

Virginia Department of Mines, Minerals & Energy
Division of Mines

Accident Investigation Report

Underground Coal Mine

Struck By

Fatality Investigation Report

January 11, 2012

Consolidation Coal Company

Buchanan #1 Mine

Mine Index No. 11912AA

Buchanan County, Virginia

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Struck By
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Buchanan #1 Mine

On January 11, 2012, at approximately 7:40 pm, an employee of the Consol Energy Buchanan #1 Mine (Virginia Mine Index #11912AA) was seriously injured and later died from these injuries when he was struck by a 1 ½ inch water cut-off valve that burst under pressure. Joseph Saunders, tram operator, was making repairs to the water assembly which had been damaged by the piece of equipment that the tram crew was moving. Mr. Saunders was transported to the Bristol Regional Medical Center where he passed away on January 18, 2012. Mr. Saunders, age 44, had approximately 1 year and 8 months total mining experience with 25 weeks employment at the Consol Energy Buchanan #1 mine.

The Department of Mines, Minerals, and Energy's Division of Mines (DM) was conducting an inspection in another part of the mine at the time of the accident. John Brown, DM inspector, was quickly notified and immediately reported to the scene. Mark Hlywa, an inspector with the federal Mine Safety and Health Administration, was also in the mine and reported promptly to the scene of the accident and a joint investigation began immediately.

COMMENTARY

Consol Energy Buchanan #1 mine is located approximately six (6) miles from Oakwood, Virginia on Contrary Creek Road. The Buchanan #1 Mine is a large underground complex with 759 total employees and 694 underground employees. The mine operates in the Pocahontas #3 seam and averages seven feet of mining height.

On Wednesday, January 11, 2012, the Buchanan Mine was moving a Freedom Car (battery powered shuttle car) by rail from the Page Portal Service Shaft to the longwall development section 21 Right. The job began with the day shift crew and was to continue until completed. During the course of their shift, the day shift crew was able to move the equipment from the service shaft to 8 Left on 4 North Mains where it was parked for the evening shift to take over. The day shift employees stated that during the move they had shifted the to avoid obstacles and even broken one fire valve themselves but did not encounter any problems that they thought were out of the ordinary for such a large piece of equipment. According to statements of persons interviewed, it was not unusual for a crew to have to shift items from side to side or temporarily remove obstacles (such as fire valves) in order for an oversize load to clear. They also stated that move crews would often carry tools and spare parts necessary to make repairs to water lines and valves to prepare for the possibility that some get broken during the move.

Evening Shift Foreman David Semones assigned the task of continuing to move the Freedom Car from 8 Left to 21 Right to Foreman Greg Addington and Tram Operators Joe Saunders and David Greene. Once the shift change traffic had cleared, the men proceeded with Mr. Greene operating the lead tram, Mr. Saunders

operating the tail tram, and Mr. Addington riding in the tail tram with Mr. Saunders to help watch for clearance issues.

The move crew proceeded up 4 North Mains and along 3 East Mains. When they reached break 51 on 3 East, Mr. Semones contacted Mr. Addington to ask how they were doing and was told that they were moving slowly but were not experiencing any problems. Mr. Addington and Mr. Greene both stated in their interviews that they did not encounter any problems until they reached break 61 on 3 East.

As the crew proceeded through the switch at break 61, lead tram operator David Greene spotted a problem. A rock dust bin with a fire suppression system was installed in the side track at break 61 and there was very little clearance as the Freedom Car was passing the waterline connections. The crew attempted to ease by but apparently a wide part of the Freedom Car that they could not see impacted the water assembly and separated it. As water rushed from the open line, the crew pulled far enough ahead to get away from the spray. Mr. Greene closed a water cut-off valve at break 66, Mr. Saunders closed a cut-off valve at break 58 $\frac{3}{4}$ and the two met at break 62 where they closed another cut-off valve on a crossover pipe. The crossover pipe connected the 6" line running in the belt and track entry with a 10" main supply line located in the adjacent entry. Once the water supply was cut off the men immediately began making repairs and Mr. Addington contacted Mr. Semones to inform him of the problem. The crew did not have any spare parts with them so they first tried to determine the extent of the damage and what parts, if

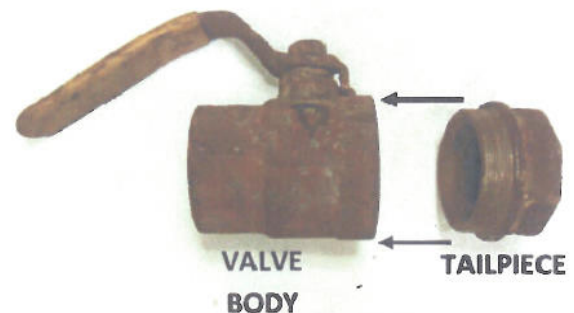


Figure 1

any, would be needed. They found that the impact had separated a threaded coupling on a 1 ½ inch brass cut-off valve (Figure 1). The tailpiece of the valve had been left attached to the steel waterline on the ground. The valve body remained attached to the water manifold that had been installed to provide a connection for the rockdust bin fire suppression system and fire outlet for the beltline. To the men, there were no obvious signs that the valve could not be reconnected so they threaded the manifold back onto the tailpiece of the separated valve. Mr. Greene stated that after he had tightened it by hand, Mr. Saunders

tightened it some more with a 18" pipe wrench. The final connection that needed to be made was for the rockdust bin fire suppression system. Figure 2 shows the assembly after it



has been reinstalled during the investigation. According to witnesses, this is how it looked as Mr. Saunders attempted to make the final connection. As the men were working, a small amount of water continued to flow from the open connection. The men assumed that it was just water draining from the pipe because it had no apparent pressure and once the 1 ½" valve had been reconnected, they closed it to stop the flow. However, this was not the case. The 6" valve on the crossover line at break 62 was not fully closed and bypassing into the line the men were working on and as soon as the 1 ½" valve was closed, pressure began to build.

Witnesses estimated that 5-10 minutes after the valve was closed, the manifold blew apart again at the same connection and struck Mr. Saunders in the forehead as he knelt over the assembly to make the final connection. The crew immediately began administering first aid and making arrangements to transport Mr. Saunders as quickly as possible. The accident occurred at approximately 7:40 pm on January 11, 2012. Mr. Saunders was transported to Bristol Regional Medical Center where he passed away as a result of his injuries on January 18, 2012.

STATEMENTS FROM MINE PERSONNEL AND OTHER FACTORS

Statements from mine personnel interviews and other factors determined during the investigation revealed the following:

1. There were nine employees located near Mr. Saunders at the time of the accident however none actually saw the water manifold strike him. Some were not looking directly at him and the ones that were focused on the work he was doing with his hands. When the valve failed, there was a large burst of water and when the men opened their eyes Mr. Saunders lay injured.
2. It was considered common knowledge by the employees that the main waterlines held high pressures and needed to be respected.
3. Moving oversize equipment was a complicated task at the Buchanan Mine. The loads often had to be shifted back and forth due to clearance issues and it was not unusual to damage things such as waterlines.
4. This was the third Freedom Car that was moved into the Buchanan Mine. A Freedom Car is an electric shuttle car that has been converted to run on batteries.
5. The rockdust bin and the associated fire suppression system had only been installed in the 6 Right sidetrack for a few months.
6. While the broken valve was being repaired there was a small flow of water from the opening that everyone assumed was just the water left in the line draining out.
7. Once the 1 ½" valve had been put together, Mr. Saunders turned it off to stop the flow while they completed repairs.
8. Immediately after the valve blew apart and injured Mr. Saunders, the flow returned to only a small amount.

PHYSICAL FACTORS

1. Ample clearance was not provided for the Freedom Car to be moved along the belt/track way. As the equipment was being moved, it struck a 1 ½" fire valve located along the travel way. During the investigation the water assembly was reinstalled in the same position it was located before the accident and the Freedom Car (which had not been moved from the scene or moved on its carrier-Figure 3) was pulled through the area in the same manner that it was being transported. Figure 4 shows how the newly installed battery compartment on the Freedom Car contacted the water assembly during the recreation. These findings correlate the statements of tram operator David Greene. He stated that as the car was being pulled through the area, he could only see as far as the wheel unit but once it cleared he thought it would be ok.

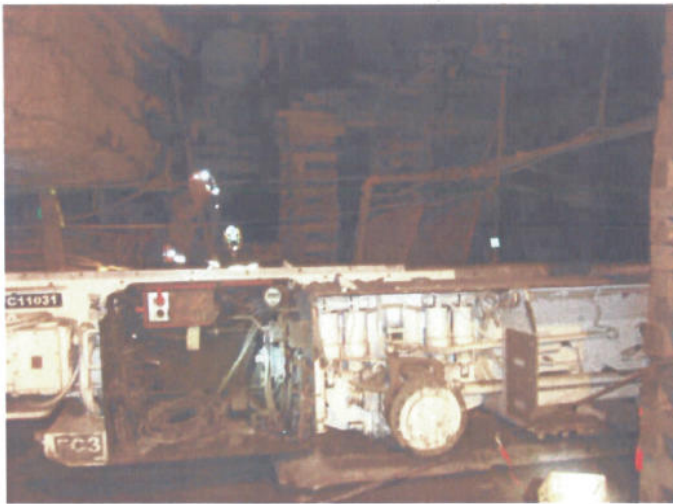


Figure 3



Figure 4

- The water pressure was measured at the accident scene and found to be approximately 850 psi. This measurement was taken the day following the accident with production idled. There were other activities going on in the mine but the measurement taken was basically a static pressure. (Figure 5)



Figure 5

- The valve that was impacted and failed was a 1-1/2 inch bronze ball valve, model BA-100, two-piece, standard port, and was manufactured by Milwaukee Valve Company, Inc. The ball valve had a listed maximum allowable working pressure of 600 psig WOG (Water Oil Gas) and 150 psig SWP (Steam Working Pressure). The ball valve had female NPT (National Pipe Taper) threads on the inlet and outlet of the valve. Figure 6 shows the valve in question and a new valve of the same model from the same manufacturer.

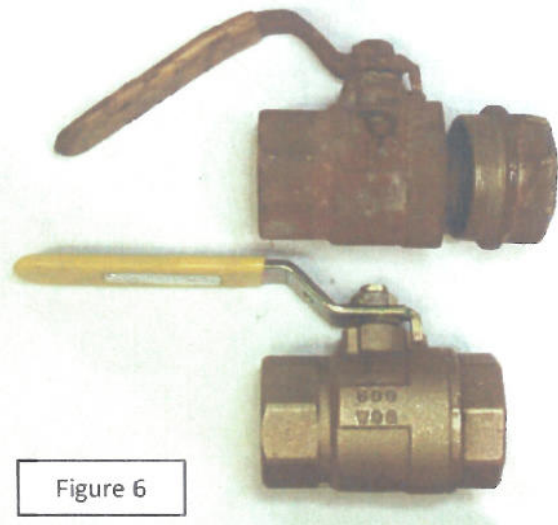


Figure 6

4. The 6" cut-off that was located on the cross over pipe and failed to close properly was a Series 721 six inch ball valve constructed of ductile iron and manufactured by Victaulic (Figure 7).

