The Sunshine Mine Fire:

The Bureau of Mines' Investigation

On 14 February 1973 the U.S. Bureau of Mines issued its "Final Report of Major Mine Fire Disaster, Sunshine Mine . . . May 2, 1972" produced by a committee consisting of Roland V. Wilson (supervisory mining engineer), E. Levi Brake (mining engineer), and Robert E. Riley (mining engineer). All three had been active in the rescue and recovery effort, Wilson arriving on the afternoon of the fire from the bureau's Spokane office, and Brake and Riley joining on May 7 from its Phoenix and Salt Lake City offices. In its abstract, the report states:

It is not possible to single out any one fact as the chief cause for the large loss of life. However, the Bureau of Mines believes that the following major factors contributed to the severity of the disaster:

1. The emergency escapeway system from the mine was not adequate for rapid evacuation.

2. Top mine officials were not at the mine on the day of the fire and no person had been designated as being in charge of the entire operation. Individual supervisors were reluctant to order immediate evacuation or to make a major decision such as stopping the 3400 level fans.

3. Company personnel delayed ordering evacuation of the mine for about 20 minutes while they searched for the fire.

4. The series ventilation system used in the mine caused all persons inby [*sic*] the fire, which contaminated the main intake airways, to be exposed to smoke and carbon monoxide.

5. Most of the underground employees had not been trained in the use of the provided self[-]rescuers and had difficulty in using them. Some self[-]rescuers provided by the company had not been maintained in useable condition.

6. Mine survival training, including evacuation procedures. barricading, and hazards of gases, such as carbon monoxide, had not been given mine employees.

7. The emergency fire plan developed by the company was not effective. The company had not conducted evacuation drills.

8. Abandoned areas of the mine had not been sealed to exclude contaminated air from entering the ventilation airstreams.

9. The controls built into the ventilation system did not allow the isolation of No. 10 Shaft and its hoist rooms and service raises or the compartmentalization of the mine. Smoke and gas from this fire was thus able to move unrestricted into almost all workings and travelways.

These and many other factors involved in the disaster are discussed in detail in the Findings and

Analysis section of this report.

The Findings of the "Final Report," approved by the bureau's director:

Probable cause of the fire

The Bureau of Mines believes that spontaneous combustion of refuse near scrap timber was the probable cause of the Sunshine mi[n]e fire.

Causes of the Disaster

The Bureau of Mines believes the following factors contributed to the severity of the disaster:

1. Ineffectiveness of stench warning system.

2. Delay in beginning mine evacuation.

3. Ineffectiveness of the mine communication system.

4. Inadequacy of the emergency escapeway system.

5. Inadequacy of the emergency fire plan.

6. Use of a series ventilation system.

7. Failure to seal abandoned areas of the mine.

8. Failure to monitor the mine atmosphere.

9. Failure to construct incombustible ventilation bulkheads.

10. Lack of remote controls on major underground fans.

11. Failure to maintain self[-]rescuers in useable condition.

12. Failure to train underground employees in use of self[-]rescuers.

13. Failure to conduct mine survival training.

14. Failure to designate anyone as being in charge of the entire operation in the absence of top mine officials.

15. Inability to use No. 10 Shaft chippy hoist.

16. Death of the No. 10 Shaft hoistman.

17. Failure to make use of both cages on No. 10 Shaft double-drum hoists.

Shortly after he arrived at the mine on the afternoon of the fire, Roland V. Wilson, supervisory mining engineer from the bureau's Spokane office

issued Withdrawal Order No.1 at 3:30 p.m., May 2,1972, . . . [which] prohibited entry into the mine by any persons except those actively engaged in rescue or recovery work. Under this Order, rescue and recovery operations were subject to Bureau of Mines approval.

After the rescue and recovery ended, the Bureau of Mines required the company to develop

a proposal outlining mine improvements to be completed before Bureau of Mines Withdrawal Order No.1 could be annulled and the mine allowed to resume production. Joint discussions were held between company, State, union, and Bureau of Mines officials and all concurred upon the requirements of the company proposal.

Guidelines used in developing the reopening proposal were to:

1. Minimize fire hazards underground in all reasonable and practical ways.

2. Provide evacuation and escape facilities, plans, and training that would allow all underground crews to be assured escape or refuge in the event of a fire.

3. Provide a ventilation system offering maximum resistance to contamination by toxic fire gases.

4. Provide management support for an active safety and accident prevention program.

5. Eliminate hazards caused by the mine fire by permanently sealing and sandfilling [*sic*] the fire area. . . .

The report then listed fifteen projects necessary to fulfil these guidelines, followed by ten safety "programs" to be developed by the company. These programs included (parphrasing):

That one-hour self-rescuers to be carried by all underground;

That mandatory fire drills be required;

That carbon monoxide detectors be "readily available" for underground supervisors;

That emergency maps and escapeway postings be placed in all active areas;

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That summary fire plan procedures for supervisors and men be posted in all active areas;

That an emergency plan indicating the responsibilities of all surface and underground supervisors be adopted, with continual instruction.

That "more stringent and specific" fire-prevention controls be implemented;

That a new check-in, check-out system to account for personnel in the mine be implemented.

The two final programs had already been implemented at the time of the report:

The company has adopted a formal management policy and directive regarding safety at the Sunshine mine.

Training programs involving self-rescuer training, survival training, mine rescue training, first-aid training, accident prevention and new employees['] orientation have been inaugurated."

The report concludes:

All of the work projects and safety program items in the company reopening proposal and improvements recommended by the Bureau of Mines were completed before the Bureau of Mines Withdrawal Order No.1 was annulled December 8, 1972, except [for five items either in progress or awaiting completion of prerequisite projects].

Of course, the Sunshine fire had ramifications well beyond the mine itself or the Coeur d' Alene. The Federal Metal and Nonmetallic Mine Safety Act of 1966, in force at the time of the Sunshine disaster, established procedures for developing advisory and mandatory safety standards for such mines, increased safety training, required one annual inspection for underground mines, and granted federal inspectors the authority to issue citations or orders of withdrawal, such as the one Wilson had imposed on the Sunshine Mine. In July 1973, U.S. Secretary of the Interior Rogers Morton established the Mine Enforcement and Safety Administration, separate from the Bureau of Mines within his department, which assumed all health and safety oversight in mines. This, in the words of its successor agency, "to avoid any appearance of a conflict of interest between the enforcement of mine safety and health standards and the Bureau's responsibilities for mineral resource development."

The post-Sunshine reforms culminated when the U.S. Congress passed the Federal Mine Safety and Health Act of 1977. This mandated four annual inspections of all underground mines, stipulated elements of mandatory training for miners, and transferred oversight of health and safety in all U.S. mines to the U.S. Department of Labor, vesting that authority in a new agency, the Mine Safety and Health Administration.

James M. Day, *The Price of Silver: The Story of the Sunshine Silver Mine Disaster* (Carson City, NV: Bridger House Publishers, 2007), 29, 187; U.S. Bureau of Mines, "Final Report of Major Mine Fire Disaster, Sunshine Mine . . . May 2, 1972" (Alameda, CA: USBM, 1973), 3-4, 36, 66-7, 79-80, 82-3, 87, 90-3; U.S. Department of Labor, MSHA website: https://www.msha.gov/about/history