

**Mechanical & Engineering  
Safety Division  
(M&ESD)**

**NMA Approval Workshop  
@ A&CC**

**May 21 & 22, 2008**

# M&ESD

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# M&ESD PRESENTATION

1. M&ESD Program Areas
2. Approval Programs
3. KEY Application Points

# Program Areas

- Approval Programs
  - Diesel Powered Equipment
  - Dust Collection Systems
- Wire Rope Evaluations
- Fire Protection Systems
- Explosives Safety
- Technical Assistance
  - Accident Investigations
  - Training
  - Inspector and Industry Assistance



# Wire Rope Nondestructive Testing





# Nondestructive Testing Equipment

LMA 250

LMA 125

Digital  
Multimeter

NDT Controller

LMA 75

Strip Chart Recorder



# Fire Protection Systems Engineering



**Fire Suppression Systems in Mines**



**Machine Fire Suppression Systems**



# Explosives Safety



# Explosives Safety



Shot fired at Western Copper Mine

# *Technical Assistance*



## Examples:

- Inspector Support
- Training
- Accidents
- Regulations
- Litigation
- Stakeholder Requests for Compliance Assistance



# Accident Investigations

Identify contributing factors









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# M&ESD

## APPROVAL PROGRAM AREAS

# M&ESD APPROVAL WEB LINKS

- <http://www.msha.gov/>
- <http://www.msha.gov/TECHSUPP/ACC/ACHOME.HTM>
- <http://www.msha.gov/TECHSUPP/ACC/application/application.htm>
- <http://www.msha.gov/TECHSUPP/ACC/StandardTestProcs/StandardTestProcs.asp>
- <https://lakegovprod2.msha.gov/ManufacturerStatusReport.aspx>

# Dust Collectors (Part 33)

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OR

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# Dust Collectors (Part 33)

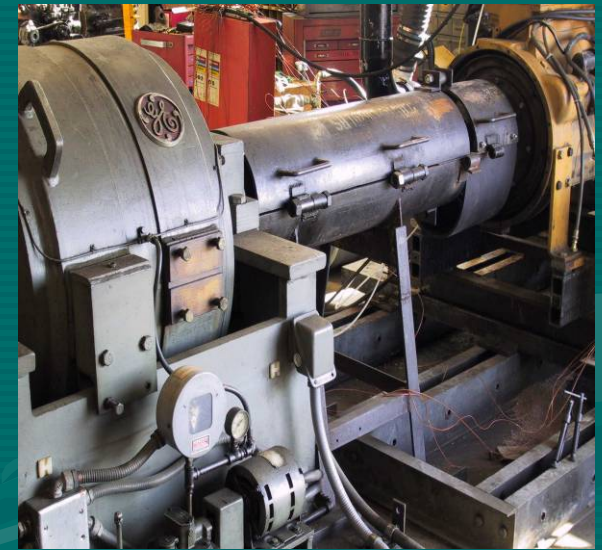
<http://www.msha.gov/30cfr/33.0.htm>



M&ESD

DIESEL PROGRAM AREAS

# Diesel Laboratory



**Productivity / Safety / State-of-the-Art**



# Diesel Program Areas

- Diesel Approval Process
- Special Approval Programs & Approval Changes
- Field Modifications
- New Technologies

# Diesel Approval Process

## BUILDING BLOCKS

- Part 7, Subpart E, Category B Engines
- Part 7, Subpart E, Category A Engines
- Part 7, Subpart F, Power Package
- Diesel Electric Evaluation (DE)
- Part 36 Machine Approval - Coal -



# Diesel Engines

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# Diesel Approval Process

Part 7, Subpart E, Category B Engines

- <http://www.msha.gov/30cfr/7.0.htm>
- <http://www.msha.gov/30cfr/7.83.htm>

# DIESEL ENGINES

## PART 7

Testing by Applicant or Third Party

# DIESEL ENGINES

Applicants Submits Certified Statements

- Compliance with Design Specifications
- Compliance with Test Requirements
- Quality Assurance

# DIESEL ENGINES

Third party laboratory evaluations

- Test and Observations

- MSHA observes first test and any additional testing deemed necessary

# Diesel Approval Process

## Part 7, Subpart E, Category A Engines

- <http://www.msha.gov/30cfr/7.0.htm>
- <http://www.msha.gov/30cfr/7.83.htm>



July 31, 2006

**Letter to all Diesel Power Package Manufacturers and Diesel Engine Manufacturers**

The development of permissible diesel equipment utilizing newer engines has been hindered due to the small number of permissible engines approved under Code of Federal Regulations, Title 30 Part 7 Subpart E. This letter announces a change in the Mine Safety and Health Administration's (MSHA) Approval and Certification Center (A&CC) procedures to help promote a greater availability of engines for permissible machines.