The valve was designed for 800 psig WOG service with reinforced tetrafluoroethylene (TFE) seats. The valve had an end to end dimension of approximately 10 inches, grooved connections, the outside diameter was approximately 8 inches, and the valve

had a manufacturer's listed weight of 75 pounds. There was some foreign material buildup on the fully closed side of the valve stop. The material appeared to be coal dust and rock dust that had adhered to surfaces between the valve stem and valve stop. The valve easily closed to the point where the valve stem contacted the material buildup on the valve stop and would not close further. Figure 8 illustrates the closest approximation of the

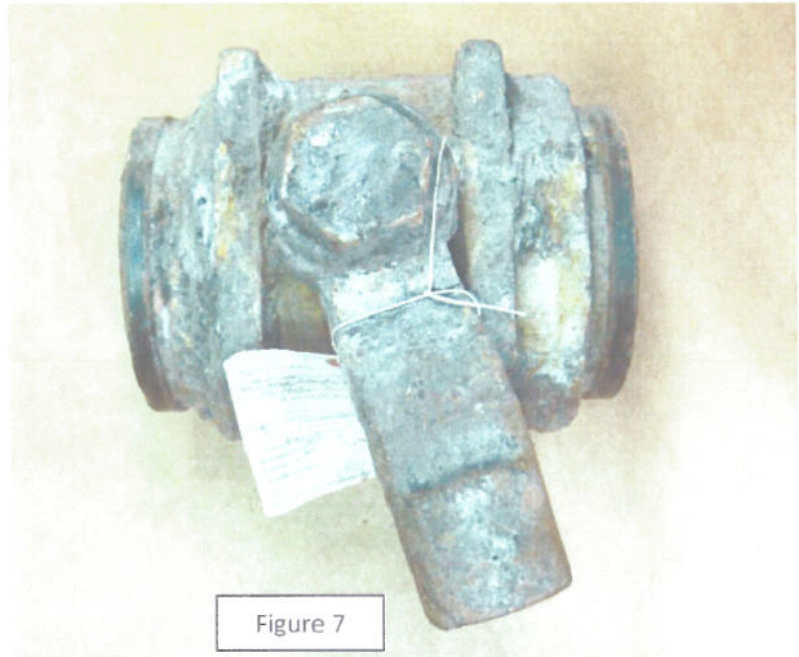


Figure 7

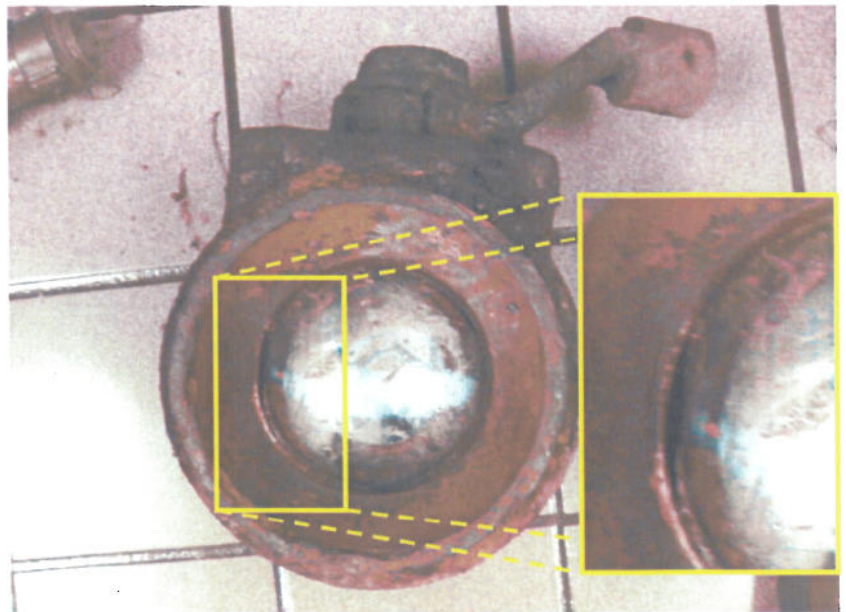


Figure 8

opening that investigators believe existed given the amount of material that was preventing the valve from fully closing.

CONCLUSIONS

The Department of Mines, Minerals, and Energy's Division of Mines (DM) was conducting an inspection in another part of the mine at the time of the accident. John Brown, DM inspector, was quickly notified and immediately reported to the scene. Mark Hlywa, an inspector with the federal Mine Safety and Health Administration, was also present in the mines and reported to the scene of the accident and a joint investigation began immediately. The investigation revealed several factors that contributed to the accident:

- Ample clearance was not provided for the Freedom Car to be moved along the belt/track way. As the equipment was being moved, it struck a 1 ½" fire valve located along the travel way. Statements from mine personnel indicate that large pieces of equipment could not be moved through the mine without repositioning the load several times to avoid obstacles and even with this information it was still not unusual to damage items such as waterlines. Repositioning the obstacles that caused the close clearances would have allowed these loads to be transported without damage thus eliminating the need for repairs and further exposure of the miners.
- The 1 ½" brass valve used in the water assembly was not suitable for the pressures that were present in the water system. While the valves are designed and tested to higher pressures, once safety factors are taken into account, the ball valve had a listed maximum allowable working pressure of 600 psi. The water pressure was measured at the accident scene and found to be approximately 850 psi. These valves were in wide use at the Buchanan Mine. Their design specifications above the rated pressure had allowed them to be used for many years. It was the damage to the threads of the coupling that caused the valve to fail. When the Freedom Car impacted the assembly, the threaded pieces were "stripped" apart. This damage was not apparent to the men making the repairs but had weakened the valve to the extent that it was no longer able to contain the pressure. The Milwaukee

Valve Operation Guide states that “repair or replacement of two piece ball valves internal parts is not recommended. Damage can occur to the body and tailpiece during disassembly that would make the valve inoperable.” Such damage is almost guaranteed when the valve is forcefully broken apart. If the damaged valve would have not been repaired and reused the second failure that injured Mr. Saunders likely would not have occurred.

- The 6” cut-off valve on the crossover pipe was not maintained in a usable and operative condition. The buildup of material on the exterior of the valve prevented the handle from moving to the fully closed position. This allowed a small opening in the valve to pressurize the pipe while Mr. Saunders was working on it. In addition, these repairs were being made adjacent to a running conveyor belt and the noise from the conveyor would have made it very difficult to hear whether or not the valve was bypassing. If this valve had been operating properly, the damaged pieces would not have been pressurized until repairs were completed and everyone was in a safe position.

ENFORCEMENT ACTIONS



ACCIDENT INVESTIGATION

Company Name: CONSOLIDATION COAL COMPANY			Mine Name or Number: BUCHANAN MINE #1	Report Date: 9/13/2012	Mine Index Number: 11912AA
Address: P.O.BOX 230			Location: CONTRARY		MSHA ID Number: 44-04856
City: MAVISDALE	State: VA	ZIP: 24627	County: BUCHANAN	Office Phone Number: (276)498-6900	Mine Phone Number: (276)498-6900
Person with Overall Responsibility: BRETT HOLBROOK			Person in Charge of Health and Safety: BRETT HOLBROOK		
Investigated: 1/11/2012, 1/12/2012, 1/13/2012, 1/17/2012, 1/19/2012, 1/20/2012, 2/2/2012, 2/9/2012, 8/28/2012, 9/6/2012, 9/7/2012, 9/13/2012					

Notified by: BRETT HOLBROOK Date: 1/11/2012 Time: 08:03 PM
 Accident Date 1/18/2012 - Id:TAR0013227 Accident Time 04:00 PM Shift 2
 Foreman in Charge GREGORY ADDINGTON Certification Number 76186
 Equipment Involved: Brookville Locomotive, Track Equipment Carrier, Phillips Freedom Car
 Was scene disturbed? No

Injured Party		Type of injury <u>SERIOUS PERSONAL INJURY</u>		Fatality Date <u>1/18/2012</u>	
Name of injured <u>JOE EDWARD SAUNDERS</u>		Regular occupation <u>UTILITY MAN-UGF</u>		Occupation At time of accident <u>TRAM OPER-UGF</u>	
Address <u>3740 NEW HOPE ROAD, PRINCTON WV 24740</u>		Telephone number <u>304 425-2863</u>		Date of Birth <u>9/15/1967</u>	
Family status <u>Married</u>		Dependents <u>2</u>		Mining Experience:	
Total <u>1 YR 8 M</u>		With present company <u>6 MTHS</u>		Experience in occupation when injured <u>3 MTHS</u>	
Classification <u>EXPLODING VESSEL</u>					
Extent of injuries <input type="checkbox"/> Eyes <input checked="" type="checkbox"/> Head <input type="checkbox"/> Arm <input type="checkbox"/> Foot <input type="checkbox"/> Leg <input type="checkbox"/> Back <input type="checkbox"/> Other. Specify					

Location of Accident: 3 East Mains belt/track entry at Crosscut No. 61

Brief description of Accident:

The mine employee sustained severe head injuries when he was struck by a fire fighting water valve that was unexpectedly disengaged and propelled under pressure following reinstallation, during repair of a damaged water supply system, located at Crosscut No. 61 in the 3 East Mains belt / track entry. The accident occurred on the second shift on January 11, 2012 and was initially investigated as an accident involving serious personal injury. The accident victim passed away on January 18, 2012, while receiving medical treatment at the Bristol Regional Medical Center, Bristol, TN. A formal fatal accident investigation report will be provided at a later date.

Recommendations: See formal fatal accident investigation report.



COMMONWEALTH OF VIRGINIA
DEPARTMENT OF MINES, MINERALS AND ENERGY
DIVISION OF MINES
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TAR0013229

Action Taken: Preventative measures and corrective action were implemented immediately including safety meetings held with the mine personnel, Special Written Instructions issued by the Division of Mines and approved actions plans addressing safe work procedures for conducting work associated with high pressure water systems and track equipment moves.

RATLIFF, TERRY A., Inspector / Specialist



ORDER OF CLOSURE

Company Name: CONSOLIDATION COAL COMPANY

Mine Name/Number: BUCHANAN MINE #1

Mine Index: 11912AA

VIOLATION/CO NUMBER: TAR0013231	INSPECTION NUMBER: TAR0013229	ISSUED: 1/12/2012 08:15 AM	
PERSON WITH OVERALL RESPONSIBILITY: BRETT HOLBROOK		SECTION OF VIRGINIA MINING LAW: 45.1-161.91.A.(ii), REF. 45.1-161.91.A.(ii)	
SERVED TO: BRETT HOLBROOK		DUE:	CORRECTED:

CONDITION(Y)\PRACTICE(N): A serious accident occurred at the referenced mine on the second shift on January 11, 2012 involving an employee who sustained severe head injuries as a result of being struck by a dislodged fire fighting water cut off valve while in the process of repairing the water valve system, located at crosscut No. 61 in the 3 East Mains belt - track entry. A verbal order of closure was issued to control the scene of the accident at approximately 9:15 p.m. on January 11, 2012, by John E. Brown, Division of Mines. The work area and equipment associated with the accident will remain undisturbed pending investigation.

A serious accident has occurred at the mine, as may be necessary to preserve the scene of such accident during the investigation of the accident.

AREA/EQUIPMENT: 3 East Mains belt - track entry / work area and equipment associated with the accident

ACTION TO CORRECT:

RIGHT TO REVIEW OF CLOSURE ORDER UNDER SECTION 45.1-161.91D

The issuance of a closure order shall constitute a final order of the Department, and the owner or operator of the mine shall not be entitled to administrative review of such decision. However, the owner or operator of any mine or part thereof for which a closure order has been issued may, within ten (10) days following the issuance of the order, bring a civil action in the circuit court of the city or county in which the mine, or the greater portion thereof, is located for review of the decision.


