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Rescue Efforts

To inquire into . . .

(g) all other matters related to the establishment and operation of the Mine which the Commissioner considers relevant to the occurrence

I would be remiss if I did not comment on the selfless bravery shown by the rescue teams in the days following the explosion. The conditions in the mine were terrifying. Dislocations caused by the force of the explosion resulted in severe instability within the roof and walls of the mine. Rock falls, of varying degrees of intensity, were almost continuous. Indications of the devastation were rampant, as were signs of impending danger. Yet these men, miners trained in mine rescue, went unquestioningly into that perilous environment with the hope of finding some of their comrades alive. The rescuers came from mainland Nova Scotia, Cape Breton, and New Brunswick. We can only be thankful for this valiant display of selfless concern for one's fellow worker.

A mine safety official with the Mine Safety and Health Administration (MSHA) of the U.S. Department of Labor aptly described to me the re-entry into a coal mine following an explosion as being akin to walking down the barrel of a loaded cannon. We owe each of those brave men our respect and admiration. The Government of Canada recognized their contribution by awarding the Medal of Bravery to 202 of the rescuers. A list of those recipients appears in Appendix M at the end of this Report. In addition to the teams of mine rescuers, organizations such as the mining industry associations and some provincial governments were quick to respond generously with much-needed rescue supplies. Representatives from MSHA also established an early presence on the scene. Firefighters, medical personnel, the RCMP, and a caring community must also be acknowledged for their tireless efforts.

Response and Organization

Westray miner Dave Matthews and his wife had just returned from a trip to Boston on Friday evening, 8 May 1992. Matthews was living in a house at the foot of the driveway leading to the mine. His wife decided to stay with him in the "company house" before driving to their home in Cape Breton the following day. Matthews was scheduled to go to work in the mine on Saturday night. When they heard the sound of the explosion at 5:20 on Saturday morning, the Matthewses did not know what it was. Dave Matthews looked out of the bedroom window and could still hear a rumbling noise. ("[T]he remnants of the noise [were] still coming," he testified.) As he went downstairs, he noticed that most of the windows in the house had been blown out. He opened the door and looked towards the mine, where he saw dust and stones "still coming out of the entry." He immediately went back upstairs to get dressed and told his wife that he was going up to the mine site to see what was happening. His wife expressed some reservations, but Matthews told her, "that don't look good

over there." As he left the house, he commented, prophetically, "I don't think anybody is going to walk out of that pit."[1]

As Matthews started towards the portal, he was picked up by Westray general manager Gerald Phillips and his daughter, Samantha, who were driving to the mine. Phillips expressed concern and said that he had been "blown out of bed" by the explosion. The first person they met at the security gate to the mine property was the security guard, who appeared to be in a state of confusion and had no idea what had happened. The guard said that he had called foreman Arnie Smith. At this point, Phillips instructed his daughter and Matthews to "get on the phone" and try to get some rescue people assembled.[2] Matthews said that the only thing they had to work with was an employee list, which was incomplete in that "half of them had no phone numbers." They phoned the local operator, who provided some assistance as well as several numbers classified as new listings.[3] Matthews said that the next person to arrive on the scene was Smith, followed by either underground manager Roger Parry or assistant underground superintendent Glyn Jones. It appears that Matthews and Samantha Phillips stayed on the phones from about 5:30 until about 8:00 AM.[4]

The mine rescue operation was technically and legally in the control of the mine manager, Phillips. The early stages of the operation seem to have been fraught with confusion. The first evidence of this confusion was the absence of a current list of miners trained in mine rescue. The only list available was the incomplete employee list, referred to above.[5]

In Toronto, Graham Clow, a mining engineer and a Curragh vice-president, received a phone call from the new president of operations, Colin Benner, in the early hours of 9 May 1992. Clow, Benner, and Westray president Marvin Pelley were able to catch a scheduled 7:00 AM flight from Toronto to Halifax.[6] They arrived at the mine site about 3 hours later at approximately 11:00 AM.

