighters.
- Full-scale exercises at the Dryden Municipal Airport, involving the CFR unit, were not conducted regularly.
- CFR training exercises involving the Dryden airport, although inadequate, were helpful; however, deficiencies identified in the exercises were not always corrected.
- Transport Canada did not exercise its authority over the Dryden airport management to impose its national standards in the Dryden Municipal Airport Emergency Procedures Manual.
- Transport Canada did not ensure that the matter of the Dryden airport CRFAA was clearly defined in the Dryden Airport Emergency Procedures Manual and understood by the Dryden CFR chief and personnel.
- The Dryden airport CFR access road to the CRFAA was inaccessible to CFR vehicles on March 10, 1989, owing to lack of winter maintenance.
- Two civilians, Mr Craig Brown and Mr Brett Morry, were the first persons to arrive at the crash site, having departed from the airport terminal immediately after seeing the fireball from the crash. They made a path from Middle Marker Road, through deep snow, to the aircraft.

- Dryden CFR Chief Ernest Parry arrived at the intersection of Middle Marker Road and McArthur Road at between 12:15 and 12:18 p.m. and set up a command post. Crew chief Stanley Kruger arrived in Red 1 shortly thereafter, parking at the far end of Middle Marker Road, approximately opposite to the crash site. He carried a portable radio and a first aid kit to the crash site, following the path made by Messrs Brown and Morry. He encountered some 20–25 survivors and directed them towards McArthur Road. The survivors reached McArthur Road at approximately 12:32 p.m.
- All survivors were out of the aircraft wreckage by the time Mr Kruger reached the crash site, except for Mr Uwe Teubert and Mr Michael Kliever, who were trapped on the left side of the aircraft under wreckage until freed at approximately 1:12 p.m. under the direction of doctors Gregory Martin and Alan Hamilton, who had arrived on the scene.
- The initial response to the crash of C-FONF on March 10, 1989, by the various emergency plan agencies, Ontario Provincial Police, Town of Dryden Fire Department, Unorganized Territories of Ontario Fire Department, Dryden Ambulance Service, and Dryden CFR services unit, was timely and well executed. However, the fire-fighting activity at the scene was uncoordinated and lacking in leadership and direction.
- Although a mutual aid frequency had been designated in the Dryden Municipal Airport Emergency Procedures Manual, not all responding agencies had the equipment necessary to operate on that frequency.
- The on-scene radio equipment for communication between the fire chief, the fire-fighters, the OPP, and rescuers was either misused, incompatible, or nonexistent, clearly contributing to the lack of a coordinated and timely fire-fighting effort at the crash site.
- As was the case in previous full-scale emergency exercises, all Dryden area agencies responding to the crash on March 10, 1989, were not capable of communicating on a common frequency. The Ontario Provincial Police did not have the equipment necessary to transmit and receive on the channel designated in the Dryden Area Response Plan as the emergency fire (mutual aid) channel. Communication between CFR Chief Parry and CFR crew chief Kruger was not established in a timely manner on either the fire channel or the CFR unit working channel. The UT of O fire chief and fire-fighters had no radios for communication between themselves or anyone else.

- A substantial amount of fire-fighting equipment arrived on the scene between 12:19 and 12:44 p.m., more than sufficient to extinguish the aircraft fire.
- The obvious lack of coordination and direction of fire-fighting activity at the scene of the crash was caused at least in part by jurisdictional uncertainty, deficient training, and confusion as to who was in command.
- At the scene of the crash, all the fire-fighters, including the fire chiefs for the Dryden airport CFR unit and the UT of O Fire Department, became distracted by the plight of the survivors to the extent that they overlooked their primary responsibility to fight the aircraft fire. As a result, handlines were not brought in and fire extinguishant was not applied to the aircraft fire until approximately 2:00 p.m. on March 10, 1989, about one hour and 50 minutes after the crash.
- It is highly probable, if not virtually certain, that more timely extinguishment of the aircraft fire would have resulted in preservation of the aircraft data recorders and of more of the aircraft remains, for investigative purposes.
- Concentration by the fire-fighters at the crash site on their primary responsibility of extinguishing the aircraft fire and providing an escape route for passengers would probably have resulted in the earlier location and freeing of Mr Teubert and Mr Kliever from the wreckage.
- The duties and responsibilities of the on-site coordinator (OSC) for an aircraft crash are not fully detailed in the Dryden Municipal Airport Emergency Procedures Manual. For example, the manual did not designate individuals holding certain positions among the various agencies involved in the emergency manual who would be expected to act as on-site coordinators. Although the manual described the duties of an OSC for an aircraft crash on the airport, the manual did not deal with a crash off the airport.
- Apart from the noted deficiencies in the fire-fighting response at the scene of the crash, the collective efforts of all persons, agencies, businesses, and officials in the Town of Dryden relating to the crash were timely and carried out in a responsible, compassionate, and meaningful manner.

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## RECOMMENDATIONS

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It is recommended:

- MCR 18<sup>1</sup> That Transport Canada ensure that airport crash, fire-fighting, and rescue units carry out emergency response exercises as mandated in applicable Transport Canada documentation, including exercises in winter and in off-airport conditions.
- MCR 19 That Transport Canada ensure that all persons involved in crash, fire-fighting, and rescue (CFR) exercises, including CFR chiefs and on-site coordinators, fully understand and carry out their duties during such exercises, as defined in applicable Transport Canada documentation and as they would in an emergency.
- MCR 20 That Transport Canada ensure that airports subsidized by Transport Canada have in place at all times up-to-date crash, fire-fighting, and rescue airport emergency response plans and airport emergency procedures manuals approved by Transport Canada.
- MCR 21 That Transport Canada ensure that the necessary crash, fire-fighting, and rescue emergency response to aircraft crashes that occur within the critical rescue and fire-fighting access area (CRFAA) be clearly delineated in all relevant documentation, including airport emergency response plans and airport emergency procedures manuals.
- MCR 22 That Transport Canada ensure that, as part of the emergency planning process, all responding agencies designated in an airport emergency procedures manual equip themselves with radios capable of communication on a common channel.

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<sup>1</sup> In the course of the hearings of this Commission of Inquiry, certain facts emerged from the evidence that, in the interests of aviation safety, I felt duty-bound to report in two interim reports. For ease of reference, recommendations are numbered consecutively, beginning with those that appear in my *Interim Report* of 1989, and all are found in Consolidated Recommendations, Part Nine of this my Final Report. They are preceded by the code "MCR," in accordance with the "short title" (Moshansky Commission) of the reports.



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**PART THREE**

**CRASH, FIRE-FIGHTING,  
AND RESCUE SERVICES**

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# 9 DRYDEN MUNICIPAL AIRPORT CRASH, FIRE-FIGHTING, AND RESCUE SERVICES

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In the introduction to my Report, I stated that in my view the involvement of the Dryden Municipal Airport Crash, Fire-fighting, and Rescue (CFR) Services was a collateral safety issue which I considered serious enough to warrant investigation.

## Legislation and Policies Governing Dryden Municipal Airport and Its CFR Services

The Dryden Municipal Airport aerodrome certificate in effect on March 10, 1989, was issued on March 23, 1988, to the Town of Dryden by the minister of transport pursuant to the *Aeronautics Act* and the Air Regulations. This certificate requires the Town of Dryden to maintain an aerodrome operations manual for the Dryden Municipal Airport in accordance with the aerodrome standards contained in Air Regulations Series III, No. 2 – Airport regulations. Although aerodrome services do not form part of the aerodrome certification criteria, the aerodrome operations manual requires that aerodrome services provided be inventoried in the manual; CFR services are in this category. The Dryden Municipal Airport Aerodrome Operations Manual, approved by Transport Canada on March 23, 1988, lists CFR services as follows:

3.1 AERODROME EMERGENCY SERVICES D'URGENCE  
SERVICES –

A) Crash, Fire Fighting and Rescue –  
Services de secours et d'incendie

CFR4 – 2300 Gals of foam  
400 Lbs dry chemical

Hours of Operation – Heures d'exploitation as per  
CFS [Canada Flight Supplement]

B) Medical (Agreements with Other Agencies) –  
Médicaux (Ententes avec d'autres organismes)

1. First aid from AES [Airport Emergency Services]

There are no further requirements regarding CFR services listed in the aerodrome certificate or in the Aerodrome Operations Manual. As well, unlike United States Federal Aviation Regulations (FARs), in particular FAR Part 139, Canadian aviation legislation, such as the *Aeronautics Act*, Air Regulations, and Air Navigation Orders, has no provisions governing the requirements of CFR services.

FAR Part 139 deals with the certification and operations of United States land airports that service scheduled or unscheduled air carrier operations conducted with aircraft having more than 30 passenger seats. Parts 139.317 and .319 set out minimum levels of CFR equipment and extinguishing agents, and operational requirements that must be maintained at these airports. By legislation, aircraft rescue and fire-fighting equipment and extinguishing agents are defined by reference to Federal Aviation Administration (FAA) advisory circulars and must be acceptable to the administrator of the FAA. Similarly, by legislation, an airport's aircraft rescue and fire-fighting vehicles and their systems must be maintained so as to be able to perform their functions, and personnel must be able to demonstrate their ability to respond adequately when requested by the FAA. As well, each airport certificate holder must ensure that all rescue and fire-fighting personnel are acceptably equipped and properly trained to perform their duties in a manner acceptable to the administrator of the FAA.

In Canada, rules and guidelines governing crash, fire-fighting, and rescue requirements and standards are set out in various policy documents issued by Transport Canada Airports Authority Group. These policy documents, given AK designations, are implemented as mandatory standards and guidelines for internal use within Transport Canada. These documents are intended to govern Transport Canada – owned and operated airports but they have no supporting legislative or statutory authority.

The principal documents used by Transport Canada Airports Authority Group for CFR services are AK-12-03-001, CFR standards document, and AK-12-06-002, 003, and 004, training and equipment standards documents. Other related policy documents are AK-12-08-002, Firefighter Code of Conduct, and AK-66-06-400, Aviation Fuelling Manual. For information not contained in these documents, CFR fire-fighters must refer to documents called National Fire Protection Association (NFPA) manuals, published in the United States. For example, Transport Canada document AK-66-06-400 does not provide

information regarding the handling of fuel spills. NFPA manuals specifically describe and categorize sizes of fuel spills and how each spill is to be handled.

I find Transport Canada AK policy documents dealing with CFR services to be detailed and comprehensive. I also find Transport Canada training requirements to be of a high standard, with the exception of certain specific deficiencies that are dealt with in this Report.

Specific deficiencies were noted in the training and knowledge of the Dryden airport CFR personnel in a number of areas. Some of these deficiencies arose out of a lack of training requirements or policy instruction within the Transport Canada CFR documentation and training standards. I will deal with these deficiencies in the context of the activities of the Dryden CFR unit on March 10, 1989.

Unlike in the United States, no legislation in Canada compels certificate holders of airports not owned or operated by Transport Canada to comply with Transport Canada policy standards and guidelines regarding CFR services. An airport such as the Dryden Municipal Airport, which is owned by Transport Canada but leased and operated by the Town of Dryden, appears to fall into a category that is neither clearly governed by Transport Canada CFR policies and standards nor by legislation equivalent to such policies and standards. Transport Canada exercises certain control over the operation of the Dryden Municipal Airport through its lease and its financial assistance agreements. I will deal specifically with these agreements and their application to CFR services further in this chapter.

## **Background of Dryden Municipal Airport and CFR Services**

In August 1968 the Corporation of the Town of Dryden and the minister of transport entered into an agreement for the construction, operation, and ownership of the Dryden Municipal Airport. The Town of Dryden acquired the land and constructed access roads, and Transport Canada constructed a runway, now a paved runway, 6000 feet long by 150 feet wide. In March 1974 the Town of Dryden transferred to the minister of transport all the land upon which the Dryden Municipal Airport is situated and, thereafter, has leased the airport for successive five-year periods. The most recent lease agreement is dated June 5, 1989. The relevant provisions in the agreement state as follows:

22. That the Lessee shall, at its own cost, before using the said land and the said facilities for airport purposes obtain a license from the Minister under the Air Regulations and amendments thereto, and

thereafter the Lessee shall during the currency of this Lease operate the said airport as a public airport, subject to such terms and conditions as the Minister may direct and shall charge for the use of the said airport and for any services performed in connection therewith only such fees as the Minister may approve.

23. That the Lessee, its officers, employees and agents and all persons using the said airport, shall, at all times, during the currency of this Lease observe and comply with the provisions of the Aeronautics Act, as amended from time to time, the Air Regulations, and amendments thereto, all rules and regulations made from time to time pursuant to the said Act, and all local airport rules.

(Exhibit 27, Lease Indenture, July 15, 1975)

The Town of Dryden views the Dryden Municipal Airport as a regional airport serving the surrounding area and northwestern Ontario. A number of flights feed into the airport from outlying areas to meet up with flights to Thunder Bay and Toronto or west to Winnipeg. There are approximately 6000 people in the Dryden community; however, up to 55,000 passengers use the airport annually.

The Dryden airport is managed by the Dryden Municipal Airport Commission on behalf of the Town of Dryden. The commission members are the mayor of the Town of Dryden, one town councillor, and two other town representatives. Mr John Callan, the chief administrative officer for the Town of Dryden, also acts as the secretary-treasurer to the commission. Day-to-day operation of the airport is the responsibility of the airport manager, who reports directly to the airport commission. Mr Peter Louttit was the airport manager from 1978 until December 15, 1989.

The airport commission enters into sublease agreements with various parties such as Dryden Flight Centre, Canadian Partner, and rental car agencies located at the airport. It is the view of the Town of Dryden and the airport commission that Dryden is not responsible for funding the airport in any way, and that operational losses are to be borne by Transport Canada. Airport revenues are primarily derived from leasing agreements and landing fees and are approximately \$300,000 annually, while the total annual operating expense is approximately \$900,000. The expenses (using approximate figures) are split among five centres as follows: administrative, \$100,000; surface maintenance, which includes fuel maintenance, mobile equipment maintenance, and fuel and maintenance staff, \$250,000; mechanical and plant maintenance, \$100,000; security services, \$100,000; and the CFR unit, \$350,000. A large portion of the CFR cost is fire-fighters' wages. Transport Canada subsidizes the airport for the shortfall of approximately \$600,000.

Each year, based on the forecast operating budget, the Town of Dryden applies to Transport Canada for financial assistance for the airport. Funding is governed by an agreement between the Town of Dryden and the minister. Clauses from the latest agreement, dated April 3, 1979, which are relevant to the operation of CFR services on the airport are as follows:

5. *Operating Subsidy*

- (1) Upon the Corporation's submission to the Minister of its forecast annual budget, Her Majesty will grant financial assistance to the Corporation by way of an annual operating subsidy to a level approved by the Minister and the maximum level of subsidy shall be determined annually in advance by the Minister.

7. *Ministerial Approval*

The Corporation shall not, without the consent in writing of the Minister, being first had and obtained, assume any obligations or make any expenditures under the provisions of this Agreement which is not in accordance with annual operating budgets approved by the Minister.

9. *Air Regulations*

The Corporation shall abide by the Air Regulations, including any amendments thereto, and all other regulations that may be made from time to time under the provisions of the Aeronautics Act, being Chapter A-3 of the Revised Statutes of Canada, 1970, and the Corporation shall obtain a licence from the Minister under the Air Regulations and amendments thereto, and thereafter the Corporation shall, during the currency of this Agreement, operate the Airport as a public airport, subject to the terms and conditions as the Minister may direct.

12. *Corporation Provision of Facilities*

Without limiting or restricting the generality of the provisions of Clause No. 18 hereof, the Corporation shall be responsible for the operation, management and maintenance of the Airport, and all related facilities which, without limiting or restricting the generality of the foregoing, shall include airport services, runways, fences, hangars, shops, terminal and other buildings, airport lighting equipment, and like services, and the Airport shall be maintained in a serviceable condition, all to the satisfaction of the Minister.

13. *Navigational Aids, etc.*

Her Majesty may supply radio navigational facilities, airway and airport traffic control and meteorological services should the Minister at any time consider that such services are necessary.

(Exhibit 288)

In the early years of this arrangement, it was relatively easy for the Dryden airport to obtain subsidies from Transport Canada. Since 1984, according to Mr Louttit, fiscal restraint has led Transport Canada to require more justification for assistance. Mr Louttit testified that fiscal restraint, together with ongoing reorganization, changed the relationship between Transport Canada and the Dryden airport, and that Transport Canada expected the airport commission to operate more independently. It was this arm's-length relationship that existed on March 10, 1989, and, according to Mr Louttit, the transition to independence was a difficult one both for Transport Canada and for the Town of Dryden, particularly at Mr Louttit's level of airport manager. The relationship between Transport Canada's regional office at Winnipeg and the Dryden Municipal Airport was at times strained, especially during budget negotiations.

Mr Callan, in his testimony, spoke with some pride about the Dryden airport and the significance it has for the business community and the local residents. It is my impression that the Town of Dryden and the airport commission also took pride in the fact that the airport was manned by full-time professional CFR personnel equipped to handle aircraft such as the Boeing 737.

There are 37 airports in Transport Canada's Central Region that are either owned and operated by Transport Canada, owned and subsidized by Transport Canada, owned by Transport Canada and operated under contract, or only subsidized by Transport Canada. Transport Canada, Central Region, covers the area from Thunder Bay to the Saskatchewan/Alberta border and from the Canada/U.S. border north to the high Arctic. In the early 1970s, flying activity was increasing and carriers such as Transair started flying into the Dryden airport using Fokker F-28 aircraft. NorOntair also operated Twin Otter aircraft into Dryden. In the late 1970s, sophisticated and expensive fire-fighting equipment was being placed at various subsidized airports across Canada, and Transport Canada was attempting to staff CFR units at these subsidized airports with fire-fighters in accordance with the prescribed airport category. Emergency services specialists in Transport Canada Central Region headquarters, Winnipeg, in allocating their resources, wanted to place at each of the subsidized airports a full-time professional fire chief so there would be someone at each airport to maintain the new fire-fighting equipment and to hire and train auxiliary fire-fighters. However, Transport Canada headquarters decided to concentrate the full-time professional fire-fighters at airports, such as Dryden, into which larger aircraft types were operating.

The Dryden airport commission began employing full-time fire chiefs in 1978. The first two fire chiefs that were hired did not remain for various reasons including, in the opinion of Transport Canada emer-

agency services specialists, frustration as a result of a perceived lack of support by the airport manager for the CFR program. Mr Ernest Parry, hired in 1982, was the third fire chief and was hired coincident with the Dryden airport CFR unit being staffed with full-time, professional fire-fighters.

## **Dryden Airport Category and CFR Services**

### **Airport Categorization**

Airports are categorized by Transport Canada for the purpose of determining the CFR resources required, based on length and maximum fuselage width of the longest aircraft normally using the airport. The airport category is determined from a table in Transport Canada document AK-12-03-001. The category appropriate to aircraft length is established first and, if the maximum fuselage width of the longest aircraft is greater than the maximum width for that category, the category is increased by one level. Aircraft traffic statistics for the previous 12 months are also used in determining the airport category.

### **Level of Protection**

Transport Canada document AK-12-03-001 outlines the CFR requirements for all categories of airports. The categories range from 1 to 9, with an airport like Manning, Alberta, being a 1; Moose Jaw, Saskatchewan, a 3; Montreal/Saint-Hubert, Quebec, a 5; Winnipeg, Manitoba, a 7; and Lester B. Pearson in Toronto, Ontario, a 9. On March 10, 1989, the Dryden airport was listed as category 4.

The number, type, and characteristics of fire-fighting vehicles and minimum quantities of extinguishing agents are specified for each category. The minimum number of employees on duty is specified and related to the type and number of vehicles provided to meet the level of protection for the particular airport category. At airports of category 5 or above, the manpower response is to include one additional person as crew chief.

It is stated in document AK-12-03-001 that "Airport emergency procedures shall be developed to ensure the effective utilization of all available resources in the event of an aircraft accident/incident" (Exhibit 243, s. 4.01, p.7).

## Dryden Airport CFR Services

From 1978 until March 10, 1989, the category of the Dryden airport varied from category 3 to 6. In the 1980s, Transport Canada monitored Dryden air traffic and determined that the category of the Dryden airport was too high. Transport Canada then discussed downgrading the category with the Dryden airport commission. During these discussions, the Dryden airport commission's aim was to maintain the highest airport category and the commensurate level of CFR services. Thus, CFR staff positions could be preserved.

It was the evidence of Mr Callan that Dryden area residents were thrilled when Air Ontario announced it was going to introduce its jet service to the Dryden airport. Accordingly, the Town of Dryden corresponded with Air Ontario to gain its support for maintaining the existing airport category and had discussions on the same topic with Transport Canada. The Town of Dryden and the airport commission wished, at least, to delay any reduction of CFR service.

The *Canada Flight Supplement*, in effect for the period February 9, 1989, to April 6, 1989, provided Canadian terminal and en route data for pilots in flight and for flight planning. It listed the Dryden Municipal Airport as a category 4 airport, with the appropriate level of CFR services available from 1300 to 0315 UTC (7:00 a.m. to 9:15 p.m. CST) on Monday to Saturday and from 1300 to 0300 UTC (7:00 a.m. to 9:00 p.m. CST) on Sundays. Outside these hours of operation, three hours' prior notice was required for CFR service.

Although the Dryden airport was listed in the supplement on March 10, 1989, as a category 4 airport, the CFR vehicle strength, a rapid intervention vehicle and a foam truck, was in fact commensurate with a category 5 airport. The Dryden CFR unit comprised a fire chief and five fire-fighters, all full-time professionals, two of whom were designated crew chiefs. Transport Canada AK-12-03-001 lists the CFR staff requirement for a category 4 airport as four professional fire-fighters and five auxiliary fire-fighters. Shortly before the March 10, 1989, crash, Transport Canada had advised the airport commission that the Dryden airport should be reclassified as a category 3 airport. This change, if implemented, would have effectively eliminated all full-time fire-fighters, except for the fire chief.

