385923

Canadian National Railroad
WISCONSIN DIVISION
Signal and Communications department
1625 Depot Street
Stevens Point, WI. 54481

January 24, 2006
FILE: DMIR steel deck bridges

Federal Railroad Administration
Mr. Grady C. Cothen Jr.
Associate administrator for safety
Department of transportation
400 7th Street s.w.
Washington, DC. 20590

RE: Docket 1998-4821-15

Dear Mr. Cothem,

The Canadian National Railroad requests permission to extend its waiver that permits the railroad to utilize wheel counters to detect trains over the spans of their steel deck bridges. This waiver was granted by the FRA on January 29, 2001. Attached is a copy of findings and conclusions dated January 29, 2001.

As required in line 9 of the decision, all revelent information concerning service failures of rail or unsafe conditions related to the signal system during the period of the waiver should be included in this request to extend the waiver. The following paragraph is a description of this requirement.

During the past 5 years in which the wheel counters have been in service on the former DMIR, no incidents occurred at the location of the wheel counter devices. Any failure in the wheel counter devices were always on the safe side, resulting in train operations at restricted speed. During the past five years 0 (zero) broken rails occurred on the bridge. All of the required track and signal inspections were performed and will continue to be performed. The general performance of the wheel counter devices over the past 5 years was very good.

The waiver extension is requested as a permanent installation of the wheel counters as described in Docket 1998-4821-14.

Thank you for your assistance on this matter. Please call if questions.

Sincerely,

John P. Rath
Manager of Signals and Communications
715-345-2520

CC: CN RR - Tim Luhm Sr Manager of S&C,
FRA - Jeff Thomas – 200 West Adams St, Suite 310, Chicago, Ill 60606

Attachment A

41730

DULUTH MISSABE AND IRON RANGE RAILWAY COMPANY

ENGINEERING DEPT. . 329 SECOND STREET . PROCTOR, MN 55810-1091

November 11, 1998

Associate Administrator for Safety
FEDERAL RAILROAD ADMINISTRATION
400 Seventh Street, SW
Washington DC 20590

FRA-98 4821-1

In accordance with *49CFR235* the Duluth, Missabe and Iron Range Railway Company hereby submits application for relief from the requirements of the rules, standards and instructions contained in *49CFR236.51, Track Circuit Requirements* on steel deck bridges.

1. **APPLICANT**
The Duluth, Missabe and Iron Range Railway Company, hereinafter referred to as DM&IR.

2. **MANNER INVOLVED**
The DM&IR owns, operates and maintains the track and signal system involved.

3. **LOCATION OF STEEL DECK BRIDGES**

SIGNALED TERRITORY WITH INSULATED PADS

MILEPOST	BRIDGE	TRACKS	RAIL WT.	LENGTH (FT.)
R9.67	10A	1	115	419
R9.98	10B	1	115	268
R12.14	13A	1	115	380
R12.64	13c	1	115	1,389
R14.59	15A	1	115	420
R17.18	18A	1	115	550
R18.42	19A	1	115	2,440
R18.83	19B	1	115	570
R19.79	20A	1	115	820
67.49	68A	1	115	60
10 Bridges				7,816

SIGNALED TERRITORY WITH TRAP CIRCUITS

MILEPOST	BRIDGE	TRACKS	RAIL WT.	LENGTH (FT.)
3.14	4A✣	1	136	204
4.33	5A✣	1	132	64
4.37	5B✣	1	132	77
4.46	5B-2✣	1	132	64
4.49	5C✣	1	132	132
19.67	20A	1	136	100
25.55	26A	1	115	427
41.72	45A	1	136	200
59.48	60A	2	132	190
N3.24	1A	2	132/115	48
N46.09	47A	1	132	173
N69.16	70A	1	132	110
N69.29	70B	1	132	230
13 Bridges				2,019

NON-SIGNALED TERRITORY

MILEPOST	BRIDGE	TRACKS	RAIL WT.	LENGTH (FT.)
3.14	4A✣	1	115	204
4.33	5A✣	1	115	64
4.37	5B✣	1	115	77
4.46	5B-2✣	1	115	64
4.46	5C✣	1	115	132
C8.51	9A	1	115	50
C10.88	11A	1	115	568
c13.44	14A	1	115	58
C17.26	17A	1	115	68
N6.33	7A	1	132	80
N18.88	19A	1	132	64
N19.90	20A	1	132	80
N21.93	22A	1	132	80
N25.04	25A	1	132	100
N39.90	40A	1	132	96
15 Bridges				1,785

✣ Double-track bridge, 1 track signaled.

