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**MANUAL
OF
SAFE PRACTICES**

**RAVENNA
ORDNANCE
PLANT**



ATLAS POWDER COMPANY
(Operating Contractor)
RAVENNA, OHIO

W-ORD-463

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THIS BOOK IS CODED FOR YOUR
CONVENIENCE

WHITE—General rules for all employees.

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Mechanical service employees.

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INTRODUCTORY EXPLANATION

This plant is government property and is being operated by the Atlas Powder Company for the U. S. government. It is a major part of the program for National Defense and its continuous operation is imperative. Every means will be used to insure regular operation, to safeguard the personnel and the Plant property.

The Company believes in maintaining good working conditions. The advantages of a safe, comfortable, and well-lighted working place are recognized; and every reasonable effort will be made to provide this environment.

The Company strives to prevent accidents by fostering a thorough safety program, including systematic inspections, proper instructions regarding safe practices and the providing of adequate protection and equipment for the elimination of accidents, hazards, and fire.

IT TAKES COOPERATION!

Our Safety is accomplished by a sincere and constant cooperative spirit among our employes. We have found in our experience that merely to talk Safety does not make Safety a fact.

Each and everyone of us must perform our daily tasks for Safety in the same manner that we perform the tasks of our mechanical work. Then, and then, only, will Safety be a reality during our working day.

PURPOSE

This Manual has been designed as a reference to assist you in complying with the needs of this plant for Safety.

EMPLOYEES

All persons when employed are advised that certain portions of the occupations are hazardous, that their safety as well as that of others depends on the intelligence and care exercised by themselves and by their fellow workers.

The Company maintains a regular Medical Department and Hospital to safeguard the health and well-being of its employes. In addition to the regular examination given at the time of hiring, periodic examinations are given thereafter. These examinations are of much value in helping to determine the kind of work for which the employe is best fitted, preserving his general health and detecting those conditions which can be corrected by early treatment and which would be serious if neglected.

Employes are expected to report for work on time and to be regular in attendance. If you expect to be absent, notify your Foreman in advance. If you are unable to come in due to sickness or other reasons, notify the Telephone Operator immediately. Any employe absent for three consecutive days without notice will be subject to dismissal pending investigation of cause of absence. If you are obliged to be absent for over fourteen consecutive days, it is necessary to get a written Leave of Absence to prevent being dropped from the Roll and breaking your service record.

No employe of the Arsenal will be allowed to leave his or her work for the purpose of making personal telephone calls without first obtaining permission from his or her immediate supervisor or foreman. Such permission will be given in emergency cases only.

Because of the part this Plant plays in the National Defense Program, every employe should be fully aware of his personal responsibility to guard against espionage or sabotage activity. Therefore, each employe should be careful of his conversation at all times and should not divulge any information concerning the activities of the personnel of the Plant or

its operation. Company activities should not be discussed with or in the presence of outsiders. Do not talk about the Arsenal outside the plant. Do not talk about your area with employes from another area.

Employes are allowed in the plant at such times and in such buildings, as their duties require. Employes will not leave their department nor go to areas or departments other than the one in which they are employed unless authorized by written permission signed by Supervisor.

The photographic pass is given to each employe to be used for identification when entering or leaving the Plant and in getting pay from the Payroll Department. Each employe is held strictly accountable for the personal pass issued to him and its wrongful use is a serious offense. If lost, report immediately to your Supervisor, telephoning from the gate if outside the Arsenal. If inside, report verbally.

Employes are given photographic badges for the area in which they are to work. Before entering other areas proper authority must be obtained.

No person, unless authorized, will be permitted to enter, or remain in any magazine or explosive area. Guards, foremen, and others in charge of explosives and ammunition will establish the identity of all person who approach magazines, buildings or areas in their charge, and determine the right of such person to enter or remain therein. They will request any such person to leave, or eject him if his presence or actions are contrary to safety.

Identification badges must be displayed on the upper left portion of each employe's person and must be readily visible for inspection at any time.

When passing through any gate personnel must have passes ready for immediate inspection by the guard.

No packages or material may be taken from the plant without a special package pass. All

Patrolmen have authority to inspect any and all packages entering or leaving the Plant at any time.

It is necessary from time to time to search employes on Plant property. Please understand that this is being done for your protection and the protection of your fellow workers. Searches of this nature do not have their basis in suspicion of a dishonest act, but are necessary to insure that no matches, lighters, or similar devices are carried into the Plant.

Suggestions from employes on matters concerning safety, more efficient operation, better practices, etc., are welcome at all times and will be given careful consideration.

Foremen and Supervisors at this Plant are not interested merely in getting out production. They will be glad at all times to discuss your problems, to explain things you do not understand, and to help you to learn your job, to get advancement, and to work safely. They should be consulted with any complaint that you may have.

In the study of employes for advancement, due consideration will be given to the manner in which they comply with the rules of this safety manual.