RATLIFF, TERRY A, INSPECTOR/SPECIALIST



COMMONWEALTH OF VIRGINIA
 DEPARTMENT OF MINES, MINERALS AND ENERGY
 DIVISION OF MINES
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TAR0013232

ORDER OF CLOSURE - MODIFY

Company Name: CONSOLIDATION COAL COMPANY

Mine Name/Number: BUCHANAN MINE #1 **Mine Index:** 11912AA

VIOL/CO NUMBER: TAR0013231	ACTIVITY NUMBER: TAR0013232	ACTIVITY: 1/12/2012 06:00 PM	INSPECTION NUMBER: TAR0013229
PERSON WITH OVERALL RESPONSIBILITY: BRETT HOLBROOK		ACTIVITY TYPE: MODIFY	
SERVED TO: BRETT HOLBROOK		EXTENDED DUE DATE: 1/12/2012 06:00 PM	

CONDITION/PRACTICE: Order of Closure No. TAR0013231 is modified to allow normal travel on the trackway at the affected area. An action plan was approved addressing safety precautions to be taken for continuing the equipment move of the Freedom Car which was being moved when the fire fighting valve was damaged at crosscut No. 61 on the 3 East Mains belt / track entry. The Freedom Car will be moved from its current location to the designated 21 Right Section. An action plan addressing additional measures will be required before similar oversized equipment moves are permitted.



 RATLIFF, TERRY A., INSPECTOR/SPECIALIST



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TAR0013923

ORDER OF CLOSURE - CORRECT

Company Name: CONSOLIDATION COAL COMPANY

Mine Name/Number: BUCHANAN MINE #1 Mine Index: 11912AA

VIOL/CO NUMBER: TAR0013231	ACTIVITY NUMBER: TAR0013923	ACTIVITY: 8/28/2012 02:15 PM	INSPECTION NUMBER: TAR0013229
PERSON WITH OVERALL RESPONSIBILITY: BRETT HOLBROOK		ACTIVITY TYPE: CORRECT	
SERVED TO: BRETT HOLBROOK		CORRECTED DATE: 8/28/2012 02:15 PM	

ACTION TO CORRECT: The underground accident scene investigation and subsequent personnel interviews were completed on February 9, 2012. The accident investigation report will be provided pending completion of the formal fatal accident investigation report. The DM accident investigation report is presently held pending the MSHA fatal accident investigation final report.


 RATLIFF, TERRY A., INSPECTOR/SPECIALIST



SPECIAL WRITTEN INSTRUCTIONS

Company Name: CONSOLIDATION COAL COMPANY			Mine Name or Number: BUCHANAN MINE #1	Date: 1/19/2012	Mine Index Number: 11912AA
Address: P.O.BOX 230			Location: CONTRARY		MSHA ID Number: 44-04856
City: MAVISDALE	State: VA	ZIP: 24627	County: BUCHANAN	Office Phone Number: (276)498-6900	Mine Phone Number: (276)498-6900
Person with Overall Responsibility: BRETT HOLBROOK		Person in Charge of Health and Safety: BRETT HOLBROOK		Time of issuance: 07:30 AM	Inspection #: TAR0013229

PERSONS SHALL NOT BE PERMITTED TO WORK IN THE FOLLOWING AREA OF THE MINE AND THE AREA WILL REMAIN UNDISTURBED UNTIL AN INVESTIGATION IS COMPLETED:

AREA AFFECTED: Entire Mine

REASON(S):

The accident investigation initiated in response to the January 11, 2012 serious accident involving a failed firefighting water valve has warranted the issuance of the following special written instructions:

1. A safety meeting is to be held with all mine personnel to review potential hazards associated with the mine's high pressure water supply system(s) prior to the next scheduled work shift. Documentation of this review will be provided.
2. Prior to performing work on the mine's water supply system, mine personnel will be trained in safe procedures for conducting installation, handling or repair of the mine's water supply systems including but not limited to firefighting water valves, installation and removal of water lines, waterline couplings, cut-off valves, etc.
3. All work associated with the water supply system will only be conducted under the direct supervision of a certified mine foreman who is trained, knowledgeable and experienced with the water supply system and is skilled in the safe procedures necessary for performing such work.
4. The special written instructions will remain in effect until an action plan addressing safe work procedures with respect to managing the mine's water supply system is developed and approved by the Division of Mines.

"45.1-161.14D. No operator, agent, or certified person shall knowingly permit any person to work in any part of a mine in violation of written instructions issued by a mine inspector, pursuant to the Mine Safety Act of Virginia.


 RATLIFF, TERRY A., INSPECTOR/SPECIALIST



NOTICE OF VIOLATION

Company Name: CONSOLIDATION COAL COMPANY

Mine Name/Number: BUCHANAN MINE #1 **Mine Index:** 11912AA

VIOLATION/CO NUMBER: TAR0013976	INSPECTION NUMBER: TAR0013229	ISSUED: 9/13/2012 08:15 AM	
PERSON WITH OVERALL RESPONSIBILITY: BRETT HOLBROOK		SECTION OF VIRGINIA MINING LAW: 45.1-161.135.F.	
SERVED TO: BRETT HOLBROOK		DUE: 9/13/2012 08:15 AM	CORRECTED: 9/13/2012 08:15 AM

CONDITION(Y)PRACTICE(N): An accident investigation initiated at the referenced mine on January 11, 2012, determined that ample clearance was not provided at crosscut No. 61 on the 3 East Mains trackway along the conveyor where equipment being transported. A firefighting water valve system installed along the conveyor line adjacent to the trackway was damaged by the equipment moving on the track. The firefighting equipment was being repaired when the accident occurred. Interviews conducted with mine personnel associated with the accident revealed that ample clearance is not provided at a number of similar locations along conveyor lines and is often impacted during transport of oversized equipment.

Ample clearance shall be provided (i) at conveyor loading heads, (ii) at conveyor control panels, and (iii) along conveyor lines.

AREA/EQUIPMENT: 3 East Mains / crosscut No. 61

ACTION TO CORRECT: An action plan was approved on January 27, 2012 and implemented addressing safety precautions that will be taken when moving equipment along the trackway underground. Corrective measures also included re-routing and/or re-installing water fire fighting valves/ waterlines and other obstructions to provide ample clearance along the trackway at a number of locations. The action plan is required to be reviewed during New Miner Training and as part of the Annual Re-Training conducted for all employees.

RIGHT TO APPEAL NOTICE OF VIOLATION UNDER SECTION 45.1-161.90D

This Notice of Violation shall be subject to review by the applicable court or agency, if within twenty (20) days following its issuance the person to whom the Notice of Violation has been issued appeals its issuance by notifying the Department in writing that he intends to contest its issuance to:

Chief, Division of Mines, P.O. Drawer 900, Big Stone Gap, Va. 24219

The Department shall conduct informal conference or consultation proceedings pursuant to 9-6-14-11 of the Administrative Process Act, unless the person and the Department agree to waive such a conference or proceeding to go directly to a formal hearing. If such a conference or proceeding has been waived or if such a conference or proceeding has failed to dispose of the case by consent, the Department shall conduct a formal hearing pursuant to 9-6-14-12 of the Administrative Process Act. The formal hearing shall be presided over by a hearing officer pursuant to 9-6-14-13 of the Administrative Process Act, who shall recommend findings and an initial decision, which shall be subject to review by the Department. Any party aggrieved by and claiming unlawfulness of the decision shall be entitled to judicial review pursuant to Article 4 of 6-14-15 et seq. of the Administrative Process Act.


RATLIFF, TERRY A., INSPECTOR/SPECIALIST



NOTICE OF VIOLATION

Company Name: CONSOLIDATION COAL COMPANY

Mine Name/Number: BUCHANAN MINE #1 **Mine Index:** 11912AA

VIOLATION/CO NUMBER: TAR0013977	INSPECTION NUMBER: TAR0013229	ISSUED: 9/13/2012 08:15 AM	
PERSON WITH OVERALL RESPONSIBILITY: BRETT HOLBROOK		SECTION OF VIRGINIA MINING LAW: 45.1-161.200.E.	
SERVED TO: BRETT HOLBROOK		DUE: 9/13/2012 08:15 AM	CORRECTED: 9/13/2012 08:15 AM

CONDITION(Y)\PRACTICE(N): An accident investigation initiated at the referenced mine on January 11, 2012, determined a damaged firefighting water valve was immediately re-installed after being damaged and dislodged during an equipment move. The firefighting valve, located at crosscut No. 61 in the 3 East Mains belt / track entry, was damaged and dislodged at a threaded connection as a result of being struck by a unit of oversized equipment being transported on the track. The Milwaukee Valve Operation Guide states that "repair or replacement of two piece ball valves internal parts is not recommended. Damage can occur to the body and tailpiece during disassembly that would make the valve inoperable."

All fire-fighting equipment shall be maintained in a useable and operative condition. Chemical extinguishers shall be examined every six months and the date of the examination shall be indicated on a tag attached to the extinguishers.

AREA/EQUIPMENT: 3 East Mains / crosscut No. 61

ACTION TO CORRECT: Special Written Instructions were issued on January 19, 2012, implementing management controls and safe work procedures for performing work on high pressure water supply lines underground and requiring an action plan be submitted for approval by the Division of Mines to address further details of safe work procedures to be followed for this type of work. The action plan was approved on February 3, 2012 and implemented addressing the safe work procedures for installing or changing out water valves, water line and components. The action plan was required to be reviewed during New Miner Training and as part of the annual re-training conducted for all employees.

RIGHT TO APPEAL NOTICE OF VIOLATION UNDER SECTION 45.1-161.90D

This Notice of Violation shall be subject to review by the applicable court or agency, if within twenty (20) days following its issuance the person to whom the Notice of Violation has been issued appeals its issuance by notifying the Department in writing that he intends to contest its issuance to:

Chief, Division of Mines, P.O. Drawer 900, Big Stone Gap, Va. 24219

The Department shall conduct informal conference or consultation proceedings pursuant to 96-1411 of the Administrative Process Act, unless the person and the Department agree to waive such a conference or proceeding to go directly to a formal hearing. If such a conference or proceeding has been waived, or if such a conference or proceeding has failed to dispose of the case by consent, the Department shall conduct a formal hearing pursuant to 96-1412 of the Administrative Process Act. The formal hearing shall be presided over by a hearing officer pursuant to 96-1411 of the Administrative Process Act, who shall recommend findings and an initial decision, which shall be subject to review by the Department. Any party aggrieved by and claiming unlawfulness of the decision shall be entitled to judicial review pursuant to Article 4 of 96-1415 et seq. of the Administrative Process Act.



