STOP

LOOK

and LIVE

OPERATING RULES

ERIE MINING COMPANY
MINING DEPARTMENT
RAILROAD

FEBRUARY 15, 1977

OPERATING RULES

MINING DEPARTMENT

RAILROAD

November, 1976

The rules herein set forth govern the railroad operations over all trackage of the Mining Department of Erie Mining Company at Hoyt Lakes, Minnesota, except Mainline Trackage.

These rules take effect immediately, superseding all previous rules and instructions not consistent herewith.

Additional instructions or operating rules may be issued by proper authority.

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FOREWORD

These operating rules and regulations are designed to insure safe and efficient operation of the rail haulage function.

Trainmen and other employees whose duties have to do with operation of trains shall familiarize themselves with these rules and they shall be governed by these rules in the discharge of their duties. Failure to do so shall subject the offending person to discipline or discharge.

Trainmen must keep in mind that they are members of a team and that safety and efficiency depends upon the degree to which teamwork and cooperation are developed. They must remain constantly alert and ready to meet unusual conditions and circumstances which may arise.

GENERAL RULES

1. The train operator or engineer is in charge of his locomotive and train and is responsible for the safety, prompt movement and proper care of the same, and the safety and conduct of his crew.

2. It is the responsibility of the train operator or engineer to see that the crew perform their duties in the proper manner. For this reason, he shall not permit his crew to perform any unsafe act or follow any unsafe practices.

3. The train operator or engineer is responsible for all movements of his train. A student engineer shall train under the direction of the locomotive engineer. A train operator trainee shall train under the direction of a train foreman.

4. Before moving his train or locomotive either forward or backward, the train operator or engineer must satisfy himself that all persons and other equipment are in the clear. The train operator must be in a position to maintain visual contact with the end of his train in the direction of travel.

5. The train operator or engineer shall make sure that his crew is familiar with their duties, give the necessary operating instructions, and caution them regarding the risks connected with their work.

6. Whenever cars are pushed by a locomotive in manual operation, the engineer must be especially alert and ready to assist the brakeman in stopping the train at the first indication that brakes are being applied with the tail hose.

7. Crew members are responsible to the train operator or engineer and shall obey orders and instructions given by him.

8. It shall be the responsibility of all operating crews to practice good general housekeeping.

9. Reading matter, other than that applying to the operation, shall not be permitted on locomotives or cab cars.

10. The engineer or brakeman shall not carry on unnecessary conversation in the cab when the train is in operation.

11. When out of the locomotive between sunset and sunrise, the brakeman shall keep his lantern lighted. When a member of the train crew does not have access to a radio and should be seen, inability of the engineer to see either the train crew or his lantern shall be construed as a stop signal.

12. Train crews or train operators shall take all reasonable precautions to insure the safety of other employees working on or near trains, cars or tracks. Special care shall be taken when switching at the crusher, loading ramps, loading pockets, car repair tracks, yards, etc.

13. The train operator and engineer will be required to make out all necessary reports.

14. The train operator, brakeman, or brakeman loader will be responsible for removing rocks, from or near tracks, which may be struck by locomotives or cars.

15. The train operator or engineer shall see that the headlights, marker lights, tail light and warning devices on end cars are in good working order. He shall also assure that his locomotive is supplied with the necessary equipment to be used if it becomes necessary to stop the train under circumstances which would permit it to be struck by another train.

16. The train operator or engineer shall see that the side steps of locomotives and end cars are in good condition and that they are free of snow, ice or other material.

17. At the start of his shift, the train operator or engineer shall check lube oil, fuel oil, sand and water; except that, when assigned a train already dumping at the crusher or next in line to dump, he shall make this check after completion of the dumping. The train operator or engineer shall correct or report defective conditions found on the locomotive during his shift, including flat or scuffed locomotive wheels.

18. The train operator or engineer shall report to the train director any track in bad order or any other conditions affecting the safe operation of equipment and requiring attention.

19. It is the responsibility of the train operator or engineer to see that his locomotive is supplied with the following equipment:
    1. Track broom
    2. Train line hoses
    3. Air hose wrench

20. At the beginning of the shift, the train operator or brakeman shall check the train to see that it is in safe operating condition and perform the standard air brake test according to Rule 74.

    If bad order equipment or flat spots are found, they shall be reported to the train director.

    When a relieving crew picks up an operating train at the crusher, the above rule does not apply.

    Dumping will continue until completed and the train is clear of the crusher. At that time, the train operator or engineer will make an **operational check of the locomotive. The train operator will also check all remote control functions.**

    The alert must also be checked. (This is done by putting the direction switch in neutral and giving one notch of throttle. A dropout should occur after 37 seconds.

    At the beginning of the shift and several times during the shift, the train operator or engineer should check the remote control battery charging indicator lights. The lights should be lit for each battery on charge. This will insure a fully charged battery for the next crew. The train operator or engineer will make an automatic brake pipe reduction and the train operator or brakeman will observe brake operations on the point car. A running train air brake test will be made as soon thereafter as possible.

    1. When Alco RS-11 Locomotives 7210, 7213 and 7214 are returned from being in consist with mainline F-9 Units, the J relay valve under the cab on the left side should be changed to mine service position. This valve is identified by a metal tag. This is required so that the brake cylinder range will be within the proper limits for mine service after being controlled from a F-9 Unit.

21. No material shall be carried on the front or rear of locomotives which will interfere with its safe operation.

22. All conditions or practices that may result in personal injury or damage to equipment or property, shall be reported to the train director or foreman in charge.

23. The train operator or engineer shall be responsible for having the radio turned on at all times. The following procedure shall be followed in case of radio failure:
    1. Check on and off switch to make sure radio is operating.
    2. Turn volume up to high.
    3. Call other operating locomotives for radio check.
    4. If in locomotive try cab car radio, if in cab car try locomotive radio.
    5. If the above mentioned instructions do not produce results, proceed to instructions 6, 6a and 6b.
    6. Contact the train director and report radio failure in the following manner:

       (6a) Make contact with train director through a lay-by locomotive, radio, or by telephone from loading pockets, where phones are available.

       (6b) If 6a is not feasible, proceed with caution to nearest road or road crossing and stop. Begin giving signals consisting of a series of 5 long blasts on the horn. Continue this until Area Foreman or other locomotive arrives at the scene.

24. When picking up a train or additional cars, it is the duty of the train crew to see that all brake pipe hoses are coupled and all angle cocks are properly positioned.

25. When a train is to be pushed by the locomotive, the train operator or brakeman shall:
    1. See that an emergency valve is cut in on the train line of the lead car. (Cab cars are so equipped.)
    2. Watch the track ahead.
    3. Properly protect the pushing movement.
    4. Operate the tail hose valve if required by an emergency.

26. Before giving the engineer a signal to move his train, the brakeman shall make sure that the tracks are clear in the direction of movement.

27. The train operator or brakeman is responsible for the position in which switches are left and must see that they are properly lined after having been used unless otherwise provided.

28. If a brakeman is used and the locomotive is pulling a train, he must ride either the opposite side of the cab from the engineer, or the leading end of the locomotive where he is visible to the engineer.

