

<b>JEFFREY</b>	<b>MINING PRODUCTS</b>	JEFFREY MINING PRODUCTS 274 EAST 1ST AVE. COLUMBUS, OHIO 43201			THIS DRAWING CONTAINS CONFIDENTIAL INFORMATION AND IS THE EXCLUSIVE PROPERTY OF JEFFREY MINING PRODUCTS. NEITHER THE DRAWING OR ITS CONTENTS ARE TO BE USED, REPRODUCED, OR DISCLOSED IN WHOLE OR PART, WITHOUT PRIOR WRITTEN CONSENT FROM JEFFREY MINING PRODUCTS.															
		DRAWING NO.  <b>538A558</b>		SHEET NO.  1	<b>PART 36 MACHINE APPROVAL NUMBERS THAT USE THIS CHECKLIST:</b> 31-111-0 31-106-0,-1 31-123-0,-1 31-106-2															
DRAWN P.MEISEL		DATE 1/13/87		R E V	A 7/6/90 CM	B 6/9/92 RM	C 4/18/97 KT													
CHECKED		DATE																		

THIS BLOCK FOR MSHA USE ONLY
PS # _____
REV LEVEL _____

### POWER SYSTEM CHECKLIST

SAFETY COMPONENTS SYSTEM FOR AN MWM MODEL D916-6 ENGINE

LISTED BELOW ARE THE ITEMS AND FUNCTIONS THAT MUST BE MAINTAINED IN ORDER FOR THE POWER SYSTEM TO BE CONSIDERED PERMISSIBLE. FOR A COMPLETE EQUIPMENT PERMISSIBILITY EVALUATION, THIS CHECKLIST MUST BE USED IN CONJUNCTION WITH A MACHINE CHECKLIST AND, IF SO EQUIPPED, AN ELECTRICAL SYSTEM CHECKLIST.

**ALL INSPECTIONS AND TESTS SHALL BE PERFORMED IN FRESH AIR**

- ( ) IT HAS BEEN DETERMINED THAT THE AREA IN WHICH THE TESTS ARE TO BE PERFORMED IS FRESH AIR.
- ( ) THIS MACHINE UTILIZES AN MWM SIX CYLINDER MODEL D916-6 DIESEL ENGINE.

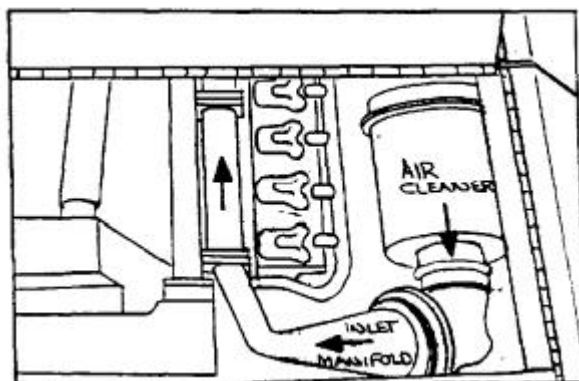
TEST SHEET TITLE: <b>POWER SYSTEM CHECKLIST</b>					MINE SAFETY & HEALTH ADMINISTRATION APPROVED PRINT. NO DEVIATION OR REVISION IS LEGAL UNTIL APPROVED BY MSHA			
DISTR. CODE SEE DRG.	STD: B	SPECIAL:	ENG. SEC L.	PRINT LOCATION:	DRAWING NUMBER  <b>538A558</b>	SHEET NO. 1	OF 18 SHEETS	

<b>JEFFREY</b>		<b>MINING PRODUCTS</b>	JEFFREY MINING PRODUCTS 274 EAST 1ST AVE. COLUMBUS, OHIO 43201			THIS DRAWING CONTAINS CONFIDENTIAL INFORMATION AND IS THE EXCLUSIVE PROPERTY OF JEFFREY MINING PRODUCTS. NEITHER THE DRAWING OR ITS CONTENTS ARE TO BE USED, REPRODUCED, OR DISCLOSED IN WHOLE OR PART, WITHOUT PRIOR WRITTEN CONSENT FROM JEFFREY MINING PRODUCTS.									
DRAWING NO.  <b>538A558</b>			SHEET NO.  2	<b>PART 36 MACHINE APPROVAL NUMBERS THAT USE THIS CHECKLIST:</b> 31-111-0 31-106-0,-1 31-123-0,-1 31-106-2											
DRAWN P. MEISEL		DATE 1/13/87		R E V	A 7/6/90 CM	B 6/9/92 RM	C 4/18/97 KT								
CHECKED		DATE													

### INTAKE SYSTEM

SKETCH 1 DEPICTS THE ASSEMBLED INTAKE SYSTEM.

\*3. ( ) ALL COMPONENTS APPEAR TO BE THE SAME AS SHOWN IN THE SKETCH



SKETCH NO. 1: ASSEMBLED AIR INTAKE SYSTEM

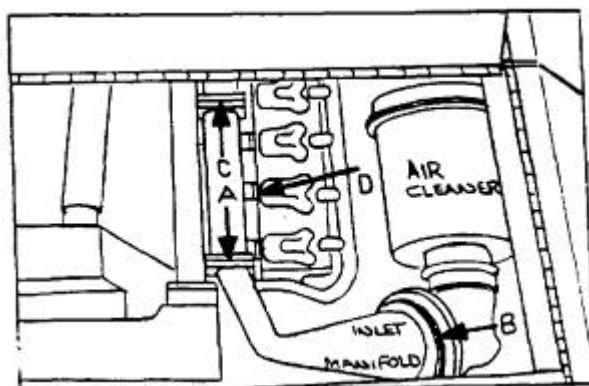
\*(WEEKLY) DESIGNATES THOSE INSPECTION CHECKS THAT MUST BE PERFORMED DURING THE WEEKLY MAINTENANCE EXAMINATION IN ACCORDANCE WITH 30 CFR, SECTION 75.1914.

