

CHAPTER 2: CRITICAL OPERATIONAL ELEMENTS

Section 2.1 Critical Operational Elements Overview

FRA examined NS' compliance with the operational elements outlined in the FRA's press release on March 7, 2023.¹⁵ These operational elements were evaluated by several divisions within FRA's Office of Railroad Safety, between March 15 and May 15, 2023. The FRA divisions involved included: Operational Practices, Motive Power & Equipment, Signal & Train Control, Track & Structures, Audit Management, and the Hazardous Materials divisions. The following sections will discuss the specific operational elements FRA evaluated and FRA's findings on how NS performed during the Assessment.

Section 2.2 Operating Practices Findings

During the NS Safety Assessment, FRA's Operating Practices Division (OP) performed focused reviews and inspections relating to the following operational elements:

- Operation control center procedures and dispatcher training relating to wayside detectors;
- Evaluating results of operational testing of employees' execution and comprehension of all applicable operating rules and federal regulations; and
- Engineer and conductor training and certification.

Sub-Section 2.2.1 Operation Control Center Procedures and Dispatcher Training Relating to Wayside Detectors

During the week of March 13, 2023, FRA's Operating Practices team conducted a detailed assessment of wayside detection processes at the NS Network Operation Center in Atlanta, GA. The objectives were to evaluate regulatory compliance, identify inefficiencies, and recommend improvements. FRA's Signal &

¹⁵ Press Release, U.S. Department of Transportation, USDOT's Federal Railroad Administration Announces a Supplemental Safety Assessment of Norfolk Southern Railway's Operations (March 7, 2023) [FRA 02-23.pdf \(dot.gov\)](#).

Train Control team's review of NS procedures involving wayside defect detectors is described in Sub-Sections 2.4.4 and 2.4.5 of this report.

The Advanced Train Control (ATC) Desk is a singular desk located within the Network Operations Center (NOC). The desk operates 24/7 and is continuously staffed by one mechanical employee (a former mechanical supervisor) working 12-hour shifts. The positions are supervisory and are not subject to the hours-of-service law. NS has a system of approximately 1,200 mechanical wayside detectors spread over its 19,500-mile network and staff at the ATC desk are responsible for monitoring wayside detection results, such as, looking for trending data and addressing alarms when they occur. This position is the primary point of contact for Train and Engine Service (T&E) crews who experience mechanical issues, as well as reporting when a wayside detector does not report. The ATC desk answers calls from crew and other wayside employees who may observe something, (e.g., smoke or sparks coming from an overheated journal on a passing train) from the field. Additionally, members of the public can also report sightings of all types of safety issues, including mechanical problems, by calling a designated number on Emergency Notification Signs (ENS) signs or through local authorities. These calls are typically directed to the chief dispatcher, who then contacts the ATC desk for assistance and historical information about the relevant train, once the details have been determined.

Finding 1: NS relies on emails from ATC desk to dispatchers, which slows communication.

Wayside “hot box” detector reports, referred to as “Hotbox reports,” are triggered in the event a wayside detector detects a heat anomaly (i.e., bearing, wheel, or axle that is exceeding safe temperature thresholds or trending toward exceeding the safe temperature). In such instances, the wayside detector transmits a signal to the ATC desk noting that the wayside detector either detected a critical alarm (temperature has exceeded the safety limit) or a trending alert (reporting an elevation in temperature). It should be noted that wayside detectors also broadcast to the train crew via the radio. Each wayside detector broadcasts location, direction of travel, and if there is a critical alarm (or no defect).¹⁶ FRA found the railroad's process for handling, analyzing, and reacting to the data in the wayside detector reports by the ATC desk at the NOC demonstrated

¹⁶ Wayside detectors do not broadcast trending alerts (i.e., those identifying changes detected from one detector to the next to the crew), this information is only reported to the ATC desk.

a significant lack of standardization and consistency, directly contributing to data not being received by the personnel responsible for addressing the issues identified. Additionally, FRA noted that communication between the ATC desk and dispatchers was primarily via e-mail and as a result, FRA observed communication gaps, potentially allowing for delayed feedback and impeding issue resolution.

Recommendation:

NS should place indicators of detector locations on the dispatcher's board (i.e., tabs specifying the name, type, milepost, and possible health status of the detector), and should cease relying solely on email from the ATC desk for notifications, instead, implementing a more reliable communication channel.