29. All movements must be cleared through the train directors, and all messages originating from the train directors must be repeated. **The individual receiving the train director's orders must pepeat the communications to positively identify his understanding of the verbal communications. The order will be reissued by the train director in the event the repeated message does not agree with the original. Abbreviations or shortening of the message will not be allowed. Do not complicate orders with other inquiries unless they pertain to safety. Short, concise, single train orders from point to point will be given, and not long distance clearance and multiple orders at one time. There shall be no unnecessary radio conversation between train crews.**

30. When a train is in motion, employees shall not go between cars or between locomotives and cars to adjust air appliances or brakes, to couple or uncouple cars, or for any other purpose.

31. Trains must not be operated at speeds in excess of those appropriated for existing conditions. **The remote control locomotives are equipped with speed control shutdowns. Trains operating in the mine will be set at 27 MPH. Locomotives equipped for the marshalling yard to Dunka haul can be set for 33 MPH. If the train operator should exceed the above mentioned speeds, a drop-out will occur (full service application of the train brakes). Loaded trains from Area 9 are restricted to slow speeds between Area 9 rock ramp and the 901 Switch. Train operators leaving Area 9 proceeding eastward toward the Crusher will handle their train so that a full stop can be made at the Area 9 rock ramp when required.**

32. The train operator, or engineer, or brakeman (when used) shall look back when starting, and shall look back frequently when running to see that the movement is normal.

33. All taconite haulage trains moving toward the crusher are required to call at the high bridge when approaching from the west and at the 501 switch when approaching from the east, unless specifically instructed otherwise.

34. An engineer shall not move a locomotive or train until the proper signal has been given and no locomotive or train shall be moved until the proper horn signal has been given.

35. Before moving his locomotive or train, the train operator or engineer must make sure that others are in a safe place and shall take all reasonable precautions to see that they are not endangered by the movement.

36. Locomotives or trains moving in the same direction on the same track shall keep a safe distance apart, the distance to be governed by the ability of the following locomotive or train to avoid a collision should the preceding locomotive or train stop unexpectedly.
    1. **Hauling trains traveling in the same direction towards the crusher will maintain an interval of at least *two* (2) train lengths (20 cars).**

2. **Haulage trains traveling in the same direction away from the crusher will maintain an interval of at least *three* (3) train lengths (30 cars).**
3. **Any train approaching another train or other on-track equipment that is stopped will come no closer than *one* (1) full train length, (10 cars) unless by special instruction which must be cleared through the train director.**
4. **When delays occur at the crusher and train stacking is evident, the train director will stop trains at designated locations and intervals.**
5. **At pocket lay-bys, shovel lay-bys, and primary crusher approach zones, the train operators will use discretion when parked back-to-back in lay-by situations. The train operators should utilize the spacing interval within the lay-by.**
6. **Always keep alert to potential interferences ahead of your train.**

37. Whenever an emergency stop is made on a heavy grade and the locomotive's independent brake is unable to hold the train, a sufficient number of hand brakes must be set to hold the train before the air brakes are released or the engine cut off. When ready to start, hand brakes must not be released until the air brake system has been fully charged.

38. If it becomes necessary to stop a train under circumstances that may cause it to be struck by another train, the train operator or engineer must protect the train and notify a foreman and the train director promptly. **Remote control locomotives are equipped with a flashing amber strobe lights. This light will flash as long as the locomotive is in the stop position.**

39. Under an emergency situation, a locomotive left unattended shall have the independent brake valve set in the application position with the generator field switch in the off position. The throttle must be closed, the reverse lever in neutral position and the locomotive hand brake set. In the event that a remote control locomotive is disabled or left unattended for an extended period:

1. Turn off the remote control set.
2. Position the remote control switch to manual (located on mechanism cabinet in locomotive).
3. Position automatic brake handle to lap position.
4. Remove battery from the remote control pack **and put on charge**.
5. Tie down the hand brakes on locomotive.
6. Set the proper amount of hand brakes on the cars.
7. **Place remote control pack in storage rack located on top of the mechanism cabinet in the locomotive cab.**

40. When a train becomes parked on a grade, the train operator or engineer shall immediately lap the air on the locomotive and attached cars so they will not release and run back. This is done manually at the brake stand in the locomotive cab, or with the (E.M.A.) button on the control box when in remote control. The train operator or engineer shall then set all hand brakes on the detached cars to hold them. Immediately after doing this, he shall set all hand brakes on the cars attached to the locomotive so that, with the locomotive brakes, the cars will be held securely. He shall then close the end angle cock on the cars attached to the locomotive, after which, the train operator or engineer shall recharge the air brake system on these cars.

41. When moving from one track to another, locomotives or trains must stop in the clear and wait for a signal to proceed unless it is known by observation that the movement can be completed without risk of accident.

42. A locomotive or train, approaching or passing a point where a locomotive crane is standing or working on an adjacent track, must proceed slowly and with caution. The locomotive crew must be on the alert and prepared to make an emergency stop, should it become necessary.

43. Running through rigid switches is prohibited.

44. Making flying switches or kicking cars is prohibited.

A. **Switch point closure indicator lights have been installed on some switches in the mine area. This amber indicator light is positioned so that its normal position will be LIGHT ON and display an amber color. An extinguished light indicates switch points are not closing properly or a burnt out or a broken light. In all cases, when the light is extinguished, the train will stop and a visual examination of the points must be made prior to passing over them. This abnormal condition should then be reported to supervision. (Selected critical switches are equipped with direction indicator green and amber lights which operate the same as mentioned above.)**

45. The train operator or engineer of a train approaching a shovel shall not move up until he knows the track is clear and the shovel operator is aware of the approaching train. **The flashing strobe stop light may be turned off at the shovel only if it interferes with loading, it must be turned on again before the train leaves the shovel.**

46. When a train is being operated on a grade or being spotted at a shovel which is on a grade, the train operator or engineer shall make sure that he has complete control of the train. If necessary, he shall have a sufficient number of hand brakes or retainers set up to give him such control.

47. No rail equipment shall enter the General Shop without permission of the Shop Foreman.

48. The train operator or brakeman on trains arriving at the crusher from the east will ride the cab car into the crusher, dismount short of the cavity, walk past the cavity and dump the first two cars. While the second car is returning to position, he shall remount the cab car and continue the dumping operation.

49. Except when authorized by supervision, only the train operator, locomotive engineer and train crew shall ride on locomotive and cars. It is the duty

of the train operator or engineer to prohibit riding by unauthorized persons and to determine the exact location where authorized riders intend to dismount.

50. Riding in loaded dump cars is prohibited except where special provisions for riding have been made (cab car).

51. Employees are prohibited from riding on drawbars, brakebeams, journal boxes, brakewheels, and in or on cars containing loads that may shift.

52. Locomotives in motion shall be boarded from the side only.

53. Before signaling the engineer to move a locomotive which he intends to board, the brakeman shall take a position on the engineer's side of the train and board the locomotive from that side.

54. No one shall attempt to get on or off a moving locomotive or train unless he has the use of both hands and unless the locomotive or train is moving at such a speed that he can get on or off in safety.

55. When the train operator or engineer knows that someone is about to get on or off his locomotive while it is in motion, he shall operate the locomotive at a speed which will enable that person to get on or off in safety or, if necessary, shall come to a complete stop.

56. Preparatory to getting off a locomotive, a person shall face the steps and, before getting off, shall make sure that there is good footing at the side of the track. He shall also make certain no train is approaching from either direction on the next track.

57. A brakeman intending to ride in an empty ore car shall have the tail hose connected, take a safe position in the car before the train is placed in motion and shall remain in the car until the train has been brought to a stop.

