U.S. Department of Labor
MSHA
Mine Safety & Health Administration

Machine Application, Evaluation & Approval Process

2024 Approval & Certification Center

Approval Workshop

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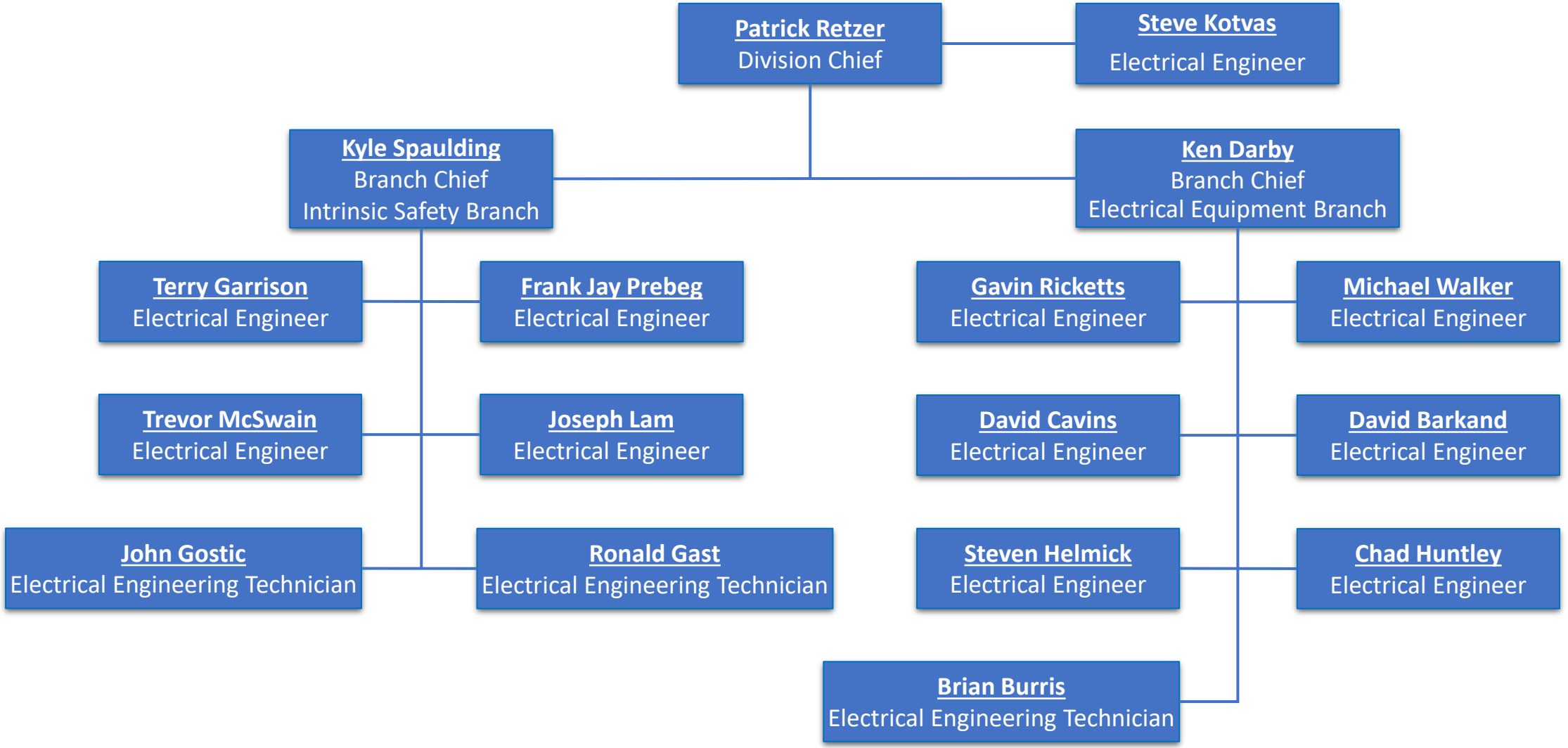
David Cavins

Electrical Engineer

ESD Staff


Patrick Retzer
Division Chief
Steve Kotvas
Electrical Engineer
Kyle Spaulding
Branch Chief
Intrinsic Safety Branch
Ken Darby
Branch Chief
Electrical Equipment Branch
Terry Garrison
Electrical Engineer
Frank Jay Prebeg
Electrical Engineer
Gavin Ricketts
Electrical Engineer
Michael Walker
Electrical Engineer
Trevor McSwain
Electrical Engineer
Joseph Lam
Electrical Engineer
David Cavins
Electrical Engineer
David Barkand
Electrical Engineer
John Gostic
Electrical Engineering Technician
Ronald Gast
Electrical Engineering Technician
Steven Helmick
Electrical Engineer
Chad Huntley
Electrical Engineer
Brian Burris
Electrical Engineering Technician

Difference between an approval / certification / acceptance / evaluations?

