

NATIONAL TRANSPORTATION SAFETY BOARD

FISCAL YEAR 2025  
BUDGET REQUEST



# National Transportation Safety Board

Office of the Chair

Washington, DC 20594



March 11, 2024

The Honorable Kamala D. Harris  
President  
United States Senate  
Washington, DC 20510

The Honorable Mike Johnson  
Speaker  
United States House of Representatives  
Washington, DC 20515

Dear Madam President and Mr. Speaker:

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in the other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and the US Coast Guard and adjudicate appeals of civil penalty actions taken by the FAA.

The enclosed budget submission reflects the NTSB's request of \$150 million for fiscal year (FY) 2025. This funding level is an increase of \$5 million above the FY 2024 president's budget request of \$145 million and funds 455 full-time equivalent positions.

The products and initiatives highlighted in this submission not only reflect our agency's accomplishments in the past year, but also outline initiatives that will enable us to continue to improve processes and products into the future. This request will allow us to meet the challenges that come with the rapid changes and innovations in transportation as we continue to be the world's preeminent safety agency. We will use the requested resources to fill new positions that address emerging technologies, data analysis, and process improvements, as well to invest in crucial staff training and development. These resources will also allow us to address critical needs in information technology modernization and development in order to

strengthen our data governance/analysis and keep pace with continuing advances in technology and cybersecurity.

As an agency, we are excited to invest our resources in people and processes that help make transportation safer for the public. Full funding at the requested level of \$150 million provides sustained support of this mission.

Sincerely,



Jennifer Homendy  
Chair

Enclosures

cc: The Honorable Tom Cole  
Chair  
Subcommittee on Transportation, Housing and  
Urban Development, and Related Agencies  
Committee on Appropriations  
US House of Representatives

The Honorable Mike Quigley  
Ranking Member  
Subcommittee on Transportation, Housing and  
Urban Development, and Related Agencies  
Committee on Appropriations  
US House of Representatives

The Honorable Brian Schatz  
Chair  
Subcommittee on Transportation, Housing and  
Urban Development, and Related Agencies  
Committee on Appropriations  
US Senate

The Honorable Cindy Hyde-Smith  
Ranking Member  
Subcommittee on Transportation, Housing and  
Urban Development, and Related Agencies  
Committee on Appropriations  
US Senate

# National Transportation Safety Board

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## Fiscal Year 2025 Budget Request



National Transportation Safety Board  
490 L'Enfant Plaza, SW  
Washington, DC 20594  
[www.nts.gov](http://www.nts.gov)

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## ABBREVIATIONS, ACRONYMS, AND INITIALISMS

ADS-B	automatic dependent surveillance–broadcast
Amtrak	National Railroad Passenger Corporation
BAC	blood alcohol concentration
BART	Bay Area Rapid Transit
BS	IMO ship registration code for the Bahamas
BZ	IMO ship registration code for Belize
CAROL	Case Analysis and Reporting Online
CDO	chief diversity officer
<i>CFR</i>	<i>Code of Federal Regulations</i>
CH	IMO ship registration code for Switzerland
CIDER	Crash Investigation Data Extraction and Readout
CISO	chief information security officer
CP	Canadian Pacific Railway
CPIC	Capital Planning and Investment Control
CVR	cockpit voice recorder
DEIA	diversity, equity, inclusion, and accessibility
DevOps	software development and IT operations
DIAC	Diversity and Inclusion Advisory Council
DOT	US Department of Transportation
DREAM	Data Recorders, Electronics, and Analysis Management
EEO	equal employment opportunity
Evidence Act	Foundations for Evidence-Based Policymaking Act of 2018

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FAA	Federal Aviation Administration
FDR	flight data recorder
FHWA	Federal Highway Administration
FISMA	Federal Information Security Management Act
FMCSA	Federal Motor Carrier Safety Administration
FOIA	Freedom of Information Act
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FTE	full-time equivalent
FY	fiscal year
HR	IMO ship registration code for Croatia
ICAO	International Civil Aviation Organization
IIC	investigator-in-charge
IMO	International Maritime Organization
IT	information technology
LGBTQIA+	lesbian, gay, bisexual, transgender, queer or questioning, intersex, asexual, plus
MAIIF	Marine Accident Investigators' International Forum
MBTA	Massachusetts Bay Transportation Authority
MEDICS	Medical Information Catalog System
MH	IMO ship registration code for the Marshall Islands
mph	miles per hour
MWL	Most Wanted List of Transportation Safety Improvements
NHTSA	National Highway Traffic Safety Administration

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NL	IMO ship registration code for the Netherlands
NO	IMO ship registration code for Norway
NS	Norfolk Southern Railway
NTEMP S3	North Tarrant Express Mobility Partners Segments 3
NTSB	National Transportation Safety Board
OMB	Office of Management and Budget
OPM	Office of Personnel Management
PA	IMO ship registration code for Panama
PHMSA	Pipeline and Hazardous Materials Safety Administration
PREVIEW	Protected Recording Viewer
PTC	positive train control
PT	IMO ship registration code for Portugal
SA	IMO ship registration code for Saudi Arabia
SAFTI	System for Analysis of Federal Transportation Investigations
SES	Senior Executive Service
SIS	substantially interested State
SL	senior level
SMS	safety management system
SSA	Safe Skies for Africa
SUV	sport utility vehicle
ST	scientific and professional
UAS	unmanned aircraft system (drone)
UP	Union Pacific Railroad

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US	IMO ship registration code for the United States of America
<i>U.S.C.</i>	<i>United States Code</i>
VC	IMO ship registration code for St. Vincent and the Grenadines
VRU	vulnerable road user
WMATA	Washington Metropolitan Area Transit Authority

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## EXECUTIVE SUMMARY

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in the other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The enclosed budget submission reflects the president's request of **\$150 million** for fiscal year (FY) 2025. This funding level is an increase of \$5 million from the FY 2024 president's budget request of \$145 million and funds 455 full-time equivalent (FTE) positions.

Our annual appropriations have increased from \$110.4 million in FY 2018 to \$129.3 million in FY 2023; however, over that time, the increases have primarily provided for annual employee pay increases and required increases in retirement and health insurance benefit contributions. They have not allowed for our staffing levels to increase, nor have they allowed us to address key programmatic goals essential to our mission and congressional mandates.

We have seen tremendous growth and technological advancements in transportation over the last two decades that have increased the complexity of our investigations. To continue as the world's preeminent safety agency, complete our investigations, and develop recommendations that advance safety improvements without delays, we must meet the challenges that come with the rapid changes and innovations in transportation. Therefore, requested resources are critical for the agency to respond to events without affecting the timeliness or quality of our investigations and reports, or our independence. Requested resources will allow us to hire professionals with the required skills, to purchase the tools necessary for those skilled professionals to do their jobs, and to invest in crucial staff training and development. Such resources will also allow us to address critical needs in information technology (IT) development and modernization to keep pace with continuing advances in technology, as well as strengthen our data governance/analysis and cybersecurity efforts, including our ability to meet congressional mandates in these areas.

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**Investing in our Workforce:** The NTSB’s mission of improving transportation safety depends on a workforce of knowledgeable, experienced, and dedicated experts in their respective fields. People are our primary resource, and personnel and payroll costs consume most of our funding. The FY 2025 request of \$150 million is essential to the agency as we strive to achieve and sustain staffing levels that fully support our safety mission and strategic goals and continue efforts to move the agency to data-based, evidence driven operations.

In FY 2023, under a newly hired chief human capital officer (CHCO), we began a review of our workforce to understand future hiring needs across the agency. This review assesses the NTSB’s staffing needs for current investigations, emerging investigative areas, and recent congressional mandates. The review also includes an analysis of ways to strengthen our data-analysis capabilities and address increasing complexity in investigations and support operations. The workforce review will assess our resource needs and help us identify the appropriate allocation of staff, with the goal of further reducing the amount of time it takes to complete our investigations.

Full results of this analysis will not be received until later in FY 2024, but staffing shortfalls are evident now. For example, additional data analysts will be needed throughout the agency because new and enhanced data-collection tools are providing new and more complex data that can be used to develop actionable safety recommendations. Data analysts will also help the NTSB meet new federal requirements for data management and data governance in support of evidence-based decision-making. Additionally, to meet current investigative requirements, the agency needs additional investigative personnel, scientists, experts in safety science, technical writers, administrative and human resource professionals, IT experts, analysts, and other specialists to support frontline investigative personnel with their daily work.

Our FY 2025 request of \$150 million will cover pay-raise costs and provide for 455 FTEs, which is a modest increase toward full staffing, allowing us to fill new positions that address emerging technologies, data analysis, and process improvements. The requested funding will also improve our ability to carry out our critical safety mission now and in the future; to recruit, retain, and develop a highly qualified, specialized, diverse, and inclusive workforce; to prepare the agency for investigations involving emerging transportation technologies and systems; and to meet existing needs and future challenges through data-driven decision-making and agencywide risk management.

**Investing in Data and Technology:** Accomplishing our mission also depends upon improving the quality, quantity, and usefulness of investigation-related data and ensuring our IT systems can securely and effectively address the demands of internal and external users. Without capable IT systems, we

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cannot meet our safety mission. Funding increases in recent years have enabled the agency to make considerable progress in improving the quality, quantity, and usefulness of investigation-related data. This progress results, in part, from implementing and enhancing critical software systems, but we must continue to invest in both hardware and software to maintain our progress.

We continue to upgrade our IT systems and have developed a robust search tool to provide the public with a more comprehensive view of our investigation data, safety recommendations, and dockets. Investigation data from all the modes is now maintained in the System for Analysis of Federal Transportation Investigations (SAFTI). We have also integrated SAFTI with the safety recommendation information currently maintained in a separate database. Efforts now turn to expanding tools for analyzing our safety data with the goal of improving our investigative processes. To effectively conduct our investigations and share information with the public and other stakeholders—crucial steps in implementing our recommendations and improving safety—we require resources to fully optimize SAFTI, enhance our data analytics capabilities, and upgrade and consolidate internal systems and applications.

Along with investment in software development, we must also invest in IT systems that maximize performance and enable continuity of operations, no matter where our work takes us, and continue to meet our mission under unforeseen circumstances. Requested funding is required to maintain, enhance, and upgrade current internal IT and data-processing systems. Various systems, software, and tools are used across the agency to enable investigative processes to be more effective, efficient, and data driven. One example of these systems is the Crash Investigation Data Extraction and Readout (CIDER) system, an application used for processing recorder data. As a mature system, CIDER requires ongoing maintenance and enhancement efforts. The agency also needs to update and upgrade other external systems that the public and stakeholders use to obtain information about NTSB accident investigations, safety recommendations, and transportation safety issues.

We also need to invest in new cybersecurity technologies to protect against, detect, identify, deter, and respond to persistent and increasingly sophisticated malicious cyber campaigns. Additionally, as cybersecurity elements continue to be embedded into the US transportation system, the NTSB's modal investigators will need the capability to identify cyber elements in their casualty analyses, so additional resources will need to be invested in this area as well.

This budget request highlights the FY 2023 accomplishments of all our offices in supporting the agency's work as we continue to be a global leader in promoting transportation safety across the world. These accomplishments include the completion of accident investigation reports, our involvement in

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international investigations, and our efforts in advocating for the adoption of our recommendations. We are proud of these accomplishments, appreciative of the opportunities provided to us, and eager to meet the challenges ahead. Funding at the full request level of \$150 million supports our important mission now and in the future.

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## MISSION AND ORGANIZATION OVERVIEW

Since its creation in 1967 as an accident investigation agency within the newly created US Department of Transportation (DOT), the NTSB's mission has been to determine the probable causes of transportation accidents and incidents and to formulate safety recommendations to improve transportation safety. Our authority currently extends to the following types of accidents:

- All US civil aviation accidents and certain public aircraft accidents.
- Select highway crashes.
- Railroad accidents involving passenger trains and accidents involving freight trains that result in fatalities or significant property damage.
- Major marine casualty accidents and any marine accident involving both a public and a nonpublic vessel.
- Pipeline accidents involving fatalities, substantial property damage, or significant environmental damage.
- Select accidents resulting in the release of hazardous materials in any mode of transportation.
- Select transportation accidents that involve problems of a recurring nature or that are catastrophic, including select commercial space transportation accidents.

In 1974, Congress passed the Independent Safety Board Act, which severed the NTSB's ties to the DOT and authorized the agency to take the following additional actions:

- Evaluate the effectiveness of government agencies involved in transportation safety.
- Evaluate the safeguards used in the transportation of hazardous materials.
- Evaluate the effectiveness of emergency responses to hazardous material accidents.
- Conduct special studies on transportation safety problems.
- Maintain an official US census of aviation accidents and incidents.
- Review appeals from individuals and entities who have been assessed civil penalties by the FAA.
- Decide on appeals of enforcement actions by the FAA and US Coast Guard and certificate denials by the FAA.

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The NTSB also leads US teams assisting in international aviation accident investigations conducted by foreign authorities under the provisions of International Civil Aviation Organization (ICAO) agreements. In 1996, the Aviation Disaster Family Assistance Act assigned the NTSB the additional responsibility of coordinating federal government resources to support local and state governments, disaster relief organizations, and transportation carriers to address the concerns of accident survivors and family members following air carrier accidents that have occurred in the United States or its territories resulting in a loss of life (Title 49 *United States Code* [U.S.C.] section 1136). The rail passenger disaster family assistance provisions of the Rail Safety Improvement Act of 2008 assigned the NTSB similar responsibilities for rail passenger disasters resulting in a loss of life (Title 49 U.S.C. section 1139). In 2018, our reauthorization expanded our family assistance responsibilities, obligating the agency, to the maximum extent practicable, to provide information regarding NTSB investigative processes and products to the families of individuals involved in any accidents we investigate before we provide this information to the media (Title 49 U.S.C. section 1140). Currently, the primary focus of agency efforts is to ensure compliance for accidents involving fatalities.

As of September 30, 2023, the NTSB has investigated more than 150,000 aviation accidents and incidents in the United States, assisted more than 7,700 foreign investigations involving US-registered aircraft, and investigated thousands of surface transportation accidents.<sup>1</sup> On call 24 hours a day, 365 days a year, our investigators have traveled throughout the United States and to every corner of the world to do their work. Because of this dedication, we are recognized as the world's leading accident investigation agency.

We have issued 15,406 safety recommendations derived from the findings of NTSB investigations to 2,482 recipients in all transportation modes. Since 1990, we have published the Most Wanted List of Transportation Safety Improvements (MWL), highlighting safety-critical actions that the DOT modal administrations, the US Coast Guard, the states, and other entities should take to help prevent accidents, minimize injuries, and save lives. The MWL will be retired at the end of calendar year 2023. Additional information concerning the MWL is provided in Appendix C.

We are not authorized to regulate transportation equipment, personnel, or operations, or to initiate enforcement action. However, because of our reputation for objectivity and thoroughness, many safety features currently

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<sup>1</sup> During FY 2023 we did a major review and update of our aviation investigation records, particularly those before 1982. As a result, we have a more accurate number of older agency aviation investigations than we have typically had in the past.

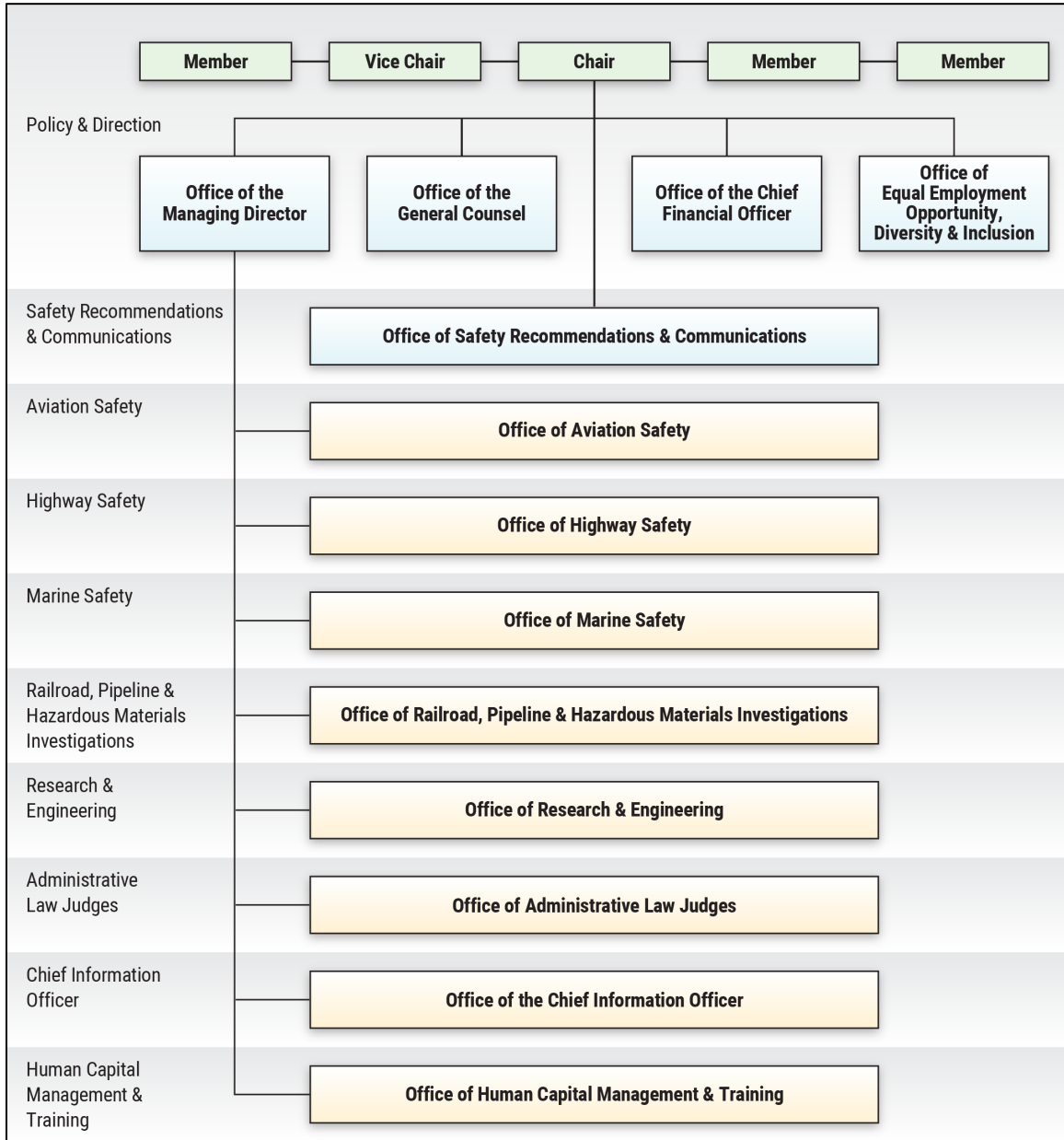
incorporated into airplanes, helicopters, automobiles, commercial motor vehicles, trains, pipelines, marine vessels, and space vehicles, in addition to numerous operational safety measures, had their genesis in NTSB safety recommendations. Additional information concerning the status of our safety recommendations is provided in Appendix D.

Our five-member Board comprises appointees nominated by the president and confirmed by the Senate. A chair (one of the five members, nominated separately to this position by the president and confirmed separately by the Senate) serves as the chief executive officer and chief administrative officer of the NTSB. The president designates another member as vice chair.

The NTSB is headquartered in Washington, DC. We also have staff stationed at offices in Aurora, Colorado; Anchorage, Alaska; and Federal Way, Washington; as well as other locations throughout the country.



## Program Activity and Organization Structure



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## RESOURCE REQUIREMENTS

### Appropriations Language

#### ***Salaries and Expenses – 950310***

“For necessary expenses of the National Transportation Safety Board, including hire of passenger motor vehicles and aircraft; services as authorized by 5 U.S.C. 3109, but at rates for individuals not to exceed the per diem rate equivalent to the rate for a GS-15; uniforms or allowances therefore, as authorized by law (5 U.S.C. 5901-5902), \$150,000,000 of which not to exceed \$2,000 may be used for official reception and representation expenses.”

#### ***Emergency Fund – 950311***

No new funding is being requested for the Emergency Fund in FY 2025.

## NATIONAL TRANSPORTATION SAFETY BOARD SALARIES AND EXPENSES

### *Obligations by Object Classification (\$000s)*

Identification Code: 95-0310-0-1-407	FY 2023	FY 2024	FY 2025
<b>Personnel Compensation &amp; Benefits:</b>			
11.1 Permanent Positions	59,861	63,713	71,691
11.3 Positions Other Than Permanent	2,354	3,201	3,449
11.5 Other Personnel Compensation	2,907	3,297	3,740
Total Personnel Compensation	65,122	70,211	78,880
12.1 Personnel Benefits	23,244	25,145	28,597
<b>Subtotal, Personnel Compensation &amp; Benefits</b>	<b>88,366</b>	<b>95,356</b>	<b>107,477</b>
<b>Other Than Personnel Compensation &amp; Benefits:</b>			
21.0 Travel & Transportation of Persons	2,879	3,265	3,622
22.0 Transportation of Things	148	151	154
23.1 Rental Payments to General Services Administration	10,141	10,592	10,813
23.2 Rental Payments to Others	2,443	140	156
23.3 Communications, Utilities, & Miscellaneous Charges	1,013	1,056	1,173
24.0 Printing & Reproduction	102	106	117
25.0 Other Contractual Services	18,014	17,541	19,585
26.0 Supplies & Materials	902	939	1,043
31.0 Equipment	4,196	154	5,860
99.9 Total Obligations	128,204	129,300	150,000
<b>Personnel Summary:</b>			
FTE Employment	409	418	455

**NATIONAL TRANSPORTATION SAFETY BOARD  
SALARIES AND EXPENSES**

***Obligations by Program Activity (\$000s)***

<b>Identification Code: 95-0310-0-1-407</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
Policy and Direction	25,112	29,345	32,974
Safety Recommendations & Communications	9,262	9,307	10,736
Aviation Safety	34,812	34,971	40,300
Information Technology & Services	9,679	9,716	11,015
Research & Engineering	14,701	15,266	18,345
Administrative Law Judges	2,283	2,298	2,775
Highway Safety	9,704	9,746	11,219
Marine Safety	5,738	5,766	6,762
Railroad, Pipeline & Hazardous Materials Investigations	11,595	11,661	13,697
Human Capital Management & Training	5,318	1,224	2,177
<b>Total</b>	<b>128,204</b>	<b>129,300</b>	<b>150,000</b>

## NATIONAL TRANSPORTATION SAFETY BOARD SALARIES AND EXPENSES

### *FTE by Program Activity*

Identification Code: 95-0310-0-1-407	FY 2023	FY 2024	FY 2025
<b>Policy and Direction</b>	<b><u>79</u></b>	<b><u>78</u></b>	<b><u>84</u></b>
Chair, Vice Chair, Board Members	14	13	16
Office of the Managing Director	34	35	35
Office of the General Counsel	8	7	9
Office of the Chief Financial Officer	19	21	21
Office of Equal Employment Opportunity, Diversity & Inclusion	4	2	3
<b>Safety Recommendations &amp; Communications</b>	<b>32</b>	<b>32</b>	<b>33</b>
<b>Aviation Safety</b>	<b>113</b>	<b>114</b>	<b>123</b>
<b>Information Technology &amp; Services</b>	<b>28</b>	<b>26</b>	<b>30</b>
<b>Research and Engineering</b>	<b>43</b>	<b>46</b>	<b>48</b>
<b>Administrative Law Judges</b>	<b>8</b>	<b>11</b>	<b>11</b>
<b>Highway Safety</b>	<b>32</b>	<b>30</b>	<b>34</b>
<b>Marine Safety</b>	<b>19</b>	<b>20</b>	<b>23</b>
<b>Railroad, Pipeline &amp; Hazardous Materials Investigations</b>	<b>38</b>	<b>47</b>	<b>47</b>
<b>Human Capital Management &amp; Training</b>	<b>17</b>	<b>14</b>	<b>22</b>
<b>Total</b>	<b>409</b>	<b>418</b>	<b>455</b>

## NATIONAL TRANSPORTATION SAFETY BOARD SALARIES AND EXPENSES

### Analysis of Changes – FY 2024 to FY 2025 (\$000s)

- \$ 10,454 Staffing Changes  
 The requested funding level provides for an FTE level of 455, which is 37 above the FTE level supported by the FY 2024 annualized continuing resolution funding level.
- \$ 2,614 Pay Increase  
 Funds to cover the prorated impact of an FY 2025 2-percent pay raise effective January 1, 2025.
- \$ 533 Other Personnel Compensation Increase  
 Funds to cover other personnel-related compensation, including the FY 2025 increase to employee health benefits contributions.
- \$ 457 Nonpay Inflation  
 Inflation of 2 percent is used for nonpay inflation based on economic assumptions for discretionary programs.
- \$ 6,642 Operational Increase  
 Increases in General Services Administration lease expenses, contractual services, IT system modernization and investigative equipment expenses.
- \$ 20,700 Total

### Summary of Changes

- \$ 129,300 FY 2024 Level (supports 418 FTEs)
- \$ 20,700 Total Increase
- \$ 150,000 FY 2025 Level (supports 455 FTEs)

## NATIONAL TRANSPORTATION SAFETY BOARD SALARIES AND EXPENSES

### *Non-Senior Executive Service/Senior Level/Scientific and Professional Awards*

The following information outlines estimated non-Senior Executive Service/senior level/scientific and professional (non-SES/SL/ST) awards spending as a percentage of non-SES/SL/ST salary spending for FY 2023, FY 2024, and FY 2025.

	<b>Non-SES/SL/ST Salary Spending (\$000s)</b>	<b>Awards</b>
FY 2023 Actuals	\$57,234	2.3%
FY 2024 Estimate	\$61,095	2.3%
FY 2025 Request	\$69,155	2.3%

## POLICY AND DIRECTION

	(\$000s)	FTEs
FY 2024 Estimate	\$29,345	78
FY 2025 Request	\$32,974	84
Increase/Decrease	\$3,629	6

### Overview of the Request

The funding level for this program reflects the prorated impact of a pay raise of 2 percent projected for January 1, 2025, a 2 percent nonpay inflation factor, an increase in agency program investments, and an increase in the agency's contribution to employee health benefits. An increase of 6 FTEs is supported by this funding level.

### Program Description

The policy and direction program resources fund the offices of the chair, vice chair, and members of the Board, as well as the offices of the managing director, general counsel, chief financial officer, and equal employment opportunity, diversity, and inclusion. Collectively, these offices provide overall leadership, management, and direction for the NTSB.

#### ***Chair, Vice Chair, and Board Members***

The chair serves as the chief executive officer and chief administrative officer for the agency. The chair, vice chair, and Board members preside at NTSB Board meetings; review and approve NTSB reports, safety studies, and safety recommendations; provide appellate review of FAA certificate and certain civil penalty actions, as well as US Coast Guard license actions; and act as spokespersons at accident scenes. They also advocate for specific safety recommendations with the transportation community, other federal agencies, state and local governments, and the public.

#### ***Office of the Managing Director***

The Office of the Managing Director assists the NTSB chair in performing the agency's executive, investigative, and administrative functions. The office coordinates the activities of the entire staff, manages the agency's day-to-day operation, develops policies, and recommends plans to achieve program objectives. The managing director acts as the agency's chief operating officer and is responsible for the overall leadership, direction, and performance of the agency. In this capacity, the managing director oversees



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two deputy managing directors, the director of the Office of Administrative Law Judges, the chief data scientist, and the Occupational Safety and Health Division.

The principal deputy managing director for management and operations is responsible for managing and overseeing the agency's noninvestigative operations and administrative programs, including the following offices and divisions:

- Office of the Chief Information Officer
- Office of Human Capital Management and Training
- Executive Secretariat Division
- Administrative Operations and Security Division
- Transportation Disaster Assistance Division

The deputy managing director for investigations oversees the agency's transportation investigations and functions. All modal investigative offices, the Office of Research and Engineering, and the Special Operations Division report to this deputy.

The Office of the Managing Director develops and oversees the implementation of agency-level performance and operating plans, including initiatives and results to improve agency processes and accountability. Technical staff within the office collaborate with other agency leaders to develop the agency's strategic plan and devise metrics for measuring the effectiveness, timeliness, and quality of agency initiatives to meet strategic goals. The office also evaluates programs and makes recommendations to the NTSB chair aimed at improving organizational efficiency, effectiveness, and policy compliance.

The chief data scientist supports the agencywide effort to better use data for strategic decision-making and is currently designated as the agency's acting chief data officer, as required by the Foundations for Evidence-Based Policymaking Act of 2018 (Evidence Act). The chief data scientist also chairs the agency's Data Governance Body and is responsible for applying machine learning and advanced data science methods and techniques to support agency investigations and research; analysis and reporting of emerging transportation safety trends; and agency operational performance monitoring.

The Occupational Safety and Health Division is responsible for ensuring compliance with federal, state, and local statutory and regulatory mandates,

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guidelines, standards, and procedures, and for ensuring safe working conditions for NTSB employees (both in the office and on scene during investigations). This includes planning, implementing, and evaluating the agency's occupational safety and health program to reduce the potential for human and economic losses associated with our work on scene at incidents and accidents.

The Executive Secretariat Division coordinates all official written material sent to or from the agency. The division is responsible for managing Board voting processes in accordance with the Government in the Sunshine Act and agency directives; issuing *Federal Register* notices; overseeing the coordination of executive-level reviews of Board products, such as investigation reports and policy documents; controlling, monitoring, processing, and distributing all official agency correspondence; archiving official agency records related to Board actions; and standardizing and providing procedural guidance to Board members, the managing director, office directors, and their staffs. Division services may also include writing and editing correspondence, agencywide reports, and other documents for the Board, the managing director, and agency offices and divisions.

The Administrative Operations and Security Division manages the NTSB's facilities and building management program, including physical and personnel security, property and space management, facilities maintenance, mail services, and fleet vehicle transportation.

The Transportation Disaster Assistance Division ensures that the agency meets its statutory obligations under Title 49 U.S.C. sections 1136, 1139, and 1140. These obligations include responding to all major aviation accidents and rail accidents investigated by the NTSB and coordinating federal government resources to support local and state governments, disaster relief organizations, and transportation carriers to address the concerns of survivors, families, and friends. The division also supports the agency's peer support and stress awareness programs as part of the employee assistance program. Additional information on division activities is provided in Appendix E.