58. When persons, other than train crew or chainer brakeman in the performance of their work, are to get on or off a locomotive, train or locomotive crane, the train operator, engineer or crane operator

must first determine where this is to be done and stop to permit them to do so. This does not relieve the train operator, engineer or crane operator of the responsibility of stopping to permit a crew member or chainer brakeman to get on or off when other rules or hazardous conditions require that a stop be made.

59. When it is necessary to go between cars, employees shall, to the greatest extent possible, avoid stepping on the rails, drawheads, couplings, air hoses or safety chains.

60. Before any employee goes under a locomotive or car coupled to a locomotive for any purpose, he shall make sure that the train operator or the engineer and train crew have been notified. The train operator or engineer is responsible for providing protection for those engaged in making repairs. In the case of remote controlled trains, the operator must set the automatic brake and tie down a sufficient number of hand brakes to prevent movement of the train and remove the battery from the control box. He must station himself on the ground in the area of activity until the train is released by those working between or under the cars.

61. When it is necessary for an employee to go underneath or between cars that are not coupled to a locomotive, he shall see that the cars are secured against movement and that the danger end of the car is suitably protected. See Rule No. 152.

62. Employees crossing the track, either in front of or behind a standing locomotive or train, must assume that the locomotive or train will move and shall cross the track at least 25 feet from the locomotive or train.

63. Employees working or or near tracks must expect trains to run on any track, at any time, and in either direction.

64. When an approaching train comes within a reasonable distance of men working on a track, the men shall go to a place of safety beyond the danger of being struck by the cars or anything projecting

or falling from them. They shall remain in the safe area until the train has passed. Whenever it is practical to do so, all men shall go to the same side of the track.

65. Walking on tracks is prohibited except for authorized persons required to do so by their work.

66. The train operator or brakeman shall spot the first car to be loaded at the shovel and then take a position where he can observe the shovel teeth on the bucket and the loading of the cars. The brakeman, (when used) must be in view of the engineer for the purpose of signaling moves.

67. The train operator or brakeman shall observe the bucket teeth after each car is loaded. If the teeth are intact, the train shall be moved for continued loading. If teeth are missing, the loading shall be stopped and the shovel operator and train director advised. Unless directed otherwise, a search for the lost tooth shall be made.

68. The train operator or brakeman is allowed to remain in the cab of the locomotive while the two cars nearest the engine are being loaded. He shall be responsible for inspecting for lost teeth, whether on the ground or in the locomotive.

69. When spotting at a shovel, the train operator or member of train crew shall not stand where he may be struck by a train or by chunks falling from the shovel dipper or cars.

70. When dump cars are being cleaned, pistons shall be maintained in the dumping position with the air on.

71. When dumping stripping cars on a dump, no employees shall stand near the loaded cars on the dump side of the train.

72. Any cars that fail to dump clean shall be reported to the train director.

73. The train operator or engineer shall call the train director when he still has three (3) cars left to dump at the crusher. After dumping is completed, he must notify train director that he has completed

dumping before pulling away from the crusher.

(73a) **The crusher operator will use the following signals to advise the train operator or locomotive engineer when the last car of his train is dumped. When dumping of the last car of a train is completed, the red light will be changed to green with four distinct blinks, and then a steady green.**

(73b) **If a dropout or emergency is experienced during dumping at the crusher, do not attempt to reset until the green light is on. (Do not reset on a red light; there can be movement in the cars that will bend the dumping tracks.)**

74. A brake test must be made when picking up a train, setting out cars, adding cars to a train, after a derailment, or a break in two. The following method for testing will be used:

    A full service application will be made. The brake cylinder pistons must be out on all cars, especially on the point cars. Exceptions covered by Rule 20. In addition, the train operator or engineer shall make a running test of the train air brakes as soon as it is possible to do so and must be satisfied that there is sufficient braking power to control the train.

75. Mine haulage railroad cars with b.o. brakes will be handled as follows:
    1. Trains with 9 cars or less will not have more than 1 car with b.o. brakes.
    2. Trains of 10 to 18 cars will have no more than 2 cars with b.o. brakes.
    3. Each successive increment of 9 cars or less will increase the allowable b.o. brake cars by one.
    4. When the number of allowable cars with b.o. brakes in a train are exceeded, repairs will be made or the car(s) will be set out at the first reasonable opportunity upon conpletion of the train's normal dumping cycle.

76. Before descending a steep grade, the train operator or engineer shall test the air brakes and make sure

that he has sufficient braking power to control the train.

77. Before adjusting the brake piston travel or working on the brake rigging, the cut-out cock in the branch pipe must be closed and the reservoir bled.

78. When trains with locomotive coupled are left to stand unattended, the air brakes should always be applied in full service rather than in emergency. The brake system should be fully charged before the full service application is made (a 22 psi reduction) and the automatic brake valve left in maintaining position. The independent brake should be fully applied, the reverser handle removed, the generator field breaker on the engineman's control panel opened (off) and the hand brake applied. This in no way abrogrates the rule requiring sufficient hand brakes to be set on cars.

79. When setting out or leaving a cut of cars, an emergency application must be made and an angle cock left open. The proper amount of hand brakes to hold the train must also be set, the exception being Rule 115.

80. When cars are set out on a grade, they must be blocked with a rail clamp. All air brakes shall be released and the cars allowed to settle against the clamp. The train crew shall wait until the slack has adjusted itself and, before cutting off the cars from the locomotive, shall set a sufficient number of hand brakes or block a sufficient number of cars to prevent the cars from moving should the rail clamp be removed.

81. Adjusting couplings on a locomotive or cars with the hands or feet is prohibited while either is in motion.

82. When uncoupling a car or cars from a locomotive or train, the train operator or members of the train crew shall first close the angle cock on the air brake line and then part the hoses by hand.

83. When it is necessary to uncouple a locomotive from its train or to uncouple cars on a grade

while loading at a shovel, every precaution must be taken to prevent the detached cars from moving. Air brakes must not be relied upon to hold the detached cars on a grade.

84. The operator of a locomotive crane, plow or other equipment of this nature is responsible for the safety and operation of such equipment and for the conduct and general safety of other employees riding or employed thereon.

85. Before making a lift or swinging the boom, the operator of a locomotive crane shall make certain that members of the ground crew are in the clear.

86. Employees shall not stand or walk under locomotive crane booms when lifts are being made.

87. No one is permitted to ride on a flatcar under a suspended boom.

88. Before a locomotive crane works in a place where it will foul an adjacent track, the operator shall obtain and send a flagmen a sufficient distance along the adjacent track to stop locomotives or trains at a safe distance from the locomotive crane. The flagman shall hold them there until a signal is received from the locomotive crane that all is clear and it is safe to proceed.

89. All on-track equipment must be operated with caution. Operators shall always keep a look-out for trains or other vehicles and protect themselves at all times.

90. Trailing point movements shall not be made through the 210, **214** or 105 switches unless the switch is properly lined. The 210 and 105 switches are dual control switches and their operation is governed by Rules 119 and 123.

OPERATING RULES
POCKET LOADING OPERATIONS

91. At the start of each shift, the train operator or brakeman loader shall inspect the pocket area and observe for defects, excessive spill and report any unsatisfactory condition to the train director and his supervisor.

92. The train operator or brakeman loader shall be responsible for turning on the amber occupancy light at the pocket. The light shall be turned on only when the train operator or brakeman loader is in the pocket loading cab and there is a car spotted under the feeder. The amber light shall be extinguished, and the red light will be turned on, if there is equipment or other activity of any kind in the pocket cavity.

