

ICC PROPOSES RS & CHANGES

The material presented this month and next is abstracted from the brief submitted by the ICC Bureau of Safety and Service, Oct. 17, 1963. It is a resume of the testimony presented in May and June, 1963 in the Ex Parte 171 hearing on proposed signal RS&I changes. Material in brackets is added to identify persons testifying. Where italics are printed, material in italics denotes the latest proposed changes.

136.2 Grounds—Each circuit, the function of which affects the safety of train operation, shall be kept free of any ground or combination of grounds which will permit a flow of current equal to or in excess of 75% of the release value of any relay or other electromagnetic device in the circuit, except circuits which include any track rail and *except the common return wires of single-wire, single-break, signal control circuits using a grounded common, and alternating current power distribution circuits which are grounded in the interest of safety.*

Two signal experts testified in support of proposed rule 136.2 as contained in the Commission's Notice of Proposed Rule Making, [G. B. Anderson, assistant chief, Section of Railroad Safety, Bureau of Safety and Service, Interstate Commerce Commission; Clarence C. Billingslea, signal engineer, Texas & New Orleans Lines, Southern Pacific.]

This rule applies to all signal systems. With respect to the proposal relating to single-wire, single-break signal control circuits with a common return wire, safety is increased by intentionally grounding the common return wire. Proponent's witnesses stated that when a common return wire is intentionally grounded, no other ground which might occur in such circuit will cause the signal involved to display an aspect more favorable than its most restrictive aspect. Whereas, if such common return wire is not intentionally grounded, it is possible for a combination of undesired grounds to produce a "false clear" aspect. With reference to that part of the proposed rule which permits alternating current power distribution systems to be grounded, these witnesses stated that the proposal merely seeks to provide maximum safety for such systems; that it is common practice for alternating current distribution systems to be grounded so as to provide for prompt disconnecting when faulty conditions arise; and that the grounding of such systems reduces the hazards created by possible faulty conditions and increases safety of such systems.

Testimony in opposition to the proposed revision of Section 136.2 was presented by four witnesses for the Railroads Brotherhoods, [Jesse Clark, president, Brotherhood of Railroad Signalmen; E. L. Abbott, editor and manager, Signalman's Journal, Ansel E. Littlejohn, leading signalman, Elgin, Joliet & Eastern, W. D. Best, grand lodge representative, Brotherhood of Railroad Signalmen.] They advocated the adoption of what they termed a "stronger rule". Their proposal differed materially from that proposed by the Commission in three respects: (a) circuits shall be kept free of grounds in excess of 50% of the release value of any relay or other electromagnetic device in the circuit; (b) common return wires of a single-wire, single-break signal control circuit were not excepted; and (c) signal circuits fed from grounded alternating current power distribution circuits must be isolated and kept free from grounds. These witnesses stated that a grounded common return wire of a single-wire, single-break, signal control circuit was not in the interests of safety; that safety of railroad operation would be increased if the proposed rule were modified so as to prescribe that the permissible flow of current be equal to or in excess of 50%, instead of the present requirement of 75%, of the release value of any relay or other electro-

magnetic device in the circuit; and that grounds in alternating current power distribution circuits should be isolated from signal control circuits. However, it was admitted by one witness [Ansel E. Littlejohn, EJ&E] that his railroad requires certain alternating current power circuits to be grounded.

In rebuttal, witnesses [C. C. Billingslea, SP; G. B. Anderson, ICC] for proponents stated that the opposition's testimony relating to grounded common return wires confused single-wire, single-break signal control circuits with two-wire polarized circuits; that the two circuits are simply not analogous and that intentional grounding of a common wire in a polarized circuit would not be permitted under proposed Section 136.2; that the cross of two positive control wires by foreign articles resulting in an aspect less restrictive than intended may occur whether the common return is grounded or not grounded; that safety is not appreciably increased by reducing the release value from 75 to 50%; and that alternating current power distribution circuits, as used in railway signaling, are never connected directly to signal control circuits because the voltage must be reduced by means of a transformer before suitable for use in such circuits. Hence it is not necessary to spell out the requirement that such power distribution circuits be isolated.