Finding 2: NS' personnel policy poses a risk of delays or disruptions, if a single employee working the ATC desk takes a break or is addressing other issues.

During the Assessment, the OP team learned that NS' ATC desk personnel are eligible for remote work. With this personnel policy, only one employee, working remotely, was assigned to cover all detectors for the entire 19,500-mile network covered by the ATC desk. In addition to monitoring wayside detection results, the person working the ATC desk also has supervisory responsibilities, including being the point of contact for T&E crews experiencing mechanical issues. Besides the risk of delays or disruptions due to having only a single employee working the ATC desk, there is also the issue of lack of redundancy and coverage gaps during employee breaks.

Recommendation:

NS should reconsider the remote work option for ATC desk personnel, if only one remote employee is responsible for covering such a vast territory. NS should consider providing backup for the ATC desk employee responsible for covering all wayside detectors.

Since FRA's Assessment, as of July 10, 2023, NS has rescinded the remote work option for ATC desk personnel. Additionally, NS has added another employee to the ATC desk to lessen the burden of a single employee being responsible for monitoring the entire system, and to increase system reliability by providing redundancy.

Finding 3: NS' processes showed a lack of escalation for unanswered calls to the ATC desk from the dispatch floor.

When a critical alarm is received and after contacting the affected train crew, the ATC desk communicates with the dispatch center primarily via email. The ATC desk also conducts research of records and trending data and determines the steps to follow after a trending alert is received. During the Assessment, FRA witnessed dispatchers who were unfamiliar with detector locations and types, as well as lacking a standardized turnover process. Dispatchers were often the last to know when a train had been stopped, thereby causing potential delays in handling and protection.

Recommendation:

Due to the lack of escalation for unanswered calls, NS should prioritize the inclusion of dispatchers in the communication loop to ensure they are aware of each train's statuses. NS should also implement training and standardized procedures for dispatch turnover to ensure uniformity.

Finding 4: NS' Disaster Recovery Center Dispatcher Training Program should be evaluated for potential improvements.

A separate review of NS' Disaster Recovery Center Dispatcher Training Program was conducted in April 2023. At the time of review, the program consisted of seven weeks of classroom and scenario-based simulator training, followed by 16 to 23 weeks of on-the-job (OJT) and simulator assessments. Although sufficient in content and structure, FRA's review found areas needing improvement.

Recommendation:

NS should upgrade the dispatch system to permit simulator/scenario-based assessments on each territory, create a structured recurrency training program for qualified dispatchers, and establish territory-specific familiarization requirements.

Sub-Section 2.2.2 Evaluating results of operational testing of employees’ execution and comprehension of all applicable operating rules and federal regulations.

FRA’s 2022 NS System Audit included a review of NS’ compliance with 49 CFR § 217.9, Program of Operational Tests and Inspections; Recordkeeping. Overall, FRA observed inconsistencies in NS’ operational testing and inspection program, ranging from access to and accuracy of records, to the methods and processes used to prioritize the testing of rules that prevent accidents. The failure to properly administer and implement the program of operational testing can diminish the capacity to correct accident/incident and injury trends. Further, recordkeeping systems should not allow testing officers to record numbers of tests that cannot be verified. The term ‘numbers’ refers to individual rules monitored during testing activities. The railroad permitted officials to document any tests incorporated into a ‘scenario’ whereby multiple rules are confirmed during a scenario test. Consequently, the railroad could not verify the precise observations and tests carried out on its employees. Additionally, by allowing officials to document tests as 'scenarios', both the FRA and the railroad were unable to verify the accuracy of the test results. This is due to NS’ mandate to formally train or discipline employees for all rule violations. The railroad conceded that testing officials were reluctant to report failures, as this would necessitate formal training or disciplinary action. FRA concluded that without a properly administered program, NS could be hindered in monitoring conditions on the railroad or targeting resources successfully.

FRA has continued to work with NS to address the findings of the 2022 NS System Audit, including a review of NS’ most recent RP-1 Supervisor Guidelines for Conducting Efficiency Checks (Program) submission dated June 5, 2023. FRA’s review of the Program identified substantial compliance issues. Despite numerous opportunities to improve the Program, NS has not rectified the significant deficiencies identified in 2022.