93. The train operator or brakeman loader shall load the cars, maintaining sufficient freeboard around the top perimeter of the car to prevent spillage.

94. The train operator or brakeman loader shall stop the feeder in time to avoid depletion of ore from the pocket, unless otherwise directed.

95. The train operator or brakeman loader shall not signal trucks to dump when there is doubt that the load will dump clear.

96. When a locomotive is coupled onto a new cut of cars, an air brake test shall be made from the point end of the train before moving.

97. The train operator or engineer shall contact the train director for clearance to move off the load track and pick up empties.

98. A train operator shall not move his train while riding in a vehicle provided for transporation purposes.

99. The train operator or brakeman loader shall protect the pushing movement of an empty train under

the pocket from the pocket loading cab. During periods of poor visibility, the movement shall be protected by whatever means necessary.

100. Unauthorized personnel shall not be allowed in the loading engine or the pocket loading cab. It will be the responsibility of the train operator or train crew to enforce this regulation.

101. The train operator or brakeman loader shall observe for tramp metal while loading cars at the pocket. If tramp metal is seen, loading must be stopped and the foreman notified. Unless otherwise directed, the tramp metal shall be removed from the car.

102. The train operator or engineer shall use caution when pushing cars through the pocket. Locomotives will not clear the pocket.

a. **All mine locomotives are equipped with special emergency stop equipment. This equipment includes a roof sensor and associated in-cab electrical gear. The purpose of the emergency stop equipment is to prevent the locomotives from making contact with the pocket feeders at all pocket loading operations. In the event a locomotive approaches too close to the pocket feeder, the roof sensor will engage a hanging flap at the pocket which will in turn cause the locomotive to go to emergency. The train operator will then have to reset his equipment in the locomotive cab before he can go back to normal operation. The emergency stop devices have been set in a manner that the car next to the locomotive can be loaded properly without triggering the emergency stop. At Dunka, in additional to the emergency stop at the pocket, a special sensing flap has been placed in advance of the pocket (approximately 130 feet south of the pocket.) This flap will activate the locomotive roof sensor and, if the approach speed exceeds six (6) miles per hour, the locomotive will go to emergency. The locomotive must then be reset in the cab in order to proceed. The Baldwin Locomotives are so equipped for this additional function. Alco locomotives, which are seldom used at Dunka *DO NOT* HAVE SPEED CONTROL FACILITIES OR POCKET STOP EQUIPMENT COMPATIBLE WITH THE Dunka pockets. You will find that, if you conduct normal safe operations at the various pockets, the features explained above will not be activated. The protective devices are provided to prevent locomotive damage at the pockets and insure a safe pocket operation.**

103. The train operator or brakeman loader will operate the green "dump" light and the red "no dump" light making certain that the red light is on:

A. When pocket is full.

B. When there are no cars under the feeder.

C. **When the pocket loading cab is unoccupied.**

(103a) **A red flashing light will be on when there is equipment or activity of any kind in the pocket cavity.**

104. **Train operators will keep the remote control pack on their person at all times when operating the locomotive or train. When a locomotive is properly secured and a short period of inactivity is authorized, the remote control pack may be removed provided: 1) it is kept within the physical control of the train operator; 2) that no other belly pack is in the immediate area. At the end of the shift, the train operator being relieved will advise his relief of the condition of his train and present the remote control pack to his relief. When a train is to be left for a short period of time and relief is not present:**

THE TRAIN OPERATOR GOING OFF SHIFT WILL

a. Turn off the remote control set.

b. Remove the battery from the remote control pack and put on charge.

c. Position the remote control set in the storage rack atop the mechanism cabinet or, if in the cab car, in the storage rack provided.

d. Set the proper amount of hand brakes to hold the train. (This applies when operating from the locomotive or cab car.)

When the train is going to be left for an extended period of time, the train operator will

1) Turn off the remote control set.
2) Position the remote control switch to manual (located on mechanism cabinet in locomotive).
3) Position the automatic brake handle to lap position.
4) Remove the battery from the remote control pack **and put on charge. Check to see that charging light is lit.**
5) Tie down hand brakes on locomotive.
6) Set proper amount of hand brakes on cars.
7) **Place remote control pack in the storage rack located on top of the mechanism cabinet in the locomotive cab.**

105. When an empty train is in layby on a loading pocket empty track, the train operator will go to the loading tower to wait for the loading train operator to finish loading. Before leaving his train in layby, the train operator will turn off his remote control set and keep it off until the loaded train clears the loading area.

105A. **At the end of the shift when the train operator is tying up his locomotive and train during a pocket loading operation, do not move the locomotive any closer than (2) car lengths of the pocket. This applies to the situation where there are a number of cars to be loaded and the train operator brings the locomotive in to facilitate tie up. The movement should be made with minimum throttle and speed. This will prevent unnecessary movements of the locomotive to the pocket where it may be in jeopardy of striking the pocket structure due to longer than normal moves.**

SPECIAL OPERATING RULES
AREA 8 LOADING AND HAULING

106. A red tail light will be used on the rear of all trains hauling between Area 8 and the marshalling yard and will be kept lighted during travel.

107. Empty trains for Area 8 and loaded trains for the marshalling yard will notify the train director by radio when they are ready to depart. As soon as clearance is obtained from the train director, trains will depart. This will be authority for all haulage movement to or from Area 8, subject to signal indication.

108. During the pellet shipping season, switches at Balsam and Dunka Junction will be controlled by C.T.C. During the season when pellets are not being shipped, these switches are normally lined and locked for Dunka traffic and the C.T.C. system is inactive.

109. One hand brake for every 9 cars or fraction thereof (both empty or loaded cars) will be applied by train crews when leaving cars in the marshalling yard.

110. Trains will be moved between the marshalling yard and the Area 8 yards with radios tuned to Channel KAJ 761.

111. Trains will announce their passage over switches at Balsam, Dunka Junction and on arrival at Area 8. When Area 8 empty trains pass Dunka Junction, they will receive instructions from the train director as to their yard destination.

112. Empty trains will enter the empty track at the designated yard and stop the first car alongside the car sign which most nearly corresponds to the number of cars in the train.

113. When in manual operations, a portable radio will be carried on the haulage locomotive for use by a brakeman in passing signals to the engineer. This radio must be carried by the brakeman, when necessary, to protect the end of the train.

114. When a cut of cars has been loaded, the train operator or engineer will spot the first loaded car at the spotting board on the load track that most nearly corresponds to the number of cars in the cut, centering the cars in the yard saucer.

115. When setting out cars on either the load or empty track at either Dunka pocket, the cars will be left with a full service application.

116. It will not be necessary to set hand brakes on cars left centered on the load or empty track at either Area 8 yard.

117. All trains approaching Dunka must call the loading pocket in use to receive clearance to come into the Dunka Yard. This call will be made when approaching the Linde Air road crossing. If no reply is received from the pocket, the Train Director shall be called for clearance.

SPECIAL OPERATING RULES COVERING C.T.C. SYSTEM OF JOINT USAGE OF TRACK

During the pellet haulage season, the movement of trains through the joint usage track of the mainline and the Dunka River haulage will be governed by Centralized Traffic Control. This includes the trackage between M.P. 1 and M.P. 10.4 on the mainline, marshalling yard to mainline at Balsam, and Dunka Jct. to M.P. 1.05 on Dunka Branch as designated by signs; Begin C.T.C. and End C.T.C. On these portions of the railroad, automatic block signals will be the authority for the movement of trains. Train crews shall not disregard the use or observation of other signals, whenever and wherever they may be required.