136.6 Hand-operated switch equipped with switch circuit controller.—Hand-operated switch equipped with switch circuit controller connected to the point, or with facing-point lock and circuit controller, shall be so maintained that when point is open $\frac{1}{4}$ " or more on facing-point switch and $\frac{3}{8}$ " or more on trailing-point switch, track or control circuits will be opened or shunted or both, and if equipped with facing-point lock with circuit controller, switch cannot be locked. *On such hand-operated switch, switch circuit controllers, facing-point locks, switch-and-lock movements, and their connections shall be securely fastened in place, and contacts maintained with an opening of not less than $\frac{1}{16}$ " when open.*

The proposed revision of this rule was agreed to by all parties to this proceeding. It differs from the present rule by the insertion of the words "on such hand-operated switch" before the words "switch circuit controllers" in the last sentence. This change was suggested to clarify the requirements of the last sentence and does not alter the degree of safety provided by the current requirements.

136.11 Adjustment, repair, or replacement of apparatus.—Any piece of apparatus or any part thereof which fails to perform its intended function shall be promptly adjusted, repaired, or replaced. [Proposed revision is as follows:]

136.11 Adjustment, repair or replacement of component.—*When any component of a system or interlocking, except track rails, the proper functioning of which is essential to the safety of train operation, fails to perform its intended function, it shall be adjusted, repaired or replaced without undue delay.*

The proposed revision of this rule was supported by one signal expert [G. B. Anderson, ICC] and in addition by the Association of American Railroads through its counsel.

This rule applies to all signal systems. The witness for proponents testified that much difficulty has been experienced in the administration of rule 136.11 because "promptly" has been construed by some to mean "at once" or "without delay"; that any repair or replacement involves some delay and literal compliance is not possible; that without undue delay means without excessive delay; that the term "apparatus" does not include "bond wires" and "track rails"; that the proposed term "components" actually broadens the scope of the rule; that track rails

are excluded from the proposed rule because they are not signal equipment; that when a signal displays its most restrictive aspect because of a broken rail, it is performing an intended function; that there are many situations where safe movement of a train is not adversely affected by failure of a component and then prompt repair is not as imperative as when such failure results in a false clear aspect; and that if rule 136.11 is revised as proposed safety of train operation will be maintained.

Seven witnesses for the Railroad Brotherhoods [Walter P. Dunn, locomotive engineer, Boston & Maine; Kenneth Clark, locomotive engineer, The Milwaukee Road; Warren H. Pelton, locomotive engineer, Missouri Pacific; Jesse Clark, BRS; E. L. Abbott, SJ; Ansel E. Littlejohn, EJ&E; W. D. Best, BRS] testified in opposition to the proposed revision of rule 136.11. In summary that testimony was essentially as follows: that any apparatus that fails or is not functioning properly should be repaired immediately; that it is not desirable to exclude track rails from the requirements of the rule because they are indispensable parts of the track circuit; that the phrase "the proper function of which is essential to safety of train operation" injects an element of personal judgment, opinion or discretion into the rule; that safety of train operation is affected even though no trains are scheduled to use the track involved, because it is not possible to anticipate when the track must be used; that there is no good reason to replace the word "promptly" by "without undue delay"; that when safety of train operation is affected by a defective component, the unsafe condition should be corrected immediately and without delay; and that track circuit connectors should be placed as near the angle bars as possible to provide maximum broken rail protection.

In rebuttal the witness for proponents [G. B. Anderson, ICC] stated that while he agreed that track rails are essential and integral components of a signal system, the maintenance and repair of such components are beyond the scope of the Commission's jurisdiction under the Signal Inspection Act; that other rules require a signal must display its most restrictive aspect when a rail is broken and if such aspect is displayed because of a broken rail, then the signal is performing its function; and that when a signal displays its most restrictive aspect, there is no danger to train operation if the signal aspect is obeyed.

136.51 Track circuit requirements.—Track relay shall be in deenergized position whenever any of the following conditions exists, and the track circuit of an automatic train-stop, train-control, or cab-signal system shall be deenergized in the rear of the point where any of the following conditions exists:

(a) When a rail is broken or a rail or switch-frog is removed except when a rail is broken or removed in the shunt fouling circuit of a turnout or crossover, provided, however, that shunt fouling circuit may not be used in a turnout through which permissible speed is greater than 45 mph. It shall not be a violation of this requirement if a track is energized: (1) *When a break occurs between the end of rail and track circuit connector; within the limits of rail-joint bond, appliance or other protective device, which provides a bypath for the electric current, or* (2) *as result of leakage current or foreign current in the rear of a point where a break occurs or a rail is removed.*

(b) When a train, locomotive, or car occupies any part of a track circuit, including fouling section of turnout except turnouts of hand-operated main track crossover. 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.