The main deficiencies in the Program are as follows:

1. The Program fails to enforce the annual number of required tests and inspections for critical groups such as locomotive engineers, T&E, dispatch, engineering, and mechanical service employees, as mandated by § 217.9(c)(2).
2. The Program does not adequately detail each required operational test and inspection or the procedures for executing them. See 49 CFR § 217.9(c)(3). Specific shortcomings have been observed

in areas such as Handling Switches and Derails, Shoving or Pushing Movements, Securement of Equipment, and Blue Signal Tests.

3. The Program lacks established procedures for testing speed compliance and adherence to restrictive signal indications as required by § 217.9(c)(3). This gap could compromise the qualification and requalification of locomotive engineers under Part 240.
4. The Program does not specify the frequency of each operational test and inspection as required by § 217.9(c)(5).

Due to these persistent non-compliant conditions, on June 30, 2023¹⁷, FRA disapproved NS' Program. Per the applicable regulation, NS had until August 4, 2023, to correct these deficiencies and resubmit the Program for approval or provide a detailed written justification for the Program's current state. On August 4, NS requested an extension on their submittal until August 11, which FRA granted.

Sub-Section 2.2.3 Engineer and Conductor Training and Certification

On June 14, 2023, FRA sent a letter to NS demanding immediate modification of substantial deficiencies identified within its conductor certification program. For the last two years, FRA has highlighted concerns about NS' substandard responses.

FRA's OP Division has been performing an ongoing audit of NS, conducted under the Infrastructure Investment and Jobs Act (IIJA), Section 22410. This section pertains to the training, qualification, and certification of operating crew members, and requires the Secretary to commence audits of the training, qualification, and certification programs employed by railroad carriers for their locomotive engineers and conductors. So far, FRA's Section 22410 audit of NS has exposed shortcomings that NS must address with the utmost urgency, particularly considering the large influx of new hires currently undergoing training.

¹⁷ A copy of FRA's June 30, 2023 letter to NS is in Appendix C of this report.

In its June 14, 2023¹⁸ letter, FRA identified and communicated three specific areas for immediate and significant corrective action, as well as required NS to furnish a comprehensive action plan with a timeline for implementation within 90 days. On July 17, 2023, NS presented FRA with a progress update in response to FRA's direction. Listed below are FRA's findings and recommendations, along with NS' responses.

Finding 1: The current 13-day conductor classroom training window is markedly insufficient, failing to meet the complex demands of Class I freight railroad operations.

Recommendation:

NS should promptly reassess and significantly extend the duration of the program to ensure comprehensive knowledge acquisition, skill development, and practical experience.

NS Response:

NS collaborated with Atkins Nuclear Solutions (ANS) to review and enhance the effectiveness, content, and duration of the conductor training. Initial reviews have been completed and further conversations are in progress to implement ANS' recommendations by September 15, 2023.

Finding 2: NS' OJT field training is deficient in structure, consistency, and oversight, leading to a heightened risk of trainees acquiring unsafe work practices.

Recommendation:

NS should implement objective, measurable standards, record progress, and implement effective training and oversight mechanisms.

¹⁸ A copy of FRA's June 14, 2023 letter to NS is in Appendix C of this report

NS Response:

NS successfully distributed Qualification Books to current trainees and all personnel overseeing trainees. Along with the distribution, NS is implementing monitoring protocols and conducting regular physical reviews of trainees' progress. Further, an On-the-Job (OJT) Knowledge Assessment process has been implemented, and its effectiveness is under continual evaluation. NS is also creating a field orientation checklist, meeting with labor leaders to clarify conductors' roles and responsibilities, and developing a "train the trainer" session for these conductors.

Finding 3: NS has neglected FRA's training regulations by designating "qualified instructors" without seeking concurrence or nonconcurrence from designated employee representatives.

Recommendation:

NS must strictly adhere to the process outlined in 49 CFR § 242.7 for the selection of qualified instructors, ensuring joint selection, or memorialize if nonconcurrence with designated employee representatives occurred.

NS Response:

NS is setting up a bilateral training feedback system for each trainee-conductor pairing, a paper-based version of which will be implemented by August 3, 2023. In tandem, a digital version of the system is under development. Meetings with labor leaders have been held to discuss the expectations and characteristics of an effective trainer. NS is also updating its internal guidelines on conductor and trainee pairing based on these actions, with the project slated to continue through September 15, 2023, and potentially beyond.