GENERAL RULES

Certain rules are necessary for the successful operation of any business. Much thought has been given to the following rules, and the careful reading of them will suggest the reason for each:

1. It is a serious offense for an employe to hire in under an assumed name or falsify or leave out any part of his employment application.
2. No fighting is permitted on this Plant.
3. Drugs, firearms, or cameras are not permitted on the Plant except by special permission.
4. Lighters and matches are strictly forbidden on the Plant operating area. An employe found with matches or a lighter will be subject to discharge depending upon the seriousness of the offense—the first time he will be warned and the second time discharged. Any employe found with intentionally concealed matches will be dismissed for the first offense.
5. Smoking is not permitted in the Plant operating areas.
6. Divulging information concerning the Plant or its operation is a serious offense.
7. No employe is permitted to enter the Plant with intoxicants on his breath or have any intoxicating liquor in his possession within the Plant.
8. Gambling in any form within the Plant is strictly forbidden.
9. Gross neglect or violation of safety rules and regulations will be subject to strong disciplinary action.
10. A clean Plant is a safe Plant. All good craftsmen should clean up their own jobs before leaving the location.
11. Keep aisles clear, and access to exits must never be blocked.

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12. Stack materials in an orderly and safe manner.
13. Clean up spilled oil.
14. Put trash and other waste materials in proper receptacles and do not allow to accumulate.
15. Learn the rules posted for your house or shop. Follow them and instructions given by your Foreman to the letter.
16. If your work takes you into other buildings, as in the case of repairmen, read the house rules before proceeding.
17. Never experiment. If you are not sure, ask and find out the correct method.
18. All work on hazardous material will be suspended during an electrical storm when ordered by the Operating Superintendent, and employes will withdraw from the immediate vicinity where explosives and ammunition are stored to designated buildings.
19. Employes will thoroughly acquaint themselves with the safety exits of the building in which they are employed, the location of bombproofs, which are to be used in case of an emergency.
20. Daily, on beginning work, employes should satisfy themselves as to the condition of safety exits, fire-fighting apparatus, and machinery under their charge. Any unsafe conditions noted should be promptly reported to the foreman or other responsible official.
21. Employes are expected to satisfy themselves at all times that the posters in the room or building relating maximum weight of hazardous materials allowed, are adhered to; that the tools permitted on the posted list are in their place or accounted for. Instances of disregard of such requirements should be promptly recorded.
22. Employes will not make changes in, or tamper with electrical equipment. All repairs and changes will be made by the persons authorized to do this work.

23. Employes will not remove any guards, railings, ladders, protectors, or safety appliances of any kind, except for repairs or cleaning. Machines from which any safety appliance has been removed will not be operated until the appliance has been replaced.
24. Paints, oils, etc., unnecessary to operation shall not be allowed to remain in explosive operating buildings or magazines. A special storeroom is provided for inflammable materials, and only the quantity required for immediate use should be removed from the store-house.

SAFETY RULES FOR OFFICE WORKERS

A detailed analysis of accident possibility indicates very clearly that office workers and service employes are exposed to many hazards and that to avoid personal injury they must exercise reasonable care and good judgment in the performance of their daily work—just as do the men in the field.

1. A desk or cabinet drawer or packages left open are a very serious collision and tripping hazard. Keep them closed and out of the way. Don't pinch your fingers while closing them.
2. Tilting a chair back in order to get in a more comfortable position is a widespread practice and a bad one. Many people have been injured due to chairs slipping out from under them or breaking due to the added strain that such a position places upon a chair. Don't do it.
3. The use of pins to fasten papers together has been the cause of many scratched and pricked fingers. Pins, therefore, are not to be used for this purpose. All other fasteners should be handled carefully.
4. Fingers may be cut when handling any paper. Avoid this by being careful.
5. Any person who receives a cut, scratch, bruise (including blood and water blisters), sprain, strain or any other form of injury, no matter how slight and regardless of whether or not the skin may be broken, must report immediately to the first aid station for treatment. First aid supplies must not be kept in the offices.
6. Pencils, pen points, scissors, etc., should be carried in such a manner that the sharp points cannot cause puncture wounds to their owners or others. Carry them point

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- down in pocket, when not in use, and not between fingers with point in palm of hand.
7. Defective chairs and desks or any other equipment are hazardous and may result in injuries. Don't keep such equipment in service. Report it at once to your supervisor.
 8. Cords on electrically operated office machines may cause people to trip and fall if left on the floor or across passageways. Inspect before short circuits occur, not after.
 9. Many persons have received black eyes from walking into partly open doors. Keep them closed or opened all the way back against the wall in order to avoid this danger.
 10. Good housekeeping is the keynote of safety as well as efficient workmanship. Keep your desk clean and orderly.
 11. No horseplay. Don't shoot paper clips and wads of paper with rubber bands, etc., or engage in any of the practices that may come within this term.
 12. A standard four-drawer correspondence file can be very dangerous as it may upset when the top drawer is opened if the top drawer happens to be heavily loaded and the lower drawers are empty or filled with lightweight materials. Use care in loading file and stand on side when opening.
 13. Electric fans can inflict serious hand injuries. Keep them off desks and have them located high enough above the floor to be out of reach.
 14. Don't walk headlong or too hurriedly from rooms into corridors, especially poorly lighted ones. When walking in corridors, keep to the right, particularly at corners.
 15. Don't drive nails in walls to hang file boards and other articles—use hooks or other suitable devices. See Safety Division if in doubt.

