What's the Answer?

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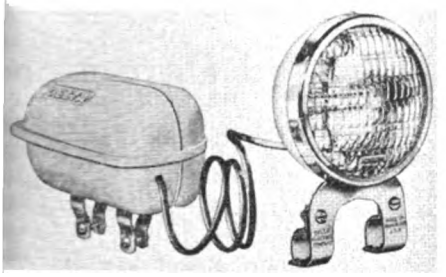


Motor Car Lights

By A Signalman
Norristown, Pa.

A Delta A-2187 6-volt sealed-beam bicycle headlight with 4½-in. reflector, battery case, etc., makes a good, inexpensive (about $6.) motor car headlamp. An additional unit equipped with a red plastic lens cover disk (easily made) will serve as a rear marker lamp. Mounting clamps may have to be slightly modified for motor car use.

Can You Answer These Questions?

• What experience have you had with atomic lamps (using Krypton 85 gas or similar atomic material)? What use are you making of them? Has their service been satisfactory? What regulations (Atomic Energy Commission or other) have you encountered? Is storage of these lamps, where the collective emission from several lamps might be higher than is considered safe, a problem. If so, how is it to be solved? Do you expect to make greater use of atomic lamps in the future?

• What is your maintenance, test and repair procedure for microwave equipment? What type and make of test instruments do you use, and are they bench or portable models? Who does the test and repair work?

• Do you use snow detectors for turning on switch heaters or similar applications? Please describe your present and prospective uses of these devices.

Please send us your answers to these questions. We pay for all answers when they are published. Answers will be published anonymously if requested. Write Editor, Railway Signaling and Communications, 30 Church St., New York 7, N. Y. Also please send us questions for this department.

Power Line Carrier

Have you tried making use of the signal power line for transmitting carrier type signals, such as the type used in hotbox detection? What precautionary steps must be taken to insure success? What is the distance that the carrier signal is being transmitted? Who supplied the coupling devices, etc.?

Have Adequate Carrier Paths

J. A. PARKINSON, General Superintendent Communications and Signals, Atchison, Topeka & Santa Fe, Chicago, Ill.

The answer is no. In all cases where we have need for transmitting carrier we have had available paths such as code lines or communication physical pairs, so that it has not been necessary to resort to applying carrier to power wires. Obviously, there are numerous precautions which would have to be taken in that sort of application, which we can eliminate by superimposing our carrier on low voltage circuits only.

Have Tried Carrier on Power Line

A. K. HANSEN, Director of Communications, Quebec North Shore & Labrador, Sept Iles, Que.

We are unable to give you an answer to your question based on actual experience. While we use a Westinghouse carrier suitable for operation on a power line, it is actually working on the signal code line. However, we have tried the carrier on our 23-kv power line located 13 ft above the code line, with good results.

There is no reason why the power line should not be suitable for carrier transmission, provided it is designed for use with carrier—paying particular attention to coupling and filtering. We use our Westinghouse carrier over a distance of 360 miles with one repeater, which gives satisfactory voice and teletype operation.

I would assume that your question has reference particuarly to the lower voltage signal supply line which, as mentioned above, would require engineering based on the physical and electrical characteristics of the line.

Interlocking Costs

When the operating cost of an interlocking or other joint facility is shared between two or more railroads, do you itemize each bill for each facility, or have you adopted an average cost per signal unit? What are the reasons for your choice?

Averaging Would Cause Inequities

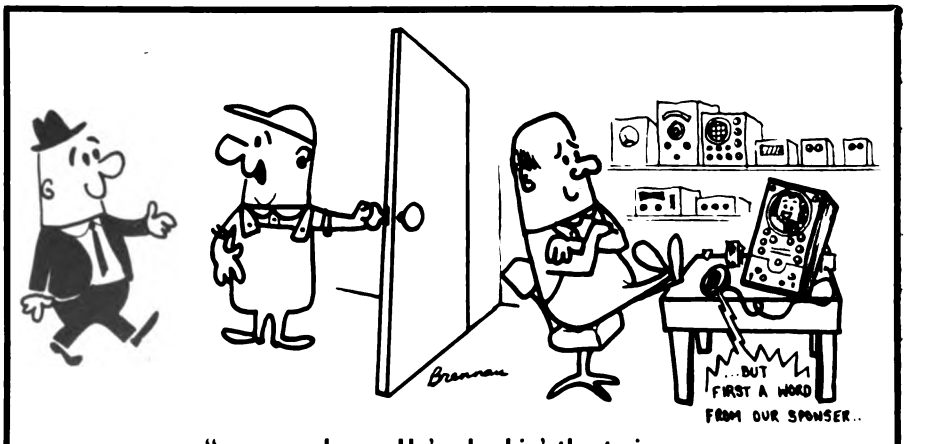
C. J. R. TAYLOR, Office Engineer, Erie-Lackawanna, Cleveland, Ohio.

