What's the Answer?

Can You Answer These Questions?

• Do you use saturable inductors on your communication lines to reduce the transmission loss due to bridged taps? If so, please describe their application and the results obtained. If rejected, please state your reasons for so doing.

• Do you use the smaller backgrounds on searchlight signals? Why or why not? (Note small backgrounds compare approximately as shown.)

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.

PF Improvement

Do you use capacitors to improve the power factor of signal power transmission lines? Please describe your reasons for using or not using them.

Capacitors Indispensable

P. H. LINDEROTH, Signal Engineer, Chicago, Milwaukee, St. Paul & Pacific, Chicago, Ill.

Capacitors are almost indispensable for a 4,400-volt, 60-cycle transmission line furnishing power for operating 110-volt AC motor-driven semaphore signals and AC track circuits. On a 90-mile section of our railroad with this type of signaling, the heavy inductive load resulted in a very low power factor, which required a penalty payment to compensate for the wattless current. Before capacitors were installed, considerable difficulty was also experienced in maintaing a satisfactory operating voltage on the far end. We installed 10-kva capacitors about 10 miles apart and upon completion of our first installation found that the kilowatt-hour consumption increased substantially. This was due to the improved primary voltage and it was necessary to adjust downward the voltage applied to the track circuits and to the terminals of the signal lamps of the entire 90 miles.

Snow Detectors

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

For Switch & 3rd Rail Heaters

L. M. BELLINGER, Superindentent of Signals, New York City Transit Authority, Brooklyn, N. Y.

The Transit Authority has snow detectors at six locations which control heat elements for 22 track switches. It is also installing snow detectors to control heater elements on sections of the third rail at two other locations.

One snow detector is located at each of these locations:

	No. Heaters Controlled
Hammels Wye (IND)	1
Dyre Ave. station (IRT)	7
Morris Park station (IRT)	6
Hunters Point Station (IRT)	4
Rockaway Park station (IND)	2
Mott Ave. station (IND)	2
11th St. (Queens) (BMT)	3rd rail
Wilson Ave. station (BMT)	3rd rail

Eleventh St., Queens, is open grade and Wilson Ave. is an open cut. Both locations are susceptible to sleet formation and snow accumulation on the third rail. Manual control of heaters here would not only be costly but not conducive to employee safety, due to the limited clearances. No problems were encountered in making this installation.

The heaters use the 600-volt DC power with the control switches activated by the AC signal power. The detectors were supplied by the Rails Company, Maplewood, N. J.

Snow Detectors a "Must" Item

W. E. BELL, Assistant Signal Engineer, Erie-Lackawanna, Cleveland, Ohio.

On the Erie-Lackawanna, at the present time, we have snow detectors installed at several remote controlled locations. At one location the detector is used to automatically light the switch heaters when weather conditions so indicate. At the other location the snow detector is used to send an indication to the control office to notify the operator the switch heaters should be turned on. As these detectors are located on the ground close to the switch they are also activated by dri ing snow.

Tests, so far, have proved the d tectors perform very satisfactori With the increase of remote controll interlockings equipped with remo controlled switch heaters, an au matic snow and ice detector is "must" item to prevent switch failur We feel that snow detectors used an indication to alert the dispatch or operator will become standa equipment. Use of snow detectors automatically turn on switch heat will, without doubt, be advantageo at outlying locations where cost of co equipment to control them would prohibitive, and at certain spri switch locations not protected by co trolled home signals, and where n code lines or equipment are availabl

Very Useful Device

D. H. WALKINGTON, Assistant En gineer, Canadian Pacific

The Canadian Pacific has installe two snow detector units at widel separated locations for test purpose One of these units was installed at power switch in CTC territory for th purpose of automatically controllin the propane gas switch heater. It ha operated with no trouble and practi cally no maintenance.

The complete installation consists c three parts: a sensing head, a contr box and a thermostat. The sensin head is mounted just below the top c the ties between the rails at the switc points. The sensing head is fitted wit a small electric heater which turns an snow falling on the head into wate The presence of water on the head then detected and operates a relay i the control box by means of a tra sistorized amplifier. The control bo is located in the bungalow (she mounted). The thermostat is also i the bungalow, although unless th bungalow is well ventilated the remot temperature bulb should be outsid

If the outside temperature is le than the thermostat setting of, sa 36 deg F then the switch heaters wi be ignited, it being considered that b low this temperature the water on th sensing head is likely due to snow freezing rain. When moisture forms o the detector grid it will operate th control relay by means of the transisto amplifier, provided the thermostat co tact is closed. The relay then operat the snow melter and the timer. Th control relay is held energized by th

imer for the 30-minute cycle. If mois-ure is still present on the grid at the nd of the cycle the snow melters will emain on for another complete cycle. 'he amount of moisture needed to op-rate the device can be varied by vary-ıg the heat supplied to the grids, by ıeans of the rheostat.

This device has several possible ap-lications:

(1) To indicate to the dispatcher ıat it is snowing. This can be particu-ırly useful at night in remote areas.

(2) To automatically control switch eaters. This arrangement is useful at ›ring switches outside CTC territory, ır example. It could also be useful hen heaters are added to switches in TC territory where no spare control ıd indication code steps are avail-›le. Even where code steps are avail-›le, the use of snow detectors would ›obably be more economical than lding the necessary field and office ›plication equipment. It is of course ssible to have one detector control ore than one switch heater by means line wire.

(3) To combine both (1) and (2). This is the arrangement used at present on the CPR. The detector directly controls one heater, which then indicates to the dispatcher when it ignites. This warns the dispatcher that he should ignite other heaters in the area.

Used in any of the above applications the detectors have several advantages. They will operate heaters at the first snow, which is quite important to prevent smothering of heaters (particularly in the case of heavy wet snow). Early ignition also permits the heaters and rails to warm up early in the snowfall, insuring that the switch points can be kept clear even in the heaviest storm. Soon after the snowfall stops the heaters will shut off, instead of leaving this decision to the judgment of a dispatcher many miles away. This usually results in a considerable reduction in gas consumption, and on the other hand guards against heaters being turned off prematurely. The detector will also operate if snow drifts into the switch, or is dragged in by passing trains.

It should be noted, however, that in reality the sensing head only detects moisture. If the air temperature is lower than the setting on the thermostat the relay in the control box will then operate. This will be the case regardless of whether or not the moisture is a result of snow. This means that the switch heaters are sometimes cycled for such causes as rain (when the air temperature is, say, between 32 deg and 36 deg F) and water dripping from passing trains, etc. On one occasion we determined that the heaters had been operated as a result of a track motor car with leaky radiator!

We remove the melters and sensing head from the track in summer. This permits them to be cleaned and pipes blown out, and also protects them from possible damage from dragging equipment, etc.

The detecting apparatus requires approximately 21 watts at 115 volts AC. On the whole the snow detector has proved to be an economical, dependable and potentially very useful device.