\*4. ( ) COPPER GASKETS ARE INSTALLED BETWEEN THE INTAKE SYSTEM JOINTS IDENTIFIED IN SKETCHES 2 AND 3 AS GASKETS A AND B. GASKET C IS METAL CLAD FIBER. GASKET D

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DRAWING NO. <b>538A558</b>			SHEET NO. 3	<b>PART 36 MACHINE APPROVAL NUMBERS THAT USE THIS CHECKLIST:</b> 31-111-0 31-106-0,-1 31-123-0,-1 31-106-2														
DRAWN P.MEISEL		DATE 1/13/87		R E V	A 7/6/90 CM	B 6/9/92 RM	C 4/18/97 KT											
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(6 PLACES) IS ALSO METAL CLAD FIBER.

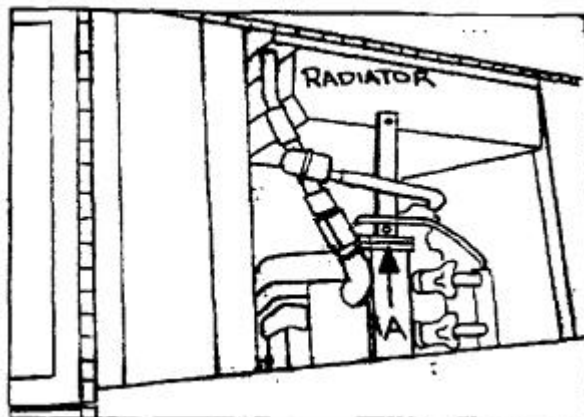


SKETCH NO. 2: INTAKE SYSTEM GASKETS

\*(WEEKLY) DESIGNATES THOSE INSPECTION CHECKS THAT MUST BE PERFORMED DURING THE WEEKLY MAINTENANCE EXAMINATION IN ACCORDANCE WITH 30 CFR, SECTION 75.1914

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DRAWING NO. <b>538A558</b>			SHEET NO. 4	<b>PART 36 MACHINE APPROVAL NUMBERS THAT USE THIS CHECKLIST:</b> 31-111-0 31-106-0,-1 31-123-0,-1 31-106-2														
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SKETCH NO. 3: INTAKE SYSTEM GASKETS

\*5. ( ) THE BOLTS AND/OR NUTS SECURING THE JOINTS SPECIFIED IN ITEM 4 ARE IN PLACE AND TIGHT.

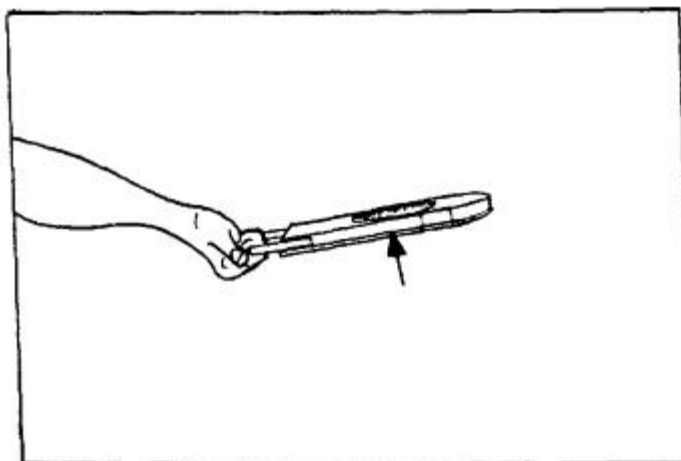
\*(WEEKLY) DESIGNATES THOSE INSPECTION CHECKS THAT MUST BE PERFORMED DURING THE WEEKLY MAINTENANCE EXAMINATION IN ACCORDANCE WITH 30 CFR, SECTION 75.1914.

\*6. ( ) CHECK THE GAP IN THE JOINT BETWEEN THE TWO SECTIONS OF THE FLAME ARRESTER

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DRAWING NO. <b>538A558</b>			SHEET NO. 5	<b>PART 36 MACHINE APPROVAL NUMBERS THAT USE THIS CHECKLIST:</b> 31-111-0 31-106-0,-1 31-123-0,-1 31-106-2															
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HOUSING WITH THE FLAME ARRESTER INSTALLED IN THE INTAKE SYSTEM (WITH BOLTS TIGHT). THE GAP DOES NOT EXCEED .004 INCHES. THIS JOINT IS DEPICTED IN SKETCH 4 ON A REMOVED FLAME ARRESTER.



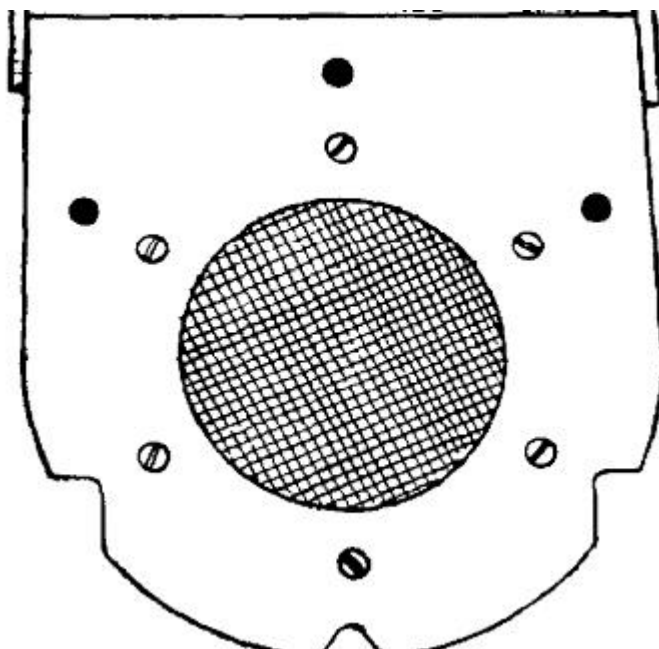
SKETCH NO. 4: JOINT IN THE INTAKE FLAME ARRESTER HOUSING

7. REMOVE THE INTAKE FLAME ARRESTER (SKETCH 5).
- ( ) A. THE FLAME ARRESTER CORE IS CLEAN AND HAS NO APPARENT DAMAGE.
  - ( ) B. THE SIX SLOTTED SCREWS ON THE FLAME ARRESTER ARE IN PLACE AND TIGHT.
  - ( ) C. THE GAP BETWEEN THE CORE AND THE HOUSING DOES NOT EXCEED .004 INCHES.