The Special Operations Division coordinates the agency's involvement in special access programs and serves as the primary interagency liaison with the Federal Bureau of Investigation; federal, state, and local emergency response organizations; and other pertinent first responder agencies. This division also provides outreach to public safety agencies to assist them to better prepare their response to transportation disasters. The division also oversees the Response Operations Center, which provides support 24 hours a day, 365 days a year for agencywide operational requirements, including accident launches and collecting and disseminating information related to transportation accidents and incidents. The division manages the agency's evidence

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management program and the unmanned aircraft systems (UAS) program to support accident scene documentation. The division coordinates the NTSB's Official Passport Program and ensures the agency follows all Department of State protocols and processes for obtaining and maintaining official passports. The division is responsible for the agency's continuity of operations plans and interfacing with the Federal Emergency Management Agency to ensure readiness and compliance.

### ***Office of the General Counsel***

The General Counsel serves as the chief legal officer of the agency, ensures the proper implementation of the NTSB's statutory responsibilities relating to transportation safety, and serves as the Designated Agency Ethics Official. Specifically, the Office of the General Counsel advises NTSB officials on legal and policy issues arising under the NTSB's governing legislation and regulations, and on other administrative law matters. The office also reviews pilots' appeals of certificate actions and certain civil penalties and mariner license actions, acting on behalf of the agency on particular procedural aspects of enforcement cases; administers the agency's ethics program; reviews contracts and acquisition documents; makes release determinations of official information for use in litigation not involving the United States; ensures compliance with statutes concerning public access to information through publication of NTSB decisions and releases under the Freedom of Information Act (FOIA); drafts all rulemaking and interpretive guidance; represents the NTSB (or assists the Department of Justice) in administrative or judicial forums in personnel matters, in litigation arising from the agency's accident investigation responsibilities, and in other matters in which the agency has an interest; and provides internal legal assistance and guidance regarding all other aspects of NTSB accident and incident investigations, such as hearings, appearances as witnesses, the acquisition of evidence by subpoena and other means, and taking depositions.

### ***Office of the Chief Financial Officer***

The Office of the Chief Financial Officer manages NTSB financial resources, develops the agency's budget requests for submission to Office of Management and Budget (OMB) and Congress, and executes the budget for resources Congress appropriates to the NTSB. The office also prepares the agency's financial statements as required by the Accountability of Tax Dollars Act and oversees property and inventory control programs and the NTSB's travel and charge card programs. The office is responsible for agency accounting and financial policy and for overseeing internal controls to comply with the requirements of the Federal Managers' Financial Integrity Act. Additionally, the office manages the NTSB acquisition program, awards and

administers contracts and agreements, manages the purchase card program, awards real property leases for both the NTSB headquarters and regional offices, and provides customers with acquisition guidance and training.

### ***Office of Equal Employment Opportunity, Diversity, and Inclusion***

The Office of Equal Employment Opportunity, Diversity, and Inclusion (EEODI) advises and assists the chair and NTSB office directors in carrying out their responsibilities related to Title VII of the Civil Rights Act of 1964, as amended, and other laws, executive orders, and regulatory guidelines affecting diversity development and the processing of Equal Employment Opportunity (EEO) complaints and reasonable-accommodation requests. These services are provided to managers, employees, and job applicants through a combination of full-time staff, collateral-duty employees, and volunteer managers of our special-emphasis programs. To maintain the integrity and impartiality of the agency's EEO complaints resolution program, external EEO counselors and investigators are contracted to help employees and job applicants who file formal or informal complaints of alleged discrimination. In addition, the office manages the agency's alternative dispute resolution and American Sign Language interpretation programs. Office services include providing required educational compliance training to NTSB staff; raising diversity, equity, inclusion, and accessibility (DEIA) awareness at the agency; engaging in targeted outreach; helping with internal recruitment initiatives; and providing career enhancement advisory services.

## SAFETY RECOMMENDATIONS AND COMMUNICATIONS

	(\$000s)	FTEs
FY 2024 Estimate	\$9,307	32
FY 2025 Request	\$10,736	33
Increase/Decrease	\$1,429	1

### Overview of the Request

The funding level for this program reflects the prorated impact of a pay raise of 2 percent projected for January 1, 2025, a 2 percent nonpay inflation factor, an increase in agency program investments, and an increase in the agency's contribution to employee health benefits. An increase of 1 FTE is supported by this funding level.

### Program Description

The Office of Safety Recommendations and Communications comprises five divisions: Media Relations, Government and Industry Affairs, Safety Advocacy, Safety Recommendations, and Digital Services. The office ensures that information regarding NTSB investigations, activities, advocacy, and safety recommendations is accurately and effectively communicated to a range of stakeholders, including elected officials and their staffs at the federal, state, and local levels; industry representatives; media; and the public. The office's mission begins at the scene of an accident, continues through the NTSB accident investigation and the resulting issuance of one or more safety recommendations, and is maintained through advocacy efforts to secure favorable action on safety recommendations. The office uses various communication channels, such as print, television, digital, and social media to facilitate robust public and stakeholder engagement.

#### ***Media Relations Division***

The Media Relations Division is responsible for—

- Serving as a national media spokesperson for the NTSB.
- Serving as the primary point of contact for the release of investigative and other agency information to the public through the media.
- Providing media relations support for Board members and investigators during and after a major accident launch.

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- Responding to media inquiries, including facilitating interviews with NTSB subject matter experts, developing responses to queries, and crafting key messages.
  - Providing formal media relations training for Board members and investigators.
  - Providing counsel to senior leadership regarding public and media perceptions of NTSB actions and policies.
  - Providing strategic and tactical support for forums, meetings, roundtables, and other special investigative events.
  - Providing guidance and training to members of the transportation industry to align their communications with the NTSB party agreement for investigations.
  - Supporting the Safety Advocacy Division and its programs.

### ***Government and Industry Affairs Division***

The Government and Industry Affairs Division is responsible for–

- Informing Congress, other federal agencies, and state and local governments about NTSB activities and advising the chair, vice chair, Board members, and staff on congressional and legislative matters.
- Coordinating responses to requests for information and assistance from Congress, the White House, the Government Accountability Office, other federal agencies, and state and local governments through correspondence and briefings.
- Supporting the chair, vice chair, Board members, and staff with legislative testimony.
- Providing accident launch support to the chair, vice chair, Board members, and investigators.
- Monitoring federal and state legislative activity related to NTSB safety recommendations.
- Coordinating the development of NTSB legislative proposals and providing technical assistance to Congress and states drafting legislation.
- Supporting modal offices in planning and executing forums and roundtables.
- Helping staff identify appropriate resources in state and local government to support investigations and other projects.

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- Supporting the Safety Advocacy Division and its programs.

### ***Safety Advocacy Division***

The Safety Advocacy Division is responsible for–

- Developing the NTSB’s advocacy strategy, both nationally and at the state level, and working with Board members and NTSB staff to promote action on safety recommendations.
- Collaborating with the Government and Industry Affairs Division to obtain support for programs and legislation at state and local levels consistent with NTSB safety recommendations.
- Disseminating safety information and increasing public awareness of NTSB activities in transportation safety through conference presentations, webinars, the “Safety Compass” blog, and social media.
- Developing and maintaining contact with safety advocacy organizations and providing information on NTSB activities and safety recommendations as part of the division’s outreach efforts.

### ***Safety Recommendations Division***

The Safety Recommendations Division is responsible for–

- Evaluating responses from safety recommendation recipients and drafting classification response letters for Board member review and approval.
- Working with modal offices to develop safety recommendations that are actionable, effective, and measurable, based on the findings of accident investigations.
- Supporting and tracking safety recommendation implementation.
- Maintaining the safety recommendations database, which includes information on recommendation recipients, status, adoption, and implementation.
- Analyzing safety recommendation status and implementation and generating summary reports.
- Supporting the Safety Advocacy Division with its advocacy programs.

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## ***Digital Services Division***

The Digital Services Division is responsible for–

- Engaging the public and stakeholders using digital media.
- Implementing digital strategies to highlight the NTSB’s investigative and safety advocacy messages.
- Managing digital communications programs and platforms (website, social media, and visual media) to ensure consistent messaging across various digital channels and agency compliance with digital government policies and orders.
- Providing leadership and guidance regarding digital technology adoption for agency communications programs.
- Producing videos and animations, providing photography support, developing original graphics, and editing images in support of agency activities such as accident launches, investigative product development, and advocacy, among others.

## **Accomplishments and Ongoing Efforts**

### ***Media Relations Division***

Between October 1, 2022, and September 30, 2023, Media Relations staff published 76 news releases and 6 media advisories, which resulted in more than 455,300 separate news articles or television and radio segments and more than 2.4 million page views on [nts.gov](https://www.nts.gov). These mentions included information about a series of serious runway incursions at major airports across the nation; the Norfolk Southern Railway (NS) train derailment with subsequent hazardous material release and fires in East Palestine, Ohio; the combination-vehicle fire and Interstate 95 overpass collapse in Philadelphia, Pennsylvania; and the hull failure of the *Titan* submersible. Staff also made 701 posts to X during this period, gathering more than 11 million views.

The division provided training on media relations and response communications to 45 NTSB staff and more than 400 transportation industry communicators in FY 2023. Venues included a 2-day workshop in Washington, DC; training sessions in Seattle, WA; Dallas, TX; and Chicago, IL; and a guest lecture at American University in Washington, DC.

### ***Government and Industry Affairs Division***

The Government and Industry Affairs Division has initiated outreach to congressional, federal, state, and local officials who expressed an interest in



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improving transportation safety. It has arranged numerous briefings by Board members and investigators and has responded to requests for information regarding NTSB investigations and safety recommendations.

In FY 2023, the division supported development of the Board's legislative proposal to Congress to reauthorize the agency through FY 2028. Staff also prepared the chair to testify at two congressional hearings regarding aviation safety and freight rail safety. The division also supported Board member and staff testimony and legislative advocacy on impairment in Connecticut, Hawaii, New York, North Carolina, and Washington; motorcycle helmet use in Connecticut, Maryland, Nebraska, and Tennessee; pedestrian safety in Maryland; speed enforcement in Connecticut; distracted driving in Missouri, North Carolina, and South Carolina; occupant protection in New Hampshire; and school bus safety in Oregon. The division supported major accident launches and general aviation regional investigations. As these investigations continue, the division updates Congress, as well as state and local officials, and serves as the main point of contact for additional outreach and inquiries.

### ***Safety Advocacy Division***

From October 1, 2022, through September 30, 2023, the Safety Advocacy Division helped develop, execute, and promote more than 75 advocacy and outreach activities related to the final (2021-2023) MWL and other critical safety recommendations. Major activities included the following:

- Supporting the chair's safety summits on highway and aviation safety.
- Producing the Safe Systems Roundtable Series
- Producing the National Distracted Driving Coalition webinar series and national summit.
- Participating in the Flight Data Monitoring Roundtable at the National Business Aviation Association National Conference.
- Creating the ".05 BAC [blood alcohol concentration] Legislative Primer" webinar.
- Hosting the Communicating and Connecting with Underserved Communities webinar series.
- Developing and hosting motorcycle safety webinars.
- Creating campaigns for National Distracted Driving Awareness Month, Pedestrian Safety Month, National Teen Driver Safety Week, National Child Passenger Safety Week, Rail Safety Week, and School Bus Safety Week.

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The division identified and promoted speaking opportunities for Board members and modal office staff at national conferences and industry meetings, including the 2023 National Lifesavers Conference, the National Black Caucus of State Legislators Annual Conference, and the 32nd World Traffic Safety Symposium. Staff prepared legislative testimony related to MWL issue areas and briefed state representatives on highway safety issues.

The division used its social and digital platforms to share information related to the NTSB's advocacy work, MWL-related activities, and investigative outcomes and lessons learned with stakeholders and agency staff. Staff sent 92 e-mail notifications to more than 240,000 stakeholders. The division developed hundreds of social and digital media products promoting the agency's safety messages and increased followers across all platforms, reaching more than 2,024,000 people via X, Facebook, LinkedIn, Instagram, YouTube, and Flickr. Staff wrote or coordinated the posting of 15 blogs and produced four episodes of the "Behind-the-Scene @ NTSB" podcast, which highlighted agency activities, staff, and programs. The division also supported the development of webinars on MWL topics specific to unique audiences and recommendation recipients, such as webinars on teen driving safety, collision avoidance technology, and motorcycle safety.

### ***Safety Recommendations Division***

From October 1, 2022, through September 30, 2023, the Safety Recommendations Division reviewed and analyzed 287 responses from recommendation recipients and developed recommendation classification responses for Board review and approval. Staff generated 40 follow-up letters for recommendation recipients who had not responded to NTSB safety recommendations and assisted the modal offices in developing and issuing 60 new safety recommendations resulting from 12 investigation reports and studies. In addition, the division developed numerous reports and data summaries on specific recommendation topics to support NTSB Board members, other agency staff, the media, and the public.

Outreach activities in FY 2023 included meetings to discuss open recommendations with government and industry organizations, including the following:

- AAA
- Airlines for America
- American Association of Motor Vehicle Administrators
- Cirrus Aircraft
- Consumer Product Safety Commission
- Experimental Aircraft Association

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- FAA
  - Federal Highway Administration (FHWA)
  - Federal Motor Carrier Safety Administration (FMCSA)
  - Federal Railroad Administration (FRA)
  - Federal Transit Administration (FTA)
  - International Code Council
  - Maryland Motor Vehicle Administration
  - MITRE
  - Motorcycle Industry Council
  - National Center for Driving While Impaired Courts
  - National Center for Health Statistics
  - National Highway Traffic Safety Administration (NHTSA)
  - National Weather Service
  - Office of the Secretary of Transportation
  - Pennsylvania Department of Transportation
  - Pennsylvania Turnpike Commission
  - Pipeline and Hazardous Materials Safety Administration (PHMSA)
  - Regional Airline Association
  - SAE
  - Texas Department of Transportation
  - US Coast Guard
  - US Tire Manufacturer's Association
  - Washington Metropolitan Area Transit Authority (WMATA)

### ***Digital Services Division***

In FY 2023, the Digital Services Division supported 3 virtual Board meetings, 1 investigative hearing, and 12 other NTSB-led events. Staff completed over 400 graphics and illustrations for use in reports and other products; managed 10 print publication requests; produced more than 68 videos, podcasts, and live video streams; and fulfilled more than 800 website update requests.

The division began the next phase of the agency's branding and design standards project, which provides guidance on annotating and labeling images used in investigation reports and other products to optimize and standardize those graphic elements.

The division conducted an audit of the agency's customer service processes to better align with OMB Memorandum M-23-22, "Delivering a Digital-First Public Experience," and to meet the agency's FY 2023 strategic performance metric to establish a digital services customer experience improvement strategy. The division produced a benchmarking report on the

current state and made recommendations to improve customer service processes and implement customer-focused improvements. The division also worked with the NTSB's Office of General Counsel to obtain generic clearance from OMB to collect qualitative feedback on agency service delivery.

The Digital Services Division continues to work closely with the Office of the Chief Information Officer to improve the intuitiveness and functionality of the public-facing Case Analysis and Reporting Online (CAROL) system, which provides access to all our recommendations and most of our investigations.

## AVIATION SAFETY

	(\$000s)	FTEs
FY 2024 Estimate	\$34,971	114
FY 2025 Request	\$40,300	123
Increase/Decrease	\$5,329	9

### Overview of the Request

The funding level for this program reflects the prorated impact of a pay raise of 2 percent projected for January 1, 2025, a 2 percent nonpay inflation factor, an increase in agency program investments, and an increase in the agency’s contribution to employee health benefits. An increase of 9 FTEs is supported by this funding level.

### Program Description

The mission of the Office of Aviation Safety includes the following:

- Investigate all air carrier, commuter, and air taxi accidents and certain serious incidents; fatal and nonfatal general aviation accidents and serious incidents; UAS, advanced air mobility, and public aircraft accidents and serious incidents; and commercial space launch/reentry accidents.
- Participate in the investigation of aircraft accidents that occur in foreign countries involving US carriers, US-manufactured or -designed equipment, or US-registered aircraft, to fulfill US obligations under ICAO agreements.
- Investigate safety issues that extend beyond a single accident to examine specific aviation safety problems from a broader perspective.

The Office of Aviation Safety conducts investigative activities through five specialty divisions based in Washington, DC, and a regional investigation management structure comprising four regions. Investigators are located throughout the country. International aviation activities are coordinated from the Washington, DC, office.

As applicable for domestic accident and incident investigations, a specialist in operational factors, aviation engineering, human performance, survival factors, or other organizational element may act as a group chair on a major investigation to examine issues in their specialty area. Group chairs lead

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their respective groups in the technical investigation of an accident under the direction of the investigator-in-charge (IIC) and produce a factual report that is placed in the agency's public docket. They also produce analytical reports that are used to develop the draft accident report and proposed safety recommendations. NTSB technical specialists may also provide specialized assistance through the US-accredited representative in foreign accident and incident investigations.

### ***Air Carrier and Space Investigations Division***

The Air Carrier and Space Investigations Division performs the following functions:

- Provides an IIC for air carrier domestic aircraft accident and incident investigations, certain public aircraft accidents and incidents, commercial space launch/reentry accidents, and UAS accident and incident investigations.
- Coordinates the preparation of comprehensive aviation accident and incident reports and manages aviation investigative hearings, forums, and conferences related to air carrier operations.
- Coordinates and supervises the efforts of NTSB group chairs and external investigation participants provided by industry, other government agencies, and foreign authorities (for US investigations involving foreign-operated, -registered, -manufactured, or -designed aircraft).
- Provides accredited representatives to assist in the investigation of civil aviation accidents that occur in other countries. (The accredited representative informs domestic aviation interests of the progress of an investigation while providing needed technical expertise, as requested, to foreign accident investigation counterparts. The accredited representative also informs FAA and US industry representatives of issues that may affect US aviation safety, or the safety of aircraft or aircraft components manufactured in the United States.)
- Develops investigative techniques and strategies for emerging transportation industries to improve safety. Current areas of development include increasing proficiency in investigating accidents and incidents involving UAS operations, commercial space launch and reentry operations, and advanced air mobility vehicle operations in the US National Airspace System, as well as using small UAS technology to document accident scenes.

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### ***Operational Factors Division***

The Operational Factors Division examines issues related to air traffic control, flight operations, and meteorology, such as the following:

- Air traffic control facilities, procedures, and flight handling, including developing flight histories and animations from air route traffic control centers and terminal facility radar records.
- Operations of the air carrier or the UAS operator; training, experience, and operational performance of flight crews or UAS and advanced air mobility pilots; and FAA surveillance of flight operations.
- Meteorological/environmental conditions that may have caused or contributed to an accident, and pertinent meteorological products, procedures, and services provided by government and industry.
- Commercial space crewmember training, experience, and operational performance.

### ***Aviation Engineering Division***

The Aviation Engineering Division examines issues related to powerplants (engines), structures, systems, system safety, and maintenance, such as the following:

- Powerplant components, including the airworthiness of aircraft engines and propellers.
- Integrity of aircraft structures and flight controls, including the adequacy of design and certification.
- Airworthiness of aircraft flight controls and electrical, pneumatic, hydraulic, and avionics systems.
- Hazards and associated safety risks introduced by aircraft equipment failures, including the adequacy of design and certification.
- Service history and maintenance of aircraft systems, structures, and powerplants.
- Airworthiness of helicopters, including powerplants, structures, and control systems.
- Commercial spacecraft engines, structure, and systems.

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## ***Human Performance and Survival Factors Division***

Human performance specialists assess the knowledge, experience, training, and physical abilities of those whose actions may have caused or contributed to an accident or incident. They review the adequacy of established procedures, examine the work habit patterns and interrelationships among crewmembers and managers to assess organizational factors and safety culture, and investigate the ergonomics of equipment design and the potential effects of that design on operator performance. A human performance investigation may also include an assessment of sleep and rest cycles, the use of alcohol, and the use of other impairing drugs.

Survival factors specialists examine factors that affect the survival of those involved in accidents, including the causes of injuries sustained by occupants of the aircraft or by others. They also examine safety procedures, search-and-rescue operations, crashworthiness, equipment design, emergency response and escape, crewmember emergency procedures training, and airport operations and certification.

## ***Writing and Editing Division***

The staff of the Writing and Editing Division manage the development of, write, and edit aviation investigation reports. Staff also write, analyze, and edit safety alerts, responses to notices of proposed rulemaking, and general correspondence related to aviation. In addition, the division manages the NTSB's aviation accident database.

## ***Regional Offices***

Although regional accident/incident investigations may be smaller in scope than those led by IICs in the Air Carrier and Space Investigations Division, they are conducted in a similar manner. Often, these investigations are assigned to a single aviation safety investigator who gathers detailed information and works with party representatives and select subject matter specialists to determine the probable cause of the accident. During each investigation, these investigators consider ways to prevent similar accidents from occurring in the future through a more immediate and informal solution (known as a safety accomplishment) or through the formal safety recommendation process. In addition, the investigators often support major accident investigations and may identify accidents that have broader safety issues to be addressed in a forum, at a Board meeting, or through a safety research report. In these cases, additional staff from headquarters are often assigned to assist regional investigators in gathering the facts, developing the



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analysis, and drafting the final report. A map showing the four regions is provided in Appendix F.

### ***Administrative Support Division***

The Administrative Support Division is responsible for processing budget, travel, payroll, personnel, timekeeping, procurement, contracting, and purchase card actions for the office.

## **Accomplishments and Ongoing Efforts**

Office accomplishments include issuing products related to transportation safety arising from completed and ongoing investigations. Products completed between October 1, 2022, and September 30, 2023, are highlighted below, along with information about other efforts and focus areas important to our mission.

### ***Investigation Reports***

Investigation reports are issued for accident or incident investigations and may contain a determination of probable cause and safety recommendations, depending upon the scope of the investigation and the safety issues identified. For select, larger scale investigations, the office launches an investigation team and presents a comprehensive investigation report to the Board. Investigations that are limited in scope are primarily intended to determine probable cause; the resultant report may be issued by the office director under delegated authority or may be adopted by the Board. A report containing only safety recommendations can be issued at any time during an investigation. If the Board determines that a recommended course of action requires immediate attention to avoid imminent loss of life from a similar accident, the safety recommendation is designated "urgent." From October 1, 2022, through September 30, 2023, the Office of Aviation Safety issued a total of 1,274 investigation reports that solely determined probable cause. During this period, the office also published four investigation reports identifying safety issues that led to the issuance of 17 safety recommendations, 6 of which were designated as urgent.

Below are summaries of a sampling of the aviation investigation reports completed between October 1, 2022, and September 30, 2023, arranged by report date.

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**Abrupt Loss of Pitch Control and Water Impact  
de Havilland DHC-3, N725TH  
Mutiny Bay, Washington  
September 4, 2022**

On September 4, 2022, about 3:09 p.m., a De Havilland Canada DHC-3, N725TH, entered a nose-down, near vertical descent, and impacted the water in Mutiny Bay, near Freeland, Washington, and sank. The pilot and nine passengers were fatally injured, and the airplane was destroyed. The scheduled flight was operated by Northwest Seaplanes doing business as Friday Harbor Seaplanes under 14 *Code of Federal Regulations (CFR)* Part 135.

We determined that the probable cause of the accident was the in-flight unthreading of the clamp nut from the horizontal stabilizer actuator barrel due to a missing lock ring, which resulted in the horizontal stabilizer moving to an extreme trailing-edge-down position rendering the airplane's pitch uncontrollable.

We identified the following safety issues in this investigation: (1) a failure in the horizontal stabilizer trim actuator caused the airplane to abruptly pitch down, (2) it is possible for a clamp nut to unscrew from its barrel during DHC-3 airplane operations if the lock ring is not present or is damaged, (3) deformation of the lock ring or its tang can prevent the lock ring from retaining the clamp nut, (4) a secondary retention feature for the DHC-3 horizontal actuator assembly clamp nut is necessary, (5) maintenance personnel should not install moisture seals in the horizontal stabilizer actuator, which deviate from manufacturer's maintenance procedures, and (6) clear and concise inspection and overhaul criteria regarding the assembly of the horizontal stabilizer actuator are critical to prevent its failure.

The NTSB issued new safety recommendations to the FAA, Viking Air, and Transport Canada, which is the regulator for the state of design and manufacture of the DHC-3. (Two urgent recommendations were issued on October 26, 2022, early in the investigation. See below for more information.)

Recommendations: 8 new  
Report Date: September 29, 2023

**Runway Excursion  
McDonnell Douglas DC-9-87 (MD-87), N987AK  
Brookshire, Texas  
October 19, 2021**

On October 19, 2021, about 10:00 a.m., a McDonnell Douglas DC-9-87, N987AK, operated by 987 Investments LLC, overran the departure end of

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runway 36 at Houston Executive Airport (TME), Brookshire, Texas, after the crew executed a rejected takeoff. Of the 23 passengers and crew onboard the airplane, two passengers received serious injuries and one received minor injuries. A postcrash fire ensued, and the airplane was destroyed. The airplane was operating as a 14 *CFR* Part 91 flight from TME to Laurence G. Hanscom Field Airport, Boston, Massachusetts.

We determined that the probable cause of the accident was the jammed condition of both elevators, which resulted from exposure to localized, dynamic high wind while the airplane was parked and prevented the airplane from rotating during the takeoff roll. Also causal was the failure of Everts Air Cargo, the pilots' primary employer, to maintain awareness of Boeing-issued, required updates for its manuals, which resulted in the pilots not receiving the procedures and training that addressed the requirement to visually verify during the preflight checks that the elevators are not jammed.

As a result of the NTSB's investigation of a similar accident in Ypsilanti, Michigan, in 2019, we issued safety recommendations intended to prevent future occurrences. Because of the age of the airplane, design changes were not possible. However, the FAA is developing a notice to ensure that operators have procedures within their Continuous Airworthiness Maintenance Program defining who is responsible for monitoring the wind that affects parked airplanes and who is responsible for notifying maintenance personnel when conditions could meet or exceed the ground gust criteria specified in the *Aircraft Maintenance Manual*.

Recommendations: None  
Report Date: September 28, 2023

**Impact with a Pole and Building on Takeoff  
Cessna Citation560XLS+, N560AR  
Farmington, Connecticut  
September 2, 2021**

On September 2, 2021, at 9:51 a.m., a Cessna 560XLS+ airplane, N560AR, was destroyed when it was involved in an accident near Farmington, Connecticut. All four airplane occupants (the pilot, copilot, and two passengers) were fatally injured. One person on the ground sustained serious injuries, and three people sustained minor injuries. The airplane was operated as a 14 *CFR* Part 91 personal flight.

We determined that the probable cause of the accident was the pilot-in-command's failure to release the parking brake before attempting to initiate the takeoff, which produced an unexpected retarding force and airplane-nose-

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down pitching moment that prevented the airplane from becoming airborne within the takeoff distance available and not before the end of the airport terrain. Contributing to the accident were the airplane's lack of a warning that the parking brake was not fully released and the FAA's process for certification of a derivative aircraft that did not identify the need for such an indication.

We identified the following safety issue in this investigation report: lack of a cockpit indication in Cessna 560XL airplanes to alert pilots when the parking brakes are not fully released before takeoff. Three recommendations related to this issue were issued to the FAA in FY 2022.

Recommendations: None  
Report Date: September 27, 2023

**Loss of Control in Flight and Collision with Terrain**  
**Airbus Helicopters AS350-B3, N351SH**  
**Palmer, Alaska**  
**March 27, 2021**

On March 27, 2021, about 6:35 p.m., an Airbus Helicopters AS350-B3, N351SH, was destroyed when it was involved in an accident near Palmer, Alaska. The pilot and four passengers were fatally injured, and one passenger was seriously injured. The helicopter was operated as a 14 *CFR* Part 135 on-demand charter flight.

We determined that the probable cause of the accident was the pilot's failure to adequately respond to an encounter with whiteout conditions, which resulted in the helicopter's collision with terrain. Contributing to the accident was (1) the operator's inadequate pilot training program and pilot competency checks, which failed to evaluate pilot skill during an encounter with inadvertent instrument meteorological conditions, and (2) the FAA principal operations inspector's insufficient oversight of the operator, including their approval of the operator's pilot training program without ensuring that it met requirements. Contributing to the severity of the surviving passenger's injuries was the delayed notification of search-and-rescue organizations.

Recommendations: None  
Report Date: September 27, 2023

**Engine Fire Involving Boeing 777, N772UA**  
**Broomfield, Colorado**  
**February 20, 2021**

On February 20, 2021, about 1:09 p.m., United Airlines flight 328, a Boeing 777-222, N772UA, experienced fan blade separation (known as a fan

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blade out event) in the right engine, a Pratt & Whitney PW4077, and subsequent engine fire shortly after takeoff. The flight crew declared an emergency and landed the airplane without incident at the departure airport about 24 minutes after takeoff. There were no injuries to the 239 passengers and crew onboard, and the airplane sustained minor damage. The regularly scheduled domestic passenger flight was operating under the provisions of 14 *CFR* Part 121.

We determined that the probable cause of the accident was the fatigue failure of the right engine fan blade. Contributing to the fan blade failure was the inadequate inspection of the blades, which failed to identify low-level indications of cracking, and the insufficient frequency of the manufacturer's inspection intervals, which permitted the low-level crack indications to propagate undetected and ultimately resulted in the fatigue failure. Contributing to the severity of the engine damage following the fan blade failure was the design and testing of the engine inlet, which failed to ensure that the inlet could adequately dissipate the energy of, and therefore limit further damage from, an in-flight fan blade out event. Contributing to the severity of the engine fire was the failure of the "K" flange following the fan blade out, which allowed hot ignition gases to enter the nacelle and imparted damage to several components that fed flammable fluids to the nacelle, which allowed the fire to propagate past the undercowl area and into the thrust reversers, where it could not be extinguished.

We identified the following safety issues in this investigation report: (1) inadequate inspection of the fan blades, which failed to identify low-level indications of cracking, and (2) the manufacturer's insufficient inspection intervals, which allowed the low-level crack indications to propagate undetected. The FAA issued two airworthiness directives to address these issues.

Recommendations: None

Report Date: September 7, 2023

**Rapid Right Roll and Ground Impact  
Bombardier CL-600-2B16, N605TR  
Truckee, California  
July 26, 2021**

On July 26, 2021, about 1:18 p.m., a Bombardier Inc. Challenger 605, N605TR, was destroyed when it entered a rapid left roll and impacted terrain while on approach to Truckee-Tahoe Airport, Truckee, California. The captain, first officer, and four passengers were fatally injured. The airplane was operated as a 14 *CFR* Part 91 personal flight.

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We determined that the probable cause of the accident was the first officer's (FO's) improper decision to attempt to salvage an unstabilized approach by executing a steep left turn to realign the airplane with the runway centerline, and the captain's failure to intervene after recognizing the FO's erroneous action, while both ignored stall protection system warnings, which resulted in a left-wing stall and an impact with terrain. Contributing to the accident was the FO's improper deployment of the flight spoilers, which decreased the airplane's stall margin; the captain's improper setup of the circling approach; and the flight crew's self-induced pressure to perform and poor crew resource management, which degraded their decision-making.

