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COMMENTS OF STILLWATER MINING COMPANY IN RESPONSE TO THE MINE SAFETY AND HEALTH ADMINISTRATION PUBLIC COMMENT PERIOD IN REGARDS TO PROPOSED RULEMAKING ON DIESEL PARTICULATE MATTER EXPOSURE OF UNDERGROUND METAL AND NONMETAL MINES VOLUME 70, NUMBER 53280 (SEPTEMBER 7, 2005) METAL AND NONMETAL FEDERAL REGISTER

RIN 1219-AB29

Stillwater Mining Company (Stillwater) appreciates this opportunity to submit written comments in response to the re-opening of the rulemaking record on MSHA's diesel particulate matter (DPM) rule announced in the September 7, 2005 70 FR 53280. Stillwater is an active member of MARG Diesel Coalition, Nevada Mining Association, National Mining Association, NIOSH M/NM Diesel Partnership, and has been an active participant in NIOSH/NCI study efforts.

SMC is willing to provide these comments and information requested by MSHA in the 70 FR 53280, in hope, that MSHA will come to realize and acknowledge that industry continues to encounter economic and technological feasibility issues in its efforts to comply with this DPM rule.

Most importantly, we urge MSHA to act in this rulemaking to delete and revoke the permissible exposure limit (PEL) of 160 $\mu g/m^3$ and adopt the 308_{EC} $\mu g/m^3$ interim limit as the final regulated standard. Stillwater appreciates the Agency's proposed phase-in of the final rule, because it allows time for technological advancements. However, the phased-in approach to the final DPM concentration does not rectify the error in the rule, which includes lack of scientific justification, economical and technological feasibility, and an appropriate TC/EC conversion factor. The rule is simply not feasible for the majority of mine operators to meet and the appropriateness of the phased-in approach does not diminish the inability of most mine operators to comply with the final exposure limit.

As MSHA is aware, Stillwater Mining Company has been a leader in the cooperative good faith efforts of labor, industry and the Agency to conduct research aimed at the development and testing of DPM reduction technology. We are committed to the protection of the health and safety of our workforce and we welcome further opportunities to continue our cooperative research efforts. Consistent with our commitment, we have completed another joint research project with NIOSH in support of the M/NM Diesel Partnership. The purpose of which was to evaluate the applicability of DPM control technologies to the Stillwater equipment fleet.

Isolated Zone Studies-Determining the Effectiveness of DPF's and Alternative Fuels

Stillwater Mining Company has previously provided comment on the joint research projects with NIOSH in its three Isolated Zone (Isozone) studies conducted at the Stillwater Mine. Stillwater made available its facilities, personnel, and resources to the NIOSH Metal/Nonmetal Diesel Partnership in an effort to identify potential solutions that would benefit the Company and its industry partners. These studies provided significant insight on the viability of diesel particulate filter (DPF) systems, diesel oxidation catalytic (DOC) converters, and fuel formulations in reducing the concentrations of DPM in an underground mine environment.

> “The objective of the first phase was to establish the effectiveness of the selected technologies in reducing diesel emissions by using an isolated zone methodology. The objective of the second phase was to assess the effectiveness of diesel particulate filters in controlling the exposure of underground miners in actual production scenarios.” *Phase I report, page 5*

> “The objective of this study was to determine the effects of selected, state-of-the-art, emission control technologies on the ambient concentrations of diesel particulate matter (DPM) and gases emitted by underground diesel-powered mining equipment. The technologies were tested in an underground mine using mining vehicles that were operated under conditions that closely resembled actual production scenarios.” *Phase III report, page 12*

While the Phase I study was well suited for its initial objective, it provided no reliable data to indicate that the selected filter technologies would in fact provide the necessary reduction of DPM in an actual mining application. Thus, the Phase II Case Study was developed in an effort to provide this relevant information. The Phase II Case Study, report explains and applies the lessons of the Phase I Study and provides critical safety and feasibility information regarding the use of DPF systems in actual mining conditions.

The Phase II Case Study demonstrated the technological limitations that mines will encounter during attempted DPM reduction efforts in the actual mining cycle. Equipment failures and performance below that obtained during the isolated zone testing, and as advertised by manufacturers, were commonplace and will be repeated as these technologies are deployed elsewhere. Indeed, the report notes that:

> “… the efficiencies for the DPF systems achieved in the mining studies did not always agree with the efficiencies reported in the laboratory studies. These studies also demonstrated that considerable effort is needed to select and optimize DPF systems for individual underground mining applications.”

Moreover, the Phase II Case Study could only include those pieces of equipment for which a DPF system could be retrofitted. This category of diesel equipment represents only a small fraction of Stillwater’s underground diesel fleet thus leaving the vast majority of the fleet vulnerable to either future controls or the premature replacement of engines or equipment.

The Phase III Study selected control technologies, including seven alternative fuel formulations and four filtration systems. These were tested to evaluate the effectiveness of the technologies for controlling DPM and gaseous emissions from underground diesel-powered mining equipment. Again, the study was well suited for its initial objective in an in-situ environment, but provided no insight as to how effectively the selected filter technologies and alternative fuels would control DPM in an actual mining application.

The Isozone Studies proved the dangers inherent in promulgating rules and mandating technology changes, before feasibility and safety is proven. As reported in the Phase II Case Study, the very technology that justified MSHA's feasibility determination for the rule, and appeared promising in the Isozone Phase One study, produced such high levels of NO_2 in actual mining conditions that the miners were withdrawn and the test stopped to prevent an imminent danger. This condition was also present during specific DPM controls testing in portions of all the Isozone Studies, which led to the premature ending of testing.

> "… increased both the average and peak NO_2 concentrations at the downstream and on-vehicle locations. The peak downstream concentration of NO_2 increased by 28% while the peak vehicle concentration of NO_2 increased by 73% ..." *Phase III report, page 75*

The experience gained in the Isozone Studies is extremely relevant to this rulemaking. It determined that aftermarket exhaust treatments would not ensure compliance to the final rule. It identified that two identical pieces of equipment may not both be able to utilize DPF's because of different duty cycles. It identified that only a small portion of the Stillwater diesel fleet was capable of successfully using the passive regeneration type systems. It identified that DPM controls have the potential to produce other hazardous conditions such as high NO_2 levels. It also identified that selection and implementation of the proper DPM control systems is more complex and extensive than previously considered. Finally, it concluded that additional research and testing was needed to evaluate the applicability of DPM controls to an entire diesel fleet.

Estimation of the Applicability of Diesel Exhaust After-Treatment Controls

NIOSH M/NM Diesel Partnership conducted a study November 2005 at the Stillwater Mine to review gaps related to the applicability of after-market DPM controls applied to existing diesel equipment fleets. The study was conducted to gain a better understanding of potential barriers to the application of after-market DPM control technologies. Equipment was classified into categories based on the applicability of the equipment being suitable for the installation of either a passive or active regeneration systems. The appropriateness of these controls were determined by reviewing the work area geometry where the equipment was operated, duty cycle, thermal profile, backpressure limitation, visibility obstruction and if the controls are likely to produce any other hazardous conditions. The study classified the equipment as: 1) Likely application; 2) Potential application; and 3) Unlikely application.

The final report of this study has not been completed and will be presented to the DPM Partnership at its next meeting. The study identifies the complexity that mine operators are going to experience when evaluating effective DPM controls and applying aftermarket controls to its existing fleet. DPM control solutions need to be evaluated on a practical case-by-case basis for each mine operator, mining method, duty cycle and for the specific type of equipment. It is simply not a matter of selecting a DPF and installing it on the equipment.