Nordair Ltd introduced jet service to the Dryden airport in the late 1970s, using the Boeing 737-100 aircraft. This was the largest aircraft to use the airport, and its size and the frequency of service resulted in the airport being assessed at that time, as category 6. Because of a subsequent reduction in the number of Boeing 737 flights into Dryden, the airport category was reduced to category 5. Canadian Airlines, the successor to Nordair Ltd, terminated the Boeing 737-100 service into



Dryden in February 1988. Air Ontario subsequently introduced jet service into Dryden, using the Fokker F-28 Mk1000 aircraft, in June 1988. This aircraft, which was smaller than the Boeing 737, required a category 5 airport, but, because of a lower frequency of service, the airport was then assessed as category 4. Without the operation of the F-28 aircraft, the Dryden airport could have been reduced by Transport Canada to a category 3 airport.

The chief of the Dryden airport CFR unit reports to the airport manager. The fire chief is responsible for managing the CFR unit. The evidence indicates that the chief's responsibilities include the following: ensuring that CFR employees are adequately trained and able to perform their duties; preparing annual work plans and budgets; requesting training materials through the airport manager from Transport Canada; and reporting CFR unit activities to the airport manager on a monthly basis.

## **Role of the Dryden CFR Unit**

There were posted on the wall of the Dryden CFR unit office copies of two pages from A.I.P. Canada: Aeronautical Information Publication, TP 2300 E, dated May 13, 1982, and entitled "Airport Emergency Services," stating the following objective at Paragraph 7.1(a):

Objective – the primary objective of the Airport Emergency Services (AES) is to save lives in the event of an aircraft accident/incident or fire at an airport. This will be accomplished by providing a fire-free escape route for the safe evacuation or rescue of passengers and crew. A secondary objective is to preserve the property involved by containing or extinguishing, where practical, any fire resulting from an aircraft accident or incident.

(Exhibit 187)

This paragraph is found, unchanged, in the current edition of the A.I.P., except that the title Airport Emergency Services has been changed to Airport Crash Firefighting and Rescue Services (CFR). The statement in question is extracted from the Transport Canada Crash Firefighting and Rescue Standards, AK-12-03-001; Policy document: TP 3660. This Transport Canada document further states that:

Specifically, the CFR will normally be the first to arrive at the scene of an aircraft emergency. Upon their arrival, action will be taken to prevent, control, or extinguish fire involving or adjacent to an aircraft for the purpose of providing fuselage integrity and an escape area for its occupants. Such efforts shall be under the direction of the senior CFR officer present.

The CFR will participate, to the extent possible within their available resources, with the flight crew in the evacuation of passengers. If the flight crew are unable, for whatever reason, to open usable emergency exits, CFR personnel will, by whatever means necessary, force entry to the aircraft and provide assistance in the evacuation/rescue of the occupants.

(Exhibit 243)

Mr Brian Boucher, an Air Canada pilot and representative of the Canadian Air Line Pilots Association (CALPA), a well-trained fire-fighter and fire professional and a trained specialist in aircraft fires, assisted this Commission with respect to fire-related issues. During his testimony, Mr Boucher was questioned about the roles of fire-fighting units in general and about the Dryden CFR unit in particular. While responding to a specific question about the use of handlines, Mr Boucher provided insight into the roles and priorities of fire services and fire-fighters. The relevant portion of his evidence pertinent to an assessment of the fire-fighting response by the Dryden CFR unit on March 10, 1989, and in particular whether handlines were brought to the site of the crash of the F-28 in a timely manner, was as follows:

- Q. All right. Given your background and given your experience in fighting fires, would you have – in that position that they were in, would you have taken a hand line into an aircraft immediately or attempted to?
- A. The role of the fire department, the role of the fire service is to save lives. The fire service has tactical priorities. The first priority is rescue. The second priority is fire control. Either you control the fire offensively or defensively. After you have taken care of that tactical priority, then you go into the final stage which is property conservation.

When I talk rescue, we break rescue down into two areas, a primary search and a secondary search. Now, the primary search is to immediately try and rescue people that would be in immediate danger, to prevent further injury, and that's the key word there, to prevent further injury. In order to do that, especially when you have a fire burning, in order to prevent further injury from the people that you are trying to rescue and yourself, and the survivors, is no different than a structure fire. You have to take something to control the fire, something with you to help you to carry out this primary search. So it would be a mandate to take a hand line with you as soon as possible, as soon as you were able to take that hand line.

It's no different than a structural fire. An airplane on the ground burns, as far as fire dynamics goes, the same as a building, a structure fire or a trailer fire that has life in it. The major difference with airplane fires is it has fuel on board. And

as I have explained earlier, you have that problem with a fuel-fed fire, and what that does is gives you only a few minutes to do your job, to carry out a primary rescue, or at least try and control the fire in order to get up, get inside to do a primary rescue. After you have completed the primary rescue and if you can't get inside an airplane or a building, you always check the surrounding area of the incident that you have responded to.

When that's been completed, you go into fire control and you put the fire out. And then, last, you go into property conservation and that's overhauling the airplane and making sure you put out all the spot fires and so you don't get any more damage by letting the fire continue to burn.

If you cannot do a primary search, get inside, because when you arrive there, the cabin is totally involved, as we call it, fully involved. Then as soon as the fire is knocked down, you then do a secondary search. And when you do a secondary search, the possibility of survival is very remote.

(Transcript, vol. 68, pp. 108-10)

## **CFR Response Areas**

The CFR response areas delineated in the A.I.P. and Transport Canada CFR standards document AK-12-03-001 are generally followed in the Dryden Airport CFR Standard Operating Procedures manual. An insert page in this Dryden airport CFR manual titled: "Response to Aviation Emergencies Off-Airport," effective November 18, 1985, clearly requires that the Dryden CFR respond even to "off-airport" aircraft accidents:

CFR personnel shall respond to aircraft accident/incidents off-airport in accordance with policies/procedures outlined in Transport standard AK-12-03-001 sec. (A) 3.01, 3.03, 3.04, 3.05, and the Dryden Municipal Airport Emergency Procedures Manual.

(Exhibit 76)

Subsection 3.01 of the Transport Canada CFR Standards Manual sets out the responsibilities of a CFR unit as follows:

The primary responsibility of the CFR shall be to respond to an aircraft accident/incident on the areas within the Critical Rescue and Firefighting Access Area (CRFAA) and airport boundary; the secondary responsibility shall be to respond to an aircraft accident/incident occurring beyond the CRFAA and airport boundary when it is considered that the crash site is reasonably accessible and a useful service can be rendered.

(Exhibit 243)

It is noteworthy that the word “shall” is used in both the Dryden Airport CFR Standard Operating Procedures manual and in the Transport Canada CFR Standards AK-12-03-001 policy document to describe both the primary and secondary responsibility of the CFR.

## **Critical Rescue and Fire-fighting Access Area (CRFAA)**

A CRFAA is defined in the Transport Canada Crash Firefighting and Rescue Standards AK 12-03-001 policy document as a rectangular area, 300 metres wide, centred on a runway, and extending 1000 metres past each end of the runway (see figure 9-1). The CRFAA is the area where the majority of aircraft accidents have historically occurred, and the boundaries of the CRFAA are not necessarily coincident with the airport boundary. The terrain conditions within the CRFAA are not taken into account in the definition.

Applying the criteria set out in the Dryden Airport CFR Standard Operating Procedures and in the Transport Canada CFR Standards document AK-12-03-001 policy document, the portion of the CRFAA at the west end of Dryden airport consisted of an area 300 metres wide, centred on runway 29, and extending 1000 metres west of the end of the runway.

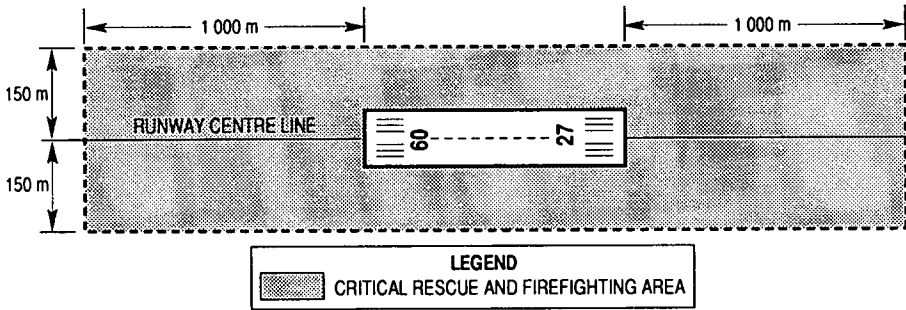
Inasmuch as flight 1363 began striking trees 127 metres to the west of the end of runway 29 before crashing and coming to a stop 962 metres to the west of the end of runway 29 at Dryden, almost in line with the runway centre line, I find that the crash occurred within the Dryden airport CRFAA.

The evidence is clear that the Dryden CFR unit never at any time conducted fire-fighting training within the CRFAA of the Dryden airport. The reason for this appears to lie, at least in part, in the lack of understanding by the Dryden CFR unit of the concept of the CRFAA, and in the failure by Transport Canada to define clearly the meaning of the CRFAA and to ensure that all CFR units understood their responsibilities with respect thereto.

During his testimony, Chief Parry discussed the responsibilities of the CFR unit at the Dryden airport. It was his opinion that the primary responsibility of the CFR unit was to perform crash, fire-fighting, and rescue operations on the airport. Chief Parry disagreed that part of the primary responsibility of the Dryden CFR unit was to respond to aircraft accidents beyond the airport boundary.

He also was of the view that the Dryden airport did not have a viable CRFAA because of the difficult terrain at the runway ends. The fact remains, however, that there was a CRFAA for the Dryden airport and that there were CFR access gates at both ends of the airport. The CFR

Figure 9-1 CRFAA



Source: Transport Canada, *A.I.P. Canada*

access gate at the west end of runway 29 led to a road that passed through the eastern portion of the CRFAA in which the crash occurred. This road provided direct access from the west end of runway 29 to McArthur Road.

As is pointed out elsewhere in this report, this access road, because of lack of winter maintenance, was not available to the CFR fire trucks that had hurriedly been driven to the west end of the runway immediately after the crash. These trucks then had to return from this point to the terminal area to get to public roads leading to the crash site, thus adding to the accident response time.

A reference contained in section 3.02 of Dryden Municipal Airport CFR Standard Operating Procedures manual to the Transport Canada CFR Standards AK-12-03-001 policy document implied that the CRFAA was part of the Dryden CFR unit's area of primary responsibility.

The Dryden Municipal Airport Emergency Procedures Manual (unapproved by Transport Canada at the time of the crash) states the following in section 3.02, in relation to the CFR response to an aircraft crash off-airport:

1. The primary responsibility of the CFR is to respond to aircraft accidents/incidents within the airport boundaries (CRFFAA<sup>1</sup>).
2. The Chief, CFR may dispatch CFR equipment and/or manpower to an aircraft accident/incident outside airport boundaries provided the site is reasonably accessible, a useful service can be rendered, and measures taken so the primary CFR responsibility is not jeopardized.

(Exhibit 51)

<sup>1</sup> Abbreviations of critical rescue and firefighting access area are seen, in documentation, as both CRFAA and CRFFAA.

From a reading of paragraph 1 above, it appears that the authors of the Dryden Municipal Airport Emergency Procedures Manual, by including, in brackets, the term (CRFAA) in paragraph 1, either regarded the airport boundary and the boundary of the CRFAA to be coincident or that the portion of the CRFAA that lay outside the airport fencing was to be considered as being inside the airport boundary, and therefore a CFR area of primary responsibility. The evidence shows, however, that this was not clearly understood by the Dryden CFR unit.

Transport Canada documents are not specific when discussing CFR response areas. The Transport Canada CFR Services Standards document AK-12-03-001 contains phrases that are not precise. In section 3.01 of the document, the phrase "beyond the CRFAA *and* airport boundary" is twice used, and in sections 3.02 and 3.03 the phrase "within the CRFAA *or* airport boundary" and "beyond the CRFAA *or* airport boundary" are used (emphasis added). There is more than one way to interpret the quoted phrases and this can lead to misunderstanding on the part of CFR personnel, as appears to have been the case at Dryden. Clearly, in directions about the response to aircraft crashes, there should be no ambiguity. Common sense would lead me to believe that Transport Canada would want CFR units to respond, to the best of their ability, to a crash in the entire area of a CRFAA, be it wholly inside, or partially outside, the airport boundary. Although I would interpret the provisions of AK-12-03-001 to mean in fact that a CFR unit should respond to an aircraft accident/incident that occurs even beyond the CRFAA or airport boundary, it is imperative that Transport Canada ensure that such intent be spelled out clearly in each airport's emergency plan and understood by each CFR unit.

Mr Larry O'Bray, the superintendent of CFR services, Transport Canada, Central Region, testified that fire-fighters should occasionally train in off-runway CRFAA areas and that, as most of the CRFAA area is off-runway, it is important that training with handlines be conducted in all areas of the CRFAA. He also testified that attention to training in the CRFAA and training with handlines had not been stressed or encouraged by Transport Canada. This observation is reinforced by the fact that Dryden airport training records indicate that the Dryden CFR unit there never trained off-airport and never trained for a crash inaccessible to the fire vehicles (as was the case in this accident), and requiring the use of extended handlines. Nor is there any indication in the evidence before me that Transport Canada has ever been concerned in this matter.

I agree with Mr O'Bray regarding the importance of CFR fire-fighters conducting reasonable and realistic handline training within the off-runway area of the CRFAA and not simply on the level, hard-packed airport property or hard-surface areas such as runways and taxiways. It

is important that fire-fighters be able to use handline equipment when fire-fighting vehicles cannot be driven to the fire.

The evidence, however, shows that any misunderstanding of the responsibility of a CFR unit to respond to an accident within the CRFAA had no bearing on the outcome of the March 10, 1989, accident, other than the fact that such lack of understanding may have influenced the absence of CFR training by the Dryden CFR unit within the CRFAA, especially with regard to the use of handlines.

Since there are areas on and off airports, but within the CRFAA, that may be inaccessible to fire-fighting vehicles, it is clearly up to Transport Canada to ensure that airport authorities, in conjunction with their respective CFR units, determine the most appropriate ways to deal with emergencies within each airport boundary and within the CRFAA, and to conduct appropriate training. Inasmuch as the secondary responsibility of CFR units is to provide a service outside the airport boundary and CRFAA, some planning and training in this respect should be carried out as well.

## **Dryden Airport CFR Unit on March 10, 1989**

### **Fuelling Procedures at Dryden**

The term "hot refuelling" refers to the procedure whereby an aircraft is refuelling while one, or more, of its engines is operating. Because the running engine is an ignition source and there is the possibility of fuel spilling, precautions are normally taken to ensure the safety of the passengers, crew, fuellers, aircraft, and other facilities.

Transport Canada, Airports and Properties Branch, Winnipeg, issued, on May 8, 1978, "for the attention of all concerned" a letter outlining the procedures for refuelling a Boeing 737 with one engine running. The following passage is quoted from the letter:

Procedures:

- (a) This procedure will be permitted only when the APU of the aeroplane is unserviceable and the necessary ground power for an engine start is not available on the airport.
- (b) All passengers are to be off-loaded and cleared from the area during the refuelling period.
- (c) Pressure refuelling permitted to a maximum volume of ninety percent of each tank capacity of the Boeing 737 and at a fuelling pressure not to exceed 30 PSI.

- (d) Normal static discharge precautions taken.
- (e) Fuel quantity at wing refuelling station and in cockpit to be monitored throughout procedure.
- (f) A responsible company employee to be positioned at nose of aircraft to observe refuelling operation while in direct radio communications with crew member or maintenance man in the cockpit qualified to handle power plant controls.
- (g) An entrance door to be open providing a satisfactory evacuation route for any crew members or company servicing personnel on board.
- (h) All available fire fighting equipment shall be located within operational distance of the aeroplane.
- (i) The aircraft to be positioned the maximum distance from the air terminal or other structure consistent with fixed apron or cabinet refuelling capability. Where possible this separation should be not less than 250 feet from the public terminal or passenger waiting room.
- (j) The Airport Manager or his representative shall be advised before the company initiates each such refuelling procedure.  
(Exhibit 273)

The testimony of Transport Canada emergency services officers indicated that this directive relating to hot refuelling of the Boeing 737 aircraft had been circulated to all airport managers in Central Region where Boeing 737 aircraft operated, including Dryden. However, it had not been passed on to the Dryden CFR unit by the airport manager. The CFR fire-fighters at Dryden had no knowledge of the directive or its contents until after March 10, 1989, when it was shown to CFR crew chief, Mr Stanley Kruger, by Mr Jack Nicholson, Transport Canada, Winnipeg.

On March 10, 1989, because the APU on C-FONF could not be used by the flight crew to start the engines, and there was no ground-start capability for the F-28 at Dryden, it was necessary to hot refuel the aircraft (see also the description in chapter 5, Events and Circumstances Preceding Takeoff). The aircraft was parked in the normal parking area with the centre line of the aircraft about 90 feet from the Dryden terminal. At approximately 11:40 a.m., after the aircraft had been parked and the pilots had discussed refuelling with Mr Vaughan Cochrane, the Dryden Flight Centre representative, Mr Cochrane called the fire hall and asked Mr Kruger to have the fire-fighters hurry to the terminal area



since the F-28 was to be refuelled while one of its main engines was running. Mr Kruger relayed the information to his partner, fire-fighter Gary Rivard, and they drove two fire-fighting vehicles, Mr Kruger in Red 1 and Mr Rivard in Red 2, to the terminal area. According to Mr Kruger, the F-28 refuelling was underway when they arrived at the terminal. The fire vehicles were parked 100 to 125 feet in front of the aircraft facing downwind in an easterly direction, with Red 2 covering the refuelling operation and Red 1 to the right of Red 2 covering the aircraft exits. Once the hot refuelling was completed, Red 1 returned to the fire hall while Red 2 remained in position until C-FONF taxied away from the terminal.

During testimony, Mr Kruger stated that he was aware that hot refuelling meant refuelling with an engine running, but he had not received formal instructions on procedures to be followed. He did, however, know that he was to cover the aircraft during a hot refuelling in case of an emergency. Some time after March 10, 1989, Mr Nicholson provided a copy of the May 8, 1978, letter to Mr Kruger.

Mr Jeffrey Hamilton, an emergency services officer, Transport Canada, Airports Authority Group, Central Region, an experienced commercial bush pilot and a qualified CFR fire-fighter and fire officer, testified that the Dryden CFR personnel did not follow the correct procedures for hot refuelling as set out in the May 8, 1978, letter. Mr Hamilton also testified that, if hot refuelling is taking place and the correct procedures are not being followed by the flight crew and the fuelling agent, the CFR fire-fighters should insist, on the spot, that refuelling immediately cease and the correct procedures be complied with.

Many of the hot refuelling procedures specified in the May 8, 1978, letter were not followed. Because none of the Dryden CFR crew were aware of the correct procedures, the appropriate action was not taken by either Mr Kruger or Mr Rivard. Mr Kruger observed that the passengers stayed on the aircraft during the hot refuelling. Even if Mr Kruger was not aware that hot refuelling with passengers on board was not allowed, he was aware that the hot refuelling was taking place too close to the terminal building. During testimony, he stated it was his opinion that the aircraft was parked too close to the terminal and that, if anything happened to the aircraft, the terminal would probably have been affected. It is my view that Mr Kruger, as crew chief, should have at least stopped the fuelling because of the proximity of the aircraft to the terminal building. Chief Parry, who was in the vicinity of the aircraft at that time, was neither aware that a hot refuelling was taking place nor indeed aware of what the term meant.

As the evidence of the hot refuelling at Dryden came to my attention early in this Inquiry, I made an interim recommendation on an urgent basis to the minister of transport at the commencement of the hearings

in Dryden, later formalized in my first *Interim Report* as Interim Recommendation No. 1, as follows:

The Department of Transport prohibit the refuelling of an aircraft with an engine operating when passengers are on board, boarding, or deplaning.

Transport Canada subsequently issued a notice to all air carriers requesting voluntary compliance with the interim recommendation until the necessary legislation was drafted and passed. I am advised by representatives of the Department of Transport that such legislation will be in place by the end of 1991.

When the refuelling hose was disconnected from C-FONF after the hot refuelling at the Dryden airport was completed, about 5 litres of fuel poured out of the aircraft fuelling manifold onto the tarmac. The fuel spill was observed by the three CFR staff who were in the vicinity of the aircraft. Mr Kruger discussed its cleanup with the refueller, Mr Cochrane, and they agreed that, because the spill did not pose a significant threat, it would be cleaned up after C-FONF had departed the area. Once the aircraft taxied away, Mr Rivard used the main turret water gun on Red 2 to wash the fuel away. He estimated that 200 to 300 gallons of Red 2's approximately 1000-gallon water capacity was used.

Mr Hamilton, when asked how a CFR fire-fighter should have handled the fuel spill, stated in testimony that, a "fuel spill of that size could have been handled with absorbent material, either a speedy dry or an aquasorb or even sand could have been spread on the spill and cleaned up as opposed to using the resources from the truck" (Transcript, vol. 34, p. 4). Both Mr Kruger and Chief Parry testified that using water from the CFR vehicles to clean up a small fuel spill was a misuse of a valuable resource and that the procedures had been changed regarding cleanup of such spills. I agree with Mr Hamilton that absorbent material, not the CFR fire-fighting equipment, should be used to handle small fuel spills. The fire trucks should have been available with full water tanks in case of an emergency during aircraft operations. If, however, a fuel spill is sufficiently large, it should be cleaned up before the aircraft's engines are started.