On the Erie-Lackawanna for maintenance and operation of joint facility interlockers we generally itemize each bill in detail, thus:

Maintenance: Inspection, labor (repairing and adjusting), material, equipment rental (truck, housetrailer, etc.).

Operation: Labor (lubricating, cleaning, testing), material, electric, supplies (fuel, stationery, etc.).

Operating: Operator or leverman's



". . . sure boss—He's checkin' the train radio transmitters with the oscilloscope now!"

wages, travel expense of relief operator (if any).

Bills are rendered in accordance with the agreement, generally on a unit distribution percentage, in accordance with the value of units installed for the benefit of each road.

In our opinion, to render bills in accordance with an average cost per signal unit would give rise to inequities, as traffic at each joint interlocking can vary considerably, greatly varying the cost of maintenance and operation. What might be a satisfactory cost per signal unit at one plant might be entirely inconsistent for another.

Packset Batteries

Do you make use of rechargeable batteries for portable radios? What type of battery is used and where is the charger located? What procedure is followed, and how often are the batteries recharged?

Have Battery for Each Trick

J. A. PARKINSON, General Superintendent Communications and Signals, Atchison, Topeka & Santa Fe, Chicago, Ill.

The Santa Fe uses rechargeable batteries for portable equipment in car inspecting and car checking services. The type of battery used is a 6-volt nickel cadmium. In the case of both the car checking and car inspecting systems, the chargers are located at the point where the crews change tricks. A battery is assigned to each trick of operation, and has a number painted on its side so that the employees will know that the battery is for their specific use. At the completion of the tour of duty, each man removes his battery from the packset and places it on charge, thus permitting the battery to be charged for 16 hours and to be in service for 8 hours out of each 24 hours. This method of operation has proved to be satisfactory insofar as the use of rechargeable batteries is concerned.

Use Dry Cells

G. H. ALFORD, Superintendent of Signals and Communications, Texas & Pacific, Dallas, Texas.

This company has abandoned the use of rechargeable batteries for portable radios. They were used at one time but did not prove successful. Dry cell type batteries are used for our portable radios, which have proved to be more successful and much more economical than rechargeable batteries.

Hi-Speed Detection

How do you detect overspeed trains? How are speed violations recorded so that the responsible engineman is correctly associated with the violation?

Have Permanent Recorders

F. L. CHATTEN, System Engineer-Communications and Signals, Pennsylvania, Philadelphia, Pa.

Overspeed of trains is detected at specific locations by permanently installed recorders which produce a tape indicating time consumed for the front of a train to pass over a measured distance. The record produced is identified in the same manner as traingraph records on CTC installations.

Portable speed recording devices are also employed for spot checks which produce a visual record in miles per hour for the first wheels of a train to pass two points separated by 132 ft. This is a semi-automatic device which requires a re-set for each operation. The train and speed are recorded by personnel conducting the speed check, who also re-set the device for the next operation.

Speed tapes on engines are available for this purpose, and the recordings now associated with hotbox detectors also have such an application within reasonable margin of accuracy.

Time Locking

Where you employ time locking, how long do you set the time? Why, and how was this time period arrived at? Does it depend upon train speed?

22.7 mph Is Critical Speed

L. A. SEBECZEK, Office Engineer, Signal Department, Burlington Lines, Chicago, Ill.

Where time locking is employed, the predetermined time setting of a time release will depend on the number of approach signals required to provide stopping distance for a specified maximum speed. The minimum release time setting of a time release must be greater than the maximum time required for a train to stop with a full

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Reader Writes

The signal department should not be subordinate to any department, and especially the engineering department. They should hold the same rank, and be equal to the operating department. The signal department is first an operating department governed by railroad rules for conducting transportation requisites and standards with rules for the construction and maintenance of signal systems, including tests and the ICC's RS&I.

Signaling has grown from high ball signals through semaphores to color-lights, from mechanical to present electric and relay plants, etc, etc. Where was the engineering department in those early days? The signal department was conceived from the carpenter department and grew into a department of its own right. Upon reaching maturity, it was placed under the engineering department. It has been said that the signal department then became a step-child of the engineering department. So true that statement as the engineering department had little or nothing to do with the conception or growth of the signal department.

The closest relation I can see of the signal department to the engineering department is the track over which the signals govern the movement of trains.

I do not agree with the consolidation of the communication and signal departments, as each field has grown into a science of its own. Both departments are growing rapidly and are capable of standing on their own merits. Eventually they will be recognized, or else become a "frankenstein" to the department that would hold them in subjugation.

(Name Withheld)

Editor's Note: These comments refer to RS&C Editor's Corner in March 1961, page 50.

WHAT'S THE ANSWER?

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service application of air before reaching a point where a stop is required. The release time setting should be equal to or greater than the time required, plus a distance factor to provide additional time at a speed not to exceed 30 mph.