DPF Control Technology

Passive Regeneration Systems

Research and testing of DPF regeneration systems has concluded that passive regeneration systems are preferred over active regeneration systems. The "fit and forget" method of the passive regeneration systems has proven more reliable and functional for the Stillwater fleet with high duty cycles. Thermal profiling is conducted on equipment to determine the duty cycle and ensures the compatibility of the passive regeneration system to the equipment. Currently, 32 passive regeneration systems have been installed on underground equipment and additional profiling is being conducted.

Practical experiences with equipment that have the capability to operate with passive regeneration systems indicate this type of control can reduce DPM exhaust emissions. The majority of the diesel fleet at Stillwater is not capable with this DPF, testing has concluded that the MTI 1604 haul truck has been successfully operated with a Englehard Passive filter. Average operating life of the Englehard DPF utilized at Stillwater is 3000-4000 hours at a cost ranging from $7,000-$8500 per unit. Currently, Stillwater is testing DCL passive DPF on five LHD's that have been identified to operate with a high enough duty cycle to promote passive regeneration. Testing is still in its infancy, results of the testing have proven inconclusive to report at this time. The number of units suited for passive regeneration systems continues to be the minority when compared to the total equipment fleet. The majority of the Stillwater fleet is not compatible with a passive regeneration system due to low duty cycle and low exhaust temperatures that do not support passive regeneration. Table 1 indicated the cost associated with installing passive DPF on the equipment capable to operate with the passive regeneration systems.

Table 1: Cost of Passive DPF

	2004		2005		2006 Projected	
	# Installed	Cost $	# Installed	Cost	# Installed	Cost
Englehard Passive Filter	15	$112,000	30	$209,000	43	$310,000
DCL Passive Filter	--	--	5	$25,000	10	$50,000
Total		$112,000		$234,000		$360,000

Active Regeneration Systems

For equipment not compatible with passive regeneration systems, active regeneration systems have been researched and tested at Stillwater. The cost for these systems have range from $4000-$8,000 per unit. The systems tested have been primarily off-board regeneration system, due to the lack of feasibility and practicality for the on-board systems. Five off-board DCL Titans have been tested on various equipment such as John Deere tractors, MTI fuel truck and powder truck, and Normet utility trucks.

Practical experience with active regeneration systems has not indicated these control options are economically feasible for the Stillwater diesel fleet. Equipment identified for use with active regeneration systems has been limited to equipment that is parked on surface at the end of shift. This would allow the DPF to be removed and placed in a regeneration station. Unfortunately, not all equipment can logistically be brought to surface for regeneration. Initial operating time before the unit is required to be removed and placed on a regeneration station is, at best, 10-15 hours. However, experience has shown this time can be as little as 4 hours before off-board regeneration is required. Due to the low utilization of the active DPF before the system needed to have off-board regeneration, two active DPF were purchased to ensure the equipment would be operational for the next shift. This option has proven to be cost prohibitive, it is unrealistic to logistically store spare active DPF and regeneration stations for even the small fraction of equipment that has the capability to operate with a active DPF. Table 2 indicates the cost associated with the installation and maintenance of the DCL Titans.

Table 2: Cost of Active DPF

	2004	
	# Purcahsed	Cost $
DCL Titans	10	$70,000
Regeneration Stations	4	$25,000
Total		$95,000

For units that must be regenerated underground, additional excavations to house the regeneration equipment and to provide parking during regeneration would be required. These additional excavations are neither practical nor economically feasible. Additionally, moving equipment to the regeneration stations is time consuming, unproductive and cost prohibitive.

Disposable Filter Elements

Stillwater's DPM reduction plan placed high expectation on the use of disposable filter elements to reduce DPM exposures. These filter elements were installed on 89 piece of equipment primarily located in the lower off-shaft of the mine. The equipment identified for the installation of the filters was primarily the low duty cycle, low thermal profile equipment that is not suited for either the passive or the active regeneration systems. The effectiveness of these disposable filters was estimated to reduce dpm by approximately 60-65%. Unfortunately, practical experiences with these filters proved to be discouraging with the operating life of the filter being the primary concern. The average operating life ranged from 4-10 hours, requiring filters to be discarded and replaced every two shifts.

Filter installation had to be positioned within the confines of the engine compartment to improve operator visibility and to reduce accidental damage. The physical dimensions of the canister/filter were evaluated and a size was selected that met the requirements for installing the unit within the engine compartment. Unfortunately, only one supplier was identified who was willing to develop a filter sized for the Stillwater application. Other suppliers recommended large filters, used in tandem that would need to be installed on the outside of the engine compartment and equipment frame. This installation overly subjected the canister to accidental damage and destruction making the installation infeasible.

Additional challenges encountered were the high number of filters that “burnt out” causing the seals and media to be ineffective at capturing the particulate matter. It was concluded that the exhaust temperatures even though not high enough to be compatible for passive or active regeneration systems did exceed the maximum temperature limits of the disposable filter. The disposable filters are rated for 650°F and technically have the potential to work on many pieces of equipment. However, these controls are also limited by the amount of DPM they can store. Information provided by supplier and PRL the 10” diameter filters has a capacity of 8g of DPM per inch of filter length. Beyond this loading rate the backpressure will raise quickly and the potential for hot spots and “burn outs” increase. The number and size of filters required was calculated based on 10 hrs of run time between replacements. Few units had the space available for the filter(s) or had the potential to exceed the 650°F limit during normal operations. The use of disposable filters has proven to also be cost prohibitive. As an example, a Toyota truck requires 2 filters in parallel due to its particulate load. At a cost of $200/filter the annual cost to maintain filters on the truck is estimated to be ~$40,000 per unit. Table 3 indicates the cost associated with installing the DFE on the 84 pieces of equipment at the Stillwater Mine.

Table 3: Cost of DFE

	2004		2005		2006 Projected	
	# Installed	Cost $	# Installed	Cost	# Installed	Cost
16” Exhaust Filter	2	$320	463	$69,400	200	$40,000
16” Canister	2	$1100	85	$44,625	25	$15,000
20” Exhuast Filter	2	$320	280	$44,800	130	$25,000
20” Canister	2	$1100	41	$22,500	15	$12,000
26” Exhaust Filter	--	--	190	$33,250	80	$16,000
26” Canister	--	--	1	$450	1	$450
Total		$2840		$215025		$108450

The intent of the M/NM Diesel Partnership study was to identify the appropriate DPM control for the Stillwater fleet, as it exists currently. The Table 4 below represents the results of the study. Results are divided into the three categories of control applicability. As the results indicate only 29% of the Stillwater underground fleet is applicable for either a passive regeneration or active regeneration system. 49% of the Stillwater fleet was categories as potential; where additional information was needed to determine the applicability of installing a passive or active regeneration system. 23% of the Stillwater fleet is not suited to have either a passive or active regeneration system. Stillwater is committed to continue its research on the equipment identified as “Potential” to determine if effective controls can be identified. In addition to the applicability results, thousands of horsepower-hrs/year and potential particulate loading in kilograms/yr. are presented.

