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# IOWA TRACK GEOMETRY CAR OPERATORS SAFETY MANUAL



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## **Safety Policy**

It is the policy of the Iowa Department of Transportation, to exercise its responsibilities for the inspection of railroad track in the State of Iowa, in a manner providing for the greatest safety of agency and railroad personnel and equipment and of the general public, which is consistent with the proper fulfillment of those responsibilities.

## **Notice**

The safety rules and instructions issued by the Iowa DOT personnel office and those contained herein govern all employees of the Iowa Department of Transportation when engaged in the work and operations conducted using the Iowa Track Geometry Car.

Safety is of the first importance in the discharge of duty. It is impractical to include rules and instructions for safe practices to meet all contingencies. Employees in any situation not provided for herein shall act as directed by the supervisor, or if not directly supervised, act as their own best judgment dictates.

## **The Railroad Representative As Final Rules Authority**

Given the fact that the Iowa TGC is staffed by non-railroad employees, the railroad employee accompanying the TGC while on-track shall be knowledgeable of the railroad's safety and operating rules governing the operation of Hy-rail vehicles and shall have final authority regarding the application of railroad operating rules to the operation of the TGC when on track.



## **Iowa Track Geometry Safety Rules and Practices**

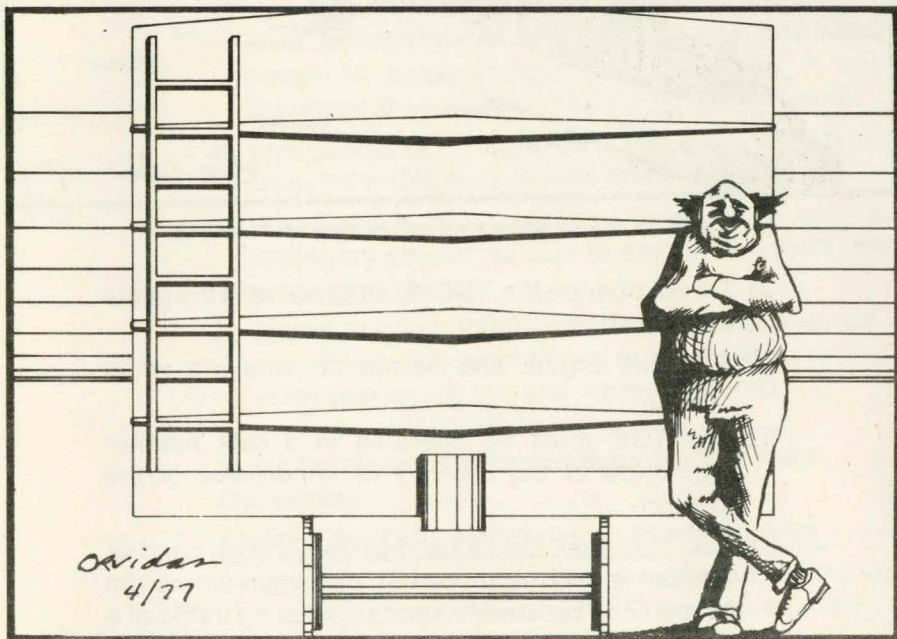
### **General Rules**

1. The TGC operator is responsible for safe operation of the vehicle.
2. Expect trains to run at any time, on any track, in either direction.
3. When necessary, walk against the current of traffic watching for approaching trains from both directions.
4. Look in both directions before stepping onto or crossing tracks.
5. Keep a safe distance (15-20 feet) from ends of cars or locomotives when crossing tracks.
6. Move to and keep a safe distance from approaching and passing trains and other moving railroad equipment.
7. Do not lean against standing cars or locomotives.
8. Do not walk or step on rail, frog, switch, guard rail, interlocking machinery, or other similar track structures.
9. Keep a careful lookout for obstructions, holes and openings to prevent tripping, slipping, falling, or turning an ankle.
10. Do not walk where there is steam, dense smoke, or other visual obstruction.
11. Do not run over hose lines or electrical cables with the TGC.
12. Exercise caution and sound warnings when passing doorways rounding corners, and passing congested areas.
13. Do not leave the TGC where it may foul tracks or highways.
14. Scuffling, horseplay, practical jokes, and all conduct of a similar nature is prohibited while on duty when on railroad property.
15. Do not lie down or cross under cars or cross between coupled equipment.