The Dryden airport is subsidized by Transport Canada and is subject to operating guidelines issued by Transport Canada, including the guidelines regarding the fuelling of aircraft. The Dryden Flight Centre, which is the airport handling agent for ESSO Petroleum Canada, must, as well as following Transport Canada guidelines, follow the guidelines or instructions issued by ESSO for the handling of ESSO products.

Transport Canada policy documents AK-66-06-400, Aviation Fuelling Manual: Fuel Storage, Handling and Dispensing; AK-12-06-004, Airport Crash, Firefighting, and Training Manual, and TP 1297 AK-71-20,

Manual of Standard of Procedures for Aircraft Fuel Servicing, set out the standards and guidelines relating to aircraft fuelling on Transport Canada-operated and Transport Canada-subsidized airports.

Transport Canada, as one the largest operators of airports in North America, created the documents noted above based on its experience in aircraft fuel handling and knowledge of previous fuelling-related accidents. The destruction of an Air Canada DC-8 aircraft in Toronto, Ontario, on June 21, 1973, to which I referred in my first *Interim Report*, is one example of such an occurrence. This aircraft caught fire during refuelling; however, the source of ignition was never determined. The boarding of passengers on the Air Canada DC-8 had just been approved but, fortunately, had not yet commenced when the first explosion took place.

ESSO Petroleum Canada's Aviation Operations Standards Manual, which describes in detail how to handle aviation fuels and other ESSO products safely, is issued to all ESSO agents, including the Dryden Flight Centre.

Transport Canada policy document AK-66-06-400 outlines the provisions relating to bonding and grounding an aircraft during fuelling to prevent the buildup of static electricity that could lead to static discharge and ignition of fuel vapours. Provisions in the document require that the aircraft and the refuelling vehicle each be grounded, the aircraft and the refuelling vehicle be bonded to each other, and the fuel nozzle be bonded to the aircraft.

Mr Jerry Fillier, an employee of Dryden Flight Centre, initially started to hook up the fuel truck to C-FONF but was sent by Mr Cochrane to refuel another aircraft at the fuel cabinets. Mr Cochrane then completed the hook-up and hot refuelling of C-FONF. During his testimony, Mr Fillier stated that he bonded the truck to the aircraft but did nothing else regarding the refuelling of C-FONF. He knew the procedures for proper bonding but did not know that the aircraft should have been grounded. It was not determined conclusively during the testimony of Mr Cochrane whether he completed the required bonding and grounding before he started to refuel the aircraft.

Transport Canada policy document AK-12-06-004 states at page 51 that:

With Type B jet fuel, due to its relatively low vapour pressure, the vapour-air mixture above the liquid surface, under normal temperature and pressure conditions, will often be within flammability range. This means that ignition of Type B vapours either inside or outside a tank may cause violent combustion within the confined

space if the flame enters. Type A jet fuels do not give off flammable vapours in ignitable amounts unless the fuel temperature is above 35°C.

(Exhibit 244)

C-FONF was refuelled at Dryden with Jet B fuel, and the temperature during the hot refuelling was 1°C, a temperature within the fuel's flammability range.

On all refuelling vehicles, there is a dead-man switch that normally must be held continuously by the refueller in its "on" position to allow fuel to flow. This safety feature will cause refuelling to stop the moment the switch is released. The safety feature of the switch can be bypassed by, for example, taping the switch "on" or by using a switch override.

The ESSO Aviation Operations Standards Manual states at section 020-004, page 18, as follows:

Deadman control devices must be installed on all underwing fuelling vehicles.

Unless prohibited by local regulations, these devices may have an over-ride which must be sealed in the normal position. This over-ride can be used to complete a fueling in case of a faulty deadman.

Corrective action must be taken to repair the deadman immediately after fueling is completed.

(Exhibit 173)

Transport Canada policy document AK-66-06-400, subparagraph 8.04 at page 8, states in part: "Self-closing nozzles or deadman controls shall not be blocked open or bypassed" (Exhibit 270). Mr Cochrane testified that it was normal at Dryden to override the dead-man switch when refuelling, and, in this instance, he caused the dead-man switch to be bypassed.

The ESSO manual states in its introduction to section AOSM 202-007, page 1: "Fueling of an aircraft with one propulsion engine running is a *non-routine, emergency operation* and as such requires very strict safety precautions, in addition to those given elsewhere ... [emphasis added]" (Exhibit 173).

The ESSO manual also states that, when hot refuelling is to take place, all passengers must deplane, the customer must sign an indemnification release statement, a representative of the customer must supervise the refuelling, the operation must be reviewed beforehand by the customer and the agent, the aircraft must be positioned at least 150 feet from any building or aircraft, and all persons not directly needed for the refuelling must be at least 150 feet away. Mr Cochrane, although a representative and agent of ESSO, was not aware of these provisions and did not take any steps to ensure that they were met.

The evidence shows that there was nothing in any manuals normally used by Air Ontario F-28 pilots regarding hot refuelling, a serious omission. However, the Air Ontario Flight Attendant Manual, Section 2.31, Item 12, states as follows:

When refuelling is required with one engine running, all passengers are to be off-loaded and cleared from the area during the refuelling period. Flight Attendants should also leave the aircraft.

(Exhibit 137)

It is my view that, during the hot refuelling of aircraft C-FONF, the Dryden Flight Centre refuellers used unsafe procedures in that they did not follow any of the special precautions outlined in the ESSO manual. The failure to use the dead-man control device, the possible inadequate grounding, the fact that there were passengers and crew on board the aircraft, and the fact that the aircraft was closer to the terminal and other persons and equipment than allowed are made more dangerous by the fact that Jet B fuel, which is more volatile than Jet A fuel, was being pumped into the aircraft. The hot refuelling was completed in disregard of proven safety procedures, either because the proper procedures were not known or, if the procedures were known, the dangers involved were not appreciated.

It is also my view that the pilots of C-FONF should have been aware that extra precaution was required when hot refuelling with passengers on board.

The CFR fire-fighters were in the vicinity and monitored the hot refuelling, and they, as well, are equally responsible for ensuring that refuelling be as safe as it can be. As professionals, they should, because of their training and knowledge, be able to spot unsafe practices, and they should intervene to preclude an obvious fire hazard. The evidence is clear that the CFR unit did not intervene in any way with the refuelling other than to clean up the small fuel spill.

It is obvious from all the evidence that the flight crew were anxious to depart Dryden as soon as possible, and I am left with the impression that the fuelling agent, who was also the ground-handling agent for Air Ontario, was in a hurry to fuel C-FONF at Dryden. By so doing, he ignored many precautions that are in place to promote safe fuelling operations.

As a result of the evidence and testimony that came before me during the course of the hearings, Transport Canada, on March 22, 1990, issued an AK directive by way of a memorandum to all airport managers of Transport Canada-owned and operated airports and Transport Canada-subsidized airports dealing with airport fuelling procedures. The memorandum is as follows:

The purpose of this memo is to reconfirm that the TC fuelling safety procedures covered in TP 2231 (AK-66-06-400) are still in force and shall be followed at Transport Canada owned and operated airports, and extended to subsidized airports in line with ADM memo of February 15, 1990. You are asked to take immediately the necessary steps to implement TP 2231 (AK-66-06-400) with emphasis on the following sections:

Section 4.05

The Airport Manager *shall* maintain a separate file for each fuel company or handling agency, which will provide a record of all inspections, document verification, and violations of the policies and standards outlined herein.

Section 4.06

The Airport Manager shall recommend that an agreement, lease, or other contract document be terminated or not renewed, if the training record of any employee engaged in the handling of fuel or fuel vehicles or equipment is not provided when requested and/or if standards or safety and security requirements are not met.

Section 4.07

The Airport Manager shall advise the fuel system operator, the airport management committee, or the airlines and the fuelling committee, if established, of any deficiencies in the fuelling area.

Strict adherence to these standards are compulsory, and any deviation from them must be requested from AK – Ottawa.

In order to ensure compliance from coast to coast, I requested that AKOB<sup>2</sup> personnel conduct “spot checks” at airports regardless of their size. This is a very important safety matter, and I trust that you will do your utmost to ensure its full implementation.

I commend the action taken by Transport Canada both in reaffirming that Transport Canada Fuelling Safety Procedures covered in policy document AK-66-06-400 shall continue to be in force, and in extending the mandatory fuelling safety practices and procedures to subsidized airports in Canada. I also agree with Transport Canada’s decision to have its personnel conduct spot checks at airports to ensure that knowledge, training, and standards of safety are met regarding fuelling procedures. However, I see no reason why CFR personnel, upon receiving proper training regarding aviation fuels and fuelling pro-

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<sup>2</sup> AKOB is the designation for personnel in Transport Canada Airports Safety Services, Ottawa.

cedures, cannot be used to monitor fuelling procedures on a continuing basis and act as Transport Canada's representatives in ensuring compliance with the standards and procedures. Since the airport CFR unit, as an arm of Transport Canada's airport authority, has a real interest in having fuelling practices and procedures conducted in a safe manner, it seems only logical that they be mandated to ensure that standards are maintained.

## **Crash Gate Access Roads**

At the Dryden airport, there are roads at either end of runway 11/29 leading to gates built into the airport perimeter fences in line with the runway. The roads and gates are to provide the CFR fire vehicles immediate access off the runway ends into the critical rescue and fire-fighting access area (CRFAA) beyond the airport proper in the event of an aircraft crash. On March 10, 1989, the access road to and beyond the crash gate at the west end of runway 29 could not be used by the fire vehicles because it had not been cleared of snow. During testimony, Crew Chief Kruger stated that he was of the opinion that the access roads should be kept open and accessible, and that he had communicated this view to both Chief Parry and Mr Louttit, the airport manager, on a number of occasions prior to March 10, 1989. Mr Kruger testified that the access road could have been kept open easily with the airport grader or front-end loader and that "a lot of minutes could have been saved" in reaching the crash site if this had been done (Transcript, vol. 26, p. 159). After the crash of C-FONF, Mr Kruger and Mr Garry Galvin, the other Dryden CFR crew chief, wrote a summary of observations and suggestions by the Dryden CFR crew. The summary was dated March 13, 1989, and stated in part as follows:

Better maintain access roads to runway, road from firehall to the runway should be kept sanded on a priority basis in winter months. Access roads at the end of the runway at each end should be kept open in winter months.

(Exhibit 186)

Mr Arthur Bourre has been an employee of the Dryden airport for approximately 10 years and is an experienced meteorological observer and equipment operator. During his testimony, he agreed with Mr Kruger that the access roads should be kept clear of snow, that the CFR crews had requested the same of Dryden airport management, and that it would not be difficult to keep them open using airport equipment. Mr Hamilton, a Transport Canada emergency services officer, agreed that the access roads should be kept clear.

Although Transport Canada's policy manual AK-72-40-200, Manual of Snow Removal and Ice Control Operational Requirements, does not clearly state policy on crash roads, it does establish priorities for snow and ice removal to keep an airport operating. This document establishes three levels of priority for areas to be cleared during and after a snowstorm. The airside priority I area requires, among other things, that access roads from the fire hall to the active runway be cleared at all times. The airside priority III area sets out the following requirements in section 4.02 (a)(iii):

Priority III Area

The Airside Priority III Area includes those surfaces that are cleared after a snowstorm. They are:

- (1) all other runways and taxiways;
- (2) airside service roads;
- (3) runway, taxiway shoulder areas;
- (4) pre-threshold areas;
- (5) glide path sites;
- (6) remaining airside areas required to permit full operational use of the airport.

While the priority III area does not expressly include crash gate access roads at runway ends, I interpret the statement in subparagraph (6), "remaining airside areas required to permit full operational use of the airport," to be broad enough to include crash gate access roads at the runway ends.

I heard no reasonable explanation as to why the management of the Dryden airport did not keep the crash gate access roads open during the winter. I find this particularly disconcerting in view of the fact that a Dryden CFR fire-fighter had repeatedly requested of airport management that this be done. I find that both the airport manager, Mr Louttit, and Chief Parry had a duty to ensure that the crash gate access roads were kept open and that they did not discharge that duty.

Transport Canada, Central Region, Emergency Services Organization, did not identify this problem. Its inattention to this area appears, in large part, to have been attributable to the lack of adequate resources, to inappropriate lines of authority, and to the lack of adequate control by Transport Canada over the Dryden airport and the CFR unit.

As a result of the evidence put before this Commission with regard to the Dryden airport crash gate access roads not being maintained during the winter months, the director-general airports operations, Transport Canada, on March 23, 1990, issued the following directive:



### SNOW REMOVAL – EMERGENCY ACCESS ROADS AND GATES

During the recent Commission of Inquiry hearings concerning the Crash Fire Rescue (CFR) response to the Air Ontario crash at Dryden, Ontario, there was considerable criticism regarding the fact that emergency access roads at the ends of the active runway had not been maintained during the winter months.

Pending an amendment to the “Snow Removal and Ice Control Standard,” we would ask that emergency access roads and crash gates at each end of every active runway are cleared of snow as part of the after storm clean-up. In addition, these instructions extend to subsidized airports in line with AK’s direction of February 15, 1990.

I endorse the action of Transport Canada in instructing airport managers to ensure that emergency access roads and crash gates at each end of every active runway are clear of snow as part of the after-storm cleanup. I also endorse the amendment to policy document AK-72-40-200 to ensure that access roads and crash gates are more clearly defined in the priority III area subsection of the document.

### **Activities of CFR Fire-fighters**

The evidence leaves no doubt whatsoever that the CFR personnel who attended at the scene of the crash allowed themselves to become diverted from their responsibility to take action to prevent, control, or extinguish the fire involving or adjacent to the aircraft, as set out in Transport policy document AK-12-03-001. Instead, they gave in to human instinct and assisted the survivors who were already outside the aircraft.

I will not review in detail the actions and the efforts of crew chief Kruger and fire-fighter Rivard, the first CFR members to arrive at the scene, in assisting passengers who had extricated themselves from the flaming aircraft wreckage. The passengers’ recollections are discussed elsewhere in this report. While it is not difficult to understand Mr Kruger’s and Mr Rivard’s instincts of human compassion which caused them to become absorbed in assisting the survivors, their actions demonstrate the need for adequate training of CFR crews about their primary responsibility at an aircraft accident site. At the same time, I commend Mr Kruger for making his way immediately to the crash site, assessing the situation, and directing much of the rescue activity.

I will comment later on the actions of Chief Parry as on-site coordinator. My comments and observations now will be directed at the actions of Chief Parry, crew chief Kruger, and fire-fighter Rivard in their capacity as professional CFR personnel responding to the crash of C-FONF.

The CFR unit acted in a timely manner in initially responding to the crash, except that Mr Rivard arrived at the crash site approximately 30 minutes after the arrival of Chief Parry and Mr Kruger because he got stuck in a snow bank at the airport, and because he stopped to top up Red 2 with water.

Paragraph 3.01 of the draft Dryden Emergency Procedures Manual deals with aircraft crashes off-airport and states *inter alia*, that: "Aircraft accidents/incidents outside the airport boundaries are the responsibility of the O.P.P. and the site will be under their command" (Exhibit 71). Paragraph 3.02 in part states: "The Chief ... [in this case, Chief Parry] may dispatch AES [Airport Emergency Services] equipment and/or manpower to an aircraft accident/incident outside airport boundaries provided the site is reasonably accessible, a useful service can be rendered, and measures taken so the primary AES responsibility is not jeopardized."

At the time, Chief Parry did not consider the ramifications of leaving the airport unattended, nor did he stop to consider the issues of jurisdiction or responsibility; his perceived requirement was to get himself, his fire-fighters, and his fire-fighting equipment to the crash site as quickly as possible. During the hearings, Chief Parry testified that his primary responsibility was the airport, that he had left it unattended, and that he would not have been able to respond to an emergency at the airport. Chief Parry explained his actions in responding to the crash by stating the following in testimony: "considering the weather conditions, and the fact that the primary aircraft was down, I did not anticipate any other aircraft of an F-28 or primary aircraft size at the airport at that time" (Transcript, vol. 6, pp. 272-73).

In my view, Chief Parry properly exercised his discretion in responding to the crash. Clearly there was a possibility that the CFR fire-fighters could render a useful service. Although the evidence demonstrated that Chief Parry lacked a full understanding of the scope of his responsibilities and duties and that his views regarding the CRFAA were questionable, these factors did not affect the initial CFR response.

The airport manager was immediately involved in the response to the crash and was aware that, once the CFR vehicles left the airport, there was no CFR service available to respond to further emergencies at the airport. He was therefore in the best position to notify all potential users and operators of the lack of availability of CFR services. It was not until 3:46 p.m. EST, however, that a notice to airmen (NOTAM) was issued by Kenora Flight Services stating that CFR services were not available at the Dryden airport. Another NOTAM was issued at 4:30 p.m. EST indicating that CFR services were again available.

### **Initial Response by CFR Unit to the Crash**

Each of the three Dryden CFR staff who responded to the crash of C-FONF committed a number of errors that, given the evidence as to their inadequate training, are understandable. Each error or mistake, by itself, may not have been significant in the overall response; however, in assessing the collective errors of these persons, I am led to question the level of training and knowledge of the personnel of this CFR unit. Accordingly, I will deal with the activities of the each of these persons.

Fire-fighter Rivard, an experienced truck operator and previously a part-time maintenance employee for the Dryden airport, had been a fire-fighter for a few months prior to March 10, 1989, and on that day was operating vehicle Red 2. In responding to the crash, Mr Rivard, in Red 2, and Chief Parry, in Red 3, drove on to runway 11/29 and proceeded quickly to the west end of the runway. The vehicles were not able to use the crash gate access road at the end of runway 29 to reach the public roads that led to the crash site, so both vehicles turned around and proceeded back towards taxiway Alpha and the service road. As Mr Rivard had depleted some of the water from Red 2 in washing down the fuel spill, he asked Chief Parry if he should refill the truck. Chief Parry instructed Mr Rivard to top up Red 2 before proceeding to the crash site.

Chief Parry exited the runway at taxiway Alpha, and Mr Rivard proceeded east to the service road to fill up Red 2 at the fire station. Mr Rivard estimates that he was travelling at approximately 40 mph while proceeding along the runway and slowed to approximately 25 mph to negotiate the turn onto the service road. The service road, while cleared, was snow packed and not sanded. On entering the service road, Mr Rivard lost control of the vehicle, and it slid into a snow bank. Airport maintenance employee Christopher Pike, using a front-end loader, pulled Red 2 from the snow bank, and Mr Rivard proceeded to replenish Red 2 with an estimated 200 to 300 gallons of water. He then proceeded to the crash site, arriving at the junction of McArthur and Middle Marker roads at 12:43 p.m. Approximately 30 minutes had elapsed between the time that Mr Rivard got stuck and the time he arrived at the crash site.

Crew chief Kruger, in vehicle Red 1, returned to the fire hall after monitoring the refuelling and observing C-FONF take off. Immediately on his arrival at the fire hall, he received a radio call from Chief Parry asking him to "get back out here" (Transcript, vol. 26, p. 109). Mr Kruger drove Red 1 back onto the runway and proceeded westbound. On seeing Red 2 and Red 3 coming towards him, Mr Kruger turned around and waited for Red 2 and Red 3 to catch up and lead the way. Mr Kruger followed Chief Parry off the airport property and to the crash site.

En route to the crash site, Chief Parry communicated by radio with the Town of Dryden as follows:

This is Airport Red 3 we suspect we have an F-28 jet down approximately 3 or 4 miles west of the runway, please activate the mutual aid and emergency plan.

(Exhibit 1282, p. 2)

Chief Parry parked Red 3 at the intersection of McArthur Road and Middle Marker Road, unlocked the gate to Middle Marker Road, and signalled Mr Kruger to go down this road the crash site. Chief Parry and Mr Kruger arrived at the intersection at approximately 12:18 p.m.

### **Fire Chief Parry**

Chief Parry stated that, based on his experience with the exercises he had been involved with and the location of the crash site, he made the decision to stay at the intersection and establish a command post. He believed he would be most effective in directing arriving agencies where to go. This decision is not inconsistent with the CFR and other emergency training with which Chief Parry had been involved, and had been reinforced by Transport Canada officials who oversaw or reported on the training. All such training, however, had been conducted on the airport.

Chief Parry remained at the intersection, acting, in his view, as overall coordinator. Chief Parry's jurisdiction was never challenged by other responsible persons, and he voluntarily relinquished command to the Ontario Provincial Police (OPP) at mid afternoon on March 10.

Because of its location in Wainwright Township, the crash site came under the overall command of the OPP, and the fire-fighting responsibility came under the purview of the Unorganized Territories of Ontario (UT of O) Fire Department under the direction of Fire Chief Roger Nordlund.

During his testimony, Chief Parry agreed that the control of the fire-fighting effort should have been under the UT of O Fire Department, and that the overall responsibility in the area should have rested with the OPP. When asked to explain in what context or under what jurisdiction he established his command post, Chief Parry replied as follows:

- A. Simply that it was an aircraft incident and we were the first there.

(Transcript, vol. 6, p. 269)

It appears to me that the overlapping jurisdictions in place at the crash scene on March 10, 1989, caused confusion and uncertainty as to the respective roles of those involved. This is an area in need of clarification,

as previously was discussed in chapter 8, Dryden Area Response. Chief Parry did not go to the crash site until approximately 3:30 p.m., some 3 hours and 20 minutes after the crash occurred, when he toured the site with Staff Sergeant D.O. Munn of the OPP. Chief Parry estimated that he was there for 10 to 20 minutes, long enough to ensure that there was no further need for the CFR unit and that he could do "an official turnover to the OPP" (Transcript, vol. 6, p. 267). It was not until later that he realized an official turnover was not required.

### **Crew Chief Kruger**

After parking Red 1 on Middle Marker Road, Mr Kruger took a portable, two-way, two-channel FM radio and a first aid kit weighing approximately 25 pounds and walked into the site. It was Mr Kruger's intention to proceed to the crash site and assess the accident. Two civilians, Craig Brown and Brett Morry of Terraquest Ltd, who were the first persons to arrive at Middle Marker Road after the crash, had already walked through the deep snow to the crash site, and Mr Kruger followed the path they had made, catching up to them as they neared the crash site. Mr Kruger stated he could hear the fire, small explosions, and the sound of flames making an echoing noise in the bush.