\*(WEEKLY) DESIGNATES THOSE INSPECTION CHECKS THAT MUST BE PERFORMED DURING THE WEEKLY MAINTENANCE EXAMINATION IN ACCORDANCE WITH 30 CFR, SECTION 75.1914

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DRAWING NO. <b>538A558</b>			SHEET NO. 6	<b>PART 36 MACHINE APPROVAL NUMBERS THAT USE THIS CHECKLIST:</b> 31-111-0 31-106-0,-1 31-123-0,-1 31-106-2															
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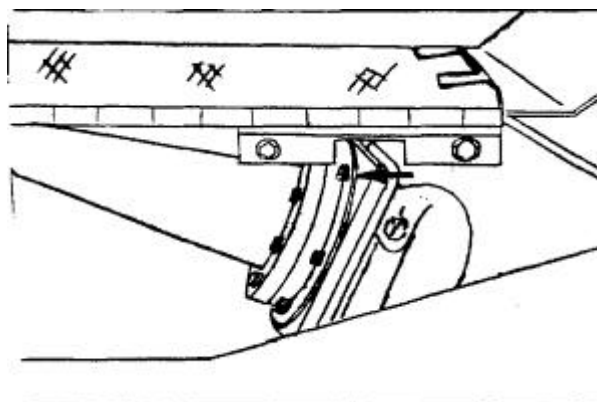
SKETCH NO. 5: INTAKE FLAME ARRESTER

- 8. ( ) REINSTALL THE FLAME ARRESTER. THE SIX BOLTS SECURING THE ASSEMBLY TOGETHER ARE ALL IN PLACE AND TIGHT.
- \*9. ( ) THE GAP IN THE JOINT IDENTIFIED BY THE ARROW IN SKETCH 6 DOES NOT EXCEED .004 INCHES.

\*(WEEKLY)DESIGNATES THOSE INSPECTION CHECKS THAT MUST BE PERFORMED DURING THE WEEKLY MAINTENANCE EXAMINATION IN ACCORDANCE WITH 30 CFR, SECTION 75.1914

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DRAWING NO.  <b>538A558</b>			SHEET NO.  7	<b>PART 36 MACHINE APPROVAL NUMBERS THAT USE THIS CHECKLIST:</b> 31-111-0 31-106-0,-1 31-123-0,-1 31-106-2															
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SKETCH NO. 6: CHECKING GAP IN INTAKE SYSTEM JOINT

- \*10. ( ) THE NUTS SECURING THE INTAKE MANIFOLD TO THE ENGINE HEAD ARE IN PLACE AND TIGHT.
- \*11. ( ) THE COMPLETE INTAKE SYSTEM SHOWS NO EVIDENCE OF DAMAGE. THERE ARE NO LOOSE CONNECTION(S), CRACKS, OR MISSING PORT PLUGS (OR CAPS).

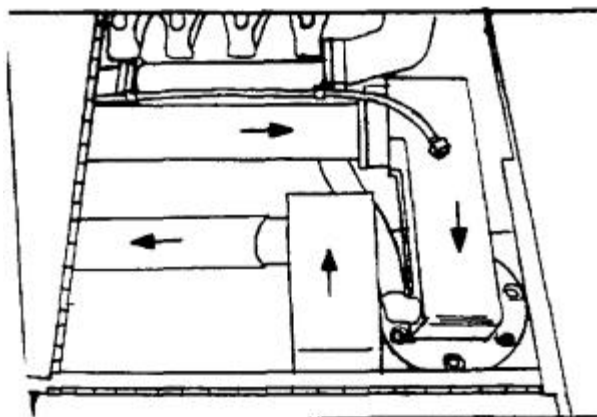
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**EXHAUST SYSTEM**

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DRAWING NO.  <b>538A558</b>			SHEET NO.  8	<b>PART 36 MACHINE APPROVAL NUMBERS THAT USE THIS CHECKLIST:</b> 31-111-0 31-106-0,-1 31-123-0,-1 31-106-2															
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THE EXHAUST SYSTEM OF THE ENGINE INCLUDES A WATER-COOLED EXHAUST MANIFOLD, WATER-COOLED EXHAUST PIPE, AND A WATER BATH EXHAUST CONDITIONER (SCRUBBER). SKETCH 7 DEPICTS THIS SYSTEM.



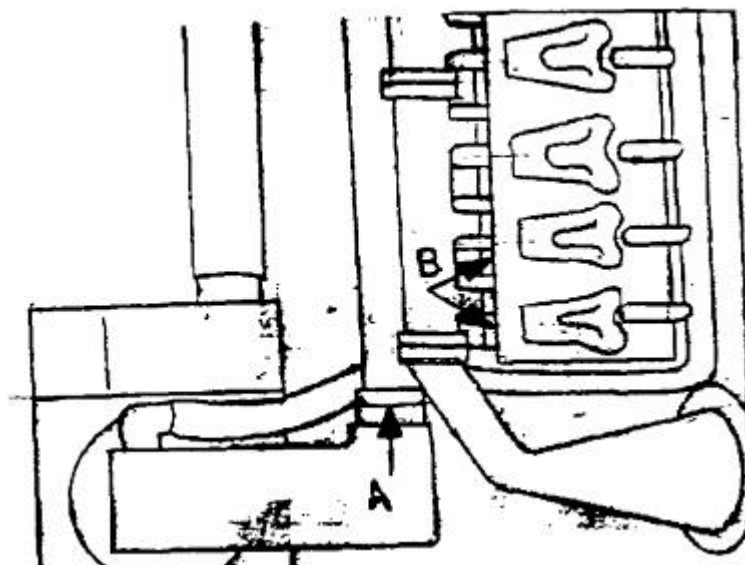
SKETCH NO. 7: EXHAUST SYSTEM

- \*12. ( ) THE NUTS SECURING THE EXHAUST MANIFOLD TO THE ENGINE HEAD ARE IN PLACE AND TIGHT.
  - \*13. ( ) A GASKET (FIBER) IS INSTALLED BETWEEN THE FLANGE OF THE EXHAUST MANIFOLD AND FLANGE OF THE EXHAUST PIPE. A IN SKETCH 8.
  - \*14. ( ) THE BOLT SECURING THE EXHAUST MANIFOLD TO THE EXHAUST PIPE ARE IN PLACE AND TIGHT.
- \*(WEEKLY) DESIGNATES THOSE INSPECTION CHECKS THAT MUST BE PERFORMED DURING THE WEEKLY MAINTENANCE EXAMINATION IN ACCORDANCE WITH 30 CFR, SECTION 75.1914.