16. Firearms and unshielded glass containers should not be carried on board the TGC.
17. Keep the interior of the cab and instrument cabinets clean and orderly. Keep all tools and supplies in the designated places. Do not leave tools or other material on sills, ledges, and the like where they may fall or be jarred from place.
18. Paper, rubbish, greasy rags must be disposed of in proper containers. Drawers, cabinets and the like are not proper recepticals for disposal of trash.
19. Ice and frost must be removed from all windows before operation and should be removed from boarding steps.
20. Employees must not stand on one track while trains are passing on another.

#### **Rules Pertaining To Off-Track Operation**

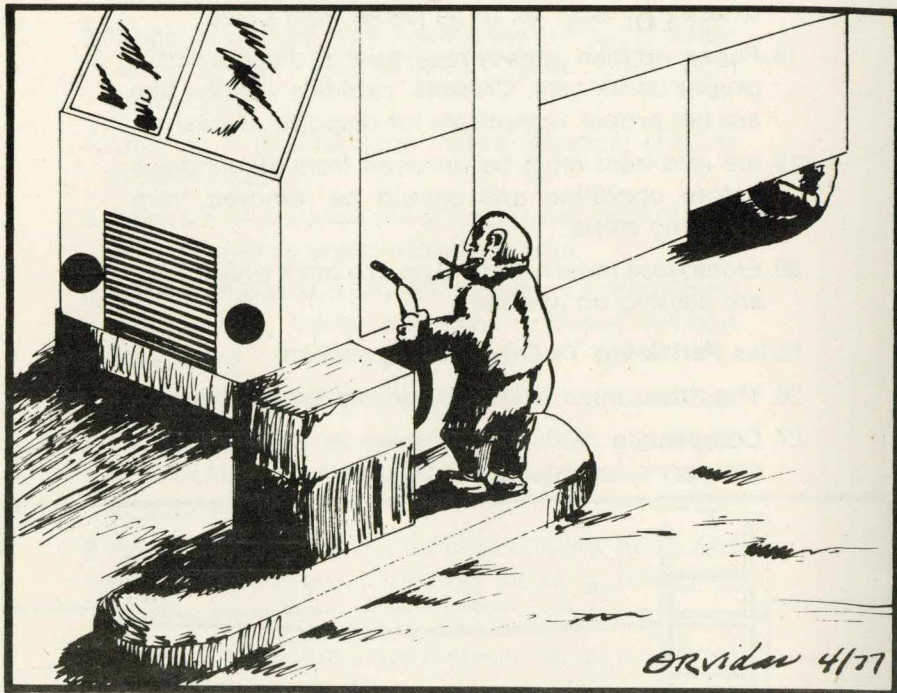
26. The driver must have a valid Iowa drivers license.
27. Compliance with traffic laws is required and ordinary courtesy should be practiced.



**Do not lean against standing cars or locomotives.**



28. Check the TGC's safety devices (horn, lights, wipers, tires, beacon, etc.) and repair if necessary before operating.
29. Be sure all passengers are seated and all tools and equipment are secured before operating the TGC.
30. Do not carry unauthorized persons in the TGC.



**Shut off engine and permit no smoking when fueling.**

31. Do not operate the TGC down grade with the gears in neutral.
32. Shut off engine and permit no smoking when fueling.
33. The TGC must be operated in a safe manner regardless of the urgency or importance of the mission.
34. The TGC shall not be used to tow or push another vehicle. It may be placed in a position where the beacon can be used to warn on-coming traffic of a disabled vehicle.

