SUBMISSION TO THE NATIONAL TRANSPORTATION SAFETY BOARD

RE: NS DERAILMENT OF TRAIN 32N IN EAST PALESTINE, OH

RRD23MR005

December 18, 2023

The Transportation Division of the International Association of Sheet Metal, Air, Rail and Transportation Workers (SMART TD) is grateful to the NTSB for granting [us] party status and for the opportunity to participate in almost all aspects of the investigation into the Norfolk Southern (NS) derailment of train 32N that occurred in East Palestine, OH, on February 3, 2023. We are also appreciative to the NTSB for our invitation to participate in its investigative hearing held at the East Palestine High School on June 22 and 23, 2023, and for their recognition of the expertise that the men and women operating in the train and engine crafts possess and bring to the investigation process.

In that vein, SMART TD would like to recognize the professionalism and efforts of the crew on train 32N when the incident occurred. Within minutes of the derailment and subsequent fire, the crew had notified the proper authorities, secured the train to prevent incidental movement, correctly identified the hazardous materials involved, separated the locomotives from the train's consist, and determined (and acted upon) an appropriate evacuation radius; all of which mitigated the potential for the spread of hazardous material and fire, as well as the risk to the residents and community of East Palestine. Their use of the Emergency Response Guidebook (ERG) and ability to accurately assess the situation highlights the critical role of onboard conductors and locomotive engineers in accident response and the potential safety gains for that role to be expanded.

Early in the investigation, it was said by National Transportation Safety Board (NTSB) Chairwoman Jennifer Homendy that the derailment of train 32N was "*100% preventable*," and she is unquestionably and unequivocally correct. It most likely would have never occurred if specific operating rules and procedures had not been amended or eliminated in the months and years preceding this incident. Unfortunately, as happens far too often in the transportation industry, reductions and withdrawals from rules and policies pertaining to safety and oversight are made by a carrier in the belief that the next best thing, typically technology, will be sufficient to justify the change. That is not always the case; we believe that is evident here.

Through this investigation, SMART TD has identified several factors that contributed to the cause of this derailment, its resulting fire, and the ensuing catastrophic release of hazardous materials. These factors, along with recommendations to correct them, are provided herein.

WAYSIDE DETECTORS[1]

Without question, wayside detectors are at the center of this investigation, as they failed to appropriately and adequately identify the defect they were designed to detect. However, it is not because of technological failure or limitations of the device that the failing roller bearing on train

[1] Recommendations will be indicated by bullet point

32N went unaddressed, but rather it was because of changes to the carrier's protocol as to how those detectors were utilized and functioned.

Before 2021, NS's standard operating procedure was for the audible alert function of a wayside detector to always be in the on position. This meant train crews would receive immediate notification via audible communication through the locomotive's onboard radio when a potential defect was present. Once an audible alert was received in the cab of the locomotive, the crew would then be required to act in accordance with governing operating rules and procedures, which informed them of when a visual inspection was necessary, how to control their train's movement, and when to bring it to a stop.

Unfortunately, during this time period, operational changes were made across the industry that frowned upon the slowing of freight, regardless of its reasoning. This includes stops made for audible alerts issued by wayside detectors. During day two of the investigative hearing, it was mentioned by both the AAR witness and the carrier witness[2] that if a detector's temperature threshold is set too low, then it will result in "*a lot of false stops*" or "*false positives.*" There is no such thing as a *false stop* or *false positive.* In fact, this is a foreign statement to train crews, as the first time this Organization had ever heard the term was during the testimony of the railroad witnesses, and it's a misnomer at best.

One of the greatest benefits of an audible alarm is that it indicates to the crew (immediately) that there is a potential threat to the integrity of their train and that it requires them, per operating rules, to slow their speed or to stop and make a visual inspection. So, instead of an alert going to a remote desk and the crew being permitted to continue at maximum authorized speed – which maintains or exacerbates the worsening of the defect – the train is slowed or stopped altogether, thus allowing the defect to maintain its temperature or to cool significantly. As a result, the train does not continue operating in a manner that progresses the defect's mechanical deterioration, which ultimately leads to catastrophic failure (as is the case with 32N). Instead, it provides an opportunity for the defect to be identified by the conductor or for the train to safely travel to the next defect detector, where it can be scanned again. Should a second defect detector detect the same car for a potential problem, then the car must be set out and removed from the train before any derailment can occur.