Definitions:

BLOCK – A length of track of defined limits, the use of which by train or engine is governed by block signals.

AUTOMATIC BLOCK SIGNAL – A fixed signal designated by number plate at the entrance of a block to govern train or engine entering and using that block.

AUTOMATIC BLOCK SYSTEM – A series of consecutive blocks governed by block signals actuated by train or engine or by certain conditions affecting the use of a block.

CENTRALIZED TRAFFIC CONTROL – A term applied to a system of railroad operation by means of which the movement of train or engine over routes and through blocks on a designated section of track or tracks is directed by signals controlled from a designated point.

SIGNAL INDICATION – The information conveyed by the appearance of the signal.

REMOTE CONTROL – A term applied to a system of operation of outlying signal appliances or switches from a designated point.

DUAL-CONTROL SWITCH — A track switch operated by remote control which is also equipped for hand throw operation.

CONTROL STATION — A place from which remote control signal appliances or switches are operated.

POSITIVE SIGNAL — An automatic block signal equipped with a reflective marker indicating the letter "p".

APPROACH SIGNAL — A fixed signal used in connection with one or more signals to govern the approach thereto.

DWARF SIGNAL — A low signal.

YARD SPEED — A speed, according to conditions, which will permit stopping within one-half the range of vision and short of a train, engine, cars, switch not properly lined, derail or other obstruction or before reaching a stop signal. When circumstances require, the train must be preceded by a flagman.

RESTRICTED SPEED — A speed not exceeding 15 M.P.H., that will permit stopping short of another train, obstruction, or switch not properly lined and will permit watching for a broken rail.

118. Such operating, interlocking and ABS rules as are not modified by these rules remain in effect.

119. The movement of trains or engines and control of positive ABS and dual-controlled switches shall be supervised by the train director, who shall issue instructions when required.

120. Train crews must be informed of abnormal track conditions over which movement is to be made. Classification signals are not required but may be displayed to avoid stops to place or remove them.

121. When necessary for an engine or a train to enter the C.T.C. system to perform work within the the system, permission shall be secured from the train director, including time and working limits. This permission will be verbal, repeated by employees

receiving the permission who shall state his engine identification and his name.

122. When a switch or signal cannot be operated due to a track obstruction or other conditions, the train director shall apply a red marker to the control lever governing that switch or signal, and the red marker must not be removed until the switch or signal is reported serviceable.

123. To operate a dual-controlled switch by hand, permission shall first be secured from train director. When the selector lever is placed in the hand throw position, all signals adjacent to the switch will indicate "stop". Any movements made over the switch shall be by hand signals under this condition.

When the selector lever has been restored to power position, the engineer shall be notified. The engineer shall not accept hand signals as against fixed signals, unless the selector lever has been placed in the hand throw position or in an emergency when he is fully informed as to the circumstances.

124. When a train or engine is stopped by a positive stop signal, it may proceed when the signal is cleared or when authorized to proceed.

125. A train or engine shall not make a reverse movement without the proper positive signal indication or until after a complete understanding with the train director as prescribed by Rule No. 138.

126. Signals may be changed for a train or engine at any time if anything is discovered that might endanger the safety of the train or engine. Every effort must be made to avoid accidents.

127. If a train or engine overruns a stop signal, the facts must be reported to the train director immediately.

128. A train or engine having work to perform in the block must inform the train director in advance the amount of time necessary. If for any reason a train or engine is unduly delayed after entering the block, the train director must be communicated with at once.

129. When it is safe to do so, switches and signals may be operated at the request of track repairmen and signal repairmen.

130. Running switches or dropping cars will not be permitted over dual-controlled switches. Sand must not be used over the movable parts of dual-controlled switches.

131. Train directors must observe, as far as practicable, whether the indications on the control machine correspond with the position of the levers.

132. Trains going to Dunka will notify train director by radio when ready to depart for marshalling yard. Trains may then move down east lead and foul approach circuit not exceeding 10 M.P.H. Eastward signal 37 will then govern movement over dual-controlled switch No. 2.

133. If signal 37 shows red aspect, the train shall not pass the signal but the train operator or engineer shall notify the train director by radio of this fact. When signal 37 shows green aspect, the train or engine may enter the main track at switch No. 2 at a speed not exceeding 30 M.P.H. until the entire train has passed through the turnout.

134. Trains going to Dunka shall leave the mainline and enter the Dunka Branch when the eastward signal 93 shows a red over yellow aspect. Speed shall not exceed 30 M.P.H. until the entire train has passed through the turnout.

135. Trains returning from Dunka shall enter the C.T.C. territory at M.P. 1.05 Dunka Branch at yard speed and shall be governed by the aspect of signal 92. When signal 92 displays green, trains from Dunka shall enter the main track at a speed not exceeding 30 M.P.H. until the entire train is through the turnout. If signal 92 displays red, trains shall stop short and notify the train director.

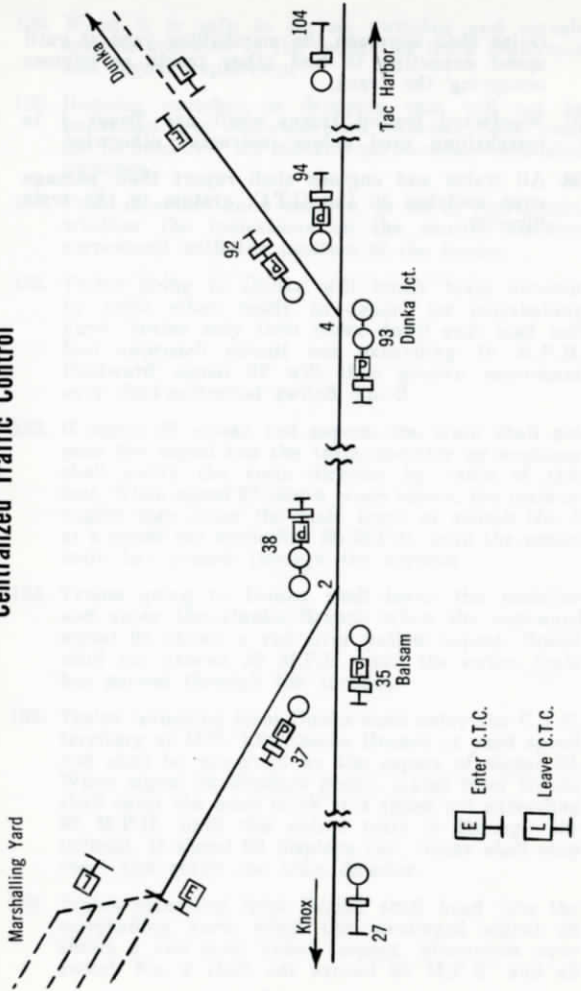
136. Trains returning from Dunka shall head into the marshalling yard when the westward signal 38 shows a red over yellow aspect. Movement over switch No. 2 shall not exceed 30 M.P.H. and all

trains shall approach the marshalling yard at yard speed expecting to find other trains or engines occupying the track.