35. The following precautions must be taken before leaving the TGC unattended:
  - (a) Motor and all other equipment turned off.
  - (b) Hand brake set.
  - (c) Wheels properly crimped toward curb and gear lever placed in reverse if headed down hill and in low in headed uphill.
36. During all times of non-rail travel, the gauge measurement carriage and the Hy-rail equipment must be in the retracted position and secured by the means provided for each.
37. The operator in charge of the TGC is responsible for its maintenance, appearance, and cleanliness. Grease, dirt, or debris must not be allowed to accumulate in the cab or equipment cabinets. Any unsafe condition or maintenance need must be brought to the attention of the central maintenance office at the Ames headquarters.
38. Only authorized persons are permitted to perform work on the electrical and hydraulic equipment of the TGC.
39. All conductors, wires, and electrical equipment shall be considered energized unless positively known to be deenergized and grounded. If not grounded they are not considered deenergized.
40. Safe practices common to work on all electrically powered equipment should be employed.
41. When using the auxiliary power cable with a stationary source, be sure to properly connect the grounding cable.
42. Sitting or lying underneath the TGC is prohibited, except to make inspection or repairs, and then only when brakes are set, and wheels blocked.

### **Rules Pertaining To Preparations For On Track Operations**

#### **Meeting the On-Board Railroad Representative**

45. Exercise care not to foul tracks, walks, drives, or roadways when parking TGC prior to entering a facility to meet the railroad representative.



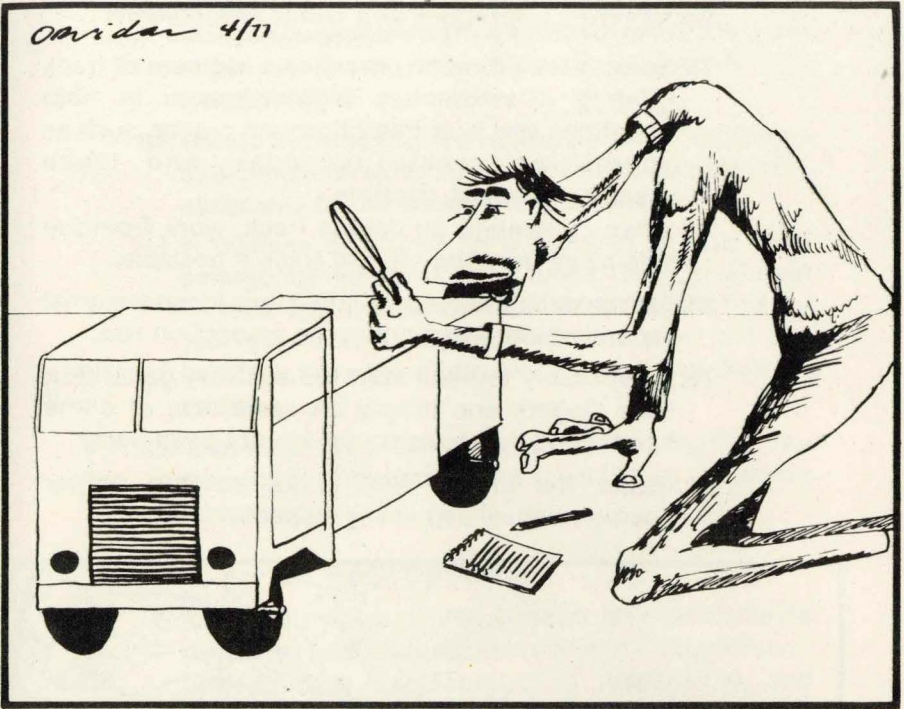
46. Insure that the railroad representative has secured a train line-up for the day and segment for inspection prior to leaving the meeting place and that he has informed the operator of the contents of the line-up.
47. Prior to the start of measurement work, all occupants of the TGC shall be informed and have a thorough understanding of the procedures to be followed should an emergency arise.
48. Prior to the start of measurement work, the TGC operator shall explain any duties and activities assigned to the railroad representative and/or other TGC occupants to be performed by them during inspection operations.