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		DRAWING NO.  <b>538A558</b>		SHEET NO.  9	<b>PART 36 MACHINE APPROVAL NUMBERS THAT USE THIS CHECKLIST:</b> 31-111-0 31-106-0,-1 31-123-0,-1 31-106-2														
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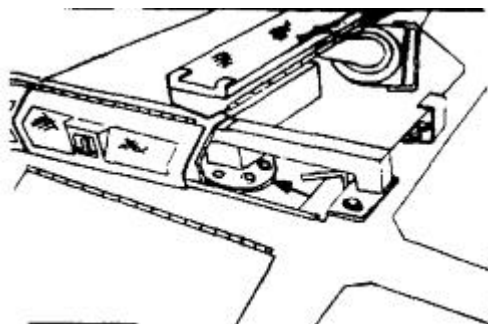
SKETCH NO. 8: EXHAUST SYSTEM GASKETS

- \*15. ( ) METAL CLAD FIBER GASKETS (6 PLACES) ARE INSTALLED BETWEEN THE EXHAUST MANIFOLD AND THE ENGINE. B IN SKETCH 8
- \*16. ( ) THERE IS A COPPER GASKET BETWEEN THE FLANGE OF THE EXHAUST PIPE AND THE FLANGE OF THE SCRUBBER AS SHOWN IN SKETCH 9.

\*(WEEKLY) DESIGNATES THOSE INSPECTION CHECKS THAT MUST BE PERFORMED DURING THE WEEKLY MAINTENANCE EXAMINATION IN ACCORDANCE WITH 30 CFR, SECTION 75.1914

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		DRAWING NO. <b>538A558</b>		SHEET NO. 10	<b>PART 36 MACHINE APPROVAL NUMBERS THAT USE THIS CHECKLIST:</b> 31-111-0 31-106-0,-1 31-123-0,-1 31-106-2														
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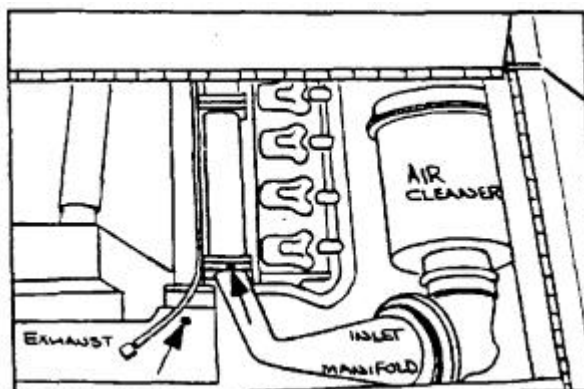
SKETCH NO. 9: EXHAUST PIPE TO SCRUBBER GASKET LOCATION

- \*17. ( ) THE BOLTS SECURING THE EXHAUST PIPE FLANGE TO THE SCRUBBER ARE ALL IN PLACE AND TIGHT.
- \*18. ( ) THE SCRUBBER IS IN GOOD CONDITION WITH NO OPEN HOLES OR CRACKS DUE TO CORROSION ACCIDENTS, MISSING PLUGS, ETC.
- 19. ( ) CONNECT A MANOMETER OR MAGNEHELIC TO THE INTAKE VACUUM PORT SHOWN IN SKETCH 10. RUN THE ENGINE AT FULL THROTTLE WITH NO LOAD. THE INTAKE VACUUM DOES NOT EXCEED 20 INCHES OF WATER.
- \*20. ( ) ENGINE SHUTS DOWN WHEN THE "RUN/STOP" SWITCH LOCATED ON THE INSTRUMENT PANEL IS SWITCHED TO THE STOP POSITION.
- 21. ( ) REMOVE THE MANOMETER OR MAGNEHELIC. THE PLUG SEALING THE INTAKE VACUUM PORT IS SECURELY INSTALLED.
- 22. ( ) CONNECT A MANOMETER OR MAGNEHELIC TO THE EXHAUST BACK PRESSURE PORT SHOWN IN SKETCH 10. RUN THE ENGINE AT FULL THROTTLE WITH NO LOAD. THE BACK PRESSURE DOES NOT EXCEED 40 INCHES OF WATER.

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DRAWING NO.  <b>538A558</b>			SHEET NO.  11	<b>PART 36 MACHINE APPROVAL NUMBERS THAT USE THIS CHECKLIST:</b> 31-111-0 31-106-0,-1 31-123-0,-1 31-106-2														
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SKETCH NO. 10: INTAKE VACUUM AND EXHAUST BACK PRESSURE PORT LOCATION

- 23. ( ) REMOVE THE MANOMETER OR MAGNEHELIC. THE PLUG SEALING THE EXHAUST BACK PRESSURE PORT IS SECURELY REINSTALLED.
- 24. ( ) COOLANT TEMPERATURE SENSOR SHUTS ENGINE DOWN AT CORRECT TEMPERATURE. TEST THE TEMPERATURE SENSOR VALVE THAT IS INSTALLED IN THE ENGINE WATER OUTLET. SKETCH 11 SHOWS THE LOCATION OF THIS SENSOR. ONE TEST METHOD IS OFFERED FOR INFORMATION.