Rightfully, the practice of using defect detectors should rely upon their ability to act as a system, not just individually. This requires audible notification to the men and women operating the trains and the standardization of wayside detector location(s). By communicating the presence of a potential defect in real time, crews can use and depend on the wayside detector network in a way that ensures the safest course. Unfortunately, NS proved its willingness to deviate from this path by capitulating to outside pressures and making unsafe changes to its network based on operational

[2] See pg. 215, lines 21-25; pg. 223, lines 17-20;

whims, which is seemingly a factor here in the decisions made by the *wayside desk*. Without sufficient guidelines and requirements, the industry is susceptible to it happening again.

According to past precedent, train 32N should have stopped when the first elevated temperature was detected on car 23. Prior to 2021, the crew would have received an audible alert. By operating rule, they would have been obligated to stop and inspect. Not only could this have indicated to them that there was a significant defect, but, at the very least, would have given the faulty bearing time to cool, allowing it to travel more safely to the next detector. Had the bearing indeed been bad, then the temperature would have once again been elevated (to a more manageable degree), the second detector would have flagged it, and the defective car would have been required to be set out.

Therefore, we make the following recommendations:

- The presence and use of wayside detectors on America's Class I railroads should be required and regulated. (Currently, changes to their standard operating procedures are subject to operational impulses, which tend to ebb and flow with Wall Street and other external pressures.)
    - An audible alert for all defects (regardless of temperature or conditions) that can be heard by a train crew's radio, where real-time detection occurs, should be immediately mandated for wayside detectors.
        - This should also be required by statute and/or regulation.
    - The distance between wayside detectors should be determined and required by statute and/or regulation.
    - Standardized procedures and protocols for when a wayside detector has identified a potential defect should be established and required by statute and/or regulation.
    - Requirements for how a train operates, including speed and distance, once a defect has been identified, should be established and required by statute and/or regulation.

Similarly, the temperature threshold should be set at a point indicative of a problem, not at the precipice of catastrophic failure. It should not be subject to preference, as is the case currently. To this point, it was testified throughout the investigative hearing that there were differing standards between the AAR and NS's temperature thresholds[3].

- Temperature thresholds for determining bearing/wheel-related defects should be established and required by statute and/or regulation.
    - This threshold should not be at or near the point of deterioration but rather at a temperature that is indicative of a defect early in development.

[3] See pg. 216, lines 13-25 & pg. 217, lines 1-7; pg. 223, lines 11-25 & pg. 224, lines 1-3 (as well as others)

- *Temperature sticks (i.e., tempsticks)* should be required by statute and/or regulation for a conductor to have in their possession.
    - These *tempsticks* or *temperature tools* should be able to detect varying degrees of temperature so that a conductor can properly identify the state of the bearing/wheel. Whether this is performed by having more than one *tempstick* (set to melt at differing degrees) or a tool capable of reading temperature, a conductor must be able to determine an accurate temperature reading.

Defects should also be immediately reported to the dispatcher for the territory. The fact that the final defect detector reading was not broadcast to the dispatcher or wayside desk because of the derailment is concerning[4]. Had the locomotives been damaged and the crew incapacitated, the known defect would not have been transmitted. This is problematic, especially for remote areas. If a derailment were to occur in a location removed from a population, the immediate relay of critical information, such as a known defect, could prove pivotal for how a railroad approaches the situation and formulates its response.

- Defects detected by a wayside detector should be required by statute and/or regulation to make an immediate broadcast to the applicable dispatcher(s) and wayside desk, in addition to the train's crew.

EMERGENCY RESPONSE

SMART TD is deeply troubled by the time it took emergency responders to receive the train's consist information. This resulted in an unnecessary delay in evacuating residents in the zone of danger, thus prolonging their exposure to the chemicals released during the derailment, the subsequent fire that ensued, and the extremely dangerous vapors and chemical clouds that were created as a result.

During the investigative hearing, there was much conversation surrounding the use of electronic devices and device applications, like AskRail, to communicate hazardous material information in the event of a release. While these devices have proven useful in urban events that possess adequate cellular service (which allows the devices to communicate), railroad employees have encountered, and continue to encounter, significant losses of communication and an inability to utilize the functions of these devices in their day-to-day operations.

Like cell phones, electronic devices need cellular service to communicate. This not only means the ability for one to share the train's consist and/or hazardous materials information to an

[4] See pg. 24, lines 15-18

emergency responder but also the crew's ability to upload critical information to the device and, subsequently, the carrier's network. For example, a train stops at a chemical manufacturer to pick up a load of hazardous material and add it to their train. Because of the manufacturer's rural location, the conductor inputs the necessary information into the device, but the device is unable to communicate the information to the carrier's network due to the lack of cellular service. As such, the dangerous load moves within the train's consist (unbeknownst to the carrier's system) until it reaches an area with cellular service. Should a derailment occur before the device can get to the cellular network and a breach of that train car occurs, AskRail, or any other application, would not be able to identify the presence of that car within the train, as the device would not have had the opportunity to communicate the update. At this point, the only contact with this critical information would be the train's crew.