16. KEEP STOREROOMS AND REST ROOMS CLEAN AND ORDERLY.
17. Don't store combustible material closer than 6 inches to any steam pipe or radiator.
18. Don't heat stoppered bottles by placing them on radiators or steam pipes. They may get too hot and explode with serious results from flying glass.
19. Take time to be safe when using stairways. NEVER RUN ON STAIRS.
20. Don't place articles on window sills, filing cabinets, etc., which may cause injury if they fall.
21. Be careful to keep hands free when raising or lowering windows, also when closing doors and gates.
22. Knives and blades should never be placed in desk drawers with blade open. Don't use makeshift tools.
23. Beware of hernia, sprains, strains and splinters from lifting or shifting equipment and supplies.
24. Never deposit oily cloths, glass, or blades in waste baskets.
25. When out on the plant observe the rule which specifies the left hand side of the road for pedestrians. Look both ways before crossing roads or stepping onto the road from behind a parked car or a blind corner. When you walk avoid ankle spraining objects.
26. When operating a motor vehicle, drive with care and watch for pedestrians and railroad crossings. The trains have the right of way. "Don't speed."
27. Familiarize yourself with all regulations in the "Manual of Safe Practices" which may now or at some future time apply to you, depending on what you do or where you go.
28. Look out for broken bottles, porcelain faucet handles, slippery, soapy, waxy or icy floors or walkways, and tripping door mats.

29. If you have smoking privileges, be careful.
30. Keep an eye on sanitation.
31. Crowding on stairs or entrance doorway is dangerous.
32. Walking without looking where you are going, climbing on chairs, boxes, or other makeshift supports should not be done.

SAFETY RULES FOR GUARDS, FIRE-MEN AND SERVICE EMPLOYEES

(Non-Mechanical)

1. The nature of your work (PROTECTION) makes you a logical person to assist in the enforcement of all safety rules when you can.
You are authorized to caution with discretion anyone on the plant whom you know to be breaking any rule, whether it be strictly safety or deportment.
2. Although you may be called on for emergency service from time to time, do not expose yourself uselessly. For example, use reasonable care:
 - a. When getting on or off fire truck or other vehicles.
 - b. Directing Plant traffic or parking.
 - c. Accosting suspects.
 - d. When making night rounds, have sufficient light.
 - e. During winter, when roads and paths are slippery.
3. Keep yourself adequately protected from the elements in all weather.
4. Keep safety conscious in all your task performances, large or small.
5. Discipline yourself to comply with the Plant general safety regulations listed elsewhere in this book.

TECHNICAL DEPARTMENT

SAFETY RULES

Laboratory — General

1. Safety glasses must be worn by everyone in the laboratory at all times.
2. Do not allow a long length of cheese cloth or rag to hang from a trouser pocket or belt loop.
3. Learn to automatically inspect every piece of glassware and apparatus for cracks, defects, etc., before using. This is particularly true when the glassware is to be heated.
4. Make a habit of reporting safety hazards to your immediate superior (or writing them down for future reference) as soon as you observe them; otherwise you will forget them.
5. Do not place pieces of apparatus near the edge of tables or shelves where they may be knocked off and damaged.
6. When a gas burner is used in a permissible area, make certain it is turned off when the work is completed.
7. Keep all sinks clean. Do not allow broken glass and rubbish to accumulate in the corners.
8. Do not store explosives or volatile solvents in glass containers where they will come in contact with direct sunlight.
9. Clean up the area in which you are working as soon as any specific job is completed. Remember that good housekeeping is very essential to safety.
10. Do not attempt to handle any equipment or chemical reagents until you are thoroughly familiar with the hazards involved.

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MECHANICAL DEPARTMENT

General Safety Rules for all Shops

1. In no case is heat to be applied to any equipment unless it is ascertained that this equipment is free of hazardous material, except when permission to do so has been received from the Area Supervisor.
2. Be sure that scraps and sweepings are put in properly covered receptacles and that no oily waste is left in the buildings at end of the shift.
3. Keep all material at least one foot from radiators.
4. Watch out for defective equipment and report same immediately to your Foreman.
5. Foreman must thoroughly inspect major repairs before the equipment is turned over to the operator.
6. All equipment must be thoroughly cleaned before turning same over for repairs.
7. No one is allowed to operate equipment until he has been properly instructed and understands the operation of every valve, lever, switch, etc.
8. Machinery must not be operated without guards.
9. Repairs of electrical equipment is to be done by authorized persons only.
10. All electric lamp bulbs burned out in explosive or operating buildings must be replaced by electrician or by an authorized maintenance man.
11. All extension cords must be numbered and sent to the electrical department for monthly checking.
12. Test all lamps in the shop before placing them in any of the plant houses.
13. Carry electric tools in special belt. Also on outside work use safety strap, hooks or pole climbers.

