Regulations issued in 1939 are now replaced by new ones, which require a few changes in practice on some railroads.

THE Interstate Commerce Commission has issued new rules, standards and instructions, applying to signaling, which are to be effective as of October 1, 1950. These new regulations, as issued with explanations by the Commission, cover 51 mimeograph pages, the following abstracts being confined to: (1) Brief opening explanation by the Commission; (2) Discussion of most recent actions in modifying the rules and; (3) Quotations of some of the regulations which may require important changes in practices on some roads.

Abstract of Report by Commission

DIVISION 3, COMMISSIONERS
PATTERSON, JOHNSON AND CROSS.

PATTERSON, Commissioner:

On January 6, 1950, we issued a notice of proposed rule making, stating therein that investigation would be made pursuant to the provisions of section 25 of the Interstate Commerce Act for the purpose of revising, amending and modifying the rules, standards and instructions for installation, maintenance and repair of automatic block signal systems, interlocking, traffic control systems, automatic train stop, train control, and cab signal systems, and other similar appliances, methods and systems, prescribed by the Commission's order of April 13, 1939. Such investigation was deemed necessary because the present rules, standards and instructions had been in effect for more than 10 years, and experience had shown that some of them should be eliminated and others clarified, and that in some respects they were incomplete and inadequate to carry out the purposes of section 25.

Each such notice was accompanied by a copy of rules, standards and instructions tentatively proposed as a substitute for those prescribed by the Commission's order of April 13, 1939, and by a copy of special rules of practice applicable to this proceeding. The only evidence offered in opposition to the tentatively proposed rules, standards and instructions was submitted by the officers of six railroads, and they offered objections to but 10 of the 162 rules.

Rule 10

This rule reads as follows: "Electric locks on new installations and new electric locks applied to existing installations shall be of the forced-drop type." The only railroad objecting to it is the Chicago, Burlington & Quincy. Its objection is that electric locks of the forced-drop type should not be required on hand-operated switches for the reason that it knows of no manufacturer making electric locks of the forced-drop type for such switches. When advised that at least one manufacturer makes a lock for hand-operated switches that will meet the requirements of this rule, its objection was withdrawn.

Rules Concerning Signals at Spring Switches

136.12 Spring switch signal protection—where required. Signal protection shall be provided for facing and trailing movements through spring switch within interlocking limits, and through spring switch thereafter installed in automatic block signal, train stop, train control or cab signal territory where train movements over the switch are made at a speed exceeding 20 m.p.h., except that signal protection shall be required only with the current of traffic on track signaled for movement in only one direction.

NOTE: Relief from the requirements of this section will be granted upon an adequate showing by an individual carrier.

136.13 Spring switch selection of signal control circuits through circuit controller. The control circuits of signals governing facing movements over a main track spring switch shall be selected through the contacts of a switch circuit controller, or through the contacts of relay repeating the position of such circuit controller, which, when normally closed switch point is open one-fourth inch or more, will cause such signals to display their most restrictive aspects, except that where a separate aspect is displayed for facing movements over the switch in the reverse position the signal shall display its most restrictive aspect when the switch points are open one-fourth inch or more from either the normal or reverse position.

136.14 Spring switch signal protection—requirements. (a) The indication of signal governing movements from siding to main track with the current of traffic on track signaled for movements in only one direction through a spring switch in automatic block signal territory shall be not less restrictive than "Proceed at Restricted Speed" when the block, into which movements are governed by the signal, is occupied, and shall be "Stop" when the main track is occupied by a train approaching the switch within at least 1500 feet in approach of the approach signal located stopping distance from the main track signal governing trailing movements over switch, except that the indication may be caused to be less restrictive if approach or time locking is used.

(b) The indication of signal governing movements against the current of traffic from the reverse main of main tracks to a single track, or signal, governing movements from a siding to a main track signaled for movements in either direction, through a spring switch, in automatic block signal territory, shall be not less restrictive than "Proceed at Restricted Speed" when the block, into which movements are governed by the signal, is occupied by a preceding train, and shall be "Stop" when the block on the single track into which the signal governs is occupied by an opposing train.