This investigation was used to support a safety alert on circling approaches (described below).

Recommendations: None

Report Date: August 10, 2023

**Engine Fire Involving a Bombardier Global 7500  
Riyadh, Kingdom of Saudi Arabia  
March 31, 2022**

On March 31, 2022, a Bombardier Global 7500, which was equipped with GE Aviation turbofan engines, experienced a right (No. 2) engine fire during the takeoff climb from Riyadh, Kingdom of Saudi Arabia. After the right engine fire warning annunciated, the pilots performed troubleshooting procedures, shut down the right engine, and returned to the airport for an uneventful landing with no injuries reported. In accordance with Annex 13 to ICAO, the NTSB accepted delegation of this accident investigation from the Kingdom of Saudi Arabia Aviation Investigation Bureau. During this investigation and our investigation of a similar engine-fire event involving another Bombardier airplane equipped with a similar engine (which occurred April 3, 2022, in West Palm Beach, Florida), Bombardier inspected other airplanes and identified two additional engines with similar fuel leaks.

The NTSB determined that the probable cause of this incident was an in-flight engine fire that resulted from a fuel leak from the fuel nozzle No. 18 pigtail-to-fuel manifold b-nut connection that contacted hot engine parts and ignited. Contributing to the manifold fuel leak was the misalignment between the fuel manifold female ferrule and fuel nozzle male bullnose sealing surfaces, coupled with distress of the ferrule sealing surface.

As a result, GE Aviation issued two service bulletins and revised its component installation and assembly procedures, and the FAA issued an

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airworthiness directive to address and mitigate the risk of similar fuel leaks and engine fires.

Recommendations: None  
Report Date: June 13, 2023

**Runway Excursion Involving Embraer EMB-145  
Chicago, Illinois  
November 11, 2019**

On November 11, 2019, about 7:42 a.m., an Embraer EMB-145, N169AE, departed the left side of the runway during landing in Chicago, Illinois, and the right main landing gear collapsed. None of the 41 crewmembers and passengers aboard the airplane was injured, and the airplane sustained substantial damage. The domestic passenger flight was operated by Envoy Air as American Eagle flight 4125 under the provisions of 14 *CFR* Part 121. Wet, snowy weather conditions at the airport had preceded the flight's arrival.

We determined that the probable cause of this accident was the flight crew's inability to maintain the airplane on the runway centerline after touchdown due to the reduced braking action resulting from the deteriorating weather conditions, which caused the airplane's departure from the runway surface. Contributing to the accident were the delay in performing the runway assessment for undetermined reasons and failure to close the runway. Also contributing to the accident was the controller's failure to advise the accident flight crew that braking action was no longer consistent with the previously published notice to air mission, which described braking action as good across all three runway zones.

Recommendations: None  
Report Date: February 6, 2023

**Uncommanded Left Yaw Involving a Sikorsky S-61N  
Camp Dwyer, Afghanistan  
April 20, 2020**

On April 20, 2020, a Sikorsky S-61N helicopter entered an uncommanded left yaw while approaching Camp Dwyer, Afghanistan. During the subsequent emergency landing, the helicopter impacted the ground and rolled on its right side, resulting in serious injuries to all three occupants and substantial damage to the helicopter. The cargo flight was operated under 14 *CFR* Part 135 under a contract with the US Department of Defense. In accordance with Annex 13 to ICAO, the NTSB accepted delegation of this accident investigation from the Afghanistan Civil Aviation Authority.



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The NTSB determined that the probable cause of this accident was fatigue cracking of the auxiliary servo cylinder's pedal damper check valve housing and its bolts, which caused the sudden and uncommanded movement of the helicopter's left pedal and a subsequent left yaw that continued until ground impact. Contributing to the accident were (1) the nonconforming edge of the pedal damper check valve housing during manufacture and (2) Sikorsky's lack of a specific inspection for the pedal damper check valve housing.

As a result of this investigation, on October 17, 2022, Sikorsky released an alert service bulletin that addressed the inspection of the auxiliary servo cylinder pedal damper check valve housing. In addition, Sikorsky implemented a daily inspection of the check valve housing and a 30,000-hour life limit for the check valve housing.

Recommendations: None  
Report Date: February 1, 2023

**Require Immediate Inspection of Bell 407 Tail Boom Attachment Hardware and Fittings Near Kalea, Hawaii  
June 8, 2022**

On June 8, 2022, about 5:26 p.m., a Bell 407 helicopter, N402SH, impacted terrain near Kalea, Hawaii, following an inflight separation of the tail boom. The pilot and two passengers sustained serious injuries, and three passengers sustained minor injuries. The helicopter sustained substantial damage during the impact. The on-demand air tour flight was operated by Paradise Helicopters under Title 14 *CFR* Part 135.

We identified the following urgent safety issues in this ongoing accident investigation: (1) the need to perform an immediate torque check of the tail boom attachment hardware and visual inspection of the attachment fittings for evidence of cracks and fractures, and (2) the need to conduct more frequent torque checks of the tail boom attachment hardware and visual inspections of the attachment fittings for evidence of cracks and fractures to provide multiple opportunities to identify potential failures.

The NTSB issued urgent safety recommendations to the FAA and Transport Canada, which is the regulator for the state of design and manufacture of Bell 407 helicopters.

Recommendations: 4 urgent  
Report Date: December 1, 2022



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**Flight Control System Difficulty on Embraer EMB-175****Atlanta, Georgia****November 6, 2019**

On November 6, 2019, about 9:15 p.m., an Embraer EMB-175LR, N117HQ, experienced a pitch trim anomaly shortly after takeoff from Atlanta, Georgia. The flight crew declared an emergency and returned to the airport. The nine passengers and crewmembers aboard the airplane were not injured, and the airplane was not damaged. The regularly scheduled passenger flight was operated by Republic Airways under 14 *CFR* Part 121.

We determined that the probable cause of this accident was the captain's use of his pitch trim switch, which had been placarded inoperative but not deactivated, resulting in the airplane pitching up when the captain was trying to trim down. The trim commands were reversed due to maintenance personnel's incorrect installation of the pitch trim switch. Contributing to the incident was the operator's delay in incorporating SB170-27-0051, which would have prevented the switch from being installed inverted.

We identified the following safety issues in this investigation report: (1) the captain's use of his pitch trim switch, which had been placarded inoperative but not deactivated, resulting in the airplane pitching up when the captain was trying to trim it nose-down; (2) maintenance personnel's incorrect installation of the pitch trim switch, which resulted in a reversal of the trim commands; and (3) the operator's delay in incorporating the manufacturer's service bulletin, which would have prevented the switch from being installed inverted. In January 2020, the NTSB issued four new safety recommendations to the FAA and six to the National Civil Aviation Agency of Brazil, which is the regulator for the state of design and manufacture of the Embraer EMB-175.

Recommendations: None

Report Date: December 1, 2022

**Implement Special Federal Aviation Regulation for Air Tours near Ketchikan, Alaska****Ketchikan, Alaska****August 5, 2021**

These recommendations were derived from findings from the investigation of an August 5, 2021, air tour airplane accident in Ketchikan, Alaska, as well as from our review of six previous accident investigations of 14 *CFR* Part 135 air tour airplane accidents near Ketchikan since 2007. The pilot and all five passengers sustained fatal injuries in the 2021 accident; of the six previous accidents reviewed, four were fatal, involving 25 fatalities and 13 serious injuries.

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We identified the following safety issues in this investigation report: (1) air tour operations continue to be vulnerable to the hazards unique to the area's terrain and weather conditions, (2) the FAA's current weather minimums for Part 135 airplanes and lack of required operational safety requirements for Ketchikan air tours allow pilots to regularly fly in frequently unsafe weather conditions in a geographical area with distinct operational hazards, and (3) the FAA's failure to sufficiently address the continued need for improved pilot training on reducing the risk of weather-related accidents for Ketchikan air tours.

The NTSB issued new recommendations to the FAA and the National Weather Service.

Recommendations: 3 new  
Report Date: November 16, 2022

**Require Immediate One-Time Inspection of De Havilland Canada DHC-3 Horizontal Stabilizer Actuator  
Mutiny Bay, near Freeland, Washington  
September 4, 2022**

These safety recommendations were issues as a result of an accident that occurred on September 4, 2022, about 3:09 p.m., when a De Havilland Canada DHC-3, N725TH, entered a nose-down, near vertical descent, and impacted the water in Mutiny Bay, near Freeland, Washington, and sank. The pilot and nine passengers were fatally injured, and the airplane was destroyed. The scheduled flight was operated by Northwest Seaplanes doing business as Friday Harbor Seaplanes under 14 *CFR* Part 135. During the examination of the airplane wreckage, we found that the clamp nut that attaches the trim jack assembly of the horizontal stabilizer actuator to the actuator barrel had unscrewed from the barrel. The examination also found that the circular wire lock ring, which was designed to prevent the clamp nut from unscrewing, was not present.

We identified the following urgent safety issue in this ongoing accident investigation: the need to ensure that the lock ring in the horizontal stabilizer actuator is in place and is properly installed to preclude a reduction or loss of pitch control.

The NTSB issued new urgent safety recommendations to the FAA and Transport Canada.

Recommendations: 2 urgent  
Report Date: October 26, 2022

**Domestic Investigative Workload Summarized by State**

The NTSB carefully considers the level of detail necessary for each investigation with the aim of concentrating resources on investigations that are most likely to enhance aviation safety while fulfilling our mandate to investigate all civil aviation accidents. Because many accidents have similar causes and may not provide new information that would result in further safety action, investigating these in detail may not be justified, given the agency’s limited resources. Therefore, the investigation depth and final report for each event (accident or incident) is stratified into one of four classes.

The following table summarizes statistical information on domestic accident and incident investigations initiated between October 1, 2022, and September 30, 2023, by class and state, territory, or major body of water. Investigation classes are defined below the table.

State	Pending	Class 1	Class 2	Class 3	Class 4	Total
Alabama				13	6	19
Alaska				23	52	75
Arizona				23	23	46
Arkansas				11	12	23
Atlantic Ocean					4	4
California				51	53	104
Caribbean					3	3
Colorado				14	25	39
Connecticut				4	2	6
Delaware						0
Florida	2			42	41	85
Georgia	1		1	24	17	43
Gulf of Mexico				1		1
Hawaii				6	5	11
Idaho				8	17	25
Illinois				13	18	31
Indiana				3	8	11
Iowa				6	11	17
Kansas				7	13	20
Kentucky				6	8	14
Louisiana				9	7	16
Maine				3	2	5
Maryland				6	3	9
Massachusetts	1			4	4	9
Michigan				13	7	20
Minnesota				13	20	33

State	Pending	Class 1	Class 2	Class 3	Class 4	Total
Mississippi				6		0
Missouri				13	10	23
Montana				6	11	17
Nebraska				7	3	10
Nevada				9	15	24
New Hampshire				4	4	8
New Jersey				5	7	12
New Mexico				5	10	15
New York		1		14	13	28
North Carolina				17	17	34
North Dakota				5	6	11
Ohio	1			13	9	23
Oklahoma				12	10	22
Oregon				7	10	17
Pennsylvania				7	8	15
Puerto Rico				1	1	2
Rhode Island						0
South Carolina				11	11	22
South Dakota				1	4	5
Tennessee				8	14	22
Texas		1	1	55	53	110
Utah				12	23	35
Vermont					1	1
Virginia				12	10	22
Washington				15	21	36
West Virginia				3	5	8
Wisconsin				11	10	21
Wyoming				5	5	10
<b>Total</b>	<b>5</b>	<b>2</b>	<b>2</b>	<b>567</b>	<b>652</b>	<b>1,228</b>

**Class 1:** This category of NTSB investigation is reserved for very significant accidents and is likely to involve significant NTSB and external resources. These investigations generally involve transport-category aircraft and commercial operations, as well as loss of life, multiple injuries, considerable property damage, a new aircraft design, or significant public interest. Investigation updates or interim reports may be released during the investigation. The Board will deliberate the findings, probable cause, and recommendations accompanying the final report at a public “sunshine” meeting.

**Class 2:** Class 2 investigations generally have a broad scope and involve both a significant effort collecting evidence across several investigative areas and a substantial investment of resources. Investigators launch to the scene of

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Class 2 investigations. These investigations may involve very complex systems and processes, multiple organizations, or poor risk controls implemented by the operator, manufacturer, maintainer, and regulator. Class 2 investigations may have a response similar to that of a Class 1 investigation but, upon further examination, the safety issues may be more limited or specific to a certain airplane type or operation. A final comprehensive report will be made available to the public. The Board members may deliberate the findings, probable cause, and recommendations accompanying the report.

**Class 3:** Class 3 investigations seek to identify safety issues that reveal underlying causes of the accident. The investigation is led by an IIC, who may be assisted by other NTSB subject matter experts if the investigation requires an in-depth focus on a specific area. The investigative team may travel to the scene of the accident or to other follow-up activities, or the entirety of the investigation may be conducted remotely. A final report will be made available to the public, identifying the probable causes of the accident and factors that contributed to the outcome of the accident, if any. Findings from these investigations may be used to support recommendations, or the investigative team may work with industry stakeholders directly to resolve safety issues identified during the investigation. Accidents that involve recurring safety issues may be accompanied by a safety message that includes practical strategies to avoid future accidents.

**Class 4:** Class 4 investigations, which are led by an IIC, seek to identify the cause of the accident. In some cases, the IIC may travel to the scene of the accident, but Class 4 investigations are generally conducted remotely. The report examines only the actions and conditions directly relating to the accident, and the documented sequence of events and probable cause reached is simple and straightforward. The IIC may work with industry stakeholders to develop solutions to safety issues identified during the investigation. Investigations that involve well-known circumstances may be accompanied by a safety message that includes practical strategies to avoid potential future recurrence. Class 4 investigations must be published within 6 months.

**Pending:** Investigations identified as pending are accidents or incidents that have been recently reported to the NTSB and are being evaluated, based on available information, for further classification.

### ***International Investigations***

The United States is a signatory to the Chicago Convention on International Civil Aviation, which is administered by ICAO. The NTSB is charged with fulfilling the US obligation for accident and incident

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investigations in accordance with Annex 13 of this agreement in full coordination with the US Department of State.

The international investigative process is critical to maintaining aviation safety in the United States and throughout the world. When an aircraft operated by—or designed, manufactured, or registered to—a US company has been involved in an accident in a foreign state, NTSB participation in that investigation enables the United States to ensure the airworthiness and operation of its aircraft operated here and overseas. ICAO Annex 13 protocols also define the agency’s engagement with international authorities whose products or operations are involved in accidents within the United States. This international process of collaboration plays an important role in enabling us to identify safety concerns and issue appropriate recommendations. We have issued numerous safety recommendations that have resulted in safety improvements worldwide as a direct result of our participation in these foreign investigations.

Between October 1, 2022, and September 30, 2023, the Office of Aviation Safety was notified of 446 international investigations. The following investigations required significant US involvement during this period.

**Collision with Terrain Involving a Jet Valet Raytheon 390 Premier 1  
Elmina, Malaysia  
August 17, 2023**

On August 17, 2023, about 2:50 p.m., a Jet Valet Raytheon 390 Premier 1, N28JV, lost control and crashed on a road in a wooded area while on approach to Sultan Abul Aziz Shah Airport, Elmina, Malaysia. Both pilots and all six passengers were fatally injured, as were two people on the ground. As the US-accredited representative of the state of design and manufacture of the airframe and engine, NTSB staff traveled to Malaysia to support the Air Accident Investigation Bureau in its investigation.

**Collision with Terrain Involving Boeing Company 737-3H4, N619SW  
Fitzgerald River National Park, Western Australia  
February 6, 2023**

On February 6, 2023, about 3:32 p.m., a Coulson Aviation Boeing 737-3H4 large air tanker crashed while conducting firefighting activities at Fitzgerald River National Park. Both pilots on board sustained minor injuries. As the US-accredited representative of the state of design and manufacture of the airplane, NTSB staff traveled to Australia to support the Australian Transport Safety Bureau in its investigation.

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## ***US Comments on Foreign Accident Reports***

The NTSB completed comments on behalf of the United States on several international investigations in which the United States had significant involvement under Annex 13, including the following:

### **Boeing 737, Banjarmasin, Indonesia Flap Asymmetry During Approach August 14, 2022**

On August 14, 2022, the flight crew of a Boeing 737 noticed an indication of a flap asymmetry during approach to Sjamsudin Noor Airport, Banjarmasin, Indonesia, and a left rolling tendency of the airplane. They performed a go-around and attempted to troubleshoot the issue, but it remained. The flight crew completed the non-normal landing checklist before deciding to land. Before touchdown, the airplane rolled to the left and the left wingtip and engine cowling contacted the runway. No injuries were reported to the four occupants on board. The NTSB US accredited representative provided comments on a draft report in February 2023. The final report is pending.

### **Boeing 737-800, Kathmandu, Nepal Tailstrike During Takeoff May 6, 2022**

On May 6, 2022, the flight crew of a Singapore Airlines Boeing 737-800 suspected a tailstrike during takeoff from Kathmandu, Nepal. They continued to climb above the minimum safe altitude due to high terrain and diverted to Kolkata, India, where they landed without further incident. No injuries were reported to the 165 passengers and 8 crewmembers on board. The NTSB US accredited representative provided comments on a draft report in December 2022. The final report was issued in May 2023.

### **Boeing 737 MAX, Addis Ababa, Ethiopia Addis Ababa Bole International Airport March 10, 2019**

On March 10, 2019, Ethiopian Airlines flight 302, a Boeing 737 MAX 8, crashed near Ejere, Ethiopia, shortly after takeoff from Addis Ababa Bole International Airport, Ethiopia. All 157 passengers and crew on board were fatally injured, and the airplane was destroyed.

The Ethiopian Airplane Accident Investigation Bureau published its final report in December 2022; however, it had not appended the comments provided by the NTSB in May 2022, which we had requested, and which is

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ICAO Annex 13 protocol. Accordingly, we released the comments following the report's publication. Because the published report had also introduced new information not included in the draft we reviewed in May, we released additional comments in January 2023 that addressed the new information.

**Boeing 787-8, Hong Kong  
In-flight Loss of Control  
October 20, 2018**

On October 20, 2018, an Air India Boeing 787-8 descended rapidly on approach to Hong Kong International Airport, triggering a ground proximity warning system alert on the airplane. The flight crew recovered airplane control about 200 ft above mean sea level about 2.6 nautical miles from the intended runway and landed the airplane uneventfully following a go-around and second approach. No injuries were reported to the 197 passengers and 10 crewmembers on board. The NTSB US-accredited representative provided comments on the draft final report in March 2023. The final report is pending.

***Safety Alerts***

A safety alert is a short informational bulletin that pinpoints a particular safety issue. It contains information based on the findings of one or more NTSB investigations and enhances the dissemination of safety information and actions to the traveling public.

**Mechanics: Ensure B-nuts Are Properly Secured!**

This safety alert was derived from multiple NTSB investigations involving an improperly secured B-nut, which is a common term for the type of nut that provides the clamping force to create a reliable seal in lines installed on aircraft. Our investigations found that, if the B-nut on a reciprocating or turbine engine had been properly secured, the accidents might have been avoided. These accidents described in the safety alert highlight the risks involved with improperly tightened and torqued B-nuts, and the safety alert provides mitigation strategies that mechanics can use to prevent this situation from occurring.

The following safety issue was identified and addressed in this safety alert: improperly secured B-nuts can result in a loss of engine power or an engine fire.

Issue Date: April 24, 2023



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**Circling Approaches: Know the Risks!**

This safety alert was derived from multiple NTSB investigations involving circling approaches. The safety alert describes accident scenarios in which pilots planned for one approach then, during the final segment of the approach, switched to a circling approach, resulting in an unstabilized approach and loss of control. The accidents highlight the risks involved with circling approaches, and the safety alert provides mitigation strategies that pilots can use to prevent similar accidents from occurring.

The following safety issues were identified and addressed in this safety alert: (1) although circling approaches may be necessary to accommodate traffic flow at airports or are favorable due to wind conditions, pilots sometimes do not evaluate the risks of these approaches before accepting them; and (2) circling approaches can be riskier than other types of approaches because they often require maneuvering at low altitude and low airspeed during the final approach, increasing the opportunity for loss of control or collision with terrain. These risks are heightened when conducting circling approaches in marginal or reduced visibility conditions.

Issue Date: March 8, 2023

***Other Efforts and Focus Areas*****Zero Open Investigations More than Two Years Old**

Down from a high of 442 open investigations 2 years or older in February 2022, the Office of Aviation Safety ended FY 2023 with no open investigations over 2 years old.

**State of Runway Incursions Roundtable: A Path Forward**

Although the number of runway incursions—defined as the incorrect presence of an aircraft, vehicle, or person on a runway—has remained relatively stable over the past decade, we have seen a recent increase in the number of the most serious incursions. The NTSB has opened investigations into six incursion events since the beginning of 2023. As a result, on May 23, 2023, the NTSB hosted an in-person roundtable discussion among safety experts from the aviation industry, labor, academia, and government on the danger of runway incursions in the United States and possible solutions to mitigate the problem.

**Aviation Report Timeliness Project—Initial Quality Review**

To continuously improve the timeliness and quality of regional aviation reports, the Office of Aviation Safety implemented, as part of the report

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development process, an initial quality review. A formalized peer review, the initial quality review is intended to help investigative staff identify and address areas that do not adhere to report quality standards early in the development process. It is also anticipated that acting as peer reviewers will improve investigative staff’s familiarity with report quality standards.

### Ongoing Significant Aviation Accident and Incident Investigations

Location	Date	Description	Fatalities
Austin, Texas	2/4/2023	Boeing 737 runway incursion	0
Queens, New York	1/14/2023	Boeing 737 runway incursion and aborted takeoff	0
Dallas, Texas	11/12/2022	Midair collision of B-17 and P-63 during airshow	5
Amherstdale, West Virginia	6/22/2022	Bell UH-1B collision with terrain	6
Miami, Florida	6/21/2022	McDonnell Douglas MD-80 landing gear collapse	0
Jolon, California	2/16/2022	Failure of Joby Aviation JAS4-2 experimental aircraft component during developmental flight test	0

Note: We are devoting significant resources to the investigations listed and anticipate producing a report upon the completion of each investigation.

## HIGHWAY SAFETY

	(\$000s)	FTEs
FY 2024 Estimate	\$9,746	30
FY 2025 Request	\$11,219	34
Increase/Decrease	\$1,473	4

### Overview of the Request

The funding level for this program reflects the prorated impact of a pay raise of 2 percent projected for January 1, 2025, a 2 percent nonpay inflation factor, an increase in agency program investments, and an increase in the agency's contribution to employee health benefits. An increase of 4 FTEs is supported by this funding level.

### Program Description

The Office of Highway Safety investigates crashes that have significant safety implications nationwide, highlight national safety issues, involve the loss of numerous lives, or generate high interest because of emerging technologies or the circumstance of the crash. Such investigations may focus on mass casualties and injuries on public transportation vehicles (such as motorcoaches and school buses), collapses of bridges spanning roadways or tunnel structures, or collisions at highway-railroad grade crossings. This office also investigates crashes that involve new safety issues or technologies (such as automated vehicles and alternatively fueled vehicles) and develops reports based on trends emerging from NTSB investigations and from research and data that identify common risks or underlying causes of crashes, injuries, and fatalities.

The NTSB is the only US organization that performs independent, comprehensive, and transparent multidisciplinary investigations to determine the probable causes of highway crashes, with the goal of making recommendations to prevent similar events and to reduce injuries and fatalities. Our investigations result in recommendations that provide policymakers and stakeholders with unbiased analysis and that, if implemented, would reduce or eliminate the safety risks identified in the investigations.

The Office of Highway Safety comprises the Investigations Division and the Report Development Division.

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## ***Investigations Division***

The Investigations Division manages the go-teams launched to crash sites to collect the factual and develop the analytical information for investigations. Currently, the division is separated into two branches: multidisciplinary investigations and special investigations. The multidisciplinary investigation branch conducts major highway investigations through a multidisciplinary team comprising an IIC and five other investigators with expertise in vehicle, highway, human performance, survival, and motor carrier factors. The special investigations branch performs focused investigations by specific subject matter experts on targeted safety issues. All investigations are supported by two crash reconstruction experts and a national resource specialist. To enhance geographic coverage and reduce response time, team members are located throughout the country, including in California, Colorado, Florida, Tennessee, Texas, Washington, Wisconsin, Wyoming, and Washington, DC.

## ***Report Development Division***

The Report Development Division manages investigation report development. Project managers and technical writer-editors review the information provided by the investigators for accuracy and completeness; research, analyze, and develop national highway safety issues based on this investigative information; and write and edit technical reports. This division is also responsible for managing investigative hearings, forums, and other specialized meetings on national highway safety issues.

## **Accomplishments and Ongoing Efforts**

Office accomplishments include issuing products related to transportation safety arising from completed and ongoing investigations. Products completed between October 1, 2022, and September 30, 2023, are highlighted below, along with information about other efforts and focus areas important to our mission.

### ***Investigation Reports***

Investigation reports are issued for highway crash investigations and may contain a determination of probable cause and safety recommendations, depending on the scope of the investigation and the safety issues identified. For select investigations, the office launches an investigation team and presents a comprehensive investigation report to the Board. Investigations that are limited in scope are primarily intended to determine probable cause; the resultant report may be issued by the office director under delegated authority or may be adopted by the Board. A report containing only safety

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recommendations can be issued at any time during an investigation. If the Board determines that a recommended course of action requires immediate attention to avoid imminent loss of life from a similar accident, the safety recommendation is designated "urgent." From October 1, 2022, through September 30, 2023, the Office of Highway Safety issued a total of six investigation reports that solely determined probable cause. During this period, the office also published four investigation reports identifying safety issues that led to the issuance of 14 new safety recommendations.

Below are summaries of the highway investigation reports completed between October 1, 2022, and September 30, 2023, arranged by report date.

**School Bus Run-Off-Road and Rollover Crash  
Monaville, Texas  
December 17, 2021**

On Friday, December 17, 2021, about 12:10 p.m., a 2018 IC 43-passenger, lap belt-equipped school bus, operated by Hempstead Independent School District (ISD), was traveling south on Farm to Market Road (FM) 1887 in the unincorporated community of Monaville, Texas. The posted speed limit was 55 miles per hour (mph), the weather was clear, and the roadway was dry. After crossing over a bridge near the intersection of Holik Road and FM 1887, the bus departed the southbound lane to the right. The driver initiated a series of steering maneuvers to the left, back to the right, and again to the left, and then lost control of the bus. The bus departed the road and rolled over in one complete rotation. The bus was occupied by a 59-year-old driver, a 59-year-old aide, and four student passengers. As a result of the crash, the aide was ejected and fatally injured. The driver and three student passengers sustained minor injuries. One student passenger, who was restrained in a child safety seat, was uninjured.

We determined that the probable cause of the Monaville, Texas, crash was the bus driver's failure to keep the vehicle in its travel lane due to being distracted by the vehicle's vent window. Contributing to the severity of the injuries was the lack of seat belt use by several school bus passengers.

After the crash, Hempstead ISD updated its policy to require seat belt use for students and staff. Hempstead ISD also hired additional staff to oversee necessary maintenance and driver qualification records. The NTSB has previously recommended that associations involved in student transport inform their members that onboard video systems should be used to help ensure that safe transportation behaviors—including sitting properly and wearing seat belts—are followed on school buses. Further, driver assistance features, such as lane departure warning, may have alerted the driver and brought her attention

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back to the forward roadway instead of the bus vent window. The IC Bus manufacturing company now includes electronic stability control as a standard feature, and lane departure prevention is available as an option for buses manufactured from late 2018 to present.

Recommendations: None

Report Date: August 23, 2023

**Wrong-Way Driving Crash Between Service Truck and Motorcoach on Interstate 20  
Big Spring, Texas  
November 19, 2021**

On Friday, November 19, 2021, about 4:02 p.m., a crash involving a service truck and a motorcoach occurred in the eastbound lanes of Interstate 20 near Big Spring, in Howard County, Texas. A 2016 Ford F-350 service truck traveling in the wrong direction in the eastbound lanes struck a 2005 MCI motorcoach nearly head-on. The service truck then sideswiped a 2018 Freightliner bus. The motorcoach sustained frontal damage, the bus sustained minor damage to its left side, and a postcrash fire consumed the service truck. Three vehicle occupants died, and 50 passengers sustained minor-to-serious injuries.

We determined that the probable cause of the Big Spring, Texas, head-on crash between a service truck and a motorcoach was that the service truck driver was traveling the wrong way on Interstate 20 for unknown reasons.

Recommendations: None

Report Date: May 8, 2023

**Improving the Identification, Prioritization, and Completion of Follow-up Actions on  
Bridges with Uncoated Weathering Steel Components  
Pittsburgh, Pennsylvania  
January 28, 2022**

On January 28, 2022, about 6:40 a.m., the Fern Hollow Bridge, which carried Forbes Avenue over the north side of Frick Park in Pittsburgh, Allegheny County, Pennsylvania, experienced a structural failure. As a result, the 447-foot-long bridge fell about 100 feet into the park below. At the time of the collapse, a 2013 New Flyer articulated bus, operated by the Port Authority of Allegheny County, and four passenger vehicles were on the bridge. A fifth passenger vehicle drove off the east bridge abutment following the collapse and came to rest on its roof on the ground below. As a result of the collapse, two vehicle occupants sustained serious injuries, two sustained minor injuries, four were uninjured, and the injury status of one is unknown.

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The collapse remains under investigation and the NTSB will determine a probable cause of the collapse when the final report is complete.

We identified one safety issue in this interim report addressing the extensive corrosion and deterioration of the bridge's uncoated weathering steel components. Maintenance activities to address these issues were called for in numerous inspection reports but were not completed.

The NTSB issued one new safety recommendation to the FHWA in this interim report.

Recommendations: 1 new  
Report Date: May 3, 2023

**Multivehicle Crash and Postcrash Fire on Interstate 65  
Greenville, Alabama  
June 19, 2021**

On June 19, 2021, about 2:21 p.m., a series of vehicle collisions occurred in the northbound lanes of Interstate 65 near Greenville, Alabama, in Butler County. This investigation focuses on one multivehicle crash sequence involving 10 passenger vehicles and 2 commercial trucks. Several passenger vehicles were slowing or had stopped due to earlier crashes, creating a traffic queue at the northern end of the bridge that crosses Pigeon Creek. A 2020 Ford Explorer collided with a vehicle at the end of the traffic queue. A 2020 Volvo truck-tractor with a Cottrell trailer for transporting automobiles collided with the Ford Explorer, initiating a series of additional collisions in both travel lanes. A 2005 Freightliner truck tractor/2009 Wabash dry trailer combination vehicle that was following behind the Volvo auto-transporter combination vehicle collided with several vehicles and continued into the median. The two commercial trucks and four passenger vehicles, including a 2017 transit van, came to rest in the center median. A postcrash fire ensued and destroyed the vehicles in the median. Ten vehicle occupants died, and 19 others sustained injuries. At the time of the crash, there was light rain, and the roadway was wet. The posted speed limit was 70 mph.