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14. Cables, wire, or piping being placed over standard gauge railroad track must clear track by not less than 22 feet.
15. Insist on being instructed as to your duties and how to perform them safely.
16. When working in other buildings always observe house safety rules.
17. Always determine the voltage of the circuit on which the extension cord is to be attached, and be sure that you have the proper voltage lamp in the socket.
18. Mechanics required to enter any buildings in which explosives have been, for the purpose of making minor repairs before it has been wet down, must wear approved powder shoes, or shoes equipped with an approved type of leather sandal. In event of major repairs after building is washed out, powder shoes are not required. The supervisor in charge of the area should inspect the location of the work and pass on its safety.
19. Motor starting switches must be thrown with the left hand.
20. Upon entering a building with a truck, go slower than a walk.
21. Do not permit trucks to stand in dark places when not in use.
22. Skylarking, fighting, throwing, or abuse of equipment is strictly forbidden.
23. When working in explosive building, do not obstruct exits.
24. Explosives, or waste containing the same must be placed in approved and marked containers only.
25. The use of soldering irons and drills will not be permitted in explosive buildings except under the supervision of the Safety Department.
26. Rubbers, galoshes, or any shoes with rubber soles are not allowed to be worn in explosive buildings; they may be worn, however, in magazines.

27. All portable ladders used on hard surfaces are to be fitted with non-skid extension feet. All portable ladders on soft or earth surfaces are to be equipped with pointed iron feet. All single and extension ladders are to be equipped with six feet of $\frac{1}{2}$ inch manila rope spliced on the second rung from the top.
28. Alcohol used in this plant has been denatured. Do not let it get in your eyes.
29. When dismantling buildings men are not to enter the building while other men are working on the roof. All overhead work will be done at one time, after which the men will enter the building and clear away the lumber which has been thrown down.
30. Rail traffic has the right-of-way.
31. Do not hesitate to call fellow employees' attention to unsafe practices.
32. Turn down all nails.
33. Think safety and work safely.
34. WARNING: THE APPLICATION OF COMPRESSED AIR INSIDE THE BODY IS LIKELY TO RESULT FATALLY. ANY INDICATION OF SUCH PRACTICE WILL RESULT IN IMMEDIATE DISCHARGE. DEATH FROM THIS CAUSE IS MANSLAUGHTER AND A PENITENTIARY OFFENSE.
35. Always be sure to use approved equipment for whatever work you are doing. There is a correct tool for every job. This applies especially to the use of protective equipment, such as goggles, gas masks, respirators, etc. DO NOT EXPERIMENT—IF YOU ARE NOT SURE, ASK AND FIND THE CORRECT ANSWER.

Blacksmiths

1. Keep building clean.
2. Before starting work on explosive equipment, be sure that all explosive dust has been cleaned off.

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3. Be sure that all waste and scrap material are cleaned up and put in proper place.
4. Do not use defective equipment.
5. Keep matches in metal containers with permit.
6. Make certain that fire in forge is out before leaving building at completion of work for the day.
7. Keep Cyanide in special container and locked up except when in use. (Cyanide is to be used only by Blacksmith or in his presence.)

Carpenters

1. Turn down all nails and screws.
2. Keep all scrap material piled neatly.
3. Put all tools in their proper place when finished using them.
4. Do not use defective tools.
5. Use a tool only for its intended purpose.
6. Do not operate machinery unless all guards are in proper place.
7. Keep all dry powder jobs wet down.
8. Keep all oily rags and waste in metal container provided for that purpose.
9. Do not allow oil or grease to accumulate on floor.

Electrical — General

(1) Material

It shall be the duty of the Electrical Foreman in charge of the work to check and inspect all materials received for electrical work as follows:

- (a) That material is received as ordered.
- (b) That it is undamaged—that it is in proper condition for use.
- (c) That it is the correct material for the application, even though it conforms to requisition requirements.

It shall be the Foreman's duty to report on any material which does not conform to these conditions and hold up use of same pending approval of the Chief Electrical Foreman who will be responsible for such conditions being brought to the attention of proper persons for investigation and final settlement.

(2) Other Precautions

The following additional precautions shall be taken:

- (a) Before starting any "hot" work the Electrical Foreman in charge of the work shall inspect all adjacent circuits, including insulation, and properly protect bare spots, etc.
- (b) "Hot" work must not be performed over, under, or unreasonably adjacent to moving machinery.
- (c) The area in which "hot" work is being done must be roped off, proper signs placed, and the area kept clear of those persons not directly connected with the work in a working, supervisory, or safety capacity.
- (d) No live wires shall be cut loose before precautions have been taken to prevent them falling across equipment, persons, etc., by tying them to prevent such injury or destruction.
- (e) Always remove electrical wiring and equipment as soon as it is no longer needed at that location.