(c) The indication of signal governing movements against the current of traffic from the reverse main of main tracks to a single track or signal governing move-
ments from a siding to a main track signaled for movement in either direction through a spring switch in automatic block signal territory shall be "Stop" when the normal direction main track of the double track or the single track signaled for movements in both directions is occupied by a train approaching the switch within at least 1500 feet in approach of the approach members to a train moving out of a siding, rule 14 is the Great Northern, normal direction in a track of the double track would permit the continued use of trailing direction. The rule recognizes that there may be some where the protection provided so closely approaches that required under rule 14 that relief from a requirement that they be brought into exact compliance with the rule may be warranted. The rule has, therefore, been modified to the extent of adding a note to the rule with respect to existing installations.

Roadway Signals and Cab Signals

136.21 Location of roadway signals. Each roadway signal hereafter installed shall be located over or to the right of the track it governs. Relief from the requirements of this section will be granted upon an adequate showing by an individual carrier.

136.24 Spacing of roadway signals. Each roadway signal shall be located with respect to the next signal or signals in advance which govern train movements in the same direction so that the indication of a signal displaying a restrictive aspect can be complied with by stopping, or by slowing by emergency application, initiated at such signal, either by stopping at the signal where a stop is required, or by a reduction in speed to the rate prescribed by the next signal in advance where reduced speed is required.

136.25 False restrictive position of semaphore signal arm failure of lamp in light signal. If an approach signal assumes a false restrictive position or if a lamp in a light signal fails the signal shall not display a less restrictive aspect than intended. Relief from the requirements of this section shall be brought into conformity therewith in accordance with the following schedule:

- Not less than 20 percent on or before October 1, 1951.
- Not less than 40 percent on or before October 1, 1952.
- Not less than 60 percent on or before October 1, 1953.
- Not less than 80 percent on or before October 1, 1954.

The aspects of cab signals shall be shown by lights or by illuminated letters. Each aspect displayed by a signal shall be identified by a name and shall indicate action to be taken. Only one name and indication shall apply to those aspects indicating the same action to be taken; the same aspect shall not be used with any other name and indication.

The fundamental indications of signal aspects shall conform to the following:

- A red light, a series of horizontal lights or a semaphore blade in a horizontal position shall be used to indicate stop.
- A yellow light, a lunar light, or a series of lights or a semaphore blade in the upper or lower quadrant at an angle of approximately 45 degrees to the vertical, shall be used to indicate that speed is to be restricted and stop may be required.
- A green light, a series of vertical lights, or a semaphore blade in a vertical position in the upper quadrant or 60° or 90° in the lower quadrant shall be used to indicate proceed at authorized speed.

The names, indications and aspects of roadway signals and cab signals shall be defined in Block Signal and Interlocking Rules in effect on each railroad subject to these Rules, Standards and Instructions. Copy of such Block Signal and Interlocking Rules shall be filed with the Interstate Commerce Commission within six months after the date of this order and copy of subsequent modifications shall be filed with said Commission within thirty days after such modifications become effective. Such rules and any modifications thereof shall remain in effect until otherwise ordered by the Commission.

NOTE: Relief from the requirements of this section will be granted upon an adequate showing by an individual carrier.

A switch indicator consisting of a single yellow light unit (normally dark) and a switch-key-controller mounted on an iron mast located at clearances point of a siding, must be operated by a member of the crew who, together with engineer, must observe and be governed by its indication before fouling main track or making movement from siding to main track through a spring switch in automatic block signal territory, unless movement is made immediately after an opposing train has passed the switch and automatic signal at leaving end of siding indicates "Proceed".

Under these instructions, an indication (a normally dark indicator) requires a stop under some conditions and permits a train to pass it without a stop under other conditions. The revision of the rule submitted by the Great Northern makes no provision for following moves. As pointed out above, it is safer that such moves be made only under the conditions set forth in the rule. The Great Northern's suggested revision of the rule would not provide as great a degree of safety as is desirable. A system installed in compliance with the rule can be made just as flexible, so far as train operation is concerned, as the system in use on the Great Northern, and, so far as future installations are concerned, any additional expense necessary to meet the requirements of the rule will not be unduly burdensome.