As he neared the crash site, Mr Kruger met about 20 surviving passengers who presented a scene that was "hard to describe and put into words." The survivors were, in his words, "in various states of emotional distress, underdressed, and all of them coming towards me at the same time" (Transcript, vol. 26, p. 130). Mr Kruger gave them directions on how to get to Middle Marker Road and to the intersection. From his observations when he arrived at the crash site, Mr Kruger formed the opinion that there were no survivors in that aircraft.

By the time Mr Kruger arrived at the aircraft, all passengers who were to survive the accident, except two, had exited the aircraft either on their own or with the help of others. Two remaining survivors, Mr Uwe Teubert and Mr Michael Kliewer, were discovered at approximately 1:00 p.m. trapped under the left side of the aircraft. Under the direction and with the assistance of doctors Gregory Martin and Alan Hamilton, rescuers removed Mr Teubert and Mr Kliewer from the wreckage by approximately 1:10 p.m. Mr Kliewer was badly injured and incapacitated. They were both attended to by the doctors, taken out to the road on stretchers, and transported by ambulance to the Dryden hospital at approximately 1:45 p.m. Mr Kliewer died in hospital as a result of his injuries.

All other surviving passengers either made their own way out to Middle Marker Road or were assisted by other survivors, by Mr Kruger and Mr Rivard, by various UT of O and Town of Dryden fire-fighters,

by OPP officers, by numerous civilians, and by medical personnel from the Dryden hospital.

Mr Kruger stated that on arriving at the aircraft site, he observed many fires around the edge of the aircraft and that the aircraft itself was burning. He inspected the right-hand side up to the nose area of the aircraft, but did not proceed around the left side of the aircraft prior to the rescue of the trapped individuals. After inspecting the right-hand side, Mr Kruger decided to go back with the remaining survivors and wait until he got help with fire-fighting apparatus.

During his testimony, Mr Kruger stated that he recognized several individuals who arrived on the scene shortly after he did. From that fact alone, he knew that the disaster plan had been activated and that there would be other fire departments responding in short order.

Mr Kruger testified that after arriving at the crash site, he called Chief Parry on channel 1 of the hand-held radio, which he stated was "our airport operating frequency for our fire department," and provided him with a quick assessment of the accident (Transcript, vol. 26, p. 125). It was Mr Kruger's opinion that channel 1 was the frequency on which he would communicate with Chief Parry. Mr Kruger further stated that he advised Chief Parry that the crash site was about 150 yards from Middle Marker Road, that there were at least 20 survivors, that "there was an awful lot of the aircraft that was burning that could be saved and to get the handlines in as quick as possible" (Transcript, vol. 26, p. 136). Mr Kruger also testified that he told Chief Parry to send in men and equipment. In Mr Kruger's view, "men and equipment" was a self-explanatory statement meaning "firefighting apparatus" (p. 136). Red 1 could not be used as a fire-fighting vehicle because its handline was only 150 feet long and would not reach the accident site from the nearest point at which it could park.

Chief Parry agreed during testimony that Mr Kruger contacted him early on when he first went into the crash site and provided him with an estimate that it was 150 yards from the crash site to Middle Marker Road. It was Mr Rivard's testimony that he heard Mr Kruger make the request for handlines, stretcher boards, and men about three times and that Chief Parry was not answering Mr Kruger's calls. Mr Rivard stated that on two occasions, once while he was refilling Red 2 with water and again while he was driving to the crash site, he answered Mr Kruger's calls on his own radio but did not receive a reply. Mr Rivard stated that Mr Kruger's requests were made on channel 1, the CFR unit's emergency channel.

Mr Kruger testified that his call for handlines shortly after he got into the woods was acknowledged by Chief Parry. Since the tape recording of the fire channel at Dryden dispatch shows that Chief Parry began operating on the mutual aid channel before he arrived at the scene, any

such conversation and acknowledgement would have to appear on the same tape recording, unless Chief Parry had switched momentarily to channel 1. At 1:04 p.m. airport control radioed Red 3 (Chief Parry) that Red 1 had been talking to Kenora on VHF frequency 122.6. Chief Parry replied that he had lost contact with Red 1 and had sent a Dryden fire-fighter with a radio to try to re-establish contact. The first tape-recorded transmission from Red 1 occurs at 1:10 p.m., on channel 2, the mutual aid channel. This transmission was a request from Red 1 for handlines, which was acknowledged by Chief Parry. The evidence shows that, subsequent to his initial radio contact with Chief Parry, shortly after arriving at the crash site, Mr Kruger transmitted other information by radio, but these messages did not get to Chief Parry, probably because Chief Parry was then on the mutual aid frequency.

Fire-fighter Rivard, Mr Kruger's partner, also stayed on channel 1. In the minutes of the staff debriefing, held at the airport on March 14, the following recommendation appears:

A better procedure is needed for CFR to know when to change from the CFR frequency to the Mutual Aid frequency on the FM radios.  
(Exhibit 37(e))

It would appear from all of the evidence that, after Mr Kruger's initial radio contact with Chief Parry after reaching the crash site, there was no further two-way radio communication between them until about 1:10 p.m. I conclude that Mr Kruger did not change his radio from channel 1, the CFR channel, to channel 2, the mutual aid channel, as Chief Parry had done. In his testimony, Mr Kruger discussed why he did not switch channels:

- Q. Did you have both channel 1 and channel 2 on your portable radio?
- A. Yes, I did.
- Q. Did you attempt to raise the Chief on channel 2?
- A. Not until some time later.
- Q. And why is it that you didn't think of switching to channel 2 when you didn't get a response on channel 1?
- A. I can't give you a definite answer on that. I think I was so caught up with the activity it – it did take some time. I had contacted my partner on the firefighting frequency. It never occurred to me, for any reason, that I should not be able to raise the Fire Chief on that channel.

(Transcript, vol. 27, p. 63)

It would seem that the establishment of communications between Chief Parry and Mr Kruger would be a priority for both of them given their tasks as on-scene commander and fire-fighter. One radio call on the

other channel by either Mr Kruger or Chief Parry would have accomplished this linkage.

Mr Kruger spent the duration of his time at the crash site attending to surviving passengers and directing arriving individuals to various duties. On his immediate arrival, Mr Kruger gave his fire-fighter's coat to flight attendant Sonia Hartwick who was carrying an infant child, thereby negating his effectiveness as a fire-fighter. Mr Kruger became involved in assisting and carrying stretcher patients as "there was no surplus of help, rescuers, at the time" (Transcript, vol. 26, p. 149). On the arrival of Mr Rivard, Mr Kruger instructed him to grab the power saw out of Red 1 and brush out a trail to allow the stretchers to be carried out to Middle Marker Road. Mr Kruger then became involved in a ground search team that checked the flight path for passengers who may have been thrown from the aircraft.

Although all his actions were commendable, Mr Kruger became so involved in assisting the injured passengers that he forgot that, as the first professional fire-fighter at the scene, he should have focused his attention on fighting the aircraft fire, on the possibility of assisting trapped passengers, and on the preservation of evidence.

### **Fire-fighter Rivard**

Mr Gary Rivard, on his arrival in Red 2 at the intersection of McArthur and Middle Marker roads at 12:43 p.m., was signalled by Chief Parry to drive down Middle Marker Road. On driving towards the site, Mr Rivard realized that an ambulance, which had been allowed access down Middle Marker Road by the OPP and was parked behind Red 1, would be blocked by Red 2. Mr Rivard parked behind the ambulance and assisted Mr Harold Rabb, a Dryden ambulance driver, in getting two surviving passengers into Red 2. Mr Rivard then backed Red 2 out of the intersection to allow the ambulance to exit. As he was crossing McArthur Road at the intersection, there was a loss of air pressure from the air system of Red 2 that caused its brakes to apply automatically and the engine throttle to fail to idle power. The loss of air had been a recurring problem on Red 2. Mr Rivard, leaving the vehicle's engine running, assisted the survivors who were riding in Red 2 into other vehicles located on McArthur Road. Then, with the aid of a Dryden airport maintenance worker, Mr Christopher Pike, he overrode the failed engine throttle and locked brakes and moved Red 2 out of the way of the intersection. He parked Red 2 on the side of McArthur Road where it remained for the balance of the afternoon. Mr Rivard then made his way through the bush to the aircraft crash site.

While Mr Rivard admitted during testimony that he could, with the assistance of Mr Pike, have moved Red 2 back down Middle Marker Road close to the crash site, and, thereafter, with the assistance of



civilian rescuers, run a handline into the wreckage, he had no explanation why he did not do so. Nor did he check with Chief Parry to see whether he had heard the urgent requests for handlines made by Mr Kruger on channel 1. It strikes me that a properly trained fire-fighter, hearing no response to such important calls to the fire chief, would have done no less.

On his way in to the crash site, Mr Rivard came across rescuers struggling with passengers on stretchers. He assisted them and became involved with others in carrying three individuals on stretchers to Middle Marker Road. After helping with three stretchers, he spent a further half hour with a fellow fire-fighter from the town of Dryden, Mr Craig Bulloch, using a chain saw from Red 1 to clear a trail through the wooded area from the aircraft crash site to Middle Marker Road. Thereafter, Mr Rivard, Mr Kruger, UT of O and the Town of Dryden fire-fighters and others assisted survivors of the crash in making their way to Middle Marker Road and transporting injured passengers in stretchers to ambulances. Shortly after 1:30 p.m., when the UT of O fire-fighting vehicles drove down Middle Marker Road, Mr Rivard assisted other UT of O fire-fighters in extending a handline from the UT of O pumper truck to the aircraft crash site. Water and foam were first applied to the burning aircraft at approximately 2:00 p.m.

## **Use of Fire-fighting Equipment Available at the Crash**

Airport CFR fire-fighting equipment that arrived at the scene of the crash were:

- Red 1, a rapid intervention vehicle carrying 300 gallons of premixed water and foam, 300 pounds of dry chemical, and equipped with a dual-agent handline 150 feet long on either side of the truck (the lines could not be joined together);
- Red 2, a crash response tanker vehicle holding 1000 gallons of water and separate foam tank and equipped with connectible 2½-inch 50-foot and 100-foot handlines with a total length of 600 feet (a 100-foot section of 2½-inch hose with connections weighs 11 kilograms); and
- Red 3, a four-wheel drive suburban van equipped with three communications radios and carrying two 30-pound fire extinguishers. Its radios are a 10-frequency VHF scanner that receives only, a two-channel FM two-way radio used for communicating between airport vehicles and offices and the Town of Dryden Fire Department, and a single frequency VHF radio for communicating between airport vehicles and the Kenora Flight Service Station.

Red 3 and Red 1 arrived at the scene of the crash at 12:18 p.m., less than 10 minutes after the crash, and Red 2 arrived at 12:43 p.m., approximately 33 minutes after the crash.

The UT of O fire-fighting vehicles that arrived in response to the crash were a self-contained rapid attack vehicle carrying water, unmixed foam concentrate, and about 1000 to 1200 feet of fire hose, and a tanker truck carrying about 1000 gallons of water, unmixed foam concentrate, and a port-a-pond water tank. The two UT of O fire-fighting vehicles arrived at 12:34 p.m. and 12:40 p.m. respectively, less than 30 minutes after C-FONF crashed. Three fire-fighters arrived with the UT of O fire vehicles, with additional fire-fighters arriving continually in their private vehicles. UT of O Fire Chief Roger Nordlund arrived at the crash site at 12:45 p.m.

The Town of Dryden Fire Department dispatched two vehicles to the crash site after a request was made by Chief Parry at 12:26 p.m. for a pumper truck. The Town of Dryden pumper truck, a suburban van, 10 fire-fighters, and two fire captains arrived at the intersection at 12:44 p.m., 34 minutes after the crash. (Mr Louis Maltais, the fire chief for the Town of Dryden, testified that, because all the fire-fighting equipment from the airport had been committed to the crash site, he sent the town's pumper truck to the airport fire hall at approximately 2:30 p.m. to provide CFR coverage for any incoming aircraft.)

By 12:45 p.m., approximately 35 minutes after the crash, there were seven fire-fighting vehicles near the scene of the crash from three fire-fighting units. Three of the vehicles, the CFR truck Red 2, the UT of O pumper truck with portable tank, and the Town of Dryden pumper truck were capable, with the use of their extended fire hoses, of delivering water and/or water and foam to the burning aircraft. However, no attempt was made to use any of the fire-fighting equipment on the peripheral fires and burning aircraft until after 1:30 p.m., when the UT of O tanker truck was driven down Middle Marker Road to a point within 150 yards of the crash site. Extinguishing and controlling the fire was not commenced until approximately 2:00 p.m., one hour and 50 minutes after the crash, when the first water and foam mixture was applied by UT of O fire-fighters.

There were two 30-pound, cartridge-activated fire extinguishers on Chief Parry's suburban vehicle, Red 3. One was a standard multi-purpose, dry chemical extinguisher, and the other was specifically for metal fires such as wheel brake fires. Neither extinguisher was used on the aircraft fire. Chief Parry gave the following reasons for not using these extinguishers:

- A. ... I knew that it was an F-28 that had gone down in heavy bush. I had seen smoke from a distance and both arriving and the

magnitude of that disaster was not going to be affected in any significant manner by a 30-pound extinguisher.

(Transcript, vol. 6, p. 251)

When questioned further, however, Chief Parry agreed that these fire extinguishers could have been used to contain spot fires and flare-ups described by rescuers who arrived early at the crash site.

In discussing the use of rapid intervention vehicle, Red 1, for fire-fighting, Chief Parry stated that Red 1 does not have handlines suitable for use away from the immediate vicinity of the truck. He stated in testimony that "it has a fixed dual agent handline which is extremely heavy and short. It is intended for immediate mop-up use in the close proximity" (Transcript, vol. 7, pp. 10-11). The suburban vehicle, Red 3, parked at the intersection all afternoon, was used as a command post by Chief Parry.

During testimony, Chief Parry explained why he did not instruct Mr Rivard in Red 2 to proceed back down Middle Marker Road and position the vehicle close to the crash site:

- A. We already had a pumper truck in that area. A pumper truck can be supplied with water. It has drafting capability. It also carries a great deal of hose. It was sent in there initially.

(Transcript, vol. 6, pp. 253-54)

Chief Parry was referring to the UT of O pumper truck that arrived at the intersection at 12:40 p.m. and parked on McArthur Road three minutes prior to the arrival of Red 2. While Chief Parry admits that he made an error in signalling Red 2 to go down Middle Marker Road when it first arrived, he stated that his action was a "natural instinct" and he waved Red 2 in, not realizing that there was an ambulance already down Middle Marker Road.

In Chief Parry's view, Red 2's fire-fighting capability would have been less effective than the UT of O pumper truck and, in his words, it would have been "perhaps disastrous" for the CFR fire-fighters to "try and set that up and get those handlines in" from Red 2 (Transcript, vol. 6, p. 255). Chief Parry felt that it would have taken the efforts of Mr Kruger, Mr Rivard, and himself just to string the 500 feet of fire hose into the crash site, and "that it probably would have taken us a long time, just three of us mainly, trying to get that hose in there" (Transcript, vol. 6, p. 255). Chief Parry was also of the view that he would have lost the coordination aspect of "getting all those other resources there. In my opinion, that would have been disastrous" (p. 256). Chief Parry stated in testimony that, even if it was physically possible for the three CFR personnel to hook up the links of hose and string the line from Red 2, it would have been a 20- to 30-minute operation. Based on his experi-

ence from previous exercises, Chief Parry elected to man his command post and he stayed there, in his words, “[a]s much as I possibly could” (p. 257).

Chief Parry explained that he did not instruct Red 2 to proceed back down Middle Marker Road because Red 2 would have been less effective than the UT of O pumper truck. While he explained why the UT of O pumper truck would be more effective, Chief Parry had no explanation of why the UT of O pumper truck was not directed down Middle Marker Road to a position near the crash site as soon as possible after its arrival. Chief Parry stated in testimony that:

- A. ... what really happened ... the UT of O pumper truck showed up around about the same time as the Red 2 and I instructed them to go in and see if they could get a handline in ... when the UT of O pumper truck showed up, it was the first thing I said to them. See if you can get a handline in there.

(Transcript, vol. 8, p. 15)

The UT of O fire-fighter who drove fire truck number 2, the tanker truck, was Mr Gerald McCrae. He testified that when he arrived at the intersection, he was instructed by an OPP officer standing next to a police cruiser to park the truck off to the right out of the road. Someone then told Mr McCrae that “we need back boards” (Transcript, vol. 8, p. 242). Mr McCrae found two mini-stretchers in the back of Chief Parry’s van and ran down Middle Marker Road. Mr McCrae stated that there were all kinds of survivors walking out as he was running down Middle Marker Road. He followed a path into the crash site and came upon survivor Mrs Nancy Ayer, 40 feet from the aircraft, and immediately assisted her. Mr McCrae, with the help of Dryden airport employee Allan Haw, Terraquest pilot Craig Brown, and surviving passenger Alfred Bertram, carried Mrs Ayer to Middle Marker Road, transported her to the intersection, and placed her in an ambulance. Mr McCrae stated that no one in the UT of O made an effort to take either the pumper truck or the tanker truck down Middle Marker Road. As he explained, “[w]e more or less did what we were directed to do when we arrived on the scene” (Transcript, vol. 8, pp. 269–70). He does not recall who gave him the instructions to take stretchers and back boards to the site, but he perceived his role at the time to be one of rescue of survivors as opposed to fire suppression.

Whether Chief Parry made a request to “see if they can get a handline in there” will not be definitely known. The request either was not made, was not heard, was not remembered, or was ignored by the UT of O fire-fighters. Nor did the UT of O fire-fighters take the initiative to take a handline into the crash site. The UT of O pumper truck was not driven down Middle Marker Road until sometime after 1:30 p.m. A briefing

took place between Chief Parry and UT of O Fire Chief Nordlund, when the latter arrived at 12:45 p.m., only minutes after the arrival of the UT of O tanker truck. Chief Nordlund was advised by Chief Parry of the steps he had taken in alerting various parties, but there was no discussion as to what each was going to do, and no discussion regarding the use of handlines. Chief Nordlund thereafter proceeded, as did many of his fire-fighters, immediately towards the crash site. In making his way into the site, Chief Nordlund assisted carrying stretchers part way out to Middle Marker Road. He stated that he "eventually got in to the fire scene and took a minute or two just to assess what was going on" (Transcript, vol. 8, p. 109).

Mr Rivard agreed that Red 2 could have been moved back down Middle Marker Road, close to the crash site. He also agreed that he could have rounded up several rescuers and run the handline from Red 2 to the crash site. It was Mr Kruger's evidence that coupling two sections of hose together would take only a matter of seconds. In reconstructing the time that it might have taken a fire-fighter, with the assistance of civilian rescuers, to extend the 500 feet of hose from Red 2, Mr Kruger estimated that it would be 15 or 20 minutes. He also stated that a handline would have assisted in the rescue effort of the last two passengers removed from the aircraft, Mr Uwe Teubert and Mr Michael Kliewer. In testimony, Chief Nordlund stated that it would take one fire-fighter and two to three volunteers less than five minutes to extend 500 feet of hose, in four 100-foot sections and two 50-foot sections, to the crash site.

During testimony, although Chief Parry agreed that providing a fire-free escape route for the passengers and crew of a burning aircraft was his primary responsibility, he stated that, in this case, "that was not possible" (Transcript, vol. 7, p. 48). Because he thought that the aircraft had crashed some distance into the bush, because the smoke and perhaps the fire had died down, and because it was his own belief that the chances for survival of anyone in the crash were slim, Chief Parry did not even consider running a fire hose through the bush into the crash site from Red 2. It was Chief Parry's view that his first priority was getting in a great deal of help, and that neither he nor his crew chief and his fire-fighter were going to make any significant difference by themselves.

When asked if it was his obligation to make efforts to contain the fire at the crash site, Chief Parry stated, "No, it was not. By that time, I had injured people under my care" (Transcript, vol. 7, p. 42). Chief Parry's view of his obligations at the crash site illustrates the depth of his misunderstanding of his responsibility as the CFR chief.

In discussing the use of the CFR tanker truck Red 2, Chief Parry indicated in testimony that the election not to use Red 2 and its fire

hoses immediately to extinguish the fire at the crash site was “fortuitous” (p. 68). One could infer from this evidence that Chief Parry considered it more important to conserve the fire truck water supply than to use it to suppress the fire. In explaining this apparently incongruous position, he stated as follows:

- A. Once it was set up, if it had been set up and in use, it has a limited water supply and has no drafting capability, so once the truck is empty, it will just sit there and be an obstruction for the remainder of the duration, whereas a pumper truck, which was the unit that was on site, carries more hose, has much more versatility, has unlimited water supply in that it can draft and can be supplied by tankers.

(Transcript, vol. 8, p. 64)

Fire-fighter Rivard, during testimony, had a different view. In proper circumstances, handlines from both tanker truck Red 2 and the UT of O tanker truck could have been used at the crash site.

Chief Parry agreed during testimony that although a continuous stream of foam mixture from the fire hose lasts approximately eight to nine minutes, he also admitted that it would last considerably longer if the operator of the hose used short bursts rather than a continuous stream. Chief Parry agreed that the foam was available immediately from fire truck Red 2. The UT of O pumper truck carries and is equipped to use the same A Triple F foam as described below.

Mr Thomas Harris was a passenger on flight 1363 and the only one who escaped out the left emergency exit, receiving severe burns to his hands in the process. At that time, he was the senior technical assistant at Abitibi Price in Thunder Bay, and he is a chemical engineer. In testimony he stated that he had seen intense fire and training films of aircraft fires and fire-fighting, and that he had seen how easily these fires can be extinguished with proper fire-fighting equipment and foam.