- ***Approval*** **– A formal document issued by MSHA which states that a completely assembled product has met the applicable requirements and which authorizes the attachment of an approval plate.**
  - **Part 7 products are also referred to as "approved"**
  - **Sometimes referred to by industry as the "2G" number. (Refers to the previous approval numbering system under Schedule 2G.)**

- ***Certification*** **– A formal written notification issued by MSHA which states that a component complies with the applicable requirements and is suitable for incorporation on approved equipment. (e.g., XPs and Methane Monitors) Also entails the attachment of a certification plate**

- ***Acceptance*** **– Written notification by MSHA that a product has met the applicable requirements and will be listed by MSHA as acceptable.**

- ***Evaluations*** **– A formal written notification issued by MSHA which states that a "system" complies with applicable requirements and is suitable for incorporation on approved equipment. (i.e., Shearers)**

Definitions

Permissible -
"…As applied to electric face equipment, all electrically operated equipment taken into or used inby the last open crosscut of an entry or a room of any coal mine the electrical parts of which, including, but not limited to, associated electrical equipment, components, and accessories, are designed, constructed, and installed, in accordance with the specifications of the Secretary, to assure that such equipment will not cause a mine explosion or mine fire, and the other features of which are designed and constructed, in accordance with the specifications of the Secretary, to prevent, to the greatest extent possible, other accidents in the use of such equipment…"

Inby - Nearer to the working face; away from the mine entrance.

Outby – Nearer to the shaft, and hence farther from the working face. Toward the mine entrance. The opposite of inby.

ASAP – Approval Standard Application Procedure

ACRI – Approval Criteria

X/P – Explosion Proof

Electrical Safety Division (ESD)

- **Complete mining machine approvals**
- **Intrinsically safe systems evaluations**
- **Communication & Tracking**
- **Proximity Detection Systems (Approvals) & Machine Integration**
- **Mine component acceptances:**
  - Proximity Detection Systems (PDA)
  - Shearer Evaluations (SE)
  - Diesel Electric Evaluations (DE)
  - Ground Wire Monitors
  - Monitor and Power Systems (MAPS)
  - Mine Wide Monitoring Systems
  - Elastomer Connectors
  - Fused Vacuum Contactor Circuit Breakers

Intended Discussion Segments

1. **Why are Mining Machine Approvals required**
2. **What are Mining Machines**
3. **How to Get Started to Apply for a Mining Machine Approval**
4. **Evaluation and Technical Process used by the Approval and Certification Center (A&CC) for Mining Machine Approvals**
5. **Common Discrepancies for Mining Machine Approvals**
6. **How to Expedite your Application for Mining Machine Approvals**
7. **Questions**

Why is MSHA approval required?

- **Federal Mine Safety & Health Act of 1977, Public Law 91-173**

- **30 CFR 75.500 requires the use of "permissible" equipment in gassy areas of underground coal mines**

- **30 CFR 57.22302 requires MSHA approved equipment for use in hazardous areas of underground gassy metal and nonmetal mines**

- **Specific parts of 30 CFR were promulgated to ensure compliance of mining equipment with the Federal Mine Safety & Health Act of 1977 and Mine Improvement and New Emergency Response Act of 2006.**

What are Mining Machines?

- **A mining machine is a device that is used to extract minerals from the Earth.**

- **Most mining machines are evaluated according to ASAP2011**

- **Some types of mining machines:**
  - **Continuous Mining Machines**
  - **Scoops**
  - **Drills**
  - **Roof Bolters**
  - **High Voltage Longwall Mining Systems**

What are Mining Machines?

Roof Bolter

Continuous Mining Machine

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What are Mining Machines?

Drill

Scoop

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These are also considered mining machines relative to 30 CFR, Part 18

Belt Scales

Rockduster

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How does the MSHA ESD approval process work?

