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Working Underground at Westray

To inquire into . . .

(c) whether any neglect caused or contributed to the occurrence;

(d) whether there was any defect in or about the Mine or the modes of working the Mine

It is almost axiomatic that the development of a safety mentality in the workplace must start at the top. It is the responsibility of management at all levels through its actions and its example to instil a strong safety ethic in its workforce.[1] In the case of Westray, management undeniably failed to do so. Instead, management created a workplace that fostered a disregard for worker safety. Westray management either dismissed fundamental safety hazards for those working underground in the mine – including roof, dust, and gas conditions – or addressed them inadequately. In the preface to this Report, we state that "safety and production . . . must be so harmonized that they can coexist without doing violence to one another." Westray is a stark example of an operation where production demands violated basic and fundamental tenets of safe mining practice. As this chapter will reveal, management's drive for production, together with its disdain for safety, played a key role in the devastation of the Westray mine.

The Absence of a Safety Mentality

A strong safety mentality must by necessity start with the most senior official and filter down through all levels of management to the workforce. Colin Benner, who had been president of Westray Coal for only a month at the time of the explosion, commented on this very issue during his testimony at the hearings of this Inquiry. His evidence was insightful, reasonable, and well founded:

> Q. . . . How important is it to establish . . . a "safety mentality"?
>
> A. Oh, I think it's critical. It's crucial. It's – safety is a state of mind, whether it's at the workplace or it's at home or it's out in the recreational activity. It's a state of mind. You know, it has to be established, and I think there's fundamentals that go along with establishing that and I think, first and foremost, would be the involvement or the role of people such as myself, top management, if you will.
>
> *Management has to establish a policy, and it has to promote that policy* and it has to promote its thoughts with respect to how it wants its operations managed from a safety standpoint. And then [at] the next level down, which is mid-management or site management, there's a responsibility to reinforce that policy and to enforce the regulations . . . as they are working under. And in this case, for example, it would be the coal regulations and the OSHA [*Occupational Health and Safety Act*] of Nova Scotia. And the next level down is front line management. *And by the way, it all has to be done by way of demonstration through behaviour and attitude.* And then the next level down is front line

[1] Throughout the course of this Inquiry, this message has been reinforced over and over. It is perhaps best expressed in the Burkett Report, *Towards Safe Production*.

> supervision who have to ensure that the safety policies and the regulations are practised in the workplace, that they're conveyed to the workers and that the workers are in point of fact aware of and educated in that sort of thing. And then the next level down, of course, is the workers, and they have to accept the responsibility of taking on these assignments in a safe manner and in following the regulations.[2]

Benner agreed with the view that safety is integral to production – you cannot sustain production without safety.[3]

As articulated by Benner, it is incumbent on management *both* to "establish a policy" and to "promote that policy" through its behaviour and attitudes. Simply put, a company policy that advocates safe working procedures is rendered futile if management proceeds to ignore the policy, to violate its procedures, and to trivialize the very safety issues it addresses. Westray's policies and procedures were set out in detail in its Operations and Maintenance Employee Handbook, which we will return to at various points in this chapter. As we shall see, management did not follow the policies and procedures it laid out. The safety policy purportedly established by Westray was merely formulated; it was never promoted or enforced.

Westray's Health and Safety Philosophy

On 29 October 1991, mine manager Gerald Phillips sent a memorandum to all Westray Coal employees along with an excerpt from Westray's Operations and Maintenance Employee Handbook, entitled Health and Safety Philosophy.[4] The memorandum was prompted by media attention, which focused on safety problems underground at Westray. Phillips commented as follows to his employees:

> I would like to stress to all employees that Westray considers, first and foremost, the safety of its employees its number one priority, and emphasizes safe work practices and safe work environments.
>
> . . .
>
> Westray Coal, its consulting engineers . . . and the Nova Scotia Department of Labour, continuously monitor and evaluate the underground conditions. Whenever we feel it is necessary to provide additional support, it is always done without hesitation or any questions being asked regarding loss of productivity or costs, again stressing safety is our number one priority.
>
> We have been open to discussions with you on safety . . . and this policy of consultation and response will continue to be a commitment on my part.
>
> Beyond our regular formal meetings, *I would like to stress that Westray has an open door policy whereby you, individually, have avenues to air your views at any time. We encourage you, as employees, to feel free to raise your legitimate concerns whether it is with respect to safety, working conditions or any other subject* related to your employment. I cannot

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2 Hearing transcript, vol. 73, pp. 16005–06. Emphasis added.

3 Hearing transcript, vol. 74, pp. 16175–76.

4 Exhibit 120.301–305.

> promise the moon, however, I can promise to listen to and respect those matters which are of legitimate concern to you. I am committed to this open dialogue.
>
> . . .
>
> Westray Coal will strive to always work towards a safe operation. Your personal safety will always be our number one concern. [Emphasis added.]

The Health and Safety Philosophy developed by Westray set out the responsibilities of each member of the management team, of supervisors, and of employees. In effect, it theorized about the development of a safety ethic that would start with management and filter down to the supervisors and employees. It advocated the implementation of safe and productive work procedures, proper education and training for workers, high standards for housekeeping, high standards for the development and maintenance of equipment and underground work areas, and accident prevention. It concluded with the slogan "Protection – People – Production."[5] *In theory* at least, management accepted the view that safety was integral to production. In fact, Phillips would employ similar slogans in writing memoranda to Westray employees: "Safety And Production Go Hand In Hand,"[6] "Please Work Safely and Productively,"[7] and "Always work safely because a safe operation is a productive operation."[8] To the detriment of underground workers, Westray's *practice* bore no resemblance to its *theory*.

The evidence before this Inquiry unequivocally paints a picture of a coal mining environment that stressed production and was devoid of any safety mentality. Don Mitchell, a coal mining expert, commented on Westray's general approach to safety, and his words were absolute: "There was none. Or if there was any, it . . . [did not] add up to a hill of beans."[9]

The absence of a safety ethic at Westray manifested itself through every facet of the operation – the hazardous dust, gas, and roof conditions, the multitude of illegal practices, the ineffective environmental monitoring system, the lack of proper safety equipment for miners, the state of housekeeping in the mine, and the human relations issues such as management-worker relations and the ineffectiveness of the joint occupational health and safety committee. We will explore each of these facets in this chapter, as well as the effect of the production incentive bonus.

Dust, Gas, and Roof Conditions

The evidence before this Inquiry relating to the dust, gas, and roof conditions at Westray is unequivocal. The accumulations of both dust and gas and the state of the roof were extremely hazardous and menacing for

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5 Exhibit 120.304–305.

6 7 November 1991 (Exhibit 15.135).

7 12 March 1992 (Exhibit 120.034).

8 9 April 1992 (Exhibit 120.319).

9 Hearing transcript, vol. 16, p. 2944.

all of Westray's short life. The underground hazards at Westray are addressed throughout this Report, particularly in Chapters 7 to 10, Ventilation, Methane, Dust, and Ground Control. For this reason, the following review is by no means exhaustive. Rather, we will concentrate on management's apparent refusal to alleviate obviously hazardous conditions. It provides a striking illustration of the absence of any safety ethic at Westray.

Dust Conditions

Although reports of coal dust underground vary in detail, one thing is clear: coal dust accumulations underground at Westray exceeded safe levels in almost every part of the mine. In Chapter 9, we explore in detail the accumulations, the reluctance to clear dust out of the mine, the insufficient controls to suppress airborne dust, the serious lack of stonedusting, and the absence of a sampling program. The evidence compels us to conclude that management considered coal dust to be, at worst, a nuisance to be shoved aside and ignored – not the lethal hazard it turned out to be.

Section 70(1) of the *Coal Mines Regulation Act* requires that, "[u]nless the floor, roof and sides of the road and working places in a mine are naturally wet throughout, they shall be systematically cleared so as to prevent, as far as practicable, the accumulation of coal dust, and systematic steps either by way of watering or otherwise shall be taken to prevent explosions of coal dust occurring." The company ignored its legal obligations under the act – as it ignored its own Safe Operating Procedures.

Mine geologist Arden Thompson shared his own observations of the stonedusting, or lack thereof, at Westray. His testimony is clear and insightful. Thompson believed that the amount of stonedust being spread was inadequate. There was no systematic stonedusting and, as far as Thompson knew, there was no equipment available for such dusting.[10] Recalling the only incident in which he saw stonedusting being done, he testified that the workers were using round-mouthed shovels to spread the dust and that they had as much on themselves as on the rib:

> [O]ne of the fellows on the bolter made a comment to me. . . . "Arden," he said, "there must be somebody coming." And I knew what he meant but I just played along, I said "Well, what do you mean?" And he said, "Well," he says, "look at the stone dust we're putting on." . . . *I knew that the stone dust was just cosmetic.*[11]

Thompson explained that a day or two later he noted a tractor-load of people who, to the best of his knowledge, were considering investing money in the project. Shortly thereafter, Clifford Frame and then-Premier Donald Cameron were to visit the mine.

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[10] There were in fact two devices used sporadically for stonedusting (see Chapter 9, Dust).

[11] Hearing transcript, vol. 40, pp. 8806–07. Emphasis added. Thompson stopped going underground in December 1991 (p. 8796).

Thompson described stonedusting at Westray as "cosmetic." It appears that Westray management was only concerned with stonedusting prior to an inspection by the Department of Labour or a visit by someone management hoped to impress.

In what seems to be a transcript of a conversation between underground manager Roger Parry and president Marvin Pelley regarding Westray's safety committee, Parry made the following comments about stonedusting underground:

> **Roger** My impression of the visit was that the inspectors was that we had stone dust throughout the belt road and they requested more stone dust in the working areas. *When they would finish that visit and expressed their concern about the dust we'd start moving stone dust in that very same day and the night shift next morning stayed over and started spreading the stone dust for the next four shifts between shifts spreading stone dust in the Southwest section and Main belt lines discolith.* The belt crew more stone dust down to number five cross-cut and they spread stone dust throughout the belt line from the back and down number eleven cross-cut. The air velocities there carried the stone dust all the way through the tunnels. To give you a fixed outcome more or less they have three men working overtime between shifts stone dusting in the discolith.[12]

The date of this conversation is not known, but Parry's comments on stonedusting suggest that Westray management was quick to respond to the inspectorate's concerns or orders to clean up dust. The evidence before this Inquiry flatly contradicts any such proposition.

Finding

There is no question that management was aware that coal-dust accumulations underground at Westray were at hazardous levels. There is no question that management was aware, or ought to have been aware, that safe mining practice – as well as section 70(1) of the *Coal Mines Regulation Act* – requires operators to clear or treat coal dust to render it non-explosive. Notwithstanding the legislative requirement and the fact that management was cognizant of the hazard, management failed to order and enforce sufficient and systematic stonedusting underground at Westray.

Gas Conditions

Methane conditions encountered underground at Westray were unacceptable. The miners who testified at this Inquiry recounted numerous incidents of men becoming faint, dizzy, and numb while working in the mine. Management must have been aware of the severity of the situation

[12] Exhibit 120.244–45. Emphasis added. The circumstances of this transcript, entitled Safety Committee, are unknown to the Inquiry. It comprises five pages of conversation between Roger [Parry] and Marvin [Pelley] and is undated but is clearly post-explosion. Parry's language here is clearly ungrammatical; the oddities may result from poor transcription. Despite language problems, I chose to quote from this source because it offers a rare glimpse into his own thinking. Parry's use of the term "discolith" is curious; the word is a legitimate geological term – referring to a tiny inclusion in sedimentary rock – but has nothing to do with coal mining.

and the unsafe conditions workers were exposed to, yet chose to ignore the hazardous reality of the underground.

Chapter 8 documents in detail the hazards of methane, the regulatory requirements for dealing with the gas, and the actual conditions in the Westray mine. The evidence points to a serious hazard that was neglected and underrated by management. Methane is dangerous in two respects. First, in concentrations of 5 to 15 per cent by volume in air, it is explosive. Second, although not physiologically harmful itself, methane displaces oxygen, which is necessary to sustain life. This deplacement of oxygen explains the fainting, dizziness, and numbness experienced by underground workers. Furthermore, since methane is lighter than air, it tends to accumulate at the roof and in roof cavities if ventilation air currents are insufficient to move it. In evidence to the Inquiry, witnesses demonstrated over and over again that methane regularly occurred and gathered in dangerous concentrations throughout the Westray mine. It becomes clear through the witnesses' stories that management was, by turns, indifferent to or contemptuous of the workers' legitimate concerns about gas.

Westray management was aware of the excessive levels of methane gas underground. Lenny Bonner testified that, while working with Ed Estabrooks in the North Mains installing chock blocks and steel sheathing, he suddenly found himself on his knees. A moment later, Estabrooks attempted to put up another chock and "he came down like a ton of bricks" and "his eyes were rolled up in his head." Bonner grabbed him by the shirt and shook him until his eyes focused; he was evidently unharmed. Following the incident, Bonner advised Roger Parry to get some ventilation up above those arches. Bonner testified that Parry replied: " 'I find that fucking hard to believe. I was just down there and it was only 0.5 [per cent methane].' "[13] Parry's response is telling and indicative of management's general response to workers' legitimate safety concerns.

The existence of serious and excessive gas levels underground was routine and recurring. Section 72 of the *Coal Mines Regulation Act* sets out the responsibility of "the person in charge of a mine or any part thereof." This section provides that, where the percentage of flammable gas in the general body of air is 2.5 per cent or more, "*every worker shall be withdrawn from the mine or such part thereof as is so found dangerous*" [emphasis added]. Management's duty is absolute. Management was aware that conditions underground were bad; workers who had experienced symptoms consistent with high concentrations of methane had expressed their concerns *directly* to management. Notwithstanding its responsibility, management responded by trivializing these potentially lethal conditions and bullying the miners into working despite the conditions – a singularly callous reaction.

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[13] Hearing transcript, vol. 24, pp. 4733–35.

Finding

There is no question that management knew that the levels of methane underground at Westray were hazardous. Management was aware, or ought to have been aware, that, under section 72 of the *Coal Mines Regulation Act*, such conditions mandated the withdrawal of workers from the affected area.

Roof Conditions

The severity of the roof problems at Westray is beyond dispute. Experts, management, miners, and government representatives recognized and focused much attention on the issue. Chapter 10 of this Report details the serious ground control problems faced by Westray. Although it is true that the precarious roof conditions underground at Westray did not play a *direct* role in the cause of the explosion, they were, in many ways, integral to the disaster. The evidence suggests that Westray's preoccupation with roof conditions diverted attention from other critical safety issues, including gas and dust accumulations, which *did* play a direct role in this disaster.

Again, the evidence is overwhelming that Westray employees were expected to work in hazardous conditions, and that production and the safety of equipment took precedence over the well-being of the workforce. Westray management was preoccupied with ground control problems and, as a result, ignored and trivialized other safety concerns. Jay Dooley expressed the view that "there was too much concentration on trying to hold up the ground as opposed to the [stone]dusting."[14] Don Dooley also testified to the decline in the amount of stonedusting owing to Westray's preoccupation with ground problems: "The last three or four months, every minute of overtime was spent setting steel. We had unbelievable roof conditions and problems. . . . you were preoccupied with your roof. Like, that roof was imminent death right there in front of you."[15] Randy Facette expressed concern that someone would be killed by a roof fall. He went on to say that the roof was Westray's primary focus, which took away from other problems in the mine.[16] Dr Malcolm McPherson made some insightful comments from the perspective of a mining engineer on this concentration of attention on the problems of roof control at the expense of other safety issues.