(c) Where switch shunting circuit is used:

1. Switch point is not closed in normal position.

2. A switch is not locked where facing-point lock with circuit controller is used.

3. An independently operated fouling-point derail equipped with switch circuit controller is not in derailing position.

This proposed rule revision was supported by the testimony of three witnesses for proponents. [G. B. Anderson, ICC; A. J. Hendry, signal engineer, Northern Pacific; J. M. Trissal, vice-president and chief engineer, Illinois Central.]

This rule applies to all signal systems. In support of the proposed revision it was stated that ever since the present rule was in effect literal compliance with all of its requirements has been practically impossible. The rule fails to take into consideration that there is a tie-plate under the rail on every tie and if a rail breaks over a tie-plate a by-path for the track current is provided by the tie-plate. Guard rails at switches and frogs being bolted to the rails also provide by-paths for track current. Bolted rails to main track rails often used to provide flangeways at highway grade crossings also provide by-paths around a break in the main track rail. The proposed rule provides that it shall not be a violation of the rule if the break occurs at any of these numerous places where track current may be by-passed by some appliance or protective device that is essential to safe and efficient operation of a railroad. The proposed revision of Section 136.51 neither adds or detracts from the intent and purpose of the present rule, nor will it adversely affect safety of train operation.

Four witnesses for the Railroad Brotherhoods [Jesse Clark, BRS; E. L. Abbott, SJ; Ansel E. Littlejohn, EJ&E; Walter P. Dunn, B&M] testified in opposition to this proposed modification of Section 136.51 and in favor of their recommended changes in said rule. That testimony was substantially as follows: A great many carriers require immediate protection including placing signals at their most restrictive aspect when track defects occur. All broken rails will not affect track circuits, but this area should be as small as possible to provide maximum broken rail protection. It is desirable to provide an exception for broken rails located between the end of the rail and the track circuit connector, but this area should be as small as possible. Track circuit connectors should be attached to the web of the rail within 3" from the end of the joint bar. Also devices such as tie-plates, rail joint bars, guard rails at frogs and rail braces at switches are normal devices which can be recognized by the rule, but wholesale exclusion of any appliance or protective device without consideration of loss of broken rail protection should not be allowed. Neither the present nor proposed rule provides minimum requirements for safety by requiring alternate manual protection when loss of broken rail protection is unavoidable. When such conditions are discovered signals should be secured to display their most restrictive aspects. At turnouts and crossovers where trains operate in excess of 25 mph broken rail protection should be provided by use of series circuits. Where shunting is not effective, all protection of the signal system is lost. Rule 136.51(b) should require foreign matter be eliminated.

In rebuttal proponent's witnesses [J. M. Trissal, IC; G. B. Anderson, ICC; A. J. Hendry, NP] testified substantially as follows: Broken rail protection is only incidental to other functions of a signal system and carriers extensively use rail detector cars to discover breaks in rails as well as many hidden faults. Series fouling circuits provide more broken rail protection than shunt fouling but the great expense required to install series circuits where trains exceed 25 mph is not commensurate with the added protection. Generally accepted practice requires

track circuit connectors to be installed as near to end of joint bar as possible. However some installation machines do not permit locating these connectors within 3" of the joint bar and such installation even if practical would only increase broken rail protection by an infinitesimal amount. When track conditions such as wide gauge, insecure track, obstructions and other conditions unsafe for train passage have been discovered it is frequently impractical to interrupt signal control circuits and necessary protection is now provided by the carriers' operating rules. Deposits of sand, rust, grease or other foreign matter on a rail sufficient to prevent shunting is often beyond the railroad's control. To require signals be placed in their most restrictive position when such deposits occur would not result in any more protection than now afforded by the carriers' rules and the regulation would be impossible to administer.

136.201 Track-circuit control of signals.—Signals shall be controlled automatically by track circuits extending through the entire block. [Proposed revision is as follows:]

136.201 Track-circuit control of signals.—*The control circuits for home signal aspects with indications more favorable than "proceed at restricted speed" shall be controlled automatically by track circuits extending through the entire block.*

Two signal experts, [G. B. Anderson, ICC; J. R. DePriest, superintendent communications and signals, Seaboard Air Line] testified in support of the proposed change in Section 136.201.