In general, the process is as follows:

1. Manufacturer submits application & drawings
2. Fee estimation process
    a) Preliminary Review
    b) Pre-authorizations
    c) Blanket Authorizations
3. Investigator Documentation Review / Compliance Verification
4. Investigator Discrepancy Letters
    a) Provide applicant with list of discrepancies
    b) Applicant provides edits/revisions/changes to meet the requirements
    c) Investigator review of Applicant response(s)
5. Investigator Testing / Inspection
6. Finalization / Approval Letter
    a) Conditions of Use

Where can I find information on the MSHA approval process?

- MSHA's website
- A&CC Homepage
  - Application Procedures
  - Application Status Feature
  - Evaluation Criteria (e.g. Intrinsic Safety Evaluation Criteria)
  - Test Procedures
  - Lists of Approved Products

Need help with preparing application?

- **A&CC webpage has a compliance guide search feature**
- **Application procedure forms and checklists can be found at the above link**
- **Free A&CC approval application consultation services are available.**

How to Begin an Application electronically.

- **Email**
  - **Send as attachments**
    - The maximum file size is 20MB – however, file attachment size may increase by up to 30% depending on the sender's email system, impacting the ability to send large files.
  - **Can send multiple emails for same application**
  - **ipso@dol.gov**

- **FTP Submittal**
  - **Posted at mfgr.msha.gov**
  - **No file size limit or number of files limit**
  - **Applicant can organize and view files**
  - **Contact ipso@dol.gov for more information on setting up FTP account**
  - **Can still use email to send drawing corrections directly to the investigator**

Can I monitor my application status?

- **Product Approval / Application Status Search**
  - **Obtain a Manufacturer ID from ipso@dol.gov**
  - **Equipment Approval and Certification webpage**
  - **View your Application Lifecycle from Estimate to Invoice Payment**
- **Online application status site provides:**
  - **PAR #**
  - **Date Rec.**
  - **Company ID**
  - **Employee Name**
  - **Status Code**
    - **2 – Awaiting Initial Action**
    - **3- Investigation in Progress**
    - **4C – Awaiting company response**
  - **Status Date**

Evaluation Process

- **Applications, once fee authorizations are completed, are assigned to an investigator in the order they are received, except as outlined below:**

  - **Requests from Mine Safety and Health Enforcement (MS&H) stating that, in the interests of safety and health, the application is needed on a priority basis to meet the expressed need.**

  - **Longwall and related approval applications are prioritized ahead of all other types of approval applications.**

  - **Other equipment, components and devices may receive priority processing based on critical safety and/or health issues being addressed by the Agency where expediting approval applications that address safer and/or advanced technology applicable to the issues, will result in improved safety and health for the nation's miners.**

Part 18 Machine Approvals

- ASAP 2011 PDF

Should include but not limited to:

- **Assembly/Layout drawing, Showing general location of components and cables**
- **Bill of Material/Table, Identifying pertinent components**
- **Schematics: Identifying overcurrent devices and settings**

(Use ASAP2011 checklist to identify required information for your machine)

Compliance Information Guides

- **Mining Machine categories of equipment include the following:**
  - Battery Powered Mobile Machines
  - Batteries for Mobile Machines
  - Electric Mining Machines
  - Diesel Electrics
  - Experimental Permits for Machines
  - Permissible Fans
  - Field Modifications of Electric Machines
  - Longwall Mining Machines
  - Water Pumps

Technical Evaluation

- **The assigned investigator will evaluate the application to determine compliance with established regulations, policies, and procedures.**

- **From this evaluation, the investigator will draft a discrepancy letter where the application/design does not comply.**

- **The investigator may request test samples from the applicant when required to determine compliance with established regulations, policies, and procedures.**

Technical Evaluation

- **The investigator will contact the individual designated in the application letter to discuss the application and any pertaining discrepancies in the discrepancy letter.**

- **The discrepancy letter may include a listing of additional documentation, components, samples, and/or needed factory inspections scheduled required for evaluation.**

- **If the applicant does not resolve all the discrepancies and/or give the needed samples required for testing listed in the time specified within the discrepancy letter, the investigation will be cancelled.**

Technical Evaluation

- **Effective October 1, 2019, the A&CC will no longer continue the practice of issuing multiple discrepancy letters for individual approval applications.**