Mr Harris stated that, when he escaped from the wreckage, the flames were two to five feet high. About 10 minutes after the crash, he saw two rescuers arrive, one a fire-fighter (later identified as Mr Kruger) and the other a non-fire-fighter. At this time, the flames were 5 to 10 feet high on the left side of the aircraft, and Mr Harris was of the opinion that had the rescuers had a fire hose they could have extinguished the fire at that point in time. This may be true, but, as explained in chapter 8, Dryden Area Response, the earliest that a handline could have reached the aircraft was approximately 12:50 p.m., some 25 minutes later.

## **Experts' Views of CFR Activities March 10, 1989**

### **Mr Brian Boucher**

Mr Brian Boucher, an Air Canada pilot and trained specialist in aircraft fires, testified that the foam supplied by Transport Canada for use in Red 2 is probably the best foam on the market and is recommended for use at all airports. He stated that Red 2 was carrying aqueous film-forming foam, commonly referred to as A Triple F. Mr Boucher described the fire knock-down characteristics of that foam as superb. Having listened to Mr Kruger's testimony as to the state of the fire on his arrival at the crash site and having spoken to him personally, Mr Boucher thought that a fire-fighter with a handline using the foam from Red 2 could probably have knocked down the major part of the fire in 10 minutes, and it could have taken 20 to 30 minutes to extinguish the fire completely. In Mr Boucher's opinion, the fuselage would have been saved from complete destruction by the fire and the flight data recorder would have been saved had a handline been brought in immediately. Mr Boucher stated:

- A. ... The fire hadn't penetrated past the floor. The fire was burning in the ceiling. The fire burned downwards. It didn't start impinging on the flight data recorders until later on in the fire. So if that fire would have been knocked down within ... 15 minutes, 20 minutes, the way the flight data recorders are designed to sustain a certain amount of heat, as you have already heard testimony from, it's most likely, most probable that those flight data recorders would have been saved.

(Transcript, vol. 68, pp. 113-14)

It should be noted that the Dryden airport CFR unit supplies the UT of O Fire Department with A Triple F foaming agent for use on aircraft fires, and that that foam was used by the UT of O on March 10, 1989.

### **Mr Jeffrey Hamilton**

Mr Jeffrey Hamilton, the Transport Canada emergency services officer who provided expert evidence on a number of matters, was specifically asked to assess the Dryden CFR unit's response to the crash. As well, he was asked to give his opinion on the procedures used during the hot refuelling and on the fact that the CFR did not keep the access roads clear of snow.

It was Mr Hamilton's opinion that a properly trained CFR fire-fighter would not have lost control of his vehicle turning off the runway and should have proceeded with a little more caution. He was of the view that the maintenance road from the fire hall to the runway should have been kept sanded. Mr Hamilton testified that Mr Rivard should not have

stopped to top up Red 2 with water. The loss of brakes on Red 2, due to a known and repairable defect in the braking system of the vehicle was unacceptable. While Mr Hamilton agreed with Chief Parry's action in manning a communication post at the intersection of McArthur Road and Middle Marker Road, he stated that Chief Parry should have ordered the lines from the UT of O pumper truck to be taken in to suppress the aircraft fire. In Mr Hamilton's view, that order should have been given immediately. In addition, Mr Hamilton testified that crew chief Kruger should not have given up his fire-fighter's coat, a piece of protective apparel, to one of the survivors.

Mr Hamilton concluded that the response by the Dryden CFR personnel to the crash of C-FONF was unacceptable, and he agreed that lack of training was the cause of some of the errors made by the fire-fighters. Mr Hamilton stated that this lack of training and knowledge should improve in the future, not only at the Dryden airport but at all Transport Canada-owned, operated, and subsidized airports, through the introduction of Transport Canada's Firefighter Certification Program. This program, in the words of Mr Hamilton, "will bring every firefighter in the region, or the country for that matter, to the same level of training, both practical and theoretical in every aspect of their job" (Transcript, vol. 34, p. 14).

### **Mr Larry O'Bray**

At the time of the crash, Mr Larry O'Bray was superintendent of CFR services, Transport Canada, Central Region, and, as such, was responsible for implementing and overall coordination of Transport Canada's CFR programs within Central Region. This included assisting and advising airport managers in the running of their CFR programs, conducting training programs, and evaluating CFR units within Central Region. Both emergency services officers, Mr Jack Nicholson and Mr Jeffrey Hamilton, reported to Mr O'Bray.

In mid-January 1990 Mr O'Bray and Mr Nicholson visited the Dryden airport and reviewed with the CFR personnel their response to the Air Ontario crash. The purpose of their visit was to discuss the implementation of Transport Canada's new Firefighter Certification Program with Airport Manager Louttit and Fire Chief Parry and to review the events of March 10, 1989, including the errors made and procedures that should have been followed by the CFR unit.

During testimony, Mr O'Bray summarized his review of the initial response of the CFR unit and the UT of O Fire Department. He approved of Mr Kruger's going to the crash site to assess the fire; however, he was critical of Chief Parry's lack of communication with the UT of O fire chief upon the latter's arrival. As an expert CFR fire-fighter, Mr O'Bray was of the view that many of the fire-fighters became



distracted when they arrived at the crash site. He stated that their distraction was, to some extent, due to lack of training and repetitive drills and lack of knowledge.

Mr O'Bray pointed out that there was ample evidence over the years from the training reports provided by Chief Parry and Mr Louttit, the airport manager, to Transport Canada and from the evaluations conducted by Transport Canada to show that the Dryden CFR unit was not properly trained to Transport Canada's "full standard" (Transcript, vol. 36, p. 14).

I share Mr O'Bray's view that such crash-site distraction could occur to any inadequately trained fire-fighter, and that there should be a training program within Transport Canada aimed at preparing CFR crews for the realities of a catastrophic aircraft crash such as occurred at Dryden. I am satisfied from the evidence that the underlying cause of the distraction of the CFR fire-fighters was, in large part, the result of inadequate fire-fighter training and lack of repetitive drills by the CFR unit.

## **Aircraft Crash Charts**

Transport Canada's airport emergency services fire-fighter training standards document AK-12-06-002 requires fire-fighters to have a thorough knowledge of items that are critical to an aircraft accident or incident response. Paragraph 3.03 states as follows:

### 3.03 Aircraft

AES personnel shall possess a comprehensive knowledge of all aircraft in continuing and regular use at their respective airports. This knowledge shall be acquired through training and independent study. The required knowledge will include configurations, construction, passenger capacity, fuel capacity, and location of exits. An associated requirement is a detailed knowledge of the hazards associated with aircraft, i.e., aviation fuels, jet engines, propellers, wheel fires, explosives, helicopter rotors, etc. The Fire Chief shall, through regular testing, ensure that each person is current and adequate in his/her knowledge. Firefighters shall have a detailed knowledge of the various types of aircraft incidents, their peculiarities, and generally accepted practices in approaching each. Based on the required knowledge of aircraft, airports, and accepted basic tactics, appropriate tactics shall be developed by the Fire Chief.

(Exhibit 244)

Mr Jack Nicholson, the Transport Canada Central Region emergency services officer responsible for evaluating the Dryden CFR unit at the time of the crash, testified that an important element of the knowledge

required by fire-fighters is provided by aircraft crash charts. Witnesses who gave evidence on this subject agreed that aircraft crash charts are essential for the identification of the critical areas that fire-fighters must be aware of in their response to potential or actual aircraft accidents or incidents. Accordingly, it is important for airport CFR units to obtain crash charts for each aircraft that uses their airports on a regular basis.

The crash chart of a Fokker F-28 Mk3000 and 4000<sup>3</sup> (see figure 9-2) provides critical information for fire-fighters and rescuers regarding the location and operation of doors and emergency exits, passenger seating arrangements and escape routes, and location of hazardous items such as aviation fuel, batteries, high pressure lines and reservoirs, and onboard fire extinguishers. The crash chart also shows the location of the aircraft flight recorders.

At the time of the crash of C-FONF on March 10, 1989, the scheduled passenger-carrying aircraft using the Dryden Municipal Airport most frequently were the Fokker F-28 jet aircraft operated by Air Ontario and the British Aerospace Jetstream 31 turboprop aircraft operated by Canadian Partner. Air Ontario also operated the de Havilland Dash-8, the Convair 580, and the HS-748 turboprop aircraft into the Dryden Airport from time to time. Chief Parry testified that, of the five aircraft listed, the Dryden CFR unit had in its possession a crash chart for only the HS-748 aircraft. The fact that there was no F-28 crash chart available to the CFR may have been of significance in the case of the Dryden crash.

There was no doubt in the minds of both Chief Parry and Crew Chief Kruger that crash charts are valuable and necessary tools to inform fire-fighters of the critical areas of an aircraft that will be of concern in any emergency. The evidence shows that obtaining crash charts, at least at the Dryden Municipal Airport, was left up to the fire chief, with no assistance or direction from Transport Canada as to how they were to be obtained. Chief Parry testified that he received a Fokker F-28 Mk3000/4000 crash chart, depicted above, only days before he appeared before this Commission of Inquiry as a witness, more than three months after the F-28 crash. He also testified that when he contacted Boeing-de Havilland Aircraft for a Dash-8 chart, he was advised that they did not have a crash chart for the Dash-8. As a case in point, I was surprised to hear during the course of Transport Canada witness testimony that crash charts for the Boeing 747-400 series aircraft, one of Boeing's newest aircraft, were not at that time available at airports such as Lester B. Pearson International Airport, Toronto. This Boeing 747-400 aircraft differs from other Boeing 747 aircraft in that there is a fuel tank in its

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<sup>3</sup> The crash chart for the Fokker F-28 Mk1000 aircraft shows that the layout and configuration of a Mk1000 are similar to that of a Mk3000 aircraft.

vertical stabilizer. I have no doubt that there is information on other differences in this aircraft that could also be used by CFR units.

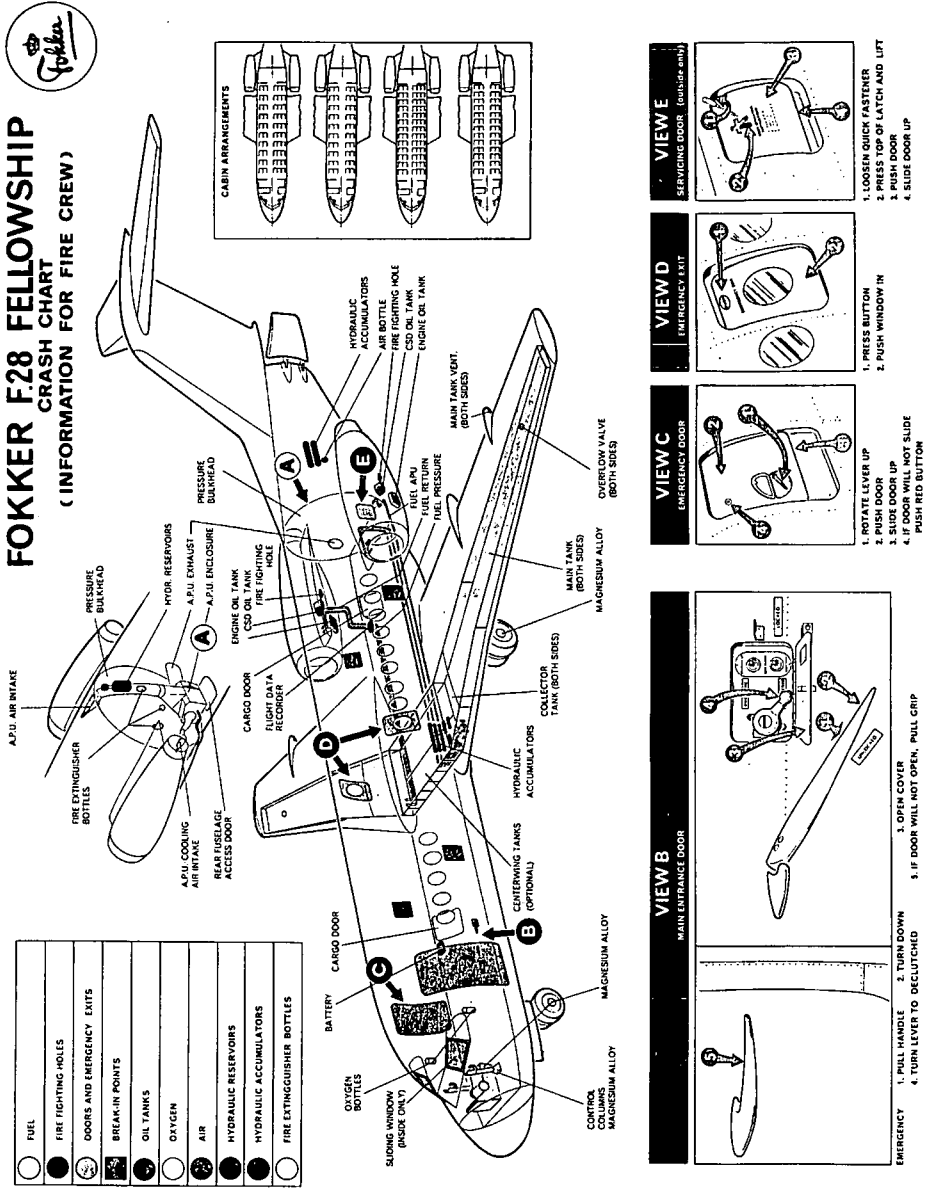
The problem of lack of aircraft crash charts is not isolated to the Dryden Municipal Airport. During testimony, Mr Nicholson stated that there was no Transport Canada policy that he was aware of requiring crash charts to be made available at any airport. However, it was the responsibility of the fire chief to ensure that the CFR fire-fighting crews possessed information of the type contained in crash charts. Testimony of other Transport Canada witnesses revealed that Transport Canada left it to individual fire chiefs at airports operated by Transport Canada to ensure that crash charts of aircraft that used the airport on a regular basis were available to the CFR unit.

The fact is that fire chiefs may not be in the best position to obtain or demand aircraft crash charts from either the manufacturer or from an aircraft operator. I am of the view, having heard the evidence, that the onus should be placed on the carrier to provide the CFR unit at any airport used by the carrier with a crash chart for every aircraft it operates into that airport.

I will not review in detail all the testimony dealing with the necessity for crash charts to be available to CFR fire-fighters. Suffice it to say that crash charts are an important tool which, together with actual visual inspection of an aircraft, enable fire-fighters to familiarize themselves with components of the aircraft that may be critical in any aircraft crash, fire, or rescue scenario. Crew chief Kruger in testimony confirmed that, after saving lives, his secondary mandate is the preservation of evidence and the protection of the accident site. He stated that preservation of evidence "is a very fundamental and important one" (Transcript, vol. 26, p. 143).

It is reasonable to assume that if the Dryden CFR unit had been more familiar with F-28 aircraft through study of its crash chart and a thorough familiarization of the critical aspects of the aircraft, including the aircraft flight recorders, all of the crew, including the fire chief, may have been more alert to the need to attempt to control the aircraft fire and preserve the aircraft structure. Testimony revealed that the CFR fire-fighters did not know where the F-28 aircraft flight recorders were located. Clearly the chances that the recorders might have been saved from destruction, and the information therein used in analysing the cause of this crash, would have been increased had the Dryden CFR unit had crash charts. It was estimated that the recorders were exposed to an average temperature of 850°C for two hours, which destroyed the tapes. Reducing the time that the recorders were exposed to high temperatures would have increased the likelihood that the information stored in them would have been recovered.

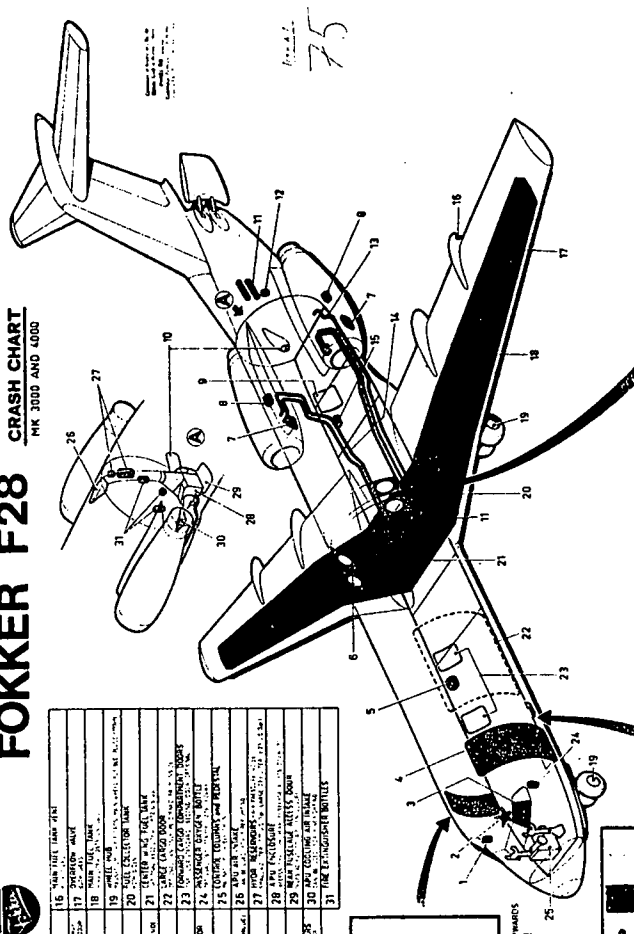
Figure 9-2 Fokker F-28 Crash Charts



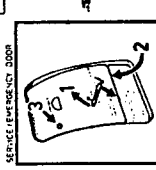
# FOKKER F28 CRASH CHART MK 3000 AND 4000



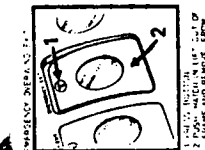
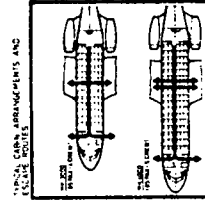
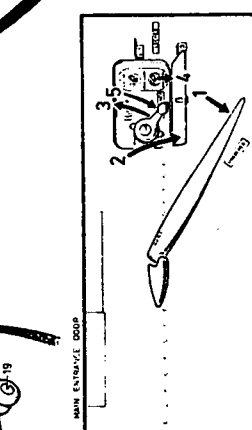
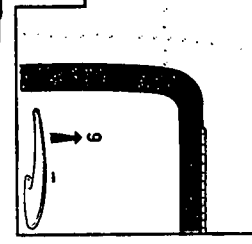
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Fokker F-28 Mk1000  
Source: Fokker Aircraft

As a result of this crash and the testimony heard before this Inquiry regarding the unavailability of crash charts, Mr Henry Moore, director, Airport Safety Services, Transport Canada, testified that in August 1989 his staff conducted a survey to determine the availability of crash charts on a national basis. Based on that survey, Mr Moore stated that Transport Canada was not "as well prepared" as it should be regarding crash charts. As a result of this survey, Transport Canada issued a policy directive instructing all Transport Canada Regions as follows:

#### **CRASH FIRE RESCUE – AIRCRAFT CRASH CHARTS**

Headquarters, AKOB, have recently completed a survey on the availability of aircraft crash charts at all airports.

While it appears that, for the most part, charts are available, it is evident that not all aircraft are covered, and not all charts are up to date. It is therefore suggested that Regional CFR staff provide guidance and assistance to airports within their area of responsibility to ensure the following:

- Up-to-date crash charts for all regularly scheduled, charter and/or cargo aircraft are obtained.
- Copies of charts are carried on each CFR vehicle, in the fire hall for training purposes and in the ECC.
- CFR personnel conduct familiarization exercises on all aircraft, using their airport as part of their regular training program.
- Crash charts on all other aircraft using the airport are also recommended.

Once you are satisfied that this very important requirement has been met, it would be appreciated if this Headquarters (AKOB) is advised.  
(Exhibit 272)

I am advised that Transport Canada's instructions to the regions regarding provision of crash charts to all CFR units apply to CFR units at subsidized airports as well as to Transport Canada-owned and operated airports. Mr Moore also testified that Transport Canada will in the future require manufacturers and operators of new aircraft to provide to Transport Canada, as a requirement of the aircraft type approval, a crash chart of the aircraft for distribution by Transport Canada to all airports. Transport Canada issued a policy letter, dated February 6, 1991, stating in part:

#### **POLICY STATEMENT**

All Canadian air carriers introducing new aircraft types or aircraft that have not been operated in Canada will be required to provide

aircraft crash charts. This information will be required 25 working days before the aircraft may be used in a commercial air service.

#### PURPOSE

To ensure service that Emergency Response Service (ERS) formerly Crash, Fire, and Rescue (CFR) units, at airports, have up-to-date crash charts before an aircraft goes into service.

This policy letter will be incorporated into the next amendment of Transport Canada Air Carrier Certification Manual.

I agree with the action taken by Transport Canada in both ensuring that requisite crash charts of aircraft using airports on a continuing and regular basis be made available to all CFR units and in requiring all Canadian air carriers introducing new aircraft types or aircraft that have not been previously operated in Canada to provide crash charts to Transport Canada.

I wish to emphasize that these crash charts should be made available to all airports, whether they are Transport Canada-owned and operated or subsidized and community airports. If passenger-carrying scheduled carriers use an airport on a regular and continuing basis, these charts should be at that airport.

## **Training and Proficiency of Dryden CFR Unit Personnel**

### **Transport Canada Training Policy**

The Transport Canada Firefighting and Rescue Services training standards manual, which was in effect at the time of the crash, states that it is Transport Canada's policy that:

Crash Firefighting Rescue Services will be provided at all airports operated by Transport Canada that are used by commercial air carriers on a regularly-established basis.

It is further stated that:

Crash Firefighting Rescue Services, whose duties consist of the provision of aircraft crash fire protection services, are infrequently called upon to face a serious situation involving a major aircraft accident. It follows that only by means of a most carefully planned and executed program of training, can there be any assurance that both men and equipment will be ready to cope with a major aircraft

fire should the need arise. Training requirements fall into two broad categories: initial training and ongoing training.