FRA is actively monitoring NS' progress and will employ stringent enforcement measures should NS fail to address these concerns satisfactorily. IIA Section 22410 requires FRA to notify Congress of a railroad or any employee representative's refusal to cooperate with the audit and audit findings.

Section 2.3 Motive Power and Equipment Findings

FRA's Motive Power & Equipment Division (MP&E) specifically looked at the following operational elements:

- Communication between staff in the transportation, mechanical, and engineering departments, and
- Rolling stock maintenance, inspection, and repair practices.

FRA's assessment of NS' mechanical department included both regulatory (compliance with FRA regulations) and non-regulatory (issues not covered under FRA regulations, but still pose a risk) inspections and reviews. The Assessment, which covered all NS locations and included conversations with labor and management employees, is supported by the findings identified and documented during the 2022 NS System Audit and FRA's routine compliance inspections. FRA's MP&E Division's objectives during this Assessment were to observe improvements and follow up on corrective actions from the 2022 NS System Audit, specifically regarding brake tests, daily inspections, mechanical inspections, and blue flag protection of mechanical employees and crews designated to inspect freight cars and locomotives. MP&E also reviewed the communication procedures between NS transportation and mechanical employees, as it applies to protection of the employees with the movement of trains in and out of shops and yards inspection points.

While FRA is considering enforcement actions against NS based on the Assessment, FRA did not find egregious violations or incidents that indicated an individual liability or violation was warranted. FRA did not find instances of Blue Signal Protection miscommunication between NS' transportation and mechanical departments. Nor did FRA see instances of the transportation department over-riding the recommendations of mechanical inspectors for removing FRA defective cars from the line of road.

Although FRA did not identify a significant number of defects during this Assessment, NS' level of compliance did not meet the expectations generated by the employees (management and labor), who indicated that significant quality improvements were instituted after the 2022 NS System Audit. For example, during several meetings between the FRA and NS, NS claimed it had made improvements in its mechanical processes, including inspections. FRA's Assessment results indicate that NS has maintained the same level of performance that it had previously. While NS' mechanical department leadership has specific performance goals and quality programs in place, based on FRA observations, compliance has not improved. Therefore, FRA's MP&E Division will continue the focused inspections on all NS properties for an extended period.

Section 2.4 Signal and Train Control Findings

During the NS Safety Assessment, FRA's Signal, Train Control and Crossings Division (S&TC) performed focused reviews and inspections relating to the following operational elements:

- Signal maintenance, inspection, and repair practices;
- Signal training;
- Compliance with federal Hours-of-Service regulations;
- Maintenance, inspection, and calibration policies and procedures for wayside defect detectors; and
- Procedures related to all wayside defect detector alerts.

The S&TC Division also followed-up on the 2022 NS System Audit findings to confirm that the recommendations were addressed.

Sub-Section 2.4.1 Signal Maintenance, Inspection, and Repair Practices

FRA performed field inspections from March 15 through May 15, 2023, encompassing portions of the entire NS system. The field inspections focused on compliance with 49 CFR Parts 234 - Grade Crossing Safety, and 236 - Rules, Standards, and Instructions – Signal & Train Control. The inspections identified over 100 defects across 95 miles of NS territory and FRA is considering enforcement actions based on those defects. Further, reviewing the maintenance and inspection history of the territory identified a failure to prioritize critical safety work necessary to ensure safe operation. Overall, the areas inspected had a high number of defective conditions and a lack of general maintenance.

Finding 1: Frontline supervisors lack general signal knowledge and consistency when applying testing and maintenance procedures.

During the inspections, FRA observed frontline supervisors lacked general signal knowledge, and identified inconsistent application of railroad testing and maintenance procedures. FRA did note a strong understanding and dedication to procedures by mid-level and upper managers. The frontline supervisors, however, perform the direct oversight of the systems the signal department manages and the employees who maintain these systems. Therefore, they need to be better trained to ensure a technical understanding of these systems.

Specifically, frontline supervisors need to understand the company procedures for installing and maintaining these systems, as well as the federal regulations governing these systems. FRA found a high turnover rate and a lack of consistent training among frontline supervisors.

Recommendation:

NS should re-evaluate the training process for frontline supervisors. The training should ensure the supervisors are knowledgeable about the systems the signal department is responsible for maintaining, and about NS policies and procedures and applicable federal regulations for installing, testing, and maintaining these systems.