Table 4: Summary of Results

	Units	% Units	K hp-hr	%K hp-hr	Kg/yr	% kg/yr
Not Likely	65	23%	3,158	7%	1,203	19%
Potential	139	49%	9,760	21%	2,288	36%
Likely	82	29%	37,782	72%	2,284	44%
Total	286		45,701		6,273	

Alternative Fuels

Stillwater is presently utilizing #1 Diesel and has started receiving shipment of ultra low sulfur (ULS) fuel. While ULS fuels have shown negligible reduction in DPM, the proven benefits indicate that ULS has the potential to improve DPF efficiency and reduce the potential for runaway regeneration. The utilization of ULS fuel at Stillwater will continue. Stillwater usage of diesel fuel is in excess of 1,000,000 gallons per year. The primary storage tank for the diesel fuel is a 10,000 gallon tank located on the surface, fuel is distributed underground to 23 strategically located 500 gallon fuel cells to service the underground equipment.

Stillwater continues to research and negotiate with regional suppliers on the availability of other alternative fuels, primarily biodiesel. Limited testing of biodiesel at Stillwater has shown potential in reducing DPM concentration, however the availability of biodiesel has proven difficult. No manufactures of biodiesel have been located in the proximity of the mine, making availability and delivery a significant concern. In addition to availability, cold weather concerns were evaluated to determine the necessary storage requirements to reduce the potential for the fuel to gel. To meet our needs we looked at the possibility of railing the biodiesel to the regional supplier and found that it had major drawbacks with handling the product in large quantities. Biodiesel cold flow properties in 100% form is not good below 45 degrees and would require some type of heating to make it flow. The regional supplier does not have the infrastructure to support this product due to the current low demand and newness of the product. Because regional suppliers do not have the capability to manage, store, blend and transport in heated containers, on-site storage was evaluated. Cost analysis concerning on-site storage was conducted with a regional supplier and proved cost prohibitive. The cost of the infrastructure to support biodiesel at the mine would include a 10,000 gallon tank for diesel, 15,000 gallon tank for biodiesel, and a 10,000 gallon tank for the blended product. The cost for this system would be in excess of $250,000. This effort of on-site storage still would not guarantee that the availability of biodiesel would be delivered during the winter months. Currently, this option is not economically feasible and time is needed for manufactures to construct distribution centers closer to mines or alternatives must be identified to make alternative fuels economical feasible.

Testing conducted in the Isozone studies proved that water emulsion fuels had a significant negative effect on the performance of the diesel equipment. Equipment operators indicated during the testing of these fuels significant reduction of horsepower was experienced. Stillwater has not conducted any additional testing of water emulsion fuel.

Environmental Cabs

Feasibility of cabs within Stillwater operations is a huge issue for both noise and DPM. The ability to install cabs on all equipment is neither feasible nor practical within our mine due to geometric constraints. Some cabs have been installed, however, on equipment that can be constrained to a specific mining location. This constraint minimizes equipment utilization and operational flexibility but is utilized when possible. Environmental cabs do have the potential to reduce DPM exposure to the operator inside, but has no effect those miners outside the confines of the cab. Environmental cabs will not ensure compliance for all miners to either the 308_{EC} μg/m^3 interim limit or the 160 μg/m^3 final PEL.

Engine Replacement

Since 2001, Stillwater has performed a proactive engine campaign to replace the higher DPM emitting engines with the newer EPA Tier I and Tier II rated engines. To date, 68% of the underground equipment meets the US EPA Tier I or II rating. Respectively, 52% of the underground equipment meet the EPA Tier II rating and 16% meet the EPA Tier I engine rating. In addition to replacing older engines, Stillwater has also been upgrading newer existing engines by installing electronic EMR II governors. This proactive approach of replacing and upgrading engines has indicted an impact in reducing DPM concentration. Stillwater has also tested the newly available Tier III engines. Currently, one Tier III engine is being operated at the mine and three additional engines are expected to arrive in late January 2006. Table 5 indicates the cost associated with engine replacements and upgrades to electronic governors.

Table 5: Cost of Engine Replacement and Upgrades

	2004		2005	
	# Installed	Cost $	# Installed	Cost
Engine Replacements	22	$264,000	26	$312,000
Engine Upgrades (Elect. Govenors)	50	$100,000	48	$98,000
Total		$364,000		$410,000

In conjunction with the engine replacement program, Stillwater has been involved in an extensive emission monitoring and engine-tuning/preventative maintenance program. This program provides knowledge of how the equipment is running and ensures that the engine is performing within optimal emissions parameters. The longer the engines stays in its optimal parameters the more efficient the engines run, which potentially has an impact on the amount of particulate that the engine emits. The initial PM/emissions program was conducted on a 250-hrs cycle, with a DPM 6-point emissions check every 1000-hrs. A new 28-day cycle PM/emissions program has been instituted. The new program has decreased the time a piece of equipment comes to the shop from 250-hrs to 125-hrs. A complete DPM 6-point emissions test is conducted every 56 days on all underground diesel equipment. During the emission testing all equipment that has DPF installed, will have the DPF removed and the ash clean.

Table 6 is a summary of the engine size and DPM/Emission Rates of the Stillwater Fleet. This table is cited from the NIOSH M/NM Diesel Partnership Study

Table 6: Engine Size and Emission Rates for Stillwater Fleet

APPROVAL #	ENGINE MANUFACTURER	MODEL	HP	PI CFM	DPM GR/HR	BP MAX "	ENGINE YEARS
	CASE	4390	80		24		1996-2004
	CATERPILLAR		200		80		1994-1998
	CATERPILLAR	3126B (T2)	200		30		2004-2005
	CATERPILLAR	3304 PCNA	200		80		1996
7E-B010	CATERPILLAR	3306 DITA	165	5500	9	27	1999-2000
7E-B010-1	CATERPILLAR	3306 DITA	270	6000	10	27	1999-2002
7E-B018	CATERPILLAR	3406E ATAAC	400	13000	22	27	2003-2005
	CUMMINS	QSB4.5L (T3)	110		11		2005
7E-B098	DAIMLER CHRYSLER	OM904LA Max Altitude 3000ft	147	3000	5	41	2004
7E-B056	DEUTZ	BF4M 1011F	75	4000	6	30	2001
	DEUTZ	BF4M 1012	99		30	30	1999-2001
7E-B011	DEUTZ	BF4M 1012C	105	4000	7		1999-2001
7E-B008	DEUTZ	BF4M 1013C	115	7500	13		1996-2003
	DEUTZ	BF4M 1013C	139		83		1991-1996
7E-B008	DEUTZ	BF4M 1013C	139	6500	11	30	1996-2000
7E-B008	DEUTZ	BF4M 1013FC	154	7500	13	30	1995-2000
07-ENA040002	DEUTZ	BF4M 2012	100	3000	5	40	2005
7E-B007	DEUTZ	BF6M 1013ECP	209	14500	44	30	1999
7E-B057	DEUTZ	BF6M1013FC	209	8500	14	30	1999-2001
	DEUTZ	F3L 912	45		27		1995-2001
	DEUTZ	F4L 912	52		31		1999-2002
	DEUTZ	F4L 912W	52		31		1997-1999
	DEUTZ	F5L 912	75		45		1995-1997
	KAWASAKI	953 cc	24		14		2004-2005
7E-B022	PERKINS	1004-40T	75	9000	15	41	1998-2001
	TOYOTA	1DZ -11	59		18		1999-2005
	TOYOTA	1HZ 6 CYL	128		28		1998-2004
	YANMAR	4TNE84	39		23		1999-2002

Attached in Appendix I is a complete list of all underground diesel equipment, last years operating hours, engine model, horsepower rating, and thousands HP-hr/year.

Ventilation

Both the Stillwater Mine and East Boulder Mine have completed major ventilation upgrades. Both currently have additional ventilation raises being developed to surface that will further support the reduction of DPM. However, even with these significant enhancements, compliance to the dpm regulation cannot be guaranteed.