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1 Hearing transcript, vol. 31, pp. 6614–16.

2 Hearing transcript, vol. 31, pp. 6616–17. Arnie Smith, an underground shift foreman, was in charge of mine-rescue training at Westray.

3 In Chapter 5, Working Underground at Westray, I describe Westray's ineffective tagging system, and note that on the morning of 9 May management was not sure which workers were in fact underground.

4 Hearing transcript, vol. 31, pp. 6617–18.

5 It is general practice, and of utmost importance for any emergency organization, to have a call-out list of essential persons to be contacted in the event of a disaster. There was no such list evident at Westray.

6 **Comment** Marvin Pelley was president of development and projects for Curragh Resources. Clow and Benner were the only two senior executives of Curragh Resources who gave evidence at the Inquiry. They both testified, albeit with some misgivings, out of a sense of duty as professional engineers and out of a concern that the Inquiry receive as much evidence as possible. I was impressed by their concern and their frankness during testimony, and I was moved to say, at the conclusion of Clow's evidence, "I find that your appearance here and that of Mr Benner has added a human and humane dimension to the pretty cold image that I have built up in my own mind with respect to the operators, the corporate operators of the Westray facility, and I thank you for that" (Hearing transcript, vol. 75, pp. 16348–49).

Wayne LeBlanc, chief ventilation engineer for Devco, who also had responsibility for Devco mine rescue operations, was called at his home in Sydney by Department of Labour inspector Albert McLean at about 5:45 AM. LeBlanc immediately arranged to have two Devco mine rescue teams prepare to leave for Westray. At the request of Reg McIntyre, Devco's vice-president of operations, LeBlanc left immediately for Pictou and arrived at the mine site at 11:00 AM. By 2:00 PM, they were joined by Bob Cooper and Roy MacLean, respectively Devco's vice-president of human resources and its director of mining engineering.

Sometime during the early stages of the rescue operation, Benner assumed the role of company spokesman. It was his image that the public saw on television screens and in newspapers throughout North America during the trying days of the operation. Benner became the link from the company, through the media, to the concerned public, and he carried out this task with compassion and dignity.[7]

From the evidence, it appears that the mine rescue operation was organized and administered throughout by Phillips, Westray engineering superintendent Dave Waugh, Clow, McIntyre, and LeBlanc.[8] Clow observed that Phillips was initially attempting to "run" the entire rescue operation, which at the time appeared disorganized. Clow brought his observations to Benner's attention, and a central control capability – a standard practice in mine rescue – was established. From this base, the appropriate experts would be involved in decision making. All communication would now be carried out through the control centre, and records of all events would be maintained there. The majority of the decisions would be made by Phillips after consultation with the others.

The actual rescue organization was initially formulated by Clow, McIntyre, and LeBlanc. The following narrative draws on interviews with these three men, on written summaries setting out their recollections and observations, and on the oral testimony of Graham Clow.[9]

Clow noted that the telephone company, Maritime Tel&Tel, had responded with exemplary haste to establish a communications capability among the essential areas of the emergency response set-up. Clow, McIntyre, and LeBlanc immediately set about establishing the central control (communications) room, which was operating by mid-afternoon Saturday. Before that, control had been handled on a more or less ad hoc basis through the mine manager.

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7 For a more complete analysis of the interrelationship among the various players, such as the company, the media, the police, and the Westray families, I refer to the 1994 master's thesis prepared by freelance journalist Trudie Richards, "The Cost of Coal: The Westray Mine Explosion. An examination of the relationship between the mine owner, the media and the community" (Ottawa: Carleton University, 1994).

8 **Comment** Wayne LeBlanc had given mine rescue seminars to mining people throughout the province. The last such seminar, conducted about two and one-half weeks before the Westray explosion, was attended by Gerald Phillips, Roger Parry, and Arnie Smith. On his arrival at the scene on 9 May 1992, LeBlanc said he didn't see much evidence of mine rescue organization.