We determined that the probable cause of the Greenville, Alabama, crash was the unsafe speeds of multiple vehicles during rain, low visibility, and wet road conditions. Contributing to the fatal injuries of the transit van passengers was the postcrash fire.

Driving at speeds above the speed limit or too fast for conditions can have serious consequences, including a loss of vehicle control, increased crash severity, and more severe injuries. Further, the NTSB has identified a need for increased public awareness about the dangers of speeding and driving too

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fast for inclement weather. The NTSB also previously issued safety recommendations for highway and vehicle technologies addressing speeding that may prevent or reduce the severity of crashes. In addition, fuel tanks on commercial trucks involved in crashes are susceptible to high impact forces, resulting in ruptures, postcrash fuel spillage, and fire. The NTSB previously recommended that federal regulators work to improve vehicle safety standards to improve the crashworthiness of side-mounted fuel tanks on truck-tractors.

Recommendations: None

Report Date: April 26, 2023

**Multivehicle Collision Involving a Milk Tank Combination Vehicle and Stopped Traffic Queue  
Phoenix, Arizona  
June 9, 2021**

On the evening of June 9, 2021, a truck-tractor in combination with a tank-trailer hauling milk, operated by Arizona Milk Transport, was traveling eastbound on SR-202 in Phoenix, Arizona, when it crashed into a queue of passenger vehicles that were stopped due to a road closure. The truck driver did not slow down or steer away as he approached the traffic queue at a speed of 62–64 mph. The combination vehicle struck and partially overrode the vehicle at the end of the traffic queue, initiating a series of chain reaction collisions that involved six other passenger vehicles. Following the initial impacts, the combination vehicle crossed the eastbound travel lanes, struck the concrete median barrier and separated, and the truck-tractor and one passenger vehicle were consumed by fire. Four passenger vehicle occupants died, and 11 occupants were injured; the truck driver was uninjured.

We determined that the probable cause of the Phoenix, Arizona, multivehicle crash was the truck driver’s failure to respond to the fully conspicuous traffic queue, likely as the result of fatigue. Contributing to the crash was Arizona Milk Transport’s (1) poor oversight of its drivers, (2) lack of fatigue management program, and (3) failure to enforce its own policies, such as those regarding on-duty hours—all a consequence of its inadequate safety culture. Contributing to the severity of injuries to several passenger vehicle occupants was their lack of or improper lap/shoulder belt use.

Safety issues identified in this investigation included (1) the inadequate safety culture of the motor carrier, (2) the need to reduce the risk of fatigue for drivers operating under an agricultural hours of-service exemption, (3) the need to improve the prioritization of messages displayed on dynamic message signs, (4) the need to increase the use of occupant restraints for all seating positions, and (5) the need to expedite deployment of collision avoidance technologies.



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The NTSB issued new safety recommendations to the US DOT, the Arizona Department of Transportation, Arizona Milk Transport, the Commercial Vehicle Safety Alliance, the International Dairy Foods Association, the National Conference for Interstate Milk Shipments, and the International Milk Haulers Association, and reiterated recommendations to the US DOT, the Federal Communications Commission, NHTSA, and 38 states and the District of Columbia.

Recommendations: 9 new, 6 reiterated  
Report Date: March 28, 2023

**Multivehicle Crash in Icy Conditions on Interstate 35 West  
Fort Worth, Texas  
February 11, 2021**

On the morning of February 11, 2021, a multivehicle crash occurred in the southbound toll lanes of Interstate 35 West (I-35W), in Fort Worth, Texas. The crash sequence began on an elevated portion of the roadway near the exit to Northside Drive and ultimately involved 130 vehicles. In the days before the crash, the area had experienced 36 consecutive hours of below-freezing temperatures. In anticipation of forecast freezing rain and sleet, North Tarrant Express Mobility Partners Segments 3 (NTEMP S3), which was responsible for operations and maintenance on the I-35W right of way at this location, pretreated the traffic lanes with a liquid brine solution. NTEMP S3 applied the solution to the two southbound toll lanes about 44 hours before the multivehicle collision occurred. The crash event began about 6:00 a.m. on February 11, when several vehicles in the southbound toll lanes slid on the elevated roadway and struck the concrete barriers beside the toll lanes. As approaching drivers encountered the vehicles involved in these initial crashes, they were unable to stop on the icy roadway, leading to secondary crashes. As a result of the crash event, six people were fatally injured. Four of the fatally injured people remained inside their vehicles; two were struck on the roadway after they had exited their vehicles.

We determined that the probable cause of the multivehicle crash in Fort Worth, Texas, was ice accumulation on the surface of the elevated roadway, which made drivers lose control of their vehicles, which then slid into road barriers and other vehicles. Contributing to the unsafe roadway condition was the failure of NTEMP S3 to effectively monitor and address roadway conditions along I-35W during and after periods of freezing rain and mist. Contributing to the severity of the crash outcome was drivers traveling at speeds too fast for the winter weather conditions.

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Safety issues identified in this investigation included (1) the inadequate methods to monitor the condition of the roadway and elevated structures during inclement weather, (2) insufficient training for personnel responsible for snow and ice control on how to monitor moisture and icy conditions and when to apply suitable roadway treatments, and (3) the need for technological countermeasures to help drivers and vehicles respond appropriately to inclement weather conditions.

The NTSB issued new recommendations to the state of Texas and reiterated recommendations to the US DOT, NHTSA, the Federal Communications Commission, and the state of Texas.

Recommendations: 3 new, 5 reiterated  
Report Date: February 27, 2023

**Electric Vehicle Run-Off-Road Crash and Postcrash Fire  
Coral Gables, Florida  
September 13, 2021**

On September 13, 2021, about 8:54 p.m., a 2021 Tesla Model 3, Long Range-Dual Motor electric car, occupied by a 20-year-old driver and 19-year-old passenger, was traveling north on Alhambra Circle in Coral Gables, Florida. The weather was clear, the road was dry, and the area was illuminated by streetlamps. As the car approached the signalized intersection with Coral Way, it accelerated, shifted into the southbound lane to pass another car, and then reentered the northbound lane. After this passing maneuver, the car continued to accelerate, running the red light. The driver then lost control, departed the roadway, and struck two trees in the center median. Both the driver and the passenger died. A postcrash fire engulfed the car; firefighters faced challenges in extinguishing the fire and reported that the car's batteries reignited at least once.

We determined that the probable cause of the Coral Gables, Florida, crash was the driver's decision to travel at an excessive speed, which led to the failure of the driver to control his car.

Speeding is one of the most common factors associated with motor vehicle crashes in the United States. The NTSB has advocated for a comprehensive strategy that includes vehicle technologies, such as intelligent speed adaptation, to help reduce crashes caused by excessive speed. Although the first responders to this crash extinguished the initial fire and managed reignition events safely, their response did not include consulting a vehicle-specific emergency response guide. The NTSB has recommended to manufacturers of electric vehicles equipped with high-voltage lithium-ion batteries that they provide their emergency response guides for how to

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extinguish electric vehicle fires in a standardized format, and that they provide vehicle-specific information for safely extinguishing fires, mitigating reignition events, and transporting and storing damaged vehicles.

Recommendations: None  
Report Date: February 13, 2023

**Electric Vehicle Run-Off-Road Crash and Postcrash Fire  
Spring, Texas  
April 17, 2021**

On April 17, 2021, about 9:07 p.m., a 2019 Tesla Model S P100D electric car was traveling west on Hammock Dunes Place—a residential road in Spring, Texas—when it crashed and caught fire. The crash trip originated at the driver’s residence near the end of a cul-de-sac. The car traveled about 550 feet before departing the road at a leftward curve, driving over the right-side curb, hitting a storm sewer inlet and a raised manhole, sideswiping a tree, and running into a second tree. The crash damaged the front of the car’s high-voltage lithium-ion battery case, where a fire started. As a result of the crash and the postcrash fire, the driver and passenger were fatally injured.

We determined that the probable cause of the Spring, Texas, electric vehicle crash was the driver’s excessive speed and failure to control his car, due to impairment from alcohol intoxication in combination with the effects of two sedating antihistamines, resulting in a roadway departure, tree impact, and postcrash fire.

The NTSB has advocated for vehicle technologies—including passive vehicle-integrated alcohol impairment detection systems, advanced driver monitoring systems, and intelligent speed adaptation—to help reduce crashes caused by alcohol impairment and excessive speed. The NTSB has also recommended to manufacturers of electric vehicles equipped with high-voltage lithium-ion batteries that they provide information for how to extinguish electric vehicle fires in their emergency response guides in a standardized format and that they provide vehicle-specific information.

Recommendations: None  
Report Date: February 8, 2023

**Box Truck Collision with Group of Bicyclists  
Searchlight, Nevada  
December 10, 2020**

On December 10, 2020, about 9:39 a.m., a 2019 Isuzu NPR-HD box truck, being driven by a 45-year-old male, collided with a group of bicyclists

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and a 2019 Subaru Outback sport utility vehicle (SUV) that were traveling in the rightmost southbound lane of US Highway 95 in Clark County, Nevada. Five of the bicyclists died, one bicyclist sustained serious injuries, one bicyclist and the driver of the SUV sustained minor injuries, and the driver of the box truck was uninjured. After impact, both the SUV and the box truck came to a controlled stop on the right shoulder of the roadway.

We determined that the probable cause of the Searchlight, Nevada, crash was the box truck driver's impairment and fatigue stemming from his use of methamphetamine. Contributing to the crash was the decision made by the bicyclists to ride in the right travel lane of a 75-mph roadway.

The NTSB previously recommended that NHTSA evaluate best practices and countermeasures to reduce fatalities, injuries, and crashes involving drug-impaired drivers, as well as provide additional guidance to the states on drug-impaired driving. The NTSB has also recommended that the FMCSA determine the prevalence of commercial motor vehicle (CMV) driver use of impairing substances, particularly synthetic cannabinoids, and develop a plan to reduce the use of such substances and work with motor carrier industry stakeholders to develop a plan to aid motor carriers in addressing CMV driver use of impairing substances. Further, the NTSB advocates for a Safe System Approach to protect vulnerable road users (VRUs), including bicyclists.

Recommendations: None

Report Date: November 30, 2022

### **Collision Between Service Vehicle and School Bus**

**Decatur, Tennessee**

**October 27, 2020**

On October 27, 2020, about 3:45 p.m., a utility service truck was northbound on the two-lane State Route 58 in Decatur, Tennessee. At the same time, a transit-style school bus was traveling south, carrying 33 students home from school. The truck driver reported that he was looking in his side rear-  
vision mirrors when the truck's right-side wheels departed the roadway and entered the earthen v-ditch adjacent to the paved rumble-milled shoulder. When the truck driver steered the truck back onto the roadway, the truck yawed counterclockwise and crossed into the southbound lane. The bus collided with the right side of the truck, fatally injuring the 53-year-old bus driver and a 7-year-old passenger seated directly behind the bus driver. Four other school bus passengers sustained serious injuries, 10 sustained minor injuries, and 18 were uninjured or their injury level was unknown. The truck driver was also uninjured.

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The NTSB determined that the probable cause of the Decatur, Tennessee, crash was the service truck driver's inattention to the forward roadway due to his looking at a sheriff's vehicle behind him, which resulted in his failure to keep the truck on the roadway. Contributing to the cause of the crash were nonrecoverable and critical foreslopes and the pavement edge drop-off along the state highway, which prevented the truck driver from safely returning the truck to the roadway in a controlled manner. Contributing to the severity of the crash was the lack of passenger lap/shoulder belts on the school bus and the unsafe seating positions by some of the students.

We identified the following safety issues during this investigation: (1) the inadequate roadway design, (2) the lack of lane departure warning and prevention systems for heavy vehicles, and (3) the lack of sufficient passenger protection measures on school buses.

The NTSB issued safety recommendations to the National Association for Pupil Transportation, the National Association of State Directors of Pupil Transportation Services, the National School Transportation Association, NHTSA, and multiple states.

Recommendations: 1 new, 4 reiterated  
Report Date: October 18, 2022

### ***Safety Alert***

A safety alert is a short informational bulletin that pinpoints a particular safety issue. It contains information based on the findings of one or more NTSB investigations and enhances the dissemination of safety information and actions the traveling public.

### **Child Passenger Safety**

In the Phoenix, Arizona, multivehicle crash, the use of a lap/shoulder belt without an appropriate child safety restraint system contributed to the injuries of the child occupant. Transportation safety advocates and state and federal agencies, including the NTSB, regularly conduct outreach to increase awareness and proper use of child seats.

Issue Date: April 2023

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## ***Other Efforts and Focus Areas***

### **Meetings**

#### **L4 Automated Driving Leaders Meeting**

**May 24, 2023**

The purpose of this meeting was to share NTSB investigative procedures and processes along with case studies to help automated vehicle developers understand an NTSB investigation and prepare for future automated driving system deployment. NHTSA and the FMCSA briefly shared information about their investigations, as well.

#### **Highway Safety Summit**

**October 26, 2022**

During this summit, hosted by Chair Jennifer Homendy, we identified the safety priorities, needs, and concerns of our stakeholders; identified collaboration opportunities for advancing progress on safety recommendations through advocacy efforts; and informed NTSB strategic planning as it relates to preventing transportation casualties, fatalities, and injuries through NTSB investigations and recommendations.

### **Webinars**

#### **Seeking Solutions to Eliminate Distracted Driving**

**April 26, 2023**

The purpose of this event was to focus attention on the human and economic costs of distracted driving, which contributes to more than 3,000 deaths each year in the United States and cost \$98.2 billion in economic losses in 2019.

#### **Teen Driver Safety Advocacy: Strategies and Programs to Create Change**

**October 19, 2022**

The purpose of this event was to find effective, meaningful ways of influencing teens to make smart decisions to prevent teen driver crashes.

### **Roundtables**

#### **Advancing Pedestrian Safety Through a Safe System Approach**

**October 5, 2022**

In this roundtable, we discussed the state of pedestrian safety; planning for a Safe System; ideas for improving pedestrian safety through inclusive road

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infrastructure, vehicle design, and safety technology; and the policy changes needed to implement a proactive, integrative, and shared-responsibility approach to safety.

### **Investments in Technology**

#### **Three-Dimensional Laser Scanners**

##### **August 2023**

In collaboration with the Office of Research and Engineering, we upgraded our 10-year-old laser scanning tools with two new three-dimensional laser scanners to improve documentation of factual evidence and to efficiently analyze and explain the circumstances of a crash. The new tools will improve graphic simulation and animation techniques to reconstruct, quantify, and illustrate crash sequences.

#### **Reconstruction Software**

##### **September 2023**

We purchased new reconstruction software to simulate motor vehicle crashes, including pedestrian crashes, based on physics and dynamic motion, in a three-dimensional environment, including the integration of airbag control module data. The software can also provide scale diagrams, three-dimensional models, and terrain environments that includes seamless integration of point cloud data from the three-dimensional laser scanners and drone data, improving the efficiency of the reconstruction process.

#### **Regulatory Correspondence**

##### **2023**

We provided feedback and guidance on nine regulatory efforts, including rulemaking related to light and heavy vehicle automatic emergency braking, NHTSA's New Car Assessment Program, trailer and semitrailer side underride guards, the FMCSA's carrier safety management system (SMS), commercial motor vehicle automated driving systems integration plan and human factors considerations, and the DOT's request for enhancing the safety of VRUs at intersections.

### **Ongoing Significant Highway Accident Investigations**

<b>Location</b>	<b>Date</b>	<b>Description</b>	<b>Fatalities</b>
Teutopolis, Illinois	9/29/2023	Cargo tank combination vehicle roadway departure crash and subsequent release of anhydrous ammonia	5

<b>Location</b>	<b>Date</b>	<b>Description</b>	<b>Fatalities</b>
Wawayanda, New York	9/21/2023	Motorcoach roadway departure and overturn	2
Highland, Illinois	7/12/2023	Crash between motorcoach and combination vehicles parked along rest area ramp	3
Philadelphia, Pennsylvania	6/11/2023	Combination vehicle overturn, fire, and interstate 95 overpass collapse	1
Millersburg, Oregon	5/18/2023	Crash involving a combination vehicle departing the roadway and colliding with a parked van and second combination vehicle	7
Excelsior Township, Wisconsin	5/12/2023	Vehicle collision with stopped school bus and student pedestrian	1
Woodlawn, Maryland	3/22/2023	Vehicle collision with workers in a highway work zone	6
Goodyear, Arizona	2/25/2023	Crash between a pickup truck and a group of bicyclists	2
Delray Beach, Florida	2/8/2023	Grade-crossing crash between SUV and intercity passenger train	2
Louisville, New York	1/28/2023	Cross-over crash between a medium size bus and truck	6
Williamsburg, Virginia	12/16/2022	Rear-end collision between a combination vehicle and a bus	3
Hamden, Connecticut	7/23/2022	Battery electric bus fire	0
Dermott, Arkansas	6/6/2022	Crash between a medium-size bus and a combination vehicle	5
Tishomingo, Oklahoma	3/22/2022	Crash between a passenger car and a combination vehicle at intersection	6
Andrews, Texas	3/15/2022	Head-on crash between a pickup truck and a transit van	9
Pittsburgh, Pennsylvania	1/28/2022	Collapse of the Fern Hollow Bridge	0

Note: We are devoting significant resources to the investigations listed and anticipate producing a report upon the completion of each investigation.



## MARINE SAFETY

	(\$000s)	FTEs
FY 2024 Estimate	\$5,766	20
FY 2025 Request	\$6,762	23
Increase/Decrease	\$996	3

### Overview of the Request

The funding level for this program reflects the prorated impact of a pay raise of 2 percent projected for January 1, 2025, a 2 percent nonpay inflation factor, an increase in agency program investments, and an increase in the agency's contribution to employee health benefits. An increase of 3 FTEs is supported by this funding level.

### Program Description

The Office of Marine Safety investigates and determines the probable cause of major marine casualties in US territorial waters, major marine casualties involving US-flagged vessels worldwide, and accidents involving both US public (federal) and nonpublic vessels in the same casualty. In addition, the office investigates select catastrophic marine accidents and those of a recurring nature.

The US Coast Guard conducts preliminary investigations of all marine accidents and notifies the NTSB when an accident qualifies as a major marine casualty, which includes any one of the following:

- The loss of six or more lives.
- The loss of a mechanically propelled vessel of 100 or more gross tons.
- Property damage initially estimated to be \$500,000 or more.
- A serious threat, as determined by the commandant of the US Coast Guard with the concurrence of the NTSB chair, to life, property, or the environment by hazardous materials.

The office is also responsible for the overall management of the NTSB's international marine safety program, under which the office investigates major marine casualties involving foreign-flagged vessels in US territorial waters and those involving US-flagged vessels anywhere in the world. Accidents involving foreign-flagged vessels accounted for 29 percent of NTSB marine casualty investigations over the past 5 years. Under the International Maritime

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Organization (IMO) *Code of International Standards and Recommended Practices for a Safety Investigation Into a Marine Casualty or Marine Incident* (Casualty Code), the office also participates with the US Coast Guard as a substantially interested State (SIS) in investigations of serious marine casualties involving foreign-flagged vessels in international waters. The international program involves reviewing US administration position papers related to marine accident investigations and participating in select IMO subcommittee meetings.

As part of the international program, the office coordinates with other US and foreign agencies to ensure consistency with IMO conventions. We also cooperate with other accident investigation organizations worldwide at annual meetings, such as the Marine Accident Investigators' International Forum (MAIIF), Europe MAIIF, and MAIIF Americas, which track developments related to marine casualty investigations and prevention and have status as a nongovernmental organization (NGO) with the IMO.

The NTSB is the only federal organization that performs independent, comprehensive, and transparent multidisciplinary investigations to determine the probable cause of marine accidents, with the goal of making safety recommendations to prevent similar events from occurring in the future. The thoroughness and independence of these investigations maintain public confidence in marine transportation systems and provide policymakers with unbiased analysis.

The Office of Marine Safety comprises the Marine Investigations Division and the Product Development Division.

### ***Marine Investigations Division***

The Marine Investigations Division manages the multidisciplinary go-teams that launch to accident sites, collect information, and analyze collected information to determine the probable cause. Currently, major casualty investigators on each team are led by an IIC and include subject matter experts in nautical operations, marine engineering and naval architecture, survival factors, human performance, and, when needed, from the Office of Research and Engineering.

### ***Product Development Division***

The Product Development Division works with the Marine Investigators Division to produce all marine investigation reports and issue safety recommendations. The division, which consists of technical writer-editors, is responsible for quality control of all products and ensuring adherence to agency publications guidelines. The division is responsible for drafting and

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editing the annual *Safer Seas Digest* publication, as well as addressing responses to notices of proposed rulemaking and general office correspondence.

## Accomplishments and Ongoing Efforts

Office accomplishments include issuing products related to transportation safety arising from completed and ongoing investigations. Products completed between October 1, 2022, and September 30, 2023, are highlighted below, along with information about other efforts and focus areas important to our mission.

### ***Investigation Reports***

Investigation reports are issued for accident or incident investigations and may contain a determination of probable cause and safety recommendations, depending on the scope of the investigation and the safety issues identified. For select major marine casualties, the office launches a full investigation team and presents a comprehensive investigation report to the Board. Investigations that are limited in scope are primarily intended to determine probable cause; the resultant report may be issued by the office director under delegated authority or may be adopted by the Board. A report containing only safety recommendations can be issued at any time during an investigation. If the Board determines that a recommended course of action requires immediate attention to avoid imminent loss of life from a similar accident, the safety recommendation is designated “urgent.”

From October 1, 2022, through September 30, 2023, the Office of Marine Safety issued a total of 27 investigation reports, 3 of which identified safety issues that led to the issuance of 15 new safety recommendations and 1 reiterated safety recommendation, and 24 of which solely determined probable cause.

Below are summaries of a sampling of the marine investigation reports completed between October 1, 2022, and September 30, 2023, arranged by report date.

#### **Engine Room Fire Aboard Passenger Vessel *Spirit of Norfolk* Near Naval Station Norfolk, Norfolk, Virginia June 7, 2022**

On June 7, 2022, about 12:04 p.m., the US Coast Guard received a report of an engine room fire aboard the 169-foot-long passenger vessel *Spirit of Norfolk* (US) while it was underway on the Elizabeth River near Naval Station Norfolk, Virginia. The vessel was on a 2-hour sightseeing cruise with 108

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persons on board. The crew determined they could not enter the smoke-filled engine room to fight the fire, the vessel lost propulsion, and the passengers and crew evacuated to one of the Good Samaritan vessels on scene. The *Spirit of Norfolk* was towed to a US Navy pier. The fire spread throughout the vessel before being extinguished 4 days later. There were no injuries, and no pollution was reported.

We determined that the probable cause of the fire on the *Spirit of Norfolk* was likely the ignition of combustible material stored near the exhaust piping from the operating port generator. Contributing to the severity of the fire was the lack of a fire detection and fixed fire extinguishing system in the engine room. Also contributing to the severity were ineffective communications between the unified command and firefighting teams that led to the fire attack team opening the engine room door, allowing the fire to spread.

We identified the following safety issues in this investigation: (1) lack of a fire detection and a fixed fire extinguishing system in the engine room and (2) ineffective response communications.

The NTSB issued three new recommendations to the US Coast Guard.

Recommendations: 3 new

Report Date: September 29, 2023

**Contact of Passenger Vessel *Cathlamet* with Ferry Terminal Dolphin  
Seattle, Washington  
July 28, 2022**

On July 28, 2022, about 8:14 a.m., the passenger and car ferry *Cathlamet* (US) had crossed Puget Sound and was approaching the Fauntleroy Ferry Terminal in Fauntleroy, Washington, with 94 persons on board when the vessel struck a ferry terminal dolphin. One minor injury was reported. The damage to the vessel was estimated at \$10 million, and the dolphin damage estimate was \$300,000.

We determined that the probable cause of the contact of the passenger vessel *Cathlamet* with the dolphin at the Fauntleroy Ferry Terminal was the master's incapacitation, likely due to a microsleep, while the vessel was docking, and the quartermaster not actively monitoring the approach to the ferry terminal and intervening before the contact.

As a result of this investigation, we issued lessons learned about fatigue, watchstanding, and complacency. Fatigue is often a factor in casualties

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investigated by the NTSB. Fatigue affects all aspects of human performance, including decision-making, alertness, and reaction time. Mariners should understand the performance effects of sleep loss and recognize the dangers of fatigue, such as microsleeps. When affected by fatigue, mariners should arrange for a qualified watchstander to serve in their place and avoid being on duty when unable to safely carry out their responsibilities. In addition, repetitive operations, such as ferry transits—back and forth on the same route—require operators to sustain a high level of vigilance to prevent complacency. Complacency occurs when operators repeatedly complete a task without consequence, desensitizing them to its inherent risk. As with any repetitive task, individuals become increasingly familiar and comfortable over time. To combat complacency, operators should comply with procedures, such as operating checklists, that are in place to prevent single points of failure, and companies should train operators on the importance of following procedures.

Recommendations: None

Report Date: September 27, 2023

**Grounding of the Tugboat *CC Portland*  
Ingleside, Texas  
August 7, 2022**

On August 7, 2022, at 4:25 p.m., the tugboat *CC Portland* (US) grounded outside the Corpus Christi Ship Channel, near Ingleside, Texas, while repositioning to secure a tow line on the bow of the inbound liquefied natural gas carrier *LNG Fukurokuju* (BS). No injuries were reported by the five crewmembers aboard the *CC Portland* or the 27 crewmembers aboard the *LNG Fukurokuju*. An estimated 4-5 gallons of diesel fuel were released from a hull breach on the tugboat. Damage to the *CC Portland* was estimated at \$1.3 million.

We determined that the probable cause of the grounding of the *CC Portland* was the mate's attempt to make up bow to bow with a liquefied natural gas carrier while the tugboat and liquefied natural gas carrier transited at a speed that was excessive for the advanced harbor-assist maneuver. Contributing to the casualty was the lack of a company policy regarding maximum allowable speed for bow assist maneuvers.

As a result of this investigation (and others), we issued lessons learned about the hazards associated with speed on bow-to-bow harbor-assist operations. The risk of a casualty during these operations with azimuthing stern drive (ASD) tugboats increases with increasing speed. Hydrodynamic forces around an assisted vessel's bow increase exponentially with speed, while the amount of reserve propulsion power available to the tugboat operator

decreases. Therefore, owners and operators of ASD tugboats that perform bow-to-bow harbor-assist operations should set speed limits for these maneuvers. These limits may vary for different classes of tugboats based on design. Tugboat operators should communicate these predetermined speed limits to pilots and ship masters in command of the vessels that they are assisting before engaging in these maneuvers.

Recommendations: None

Report Date: September 7, 2023

### **Grounding and Capsizing of Fishing Vessel *Challenger***

**Karluk, Kodiak Island, Alaska**

**August 7, 2022**

On August 7, 2022, about 7:00 a.m., while transiting along the northwestern shore of Kodiak Island, Alaska, the fishing vessel *Challenger* (US) struck a submerged rock and began taking on water. The captain and three crewmembers used onboard pumps to remove the floodwater, but the pumps were unable to keep up, and the crew abandoned the vessel. A nearby Good Samaritan fishing vessel rescued them. The *Challenger* eventually capsized. There were no injuries, and no pollution was reported. Damage to the vessel was estimated at \$600,000.

We determined that the probable cause of the grounding of the fishing vessel *Challenger* was the captain's decision to navigate close to shore in an area known to him to have an uncharted rock. Contributing to the capsizing of the vessel was the lack of a watertight collision bulkhead and subdivision or compartmentalization below the main deck, which allowed for progressive flooding.

As a result of this investigation, we issued lessons learned on reporting unmarked hazards. In addition to marking hazards on their own charts and charting software, mariners can report issues (errors or omissions) with the National Oceanic and Atmospheric Administration's nautical charts or Coast Pilot through the Office of Coast Survey's ASSIST tool.

Recommendations: None

Report Date: August 17, 2023

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**Collision between Cargo Ship *Damgracht* and Cargo Ship *AP Revelin*  
Sabine Pass, Port Arthur, Texas  
August 21, 2022**

On August 21, 2022, about 10:45 a.m., the cargo ship *Damgracht* (NL) was inbound in the Sabine Pass Outer Bar Channel en route to Beaumont, Texas, and the cargo ship *AP Revelin* (HR) was outbound when the two vessels collided near Port Arthur, Texas. There were no injuries to the *Damgracht's* 16 crewmembers nor to the *AP Revelin's* 19 crewmembers, and no pollution was reported. Damage to the *AP Revelin* was estimated at \$3.4 million, and there were no reported damage costs for the *Damgracht*.

We determined the probable cause of the collision between the cargo vessel *Damgracht* and the cargo vessel *AP Revelin* was the *Damgracht's* loss of propulsion caused by an automatic shutdown of the main engine due to a false alarm, likely triggered by water vapor sensed by the oil mist detector shortly after engine maintenance was completed to replace a failed cylinder head gasket during high-humidity conditions.

As a result of this investigation, we issued lessons learned on oil mist detector precautions after engine maintenance. When certain engine components, such as cylinder head gaskets, fail, cooling water can be introduced into engine lube oil systems. Ambient air conditions, such as high humidity or extreme cold temperatures, can also increase the water content within engine lube oil sumps. The elevated quantity of water in lube oil systems can trigger false alarms in engine crankcase oil mist detectors (and lead to an engine shutdown) due to water droplets passing through the measuring track or the filter glass detecting condensation (mistaking it for oil mist). After an engine's crankcase is opened and exposed to these conditions during maintenance and repair, it is good practice for engine crews to inspect and test the lubricating oil system for water intrusion and ensure lube oil purifying equipment is functioning properly to remove any water or other contamination in the lube oil.

Recommendations: None

Report Date: August 1, 2023

**Collision between US Coast Guard Cutter *Winslow Griesser* and Center-console Boat  
*Desakata*  
Near Dorado, Puerto Rico  
August 8, 2022**

On August 8, 2022, about 2:17 p.m., the 154-foot-long US Coast Guard cutter *Winslow Griesser* (WPC-1116) and the 23-foot-long center-console boat

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*Desakata* collided about 4 miles off the northern coast of Puerto Rico. The cutter, with a crew of 21, was transiting westbound along the coast, and the boat was transiting northbound while trolling (fishing). Of the two *Desakata* crewmembers, one was seriously injured, and one was fatally injured. None of the *Winslow Griesser* crewmembers was injured. No pollution was reported. The *Desakata*, valued at \$58,800, was a total loss.