> You have already heard of the severe problems of roof control/ground control, the falls of roof, and this was a major, major concern to the mine management. This was a major concern to the mine management, I would hope, from the point of view of the safety of the miners. There is another factor, however.
>
> Falls of roof inhibit the mining process itself. If you have falls of roof, then you cannot get your coal out; you cannot get your men and materials

[14] Hearing transcript, vol. 38, p. 8401.

[15] Hearing transcript, vol. 36, p. 7793.

[16] Hearing transcript, vol. 33, p. 7228.

> and equipment in. A fall of roof in part of that infrastructure of the mine will cause a cessation of min[ing] because, physically, you cannot get the equipment, the people in. *So not only is this a matter of safety, it also results in cessation of production in that part of the mine.*
>
> Problems associated with poor ventilation do not necessarily do that. If you have poor ventilation, then you can keep mining, as, indeed, happened at Westray. So although it is equally a matter of safety and health, as the falls of roof are, it does not immediately prevent production. It will inevitably do so in the long term, sometimes with tragic consequences, as we've seen at Westray.[17]

McPherson's comments take us back to the opening paragraph of this chapter – and the harmonization of safety and production.

Finding

Westray management was preoccupied by problems of ground control. Management focused only on those safety issues, such as ground control, that directly interfered with immediate production of coal. Management's drive to produce and its failure to advocate safety in the workplace rendered any harmonization of production and safety difficult. Thus, Westray failed both to meet production demands and to address safety concerns.

Hazardous and Illegal Practices

A coal mining operation that functions without any safety ethic will inevitably violate the principles of safe operation. The *Coal Mines Regulation Act* sets out many basic principles of safe mining practice. Although Westray itself acknowledged such principles in its Health and Safety Regulations for Employees,[18] it then ignored and abused safe operational procedures and provincial regulations. Some of these issues are addressed in this chapter. Others are addressed in other parts of this Report. This is not an exhaustive catalogue of all the unsafe practices reported at Westray. The purpose here is to illustrate the breadth of the hazards encountered underground. Westray underground workers were faced with serious safety concerns that touched on every underground coal mining practice.

Finding

The many instances of hazardous and illegal practices encouraged or condoned by Westray management demonstrate its failure to fulfil its legislated responsibility to provide a safe work environment for its workforce. Management avoided any safety ethic and apparently did so out of concern for production imperatives.

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[17] Hearing transcript, vol. 9, pp. 1705–06. Emphasis added.

[18] Exhibit 119, p. 191.

Twelve-Hour Shifts

Section 128(1) of the *Coal Mines Regulation Act* sets out the length of shifts for underground workers:

> **Length of shift**
> Subject to this Act, a worker *shall not* be employed at his working place below ground in a mine for the purpose of his work for more than eight hours during any consecutive twenty-four hours. [Emphasis added.]

By working 12-hour shifts, Westray was in violation of section 128. Some workers at Westray were not averse to working 12-hour shifts, since they received four days off.[19] Many others felt it was too arduous. McPherson summarized the problems associated with 12-hour shifts:

> 12 hours in the arduous conditions of any underground mine as a routine and continuous procedure is much too long. Normal period, of course, is eight hours. Many mines use seven hours. Some mines in the world have now gone to four shifts working six hours, Mr Commissioner. *12 hours is excessive*. Not only from the point of view of the human aspects of working 12 hours at a time, but also *because of the inevitable loss of attention* that can result and has resulted all too often in accidents and deaths occurring in mine. You are very reliant for your safety, not only on yourself, but also on the guy next to you. And if you've been working for 12 hours, that attention is going to slip.[20]

Bryce Capstick agreed that a 12-hour shift is too hard on the workers: "[T]heir body gets tired. Their brain gets tired. They're more apt to become dangerous [to] themselves and the ones around them."[21] Shaun Comish agreed that, when the end of his shift was approaching, he would be thinking less about safety and more about "getting out of there."[22] Doug MacLeod said that after 8 or 9 hours underground "you're accidental [*sic*] prone."[23] While Don Dooley did not object to 12-hour shifts, he could not deny that a worker could be less safety conscious towards the end of a 12-hour shift.[24]

The situation was exacerbated by the fact that there were no regularly scheduled lunch breaks at Westray. Management apparently felt that such breaks would interfere with production. Comish testified that management did not like the workers taking breaks. He recounted that on a few occasions the miners saw a light approaching while they were eating their lunch and "they would all just scramble like rats, go back to work" in case it was Roger Parry. Depending on Parry's mood, he would either

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19 Rick Mitchell liked the 12-hour shifts (Hearing transcript, vol. 31, p. 6828). Ron MacDonnell testified that the 12-hour shifts were not bad, since he got to go home for four days (vol. 29, p. 6121). Aaron Conklin testified that he had no problem with 12-hour shifts (vol. 28, p. 6016).

20 Hearing transcript, vol. 9, p. 1705. Emphasis added.

21 Hearing transcript, vol. 42, p. 9389.

22 Hearing transcript, vol. 28, p. 5847.

23 Hearing transcript, vol. 27, p. 5706.

24 Hearing transcript, vol. 36, p. 7962.

"start hollering" or sit and chat for a while.[25] Harvey Martin related an incident when, about three hours into a shift, he and Roger Ellis were sitting down having tea, and Phillips appeared. Martin recalled Phillips saying: " 'You guys are sitting down on your ass while everybody else is fucking working their guts out.' "[26] Tom MacKay testified that, some days, the workers on the bolter would rotate jobs to give one another an opportunity to take a break. Other days, he would not get a lunch break. MacKay explained that management did not want them taking a break together; work was to be ongoing.[27] Wayne Cheverie testified that, on the odd occasion, he would not take any breaks during his shift. He explained that you would grab lunch whenever it was possible, that is, whenever it would not hold up production.[28]

Finding

Shifts at Westray for underground workers were 12 hours in length. In scheduling these shifts, Westray was in violation of section 128(1) of the *Coal Mines Regulation Act*. Twelve-hour shifts increase the risk of injury and accident to the workers because of their mental and physical fatigue.

Tagging System

Practically speaking, there was no tag-in, tag-out system at Westray. Coal mining expert Tom Smales described for the Inquiry the conventional procedures employed in underground mining. He explained that there should be two systems operating in a mine to monitor who is underground at any given time. First, in the tag board system, each miner is assigned an identification disk, which the miner places on "in" when going underground and on "out" after leaving the underground. Second, at the same time, the miner should speak to his foreman, who then identifies the miner by recording his presence underground in a register. Smales went on to describe the importance of such a system to an underground operation. In the event of a disaster, it is essential to know who is underground. As well, it is important to be able to locate an injured worker. In a properly run mine, there should be little confusion about who is underground and where they are.[29]

Bonner referred to the tagging system at Gays River.[30] He said that it had been strictly enforced – an underground worker was not allowed to

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25 Hearing transcript, vol. 28, pp. 5807–08.

26 Hearing transcript, vol. 23, p. 4476.

27 Hearing transcript, vol. 32, pp. 7026–27.

28 Hearing transcript, vol. 21, p. 4003.

29 Hearing transcript, vol. 2, pp. 321–22. In addition, each miner should be assigned a specific cap lamp. Its presence or absence from the charging rack provides yet another check of the miner's whereabouts.

30 A number of Westray employees had worked at Gays River, another Nova Scotia underground mine that closed shortly after Westray started up.

leave the property until tagging out. Bonner remembered a time he had forgotten to tag out:

> There was one instance where I had to drive back to the mine at Gays River and remove my tag. . . . My shift boss had to stay until I got back to the mine and remove my tag. Even though he [had] seen me leaving, and I said goodbye to him, he still had to stay there and call me back to the mine site to remove my tag from that board.[31]

This was not the situation at Westray. In fact, when the Westray mine exploded on 9 May 1992, management was not sure who was working underground.[32]

Jay Dooley said that the tag system at Westray fell into disuse as the development of the mine progressed. He did not see the absence of a tagging system as a threat to his safety; he testified that he became complacent.[33] Don Dooley explained that, for the first few months, he did use the tagging system. He did not continue because he felt that no one else was committed to the system and no one monitored it.[34] Wayne Cheverie testified that workers were never instructed or encouraged to use the tag system.[35] Clive Bardauskas said that he had assigned himself a tag that corresponded with his lamp number. He was not directed to do so by management or the supervisors. Bardauskas tagged in and out for a few weeks until his tag disappeared.[36] John Lanceleve spoke about the tagging system at Westray as follows:

Q. Did it strike you as odd that you and a few others were using it and others weren't?
A. Yes.
Q. Did you ever speak with anybody about that?
A. Well, we joked around about it amongst the crew, amongst the guys.
Q. What did you joke around about?
A. That they can't even run a tag board system. Like, it was never enforced.
Q. It was never enforced?
A. No.
Q. By the management?
A. No.
Q. By the shift bosses?
A. No.[37]

The evidence is clear that, although the tagging system was set up and used to a limited degree by a few workers in the early development of the Westray mine, underground workers soon stopped using the system, and management and supervisors failed to police it.

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31 Hearing transcript, vol. 24, pp. 4744–45.

32 Dave Matthews was one of the first on the scene. He told the Inquiry that "we didn't know who was underground at the time" (Hearing transcript, vol. 31, p. 6628).

33 Hearing transcript, vol. 39, p. 8685.

34 Hearing transcript, vol. 36, p. 7965.

35 Hearing transcript, vol. 21, p. 4057.

36 Hearing transcript, vol. 23, pp. 4606–07.

37 Hearing transcript, vol. 27, pp. 5539–40.

Finding

No effective system existed at Westray to keep track of the whereabouts of people underground. Management and supervisors failed to set up and enforce the use of an appropriate system for keeping track of who was underground and where they were.

Storing Fuel and Refuelling Vehicles Underground

Section 69(6) of the *Coal Mines Regulation Act* addresses the storage of flammable material:

> No oil, grease, canvas or other inflammable material shall be stored below ground in any mine except in a fireproof receptacle or chamber.

Westray's Codes of Practice for Non-flameproof Diesel Equipment further provided that non-flameproof diesel equipment "be fuelled on surface only with the engine turned off or at specifically designed and approved underground filling stations."[38] Like other Westray safety rules, this one was more honoured in its breach by Westray management than by enforcement.

The record shows that fuel was illegally stored underground at Westray and that equipment was improperly refuelled in violation of these provisions. Wayne Cheverie testified that fuel was taken underground at Westray regularly after December 1991. There was an order that the 5-gallon containers (jerry cans) be taken to No. 10 Cross-cut; Cheverie presumed the order came from Roger Parry. As well, a 45-gallon drum with a barrel pump was set up at No. 10 Cross-cut. Either the workers would bring the vehicles to this cross-cut to be refuelled or the jerry cans were transported to the vehicles on the back of a non-flameproof tractor. Cheverie described this process:

> A. Sometimes the plugs or caps for the cans would be missing and they'd be sloshing around in the back of the tractor and spilling out on the ground as you went underground. We carried them on the back end of the tractor because most of the tractors had the exhaust built into a bumper that went on the front of the tractor, therefore, keeping them as far away from anything hot as you – or a spark, as you could.
> Q. When the fuel would spill out, would someone clean it up?
> A. Definitely . . . not.
> Q. You never did it?
> A. No.[39]

Clive Bardauskas described the manner in which vehicles were refuelled underground. He said that sometimes fuel was poured from a jerry can into the machine without a funnel while the vehicle was running, and with no lighting other than the worker's cap lamp.[40]

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38 Exhibit 69b.004.

39 Hearing transcript, vol. 20, pp. 3974–75.

40 Hearing transcript, vol. 23, p. 4619. Bardauskas had done this himself on occasion when a Scooptram for some reason or another couldn't be taken to the fuel station at No. 10 Cross-cut.

Jay Dooley said that he was concerned about fuel underground at Westray. In fact, he asked Roger Parry about acquiring a flameproof building to house these materials. Parry advised Dooley that he planned to use No. 11 Cross-cut as the storage for underground fuels when the cross-cut was complete. The plan never materialized.[41] Dooley further confirmed that there were both jerry cans and 45-gallon drums improperly stored at No. 10 Cross-cut. Management had ordered him to take the 45-gallon drum underground, he testified, and he had done so, but he was aware that it was an improper practice. Dooley testified that there was nothing to prevent an inspector from seeing the 45-gallon drum.[42]

There is evidence that workers were ordered to conceal fuel from mine inspectors. Harvey Martin recalled being underground with maintenance foreman Roger Ellis when mine manager Phillips instructed Ellis to hide the diesel fuel at No. 10 Cross-cut because an inspector was to tour the mine that day. Martin said that Ellis hid one 5-gallon jerry can in his personal tool box, but he wasn't sure what was done with the others.[43]

Bardauskas explained that managers encouraged storing fuel and refuelling underground because they did not want the mechanics coming out of the mine to get fuel: "They wanted the guys down there the full twelve hours."[44] Although Jay Dooley said that the Scooptrams were refuelled underground so that roof support crews wouldn't lose any time, he agreed that this in fact indirectly improved production.[45]

Finding

Westray management instructed that fuel be stored underground and that vehicles be refuelled underground. In so doing, Westray management acted in violation of section 69(6) of the *Coal Mines Regulation Act* and of its own codes of practice. These fuel storage and refuelling practices were illegal and hazardous.

Torches Underground

Section 88 of the *Coal Mines Regulation Act* addresses the use of torches underground and mandates that permission be sought from an inspector. Section 88(1) provides:

> An inspector may permit the use, under the constant supervision of an official carrying a locked flame safety lamp or a gas tester of a type approved by the Minister, of an electric welder, acetylene torch or heating unit in main trolley roads, pump rooms or engine rooms, if these places are ventilated by a split of fresh air from the main intake airway.

41 Hearing transcript, vol. 39, pp. 8672–73.

42 Hearing transcript, vol. 38, pp. 8440–41.

43 Hearing transcript, vol. 23, pp. 4486–87.

44 Hearing transcript, vol. 23, pp. 4618–19.

45 Hearing transcript, vol. 38, pp. 8440–41.

There are numerous accounts of the unauthorized use of acetylene torches at Westray. Fraser Agnew agreed that it was commonplace for torches to be used underground. He said that Roger Parry would tell him when a "burn" was to take place and that he was to supervise it.[46] Underground mechanic Wayne Cheverie also testified that torches were brought into the mine regularly to facilitate repairs to equipment.[47] The record is clear that the Department of Labour inspectorate did not authorize the use of torches underground on each of these occasions (see Chapter 12, Department of Labour).

It is not unusual in the coal mining industry for an inspector to grant such permission on condition that specified safety precautions – including the use of stonedust, fire extinguishers, and fire hoses – are followed. Putting aside for a moment the fact that Westray did not have any authority to use torches underground, I note that, when torches *were* used underground, the company routinely failed to follow any such safety precautions. Randy Facette said that, on several occasions, torches were used underground without the proper safety procedures in place. Facette referred to one incident at No. 5 Cross-cut when he, Rick Mitchell, and Jay Dooley were setting steel supports, and the holes and bolts would not line up properly. Dooley brought down cutting gear to cut the plates and the steel legs to match up the holes. Facette went on to say:

> And I believe it was Rick that mentioned to Jay, you know, "Where is your extinguishers, your rock dust, your charged hose and all this, eh?" And Jay's response was basically, "No, we don't need that, we're in the in-take air." I think what he did, there was a little pile of sand there, and he had us throw some sand on the ground . . . underneath where he would be cutting, and that was the extent of what he did. Me and Rick just walked away shaking our heads more or less.[48]

Mitchell, a member of the Westray safety committee, said that he told mine inspector Albert McLean about this incident and the lack of safety procedures employed while welding underground.[49]

Facette testified to another incident when steel work was being done at the intersection of No. 2 Main and 3 North Main. He noted acetylene torches against the rib in his crew's work area. Facette stated he was against the use of cutting equipment in that part of the mine, particularly when they could have prefabbed the material on the surface. At that point, he advised Jay Dooley that he was a safety committee member and that he required that the proper safety precautions be taken – that the area be stonedusted and wetted down, and that the charged hose, extinguisher, and a supply of stonedust be on hand. Facette recalled Dooley's response to his safety concerns: "And he told me if I wanted it, basically to do it myself, so that's what I did." Facette went on to say that, as he was throwing the

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46 Hearing transcript, vol. 35, p. 7725.