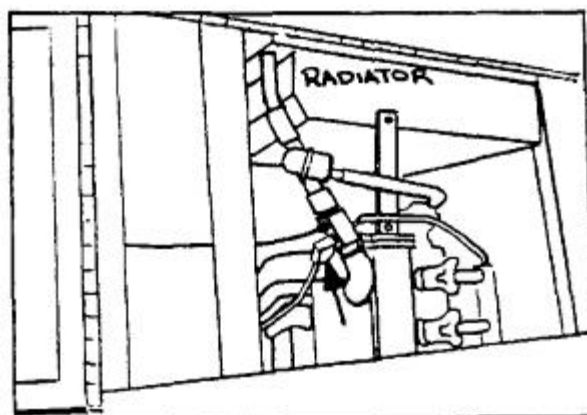
**CAUTION: ENGINE COOLANT MAY BE HOT**

TO TEST THE TEMPERATURE SENSOR VALVE, UNSCREW THE SENSOR VALVE FROM THE ENGINE WATER OUTLET AND INSTALL PIPE PLUG IN ITS PLACE. START THE ENGINE AND IMMERS THE END OF THE

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<b>JEFFREY</b>		<b>MINING PRODUCTS</b>	JEFFREY MINING PRODUCTS 274 EAST 1ST AVE. COLUMBUS, OHIO 43201			THIS DRAWING CONTAINS CONFIDENTIAL INFORMATION AND IS THE EXCLUSIVE PROPERTY OF JEFFREY MINING PRODUCTS. NEITHER THE DRAWING OR ITS CONTENTS ARE TO BE USED, REPRODUCED, OR DISCLOSED IN WHOLE OR PART, WITHOUT PRIOR WRITTEN CONSENT FROM JEFFREY MINING PRODUCTS.													
DRAWING NO.  <b>538A558</b>			SHEET NO.  12	<b>PART 36 MACHINE APPROVAL NUMBERS THAT USE THIS CHECKLIST:</b> 31-111-0 31-106-0,-1 31-123-0,-1 31-106-2															
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TEMPERATURE SENSOR VALVE INTO A HEATED AND AGITATED WATER/ANTIFREEZE MIXTURE. THE SENSOR MUST TRIP AND SHUT DOWN THE ENGINE BEFORE THE TEMPERATURE EXCEEDS 201 DEG F.



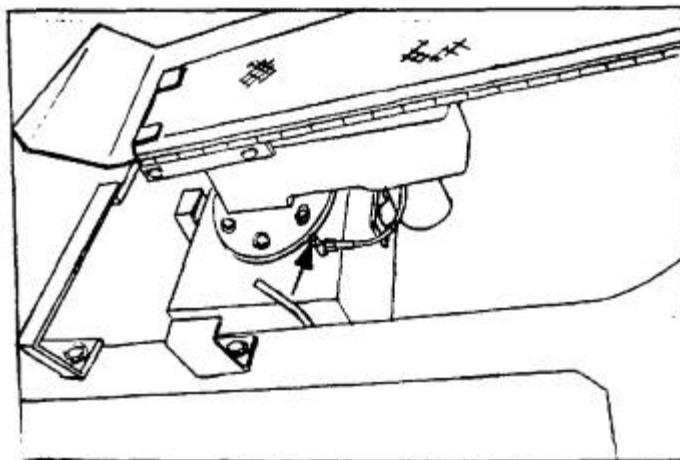
SKETCH NO. 11: LOCATION OF HIGH COOLANT TEMPERATURE SHUTDOWN SENSOR

25. ( ) THE TEMPERATURE SENSOR VALVE IS REINSTALLED.
- \*26. ( ) TEST FOR PROPER SCRUBBER OPERATING WATER LEVEL. AFTER THE ENGINE HAS BEEN OPERATED FOR AT LEAST 5 MINUTES, SHUT THE ENGINE DOWN AND REMOVE THE SCRUBBER DIPSTICK PORT PLUG (SEE SKETCH 12). INSERT A LONG ROD THROUGH THIS PORT AND CHECK THE WATER LEVEL. THE LEVEL SHOULD BE 11 TO 12 INCHES.

\*(WEEKLY) DESIGNATES THOSE INSPECTION CHECKS THAT MUST BE PERFORMED DURING THE WEEKLY MAINTENANCE EXAMINATION IN ACCORDANCE WITH 30 CFR, SECTION 75.1914.

<b>TEST SHEET TITLE: POWER SYSTEM CHECKLIST</b>					<b>MINE SAFETY &amp; HEALTH ADMINISTRATION APPROVED PRINT. NO DEVIATION OR REVISION IS LEGAL UNTIL APPROVED BY MSHA</b>			
DISTR. CODE SEE DRG.	STD: B	SPECIAL:	ENG. SEC L.	PRINT LOCATION:	DRAWING NUMBER  <b>538A558</b>	SHEET NO. 12	OF 18 SHEETS	

<b>JEFFREY MINING PRODUCTS</b>		JEFFREY MINING PRODUCTS 274 EAST 1ST AVE. COLUMBUS, OHIO 43201		THIS DRAWING CONTAINS CONFIDENTIAL INFORMATION AND IS THE EXCLUSIVE PROPERTY OF JEFFREY MINING PRODUCTS. NEITHER THE DRAWING OR ITS CONTENTS ARE TO BE USED, REPRODUCED, OR DISCLOSED IN WHOLE OR PART, WITHOUT PRIOR WRITTEN CONSENT FROM JEFFREY MINING PRODUCTS.														
DRAWING NO. <b>538A558</b>			SHEET NO. 13	<b>PART 36 MACHINE APPROVAL NUMBERS THAT USE THIS CHECKLIST:</b> 31-111-0 31-106-0,-1 31-123-0,-1 31-106-2														
DRAWN P.MEISEL		DATE 1/13/87		R E V	A 7/6/90 CM	B 6/9/92 RM	C 4/18/97 KT											
CHECKED		DATE																