We determined that the probable cause of the collision between the US Coast Guard cutter *Winslow Griesser* and the center-console boat *Desakata* was the failure by both vessels' crews to maintain a proper lookout. Contributing to the casualty was the *Winslow Griesser* commanding officer and officer of the deck not taking sufficient measures to increase situational awareness while transiting at a high speed.

We identified the following safety issues in this investigation: (1) inadequate lookout on both vessels given the operating conditions and (2) difficulty detecting small vessels by radar.

As a result, the NTSB made two new safety recommendations to the Coast Guard.

Recommendations: 2 new  
Report Date: July 3, 2023

**Collision Between Bulk Carrier *Bunun Queen* and Offshore Supply Vessel *Thunder*  
Port Fourchon, Louisiana  
July 23, 2022**

On July 23, 2022, about 1:14 p.m., the bulk carrier *Bunun Queen* (LR), transiting eastbound in the Gulf of Mexico with 20 crewmembers on board, and the northbound offshore supply vessel *Thunder* (US) collided about 66 miles south of Port Fourchon, Louisiana. The *Thunder* sustained substantial damage to its port side, which resulted in the flooding of one of its propulsion rooms and three other spaces. Eleven of *Thunder's* 18 crewmembers were evacuated to a Good Samaritan vessel, and the remaining crew stayed with the vessel to control the flooding while it was towed back to port. There were no injuries, and no pollution was reported. Damage to both vessels was estimated at \$12.3 million.

The NTSB determined that the probable cause of the collision between the bulk carrier *Bunun Queen* and the offshore supply vessel *Thunder* was the *Bunun Queen* officer's distraction due to performing non-navigational tasks, and the *Thunder* officer's distraction due to cell phone use, which kept both officers from keeping a proper lookout. Contributing to the casualty was



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the *Thunder's* officer on watch not following his company's watchkeeping policies.

As a result of this investigation, the NTSB issued lessons learned on the distraction related to the use of personal electronic devices. Nonoperational use of cell phones and other wireless electronic devices by on-duty crewmembers in safety-critical positions has been a factor in casualties and accidents in all transportation modes. Using cell phones and other personal electronic devices has been demonstrated to be visually, manually, and cognitively distracting. Nonoperational use of cell phones should never interfere with the primary task of a watchstander or a bridge team member to maintain a proper lookout. It is important for personnel to follow established protocols regarding cell phone use.

Recommendations: None  
Report Date: May 22, 2023

**Breakaway of Moored Mobile Offshore Drilling Unit *VALARIS DS-16* and Subsequent Collision with Cargo Vessel *Akti*  
Bayou Casotte, Pascagoula, Mississippi  
March 12, 2022**

On March 12, 2022, about 12:20 a.m., the mobile offshore drilling unit *VALARIS DS-16* (MH) was in layup status at the ST Engineering Halter Marine and Offshore Shipyard in Pascagoula, Mississippi, when it broke away from the dock, drifted across the Bayou Casotte channel, and collided with the bulk cargo vessel *Akti* (MH) moored at the Chevron Refinery dock no. 6. There were no injuries reported for the 164 crewmembers and personnel on board the *VALARIS DS-16* or the 22 crewmembers on board the *Akti*, and there was no pollution reported. The total damage resulting from the breakaway was estimated at \$5 million.

The NTSB determined that the probable cause of the breakaway of the *VALARIS DS-16* from the ST Engineering Halter Marine and Offshore Shipyard dock and the subsequent collision with the cargo vessel *Akti* was the failure of one of the shipyard's mooring bollards—which had been modified to increase its height to accommodate more lines—used to secure the *VALARIS DS-16's* bow mooring lines to a pier during a cold front with strong winds.

As a result of this investigation, the NTSB issued lessons learned related to bollard inspections. As a result of continuing increases in vessel size and sail area, bollards that were previously sufficient may not have adequate capacity to moor larger vessels. There are currently no US Coast Guard or Occupational Safety and Health Administration regulatory requirements for facilities to

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inspect and verify loading capacities of bollards at shoreside facilities. Due to their exposure to seawater, bollards and associated pierside mooring equipment are also at high risk for corrosion, which can significantly affect service life. The Coast Guard has recommended that facility owners and operators develop routine inspection programs for bollards and other mooring equipment.

Recommendations: None  
Report Date: March 7, 2023

**Collision Between Yacht *Utopia IV* and Tank Vessel *Tropic Breeze*  
Northeast Providence Channel, Bahamas  
December 23, 2021**

On December 23, 2021, about 10:21 p.m., the motor yacht *Utopia IV* (US) and tank vessel *Tropic Breeze* (BZ) were transiting the Northeast Providence Channel, 20 miles northwest of Nassau, Bahamas, when the two vessels collided. The *Tropic Breeze*'s engine room began flooding. The vessel's seven crewmembers abandoned the *Tropic Breeze* to liferafts and a rescue boat before the ship sank, and they were rescued by a Good Samaritan vessel. Three of the 13 crew aboard the *Utopia IV* sustained minor injuries. There were 156,500 gallons of petroleum cargo and fuel lost with the tanker. Damage to the vessels was estimated at \$7.9 million.

The NTSB determined that that the probable cause of the collision between the yacht *Utopia IV* and the tank vessel *Tropic Breeze* was the *Utopia IV*'s wheelhouse crew not maintaining a proper lookout and therefore not identifying the tank vessel they were overtaking. Contributing was the *Tropic Breeze*'s bridge team also not maintaining a proper lookout.

As a result of this investigation, the NTSB issued lessons learned on the importance of maintaining proper lookout. A proper lookout by suitably trained crewmembers is required by the Convention on the International Regulations for Preventing Collisions at Sea, 1972, and is essential in determining the risk of collision. The effective use of all available resources by a bridge team, including visual scanning, radars, electronic charts, and an automatic identification system, increases collective situational awareness and contributes to a safe navigation watch. Operators and crews should ensure that vessel bridge teams are staffed with certificated/credentialed mariners who are familiar with all bridge navigation equipment and able to independently take immediate action.

Recommendations: None  
Report Date: December 22, 2022

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**Collision Between Liquefied Petroleum Gas Carrier *Gas Ares* and Moored Tug *Sabine*  
Port Neches, Texas  
November 25, 2021**

On November 25, 2021, at 10:27 p.m., the liquefied petroleum gas carrier *Gas Ares* (PA) was transiting upbound on the Neches River in Port Neches, Texas, with 24 persons on board, when it collided with the outermost of two harbor tugs moored alongside the no. 1 loading dock at the Motiva Port Neches Terminal. No injuries or pollution were reported. Damage to the tugs and dock was estimated at \$1,057,000.

The NTSB determined that the probable cause of the collision between the liquefied petroleum gas carrier *Gas Ares* and the tug *Sabine* (US), moored alongside the tug *Florida* (US) at the Motiva Port Neches Terminal no. 1 loading dock, was the pilot's decision to reduce the vessel's speed in order to create less wake when passing a pipeline removal project, causing a loss of rudder effectiveness in strong crosswinds that set the carrier toward moored vessels.

Recommendations: None  
Report Date: October 27, 2022

**Capsizing of Liftboat *SEACOR Power*  
Gulf of Mexico, 7 miles off Port Fourchon, Louisiana  
April 13, 2021**

On April 13, 2021, about 3:37 p.m., the liftboat *SEACOR Power* (US) capsized about 7 miles off the coast of Port Fourchon, Louisiana in a severe thunderstorm. Search-and-rescue efforts were hampered by 30- to 40-knot winds and seas that quickly built to 10 to 12 feet and persisted throughout the evening and into the next day. Six personnel were rescued by the US Coast Guard and Good Samaritan vessels, and the bodies of six fatally injured personnel were recovered. Seven personnel were never found and are presumed dead. The vessel, valued at \$25 million, was a total constructive loss.

The NTSB determined that the probable cause of the capsizing of the liftboat *SEACOR Power* was a loss of stability that occurred when the vessel was struck by severe thunderstorm winds, which exceeded the vessel's operational wind speed limits. Contributing to the loss of life on the vessel were the speed at which the vessel capsized and the angle at which it came to rest, which made egress difficult, and the high winds and seas in the aftermath of the capsizing, which hampered rescue efforts.

We identified the following safety issues in this investigation: (1) gaps in forecasts and communications of weather events, (2) the operation and stability

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of restricted-service liftboats in severe thunderstorms, (3) the effectiveness of the initial response to the capsizing, and (4) the difficulty in locating survivors in adverse weather and sea conditions.

The NTSB issued new recommendations to the National Weather Service, FAA, US Air Force, US Coast Guard, Offshore Marine Service Association, and SEACOR Marine, and reiterated one recommendation to the Coast Guard.

Recommendations: 10 new; 1 reiterated  
Report Date: December 4, 2022

**Grounding of Passenger Ferry *Commodore*  
Bushwick Inlet, East River, Brooklyn, New York  
June 5, 2021**

On June 5, 2021, about 4:08 p.m., the high-speed catamaran passenger ferry *Commodore* (US) was transiting northbound on the East River near Bushwick Inlet off Brooklyn, New York, when the vessel lost primary steering and speed control to both of its port hull water jets and then grounded. One minor injury was reported among the 7 crewmembers and 107 passengers on board. The vessel was later refloated and drydocked for repair. No pollution was reported. Damage to the vessel was estimated at \$2.5 million.

The NTSB determined that the probable cause of the grounding of the passenger ferry *Commodore* was the loss of the primary control system for the catamaran's port water jets and propulsion engines due to a flaw in the system manufacturer's software causing a memory card failure. Contributing to the casualty was the company's lack of clear SMS procedures for primary control system failure and ineffective oversight of crew training on failure modes for loss of propulsion and steering control, resulting in the captain not identifying the nature of the loss of control and either engaging back-up control or using emergency engine shutdowns to stop the vessel.

As a result of this investigation, the NTSB issued lessons learned regarding the importance of training for the loss of propulsion or steering control. The loss of such control while transiting in channels or maneuvering near immediate hazards (grounding, traffic, objects), when response time is critical, demands crewmembers act quickly to mitigate potential casualties. SMS should identify potential failure modes and specific responses. Effective company training on the loss of propulsion and steering controls builds crew confidence and proficiency and improves a crew's ability to respond during an actual emergency. Training should include requirements for the practical demonstration of loss-of-control procedures and use of emergency back-up

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systems. Vessel owners and operators should continuously evaluate training programs to ensure effectiveness of drills and implement changes to improve SMS procedures.

Recommendations: None

Report Date: October 4, 2022

### ***Investigative Hearings***

Investigative hearings are public hearings related to investigations in which the agency is authorized to obtain testimony under oath.

#### **US Coast Guard Investigative Hearing into Engine Room Fire on the Small Passenger Vessel *Spirit of Norfolk* (Marine Board of Investigation) Investigative Hearing January 26 to February 2, 2023**

From January 26 to February 2, 2023, the US Coast Guard conducted a formal investigation public hearing, called a Marine Board of Investigation (MBI), into the engine room fire aboard the 169-foot-long small passenger vessel *Spirit of Norfolk* (US) while it was underway on the Elizabeth River near Naval Station Norfolk, Virginia. The vessel was on a 2-hour cruise with 108 persons on board, including a large number of grade school children. The vessel lost propulsion, and the passengers and crew evacuated to a Good Samaritan vessel. The *Spirit of Norfolk* was towed to a naval pier. The fire spread throughout the vessel before being extinguished 4 days later, on June 11. Two members of the NTSB's Office of Marine Safety participated alongside the Coast Guard questioning witnesses. During the hearing, US Coast Guard and NTSB investigators heard from 23 witnesses who provided testimony into pre-accident historical events, regulatory compliance, crewmember duties and qualifications, mechanical systems, emergency response, and Coast Guard oversight.

### ***Safety Alerts***

A safety alert is a short informational bulletin, usually only a page long, that pinpoints a particular safety issue. It contains information based on the findings of one or more NTSB investigations and enhances the dissemination of safety information to the traveling public.

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### **Reducing Collision Risk by Improving Small Vessel Detectability**

This safety alert was derived from a casualty in which two vessels—a 23-foot-long center-console boat with a fiberglass hull and a 154-foot-long US Coast Guard cutter—collided because neither crew saw the other vessel approaching, either visually or by electronic means. Had the fiberglass boat been equipped with a radar reflector, it may have appeared on the cutter’s radar, providing the cutter’s crew an opportunity to detect the boat. Similarly, had the boat been equipped with an automatic identification system transponder, the cutter’s crew may have been aware of the boat.

Issue Date: June 30, 2023

### ***Support to Foreign Accident Investigations***

Between October 1, 2022, and September 30, 2023, the Office of Marine Safety participated with the US Coast Guard as a marine safety investigating State in two ongoing investigations of serious marine casualties involving foreign-flagged vessels in international waters under the IMO Casualty Code.

<b>Location</b>	<b>Date</b>	<b>Description</b>	<b>Fatalities</b>
South Atlantic Ocean (Antarctic Ocean - Drake Passage)	11/29/2022	PV <i>Viking Polaris</i> (NO), Heavy weather damage/SIS investigation	1
Elephant Island, Antarctica	11/15/2022	<i>World Explorer</i> (PT), Small boat capsize/SIS investigation	2

### ***Other Efforts and Focus Areas***

#### **Conferences**

#### **Americas Marine Accident Investigators International Forum August 26 to September 1, 2023**

The office director represented the United States at the Americas Marine Accident Investigators International Forum (AMAIF) meeting in Buenos Aires, Argentina, with representatives from Peru, Ecuador, Chile, Argentina, Brazil, the Marshall Islands, and the Panama Canal. The NTSB’s Office of Marine Safety is a member of the MAIF. The director presented on the current issues in US major marine casualties.

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**European Marine Accident Investigators International Forum  
May 11 to 12, 2023**

The office deputy director represented the United States at the European EMAIIF's 16th Annual Meeting in Copenhagen, Denmark. His presentation to the delegates was titled, "Scoping the Investigation Report: What and How to Communicate to Readers." He also participated in question-and-answer session on NTSB Office of Marine Safety practices.

The session and presentation considered the issues that can arise when accident reports are designed to meet various expectations but must also effectively communicate the investigation results.

**International Maritime Organization Subcommittee on Navigation, Communication, and Search and Rescue Meeting  
May 10 to 19, 2023**

An investigator attended this meeting as part of the US delegation and participated in search-and-rescue and navigation working groups throughout the session.

**International Maritime Organization Subcommittee on Ship Systems and Equipment Meeting  
February 27 to March 3, 2023**

An investigator participated in this meeting as a member of the US delegation, headed by the US Coast Guard, in London, England. The Subcommittee on Ship Systems and Equipment deliberates on a wide range of technical and operational matters related to systems and equipment on all types of ships, vessels, craft, and mobile units covered by IMO instruments. This includes lifesaving equipment, lifting appliances and arrangements, and fire detection and fire extinguishing systems. During this year's meeting, office staff provided support to the Coast Guard in the Life Saving Appliances Working Group, which considered several proposed revisions to the International Life-Saving Appliances Code.

**International Maritime Organization Subcommittee on Human Element, Training, and Watchkeeping  
February 6 to 10, 2023**

An investigator participated in this meeting, primarily contributing to Working Group 2, which was tasked with developing the scope, aims, and principles of the upcoming comprehensive review of the 1978 Standards of Training and Certification of Watchkeeping Convention and Code. The review

specifically highlighted the areas of bullying, harassment, and psychological safety to be introduced as part of the model training courses.

## Meetings

### Radio Technical Committee (Maritime)

**June 14 to 17, 2023**

The office director attended and presented at the annual convention of the Radio Technical Committee (Maritime) in Jacksonville, Florida. Several hours of the conference were dedicated to an open NTSB recommendation on personal locator beacons, during which the director explained the importance of such technology.

### Most Wanted List Outreach

### Navigation Technology Conference

**December 5 to 7, 2022**

The office director presented at the annual Navigation Technology Conference in Seattle, Washington, advocating for the use of personal locator beacons.

## Investment in Technology

### Made Smart Software Program

In collaboration with the Offices of the Chief Information Officer and the Chief Financial Officer, the Office of Marine Safety acquired a Made Smart software program, which provides highly accurate vessel automatic information system (AIS) tracking and plotting of vessel positions. This software offers a high return on investment, as it will improve the efficiency and accuracy of processing vessel AIS data for casualty investigation analysis, thus saving weeks of investigator project hours.

## Ongoing Significant Marine Accident Investigations

Location	Date	Description	Fatalities
St. Rose, Louisiana	9/12/2023	<i>John 3:16</i> (US)	0
Houston, Texas	8/26/2023	<i>MBC Africa</i> (AG) - <i>Common Faith</i> (GR) Collision	0
Covington, Louisiana	8/17/2023	<i>Covington Marina</i> (US) Fire/Explosion	0
Byrdstown, Tennessee	8/10/2023	<i>Sunset Marina Fire</i> (US) Fire/Explosion	0



<b>Location</b>	<b>Date</b>	<b>Description</b>	<b>Fatalities</b>
Lahaina, Hawaii	8/08/2023	<i>Atlantis IV</i> (sub) (US) Fire/Explosion	0
Myrtle Beach, South Carolina	8/08/2023	<i>Jacqueline A</i> (US) Flooding/Hull Failure	0
Thebes, Illinois	7/29/2023	<i>City of Louisville</i> (US) Grounding/Stranding	0
Galveston, Texas	7/13/2023	<i>Duke</i> (US) Contact	0
Lake Charles, Louisiana	7/8/2023	<i>Danny Terral</i> (US) Contact	0
San Francisco, California	7/6/2023	<i>Ruby Princess</i> (BS) Contact	0
Newark, New Jersey	7/5/2023	<i>Grande Coasta D'Avorio</i> (IT) Fire/Explosion	2
New Orleans, Louisiana	7/4/2023	<i>Kitty</i> and barge <i>EMS 317</i> (US) Contact	0
New Orleans Louisiana	6/25/2023	<i>Joanne Marie</i> (US) Flooding/Hull Failure	0
900 nm east of Cape Cod, Atlantic Ocean	6/22/2023	<i>Sub Titan</i> (US) Other/Implosion - <i>Polar Prince</i> (CA) Attending Vessel	5
Tall Timbers, Maryland	6/7/2023	Rec Vessels/Tall Timbers Marina (US)	0
Cantaño, Puerto Rico	6/7/2023	<i>San Juan - Jax Bridge Barge</i> (US) Contact	0
Kodiak, Alaska	5/25/2023	<i>Cingluku-Jnguk</i> (US) Fire/Explosion	0
Piti, Guam	5/24/2023	<i>Polaris</i> (US) Fishing - Flooding/Hull Failure	0
Mackinaw City, Michigan	5/7/2023	<i>Nickolena</i> (US) Contact	0
Chalmette, Louisiana	4/25/2023	<i>EMS 348</i> (US) Contact	0
Natchez, Mississippi	4/23/2023	<i>Susan K</i> (US) Contact	0
Port Dolomite, Michigan	4/21/2023	<i>John J Boland</i> (US) Grounding/Stranding	0
Delray Beach, Florida	4/12/2023	<i>Lady Delray</i> (US) Fire/Explosion	0
Tacoma, Washington	4/8/2023	<i>Kodiak Enterprise</i> (US) Fire/Explosion	0
Louisville, Kentucky	3/28/2023	<i>Ocean City</i> (US) Contact	0
Convent, Louisiana	3/27/2023	<i>Sirocco</i> (PA) Contact	0
Geismar, Louisiana	3/26/2023	<i>Uncle Blue</i> (US) Capsizing/Listing	0
Boston, Massachusetts	3/25/2023	<i>Spirit of Boston</i> (US) Fire/Explosion	0
Savannah, Georgia	3/16/2023	<i>Carol Jean</i> (US) - <i>FV Having Faith</i> (US) Flooding/Hull Failure	0
Westport, Washington	3/9/2023	<i>Marlins II</i> (US) Fire/Explosion	0
Barataria, Louisiana	2/17/2023	<i>Desperado</i> (US) Fire/Explosion	0
Ingleside, Texas	1/22/2023	<i>Mark E Kuebler</i> (US) - <i>Nisalah</i> (SA) Collision	0
Homer, Alaska	1/19/2023	<i>Qualifier 105</i> (US) Fire/Explosion	0
Meraux, Louisiana	1/16/2023	<i>W.B. Wood</i> (US) Capsizing/Listing	0
Angola, Louisiana	1/9/2023	<i>Big D - Carol McManus</i> (US) Collision	0

<b>Location</b>	<b>Date</b>	<b>Description</b>	<b>Fatalities</b>
Sault Ste. Marie, Ontario, Canada	1/7/2023	<i>American Mariner</i> (US) Grounding/Stranding	0
New York, New York	12/22/2022	<i>Sandy Ground</i> (US) Fire/Explosion	0
Jamaica Beach, Texas	11/25/2022	<i>Captain Alex</i> (US) Flooding/Hull Failure	0
Houma, Louisiana	11/20/2022	<i>L/B Robert</i> (US) Capsizing/Listing	0
Baton Rouge, Louisiana	11/13/2022	<i>S-Trust</i> (LR) Fire/Explosion	0
Chincoteague, Virginia	10/27/2022	<i>MSC Rita</i> (PA) - <i>Tremont</i> (US) Collision	0
Cooper River, near Naval Weapons Station, Charleston, South Carolina	9/5/2022	<i>Bow Triumph</i> (NO) Contact	0
Colombia River entrance, Oregon (Pacific Ocean)	8/11/2022	<i>MV Maunalei</i> (US) Machinery Damage	0
Nunez Point, Alaska	8/02/2022	<i>CFV Hotspur</i> (US) Capsizing/Listing	0
Houston, Texas	7/23/2022	<i>MV Thorco Basilisk</i> (CH) Cargo Damage	0
New York, New York	4/29/2022	<i>Lady Delray</i> (US) Fire/Explosion	0
Santo Domingo Cay, Bahamas	3/06/2022	<i>Capt Beau</i> (US) - <i>Carib Trader II</i> (VC) - Flooding/Hull Failure	0
Newport Beach, California	10/1/2021	San Pedro Bay Pipeline (US), <i>MSC Danit</i> (PN), <i>Beijing</i> (MT) Contact	0

Note: We are devoting significant resources to the investigations listed and anticipate producing a report upon the completion of each investigation.

## RAILROAD, PIPELINE AND HAZARDOUS MATERIALS INVESTIGATIONS

	(\$000s)	FTEs
FY 2024 Estimate	\$11,661	47
FY 2025 Request	\$13,697	47
Increase/Decrease	\$2,036	0

### Overview of the Request

The funding level for this program reflects the prorated impact of a pay raise of 2 percent projected for January 1, 2025, a 2 percent nonpay inflation factor, an increase in agency program investments, and an increase in the agency's contribution to employee health benefits.

### Program Description

The Office of Railroad, Pipeline and Hazardous Materials Investigations comprises four divisions: Railroad; Pipeline and Hazardous Materials; System Safety; and Report Development. The office investigates accidents involving railroads, pipelines, and hazardous materials, and evaluates the associated emergency response. Based on the findings of these investigations, the NTSB may issue safety recommendations to federal and state regulatory agencies; unions, industry, and safety standards organizations; carriers and pipeline operators; equipment and container manufacturers; producers and shippers of hazardous materials; and emergency response organizations. The office may also issue safety alerts to industry.

Consistent with the agency strategic goal of improving processes and products, the office identifies ways to enhance the effectiveness and efficiency of its investigative activities and products. To improve efficiency and effectiveness, the office initiated a reorganization and established four new branches in its Railroad Division, and two new branches in the Pipeline and Hazardous Materials Division. To ensure experienced investigators were assigned to the new branches, the office executed an internal realignment of staff and hired 12 new investigators.

#### ***Railroad Division***

Staff investigate accidents and incidents involving passenger and freight railroads, commuter rail transit systems, and other fixed guideway systems. Accidents are typically collisions or derailments, some of which involve

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fatalities, severe injuries, release of hazardous materials, or evacuation of residences. The division is separated into four branches of multidisciplinary investigative teams with expertise in the areas of track and engineering, operations, mechanical, signal and train control, survival factors, and crashworthiness.

The division does not investigate every railroad accident reported to the FRA or every rail transit accident reported to the FTA. To use NTSB resources most efficiently and effectively, criteria have been established to help identify for investigation those accidents that pose significant safety risks. The division also assesses selected railroad safety issues, often based on a set of accident investigations with similar safety issues. In other cases, staff may focus on analyses of regulations, railroad safety programs or procedures, or audit reviews of management and operations practices.

### ***Pipeline and Hazardous Materials Division***

Staff in the Pipeline and Hazardous Materials Division investigate accidents occurring during the transport of natural gas or other hazardous liquids, such as gasoline or propane, through underground pipeline systems, as well as accidents that threaten public safety by the release of hazardous substances. Pipeline investigations focus on accidents that involve fatalities or result in substantial property or environmental damage. The division is separated into two branches: pipeline investigations and hazardous materials investigations, with investigators having expertise in pipeline engineering, hazardous materials, survival factors, environmental response, and emergency response.

The division also investigates accidents involving the release of hazardous materials in all modes of transportation, including aviation, highway, railroad, and marine. The division may also investigate select hazardous materials accidents that highlight safety issues of national importance or involve a specific accident prevention issue. An investigation may include analysis of the performance of hazardous materials containers, such as rail tank cars, highway cargo tanks, or smaller nonbulk packaging. In addition, the division investigates environmental response issues in all modes, including pipeline.

### ***System Safety Division***

System Safety Division staff support the investigations led by the Railroad Division and the Pipeline and Hazardous Materials Division. The division investigates the role of system safety management in the regulated transportation modes, as well as the role of individual, workgroup, and organizational factors in an accident scenario. Staff also examine the role of

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regulatory, industry, and company practices in the accidents under investigation. The division oversees emerging safety regulations, methods, and data related to the railroad, pipeline, and hazardous materials areas.

Staff typically lead inquiries that extend well beyond the debris field of an accident site. Failures of operational systems rarely are isolated to the last component to break or malfunction. Rather, the reasons for system failures often are traceable back to management decisions and corporate cultural influences. Once these systemic failures are identified and understood, staff work to develop corresponding safety recommendations. Specific topics evaluated include drug and alcohol use, work-rest cycles and human fatigue, individual and team training, organizational safety culture, safety management, and public awareness.

### ***Report Development Division***

The Report Development Division is responsible for drafting and editing railroad, pipeline, and hazardous materials investigation reports to ensure that they are logical and well-organized, and that the issues presented are supported. They also write and edit responses to notices of proposed rulemaking, congressional testimony; speeches on matters pertaining to railroad, pipeline, and hazardous materials safety; and replies to safety inquiries from Congress, other federal agencies, state and local agencies, industry, and the public. The division is also responsible for effectively implementing the agency's guidance, protocols, and applicable portions of NTSB Board orders and operations bulletins related to product standardization and development.

## **Accomplishments and Ongoing Efforts**

Office accomplishments include issuing products related to transportation safety arising from completed and ongoing investigations. Products completed between October 1, 2022, and September 30, 2023, are highlighted below, along with information about other efforts and focus areas important to our mission.

### ***Investigation Reports***

Investigation reports are issued for accident or incident investigations and may contain a determination of probable cause and safety recommendations, depending on the scope of the investigation and the safety issues identified. For select major accidents, the office launches a full investigation team and presents a comprehensive investigation report to the Board. Investigations that are limited in scope are primarily intended to

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determine probable cause; the resultant report may be issued by the office director under delegated authority or may be adopted by the Board. A report containing only safety recommendations can be issued at any time during an investigation. If the Board determines that a recommended course of action requires immediate attention to avoid imminent loss of life from a similar accident, the safety recommendation is designated "urgent." From October 1, 2022, through September 30, 2023, the Office of Railroad, Pipeline and Hazardous Materials Investigations issued 3 investigation reports identifying safety issues that led to the issuance of 18 new safety recommendations; we also issued a total of 19 investigation reports that solely determined probable cause.

Below are summaries of the investigation reports completed between October 1, 2022, and September 30, 2023, arranged by report date.

### **Beyond Full Implementation: Next Steps in Positive Train Control**

The Rail Safety Improvement Act of 2008 requires Class I railroads and each "entity providing regularly scheduled intercity or commuter rail passenger transportation" to develop, submit, and carry out a plan for implementing positive train control (PTC), and railroads have since deployed PTC systems compliant with the law and FRA regulations. After this deployment, the NTSB undertook a review of FRA regulations, currently deployed PTC systems, recent developments in PTC technology, seven accidents with PTC-relevant findings, and the NTSB's recommendations from those accidents. During this review, the NTSB identified PTC-relevant safety issues and opportunities for improvements to current PTC systems as the FRA and the rail industry contemplate the future of PTC.

As a result of this investigation, the NTSB issued safety recommendations to the FRA.

Recommendations: 5 new  
Report Date: September 28, 2023

### **BNSF Railway Company Derailment and Pool Fire Involving DOT-117J Tank Cars Oklaunion, Texas January 8, 2022**

On January 8, 2022, about 9:49 a.m., an eastbound BNSF Railway Company train derailed 37 tank cars at milepost 156.2 on the BNSF Railway Company Red River Division in Oklaunion, Texas. The train had 2 crewmembers on board and was composed of 2 head-end locomotives, 1 distributed power locomotive at the rear of the train, 2 buffer railcars, and 96 loaded US DOT specification 117J (DOT-117J) tank cars carrying denatured ethanol, a

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flammable liquid. The BNSF Railway Company estimated that 601,819 gallons of denatured ethanol released from 28 of the 37 derailed tank cars. The ethanol ignited and burned uncontrolled for about 4 hours, resulting in a pool fire. No injuries or evacuations were reported.

Because this was a hazardous materials investigation focused on the performance of the DOT-117J tank cars, the NTSB did not determine the probable cause of the derailment.

As a result of this investigation, the NTSB issued safety recommendations to the FRA, PHMSA, and the Association of American Railroads.

Recommendations: 7 new  
Report Date: September 27, 2023

**Grade Crossing Collision Between MS Contracting LLC Dump Truck and Amtrak Passenger Train  
Mendon, Missouri  
June 27, 2022**

On June 27, 2022, about 12:42 p.m., eastbound National Railroad Passenger Corporation (Amtrak) train 4 (also known as the Southwest Chief) derailed both locomotives and all eight railcars in Mendon, Missouri, after colliding with an MS Contracting LLC dump truck that had entered a highway-railroad grade crossing. Three train passengers and the truck driver were killed, and 146 other passengers and Amtrak crewmembers were transported to local hospitals with injuries. Amtrak and the BNSF Railway Company estimated damage to track and equipment to be about \$4 million.