4. **Description and Reason for Change**
The DM&IR requests relief from the requirements of the rules, standards and instructions contained in *49CFR236.51, Track Circuit Requirements* on steel deck bridges supporting main track. The tables in section three (3) identify the location of all the steel deck bridges in service on the DM&IR.

Signaled territory with bridge pads shows 7816 feet of track that has GEO plates riveted to the bridge deck on 21-inch centers. The GEO plate fastening system is insulated from the rail with plastic pads. Those pads are only available from an Australian supplier at a high cost and only in large quantities. Maintaining electrical rail isolation from the bridge deck is a constant problem that interferes with track circuits in the following ways: the insulating pads are wearing out and nearing the end of their useful life, 30-90 days after rail grinding has been done long slender rail spurs form and bend down making contact with the bridge deck and various metallic objects can become jammed under the rail. These problems result in train delays, signal maintainer time spent finding the trouble, and Bridge & Building personnel making repairs. Train delays and maintenance costs are escalating and the DM&IR believes that maintaining a track circuit on steel deck bridges is impracticable. A traditional circuit-based trap circuit is not possible on many bridges due to the long length of the bridges and train operation requirements. Also, rail size is limited to 115-pound and cannot be upgraded to our 136 standard for main line track.

The tables also identify twenty-seven bridges in signaled territory with trap circuits or in non-signaled territory. Because no insulating pads are required, most of the bridges have been upgraded to 132- or 136-pound rail. Trap circuits are adversely affected and will not operate properly if a train makes a reverse movement while on the bridge, maintenance-of-way work, or non-insulated equipment interferes with the adjacent track circuits. The DM&IR proposes to install a trap circuit based on counting wheels on and off a bridge rather than using adjacent track circuits requiring a normal movement over the bridge. This request complies with 236.728: *A trap circuit is used where providing a track circuit is desirable but where maintaining a track circuit is impracticable.*

A Honeywell wheel count system to detect occupancy has been on test at the DM&IR for more than one year. Data has proven the system to be more reliable at detecting occupancy than the Electrocode track circuit over a steel deck bridge with pads on which it is superimposed. When a failure in the wheel count system has occurred, it always "fails safe," showing an occupancy on the bridge. The Electrocode track circuit also "fails safe," but this occurs more frequently due to the problems associated with isolating the rail from the bridge deck.

5. **Construction Dates**
Engineering to begin immediately upon approval and installations will be prioritized for each bridge based on past maintenance requirements and operation delays.

6. **Changes in Operating Practice**
No changes in operating practice are planned and all main track will continue to be inspected for defects twice a week.

7. **SAFETY**
Safety in operations will be enhanced because of fewer trains stopping for red signals and proceeding on verbal authority. Signal, track and B&B forces will not be on the bridge troubleshooting and repairing defective bridge pads and resetting trap circuits.

8. **PRINTS**
Enclosed are three (3) copies of explanatory pictures and Honeywell wheel count system description.

9. **NOTIFICATION TO JOINT CARRIERS**
The following carriers have joint operating agreements with the DM&IR over subject track and have been notified of the filing of this application: Duluth, Winnipeg & Pacific Railway-CN North America. Burlington Northern Sante Fe, Union Pacific and Wisconsin Central.

D. B. Moore
Chief Engineer

TRL: ps

Enclosure

c: T. R. Luhm, DM&IR Engineer-Electrical, Signal & Communications
J. C. Pranaitis, DM&IR General Manager
T. F. Maske, Regional Signal & Train Control Specialist
FRA 111 No. Canal St., Ste 655, Chicago IL 60606
P. E. Comstock, Signal & Train Control Inspector
FRA, BHW Federal Bldg, Rm G56B, One Federal Drive, Fort Snelling MN 55111
R.A. Senffner, B&LE Engineer-Signals & Communications
POB 68, 135 Jamison Lane, Monroeville PA 15 146
W. Pierce, Honeywell, 4540 Honeywell Court, Dayton OH 45424