9 The three men had access to post-rescue interviews and transcripts of relevant Inquiry hearing transcripts.

The board room in the main office building was commandeered for use as the control room. It was generally staffed by four to six persons, the mine manager in overall charge, with Waugh or Clow to replace him as required.[10] Don Jones and John Campbell from the Department of Natural Resources acted on instructions from the coordinators in managing the flow of teams and services. One person attended to the phones. One telephone line, dedicated to underground communication, was connected to a loudspeaker so that everyone in the control room could monitor the calls. McIntyre and LeBlanc were generally in the control room, as was Clow when he returned from underground. The practice after each foray into the mine by a mine rescue team was to have the team's captain and co-captain attend at the surface to report on the conditions and progress. This debriefing, usually carried out by some combination of McIntyre, LeBlanc, Phillips, Waugh, and Don Jones, formed the basis of a report, which was then used to brief the next team of rescuers with an updated summary of conditions in the mine. Another priority was to get the mine rescue station under control. With the assistance of Albert McLean, the station was organized and staffed by Mike Kelloway and Bernie Dawe of Devco, and Dave MacLean and Fred Doucette of the Nova Scotia Department of Labour.

When LeBlanc arrived at the site, he noted the absence of adequate air-sampling and testing apparatus, both essential to the safety of personnel underground. LeBlanc arranged through Devco and the CANMET Coal Research Laboratory in Sydney to have the necessary equipment brought to Plymouth. Devco ventilation technologist Brian Stanford took charge of the gas-testing facility. Devco also supplied a water gauge and recording barometer, Draeger OXY-60 breathing devices, and copper safety tools, none of which were available at the Westray site.[11] Delivery of these items by a Devco truck was facilitated on the first day by McIntyre and LeBlanc.

Rescue Teams

Concurrently, the Westray rescue teams were being assembled, with some having already entered the mine by the time Clow, McIntyre, and LeBlanc began their work. Indeed, the presence of these teams underground added urgency to the establishment of efficient control and communication.

During the first day, the Westray teams were joined by teams from Devco and Canadian Rock Salt of Nova Scotia; and from Potocan, Heath Steel, and Brunswick Mining and Smelting of New Brunswick. That these

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[10] Clow spent less time in the control room because his presence was demanded in the underground rescue operation. He told the Inquiry that he had had "a great deal of mine rescue experience" dating back to the early 1970s. He had captained a team and "at one stage coached a team that won the National Mine Rescue Championship" (Hearing transcript, vol. 75, p. 16329).

[11] **Comment** In Chapter 6, The Explosion, I commented on the lack of a water gauge and barometer at Westray and the attitude of the underground manager as to the necessity of such testing devices. Copper tools are used in potentially explosive atmospheres. If a copper tool happens to cause a spark, the spark is not of sufficient intensity to ignite any gas.

teams were assembled and deployed with such speed and efficiency bears testament to the skill, training, and dedication of these men. The rescuers, or draegermen, as they may variously be called throughout this Report, are made up of miners, supervisors, engineers, equipment operators, and other underground employees who volunteer for intensive skill training in underground rescue.[12] The typical draegerman must be in very good physical condition and be highly trained in mine rescue, first aid, and general emergency response techniques. Draegermen must be dedicated teamworkers, since their conduct underground could, at any given moment, affect the safety and well-being of their team members. They must be resolute without being foolhardy. The evidence and the observations lead to the conclusion that the draegermen at work during the Westray rescue efforts measured up to this profile.

In addition to carrying out actual mine rescue and victim recovery, draegermen will be called upon at times to construct barricades, temporary air seals, and water-pumping facilities; to clear debris; to repair communications and service lines; and to make required adjustments to ventilation services – to mention just a few of their tasks. To perform such work under normal circumstances is onerous. To perform them under severe stress, in extremely dangerous conditions, in darkness, and with about 23 kg of equipment on one's back and belt, is oppressive in the extreme.