Additionally, the likelihood of an electronic device being destroyed in an event is far greater than a hard copy. (This is also true of daily tasks.) To that point, electronic devices have vulnerabilities that just don't exist with printed documentation. Batteries are susceptible to loss of charge. Screens are subject to fracture. And software products are prone to failure, just to name a few. The only true fail-safe is written documentation.

- The train's consist information, including the hazardous materials and their applicable emergency response information, should be required by statute and/or regulation to be issued on paper to the conductor for his/her tour of duty – regardless of present technology.
    - Electronic devices should serve as a supplemental backup to a crew's hard copy.

Another component of this issue is the prioritization of locating a train's crew in the advent of a situation requiring an emergency response.[5] As stated in our preamble, the crew of 32N was the first on the scene to determine the materials involved, the need for evacuation, and the distance in which to evacuate. This cannot be overlooked.

In a catastrophic derailment like East Palestine, the railroad's dispatch center establishes communication with the applicable 911 center and/or any other necessary emergency responders that may be present. It should be mandatory for the railroad dispatcher to notify the emergency responders of where the train's crew is located and what their condition is. It should also be required that they communicate the crew's location and that the crew possesses the train's consist information.

It is unfathomable to consider that the information needed for East Palestine's first responders took more than two hours to arrive, especially when the conductor already ascertained all of the information necessary in minutes. Not only did they possess the documentation needed, but they were also located no more than a mile away.

[5] See pg. 56, lines 23-25 & pg. 57, lines 1-2

- Railroads should draft and maintain response plans for dispatchers to use in the event of a derailment, fire, and/or hazardous materials release. This plan should assist them in determining a crew's status and location and require them to relay that information to local emergency responders. This plan should be drafted and required by statute and/or regulation.

- Rail carriers should be required, via statute and/or regulation, to provide the applicable emergency response dispatch centers with their emergency action plans.

- If/when a conductor determines that an evacuation is necessary in accordance with the ERG, that decision should be broadcast via the dispatcher to the emergency service responders.

INSPECTIONS

There have been other changes that need consideration as well. At the end of 2020, the Federal Railroad Administration (FRA) issued a rulemaking that extended the time freight rail equipment could be "off air" before requiring a new brake inspection. The rule, in essence, extended the time a train could be off air before requiring a visual inspection from four hours to twenty-four hours and, in doing so, exponentially reduced the number of inspections being performed in the industry. This has resulted in fewer *eyes* observing the equipment and fewer assurances of the integrity of this nation's freight trains, and while there is no way to quantify the effects of this rule change, at least not currently, we believe it would behoove FRA and other applicable state regulators to know just how many fewer inspections are being performed as a result.

This is important because it speaks to the potential for a safety gap, especially when considering the haphazard way in which detectors are being utilized in this country. Bearing defects, in addition to a multitude of other indicators for defective equipment, can give off visual cues that, most likely, will not be *caught* by a detector. (For the detectors that may be capable of identifying a defect such as this, there are so few in the industry that they are insignificant to mitigating the threat.) In fact, much like the pre-flight inspection of an airliner, trains need to be inspected – and regularly. Surprisingly, FRA gave little justification when it issued this change in rule. Aside from the financial benefits for the carriers, the only other rationale offered, in summary, was that it anticipated a reduction in slips, trips, and fall hazards. On the contrary, the reality is an increase in catastrophic events.

- A study into the frequency of inspections being performed, as well as its effect on safety should be conducted by an independent body.

As is the case in every mode of transportation, inspections are integral to the safe movement of trains. This includes both their quantity and quality. Yet, because of changes in operation since the adoption of PSR, the few inspections that are being performed are being done under the cloak of an intimidating/harassing atmosphere. Carmen, otherwise known and acknowledged (by regulation) as the Qualified Mechanical Inspector (QMI), are given unrealistic timeframes to inspect rail equipment for the railroad to meet or maintain its expedited schedules – schedules oblivious to the time needed to perform safety-critical functions. This was evidenced on day two of the hearing by multiple witnesses.

Rail carriers should be prohibited from assigning maximum amounts of time in which an inspector has to perform an inspection. Every rail car is different, as is the condition of the components that are on them. What may work for one car (in measured time) may not for another. Carmen should be given discretion in the amount of time it takes to ascertain compliance. They should also be permitted oversight to ensure that a defect is handled accordingly and possess the protections necessary to free them from the threat of unjustifiable harassment and intimidation. Accordingly, there should be a process for a carman to appeal a manager's decision to overlook a defect or to permit the movement of rail equipment despite the knowledge that a defect exists.