47 Hearing transcript, vol. 20, p. 3949. Cheverie said that, when he asked maintenance superintendent Bob Parry about permits, Parry replied, " 'We do have permits.' " (p. 3951).

48 Hearing transcript, vol. 33, p. 7157.

49 Hearing transcript, vol. 31, p. 6727.

stonedust, there was gas coming up from the floor that ignited the full length of a 20-foot I-beam. "Fortunately, it was extinguished right away, but it scared the hell out of me."[50]

Dooley, however, testified that he had taken safety precautions when using torches, including the use of stonedust and fire extinguishers.[51] He said that torches were used underground in his presence at least four or five times. He had been advised by Roger Parry that Westray had an "open permit" to burn underground, provided that the necessary precautions were followed.[52]

Management ordered workers to use torches underground and would not tolerate workers who defied orders. Don Dooley testified that he had heard that Stephen Lilley was suspended for leaving the mine because he did not feel the use of torches was a safe practice.[53] Wayne Cheverie also testified to this incident. He recalled Lilley's telling him that he had been suspended for refusing to stay in the mine while torches were being used. Cheverie told the Inquiry about the effect this episode had on the workers:

> And that sent a real clear message to all the other workers that were there that either put up with the torches going underground or . . . you'll be suspended or fired or whatever.
>
> . . .
>
> If you refused unsafe work, you were threatened with your job or intimidated into submission.[54]

Clive Bardauskas explained that he used torches underground as a result of the Lilley episode. Bardauskas once commented to Bob Parry that he never saw torches being used underground in the United Kingdom. He testified that Parry's response was: "'You're no longer in the U.K.; you're in Canada now.'"[55] Bardauskas interpreted this to mean "Keep your mouth shut." He felt that he had been asked to do work at Westray in a manner that compromised safety.

Finding

The unsafe use of torches underground was a common practice at Westray. Management was aware of the practice, condoned the practice, and reprimanded those who condemned it. In so doing, management sent a clear message to the underground workers. Management's *unsafe* mentality was, in effect, filtering down to the Westray workforce.

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50 Hearing transcript, vol. 33, pp. 7158–59.

51 Hearing transcript, vol. 39, pp. 8648–50. There is evidence that some miners took measures, such as wetting down and stonedusting areas in which burning was being done.

52 Hearing transcript, vol. 39, p. 8643. No such "open permit" had in fact been granted to Westray Coal.

53 Hearing transcript, vol. 37, p. 8142.

54 Hearing transcript, vol. 21, pp. 3996–97.

55 Hearing transcript, vol. 23, pp. 4626–27. Bardauskas and Parry both had UK coal mining experience.

Methane Detection Equipment

The evidence supports the fact that methane detection equipment at Westray was improperly and illegally defeated in the interests of production. Westray's Health and Safety Regulations for Employees plainly forbade the deactivation of, removal of, or interference with any protective device on any machinery.[56] Again, management failed to enforce its own regulations. Some workers – aware of the prohibition – nevertheless engaged in such practices under the instruction of supervisors and management. Other workers were uninformed and unaware of the existence of any such health and safety regulations. As a result, the safety guidelines and procedures put in place by the management team were breached on a regular basis.[57]

Many instances of methanometer misuse, disuse, and tampering are documented in Chapters 6 to 8, The Explosion, Ventilation, and Methane. The tampering with methane detection equipment in the mine showed complete disregard for a basic safety practice in the coal mining industry. It subordinated worker safety to production – a practice all too commonplace at Westray.

Finding

Methane detection equipment at Westray was illegally foiled in the interests of production.

Lockout System

There was no proper system – integral to safety – for locking out the conveyor belts at Westray. Jeff Yeo, Westray's electrical engineer-in-training, defined a "true lock-out" as a physical lock requiring a key or other such method to re-energize the conveyor. He agreed that such a method "is the appropriate and sort of industry standard so far as lock-outs are concerned." Yeo testified that there was no such feature on Westray's conveyors.[58] Electrician Harvey Martin supported Yeo's testimony. Martin said that the safety lockout procedures at Westray did not seem to square with his previous industry experience.[59] According to Mick Franks, the lockout system at Westray could be defeated. He recalled that, on instruction from his supervisor, he had "jumped out" the main belt in order to override the lockout system, which had become damaged. As a result, the main belt could not be shut down between the surface and No. 5 Cross-

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56 Exhibit 119.194.

57 This breaching of safety guidelines and procedures happened despite the fact that every employee was required to sign a statement acknowledging having received, read, and understood the company health and safety handbook (Exhibit 119.199).

58 Hearing transcript, vol. 45, p. 9862.

59 "Any place that I've ever worked, lockout systems have been to cut the actual power to a device" (Hearing transcript, vol. 23, p. 4504).

cut, leaving that segment completely without any safety protection for the underground worker.[60]

The lack of a proper lockout system at Westray resulted in serious injury to one underground worker. Matthew Sears testified that he had been instructed to replace a worn roller on the main conveyor. His supervisor, Ralph Melanson, told him and his co-worker, Gordon Walsh, that the conveyor belt was locked out and that they could proceed to work. Sears told the Inquiry how they lifted the belt, got the roller out, and replaced it with a new one. As they were finishing, the conveyor started without the usual warning. Both Sears and Walsh were standing on the belt at the time. Sears testified that his supervisor attempted to pull the safety cable running alongside the belt to stop it. Walsh managed to jump off the belt. Sears was not so fortunate:

> I fell down and I tried to roll off the conveyor belt to get off it and I did. But as I did, my body got tangled up . . . on the return conveyor belt that was going back to a large roller . . . And I was pulled – when I was first on the conveyor belt, I would have been pulled away from the roller, but as I rolled off, there was a belt underneath and it pulled me back.

Sears then fell between the conveyor and a nearby chain-link fence. His leg was caught in the large roller and jammed in beside it. Sears held on to the fence to keep himself from being further pulled into the roller. Walsh was also holding on to him. Melanson was still trying to stop the conveyor belt, but each time he pulled the safety cable the belt would restart. Melanson then went for help. The conveyor belt eventually got up to full speed, the roller slid away from Sears, and he managed to free his leg.[61] Sears was taken to hospital. He was off work for four months before returning to light duties. Although the electrical foreman, Brian Palmer, had called him to apologize for having restarted the conveyor, Sears did not receive any explanation from the company about what had occurred. Walsh had heard "rumblings" that the accident was basically Sears's own fault.[62] In a pre-hearing interview, electrician Terry Regular said that he had been working on the surface with Palmer that day when they noticed that the conveyor belt had stopped:

> And of course when the belt stopped, it was just, geez, the belt is down. Let's go, run, run, go get a belt going. And . . . Brian and I, we went to the top of the breaker station. The belt was stopped. We looked at . . . the indicator . . . There was no lockout on the thing and the belt was stopped. So Brian started the belt . . . We were stopped again. We started again, stopped again. It kept stopping.[63]

Harvey Martin said that he had spoken to Palmer about the accident. Martin explained that the lockout system had been improperly hooked into a timer instead of an actual lockout device. Even though it looked as if it

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60 Hearing transcript, vol. 21, p. 4170.

61 Hearing transcript, vol. 29, pp. 6056–59.

62 Hearing transcript, vol. 29, pp. 6060–63.

63 Pre-hearing interview with Terry Regular and Greg Palmer, 11 June 1992, p. 75.

was locked out, the belt could still be started.[64] The main power feed to the belt was simply not shut down, as it would have been with a proper lockout procedure in place.

As a result of the incident, Sears underwent three operations to his left knee and foot. He lost the feeling in his foot and in the lower portion of his ankle; at the time of his testimony, he did not have full use of his leg.[65] Matthew Sears's accident was preventable.[66] It would not have occurred had a standard lockout system been in place – a routine matter in any normal underground coal mining operation.

Finding

No true system was in place at Westray for locking out the main conveyor belt, a standard procedure in underground coal mine operation.

Unqualified Underground Personnel

Westray sent workers and foremen underground without proper training or underground experience.[67] As the issue of training has been addressed in Chapter 4, the following evidence is offered to document further management's lack of concern for the well-being of its workforce.

Steven Cyr said that, although he was on a training crew with John Bates for about a month, it was more of a labour crew than a training crew. There was no instruction about the hazards of methane or coal dust. There was no demonstration of how a self-rescuer was used. The crew was simply shown the bolter and put to work setting steel and laying pipes.[68]

The evidence suggests that the foremen at Westray also lacked the training and experience appropriate for their assigned roles. Bryce Capstick testified that the only coal mining experience he had was the development of the roadways, which involved some mining through coal. He did not have any experience with the actual production of coal.[69] In testifying, Capstick discussed whether he was qualified to hold the position of shift foreman at Westray. He felt qualified as far as the production of coal was concerned. He felt less qualified about ensuring that the operation was run properly:

> [W]hen I was there I relied on the mine inspectors, and I relied on upper

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64 Hearing transcript, vol. 23, p. 4504.

65 Exhibit 112.1B.9–10.

66 Yeo testified that, had a true lockout system existed at Westray, it would have been "extremely unlikely" that the Matthew Sears accident would have occurred (Hearing transcript, vol. 45, p. 9863).

67 As noted in Chapter 2, front-line supervisors are variously referred to by witnesses as foremen, shift foremen, shift bosses, shifters, and fire bosses. The terminology varies from mine to mine. Except in quotations, we will attempt to simplify things by referring to this class of supervisor as foremen. To further confuse matters, most underground foremen at Westray were also mine examiners by default.

68 "But there was no training or anything, no" (Hearing transcript, vol. 25, pp. 5094–96.)

69 Hearing transcript, vol. 42, pp. 9284–85.

> management as far as the actual operation of the mine was concerned. . . . If any regulation was being violated, I expected them to know about it.
>
> And as far as work goes, work is work. . . . and as long as you carried out certain duties, you know, that aspect would be covered. But apparently, I guess, I was kind of misled because nobody kept an eye on anything. Upper management, they just connived to break every rule and regulation and when the inspectors came in, they just rubber-stamped everything.[70]

Capstick went on to say that, with the exception of Arnie Smith and Jay Dooley, he did not feel that the rest of the shift foremen had had enough underground coal mining experience.[71]

Cyr recalled a conversation he had had with Chester Taje, a miner who had come to Westray from Alberta with the expectation of becoming a foreman. Taje told Cyr he hadn't been made a foreman "because of his safety standard." According to Cyr, Taje thought that the Westray foremen were "a bunch of donkeys and weren't qualified to be shifters."[72] Buddy Robinson, a coal miner with 30 years' underground experience, was of a similar mind. In his opinion, Owen McNeil, Ray Roberts, Bryce Capstick, and Angus MacNeil were not qualified to be foremen. Robinson did not think that they had sufficient coal mining experience.[73]

Finding

Westray management sent underground both foremen with little or no coal mining experience and novice miners who were untrained and inadequately supervised. This practice can only be construed as a further example of Westray management's laxity in applying basic principles of coal mining safety.

Non-flameproof Equipment Underground

There are instances in which workers, supervisors, and management at Westray employed non-flameproof equipment underground in violation of the regulatory conditions for its use.[74] Westray did receive exemptions for non-flameproof mobile equipment. Each exemption carried with it a set of conditions to be followed for that specific piece of equipment. The following conditions were common to the exempted non-flameproof mobile equipment:

- the equipment was not to be used in the return air
- the equipment was not to be used beyond the last open cross-cut

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70 Hearing transcript, vol. 42, p. 9314. With this brief comment, Capstick seems to have aptly summarized the roles of management and the inspectorate at the Westray mine.

71 Hearing transcript, vol. 42, p. 9329.

72 Hearing transcript, vol. 25, p. 5168.

73 Hearing transcript, vol. 30, pp. 6408–09. It is significant to note that Robinson declined more than once to be a shift foreman at Westray. He testified that he was unwilling to instruct miners to work in conditions that he himself would find hazardous (pp. 6410–11).

74 The *Coal Mines Regulation Act* was outdated to the extent that it made no provisions for the use of diesel equipment other than diesel locomotives. Instead, the director of mine safety granted each piece of equipment a permit subject to written conditions for its use.

- the equipment was not to be used within 300 feet of the working faces
- the equipment was not to be used in air containing more than 0.25 per cent methane measured in the general body of air
- the equipment was not to be used on roadways with more than 15 per cent combustible matter.[75]

As well, Westray's own code of safe practice for non-flameproof equipment provided that such vehicles "shall only be operated in intake airways and shall not pass the last open cross-cut."[76]

The evidence of underground workers at Westray shows that these conditions were simply not met. Ron MacDonnell testified that he observed Jay Dooley, an experienced coal miner and a foreman, operating a non-flameproof bulldozer "right at the face."[77] Dooley confirmed this himself. He explained that he was advised by Roger Parry that the non-flameproof diesel equipment was not permitted in any area with more than 0.25 per cent methane in the air. This was the only condition Dooley was aware of prior to the explosion. Dooley went on to say that he recalled seeing such equipment being operated within 5 or 10 feet of the face. It was a regular occurrence for the non-flameproof boom truck to be at the face.[78] Wayne Cheverie said that he was not made aware of the conditions governing the use of non-flameproof equipment in the mine. He said that maintenance superintendent Bob Parry advised him that the non-flameproof tractors were not to go past the last fresh-air cross-cut – the only condition he was aware of prior to the explosion. Cheverie explained that he could not always abide by the restrictions applicable to the tractor:

> There were certain things that were expected of you . . . in the mine that could only be done with a vehicle of some sort and by times everyone in the mine abused the equipment that was exempted.[79]

Cheverie went on to provide examples of prohibited actions. The non-flameproof vehicles were used to transport hydraulic oil and bolting supplies to the face, and to stock the bolter with roof bolts, bolt plates, screen, and resin. This was done at the request of the foremen. Cheverie also recalled driving the tractor in the return air. He believed that foremen and mine management must have been aware of such practices.[80] Cheverie reminded the Inquiry that the only vehicle access to the Southwest 2 section was via a return airway.

There is evidence establishing that both Roger Parry and Phillips engaged in such unsafe and illegal practices. Estabrooks said that he saw Phillips and Parry drive a non-flameproof tractor down 2 East in the

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75 Exhibit 73.12.003. This is from the schedule of conditions for the Jeffrey Dresser dozer used underground. Similar approvals were on file for the Massey-Ferguson tractors and a boom truck. Certified flameproof vehicles such as the Wagner Scooptrams were subject to some of the same restrictions (Exhibit 69a).