Attachment B

131661

U.S. Department of Transportation
Federal Railroad Administration

400 Seventh St., S.W.
Washington, D.C. 20590

FRA-1998-4821-14

January 29, 2001

Mr. D. B. Moore
Chief Engineer
Duluth, Missabe, and Iron Range Railway Company
329 Second Street
Proctor, MN 55810-1091

RE: FRA Docket No. 1998-4821

Dear Mr. Moore:

The Federal Railroad Administration (FRA) has considered your request dated November 11, 1998, for waiver of the requirements of 49 CFR §236.51 concerning track circuits for certain designated steel bridges. Other sections of the Rules, Standards and Instructions potentially of interest in relation to this request include §236.55 (Dead section; maximum length), §236.728 (Trap circuit), and §236.5 (Design of control circuits on closed circuit principle).

You have proposed to install, in lieu of existing track circuits, electronically controlled wheel counting devices that can determine when conventional rail equipment enters the bridge and exits the bridge. These devices would be designed to provide trap circuit protection but would not offer the benefit of broken rail detection.

Findings and Conclusions

FRA has made the following findings and conclusions related to this request:

1. a. Maintaining the existing track circuits on the steel bridges in question raises issues of practicability. Although FRA does not determine here that maintenance of these track circuits is impractical, *per se*, FRA recognizes that the degree of difficulty associated with maintenance should be recognized in reviewing this request.

   b. The necessity to rely on restricted speed operations or mandatory directives over the subject territory, in the case of false restrictive indications arising from shorting of track circuits on the subject bridges, is not favorable to safety.

c. It is recognized that the same issues related to practicability of maintenance may diminish the utility of track circuits as a means of detecting broken rails.

2. The utility of a track circuit in detecting a service failure that could lead to a derailment is reduced on the subject steel bridges, because (i) stiffness of the track structure support reduces stresses on the rail section and (ii) a transverse defect is less likely to result in lateral displacement of the rail under load (given the attachment arrangements and rigid steel deck).

3. The proposed modification to the signal system will be made in conjunction with replacement of rail with heavier, new rail. Early completion of this work is desirable to further reduce the possibility of service failures.

4. The railroad is conducting a program of internal rail inspection, although it is not required to do so by regulation.

5. Removal of the track circuits on the bridges in question and substitution of trap circuits will not materially increase the risk of an undetected service failure resulting in a train accident.

6. The trap circuit design proposed, if properly executed, should result in more reliable identification of track occupancy on the bridges in question than would use of conventional trap circuits, since each axle would be counted in and out.

7. The proposed trap circuit arrangement can be implemented in a manner that will fail safe (meeting the intent of §236.5) under most conceivable circumstances. The issues raised in this proceeding do not require FRA to decide whether the arrangement is suitable for other vital applications.

Decision

Relief from 49 CFR Part 236 is granted as necessary to permit the substitution of the above-referenced trap circuit arrangements in lieu of track circuits on the bridges specified in the petition, subject to the following conditions:

1. Relief applies only with respect to trackage on the steel decks of bridges specified in the petition (approximately 7,816 feet in total length). All bridge approaches shall remain equipped with conventional track circuits.

2. This relief shall apply only to such a track segment for which new rail weighing 136 pounds per yard is installed and directly fixed to the deck by existing attachments or devices of at least equal strength and durability.

3. Maximum authorized speed over the subject bridges may not exceed 25 miles per hour.

4. All rail on the subject bridges shall be inspected internally not less frequently than twice annually with not fewer that four months between inspections, and the requirements of 49 CFR §213.237 shall apply notwithstanding the maximum operating speed in effect. Each new field weld shall be hand tested for internal defects within 10 calendar days of installation.

5. On the subject bridges, at least one of the twice-weekly visual inspections required by §213.233 shall be made while walking.