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TAR0013977

RATLIFF, TERRY A. INSPECTOR/SPECIALIST



NOTICE OF VIOLATION

Company Name: CONSOLIDATION COAL COMPANY

Mine Name/Number: BUCHANAN MINE #1

Mine Index: 11912AA

VIOLATION/CO NUMBER: TAR0013978	INSPECTION NUMBER: TAR0013229	ISSUED: 9/13/2012 08:15 AM	
PERSON WITH OVERALL RESPONSIBILITY: BRETT HOLBROOK		SECTION OF VIRGINIA MINING LAW: 45.1-161.200.E.	
SERVED TO: BRETT HOLBROOK		DUE: 9/13/2012 08:15 AM	CORRECTED: 9/13/2012 08:15 AM

CONDITION(Y)\PRACTICE(N) : An accident investigation initiated at the referenced mine on January 11, 2012, determined that the firefighting water valves installed in the mine were not suitable for the water pressures of the underground water supply system. The water pressure measured in the 6-inch water supply line delivering water to the firefighting water valve measured 850 psi. The firefighting water valve is rated at 600 psi maximum water pressure according to the Milwaukee Valve Corporation manufacturer.”

All fire-fighting equipment shall be maintained in a useable and operative condition. Chemical extinguishers shall be examined every six months and the date of the examination shall be indicated on a tag attached to the extinguishers.

AREA/EQUIPMENT: 3 East Mains / crosscut No. 61

ACTION TO CORRECT: The referenced firefighting water valves installed in the mine were replaced with water valves suited for the existing water pressures of the underground water supply system.

RIGHT TO APPEAL NOTICE OF VIOLATION UNDER SECTION 45.1-161.90D

This Notice of Violation shall be subject to review by the applicable court or agency, if within twenty (20) days following its issuance the person to whom the Notice of Violation has been issued appeals its issuance by notifying the Department in writing that he intends to contest its issuance, to:

Chief, Division of Mines, P.O. Drawer 900, Big Stone Gap, Va. 24219

The Department shall conduct informal conference or consultation proceedings pursuant to 9-6-14.1 of the Administrative Process Act, unless the person and the Department agree to waive such a conference or proceeding or proceeding to go directly to a formal hearing. If such a conference or proceeding has been waived, or if such a conference or proceeding has failed to dispose of the case by consent, the Department shall conduct a formal hearing pursuant to 9-6-14.12 of the Administrative Process Act. The formal hearing shall be presided over by a hearing officer pursuant to 9-6-14.14.1 of the Administrative Process Act, who shall recommend findings and an initial decision, which shall be subject to review by the Department. Any party aggrieved by and claiming injunctive relief of the decision shall be entitled to judicial review pursuant to Article 4-19, 6-14.15 et seq.) of the Administrative Process Act.

RATLIFF, TERRY A., INSPECTOR/SPECIALIST



Division of
Mines
3405 Mountain Empire Road
Post Office Drawer 900
Big Stone Gap, Virginia 24219-0900
(276) 523-8100 FAX (276) 523-8243
www.dmine.virginia.gov

COMMONWEALTH OF VIRGINIA

Department of Mines, Minerals and Energy

Division of Mines

3405 Mountain Empire Road

Post Office Drawer 900

Big Stone Gap, Virginia 24219-0900

(276) 523-8100 FAX (276) 523-8243

www.dmine.virginia.gov

January 24, 2012

Mr. Brett Holbrook
Consolidation Coal Company
Post Office Box 230
Mavisdale, Virginia 24627

Dear Mr. Holbrook:


RE: *Buchanan Mine #1, DM Mine Index No. 11912AA*
Action Plan

Your Action Plan, received today, January 24, 2012, regarding installation and removal procedures on pressurized water lines at the referenced mine, has been reviewed and approved. The approved plan will be reviewed during all New Miner Training and as part of annual retraining for all employees.

A copy of the approved plan is enclosed and must be reviewed immediately with all work related mine personnel. Please maintain a copy of the approved plan at the mine for review by representatives of the Division of Mines or other interested parties.

Please contact this office at 276-523-8229 if you have any questions or if we can be of further assistance.

Sincerely,


M. Randy Moore, Chief
Division of Mines

djm
Enclosure
c: *bsg4.dm.plans.approved.lebanon.11912AA*



Consolidation Coal Company

Buchanan Mine #1

P.O. Box 230

Mavisdale, Virginia 24627

Phone: (276) 498-6927

Fax: (276) 498-6904

email: brettholbrook@consolidation.com

January 24, 2012

Randy Moore, Chief
Virginia Division of Mines
PO Box 900
Big Stone Gap, VA 24219



RE: Buchanan Mine #1, MSHA ID 44-04856, VA DMME ID 11912AA
Action Plan for working on pressurized water lines.

Dear Mr. Moore:

Attached is an action plan for working on pressurized water line. This plan is being submitted in response to the special written instructions date 1/19/2012 issued by your office.

This plan will be review during all "new miner" training and as part of the "annual" retraining for all employees.

Should you require additional information or have any questions, please contact me.

Sincerely,

Brett Holbrook
General Superintendent

Approved for Chief of DM
JEB
1-24-12

JEB
1-24-12



Action Plan

INSTALLATION AND REMOVAL PROCEDURES

Installing or changing out pressurized waterline, valves or components

1. Employees will be trained in this procedure prior to working on water lines.
2. Turn off the belt, if the work affects the fire suppression systems or fire outlets. Warn all persons working in the area that the water is being turned off. Isolate the component that is to be added or removed by shutting water off at the shut off valve(s). The water line is under high pressure and may back feed. If multiple supply lines are involved you may have to cut off more than two shut off valves. Depressurize the connections that are being worked on before starting any work by slowly opening up a valve (at the manifold if on an advancing or retreating section) and an additional fire hydrant to bleed off water & air pressure. This hydrant is to remain opened until the job has been completed.
3. After the water line has been depressurized remove the part that needs to be changed. Where parts have been torn loose or broken off, those parts are to be replaced with new parts. Damaged components will be reported to the shift supervisor or assistant prior to starting repairs. The shift supervisor or assistant will review this procedure with the people performing the work prior to the start of repairs of damaged components. Replacement parts will be checked for proper pressure rating and installed securely. Install the proper size component and tighten with the proper tool, pipe wrenches should always be used when installing nipples, sleeves and valves that are threaded.
 - a. Water line
 - i. Inspect the outside surface of the pipe ends.
 - ii. The groove must be smooth and free from indentations, projections (including the weld seams), mud, dirt and roll marks to ensure a leak tight seal for the gasket. Check to make sure that the gasket is in good mechanical condition
 - iii. Install waterlines out of the walkway and against timbers or under belt rail to maintain maximum clearance from the track but located so that fire hydrants are easily accessible.
 - b. Nipples and valves
 - i. Inspect threads for damage, remove from service if damaged and replace with components that are in good mechanical repair. Components that have been torn loose or damaged shall not be reused.
4. Only use components that are pressure rated to meets or exceeds the minimum requirements for the applications. If in doubt ask. Bolt on applications should always be tightened with the proper tools. When installing a fire outlet, be sure to check that a dump valve and fire hose can be attached to it without having to go under the conveyor belt or move a timber. It should be installed free of obstructions and as close as possible and parallel to the supply line to maintain the maximum clearance from the track with the lowest profile.
5. After making assurance that all work has been completed and everyone in the area has been warned and nonessential personnel have been moved to a safe location, re-pressurize the line, flush out the newly installed water line or component by opening the valve slowly.
6. After air and dirt is flushed or removed from the waterline or component, shut off the cut-off valve, check for leaks. If additional repairs are necessary be sure to isolate the component from the high pressure source as described in Items #1 and #2 of this procedure.

01/24/2012



ENERGY
GAS AND OIL
INDUSTRIAL REGULATION
MINERAL MINE
REGULATORY AND ENFORCEMENT
MMS
MMS (REG)

COMMONWEALTH OF VIRGINIA

Department of Mines, Minerals and Energy

Division of Mines

P.O. Drawer 900

Big Stone Gap, Virginia 24219-0900

(276) 523-8100 FAX (276) 523-8248

www.dmine.sirgem.gov

January 27, 2012

Mr. Brett Holbrook
Consolidation Coal Company
Post Office Box 230
Mavisdale, Virginia 24627

Dear Mr. Holbrook:


RE: ***Buchanan Mine #1, DM Mine Index No. 11912AA
Action Plan***

Your Action Plan, received January 25, 2012, concerning the movement of oversized equipment at the referenced mine, has been reviewed and approved. The approved plan will be reviewed during all New Miner Training and as part of annual retraining for all employees.

A copy of the approved plan is enclosed and must be reviewed immediately with all work related mine personnel. Please maintain a copy of the approved plan at the mine for review by representatives of the Division of Mines or other interested parties.

Please contact this office at 276-523-8229 if you have any questions or if we can be of further assistance.

Sincerely,


M. Randy Moore, Chief
Division of Mines

drum
Enclosure
c: *bsg4.dm.plans.approved.lebanon.11912AA*



Consolidation Coal Company

Buchanan Mine #1

P. O. Box 230
Mavisdale, Virginia 24627
Phone: (276) 498-6927
Fax: (276) 498-6906
Email

January 25, 2012

Mr. Ray McKinney, District Manager
MSHA
P.O. Box 560
Norton, Virginia 24273

Mr. Randy Moore, Chief
Virginia Division of Mines
P.O. Box 900
Big Stone Gap, Virginia 24219

Buchanan Mine #1, MSHA ID 44-04856, VA DMME ID 11912AA
Action Plan 2. Moving Oversized Equipment (MSHA K Order 8192570)

Dear Messrs McKinney and Moore:

Attached is the second action plan concerning the movement of oversized equipment at Buchanan Mine in reference to K Order 8192570. This submission supersedes any other previous versions of the second action plan.

Should you require additional information or have any questions, please contact me.

Sincerely,

A handwritten signature in cursive script that reads "Brett Holbrook".

Brett Holbrook
General Superintendent

Buchanan No.1 Mine

MSHA 44-04856

VA DMME ID 11912AA

Action Plan 2 for Moving Equipment (MSHA K Order 8192570)

- **Movement of mining equipment on track less than 4'9" wide, as measured from the centerline of the track.**
 - 1)An evaluation was conducted of the belt/track entry and there is at least 4'9" of clearance, left and right from the center line of the track, with no objects or obstacles that would contact equipment being moved.
 - 2)Mining equipment or components that do not project more than 4'9" from the centerline of the track may be moved normally through-out the mine, as long as the load is not shifted. In the event an obstacle is encountered which was installed or occurred after the initial measurement, that obstacle will be removed before the equipment is transported through the area.
- **Movement of Oversized Equipment greater than 4'9" wide measured from the center line of the track.**
 - 1. All oversize equipment moves will be supervised by a certified foreman
 - 2. All crews that move oversize equipment shall be properly trained in the hazards associated with the task and given proper tools to perform the work. Once training is complete the crews shall perform the following procedures;
 - a. Determine the cross section size requirement for the load
 - b. Pre-measure the Haulage Route and then:
 - i. Permanently remove or retro-fit any obstacle that may intrude in the load area i.e. Fire Valve, Water Pipe, etc
 - ii. Flag any obstacle that cannot be removed i.e. belt drive and/or coal rib.
 - c. A motor will be positioned on the inby and outby ends of the equipment being transported
 - d. A manbus capable of transporting an injured miner on a stretcher will always be readily available outby the oversized equipment being moved. First Aid equipment will be carried on the manbus. The manbus will not located more than 1 block light outby the equipment load being moved.
 - e. A sufficient number of personnel, (a minimum of 3 people), will be assigned to the equipment move to ensure the task can be done safely.