76 Exhibit 69b.004.

77 Hearing transcript, vol. 29, p. 6089.

78 Hearing transcript, vol. 39, pp. 8663–65, 8669.

79 Hearing transcript, vol. 20, pp. 3968–70.

80 Hearing transcript, vol. 20, pp. 3970–72.

Southeast section of the mine just days before the explosion. He also testified that Albert McLean, the mine inspector, rode a tractor with Parry to within 30 feet of the North A Road face.[81] Don Dooley witnessed Parry driving a non-flameproof tractor in the North mains return air.[82] Clive Bardauskas said that he saw Bryce Capstick operating a Scooptram with the scrubber "spragged" – that is, with the float-scrubber safety system that dilutes noxious gases and prevents sparking disabled. On this occasion, both he and Jay Dooley saw sparks flying out of the exhaust. At that point, according to Bardauskas, Dooley ordered the machine shut down, and the scrubber was filled with water – a safety procedure that took only a few minutes.[83]

In a pre-hearing interview, Lenny Bonner recounted an episode involving the use of non-flameproof equipment underground in SW1-3 Cross-cut. Bonner testified that he was sitting in the front of the tractor while attempts were made to back it up the hill:

> [W]e were backing up there and they had a fan pulling the air out of one of the other sections and it was exhausting right on the slope . . . and we were backing up the tractor and it just started to – it looked like you were putting a grinder to a piece of steel, it was sparks that came out of the exhaust. It kind of scared the shit out of us and we shut the tractor down right there and Chester Taje was standing on the corner and he seen it and he was just white as a ghost because the dust that was getting kicked up from the exhaust of the tractor and the wheels and the fan blowing on us exhausting gas out on us and coal dust and mixing it all up and all them sparks flying out and they were big sparks – they looked as big as the tip of your finger, they did.[84]

During the mine rescue operation, those same non-flameproof tractors were taken underground as far as the fresh-air station. Clive Bardauskas testified that he noted the exhaust of the tractor was sparking underground. When asked how that made him feel, Bardauskas responded simply: "Sick. That even during the rescue that we'd have situations where tractors were still producing sparks."[85]

The careless and haphazard use of non-flameproof equipment in a coal mine is a serious safety issue.

Finding

Westray management failed to provide adequate instruction on the use, and the limitations imposed on that use, of non-flameproof equipment. By its example, Westray management condoned, and even encouraged, illegal use of this equipment underground.

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81 Hearing transcript, vol. 24, pp. 4891–94. It is likely that 2 East in May 1992 met *none* of the conditions required for operating the tractor.

82 Hearing transcript, vol. 36, p. 7933.

83 Hearing transcript, vol. 23, pp. 4596–98.

84 Exhibit 92.1.81–82.

85 Hearing transcript, vol. 23, pp. 4702–03.

Cable Damage

The evidence shows that the maintenance of electrical cables at Westray violated section 85(2), rule 75, of the *Coal Mines Regulation Act*:

> Trailing cables shall be examined for defects or damage at least once each shift by the machine operator, and once each week by the chief electrician or one of his assistants. *If found damaged or defective, they shall be sent to the surface for permanent vulcanized repair, and shall be replaced by spare cables in good condition.* [Emphasis added.]

Malcolm McPherson testified to the seriousness of cable damage from the perspective of safety:

> We do not have any evidence that cable damage was the cause of this particular ignition, but reflecting your statement that this is an indication of perhaps less than adequate training of the miners in handling those cables. And, indeed, if that had continued, this would have been, and indeed it was, a possible source of ignition.[86]

The evidence of electricians Mick Franks and Harvey Martin shows the improper, yet common, manner in which cables were repaired at Westray. Franks said that the *Coal Mines Regulation Act* permits tape repair of damaged cables during and until the end of a shift, provided that the inside pilot cable is undamaged. It then requires removal of the cable to surface for vulcanization. He was advised of this policy when he first began work with Westray. Franks said that the policy was never implemented. He made his first report of cable damage to Brian Palmer, but the cable was never removed from the mine for servicing. Franks estimated that approximately eight or nine cables may have been removed properly. He testified that there was a lot of cable damage and no vulcanizing kits to repair them. He saw only one kit prior to the explosion; as far as he knew, it was never used. Franks remarked that the practice employed at Westray was merely to tape the cables and use them in that state.[87] Martin's testimony is consistent with that of Franks. He stated that at one time he was advised that damaged cables were to be repaired for the remainder of a shift and then removed from the mine and vulcanized. Martin never saw any cables removed from the Westray mine to be repaired properly.[88]

The improper repair of cables would have been quite evident to mine management – and to the inspectorate – since some cables showed numerous and obvious "tape jobs." Nevertheless, Westray electricians were never instructed to repair the cables properly, nor were they given the necessary materials to make such repairs.

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86 Hearing transcript, vol. 9, p. 1702.

87 Hearing transcript, vol. 21, pp. 4143–44.

88 Hearing transcript, vol. 23, p. 4534.

Finding

Westray management seemed to condone the dangerous and haphazard practice of allowing temporary cable repairs to remain as permanent repairs. In so doing, management was in violation of section 85(2), rule 75, of the *Coal Mines Regulation Act*, which requires that such cables be properly vulcanized.

Main Ventilation Fan

There are accounts of the main ventilation fan having been shut down at Westray – a blatantly unsafe and illegal practice whenever workers are underground.[89] Clive Bardauskas questioned Westray's rationale for having positioned the main ventilation fan directly above the conveyor belt. Debris and dust were sucked into the fan, partly blocking the mesh cover on the main fan intake. To clear the problem, the fan was simply turned off and the mesh was cleaned.[90] Bardauskas referred to one incident in No. 5 Cross-cut, where a new belt drive was being installed. As one of the welders proceeded to burn, the torch suddenly turned "a funny colour blue."[91] Bardauskas said that maintenance foreman Roman Schule tested for gas, went off to determine what had happened, and returned to advise that the main fan had been turned off. Bardauskas found this unbelievable because "you just don't turn the main fan off when there's men underground, and especially you don't turn it off when you're doing burning or welding like that."

Matthew Sears, who worked a total of 12 shifts underground at Westray, testified that he was aware of the main fan being shut down on at least two occasions to clean out debris that had collected in the fan. Ralph Melanson, his foreman, had told him to do it; he didn't know who would have instructed Melanson to take that course of action. Sears went on to say that the fan was shut down for "approximately 15 to 21 minutes" on each occasion. He doubted that mining was ongoing the first time, but thought it was "more than likely that mining was going on" the second time.[92]

Finding

The main ventilation fan in any mine is fundamental to the safe operation of that mine and the safety of its underground workers. Notwithstanding, Westray management failed to instil any understanding of this fact in its workforce. On the contrary, workers were instructed to shut the fan down for maintenance without any provision for the safety of the workers.

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89 Section 71(4) of the *Coal Mines Regulation Act* requires that "[w]hen the fan is stopped for any reason, the workers shall be removed from their working places to a place of safety . . . and the workers shall not return to their working places until the mine has been declared safe." Turning off the main fan interrupts the flow of respirable air to underground workers and promotes the formation of methane layers at the roof.

90 Hearing transcript, vol. 23, pp. 4628–29.

91 Hearing transcript, vol. 23, p. 4623. Methane burns with a characteristic blue flame.

92 Hearing transcript, vol. 29, pp. 6052–53.

The evidence is clear that the underground workers were well aware of the dangers they were regularly exposed to. Professor Gerald Wilde at my request identified several of the safety concerns which, by their own account, prompted experienced miners, as well as novices, to quit Westray:

- presence and accumulation of coal dust
- presence of methane, the methanometer not working or being deliberately set at a higher than prescribed level
- sparks from electrical equipment, torches taken underground
- poor ventilation
- frequent cave-ins of the roof structure
- poor level of training of the workforce and of safety training in particular.[93]

Environmental Monitoring System

Although Nova Scotia's *Coal Mines Regulation Act* makes no mention of atmospheric monitoring systems (AMS), such systems have become commonplace and reliable. The ability to monitor continuously the quality of mine air in designated locations is important to underground mine safety.[94] Westray had such a system, but it was neither installed nor operated properly. Unfortunately, management's disregard for this key safety feature effectively disabled an early warning system for the kind of conditions that resulted in the explosion of 9 May 1992.

Underground mine monitoring systems are used in two separate but related ways: to control and monitor the operation of mechanized equipment, and to observe the condition of the mine atmosphere. The most common airborne pollutants monitored in coal mines are methane and either carbon monoxide or smoke. Air velocity transducers are also being used increasingly.[95] Some systems may also track the concentration of oxygen and carbon dioxide as well as temperature, humidity, and pressure differentials across fans, doors, or stoppings. With these systems, alarms can be set off when preset levels of the monitored conditions are exceeded. The control centre, usually at a surface location, houses the computer and associated equipment that manages the system and records the information received from remote monitors.

The system at Westray monitored and controlled the belt conveyors in the main slopes and equipment in the coal preparation plant, where the control centre was situated. The six environmental monitoring stations in the mine – all of them in, or close to, the main slopes – measured carbon

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93 Gerald J.S. Wilde, "Risk Awareness and Risk Acceptance at the Westray Coal Mine: An Attempt to Understand Miners' Perceptions, Motivations, and Actions prior to the Accident," report to the Westray Mine Public Inquiry (Kingston, April 1997), 2. Professor Wilde is a member of the Department of Psychology, Queen's University, Kingston, Ont.

94 U.S. coal mining regulations require an AMS under certain ventilating circumstances or as an alternative to regular hand testing (see 30 CFR 75.351).

95 A transducer is a device that converts a non-electrical signal, such as the speed of rotation of an anemometer, into an electrical signal.

monoxide and methane. It was a new and modern system, but it had a history of intermittent operation and unreliability. The recordings made prior to the explosion gave no definitive warning of impending danger and they offer no assistance in establishing the cause or behaviour of the explosion. It is by no means certain that the system, as installed, could have detected any progressive indications of unsafe conditions in the Southwest sections of the mine. Two questions arise: Why was the environmental monitoring system so unreliable? and How suitable were the numbers and locations of the monitoring stations?

Description

The monitoring system at Westray was manufactured by Davis Derby Limited (later Senior Davis Derby), a long-established British firm with an admirable reputation in the British coal mining industry. It used transducers made by another British company, Trolex Limited. The Canadian distributor, Minelec Limited, first supplied a carbon monoxide detection system to Canadian Mine Development, the Westray mining contractor, in January 1990. The first conveyor control was shipped in May 1991, and Westray received the main mine monitoring system in July 1991. Alan Blevins, president of Minelec, conducted training sessions for Westray personnel during the weeks of 13 May, 24 July, 22 October, and 9 December 1991.[96]

At the time of the explosion, six environmental monitoring stations had been established for carbon monoxide and methane. Four of the stations communicated with the surface control centre, as indicated in table 5.1. The two other local stations, with flashing beacons, monitored the electrical power centre in No. 5 Cross-cut and the compressor in No. 10 Cross-cut. Their trip-point levels were set at 12 parts per million carbon monoxide and 0.25 per cent methane.[97]

Low-voltage electrical signals were transmitted between the control centre and monitoring points via electrical "outstations." The principle of operation was that every few seconds a signal was sent from the surface control to each transducer, or sensor, to check that it was connected and operating correctly. Signals sent from the transducers to the control centre indicated the concentration of gas detected. When that concentration exceeded the preset limits, audio and visual alarms would be activated at the corresponding locations. The incoming signals could be inspected visually via computer monitor screens at the control centre. In addition, two forms of records were made. One, known as the rolling log, maintained information on the two-way signals, including whether an alarm condition was detected, but did not record the actual

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[96] Alan Blevins summarized this information in a 12 June 1992 letter to Shelley Gray, an occupational hygienist with the Nova Scotia Department of Labour (Inquiry file, DOL Box6 33).

[97] Exhibit 45.11.

Table 5.1 Underground Monitoring for Carbon Monoxide (CO) and Methane (CH_4)

Station	Underground Alarm Setting		Surface Alarm Setting	
	CO (ppm)	CH_4 (%)	CO (ppm)	CH_4 (%)
No. 1 Environment (Intake) NW1 Cross-cut between North B & D Roads	12	0.75	12	1.25
No. 2 Environment (Exhaust) 2 North Main at North D Road		0.75		1.25
No. 3 Conveyor No. 2 Main between Nos. 10 & 11 Cross-cuts	12		20	
No. 2 Conveyor No. 2 Main between Nos. 4 & 5 Cross-cuts	25	1.25	20	0.8

Source: Exhibit 45.11.

concentrations.[98] The second (archived) form of record did, indeed, give actual concentrations, but averaged over periods of 10 minutes.

Signals Recorded Prior to the Explosion

The person charged with maintaining the monitoring system at Westray was a young electrical engineer-in-training, Jeff Yeo. Yeo testified that he had had no experience in underground coal mining; nor had he had any formal training in mine electrical procedures.[99]

At the time of the 9 May 1992 explosion, the environmental monitoring system was not working reliably. Dr McPherson reported that it is not unusual for a new electronic surveillance system at an underground mine to have a settling-in or debugging period when initial site-specific problems are resolved, and operators and maintenance personnel become trained and fully conversant with the system. At Westray, there were several reasons why that period was prolonged, in addition to Yeo's lack of experience. At an early stage of installing the environmental monitoring system, lengths of underground telephone cable were installed instead of the type of cable specified by the manufacturer.[100] Surges of electrical current on power lines, as occur when equipment is switched on or off, could cause transient responses and produce false alarms.[101] The system would be especially susceptible to such effects because of the incorrect cable that was used. A control circuit card was suspected of malfunction and was replaced, Yeo testified, but without any perceptible improvement.[102] There was no schedule in place for calibration

98 Exhibit 33.

99 Hearing transcript, vol. 45, pp. 9800, 9890–91.

100 Hearing transcript, vol. 45, pp. 9840–42.

101 Hearing transcript, vol. 45, p. 9855.

102 Hearing transcript, vol. 45, pp. 9891–92. Yeo thought that initially the new card might have helped, "but over time we started to have doubts as to whether that really made much difference at all."

of the sensors.[103] False alarms occurred so frequently that operators in the control room were instructed to ignore them.[104] Yeo told the Inquiry that the primary concern of the control room operators was "to run a prep plant, and they had other things to do."[105]

A further factor that delayed the development of a reliable environmental monitoring system, and which also had a parallel with mine ventilation, was that Yeo had duties related to mine production, which took priority over matters of safety. The former included the monitoring system for the conveyors.[106]

The rolling log for the period 20 April to 9 May 1992 indicates that few meaningful signals were received from environmental monitors during that period. It was within the context of this virtually useless environmental surveillance system (as installed) that mine personnel and engineers of Senior Davis Derby tried to glean information from signals recorded shortly before the explosion.[107] The signals transmitted in the early hours of 9 May 1992 were recorded on the rolling log and as archived data, and these data were analysed by Senior Davis Derby.[108] Table 5.2 combines in summary form the two sets of records for the northern intake (No. 1 Environment station) and nearby exhaust monitoring points. The intermittent nature of the signals and the short-lived alarms, unconfirmed by the archived data, suggest strongly that the records reflect transients that could have been caused by electrical fluctuations, by switching the system on or off, or by faults in the transmission links.

Had any abnormal quantities of gas been emitted from the Southwest section into the main slopes, they might have been detected at the No. 2 Conveyor monitoring station. No such abnormalities were recorded. Between midnight and loss of transmission on 9 May 1992, the carbon monoxide fluctuated at low levels between 0.78 and 1.57 parts per million, while the methane concentrations ranged from 0.29 to 0.35 per cent.

Locations of Monitoring Stations

McPherson examined the locations of the monitoring stations and reported to me subsequent to the hearings. The stations along the main conveyors were sited appropriately for detecting abnormal gas emissions from the

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103 Hearing transcript, vol. 45, pp. 9901–02. The Trolex Installation and Operating Data booklet for the TX3261 methane sensor used in the system recommended recalibration and other regular servicing every two weeks (Inquiry file, DOL Box 6 32).

104 Hearing transcript, vol. 45, pp. 9837–38.

105 Hearing transcript, vol. 45, p. 9884.

106 Hearing transcript, vol. 45, p. 9861. Yeo was the system administrator for the company's minicomputer (p. 9799). He commented, regarding the environmental monitoring system: "I would say I didn't have as much time to work on it as I would have liked to" (p. 9846).