6. Prior to removing existing track circuits or implementing the new trap circuit arrangement on any bridge, the railroad shall--

   a. Make available for review and approval of the Director, Office of Safety Assurance and Compliance, FRA, (i) circuit plans for the new installation, (ii) a safety analysis approved by the person responsible for the modified signal system design and by the vendor of the wheel counting units, identifying known failure modes for the system and actions that persons coming in contact with the system must take to avoid such failures; and (iii) training materials for all personnel involved in inspecting, testing or maintaining the circuit (including resetting the circuit) consistent with findings of the failure modes analysis;

   b. Complete training of personnel according to the approved program; and

   c. Arrange to inform operating personnel of each railroad conducting train movements over the bridge(s) of the nature of changes and the continuing requirement to call attention of the dispatcher to any usual conditions observed on or approaching any such bridge.

7. The railroad shall provide for specific instructions to assure that signals governing movements over the bridge will be caused to display a stop aspect in the event of any removal of track rail on the bridge by maintenance forces.

8. Any of the following events shall be immediately reported telephonically to the FRA Regional Administrator: (i) service failure of a rail within the limits of a trap circuit subject to this waiver; and (ii) any event subject to reporting under 49 CFR §233.7 (Signal failure reports) which involves detection of rail equipment on the subject bridges.

9. This waiver is valid for a period of five years. FRA will review this waiver for extension at the request of the railroad. Any such request shall be made at least six months prior to the end of the five year period, and that request shall contain all relevant information

concerning any service failures of rail or unsafe conditions related to the signal system during the period the waiver has been in effect.

FRA reserves the right to amend or revoke this approval based on non-compliance or based on new information pertaining to the safety of rail operations.

If you have any questions regarding this waiver, please feel free to contact me (202-493-6302).

Sincerely,

Grady C. Cothen, Jr.
Deputy Associate Administrator
for Safety Standards

Attachment C

129797

FRA-1998-4821-13

U.S. Department of Transportation
Federal Railroad Administration

400 Seventh St., S.W.
Washington, D.C. 20590

MAY 10 2001

Mr. Dave B. Moore
Chief Engineer
Duluth, Missabe and Iron Range Railway Company
329 Second Street
Proctor, Minnesota 55810-1091

FEDERAL RAILROAD ADMIN.
01 MAY 18 AM 9:43
OFFICE OF CHIEF COUNSEL

Re: Docket Number FRA 1998-4821

Dear Mr. Moore:

The Federal Railroad Administration (FRA) received your March 6 letter requesting modification of condition 5 in FRA's January 29, 2001, conditional approval letter to the Duluth, Missabe and Iron Range Railway Company, Docket Number FRA-1998-4821.

FRA notes your concern with the required walking inspection and the associated safety consequences encountered by your employees. Therefore, on April 26, 2001, after review and consideration of the issues, FRA approved the modification of condition 5 to read as follows:

> "On the subject bridges, inspection shall be made at least twice weekly with one of the inspections to be made on foot or by vehicle at a speed not to exceed 5 miles per hour per §213.233(b). In addition, each wheel count apparatus for the bridges in track shall be inspected on foot at least weekly."

Please note that all other conditions will remain unchanged and in effect at this time.

Sincerely,

Grady C. Cothen, Jr.
Deputy Associate Administrator
for Safety Standards and Program Development

01 MAY 18 PM 12:35

DULUTH MISSABE AND IRON RANGE RAILWAY COMPANY

ENGINEERING DEPT. • 329 SECOND STREET • PROCTOR, MN 55810-1091

November 13, 2001

Mr. Edward Pritchard
Acting Director, Office of Safety Assurance and Compliance
Federal Railroad Administration
1120 Vermont Avenue N.W. - Mailstop 25
Washington, D.C. 20590

RE: FRA Docket No. 1998-4821

Dear Mr. Pritchard:

The *Duluth, Missabe and Iron* Range Railway Company filed an application for relief from the requirements of the rules, standards and instructions contained in 49CFR236.51, *Track Circuit Requirements* on steel deck bridges on November 11, 1998 (Attachment A). We were directed by Mr. Grady Cothen, Jr. in his decision for approval of our waiver on January 29, 2001 (Attachment B) and his additional correspondence of May 10, 2001(Attachment C) to inform you that we have met or will meet the following conditions:

1. The track requiring this waiver is specified in our petition and listed as Bridge 19A at MP R18.42 and Bridge 19B at MP R18.83.
2. The 115 lb. continuous welded rail is replaced by new 136 lb. continuous welded rail.
3. The maximum track speed is 25 MPH (Attachment D).
4. The rail is inspected internally for defects not less frequently than twice annually with not fewer than four months between inspections. In addition, new field welds are inspected within ten calendar days of installation.
5. At least one of the required twice-weekly inspections is made by walking or in a vehicle moving less than 5 MPH (Attachment E).
6. A complete set of circuit plans and a DM&IR/Tiefenbach Axle Counting System manual are accompanying this letter. A safety analysis by the person responsible for the modified signal system and the wheel counting system are contained within the manual. This manual was also used to assist with the training of personnel that are involved with the system. Operating personnel of each railroad conducting train movements are informed of the new installation by Circular 49 (Attachment F).
7. Specific instructions, to assure that signals governing movements over the bridges are caused to display a stop aspect by Rule 10.3, Track & Time, are covered in Engineering Department Circular 108 (Attachment E).
8. Service failure of a rail or any event qualifying as a signal failure will be immediately reported telephonically to Mr. Larry Hasvold, FRA Regional Administrator at 312-353-6203.

9. The DM&IR understands that the waiver is valid for period of five years and may be extended after a DM&IR request containing relevant service information is approved by the FRA.

Mr. Tom Maske, FRA Regional Signal & Train Control Inspector was notified that the axle counting system was installed in October. He is planning a site inspection on November 27, 2001 and will be provided the circuit plans and manual at that time. Any questions on this matter can be referred to me at 218-628-4101 or dmoore@gltx.com.

Sincerely,

D.B. Moore
Chief Engineer

cc: T. F. Maske, FRA
T. R. Luhm

Attachments

Attachment D

2.2 SPEED OF TRAINS

2.2.1 MAXIMUM SPEED OF TRAINS

Trains and engines on main tracks, both divisions, except as otherwise provided—

	MPH
with ore	30
without ore	35

NOTE: Limestone, BFT and Evtac crude ore are in the "without ore" category.

2.2.2 EXCEPTIONS

Trains and engines through crossovers and turnouts on main track	20
Trains and engines through crossovers and turnouts on other than main track	10
Locomotive service tracks	5
All trains when followed by fire patrol	30

2.2.3 SCALES

• Proctor and Highland	2
• Evtac	3
• Minntac	5

2.2.4 LOCOMOTIVE SERVICE TRACKS

• PROCTOR

Diesel Facility, Roundhouse and Exchange Tracks, including the switches on the Tie-Up Lead	5

• KEENAN

Tie-Up Tracks between the North Lead Switch and the South Lead Switch	5

• TWO HARBORS

Diesel Facility Tracks beyond the Tie-Up Lead Switch	5

2.2.5 MISSABE DIVISION — Exceptions

• ROAD

MP 37 to MP 58 (with or without ore):	37

• NORTH END ROAD

MP 70.5 to MP 73.6 Southbound trains	20
Iron Junction north leg of Wye	20
Shelton Siding	20
Shelton Diamond	25
Emmert to MP C-15	10
Fairlane Highway No. 7 crossing	17
Holman Junction Bridge A-49-A	25

• NORTH END YARD AND INDUSTRIAL

Minntac (all tracks and turnouts)	15
Mountain Iron Tracks	10
Virginia Branch Evtac haul road until crossing is occupied	5
Virginia street crossings	5
Hibbing industrial	10
Fairlane: Maintenance building track	5
Concentrator track	5
Pelletizer track	5
Rod and ball track	5
Coal tracks	5
Coliseum spur (Viking Explosives)	10
Gross Nelson Trackage	10

• SOUTH END ROAD

MP 7.2 to CTC Collingwood	20
Midway Road at Adolph (both tracks, both directions)	20
XO 10.7 (crossover)	10
SL Jct. to South Itasca	25
Steelton main track	20
Milwaukee connection	10
South Itasca/Itasca:	
South leg of Wye (WC Side)	10
North leg of Wye (UP Side)	5
UP track between north leg of Wye and Lang's Road Crossing	10