Underground

It was essential at the outset to establish some control over access to the underground workings in order to monitor specifically where in the mine each team was at any particular time. Clow said that satisfactory control at the portal was established by mid-afternoon Saturday, and that records were kept of the comings and goings of the several rescue teams. At any given time, there were as many as 16 teams – active under oxygen, as backup at the fresh-air base, getting ready or debriefing, or resting – of five or six members each.[13]

Glyn Jones led the first team to go underground on 9 May. The rescuers started into the mine at about 6:20 AM – one hour after the explosion – with instructions (presumably from Phillips) to travel to No. 5 Cross-cut and report on the damage. They returned to the surface at about 8:30 AM and reported extensive damage to each of the stoppings in the cross-cuts, as well as considerable debris in No. 1 Main. The main fan was still operating, but, since the stoppings were blown out, the air was

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[12] **Comment** The term "draegerman" derives from the brand name of a certain type of underground breathing apparatus that the rescuers must carry when travelling through non-respirable air. Typically, the draegerman carries on his back a 14 kg closed-circuit breathing apparatus. Graham Clow was high in his praise for the rescue crews: "The performance of the teams speaks well to the mine rescue training programs in Nova Scotia and New Brunswick. The teams were prepared both physically and mentally for the stress of the situation" (Comments made to the Commissioner by letter dated 31 December 1996).

[13] For further commentary on rescue efforts, see Appendix J, Interview Abstracts: Post-Explosion Conditions.

recirculating at the main door at No. 2 portal. Methane was recorded at 3 per cent, carbon monoxide at 700–800 parts per million. The first priority was to establish a fresh-air base in the mains so that the rescue teams could get further underground before having to don their breathing apparatus, thus allowing greater time in the further reaches of the mine.[14]

Since the main fan was operating, the rescuers first worked at re-establishing the ventilation system by installing temporary stoppings in the several cross-cuts.[15] As a stopping was installed in each successive cross-cut, the air would be drawn further down the slope until short-circuited by the next blown cross-cut. During the night of 9 May, the teams succeeded in sealing the cross-cuts down to No. 4, and the fresh-air base was moved to that point. The fresh-air base was later established at No. 10 Cross-cut, where it remained for the balance of the rescue effort. This allowed the rescue teams to travel "bare faced" to No. 10 Cross-cut before using their breathing apparatus. It also provided a place for the backup and standby teams to await the return of those venturing further into the mine. Graham Clow described the overall operation of the mine rescue:

> At any one time, we had one rescue team in action, one on standby at the underground fresh-air base, one on standby at the portal, one coming off shift and one coming on. Each team moved up one stage at approximately one- to two-hour intervals, depending upon the work being done.
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> The requirement to feed, transport, house, and coordinate the movement of each team was huge and provided a logistical challenge. Coordination of this was done from the control room to ensure that each team was properly fed and rested before coming on shift.[16]

By mid-afternoon Saturday, 9 May, an extensive array of emergency personnel – a medical team, volunteer firefighters, members of the RCMP, and support staff – had set up at the portal in addition to the portal control. The outside agencies acted independently as self-supporting units and were on site around the clock until the rescue operation was suspended. Clow said that some of the doctors even volunteered to go underground if their services were required. Clow praised the support groups highly and said, "In the end, their services were not required, but their presence and attitude was a tremendous morale booster for the teams headed underground to know that these people and their skills were at hand if required." The communities in the area of Plymouth and the mine were highly supportive, offering food and shelter to the rescuers and other emergency groups on the scene.

Efforts continued through the night to clear the debris from No. 1 Main so that walking would be less hazardous. Leaning and falling arches and other debris made travel hazardous, since the rescuers had to be careful not to get any breathing apparatus snagged on whatever they had to climb over

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[14] The rescue teams could work under oxygen for a maximum of two to four hours (depending on the type of canister being used with the breathing apparatus).