107 Yeo was asked, post-explosion, to do "a very hurried analysis"; this analysis was inconclusive (Hearing transcript, vol. 45, pp. 9856–57). Alan Blevins arranged for analysis of the data by the system manufacturer, by this time known as Senior Davis Derby.

108 The rolling log is in Exhibit 33.3. The 14 September 1992 report of Senior Davis Derby is in Exhibit 37a.176–79.

Table 5.2 Environmental Monitoring at No. 1 Environment Station, 9 May 1992

Time (hr:min:sec)	Signal
04:24:20	• Communication established with monitors after having been off since 7 May at 01:41:13
04:24:22	• Intake methane and carbon monoxide monitors both operational • 10-minute average concentrations: Carbon monoxide 3.92 to 3.53 ppm; methane 0.16 per cent • Exhaust methane monitor not operational
04:45:20	• Intake: carbon monoxide detected. This was a short-lived alarm – 10-minute average: 2.35 to 1.96 ppm • Methane alarm for a very short transient period – 10-minute average concentration: 0.16 to 0.2 per cent
04:45:26	• No signals for 3 seconds
04:45:31	• Intake carbon monoxide monitor showing a fault • Intake methane monitor operational • Return methane monitor showing a fault
04:45:45	• Intake methane alarm for a period of less than three seconds – 10-minute average concentration: 0.2 per cent
04:46:30	• Intake carbon monoxide monitor operational – 10-minute average until loss of transmission: 2.35 to 1.96 ppm
05:18:51	• Off air

Source: Exhibits 33.3, 37a.176–79.

working sections into the main return. Similarly, the carbon monoxide monitors, had they been maintained in continuous operation, would have provided a means of detecting a fire along the main belt lines. It was also appropriate to locate an environmental monitoring station at the inbye end of the north workings, although he thought it unclear why two such stations were positioned so close to each other.[109]

The purpose of environmental electronic surveillance in an underground mine is to provide warning of actual or impending dangerous atmospheres. Therefore, when deciding where to locate such stations, it is important to consider where such conditions are most likely to arise. This is not always an easy decision, since air quality in a mine can vary with respect to both time and location. There are, however, some guidelines that offer assistance. First, in coal mines, inadequately mixed methane will migrate towards the roof. Similarly, in the case of an underground fire, thermal stratification will cause the products of combustion, including carbon monoxide, to rise. It is therefore prudent to locate gas monitoring sensors at, or close to, roof level.

Second, the geometry of the mining layout will indicate appropriate monitoring locations. McPherson thought that at Westray it would have

[109] The locations of the monitoring stations are shown on maps 5, 6, and 7 in Reference.

been prudent to site a monitoring station in the return airway from the Southeast section. In his estimation, there should have been two stations in the Southwest, one in SW2-A Road, the return airway from the Southwest 2 section, and, from the time that the Southwest 1 section was developed, one in the SW1-B Road. Had there been such a station anywhere between the SW1-B Road stopping inbye SW1-3 Cross-cut and the entrance to the SW2-B Road, and had it been located at roof level, and had it been kept operational, the methane layer emerging from the abandoned Southwest 1 workings would have been detected at an early stage.[110]

Any system of controlled partial recirculation of ventilation in a mine should be carefully designed and engineered. As a part of the design, and before permission for its use is granted by a regulatory authority, continuous monitoring of the quality and quantity of the recirculated air should be maintained by means of transducers for air velocity and carbon monoxide or smoke. In a coal mine, a methane monitor should also be provided. At Westray therefore, despite the stations in the main return, there should have been an environmental monitoring station located in the surface recirculation duct.

Finding

The environmental monitoring system at Westray was not effective. Its problems were inherent not in the equipment, but in the manner in which it was installed and maintained. They can be summarized as follows:

- **Equipment was installed improperly and an incorrect transmission cable was used.**
- **Initial difficulties were not resolved and the system was inoperative most of the time.**
- **Maintenance and resolution of faults in the system were left to an engineer-in-training with no previous experience in coal mines or with this type of equipment.**
- **That same engineer was allocated duties that conflicted between mine production and safety.**
- **There were not sufficient monitoring stations in strategic locations, especially in the Southwest sections.**
- **There was no scheduled maintenance or recalibration of gas sensors.**

Equipment

The inadequacy of the equipment provided to underground workers further supports the view that Westray management trivialized safety issues. The unacceptable standards at Westray in effect deprived miners of the very basics in underground coal mining – there was no system in place to ensure that equipment was properly outfitted, issued, or maintained.

[110] See Chapter 7, Ventilation, for details about the Southwest 1 methane layer.

Equipment Maintenance

Preventive maintenance of equipment is fundamental to both worker safety and production. Regular maintenance enhances the efficiency and the life of production equipment and thereby enhances production itself. Westray management blatantly ignored any maintenance schedules it had put in place. Equipment maintenance at Westray was simply not performed with the rigour and regularity dictated by good mining practice.

Underground mechanic Wayne Cheverie's evidence on this point is clear and credible. He testified that, although a preventive maintenance program had been established, there was no scheduled downtime; maintenance was permitted only when machines were not in production. He said that it was extremely difficult to service the continuous miners, the main production machines, since management did not like them out of production for any reason.[111] In such cases, underground workers attempted to complete whatever preventive maintenance they could while the continuous miner was inactive. Any opportunity to service the equipment simply came to an end when the production side of the crew was set to recommence mining.[112]

Harvey Martin, a shift electrician, testified that it was not always possible for him to complete scheduled preventive maintenance work. In the event that a crew was beginning or in the middle of a cut, he was not likely to have the opportunity to service that piece of machinery that day. Martin went on to identify production as the top consideration when it came to the servicing of equipment: "*Anything that had to do with production fell ahead of any preventative maintenance.*"[113] A broken-down continuous miner would take precedence over a roof bolter scheduled for preventive maintenance. Initially, Martin had thought that the company would take maintenance seriously, since a schedule had been put in place. He soon learned, however, that repair and maintenance jobs that directly affected production would inevitably take precedence over the duties assigned to him.

Mick Franks testified that it was "pretty well impossible" to complete any preventive maintenance checks on the continuous miner – there was never any downtime scheduled. According to Franks, the situation became even worse during the couple of months leading up to the explosion, when "they wouldn't shut it down at all."[114]

The underground workers assigned to the maintenance of conveyor belts were faced with similar difficulties. Franks testified that management did not permit the belt to be shut down for any reason:

> No, you could never shut the main belt down. *The main belt was totally taboo*, you know, like, Gerald [Phillips] had them install a yellow light on top of the main belt so that he could see it from his house, like a revolving

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111 Hearing transcript, vol. 21, p. 3998.

112 Hearing transcript, vol. 21, pp. 4045–46.

113 Hearing transcript, vol. 23, pp. 4447–49. Emphasis added.

114 Hearing transcript, vol. 21, pp. 4127–28.

> light, you know. So that if that light went out, he knew that the belt was down and then he'd get on the phone and find out why the belt was down. Even if there was no mining going on, even if they were doing a power move in the North Mains and the Southwest was shut down for some reason, they still had to keep that belt running for some reason. It was just – I don't know, a big bugbear with him. They just always had to keep that belt running.[115]

As a result, underground workers were left with little choice but to perform maintenance and repair work while the belt was running. According to Franks, the only time the belt was shut down was when it broke down.

Westray's mine maintenance month-end reports show that scheduled preventive maintenance work was routinely not completed. For November 1991, preventive maintenance work for the underground mechanical equipment, underground electrical equipment, underground tractors, and underground Scooptrams was 52, 29, 85, and 25 per cent, completed respectively.[116] For March 1992, preventive maintenance work completed for underground mechanical equipment, underground electrical equipment, and underground diesel equipment, was 63, 72, and 89 per cent, respectively.[117] (It should be noted that the percentage of preventive maintenance work completed on surface was higher. Maintenance work completed in the preparation plant for November 1991 and March 1992 was at 80 and 100 per cent, respectively.)

Evidence heard respecting the practice of routine preventive maintenance in other mines contrasts with the practice at Westray. Cheverie testified that at Grande Cache there was scheduled maintenance *and* downtime within which to complete such maintenance. The mechanics and electricians were expected to service the equipment every morning. When the production crew was set to mine, the machine would be released for production *if possible.* In addition, a half-hour was allotted during the shift for further maintenance work.[118] Harvey Martin contrasted his experiences at Westray and Faro. Martin explained that, on receiving a work order for routine maintenance at Faro, he always found the equipment available so that servicing could be completed. Such was not the case at Westray.[119]

Cap Lamps

There was no proper procedure for issuing cap lamps to underground

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115 Hearing transcript, vol. 21, pp. 4134–35. Emphasis added.

116 "Mine Maintenance Month end for November" (12 December 1991) (Inquiry file, West Room27 11).

117 "Mine Maintenance Month end for March 1992" (2 April 1992) (Inquiry file, West Room27 11).

118 Hearing transcript, vol. 21, p. 4002.

119 Hearing transcript, vol. 23, p. 4448. Faro was the site of Curragh's base metals mine in Yukon.

workers at Westray. Mick Franks testified about the problems he encountered:

> Q. Was that a common occurrence for your cap lamp lights to go dim?
> A. . . . [I]t . . . used to be a common occurrence, definitely, yeah. Because people would be just grabbing anybody's lamp and you might have somebody . . . using your lamp on your days off. And then you come in and . . . it might last two or three hours and it's gone.[120]

Tom MacKay experienced similar problems. He explained that one was not always assured of receiving the same lamp each shift. There were times when MacKay would just make it underground and his light would go out.[121]

This problem was exacerbated by the fact that the workers' cap lamps were not suitable for 12-hour shifts. The lamps were intended for the 8-hour shift. Accordingly, the lights would frequently begin to dim before the end of the workers' shift – clearly constituting a safety hazard.[122] Westray management was aware of this problem, but ignored it. Management's indifference is apparent from the testimony of Carl Guptill, who recounted the episode that led to his being injured.[123] Guptill had agreed to switch lamps with Wayne Conway, who was roof bolting when his lamp went dim. Rather than arrange for a replacement lamp, their foreman instructed Guptill to work in the dark, using only the light from nearby workers. Guptill tripped while carrying a heavy arch and was injured.

The mine inspectors were also aware of the safety hazard. The electrical/mechanical inspector, John Smith, had apparently been surprised to learn about the 12-hour shifts:

> I thought, "Well, surely to God there's not going to be all these guys running around every shift with a dim light after eight hours or nine hours." Well, they [the cap lamps] were new. I suppose you might squeeze 10 or 11 hours out of it if it was new and in good shape. But towards the end of each 12-hour shift, you wouldn't have a very good light, if you had a light at all. . . . So that was the thing that I was concerned about, it was a – well, it wasn't a purely electrical thing, but it was a safety thing. [124]

The inspectorate was fully aware of this safety concern yet failed to address the issue.

Methanometers

The workers responsible for calibrating methanometers testified that proper supplies for doing so were not always readily available at Westray. Harvey Martin testified that, on many occasions, the bottled 2.5 per cent methane gas required to calibrate was not available, nor was the "zero

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120 Hearing transcript, vol. 21, pp. 4181–82.

121 Hearing transcript, vol. 32, p. 7029.

122 Equipment and materials expert John Bossert agreed in testimony that the cap lamps used at Westray lose up to 40 per cent of their light output after 10 hours of continuous discharge (Hearing transcript, vol. 12, pp. 2200–01).

123 More fully described in the section on Carl Guptill in Chapter 12, Department of Labour.

124 Hearing transcript, vol. 59, pp. 12868–69.

gas."[125] Zero gas was requested but, to his knowledge, never received. As a result, Martin was not confident that the methanometers were being calibrated accurately. Mick Franks testified that, despite repeated requests, he was unable to acquire "lab air" to calibrate the methanometers properly.[126] Rick Mitchell recalled operating the continuous miner with a hand-held methanometer (see photo 10 in Reference) when there was no gas available to calibrate the on-board methanometer.[127]

Apparently, no methanometer extensions were available to the workforce at Westray. As a result, underground workers were unable to test for gas and gas pockets close to the roof or in roof cavities, which often reached a height of 4 m and higher. Rather, gas checks were confined to the height any given underground worker could reach with a standard hand-held methanometer – perhaps 2.1 m. (Sometimes workers would stand on equipment to get more height.) Harvey Martin said that he never saw any type of extension or mechanism at Westray that could be used to test for a layer of gas at the roof.[128] Trevor Eagles said that, although he had access to a methanometer with an extension in April 1992, he didn't see it after that.[129]

Management was aware that roof bolting crews were working in high methane. Underground workers repeatedly requested that the roof bolters have methanometers installed even though they are not required by the *Coal Mines Regulation Act*. The practical and safe solution to high methane concentrations would be adequate ventilation.[130] The inadequacies of the Westray ventilation system are addressed in Chapter 7, Ventilation.

Don Dooley was adamant that there should have been methanometers on the bolters. Dooley, other members of the bolting crews, and many other underground workers requested methanometers. Management's response was simple and clear: they were not required.[131] Wyman Gosbee recalled asking that the bolters be outfitted with methanometers. His foreman gave him two reasons why this would not be done: first, it would be difficult to find a safe place on the bolter to place the methanometer; and second, "you'd never get anything done because it would always be shutting down."[132] Gosbee was not satisfied by the response he received

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125 Hearing transcript, vol. 23, pp. 4452–54. "Zero gas" is bottled air with no methane, used for calibrating the zero point of the methanometer.

126 "It just didn't seem like an issue to Brian [Palmer, electrical foreman]" (Hearing transcript, vol. 21, pp. 4140–41).

127 Hearing transcript, vol. 31, p. 6805.

128 Hearing transcript, vol. 23, pp. 4543–44.

129 Hearing transcript, vol. 76, pp. 16618–19.

130 Equipping roof bolters with methanometers does not seem to be common industry practice. Perhaps the question arises only in mines such as Westray, in which the ventilation system was so inadequate that methane layering at the roof was commonplace. When mining at the face is complete, the area must be ventilated to clear any methane before the roof bolters start to work. Inquiry coal mining consultant Roy MacLean confirmed that this is the appropriate, and standard, approach.

131 Hearing transcript, vol. 36, p. 7876.

132 Hearing transcript, vol. 25, pp. 4996–97.

from his shift boss. He went on to explain that a methanometer on a bolter would automatically shut the bolter down at the standard 1.25 per cent methane. He was accustomed, however, to working in methane concentrations as high as 3.75 per cent.[133]

Finding

Roof bolting in conditions such as those experienced at Westray clearly jeopardized the health of the workers who were "gassing out" on a continual basis. The issue of methanometers on roof bolters leads us directly to the adequacy of ventilation in mining headings. If the ventilation of the headings had been adequate, methane would be cleared before bolting began. Westray management's trivialization of methane in working areas illustrates a serious disregard for or a misunderstanding of proper ventilation.

There is ample evidence from which to conclude that the underground equipment at Westray was not being properly and routinely serviced, that the underground workers' cap lamps were inadequate for their 12-hour shifts, that methane monitoring was insufficient, and that miners were being subjected to hazardous concentrations of gas. Experienced mine bosses Gerald Phillips and Roger Parry knew, or ought to have known, that these conditions constituted an immediate and serious hazard to the underground workers at Westray. If they knew and did nothing, they exhibited a startling degree of laxity in respect to the essentials of safety. If they did not know, they were simply incompetent.

Finding

Westray management failed to provide properly maintained and appropriate equipment. Management thus failed in its fundamental and overriding responsibility to ensure that underground workers were able to do their work in a safe environment.