As to existing installations, it is recognized that there may be some aspects which depend for visibility upon reflected light from an external source shall not be used.
The remainder on or before October 1, 1955.

136.26 Buffing device—maintenance. Buffing device shall be maintained so as not to cause the signal to display a less restrictive aspect than intended.

136.27 Phantom signal aspect. Measures shall be taken to prevent recurrence of a phantom signal aspect.

The Great Northern objects to rule 24 in the belief that it prohibits the use of successive restrictive signals, which are permitted under present Rule 205. Rule 24 clearly permits the use of successive restrictive signals and no change therein is warranted or necessary.

The Great Northern is the only railroad objecting to rule 23. It takes exception to that part of the rule which reads: “A single white light shall not be used” and to that part prescribing fundamental indications which reads: “A yellow light, a lunar light, etc.”

A single white light has been used for years by the Great Northern as an indication that a dragging-equipment detector has been actuated and requires that a stop be made as promptly as the safety of the train will permit and the train examined for dragging equipment. A lunar light also has been used by it as an indication on a spring switch indicator to designate “a spring switch with a facing-point lock in proper operating condition.”

The reasons for barring the use of a single white light to give an indication are that a broken colored signal lens will permit a white light instead of a colored light to be displayed, and to avoid confusion that might result from other white lights along the right of way.

The lunar light was included in the paragraph describing the lights and positions of lights or semaphore arms that should be used to indicate “that speed is to be restricted and stop may be required” because there are carriers that use that light for such an indication. If the rule were revised to eliminate the words “a lunar light” as requested by the Great Northern, the use made of the lunar light on these other carriers would be restricted.

For these reasons it is not desirable to revise the rule. However, from the standpoint of safety, there appears to be no objection to the use that the Great Northern is making of the single white light or of the lunar light. There may be other carriers that make similar use of these lights. Each such case should be considered on its own merits. The note to the rule will be made to apply to the entire rule by eliminating the words “with respect to fundamental indications as applied to semaphore signals.”

**Automatic Block Signal Systems**

136.201 Track circuit control of signals. Signals shall be controlled automatically by track circuits extending through the entire block.

136.202 Signal governing movements over hand-operated switch. Signal governing movements over hand-operated switches in the facing direction shall display its most restrictive aspect when the points are open one-fourth inch or more, and, in the trailing direction, three-eighths inch or more, except that where a separate aspect is displayed for facing movements over the switch in the normal and in the reverse position, the signal shall display its most restrictive aspect when the switch points are open one-fourth inch or more from either the normal or reverse position.

136.203 Hand operated crossover between main tracks—protection. At hand-operated crossover between main tracks protection shall be provided by one of the following: (1) An arrangement of one or more track circuits and switch circuit controllers, (2) facing point locks on both switches of the crossover, with both locks operated by a single lever, or (3) electric locking of the switches of the crossover. Signals governing movements over either switch shall display their most restrictive aspect when any of the following conditions exist:

(a) Where protection is provided by one or more track circuits and switch circuit controllers, and either switch is open or the crossover is occupied by a train, locomotive or car in such a manner as to foul the main track. It shall not be a violation of this requirement where the presence of sand, rust, dirt, grease or other foreign matter on the rail prevents effective shunting;

(b) Where facing point locks with a single lever are provided, and either switch is unlocked;

(c) Where the switches are electrically locked, before the electric locking release.

The only objection to rule 203 is by the Atchison, Topeka & Santa Fe System Lines, hereinafter collectively referred to as the Santa Fe. Their sole objection is that the rule is not made subject to Footnote 5, which provides that existing installations be brought into conformity with certain other rules within a period of five years. At the cross-examination of their witness they modified their request for time within which to comply with this rule to a period of three years. They equipped 134 crossovers with special track circuits or electric locks and have 328 to be still equipped to comply with the rule. They are carrying out an extensive program of signal installation, including the installation of automatic train stop on 2990 miles of track in compliance with our order in Appliances, Methods and Systems Intended to Promote Safety of Railroad Operation, 268 I.C.C. 547, which will tax their signal construction forces for over two years. Considering the number of crossovers to be equipped and the present program of signal installation, the Santa Fe will be given until December 31, 1952, the date on or before which compliance with our order in the case cited is required, to comply with the requirements of Rule 203. No change in the rule is necessary.