3. Movement of the load through flagged areas will be supervised by a certified foreman (who can be the third person of the crew) to direct and act as a spotter where necessary and to accompany the lead motor.
4. A gage, adjusted to the necessary clearance width of the load being moved, will be installed on the lead motor.
5. Oversize equipment that is moved through flagged areas will be transported at a very slow speed and a ground spotter will be available to observe all clearance distances.
6. Review the proper procedure for replacement of damaged waterline or components
 - a. Isolate affected area by completely cutting off the water supply, including possible back feed lines (inby and outby).
 - b. Bleed water pressure from line by opening a minimum of two fire valves within the isolated area
 - c. Maintain the two open fire valves until work on the affected valve/component is completed.
 - d. Keep your body out of the danger zones when working on water line
 - e. Install new components to replace any removed or damaged ones
 - f. Close the valve on the component being worked on
 - g. Close the valves on the two open fire valves
 - h. Turn the valves on the isolated area slowly until the line is pressurized.



Division of
Mines
1005 Mountain Empire Road
Post Office Drawer 900
Big Stone Gap, Virginia 24219-0900
Tel: 276-523-8100 FAX: 276-523-8712
www.dmine.virginia.gov

COMMONWEALTH OF VIRGINIA

Department of Mines, Minerals and Energy

Division of Mines

1005 Mountain Empire Road

Post Office Drawer 900

Big Stone Gap, Virginia 24219-0900

Tel: 276-523-8100 FAX: 276-523-8712

www.dmine.virginia.gov

February 3, 2012

Mr. Brett Holbrook
Consolidation Coal Company
Post Office Box 230
Mavisdale, Virginia 24627

Dear Mr. Holbrook:

RE: ***Buchanan Mine #1, DM Mine Index No. 11912AA
Action Plan***

Your Action Plan, received January 24, 2012, regarding work procedures on pressurized waterlines at the referenced mine, has been reviewed and approved. The approved plan will be reviewed during all New Miner Training and as part of annual retraining for all employees.

A copy of the approved plan is enclosed and must be reviewed immediately with all work related mine personnel. Please maintain a copy of the approved plan at the mine for review by representatives of the Division of Mines or other interested parties.

Please contact this office at 276-523-8229 if you have any questions or if we can be of further assistance.

Sincerely,



M. Randy Moore, Chief
Division of Mines

djm
Enclosure
c: *bsg4.dm.plans.approved.lebanon.11912AA*



Consolidation Coal Company

Buchanan Mine #1

P.O. Box 239
Mavisdale Virginia 24627
Phone: (276) 498-6927
Fax: (276) 498-6904
email:

January 24, 2012

Randy Moore, Chief
Virginia Division of Mines
PO Box 999
Big Stone Gap, VA 24219

RE: **Buchanan Mine #1, MSHA ID 44-04856, VA DOME ID 11912AA**
Action Plan for working on pressurized water line.

Dear Mr. Moore:

Attached is an action plan for working on pressurized water line. This plan is being submitted in response to the special written instructions date 1/19/2012 issued by your office.

This plan will be review during all "new miner" training and as part of the "annual" retraining for all employees.

Should you require additional information or have any questions, please contact me.

Sincerely,

Brett Holbrook
General Superintendent

Action Plan

INSTALLATION AND REMOVAL PROCEDURES

Installing or changing out pressurized waterline, valves or components

1. Employees will be trained in this procedure prior to working on water lines.
2. Turn off the belt, if the work affects the fire suppression systems or fire outlets. Warn all persons working in the area that the water is being turned off. Isolate the component that is to be added or removed by shutting water off at the shut off valve(s). The water line is under high pressure and may back feed. If multiple supply lines are involved you may have to cut off more than two shut off valves. Depressurize the connections that are being worked on before starting any work by slowly opening up a valve (at the manifold if on an advancing or retreating section) and an additional fire hydrant to bleed off water & air pressure. This hydrant is to remain opened until the job has been completed.
3. After the water line has been depressurized remove the part that needs to be changed. Where parts have been torn loose or broken off, those parts are to be replaced with new parts. Damaged components will be reported to the shift supervisor or assistant prior to starting repairs. The shift supervisor or assistant will review this procedure with the people performing the work prior to the start of repairs of damaged components. Replacement parts will be checked for proper pressure rating and installed securely. Install the proper size component and tighten with the proper tool, pipe wrenches should always be used when installing nipples, sleeves and valves that are threaded.
 - a. Water line
 - i. Inspect the outside surface of the pipe ends.
 - ii. The groove must be smooth and free from indentations, projections (including the weld seams), mud, dirt and roll marks to ensure a leak tight seal for the gasket. Check to make sure that the gasket is in good mechanical condition
 - iii. Install waterlines out of the walkway and against timbers or under belt rail to maintain maximum clearance from the track but located so that fire hydrants are easily accessible.
 - b. Nipples and valves
 - i. Inspect threads for damage, remove from service if damaged and replace with components that are in good mechanical repair. Components that have been torn loose or damaged shall not be reused.
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6. After air and dirt is flushed or removed from the waterline or component, shut off the cut-off valve, check for leaks. If additional repairs are necessary be sure to isolate the component from the high pressure source as described in Items #1 and #2 of this procedure.

01/24/2012



Consolidation Coal Company
Buchanan Mine #1
P.O. Box 230
Mavisdale, Virginia 24627
Phone (276) 498-6927
Fax (276) 498-6904
email:

January 24, 2012

Randy Moore, Chief
Virginia Division of Mines
PO Box 900
Big Stone Gap, VA 24219

RE: Buchanan Mine #1, MSHA ID 44-04856, VA DMME ID 11912AA
Action Plan for working on pressurized water lines.

Dear Mr. Moore:

Attached is an action plan for working on pressurized water line. This plan is being submitted in response to the special written instructions date 1/19/2012 issued by your office.

This plan will be review during all "new miner" training and as part of the "annual" retraining for all employees.

Should you require additional information or have any questions, please contact me.

Sincerely,

Brett Holbrook
General Superintendent

Approved for DM -

1-24-12

JEB
1-24-12

Action Plan

INSTALLATION AND REMOVAL PROCEDURES

Installing or changing out pressurized waterline, valves or components

1. Employees will be trained in this procedure prior to working on water lines.
2. Turn off the belt, if the work affects the fire suppression systems or fire outlets. Warn all persons working in the area that the water is being turned off. Isolate the component that is to be added or removed by shutting water off at the shut off valve(s). The water line is under high pressure and may back feed. If multiple supply lines are involved you may have to cut off more than two shut off valves. Depressurize the connections that are being worked on before starting any work by slowly opening up a valve (at the manifold if on an advancing or retreating section) and an additional fire hydrant to bleed off water & air pressure. This hydrant is to remain opened until the job has been completed.
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 - a. Water line
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 - ii. The groove must be smooth and free from indentations, projections (including the weld seams), mud, dirt and roll marks to ensure a leak tight seal for the gasket. Check to make sure that the gasket is in good mechanical condition
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5. After making assurance that all work has been completed and everyone in the area has been warned and nonessential personnel have been moved to a safe location, re-pressurize the line, flush out the newly installed water line or component by opening the valve slowly.
6. After air and dirt is flushed or removed from the waterline or component, shut off the cut-off valve, check for leaks. If additional repairs are necessary be sure to isolate the component from the high pressure source as described in Items #1 and #2 of this procedure.

01/24/2012

RECOMMENDATIONS

- Never reuse components in a pressurized line that may have been damaged
- Ensure that all components in a pressurized water system are compatible with the highest measured or expected pressure in the system
- Before working on any water line or component, the pressure in that section should be removed and steps should be taken to ensure that no pressure can build up during repairs
- Section 45.1-161.35 of the Coal Mine Safety Laws of Virginia requires “ample clearance” be provided along haulageways in coal mines. When transporting oversized equipment, ensure that adequate clearance is always maintained between the equipment and any mine structures

This report is hereby submitted by Chris Whitt and approved by Marshall Moore.

Chris Whitt- Emergency Manager, VA Division of Mines

Marshall Moore- Chief, VA Division of Mines

APPENDIX



COMMONWEALTH OF VIRGINIA

Department of Mines, Minerals and Energy

Division of Mine Safety

1000 Bankers Building

Richmond, Virginia 23219

Telephone: (804) 781-5000

Fax: (804) 781-5000

THIS LICENSE IS NOT TRANSFERABLE

LICENSE TO OPERATE A MINE

Mine Index No. 11912AA

This is to certify that on this date a license to operate a mine

was issued to (Company) **CONSOLIDATION COAL COMPANY**

Address: **1000 CONSOL ENERGY DRIVE, CANONSBURG, PA, 15317-6506**

for the operation of (Mine Name/Number) **BUCHANAN MINE #1
UNDERGROUND**

Person with overall responsibility for operating decisions at the mine:
BRETT HOLBROOK

County: **BUCHANAN**

Expiration Date: **AUGUST 04, 2012**

Issue Date: **JULY 20, 2011**

Receipt #: **058815**

*Pursuant to 45.1-161.57 B of the Coal Mine Safety Laws of Virginia, you are required to renew
this license within 15 days of the above expiration date.*

ORIGINAL LICENSE MUST BE POSTED NEAR THE MINE ENTRANCE

DEPARTMENT'S FILE COPY



Safety Alert Bulletin

January 20, 2012

On January 11, 2012, a motor crewman on the evening shift was critically injured when a fire fighting water distribution assembly was propelled under pressure and struck the motor crewman in the face and head. The distribution assembly had been damaged by a shuttle car being transported by the motor crew. The injury occurred while the motor crew was attempting to repair the damaged fire fighting assembly. The injured miner died from the critical injuries sustained from the accident on January 18th after remaining in a coma since the day of the accident.

The motor crew, in attempting to repair the damaged fire fighting assembly, had tried to isolate the affected section of water line by turning off three shut-off valves in the vicinity. One of the three valves was leaking and allowed pressure to build up in the section of water line that was thought to be isolated. When the victim was leaning over the fire fighting assembly and working on it with a pipe wrench, the built up pressure propelled the assembly into the miner's face and head, causing the fatal injuries.