137. Westward loaded trains shall use Track 1 in marshalling yard unless instructed otherwise.

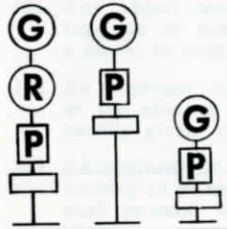
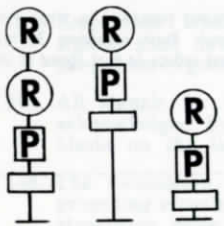
138. All trains and engines shall report their passage over switches in the C.T.C. system to the train director.

Centralized Traffic Control



C.T.C. Signals

Signals will be placed over or to the right of tracks they govern.

Aspect	Indication
	Proceed.
	Stop.
	Proceed at not to exceed 30 m.p.h. through turnout.

C.T.C. Signals (Continued)

Aspect	Indication
	Proceed.
	Proceed preparing to stop at next signal. Train exceeding 30 m.p.h. must reduce to that speed at once.
	Stop — Then proceed at restricted speed.

139. When there is doubt as to the signal given or for whom it is intended, the engineer shall investigate and remove that doubt before moving train or proceeding further.

140. A stop signal must be complied with regardless of by whom it is given.

141. Any object waved violently, by anyone at any time, on or near the track shall be construed as a signal to stop immediately.

142. An improper signal or one imperfectly observed or the absence of a signal when or where one is usually given, must be regarded as a stop signal.

143. An engineer or train operator finding a red fusee burning on or near the track on which he is running, shall proceed with extreme caution at restricted speed.

144. Employees whose duties require them to give signals shall have the proper appliances and shall keep them in good order and ready for immediate use.

145. All signals for the movement of trains shall be acknowledged by sounding the proper number of blasts on the locomotive horn.

146. The locomotive horn shall be sounded when approaching crossings, curves, men working on tracks, structures close to the track, power shovels, or other areas where men congregate or work.

147. Hand signals shall be given in accordance with instructions on pages 31-33.

148. **As a normal operating practice locomotive or cab car headlights will be fully displayed during periods of darkness or other period of restricted vision.**

A. **The locomotive headlight in the direction of travel may be dimmed or extinguished momentarily when it interferes with the vision**

of the train operator in a cab car traveling in the opposite direction.

B. Two locomotives, when meeting, should dim but not extinguish lights.

C. The headlight of a locomotive at a shovel may be dimmed or extinguished when it interferes with the safe operation of the shovel.

D. The trailing headlight shall be dimmed or switched off if necessary when it interferes with the safe operation of locomotives or trains.

E. When a locomotive or train is waiting in the clear of another track, the operator shall not extinguish the headlight in the direction of switch until he has made sure that the switch is not lined for the track occupied by the locomotive or train. This also applies to a train being loaded at a shovel under similar conditions.

F. The headlight of the cab car must not be extinguished for any reason when the cab car is the lead unit.

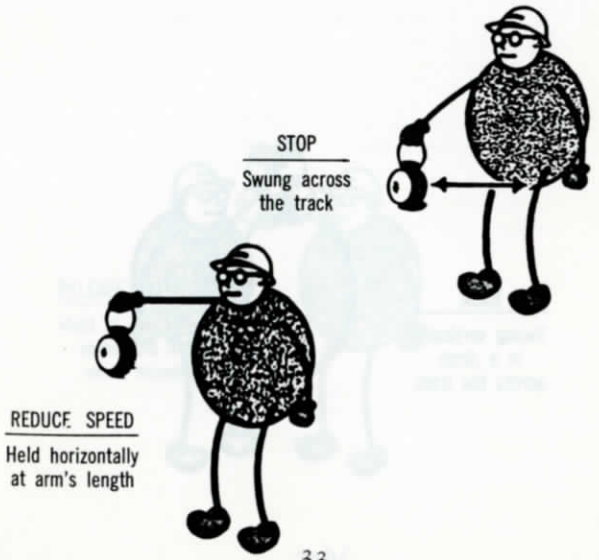
149. At all times between sunset and sunrise or when vision is restricted by fog or other conditions, two yellow marker lights will be displayed at each end of all locomotives.

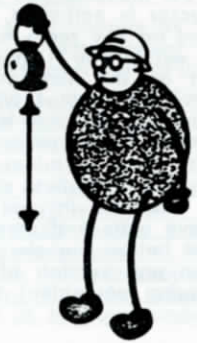
150. Step lights will be kept on at all times between sunset and sunrise or when vision is restricted by fog or other conditions.

151. Between sunset and sunrise and at other times when vision is restricted, a red tail light shall be displayed on the end cab of every train of ore cars. **At no time will the red tail light be used as a headlight.** (In case of failure of the red tail light, the accompanying white light can be used until repairs are made.)

152. A blue flag or a blue signal light displayed at one or both ends of an engine or train indicates that workmen are under or about it. Equipment thus protected must not be coupled to or moved.

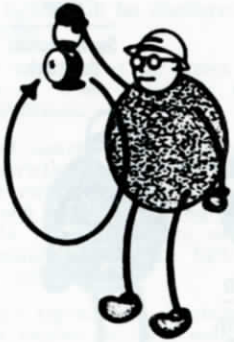
153. **A dragging equipment detector has been installed at M.P. 8 on the mainline. This device is designed to detect dragging and/or derailed equipment for the mainline and the Dunka haul. When this detector is activated, a low pulse tone will be heard on any radio tuned to KAJ-761 frequency and within one (1) mile of the detector. A white light on the instrument case adjacent to the detector apparatus will also become illuminated when the detector is activated. If train crews hear the radio pulse tone or if they see the white light illuminated as they approach the detector, immediate steps must be taken to stop the train and inspect running gear of all locomotive units and cars in the train. Train crews must be on the alert for the above indications when any section of the train is passing the dragging equipment detector.**





PROCEED

Raised and lowered vertically



BACK

Swung vertically in a circle across the track

APPLY AIR BRAKES

Swung horizontally above the head, when standing

RELEASE AIR BRAKES

Held at arm's length above the head, when standing

WHISTLE SIGNALS SHALL BE IN ACCORD WITH THE FOLLOWING CHART:

SIGNAL		MEANING
0	1 Short	Stop.
– –	2 Long	Locomotive moving ahead.
00	2 Short	Answer to any signal not otherwise provided for.
000	3 Short	Locomotive moving backward.
0000	4 Short	Call for brakeman or switch or signal.
– – – – –	5 Long	Call for foreman.
– – 0 –	2 Long, 1 Short 1 Long	Approaching crossing.
– 0	1 Long 1 Short	Warning signal.
000000	Succession of short blasts	Alarm to indicate cars or locomotive are out of control or that a blast is about to be made.

RADIO REMOTE CONTROL OF LOCOMOTIVES
CONTROLS AND FUNCTIONS

RESET CONTROL

Reset command must be given and held for at least five (5) seconds after any of the following has occurred.

When calling for a brake release after reset, wait for the count of five (5) after reset, before you initiate brake release. This will insure complete continuity in the control circuit. An immediate brake release command following the reset can void the proper function of the release relays in the control circuit.

1. Transfer from manual to remote.
2. Loss of communication.
3. Receipt of invalid command.
4. Operation of deadman circuit.
5. Emergency command.
6. Emergency caused by break-in-two on cars.
7. Low main reservoir pressure while train in motion.
8. Throttle not returned to idle after idle command.

Reset command must be given before full control of locomotive can be regained.