[15] Photographs 26 and 27 in Reference show such stoppings as they were built at No. 8 and No. 9 Cross-cuts.

[16] Letter from Clow to the Commissioner, 31 December 1996.

or under. The clean-up efforts enabled vehicular access to the mine, permitting teams to reach the fresh-air base more quickly, without their having to walk more than one kilometre each way. By Sunday morning, the Glyn Jones team was able to drive down No. 1 Main to slightly beyond No. 7 Cross-cut. From there, the team could travel on foot to No. 10 Cross-cut and enter the SW1-B Road into the Southwest section or proceed past No. 11 Cross-cut to the North mains and Southeast section.

The Jones team first moved into SW1-B Road and noted that there had been no roof falls, although considerable debris was strewn about. The team members examined equipment as they proceeded further along the roadway and noted little sign of burning. The team turned right onto SW2-1 Road, where they knew that a continuous miner crew and a bolting crew had been working. Entering SW2-1 Road, the draegermen discovered the first six victims. The bodies were fairly close together and showed little evidence of burning, except for singed hair.[17] The rescuers also found the caps from three self-rescuers, the emergency breathing devices that all miners carried on their belts. Further along the roadway, they noticed a self-rescuer on the mine floor with the mouthpiece out. None of the six victims had placed the self-rescuer to his face. At the SW2-1 working face, the team noted that the shuttle car was partially full and surmised that the continuous miner must have been cutting coal at the time of the explosion. The roof appeared to be in good condition, and the ventilation ducting was intact for approximately 75 feet (20 m) from the face, but outbye of that it had been completely burned out.[18] Returning to SW2-B Road, the rescue team turned right and discovered the bodies of another five miners along the road and in the heading. All victims showed signs of burning on their bodies and on their clothing. In each case, the self-rescuer was still attached to the miner's belt, indicating that he did not have time to put it on.[19] One of the victims was lying on the screen behind the bolter, and his helmet had melted onto the screen. It is not known whether it had melted during the initial fire or as a result of the subsequent coal dust explosion. The team then proceeded to the surface, where it reported to Phillips, Benner, and Waugh. Other teams then set about bringing the eleven miners' bodies to the surface before any further forays were attempted. This grim task was completed during the morning of Monday, 11 May.

A temporary morgue was set up in the New Glasgow arena, where Dr R.A. Perry, the provincial medical examiner, and his team performed initial examinations. Laboratory samples went to Halifax for analysis. The results of the medical examiner's investigation are in Exhibit 44.0074–82.

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17 This is supportive of the conclusion that the miners in this section were exposed to a rolling methane fire that robbed the oxygen in the air, replacing it with carbon monoxide and resulting in almost instant death.

18 Pre-hearing interview transcript, Glyn Jones and Ray Roberts (June 1992).

19 It is doubtful that the self-rescuer would have been of any value in the circumstances of this accident. The self-rescuer removes carbon monoxide and smoke particles but does not generate oxygen. The evidence is quite persuasive that the rolling methane fire that preceded the methane–coal-dust explosion had consumed all the oxygen in the air, leaving none for breathing.

When all the bodies had been removed from the Southwest section, it was sealed off. The search then resumed, with the rescue teams directed into the North mains beyond No. 10 Cross-cut. Here they encountered more adverse conditions. There was ponded water in No. 1 Main between No. 10 and No. 11 Cross-cuts. A team proceeded down No. 2 Main and was stopped at the intersections with 1 and 2 North Mains by roof falls that made these roadways impassable. The draegermen then retreated and tried to gain access through a roof fall in No. 1 Main at No. 11 Cross-cut, where a small hole in the fall may have permitted passage. At this point, the time allotted passed for the team, and it returned to the fresh-air base at No. 10 Cross-cut.