We determined that the probable cause of the collision between Amtrak train 4 and the MS Contracting LLC dump truck was the truck driver proceeding, for unknown reasons, into the highway-railroad grade crossing without stopping, despite the presence of a stop sign and approaching train. Contributing to the collision was the grade crossing's design, which reduced the drivers' ability to see approaching trains and made stopping as required by Missouri law difficult for heavy trucks.

As a result of the accident, Chariton County closed the involved crossing. In collaboration with the city of Chillicothe and the Missouri Department of Transportation, Chariton County has developed a plan to close several other passive crossings and redesign local roads to direct traffic through active crossings. Chariton County proposed its plan during a public meeting in April 2023 and is in the process of obtaining state or federal

funding to make the planned changes. As of July 2023, the Missouri state budget includes \$50 million for improving grade-crossing safety, and the Missouri Department of Transportation plans to use a portion of those funds to address passive grade crossings.

Recommendations: None  
Report Date: July 21, 2023

**Derailment of Amtrak Passenger Train 7 on BNSF Railway Track  
Joplin, Montana  
September 25, 2021**

On September 25, 2021, Amtrak's Passenger Train 7, the Empire Builder, a passenger train carrying 165 passengers and crewmembers, traveling on track owned and maintained by BNSF Railway, derailed near Joplin, Montana. Three passengers were killed and 49 people were injured. The train consisted of 2 locomotives and 10 railcars. Of the eight passenger railcars that derailed, four derailed on their sides, one derailed leaning, and three derailed upright.

We determined that the probable cause of the derailment of Amtrak Passenger Train 7 on BNSF Railway track was the combination of worn rail, vertical track deflection at a four-bolt rail joint, subgrade instability, and track misalignment. Contributing to the severity of the injuries were the occupant protections that did not restrain passengers in the overturn event and the failure of the window retention systems.

As a result of this investigation, we issued recommendations to the FRA, BNSF Railway, and all Class I and intercity railroads, and reiterated recommendations to the FRA.

Recommendations: 6 new, 5 reiterated  
Report Date: July 5, 2023

**Kinder Morgan Natural Gas-Fueled Explosion  
Coolidge, Arizona  
August 15, 2021**

On August 15, 2021, about 5:29 a.m., a 30-inch-diameter natural gas transmission pipeline owned and operated by Kinder Morgan, Inc., ruptured in a rural area of Coolidge, Arizona. The rupture resulted in the release of natural gas vapor that ignited and exploded. The explosion and gas-fed fire destroyed a farmhouse about 451 feet away, killing two of the three occupants and seriously injuring the other.



We determined that the probable cause of the accident was tented tape wrap leading to stress corrosion cracking, a fracture at a longitudinal seam weld, and subsequent rupture of the pipe. Contributing to the rupture was Kinder Morgan's failure to record the correct coating type used for this segment of pipeline, leading to a risk assessment that did not fully identify the risk of stress corrosion cracking.

As a result of the accident, PHMSA issued a corrective action order to Kinder Morgan that required El Paso to isolate, or shut down, the 38.6-mile segment of Line 2000 from main line valve 37 to main line valve 39; to reduce the operating pressure of Line 2000; to conduct a leakage survey and to review prior in-line inspections on Line 2000; to verify the records that established the maximum allowable operating pressure for Line 2000; and to develop a plan, approved by PHMSA, to resume operation of the isolated pipeline segment.

Recommendations: None

Report Date: April 27, 2023

#### **W.T. Byler Company Equipment Operator Fatality**

**Castroville, Texas**

**September 22, 2021**

On September 22, 2021, about 2:40 p.m., a W.T. Byler Company contract equipment operator was struck and killed by a suspended load of steel grating material that he was transporting with the boom and stick of a roadway maintenance machine on the Union Pacific Railroad (UP) Del Rio Subdivision near Castroville, Texas.

We determined that the probable cause of the accident was the use of a roadway maintenance machine to move a load of steel grating panels suspended in front of the machine with a clamping work head attachment that was not designed for use with such a load.

As a result of the accident, W.T. Byler prohibited the use of the clamping work head attachment to move steel grating panels; added rules to its safety program that prohibit workers from transporting materials suspended in front of roadway maintenance machine equipment above the centerline of the track; and implemented initial and refresher safety training in roadway worker protection regulations for employees. The company also hired two safety professionals dedicated to railroad projects; started conducting audits of proper employee credentials and safe working habits; and reiterated its cellular phone use policy to its employees.

Recommendations: None

Report Date: April 13, 2023

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**Passenger Fatality Bay Area Rapid Transit  
San Francisco, California  
September 13, 2021**

On September 13, 2021, about 3:13 p.m., a Bay Area Rapid Transit (BART) passenger was dragged and killed as BART train 511 was departing the Powell Street Station in San Francisco, California. The passenger exited the railcar onto the platform while their leashed canine remained on the train. The side passenger train doors closed on and pinched the canine's leash and the passenger, still attached to the leash, was dragged along the platform by the train and collided with the gate at the end of the platform.

We determined that the probable cause of the accident was the closure of the side passenger doors of the ninth railcar from BART train 511 onto a canine leash attached to the passenger's backpack, leaving her tethered to the train as it departed the Powell Street Station and dragging her along the station platform, resulting in her collision with a gate at the end of the platform.

At the time of the accident, BART was in the process of replacing the platform lighting at the Embarcadero, Montgomery, Civic Center, and Powell Street stations with LED lighting, an upgrade from the original lighting. BART was also in the process of repainting the walls of the station platform areas a brighter color. The lighting and painting improvements at the Powell Street Station were completed in July 2022. These actions increased the illumination of the environment, improving visibility for operators performing the look-back procedure at their stations.

Recommendations: None  
Report Date: February 28, 2023

**Employee Fatality Amtrak Train 163-15  
Westerly, Rhode Island  
January 15, 2022**

On January 15, 2022, about 2:15 p.m., an Amtrak conductor was killed after becoming separated from an open side passenger door of an Amfleet railcar in Amtrak train 163-15 that was traveling on track 1 at about 40 mph on its approach to the Westerly Passenger Station, in Westerly, Rhode Island.

We determined that the probable cause of the accident was the conductor's fall from an open side passenger door on Amtrak train 163-15 while moving at 40 mph. Contributing to the accident was (1) the conductor's use of the side passenger emergency door release to open a railcar door while the train was operating at a speed of 40 mph and (2) Amtrak's accepted

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practice of allowing side doors to be opened on approach to stations to allow crewmembers to monitor the platform.

As a result of the accident, Amtrak issued bulletin order, *Rule 3.21 Amendment, Amendment to Special Instruction 34-S10 and Special Instruction 940-S1 (Northeast Corridor from New York to Washington)*, which modified its employee safety rules and operational procedures to be more restrictive and prohibited the opening of side doors until after the train has stopped (Amtrak 2022, 2022a). In addition, Amtrak issued a *Weekly Safety Focus* to employees, aimed at heightening awareness on electronic device distraction and the importance of following safety rules related to the use of portable electronic devices (Amtrak 2022b).

Recommendations: None

Report Date: February 28, 2023

### **BNSF Railway Conductor Fatality**

#### **La Mirada, California**

**March 3, 2021**

On March 3, 2021, about 12:19 a.m., a train conductor of BNSF Railway train was killed during a shoving movement at Buena Park Yard in La Mirada, California. The train conductor was riding on the side ladder of the leading end of a boxcar during the shoving movement when he was pinned between the boxcar he was riding and a locomotive parked in a location that occupied the dynamic envelope of the adjacent track.

We determined that the probable cause of the accident was the lack of conspicuous close clearance markers in Buena Park Yard that hindered the train conductor's ability to clearly see and react to the railcars parked in a temporary close clearance location.

As a result of the accident, BNSF Railway established a pilot program to install paddle markers at designated locations in Buena Park Yard. Paddle markers are track markers placed alongside the rail and used to mark clearance points and other safety-relevant areas for employees in railyards. BNSF Railway indicated that the results of the pilot program could be used to establish a protocol or engineering standard for when and how to use the paddle type clearance markers.

Recommendations: None

Report Date: February 10, 2023

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**Massachusetts Bay Transportation Authority Trolley Collision with Derailment  
Brookline, Massachusetts  
July 30, 2021**

On July 30, 2021, about 6:03 p.m., a westbound Massachusetts Bay Transportation Authority (MBTA) light rail vehicle consist (trolley) collided with the rear of another westbound MBTA trolley on the B Branch of the MBTA Green Line near the intersection of Commonwealth Avenue and Harry Agganis Street in Brookline, Massachusetts. Each trolley consisted of two coupled railcars. Both of the struck trolley's railcars derailed, and the lead railcar of the striking trolley derailed. As a result of the accident, 24 passengers and 3 crewmembers were transported to local hospitals with minor injuries.

We determined that the probable cause of the accident was the operator's acceleration to 33 mph as he departed the St. Paul Street Station, exceeding maximum authorized speed due to his loss of situational awareness and colliding with the moving trolley.

In response to the accident, MBTA is deploying a train protection system for the Green Line. The system will include railcar-mounted and wayside equipment designed to mitigate the risk of trolley-to-trolley collisions by detecting obstacles, reduce signal violations through automation, and use signal and transponder data to enforce speed policies. It is scheduled for completion by June 2025.

Recommendations: None

Report Date: December 16, 2022

**Canadian Pacific Railway Raking Collision and Impact with Standing Train  
St. Paul, Minnesota  
August 25, 2021**

On August 25, 2021, about 5:08 p.m., Canadian Pacific Railway (CP) train 296-23, traveling on the St. Paul Subdivision toward St. Paul, Minnesota, collided with a standing UP freight train on a main track, derailling two locomotives on the CP train and one locomotive on the UP train. The derailed CP lead locomotive then struck and derailed a railcar from a BNSF Railway freight train, which was stopped on an adjacent main track. There were no reported fatalities or injuries.

We determined that the probable cause of the accident was improper handling of the train's air brakes by the engineer of CP train 296-23, which resulted in his failure to bring the train to a stop at the red (stop) signal at

control point Division Street. As result of this accident, the CP locomotive engineer was terminated.

Recommendations: None

Report Date: December 8, 2022

**Atmos Energy Corporation Natural Gas–Fueled Explosion During Routine Maintenance  
Farmersville, Texas  
June 28, 2021**

On June 28, 2021, about 3:35 p.m., a natural gas explosion occurred during routine maintenance activities at an Atmos Energy Corporation facility near Farmersville, Texas. The natural gas ignited and exploded after workers inserted an in-line tool into a launcher. Seven workers from Atmos; FESCO, Ltd.; and Bobcat Contracting, LLC were on site at the time of the accident and performing work for Atmos. The explosion injured two workers and killed two more.

We determined that the probable cause of the accident was a leaking mainline valve that allowed natural gas to enter the launcher, where it mixed with air, creating a flammable gas-air mixture that was ignited by an undetermined source. Contributing to the explosion and its severity were Atmos Energy Corporation's procedures and training practices that did not prepare workers to recognize and safely respond to abnormal operating conditions.

In response to the explosion, Atmos established a new covered task for pigging procedures; workers performing pigging operations must now be qualified as required by 49 *CFR* Part 192, which includes the ability to safely handle abnormal operating conditions. The new procedure also includes guidance on hazard zones near launchers and receivers and criteria for stopping work.

Recommendations: None

Report Date: October 19, 2022

***Investigative Hearings***

Investigative hearings are public hearings related to investigations in which the agency is authorized to obtain testimony under oath.

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**Norfolk Southern Railway Train Derailment with Subsequent Hazardous Material Release and Fires, February 3, 2023**  
**Investigative Hearing**  
**Hearing Date June 22-23, 2023**

The NTSB held an investigative hearing open to the public in East Palestine, Ohio, on June 22 and 23, 2023. During the hearing, the NTSB gathered sworn testimony from 27 witnesses about the February 3, 2023, NS train derailment with subsequent hazardous material release and fires. The hearing was a fact-finding step in the NTSB safety investigation, and the testimony gathered at the hearing will become part of the public record of the investigation.

The hearing focused on the following:

- Hazard communications and emergency responder preparedness for the initial emergency response.
- Circumstances that led to the decision to vent and burn five vinyl chloride tank cars.
- Freight car bearing failure modes and wayside detection systems.
- Tank car derailment damage, crashworthiness, and hazardous materials package information.

Parties to the investigative hearing included the following:

- FRA
- PHMSA
- NS Corporation
- Trinity Rail Management Leasing Services
- Oxy Vinyls, LP
- Brotherhood of Locomotive Engineers and Trainmen
- International Association of Sheet Metal, Air, Rail and Transportation Workers
- Transportation Communications Union/IAM
- Brotherhood of Railroad Signalmen
- International Association of Fire Fighters
- Village of East Palestine

***Other Efforts and Focus Areas*****Norfolk Southern Railway's Safety Practices and Culture**

Following the NS Railway train derailment and subsequent hazardous material release and fires in East Palestine, Ohio, on February 3, 2023, and

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several other significant NS accidents being investigated by the NTSB, in March 2023, the NTSB initiated a special investigation into NS Railway's organization and safety culture. The System Safety Division is leading the investigation.

#### Investigation in Process

#### **Federal Railroad Administration Rail Share November 29–30, 2022**

The FRA hosted a collaborative safety event tailored to rail industry groups. The free, 2-day event brought together about 250 representatives from industry, labor, government, and other stakeholders to discuss safety issues and best practices. During the event, Office Director Robert Hall presented on pipeline issues.

#### **National Joint Terrorism Task Force - Rail and Pipeline Security Conference 2023 April 26, 2023**

The National Joint Terrorism Task Force conducted a conference for rail and pipeline law enforcement liaisons to provide them valuable tools to assist with their liaison duties. This training is meant to strengthen collaboration among the rail and pipeline law enforcement liaisons, who will be able to take the information and contacts to enhance their respective programs and partnerships in their respective field office. Office Deputy Director Michael Hiller and Pipeline and Hazardous Materials Division Chief Sean Lynum attended and provided an overview of rail and pipeline investigative authority, processes, and NTSB investigations.

#### **American Gas Association Operations Conference May 1-4, 2023**

The American Gas Association Operations Conference is the natural gas industry's premier gathering of about 900 natural gas utility and transmission company leaders from across North America and the world for the sharing of technical knowledge, ideas, and practices. During the event, Office Director Robert Hall gave an update on NTSB investigations.

#### **Pipeline Safety Trust Conference May 1-4, 2023**

The Pipeline Safety Trust hosted the Pipeline Safety Conference, "The Future of Pipeline Safety—Technology, Tools, and Transition," with attendees who represented the affected public, the pipeline industry, and government regulators. This annual gathering focused on barriers to safer pipelines. During

the event, Chair Homendy gave the keynote address, and investigator Kim West gave an update on NTSB investigations.

### **National Association of Pipeline State Representatives September 20, 2023**

Pipeline and Hazardous Materials Division Chief Sean Lynum provided an update on NTSB pipeline investigations, the Most Wanted List, and the NTSB rail and pipeline ANPRMs at the National Association of Pipeline State Representatives (NASPR) meeting. NASPR is a nonprofit organization comprised of state pipeline safety regulatory personnel who ensure the safe operation of pipelines in the United States.

## **Ongoing Significant Railroad, Pipeline, and Hazardous Materials Accident Investigations**

<b>Location</b>	<b>Date</b>	<b>Description</b>	<b>Fatalities</b>
Walbridge, Ohio	9/17/2023	Railroad employee fatality	1
Cumberland, Maryland	8/6/2023	Fatality of conductor trainee	1
Great Barrington, Massachusetts	8/4/2023	Railroad employee fatality	1
Philadelphia, Pennsylvania	7/28/2023	Southeastern Pennsylvania Transportation Authority trolley derailment	0
Baltimore, Maryland	6/26/2023	Fatality of conductor trainee	1
Chico, Texas	4/16/2023	Collision between a UP grain train and a parked UP train	0
West Reading, Pennsylvania	3/24/2023	Explosion (natural gas) at candy factory resulting in injuries and fatalities; resident evacuation and displacement; and significant structural damage	7
East Palestine, Ohio	2/03/2023	Derailment of NS train resulting in hazardous materials release (vinyl chloride), fires, and resident evacuation	0
Camden, New Jersey	10/15/2022	Port Authority Transit Corporation contractor fatalities	2
Imperial County, California	9/08/2022	Collision between UP train and stored railcars resulting in crewmember fatalities	2
San Bruno, California	3/10/2022	Collision between commuter train and stationary rail vehicles resulting in passenger injuries	0
Reed, Pennsylvania	12/08/2021	Fatality of railroad worker	1



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<b>Location</b>	<b>Date</b>	<b>Description</b>	<b>Fatalities</b>
Arlington, Virginia	10/12/2021	Derailment of WMATA passenger train and evacuation of passengers	0

Note: We are devoting significant resources to the investigations listed and anticipate producing a report upon the completion of each investigation.

## RESEARCH AND ENGINEERING

	(\$000s)	FTEs
FY 2024 Estimate	\$15,266	46
FY 2025 Request	\$18,345	48
Increase/Decrease	\$3,079	2

### Overview of the Request

The funding level for this program reflects the prorated impact of a pay raise of 2 percent projected for January 1, 2025, a 2 percent nonpay inflation factor, an increase in agency program investments, and an increase in the agency's contribution to employee health benefits. An increase of 2 FTEs is supported by this funding level.

### Program Description

The Office of Research and Engineering is an investigative office providing scientific and technical expertise for NTSB accident investigations in all modes of transportation. The office, which includes four divisions and one program area, also conducts safety research, generates periodic statistical reviews of aviation accidents, and provides medical and toxicology expertise for investigations in all modes.

#### ***Safety Research Division***

The Safety Research Division examines transportation accidents, accident trends, and technological changes to identify problems and associated remedial actions that will reduce risk and improve the safety of the transportation system. Division staff comprises transportation safety researchers, data analysts, and statisticians who systematically examine the following:

- Risks or hazards in the transportation environment that may influence accidents or injury.
- Techniques and methods of accident investigation.
- Effectiveness of various safety countermeasures, such as policies, programs, or technologies.

The division also provides data science, data visualization, and statistical expertise to support accident launches and investigations agencywide, assists in developing safety recommendations, and publishes annual statistical reviews for the NTSB, Congress, and the public.

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### ***Materials Laboratory Division***

The Materials Laboratory Division performs expert multidisciplinary engineering and scientific analyses to determine whether the performance of materials and structures is related to the cause or severity of an accident. Engineers also analyze wreckage to determine the causes of fires and explosions. The division provides chemical and forensic science expertise, as well as technical advice and resources for experimental testing and research in the physical sciences.

### ***Vehicle Recorder Division***

The Vehicle Recorder Division extracts, formats, and analyzes data from aircraft flight data recorders (FDRs) and cockpit voice recorders (CVRs) and from recorders installed in locomotives, large ships, and some highway vehicles. Engineers also examine recorded electronic audio and video information captured by aircraft, ship, train, and support communication systems; provide electronic engineering expertise for all accident investigation modes in examining communication and control systems; provide time synchronization to correlate voice, data, and video recorder outputs; use advanced digital and analog filtering and signal representation techniques to extract critical recorder information; and perform forensic examinations of personal electronic devices and other computer hardware.

### ***Vehicle Performance Division***

The Vehicle Performance Division provides specialized aeronautical, mechanical, structural, and biomechanical engineering expertise; three-dimensional laser scanning and accident reconstruction; photogrammetry and video analysis; and animation and graphics development for all modes. Engineers use computational and visualization technology to provide accurate time-motion histories of the sequence of events and evaluate data from multiple sources to determine vehicle and occupant motion and the underlying causes of that motion. Engineers also develop video animations of accident scenarios, evaluate occupant injury mechanisms, and participate in and direct research into special projects as required.

### ***Program Area – Medical Investigations***

The medical officers evaluate the medical aspects of investigations, including medical fitness, pathology, toxicology, injury causation, and biomechanics. Examples of medical issues addressed include operator incapacitation and impairment from effects of substances and medical conditions and survivability aspects of injuries.

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## Accomplishments and Ongoing Efforts

### ***Safety Research Division***

From October 1, 2022, through September 30, 2023, the Safety Research Division responded to 294 requests for data analysis and statistical information from other NTSB offices, Board members, Congress, and the public. In addition, division staff researched and evaluated safety issues for multiple accident investigations and responded to an ANPRM on truck side underride guards and a request for comments on the US Model Minimum Uniform Crash Criteria guideline from NHTSA. Division staff published the NTSB's annual statistical reviews of aviation accidents, a general aviation accidents dashboard, a safety research report on micromobility safety data challenges, and a safety research report with recommendations for reducing alcohol, other drug, and multiple drug use among drivers in the United States. Finally, the division submitted a draft safety research plan proposing an NTSB study of US bus rapid transit systems.

### ***Materials Laboratory Division***

From October 1, 2022, through September 30, 2023, the Materials Laboratory engineers examined parts and wreckages from 140 accidents from all transportation modes and documented their findings through formal factual reports, study reports, analytical reports, and safety recommendations.

### ***Vehicle Recorder Division***

From October 1, 2022, through September 30, 2023, the Vehicle Recorder laboratories processed 407 recording devices and completed essential readouts, transcripts, and studies for aviation, rail, marine, and highway investigations.

### ***Vehicle Performance Division***

From October 1, 2022, through September 30, 2023, the Vehicle Performance staff produced 60 study reports and animations. Staff also launched to accident sites to acquire evidence for performance reports and participated in the development of safety recommendations and modal accident reports.

### ***Medical Investigations***

From October 1, 2022, through September 30, 2023, NTSB medical officers participated in over 120 investigations and produced over 225 reports

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in all transportation modes. Our medical officers evaluate and address medical issues through formal factual and analytical reports, safety recommendations, coordination with other agencies, and formal presentations to the agency and to external audiences.

Below are examples of the work performed by each of our divisions.

**Abrupt Loss of Pitch Control and Water Impact West Isle Air dba Friday Harbor  
Seaplanes de Havilland DHC-3, N725TH  
Mutiny Bay, Washington  
September 4, 2022**

A de Havilland DHC-3, N725TH, was substantially damaged when it impacted Mutiny Bay near Freeland, Washington, and sank. The pilot and nine passengers were fatally injured. A water recovery of the wreckage was required. The Materials Laboratory Division conducted a metallurgical evaluation of the horizontal stabilizer actuator and lock rings and supported the development of a safety recommendation letter. Vehicle Recorder Division staff aided in the download of home security camera footage capturing the accident.

Recommendations: 8 new  
Report Date: September 29, 2023

**Engine Room Fire Aboard Small Passenger Vessel *Spirit of Norfolk*  
Naval Station Norfolk, Virginia  
June 7, 2022**

An engine room fire occurred aboard the 169-foot-long small passenger vessel *Spirit of Norfolk* while the vessel was under way on the Elizabeth River near Naval Station Norfolk, Virginia, with 101 passengers and 7 crew. The vessel lost propulsion, and the passengers and crew evacuated to a Good Samaritan vessel. The *Spirit of Norfolk* was pushed to a naval pier, and the fire was extinguished. The Materials Laboratory supported the determination of the origin and cause of the fire.

Recommendations: 3 new  
Report Date: September 29, 2023

**BNSF Railway Company Derailment and Pool Fire Involving DOT-117J Tank Cars  
Oklaunion, Texas  
January 8, 2022**

An eastbound BNSF Railway Company denatured ethanol high-hazard flammable train derailed 31 DOT-117J100W tank cars at milepost 156.2 on the

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BNSF Red River Division in Oklaunion, Texas. BNSF estimates 601,819 gallons of denatured ethanol were released from 28 of the 31 derailed tank cars. The ethanol ignited and burned uncontrolled for about 3 hours. No injuries or evacuations were reported. The Materials Laboratory Division supported the evaluation of tank car stub sill and head pad welds and evaluated manway gaskets.

Recommendations: 7 new  
Report Date: September 27, 2023

**Crash of a Bombardier CL-600-2B16  
Truckee, California  
July 26, 2021**

A Bombardier CL-600-2B16 airplane operated as a 14 *CFR* Part 91 flight was destroyed when it crashed during the approach to Truckee-Tahoe Airport, in Truckee, California. The pilot, copilot, and four passengers died. Vehicle Recorder Division staff downloaded and analyzed data from the aircraft's FDR, CVR, and other avionics recovered from the crash. Vehicle Performance Division staff evaluated FDR data, the CVR recording, and ADS-B data obtained from the FAA to understand the sequence of events.

Recommendations: None  
Report Date: August 10, 2023

**Crash of a Bell 407 Helicopter  
Houma, Louisiana  
January 14, 2022**

A Bell 407 helicopter operated under 14 *CFR* Part 135 was destroyed when the on-demand passenger flight departed controlled flight during cruise and impacted terrain during an uncontrolled descent. The commercial pilot and passenger were fatally injured. An NTSB medical officer investigated the medical conditions and toxicological status of the commercial pilot. Vehicle Recorder Division staff extracted and analyzed video and parametric data from an onboard recording device.

Recommendations: None  
Report Date: July 6, 2023

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**Derailment of Amtrak Passenger Train 7 on BNSF Railway Track  
Joplin, Montana  
September 25, 2021**

A westbound Amtrak train carrying 154 people derailed in a right-hand curve on the BNSF Railway Hi Line Subdivision near Joplin, Montana. As a result of the derailment, 3 passengers died, and 44 passengers and crew were transported to local hospitals with injuries. Vehicle Recorder Division staff analyzed the forward-looking head-end video to evaluate track alignment in the area of the derailment, event recorder data, and cell phone record data.

Recommendations: 6 new, 3 reiterated  
Report Date: July 5, 2023

**Kinder Morgan Inc. Natural Gas-Fueled Explosion and Fire  
Coolidge, Arizona  
August 15, 2021**

A 30-inch-diameter natural gas transmission pipeline (Line 2000) owned and operated by Kinder Morgan ruptured in a rural area in Coolidge, Arizona. The rupture resulted in an explosion, fire, and ejection of a 46-foot section of the pipeline. A home near the pipeline was destroyed by the explosion and subsequent fire, which resulted in two fatalities and one injury. Materials Laboratory Division staff launched to the site of the explosion and performed a visual examination of the ejected section of Line 2000 along the length of the fracture to determine the fracture origin area and to develop a plan for evidence retrieval. Staff also performed a metallurgical evaluation of the fracture in the laboratory to determine the cause of the rupture.

Recommendations: None  
Report Date: April 27, 2023

**Multivehicle Collision Involving a Milk Tank Combination Vehicle and Stopped Traffic  
Queue  
Phoenix, Arizona  
June 9, 2021**

A multivehicle crash occurred in the eastbound lanes of State Route Loop 202 in Phoenix, Arizona, when a 2016 Freightliner Cascadia truck-tractor combined with a fully loaded 2015 Walker stainless equipment tank trailer struck multiple vehicles and a postcrash fire ensued. A total of eight vehicles were involved in the collision; four people were fatally injured. Ten people were transported to the hospital. Vehicle Performance Division staff developed an animation to aid in communicating the sequence of events in the crash. Vehicle Recorder Division staff analyzed the onboard image recorder that

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captured inward- and outward-facing video of the crash. The Safety Research Division analyzed fatal and nonfatal traffic crash data to determine the frequency of fire occurrence in rear-end crashes involving different types of passenger vehicles and provided an assessment of US commercial driver hours-of-service exceptions that exist for moving agricultural products.

Recommendations: None  
Report Date: March 28, 2023

**Crash of a Cessna 501 Citation  
Smyrna, Tennessee  
May 29, 2021**

A Cessna 501 Citation operated as a 14 *CFR* Part 91 flight was destroyed when it crashed shortly after takeoff from the Smyrna Airport in Smyrna, Tennessee. The pilot and six passengers were fatally injured. Vehicle Performance Division staff used ADS-B data obtained from the FAA along with computer simulations to understand the sequence of events.

Recommendations: None  
Report Date: March 22, 2023

**Electric Vehicle Run-off-Road Crash and Postcrash Fire  
Coral Gables, Florida  
September 13, 2021**

A 2021 Tesla Model 3 electric passenger car occupied by a 20-year-old driver and a 19-year-old passenger crashed near an intersection in Coral Gables, Florida. A postcrash fire ensued that fully engulfed the vehicle. Both occupants were fatally injured. Vehicle Recorder Division staff documented forward-facing dashcam footage that was provided to the NTSB from the vehicle traveling behind the Tesla. Additionally, staff extracted data from the severely fire-damaged restraint control module recovered from the wreckage of the Tesla, giving investigators vital information about vehicle speed and status in the seconds leading up to the crash.

Recommendations: None  
Report Date: February 13, 2023

**Electric Vehicle Run-off-Road Crash and Postcrash Fire  
Spring, Texas  
April 17, 2021**

A 2019 Tesla Model S P100D electric car crashed and caught fire on a residential, two-lane concrete road with one westbound and one eastbound



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lane and mountable concrete curbs on either side. At the crash location, the roadway was level, with a curve to the south. The maximum speed limit for the road was 30 mph. Materials Laboratory Division staff conducted a metallurgical examination of the steering wheel to determine the nature of the deformation. Vehicle Recorder Division staff performed a chip-level recovery of the burned restraint control module and successfully retrieved crash-related data. An NTSB medical officer investigated the medical and toxicological status of the driver.

Recommendations: None  
Report Date: February 8, 2023

### **Alcohol, Other Drug, and Multiple Drug Use Among Drivers Safety Research Report**

Impairment from alcohol and other drugs is a major transportation safety issue. The agency's concern about this issue has increased over the past decade, particularly in the highway mode. The NTSB has documented substance impairment in numerous highway crash investigations, many of which involved a driver's use of more than one drug.

This safety research examined the crash risk associated with different drugs, including alcohol, and the prevalence of their use among drivers. The research also evaluated countermeasures to reduce crashes involving drug- and multiple-drug-impaired drivers. Safety issues addressed included (1) the need to implement proven countermeasures for alcohol-impaired driving; (2) the growing problems of cannabis, other drug-, and multiple-drug-impaired driving; (3) the need to strengthen drug-impaired driving laws and facilitate enforcement; (4) the need to ensure that driving safety is considered in the evaluation of prescription and over the counter drugs; and (5) the need to improve systems for documenting and tracking the incidence of drug use and driving.

The NTSB issued new safety recommendations to NHTSA, the US Food and Drug Administration, the 50 states, the District of Columbia, and the Commonwealth of Puerto Rico.

Recommendations: 12 new  
Report Date: December 13, 2022

### **Micromobility: Data Challenges Associated with Assessing the Prevalence and Risk of Electric Scooter and Electric Bicycle Fatalities and Injuries Safety Research Report**

Protecting VRUs, such as pedestrians, motorcyclists, and bicyclists, through a Safe System approach is a priority for the NTSB. Successfully

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implementing a Safe System approach requires the collection and analysis of quality crash and exposure data to understand the unique risks that VRUs face. Recently, emergent transportation modes in the form of electric micromobility devices have expanded the list of people considered to be VRUs, specifically electric scooter (e-scooter) and electric bicycle (e-bike) riders. Although safety data are often collected and analyzed to craft safety initiatives for pedestrians, motorcyclists, and bicyclists, less is known about road users who use such emergent modes of transportation as e-scooters and e-bikes.