THROTTLE CONTROL

Up step one notch each time advance command is given, provided interlocks such as system not reset or invalid direction do not prevent.

Down step one notch each time retard command is given.

Returns to idle on idle command, independent brake apply command, loss of communications, deadman, emergency brake apply command and invalid direction command.

DIRECTION CONTROL

When locomotive is in idle and stopped, direction control will select forward on command, neutral on command and reverse on command.

Returns to neutral on low main reservoir pressure, low brake pipe pressure, emergency command, loss of communication and deadman.

Interlocked to prevent change in direction while locomotive is in motion or when throttle is not in idle.

Should change in direction be called for while locomotive is in motion or when throttle is not in idle, throttle will return to idle.

INDEPENDENT BRAKE CONTROL

Graduated application on command while locomotive is in motion.

Full application on command when locomotive is stopped, emergency apply command, loss of communication, deadman, and low main reservoir pressure.

Independent brakes release under the following commands only: if direction has been selected; graduated release on command; and full release on first notch of power.

ENGINE BRAKE CONTROL

Follows automatic brake control unless modified by the following:

Full release on first notch of power if direction has been selected. Reapplies when throttle returns to idle.

AUTOMATIC BRAKE CONTROL

Minimum reduction (approximately 5 pounds) on first apply command.

Graduated additional reduction on succeeding apply command.

Full release on release command.

Full service application (approximately 30 pound reduction) on loss of communication and deadman.

Brakes are released from a full service application caused by loss of communication or deadman by a brake release command following a reset command.

A count of five (5) must be given between the reset command and brake release command.

Independent brakes are not released by above commands.

Power may be applied before brakes are released.

EMERGENCY BRAKE CONTROL

This is the top priority command and is available at all times **when battery power is available at the belly box.**

Full venting of brake pipe on command.

Brakes release on automatic brake release command following a reset command.

A count of (5) must be given between the reset command and brake release command.

Brakes must be released before power can be applied.

DEADMAN AND LOSS OF COMMUNICATION

Causes full service automatic brake application.

Throttle return to idle.

Direction control transfers to neutral.

Reset command must be given before full control of locomotive can be regained.

A count of five (5) must be given between the reset command and brake release command.

IDLE CONTROL

Returns throttle to idle on command. If throttle does not idle, causes full service application of brakes.

SAND CONTROL

Applies sand in direction of travel as long as command is given.

HORN CONTROL

Sounds locomotive horn as long as command is given.

BELL CONTROL

Sounds bell on command, shuts off on repeat command.

HEADLIGHT CONTROL

Repetitive commands turn both headlights dim; bright in direction of travel and dim in trailing direction; and off in sequence. Remote controlled locomotive headlight switches must be placed on dim and M.U. switch for lead. Trailing locomotives must position headlight switches for trailing.

REMOTE-MANUAL TRANSFER

On transfer from remote to manual:

1. Place RM switch in manual. Emergency brakes will apply.
2. Brakes will release on momentary operation of brakes release switch on gage stand if brake stand is in run position. This must be done after each battery interruption.
3. Locomotive is now in manual control.

On transfer from manual to remote:

1. Place RM switch in remote position. Emergency brakes will apply.
2. **Install proper battery on belly pack.**
3. Turn transmitter on.

4. Give reset command.
5. **A count of five (5) must be given between the reset command and brake release command.**
6. Locomotive will now respond to remote commands.

ALERT CONTROL

1. **When the throttle advance command is given, with the unit in a direction or in neutral, the alert is activated and will drop out in 37 seconds. (Full service application, approximately 30 pound reduction, if no command is given from the belly box.)**
2. **When the locomotive is stopped and at idle, the alert can be nullified by pressing the independent brake apply command and holding it down for the count of five (5).**

REMOTE CONTHOL OPERATING INSTRUCTIONS

A. Undesired stop when operating from other locomotive.

1. Check if dead engine light is on.
2. If light is off, attempt a reset.
3. If no reset, look for:
   a. Loose or broken back pack antenna.
   b. Broken cable from control to back pack.
   c. Is the battery properly positioned?
   d. Is battery damaged?
   e. Missing antenna on locomotive.
   f. Replace battery if necessary.
   g. Proceed to locomotive attempting reset enroute.

B. If an undesired emergency occurs, always ask for emergency command of the remote control equipment. (This will lap the air so the train will not release.)

C. When remote control does not respond as requested:

1. Turn off the back pack.
2. Reset and repeat the attempted functions.
3. If still no response, turn back pack off and call a supervisor.

D. When using the radio pack set, allow ample time for proper signal transmission.

Give deliberate, concise commands. The unit will only transmit one command at a time.

E. Seniority of command:

1. Emergency is the most restrictive command and will override all others providing battery power is available.
2. The unit will transmit only one command at a time. If two commands are given, the most restrictive will be accepted by the unit. (Example: Train air will override throttle advance.)

F. When preparing for remote control operations after operating in manual, check all remote functions to see that they perform properly. If it is impossible to receive emergency, make a full service application and call supervision. (This indicates that the manual control valves are in the improper position for remote operation.)

G. Under certain conditions reset can be accomplished through the sand button.

Good operating procedures do not require sand before reset. Do not make command functions before resetting.

H. A blue light has been installed on top of the locomotives to indicate a dead engine, low lube oil, hot engine, or a ground relay. After any undesired train stoppage, check to see if this light is lit. If it is, return to locomotive cab and determine cause.

I. Dropouts are safety valves built into the system and can be caused by two locomotives operating in the same proximity, electrical interference, garbled signal and other causes.

Whenever a dropout is experienced ask for a reset, recover your train and proceed with normal operation. When three dropouts are experienced within a short span of time or within a limited area, notify your supervisor, and await further instructions.

J. A change in the direction of travel cannot be accomplished unless the train is stopped, and throttle is in idle. A change in direction command will bring the throttle to idle.

K. **All mine locomotives are equipped with special emergency stop equipment.**

Each locomotive has a roof sensor mounted on top of the unit which will stop the train at slow speeds before the locomotives reach any obstruction at the pocket. The car next to the locomotive can be loaded without activating the emergency system.

Baldwin locomotives used at Dunka loading pocket

are equipped with speed sensing equipment which will put the train into emergency if the speed is more than 6 MPH.

If the train is put into emergency by either set of controls, the train operator must return to the locomotive cab and reset the emergency system.

If train operators conduct normal safe operations at loading pockets, the emergency system will not be activated.

L. Whenever a command is given and the headlights dim, your train is in an undesired full service application. If this happens, reset, recover and proceed with normal operations.

M. The brake system on differential cars require 90 seconds before full release can be received after an emergency. Do not try to recover before 90 seconds has elapsed.

N. Shift Change:

1. A train operator upon being relieved will advise his relief of the condition of his train and present the remote control pack to his relief so that operation can continue with very little delay.

   The train operator coming on shift will continue to operate the train with the same battery. At his earliest opportunity he will change batteries in accordance with the battery sequence procedure.

2. When a train is to be left for a short period of time and relief is not present, the train operator going off shift will:

   a. Turn off the **belly box**.

   b. Remove battery from **belly box and put on charge and check charging light to see it is lit.**

   c. Position **belly box in storage rack atop the mechanism cabinet** or if in the **cab car, in the storage rack provided**.

   d. Set the proper amount of hand brakes to hold

the train. (This applies when operating from the locomotive or the **cab** car.)