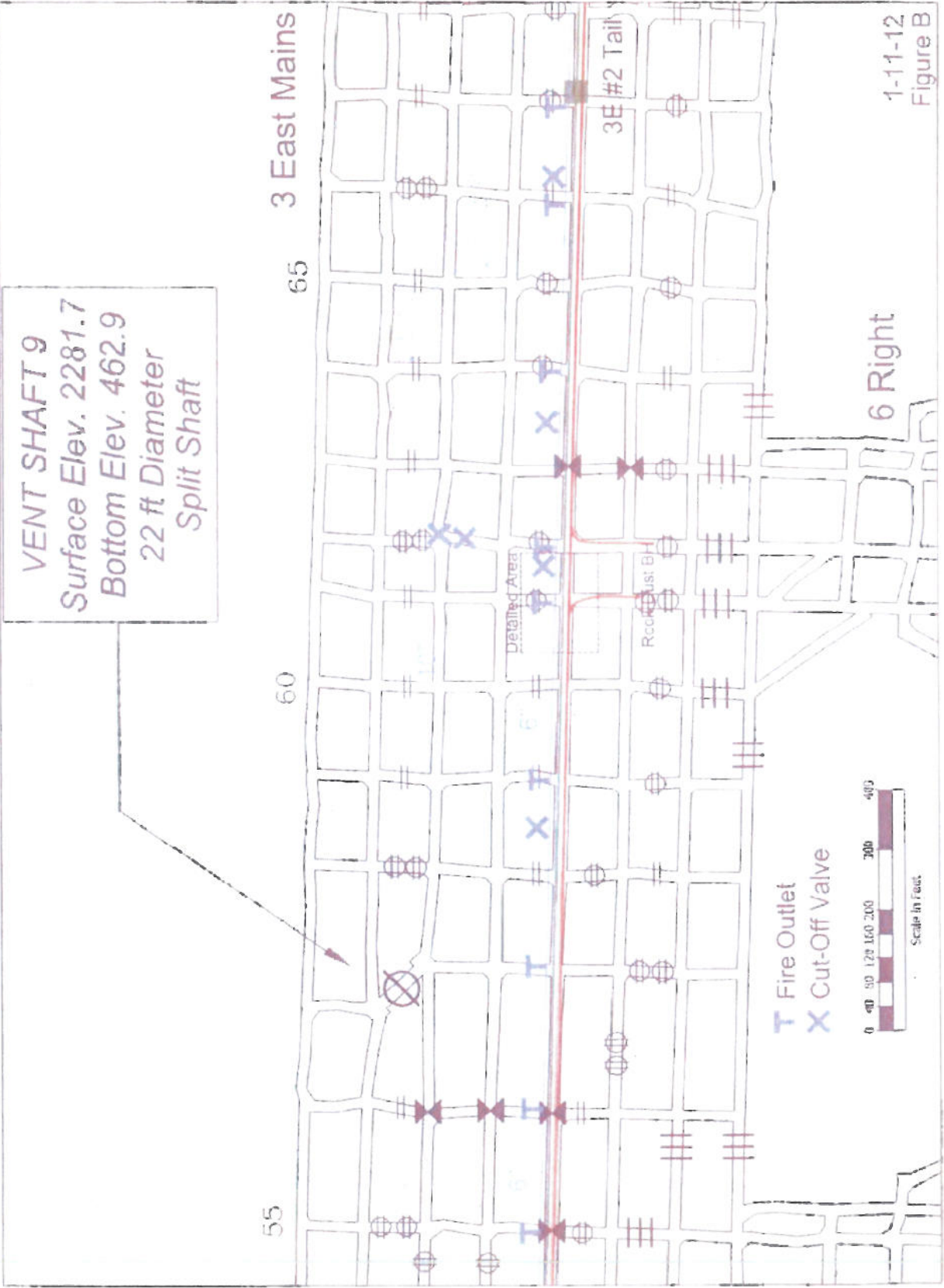
Recommendations

Section 45.1-161.35 of the Coal Mine Safety Laws of Virginia requires "ample clearance" be provided along haulageways in coal mines. When transporting oversized equipment, ensure that adequate clearance is always maintained between the equipment and any mine structures.

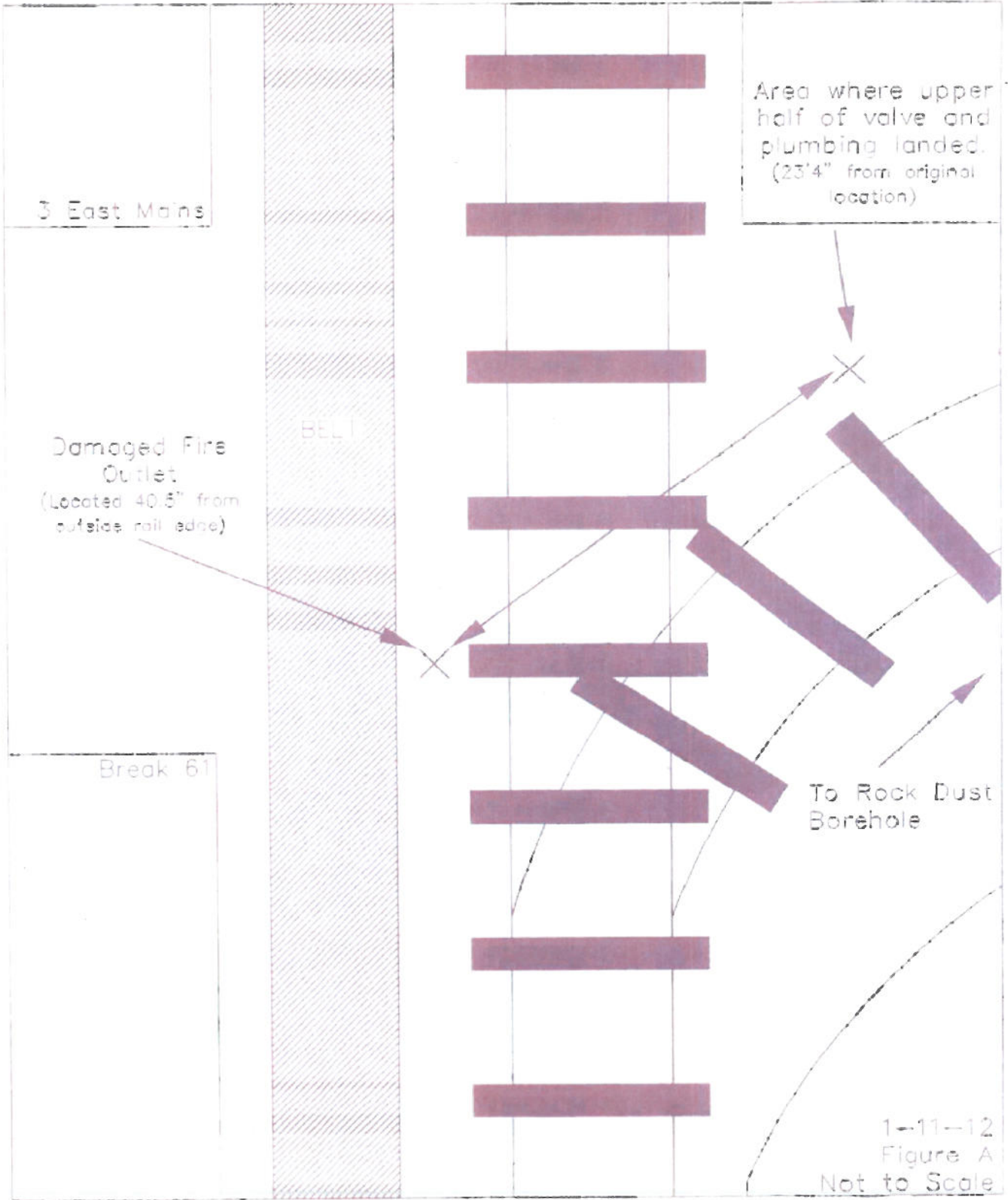
In order to control dust and provide fire fighting resources, the amount of water pressure that is being delivered to the working areas of coal mines has increased in the past few years. Before working on any water line or component, the pressure in that section should be removed. With the advent of higher operating pressures and in-line booster pump installations, the relief of pressure is of the utmost importance before working on water lines.

Mine operators should ensure that all components of the installed water system have adequate safety ratings for the pressures that are found in water lines in the mine. Be aware of the safe working pressure and the burst pressure rating of each component of the water system.

VENT SHAFT 9
Surface Elev. 2281.7
Bottom Elev. 462.9
22 ft Diameter
Split Shaft



1-11-12
Figure B



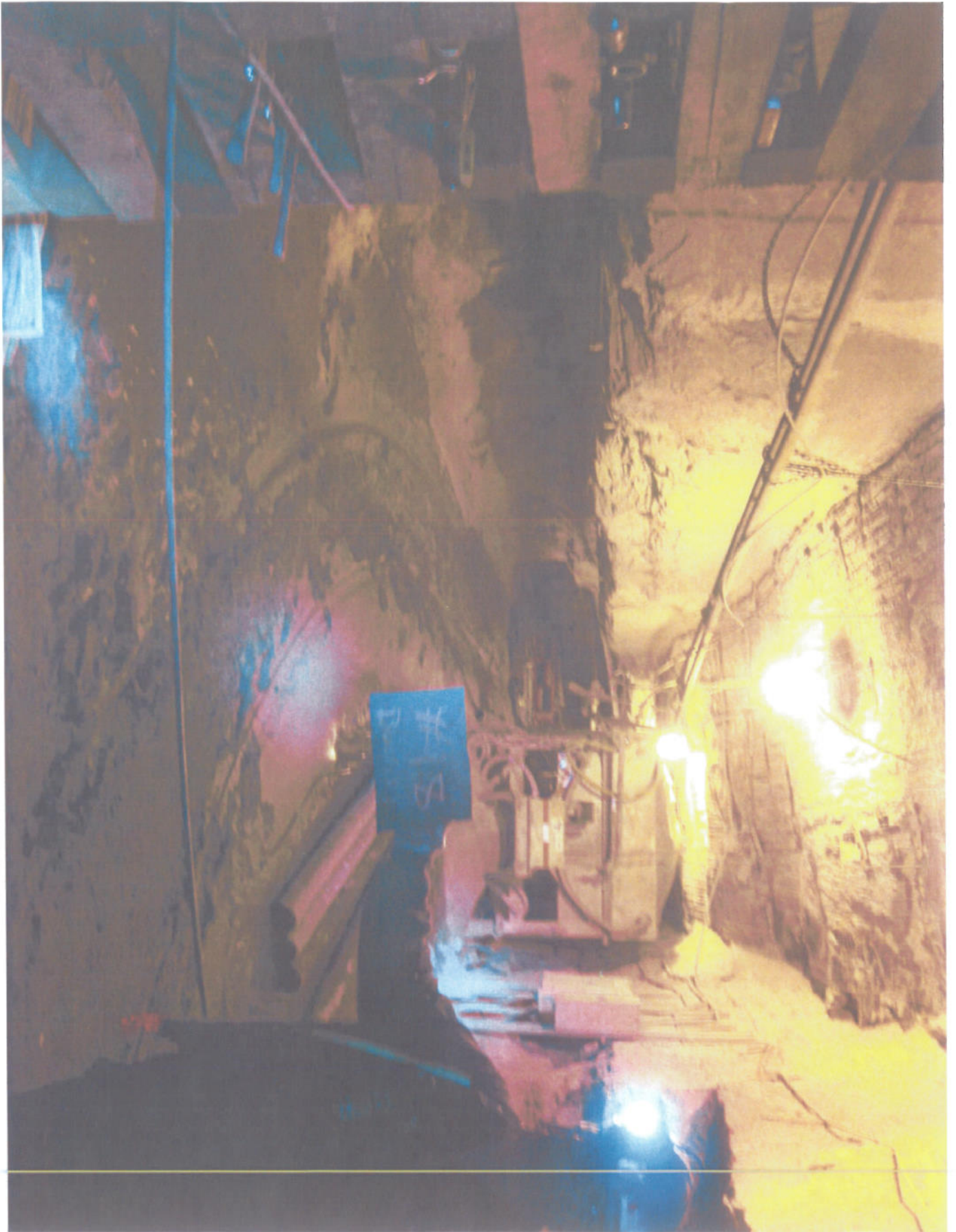
















BA-100/100S

1/4"-3"

BRONZE BALL VALVE
TWO-PIECE, STANDARD-PORT
600 PSIG WOG / 150 PSIG SWP (1)
THREADED ENDS

MSS SP-110

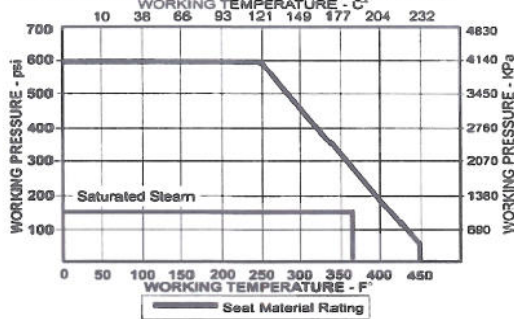
MATERIALS LIST

ITEM	PART	MATERIALS	ASTM SPEC.
1	Body	Cast Bronze	B584
2	Tailpiece	Brass (3)	B16
		Cast Bronze (1 1/4" & up)	B584
3	Ball	Brass w/ Hard Chrome Plating	B16
		316 Stainless Steel (2)	A276
4	Seat	RPTFE, 15% Glass Filled	
5	Stem	Brass	B16
		316 Stainless Steel (2)	A276
6	Thrust Washer	RPTFE, 25% Glass Filled	
7	Packing	PTFE	
8	Packing Nut	Brass	B16
9	Handle	Steel w/ Zinc Plating	Commercial
10	Hand Grip	Virryl	
11	Handle Nut	Steel w/ Zinc Plating	Commercial

- (1) Milwaukee Valve Company recommends the use of Stainless steel ball and stem for steam applications. Please consult factory for more information.
- (2) Ball and stem are stainless for BA-100S and 2-1/2"-3" BA-100
- (3) All bronze construction available. Please consult factory for more information.