Housekeeping Underground

The state of housekeeping in an underground coal mine is indicative of the existence or absence of a safety ethic. Colin Benner expressed his view:

> Oh, they're an automatic indicator. Housekeeping is . . . an indicator of an attitude. . . . The workplace, if it's kept in the right order, will be safe. If the housekeeping is good, things are put in place where they . . . belong, then usually you're not going to have a high frequency of accidents. It's just an indicator, I think, that *housekeeping, by all studies done by all safety experts and by all industrial engineering experts has always been one of the prominent features in developing a good safety program* in a mine or in any

[133] Gosbee reckoned that he started feeling the effects of oxygen deprivation at about 5 per cent methane (Hearing transcript, vol. 25, p. 4998).

> industrial setting, for that matter. A lot of accidents occur as a result of poor housekeeping.[134]

The record is replete with references to the poor state of housekeeping underground at Westray. Benner testified to the standard of housekeeping that he observed underground on 5 April 1992: "[T]here was a lot of debris in various areas, like timber lying around, steel lying around, garbage papers, lunch papers, orange peels."[135]

The mine workers generally held the view that the state of housekeeping underground left much to be desired. Lenny Bonner described housekeeping at Westray as "terrible."[136] He commented on "water jugs lying in the drift, boxes of resin cartridges . . . rock bolts . . . and Dywidags buried in coal dust. . . . lunch can wrappers . . . half eaten food" and similar items thrown on the ground. Bryce Capstick believed that housekeeping was always an "inconvenience problem" in the workplace.[137] He went on to say that it could become a "safety problem" in the event that you had to work in a poorly kept area of the mine and "there's something to trip over or cause injury."

The evidence suggests that housekeeping became a priority only when Westray management had to make a positive impression on visitors to the underground. Gosbee testified that, as a rule, management knew when an inspector would tour the mine. He commented that "[y]ou were always informed the day before to brush up on your housecleaning" and keep things in order.[138] The poor state of housekeeping underground is indicative of management's lenient approach towards safety at Westray. On those few occasions when management did exhibit an *apparent* concern for safety, it was for the benefit of officials or inspectors who were expected to visit the mine. The health and safety of the workers was, at best, a peripheral concern for Westray management.

Other Factors

Conditions for those working underground at Westray were also affected by a number of other factors, some of which are essentially human relations issues.

There is no doubt that those working underground perceived the risks in their situation. Workers spoke in testimony and interviews about the dangers and their fears. The reasons they continued working at Westray, despite conditions they saw as unsafe, also emerge from their words. Professor Wilde reviewed the evidence to try to offer some insight into the miners' perceptions of risk and their reactions to it. He reported that certain factors "contributed to the employee perceptions of accident risk" and that there was a general feeling among the underground workforce that

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[134] Hearing transcript, vol. 73, pp. 15842–43. Emphasis added.

[135] Hearing transcript, vol. 73, p. 15834.

[136] Hearing transcript, vol. 24, pp. 4740–41.

[137] Hearing transcript, vol. 42, p. 9472.

[138] Hearing transcript, vol. 25, p. 5005.

a serious accident was a strong probability. Wilde attributed the miners' willingness to accept high levels of danger to the operation of various factors, in particular economic pressures and incentives. The incentive bonus plan introduced by management at Westray in early 1992 did not help the situation, but rather, in Professor Wilde's view, made it worse:

> Mine management, rather than putting in place a safety-incentive programme of a type known to significantly improve cautious and accident-free performance, instituted instead a remuneration schedule that appears to have exacerbated risk acceptance and the frequency of imprudent practices among the miners.[139]

Professor Wilde has identified some 13 reasons given by Westray workers for accepting the risky working conditions:

- wanting the pay cheque
- wanting production bonuses
- having no prospect of alternative employment in the region
- anticipating promotion and long-term advancement through the ranks; hoping for long-term job security
- hoping working conditions would improve with time; hoping to survive through skill and experience
- not having the necessary data to confront management or to take Westray to court
- fearing reprisals; fearing being fired for complaining to management about unsafe conditions
- feeling intimidated by management
- feeling powerless; feeling that government may support mine management, that inspectorate would refuse to assist miners; fearing that complaining to the mine inspector might lead to being fired
- fearing unemployment insurance penalties; anticipating problems leaving work without sufficient cause or without UI eligibility; fearing delay in arrival of UI cheque
- being bribed to hide a lost-time injury from Workers' Compensation
- feeling loyal to colleagues working under dangerous conditions
- identifying with the mine; "having mining in the blood."

Management-Worker Relations

To understand the working environment at Westray, we need to appreciate the dynamics among management, supervisors, and underground workers. In testifying at this Inquiry, Colin Benner identified workplace dynamics – how people conduct themselves and relate with others in the workplace – as a good indicator of the existence or absence of a safety mentality.[140] The relationships at Westray are particularly telling.

On 5 May, just days before the Westray mine exploded, Lenny Bonner testified that he was putting chock blocks above the arches with Ed

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[139] Wilde, "Risk Awareness," p. 1.

[140] Hearing transcript, vol. 73, p. 16006.

Estabrooks near the face of SW2-A Road. Arnie Smith, their foreman, had sent them there and told them not to do any work until he returned, at which time he would operate the Scooptram. Bonner and Estabrooks waited for about a half-hour, but Smith did not appear. They began working without him. At this point, Bonner stated, Gerald Phillips, Roger Parry, and Smith arrived on the scene, and a heated confrontation ensued. Parry referred to Estabrooks and Bonner as "a bunch of dog fuckers." Bonner, agitated by this remark, jumped down out of the arches and made a few comments to Parry: "I threw my gloves off and I told him for a nickel that I would gut him."[141] Bonner then became confrontational with Phillips:

> And I called him an asshole for allowing Mr. Parry to go on the way that he went on in the mine. I told him to his face he wasn't much of a manager to allow this to happen and stand there and let him belittle us like that. So he walked away.[142]

Bonner was ordered to report immediately to the surface to speak with Phillips, who arrived about three hours later. Bonner told Phillips that he was not impressed with him as manager or with Roger Parry as underground mine manager. He said he was disgusted by the manner in which men were belittled and spoken to. He commented on the difficulties he and the other men were experiencing underground, including the bad roof, gas, and dust conditions. Bonner further advised Phillips that worker morale was low:

> I told him I wasn't particularly happy about coming into a workplace that made me scared to death. I told him on top of being scared to death, men have to come in here and be harassed and being called brain dead and everything else, right? Like, I mean, you don't come to work for that, you know.[143]

According to Bonner, Phillips said he agreed with most of the issues raised by Bonner, and he attempted to lay the blame on Parry. When Bonner spoke with Parry that same afternoon, the episode quickly deteriorated into an abusive confrontation:

> [Roger] came across . . . his desk. He was pounding on the desk and pointing his finger almost touching me. And I had a pin on that said, "I'm an organizer" . . . And he was spitting chewing tobacco over himself and he was quite upset and pounding on his desk and he said, "You're fucking lucky you have that or you'd be gone."[144]

Estabrooks, too, had been told to report to Parry in his office. Estabrooks described Parry's state of mind:

> And Mr. Parry was quite agitated. The veins in the side of the neck when he started ranting and raving in the mine would bulge out and kind of in and out like – a feature in his face would turn red and so on.

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141 Hearing transcript, vol. 24, p. 4781.

142 Hearing transcript, vol. 24, pp. 4770–73.

143 Hearing transcript, vol. 24, pp. 4774–78.

144 Hearing transcript, vol. 24, pp. 4778–80. Bonner was helping to organize the union membership drive.

Estabrooks felt that he and Bonner had been set up that morning because they were involved with the union drive.[145]

Section 9 of Westray's employee handbook encouraged employees to discuss issues and problems with their supervisors. It further invited employees to discuss issues with progressively higher levels of management up to and including the vice-president and general manager (Gerald Phillips), should issues remain unresolved.[146] Phillips, in his 29 October 1991 memorandum, referred to early in this chapter, had stressed Westray's commitment to open communication and "an open-door policy." This commitment amounted to nothing more than mere puffery. Contrary to the company's published position, management-worker relations were largely confrontational and founded on intimidation and bullying. Both Wyman Gosbee and Wayne Cheverie recalled experiences with Westray's open-door policy. Cheverie believed that "the door was only open if you were saying what they wanted to hear. If you said things that management didn't want to hear, then they would reprimand you; they would intimidate you and you would have to submit."[147] Gosbee shared those sentiments, but put them in a different light:

> A. But my understanding of that was that open door policy, that door only went one way. Meaning that if you had a problem and brought it up, their answer would be, well, there's 200 or 2,000 applications on my desk, if you don't like it, there's the door.
> Q. And the door was open?
> A. And the door was open.[148]

Bonner described the general attitude exhibited by management towards underground workers who expressed safety concerns:

> I was under the impression that if you complained too much, you were in hot water with the company, so to speak, so your job was at stake. And things went much smoother if you just kept your mouth shut and went along with the game plan, right? And besides, management's attitude towards things like that, like if you would have something that you wanted to discuss, you would be talked to like, *'Well, do you have a problem with that? Maybe you'd like to pack your fucking lunch can.' And this is how you would be responded to if you had a legitimate safety concern.* If you went to Roger Parry, that's how you would be talked back to.[149]

There are numerous accounts of underground workers and supervisors who expressed safety concerns or refused to perform unsafe work at Westray. The underground worker in fact has a *right* to refuse work under certain conditions as set out in section 22(1) of Nova Scotia's *Occupational Health and Safety Act*:[150]

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145 Hearing transcript, vol. 24, pp. 4906–08.

146 Exhibit 119.162.

147 Hearing transcript, vol. 21, pp. 3997–98.

148 Hearing transcript, vol. 25, pp. 5035–36.

149 Hearing transcript, vol. 24, p. 4762. Emphasis added.

150 RSNS 1989, c. 320.

> Any employee may refuse to do any act at his place of employment where he has reasonable grounds for believing that the act is likely to endanger his health or safety or the health or safety of any other employees until:
>
> (a) the employer has taken remedial action to the satisfaction of the employee;
> (b) the committee, if there is one, has investigated the matter and unanimously advised the employee to return to work; or
> (c) an officer in consultation with the Director has investigated the matter and has advised the employee to return to work.

In a transcript of a dialogue between Roger Parry and Marvin Pelley, Parry spoke about a worker's right to refuse unsafe work:

> **Marvin** So were the men ever forced to go into a place that they felt was unnecessary or did we find other work for them?
>
> **Roger** We always give it time to settle down and find other work so that that miner was not forced to go into the mine to do something they didn't want to do and any questions or concerns they would report back so that the foreman would get a hold of me whether it were day or night and I'd be back at the mine and check it out for myself.[151]

The evidence contradicts Roger Parry. Management's response to workers' concerns and refusals to perform unsafe work violated their rights under the *Occupational Health and Safety Act*. Management's response to any such refusals was invariably the same – it was management's mine, and if the underground workers did not like the way it was operated, there was simply no place for them at Westray.

Cheverie witnessed a face-to-face argument between Parry and Roy Pasemko, one of the miners. Parry ordered Pasemko to go in and roof bolt a cut; Pasemko flatly refused because of the unsafe condition of the heading:

> At the time – I remember very clearly Roy saying, "I'm not going in there. You're fucking going to kill somebody here and you don't care." And Roger's answer to that was: *"Roy, either you go in there and bolt that fucking heading or you can fucking take your lunch can and go up the drift; you're fired."*[152]

At that point, the foreman stepped in, spoke to Pasemko, and convinced him it was not worth losing his job over. Pasemko bolted another heading until he completed his shift.

Management style at Westray was consistent. Gerald Phillips, the man with primary on-site responsibility to instil and promote a safe work ethic, had a management style at times not unlike Parry's. Cheverie testified about an incident between Phillips and Aaron Conklin, a new member to the Westray crew. Following a bad roof fall, Conklin took the initiative to speak to Phillips about his concern:

> He walked over to Gerald, 8 or 10 feet from where I was standing, very meekly said "Gerald, do you think it's safe to go underground this

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[151] Exhibit 120.244. As described above in note 12, the circumstances behind this five-page transcript are unknown; it is undated but is post-explosion.

[152] Hearing transcript, vol. 21, p. 3991. Emphasis added.

> morning?" And Gerald Phillips turned around to him and loud enough so everyone in deployment that . . . could hear would hear, told him: "Aaron, either you fucking go underground or you fucking go home" and turned around and walked away.[153]

Conklin went underground and worked his shift.

Management's attitudes clearly shaped the manner in which the workplace functioned at Westray. The persistent trivializing of safety issues filtered down through the workforce. Ted Deane, a miner and bolter at Westray, recalled overhearing Phillips yelling and screaming at John Bates, Jay Dooley, and a few other night shift supervisors. Deane didn't know why they were being reprimanded, but Phillips's message was clear: "[H]e informed them that this was his mine and that they had better do things the way that they're told to do it."[154] Deane went on to explain how such intimidation on the part of management influenced safety attitudes and the way work was done at Westray:

> [A]t that time when I heard that conversation, and Gerald telling them that this was my mine, and you better do it the way I tell you to do it . . . I understood why John and maybe some of the other foremen did things the way . . . that they did. Why, if the regulations book said we weren't allowed to do it, why we actually did do it. Like, taking cutting torches in the mine and that. I understood the reason why.[155]

Carl Guptill said that he did things underground that he knew were unsafe. The reason was simple – he was intimidated by Roger Parry:

> Q. You don't seem to be a man who would easily be intimidated by someone. You had had a management position in other mines?
> A. I never met anyone like him before
> . . .
> He was rough. He had a crazy streak in him. Like, if he got really mad at you – I, at times, prepared for him to attack me.
> Q. Physically?
> A. Yes.[156]

The demeaning and abusive language used by Westray management had to be intimidating to Westray supervisors and underground workers. Although the use of rough language is not unusual in underground mining environments, the language used by Westray management went far beyond the norm. John Lanceleve said of the manner in which the men were spoken to at Westray, "Well, there's coarse language in . . . every mine I ever worked in. But it's not like cursing each other down; it's just the way some of the guys talk."[157] Lanceleve went on to contrast the Westray experience with his experience at Grand Cache in Alberta. At Grand Cache, there was no bad-mouthing of the men or public display of anger; the underground mine manager and supervisors did not use coarse

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153 Hearing transcript, vol. 21, pp. 3994–95.

154 Hearing transcript, vol. 26, pp. 5382–83.

155 Hearing transcript, vol. 26, p. 5384.

156 Hearing transcript, vol. 29, p. 6175.

157 Hearing transcript, vol. 27, p. 5564.

language to communicate with the men; the foremen were not run down by the underground manager; and miners could readily express their safety concerns. Fraser Agnew, who had also worked at Grand Cache, said that Roger Parry would call the underground workers some pretty miserable names – something he would never have heard at Grand Cache. Agnew recalled an incident at Grand Cache when someone spoke to a co-worker inappropriately, and it caused an uproar, eventually leading to a retraction. Agnew testified that the crude language at Westray was new to him:

> Q. And that wasn't something [crude language] that you were used to?
> A. No. I mean . . . you can carry on . . . we use some pretty bad language underground, all of us, you know, but it was in fun, most of it . . . but you would never go up to a man on a bolter, "Why haven't you got that bolt in there you stupid son-of-so-and-so."
> Q. And is that the way Mr. Parry . . . communicated with the men?
> A. In a lot of the ways, yes.[158]

Colin Benner was also critical of the language used by Westray management. Benner said that his criticism of the underground manager was based on language used in referring to the underground workers – "language that I wouldn't use even in a hard rock or soft rock mining industry where . . . it's quite commonly known that the workers' language is pretty coarse on occasion." Having heard how Parry spoke of the men in his presence, Benner wondered how he spoke to the employees when senior Curragh officials were *not* present: "But the fact that the candour [*sic*] was so coarse, then it led me to conclude that it might be even rougher when senior people weren't around."[159]

There is no question that management's manner of speaking to employees was harsh and demeaning. Deane testified to an incident in which Parry was calling Robbie Doyle "slow, stupid, good for nothing, demeaning him, over . . . to me, no reason."[160] Cheverie quoted Parry as once calling a few of the crew a "fucking bunch of brain-dead dummies."[161] Estabrooks testified that he overheard Phillips tell John Bates: "This is my fucking mine, and I'll run it my fucking way."[162] When Bryce Capstick became a shift foreman at Westray after qualifying as a mine examiner, Parry told him what his job was.