#### Setting the TGC on or Off Track

55. The operator with the assistance of the railroad representative shall endeavor to select a road crossing with little traffic for use in setting the TGC on and off the track, even if it is some distance from the inspection start point.
56. When conditions require or line of sight distance is obscured, the setting on and off track of the TGC must be protected by flagging.
57. When placing TGC on or taking it off rails, keep feet clear of rail and wheels, prevent movement of the TGC until the person operating the hydraulic Hy-rail signals he is clear, and exercise care not to catch hands or clothing on the Hy-rail hydraulic controls or locking mechanisms.
58. The TGC beacon light and headlights shall be turned on while setting on and while operating on track.
59. The TGC must be operated with the steering wheel lock in place.
60. The operator shall operate the TGC on the highway and when placing the TGC on track.
61. The operator shall operate the TGC hydraulic Hy-rail system.



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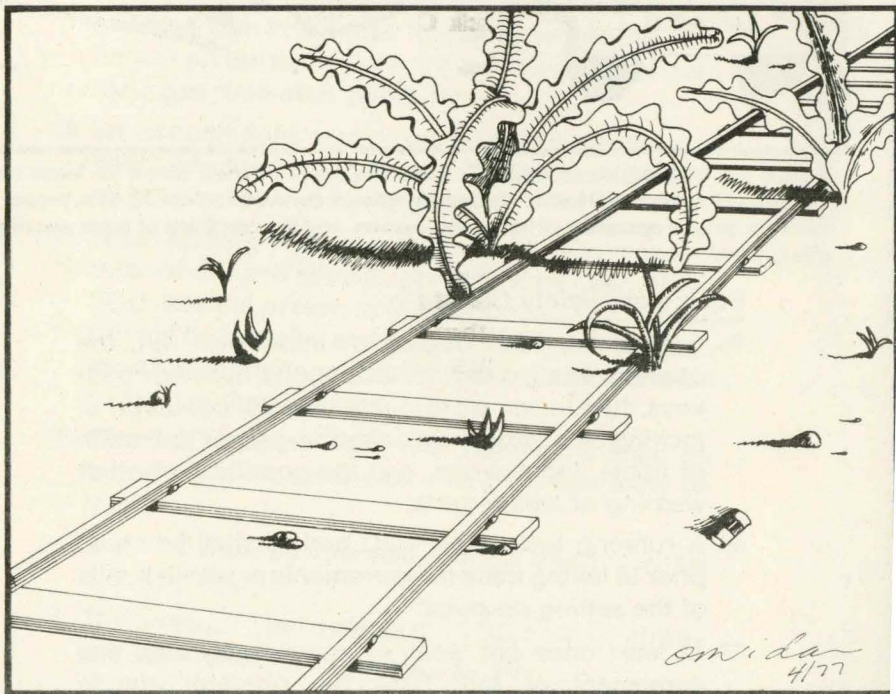
**Before the TGC begins an inspection run, the operator shall; check for loose bolts, missing cotter keys, fuel leaks, worn guide wheels, condition of locking pins, proper tire inflation, proper operation of lights and beacon, and the condition of other wearing or safety parts.**

#### Equipment Safety Checks

65. Before the TGC begins an inspection run, the operator shall; check for loose bolts, missing cotter keys, fuel leaks, worn guide wheels, condition of locking pins, proper tire inflation, proper operation of lights and beacon, and the condition of other wearing or safety parts.
66. A running test of the TGC brakes shall be made prior to taking track measurements or within  $\frac{1}{4}$  mile of the setting on point.
67. At least once per week or immediately after any derailment of the TGC, the operator should observe that there is clearance between guide wheel flange and rail and that the flanges do not ride or bind the rail while on unelevated tangent track. A check of gauge should be made according to manufacturers specification.