This rule applies only to automatic block-signal systems. Proponents' testimony was substantially as follows: The proposed change merely clarifies the present requirements and conforms to the Bureau of Safety and Service's interpretation of those requirements. It is impossible to control a signal aspect through a track relay when the track is occupied. It also is impossible to control the "proceed at restricted speed" aspect through the track relay since that aspect indicates track occupancy. Track circuit control of signal aspects means the control circuit is broken through the front contacts of a relay and not the back contacts through which the circuit for "proceed at restricted speed" aspects are carried. The adoption of this clarifying language in rule 136.201 will not adversely affect safety of train operation.

Six witnesses for the Railroad Brotherhoods [E. L. Abbott, SJ; Ansel E. Littlejohn, EJ&E; W. D. Best, BRS; Warren H. Pelton, MP; Kenneth Clark, MILW; Walter P. Dunn, B&M] testified in opposition to the revision of Section 136.201. (In clarification of their position their counsel stated that they desired the present rule be retained). In substance this testimony was as follows: All aspects including stop aspects are controlled by track circuits. The proposed revision would permit control of signal aspects other than by track circuits. The proposed rule would exclude all signals except home signals in an automatic block signal system, thus the majority of signals would not be controlled by track circuits and would not evaluate track conditions.

In rebuttal proponents' witness [J. R. DePriest, SAL] stated that the addition of the word "home" to "signal" in Section 136.201 is not a serious change. General speaking, all signals within an automatic block signal system may display block occupancy and are home signals under the Commission's definition of that term. The signal aspect "proceed at restricted speed" is a very necessary aspect for railroad operation and does not create a hazardous condition. Authority to use a track is established by time table, train orders and rules. The automatic block signals do not give a train the right to proceed. Those signals are simply auxiliary to the basic system of train operation. A signal must display an aspect at all times. When condi-

tions exist more favorable than proceed at restricted speed, the aspect "proceed at restricted speed" is prevented from being displayed by the track occupancy circuit. Under the proposed rule, if a train must enter an occupied block for operating reasons, it must be instructed to proceed into that block at a speed that will permit stopping short of another train, obstruction, broken rail or switch not properly aligned. The language of the proposed rule is correct. Since a signal aspect controlled through a track relay is prevented from being displayed when the track is occupied, it is impossible to control the "proceed at restricted speed" aspect through the track relay. Under Section 136.201, track circuits, control circuits and related track relays are designed and installed on the "fail safe" principle. Present day railroad signal systems utilizing track relays use the front contacts for indications more favorable than proceed at restricted speed. It is not possible to utilize the "fail safe" principle if the back contacts only were used. While it is true back contacts may be used for approach lighting of signals, that is not involved in Section 136.201. This rule relates to controlling the control functions of the various aspects.

136.204 Track signaled for movements in both directions, requirements.—On track signaled for movements in both directions, a train shall cause one or more opposing signals immediately ahead of it to display *the most restrictive aspect, the indication of which shall be not more favorable than "proceed at restricted speed"*. Signals shall be so arranged and controlled that if opposing trains can simultaneously pass signals displaying proceed aspects and the next signal in advance of each such signal then displays an aspect requiring a stop, or *its most restrictive aspect*, the distance between opposing signals *displaying such aspects* shall not be less than the aggregate of the stopping distances for movements in each direction. Where such opposing signals are spaced stopping distance apart for movements in one direction only, signals arranged to display restrictive aspects shall be provided in approach to at least one of the signals. Where such opposing signals are spaced less than stopping distance apart for movements in one direction, signals arranged to display restrictive aspects shall be provided in approach to both such signals. *In absolute permissive block signaling when a train passes a head block signal it shall cause the opposing head block signal to display an aspect requiring a stop.*

This rule change was supported by the testimony of two signal experts [G. B. Anderson, ICC; J. R. DePriest, SAL].

This rule only applies to automatic block signal systems. Testimony in support of the revisions to Section 136.204 was substantially as follows: The first sentence was changed to clarify the intent of this rule so as to permit trains to pass signals at restricted speed without stopping. The last sentence was added to insure that in absolute permissive block signaling, the head block signal display a stop aspect as its most restrictive aspect. The footnote was deleted because no longer applicable. The rule as revised does not change any of the basic requirements of the present rule and will not adversely affect the safety of train operation.