**Rules 308-311**

136.303 Control circuits for signals—selection through circuit controller operated by switch points or by switch locking mechanism. The control circuit for power-operated or slotted mechanical signal governing movements at higher than restricted speed in the facing direction over switches, movable-point frogs and derails shall be selected through circuit controller operated directly by switch points or by two or more locking mechanisms or through relay controlled by such circuit controller, for each facing point switch, movable-point frog and derail in the routes governed by such signal. Circuits shall be arranged so that such signal can display an aspect to proceed only when each such switch, movable-point frog and derail in the route is in proper position. Such power-operated signals hereafter installed shall be controlled in this manner through circuit controllers or switch repeating relays for all switches, movable-point frogs and derails in the routes governed by such signals.

NOTE: Existing installations shall be brought into conformity with the requirements of this section on or before October 1, 1952.

136.304 Mechanical locking or same protection effected by circuits. Mechanical locking, or the same protection effected by means of circuits, shall be provided.

136.305 Approach or time locking. Approach or time locking shall be provided in connection with signals governing movements at higher than restricted speed.

136.306 Facing point lock or switch-and-lock movement. Facing point lock or switch-and-lock movement shall be provided for mechanically operated switch, movable-point frog or split-point derail.

136.307 Indication locking. Indication locking shall be provided for operative approach signals of the semaphore type, power-operated home signals, power-operated switches, movable-point frogs and derails, and for all approach signals hereafter installed, except light signals all aspects of which are controlled by coded track circuits or by double wire line circuits.

136.308 Mechanical or electric locking or electric circuits—requites. Mechanical or electric locking or electric circuits shall be installed to prevent signals from displaying aspects which permit conflicting movements except that opposing signals may display an aspect indicating proceed
at restricted speed at the same time on a track used for switching movements only, by one train at a time. Manual interlocking in service as of the date of this order at which opposing signals on the same track are permitted simultaneously to display aspects authorizing conflicting movements when interlocking is unattended, may be continued, provided that simultaneous train movements in opposite directions on the same track between stations on either side of the interlocking are not permitted.

NOTE. Relief from the requirement of this section will be granted upon an adequate showing by an individual carrier to the Commission that signals on the same track simultaneously to display aspects to proceed through an interlocking which is unattended, provided that train movements in opposite directions on the same track between stations on either side of the interlocking are not permitted at the same time.

The only objection to rule 303 is by the Great Northern. Its objection is that the rule does not clearly show whether it applies to power interlocking in which dynamic or battery indicated circuits must deliver indications which control the mechanical interlocking between switch and signal levers, and that it should be clarified. The rule clearly states that the circuits shall be selected through circuit controller operated directly by switch points or by switch locking mechanism or through relay controlled by such circuit controller for each facing-point switch, movable-point frog, or derail in the route governed, and needs no clarification. The combination of indications and mechanical locking referred to by the witness does not comply with this rule.

The Burlington is the sole objector to rule 308. It requests that that portion reading "provided that simultaneous train movements in opposite directions on the same track between stations on either side of the interlocking plant are not permitted" be eliminated, or modified to read "where simultaneous train movements in opposite directions on the same track between stations on either side of the interlocking plant are not permitted" be eliminated, or modified to read "where simultaneous train movements in opposite directions on the same track between stations on either side of the interlocking plant are not permitted." This modification does not change the intent of the rule.

Rule 311

The Great Northern contends that rule 311 does not clearly indicate whether automatic interlocking signal control circuits may be selected through relays which repeat track relays or must be selected through track relays directly, and requests that the rule be clarified to permit use of repeater relays.