• SOUTH END YARD AND INDUSTRIAL

Proctor Second Street:	
Southbound trains on northward track	5
Southbound trains from 2C to southward track	5
Northbound trains moving through upper crossover	5
Proctor yard handling loaded commercial cars and loaded side dump cars between 2nd St. and Proctor Scale	10
Lakehead Storage reclaim track	5
Soo curve all tracks	3
Missabe Junction Hole Track	10
Ore Dock Crossover—Northbound movements	5
Ore Dock tracks 1-6	7
Ore Dock approach	20
Ore Dock 5 East and West Storage Tracks	10
BNSF yard and auxiliary tracks in Duluth/Superior terminal	10
Hullett Avenue to Steelton	10
Duluth Works track at Steelton	10
West Scale Track Divider Switch	15

2.2.6 IRON RANGE DIVISION — Exceptions

• ROAD

Two Harbors to Waldo northward track	22
Two Harbors to MP N3.5 southward track	22
MP N3.5 to Waldo	30
Highland to Waldo, southbound trains	30
MP N21.5 to N35.5 (with or without ore)	37
Allen Junction to Wyman on Old NB	20

• WALES BRANCH

Wales Branch	25
Jordan Auxilliary Track	10

• HINSDALE BRANCH

Truck haul road crossing at MP H3.7	20
MP H2.0 to end of track	25

DULUTH, *MISSABE* AND IRON RANGE RAILWAY COMPANY

Engineering Department

November 1, 2001
Proctor

Circular No. 108

Attachment E

ALL ENGINEERING PERSONNEL & ALL OTHERS CONCERNED:

INTERSTATE BRANCH BRIDGES 19A & 19B

The DMIR has upgraded to 136 lb. rail on Bridges 19A and 19B between BN Saunders and Ambridge on the Interstate Branch Main Track. The new rail does not accommodate insulated plates that are required to maintain electrical isolation between the rail and the steel bridge deck for a track circuit. As a result, the FRA has given the DMIR a waiver to utilize axle-counting technology using a trap circuit signal design for movements on this track. The FRA waiver requires Maintenance of Way Employees to be aware of the following:

1. Visual inspections of the rail shall occur twice-weekly as required by CFR49 213.233 with one of the two made while walking or in a vehicle proceeding at 5 MPH or less. This inspection shall include checking the condition and integrity of the axle counting sensors and protection blocks.

2. Internal inspections of the rail shall occur not less frequently than twice annually with not fewer than four months between inspections.

3. Each new field weld on the bridge track rail shall be tested for internal defects within 10 days of installation.

4. Track and Time per Maintenance of Way Rule 10.3 must be obtained before removing track rail on the bridges to insure that signals governing train and engine movement over the bridges are displaying a stop aspect.

5. Service failure of rail on the bridges and any event subject to reporting a FRA Signal Failure Report must be immediately reported to your Supervisor. The railroad must report these events by telephone to the FRA Regional Administrator as soon as possible.

6. Any unusual conditions on these or any other bridges must be called to the immediate attention of the Dispatcher in accordance with Maintenance of Way Rule 1.1.3.

D. B. Moore
Chief Engineer

CIRCULAR NO. 108
ENGINEERING DEPARTMENT

Tim Luhm
Engineer-ESC
Proctor

Attachment F

Duluth, MISSABE and Iron Range Railway Company

CIRCULAR 49

October 25, 2001
Time: 11:27

AREA: System

ALL TRAINMEN AND ENGINEMEN ● ALL OTHERS CONCERNED:

Circular Nos. 45 and 46 dated September 5 and 7, 2001, respectively are cancelled **AND MUST BE REMOVED FROM THE BOOK AND DESTROYED:**

Effective this time and date, the following **Circulars** were in full force and effect: 2, 3, 9, 37, 43, 47, 48, 49.

The DMIR has upgraded to 136 lb. Rail on Bridges 19A and 19B between BN Saunders and Ambridge on the Interstate Branch Main Track. The new rail does not accommodate insulated plates that are required to maintain electrical isolation between the rail and the steel bridge deck for a track circuit. As a result, the FRA has given the DMIR a waiver to utilize axle-counting technology using a trap circuit signal design for movements on this track. There will be no operational changes in this area as a result of this modification. However, be advised that in accordance with **RULE 1.1.3** of **THE GENERAL CODE OF OPERATING RULES** any unusual conditions observed on these or any other bridges must be called to the immediate attention of the Dispatcher.

F. H. See
Superintendent - Operations

CIRCULAR 49 AREA: System