(Exhibit 243)

This Transport Canada manual further states that the objective is “to provide highly trained AES (Airport Emergency Services) personnel capable of carrying out prevention, control and suppression.” The document contemplates that training programs shall elevate AES personnel to and maintain them at a high level of knowledge and skills relevant to fire prevention, control, and suppression. Airport fire-fighters are required to possess a comprehensive knowledge of and be highly skilled in the operation of all AES vehicles at their respective airports. The manual states that fire-fighters should possess a comprehensive knowledge of all aircraft in continuing and regular use at their respective airports. They should also possess detailed knowledge of their airports and those areas immediately surrounding the airport, be aware of all natural and man-made hazards in their area of operations, and acquire, through training and study, a knowledge of the most direct and secondary routes to all points within their area of operations. The manual contemplates that, in all cases, the fire chief should ensure by training, regular examination, and testing, that each fire-fighter is current, has adequate detailed knowledge of, and demonstrates competency in all aspects of his or her duties and responsibilities.

The Transport Canada Safety Services Branch in Central Region, within which the Dryden area is located, consisted, at the time of the crash, of three experienced CFR fire-fighters (a superintendent, Larry O’Bray, and two emergency services officers, Jack Nicholson and Jeffrey Hamilton).

The branch is responsible for either evaluating or training CFR units at 23 airports, some of which are owned and operated by Transport Canada, owned and subsidized by Transport Canada, or owned by Transport Canada and contracted out for operation (see figure 9-3). According to Mr O’Bray, half the airports subsidized by Transport Canada are located in Central Region.

The branch reports and provides advice on Central Region CFR matters to superiors in Central Region and in Ottawa. It also provides training, evaluation, advice, and guidance regarding CFR, crash protection, and fire prevention programs to airport managers and fire chiefs in the region. By necessity, Mr O’Bray’s organization relies almost exclusively on the airport managers and the fire chiefs to maintain the proper level of knowledge, training, and proficiency of CFR fire-fighters and to ensure that all airport equipment and facilities are in proper operating condition. In the normal course, Transport Canada expects that a fire chief at a Transport Canada–operated airport has a number of years’ experience in crash, fire, rescue, and in general fire-fighting. Some



of that experience should be in a supervisory capacity. Transport Canada attempts to obtain by competition the best qualified people within its organization to take the position of fire chief. Accordingly, Transport Canada has some control over who is placed in the position of fire chief at a Transport Canada-owned and operated airport.

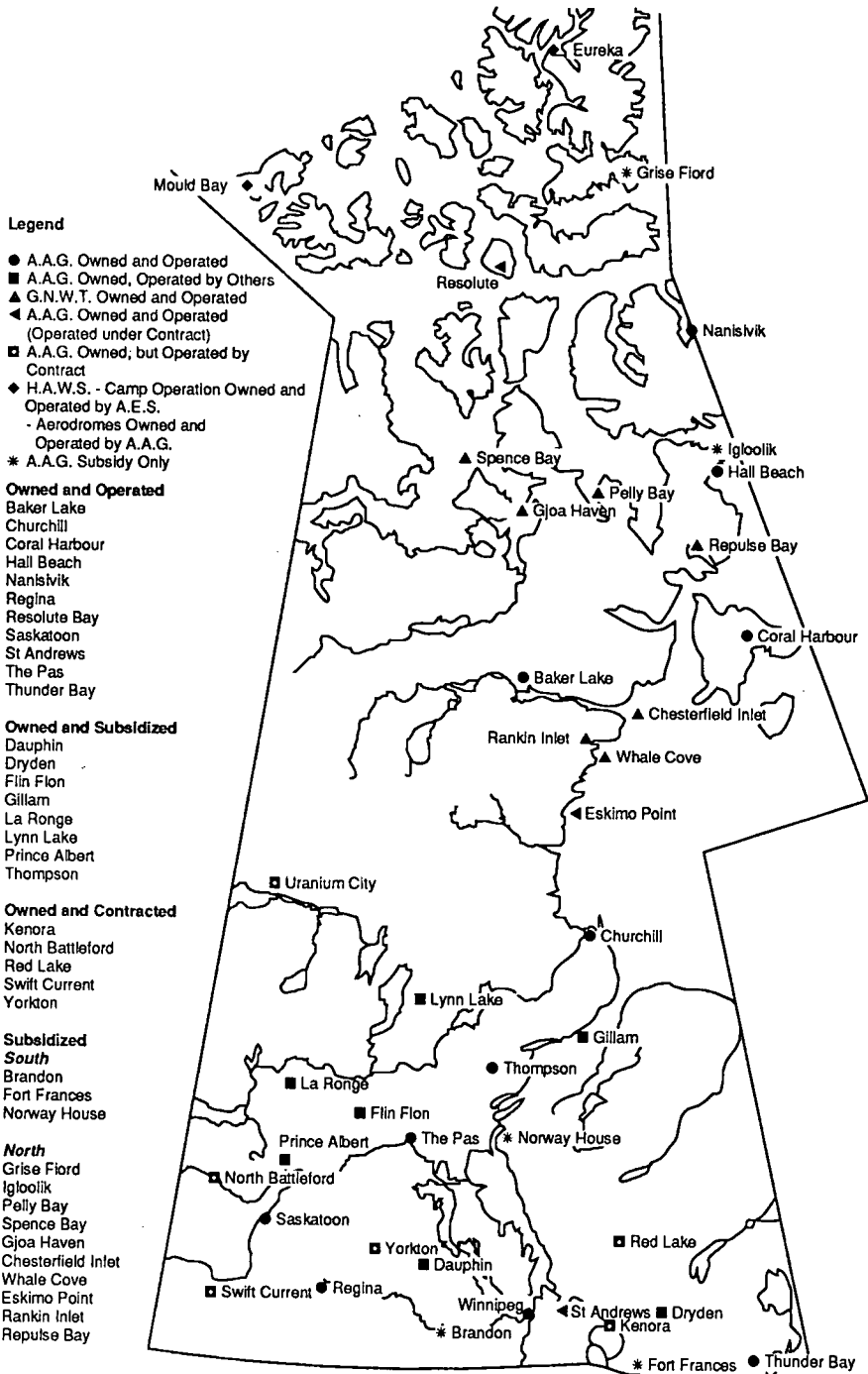
Mr O'Bray stated that a supportive and cooperative airport manager is essential to maintaining a good CFR program. In a line organization, such as Transport Canada, the airport manager is ultimately responsible for ensuring that a proper CFR program is maintained at the airport. If that airport manager does not ensure that a proper CFR program has been implemented and maintained, then Mr O'Bray's branch may provide advice to the regional director general or the director of operations within Central Region Airports Authority Group, who will then ensure that a specific airport manager comply with Transport Canada policy documents. Airport managers of international airports, such as the Winnipeg International Airport, located in Central Region, however, report directly to the director-general, Airports Operations Directorate, Transport Canada Headquarters, Ottawa. In summary, airports owned and operated by Transport Canada must comply with the CFR standards and requirements as set forth in the various Transport Canada policy AK documents.

Mr O'Bray explained that he conducts two initial training courses in Central Region each year for CFR personnel, a two-week course designed for professional fire-fighters and a one-week course designed to train auxiliary fire-fighters. Professional fire-fighters from non-Transport Canada-owned and operated airports are invited to attend the professional course.

In addition, Mr O'Bray's Safety Services Branch evaluates each of the professional CFR units within Central Region once each year. This evaluation consists of attendance at the airport, briefings with the airport manager and the fire chief, and evaluation of the fire-fighting unit's capability through various drills and exercises. The CFR chief and airport manager are debriefed after the evaluation, and a written report is provided to the airport manager. The Safety Services Branch expects training to be carried out by the fire chiefs on a regular basis and provides annual training courses to auxiliary CFR units to enhance their own training programs.

During testimony, Mr Hamilton defined a "professional" fire-fighter as one who is a paid, full-time, dedicated CFR unit member responsible for fighting fires and carrying out the airport CFR program, which includes airport fire prevention. Mr Hamilton cited the Brandon Airport as one that has a mixed fire-fighting staff, the fire chief being a full-time, salaried, dedicated fire chief and the remaining fire-fighters being auxiliary staff from the airport.

Figure 9-3 Airports and Aerodromes in Central Region



Source: Exhibit 245

Mr Hamilton, during his evidence, described the duties and responsibilities of fire-fighters, fire officers, and the fire chief in day-to-day operations. He gave evidence that, in addition to conducting normal duties during a shift, each fire-fighter must complete two hours of training each day averaged over a period of one month. Fire officers, in addition to being responsible for their own fire-fighter duties and training, are tasked with supervising their shift of fire-fighters and are responsible for ensuring that the duties of the shift are carried out. A fire officer also must ensure that the training program laid out by the fire chief is properly conducted. The fire chief, who is responsible for ensuring that he himself is properly trained as a fire-fighter, is responsible for designing the training program for CFR fire-fighters and ensuring that it is carried out. While he may delegate the responsibilities for training to others, as the administrator of the fire hall, the chief has the ultimate responsibility for its operation, including the posting of each month's schedule of training. All training, programs, and duties are to be conducted in accordance with Transport Canada AK policy documents.

All Central Region fire-fighters write Central Region examinations semi-annually, and they write a headquarters' examination annually. Fire officers are responsible for testing and examining fire-fighters on a regular basis. In addition to their own testing, fire officers are evaluated yearly by the fire chief. The fire chief is responsible to the airport manager for ensuring that all CFR examinations and tests are conducted in accordance with Transport Canada AK policy guidelines. There is no provision in Transport Canada that requires a fire chief to take the examinations that are required of fire-fighters and fire officers. It is expected by Transport Canada that fire chiefs will ensure that each of the CFR fire halls has a library of required Transport Canada AK documents, manuals, and appropriate National Fire Protection Association (NFPA) manuals, and it is mandatory that the fire-fighters conduct a self-study program of all these manuals and documents. It is the responsibility of the fire chief to produce the training schedule, and it is the responsibility of the fire officers and individual fire-fighters to ensure that the study and training are completed.

In addition to the yearly evaluation conducted by the Safety Services Branch on each CFR unit within Central Region, the Safety Services Branch relies on CFR training reports prepared by the fire chief and reviewed and forwarded by the airport manager to Central Region, Safety Services. These reports are made on a detailed form with provisions for the fire chief to list the training conducted during any six-month period in the following areas:

- training fires
- training materials
- vehicle driver training
- aircraft familiarization
- regional conducted training
- other aircraft practical training
- structure practical training
- theory training
- films shown
- Emergency Services (CFR) Chief remarks
- Airport Manager remarks
- Region remarks
- HQ remarks.

The annual evaluations provide Transport Canada with an opportunity to review an airport's facilities, inspect vehicles and equipment, and evaluate the ability of the CFR fire-fighters to respond to an emergency. On most airports there is located away from runways and buildings a specially constructed fuel burn area where CFR personnel can conduct live fire exercises. This allows the use of vehicles and handlines in extinguishing fuel-fed fires similar to those expected on a crashed aircraft.

A major part of CFR training is directed to the fire-fighters' ability to respond to a burning aircraft. Live-fire ("hot-drill") training exercises are conducted during annual courses run by Safety Services Branch. Regular hot-drill exercises are also conducted by a CFR unit as part of its training program. The ability of a CFR fire-fighter to respond to live-fire situations is to be evaluated by Transport Canada Emergency Services officers on an annual basis.

## **Dryden Airport Management Training Policy**

The Dryden airport CFR unit personnel received a two-week initial fire-fighting training course at Winnipeg in the fall of 1982, shortly after Chief Parry was hired as fire chief and the unit was staffed by full-time professional fire-fighters. Although Chief Parry had experience with a mining company as a captain on a mine fire brigade and had trained as an underground mine rescue member, he had no previous active fire-fighting experience. Unlike Transport Canada fire chiefs, who must have a previous CFR fire-fighting background and compete for the position, Dryden Airport Commission hired all their fire-fighters, including their fire chiefs, from outside Transport Canada ranks. Chief Parry did not have the fire-fighting experience Transport Canada looked for; however, it was the view of Mr O'Bray that Transport Canada could train him as

a fire chief if he was "receptive." Mr O'Bray stated during testimony that it was difficult to hire fire chiefs for subsidized airports. Although Transport Canada canvassed Transport Canada CFR fire halls in an attempt to hire a fire chief, in Mr O'Bray's words "no one would make the jump" (Transcript, vol. 35, p. 39).

By the end of the second week of the initial training course, Mr O'Bray was satisfied that the Dryden CFR fire-fighters were sufficiently trained to get involved in their own on-site training and quickly become a good crash fire rescue team. Chief Parry and the airport manager provided training reports to Transport Canada initially on a quarterly basis, and, commencing in 1987, on a biannual basis indicating materials used, training conducted, and studies completed during that period. Chief Parry and Mr Louttit used the form to address any concerns or make any remarks to Transport Canada. The Central Region Safety Services Branch began conducting annual evaluations of the Dryden airport CFR unit early in 1984. Copies of many training reports and of evaluations were reviewed.

I do not propose to review, in detail, the Dryden airport training reports or all of the evaluation reports prepared by emergency services officers; however, two matters arise from the reports and evaluations that are of concern to me. The first is the lack of training that was conducted by the Dryden airport CFR unit over the years and the continuing refusal by the airport manager and fire chief to conduct the required training, in the face of repeated recommendations by Transport Canada Central Region officials that they do so. The second matter is the inadequate manner in which Transport Canada tried to ensure that required training was being performed by the Dryden CFR unit.

It is clear from the testimony and from the documentation presented before me that, from the time the professional CFR unit was established at Dryden, Chief Parry did not have a carefully planned and executed program of training, as contemplated by Transport Canada policy documents. In addition, the evidence clearly indicates that Chief Parry was not conducting, and indeed was refusing to conduct, hot-drill training. He also was not requiring his crew chiefs to conduct sufficient hot-drill training to ensure that his fire-fighters and equipment would be ready to cope with a major aircraft fire. Airport manager Louttit supported and condoned Chief Parry's actions of reduced training as his comments on the training reports show.

While Chief Parry and Mr Louttit took the position that training was being reduced as a result of budgetary restraints, Mr O'Bray maintained that funds were always allocated and available to the Dryden airport for CFR training. Mr O'Bray testified that, while the Safety Services Branch was advising Dryden airport that funding was available and telling them to get on with training, the Dryden airport manager and fire chief

simply ignored its requests to increase the level of training and often refused to follow Transport Canada's advice and direction, each time suggesting that the cause was due to funding restrictions.

When reviewing the October 1 to December 31, 1986, training report which showed "there were no hot drills conducted at all," Mr O'Bray stated that calls were made to the airport fire chief and the airport manager suggesting to them that funding restrictions should not have been a problem because funds had been allocated (Transcript, vol. 35, p. 69). When asked what their response was, Mr O'Bray stated in testimony that:

A. Mr Parry's response specifically was that they were operating on a global budget and that the funds could be allocated to other airport operations.

Q. And I take it you disagreed with them?

A. Yes, sir, I did.

(Transcript, vol. 35, p. 69)

Because Mr O'Bray was concerned about the position taken in the training reports regarding funding restrictions, he made inquiries with Central Region's community airports officers and was advised that, as far as they were aware, the funds were available and that the Dryden airport had the funds to conduct CFR training.

The position taken by Chief Parry was not an isolated occurrence. On October 10, 1989, seven months after the crash of C-FONF, Central Region emergency services officers Jack Nicholson and Jeffrey Hamilton conducted a site evaluation of the Dryden CFR unit. In addition, Mr Hamilton testified that they also wanted to know why the CFR training program was not being carried out. Upon their arrival at the Dryden airport, the emergency services officers met with Chief Parry, the acting airport manager at the time. During the meeting, Chief Parry was asked why he was not spending the allocated training funds to purchase fuel for fire-fighting training, and Mr Hamilton testified as follows:

A. ... Mr Parry told Mr Nicholson that there wasn't any money spent on fuel or the money that was allocated was not spent on fuel and that he was not intending to spend it that he didn't have to spend it, on training fuel.

(Transcript, vol. 33, p. 202)

Mr Hamilton stated during testimony that he was left with two clear impressions: Chief Parry did not want to conduct the training and Chief Parry was quite confident that he could take money allocated for CFR training and spend it on other airport operations. The October 1989 site visit was Mr Hamilton's first to the Dryden airport CFR unit, and he

disagreed with the position taken by Chief Parry.

The testimony indicates that, as early as 1986, Mr Louttit and Chief Parry were either not spending funds allocated for CFR fire training or were using the funds for other airport expenses. This situation continued after the crash of C-FONF and the commencement of the work of this Commission of Inquiry, as is evident from the October 1989 evaluation.

Ms Paulette Theberge, Transport Canada Central Region's financial officer responsible for dealing with the Dryden Municipal Airport and the Dryden Airport Commission, gave evidence that funds for fuel and extinguishing agent for training are specifically allocated in the annual budgets. For example, in 1988, Dryden submitted a \$30,000 budget request for fuel for fire drills and for extinguishing agent. After negotiations with Transport Canada, the authorized allocation was \$17,500; however, the actual amount spent was \$5088. She had no information on how the remaining money was spent. Ms Theberge agreed that it would appear that over \$12,000, allocated for CFR training fuel and extinguishing agent, was spent on other needs at the airport. Ms Theberge also agreed that there was no justifiable reason for the fire chief and the airport manager to use training funds to accommodate shortfalls in the overall budget (Transcript, vol. 36, p. 203).

Superintendent O'Bray testified that he spoke to the financial assistance officers and community airports officers within Transport Canada and was advised that funds were available for training. However, he did not specifically request that these officers require Mr Louttit and Chief Parry to use the allocated funds for training. When asked why he did not request that these Transport Canada officers enforce proper use of the allocated funds, Mr O'Bray replied as follows:

- A. Perhaps – it was always our philosophy to go to the ... what we perceived at that time to be the line managers of those airports. But as we were finding out throughout that period ... they did not have line authority over these airport[s] either.
- Q. So the Community Airports people who were basically in the same region did not have line authority over the community airports – or subsidized airports?
- A. That was my understanding, yes.

(Transcript, vol. 35, p. 70)

Mr O'Bray also agreed in testimony that he was "getting messages" from senior managers in Airports Authority Group, Ottawa, regarding the lack of enforceability of AK standards on subsidized airports.

## **Transport Canada–Subsidized Airport Policy**

Testimony at the Commission hearings demonstrated that Transport

Canada personnel were unable to persuade or to force the Dryden airport management to train their CFR unit fire-fighters to a level of proficiency they believed satisfactory. The evidence is equally clear that Dryden airport management, and in particular Chief Parry, did not ensure that the Dryden airport CFR unit fire-fighters received sufficient training to enable them to carry out their duties and responsibilities as CFR fire-fighters adequately.

During the summer and fall of 1986, the Program Control Board (PCB) of Transport Canada advised the then executive director, Airports Group, Mr David McAree, that no additional funds would be forthcoming for subsidized airports. Accordingly, Mr McAree, the senior Transport Canada officer responsible for the operation of Canadian airports, by memorandum dated October 3, 1986, entitled Grants and Contributions to Subsidized Airports, passed that information to the regions and instructed them to deal with subsidized airports as follows:

Therefore, it is imperative that negotiations be hard and tough to control costs; that standards are to be re-examined and local airports allowed more flexibility and freedom to manage. In addition, revenue-generating opportunities should be emphasized.

To this end, it is recognized that subsidy airports may find it necessary to deviate from standards in effect at departmentally-operated airports. However, in no case can safety and security standards be allowed to be compromised.

(Exhibit 279)

At the same time, the Airports Group was advising subsidized airports that, because of budget restraints, Transport Canada would allow standards to be relaxed, since subsidized airports would not be receiving all the funds they might need to maintain their airports at those standards; however, safety and security standards could not be compromised.

Various regions began asking Airports Group headquarters for clarification regarding the standards that subsidized airports were required to meet. The original request for clarification came from Pacific Region. Mr McAree responded to all regions, in a memorandum of October 20, 1986:

Due to present and future funding limitations and legal opinions rendered, it has been decided that we should not concern ourselves with the day-to-day operations at subsidy airports per se, except as affected by:

- a) Safety and security
- b) Airside – regulations
- c) Groundside – value for money



AK documents are considered to be Transport Canada policy-related documents, and as such, cannot legally be imposed on subsidy airports except in those cases where the AK documents are given effect or incorporated in relevant regulations, or have been specified within the lease/agreement document prior to signature by both parties.

Although it is desirable that the subsidy airports meet Transport Canada standards, it is recognized that they may find it necessary to deviate from AK standards applicable at Transport Canada operated airports. However, in no case can safety and security standards be allowed to be compromised.

PCB has directed that standards are to be re-examined and local airports allowed more freedom to manage; that we encourage local flexibility in such matters as non-safety standards and landing and terminal fees. Please also refer to my 3 October 1986 memorandum providing your 1987/88 Preliminary Reference Level.

AK documents can continue to be provided to subsidy airports as information and guidance tools.

(Exhibit 280)

These two memoranda provided instructions that looser control was to be exercised over subsidized airports and that managers of those airports were not bound by the standards specified in Transport Canada AK policy documents, with the exception of safety and security, aviation regulation, and value for money. At least in Central Region, emergency services officers questioned whether subsidized airports could deviate from the requirements of AK documents regarding CFR standards and training.