- **After an applicant approves a fee estimate, we will conduct a thorough review of the complete application and conduct or observe any required performance tests. If we do not find any discrepancies and your product passes the performance tests, we will issue you an approval.**

For additional information, please see the full Approval Application Evaluation Process MEMORANDUM here. MEMORANDUM FOR APPROVAL APPLICANTS (msha.gov)

Clarification of Approval Application Evaluation Process

Clarification of Approval Application Evaluation Process (msha.gov)

Technical Evaluation

- **After all the technical documents are evaluated, a factory inspection may be required if the machine is a new design. However, we reserve the right to inspect every machine that is submitted for approval.**

- **Once this is completed and any changes required as a result of the inspection are finalized, the official approval number will be issued, unless specific circumstances dictate otherwise.**

MSHA approval numbering system

Approval No. 18-ISA240001-0

- 18 – represents the applicable 30 CFR Part
- IS – represents special approval number designations
  - IS for Intrinsic Safety
  - There will be no designator for approved machinery
- A – represents 30 CFR standards
  - B is reserved for future non-MSHA product safety standard(s).
- 24 – Two-digit calendar year in which approval is issued
- 0001 – Four-digit sequential approval number issuance
- 0 – extension number

Technical Evaluation

- **The applicant will receive an invoice for the cost of the investigation after the investigation is either completed or cancelled.**

- **The approval holder is responsible for producing products in accordance with approved drawings and specifications.**

- **After receiving equipment/products, the owner is responsible for maintaining in accordance with the MSHA approval.**

What is MSHA's Cancellation Policy?

- **The manufacturer must address any discrepancies within the time frame specified (extenuating circumstances are taken into consideration.)**

- **The manufacturer must address all items in the discrepancy letter.**

- **The manufacturer will be given a 1-week notice before any application is cancelled.**

Modifying a Previously Approved or Evaluated Product

- **Revised Approval Modification Program (RAMP)**
  - **Most commonly used**
- **Extensions of Approval**
  - **Extensions typically include more extensive changes than RAMPs**
- **Field Modifications**
  - **Submitted by mine operators**

20 Common Discrepancies

1. **Not showing the quantity of a component listed on the BOM on the schematic and layout drawing.**

2. **Not providing the nominal cable diameter and tolerance.**

3. **Not providing all the electrical ratings necessary for DC power supplies and control transformers.**

20 Common Discrepancies

4. **Not providing all the ratings for protective devices.**
5. **Not identifying all I.S. components and circuits on schematics with MSHA I.S. evaluation number and extension.**
6. **Not providing required notes on drawings.**

Examples:

- **“Do not change without approval of MSHA”**
- **“Wiring for non-intrinsically safe circuit conductors and intrinsically safe circuit conductors is not intermingled with wiring for other intrinsically safe circuit conductors.”**
- **“Any change(s) in the intrinsically safe circuitry or components may result in an unsafe condition.”**

20 Common Discrepancies

7. **Problems with drawing numbers and sheet numbers.**
   - **The drawing numbers 1234567-Sht1 and 1234567-Sht2 would be treated as two different drawings instead of one drawing 1234567 with two sheets.**

8. **Drawing numbers on the drawing not matching the drawings on the drawing list.**

9. **Calling out another manufacturer's drawing number without including the manufacturer's name that owns the drawing.**

20 Common Discrepancies

10. Not providing all the information needed to evaluate compliance for microprocessor-based overload protection (ACRI2007.)

11. Typos on all areas of the drawings.

- **Most commonly when specifying and MSHA approval, certification, and/or evaluation numbers**
- **Omitting the extension number to the above.**

12. Problems with listing components as alternate, optional, or both.

20 Common Discrepancies

13. **Improper short circuit protection for cables exiting X/P enclosures.**

14. **Part 7 battery tray electrical specifications not listing discharge to 20% capacity for setting the circuit breaker.**

15. **Not listing the discharge times for high voltage capacitors in enclosures.**

20 Common Discrepancies

16. **Missing gland specifications regarding modifications to an X/P enclosure on a field modification.**

17. **Not listing electrical specifications (e.g. voltage and wattage) for lighting enclosures.**

18. **Not providing the duty rating of electric motors.**

20 Common Discrepancies

19. Listed cables missing any of the following information:

All intercomponent (machine) cables are identified by:

a. Conductor size, (e.g., 1/0 A.W.G.).

b. Type of cable, (e.g., G-GC).

c. Number of conductors, (e.g., 3).

d. Electrical rating, (e.g., 2KV).

e. Outer diameter, with tolerance (e.g., 1.65", ± 0.04").

f. Conductor temperature rating in degrees centigrade (e.g., 90°C) and the ampacity.