SKETCH NO. 12: SCRUBBER DIPSTICK PORT

\*27. ( ) TEST FOR PROPER SCRUBBER LOW WATER SHUTDOWN

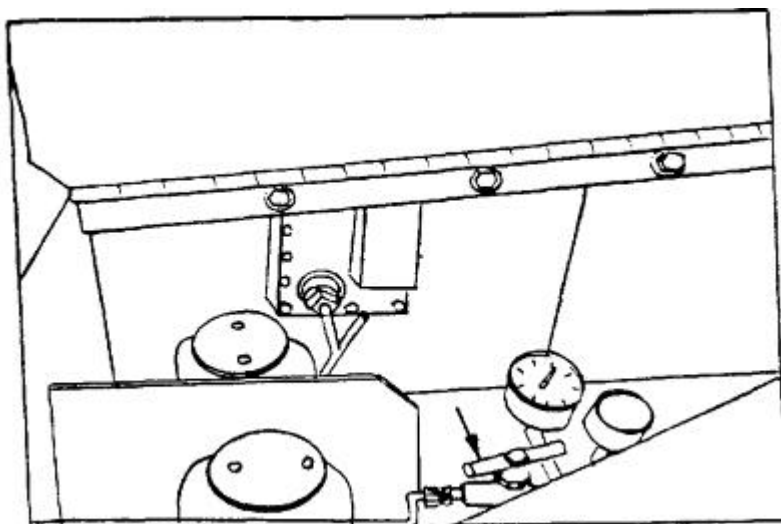
**PROCEDURE**

- A. CLOSE MAKE-UP WATER TANK AIR SUPPLY VALVE. THE LOCATION OF THE VALVE IS SHOWN IN SKETCH 13.

\*(WEEKLY) DESIGNATES THOSE INSPECTION CHECKS THAT MUST BE PERFORMED DURING THE WEEKLY MAINTENANCE EXAMINATION IN ACCORDANCE WITH 30 CFR, SECTION 75.1914

TEST SHEET TITLE: <b>POWER SYSTEM CHECKLIST</b>					MINE SAFETY & HEALTH ADMINISTRATION APPROVED PRINT. NO DEVIATION OR REVISION IS LEGAL UNTIL APPROVED BY MSHA			
DISTR. CODE SEE DRG.	STD: B	SPECIAL:	ENG. SEC L.	PRINT LOCATION:	DRAWING NUMBER <b>538A558</b>	SHEET NO. 13	OF 18 SHEETS	

<b>JEFFREY</b>		<b>MINING PRODUCTS</b>	JEFFREY MINING PRODUCTS 274 EAST 1ST AVE. COLUMBUS, OHIO 43201		THIS DRAWING CONTAINS CONFIDENTIAL INFORMATION AND IS THE EXCLUSIVE PROPERTY OF JEFFREY MINING PRODUCTS. NEITHER THE DRAWING OR ITS CONTENTS ARE TO BE USED, REPRODUCED, OR DISCLOSED IN WHOLE OR PART, WITHOUT PRIOR WRITTEN CONSENT FROM JEFFREY MINING PRODUCTS.														
DRAWING NO. <b>538A558</b>			SHEET NO. 14	<b>PART 36 MACHINE APPROVAL NUMBERS THAT USE THIS CHECKLIST:</b> 31-111-0 31-106-0,-1 31-123-0,-1 31-106-2															
DRAWN P.MEISEL		DATE 1/13/87	R E V	A 7/6/90 CM	B 6/9/92 RM	C 4/18/97 KT													
CHECKED		DATE																	

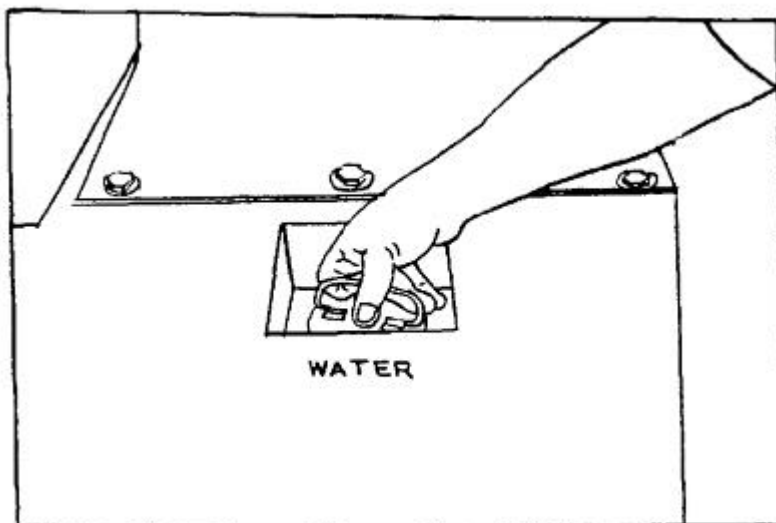


SKETCH NO. 13: MAKEUP WATER TANK AIR SUPPLY VALVE

- B. VENT AIR FROM THE MAKEUP WATER TANK FILLER CAP AND REMOVE CAP (SKETCH 14).

TEST SHEET TITLE: <b>POWER SYSTEM CHECKLIST</b>					<b>MINE SAFETY &amp; HEALTH ADMINISTRATION APPROVED PRINT. NO DEVIATION OR REVISION IS LEGAL UNTIL APPROVED BY MSHA</b>			
DISTR. CODE SEE DRG.	STD: B	SPECIAL:	ENG. SEC L.	PRINT LOCATION:	DRAWING NUMBER <b>538A558</b>	SHEET NO. 14	OF 18 SHEETS	

<b>JEFFREY MINING PRODUCTS</b>		JEFFREY MINING PRODUCTS 274 EAST 1ST AVE. COLUMBUS, OHIO 43201		THIS DRAWING CONTAINS CONFIDENTIAL INFORMATION AND IS THE EXCLUSIVE PROPERTY OF JEFFREY MINING PRODUCTS. NEITHER THE DRAWING OR ITS CONTENTS ARE TO BE USED, REPRODUCED, OR DISCLOSED IN WHOLE OR PART, WITHOUT PRIOR WRITTEN CONSENT FROM JEFFREY MINING PRODUCTS.															
DRAWING NO. <b>538A558</b>			SHEET NO. 15	<b>PART 36 MACHINE APPROVAL NUMBERS THAT USE THIS CHECKLIST:</b> 31-111-0 31-106-0,-1 31-123-0,-1 31-106-2															
DRAWN P.MEISEL		DATE 1/13/87		R E V	A 7/6/90 CM	B 6/9/92 RM	C 4/18/97 KT												
CHECKED		DATE																	