This research evaluated how limitations in available e-scooter and e-bike crash and exposure data present challenges for assessing the safety of these micromobility devices, including the prevalence and risk of fatalities and injuries. Safety issues addressed included (1) the current lack of complete, consistent, and reliable safety data; (2) inadequate data coding leading to difficulty in correctly identifying crashes involving e-scooter and e-bike riders; and (3) poor quality trip data, which makes meaningful assessments of risk nearly impossible.

The NTSB issued new safety recommendations to NHTSA, the Governors Highway Safety Association, the FHWA, the US Consumer Product Safety Commission, and the National Center for Health Statistics.

Recommendations: 6 new

Report Date: November 14, 2022

**Fire Involving Combination Vehicle with Gasoline Tank Trailer  
Philadelphia, Pennsylvania  
June 11, 2023**

A truck-tractor in combination with a tank trailer carrying gasoline caught fire while under an overpass of Interstate 95. The fire resulted in a collapse of the northbound lanes of Interstate 95. Safety Research Division staff analyzed fatal and nonfatal traffic crash data to determine the likelihood of fire occurrence following a vehicle rollover based on vehicle type and hazardous material classification.

Investigation in Process

**UGI Corporation Natural Gas–Fueled Explosion and Fire  
West Reading, Pennsylvania  
March 24, 2023**

A natural gas-fueled explosion and fire occurred at Building 2 of the R.M. Palmer Company in West Reading, Pennsylvania. The explosion destroyed Building 2 and caused significant structural damage to the adjacent Building 1

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and other surrounding structures. Seven people were killed, 11 people were injured, 3 families were displaced from a neighboring apartment building, and many more people were evacuated from the area. The Materials Laboratory supported the fire and explosion investigation as well as the evaluation of the jurisdictional pipe components.

Investigation in Process

**Crash of Pilatus PC-12/45**

**Dayton, Nevada**

**February 24, 2023**

A Pilatus PC-12/45, operated by Guardian Flight LLC as a 14 *CFR* Part 135 air ambulance flight, crashed near Dayton, Nevada. Vehicle Recorder Division staff extracted and analyzed data from multiple personal electronic devices and cockpit displays.

Investigation in Process

**Runway Incursion Between FedEx Boeing 767 and Southwest Airlines Boeing 737**

**Austin, Texas**

**February 4, 2023**

FedEx flight 1432, a Boeing 767-32LF, and Southwest Airlines flight 708, a Boeing 737-79P, were involved in a runway incursion with overflight that resulted in a loss of separation at the Austin-Bergstrom International Airport. The Vehicle Recorder Division downloaded and analyzed data from FDRs on both aircraft. Vehicle Performance Division staff are evaluating FDR data from both airplanes, ADS-B data provided by the FAA, and Saab Aerobahn surface management ADS-B data to determine the paths of both airplanes and their closest approach; they are also creating an animation depicting the sequence of events. An NTSB medical officer is investigating the medical and toxicological status of the air traffic controller. The Safety Research Division completed statistical summaries of runway incursions that resulted in aviation accidents in the United States.

Investigation in Process

**Norfolk Southern Railway Train Derailment with Subsequent Hazardous Material Release and Fires East Palestine, Ohio**

**February 3, 2023**

An NS freight train derailed 38 railcars, including 11 tank cars carrying hazardous materials that subsequently ignited and fueled fires that damaged an additional 12 non-derailed railcars. The Materials Laboratory supported the

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failure analysis of the train wheelset and its burned off axle. The Materials Laboratory also supported the evaluation of the pressure release devices from the vinyl chloride tank cars.

Investigation in Process

**Rear-End Collision Between Combination Vehicle and Medium-Size Bus**  
**Williamsburg, Virginia**  
**December 16, 2022**

A Freightliner truck-tractor in combination with a semitrailer struck the rear of a medium size bus, resulting in the ejection of multiple passengers on the bus. Three bus passengers were fatally injured. Vehicle Performance Division staff are using forward-looking video from the Freightliner truck tractor to calculate the speed of the combination vehicle and the speed of the medium-size bus in the seconds leading to impact. An NTSB medical officer is investigating the medical and toxicological status of the drivers.

Investigation in Process

**Mid-Air Collision Between a B-17 and P-63**  
**Dallas, Texas**  
**November 12, 2022**

A Boeing B-17G and a Bell P-63F collided midair while performing at the Wings Over Dallas WWII Airshow at the Dallas Executive Airport Terminal. Vehicle Recorder Division staff downloaded data from various devices containing nonvolatile memory and developed a transcript of air traffic control audio. Vehicle Performance Division staff are using video and photographs from multiple sources to calculate the position and orientation of both airplanes at impact. Vehicle Performance Division staff are also using ADS-B data from the FAA and recorded communications among the airshow participants to document the sequence of events and determine the visibility of each airplane to the other pilot in the time leading to the collision. One of the medical officers is investigating the medical and toxicological status of the flight crew of both airplanes.

Investigation in Process

**Cirrus Design Corp SR22**  
**Tomball, Texas**  
**September 1, 2022**

A newly manufactured Cirrus Aircraft SR22 airplane, N420SS, was substantially damaged when it was involved in an accident near Tomball, Texas.

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The flight instructor was fatally injured; the pilot and passenger sustained serious injuries. The Materials Laboratory Division conducted a metallurgical evaluation of a separated 90-degree elbow fitting for the fuel system. An NTSB medical officer is investigating the medical and toxicological status of the flight crew.

Investigation in Process

### **Marathon Pipe Line LLC Hazardous Liquids Pipeline Release**

**Edwardsville, Illinois**

**March 11, 2022**

A 22-inch-diameter hazardous liquids pipeline, operated by Marathon Pipe Line, ruptured and resulted in the release of about 3,900 barrels of crude oil, some of which entered Cahokia Creek, a tributary of the Mississippi River. No injuries occurred, and the crude oil did not ignite. The Materials Laboratory Division supported the metallurgical evaluation of the rupture and the characterization of the mechanical properties of the pipe steel. The Safety Research Division provided geospatial map products to assist investigators.

Investigation in Process

### **Collapse of the Fern Hollow Bridge**

**Pittsburgh, Pennsylvania**

**January 28, 2022**

A 447-foot-long bridge fell approximately 100 feet onto a park below. At the time of the collapse, a 2013 New Flyer articulated bus, operated by the Port Authority of Allegheny County, and four passenger vehicles were on the bridge. A fifth passenger vehicle drove off the east bridge abutment following the collapse and came to rest on its roof on the exposed ground below. As a result of the bridge collapse, 10 vehicle occupants sustained injuries. The Materials Laboratory Division staff launched to the site, performed a visual inspection of the wreckage as portions were removed to reveal the support structure, and documented corrosion of the structural members. Vehicle Recorder Division staff analyzed video from cameras on a bus traveling on the bridge during the collapse. Vehicle Performance Division staff are developing an animation documenting the circumstances of the collapse.

Investigation in Process

**Amplify Energy San Pedro Bay Pipeline Rupture  
Newport Beach, California  
October 1, 2021**

The offshore oil platform ELLY, located 9.75 nautical miles southwest of Newport Beach, suffered a pipeline leak. Assessment of the pipeline indicated that it was 150 feet off station with an identified rupture in the line, and that the pipeline damage was indicative of an anchor strike. The Materials Laboratory Division staff supported the recovery and evaluation of evidence and conducted a metallurgical evaluation of the leak in the pipeline. The Safety Research Division provided geospatial map products to assist investigators.

Investigation in Process

## Summary of Research and Engineering Systems

The Office of Research and Engineering is dedicated to developing innovative systems that make our work more efficient and accurate. Due to rapidly changing technology, these systems require annual updating and maintenance. They include the following:

System	Description	RE Division
<b>DREAM</b>	The Data Recorders, Electronics, and Analysis Management (DREAM) system is an internal workflow tool, integrated with SAFTI, used by recorder specialists to track devices sent in by field investigators. Specialists use the database to record the entire lifecycle of a device in the lab, from when it arrives from the field to when it is eventually returned to its owner. Intermediate steps of download, recovery, audition (when applicable), and product development are also tracked.	Vehicle Recorder Division
<b>CIDER</b>	The CIDER system is a client/server application used for processing parametric recorder data. Recorder specialists use CIDER to recover data from tape-based FDRs; convert data from raw binary formats into engineering units for analysis; analyze and validate the data; and generate plots, tabular data files, and other products for other investigative teams and reports. CIDER also provides capabilities for managing investigation recorder data and documentation of recorder conversion libraries.	Vehicle Recorder Division

System	Description	RE Division
<b>MEDICS</b>	The Medical Information Catalog System (MEDICS) is a web-based application used to store medical records from NTSB investigations. NTSB medical officers use MEDICS as a case management tool for their reviews across all modal offices. The MEDICS software automatically enforces the security, storage, transmission, and access control requirements for medical records. MEDICS also connects to the SAFTI database used to manage investigation data, which allows investigators to access records, receive autopsy and toxicology reports, request subpoenas for medical records, and request medical officer reviews. Only those employees with a need to access this health information may use MEDICS.	Medical Investigations
<b>PREVIEW</b>	The Protected Recording Viewer (PREVIEW) system is a web-based application that allows access to protected content products (such as audio and video transcripts) and recordings normally stored on non-networked secure servers within the laboratory at NTSB headquarters for authorized NTSB employees working remotely. The application automatically enforces the security requirements for storage, transmission, and access control to prevent inadvertent public release of the products and recordings in accordance with statutory requirements and NTSB policy for protecting the content.	Vehicle Recorder Division
<b>RAPT-R</b>	The Rome Audio Processing Tool-Revision (RAPT-R) is a software tool developed by the Air Force Research Laboratory that enables multitrack audio playback, video playback, and transcription. It is the NTSB's primary tool for analyzing CVR content.	Vehicle Recorder Division
<b>Reveal</b>	Reveal is a digital data recovery and analysis tool for visualizing, exploring, and extracting binary data files. It allows users to mine unstructured binary data for useful data parameters, either through manual inspection or by using scripted routines.	Vehicle Recorder Division

## ADMINISTRATIVE LAW JUDGES

	(\$000s)	FTEs
FY 2024 Estimate	\$2,298	11
FY 2025 Request	\$2,775	11
Increase/Decrease	\$477	0

### Overview of the Request

The funding level for this program reflects the prorated impact of a pay raise of 2 percent projected for January 1, 2025, a 2 percent nonpay inflation factor, an increase in agency program investments, and an increase in the agency's contribution to employee health benefits.

### Program Description

The NTSB serves as the court of appeals for pilots, aircraft mechanics, air traffic controllers, air carriers, repair facilities, and any other individual or entity against whom the FAA has taken a certificate action, and for mariners against whom the US Coast Guard has taken a certificate action. The agency's administrative law judges hear, consider, and issue initial decisions on administrative appeals regarding FAA aviation enforcement actions, including the following:

- Orders issued by the FAA administrator amending, modifying, suspending, or revoking, in whole or in part, certificates of airmen, air agencies, and air carriers for alleged violations of the *Federal Aviation Regulations* or for lack of qualifications.
- FAA actions denying applications for the issuance or renewal of airman certificates, including airman medical certificates.
- Certain FAA civil penalty orders issued against individuals, pilots, flight engineers, mechanics, or repair people where the amount in dispute is less than \$50,000.

The judges also adjudicate claims under the Equal Access to Justice Act for fees and expenses stemming from FAA certificate and civil penalty actions.

An administrative law judge must issue an oral initial decision regarding the appeal of an emergency order or an immediately effective order within 30 days of receipt. If the law judge's decision is appealed to the full Board, an opinion and order must be issued within 60 days of the appeal's initial receipt.



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Marine certificate actions are heard first by the US Coast Guard administrative law judges and may be appealed to the vice commandant of the US Coast Guard. The ruling of the vice commandant may then be appealed to the NTSB's full Board.

The NTSB has four judges. Two judges are stationed in Washington, DC; one to the circuit that includes Denver, Colorado; and one to the circuit that includes San Antonio, Texas.

## **Accomplishments and Ongoing Efforts**

The Office of Administrative Law Judges completed the following actions from October 1, 2022, through September 30, 2023:

- Emergency order appeals filed: 97
- Emergency order appeals closed: 73
- Emergency order appeal hearings held: 10
- Cases in which respondents waived the emergency procedures: 57
- Petitions challenging the FAA's determination to bring the case as an emergency processed: 33
- New cases filed: 216 (108 of which were enforcement cases; 108 of which were certificate denials, mainly medical certificate denials)
- Cases closed: 352 cases
- Hearings held: 20
- Appeals of decisions made by NTSB administrative law judges sent to the Board members: 22

## INFORMATION TECHNOLOGY AND SERVICES

	(\$000s)	FTEs
FY 2024 Estimate	\$9,716	26
FY 2025 Request	\$11,015	30
Increase/Decrease	\$1,299	4

### Overview of the Request

The funding level for this program reflects the prorated impact of a pay raise of 2 percent projected for January 1, 2025, a 2 percent nonpay inflation factor, an increase in agency program investments, and an increase in the agency's contribution to employee health benefits. An increase of 4 FTEs is supported by this funding level.

### Program Description

The Office of the Chief Information Officer provides strategic direction and operational support for NTSB information systems and develops and distributes programs and products for use by the agency and the public. The office comprises four divisions and two program areas, described below.

#### ***Computer Services Division***

The Computer Services Division provides computer and network services for headquarters and regional offices, including internet access, web services, e-mail, backup, continuity-of-operations infrastructure, and disaster recovery. The division is responsible for securing the network and defending against outside threats. Helpdesk staff perform a wide range of tasks, including desktop/laptop setup, repair, and replacement; network connectivity; and software installation and upgrades. In short, the division is responsible for deploying and maintaining essential systems and services that range from desktop telephones to enterprise storage systems, cell phones, and tablets.

#### ***Systems Support Division***

The Systems Support Division develops, distributes, and maintains agency-specific applications, provides web design and content management, and provides database administration services. Applications support accident data collection, storage, analysis, and dissemination for all modes, as well as management of systems for accident records, safety recommendations, correspondence, FOIA requests, and general administration. The division also

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develops office-centric applications for the business functions of modal and support offices.

### ***Records Management Division***

The Records Management Division maintains accident investigation files, NTSB reports, and other agency records in accordance with applicable law. It is responsible for fulfilling public requests for information, including FOIA requests, and for providing training on the docket management system and guidance on redaction policies and techniques. The division is also responsible for monitoring the privacy and confidentiality of data and information; in addition, it provides records management services that enable NTSB staff to locate and use investigative records to respond to media and public requests for accident safety data and records more efficiently and effectively.

### ***Enterprise Architect Division***

The Enterprise Architect Division provides a logical business and technological blueprint for how the NTSB operates today, plans to operate in the future, and intends to invest in technology. The division understands the business needs and defines the processes and information necessary to operate the business-support technologies and transitional processes required to implement new technologies in response to changing business needs.

### ***Chief Technology Officer Program***

The chief technology officer outlines the office's technological vision, researching new technologies for potential benefits, implementing technology strategies, and ensuring that the technological resources are aligned with the agency's mission needs and goals.

### ***Information Technology Security Program***

The chief information security officer (CISO) protects the availability, confidentiality, and integrity of IT resources through the application of requirements specified in OMB Circular A-130, the Federal Information Security Management Act (FISMA), and various US Department of Commerce National Institute of Standards and Technology publications. The IT security program uses a risk-based, cost-effective approach to secure information and systems, identify and resolve current IT security weaknesses and risks, and protect the NTSB's networked capabilities against future vulnerabilities and threats.

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## Accomplishments and Ongoing Efforts

### ***Computer Services Division***

The Computer Services Division resolved more than 3,064 service desk incidents for the agency's headquarters, regional office, and teleworking staff from October 1, 2022, through September 30, 2023. This number was significantly more than last year, and the division began tracking metrics for service desk incidences on a weekly basis. The division's IT specialists continued to support the agency's mission by launching on major accident investigations to assist Board members and staff on scene.

Additionally, the division provided both front- and back-end computing services to the agency with minimal downtime from unplanned outages. As agency staff returned to the office following max telework status that resulted from the COVID-19 pandemic, the division outfitted the agency conference rooms with state-of-the-art video teleconference equipment, which will ensure agency offices are capable of hosting meetings whether attendees are fully remote, fully in-person, or some combination of the two. We executed conference room upgrades across the agency without disrupting mission-critical tasks. The virtual conferencing equipment has been an integral part of daily operations within the agency.

The division performed 12 regular monthly maintenance activities for all agency IT systems, taking these systems offline and updating them to protect against known vulnerabilities without negatively impacting agency operations. Additionally, the division completed the necessary steps to comply with the Federal Continuous Diagnostics and Monitoring Program, including replacing our antivirus system and expanding our reported inventory to include internet-of-things devices.

The division performed a complete update/refresh of agency cellular communications devices by providing and deploying 360 iPhones to agency users. As a result, users have reliable and up-to-date devices they can use to efficiently communicate across agency platforms.

At the end of FY 2023, the division began to evaluate and specify the agency's next-generation computing platform for all users. We evaluated current computing platforms, made appropriate selections based on the NTSB's current and future needs, and awarded the purchase in a short timeframe. The next-generation computing platform will likely bring better performance as well as updated operating systems and, quite possibly, more modern deployment capabilities.

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In conjunction with the Systems Support Division, the division analyzed our cloud service use and spending. This analysis resulted in several adjustments that reduced projected cloud expenditures.

During FY 2023, the NTSB held an on-location investigative hearing in East Palestine, Ohio, which was a substantial mission event. To facilitate this, division staff worked from concept to execution with the hearing coordinator, agency staff, and external partners to determine requirements, review the statement of work for contracts, and ensure that all technical requirements were met or exceeded. The division also provided on-site support before and during the event to enable seamless on-scene technical support.

### ***Systems Support Division***

In FY 2023, the Systems Support Division minimized security vulnerabilities and performance instability throughout the agency by enhancing outdated applications and migrating them to newer technology (for example, cloud services). The outdated applications posed a significant security and instability risk, as they were not built to withstand emerging security threats and were not supported by the latest versions of the Windows operating systems. The cloud governance and policies will reduce security risks and increase efficiency in cloud resource management.

Working with the Computer Services Division, the division migrated the service desk application from an older Windows server to the NTSB's cloud platform (Azure), further increasing security and stability while reducing costs associated with on-premises hardware and physical space. The division will continue to upgrade aged applications and decommission out-of-support Windows operating systems throughout FY 2024.

During FY 2023, the division made several enhancements to its suite of in-house applications that support various agency program offices and activities, including the Product Management Application, the Case Appeals Filing System, MEDICS, SAFTI, CAROL, DREAM system, PREVIEW system, and the Office of Government Ethics 450 electronic filing. Division staff worked closely with other offices and teams as described below to help successfully launch their projects.

- SAFTI: Implemented automated method to deliver features and fixes in a timely manner to improve product quality.
- DREAM system: Enhanced the ability to update the managed device list.
- PMA: Enhanced the office director's dashboard.

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The division successfully deployed a significant number of CAROL enhancements to our public website, including the following:

- Migrated all aviation accident records from 1962 to present into a single database to allow users to use one search tool for all NTSB records.
- Enhanced CAROL Splash page.
- Enhanced the aviation investigation search tool.
- Updated the CAROL Help page.

The division transitioned the Office of the General Counsel application Subpoena Scribe to be supported by IT specialists, in line with an enterprise support approach to address shadow IT. The advantage of this approach is that applications are continuously monitored for depreciated system components to ensure we take advantage on new capabilities and to ensure supportability.

### ***Records Management Division***

The Records Management Division posted 1,318 accident dockets through September 30, 2023, receiving 558 new and closing 599 FOIA requests. This included a review of more than 111,782 pages of records, 50,500 pages which were released by the office. Despite an 8-percent increase in FOIA requests, the division reduced its backlog by 42 percent. The office continues to monitor new technologies to assist with processing requests and providing information to the public.

Staff completed agencywide records and information management training as well as email management training under the Capstone approach. The division is in the second phase of the records management improvement plan, which includes completed drafts of full inventory of the agency's records, office file plans and draft agency records schedules. Division staff continued to assist the public in obtaining accident information from NTSB website investigative search/query tools and docket management systems.

### ***Enterprise Architect Division***

In FY 2023, the Enterprise Architect Division continued to standardize business processes. Staff analyzed and visualized NTSB data to identify and comprehend trends and patterns. The division's support enabled the agency's data users to make better-informed decisions based on visualized data.

The division worked to implement an agencywide data analytics program to develop processes, infrastructure, human capital, and training, using internal and external data to improve predictions and enable informed decision-making in support of the agency's 5-year strategic plan. The program

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also supports analysis of investigative and operational data. As part of this effort, the division led the implementation of a data analytics program, laying the foundations for implementing a secure and governed, cloud-based enterprise data analytics infrastructure. The division launched the interactive dashboard of aviation accidents per month and by state or region on the NTSB website, using our new Databricks data analytics platform. The division kicked off the first phase of the data analytics project approved through the newly implemented capital planning and investment control (CPIC) process. The project will enable data scientists and data analysts to conduct analysis and deploy statistical models on enterprise data and empower NTSB stakeholders with self-service data sharing solutions. The division will continue to build and secure the infrastructure to support analytics and data governance for the agency.

The division collaborated with the chief data scientist, Office of the General Counsel, and the Data Governance Body to publish the Data Analytics System of Record Notice in the *Federal Register*. This will allow the agency to optimize critical data into our analytics platform, enhance leadership decision-making, and more effectively use agency data analytics capabilities.

The division continues to refine the implementation of the Scaled Agile Framework software development lifecycle and support IT operations (DevOps). This initiative has helped consolidate IT operations, quality engineering, and security to produce better, more reliable products. The division is standardizing and implementing the DevOps procedures and processes for the application development life cycle and is expected to complete the implementation of DevOps for major applications by the end of FY 2024. The division is also in the process of documenting and revising the NTSB's enterprise architect transition plan to streamline, identify, and document all business and operational processes.

The division continues to provide technical direction to the enhancement requests and data integration for CAROL and SAFTI applications, which enable modal offices to standardize the accident investigation process, resulting in structured data. The division also supported the clean-up and consolidation of aviation accident data that helped facilitate the launch of the enhanced CAROL search tool, and collaborated with other agencies to award a contract to develop an accident investigation risk management worksheet and implementation of a pilot in FY 2024.

In collaboration with other agency offices, the division established a repeatable CPIC process for selecting, controlling, and evaluating major IT investments and revised and published the approved operations bulletin for the process. The division also published a standard operating procedures (SOPs) eBook and intake form for potential investments. The quarterly cadence

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of the investment review board meeting has been established and the division is now maintaining a list of ongoing and upcoming investments. The CPIC process is expected to be fully implemented by the end of FY 2024.

### ***Chief Technology Officer Program***

The chief technology officer outlines the office's technological vision, which incorporates the activities of two major initiatives: digital transformation and meeting the goals identified in the Presidential Executive Order on Strengthening the Cybersecurity of Federal Networks and Critical Infrastructure. These two initiatives focus on the need to deliver services and products efficiently and effectively on a more secure and reliable technical platform, while reevaluating agency processes, procedures, technologies, and data analytics in meeting mission objectives in delivery of services and products to the public.

During FY 2023, the chief technology officer led divisions in the migration of all NTSB enterprise applications from on-premises to the Microsoft Azure Federal Risk and Authorization Management Program cloud. All agency systems and data are highly secured, resilient, scalable, and available anytime, from anywhere. The chief technology officer also provides technical guidance and a roadmap for implementing and maturing application development lifecycle. NTSB application developments will be standardized using the Microsoft Azure DevOps environment to be more responsive to agency needs, to increase collaboration for the development of better products, and to increase productivity.

The chief technology officer submitted the NTSB's Zero Trust Implementation Plan to the DHS and OMB and completed phase 1 of the Zero Trust Implementation Plan with a focus on endpoint detection and response, and refined the network infrastructure to support the next two phases of the Zero Trust implementation effort. Priorities for FY 2024 include implementing phases 2 and 3 of the Zero Trust plan per OMB and White House mandates, continuing to convert the agency's network from internet protocol version (IPv) 4 to IPv6; replacing legacy applications; developing enterprise data analytic capabilities; building the continuity-of-operations program in Dallas, Texas; and enhancing the agency's cybersecurity program.

### ***IT Security Program***

During FY 2023, the IT security program continued to advise the chief information officer regarding FISMA compliance requirements and advocated for the expanded use of such external cybersecurity enhancement services as adopting targeted web application vulnerability scanning, enhanced mobile device management, and ensuring that professional cybersecurity assessment

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services are available on an annual basis by awarding a multiyear blanket purchase agreement for independent third-party cybersecurity assessments, ensuring federal compliance, and minimizing potential security breach risks.

The IT security program coordinated with our external cybersecurity oversight agencies and provided responses to several ongoing reporting directives, cybersecurity incident reports, and the FISMA report. Remediating known vulnerabilities is now part of the IT standard operating procedures and multiple FY 2022 audit findings were closed out, further improving IT security. The NTSB now surpasses OMB targets for federal civilian agencies in three categories and meets the targets in two. This signifies a considerable improvement in the NTSB's information security posture and a marked reduction in cyber risks based on OMB FISMA metrics. Our agency's progression from an "At Risk" status to "Managing Risk" is a testament to these efforts. By meeting and exceeding OMB's target FISMA metrics, we removed the risk of DHS issuing our agency a corrective action plan and directly overseeing its implementation.

Building upon FY 2022 cybersecurity actions, including identifying and guiding the office through improving the system security plan documentation process, division staff expanded continuous monitoring and diagnostic agreements with DHS and led teams to implement OMB's initial Zero Trust mandate in application software vulnerability scanning, comprehensive IT asset management, and automated incident reporting systems. CISO staff also supplemented its annual security awareness training program by making additional advanced courses available for system administrators and owners.

## HUMAN CAPITAL MANAGEMENT AND TRAINING

	(\$000s)	FTEs
FY 2024 Estimate	\$1,224	14
FY 2025 Request	\$2,177	22
Increase/Decrease	\$953	8

### Overview of the Request

The funding level for this program reflects the prorated impact of a pay raise of 2 percent projected for January 1, 2025, a 2 percent nonpay inflation factor, an increase in agency program investments, and an increase in the agency's contribution to employee health benefits. An increase of 8 FTEs is supported by this funding level.

### Program Description

The Office of Human Capital Management and Training provides oversight, guidance, and support in setting the NTSB's workforce development strategy and aligns human resources policies with the agency's mission. The office develops goals and objectives and provides leadership in human capital planning and development, employment and staffing, compensation, benefits, executive resources, succession planning, labor and employee relations, agencywide training programs, career management, and other human capital and training functions. Two divisions carry out the office's work: Human Resources and Career Development and Training. Both divisions, along with the front office staff, support the CHCO in developing and administering policies to achieve program objectives and provide the full range of human resources and training services for the NTSB.

#### ***Human Resources Division***

The Human Resources Division is responsible for human capital planning and management, policy and program development and administration, and recruitment and hiring. The division also administers the following human resources programs: labor and employee relations, benefits, pay and leave, performance management and awards, the telework program, and the employee assistance program.

#### ***Career Development and Training Division***

The Career Development and Training division oversees the development and implementation of career development programs and the

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investigative/technical training curriculum for the NTSB workforce. The division curates educational offerings and training opportunities aimed at enhancing the skills and knowledge of agency employees to ensure they are equipped for transportation accident investigations, future leadership challenges, and to meet our mission.

## **Accomplishments and Ongoing Efforts**

### ***Human Resources Division***

Since October 2022, the Office of Human Capital Management and Training has been led by the agency's first CHCO. At the time the CHCO joined the agency, the office was faced with many challenges, such as a recent reorganization and critical needs in the areas of hiring and recruitment. Under the leadership of the new CHCO, the office began making great strides in various areas, such as employee engagement, performance management, telework and remote work, and hiring initiatives.

One of the immediate results of these initiatives was establishing a strategy and justification for direct hire authority for agency mission-critical occupations. The CHCO worked directly with the Office of Personnel Management (OPM) program manager to ensure the nuances of the agency's mission and workforce were clear. As a result, within 6 months of the CHCO onboarding to the agency, the NTSB was authorized for direct hire in all mission-critical occupations. This was a major accomplishment for the agency and supports the chair's efforts to increase our staffing to ensure we have the people we need to accomplish our mission.

Directly aligned with the chair's vision to right-size the agency, the Human Resources Division deployed resources and made hiring its highest priority. The hiring surge was a primary strategic goal for the agency, and the division was responsible for executing the strategy to hire. To track progress and set targets, the division partnered with the chief data scientist to enhance the agency's hiring dashboard to provide up-to-date staffing data and projections. This information was critical to ensure agency leadership was kept abreast of hiring metrics and delays in the hiring process. As a result, the agency hired 71 new employees in FY 2023. This broke a decades-long hiring slump by increasing our staffing from 414 employees in FY 2022 to 434 by the end of FY 2023. This was accomplished despite record attrition of 51 employees during FY 2023.

Additionally, the division coordinated the reorganization of the Office of Railroad, Pipeline and Hazardous Materials Investigations. This reorganization included establishing branch chief positions and the creation of a branch chief

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structure to address the distribution of work at the supervisor level, giving them more time to focus on staff training and development needs and on work products. Due to the division's efforts, the office grew from 34 to 50 employees.

The division was also instrumental in rolling out the telework/remote work pilot program and played an integral role in working with the Office of the Managing Director to ensure human resources and union support, which led to the success of the pilot. Fielding questions across the agency, the CHCO and the division aligned the goals of the telework/remote work pilot with management's expectations, which helped move the agency forward. Additionally, the division recertified or established new telework agreements for all agency employees. This effort was critical to ensure the agency was well-positioned to comply with government mandates and respond to calls for telework-related data.

The division supported employee engagement and recognition activities throughout the agency. The office collaborated with offices across the agency to administer the agency's major awards selection process and presentation. The annual ceremony was held virtually; however, offices were encouraged to host in-person watch parties. The ceremony recognized 32 employees representing a diversity of agency functions from both regional and headquarters locations. In the days leading up to the ceremony, the division partnered with the chair's office to promote an NTSB Night at the Ballpark event and executed post-ceremony receptions at headquarters and the regional offices. The office also distributed over 200 length-of-service pins and certificates to employees who celebrated milestones during the pandemic.