On Tuesday, 12 May, the rescue efforts were again directed into the North mains. Two teams, led by Glyn Jones and George Muise, were in the area at this time. With the assistance of a ladder, the teams got through the small hole in the roof fall at No. 11 Cross-cut and travelled to 1 North Main.[20] They encountered a small fire on the road, which they extinguished with stonedust and water. It was planned that the Jones team would travel 1 North Main while the Muise team would go into 3 North Main. As matters transpired, however, both teams were blocked by impassable roof falls, at North 4 Cross-cut and at 2 East, respectively. The two teams then returned to the surface. The extremely adverse and unstable conditions began to take their toll on the rescuers. Several teams decided to return to their home bases, and arrangements were made for replacement teams.

The apprehensions of the rescuers must have been almost palpable in these horrendous circumstances. Graham Clow was attending the forward fresh-air base in 1 North Main outbye North 4 Cross-cut. The sound of the ground moving was fearful. Clow would explain that he "was more concerned about physically getting back out again [through the small hole at the roof fall] rather than the air flow."[21] Some rescuers became physically ill from the stress and were required to return to the surface, causing some brief delays in the rescue attempts. These stressful conditions were of concern to McIntyre and LeBlanc, who discussed with the rescue team captains the necessity for a strong commitment from the advance rescue teams and the backup teams. It is fair to say that the conditions in the North mains and the Southeast section, almost intolerable at the outset, were deteriorating.

On Wednesday, 13 May, in spite of the active roof falls, rescue teams headed by Leonard Lavigne from Brunswick Mining and Brian Halliday from Devco continued their efforts. Four more bodies had been located in

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20 Clow told me in conversation that this hole had been punched through the very heavy roof fall by Gerald Phillips, assisted by one of the rescue teams. Clow recalls that this was done on the third rescue day and permitted the rescue teams to get further into the North Mains than was previously possible. The hole also allowed for the flow of ventilation air into that section, making it easier for the teams to operate.

21 Hearing transcript, vol. 75, p. 16336. At one point, Clow sat for an hour and a half in the North mains waiting for a Devco team that had ventured inbye. He sat in the pitch darkness listening to the sounds of the ground moving.

North D Road, and each team retrieved two of the bodies. One body was on top of a tractor and another was on the roof bolter. Halliday observed that these bodies were burned and that only their miner's belts remained intact. During all this time, the conditions continued to worsen. The roof was coming in almost constantly.

That Wednesday night and early Thursday morning marked the last attempt at rescue. The Devco team led by Muise travelled into the Southeast section under dreadful conditions. The rescuers had to cut screens and move fallen materials as they went in, working in temperatures up to 38°C. One member of the team came upon a rubber boot and, on further investigation, discovered another body. The deceased was assumed to be overman John Bates, since he had two report forms on him and he generally wore rubber boots. As a consequence of these discoveries and other observations, the team came to the firm conclusion that no one could have survived the mine fire and explosion that had ripped through the mine the previous Saturday. The team returned to the surface and reported to the control room.

At this time, the decision was made to discontinue the rescue operation. The decision was based on two very valid considerations. First, the results of the search to date had left the rescue coordinators and the rescue teams with overwhelming evidence that there was no chance that any Westray miner had survived the explosion. And second, the rapidly deteriorating roof conditions were such that it would be foolhardy in the extreme to risk lives for the purpose of recovering more bodies. Yet according to Benner and Clow, Gerald Phillips was at first steadfast in his determination to continue with the search operations.[22] It was only after the ad hoc group of professional advisers had thoroughly discussed the matter and the possible consequences of continued searching that Phillips reluctantly agreed with the decision to discontinue. The group concluded that it was now time to consider the safety, indeed the lives, of the living and to make a decision that would not compound the misery and heartbreak that this disaster had already occasioned. The rescue teams and others involved in the mine rescue had extended themselves over a five-day period beyond anyone's expectations. Now, the decision to discontinue, as difficult as it was, was the only responsible and sensible one. To this day, the remains of eleven deceased miners are entombed in the far reaches of the North mains and Southeast section of the Westray mine.