It was the view of emergency services officers Nicholson and O'Bray that, if funds were allocated for CFR training, they must be spent on CFR training. In the words of Mr O'Bray, "there was a lot of confusion in almost everyone's mind of whether, with respect to the documents that were coming down talking about safety and security, of whether CFR was a safety issue or a level of service" (Transcript, vol. 35, p. 79). Mr O'Bray stated that, within his branch, Mr Nicholson considered that CFR was a safety issue and that Transport Canada should be firm and require training levels to be maintained at subsidized airports at a level satisfactory to Transport Canada. Mr O'Bray testified that he was of the same view. However, direction received from senior management levels in Transport Canada headquarters and the position taken by the Transport Canada Community Airports Branch indicated that CFR was not a safety issue but a level of service. Mr O'Bray's impression was that both Transport Canada headquarters and Community Airports Branch agreed that, because CFR was not a safety issue, subsidized airports could deviate from CFR training requirements.

It is apparent that, as part of the effort by Transport Canada to reduce the cost of subsidizing airport operations, Airports Group lumped AK CFR standards with other airport AK standards. This created a situation where subsidized airports could deviate from required CFR training standards.

On behalf of his superior, H.J. Bell, Mr O'Bray prepared a memorandum to the executive director, Mr McAree, requesting clarification of the situation regarding CFR standards. The message, designated GRDG 3 145 and dated November 7, 1986, is as follows:

RE: EDA MEMO A5172-1 OF OCTOBER 20, 1986  
SUBJECT: APPLICABILITY OF AK'S TO SUBSIDIZED AIRPORTS.  
PLEASE CONFIRM THAT CFR IS A LEVEL OF SERVICE ISSUE  
AND IS NOT CONSIDERED A SAFETY ISSUE IN TERMS OF  
COMPROMISATION OF AK'S. YOUR CONFIRMATION WILL  
ASSIST US TO DEVELOP A CONSISTENT LEVEL OF SERVICE AT  
SUBSIDIZED AIRPORTS EQUIVALENT TO I.C.A.O. STANDARDS.  
H. J. BELL  
CRDG

(Exhibit 281)

Mr McAree responded on December 1, 1986, sending copies to all regions. His response was as follows:

REFERENCE IS MADE TO CRDG MESSAGE NO. 145 DATED 7  
NOVEMBER RE. APPLICABILITY OF AKS TO SUBSIDIZED  
AIRPORTS. LEASE OF AIRPORT TO MUNICIPALITIES ENTITLED  
LESSEE TO QUIET ENJOYMENT WITH COMMITMENT TO  
MAINTAIN AIRPORT AS PUBLIC AIRPORT TO LICENSABLE  
STANDARDS AND TO CHARGE FEES NOT LESS THAN THOSE  
CONTAINED IN AIR SERVICES FEES REGULATIONS. THERE-  
FORE CFR SERVICES ARE NOT MANDATORY AND SHOULD BE  
DETAILED IN APPROPRIATE AERONAUTICAL PUBLICATIONS.  
AKS ARE AVAILABLE TO MUNICIPAL SUBSIDIZED AIRPORTS  
FOR GUIDANCE PURPOSES ONLY.

(Exhibit 282)

Since both Mr O'Bray and Mr Nicholson were of the view that CFR was a safety issue, the memorandum signed by Mr Bell did not truly reflect their views. It appears that Mr Bell only wanted confirmation from Mr McAree that CFR was a level of service without a safety component and, therefore, AK standards need not be followed at subsidized airports. The first message did not ask the right question and the second message avoided any reference to the level of service-safety issue raised by Mr Bell, and declared that CFR services are not mandatory at subsidized airports.

Mr McAree's December 1, 1986, response is similarly ambiguous. As Mr McAree did not appear before this Commission, I will not speculate as to his intentions in providing such a message. Mr O'Bray stated during testimony that it was obvious to him that the question that had been asked was not specifically answered.

Even though Mr O'Bray's concern had not been addressed by Mr McAree, Mr O'Bray testified that he was not about to ask for further clarification "given the fact that it was not customary to ask Mr McAree the same question twice" (Transcript, vol. 35, p. 86).

What is clear, however, is that no further effort was made by Central Region to clarify the meaning of the message contained in the statement, "CFR services are not mandatory and should be detailed in appropriate aeronautical publications." Clearly clarification of this instruction should have been sought from headquarters by Central Region if they were not satisfied that the instructions were unequivocal. In view of Central Region's knowledge of lack of training by the Dryden CFR unit and the impression being conveyed by Transport Canada headquarters that CFR units at subsidized airports did not have to train to Transport Canada standards, Central Region should have instructed the Dryden Municipal Airport Commission to publish, in the *Canada Flight Supplement*, a notification that Transport Canada CFR training standards were not being met at the Dryden airport. I find that Transport Canada should have but did not take action either to enforce training standards or to have airport users notified that training standards were not being met.

The evidence is clear that Transport Canada, faced with budget restraints, instructed regions to negotiate "hard and tough" regarding budget requests made by subsidized airports. Transport Canada headquarters also gave instructions to regions to allow managers of subsidized airports to deviate from Transport Canada AK document standards when it came to maintaining and operating their airports.

On December 22, 1986, Mr H.J. Bell sent a letter to Mr W.F. Beatty, the chairman of the Dryden Municipal Airport Commission, providing Transport Canada's view on deviation from standards. Part of the letter reads as follows:

Relative to our discussions regarding airport standards, you are advised that although desirable, Transport Canada standards cannot legally be imposed upon leased airports, excepting for those matters affecting safety, security and certification requirements. Our AK documents may however continue to serve as information and guidance tools. Further, our Program Control Board directs that Transport Canada encourage more flexibility and freedom to manage among local (leased) airport administrations.

With specific reference to the provision of crash, fire, rescue services (CFR); again this service is not mandatory at leased airports.

Your administration is free therefore to maintain that service to a level commensurate with funding levels available, in consideration of overall airport functions. As an example, it may be appropriate, given an adjustment of your hours of operation, etc., to staff a CFR nucleus of a Fire Chief plus one Firefighter, around which auxiliary support may be established, thus providing a capability comparable with that provided at The Pas, and proposed at Churchill Airport.  
(Exhibit 91)

Internal Transport Canada directives and correspondence to the Dryden Municipal Airport Commission clearly indicated, to both the Transport Canada regional employees and the Dryden airport managers, that subsidized airports could deviate from AK standards, which included standards dealing with CFR, and that funds allocated for CFR purposes could be applied to other airport expenses. Although Mr O'Bray may have disagreed with the position taken by Mr McAree, he accepted Mr McAree's directive and, accordingly, he should have acted on its instructions. As the Community Airports Branch also received similar instructions, Mr O'Bray would receive no assistance from them.

From the evidence, it was obvious that Mr Louttit and Chief Parry believed they did not have to comply with AK CFR standards, and they considered that funds designated for CFR training could be used elsewhere to cushion the effects of the decreasing airport subsidy.

### **Enforceability of Agreements**

I will now turn to Mr McAree's memorandum of October 20, 1986, wherein he states, in part, the following:

... AK documents cannot legally be imposed on subsidy airports except in those cases where the AK documents are given effect or incorporated in relevant regulations, or have been specified within the lease/agreement document prior to signature by both parties.  
(Exhibit 280)

Ms Theberge testified that, in her opinion, the Dryden Municipal Airport had to provide airport services, including CFR services, to the satisfaction of the minister. It was also her opinion that CFR, as an airport service, falls under the terms and conditions of the financial assistance agreement between Transport Canada and the Town of Dryden. Clauses 7 and 12 of the agreement state as follows:

#### *7. Ministerial Approval*

The Corporation shall not, without the consent in writing of the Minister, being first had and obtained, assume any obligations

or make any expenditures under the provisions of this Agreement which is not in accordance with annual operating budgets approved by the Minister.

12. *Corporation Provision of Facilities*

... the Corporation shall be responsible for the operation, management and maintenance of the Airport, and all related facilities which, without limiting or restricting the generality of the foregoing, shall include airport services, runways, fences, hangars, shops, terminal and other buildings, airport lighting equipment, and like services, and the Airport shall be maintained in a serviceable condition, all to the satisfaction of the Minister.

(Exhibit 288)

Ms Theberge also referred to the airport lease agreement which, in her view, also obligated the Town of Dryden as a lessee to maintain CFR services to the satisfaction of Transport Canada.

Clause 8 of the lease agreement states as follows:

That the Lessee shall at all times during the currency of this Lease, operate, manage and maintain the said airport, and all related facilities which, without restricting the generality of the foregoing, shall include airport services, runways and taxiways, fences, buildings, airport lighting facilities, airport maintenance, equipment and like services, all herein referred to as "the said facilities," all as designated by and to the satisfaction of the Administrator and at the expense of the Lessee.

(Exhibit 27)

It was Ms Theberge's opinion that if the CFR services provided at the Dryden airport did not satisfy Transport Canada, then the Town of Dryden would be in violation of both the subsidy agreement and the lease agreement.

While not specific in referring to CFR services in clauses 12 and 8 of the respective agreements, both the airport subsidy agreement and the lease agreement in effect on March 10, 1989, required the Town of Dryden to operate and maintain the airport and all related facilities, including airport services, to the satisfaction of the minister of transport. I agree with Ms Theberge. I interpret the agreements, and specifically the following wording within the agreements, "without limiting or restricting the generality of the foregoing," "all related facilities," and "airport services," to be broad enough to include CFR services.

The airport subsidy agreement and the lease agreement are general in nature. However, without specific direction to a subsidized airport to the contrary, I interpret the intent of the statements "to the satisfaction of

the Minister” and “to the satisfaction of the administrator” to mean that Transport Canada intended to impose upon subsidy airports, to their fullest extent and in the same manner as it does upon Transport Canada – operated airports, AK document standards, including CFR training requirements.

In summary, I disagree with Mr McAree’s view that AK documents cannot legally be imposed upon subsidy airports. The intent of both clause 12 in the airport subsidy agreement and clause 8 in the lease agreement is that they contemplate standards satisfactory to the minister. As the standards of Transport Canada are the internal Transport Canada AK policy documents, these same standards are those to which subsidized airports must adhere unless otherwise advised.

In addition, clause 7 of the subsidy agreement provides that the Town of Dryden cannot, without the consent of Transport Canada, make any expenditures under the subsidy agreement that are not in accordance with annual operating budgets approved by Transport Canada. It follows that, if the airport manager wanted to use funds allocated for CFR training for other airport expenses, he could only do so with the express consent of Transport Canada. No such approval was given.

It is clear, however, from the memoranda and messages signed by Mr McAree and from Mr Bell’s letter to the Dryden Municipal Airport Commission, that Transport Canada was prepared to allow subsidized airports to deviate from Transport Canada AK standards with certain exceptions. This was in keeping with the government’s policy of fiscal restraint and specific instructions by the Program Control Board (PCB) to various senior managers. Mr McAree’s instructions to negotiate “hard and tough to control costs” and to re-examine standards to allow local airports “more flexibility and freedom to manage” were designed to relieve the pressure upon Airports Group to provide additional funds to subsidized airports under their grants and contributions program. However, Mr McAree also advised the regions that in no case can safety and security standards be allowed to be compromised.

### **CFR Services: The Issue of Safety**

Two issues must be considered: did Transport Canada intend to allow subsidized airports to deviate from Transport Canada’s required CFR training standards; and, do CFR units provide a level of safety at airports? During the hearings, in attempting to determine why Dryden airport managers refused to train their fire-fighters to the same standards as at Transport Canada–owned and operated airports, considerable testimony dealt with the safety component of CFR services. It was the testimony of Mr Nicholson that, when he confronted Chief Parry for not using funds as allocated for fire-fighter live-fire (hot-drill) training, Chief Parry referred to Mr Bell’s correspondence to the Dryden airport

commission as his authority for not being obligated to train his men to Transport Canada AK standards. This discussion took place between Chief Parry and Mr Nicholson in October 1989 at a time when Chief Parry was not only the chief of CFR services but also the acting airport manager.

It was the view of Mr Nicholson that the training of CFR fire-fighters is a safety-related operation and that Chief Parry was obligated to comply with Transport Canada standards in terms of maintaining a fire-fighter's level of knowledge and proficiency in carrying out his duties.

Mr McAree in his message of December 1, 1986, stated that CFR services are not mandatory and that AKs are available to municipal subsidized airports for guidance purposes only. Mr Bell, in his letter to the Dryden Municipal Airport Commission, advised that the airport commission was free to maintain the CFR service to a level commensurate with funding levels available, in consideration of overall airport functions, and suggested ways this might be done. He suggested that it might be appropriate to adjust the hours of CFR operation, and/or to decrease the professional fire-fighting staff to a nucleus of a fire chief plus one fire-fighter and establishing an auxiliary fire-fighting team.

While Mr McAree's message is ambiguous, I do not find the position of Mr Bell in conflict with the view of Mr Nicholson that training standards of fire-fighters must be maintained to Transport Canada AK standards. While Mr Bell suggested decreasing the number of professional fire-fighters and augmenting them with auxiliaries, he did not recommend that they need not train to AK standards. Specific funds for the purchase of training materials for CFR fire-fighters were allocated in the Dryden airport budget. Training was always contemplated and, therefore, funds for training were always allocated in the budgets no matter what funding level was available. While Mr McAree's instructions were unclear, I cannot believe and do not find that it was the intention of Transport Canada to allow subsidized airports to deviate from Transport Canada's CFR training standards.

Whether CFR is a level of service or a level of safety is an important issue. It is readily apparent to me that a CFR unit is established at an airport for one reason, to provide a level of safety with regard to aircraft crashes and aircraft fires. Therefore, once the CFR unit is established, the fire-fighters of that unit must know exactly what is expected of them and be capable of effectively and efficiently operating their fire-fighting equipment. It makes no sense that expensive and sophisticated fire-fighting equipment sat on the sidelines on March 10, 1989, because the CFR fire-fighters, for lack of adequate training, did not use their equipment in carrying out the primary and secondary objectives of CFR, that is, saving lives by providing a fire-free escape route and preserving the property involved by containing or extinguishing the fire. Two of the

three professional CFR fire-fighters, as well as the volunteer fire-fighters of the UT of O, carried out some of the tasks that could have been handled by untrained rescuers, such as the assistance rendered to surviving passengers after they had arrived at a safe distance from the fire.

The fact that the CFR fire-fighters at the Dryden airport were not properly trained is the fault of the entire system. The Dryden airport managers avoided the training requirements. Transport Canada headquarters personnel were too far removed from the problem to appreciate fully the difficulties resulting from the lack of clear direction with regard to CFR training. Although Transport Canada regional personnel attempted to persuade Dryden airport staff to conduct the required training, and although the CFR crew chiefs may have espoused that they wanted training, no one made a concerted effort to see that meaningful training was accomplished. In sum, it is my opinion that no one was sufficiently serious about CFR.

In his Report of the Commission of Inquiry on Aviation Safety of 1982, Mr Justice Charles L. Dubin discussed airport emergency services (AES). In this report, the Public Service Alliance of Canada is quoted as stating the following: "Firefighting is a profession – not something to be carried out in a haphazard manner by untrained personnel."<sup>4</sup> I totally agree with this statement.

In delineating the responsibilities of AES (CFR) personnel, Mr Justice Dubin stated that "it is not the AES responsibility to care for the injured after they have arrived at a safe distance from the accident site" (vol. 3, p. 973). I also agree with this view. Once aircraft occupants are removed to a safe distance from the accident site, fire-fighters should be left to their role of fighting the fire, preserving the wreckage, and securing the area from any further danger. Finally, in his comments regarding the role of AES (CFR) services, Mr Justice Dubin stated: "The emergency services personnel are an integral part of the overall safety system" (p. 975). I cannot state the role of CFR services more clearly.

The above comments and observations made in Mr Justice Dubin's report clearly echo my own views, and those of the experts who appeared before me, on the duties, responsibilities, roles, and training of CFR services personnel. Had the fact that CFR services are an integral part of the overall safety system been recognized by Transport Canada and had the message been clearly conveyed to the Dryden Municipal Airport that fire-fighting training must be conducted properly, I might not have needed to review in such detail the actions of and response by the Dryden Municipal Airport CFR services unit to the crash of C-FONF.

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<sup>4</sup> *Report of the Commission of Inquiry on Aviation Safety*, 3 vols. (Ottawa, 1981–82), vol. 3, p. 972



## **CFR Assessment by Transport Canada and Dryden Authorities**

On the day of the crash, Mr Desmond Risto of Transport Canada, Airports Authority Group, Central Region, went to Dryden to provide assistance and encouragement where he could to the Dryden airport staff, and the airport commission was so advised. An emergency services officer, Mr Jack Nicholson, was also dispatched by Central Region two days later to determine what the Dryden airport CFR unit had done in response to the crash. Both Mr Risto and Mr Nicholson prepared reports that were sent to Mr George Knox, the acting regional director-general, Airports Authority Group, Winnipeg.

During their visits, Mr Risto and Mr Nicholson were briefed by CFR Chief Ernest Parry and by crew chief Stanley Kruger regarding the response of the CFR unit to the crash. In their reports, Mr Risto and Mr Nicholson summarized the circumstances leading up to the crash and discussed the subsequent activities of personnel of the CFR unit, the UT of O fire unit, and the OPP.

On page 5 of his report, Mr Risto praised Chief Parry for his actions as follows:

Within a space of seconds, AFC [airport fire chief] decided to take on the responsibilities of On-Scene Co-Ordinator (O.S.C.), rather than abandon his vehicle and respond to the crash scene for fire suppression. Had this correct decision not been made, immediate multiple communications, direction and requests would have been lost, and complete chaos would have ensued pending the arrival of support agencies and equipment.

Because of the correct position taken by the AFC, and direction applied, there is no question that a systematic and organized rescue operation was conducted as response personnel were given positive and immediate instructions, with main arteries being kept open until the arrival of the O.P.P. Again, because of the correct action being taken, there is no doubt in the minds of the airport staff that more casualties/passengers were saved.

(Exhibit 237)

In reporting on the CFR unit response generally, Mr Risto stated that because of the snow depth and heavily treed area between the access road and the crash site, it was impossible for one to three men to pull a handline to the crash site. However, it would not have been necessary to pull a handline to the crash site because lengths of hose could have been connected in sequence. In addressing the mechanical breakdown

of the CFR unit vehicle Red 2, Mr Risto considered that use of the CFR unit fire trucks was "irrelevant" because of the conditions.

Mr Risto stated in his report that the response of the UT of O Fire Department was exceptional, and he remarked on the speed at which the UT of O Fire Department arrived on the scene and set up the water tank and foam equipment. Again, Mr Risto commented that it was impossible to drag 400 feet of hose through the terrain until a trail was cut to the crash site.

On March 16, 1989, the Town of Dryden and Transport Canada held a debriefing session in Dryden to discuss any major problems and concerns that arose out of the implementation of the Town of Dryden's Peacetime Emergency Plan. Mr Risto's report on the debriefing is short and touches briefly only on the need for a better communications network and the need to upgrade existing resources and inventory.

Based upon his experience as Central Region coordinator for emergency and disaster planning, Mr Risto could see nothing "flagrant or critical done out of context with established procedures and *common sense*."

Mr Nicholson in his report of March 22, 1989, summarized the activities of the Dryden Airport CFR services unit in responding to the crash. Mr Nicholson reviewed its actions, summarized the circumstances of Red 2 having to fill up with water, Mr Rivard losing control of the vehicle, and the loss of the air brake system in the vehicle. After describing the actions of the CFR fire-fighters, Mr Nicholson concluded in his report that in his judgement the CFR crash vehicles could never have "dozed" their way to the crash site. He also stated that Red 2 carried only 300 feet of 1½ inch hose line and Red 1 had 100 feet of unusable handline. The information that Mr Nicholson obtained from Chief Parry regarding Red 2 was incorrect. Red 2 actually carried 500 feet of handline. Mr Nicholson concluded that the CFR fire chief and crew could be commended for "the conscientiousness and professionalism shown during the events leading up to and attending the crash incident."

The Dryden CFR crew chiefs, Stanley Kruger and Bernard Richter, provided observations and suggestions to their fire chief and to the airport manager regarding the CFR response to the crash. These observations and suggestions in my view were well conceived and, accordingly, I quote their entire submission to their superiors:

Observations and Suggestions of Dryden CFR Crew

March 13, 1989

Better call in system, steps should be taken to ensure all CFR personal is called in for any and all significant emergency response.

Paging system could be activated to help with the problem of contacting personal.

Better maintain access roads to runway, road from firehall to the runway should be kept sanded on a priority basis in winter months. Access roads at the end of the runway at each end should be kept open in winter months.

Trucks should be maintained to peak conditions regardless of cost, or replaced.

Transport Canada should be made aware of the need to reevaluate policy of only one man per truck, especially at northern airports. Due to the depth of snow and rugged terrain experienced in the north it does not seem reasonable to expect one fireman one truck to do a proper job of rescue, firefighting, and/or saving possible evidence under these conditions. Even two men in one truck and one in the second would be a major improvement.

We should align ourselves more closely with Transport Canada so we can receive similar benefits re information and training.

Should try and make sure there is a town pumper to provide fire protection if airport operations continue during an emergency.

CFR personal directly involved in a disaster should continue to be involved as much as possible in the days following the incident if they wish so they do not feel they had to leave the job unfinished. There should also be an optional debriefing if possible within twenty-four hours.

The above are observations resulting from discussion among CFR crews following the crash of Air Ontario's F28 March 10, 1989 in Dryden. These are made in hopes of benefiting future operations of CFR, and is in no way, nor is it meant to be, a criticism of any person, department or organization.

(Exhibit 186)

On April 12, 1989, the Dryden airport manager, Mr Peter Louttit, forwarded a report of the F-28 accident to Transport Canada. The report was submitted as an Emergency Exercise Report, presumably fulfilling an exercise requirement. The report dealt with the response by the airport and its CFR unit to the crash. There were five specific deficiencies identified regarding the response by the CFR unit as follows:

1. There was no formal alarm given. CFR were made aware by witnesses waving and yelling.
2. Town dispatcher and others did not recognize the magnitude of the situation from only being given the aircraft model i.e. "F-28 crash." Need to be more specific for non-aviation personnel.
3. CFR vehicles could not reach site due to snow depth and dense bush. Firefighting was done with handline from a fire pumper truck.
4. The CFR call-in system for calling in off-duty personnel didn't work. Needs to be replaced with a better system.