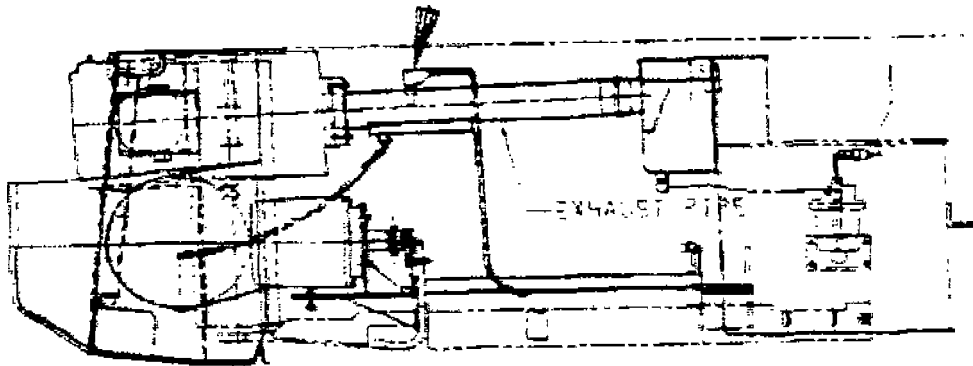


SKETCH NO. 14: MAKEUP WATER TANK FILLER CAP

- C. START THE ENGINE AND RUN AT LOW IDLE. OPEN THE SCRUBBER DRAIN VALVE AND SLOWLY DRAIN SCRUBBER WATER. (NOTE: SCRUBBER DRAIN VALVE HANDLE SHOWN IN SKETCH 15). IMMEDIATELY AFTER THE ENGINE AUTOMATICALLY SHUTS DOWN, CLOSE THE SCRUBBER DRAIN VALVE AND CHECK THE SCRUBBER WATER LEVEL. THIS LEVEL SHOULD BE AT LEAST 7-3/4 INCHES.

TEST SHEET TITLE: <b>POWER SYSTEM CHECKLIST</b>					MINE SAFETY & HEALTH ADMINISTRATION APPROVED PRINT. NO DEVIATION OR REVISION IS LEGAL UNTIL APPROVED BY MSHA				
DISTR. CODE SEE DRG.	STD: B	SPECIAL:	ENG. SEC L.	PRINT LOCATION:	DRAWING NUMBER <b>538A558</b>		SHEET NO. 15	OF 18 SHEETS	

<b>JEFFREY</b>	<b>MINING PRODUCTS</b>	JEFFREY MINING PRODUCTS 274 EAST 1ST AVE. COLUMBUS. OHIO 43201		THIS DRAWING CONTAINS CONFIDENTIAL INFORMATION AND IS THE EXCLUSIVE PROPERTY OF JEFFREY MINING PRODUCTS. NEITHER THE DRAWING OR ITS CONTENTS ARE TO BE USED, REPRODUCED, OR DISCLOSED IN WHOLE OR PART, WITHOUT PRIOR WRITTEN CONSENT FROM JEFFREY MINING PRODUCTS.							
		DRAWING NO.  <b>538A558</b>	SHEET NO. 16	PART 36 MACHINE APPROVAL NUMBERS THAT USE <b>THIS CHECKLIST:</b> 31-111-0 31-106-0-1 31-123-0-1 31-106-2							
DRAWN P.MEISEL	DATE 1/13/87	R E V	A 7/6/90 CM	B 6/9/92 RM	c 4118/97 KT						
CHECKED	DATE										



SKETCH NO. 16: LOCATION OF HIGH EXHAUST TEMPERATURE SHUTDOWN SENSOR  
(DRY PARTICULATE FILTER OPTION ONLY)

\*28( ) THE HIGH EXHAUST TEMPERATURE SENSOR SHUTS THE ENGINE DOWN. SKETCH 16 SHOWS THE LOCATION OF THIS SENSOR.

TWO TEST METHODS ARE OFFERED FOR THE WEEKLY TEST OF THE EXHAUST TEMPERATURE SHUTDOWN SENSOR HOWEVER TEST METHOD NO. 1 MUST BE PERFORMED EVERY THREE MONTHS.

METHOD NO. 1

- a. REINSTALL SCRUBBER DIPSTICK PORT PLUG AND THE MAKEUP WATER TANK FILLER CAP AND REOPEN AIR SUPPLY VALVE TO MAKE-UP WATER TANK
- b. UNSCREW THE SENSOR FROM THE EXHAUST PIPE AND INSTALL A PIPE PLUG IN ITS PLACE.

CAUTION: EXHAUST PIPE AND SENSOR MAY BE HOT

\*(WEEKLY) DESIGNATES THOSE INSPECTION CHECKS THAT MUST BE PERFORMED DURING THE WEEKLY MAINTENANCE EXAMINATION IN ACCORDANCE WITH 30 CFR SECTION 75.1914.

<b>TEST SHEET TITLE:</b> <b>POWER SYSTEM CHECKLIST</b>				<b>MINE SAFETY &amp; HEALTH ADMINISTRATION</b> APPROVED PRINT. NO DEVIATION OR REVISION IS LEGAL UNTIL APPROVED BY MSHA			
DISTR. CODE SEE DRG,	STD: B	SPECIAL:	ENG SEC L.	PRINT	DRAWING NUMBER  <b>538A558</b>	SHEET NO. 16	OF 18 SHEETS



<b>JEFFREY</b>	<b>MINING PRODUCTS</b>	JEFFREY MINING PRODUCTS 274 EAST 1ST AVE. COLUMBUS, OHIO 43201	THIS DRAWING CONTAINS CONFIDENTIAL INFORMATION AND IS THE EXCLUSIVE PROPERTY OF JEFFREY MINING PRODUCTS. NEITHER THE DRAWING OR ITS CONTENTS ARE TO BE USED REPRODUCED, OR DISCLOSED IN WHOLE OR PART, WITHOUT PRIOR WRITTEN CONSENT FROM JEFFREY MINING PRODUCTS.																		
			DRAWING NO. <b>538A558</b>	SHEET NO. 17	PART 36 MACHINE APPROVAL NUMBERS THAT USE THIS CHECKLIST: 31-111-0 31-106-0,-1 31-123-0,-1 31-106-2																
DRAWN P.MEISEL	DATE 1/13/97		R E V	A 7/6/90 CM	B 6/9/92 RM	C 4/18/97 KT															
CHECKED	DATE																				