The A&CC approves engines that are installed in permissible diesel equipment for use in underground gassy mines. Part 7 lists two categories of engines: Category A, (engines for use where permissible electric equipment is required) and Category B, (engines for use where nonpermissible electric equipment is allowed). Part 7 defines an applicant as an organization that manufactures or controls the assembly of a product and that applies to MSHA for approval of that product. To date MSHA has only considered engine manufacturers as applicants for engine approvals. Due to the limited supply of permissible engines, MSHA will also consider parties other than the engine manufacturer as applicants for Category A engine approvals under specific conditions. Applications for Category A diesel engine approvals from a third party will be accepted under the following conditions:

- The Category A application must be made in conjunction with an application for a diesel power package approval under Subpart F.
- The diesel engine must have prior approval under Part 7, Category B.
- The engine must operate within the engine manufacturer's specifications.
- MSHA will require additional specifications that are not required for Category B. The applicant may be responsible for coordinating efforts between the Category B approval holder and MSHA to ensure that the additional information is provided.
- Exhaust treatment devices may be submitted for evaluation with the engine. Devices will be evaluated to determine their effects on engine ventilation rate, particulate index, etc.
- Power ratings and speeds other than those in the Category B approval may be submitted with the Category A application. These specifications cannot be greater than Category B settings. Settings will be tested to establish ventilation rates and particulate indexes.
- Applicants must follow Part 7 procedures which include test laboratory requirements. General requirements for Part 7 approvals specified in Subpart A must also be met.
- MSHA may conduct the Category A testing at the A&CC, depending on testing backlog.
- A Category B approval label will be installed by the engine manufacturer, and a Category A approval label must be installed by the diesel power package manufacturer.

If you have any questions, please call Mr. Robert Setren at 304-547-2070.

Sincerely,

A handwritten signature in black ink, appearing to read "John P. Faini".

John P. Faini

Chief, Mechanical & Engineering Safety Division, A&CC

# Permissible Diesel Power Packages

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OR

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# Permissible Diesel Power Packages

<http://www.msha.gov/30cfr/7.97.htm>

# Permissible Diesel Power Packages

## PART 7 :

Testing by Applicant or Third Party

HOWEVER

Preamble of diesel regulations stated  
MSHA would continue to test.

# Permissible Diesel Power Packages

- Requires a Category A Approved Engine
- Approved Under Part 7 Subpart F
- Similar to Part 36 Safety Comp. Systems
- Exhaust System
  - explosion proof requirements
  - exhaust gas cooling
  - flame and spark arresting
  - surface temperature controls

# Permissible Diesel Power Packages

- Intake System
  - explosion proof requirements
  - intake flame arrester
  - emergency intake air shut off valve
- Safety Shutdown System
  - high coolant temperature
  - high exhaust gas temperature
  - low water shutdown on wet systems
  - other shutdown requirements

# Diesel Machine Approval

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# Diesel Machine Approval

<http://www.msha.gov/30cfr/36.6.htm>

# Diesel Machine Approval Required Drawings

Simplified Drawings are acceptable  
(actually they are **PREFERRED**) in  
lieu of Production Drawings

# Diesel Machine Approval Required Drawings

1. General Arrangement Drawing
2. Fuel System Drawing
3. Hydraulic System Drawing (Braking/Safety System/Steering System)
4. Pneumatic System Drawing (Starting / Braking/ Safety System)
5. Operator's Compartment Drawing
6. Approval Plate Drawing