Five witnesses for the Railroad Brotherhoods [E. L. Abbott, SJ; Ansel E. Littlejohn, EJ&E; W. D. Best, BRS; Warren H. Pelton, MP; Walter P. Dunn, B&M] testified in opposition to the changes proposed in Section 136.204. Their position was that the present rule be retained. In substance that testimony was as follows: The proposed rule would permit opposing trains to pass proceed signal indications and then find the next signal indicating proceed at restricted speed with the danger the trains would not or could not stop short of each other. The proposal

relating to head block signals add a measure of safety only for absolute permissive block systems and does not remove the objection to this proposal. To eliminate the requirement of a positive stop before a train enters an occupied block is unwise. The revised rule creates a situation in which it may be difficult to bring trains into an occupied block at a speed not exceeding 15 mph and may result in an accident.

In rebuttal, proponent's [G. B. Anderson, ICC; J. R. DePriest, SAL] testimony was as follows: The rule as proposed does not permit two opposing trains to proceed into the same block, one going at normal speed and the other as fast as 15 mph. Each train would receive a signal displaying its most restrictive aspect, accordingly each of those trains would have to approach the other at no faster than "proceed at restricted speed".

136.301 Where signals shall be provided.—Signals shall be provided to govern train movements into and through interlocking limits, *except that a signal shall not be required to govern movements over a hand-operated switch into interlocking limits if the switch is provided with an electric lock and a derail at the clearance point, either pipe-connected to the switch or independently locked, electrically.*

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.

The proposed revision to this rule was supported by two signal experts [G. B. Anderson, ICC; J. R. DePriest, SAL]. In substance that testimony was as follows: Section 136.301 applies only to an interlocking. Since October 1, 1952, the Commission has granted numerous requests for relief from the requirements of the present rule upon condition that the switch be provided with an electric lock and derail either pipe connected or independently locked electrically. The proposed rule would provide for this relief without the necessity of a formal application. The proposed change requires installation of a signal at an interlocked switch. The requirement for an electric lock and derail as proposed, furnishes more protection than that provided by the installation of a signal. Section 136.301 as proposed will maintain safety of train operation.

Five witnesses for the Railroad Brotherhoods [E. L. Abbott, SJ; Ansel E. Littlejohn, EJ&E; W. D. Best, BRS; Warren H. Pelton, MP; Walter P. Dunn, B&M] testified in opposition to the proposed revision of rule 136.301. They desired that the present rule be retained. In summary, testimony in opposition to the revision of this rule was as follows: Movements into and through an interlocking on diverging tracks at entrance to an interlocking could be initiated merely by installing an electric lock and one derail on the hand operated switch. The intended protection of the present rule would be destroyed. Movements into interlocking should be permitted only by signal indication to indicate conditions affecting the movement of trains. Any relaxation of these requirements would reduce safety and cannot be justified. The present requirement that a signal must be provided to govern all movements into an interlocking prevents establishment of conflicting movements.

In rebuttal, witnesses for proponents [Frank Youngwerth, general superintendent communications and signals, Erie-Lackawanna; J. R. DePriest, SAL] testified that: If an electric lock is provided in lieu of a signal then the switch so equipped cannot be opened if a signal for a conflicting movement through the interlocking has been cleared and once the switch is unlocked it will be impossible to permit conflicting movements. Section 136.301

is needed by the railroads because situations arise where it is impractical to install signals for the protection of industrial and other tracks and adequate protection can be provided by equipping the hand operated switch with an electric lock and derail at its clearance point. Such installation will provide virtually the same approach and time locking protection now provided by signals.

136.302 Track circuits and route locking.—Track circuits and route locking shall be provided. *Route locking shall be effective when the first pair of wheels of a locomotive or car passes a point not more than 13 ft in advance of the signal governing its movement.*

Note 1.—Relief from the requirements of this section will be granted upon 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.

Note 2.—Existing installations on each railroad, which do not conform to the requirements of this section shall be brought into conformity *within 5 years of the effective date of this rule.*

All the parties to this proceeding concurred in the revision of Section 136.302 as proposed. This revision became necessary because the Commission in one of its accident investigation reports found that the present rule requires route locking between opposing home signals of an interlocking. As a practical matter insulated joints are almost never placed exactly opposite a signal, hence some latitude is desirable. The proposed rule permits such insulated joints to be 13 ft in advance of center of mast from which signal head is mounted. Safety of train operation will be maintained if Section 136.302 is revised as proposed.