- The practice of limiting a carman to a specific time frame when performing required inspections should be prohibited by statute and/or regulation.

- Managers or any other company entity, per statute and/or regulation, should not have the ability/authority to override an identified defect without proper justification.
    - We suggest a process similar to FRA's "Good Faith Challenge."

Another unfortunate effect of PSR is the excessive elimination of carmen from rail yards across the NS system (and industry).[6] Per 49 CFR Part 215, carmen (QMI) are required to perform mechanical inspections at the provided intervals. However, there is an unfortunate caveat within the regulation that the carriers have exploited, that caveat being that carmen perform these inspections *"where present*." The carriers, in their cunning, have found that if they eliminate carmen from rail yards, then they are no longer bound to the most protective provisions of this regulation. In turn, they can have the lesser qualified craft of conductor perform a greatly reduced level of inspection known as *Appendix D*[7]. Undoubtedly, this is having a profound impact on the quality of inspections being performed in the rail industry, as an Appendix *D* inspection pales in quality and lacks the exhaustive measures Part 215 requires.

In reviewing the regulation, it is not hard for a reader to discern that the Appendix D provision is intended for inspections performed on line-of-road (en route), not originating, mechanical, or

[6] See pg. 200 - pg. 202 line 23
[7] See pg. 253, lines 11-17

initial train inspections. Conductors must have a way to determine that a rail car picked up from an industry is safe for movement, and Appendix D is the means by which to do so. When performed accordingly, the car is then moved to a yard wherein it will receive an appropriate Part 215 inspection by a QMI. Never was it contemplated that most, or, at the very least, a significant portion of the rail fleet would be limited to the Appendix D inspection.

- By statute and/or regulation, a QMI should be required to perform Part 215 inspections, except for an Appendix D inspection when/where appropriate.
    - For clarity, Part 215 should expound upon the requirements of when each inspection is required and by whom.

Since PSR, NS operational changes have also resulted in many amendments to, or all-out elimination of, many long-standing operating rules and policies. Pertinent to this investigation is the removal of the requirement for a conductor, when stopped on line-of-road, to disembark from the locomotive to inspect (from the ground) a passing train. Unfortunately, the investigation did not reveal how many trains 32N passed on its route to East Palestine or where, but the reality is that each train meet presented an opportunity for a conductor to perform a (rolling) ground inspection physically. This may very well have been the determining factor for the failing bearing to have been identified prior to the derailment.

Conductors are familiar with the proper state of operating equipment. They are attuned to the sights, sounds, smells, and feel of rail cars when they are functioning accordingly. These same methods also teach them to identify when something is amiss in a train passing by. As exhibited in evidence, the failing defect on train 32N made sounds that could have been heard by an inspecting conductor. It would have almost certainly presented heat that could have been felt or smelled. And it clearly possessed visual indicators, as the fire was easily seen in the evidence presented, that the most novice trainman would have recognized. Each of these would have been a cue to an inspecting conductor to notify the passing train via radio that a defect was present and that an inspection was warranted.

- Conductors should be required by statute and/or regulation to visually inspect passing trains (when their train is stopped) for defects.
    - This inspection, where practicable, should occur from the opposite side where the inspecting conductor's locomotive is located.
    - A designated *place of safety* for the conductor to inspect should be defined and required within the rule.

TRAIN INTEGRITY

The derailment in East Palestine was a culmination of a multitude of reductions and/or adverse changes in standard operating procedures by NS. In fact, those listed herein are only a mere fraction of the contributing factors that are actually present. However, given the fact that we are limited in scope as representatives for train and engine employees, we have restricted our comments accordingly. With that being said, we feel compelled to acknowledge a few other factors.

The size of train 32N and its makeup, while lacking the scientific ability and insight to prove it, was, in our opinion (given our professional experience), very much a contributing factor to the scale of the derailment, the hazardous materials release, and the subsequent resulting fire.

Over the last six years, a disturbing trend has occurred across the industry. Train length and train makeup (the way in which a train is put together – or built) have become far less of a priority for the safe movement of freight and more of a priority for getting the most profit per movement. Gone are the days of safe *blocking*, and now are the days of fewer *touches*. Traditionally, railroads put forth a lot of thought and effort as to how and where they placed loaded and empty cars, as well as placed cars carrying varying types of commodities. Today, their preference is to build a train with the fewest *touches* (or movements) as possible. This results in blocking (or car placement) that is less than ideal because it doesn't contemplate the dynamics and physics of a train's movement and structure.