We recognize that it is necessary in some instances to select control circuits through repeater relays and it was not intended that this rule be interpreted to prohibit this practice. The rule has been revised to read as follows:

"The control circuits for aspects with indications more favorable than "proceed at restricted speed" shall be selected through track relays for all track circuits in the route governed or through repeating relays for such track relays. At automatic interlocking, signal control circuit shall be selected (1) through track relays for all track circuits in the route governed and in all conflicting routes within interlocking limits or through repeating relays for such track relays; (2) through signal mechanism contacts or relay contacts closed when signals for such conflicting routes display stop aspects; and (3) through normal contacts of time releases for such conflicting routes or contacts of relays repeating the normal position of contacts of such time releases."

Rule 313

The Burlington requests that the first sentence of rule 313 be clarified. It reads as follows:

"Steel or wrought-iron pipe one inch or larger, or members of equal strength shall be used for operating connections for switches, derail, movable-point frog, facing-point lock, rail-locking device of movable bridge protected by interlocking, and mechanically operated signal, except up-and-down rod which may be three-fourths inch pipe or solid rod."

In some instances two switches, or a combination of one switch and one derail, or two facing-point locks are in combination and operated from one pipe, and the Burlington is apprehensive that the word "each" in the first sentence might be interpreted to prohibit such combinations.

The rule as worded was not intended to prohibit such combinations from being operated from one pipeline, and to clarify this point the sentence has been reworded as follows:

"Steel or wrought-iron pipe one inch or larger, or members of equal strength shall be used for operating connections for switches, derails, movable-point frogs, facing-point locks, rail-locking devices of movable bridge protected by interlocking, and mechanically operated signals, except up-and-down rod which may be three-fourths inch pipe or solid rod."

If Cab Signal Fails

136.566 Locomotive of each train operating in train stop, train control or cab signal territory equipped. The locomotive from which brakes are controlled, of each train operating in automatic train stop, train control, or cab signal territory shall be equipped with apparatus responsive to the roadway equipment installed on all or part of the route traversed, and such apparatus shall be in operative condition.

NOTE: Relief from the requirements of this section will be granted upon an adequate showing by an individual carrier. Relief heretofore granted to any carrier by order of the Commission shall constitute relief to the same extent from the requirements of this part.

136.567 Restrictions imposed when device fails or cut out enroute. Where an automatic train stop, train control, or cab signal device fails and/or is cut-out enroute, train may proceed at restricted speed or if an automatic block signal system is in operation according to signal indication but not to exceed medium speed, to a point available point of communication where report must be made to a designated officer. Where no automatic block signal system is in use train shall be permitted to proceed at restricted speed or where automatic block signal system is in operation according to signal indication but not to exceed medium speed to a point where absolute block can be established. Where an absolute block is established in
advance of the train on which the device is inoperative train may proceed at not to exceed 79 miles per hour.

136,568 Difference between speeds authorized by roadway signal and cab signal—action required. If for any reason a cab signal authorizes a speed different from that authorized by a roadway signal, when a train enters the block governed by such roadway signal, the lower speed shall not be exceeded.

Objections to rule 566 were filed by the Union Pacific, Santa Fe, Burlington, and the Milwaukee. The rule requires that all locomotives operated in automatic train stop, train-control or cab-signal territory be equipped with apparatus responsive to the roadway equipment, and that such apparatus be in operative condition. The Commission has heretofore granted relief from this requirement where locomotives operated in train-stop, train-control, or cab-signal territory short distances, and the note to which the rule is subject contemplates that in the future relief from the requirements of the rule will be warranted in some instances. In the fourth and seventh reports on further hearing in Appliances, Methods and Systems Intended to Promote Safety of Railroad Operation, 274 I.C.C. 628, and 276 I.C.C. 798, the requirement for installation of automatic train-stop, train control, or cab signal devices on freight locomotives was postponed until the further order of the Commission in the case of the Santa Fe and the Union Pacific, respectively. The Burlington and the Milwaukee have pending in that proceeding petitions for similar relief. The objections to this rule will be met by adding the following to the note to the rule:

"Relief heretofore granted to any carrier by order of the Commission shall constitute relief to the same extent from the requirements of these rules."