# Diesel Machine Approval Required Forms and Checklists

- Machine Factory Inspection Form
- Machine Permissibility Checklist

# Permissible Diesel Machine Features

- Installation of Power Package
- Hydraulic and Pneumatic Systems
- Brakes/Steering
- Fuel System
- Exhaust Gas Dilution

# Permissible Diesel Machine Features

- Guarding
- Hose Routing
- Operator's Compartment
- Fire Suppression/Fire Extinguisher
- V belts shall be static conducting

# Diesel Machine Approval

## Certification Statements

1. Guarding & Hose Routing
2. Operator's Compartment
3. Fire Suppression/Fire Extinguisher
4. V belts shall be static conducting

# Diesel Machine Approval

## UNIQUE

- Total machine approval (brakes, operator safety, etc.)
- Evaluate to Part 75 (Subpart T Diesel-Powered Equipment) requirements
- Permissibility Checklists
- 30 CFR § 36.20(a) MSHA will test only equipment that in the opinion of its qualified representatives is constructed of suitable materials, is of good quality workmanship, based on sound engineering principles, and is safe for its intended use. .....

# Diesel Machine Approval

## Machine Inspection

- Need Completed FIF
- Done at the site you specify
- Permissibility Checklists
- Exhaust Gas Dilution Test
- Drawing Comparison

# Special Approval Programs & Approval Changes

- RAMP
  - example, making change to a manifold used on many different power packages
- Category A Engine Approval to Power Package Manufacturer
- Subassembly Certification
  - example, flame proof ports



# New Technology

- 30 CFR § 36.20(a) MSHA ..... Since all possible designs, arrangements, or combinations of components and materials cannot be foreseen, MSHA reserves the right to modify the construction and design requirements of subassemblies or components and tests thereof to obtain the same degree of protection as provided by the tests described in Subpart C of this part.



# New Technology

- Interested in assisting the mining industry in the safe and timely introduction of new technologies which will enhance safety and health
  - diesel particulate filter
  - dry exhaust gas conditioning system
  - flame proof port

# Field Modifications

- Issued to Mines
  - Informal! Accept Forms or Letter
  - For changes to specific serial number machines at specific mine sites.
  - Description of change and also sketches, drawings, photos

# KEY APPLICATION POINTS

## 1. *CONSULT US*

*(NO FEE Before Applying)*



# KEY APPLICATION POINTS

1. CONSULT US (Before Applying)
2. *Apply Early*



# KEY APPLICATION POINTS

1. CONSULT US (Before Applying)
2. Apply Early
3. *Submit Sufficient & “GOOD” Drawings*

# KEY APPLICATION POINTS

1. CONSULT US (Before Applying)
2. Apply Early
3. Submit Sufficient & “GOOD” Drawings
4. *Include Required Certification Statements*

# KEY APPLICATION POINTS

1. CONSULT US (Before Applying)
2. Apply Early
3. Submit Sufficient & “GOOD” Drawings
4. Include Required Certification Statements
5. *Respond & Understand Discrepancies*

# KEY APPLICATION POINTS

1. CONSULT US (Before Applying)
2. Apply Early
3. Submit Sufficient & “GOOD” Drawings
4. Include Required Certification Statements
5. Respond & Understand Discrepancies
6. *Drawings = Parts*



# KEY APPLICATION POINTS

1. CONSULT US (Before Applying)
2. Apply Early
3. Submit Sufficient & “GOOD” Drawings
4. Include Required Certification Statements
5. Respond & Understand Discrepancies
6. Drawings = Parts

**7. *BOYSCOUT MOTTO:  
BE PREPARED***

# KEY APPLICATION POINTS

However (IMO) the “KEYEST” Point of all is:

*COMMUNICATE*

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# Any M&ESD Questions or Concerns

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# M&ESD APPROVAL WEB LINKS

- <http://www.msha.gov/>
- <http://www.msha.gov/TECHSUPP/ACC/ACHOME.HTM>
- <http://www.msha.gov/TECHSUPP/ACC/application/application.htm>
- <http://www.msha.gov/TECHSUPP/ACC/StandardTestProcs/StandardTestProcs.asp>
- [http://www.msha.gov/TECHSUPP/ACC/DBs\\_earch/PARlook.htm](http://www.msha.gov/TECHSUPP/ACC/DBs_earch/PARlook.htm)