## Performing Calibrations and Other Preparations

75. Select for calibration purposes a segment of track offering a satisfactory sight distance in both directions and is as free of ground clutter, such as vegetation, waste material, and track appurtenances as possible.
76. When calibrating on double track, work from the side away from the second track if possible.
78. Fasten calibration tools and other loose material securely before beginning the inspection run.
79. If necessary to hand start the auxiliary generator, keep fingers and thumb on same side of crank handle and pull toward you, do not push away.
80. Insure the drivers seat is locked into proper position before beginning inspection run.



Select for calibration purposes a segment of track offering a satisfactory sight distance in both directions and is as free of ground clutter, such as vegetation, waste material, and track appurtenances as possible.



81. Instruct the railroad representative in the use of the TGC radio and perform a radio check of the TGC radio or of the radio brought by the railroad representative.
82. Before transmitting, the radio operator shall listen a sufficient interval to be sure the circuit is not in use, especially for an emergency transmission.
83. A distress call shall be preceded by the word emergency repeated three times. The call should be repeated until answered. Unless answering the call, stay off the air until transmission will not interfere with the communication of the distress station.
84. The radio operator should clearly identify the transmitting station as the Iowa Track Geometry Car along with his name.

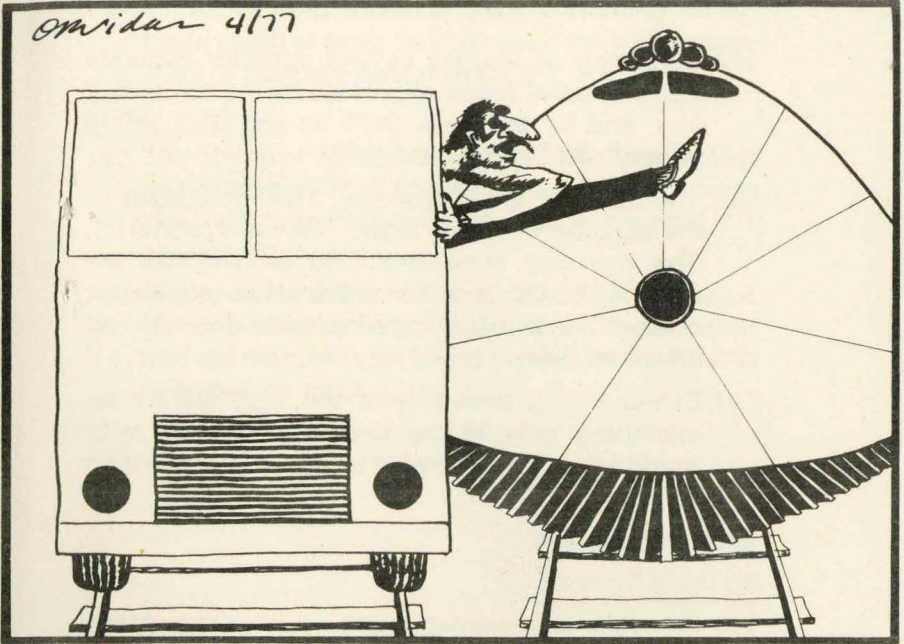
#### **Rules For On Track Operation**

95. Operating rules of the railroad take precedence over any rule in this section when in disagreement. The railroad representative is responsible, and should be so informed by the TGC operator, for the adherence by the TGC to the railroad's operating rules.
96. The maximum on track speed of the TGC shall not exceed 30 mph at any time or 25 mph when taking gauge measurements. Passage through highway grade crossings, and frogs shall not be made at more than 5 mph. Passage through interlocking plants shall not be made at more than 5 mph.
97. Extreme caution should be exercised when approaching highway crossing at grade and the right of way shall be yielded to the highway traffic.
98. The TGC must come to a complete stop at all railroad crossings, obey all signals, lift gauge carriage and cross only when there are no conflicting movements.
99. The TGC must be operated with special caution while passing work gangs on or near the track.