PRESSURE - TEMPERATURE DATA

VALVES RATED FOR VACUUM SERVICE TO 29 INCHES Hg.

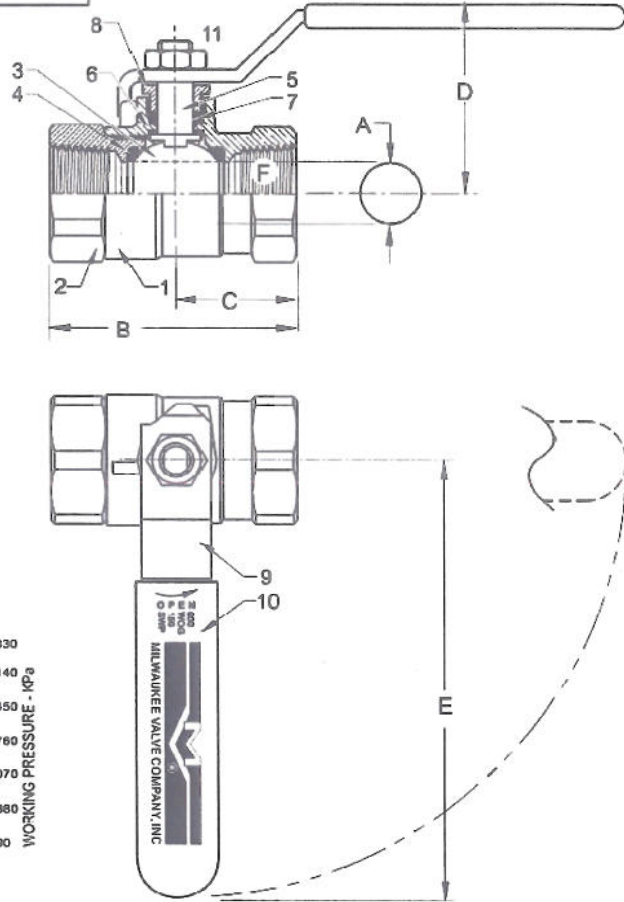


DIMENSIONS

	UNITS	1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"
A (DIA)	INCHES	0.38	0.38	0.60	0.76	0.88	1.06	1.31	1.86	2.00	2.31
	mm	9.7	9.7	12.7	19.3	22.4	26.9	33.3	39.6	51.0	58.7
B	INCHES	1.86	1.86	2.19	2.64	3.17	3.50	3.96	4.30	5.56	6.20
	mm	45.0	45.0	53.7	64.7	77.7	85.8	97.0	105.4	136.2	151.9
C	INCHES	1.00	1.00	1.10	1.30	1.58	1.74	1.97	2.15	2.79	3.10
	mm	24.5	24.5	27.0	31.9	38.7	42.6	48.3	52.7	68.4	76.0
D	INCHES	1.78	1.61	1.91	2.08	2.25	2.66	2.84	3.00	3.47	3.90
	mm	43.6	44.3	46.8	51.0	55.1	65.2	69.6	73.5	85.0	95.6
E	INCHES	3.81	3.81	3.81	4.56	4.56	6.31	6.31	7.19	7.19	7.19
	mm	93.3	93.3	93.3	111.7	111.7	154.6	154.6	176.2	176.2	176.2
F	THREAD SIZE	1/4" NPT	3/8" NPT	1/2" NPT	3/4" NPT	1" NPT	1-1/4" NPT	1-1/2" NPT	2" NPT	2-1/2" NPT	3" NPT
	Cv	7	7	13	30	38	61	87	121	228	305

Note: DN (Diameter Nominal) = Metric equivalent size.

Rev.11



The information presented on this sheet is correct at the time of publication. Milwaukee Valve reserves the right to change design, and/or material specifications without notice. For the Installation, Operation and Maintenance Manual (IOM) see the engineering section on our website. For the most current information access www.milwaukeevalve.com



MILWAUKEE VALVE COMPANY

INSTALLATION OPERATION AND MAINTENANCE MANUAL

FOR

**BRONZE VALVES
CAST IRON VALVES
CAST STEEL VALVES
SILENT CHECK VALVES
THREADED END TWO PIECE BALL VALVES
SOLDER END TWO PIECE BALL VALVES
LUG BUTTERFLY VALVES
WAFER BUTTERFLY VALVES**

2010



MILWAUKEE VALVE

BRONZE GATE, GLOBE AND CHECK VALVE INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

INSTALLATION

- 1) Thoroughly clean and prepare the piping system before valve installation.
- 2) Remove the valve end caps if present, and inspect the valve ports and seating surfaces for cleanliness just prior to installation.
- 3) Support the valve to prevent unnecessary stresses induced by connecting pipe.
- 4) Be sure the rating of the valve is compatible with the intended service conditions.
- 5) Operate the valve from the full open to closed position.
- 6) Verify the tightness of the packing nut after installation.

NOTE 1: For gear operated valves: The valve is normally shipped with the handwheel loose, the installing contractor or mechanic must take care to ensure the roll pin that holds the handwheel to the input shaft of the gear operator is installed completely, and is balanced on both sides of the handwheel. The fit of the pin in the handwheel and the shaft is controlled and should provide years of reliable service.

NOTE 2: Make sure check valves are oriented properly for flow and gravity effect, and that they are sufficiently distant from pump outlets or other turbulence inducing devices.

NOTE 3: Check valves may be shipped with internal packaging to prevent disc damage in transit. Remove any packing material prior to installation.

OPERATION

- 1) Gate and globe valves are manually operated. To open, turn the handle in a counterclockwise direction. To close, turn the handle in a clockwise direction.
- 2) Check valves are automatic.

INSPECTION & MAINTENANCE

- 1) Periodic inspection and preventative maintenance is not required other than adjustment of stem packing, and cycling of the valve from open to closed position.
- 2) If a valve develops a packing leak, adjust the packing nut to increase the pressure on the stem packing. The packing nut should be turned in a clockwise direction approximately 1/4 turn, or until the leakage stops. **It is not recommended that valves be repacked while under pressure. Remove system pressure before starting.**
- 3) Whenever a new stem is installed, the packing should be changed also.

REPAIR PARTS

Under normal conditions, repair parts are not required. Parts that may be considered recommended spare parts are as follows:

Gate Valves-Handle, handle nut, packing, gland, packing nut.

Globe Valves-Handle, handle nut, packing, gland, packing nut, disc and seat.

Check Valves-Disc, holder and hinge assembly, bonnet gasket.

When ordering parts, provide figure number, size, part needed and age of the valve.



MILWAUKEE VALVE

CAST IRON GATE, GLOBE AND CHECK VALVE INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

INSTALLATION

- 1) Thoroughly clean and prepare the piping system before valve installation.
- 2) Remove the valve end caps if present, and inspect the valve ports and seating surfaces for cleanliness just prior to installation.
- 3) Support the valve to prevent unnecessary stresses induced by connecting pipe.
- 4) Be sure the rating of the valve is compatible with the intended service conditions. Recommended aptitude is with the stem in the vertical position. Horizontal stem installations can present issues for larger valves, especially in reduced pressure service such as low pressure(5-35 psi) steam.
- 5) Bolt flange in line per recommendations of applicable ASME/ANSI standard, e.g. ASME/ANSI B16.1. Use full face gaskets.
- 6) Operate the valve from the full open to closed position.
- 7) Verify the tightness of the packing nut/gland after installation.

NOTE 1: For gear operated valves: The valve is normally shipped with the handwheel loose, the installing contractor or mechanic must take care to ensure the roll pin that holds the handwheel to the input shaft of the gear operator is installed completely, and is balanced on both sides of the handwheel. The fit of the pin in the handwheel and the shaft is controlled and should provide years of reliable service.

NOTE 2: Make sure check valves are oriented properly for flow and gravity effect, and that they are sufficiently distant from pump outlets or other turbulence inducing devices.

NOTE 3: Check valves may be shipped with internal packaging to prevent disc damage in transit. Remove any packing material prior to installation.

OPERATION

- 1) Gate and globe valves are manually operated. To open, turn the handle in a counterclockwise direction. To close, turn the handle in a clockwise direction.
- 2) Check valves are automatic.

INSPECTION & MAINTENANCE

- 1) Periodic inspection and preventative maintenance is not required other than adjustment of stem packing, and cycling of the valve from open to closed position.
- 2) If a valve develops a packing leak, adjust the packing gland nut to increase the pressure on the stem packing. The packing nuts should be turned in a clockwise direction approximately 1/4 turn, or until the leakage stops. **It is not recommended that valves be repacked while under pressure. Remove system pressure before starting.**
- 3) Whenever a new stem is installed, the packing should be changed also.

REPAIR PARTS

Under normal conditions, repair parts are not required. Parts that may be considered recommended spare parts are as follows:

- Gate Valves-Packing
- Globe Valves-Packing
- Check Valves-None

When ordering parts provide the figure number of the valve, size, part needed and age of the valve.



MILWAUKEE VALVE

CAST STEEL GATE, GLOBE AND CHECK VALVE INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

INSTALLATION

- 1) Thoroughly clean and prepare the piping system before valve installation.
- 2) Remove the valve end caps if present, and inspect the valve ports and seating surfaces for cleanliness just prior to installation.
- 3) Support the valve to prevent unnecessary stresses induced by connecting pipe.
- 4) Be sure the rating of the valve is compatible with the intended service conditions.
- 5) Operate the valve from the full open to closed position.
- 6) Verify the tightness of the packing nuts after installation.

NOTE 1: For gear operated valves: The valve is normally shipped with the handwheel loose, the installing contractor or mechanic must take care to ensure the roll pin that holds the handwheel to the input shaft of the gear operator is installed completely, and is balanced on both sides of the handwheel. The fit of the pin in the handwheel and the shaft is controlled and should provide years of reliable service.

NOTE 2: Make sure check valves are oriented properly for flow and gravity effect, and that they are sufficiently distant from pump outlets or other turbulence inducing devices.