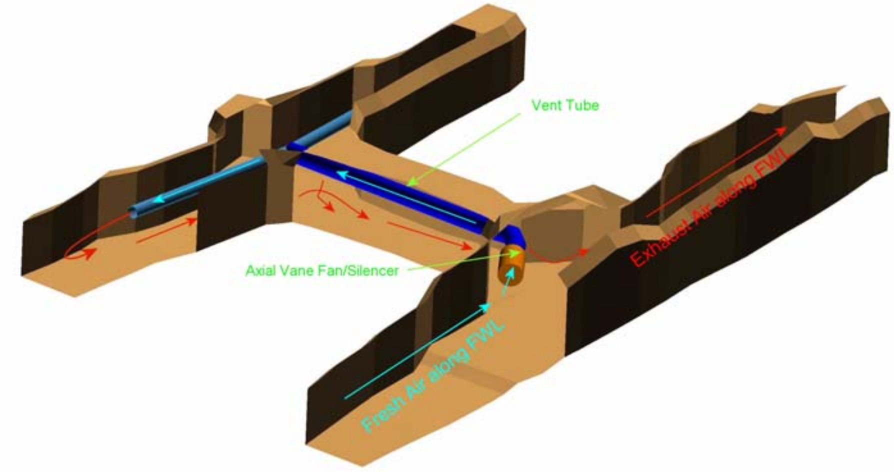
The ventilation system at the Stillwater Mine is currently separated into three primary circuits. The upperwest circuit consists of all levels above and west of the shaft from the 50w rail level. This excludes the 5150w and 53w levels. Total airflow in the upperwest is currently 305,000 cfm. The offshaft west and offshaft east circuits are both separated by the shaft, respectively. The offshaft west consists of the 23w level to the 53w level west of the shaft. Total airflow in the offshaft west is currently 445,000 cfm. The offshaft east circuit consists of the 3030e level to the 54e level east of the shaft. Total airflow in the offshaft east is currently 275,000 cfm.

Table 7: Ventilation Rate

Stillwater Mine	**East Boulder**
September 2002: **TOTAL CFM =766,000**	**November 2003:** **TOTAL CFM = 135,000**
Current 2006: **TOTAL CFM =1,200,000**	**Current 2006:** **TOTAL CFM = 215,000**

Primary ventilation is accomplished using seven 400 HP axial mine fans located internally throughout the mine. Air is drawn down the main footwalls and exhausts to six primary exhausts to atmosphere. Booster fans are used to help facilitate primary ventilation by force ventilating areas that cannot be ventilated under the power of the primary fans. There are seventeen booster fans situated throughout the mine. To accomplish stope ventilation, usually a raise is established from the sill level of the stope to the level above. This allows a split of air from the primary circuit to flow through the stope. In cases where a through raise is not possible, stope ventilation is accomplished using axial vane fans ranging from 5 to 75 horsepower in conjunction with ventilation ducting. Refer to Figure 1 below for a typical stope ventilation setup.

Figure 1: Typical Stope Ventilation



In late fourth quarter of 2006, there will be a ventilation upgrade to the upperwest and the upper offshaft west. In the upperwest, an alimak raise will be excavated from the 66w18600 crosscut, to surface, approximately 1260 ft. above. Two 400 HP axial mine fans will be positioned in parallel at the 66W18600 crosscut and will deliver approximately 310,000 cfm to the upperwest. Along with this upgrade, the two current upperwest primary fans located at 66W14600 will be re-directed to become the dedicated ventilation circuit for the upper offshaft west (levels 35w and above). With this upgrade, the offshaft west will increase from 445,000 cfm to 625,000 cfm. 220,000 cfm will be directed to the 66W14600 alimak raise, while the remaining 405,000 cfm will be exhausted to the 5150W and 53W exhaust portals for the lower offshaft region (levels 32W and below).

Conversion Factor

It is apparent that MSHA is concerned about the complexity of developing an appropriate conversion factor in order to determine the correct TC to EC relationship. Stillwater believes that additional research is needed in order to determine an appropriate conversion factor. Recent evidence indicates that EC:TC relationship may change depending on various dynamics such as fuel type, DPM control technologies being utilized, and engine duty cycle. The relationship between EC and TC as DPM concentrations are reduced remains unclear. Additional research is needed to determine the appropriate variability and to what extent the error factor for EC compliance determination must be increased as the DPM limits decrease.

Section 101(a)(9) of the Mine Act

Due to the premature promulgation of this rule, no available scientific evidence exists that determines any health related effects with DPM exposures at any level. The current limits lack the scientific certainty that DPM poses any health related diseases. It is because of this uncertainly that MSHA needs to delete the 160 $\mu g/m^3$ final PEL and permanently adopt the 308_{EC} $\mu g/m^3$ interim limit as the final regulated number. The NIOSH/NCI study of possible DPM related health effects is coming to conclusion, and should give evidence if DPM is correlated with any adverse health effect. MSHA has chosen not to wait for the outcome of this study and intends to promulgate the DPM rule without the justified scientific evidence of adverse health effects. By doing so, MSHA has not met the requirements of Section 101(a)(6)(A).

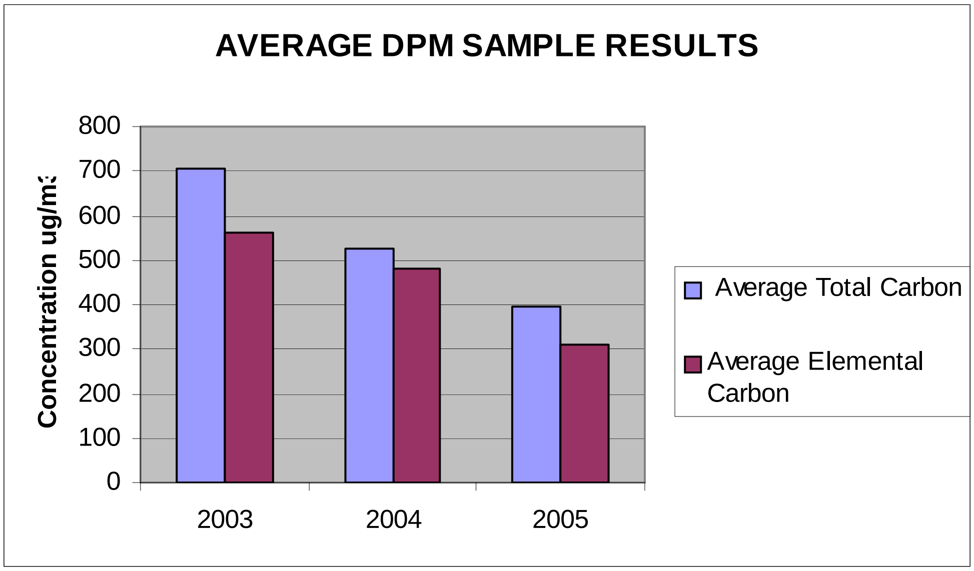
> Section 101(a)(6)(A). The Secretary, in promulgating mandatory standards dealing with toxic materials or harmful physical agents under this subsection, shall set standards which most adequately assure on the **basis of the best available evidence** that no miner will suffer material impairment of health or functional capacity even if such miner has regular exposure to the hazards dealt with by such standard for the period of his working life. Development of mandatory standards under this subsection shall be based upon **research, demonstrations, experiments**, and such other information as may be appropriate. In addition to the attainment of the highest degree of health and

> safety protection for the miner, other considerations **shall be the latest available scientific data in the field, the feasibility of the standards, and experience gained under this and other health and safety laws**. Whenever practicable, the mandatory health or safety standard promulgated shall be expressed in terms of objective criteria and of the performance desired.