136.303 Control circuits for signals, selection through circuit controller operated by switch points or by switch locking mechanism.—*The control circuit for each aspect with indication more favorable than "proceed at restricted speed" of power-operated signal governing movements over switches, movable-point frogs and derails 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 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 more favorable than "proceed at restricted speed," only when each switch, movable-point frog, and derail in the route is in proper position.*

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.

This revision was supported by the testimony of two signal experts [G. B. Anderson, ICC; F. Youngwerth, E-L] except that a witness for the Association of American Railroads suggested that relief be provided from the rule for existing trailing point switches, movable point frogs and derails presently not so equipped. In summary that testimony was as follows: The requirements of Section 136.303 apply to interlocking and traffic control systems. The present rule requires the selection of the control circuits for certain signals through switch circuit controllers or switch repeater relays. The intent was that the present rule should apply only to circuits controlling every aspect more favorable than proceed at restricted speed. However the rule literally is limited to power operated switches or slotted mechanical signals governing movements at higher speed than restricted speed. The Bureau of Safety and Service always interpreted the present rule to require switch selection circuits for each aspect of a power-operated

signal with indication more favorable than "proceed at restricted speed" regardless of whether the speed through the interlocking was restricted by operating rule not to exceed restricted speed. The revision conforms to that interpretation. The revised rule omits slotted mechanical signals from its provisions because such signals have long been obsolete. The present rule requires switch circuit selection for facing point switches, movable point frogs and derails only in service at the time the rule was last revised. The Bureau of Safety and Service witness [G. B. Anderson, ICC] supported the revision requiring selection of all switches, movable-point frogs and derails whenever installed. The proposed rule is much more restrictive than the present rule and safety of train operation will be increased.

Four witnesses for the Railroad Brotherhoods [Jesse Clark, BRS; W. D. Best, BRS; Warren H. Pelton, MP; Walter P. Dunn, B&M] testified in opposition to the proposed change in Section 136.303. In summary that testimony was as follows: Present Section 136.303 should be "improved" or "made stronger" and a substitute was proposed. The proposed rule provides that aspects of proceed at restricted speed or less favorable have no track circuit control. This would place responsibility on the engineer to determine if route through the interlocking was properly established and safe for passage. A proceed at restricted speed aspect at an interlocking would afford little protection.

In rebuttal, the proponents [G. B. Anderson, ICC; Frank Youngwerth, E-L] testimony was as follows: The Brotherhoods' proposed Section 136.303 is unduly restrictive. That proposal would require the control circuit for each aspect with indication more favorable than "stop" of power-operated signal governing movements over switches, movable-point frogs and derails shall be selected through circuit controller operated directly by switch points or switch locking mechanism. The Bureau of Safety and Service's experience with administration of the present rule discloses no reason for making rule so restrictive. When a train is authorized by signal indication to proceed over a route within an interlocking even at restricted speed indication, a signal for a conflicting route cannot be displayed. The railroad would be required to incur great expense to bring older installations into conformity with the proposed rule. The Association of American Railroads' witness suggested that existing trailing point switches, movable-point frogs or derails not presently equipped be permitted to so continue indefinitely. As an alternative, the witness for the Bureau of Safety and Service suggested a limit for such non-conformity to about 5 years to bring about full compliance. The witness for the Association of American Railroads stated that after hearing the explanation of the Bureau of Safety and Service's witness the suggestion would be a desirable addition to the rule. However some doubt is cast upon the railroads' position thereon because the Association of American Railroads' counsel's question failed to include all elements of said suggestion.

136.305 Approach or time locking.—Approach or time locking shall be provided in connection with signals *displaying aspects with indications more favorable than "proceed at restricted speed."*

The proposed revision of this rule was supported by the Bureau of Safety and Service and the Association of American Railroads [G. B. Anderson, ICC; Frank Youngwerth, E-L]. Testimony in support of this rule change was substantially as follows: Section 136.305 applies only to interlocking. The proposed revision was suggested so that the rule cannot be circumvented by imposing a speed restriction by time table or special instruction. The intent
(Please turn to page 28)

(Continued from page 19)

of the present rule is to require approach locking for all signal aspects with indications more favorable than proceed at restricted speed. Some railroads attempt to circumvent the rule by imposing a speed restriction of 20 mph through the interlocking. The revision insures against such circumvention. The proposed rule is no less restrictive than the present rule and protection presently provided will not be reduced in any way.