The operation was not without its interpersonal conflicts. When McIntyre convened a meeting to discuss discontinuing the rescue efforts, he wanted Department of Natural Resources representative Don Jones to be present, but Phillips refused to have Jones attend, and the meeting proceeded without him. Also, as noted, Phillips resisted the termination of

[22] From conversations subsequent to their appearances as witnesses at the hearings.

the rescue effort, wanting to carry on with the Westray crews.[23] When Benner was informed of the deteriorating conditions underground and the increasing dangers being faced by the rescuers, he advised other company executives that the mine rescue operation must be stopped to avoid placing others at risk while carrying out what was described as an impossible task.

McIntyre was of the view that some senior official from the provincial Department of Labour ought to have been involved in the decision to terminate the rescue operation, but the only senior department official with mining credentials, director of mine safety Claude White, was not much involved that week. Indeed, McIntyre and LeBlanc ventured the opinion that the final decision should have been made by the department. Other Department of Labour representatives – Albert McLean, Dave MacLean, Fred Doucette, John Smith, and Ralph Henwood – were actively involved in the mine rescue station at the time.

Observations of the Rescuers

The following paragraphs incorporate comments by the rescue organizers – based on their observations during the Westray rescue efforts and on their discussions with rescue teams – and interview transcripts of various members of the rescue teams.

One of the most important features of an effective rescue organization is communication, starting with a current call-out list containing up-to-date telephone numbers. Such a list covering all those persons forming the emergency organization would permit immediate contact with those persons who could then be mobilized at the earliest possible time. It is essential that everyone on the call-out list knows exactly where to report and what his or her immediate functions are. Such a list was not available at Westray, resulting in the waste of valuable time at the outset.

In addition to the underground operations, including the fresh-air bases, standby teams, and rescue teams, there must be adequate support facilities on the surface. The essential components of the surface infrastructure will include a main reporting station at the portal; a control and communication room; a public relations person to deal with the media and other inquiries; support services for both employees and families; a mine rescue station; a portable testing laboratory; a supply station; a nursing station; and a temporary morgue.

Communications must be established and maintained among the components of the operation. Lack of adequate communication could result in costly and time-consuming errors in decision making and in rescue strategy.

Even in the context of the very dangerous business of mine rescue, there seems to be a consensus among the rescuers that Westray presented

[23] At one point, according to McIntyre, Devco president Ernie Boutilier received a telephone call blaming him for the search being stopped. Although the source of this unfounded criticism was unknown, McIntyre discussed the situation with Frame and Phillips, and Phillips called Boutilier to apologize for any statements that might have caused embarrassment.

some of the most hazardous conditions ever encountered. The actively "working" roof and ribs of the mine, with the attendant grinding and cracking, was extremely stressful and caused several rescuers and teams to withdraw from the operation. This continuing "working" was made even more unnerving as the rescue teams noted changes in the strata and road conditions taking place during the brief periods between their entry into the mine and their exit some two to three hours later. This situation was particularly stressful when the rescue team had to pass through small openings in roof falls, which could well have closed up by the time the team returned.

No self-contained self-rescuers were available on site, and about 30 Oxy 60 units had to be brought in from Devco. At the start of the rescue operations, there was no mine plan available for the rescue teams. As noted, Westray had neither a recording barometer nor a water gauge – both essential for assessing the atmospheric conditions in the mine – on site; these instruments were also provided by Devco. The organizers could not locate any sort of emergency procedures manual, and they rightly assumed that none existed.

According to McIntyre and LeBlanc, one of the major problems was transportation underground. Farm tractors, modified to carry about ten persons each, provided the only means of transportation from the surface.[24] The debris remaining from the explosion caused further danger both to those draegermen proceeding on foot and to the tractors and the men being transported.