> Q. What did Mr. Parry say to you with respect to what he wanted you to do?
> A. After a day or so, it was very bluntly put to me what the duties of a foreman was going to be at that mine
>
> . . .
>
> He told me, he said, "You fellows are nothing but working fucking foremens [*sic*] . . . You will go down, you will train the men, you will show the men what to do, you will work with them. That's all you'll

[158] Hearing transcript, vol. 35, p. 7688.

[159] Hearing transcript, vol. 73, pp. 15893–94.

[160] Hearing transcript, vol. 26, p. 5416.

[161] Hearing transcript, vol. 20, p. 3967.

[162] Hearing transcript, vol. 24, p. 4903.

> fucking well do and that's it. So that threw the papers [certification] out the window."[163]

Capstick explained that "foreman" was just a title at Westray. He had to spend his time doing hands-on work and was provided no time to perform his mine examiner duties.

Finding

Westray managers not only failed to promote and nurture any kind of a safe work ethic but actually discouraged any meaningful dialogue on safety issues. Management did so through an aggressive and authoritarian attitude towards the employees, as well as by the use of offensive and abusive language. Westray workers quickly came to realize that their safety concerns fell on deaf ears and that management's open-door policy was mere window dressing.

The John T. Ryan Trophy

Westray management was concerned with the window dressing, however, and in early February 1992, in response to a suggestion from the managing director of the Chamber of Mineral Resources of Nova Scotia, Westray applied for the John T. Ryan safety trophy.[164] This award was first introduced in 1941 by Mine Safety Appliances Company of Canada Limited (now MSA Canada Inc.) to promote and "recognize notable achievement" in mine safety. The trophy was named in honour of the founder of the company and is administered by the Canadian Institute of Mining, Metallurgy, and Petroleum (CIM), through a committee comprising the chiefs of the provincial mine inspection branches and the heads of the various mining associations. The John T. Ryan trophy is a prestigious and much-sought-after award in the industry.[165] Eligibility is based on a calculation of the ratio between total number of hours worked at the mine site and the number of reportable injuries during the reporting period.[166]

Westray's entry form was prepared and certified by Allen Karasiuk, Westray's human resources supervisor, and signed by Gerald Phillips, vice-president and general manager.[167] It provided injury statistics for the competition year ending 31 December 1991, indicating 15 reportable injuries: 5 "lost time injuries" and 10 "modified work injuries." The company reported 221,357 hours worked for the year. The form named Claude White, P. Eng., as the regional representative, followed by the

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163 Hearing transcript, vol. 42, pp. 9297–99.

164 J.D.R. Smyth, managing director, Chamber of Mineral Resources of Nova Scotia, to Gerald Philips, 7 February 1992 (Exhibit 120.315).

165 Both Bruce Campbell, past executive director of the Ontario Mining Association, and Ian Plummer, mining engineer and recently retired director of mine safety for the Ontario Department of Labour, told me about the importance of this award.

166 This is somewhat of an oversimplification, but describes, in broad terms, the basis for qualification for the award. Terms and conditions for the award are in Exhibit 120.317.

167 Exhibit 120.316.

statement, "This entry is certified as the leading entry for my Region," to be signed by the regional representative.

In a memorandum of 9 April 1992, Phillips announced to "All Westray Employees" that Westray had been awarded the John T. Ryan safety trophy. Phillips wrote, in part, that this "prestigious award is in recognition of the fact that Westray had the lowest frequency of injuries of all the underground coal mines in Canada in 1991." Phillips ended his memo with the following advice: "Always work safely because a safe operation is a productive operation." Phillips and Eugene Johnson (one of the miners who died in the explosion) journeyed to Montreal to attend the CIM annual institute dinner, at which the trophy was presented to them as representatives of Westray. The news, Phillips's memo, and the presentation all occurred within a month of the 9 May 1992 explosion.

This achievement is sadly ironic in light of all the other evidence of the unsafe, unhealthy, and oppressive environment in which the Westray miners worked. The award was based entirely on injury-related statistics provided by the company. The application was not subject to any third-party audit.[168] One may speculate that statistics do not always provide the total picture.

Occupational Health and Safety Committee

Section 18(1) of the *Occupational Health and Safety Act* requires the establishment of a joint occupational health and safety committee:

> At every workplace where twenty or more persons are regularly employed, *the employer shall establish and maintain* one joint occupational health and safety committee or, at the discretion of the employer, more than one such committee. [Emphasis added.]

As well, Westray's management team had made a *written* commitment to the efficient operation of a health and safety committee. Section 5 of Westray's Operations and Maintenance Employee Handbook begins: "The maintenance of a Safety and Health Committee is recognized by Westray Coal as an important component of a comprehensive accident prevention program."[169] Again, the written commitment to safety was a sham. Westray management was derelict in not fulfilling its legal responsibility required by the act.

Because of management's attitudes, some employees attempted to air their safety concerns through other channels, including the joint occupational health and safety committee. This effort proved frustrating, further eroding the safety mentality and the morale of the Westray

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168 Our research uncovered several possible discrepancies in the entry form, but it is not known if these would have altered the outcome. For instance, during 1991, miners were given "arching bonuses" for achievement in erecting arches. The bonus took the form of added hours of pay. It is impossible to determine whether these extra hours were included in the entry calculations and if that would have substantially distorted the total hours reported. It also appears that at least three "modified work" injuries (Mike Palmer on 7 May, James Doyle on 25 July, and Ferris Dewan on 19 August 1991) were omitted from the entry form. Again, it is not known whether this would have had any effect on the outcome of the award process.

169 Exhibit 119.158.

workers. An effective health and safety committee solicits, identifies, and addresses safety-related concerns in the workplace. The one at Westray failed to meet any such criteria. The reason for its failure is clear: management made no effort to ensure that Westray's health and safety committee would be an effective and meaningful tool.

Although the company did solicit workers to be safety representatives (three members were Randy Facette, Owen McNeil, and Rick Mitchell), it failed to inform committee members of their roles, their responsibilities, and their rights pursuant to the act. The company failed as well to respond to any of the safety concerns voiced by safety representatives. Instead, Westray management chose to ignore these concerns and make excuses for its inaction. The potential of the health and safety committee was never to be realized at Westray. In fact, management's superficial participation in the committee, management's intimidation of workers who brought safety issues to the committee, and the workers' fear of reprisal diminished any concept of a functioning safety committee at Westray.

It was the hope of workers that the joint occupational health and safety committee would become a useful mechanism at Westray. But it was not long before most workers lost faith in the committee. Carl Guptill testified that he had never been introduced to the committee members and that he had not been underground long before he "started hearing rumours that they were a waste of time, that they weren't doing their job."[170] Trevor Eagles, who spoke often with the miners, said that underground workers had no means to express their safety concerns – the committee was very ineffective and its recommendations were never implemented.[171] According to Bryce Capstick, Westray had "half of a safety committee" set up – the committee did not fully exercise its rights.[172] As well, he questioned whether the Department of Labour was kept apprised of safety concerns identified by the committee at Westray. It was his view that the committee failed to fulfil any meaningful role.[173]

Don Dooley told of an incident in which the Westray health and safety committee played a useful role, but he went on to explain the committee's short-lived effectiveness. Dooley's crew was going to set an arch when Shaun Comish informed Dooley that the roof was "working." Comish refused to continue under those conditions and asked that his safety committee representative, Owen McNeil, examine the area. McNeil arrived at the scene and the roof began to work once again, at which time McNeil and Dooley agreed with Comish that the area should be bolted. The committee therefore proved to be effective on this occasion. Dooley said that, after McNeil was promoted foreman, the committee did not appoint another representative to his crew.[174] The evidence suggests that

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170 Hearing transcript, vol. 29, pp. 6176–77.

171 Hearing transcript, vol. 76, p. 16435.

172 Hearing transcript, vol. 42, p. 9360.

173 Hearing transcript, vol. 42, pp. 9385–87.

174 Hearing transcript, vol. 36, pp. 7981–84. McNeil was promoted foreman.

a successful occupational health and safety committee requires members who are aware of the workers' rights and who are able to assert those rights and insist on appropriate standards and conditions for the underground operation. Without such safety-minded and informed individuals, the committee was, for all intents and purposes, ineffectual.

There was a general feeling among the workforce that the committee and its underlying philosophy was, at best, taken lightly by Westray management. Capstick thought that the committee was merely established so that the mine could be viewed as having complied with the law.[175] Bonner told the Inquiry that the "health and safety committee was *going through the motions* of making it look like the company cared about safety."[176] Committee member Randy Facette shared their view – Westray management failed to respond to committee recommendations or to address obvious and visible safety problems:

> They would go on the walks with us just, I guess, make it look like we were actually participating in something, but other than that . . . I guess the biggest thing is that these people, like Roger Parry and Gerald Phillips, were seasoned, experienced miners with the know-how and the insight to see these problems but just chose to overlook them.[177]

Fraser Agnew understood that, at the beginning, the health and safety committee would be a mechanism by which the company and the workers could cooperatively make Westray a safer place. Agnew recalled that this was communicated by Phillips himself. Since the committee was formed around the same time as the union drive, Agnew was suspicious: "And I think it was more or less put into place because I believe the company . . . maybe figured if the safety committee got together and made a few changes that the union and the men would part ways."[178]

Not only did Westray management fail to regard the joint occupational health and safety committee as a constructive force, but management attempted to intimidate miners to prevent them from using the committee to voice their own safety concerns. Guptill said that he was hesitant to seek out committee members in the presence of Westray management:

> I didn't know anybody's name at that time or where I would go. I wouldn't do it above surface in deployment because either Roger or Gerald would be there watching me. And underground, I mean, it could take you hours to walk the mine asking, "Are you health and safety" and – I mean, as soon as you would ask the wrong person, it would have got back to them. But from what I know of occupational health and safety, it was non-existent at that mine.[179]

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175 Hearing transcript, vol. 42, p. 9384.

176 Hearing transcript, vol. 24, p. 4840. Emphasis added.

177 Hearing transcript, vol. 33, p. 7197.

178 Hearing transcript, vol. 35, p. 7730.

179 Hearing transcript, vol. 29, p. 6177.

Wayne Cheverie expressed similar concerns and feelings of distrust vis-à-vis Westray management:

> Some of the people who were appointed to the safety committee I felt I couldn't trust not to expose any concerns that I had about safety back to management, and therefore making me vulnerable to the tactics of management as far as intimidation and harassment.[180]

Wyman Gosbee tried to take his concerns about the lack of stonedusting to the committee. Despite his numerous complaints, Gosbee's concern was never addressed. He refused to take his complaint to Phillips or Parry for fear of being perceived and labelled a "complainer."[181]

The workforce was generally reluctant to approach the Westray committee, and workers were unwilling to approach Phillips or Parry directly. The evidence suggests also that underground workers were persistently discouraged by management from approaching the mine inspectors about safety violations underground. The Westray workforce had every right to speak directly with the inspectors. Section 29 of the *Occupational Health and Safety Act* provides as follows:

> **Accompaniment of officer during inspection**
> (1) Where an officer makes an inspection of a workplace pursuant to the powers conferred upon him pursuant to Section 28, *the employer shall give a committee member, or other person selected by the employees to represent them, the opportunity to accompany the officer* during his physical inspection of the workplace or any part or parts thereof.
>
> **Selection of employee by officer**
> (2) Where there is no committee member representing employees, the officer may select an employee or employees who shall accompany him during his physical inspection of the workplace or any part or parts thereof and during his physical inspection *the officer shall endeavour to consult with a reasonable number of employees*. [Emphasis added.]

In the transcript of the post-explosion dialogue between Roger Parry and Marvin Pelley referred to earlier in this chapter, Parry *claimed* to be in full support of direct contact between the inspectors and underground workers:

> **Roger** I purposely took the mines inspector on to each piece of equipment and then walked away. I left the mines inspector so he could talk himself because I never wanted it being said that people were being intimidated with me being there and felt that they couldn't talk to the mines inspector and I just left Albert [McLean] to talk with the guys which he did when he went down . . . He said I come down the mine and talk with the miners and nobody expresses concerns. Miners are very outspoken people and usually if they've got concerns it makes no difference whether you're there or I'm there or anybody else is there, if it needs to be said they'll say it but they

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180 Hearing transcript, vol. 21, p. 4093.

181 "I knew people that had went to them and brought up issues, and they were treated unfairly because of it" (Hearing transcript, vol. 25, pp. 5011–13).

> just stuck it back in their mind and maybe there was some intimidation in me being there. That's why I left the inspector there.[182]

Contrary to Parry's claims, testimony shows that he interfered with the direct and open communication lawfully required between workers and inspectors. Buddy Robinson testified that on the four or five occasions he saw inspector Albert McLean underground, Parry was always with him. Robinson did not believe that McLean had spoken to any of the miners, except himself. And when he did attempt to speak to McLean, Parry was always within earshot.[183] John Lanceleve testified that he would not speak with McLean for fear of losing his job. He then recounted an episode that illustrates the relationship between Westray management and the underground workers:

> We were just coming on shift, and he [Parry] said "There's a safety concern I'd like to speak yous [*sic*] about. . . . Some fucker took it upon himself to go to Department of Labour and report unsafe practices at the mine site." And he said "This won't be tolerated." He said "You have a health and safety committee here to deal with safety concerns." And he more or less jumped all over us that if he got wind of anyone going to health and safety that we wouldn't be employed there any more.[184]

Some workers had approached the inspectorate, but their attempts were to no avail. The Carl Guptill saga, reviewed in Chapter 12, Department of Labour, demonstrates the inspectorate's inaction. Robinson said that, on four or five occasions, he expressed his concerns to McLean about the roof and dust conditions, the qualifications of the engineers, and the non-flameproof diesel equipment underground. McLean did not respond to Robinson's concerns.[185] Robinson recalled phoning McLean at his home in Glace Bay one evening to voice his worries about Westray's underground. Robinson explained that the initiative for the phone call had come from a discussion he had had with Tom Reid, another miner. Robinson explained that Westray was mining 30 feet lower than it should, owing to an error in planning. As a result, the roof had a tendency to break and "crack something terrible. You almost thought it was going to come in behind you." Robinson said that Reid had been extremely upset about having to work in the area, and he had come to Robinson. Robinson discussed the Reid situation – among others – with McLean during an hour's conversation. Robinson spoke to McLean about the manner in which the mine was being operated – including the lack of a clear plan for the development of the mine, the lack of engineering expertise, the improper use of diesel equipment underground, and the presence of high methane in the mine.[186]

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182 Exhibit 120.243. To accept Parry's claim, I would have to reject the evidence of other relevant witnesses, and I am not going to do that.