Objections to rule 567 were filed by the Union Pacific, Santa Fe, Burlington, Milwaukee, and Illinois Central. Their objections relate only to the last sentence of the rule.

In the rules, an absolute block is defined as a block in which no train is permitted to enter while it is occupied by another train, and medium speed is defined as a speed not exceeding 40 m.p.h.

One of the objections to this rule is based on the thought that the rule requires that the absolute block referred to be a manual block. Clearly, the rule does not so provide. An absolute block can be established by the use of automatic signals, as well as by manual block operators. For example, if the aspects of automatic signals that ordinarily indicate "stop and proceed" are made to indicate "stop" for a train on which the train stop, train control, or cab signal devices have failed or been cut out en route, and the train required to stop until an aspect indicating that it might proceed is shown, an absolute block in advance of that train within the meaning of this rule would thereby be established. When the rule was thus explained at the hearing for cross-examination, the greater part of the objections to it were satisfied.

Another objection was to the words "and for", it being thought that their use meant an absolute block had to be established in the rear as well as in advance of the train. This was not the intent of the rule, but as it is possible to so interpret it, these words will be eliminated.

The only other objections to the rule is the differentiation in speeds at which a train may proceed after an absolute block has been established dependent upon whether or not an automatic block system is in use. The objection is raised by the Santa Fe and the Illinois Central. The former has in operation a train control system on its double-track line between Pequot, Ill., and Fort Madison, Iowa, 175.4 mi., and the latter has in operation an automatic train stop system on its double-track line between Champaign, Ill., and Branch Junction, Ill., 122 mi., and on its single-track line between Waterloo, Iowa, and Fort Dodge, Iowa, 97 mi. There are no automatic wayside block signals on any of these lines and when the train control or train stop devices fail or are cut out, an automatic manual block in advance of the train is established and the train then permitted to proceed at the maximum authorized speed. They desire to continue this practice, but have no objection to limiting the speed to a maximum of 79 m.p.h. It is their contention that when an absolute block is established the maximum permitted speed should be the same, whether the absolute block is a manual block or an automatic block. There is merit in this contention as the protection afforded by an automatic block would be substantially the same whether the absolute block is a manual block or an automatic block.

At the hearing for cross-examination it developed that all of the objections to this rule would be removed if the last sentence quoted above were changed to read:

"Where an absolute block is established in advance of the train on which the device is inoperative, train may proceed at not to exceed 79 miles per hour."

Such change will be made in the rule.

The proposed Rules, Standards and Instructions, with the changes herein indicated above are approved.

An appropriate order will be entered.

It is further ordered, That the Commission's order of April 13, 1939, prescribing Rules, Standards and Instructions be, and it is hereby, vacated and set aside effective October 1, 1950.

Notice of this order shall be given to the general public by depositing a copy hereof in the office of the Secretary of the Commission at Washington, D.C., and by filing it with the Director of the Division of the Federal Register.

By the Commission, division 3.

W. P. BARTEL, Secretary.

I. C. C. Annual Statistics

THE Bureau of Safety of the Interstate Commerce Commission has issued its annual tabulation of statistics pertinent to block signals, interlocking, automatic train control, telegraph and telephone for transmission of train orders, spring switches, and train communication systems, in use on the railroads of the United States as of January 1, 1950. The following information is abstracted from the compilation.

Increase In Automatic Block

Automatic block signaling was in service on 76,497.7 mi. of road or 109,052 mi. of track. Of the miles of road, 48,859.6 were single track and 27,638.1 mi. were two or more tracks. These figures compared with those for January 1, 1949, represent an increase of 1,599.1 mi. of road and 1,521.6 mi. of track. Non-automatic block, at the beginning of 1950, was in service on 28,849.3 mi. of single track and 1,162.7 mi. of two or more tracks, totaling 31,019.6 mi. of track or 30,012 mi. of road. Light type signals were in service on 71,241.2 mi. of track, an increase of 3,209.2 mi. The total

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