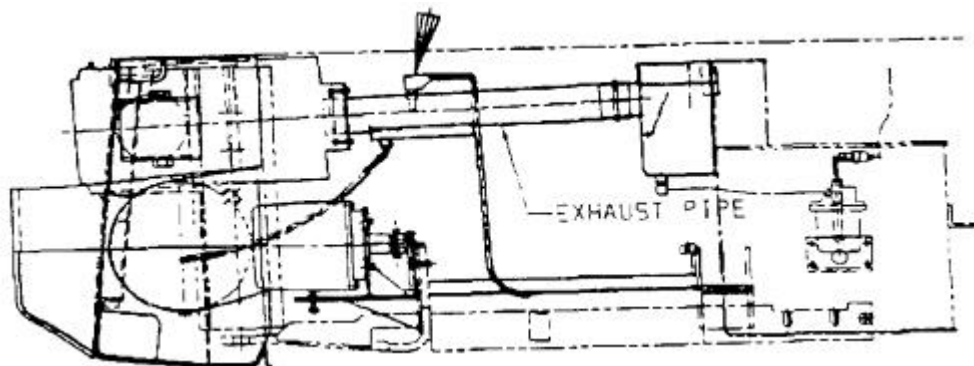
- c. START THE ENGINE AND IMMERSE THE END OF THE TEMPERATURE SENSOR INTO A CONTAINER OF HEATED AND AGITATED WATER. THE SENSOR MUST TRIP AND SHUT DOWN THE ENGINE BEFORE THE WATER TEMPERATURE EXCEEDS 165 DEG. F.

METHOD NO. 2

- a. DEFEAT THE LEVEL SHUTDOWN BY WIRING THE LEVEL ACTUATOR ( LOW WATER SHUTDOWN FLOAT) UP INTO THE "FULL" POSITION, AND START THE ENGINE, NOTING THE TIME AT START.
- b. RUN THE ENGINE AT HIGH IDLE TILL THE EXHAUST TEMPERATURE SENSOR SHUTS THE ENGINE DOWN AND NOTE THE ELAPSED TIME FROM ENGINE START TILL ENGINE SHUTDOWN. THE TIME SHOULD NOT EXCEED 3 MINUTES.
- c. IF THE EXHAUST TEMPERATURE SENSOR FAILS TO SHUT THE ENGINE DOWN, REPLACE THE TEMPERATURE PROBE WITH A CALIBRATED EXHAUST TEMPERATURE SENSOR AND REPEAT THE TEST. IF THE NEW SENSOR FAILS TO SHUT THE ENGINE DOWN, FOLLOW THE ELECTRONIC SHUTDOWN PROCEDURES OUTLINED IN THE MAINTENANCE MANUAL.

<b>TEST SHEET TITLE: POWER SYSTEM CHECKLIST</b>					<b>MINE SAFETY &amp; HEALTH ADMINISTRATION</b> APPROVED PRINT. NO DEVIATION OR REVISION IS LEGAL UNTIL APPROVED BY MSHA			
DISTR. CODE SEE DRG.	STD: B	SPECIAL	ENG. SEC L.	PRINT LOCATION:	DRAWING NUMBER <b>538A558</b>	SHEET No. 17	OF SHEETS	

<b>JEFFREY</b>		<b>MINING PRODUCTS</b>	JEFFREY MINING PRODUCTS 274 EAST 1ST AVE. COLUMBUS, OHIO 43201		THIS DRAWING CONTAINS CONFIDENTIAL INFORMATION AND IS THE EXCLUSIVE PROPERTY OF JEFFREY MINING PRODUCTS. NEITHER THE DRAWING OR ITS CONTENTS ARE TO BE USED, REPRODUCED, OR DISCLOSED IN WHOLE OR PART, WITHOUT PRIOR WRITTEN CONSENT FROM JEFFREY MINING PRODUCTS.														
DRAWING NO.  <b>538A558</b>			SHEET NO.  18	<b>PART 36 MACHINE APPROVAL NUMBERS THAT USE THIS CHECKLIST:</b> 31-111-0 31-106-0,-1 31-123-0,-1 31-106-2															
DRAWN P.MEISEL		DATE 1/13/87		R E V	A 7/6/90 CM	B 6/9/92 RM	C 4/18/97 KT												
CHECKED		DATE																	



SKETCH NO. 16: LOCATION OF HIGH EXHAUST TEMPERATURE SHUTDOWN SENSOR  
(DRY PARTICULATE FILTER OPTION ONLY)

TO TEST THE TEMPERATURE SHUTDOWN SENSOR, UNSCREW THE SENSOR FROM THE EXHAUST PIPE AND INSTALL A PIPE PLUG IN ITS PLACE. START THE ENGINE AND IMMERSSE THE END OF THE TEMPERATURE SENSOR INTO A CONTAINER OF HEATED AND AGITATED WATER. THE SENSOR MUST TRIP AND SHUT DOWN THE ENGINE BEFORE THE TEMPERATURE EXCEEDS 165 DEG. F.

- \*31. ( ) HIGH EXHAUST TEMPERATURE SENSOR SHUTS ENGINE DOWN AT CORRECT TEMPERATURE. TEST THE TEMPERATURE SENSOR THAT IS INSTALLED IN THE EXHAUST PIPE. SKETCH 16 SHOWS THE LOCATION OF THIS SENSOR. ONE TEST METHOD IS OFFERED FOR INFORMATION.

**CAUTION: EXHAUST PIPE AND SENSOR MAY BE HOT**

- \*32. ( ) THE TEMPERATURE SENSOR IS REINSTALLED.

\*(WEEKLY) DESIGNATES THOSE INSPECTION CHECKS THAT MUST BE PERFORMED DURING THE WEEKLY MAINTENANCE EXAMINATION IN ACCORDANCE WITH 30 CFR, SECTION 75.1914.

<b>TEST SHEET TITLE: POWER SYSTEM CHECKLIST</b>					<b>MINE SAFETY &amp; HEALTH ADMINISTRATION APPROVED PRINT. NO DEVIATION OR REVISION IS LEGAL UNTIL APPROVED BY MSHA</b>				
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