The foregoing requirements are necessary to assure that if a train passes a green approach signal, and immediately thereafter the home signal to an interlocking is controlled to stop, sufficient time must expire so that the train has had ample time to traverse the distance between the approach signal and interlocking home signal before an established route can be changed.

The predetermined time is arrived at by computing 30 seconds per thousand feet, measured from the inter locking home signal to the first ap proach, in case of one approach signa In case two successive approach si nals are required, a special chart used. The chart is based on the follo ing: Assuming that the first approac signal immediately in advance of t home signal is 5,000 ft (computed be stopping distance for 40 mph), a the second approach signal is 8,000 in advance of the first approach signa the elapsed time for a train to trave the distance between the first approac and home signal at a speed of 40 mp is 150 seconds. This is based on a average speed of 22.7 mph. Th elapsed time between the first a second approach is computed for mph or 58.7 ft per second, for a tot elapsed time of 136 seconds to trave the distance of 8,000 ft between t

(Please turn to page 3

VHF Radio: Material List *(Continued from page 23)*

MATERIAL AVAILABLE FROM BENDIX

Item	Bendix Number
1—Power Transformer, T-301	N 284435-1
1—Mounting Bracket for electrolytic capacitor C310	No number—specify application
1—Choke, RF Filter, L302 (Replaces R323, 470 ohm resistor)	C 215350-23
1—Start Relay	C 287123-1
1—Vibrator clamp assembly	L 206328-1
2—Crystal Switching Relay, MS-301 B or D	L 2098576-2
2—Crystal Oven, 4C0	4C04 & 4C05

ADDITIONAL MATERIAL REQUIRED FOR CONVERSION OF 10 WATT MT-143B RF DECKS TO 30 WATT MT-143D DECKS

(Most of the hardware is to be left to the discretion of the user as to how much of the old deck he considers salvageable.)

A. Available locally or from Bendix

	Item	Bendix Number
3	Capacitor, 22 mmf, ± 5%, 500 VDCW	C 220132-47
6	Capacitor, 270 mmf, ± 10%, 500 VDCW	C 220133-73
1	Capacitor, C240, Variable, 3.5–14.5 mmf, air	C 219063-1
1	Capacitor, C241, Variable 3.9–50 mmf, air	C 219065-3
1	Resistor, R239, 2500 ohm, ± 10%, 10 watt, wire wound	C 220521-252
1	Resistor, R236, 3900 ohm, ± 10%, 2 watt, comp.	RC 42BE392K

B. Available from Bendix

	Item	Bendix Number
1	Meter shunting resistor combination R238 consisting of two 20 ohm, 1 watt, 2% wire wound resistors in parallel	C 220589-2
1	Inductance, grid, L220	C 215823
1	Inductance, plate, L222	C 215821-1
1	Tube hold down bracket	A 296418
1	Tube hold down insulator	NS 3W0108
* 3	Screw	HN 949B08-632
* 3	Washer, lock	HN 799P06-M
* 3	Washer, flat	OA 17030-4

*** These items could be supplied from shop stock but factory items provide a standard mount for the hold down assembly.**

From this point it is advisable to procure a copy of Bendix drawing N200680 entitled Amplifier, RF Assembly, MT-143D for a complete list of hardware and assembly data applicable to the 30-watt deck.

WHAT'S THE ANSWER?

(Continued from page 36)

first and second approach. The sum of the two times would be the predetermined time release setting, which in this case is 286 seconds, or 4 minutes and 46 seconds. In the foregoing calculations both speed and distance are factors that must be taken into account.

It can be seen that by applying the method above for calculating time element settings that the critical speed is 22.7 mph. So, we are primarily concerned with trains operating at a speed of 30 mph or less, inasmuch as trains operating at speeds higher than 30 mph will have traversed the distance between the approach and home signal in far less time than the predetermined time for which the release is set and will occupy the plant section before time expires, maintaining the established route lock ahead of the movement.

Absolute Signals

Do you use a name plate, symbol, light or other device to indicate that a signal is an Absolute (stop and stay) signal? If so, why is this preferable to marking permissive signal and leaving absolute signals unadorned? How is fail-safe protection provided in the event the device becomes inoperative or is knocked off?

Practices on Indian Railways

LALJEE SINGH, Joint Director, Signal and Telecommunications Standards, Ministry of Railways, Simla, India.

On Indian Railways, rules require an automatic (Stop and Proceed) to be provided with a marker, consisting of white enameled disk with letter "A" in black.

Certain interlockings require the use of semi-automatic signals also. These have both manual and track circuit controls and are capable of being operated either as automatic signals or as manually controlled signals, as required. Markers are provided on semi-automatic signals also, and show a white illuminated letter "A" only when the signal is working as an automatic signal. The light is extinguished when it is working as manually controlled.

It will thus be seen that "fail-safe protection," the basis of all signaling practice, is ensured. The marker being knocked off or the light getting extinguished would automatically make the signal an Absolute (stop and stay) signal. It may, however, be stated that such failures seldom occur in practice.