3. When the train is going to be left for an extended period of time, the train operator going off will:

   a. Turn off the **belly box**.

   b. Position remote control switch to manual (located on mechanism cabinet in locomotive.)

   c. Position automatic brake handle to lap position.

   d. Remove battery **and put it on charge and check charging light to see it is lit.**

   e. Tie down hand brakes on locomotive.

   f. Set proper amount of hand brakes on cars.

   g. **Position belly box in storage rack atop the mechanism cabinet.**

4. When locomotive is tied up at shop, the train operator will:

   Same as No. 3, above.

O. Each operator will use the battery with the number corresponding to his shift. (1 = night shift, 2 = day shift, 3 = afternoon shift.) If during the shift the designated battery goes dead for any reason, the spare and only the spare will be used for finish of the shift.

P. Train operators do not have the option of running in remote or manual operations. Manual operations must be authorized by supervision.

Q. Train operators must keep their train within their vision at all times, except for momentary actions such as picking up point light from supply stand or building at crusher. If train is left unattended, it must be properly secured.

REMOTE CONTROL OPERATIONS
KNOW HOW

When operating a train in remote control, the following is a list of the several ways the different functions can be accomplished.

A. Emergency can be applied by:

1. Depressing emergency button on **belly box.**
2. Automatic brake valve in locomotive.
3. Emergency valve in cab car. When emergency valve is used in cab car, do not close this valve until an emergency application has been asked for in remote control, and sufficient hand brakes have been set as per rule #40.
4. Switching from remote to manual.
5. **Activate pocket stopper or speed stopper. (Antenna's are located on top of locomotive cab.)**

B. Automatic brake can be applied by:

1. Downward motion of automatic brake switch on body pack.
   a. Minimum reduction (approximately 5#) on first apply command.
   b. Graduated additional reduction on succeeding commands.
2. Shut off set at body pack.
3. Activate deadman (tilt back pack approximately 45 degrees).
4. If in locomotive, from automatic brake valve.

C. Automatic brake release can be accomplished by:

1. From desired full service by:
   a. Upward movement of automatic brake switch on body pack.

   b. Position automatic brake to release on brake stand (if applied from brake stand).
2. From undesired full service by (dropouts, etc.):
   a. Reset control and move automatic brake switch upward. **(A count of five (5) must be given between the reset command and brake release command.**
3. **From emergency by:**
   a. Reset controls and move automatic brake switch upward. **A count of five (5) must be given between the reset command and brake release command.**
   b. Move automatic brake to running or release position on brake stand, if applied from brake stand.
   c. Closing conductors emergency valve in point car.

D. Independent brake apply can be achieved by:

1. Downward motion of independent brake switch on body pack.
   a. If in motion you received graduated apply. Apply as desired.
   b. If stopped, you receive full application.
2. Independent brake valve in locomotive cab.

E. Independent brake release is achieved by:

1. Graduated release from upward motion of independent brake switch on body pack.
2. Throttle apply — gives full release if direction is selected.
3. Independent brake valve in locomotive if application was made with brake valve.

F. Throttle advance can be achieved by upward movement of throttle switch (each movement advances one step).

G. Throttle retard can be achieved by:

1. Downward movement of throttle switch. (Each movement retards one step).
2. Depress idle button.
3. Independent brake apply.

H. Throttle idle can be achieved by:

1. Depress idle button.
2. Request direction change.
3. Emergency.
4. Independent apply.
5. Turn set off at body pack.
6. Activate deadman.
7. Throttle retard. (One notch per downward motion of throttle switch.)
8. Switching' from remote to manual operation.

I. Direction of travel can be selected by:

1. Forward. (Movement of direction switch to right.)
2. Reverse. (Movement of direction switch to left.)
3. Neutral. (When direction switch is centered.)

NOTE: Direction cannot be changed unless locomotive is stopped and throttle is at idle.

J. Engine brakes are applied by:

1. Automatic brake application if engine is in idle.
2. Turn set off.
3. Activate deadman control.
4. Emergency request.

K. Engine brake release:

1. Advance throttle. (If direction is selected.)

L. Headlights (when headlight switches in locomotive are on dim, headlights can be controlled from belly box.

1. Dim — First depression of button.
2. Bright in direction of travel and dim trailing end — Second depression of button.
3. Off — Third depression of button.

M. Idle button — retards throttle to idle.

N. Sand button — applies sand as long as button is depressed.

O. Horn button — sounds horn as long as button is depressed.

P. Bell button — bell sounds on first command and stops on second command.

Q. Reset — depress button and hold for at least five (5) seconds.

When calling for a brake release after reset, wait for the count of five (5) after reset before you initiate brake release. This will insure complete continuity in the control circuit. An immediate brake release command following a reset can void the proper function of the release relays in the control circuit.

R. Alert Button —

1. **Press at least once every 37 seconds to keep unit from a dropout when alert is activated.**
2. **Alert can be nullified by pressing independent apply command, and held for the count of five (5), when unit is stopped and engine at idle.**

PREPARING AN ENGINE OR TRAIN FOR REMOTE CONTROL OPERATION FROM MANUAL OR FROM EXTENDED SHUTDOWN

A. Before boarding locomotive:

1. Check fuel and lights.
2. Check for loose or dragging parts.
3. Check connection of air hoses and jumper cables (if used in multiple unit operation.)

B. On board check:

1. Check the engine lubricating oil level. Bayonet gauge should show oil between high and low marks.
2. Check water in the cooling system. The sight glass should show water at all times.
3. Check governor oil. The reservoir of oil in the governor base is equipped with two sight glasses. The oil level should not be below line on lower sight glass and not above line on top sight glass.
4. Check housekeeping.

C. Preparing for remote control operation:

1. Close battery switch.
2. See that all circuit breakers on the control compartment panel are closed. Close control and fuel pump switch on gauge stand. Place headlight switch on dim.
3. Check that maintaining valve is cut in.
4. See that M.U. valve is in lead position.
5. Turn engine control switch to IDLE and start engine.
6. Check that remote control switch on mechanism cabinet is in manual position.

7. When main reservoir air is pumped up full, operate brake release switch on gauge stand and make normal manual test of train air.
8. If all air tests are good, take battery from charger and install on **belly box**. Put **belly box** on. Move remote switches on mechanism cabinet to remote position. **Turn remote set on**. Press reset button for 5 seconds. **A count of five (5) must be given between the reset command and brake release command.** The remote control unit is now ready to take commands. All remote functions should now be checked.
   a. **Check — Throttle advance, throttle retard, throttle idle, and throttle idle with independent apply command.**
   b. **Check — Horn, bell, sand and headlights.**
   c. **Check — Independent apply and release, (direction must be selected to get a release).**
   d. **Check — Automatic brake apply. (First apply, minimum reduction approximately five (5#). Graduated additional reduction on succeeding commands up to a full service reduction, 30#.)**
   e. **Check — Automatic brake release, full release on command.**
   f. **Check — Alert must drop out the unit in 37 seconds, if no command is given from the belly box. With the direction control at neutral, give one (1) notch of throttle; this will activate the alert, a drop out should occur.**
   g. **Check — Deadman, tilt belly box approximately 45 degrees, the unit must drop out. With the box in the tilt position, press emergency button, emergency must apply from tilt position.**
9. When the operator is satisfied that all remote functions are operating properly, he will close the generator field switch on the gauge stand and release hand brake on the engine. The locomotive is now in full remote control.