183 Hearing transcript, vol. 30, p. 6470.

184 Hearing transcript, vol. 27, pp. 5521–22.

185 Hearing transcript, vol. 30, pp. 6337–41.

186 Hearing transcript, vol. 30, pp. 6337–42.

> And I asked Albert is there anything you can possibly do to change the venue [*sic*] on what's going on here. Because if somebody doesn't, I don't know what we're going to do, because we had absolutely no power to do anything. The management wouldn't listen to the men. They just went their own merry way when they were doing things.
>
> So our only recourse was Albert. . . . He [McLean] said his hands were tied. . . . I understood from that that if his hands were tied, our necks were in a noose because who else are we going to turn to? . . . I assume from that, that his superiors were telling him to lay off [Westray].[187]

Joint occupational health and safety committee members Facette, McNeil, and Mitchell also sought the support and assistance of the inspectorate – but their safety concerns were ignored. Mitchell testified to a meeting that the three of them had with McLean. They discussed the illegal welding underground, lack of miner training, prohibited use of diesel equipment, ventilation in the Southwest area, inexperienced foremen, and lack of stonedusting. Mitchell asked McLean if he'd been reading the committee's safety walk reports, since the same concerns were repeatedly expressed, with no response from management or the department. McLean "said he would look into it."[188] Mitchell said that that had been the fourth time he personally spoke to McLean. Facette also testified to that meeting, which he remembered had been at McLean's request. It took place at the mine and lasted about 45 minutes. Like Mitchell, Facette recalled that they had discussed a multitude of safety issues with McLean and had been explicit about their concerns – they conveyed a sense of urgency to McLean. Facette recalled McLean advising that he would get back to them. Facette said that he did not hear from McLean or see him again until after the Westray mine exploded (more than three months later).[189]

McLean's failure to react to the concerns expressed by the safety committee members, Guptill, Robinson, and other underground workers sent a clear message to miners – any attempts to report safety concerns to the Department of Labour were futile. Don Dooley said that this was the message received. Dooley testified that he was aware of the *Occupational Health and Safety Act* and the rights afforded an individual who reports unsafe work practices to the Department of Labour. He went on to say that, following the Guptill incident, he did not feel that the act offered him any protection in the event that he went to the department. Dooley described the impact of the Guptill episode: "It totally, totally destroyed my confidence in Albert McLean and the Department of Labour to protect me or any other individual that worked at Westray Coal."[190]

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187 Hearing transcript, vol. 30. pp. 6347.

188 Hearing transcript, vol. 31, pp. 6726–30.

189 Hearing transcript, vol. 33, pp. 7207–14.

190 Hearing transcript, vol. 36, p. 7979.

Finding

Westray's joint occupational health and safety committee was ineffective. It never functioned as the *Occupational Health and Safety Act* envisaged, and for that management must bear responsibility. Management actively discouraged a safety mentality on the part of the workforce and failed to respond to safety concerns raised by committee members.

The Union Drive

The hazardous underground conditions at Westray added impetus to the workers' attempt at unionization in January 1992. The union drive was unsuccessful. The testimony suggests two main reasons for the failure – intimidation by management and the inability to gain the support of surface workers.

On 3 January 1992, just days before the union vote was to take place, Gerald Phillips sent a memorandum to all Westray employees in relation to the certification drive. Phillips reminded employees of their right to vote and advised that the *Trade Union Act* afforded them protection from pressure and harassment by either employer or union. Phillips further advised: "The decision whether to unionize is to be made by the Employee without interference from the Employer."[191] Although Phillips's words may have been reasonable, sound, and fair, his actions flatly contradicted such an approach.

The testimony of Westray employees suggests that both Phillips and Parry attempted to intimidate workers who supported the United Mine Workers of America as their bargaining agent. Ed Estabrooks testified to a discussion with Phillips in which Phillips questioned him about his union activities on company time. According to Estabrooks, Phillips said, "'If this mine is unionized, I will shut this mine down . . . This mine will operate without a union.'"[192] Buddy Robinson commented on the reasons for the failure of the union drive. He testified that some employees simply did not want to be part of a union. He also spoke of intimidation by Westray management: "Roger Parry was telling some of the men that if they . . . got a union, the pay – whatever your pay level was, it would be cut. And I told the guys that whatever your pay level is now, that's where it stays; they can't cut your wages. It stays where it's at."[193]

The failure of the union drive at Westray eliminated another potential means by which Westray could have been made a safer place. A hazardous working environment, an ineffective health and safety committee, an unresponsive inspectorate, and a failed attempt at unionization clearly left the workers with few choices. One option for some workers was simply to walk out and leave Westray behind. For others, however, quitting the

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191 Exhibit 120.081.

192 Hearing transcript, vol. 24, pp. 4900–01. Although this discussion took place on 4 May 1992 during the second attempt at unionization, months after the January 1992 union drive, it is indicative of management's attitude towards the unionization of workers at Westray.

193 Hearing transcript, vol. 30, pp. 6432–33.

mine was not a financially viable option. The situation was exacerbated by the fact that workers who wished to leave Westray would be faced with yet another obstacle – the delay or denial of unemployment insurance.

Unemployment Insurance

Although this issue, in itself, is not fundamental to the Westray tragedy, it adds yet one more component to the predicament of underground workers at Westray. The evidence on this point is limited but clear – workers who intended to leave their employment at Westray would find no support in the unemployment insurance (UI) system.

Mike Wrice was employed by Westray from June to October 1991.[194] He quickly became concerned about the underground working environment, particularly the bad ground conditions and frequent rock falls. He expressed concerns about the accumulation of coal dust. In October 1991, he decided he could stay at Westray no longer. Wrice applied to collect unemployment insurance, explaining to the unemployment insurance office that he left Westray Coal owing to "unsafe conditions." In January 1992, Wrice appeared before the board of referees and again explained that he had been working in an unsafe environment, particularly in hazardous ground conditions. A representative of the company was also questioned by unemployment insurance officials and, as Wrice put it, "I guess between the company and myself they said that they more or less believed the company."[195] Wrice then attempted to contact the Department of Labour and gain its support. The department's response was that, as far as it was concerned, Westray Coal was meeting all provincial safety regulations. As a result, Wrice suffered a nine-week penalty period prior to receiving his first unemployment insurance cheque.

Bonner said that the conditions at Westray – "the gas, the dust, management's lax attitude toward safety, the roof falls. Generally everything"[196] – caused him to quit his job. When Bonner filed his unemployment insurance claim, however, he was told that he would be penalized for eight weeks. This was because Westray had just won a safety award, and a representative from the unemployment insurance office had toured the mine with Roger Parry and had determined it to be a safe workplace. The UI person had toured the mine in response to complaints of dangerous working conditions by numerous miners who wished to leave Westray. Following the UI office's assessment, Bonner decided to go back to Westray, hoping that conditions would improve. He felt this was his only choice, since he had relocated his family to New Glasgow, and no other employment opportunities were available.[197]

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194 It should be noted that Wrice worked at Westray Coal prior to June 1991 with Canadian Mine Development and Westray for a short time before returning in June.

195 Pre-hearing interview transcript (8 October 1992), p. 39.

196 Hearing transcript, vol. 24, pp. 4762–63.

197 Hearing transcript, vol. 24, pp. 4766–68.

Ed Estabrooks testified that, although he had considered quitting Westray, he was in a financial bind at the time:

Q. Was there ever a time when you considered quitting Westray?
A. Yes. I – from the day I went underground, I had a bad feeling of the mine itself. It would give me the willies to be underground. And every time I left deployment to proceed to the portal, I would say a prayer going down and "Amen" when I reached surface again.
. . .
Q. So did you ever contemplate quitting?
A. Yes. Yes, the last two months I would – I was having trouble sleeping with different odd nightmares and that of the place.
Q. This is while you were still working there?
A. Yes, it was.
Q. So why didn't you quit, Mr. Estabrooks?
A. I was in a financial bind at the time is the reason why I stayed.
Q. Did you have any other work to go to?
A. I did not.[198]

William MacCulloch, Westray's training officer, had answered inquiries from the UI office in relation to workers' complaints that Westray was unsafe. MacCulloch advised UI representatives that the underground workers' complaints had come from hard-rock miners who were not used to the conditions of an underground coal mine. He testified at the Inquiry:

Q. And what do you recall today that you responded?
A. That this was a natural reaction by hard rock miners who were used to much safer ground conditions than we had there.
. . .
Q. [Do] you recall getting inquiries from U.I.C., that men were saying they quit because the mine was not safe?
A. "Safe" by their definition, yes. And the explanation that I would identify is that what hard rock miners would consider safe and what a coal miner would consider safe are quite often two different –
Q. Was it only hard rock miners who were quitting?
A. Mostly.
Q. But there were coal miners who were quitting as well?
A. Were there? I don't –
Q. You don't know that?
A. I don't recall very many coal miners that quit, no.[199]

Clearly, his recollection did not reflect the situation. There were coal miners working underground at Westray who were aware that such conditions were not typical of a safe coal mine. Unfortunately, this was not accepted by the unemployment insurance office.

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198 Hearing transcript, vol. 24, pp. 4889–90.

199 Hearing transcript, vol. 41, pp. 9204–06. Despite his title, MacCulloch had no experience in coal mining. His job was strictly administrative, and he had few qualifications and next to no experience in training.

Production Bonus System

Westray management brought in a production bonus system effective 1 March 1992. Under this system, which involved different bonus percentages depending on work being done, workers could earn a bonus for average monthly production in excess of 500 tonnes per machine shift. Workers had a percentage of their bonus deducted if they missed work: a one-day absence meant a 25 per cent reduction; a two-day absence meant 50 per cent reduction. This bonus was in the end only paid for the month of March, since production in April did not reach the basic level required.

Workers had mixed reactions to the bonus, but for most the relationship to safety was clear. As Ted Deane commented, "[The] bonus system killed the safety."[200] When asked if the bonus system affected safety in the mine, Buddy Robinson commented: "[A]t the stage and the state that the mine was in, I don't think it made any difference"; he agreed that in his view safety conditions could not get worse.[201] Miner Tom MacKay spoke about the bonus system:

> A. I got one bonus cheque
> Q. What did you think of that?
> A. I wasn't too keen on that either because I figured the boys are going to start taking short cuts. . . . I figured the bonus that I got was that if I got out of there at night when my shift was over, if I got out of there –
> Q. That was your bonus.[202]

Professor Wilde analysed the financial effect of the bonus payments and reported that "as many as 14 of the 39 miners, who worked a minimum of 16 shifts in March 1992 and who were entitled to 100% of the bonus, received a productivity bonus in excess of $1000.00 over that month. For the same period of one month, the average bonus for employees who worked at least one shift and were no more than three days absent (i.e., 119 of 140 underground employees) amounted to $657.09."[203] Wilde commented that there is considerable literature on the effect of pay for production on safety, and that the reaction of Westray workers to the bonus system – rushing, taking shortcuts, not taking appropriate breaks – was not surprising. He was struck by the fact that the system implemented at Westray rewarded increased production at an accelerating rate. At the same time, the economic penalty in the bonus system created great pressure not to miss any shifts.

The picture that emerges from the testimony is one of a workforce taking great risks of workplace accidents as the result of three major factors acting in conjunction: the behaviour of management, the general economic conditions in the area, and the motivations of the miners themselves. Management was perceived by workers as focused on production at the expense of safety. The high rate of unemployment in the

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200 Department of Labour interview transcript, 9 June 1992 (Exhibit 94.2, p. 42).

201 Department of Labour interview transcript, 28 May 1992 (Exhibit 106.2, p. 38).

202 Department of Labour interview transcript, 3 June 1992 (Exhibit 101.2, p. 28).

203 Calculated from Exhibit 120.044, Wilde, "Risk Awareness," p. 6.

area meant that a miner quitting Westray faced the prospect of prolonged unemployment. According to Wilde, given these conditions, miners had two options in response to the risk of accident: stay with the mine, or resign. The miners clearly felt that these were the only two options because any attempt to change the views of management might get them fired. Similarly, workers perceived that expressing safety concerns to the mine inspector had no effect, and might also result in their being fired. In other words, any attempt to reduce the dangers of the job was felt to be ineffectual in reducing danger, as well as counterproductive in terms of employment. Thus, the benefits of acting in a safe way were perceived to be small and their potential costs high. Wilde reported that these conditions would be expected to lead to increased acceptance of risk. At the same time, the largely economic benefits of staying with the mine were high, and were enhanced by the introduction of the bonus system.

> Because of its nature, this scheme, which extended more than equal increases in income for equal increments in productivity, also led to an extraordinarily high level of accident risk acceptance.[204]

Colin Benner spoke critically of the bonus system at Westray and has made the point that safety issues have to be considered as part of any bonus system.[205] Various studies recently have examined the safety effects of various incentive systems for accident prevention and the benefits that ensued in terms of reduced days lost, lower workers' compensation insurance premiums, and, ultimately, increased production or profitability. Professor Wilde reported that experience shows that some of these programs have had greater success than others. The key ingredients in the successful programs seem to be: first, the incentive scheme has been developed in cooperation with the employees to whom it is addressed; second, both group safety performance and individual safety performance are rewarded; and third, all employees are included. If all employees, including management, take part, the safety culture in a company is enhanced.

Finding

It is clear from the evidence of the miners and from an outside expert's analysis of that evidence that the incentive bonus scheme based solely on productivity was not conducive to safety in the Westray workplace.

In the course of my research, including the several mine visits referred to elsewhere in this Report, it became obvious that safe mining is a critical element in productivity. Mine accidents cost dearly in productivity and it therefore follows that a safe mine is a more productive mine. This concept is also alluded to in the Burkett Report and in the title to that report, *Towards Safe Production*. It logically follows that incentives to promote

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[204] Wilde, "Accident Risk," p. 9.

[205] Hearing transcript, vol. 73, pp. 15975–78.

safe production, in the mine or elsewhere, not only result in a safe work environment but also benefit productivity. Production incentives, on the other hand, might not have the desired results if they ignore safety considerations.

RECOMMENDATION

9 **Incentive bonuses based solely on productivity have no place in a hazardous working environment such as an underground coal mine. Such schemes should be replaced, where practical, by safety incentives that incorporate three principles:**

(a) **The incentive plan should be developed cooperatively with the employees to whom it will be addressed.**
(b) **Both group safety performance and individual safety performance should be rewarded.**
(c) **All employees, whether underground or on surface – workers, supervisors, and middle managers – should be included.**

If properly instituted, such a safety incentive plan may well have its own productivity rewards.

Conclusion

The evidence before this Inquiry compels but one conclusion – the Westray operation defied the fundamental rules and principles of safe mining practice. Regardless of the theories, philosophies, and procedures that management espoused on paper, most notably in its employee handbook, it clearly rejected industry standards, provincial regulations, codes of safe practice, and common sense in the operation of the Westray mine. Management failed to adopt and effectively promote a safety ethic underground. Instead, management, through its actions and attitudes, sent a different message – Westray was to produce coal at the expense of worker safety. Westray's illegal, hazardous, and improper practices were not confined to one area of operation or one isolated occasion. Rather, Westray's dismissal of safety concerns penetrated every facet of the operation on a daily basis. Simply put, Westray management did not truly recognize that the promotion of a safe ethic and the espousal of safe practices would not jeopardize coal production, but enhance it. And it is to the misfortune of all Nova Scotians and the coal mining industry that this was the case.

Finding

Westray management, from the chief executive officer, Clifford Frame, and the mine manager, Gerald Phillips, down to the line supervisor, had a fundamental duty to instil in the underground worker a respect for safety beyond other considerations. Management could do this through training, by example, and with continued monitoring at all levels. In trivializing and ignoring safety concerns, Westray management was significantly derelict in its duty to the workforce and seemed actively to promote a disdainful and reckless attitude towards safe mining practices.

PART TWO

The Explosion

An Analysis of Underground Conditions