Graham Clow placed great emphasis on the organization of an advisory team made up of senior and other experienced ventilation and mine rescue experts. This group provided valuable services by reviewing the rescue operation and strategy in response to the reports filed by the various rescue teams. It provided advice throughout the rescue operation and played a significant role leading to the final decision to terminate the search. The group was able to stand back from the operation, dispassionately analyse the increasing risks, and balance the risks against the decreasing probability of success.

Finding

Although the Westray mine-rescue teams and the teams from other parts of Nova Scotia and from New Brunswick were well trained and proficient in the performance of their rescue duties, the company was ill prepared for any disaster, let alone one of the magnitude of 9 May 1992. The company lacked a cohesive disaster plan, including a call-out list and an emergency procedures manual.

[24] These were the same tractors used during the mining operation to get the miners to and from their workplaces in the mine. These vehicles were commented on widely in the evidence and are the subject of discussion in Chapter 5, Working Underground at Westray.

Finding

The mine-safety personnel from the Department of Labour seemed to have a rather ill-defined role in the rescue operation, and director of mine safety Claude White seemed to play only a peripheral role in the operation.

Finding

There appeared to be a shortage of self-contained breathing devices on site, which resulted in some delay while self-contained self-rescuers were brought in from elsewhere. There was a lack of the safety tools and testing devices essential to reduce the hazards of post-explosion rescue attempts.

Finding

Community groups, volunteer medical emergency persons, volunteer firefighters, the telephone company, the RCMP, and other support groups responded with admirable haste and dedication. A more precisely defined role and more efficient on-site organization could have assisted these support groups in carrying out their respective tasks more productively.

Conclusions

Owing to the devastating nature of this explosion, the mine rescue efforts proved ultimately futile. No one in the Westray mine in the early morning hours of 9 May 1992 survived for more than one minute following ignition of the methane. The ensuing rescue operation demonstrated the bravery and dedication of the mine rescuers and the other volunteers who rallied so quickly in support of their lost friends, fellow miners, and neighbours. Much can be learned from this rescue operation to assist others in the future. It is so unfortunate that we must await a tragedy such as Westray to initiate improvements designed to avoid similar situations. We must strive to perfect a system of review, both in the context of underground mining and in the industrial community generally, wherein the advancement of safety is not disaster driven but, rather, results from continued review, earnest safety-oriented consultation, and aggressive enforcement of the regulatory regime. Anything less may only result in sustaining the disaster-driven safety mentality.[25]

RECOMMENDATIONS

68 **Every mine operator, indeed, every industrial plant or facility, should have a well-defined and comprehensive emergency procedures manual containing a complete and up-to-date list of all persons involved in any emergency operation. This list should contain an organization chart listing the individuals and their respective tasks, and a current telephone listing for each person. The manual should be prepared by the company in**

[25] See Chapter 12, Department of Labour, for more discussion of occupational health and safety in Nova Scotia.

consultation with both the joint occupational health and safety committee and the safety coordinators with the appropriate government departments. The manual should set out, in detail, the quantity and location of all emergency supplies and equipment and the details of the deployment of these materials. A current copy of any such approved emergency procedures manual should be filed with the director of occupational health and safety, and copies should be provided to each person assigned any duty under the manual.

69 The Department of Labour, in consultation with the operator, should establish such rules and regulations that would ensure the department a full and active role in every mine-related emergency procedure or rescue operation in the province. The rules and regulations should set out the duties and responsibilities of each department inspector or safety examiner in any mine-related emergency or rescue operation.

70 Rescue and emergency equipment should be standardized so that those persons trained in rescue procedures will be completely familiar with the equipment available. Similarly, the various testing devices should be standardized so that the rescuers are able to use these devices without losing valuable time and without the danger of mistaken or inaccurate readings.

71 Every community at or near which underground mining operations are carried out should have a plan to provide emergency medical, fire, and other support services. The plan should include providing emergency training to the appropriate people in those communities. Some familiarity with the underground environment could be helpful in the event of a disaster.

72 Mine-rescue competitions, long a fixture in the underground mining industry, provide a valuable training incentive for miners. These competitions should be continued.