Trains, like a slinky (if you will), move in and out depending upon whether they are under power, going over grade, going through curvature, being braked, or some other combination thereof. These physical states are exaggerated when a train is improperly made up. To understand this rationale, we offer the following: if you tie a weight to one end of a slinky and then pull the other end, the slinky is going to stretch out. Once you have the entirety of the slinky in motion, the weight will move with it accordingly. Now, suddenly stop the end without the weight, and the remainder of the slinky will come crashing in. While not quite so simple with freight trains, the basics of science are the same.

Long trains are heavier trains, and the more weight there is toward the rear, the more inertia there will be when a derailment occurs. In East Palestine, when car 23 derailed, all the weight behind it came crashing in. But what makes it more dramatic is the fact that empties preceded the bulk of the loads. In other words, once car 23 came to an almost immediate stop, the inertia behind it was so great that the empties could not adequately retard the loaded cars, and the results of the derailment became far greater than they could have been had the train been built correctly. This increased inertia, without doubt, contributed to the forces involved and the increased likelihood that the affected hazardous materials cars would be breached.

Equally concerning is that longer trains are harder to control and are more prone to breakdowns and mechanical failures. We receive reports daily from crews tasked with moving these oversized trains advising that they experienced en route train separations, loss of communication, lack of sufficient horsepower, and inability to keep the train in a constant state. What makes this even more disconcerting are the faults within the inspection process that this investigation has brought to light, all of which is substantiated in FRA's issuance of Safety Directives 2023-02[8] and 2023-03[9].

CLOSING

The derailment in East Palestine is the direct result of an industry with too much discretion. Guardrails, oversight, and enforcement are needed to prevent incidents like this from occurring in the future. It is not enough for a carrier or its representative Association to declare that the necessary changes are being made, as NS has proven that railroads are willing and able to deviate from those internally set standards.

But this isn't just true for train operations. It's also true for how/when a railroad, community, and/or government agency responds to an incident such as this. The lack of a defined response plan could not have been clearer in this derailment. Provisions (in anticipation of an event) are needed to establish authority and chain of command, as well as procedures and protocols for clarity for how each department responds. Each entity should know and understand its role and responsibility before arriving on the scene so that when they do arrive, their only focus is on executing it.

Clearly, ambiguity has no place in a situation like this. Yet, that is exactly what persisted throughout the response and handling of this derailment. When Panel 2 (day two) was asked the simplest of questions regarding who has authority and oversight for the movement of vinyl chloride, no one could answer. In fact, when an answer was finally offered, after an awkward pause, the response really wasn't that intelligible[10]. This lack of emergency response fundamentals, without question, had an adverse impact on the decisions made at the site of the derailment, not just in the immediate response but also in the decision-making for how to address the compromised hazmat cars involved in the incident.

SMART TD is extremely bothered by the choice to vent and burn the vinyl chloride. Given the evidence presented at the hearing, we believe there were better options. We also believe that the lack of an emergency plan, communication, and established chain of command were contributing factors in the decision-making process. Notably, throughout the hearing was a lack of testimony detailing prescribed procedures for how these scenarios were to be handled and by whom. Norfolk Southern filled the vacuum. A common thread apparent throughout all 4 panel discussions was

[8] https://railroads.dot.gov/elibrary/safety-advisory-2023-02-train-makeup-and-operational-safety-concerns
[9] https://railroads.dot.gov/elibrary/safety-advisory-2023-03-accident-mitigation-and-train-length
[10] See pg. 227, lines 22-25 & pg. 228, lines 1-16

though the local fire chief was technically in charge of the incident command center, it was Norfolk Southern who controlled the flow of information. Their corporation and their policy decisions led to the disaster at hand, and yet they were in a position of control and power over both the assessment of the scene and mitigation strategy. This is unacceptable.

It does not appear to us as though the vinyl chloride exhibited symptoms of polymerization, and despite OxyVinyl's best efforts to relay that knowledge to the unified incident command, it seemingly went unheard. The decision was made, and the quickest path to reopening the rail line was chosen (not necessarily the safest outcome for the Village of East Palestine) without OxyVinyl's critical information ever being meaningfully heard.

This speaks to the need for better planning and a better-governing structure for incidents such as this, as well as the need for more regulation and oversight across the industry. Safety should be the only priority. In our view, there were factors present in the cause of this derailment and its subsequent response that kept that from being a reality.

Again, thank you for the opportunity to participate in this investigation and for your consideration of our comments.

Sincerely,

PII [redacted]

Jared Cassity
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