Electric Arc Welders

1. Wear sufficient clothing of a kind that is closely woven to protect all parts of the body from the rays of the arc, also protect yourself and others against hot metal.
2. Use a mask to protect your eyes and face when exposed to electric welding operation.
3. Keep yourself insulated from ground or metal objects nearby when changing electrodes.

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4. Use a shield to protect everyone nearby from the rays of the arc. Warn all spectators and your fellow workers not to look at the arc.
5. Be careful in making welding machine ground connections. Make these to direct ground whenever possible. When connecting to metal structures, make sure you will not cause a fire at some distant point.
6. Never use combustible material to support your work.
7. Wear a pair of approved clear glass goggles to protect your eyes when hammering scale.
8. Never weld any pipeline, tank or portable container without first obtaining positive proof that it has been properly cleaned.
9. Never weld to, or close to, a conduit carrying live electric wires.
10. Keep a fire extinguisher within reach at all times while welding.

Elevator and Scales Dept.

1. Do not use defective tools.
2. Never attempt to enter or leave elevator while it is in motion.
3. Use brass hammers in all explosive buildings.
4. Never go under elevator without securely blocking same. Always pull switches or open circuit breakers before starting to work on machines.
5. Never start an elevator unless an assistant has ascertained that elevator is clear and remains where he can see elevator.
6. Never allow explosive dust to accumulate on cables, sides of hatch, or overhead machines.
7. See that all safety devices are in good working order and properly lubricated.
8. Select exit before starting work in building known to contain flammable or explosive materials.

Gasoline Engine Garage

1. Do not operate engines with the garage doors closed.
2. Do not solder gasoline tanks until they have been thoroughly steamed and cleaned. Foreman must check before proceeding.
3. Do not allow oil and grease to accumulate on floors.
4. Thoroughly clean gasoline equipment before attempting to make major repairs.
5. Do not use open flames in vicinity of gasoline tanks.
6. Do not use gasoline containing lead for cleaning purposes.
7. Do not use straight gasoline for cleaning purposes unless blended with carbontetrachloride (60%-40% mix). Do not use this mixture except in well ventilated location. Avoid contact between the liquid and skin.

Millwrights and Machinists

1. Do not attempt to clean or repair machinery while it is in motion.
2. Do not use unsafe ladders. Lash ladders overhead with safety rope when possible; otherwise, have a man hold ladder.
3. Use brass hammers in all explosive, TNT, or Ammonium Nitrate buildings.
4. Never use a defective extension cord.
5. When you repair explosive equipment, be sure that you first clean all explosive and explosive dust from same. Always wet down machines and tools.
6. When working in explosive buildings do not obstruct exits. Pick your exit before starting to work.
7. Always remember you are working around a hazardous material. **TAKE NO CHANCES.**
8. Be sure that all waste and scrap material is cleaned up in all buildings after your work is completed.

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9. Do not use defective tools.
10. No valves are to be operated by men in this department without obtaining the proper authority. No fire line valves are to be operated without permission and in presence of a representative of the Fire Department.
11. Do not wear finger rings while operating machinery.
12. Do not use files without handles.
13. See that material being worked is securely held in place.
14. Get help when handling heavy materials.
15. Remove burrs and sharp edges whenever feasible.

Oilers

1. Be sure that the sleeves of jumpers are tight, and that no frayed ends or piece of waste protrude from wrist bands, pockets, etc.
2. Do not attempt to clean shafts while in motion.
3. Do not oil cone pulleys from driven end; you may get caught by the belt.
4. Do not fill grease cups of mixer pulleys unless assisted by helper, as pulley may start revolving and catch your arm.
5. Be especially attentive to block breaker bearings, seeing that they are properly oiled at all times.
6. Do not over-oil a bearing or machine so as to cause excess oil to drip.

Painters

1. Wash your hands thoroughly and remove paint from under finger nails before eating.
2. Do not use unsafe ladders; lash ladders overhead with safety rope when possible; otherwise, have another man hold ladder.

3. Do not hold onto or walk on wet painted surfaces.
4. Use gloves when removing broken glass from window sashes. Place pieces of broken glass in receptacles provided for that purpose.
5. Do not leave oily or paint coated rags overnight in building. Always place in covered metal waste cans and empty daily.
6. Do not use defective equipment.
7. Properly close cans of all solvent or inflammable material after using, and keep minimum requirements in working shop or area.
8. Use chicken ladders, properly secured on roof work.
9. When working on steep roofs or high elevation, wear safety belts properly secured.
10. Never paint in vicinity of electrical equipment or wires before checking hazards of same with the Electric Foreman.
11. Always use approved masks or respirators when spray painting. Provide adequate ventilation when painting indoors, especially in confined locations.