The trailing (portable) cable is identified by:

a. Conductor size, (e.g., 4/0 A.W.G.)

b. Type of cable, (e.g., SHD-GC).

c. Number of conductors, (e.g., 3).

d. Electrical rating, (e.g., 2 kV).

e. Outer diameter, with tolerance (e.g., 2.31", ± 5%).

f. Conductor temperature rating in degrees centigrade, (e.g., 90°C).

g. Type of insulation, (e.g., EPR).

h. Maximum length, (e.g., 500 feet).

Note: The trailing cable nominal outer diameter, outer diameter tolerance, and ampacity must be consistent with Insulated Cable Engineers Association (ICEA) Standards.

20 Common Discrepancies

20. No Drawing List submitted with original application.

INVESTIGATION NO. MR-(leave blank)

DRAWING LIST

GHI Company
Model RB1, 440/550 Volt, 3 Phase, 60 Hertz, Alternating Current,
Roof Bolter with Integral Dust Collecting System
Built According to Assembly Drawing A-500
Maximum Tramming Speed - 1 mi/h
Approval No. 2G-(leave blank)-0

TITLE	DRAWING	PART NO.	REVISION
Assembly Drawing	A-500	-	A
Bill of Material	B-500, 3 Shts	-	A
Electric Diagram	C-500	-	A
(Alt.) Electric Diagram	D-500	-	A
Strain Clamp	*E-500	2	3
Caution Statement	F-500	-	D
Factory Inspection Form	G-500	-	E

* VWX Company Drawing

Can you find the discrepancies?

Wiring Information					
Item	Qty.	Description	Cable O.D.	Temp.	Route
A	1	#1-3 Conductor G-GC RD, 2000V	1.500”	90°C	Cable Reel to Controller
Alt A	1	#2-3 Conductor G-GC RD, 2000V	1.300”	90°C	Cable Reel to Controller
B	2	#6-4 Conductor Type W RD, 2000V	1.100”	90°C	Controller to Motor
Alt B	2	#2-4 Conductor Type W RD, 2000V	1.400”	90°C	Controller to Motor

Components				
Item	Qty.	Manufacturer	MSHA Approval	Description
1	1	DBC Equipment	X/P 2222-22	Cable Reel
2	1	DBC Equipment	18-XPA12345	Controler
3	2	DBC Equipment	1234-23	Motor

Level	Date	Revision	By	DBC Equipment			
A	10/12/2017	MSHA Release	DBC	Bill of Materials			
B	2/16/2021	Add Alt Cable	DBC	By: DBC	Sheet: 1 of 1	DWG: DBC-111	Rev: A

None of the above information is real or factual. Example for instructional purposes only.

How to Expedite your Application

1. **Consider use of a free MSHA consultation.**

2. **Communicate with your Investigator in a timely manner.**

How to Expedite your Application

3. **Use the checklist provided in ASAP 2011(MSHA investigators use it also!)**

4. **List the least amount of alternate/optional components and/or cables possible.**

How to Expedite your Application

5. **If an application contains drawings that are designated in the title block to belong to another company, they will be listed as such and may not be permitted to be distributed to the approval holder without expressed written permission. Obtain expressed written permission prior and submit it with the ORIGINAL application.**

6. **Ensure all required documentation is included with ORIGINAL application.**

How to Expedite your Application

7. Modifying certified enclosures/components within a machine approval:

Although this design option is permitted, it is important to note that modifying a 3rd party's MSHA certified product within the machine approval may cause substantial delays in processing the application. Modifications of this type are forwarded to M&ESD for review and evaluation. ESD's machine approval evaluation can only proceed after M&ESD's evaluation of the modification(s) are complete.

Bottom line: The more complete and accurate the documentation/design is, the timelier the application can be evaluated.

Questions?

David Cavins
Cavins.David.B@dol.gov
304-547-2307

Ken Darby
Darby.Kenneth@dol.gov
304-547-2006

Electrical Safety Division
MSHA Approval and Certification Center