Four witnesses for the Railroad Brotherhoods [Jesse Clark, BRS; Warren H. Pelton, MP; E. L. Abbott, SJ; Walter P. Dunn, B&M] testified in opposition to the proposed revision of Section 136.305. They advocated that the present rule be made "stronger". It was suggested approach or time locking be provided for all signal aspects more favorable than stop to insure safety of train operation. Where a proceed at restricted speed aspect is used, it is of utmost importance to insure that conflicting routes cannot be authorized and that switches, movable-point frogs and derails cannot be moved closely in advance of a train. Under the present Section 136.305 the approach or time locking mechanism need not control movements at restricted speed, this permits conflicting movements to be set up.

In rebuttal the witness [G. B. Anderson, ICC] for the Bureau of Safety and Service testified: That there is no necessity to provide approach or time locking at an interlocking home signal when it displays a proceed at restricted speed aspect because if such signal displays a proceed at restricted speed aspect the approach signal cannot display an aspect more favorable than "approach home signal prepared to stop." There is no possibility of a train passing an approach signal displaying a clear or proceed aspect and then encountering a home signal at stop. It is not necessary to provide time locking for a dwarf signal having its most favorable aspect proceed at restricted speed because the train whose movement is governed by such signal is either standing or approaching the signal prepared to stop.

136.311 Signal control circuits, selection through track relays, and through signal mechanism contacts and time releases at automatic interlocking.—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.

Note.—Relief heretofore granted to any carrier by order of the Commission shall constitute relief to the same extent from the requirements of this part.

The proposed revision of this rule was agreed to by all parties to this proceeding. This rule applies to interlocking and traffic control systems. The proposed rule differs from the present rule in that a footnote has been added which provides that relief heretofore granted shall constitute relief to the same extent from the requirements of this rule. This footnote is necessary because prior relief would no longer be valid if the proposed rule were adopted without such footnote. Safety of train operation will not

be affected if Section 136.311 is adopted as revised.

136.312 Movable bridge, interlocking of signal appliances with bridge devices.—When movable bridge is protected by interlocking, the signal appliances shall be so interlocked with bridge devices that before a signal governing movements over the bridge can display an aspect to proceed, *the bridge must be locked and the track aligned*, with the bridge locking members within 1" of their proper positions and with track rail on the movable span within $\frac{3}{8}$ " of correct surface and alinement with *rail seating device* on bridge abutment or fixed span.

The proposed revision of this rule was agreed to by all parties to this proceeding. Testimony in [G. B. Anderson, ICC] support of this modification was as follows: This rule applies only to interlocking. In administration of Section 136.312 the Bureau of Safety and Service found that in modern drawbridge installations the track is not locked by plunger locks or other mechanical locks. Alinement is checked by circuit controllers or other electric devices. These devices are just as reliable, if not more so, than mechanical locks to insure correct alignment of the track. This proposed revision will maintain safety of train operation.

136.314 Electric lock for hand-operated switch or derail.—Electric lock shall be provided for each hand-operated switch or derail within interlocking limits, except where train movements are made at not exceeding 20 mph. At manually operated interlocking it shall be controlled by operator of the machine and shall be unlocked after signals governing movements over such switch or derail display aspects indicating stop. Approach or time locking shall be provided.

Note.—Relief heretofore granted to any carrier by order of the Commission shall constitute relief to the same extent from the requirements of this part.

The proposed revision of this rule was agreed to by all parties to this proceeding. In support of this rule modification the testimony [G. B. Anderson, ICC] was as follows: Section 136.314 applies only to interlocking. The only change proposed in this rule is the deletion of the first sentence of the "note" as a compromise between the retention of the full footnote and its entire elimination. The adoption of the rule as revised will not adversely affect safety of train operation.

136.328 Plunger of facing-point lock.—Plunger of facing-point lock shall have at least 8" stroke. When lever is in reverse position plunger shall pass through lock rod $\frac{1}{2}$ " or more. [Proposed revision is as follows:]

136.328 Plunger of facing-point lock.—Plunger of lever operated facing-point lock shall have at least 8" stroke. When lock lever is in unlocked position the end of the plunger shall clear the lock rod not more than 1".

The proposed revision of this rule was agreed to by all parties to this proceeding. This rule applies only to interlocking. Present Section 136.328 is a revision of former Section 136.322. Experience shows that the wording of the original rule was preferable because that original rule was concerned only with the lever in normal or unlocked position. The proposed rule will omit all reference to the lever in reverse position. Should the proposed rule be placed in effect safety of train operation will be maintained. RSC

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