100. Persons mounting and dismounting the TGC shall do so only when the vehicle is not moving, and shall face the vehicle using the grab irons provided.
101. Persons exiting the TGC shall exercise care to check for a passing train on an adjacent track, if any, and for insecure footing or obstacles before leaving the vehicle.
102. When meeting or being overtaken by a train on an adjacent track the occupants of the TGC shall:
  - (a) exit from the TGC well in advance of the approaching train's passage.
  - (b) position themselves well away from and on either side of the track being used by the train.
  - (c) observe the train for problems such as dragging equipment, hot boxes, sticking brakes, shifted lading and the like and if seen, report it to the railroad representative immediately.
103. TGC occupants shall not extend limbs or head outside the TGC cab when it is in motion.
104. The TGC shall not pass under the bridge of a railroad while on track while the bridge is occupied by a moving train.
105. Upon retraction of the gauge sensors for any reason, the operation shall visually confirm or carefully watch the analog chart to confirm that the gauge sensor carriage is functioning properly after being repositioned for measurement.
106. The operator shall instruct the railroad representative to be alert, as well as remaining so himself, for high ballast, debris, or snow conditions that could damage the gauge sensors, or cause the rear dual wheels to lift enough to derail the guide wheels.
107. The operator shall inquire of the railroad representative once in every four hours of on rail operation if it would be advisable to check for changes in the train line up sheet.

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**When meeting or being overtaken by a train on an adjacent track the occupants of the TGC shall:**

**(a) exit from the TGC well in advance of the approaching train's passage.**

## **Accident and Emergency Procedures**

### Accidents and Injuries

120. Derailment or other accident involving the TGC severe enough to cause obstruction of the track or immobility of the TGC shall be reported to the railroad by the quickest available means of communication. Notification of the Iowa DOT headquarters shall be made as soon thereafter as possible.
121. When employees or others are injured, proper first aid procedures are to be applied. Further action in such cases is governed by the railroad company accident handling rules.
122. Injury of any kind, however minor, must be promptly reported and properly treated to avoid complications.



123. Reporting of injuries by the operator includes completion of forms requested by the railroad, if any, and by the Iowa DOT as specified in the general DOT safety manual.
130. The operator shall inform all TGC occupants of the location of the on board fire extinguisher(s). The operator shall check to assure that the extinguisher(s) are in serviceable condition, charged, and of a type suitable for use on electrical fires.
131. Extinguishing fires aboard the TGC should be attempted only to the degree consistent with safety of personnel. Better to lose the vehicle than the man.

### **Safety Equipment**

#### Warning Devices

140. Fusees and torpedoes shall be carried aboard the TGC in containers designed for that purpose and only in such quantity as may be reasonably expected to be used during one incident. Damaged or old materials will be disposed of properly.
141. Two red flags will be carried aboard the TGC.
142. Use of all warning devices will be at the direction and in the manner prescribed by the railroad representative on-board.

#### Protective Clothing

145. Hard hats and gloves should be worn during equipment calibration and other work under the TGC to protect against head injury from raising up or hand injury from scratches from equipment or track appurtenances.
146. Thin soled, open toe, or cloth shoes, or unbuckled overshoes must not be worn by TGC operators. If possible, advance notice should be given to visitors to wear sturdy shoes.



147. Avoid wearing loose or baggy clothing which could catch or snag on TGC equipment and cause a fall or damage equipment.

#### Safety Devices

150. The operator will check to determine that at least one operable fire extinguisher suitable for use on electrical fires is aboard the TGC every time it is operated on track.
151. The operator will insure that an adequate first aid kit containing sufficient supplies and an approved first aid manual is on board every time the TGC is operated on track.

# NOTES

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