Pipefitters

1. Do not attempt to clean or repair machinery while it is in motion.
2. Do not use unsafe ladders. Lash ladders overhead with safety rope when possible; otherwise, have another man hold the ladder.
3. Do not operate machinery or apparatus that is defective or unsafe. Notify your Foreman immediately.
4. Never use a defective extension cord.
5. Use brass hammers in all dry explosives or TNT buildings.
6. When working in explosive buildings, do not obstruct exits.

7. Do not use tools with mushroom heads, splintered or loose handles. Have all tools in good condition at all times.
8. No valves are to be operated by men in this department without obtaining the proper authority.
9. No fire line valves are to be operated without permission and in the presence of a representative of the Fire Department.
10. Be sure that all waste material is cleaned up in all buildings after your work is completed.
11. Do not operate any equipment in shop unless authorized to do so by Foreman.

Tinsmiths

1. Use brass hammers in all explosive buildings.
2. Repairs in hazardous areas are to be inspected by Mechanical Foremen before starting work, and by the Supervisor in charge of that area.
3. Any person who has occasion to use a fire of any description is not allowed to leave the shop until he has secured his match permit and matches from the Foreman. At no time will he be allowed to light same until the Safety Department has located a position of safety for that purpose.

POWER DEPARTMENT SAFETY RULES

Boiler Room

1. Do not light off the coal or oil burner without the use of proper equipment.
2. Never put fire under the boiler unless the water level and water columns have been checked.
3. Check safety valves before putting the boiler on the line.

4. Check blow-down valve before putting boiler in service.
5. Wear gloves and goggles when lighting fire.
6. Do not use hands in the coal feeder to remove foreign objects.
7. Do not open any port on boiler that is in operation without wearing goggles or mask.
8. Always wear goggles, face shield, and asbestos gloves when removing slag.
9. Do not enter furnace unless you have a permit, and all its requirements are fulfilled; including goggles, safety hat, all switches tagged out, and the necessary valves locked.
10. Do not enter boiler drum unless you have a permit and have locked out all steam, and water valves, and have tagged out motor switches.
11. Use only a standard vapor proof extension cord that has been checked just before you take it into boiler or furnace.
12. Always have a second person outside of boiler drum or furnace before you enter it.
13. Check soot hoppers and see that there is no burning soot before you enter.
14. Lock out steam valves on fan turbines before entering fan or working upon it.
15. Pull the disconnects, and tag them before working on a mill.
16. Always use dark glasses for observation of a furnace fire.
17. Do not stand in front of burner ports when boiler is being put on coal.
18. Do not use faulty torches when lighting a boiler.
19. Always remove coal from idle mill by hand, not by blowing it into the furnace.
20. Never work on any steam line or other equipment unless you are thoroughly familiar with all connections to it, and have advised the boiler operator.

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21. Keep all the water column shut-off valves locked open.
22. Collection of unburned fuel in the ports of the boiler may cause a bad puff if the door is opened carelessly.
23. In taking a boiler off the line, put an oil tip into each burner before the coal mill is shut off to be sure that all unburned coal is consumed.
24. Never put an oil burner into a furnace unless you are sure that the atomizers are in place.
25. Keep all burner cover glasses closed when burning coal, except for the center glass which should have small opening to prevent coal from depositing in the central tube.

Switchboard

1. When taking turbo-generator out of service always close throttle valve before opening main oil switch to prevent machine from running away if governor or overspeed trip fails to operate.
2. Have bleeder line on General Electric turbine thoroughly drained before placing turbine bleeder valve in service.
3. Never use tools near collector rings or commutator when a machine is in service or allow water to come in contact with them.
4. Always trip throttle valve by hand before overspeeding a turbine.
5. Before starting a steam turbine see that all drains are open and free of water, and turbine is thoroughly warm before placing in service. Admit steam slowly.
6. When cutting out equipment for repair work to be done, be sure all valves are closed and locked. Also, drains must be open and all pressure released.
7. Never use compressed air without goggles.

8. Do not open air disconnect while current is flowing through circuit—use oil circuit breaker.
9. Do not pull disconnects or De-ion fuse by hand but use proper pole provided, being sure pole is dry and is non-conducting material.
10. Never charge any circuit without orders from Shift Supervisor.
11. When an electric circuit is taken out of service for work to be done on line, be sure oil circuit breaker is open and racked out, disconnects pulled, locked and tagged with man's name authorizing cutout on the tag; also, information written in Engine Room log book.
12. Never foul an interlock without special permission from Shift Supervisor.
13. Never replace fuse without rubber gloves.
14. Never do any repair work or make any changes on electric circuit while circuit is charged with electricity.

Turbines

1. Before starting a steam turbine see that all drains are open, and it is free of water and the turbine is thoroughly warm before placing in service. Admit steam slowly.
2. Never clean or repair any machine while in motion.
3. Be sure all steam traps are cut in and operating on pressure reducing valve station before putting pressure reducing valve in service.
4. Never switch pressure reducing valve from automatic to manual or manual to automatic unless the loading pressure is equalized.
5. Never pull a disconnect on a circuit while motor is running. Shut motor down or report to Shift Supervisor.