MSHA is encouraged to postpone this DPM regulation until this valuable study is completed and the results of the study can be evaluated. This study is critical to help identify the appropriate exposure limit.

Respiratory Protection Program/ Medical Evaluation/ Medical Transfer

Stillwater is committed to providing a safe and healthy work environment for its employees. Unfortunately, the DPM rule has posed a significant burden on the workforce with the requirements of respiratory protection. Even with its extensive effort to reduce DPM exposures miners are currently being required to wear respirators. Based on internal DPM personal sampling 60% of the samples exceeds the 308_{EC} µg/m^3 exposure limit and 99% exceeded the 160 µg/m^3 final PEL. Although exposures have decrease ~50% since the 2001 rule was promulgated, Stillwater continues to have significant challenges to comply with the 308_{EC} µg/m^3 interim limit. To date, approximately 725 miners at the Stillwater Mine have been fit tested and enrolled into the Respiratory Protection Program. Currently, miners are required to wear respirators during certain tasks, such as operating LHD's and haul trucks that have proven to be a significant source of DPM exposure. Based on these internal samples, the use of respiratory protection would increase and ultimately be required by nearly all miners through the entire work shift as the rule continues through the proposed multi-year phase-in to the 160 µg/m^3 final PEL. This requires usage of respirators is not practical and would significantly burden the miner. Stillwater is concerned that if respirator usage were to be mandatory through the entire shift, miner's acceptance of the rule and the ability to safely remain productive would be severely compromised.



Prior to any miner being placed into a respirator, steps are taken to ensure that the miners are medically fit for wearing a negative-pressure respirator. A formal medical evaluation is conducted prior to being fit tested and annually thereafter. To date, approximately 65 miners needed additional evaluation to receive clearance to wear a negative-pressure respirator. The average cost for the additional medical evaluation was $250/visit. Estimate annual cost for medical clearance has been $16,000. Currently, miners are required to wear a respirator while performing a relatively low workload, such as operating equipment. The medical evaluation is customized for this low workload type of activities. As the DPM standard continues to become more stringent and respirator usage increases, the medical evaluation would also need to be adapted to evaluate the miner's physical condition to be able to wear the respirator for the full shift during high workload duties. This would only increase the number of miners that are unable to successfully pass the medical evaluation, increasing the need for transfer and/or termination.

The use of powered air purifying respirators (PAPR) is not practical in most mining applications, this option will only compound the cost of a respiratory program. The need for additional battery charging stations, storage facilities, and maintenance of the PAPR would significantly increase any cost associated with the respiratory program.

Currently, MSHA does not have a standard that requires medical evaluation prior to any respirator usage. Stillwater does not believe that MSHA needs to regulate and include medical evaluations in the final rule. Company's that are now required, due to the DPM rule, to place miners into respirators should not have to perform medical evaluation solely to comply to the rule. Additional research by MSHA should find that most company's that have a formal respiratory protection program are currently conducting medical evaluation in the program.

Transfer of miners unable to be medically cleared to wear a respirator needs to continue to be managed by the mine operator and through its Collective Bargaining Agreement. In the event that an employee cannot meet the requirements of wearing a respirator while performing their duties and there is no available work that the restricted employee is qualified to perform, the employee should be considered medically unfit for duty. The employment of such employees may be terminated, subject to the provisions of applicable Company policy, Collective Bargaining Agreement, and/or State or Federal law. In the event that an employee cannot meet the requirements of wearing a respirator while performing their duties and there is available work in which the person has the qualifications, the employee should be transferred to the existing and available position. The employee should receive pay at the rate of the new job classification.

As the proposed rule stands currently, a single sample collected is adequate basis for determining compliance. In the event that the sample exceeds the PEL the affected miner is required to be properly fitted and trained for a respirator. Stillwater believes that anytime the average of three samples taken by MSHA indicates the PEL has been exceeded for more than one month in any year, and MSHA determines that exposures are likely to remain above the applicable level, overexposed miners will be entitled to exercise a right to wear a respirator.

Extensions

The Isozone study results indicate that each mine has unique challenges to comply with this DPM rule and current technology may not be available to reduce DPM concentrations to the final limit. Stillwater believes that when a mine demonstrates a "good faith" attempt to reduce DPM exposure levels but needs additional time to comply, the mine should be granted a one-year renewable special extension of time to work towards compliance. Stillwater also recommends that until feasible control devices are demonstrated to be effective and commercially available for current in-mine equipment, the operator should be granted a special extension. Stillwater agrees with MSHA that extensions need to be granted and managed by the District Manager but final written determinations of both the District Manager and the Administrator for M/NM should be provided to the operator to explain the reasons for a denied extension request. Special extensions should also be granted for the entire mine or portion(s) of the mine. Pending the outcome of MSHA considerations of an application for special extensions, the PEL previously in effect or the previously granted special extension should remain the effect. This would ensure that regular communications continue throughout the DPM reduction effort of the mine operator. These special extensions should be granted until such time when feasible, effective controls are readily available to industry. MSHA would be allowed, within this provision, to review evidence of "good faith" efforts toward compliance during the extension period. MSHA should also be part of these efforts in the form of compliance assistance and information sharing. MSHA should also grant repeated special extensions as long as the operator demonstrates good faith efforts to reduce DPM levels. Stillwater also urges MSHA to provide clarity in the final rule for how these special extensions will be granted and feasibility determinations will be made.

Technological and Economic Feasibility

Technological and economic feasibility determinations are perhaps the greatest barriers to the promulgation of a supportable and effective DPM rule. The availability of DPM control technology that MSHA was certain would be available by January 2006 has not been adequate to reduce DPM concentrations to meet the 308_{EC} $\mu g/m^3$ interim limit and the 160 $\mu g/m^3$ final PEL. Stillwater's efforts to significantly reduce DPM have been met with limited success. Stillwater has seen a accumulative reduction of DPM by nearly 50% when you evaluate the ventilation upgrades, the installed DPF, engine replacements, and the additional efforts that has been implemented. The potential availability of additional controls during the multi-year phased-in approach is not guaranteed. Industry cannot rely on what "might be" available to them in the future. This statement is supported by the actual procurement, installation and replacement costs of DPM controls being significantly greater than MSHA estimated in their feasibility report.

Even with the incurred costs and efforts associated with reducing DPM exposures, Stillwater has not yet been able to find any feasible means for compliance to the 308_{EC} $\mu g/m^3$ and the 160 $\mu g/m^3$ final PEL.

Conclusion

Stillwater Mining Company maintains its commitment to provide a safe and healthful work environment for its employees. Following extensive research, analysis, and the implementation of available feasible control technologies, the Company still cannot guarantee full compliance with the 308_{EC} µg/m^3 interim exposure limit in all circumstances.

A positive result has been the Stillwater Mine DPM exposures have been significantly reduced since the introduction of the 2001 rule. However, even with these reductions, a large number of miners are now required to wear respirators. SMC has worked diligently to identify and implement economic and technologically feasible controls to comply with the 160 µg/m^3 final PEL but unfortunately, it is currently unattainable with the controls available.

Again, the staggered phased-in approach for effective dates to the final DPM concentration does not rectify the error in the rule, which includes lack of scientific justification, economical and technological feasibility, and appropriate TC:EC conversion factor.