Finding 2: NS has signal maintainer territories that are often vacant.

FRA also found a number of vacant signal maintainer territories. There are a variety of reasons for territories being vacant. Bargaining agreements are in place to allow signal maintainers the ability to bid for positions. Some territories are filled quickly. However, some are open for extended periods, or they have high turnover rates. These bargaining agreements also allow the railroad to force employees to temporarily cover these vacant territories until they can be filled permanently. When positions are temporarily filled, it is with personnel who already have a regular position and who are often overwhelmed by the amount of additional testing and maintenance responsibilities of the extra territory. This could lead to a lack of general housekeeping and maintenance. Regardless of the territory being permanently or temporarily filled, the railroad shall ensure that all testing required by federal regulations is completed and the territories are properly maintained.

Recommendation:

NS should develop a list of signal maintainer territories proven to be hard to fill and develop a plan to fill these positions permanently. The plan should look for alternative hiring practices to ensure a diverse pool of candidates hired from these locations. This should ensure an adequate pool of candidates desiring to live in the difficult to fill territories. Until a long-term solution can be achieved, NS needs to develop an immediate process to ensure these territories are properly maintained and kept in compliance with federal regulations.

Sub-Section 2.4.2 Signal Training

S&TC worked with FRA's Safety Partnership Division to evaluate NS' compliance with 49 CFR Part 243, particularly NS signal training. NS has a comprehensive training curriculum for its signal employees. It consists of classroom training and OJT field training. NS has signal equipment set up outside its training center so that signal employees can work on and troubleshoot equipment without the consequences of being hooked to the track. This gives participants a real-life scenario in a classroom setting. FRA reviewed training and qualification records for signal. FRA did not identify any non-compliance with federal regulations and FRA note NS' state of the art signal training center.

Sub-Section 2.4.3 Compliance with Federal Hours of Service Regulations

FRA performed a review of Hours-of-Service (HOS) records for covered signal employees¹⁹ during the Assessment. During this review, FRA identified incomplete and missing HOS information. FRA identified 74 defects, and also recommended training for NS signal employees during their next HOS training class. FRA is considering enforcement actions based on these defects and FRA's S&TC Division will follow-up, within the next six months, on the HOS recordkeeping to ensure these deficiencies are corrected.

Sub-Section 2.4.4 Maintenance, Inspection, and Calibration Policies and Procedures for Wayside Defect Detectors

At the NS Training Center, FRA observed NS' training procedures for testing, installing, and maintaining wayside detectors. S&TC also observed NS' compliance with the railroad's own procedures for maintenance, installation, and testing of wayside detectors. Although the NS training procedures are comprehensive, FRA

¹⁹ The HOS law applies to employees engaged in "installing, repairing, or maintaining signal systems." Signal systems include the following: block signal systems, cab signal systems, train control systems, other related or similar systems (including wayside detectors), and highway-rail grade crossing active warning systems. See 49 U.S.C. §§ 21101(4) and 21104. An employee who performs any function that has the potential to affect the proper and safe operation of a signal system is subject to the HOS laws during the particular duty periods in which the function is performed, without regard to the class or craft of the employees or the manner in which the employees is compensated, if at all.

observed inconsistencies in signal employees' skills to perform testing, installation, and maintenance in some locations.

Sub-Section 2.4.5 Procedures Related to all Wayside Defect Detector Alerts

FRA observed NS' ATC desk from a signal and train control perspective, including observing personnel responses to wayside trending alerts, alarms, and malfunctions, as well as NS operating rules for defective equipment detectors. FRA's review of Operation Control Center procedures and dispatcher training relating to wayside detectors is in Sub-Section 2.2.1 of this report. Observations at the ATC desk showed NS has a good process for communicating detector malfunctions to its field forces. This allows the field forces to ensure the detectors are repaired in a timely manner.

Section 2.5 Track and Structures Findings

FRA's Track and Structures Division (Track) performed focused reviews and inspections relating to the following operational elements:

- Track maintenance, inspection, and repair practices;
- Communication between staff in the transportation, mechanical, and engineering (maintenance-of-way) departments; and
- Training and qualification programs available to all railroad employees.