5. Supply of blankets in CFR firehall could not be located by non-CFR persons sent for them. (Boxes have since been marked)  
(Exhibit 240)

The report, after identifying problems encountered during the crash, suggests solutions. One of the solutions was to add a pumper truck to the CFR fleet. The report lists other salient points learned from the emergency as follows:

1. CFR tactics, equipment, and manning standards need to be re-examined for sites such as Dryden that are surrounded by heavy bush, rough and/or swampy terrain, and heavy snow falls in the winter.
2. The On Site Coordinator is too busy with the logistics and priorities of the emergency to keep written records of events in chronological order. Some means of tape recording his activities and the time intervals is required.

(Exhibit 240)

Mr Louttit's report of April 12, 1989, did not include all the observations and suggestions of the Dryden CFR crew chiefs. In particular, he did not comment on deficiencies they observed, such as maintenance of access roads to the runway, maintenance of the fire vehicles, re-evaluation of Transport Canada policy regarding personnel and vehicles, and alignment of Dryden airport policies closer to those of Transport Canada so that the Dryden CFR fire-fighters could receive better information and training. In my view, Mr Louttit's report should have included all these observations.

Although both Mr Risto and Mr Nicholson were quick to praise the response of the CFR fire-fighters, neither of their reports analysed deficiencies in the CFR response so that the Dryden Municipal Airport and Transport Canada could correct the deficiencies. It was not until both Mr Risto and Mr Hamilton testified before me that they confirmed that the CFR unit had made a number of errors in its response to the crash.

While it was the intention of Transport Canada to provide assistance and encouragement to the Dryden airport staff, it is my view that they should have investigated the response of the CFR unit more thoroughly to determine if there were inadequacies in the response. Because Transport Canada did not analyse the response rigorously and because the airport manager and the fire chief did not provide to Transport Canada their own thorough critique, a true picture of the CFR response was not available to the Dryden Airport Commission or to Transport Canada.

Mr Henry Moore was, at material times, the director, Airports Safety Services, Airports Authority Group, Transport Canada headquarters, and, as such, was responsible for standards and training for CFR services. During his testimony before this Commission, he was asked if there was any existing mechanism whereby Transport Canada CFR experts participated with Transportation Safety Board of Canada (TSB) investigators to assess the response of a CFR unit to a crash. Mr Moore stated that Transport Canada does not have a formal procedure either internally or with the TSB to review the response of a CFR unit to a crash. Although Transport Canada emergency services personnel are normally asked to visit an accident site immediately to assess CFR actions, no procedure exists to evaluate a CFR unit's response to a crash.

Mr Moore testified that his branch carefully followed this Commission's hearings to determine what lessons could be learned with regard to CFR and what information could assist his headquarters branch. I deal with Mr Moore's response to the hearings under the section in this chapter titled Observations. However, I deem it important to quote part of Mr Moore's testimony as an example of how Transport Canada has responded to deficiencies revealed during these hearings. When asked what lessons Transport Canada had learned and what sort of information had been obtained, Mr Moore stated as follows:

- A. I decided to become quite involved in [the] ... hearings of the Commission because we don't very often have – thank God ... crashes or serious accidents in aviation, and, just for the very purposes that you outlined, I wanted to follow it as very closely as an individual.

And I have attended most of the hearings, the majority of the hearings, I believe, and it has certainly raised the degree of urgency, if I can use that type of terminology, both for myself and for my staff.

Without prejudice and without making any assumptions in terms of the status, whether or not CFR services were being provided well at other airports, I sort of took the approach, if that sort of thing could happen at Dryden, there's a possibility it could happen somewhere else and how should we prepare to deal with that type of an incident should it occur.

A couple of things became apparent to me early in the exercise. One was the need ... to ensure that we had adequate crash charts available. In August of last year, I had my staff conduct a survey to determine the adequacy and the availability of crash charts on a national basis.

Based on that survey, we decided that we weren't as well prepared there as we felt we should be ... back in November, then, we went out again with a stronger memo saying that you – essentially, get those crash charts and have them available.

Then it was sometime after that the question was raised here at the hearings, and, since that time, we've decided to take a very strong position in this case here, and our approach is going to be to ensure that, when new aircraft ... receive type approval for operations in Canada, part of that package is going to be to provide us with crash charts, and we're going to distribute them from our headquarters. And my people evaluate the availability when they visit airports, so I don't want any more problems with crash charts.

Q. So that's a positive step in the right direction, obviously?

A. Yes.

...

A. A second thing, very early in the exercise, my assessment of what happened, based on the testimony at the scene and in consultation with members of my staff, we felt that we were going to have to do something to emphasize further the need for a strong, well-trained and knowledgeable on-scene commander.

And I have given instructions to my people to proceed with developing such a training course, and we should have that in the new year.

A number of other programs, without any specific written direction from me, but just the general sense of urgency, that we had better get on with some of these things, to the best of our ability, I feel that ... as an example, the FR Certification Program was accelerated.

I made the decision to distribute all of the documentation for this training program probably in the July – August time frame, in that area, with advice to the people affected that the specific instructions as to how the documentation was to be used would be forthcoming.

In other words, we had all the documentation, but the specific administration of the program hadn't been finalized. But we said, here is the documentation, you fellows start taking a look at it, you start using it, start becoming familiar with it, critique it, come back to us, specific instructions will be forthcoming. And they were in fact forthcoming, and the program had an official start date of November 1.

Q. And so you have accelerated the program by, what, two or three or four months?

A. Probably a couple of months, right.

(Transcript, vol. 38, pp. 26–29)

Mr Moore, in the above-quoted testimony, cited a few examples of where Transport Canada has responded positively to the evidence on CFR that unfolded during the Inquiry hearings. These and other responses are listed in the Observations section below. I commend the positive effort taken by Transport Canada regarding actions which I agree are appropriate in dealing with obvious deficiencies in the aircraft

crash response system. However, in order to assist both the responding unit, other CFR units, and Transport Canada in improving CFR capabilities, I recommend that, whenever a CFR unit responds to an aircraft crash, Transport Canada, as part of its post-crash response, immediately analyse the actions of the CFR unit. It is important that all the CFR actions be reported on so innovative ideas can be discussed, deficiencies in the response can be corrected, and useful information, both positive and negative, can be passed to other CFR units.

## **Observations**

I have paid particular attention to the matter of crash, fire-fighting, and rescue services not only because of the involvement of and response by the Dryden CFR unit but also because of the need to recognize its importance as part of the overall safety net at airports where air carriers operate on a frequent and regular basis. As a result of the testimony that was heard before this Commission, Transport Canada has responded to deficiencies exposed in a positive manner prior to the issuance of this my Final Report.

While I have deemed it necessary to identify the errors that were made by the Dryden CFR unit, I also wish to recognize those actions taken by Transport Canada to correct the CFR shortcomings uncovered during this Inquiry. I deem it appropriate to list in its entirety a letter from Mr Moore, dated March 13, 1991, addressed to Senior General Counsel, Department of Justice, Canada. A copy of this letter was provided to me for my review and consideration. Action taken by Transport Canada as outlined by Mr Moore is as follows:

### **Item 1 – Aircraft Crash Charts**

Every effort has been made during the past year to ensure that airports have the requisite crash charts. We are confident that the availability of crash charts at Transport Canada owned and operated airports has never been better. As a separate thrust, we concluded a letter of agreement with the ADM – Aviation Group that led to Policy Letter No. 49. This policy provides for a means of ensuring the provision of pertinent crash charts concurrent with the introduction of new aircraft types into regular service. My staff are also engaged in the final production of a crash chart manual, which will include over 260 different types of commercial aircraft. This document will be distributed in sufficient quantities so as to provide for one manual to be placed in each crash truck in the system. In addition, a second manual in larger-size format will be provided to each fire hall and Emergency Co-ordination Centre for quick

reference and training purposes. This latter project has been extremely demanding because of the need to rework numerous charts to provide for standardized drawings. The results have been well worthwhile, and the first printing should be distributed during the next two or three months.

Attachments:

Appendix A – Letter of Agreement, dated June 1990

Appendix B – Policy Letter #49

**Item 2 – On-Scene Controller Training**

Our approach to developing the documentation for this training course was predicated on the need to act quickly. Briefly, the first training course was presented to key personnel at the Transport Canada Training Institute (TCTI) during November of 1990. The course participants then returned to their respective Airports or Regional Headquarters to present the training to employees within their areas of responsibility. In addition, the On-Scene Controllers Course will be incorporated into our on-going Disaster/Emergency Planning and Airport Duty Managers' courses. You will note that we have also chosen a new title "Controller" to better reflect the importance placed on this activity. Our program is on-schedule, and the results to date have been most gratifying.

Attachment:

Appendix C – AK Directive 1990-A0-20

On-Scene Controllers' Course

December 10, 1990

**Item 3 – Safety Officer Certification Training**

The development and presentation of this training is right on schedule. The first regular two-week certification course was presented at the Transport Canada Training Institute in March of 1990. Additional courses took place during September 1990 and February 1991. This is now an on-going program.

**Item 4 – Critical Incident Stress Debriefing (CISD) –**

This refers to my undertaking to address the matter of post-accident counselling for non-government firefighters at subsidized airports. This was discussed with the responsible Transport Canada officials on a number of occasions; however, a final determination has not been made in respect to this item.



**Item 5 – Airport Fuelling Procedures**

An AK Directive, dated March 22, 1990, was dispatched for the purpose of ensuring that the procedures established in TP 2231 (fuelling manual) were followed, and that the importance of this activity was clearly understood by managers on a national basis. TP 2231 was reviewed and revised in consultation with the Air Transport Association of Canada, and the new version was published in April of 1990.

Attachment:

Appendix D – AK Directive – Airport Fuelling Procedures, March 22, 1991\*

**Item 6 – Tracking of Firefighter Certification Program Training Progress**

A computer program has been set up, and progress reports are being entered on a site-by-site basis to enable program implementation to be tracked by the Headquarters training officer.

**Item 7 – All-Weather Training and Training on Difficult Terrain**

A training committee review of this training indicated that the individual skills required of firefighters were already covered in the Firefighter Certification Training Program; however, it was also agreed that increased emphasis was in order. Additional Certification Program lesson plans were developed by specialists in this area and distributed to airports for review and comment. Final revised lesson plans are now ready for printing.

**Item 8 – Snow-Clearing Access Roads/Crash Gates**

A directive was forwarded to all affected Managers effectively instructing them to ensure that roads and gates are maintained clear of snow.

Attachment:

Appendix E – Snow Removal – Emergency Access Roads and Gates, March 23, 1990,  
File 5160-12-23 (AKOBC)

**Item 9 – Emergency Response Services (formerly CFR)  
Evaluation Procedures**

Revised evaluation checklists were developed for distribution to Airports for review, comments and guidance. Revised procedures were also developed to guide Headquarters staff during evaluations at Major Federal Airports.

**Item 10 – Deletion of Water for Fuel Spills, etc.**

Revised Certification Program lesson plans state that water must no longer be used to wash down a spill that is not contaminating a critical area.

**Item 11 – Fire Officer Certification Program**

This program is currently being developed. To date, working groups consisting of experienced Fire Chiefs and Fire Officers have completed the formulation of specific training objectives. The identification of requisite Fire Officer knowledge and skills has also been completed. We will now proceed with the preparation of detailed lesson plans. A parallel thrust is the development of a strategy for the delivery of the program. Consideration includes a number of centralized training courses complemented by on-site training. Formal training should get under way during 1991.

**Item 12 – Primary Role of a Firefighter in Event of a  
Crash**

The primary role of a firefighter is clearly identified in the Firefighter Certification Program; however, added emphasis has been placed on this area at the Level I phase of the training program.

A number of other activities have also been under way, which can only serve to improve the response to any future incident that may occur at a Transport Canada Airport. Widespread circulation of selected Commission transcripts has taken place throughout the organization. A number of video tape recordings of key witnesses have also been distributed.

The details of the Dryden accident, as presented by Commission witnesses, have been discussed at many National and Regional conferences, meetings, seminars and safety-related training courses during the past year. We have no difficulty in suggesting that it would be almost impossible for any Airports Group employee,

associated with safety and/or emergency planning, to be untouched by the events of March 10, 1989.

Henry L. Moore  
Director  
Airport Safety Services

Attachments

The actions taken by Transport Canada listed above are all appropriate in dealing with the obvious deficiencies revealed as a result of this Inquiry. This positive effort by Transport Canada regarding aircraft crash responses should not end with the above actions but must be a dynamic process that continues beyond the term of this Commission of Inquiry.

## Findings

- There is no legislation in the *Aeronautics Act*, Air Regulations, Air Navigation Orders, or any other Canadian legislation governing the requirements for CFR services at Canadian airports. Nor does legislation exist in Canada to compel a certificate holder of an airport not owned or operated by Transport Canada to comply with Transport Canada policy standards and guidelines regarding CFR services.
- The Dryden CFR unit personnel were not sufficiently trained to meet Transport Canada standards as set out in its AK policy documents.
- The Dryden airport manager, the CFR fire chief, the CFR crew chiefs, and the CFR fire-fighters did not ensure that all CFR personnel were trained in all aspects of crash, fire-fighting, and rescue as required by Transport Canada AK policy documents and as requested by Transport Canada emergency services officers on a continuing and regular basis.
- Budgeted funds from Transport Canada were allocated and available for the required training of the Dryden airport CFR personnel.
- The Dryden airport manager did not ensure that budgeted training funds were made available to the Dryden CFR unit. The budgeted training funds were diverted for use on other airport projects.
- Both the Dryden airport manager and the CFR fire chief incorrectly stated in training reports to Transport Canada that the reason hot-drill

fire training was not completed was because of the lack of funds, economic restraints, and funding cuts.

- Transport Canada personnel were unsuccessful in their attempts to persuade Dryden CFR personnel, directly and through the airport manager, to train properly.
- Both the lease agreement and the subsidy agreement between the Dryden Airport Commission and Transport Canada required that CFR services be maintained to the satisfaction of Transport Canada. The subsidy agreement required that variances in the expenditure of approved budget funds not be made without the expressed consent of Transport Canada.
- Transport Canada did not advise or warn the Dryden Airport Commission of the fact that proper CFR training at the Dryden airport was not being conducted. The lack of advice or warning was due in part to ambiguous direction given by Transport Canada Airports Group, Ottawa, to Transport Canada, Central Region, regarding the treatment of CFR units at subsidized airports.
- Communication between Transport Canada, Central Region's Safety and Services Branch, responsible for CFR services within that region, and the Community Airports Branch, responsible for the allocation of funds and the determination of budgets for subsidized airports, including the Dryden Municipal Airport, was deficient.
- Transport Canada, Central Region, Community Airports Branch, did not adequately monitor the spending of CFR training funds allocated to the Dryden Municipal Airport.
- Transport Canada, Central Region, Safety Services Branch, lacked vigilance and initiative in pursuing the fact that the fire chief and the airport manager did not ensure that adequate and proper CFR fire-fighting training was being carried out.
- The workload and responsibility placed upon one supervisor and two emergency services officers in Transport Canada, Central Region, was overwhelming in that they had the responsibility to train, evaluate, and supervise CFR units and to provide guidance and assistance to the airport managers and fire chiefs in Central Region, as well as assisting Transport Canada, Headquarters Emergency Services Division, in developing policy.

- The support provided by Transport Canada Airports Authority Group to the emergency services organization in Central Region was wholly inadequate.
- The Dryden CFR personnel were not familiar with the term CRFAA or its implications. This lack of familiarity with the CRFAA did not affect their response to the crash.
- AK-12-03-011, Transport Canada Crash Firefighting and Rescue Services Standards, is ambiguous when referring to “the CRFAA and the airport boundary,” or “the CRFAA or the airport boundary,” in that it is not clear whether these phrases are meant to include the entire CRFAA if its boundaries extend beyond the airport boundaries.
- The Dryden CFR personnel were not trained properly to deal with an aircraft accident on terrain inaccessible to fire-fighting vehicles.
- Transport Canada did not emphasize the use of extended handlines as part of the CFR training and evaluation programs.
- Transport Canada CFR policy documents are generally of a high standard.
- There was ample information in numerous documents available to CFR personnel and aircraft refuellers regarding precautions to be observed when hot refuelling.
- There was no information in manuals or documents normally available and used by Air Ontario F-28 pilots regarding hot refuelling.
- Aircraft refuellers at the Dryden airport did not follow correct hot-refuelling procedures.
- CFR personnel at the Dryden airport did not ensure that refuellers followed correct hot-refuelling procedures.
- Fire-fighting vehicles expended fire-fighting resources to clean up a small fuel spill when alternative means existed.
- Mr Vaughan Cochrane, contrary to ESSO instructions and Transport Canada documents, normally defeated the dead-man switch while refuelling aircraft and did so during the refuelling of C-FONF on March 10, 1989.

- Dryden airport management personnel did not ensure that the crash gate access roads at the airport were kept open and usable during the winter.
- Dryden CFR personnel reacted properly in hurrying to the crash area, setting up a command post, and assessing the crash.
- The Dryden airport manager did not cause to be issued, in a timely manner, a notice to airmen (NOTAM) regarding the lack of CFR services at the Dryden airport following the crash of C-FONF.
- Except for the initial radio contact between them, immediately after crew chief Kruger's arrival at the crash site, Mr Kruger and Fire Chief Parry did not establish vital radio communications between the crash site and the command post, although they had radios capable of providing such communications.
- There was overlapping jurisdiction among the responding agencies, being the UT of O Fire Department, the Dryden CFR unit, and the OPP. This overlapping jurisdiction caused confusion and uncertainty as to the respective roles of those agencies involved.
- It cannot be shown that any activities by any person or organization in response to the crash altered, or could have altered, the fate of any of the persons who died as a result of the crash.
- By 12:45 p.m. there were several fire-fighters and at least three fire-fighting vehicles at the crash site capable of being used effectively to fight the aircraft fire, but there was no attempt to do so until after 1:30 p.m., when a UT of O pumper truck was driven to a position opposite the crash site.
- Handlines could have been in use at the aircraft fire by approximately 12:50 p.m. at the earliest. They could have been used to assist rescue personnel, preserve more of the evidence, and protect the flight recorders from the fire and heat.
- As the result of inadequate training, the CFR fire-fighters, including the CFR fire chief, did not carry out their duties and responsibilities at the crash site as professional fire-fighters but instead spent their time performing duties that others could have performed. This is not to suggest that the duties they did perform were not important; they became distracted by their concern for the survivors.

- The UT of O fire-fighters likewise did not initially perform duties as trained fire-fighters but became, as did the CFR personnel, distracted by the survivors.
- The CFR fire chief did not properly direct the fire-fighters on their arrival at the crash area.
- Although Transport Canada headquarters officials stated that there could be no compromise in safety standards caused by spending reductions, the fact that they did not specify whether CFR was a safety issue created problems for Transport Canada regional officers and for airport management.
- The recently instituted Transport Canada fire-fighter certification program provides a comprehensive means to ensure compliance with fire-fighter standards on a national basis in Canada.

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## RECOMMENDATIONS

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It is recommended:

- MCR 23 That Transport Canada ensure that airport authorities at all Canadian airports, in conjunction with crash, fire-fighting, and rescue (CFR) unit personnel, determine the best and most practical ways to deal with emergencies within each airport boundary and critical rescue and fire-fighting access area (CRFAA), having regard to available CFR personnel and equipment and to the surrounding terrain.
- MCR 24 That Transport Canada ensure that all documents which describe or refer to the critical rescue and fire-fighting access area (CRFAA), be they Transport Canada documents or local airport authority documents, are informative, consistent, and unambiguous with regard to the CRFAA, and that such documents specifically define the responsibilities of a crash, fire-fighting, and rescue unit within the CRFAA both within the airport boundaries and/or beyond.
- MCR 25 That Transport Canada ensure, through the fire-fighter certification program, and other programs and agreements as

necessary, that all crash, fire-fighting, and rescue fire-fighters, including the fire chiefs, are adequately trained.

- MCR 26 That Transport Canada proffer for enactment legislation that empowers Transport Canada to ensure that all crash, fire-fighting, and rescue (CFR) personnel, including those at non-Transport Canada-owned and non-Transport Canada-operated airports, meet Transport Canada CFR training and operating standards.
- MCR 27 That Transport Canada encourage all communities where there is an airport with fire-fighting services to include in their mutual aid/emergency response plans specific instructions regarding the duties, responsibilities, and area of authority of each organization that is expected to respond to an aircraft emergency on and/or off airport property.
- MCR 28 That Transport Canada ensure that refuellers at Transport Canada-subsidized or operated airports are fully knowledgeable in and follow safe refuelling practices.
- MCR 29 That Transport Canada implement a policy of having airport crash, fire-fighting, and rescue units, after appropriate training, responsible for monitoring aircraft fuelling procedures and ensuring compliance with fuelling standards and procedures.
- MCR 30 That Transport Canada ensure that training programs for airport crash, fire-fighting, and rescue units include preparing fire-fighters for the realities of an air crash, so that they are not distracted from their primary responsibilities at a crash site.
- MCR 31 That whenever a crash, fire-fighting, and rescue (CFR) unit responds to an aircraft crash, Transport Canada, as part of its post-crash response, objectively review and analyse the actions of the CFR unit forthwith, in order that deficiencies in the CFR response can be corrected and useful information, on both the positive and negative aspects of the response, may be passed on to other CFR units.
- MCR 32 That Transport Canada ensure that local arrangements be made between airport managers and air carriers that will result in crash, fire-fighting, and rescue personnel being



informed of the number of persons on board, fuel on board, and any hazardous cargo on board an aircraft in the shortest possible time following an incident or accident. These procedures should accommodate the possibility that the aircraft flight crew will not be able to provide this information.