In conclusion, we again urge expedited action by MSHA to complete the rulemaking consistent with the Interim Settlement Agreement, including: 1) the deletion of the 160 µg/m^3 final PEL; 2) the permanent adoption of the 308_{EC} µg/m^3 interim limit; 3) adoption of the compliance extension provisions for the 308_{EC} µg/m^3 limit to permit yearly applications and extensions based on feasibility issues; and 4) adoption of personal protective equipment and administrative control options, to supplement engineering controls, pursuant to existing standards and policy; 5) provide a clear explanation of the process for granting special extensions and incorporate this into the final rule.

Thank you for the opportunity to provide these comments on behalf of Stillwater Mining Company.

Appendix I

Make/Model	Operating Hours Last Year	Engine Model	Horse Power	Hours Since Rebuild	,000 HP-HR/yr
TOYOTA P/U MOD 75	2326	1HZ 6 CYL	128	12178	298
TOYOTA P/U MOD 75	1472	1HZ 6 CYL	128	1734	188
TOYOTA P/U MOD 75	142	1HZ 6 CYL	128	1109	18
TOYOTA P/U MOD 75	660	1HZ 6 CYL	128	6918	84
TOYOTA P/U MOD 75	1048	1HZ 6 CYL	128	8613	134
TOYOTA P/U MOD 75	1016	1HZ 6 CYL	128	9264	130
TOYOTA P/U MOD 75	1128	1HZ 6 CYL	128	12376	144
TOYOTA P/U MOD 75	1345	1HZ 6 CYL	128	3370	172
TOYOTA P/U MOD 79	336	1HZ 6 CYL	128	1154	43
TOYOTA P/U MOD 79	189	1HZ 6 CYL	128	1269	24
TOYOTA P/U MOD 79	0	1HZ 6 CYL	128	1056	0
TOYOTA P/U MOD 79	2321	1HZ 6 CYL	128	4474	297
TOYOTA P/U MOD 79	1515	1HZ 6 CYL	128	7117	194
TOYOTA P/U MOD 79	2209	1HZ 6 CYL	128	4393	283
TOYOTA P/U MOD 79	886	1HZ 6 CYL	128	5113	113
TOYOTA P/U MOD 79	277	1HZ 6 CYL	128	4311	35
TOYOTA P/U MOD 79	1475	1HZ 6 CYL	128	3180	189
TOYOTA P/U MOD 79	482	1HZ 6 CYL	128	2244	62
TOYOTA P/U MOD 79	1109	1HZ 6 CYL	128	1874	142
TOYOTA P/U MOD 79	91	1HZ 6 CYL	128	410	12
TOYOTA P/U MOD 79	0	1HZ 6 CYL	128	561	0
TOYOTA P/U MOD 79	231	1HZ 6 CYL	128	1723	30
TOYOTA P/U MOD 79	2047	1HZ 6 CYL	128	4015	262
TOYOTA P/U MOD 79	197	1HZ 6 CYL	128	890	25
TOYOTA P/U MOD 79	85	1HZ 6 CYL	128	865	11
TOYOTA P/U MOD 79	1202	1HZ 6 CYL	128	5422	154
TOYOTA P/U MOD 79	0	1HZ 6 CYL	128	31	0
TOYOTA P/U MOD 79	1354	1HZ 6 CYL	128	8624	173
TOYOTA P/U MOD 79	0	1HZ 6 CYL	128	34	0

Make/Model	Operating Hours Last Year	Engine Model	Horse Power	Hours Since Rebuild	,000 HP-HR/yr
TRACTOR JD 4500	721	4TNE84	39	3342	28
TRACTOR JD 4500	345	4TNE84	39	2867	13
TRACTOR JD 4510	967	4TNE84	39	3067	38
TRACTOR JD 4510	307	4TNE84	39	2098	12
TRACTOR JD 4510	512	4TNE84	39	2195	20
TRACTOR JD 4510	276	4TNE84	39	1285	11
TRACTOR JD 4510	903	4TNE84	39	2750	35
TRACTOR JD 4510	370	4TNE84	39	844	14
TRACTOR JD 4510	284	4TNE84	39	1973	11
KAWASAKI MULE 3010	0	953 cc	24	349	0
KAWASAKI MULE 3010	0	953 cc	24	158	0
KAWASAKI MULE 3010	0	953 cc	24	168	0
KAWASAKI MULE 3010	0	953 cc	24	118	0
KAWASAKI MULE 3010	0	953 cc	24	420	0
KAWASAKI MULE 3010	0	953 cc	24	326	0
KAWASAKI MULE 3010	0	953 cc	24	220	0
KAWASAKI MULE 3010	0	953 cc	24	165	0
KAWASAKI MULE 3010	0	953 cc	24	2	0
KAWASAKI MULE 3010	0	953 cc	24	8	0
KAWASAKI MULE 3010	0	953 cc	24	599	0
KAWASAKI MULE 3010	0	953 cc	24	369	0
KAWASAKI MULE 3010	0	953 cc	24	710	0
KAWASAKI MULE 3010	0	953 cc	24	253	0
KAWASAKI MULE 3010	0	953 cc	24	264	0
KAWASAKI MULE 3010	0	953 cc	24	321	0
KAWASAKI MULE 3010	0	953 cc	24	284	0
KAWASAKI MULE 3010	176	953 cc	24	724	4
KAWASAKI MULE 3010	0	953 cc	24	240	0

TOYOTA P/U MOD 79	1962	1HZ 6 CYL	128	3980	251
TOYOTA P/U MOD 79	0	1HZ 6 CYL	128	633	0
TOYOTA P/U MOD 79	51	1HZ 6 CYL	128	793	7
TOYOTA P/U MOD 79	0	1HZ 6 CYL	128	0	0
TOYOTA P/U MOD 79	279	1HZ 6 CYL	128	1809	36
TOYOTA P/U MOD 79	1986	1HZ 6 CYL	128	4023	254
TOYOTA P/U MOD 79	1360	1HZ 6 CYL	128	2723	174
TRACTOR JD 4500	524	4TNE84	39	2609	20
TRACTOR JD 4500	691	4TNE84	39	4612	27
TRACTOR JD 4500	794	4TNE84	39	5675	31
TRACTOR JD 4500	1144	4TNE84	39	5643	45
TRACTOR JD 4500	920	4TNE84	39	2339	36
TRACTOR JD 4500	900	4TNE84	39	5839	35
TRACTOR JD 4500	660	4TNE84	39	4785	26
TRACTOR JD 4500	1087	4TNE84	39	5063	42
TRACTOR JD 4500	1044	4TNE84	39	4612	41
TRACTOR JD 4500	84	4TNE84	39	3294	3
TRACTOR JD 4500	1172	4TNE84	39	4719	46
TRACTOR JD 4500	714	4TNE84	39	4139	28
TRACTOR JD 4500	232	4TNE84	39	3580	9
TRACTOR JD 4500	658	4TNE84	39	3556	26
TRACTOR JD 4500	986	4TNE84	39	4836	38
TRACTOR JD 4500	475	4TNE84	39	3961	19
TRACTOR JD 4500	1084	4TNE84	39	2118	42
TRACTOR JD 4500	571	4TNE84	39	2320	22
TRACTOR JD 4500	295	4TNE84	39	3278	12
TRACTOR JD 4500	583	4TNE84	39	2775	23
TRACTOR JD 4500	677	4TNE84	39	3810	26
TRACTOR JD 4500	968	4TNE84	39	2818	38
TRACTOR JD 4500	641	4TNE84	39	4911	25
TRACTOR JD 4500	721	4TNE84	39	5622	28
TRACTOR JD 4500	742	4TNE84	39	4529	29
TRACTOR JD 4500	371	4TNE84	39	1994	14