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6. Have bleeder line on General Electric turbine thoroughly drained and drain open before placing bleeder valve in service.
7. Never use tools near collector rings or commutator when machine is in service or allow water to come in contact with them.
8. Always trip throttle valve by hand before overspeeding a turbine.
9. When cutting out equipment for repair work to be done, be sure all valves are closed and locked; also, drains must be open and all pressure released.
10. Never use compressed air without goggles.
11. Never change oil or clean movable parts of equipment until throttle or switch is tagged and locked and recorded on Engine Room log book and signed by operator doing the work.
12. Do not get on or around overhead crane until the switch is pulled, tagged and locked.
13. When putting an air compressor in service check to see that all drains on air cylinders are open and cylinders are free of water.
14. Never stand in front of air cylinder when starting machine.
15. Never start an air compressor with discharge valve closed.
16. Never allow oil and water to accumulate in air receivers; keep drained.

Pumping

1. Never work on or around moving parts of a pump with loose clothing, or with a rag in your hand.
2. Check safety and relief valves monthly by operating by hand.
3. Check emergency governor on the boiler feed pump turbines every time the pump is started or stopped.
4. Do not allow alcohol leakages to accumulate in ditches, etc., as they are a fire hazard.

5. Prevent leakage of hydraulic water, which may injure your skin or eyes.
6. Do not remove gear case covers while pumps are in operation.

Coal Handling

1. Be sure that all vapor globes, switches, and other electrical equipment are in place before starting the coal conveyor.
2. Do not climb over conveyors.
3. Do not allow coal dust to accumulate anywhere.
4. Keep clear the cables at all times unless the winch motor switch is locked open.
5. Do not start the drag line equipment if there is anyone inside of the fenced area.
6. Stay out of the winch house unless the doors to the two control rooms are locked.
7. Never use any but approved wrenches for opening hopper doors on the cars.
8. When using the car mover, be sure that it is properly placed on the rail and protect yourself from falling if it should slip.
9. Stay off of the tracks when cars are being moved.
10. Never work on or under a car unless the proper protective signs have been placed on the track.
11. When unloading a car, be sure that your wheels are blocked to prevent it from moving unexpectedly.
12. Do not hook up an oil car unless the warning signs have been placed in both ends.
13. Use dust proof goggles and respirators when there is coal dust in the air.
14. Do not use electric drills or any electrical equipment which is not vapor proof around the coal handling equipment.
15. When repairs are necessary, always wet down the part to be repaired and any other parts that may be affected.

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16. Use only approved flashlights and light cords in dusty locations.
17. Gloves should be worn to protect the hands.
18. Keep foreign materials, especially paper, wood, straw, etc. out of the coal at all times.
19. Remember that coal dust suspended in the air may easily create an explosive atmosphere which can be ignited by a stray spark.

RAILROAD SAFETY RULES

General: It is difficult to cover in Safety Rules every condition that may develop in our railroad operation. We expect each man to use good judgment so that he, himself, and other employes are not injured, and that there is no property damage.

FAMILIARIZE YOURSELF WITH THE SAFETY RULES, and if in doubt as to their meaning, apply to your Supervisor for an explanation. In addition to the following rules the bulletin board, in the Yard Office, should be checked daily for further safety instructions.

1. Keep off all tracks except in the discharge of duty, and when stepping out of the way of approaching trains, engines or cars, go far enough to clear all running tracks.
2. Before stepping upon, or crossing a track, look in both directions.
3. Do not go under an engine or car, or pass between cars separated by a short distance, without knowing that proper protection against movement has been afforded.
4. Do not step on the coupler when crossing between standing cars.
5. Before coupling air hose or doing other work between the cars of a train, you must see that your position is known to the men who are operating the railroad equipment, and that you are protected against the movement of the train.
6. Running or walking on the tracks immediately ahead of a moving car or train is prohibited.
7. Do not sit on a brake wheel.
8. Do not extend any part of the body beyond the outside clearance line of the cab

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or car without exercising care to avoid being struck.

9. Do not couple, or move, cars on a track where cars are being unloaded, without first notifying persons in or around them of the move to be made.
10. When switchmen are riding the leading footboard of an engine, they must be outside the rail, and in view of the engineer.
11. Hand brakes must be tested by switchmen before depending on their use.
12. Going between or under moving cars or engines is prohibited.
13. Before going between standing engine and cars or between cars—
 - (a) Give hand or lamp stop signal and wait for acknowledgment, unless other clear understanding has been made to protect against unexpected movement.
 - (b) Wait for slack to run out.
 - (c) If cars are on grade, know they are secure.
14. Look in both directions to see whether cars or engines are approaching before going between cars, or engine and cars.
15. Use lever to uncouple. If lever is inoperative, have proper understanding and full protection before attempting to lift lever by other means.
16. The use of both hands at the same time on Carmer release lever is prohibited. Placing full weight with one or both feet on Carmer release lever is prohibited.
17. Using finger in hole at bottom of coupler to adjust lock pin is prohibited.
18. Giving signal to stop and then stepping on track between or in front of engines or cars before such movement is completed is prohibited.
19. Stepping from one car to another after cut has been made is prohibited.