The objectives of FRA's Track Division's assessment were to determine NS' compliance with track maintenance, inspection, and repair practices, as they apply to 49 CFR Parts 213 and 214. Additionally, FRA reviewed Roadway Worker Protection (RWP) for track employees. Finally, FRA assessed the communication between NS' transportation and engineering departments, to ensure they comply with FRA regulations and NS Operating Rules. Based on the coordinated federal and state inspections over 60 days, FRA is considering enforcement actions against NS. Following the 2022 NS System Audit, a notable improvement in track quality and compliance was seen at all inspection locations. This assessment showed much-improved Continuous Welded Rail (CWR) program compliance and engagement by the entire workforce. Training and education all the way to the ballast level was evident during inspection of work

gangs. The attention to detail by track employees indicated an involved workforce. That engagement was evident in the non-regulatory conversations related to positive safety culture as well.

There were no instances of RWP violations or situations where NS' transportation department did not follow the recommendations of the engineering department for the safest course of action.

While there is room for improvement, the Bridge and Track Infrastructure assessment shows a noticeable improvement. For example, FRA has had several productive meetings with NS to bring NS' CWR plan to compliance. The entire engineering labor/management team should continue with the goals and objectives they put forward after the 2022 System Audit.

Section 2.6 Audit Management Findings

FRA's Audit Management Division (AMD) looked at the following operational elements:

- Measures implemented to prevent employee fatigue, including the development and implementation of fatigue management programs, required as part of FRA's Risk Reduction Program (RRP) rule; and
- Current status of the hazard and risk analysis required by the RRP rule.

49 CFR Part 271 requires NS and all other Class I railroads to develop and implement a Risk Reduction Program (RRP) that includes, among other requirements, a systematic approach to identifying hazards, assessing risks associated with identified hazards, and development and implementation of corrective actions for those risks. To support their programs, railroads must submit for FRA approval a plan that, in part, describes the processes and schedule they will use to execute their RRP. FRA approved NS' RRP plan on May 6, 2022. Now, NS must fully implement the program described by its plan by May 6, 2025.

Fully implementing an RRP is a complex process, and NS identified a schedule for implementing various portions of its program, including training the employees who will be executing key program elements, and testing hazard identification and risk assessment processes, beginning in the fall of 2022. During this Assessment, FRA conducted on-site interviews to determine whether NS is adhering to its own implementation schedule. NS stated that it had identified hazards and would shortly use those hazards to test its risk assessment process, but it did not share supporting documentation. FRA continues to follow up with NS in weekly and quarterly calls to ensure it continues to meet its implementation timelines and deliverables.

On July 13, 2022, FRA published an amendment to Part 271 requiring covered railroads, including NS, to also develop a Fatigue Risk Management Program (FRMP) to use RRP processes to address the risks associated with employee fatigue. FRMP plans were due to FRA for review and approval by July 13, 2023. NS submitted its FRMP plan on July 7, 2023, and it is currently under review. FRA will work with NS and its directly affected employees, to ensure that any deficiencies in the FRMP are corrected prior to approval.

Section 2.7 Hazardous Materials Findings

FRA's Hazardous Materials Division (Hazmat) specifically looked at the following operational element:

- Protection for employees working on rail infrastructure, locomotives, and rail cars.

FRA's Hazmat Division participated in this Assessment by focusing on NS' compliance with the hazardous material regulations (HMR) of 49 CFR Part 174 – Carriage by Rail. A railroad's ability to transport hazardous materials safely, and the impact on its safe operations is, in part, contingent upon the actions of the hazardous materials shippers who offer these shipments for rail transportation. The rail carrier's transportation responsibilities for moving shipments are primarily limited to ensuring:

- Shipments appear ready for transportation at time of acceptance;
- Shipments are properly placed into a train;
- Accurate placement-in-train documents are maintained for a train;
- Shipments maintain a compliant condition while in transit; and
- Movement of hazardous material shipments is expedited to the destination.

While there are other carrier responsibilities related to the movement of hazardous materials (i.e., routing analysis, HHFT reporting, training, etc.), those responsibilities occur outside of the responsibilities of the train and yard personnel who assemble and transport trains with hazardous material shipments.