NOTE 3: Check valves may be shipped with internal packaging to prevent disc damage in transit. Remove any packing material prior to installation.

OPERATION

- 1) Gate and globe valves are manually operated. To open, turn the handle in a counterclockwise direction. To close, turn the handle in a clockwise direction.
- 2) Check valves are automatic.

INSPECTION & MAINTENANCE

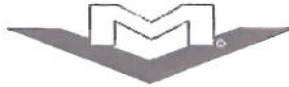
- 1) Periodic inspection and preventative maintenance is not required other than adjustment of stem packing, and cycling of the valve from open to closed position.
- 2) If a valve develops a packing leak, adjust the packing nuts to increase the pressure on the stem packing. The packing nuts should be turned in a clockwise direction approximately 1/4 turn, or until the leakage stops. **It is not recommended that valves be repacked while under pressure. Remove system pressure before starting.**
- 3) Whenever a new stem is installed, the packing should be changed also.

REPAIR PARTS

Under normal conditions, repair parts are not required. Parts that may be considered recommended spare parts are as follows:

- Gate Valves-Packing
- Globe Valves-Packing
- Check Valves-None

When ordering parts provide the figure number of the valve, size, part needed and age of the valve.



MILWAUKEE VALVE

CAST IRON SILENT CHECK VALVE INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

INSTALLATION

- 1) Thoroughly clean and prepare the piping system before valve installation.
- 2) Remove the valve end caps if present, and inspect the valve ports and seating surfaces for cleanliness just prior to installation.
- 3) Support the valve to prevent unnecessary stresses induced by connecting pipe. When lifting the valve, secure by the body and not by the bronze trim.
- 4) Be sure the rating of the valve is compatible with the intended service conditions.
- 5) Operate the valve from the full open to closed position.
- 6) Silent check valves can be installed in any position, either horizontal or vertical with flow up. The flow arrow must point in the direction of flow when the system is in operation

OPERATION & MAINTENANCE

- 1) Silent check valves are designed to prevent reverse flow automatically. On pump start-up, the flow of water forces the disc open, allowing the passage of fluid thru an area equal to the pipe size. On pump shut-down, the spring closes the disc before a media reversal takes place. This type of closure, which prevents flow reversal, is the factor which allows silent operation and prevents water hammer normally associated with valve and pump shut-off. **No regular maintenance is required.**

INSPECTION & REMOVAL

- 1) Close the discharge isolation valve, and bleed system pressure by loosening the discharge side flange. Do not loosen the inlet side flange until pressure have been relieved. Damage can occur to internal parts if this is not followed.
- 2) Remove the valve from the line. All parts can be checked for wear and damage. Replacement parts can be ordered from catalog submittal sheets.
- 3) Never attempt to inspect the seating of the valve by removing the inlet side piping. This will result in damage to the valve's internal seating mechanism.



MILWAUKEE VALVE

TWO PIECE THREADED END BALL VALVE INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

INSTALLATION

- 1) Thoroughly clean and prepare the piping system before valve installation.
- 2) Remove the valve end caps if present, and inspect the valve ports and seating surfaces for cleanliness just prior to installation.
- 3) Support the valve to prevent unnecessary stresses induced by connecting pipe.
- 4) Be sure the rating of the valve is compatible with the intended service conditions.
- 5) Operate the valve from the full open to closed position.
- 6) PTFE thread sealant is recommended when making up connections. Consult the sealant manufacturer's instructions for proper use. Install on pipe and not the valve.
- 7) Care should be used to not over tighten the valve onto the pipe, as it is possible to distort the internal parts of the valve.
- 8) Because bronze is a softer metal than steel, always put the pipe in a vise and turn the valve onto the pipe end. Always use a smooth-jawed wrench on the valve end on the same side of the valve to which the pipe or fitting is being installed to prevent distortion of the internal parts of the valve or transmission of torque and stress into the body joint. Pipe Wrenches should be used on pipe and fittings only.
- 9) Take precaution also to prevent loosening body to tailpiece connection by reverse rotation during installment/alignment. Such loosening could comprise body to tailpiece sealing.
- 10) Verify the tightness of the packing nut after installation.

OPERATION

- 1) Ball valves are designed to be opened by rotating the lever handle in a counterclockwise direction, and closing in a clockwise direction. The handle indicates the ball port direction.
- 2) Under certain conditions, throttling flow in the near-closed position can destroy the valve seats. Consult Factory for throttling service.

INSPECTION & MAINTENANCE

- 1) Periodic inspection and preventative maintenance is not required other than adjustment of stem packing, and cycling of the valve from open to closed position.
- 2) If a valve develops a packing leak, adjust the packing nut to increase the pressure on the stem packing. The packing nut should be turned in a clockwise direction approximately 1/4 turn, or until the leakage stops. **It is not recommended that valves be repacked while under pressure. Remove system pressure before starting.**
- 3) Repair or replacement of two piece ball valves internal parts is not recommended. Damage can occur to the body and tailpiece during disassembly that would make the valve inoperable.

REPAIR PARTS

Under normal conditions, repair parts are not required.



MILWAUKEE VALVE

TWO PIECE SOLDER END BALL VALVE INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

INSTALLATION

- 1) Thoroughly clean and prepare the piping system before valve installation.
- 2) Remove the valve end caps if present, and inspect the valve ports and seating surfaces for cleanliness just prior to installation.
- 3) Support the valve to prevent unnecessary stresses induced by connecting pipe.
- 4) Be sure the rating of the valve is compatible with the intended service conditions.
- 5) Operate the valve from the full open to closed position.
- 6) Solder end ball valves should be installed with the valve in a partially open position. Extreme care must be used to prevent overheating of the valve causing damage to seats and seals. Consult catalog engineering section for information on soldering procedures.
- 7) Use care to direct the flame away from the valve body. Use care to prevent the flame from making contact with the valve body as damage can occur.
- 8) Verify the tightness of the packing nut after installation, and valve cools.

OPERATION

- 1) Ball valves are designed to be opened by rotating the lever handle in a counterclockwise direction, and closing in a clockwise direction. The handle indicates the ball port direction.
- 2) Under certain conditions, throttling flow in the near-closed position can destroy the valve seats. Consult factory for throttling service.

INSPECTION & MAINTENANCE

- 1) Periodic inspection and preventative maintenance is not required other than adjustment of stem packing, and cycling of the valve from open to closed position.
- 2) If a valve develops a packing leak, adjust the packing nut to increase the pressure on the stem packing. The packing nut should be turned in a clockwise direction approximately 1/4 turn, or until the leakage stops. **It is not recommended that valves be repacked while under pressure. Remove system pressure before starting.**
- 3) Repair or replacement of two piece ball valves internal parts is not recommended. Damage can occur to the body and tailpiece during disassembly that would make the valve inoperable.

REPAIR PARTS

Under normal conditions, repair parts are not required.



LUG BUTTERFLY VALVE

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Rev 1

INSTALLATION

- 1) Thoroughly clean and prepare the piping system before valve installation.
- 2) Inspect the valve port and seating surfaces for cleanliness just prior to installation.
- 3) Support the valve to prevent unnecessary stresses induced by connecting pipe.
- 4) Be sure the rating of the valve is compatible with the intended service conditions.
- 5) Operate the valve from the open to closed position.
- 6) Butterfly valves are designed for installation between Class 125 cast iron or Class 150 flanges. Resilient seated butterfly valves do not require gaskets for installation.
- 7) Valve should be installed with the disc in the almost closed position. It is recommended that butterfly valves on horizontal pipelines have the stem in the vertical position.
- 8) Prior to tightening any flange bolts, the valve should be carefully cycled to the open position to check for possible disc interference. Interference may occur when the butterfly valve is installed on systems using pipe that has extra heavy wall thicknesses. Corrective action would include tapering the pipe ID, or the use of spool pieces.
- 9) Centralize valve in flanges, small valves may be supported by hand; larger valves may require strap and lifting device. (This is to ensure raised face flanges contact the valve properly, concentric and metal-to-metal all around except for 2-1/2" and smaller. For wafer valves, spacers over threaded rod on the bottom may be used to support/centralize the valve.)
- 10) Lug valves should be installed using the crossover method for tightening. This distributes the bolt loads evenly across the valve. **Do not over-tighten the bolts.** In dead end service (lug only) the side of the valve marked "INLET" should face the pressure side of the system. For safety, a downstream flange is recommended. Consult the catalog for bolt or cap screw length and diameter. EDPM & Buna Lined Valves 2 1/2" – 12" are suitable for Bi-Directional Dead End Service. Follow instructions shown above for insure proper installation.
- 11) Verify the gear operator travel stops after installation. Adjust as necessary.

OPERATION

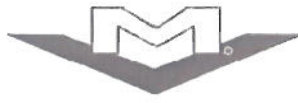
Manual butterfly valves can be operated by a lever handle or a gear operator. It is usually recommended that gear operators be used for valves 8" and larger. The lever handle gives an indication of disc position. Gear operators provide position indication with an indicator dial located on the top of the operator. Valves that are used infrequently should be cycled on a regular basis from open to close to prevent the build-up of material inside the valve.

INSPECTION & MAINTENANCE

Butterfly valves require no routine maintenance. Periodic cycling of the valve is highly recommended.

REPAIR PARTS

Under normal conditions, spare parts are not required. Consult factory for availability of repair parts.



MILWAUKEE VALVE

WAFER BUTTERFLY VALVE INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

INSTALLATION

- 1) Thoroughly clean and prepare the piping system before valve installation.
- 2) Inspect the valve port and seating surfaces for cleanliness just prior to installation.
- 3) Support the valve to prevent unnecessary stresses induced by connecting pipe.
- 4) Be sure the rating of the valve is compatible with the intended service conditions.
- 5) Operate the valve from the open to closed position.
- 6) Butterfly valves are designed for installation between Class 125 cast iron or Class 150 flanges. Resilient seated butterfly valves do not require gaskets for installation.
- 7) Wafer butterfly valves should be centered between the flanges by installing bolts through the alignment lugs and rotating the valve into position. There should be full and even contact between the elastomer and the flange face. The valve should be installed with the disc in the almost closed position. It is recommended that butterfly valves on horizontal installations have the stem in the horizontal position. Never force the valve into place if flange spacing is incorrect as damage can occur to the elastomer.
- 8) Prior to tightening any flange bolts, the valve should be carefully cycled to the open position to check for possible disc interference. Interference may occur when the butterfly valve is installed on systems using pipe that has extra heavy wall thicknesses. Corrective action would include tapering the pipe ID, or the use of spool pieces.
- 9) Tighten the bolts to obtain metal to metal contact between the body and the flange. Consult the catalog for bolt or cap screw length and diameter.
- 10) Verify the gear operator travel stops after installation. Adjust as necessary.

OPERATION

Manual butterfly valves can be operated by a lever handle or a gear operator. It is usually recommended that gear operators be used for valves 8" and larger. The lever handle gives an indication of disc position. Gear operators provide position indication with an indicator dial located on the top of the operator. Valves that are used infrequently should be cycled on a regular basis from open to closed to prevent the build-up of material inside the valve.

INSPECTION & MAINTENANCE

Butterfly valves require no routine maintenance. Periodic cycling of the valve is highly recommended.

REPAIR PARTS

Under normal conditions, spare parts are not required. Consult factory for availability of repair parts.