KAWASAKI MULE 3010	0	953 cc	24	172	0
KAWASAKI MULE 3010	0	953 cc	24	270	0
KAWASAKI MULE 3010	0	953 cc	24	684	0
KAWASAKI MULE 3010	201	953 cc	24	446	5
YOUNG BUGGY 460SL	977	BF4M1012C	105	131	103
YOUNG BUGGY 460SL	1450	BF4M1012C	105	1286	152
YOUNG BUGGY 460 UT	1379	QSB4.5L	110	20	152
YOUNG BUGGY 460 UT	1183	BF4M1012C	105	1090	124
YOUNG BUGGY 460 UT	256	BF4M1012C	105	541	27
YOUNG BUGGY 460 UT		BF4M1012C	105	6293	0
YOUNG BUGGY 460 UT	1003	BF4M1012C	105	8561	105
YOUNG BUGGY 460 UT	201	BF4M1012C	105	15	21
YOUNG BUGGY 460 UT	945	BF4M1012C	105	4684	99
YOUNG BUGGY 460 UT	641	BF4M1012C	105	5871	67
YOUNG BUGGY 460 UT	681	BF4M1012C	105	1406	72
GETMAN A-64	782	BF4M1013C	115	2605	90
GETMAN A-64	2026	BF4M1013C	115	4743	233
GETMAN A-64	1193	BF4M1013C	115	1786	137
GETMAN A-64	2768	BF4M1013C	115	30	318
GETMAN A-64	187	BF4M1013C	115	237	22
GETMAN A-64	514	BF4M1013C	115	378	59
SCISSOR LIFT DUX P1	1907	BF4M1013C	115	3891	219
SCISSOR LIFT DUX P1	1498	BF4M1013C	115	2708	172
SCISSOR LIFT EIMCO 975	684	DISPOSING	78	1556	53
SCISSOR LIFT EIMCO 975	74	DISPOSING	78	3039	6
SCISSOR LIFT MTI UVTSL6	664	BF4M1013C	115	5327	76
SCISSOR LIFT MTI UVT-SL6	482	BF4M1013C	115	541	55
TRUCK MTI U/G FUEL UVT	3119	BF4M1013C	115	8246	359
PIPE TRUCK PT-100	881	BF4M1013C	115	10907	101
GRADER CAT 120G	1121	3304	200	2319	224

TRACTOR JD 4500	324	4TNE84	39	2677	13
TRACTOR JD 4500	601	4TNE84	39	3994	23
TRACTOR JD 4500	2126	4TNE84	39	6484	83
TRACTOR JD 4500	699	4TNE84	39	4869	27
TRACTOR JD 4500	284	4TNE84	39	2133	11
TRACTOR JD 4500	651	4TNE84	39	3827	25
TRACTOR JD 4500	901	4TNE84	39	5015	35
TRACTOR JD 4500	1167	4TNE84	39	4157	46
TRACTOR JD 4500	1978	4TNE84	39	2093	77
TRACTOR JD 4500	295	4TNE84	39	1375	12
DRILL A/COPCO 282	109	F5L912	75	1871	8
DRILL A/COPCO 282	161	F5L912	75	1908	12
DRILL A/COPCO 282	132	F5L912	75	1904	10
DRILL MTI DRIFTRUNNER	120	BF4M1013C	114	14	14
DRILL MTI DRIFTRUNNER	217	BF4M1013C	114	11110	25
DRILL MTI DRIFTRUNNER	132	BF4M1013C	114	1272	15
DRILL MTI DRIFTRUNNER	239	BF4M1013C	114	1145	27
DRILL MTI DRIFTRUNNER	19	BF4M1013C	114	910	2
DRILL MTI DRIFTRUNNER	152	BF4M1013C	114	711	17
DRILL MTI VEIN RUNNER	51	F4L912	52	1059	3
DRILL A/COPCO H104	249	F4L912	52	1134	13
DRILL A/COPCO H104	185	F3L912	45	130	8
DRILL A/COPCO H104	168	F3L912	45	1697	8
DRILL A/COPCO H104	202	F3L912	45	1472	9
DRILL A/COPCO H104	297	F3L912	45	865	13
DRILL A/COPCO H104	338	F3L912	45	662	15
DRILL A/COPCO H104	206	F3L912	45	5	9
DRILL A/COPCO H104	177	F3L912	45	540	8
DRILL MTI VEIN RUNNER	204	F4L912	52	1791	11
DRILL MTI VEIN RUNNER	204	F4L912	52	282	11
DRILL MTI VEIN RUNNER	352	F4L912	52	1567	18
DRILL MTI VIEN RUNNER	0	F4L912	52	896	0
DRILL MTI VEIN RUNNER	258	F4L912	52	138	13
DRILL MTI VEIN RUNNER	2	F4L912	52	190	0

GRADER CAT 120G	3154	3126B	200	20	631
GRADER CAT 120G	1015	3304	200	2842	203
NORMET MULTIMEC 6600	1700	BF4M1012C	105	548	179
NORMET MULTIMEC 6600	1855	BF4M1012C	105	10763	195
NORMET MULTIMEC 6600	1523	BF4M1012C	105	1929	160
DRILL MTI BOLTER	188	BF4M1013C	114	1420	21
DRILL TAMROCK BOLTER	222	BF4L1011F	74	0	16
DRILL A/COPCO 282	178	F5L912	75	1953	13
TRUCK CAT AD30	1078	3406E CAT	400	1078	431
LHD MTI LT-270	1369	BF4M1012	99	1499	136
LHD MTI LT-270	1321	BF4M1012	99	8	131
LHD MTI LT-270	1560	BF4M1012	99	50	154
LHD MTI LT-270	809	BF4M1012	99	7334	80
LHD MTI LT-270	1084	BF4M1012	99	750	107
LHD MTI LT-270	1563	BF4M1012	99	7350	155
LHD MTI LT-270	1155	BF4M1012	99	1378	114
LHD MTI LT-270	837	BF4M1012	99	173	83
LHD MTI LT-270	650	BF4M1012	99	4729	64
LHD MTI LT-270	1109	BF4M1012	99	4959	110
LHD MTI LT-270	1143	BF4M1012	99	2490	113
LHD MTI LT-270	1229	BF4M2012	99	0	122
LHD MTI LT-270	1545	BF4M1012	99	37	153
LHD MTI LT-270	0	BF4M1012	99	929	0
LHD MTI LT-270	0	BF4M1012	99	736	0
LHD MTI LT-270	824	BF4M1012	99	4934	82
LHD MTI LT-270	877	BF4M1012	99	7096	87
LHD MTI LT-270	998	BF4M1012	99	4480	99
LHD MTI LT-270	845	BF4M1012	99	5721	84
LHD MTI LT-270	915	BF4M1012	99	573	91
LHD JCI-125M	585	F4L912W	99	2628	58
LHD MTI 125M	829	F4L912W	52	268	43