The HMR defects that were identified during the Assessment and have also been observed during FRA's routine compliance inspections, are typically technical in nature, do not contribute to accident causation, and do not indicate a systemic HMR compliance issue. Specifically, during the Assessment, Hazmat inspected approximately 100 train consists and identified defects related to maintaining accurate placement-in-train documents. In the event of a derailment, emergency responders would rely on the accuracy of these

documents to appropriately identify where hazardous materials were so they could safely work around the derailed equipment, and they could monitor the correct cars for changes that might indicate an impending fire or explosion. These defects were primarily the result of a numbering error by the conductor when adjusting the train consist after making pickups and deliveries. Typically, these numbering/counting errors result in the placement-in-train documents being off by one or two positions. In most cases, the conductor corrected the defect immediately. Due to this immediate corrective action, the inspector would record the defective condition but not make a violation recommendation.

Overall, during the 60-day Assessment, Hazmat conducted over 350 focused inspections, and is considering taking a few violations for non-compliance with the HMR against NS. The non-compliance was minor in nature and resulted from the actions of a few individuals across the NS network. However, findings such as documentation showing the location of placarded hazardous materials was not always correct could have a significant impact on decisions being made by first responders. First responders are taught train documentation is critical during an incident and they should be confident that documents supplied by the railroads are accurate.

Section 2.8 Chapter 2 Conclusions

FRA's 60-day NS Safety Assessment conducted by OP, MP&E, Signal, Track, Audit Management, and Hazardous Materials Divisions found varying results. There were some areas where NS has not shown much improvement since the 2022 NS System Audit, but in other areas there were noteworthy improvements.

FRA's OP Division identified seven findings during this Assessment. Those findings are: (1) NS relies on emails from the ATC desk to dispatchers, which could slow down vital communication, such as receiving wayside detector reports; (2) NS' personnel policy poses a risk of delays or disruptions, if a single employee working the ATC desk takes a break or is addressing another issue; (3) NS' processes showed a lack of escalation for unanswered calls to the ATC desk from the dispatch floor; (4) NS' Disaster Recovery Center dispatcher training program should be evaluated for potential improvements; (5) the current 13-day conductor classroom training window is not sufficient, and does not meet the demands of Class I railroad operations; (6) NS OJT field training is deficient in structure, consistency, and oversight; leading to heightened risks of NS trainees acquiring unsafe work practices; and (7) NS has neglected FRA's training

regulations by using the designation of “Qualified Instructors” without seeking concurrence from employee representatives.

FRA’s Signal Division identified two main findings that NS needs to prioritize to address critical safety issues. First, some frontline supervisors seem to lack general signal knowledge and the ability to consistently apply railroad testing and maintenance procedures. Second, NS has signal maintainer territories that are vacant. In addition to the two findings, there are some other areas that NS needs to address. There is an inconsistency in the skill levels of signal employees in testing, installing, and maintaining wayside detectors. FRA’s Signal Division also noticed that NS has an effective process for communicating to field employees when there are problems with wayside detectors. At the same time, as noted previously, ATC desk-dispatcher-crew communication regarding wayside hotbox detectors is deficient.

FRA’s MP&E Division did not identify any major issues during the Assessment. There were no egregious violations or individual liabilities since FRA’s 2022 System Audit, and there was no indication that NS’ transportation department was over-riding recommendations of its mechanical employees during this audit. However, FRA was disappointed that the claimed improvements in quality processes in equipment NS stated that it had made since the audit were not noticeable across all the NS shops. As a follow-up to the 2022 System Audit, MP&E returned in July 2023 for a specific mechanical system-wide assessment.

FRA’s Hazardous Materials Division inspected approximately 100 train consists during the Assessment and found some defects relating to the accuracy of train placement on train documents. FRA found these errors were likely due to numbering errors during pickups and deliveries. Nevertheless, these errors could have a significant impact on first responders. First responders are trained to rely on the accuracy of train documentation during incidents or accidents. If the placement of trains on train documents are incorrect, this could significantly impact a first responder’s ability to identify which trains are carrying hazardous materials.

FRA’s Audit Management Division conducted on-site interviews during the Assessment, to gauge whether or not NS was adhering to its own RRP implementation schedule. NS reported that it had already identified hazards and will begin to test those hazards against its risk assessment process. FRA approved NS’ RRP in May 2022, and NS must fully implement the plan by May 2025. After the Part 271 amendment to develop an FRMP, NS has developed and submitted its FRMP plan to FRA in July 2023. FRA is currently reviewing that plan.

The most significant improvements at NS since the 2022 NS System Audit were seen by FRA's Track Division. Track found notable improvements in NS' track compliance.