20. While riding on engine or car, operating release lever on car or engine other than on the one on which riding, is prohibited.
21. Do not stand on side steps or footboards of engines in motion to make repairs or adjustments.
22. While on running board of engine maintain secure hand hold.
23. The use of any part of a car truck as a step when getting on or off moving cars is prohibited.
24. When coming out of gangway of engines to steps, getting off top of tender, or car equipped with vertical ladder, face the equipment and place ball of foot firmly on step or ladder before placing weight on same; also do not have tools in hand.
25. Hanging on car door with feet on truss rods or hanging on hand holds with feet on trucks is prohibited.
26. Maintain lookout in the direction engine or car is moving to avoid coming in contact with structures alongside or over track or with cars or locomotives on adjacent tracks.
27. Be prepared to avoid injury from sudden starting, stopping, lurch or jerk of locomotive or cars, by facing direction it is moving, by being braced and holding, or prepared to do so at once, and by moving about only when necessary for the performance of duty.
28. Walking or stepping on rails, frogs, switches or guard rails is prohibited.
29. Place cars or engines at a safe clearance from switches.
30. Sew, tie, pin or otherwise fasten cuffs of overalls or trouser legs to avoid tripping.
31. Do not use foot to adjust drawbars, knuckles or brake shoes.
32. Do not adjust drawbars, knuckles or brake shoes while cars or locomotives are in motion. In all cases the slack must be per-

- mitted to run in or out before this work is performed.
33. Riding on leading footboards while coupling to cars is prohibited.
 34. Do not step between nor in front of moving cars or locomotives to:
 - (a) Couple or uncouple cars or locomotives.
 - (b) Connect or disconnect hose.
 - (c) Adjust knuckles or couplers.
 - (d) Turn angle cock.
 - (e) Lift pin.
 35. Uncoupling air hose on lines having angle cocks clamped open, before pressure has been depleted, is prohibited. Uncouple hose with hands or authorized tools.
 36. Before uncoupling hose by hand, have both angle cocks on air line closed, firm hold with both hands on hose, gradually break connections, if possible, to reduce pressure remaining in hose, before completely uncoupling.
 37. Before reducing brake pipe pressure with angle cock, take a position clear of hose or hold hose firmly to prevent it flying around.
 38. Boarding an approaching locomotive or car from a position between the rails is prohibited.
 39. Boarding or jumping from rapidly moving cars or engines, is prohibited except to avoid impending accident.
 40. Do not permit employes, whose duties do not require such transportation, to ride on engines or cars.
 41. Do not ride on end of loads when such loads are liable to shift from impact of coupling, when slack runs out or by ordinary train movement.
 42. It is prohibited entering upon repair tracks, coupling to or moving cars thereon, before

- car inspector signals have been removed by an authorized person.
43. Car inspectors and car repair men must display signs, or Blue signals at a suitable distance from both ends of any equipment upon which they may be working and the switches at both ends of the track must be locked.
 44. Switching or coupling on to trains, or giving signals to move trains or cars which display any signs or signals irrespective of what tracks trains are on is prohibited until such signs or signals have been removed by authorized person.
 45. The use of intoxicants in any degree will positively not be tolerated.
 46. Report at once to your Foreman or Supervisor any defect in track or rolling stock.

GENERAL SAFETY RULES COVERING ALL EXPLOSIVE OPERATIONS

1. In case of fire or explosion go to nearest shelter as quickly as possible, unless you are a member of the Fire Brigade—in which case you will go to your assigned station.
2. Do not allow any unauthorized person to operate your equipment. When you need relief call your Foreman.
3. Do not operate any defective or unsafe equipment; shut down and report to your Foreman. This includes hot bearings, loose glands, presence of static electricity, etc.
4. Do not attempt to repair, alter or adjust any of your equipment but report the condition to your Foreman. Such work must be done by the specified repair man.
5. Keep building, floor and equipment clean at all times.
6. Keep passage-ways and exits clear at all times. See that exits open freely. Remove ice, snow, or any obstructions before starting operation.
7. Do not sweep any explosives out of the building. Dispose of such materials by placing in the proper can.
8. Always use non-sparking tools unless otherwise specified.
9. Do not operate equipment until you have been properly instructed.
10. Unlock all doors of a building before starting work in the building.
11. See that all ventilation fans are running while you are in the building.
12. Always use the proper type of air hose with a grounded metal nozzle, and avoid any whipping of the hose.
13. No lunches or parcels of any kind can be carried into an operating building.

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**SMOKING IS
NOT PERMITTED
In The
Operating Buildings
Or Areas
Of The
Ravenna Ordnance Plant**