DRILL MTI VEIN RUNNER	204	F4L912	52	1501	11
DRILL A/COPCO H157 SIMBA	85	F3L912	45	829	4
SKID STEER CASE 1840	108	4390	80	2892	9
SKID STEER CASE 1845C	190	4390	80	5327	15
SKID STEER CASE 1845C	251	4390	80	775	20
SKID STEER CASE 85XT	567	4390	80	2542	45
SKID STEER CASE 85XT	1022	4390	80	3942	82
SKID STEER CASE 85XT	53	4390	80	824	4
SKID STEER CASE 85XT	704	4390	80	3173	56
SKID STEER CASE 85XT	174	4390	80	562	14
SKID STEER CASE 85XT	993	4390	80	0	79
SKID STEER CASE 85XT	581	4390	80	1448	46
SKID STEER CASE 85XT	302	4390	80	918	24
SKID STEER CASE 85XT	9	4390	80	228	1
SKID STEER CASE 85XT	869	4390	80	3506	70
FORKLIFT MTI POWDER TRUCK	1236	BF4M1013C	115	1145	142
FORKLIFT TOYOTA	12	1DZ-11	59	1843	1
FORKLIFT TOYOTA	493	1DZ-11	59	3250	29
FORKLIFT TOYOTA	129	1DZ-11	59	901	8
FORKLIFT TOYOTA	253	1DZ-11	59	1914	15
FORKLIFT TOYOTA 7FDU20	0	1DZ-11	59	425	0
FORKLIFT TRIPLE-4CE	1215	1004-4	75	8805	91
FORKLIFT TRIPLE-4CE	1172	1004-4	75	8322	88
FORKLIFT TRIPLE-4CE	1620	1004-4	75	5616	122
TRUCK MTI DT-1604	1967	BF6M1013FC	209	0	411
TRUCK MTI DT-1604	3389	BF6M1013FC	209		708
TRUCK MTI-DT-1604	1412	BF6M1013FC	209	400	295
TRUCK MTI DT-1604	2446	BF6M1013FC	209	5	511
TRUCK MTI DT-1604	1680	BF6M1013ECP	209	4290	351
TRUCK MTI DT-1604	2466	BF6M1013ECP	209	3013	515
TRUCK MTI DT-1604	3261	BF6M1013FC	209	2509	682

LHD MTI LT-210	393	F4L912W	52	8790	20
LHD MTI LT-210	772	F4L912W	52	1612	40
LHD MTI LT-210	768	F4L912W	52	112	40
LHD MTI LT-210	612	F4L912W	52	344	32
LHD MTI LT-350	1165	BF4M1013FC	151	400	176
LHD MTI LT-350	1679	BF4M1013FC	151	300	254
LHD MTI LT-350	1570	BF4M1013C	139	0	218
LHD MTI LT-350	1392	904 MERC	147	2701	205
LHD MTI LT-350	2362	BF4M1013FC	151	200	357
LHD MTI LT-350	1409	BF4M1013C	139	1430	196
LHD MTI LT-350	286	BF4M1013FC	151	316	43
LHD MTI LT-350	1478	BF4M1013FC	151	1158	223
LHD MTI LT-350	1621	BF4M1013C	139	1704	225
LHD WAGNER ST-2D	236	BF4M1013C	139	3410	33
LHD WAGNER ST-2D	1752	BF4M1013FC	151	4440	265
LHD WAGNER ST-2D	1625	BF4M1013FC	151	4756	245
LHD WAGNER ST-2D	1064	BF4M1013C	139	7228	148
LHD WAGNER ST-2D	1416	BF4M1013C	139	2791	197
LHD WAGNER ST-2D	968	BF4M1013FC	151	1725	146
LHD WAGNER ST-2D	556	BF4M1013C	139		77
LHD WAGNER ST-2D	289	BF4M1013FC	151	795	44
LHD WAGNER ST-2D	1041	BF4M1013FC	151	49	157
LHD MTI LT-350	1160	BF4M1013FC	151	282	175
LHD WAGNER ST-2D	1308	BF4M1013FC	151	4589	198
LHD MTI LT-350	1554	BF4M1013FC	151	483	235
LHD MTI LT-350	1490	BF4M1013FC	151	28	225
LHD MTI LT-350	1562	BF4M1013C	139	11289	217
LHD MTI LT-350	1578	BF4M1013C	139	98	219
LHD WAGNER ST-3.5	1218	3126B CAT	200	1604	244
LHD WAGNER ST-3.5	957	3126B CAT	200	1426	191
LHD WAGNER ST-3.5	1241	3126B CAT	200	2336	248
LHD WAGNER ST-3.5	1638	3126B CAT	200	2959	328
LHD WAGNER ST-3.5	930	3126B CAT	200	1026	186

TRUCK MTI DT-1604	2704	BF6M1013FC	209	1410	565
TRUCK MTI DT-1604	3248	BF6M1013FC	209	2759	679
TRUCK MTI DT-1604	2789	BF6M1013FC	209	1575	583
TRUCK MTI DT-1604	2785	BF6M1013FC	209	1219	582
TRUCK MTI DT-1604	2593	BF6M1013FC	209	973	542
TRUCK MTI DT-1604	3222	BF6M1013ECP	209	4441	673
TRUCK MTI DT-1604	2722	BF6M1013FC	209	1594	569
TRUCK MTI DT-1604	3839	BF6M1013FC	209	3000	802
TRUCK EJC 515	3507	BF6M1013FC	225	2500	789
TRUCK EJC 515	2627	BF6M1013FC	225	1962	591
TRUCK EJC 515 32W	2539	BF6M1013FC	225	3434	571
TRUCK EJC515 32W	0	BF6M1013ECP	225	3000	0
TRUCK EJC 413					0
TRUCK CAT AD30	2277	3406E CAT	400	5077	911
TRUCK CAT AD30	2340	3406E CAT	400	2800	936
LOCI BROOKVILLE 20T	4883	BF6M1013FC	209	1947	1021
LOCI BROOKVILLE 20 TON	6963	BF6M1013FC	209	13693	1455
LOCI BROOKVILLE 20 TON	6135	BF6M1013FC	209	0	1282
LOCI BROOKVILLE 20 TON	6448	BF6M1013FC	209	9937	1348
LOCI PLYMOUTH 10 TON	1191	BF4M1013C	139	1673	166
LOCI PLYMOUTH 15T	1255	BF4M1013C	139	967	174

LHD WAGNER ST-3.5	1072	3126B CAT	200	295	214
LHD WAGNER ST-3.5	323	3126B CAT	200	887	65
LHD ELPHINSTONE R-1300	2474	3306 CAT	165	2644	408
LHD ELPHINSTONE R-1300	1546	3306 CAT	165	1965	255
LHD ELPHINSTONE R-1300	1617	3306 CAT	165		267
LHD ELPHINSTONE R-1300	1629	3306 CAT	165	10774	269
LHD ELPHINSTONE R-1300	2318	3306 CAT	165	2080	382
LHD ELPHINSTONE R-1300	3343	3306 CAT	165	5786	552
LHD ELPHINSTONE R-1300	1556	3306 CAT	165	9157	257
LHD ELPHINSTONE R-1300	3524	3306 CAT	165		581
LHD ELPHINSTONE R-1300	2738	3306 CAT	165	15	452
LHD ELPHINSTONE R-1300	1989	3306 CAT	165	9100	328
LHD ELPHINSTONE R-1300	3797	3306 CAT	165	5756	627
LHD ELPHINSTONE R-1300	2227	3306 CAT	165	3200	367
LHD ELPHINSTONE R-1300	1721	3306 CAT	165	2097	284
LHD ELPHINSTONE R-1300	3428	3306 CAT	165	3731	566
LHD ELPHINSTONE R-1300	2052	3306 CAT	165	7872	339
LHD ELPHINSTONE R-1500	1853	3306 CAT	210	3204	389
LHD ELPHINSTONE R-1500	1148	3306 CAT	210	1893	241