The division supported the managing director's goal of increased engagement by meeting with office directors, deputy directors, employees, and the Diversity and Inclusion Advisory Council (DIAC) to encourage participation in the Federal Employee Viewpoint Survey (FEVS). Agency participation in the FY 2023 survey was 84.1 percent, up almost 12 percent over the FY 2022 level of 72.5 percent. This participation rate was the highest for the agency in at least the past 10 years.

Further, the Human Resources Division improved the performance management process by establishing and communicating a timeline to ensure that employees were placed on appropriate performance plans and streamlined the performance awards process, which ensured that 98 percent of the incentive awards (time off, special act, and on-the-spot) paid in FY 2023 were processed and paid to employees approximately 1 month earlier than in FY 2022. This process improvement directly aligns with agency leadership's

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focus on providing timely performance recognition to employees, which is a key area of focus for the agency.

### ***Career Development and Training Division***

The Career Development and Training Division primarily focused on career development and leadership training this year. The division was instrumental in reinstating mentoring throughout the agency. One of the division's significant accomplishments was an in-person speed mentoring session in honor of Women's History Month. The event featured six female leaders as mentors and 22 headquarters employees as mentees. This was a first of its kind event for the agency. Additionally, the division reestablished the agency's formal mentoring program. There are currently 8 mentors and 15 mentees participating in the program. The mentoring program has helped the agency further develop the internal talent pipeline and supports succession planning efforts.

The division introduced 360-degree assessments to agency leadership. The assessments provide feedback on strengths and areas for growth to improve leadership competencies. Thirteen leaders from three different offices participated in the assessments. This was the agency's first use of this type of assessment tool that will help to further develop our leadership cadre.

The division also led the selection of participants for the Partnership for Public Service Excellence in Government (EIG) program. Six high-potential employees from support and modal offices across the agency successfully completed the program.

Based on user feedback, the division augmented the Career Development Roadmap to make it more user-friendly, included specialized development tracks curated to meet the core competencies for mission-critical positions, and enhanced the training program through a newly extended "leadership library." This was added in late 2022 as an extended library to our SkillSoft courses and has been used to create multiple leadership tracks, with emphasis on competencies at each level. These new tracks for enhanced leadership training options include:

- Executive - Leading and Managing Organizations
- Manager - Leading and Managing Programs
- Supervisor/Chief - Leading and Managing People
- Project Manager - Managing Projects

The division also added a "Retirement Planning" section in the "Specialized Learning Tracks" page, co-located with the retirement and

midcareer planning training courses. This pairing has helped employees locate important training information.

Finally, in addition to career development and leadership initiatives, the division partnered with the private and nonprofit sectors to offer technical training in UAS (drones) and autonomous vehicles. These partnerships will familiarize NTSB investigators with innovations in technology that will impact the types of accidents they may encounter in the future and the challenges involved with investigating them.

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## APPENDIX A: FEDERAL DATA STRATEGY

### Significant Activities in FY 2023

The NTSB is committed to implementing the Foundations for Evidence-Based Policymaking Act of 2018 (Evidence Act) and achieving the data management objectives defined by the Federal Data Strategy and Annual Action Plans. One of our strategic plan goals is to improve agency products and processes through data analysis. Further, we are developing metrics that will support Evidence Act requirements for all agencies to invest in and that focus on managing and using data and evidence linking spending to program outputs, executing mission, better managing enterprise risks, and promoting civic engagement and transparency. We are prioritizing data as a strategic asset and taking significant actions to support data governance processes, establish plans for data assets and infrastructure, and expand public access to agency data. Some notable actions during FY 2023 included the following:

- Based on the results of a comprehensive, agencywide data maturity assessment, the chief data officer and the NTSB Data Governance Body published a Data Strategy Plan. The plan sets strategic goals to improve agency staffing and training, infrastructure planning, and improved data management and access. The managing director, chief data officer, and chief information officer have briefed all agency staff and produced a video and articles for the agency intranet site to introduce staff to the agency data strategy.
- The NTSB Career Development and Training Division continues to expand data skills training options for managers and staff on the agency's Career Development Roadmap.
- We published new interactive dashboards of general aviation investigation information for the agency website, NTSB.gov, that allow users to select and explore accident types and investigation findings. We are continuing to build this functionality and will make additional dashboards available to users before the end of this fiscal year.
- During FY 2023, we continued to enhance and expand the public search capabilities of our multimodal investigation management database, investigation dockets, and safety recommendations. Based on feedback from internal and external users, we expanded the range of database fields available for search and download and added an aviation-specific search option.

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- We continued to build our data analytics library of dashboards for monitoring investigation tasks, staff workload, and performance metrics. These new data analytics capabilities have already produced measurable improvements in agency operations, supporting a reduction in backlog of investigations over 2 years old from about 450 at the beginning of 2022 to zero by September 30, 2023.
  - In addition to investigation data, we expanded our analytics to include tracking staffing, hiring process, and budgeting information and initiated new data analytics to support the agency telework program. Agency use of data analytics also supported significant improvement in this area, enabling the agency to increase hiring to 434 employees as of the end of FY 2023, which is up from 401 employees at the end of FY 2021.
  - We completed OMB approval to add staffing and budgeting information data from disparate sources into the managed NTSB data repository. The repository incorporates data governance tools and processes, ensuring the security, accuracy, and availability of agency data while expanding accessibility for analytics.
  - We established a dedicated executive position to lead a future Office of the Chief Data Officer to grow the agency's data, strategic planning, and enterprise risk management programs. A full-time chief data officer is being recruited to lead this office, which will include the agency's chief data scientist.



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## APPENDIX B: DIVERSITY, EQUITY, INCLUSION, AND ACCESSIBILITY

### Significant FY 2023 Activities in Support of Presidential Executive Orders 14035, 13985, and 13988

#### *Executive Order 14035: Diversity, Equity, Inclusion, and Accessibility in the Federal Workforce*

- **Appointed a Chief Diversity Officer:** Chair Homendy appointed the agency's chief diversity officer (CDO) on Oct 17, 2022. The CDO has the expertise and authority to effectively work with the head of the agency and the Office of Equal Opportunity, Diversity, and Inclusion director to guide the agency toward a uniform approach to the systemic implementation of DEIA across the NTSB.
- **Participated in the Chief Diversity Officers Council:** The NTSB CDO attends monthly Partnership for Public Service meetings, which work to build and maintain relationships to ensure necessary federal interagency DEIA focus through discussions, workgroups, committees, and both formal and informal advisory forums.
- **DEIA Communication to the Workforce:** The CDO issued an article on DEIA achievements to the workforce on the InsideNTSB intranet. The article focused on successful efforts in leadership, strategy and planning, recruitment partnerships, and workforce development.
- **Continued Participation in EEOC EEO Educational Consortium Mentorship Program Serving as Mentors and Mentees:** This program enhances career development for NTSB's Office of Equal Opportunity, Diversity, and Inclusion professionals and ensures effective collaboration with external federal EEO stakeholders.
- **Accessibility and 508 Requirements:** The United States Access Board presented a webinar focusing on the need to ensure accessibility in the workplace and meet specific requirements to guarantee individuals with disabilities have the same opportunities as those who do not have disabilities.
- **Black Resistance and Allyship:** The NTSB hosted a fireside chat with Google's chief diversity officer on creating an inclusive workplace with proven strategies that cross over from private to federal agencies.

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- **Advancing Leaders Through Opportunity:** The NTSB hosted a fireside chat with NASA's chief financial officer on creating opportunities for Asian American, Native Hawaiian, and Pacific Islanders. The purpose was to engage the workforce in thought leadership on the future of executive services and the generation of leaders who will challenge the traditional perspective of leadership.
  - **Mentoring Women in the Workforce:** The Career Development and Training Division sponsored a speed mentoring event in honor of Woman's History Month. NTSB female executives volunteered to mentor women stationed at headquarters to provide advice, coaching, and mentoring on career development and success.
  - **Supercharging NTSB Special Emphasis Programs:** The Office of Equal Opportunity, Diversity, and Inclusion and the Career Development and Training Division sponsored a training program for the DIAC, focusing on generating and sustaining a robust special emphasis program that results in greater diversity, equity, and inclusion in the workplace.
  - **Leadership and Inclusion:** The Office of Equal Opportunity, Diversity, and Inclusion and the Career Development and Training Division sponsored a training program for managers and supervisors that focused on how to initiate and maintain inclusive leadership and the cost to federal agencies of being exclusive.
  - **Combating Religious Harassment:** The Office of Equal Opportunity, Diversity, and Inclusion sponsored "Antisemitism and Other Religious Harassment in the Federal Workplace" seminar. The training, geared toward managers and supervisors, provided context and federal regulations on religious harassment and how to avoid it.
  - **Updated DEIA Policy Statement:** Chair Homendy issued the "Diversity, Equity, Inclusion and Accessibility" policy statement on Nov. 23, 2022, which reiterated the agency's commitment to DEIA and defined what these terms mean in the workplace.
  - **Conducted a DEIA Cultural Needs Assessment:** To improve organizational and team productivity, the NTSB hired a contractor with expertise in DEIA to conduct a cultural needs survey, employee listening sessions, and leadership training. The contractor issued the NTSB a final report containing agency-specific DEIA recommendations. The final report was issued to employees in FY 2023.

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- **The NTSB’s DIAC Enhanced the NTSB Recruitment Guide and DEIA Needs Training Survey:** The DIAC updated the NTSB’s diversity resource recruitment guide sources and conducted an office-level DEIA training needs survey to guide the Office of Equal Opportunity, Diversity, and Inclusion training needs for years to come. The updated recruitments sources were included in the diversity resource guide.
  - **Launched the DEIA Educational Series, including Hybrid Workplace Learning Tracks:** The NTSB implemented a DEIA educational series and added DEIA training requirements to NTSB directors’ and deputy directors’ performance plans. As a result, NTSB staff participated in 10 DEIA educational training sessions, seminars, and events. The training program also included resources on how to help build essential DEIA and hybrid workplace skills and knowledge.
  - **Women in Aviation Conference:** NTSB representatives attended the Annual Women in Aviation International Conference in Long Beach, California, in February 2023. The conference acknowledges and supports the contribution of women to the aviation industry.
  - **Providing Reasonable Accommodation for Invisible Disabilities:** The NTSB facilitated a supervisor series webinar discussing accommodations for hidden disabilities and what supervisors should know when receiving accommodation requests.
  - **Hispanic Heritage Driving Prosperity, Power, and Progress:** Guest Speaker Cyrus Salazar, Executive Director Civil Rights, Access, Equity, and Inclusion from the Transportation Security Administration delivered a webinar honoring Hispanic contributions and the importance of diversity and inclusion in the federal workforce.
  - **American Disability Act:** The NTSB facilitated a 2-day seminar with the National Employment Law Institute reviewing legal requirements for individuals with disabilities and recent case updates. The training focused on agency responsibility in understanding the law and processing reasonable accommodation requests.

***Executive Order 13985: Advancing Racial Equity and Support for Underserved Communities Through the Federal Government***

- **NTSB Office of Equal Opportunity, Diversity, and Inclusion Observance of National Native American Heritage Month:** The NTSB workforce celebrated the profound impact Native Americans have made and

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- continue to make in our nation with a visit to the National Museum of the American Indian.
- **Communicating and Connecting Safety Messages to Underserved Communities:** The Safety Advocacy Division moderated a panel with industry professionals advocating the importance of reaching underserved communities with relevant communication methodologies connecting to the most vulnerable populations.
  - **Communicating and Connecting Safety Messages to Hispanic Communities:** The Safety Advocacy Division moderated a panel with industry professionals specifically targeting communication to Hispanic communities and effective communication strategies to reach the Hispanic population with important safety recommendations.
  - **Communicating and Connecting Safety Messages to Native American Communities:** The Safety Advocacy Division moderated a panel with industry professionals. Panelists explored challenges Native American communities have in common and ways to authentically engage these communities with safety messaging.
  - **Communicating and Connecting Safety Messages to Hispanic Communities:** The Safety Advocacy Division moderated a panel with industry professionals specifically targeting communication to Hispanic communities and effective communication strategies to reach the Hispanic population with important safety recommendations.
  - **Leveraged Agency Experts in Evidence and Evaluation of NTSB and OPM Data Sources:** The Office of Equal Opportunity, Diversity, and Inclusion director, chief data officer, and statisticians reviewed data obtained from OPM and the NTSB to identify questions, build evidence, and establish dashboards that would support strategies to move the NTSB toward becoming a model DEIA agency.
  - **Hired Diverse Candidates:** The NTSB uses different hiring methods to attract diverse candidates, including recruitment and referral programs to connect us with college students and recent graduates with disabilities who are eager to demonstrate their abilities in the workplace through internships or permanent jobs. We also used subject matter experts to review applications and conduct structured interviews. Our goal is to attract the right people for the right positions at the NTSB.
  - **Partnered with Minority-Serving Institutions:** The NTSB partnered with minority-serving institutions, which include historically Black colleges
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and universities, Hispanic-serving institutions, tribal colleges and universities, and Asian American and Native American/Pacific Islander-serving institutions to enhance outreach and safety advocacy education, which also serves to increase the agency's pipeline of diverse talent. The NTSB engaged with underrepresented students and communities by increasing our outreach and advocacy partnerships through participation in development conferences with historically Black colleges and universities and Hispanic-serving institutions.

- **Partnered with the Chickasaw Nation:** During the summer of 2023, the NTSB partnered with the Chickasaw Nation to host six interns in the Offices of Aviation Safety; Highway Safety; Railroad, Pipeline and Hazardous Materials Investigations; and Research and Engineering.
- **Conducted Safe System Approach Roundtables:** the NTSB conducted three virtual roundtables that focus on the Safe System approach to improving road safety. Nearly all these sessions included discussions on the need for greater equity in highway safety programs and policies. The sessions also discussed the role that safety organizations have in engaging with underserved communities and organizations to help influence safety outcomes.
- **Forged Stronger Relationships Through the Transportation Research Board Annual Meeting:** In January 2023, Chair Homendy addressed attendees of the 2023 Transportation Research Board Annual Meeting. Chair Homendy has used her national platform to focus on protecting VRUs, such as pedestrians, bicyclists, motorcyclists, and people with disabilities.
- **Participated in the Federal Agency Access Program Planning Meeting:** An NTSB representative attended the January 29, 2023, federal agency access planning meeting. The US Department of Justice convened the meeting to affirm the federal government's need to engage effectively with all members of the public and ensure full participation of communities with limited English proficiency.
- **NASA STEM Research Presentation:** In April 2023, NTSB Senior Human Performance Investigator, Dr. Dujan Sevillian, presented his doctoral research on checklist design and alert systems and the impact on English-as-a-second language flight crewmembers in airline operations.
- **Awarded Contracts to Small Disadvantaged Businesses:** The NTSB awarded 20 percent of the agency's total contract spending in FY 2023 to small disadvantaged businesses (SDBs), exceeding the federal

11-percent SDB contracting spending goal for FY 2022 that was specified in Executive Order 13985. The agency will continue efforts to identify opportunities for SDBs, women-owned small businesses, service-disabled-veteran-owned small businesses, and HUBZone small businesses in future years and set aside procurements accordingly to meet the president's FY 2025 15-percent SDB contracting spend goal.

***Executive Order 13988: Preventing and Combating Discrimination on the Basis of Gender Identity or Sexual Orientation***

- **Conducted LGBTQIA+ Webinar:** the NTSB conducted a webinar for NTSB employees to bring awareness to the importance of diversity and inclusion for lesbian, gay, bisexual, transgender, queer or questioning, intersex, asexual, plus (LGBTQIA+) employees. The webinar focused on informal conversations with colleagues detailing their stories with the LGBTQIA+ community and workplace.

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## APPENDIX C: MOST WANTED LIST

The NTSB's MWL highlights transportation safety improvements needed now to prevent accidents, reduce injuries, and save lives. The NTSB issued its first MWL in October 1990 to highlight specific recommendations that could significantly improve transportation safety. Since then, the MWL, now organized by issue area, has been the NTSB's premier advocacy tool across all modes of transportation. The following are the 10 issue areas included in the 2021-2023 MWL.

### **Require and Verify the Effectiveness of Safety Management Systems in all Revenue Passenger-Carrying Aviation Operations**

By establishing an effective SMS and creating a safety culture aimed at making safety a focus first and always, operators will improve aviation safety and reduce the risk of accidents.

An SMS should address four components: safety policy, safety risk management, safety assurance, and safety promotion. It can be scalable to the size and complexity of operations, yet too many operators either have none in place or have an ineffective one.

In 2015, the FAA required commercial airliners to develop a comprehensive SMS to improve safety for the flying public, but the FAA has not required other revenue passenger-carrying operators to have one.

Although we have seen some voluntary adoption of SMS programs, most operators continue operating without an SMS in place. It's time more got on board. The risk to the flying public is too great not to do so.

### **Install Crash-Resistant Recorders and Establish Flight Data Monitoring Programs**

When planes crash, we want to know what happened. The good news is that technology is available today that can give us the answers. The bad news is that the FAA has not mandated that aircraft operators install it, citing privacy, security, cost, and other concerns.

Commercial airliners are required to have only FDRs and CVRs, commonly called "black boxes," but the NTSB has long called for cockpit image recorders as well. Such video would have been extremely helpful in determining flight crew actions in recent crashes in Texas, Indonesia, and Ethiopia.

The NTSB believes other types of passenger-carrying commercial aircraft, such as charter planes and air tours, should be equipped with data,



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audio, and video recording devices. These operators should also have programs in place that analyze the data derived from these devices. Recorders and flight data management programs would not only help investigators identify the causes of accidents, but would also help aircraft operators prevent crashes in the first place by allowing crew actions to be evaluated regularly.

Regardless of the recorder type, it must be able to survive a crash.

### **Implement a Comprehensive Strategy to Eliminate Speeding-Related Crashes**

Speeding is typically defined as exceeding a speed limit, but it can also mean driving at the speed limit but too fast for road conditions. Between 2010 and 2020, speeding-related crashes resulted in over 119,500 fatalities—that’s about one-third of all traffic fatalities in the United States.

The true extent of the problem is likely underestimated because the reporting of speeding-related crashes is inconsistent. Speeding can result in a loss of vehicle control, which increases both the likelihood of a crash and the severity of injuries sustained. Higher vehicle speeds lead to greater changes in velocity, which, in turn, lead to increased injury severity—that’s just basic science.

Intelligent speed adaptation devices on large trucks, automated enforcement (speed safety cameras), expert speed analysis tools, and education campaigns are underused in our communities. These critical tools and strategies must be implemented to address this safety problem.

### **Protect Vulnerable Road Users Through a Safe System Approach**

Our roadways were designed to move motor vehicles safely and efficiently. They often do not fully meet the needs of VRUs like pedestrians, bicyclists, and motorcyclists. As a result, we are seeing increasing dangers to this population and too many crashes involving vehicles and VRUs. We must use a Safe System approach to better protect VRUs and ensure safe roads for all. A Safe System addresses all aspects of traffic safety: road users, vehicles, speeds, roads, and postcrash care.

We must make better safety investments, from road treatments, vehicle design, and collision-avoidance systems to strong traffic safety laws and robust education efforts to mitigate injury risks for all road users.

Unlike motor vehicles, VRUs lack an external structure to protect them when crashes occur, and they’re more likely to suffer a serious injury or death. Proven, effective countermeasures are being underused at the federal, state, and local levels to protect pedestrians, bicyclists, and motorcyclists. We have



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long been concerned with the threat to VRUs. In 2018 and 2019, we published three reports on the risks to this vulnerable population and issued more than 30 new recommendations focused on reducing VRU traffic deaths.

### **Prevent Alcohol- and Other Drug-Impaired Driving**

Driving under the influence of alcohol and other drugs remains a leading cause of highway crashes. In 2020, 30 percent of all traffic fatalities resulted from crashes in which at least one driver was alcohol impaired. And many of these impaired-driving crashes involve drivers who were impaired by both alcohol and other drugs (legal, illicit, and over the counter). Complicating matters, each year, more states are passing laws allowing the use of recreational marijuana and marijuana for medicinal use.

Impaired driving is 100-percent preventable. We know a per se BAC of .08 g/dL is too high. States need to lower per se BACs to .05, an action only Utah has taken. Too many alcohol-impaired crashes have occurred involving drivers who had previously been convicted of drunk driving. All states need to implement laws requiring all drivers convicted of alcohol-impaired driving to use an interlock device, preventing future impaired driving.

We have investigated many crashes involving drug-impaired drivers, but the fact is, we don't really know how extensive the drug-impaired driving problem is because, unlike for alcohol, no standardized drug-testing protocols exist. There is no established limit or threshold to determine other drug impairment. Additionally, evaluating the impact of other drugs on drivers is challenging because many drugs impair individuals differently than alcohol. Bottom line: we need to develop better drug-testing procedures and tests.

### **Require Collision Avoidance and Connected Vehicle Technologies on all Vehicles**

Each year, thousands of people are killed and injured in preventable crashes. Collision avoidance and connected vehicle technologies can help mitigate the severity of such crashes or even stop them from occurring in the first place.

Collision avoidance technologies include forward collision warning and automatic emergency braking, which can warn the driver of an upcoming hazard and act to stop the vehicle if the driver fails to respond. Most passenger vehicles and commercial vehicles (such as heavy-duty trucks and school buses) on the road today are not equipped—nor required to be equipped—with such life-saving technologies. Moreover, the National Highway Traffic Safety Administration (NHTSA) has not developed comprehensive performance

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standards for these technologies, nor does it effectively evaluate them and include this information in its vehicle safety ratings.

Connected vehicle technology, or V2X, relies on direct communication between vehicles, and between vehicles and infrastructure and other vulnerable road users. When compared to vehicle-resident sensor systems, such as forward collision avoidance systems, V2X technology can detect conflict at greater distances, can see around corners and through objects, and is unaffected by inclement weather. Although both V2X technology and vehicle-resident sensor systems have the capacity to mitigate and prevent crashes on their own, they can provide greater safety benefits when combined. To achieve this life-saving benefit, we recommended the DOT implement a plan for nationwide connected vehicle deployment and for NHTSA to require connected-vehicle technology in all newly manufactured vehicles.

### **Eliminate Distracted Driving**

Distraction occurs when drivers divert their attention away from the driving task. Crash data and research indicate personal electronic devices, such as cell phones and tablets, are among the greatest contributors to driver distraction.

Hands-free is not risk free. Using a device hands-free does not reduce driver distraction; in fact, drivers are still distracted by the conversation—this is called “cognitive distraction.”

Many drivers believe they can multitask and still operate a vehicle safely. But multitasking is a myth. Humans can only focus cognitive attention on one task at a time. That’s why the driving task should be a driver’s sole focus.

Distracted driving is widespread, killing thousands and injuring hundreds of thousands in the United States every year. States are making some progress addressing this public health problem, but no state has implemented our recommendation calling for a ban on the use of all personal electronic devices while driving except in the case of emergency. Today, 24 states and the District of Columbia prohibit drivers of all ages from using handheld cell phones while driving. Forty-eight states and the District of Columbia have an all-driver text messaging restriction. However, Missouri and Montana have yet to adopt an all-driver text messaging ban, and drivers in Nebraska and Ohio are subject only to secondary enforcement. Thirty-seven states and the District of Columbia restrict the use of cell phones by novice drivers.

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## **Improve Passenger and Fishing Vessel Safety**

Passenger and fishing vessels present distinct safety challenges within the marine transportation industry.

### **Passenger Vessels**

Passenger vessels range in size from small charter vessels, such as dive boats and amphibious passenger vessels (DUKW boats or “duck boats”) to large cruise ships operating in international waters. The number of passengers and crew on these types of vessels varies.

Fires pose a catastrophic threat to small passenger vessels, as we saw in the *Conception* dive boat fire off the coast of California in which 34 people died. Our investigations have revealed that crew training and safety regulations for these vessels vary, increasing the risk to passengers and crew.

To prevent needless deaths and mitigate injuries, passenger vessels should have SMSs, use voyage data recorders, and provide adequate fire-detection and extinguishing systems and enhanced emergency egress options. Operators need to ensure that their crews have enhanced training that includes fire drills and firefighting techniques. We also need to see more roving patrols on our waterways to ensure that passengers are being transported safely.

### **Commercial Fishing**

The domestic commercial fishing industry, which remains largely uninspected, is another marine sector of concern. Fishing consistently tops the list of most deadly occupations, due, in large part, to challenging work environments, such as poor weather and rough waters. These conditions threaten vessel stability and integrity— issues we have seen in our investigations.

We need new standards to address—and periodically reassess—intact stability, subdivision, and watertight integrity in commercial fishing vessels up to 79 feet long. More than 800 fatalities have occurred on fishing vessels in the past two decades, yet many fishing crews still aren’t trained in stability management techniques or emergency response. Equally concerning, we have found that many vessels do not carry proper life-saving equipment, such as flotation and search-and-rescue locator devices, on board. The US Coast Guard can improve safety on both passenger and fishing vessels by implementing our recommendations.

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## **Improve Pipeline Leak Detection and Mitigation**

All pipelines leak. Leak-detection and mitigation tools are essential and can make the difference between a minor incident and a deadly explosion. Pipeline systems equipped with leak-detection systems and automatic shutoff valves, or remote-control valves, can warn operators of an imminent accident and allow for quick mitigation.

The NTSB first identified the need for leak-detection and mitigation methods in natural gas transmission and distribution pipelines nearly 50 years ago, but PHMSA has yet to require operators to use these life-saving measures, and many operators won't act without regulation.

Placing service regulators outside buildings is another mitigation tool. Yet many older homes and multifamily structures still have regulators inside, which can trap accumulating gas and lead to an explosion. Methane detection also helps mitigate consequences by alerting the public to natural gas leaks, thereby minimizing public exposure. Every day we wait to enhance our mitigation systems is a day we put the public in danger.

## **Improve Rail Worker Safety**

Too many people working on or around railroad tracks, such as train crews, maintenance-of-way employees, and mechanical workers, have been killed or injured in accidents involving train or equipment movement. Many of these workers were conducting routine maintenance or switching operations when they were struck.

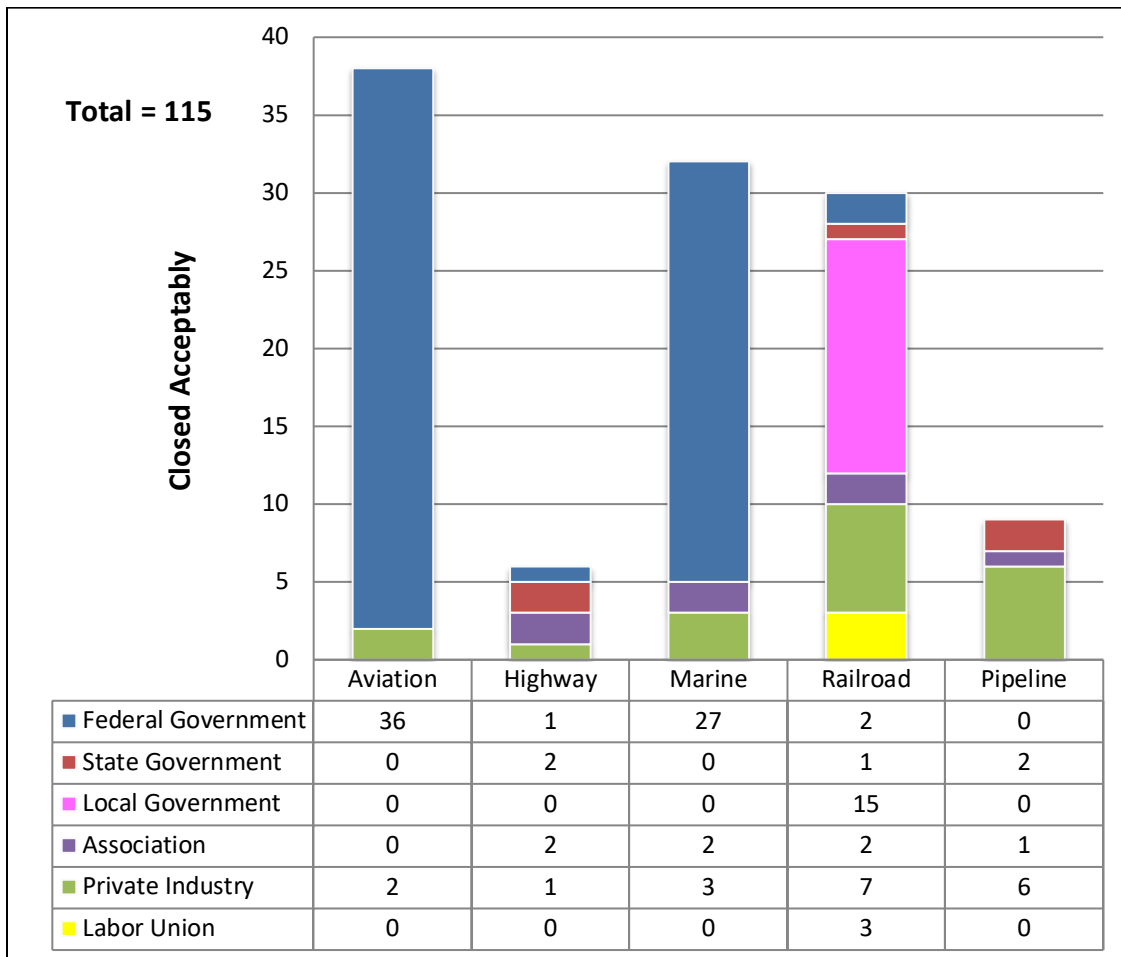
Roadway workers—those who protect the track—are being killed in preventable accidents, such as those involving the use of train-approach warning systems. These systems are vulnerable to human errors, such as miscalculating site distance and underestimating the time needed for workers to clear tracks. They lack safety redundancy and should not be used as the primary form of worker protection. Without proper warning, workers may not have enough time to react to an oncoming train. The FRA and the FTA need to require railroads to implement technology to provide safety redundancy. Industry must also improve roadway worker training and scheduling practices and develop and routinely audit procedures for delivering job briefings. Watchmen, or lookouts, should also receive proper training and the required equipment. To prevent fatigue, railroads and transit agencies must develop work schedules and limitations based on science. The FRA's Roadway Worker Protection Regulations, issued in 1997, are inadequate, and the FTA needs to establish specific regulations for roadway workers.

Operations crews and mechanical workers have also been at risk of injury in preventable accidents because of inadequate separation between train crews and rail cars carrying hazardous materials. Although PHMSA requires buffer cars, the distance the agency established is too short and threatens safety. Railroads should be required to implement a minimum of five cars as a buffer between train crews and highly hazardous flammable materials. PHMSA must issue a regulation on the appropriate separation distance for keeping train crews safe.

## APPENDIX D: STATUS OF SAFETY RECOMMENDATIONS

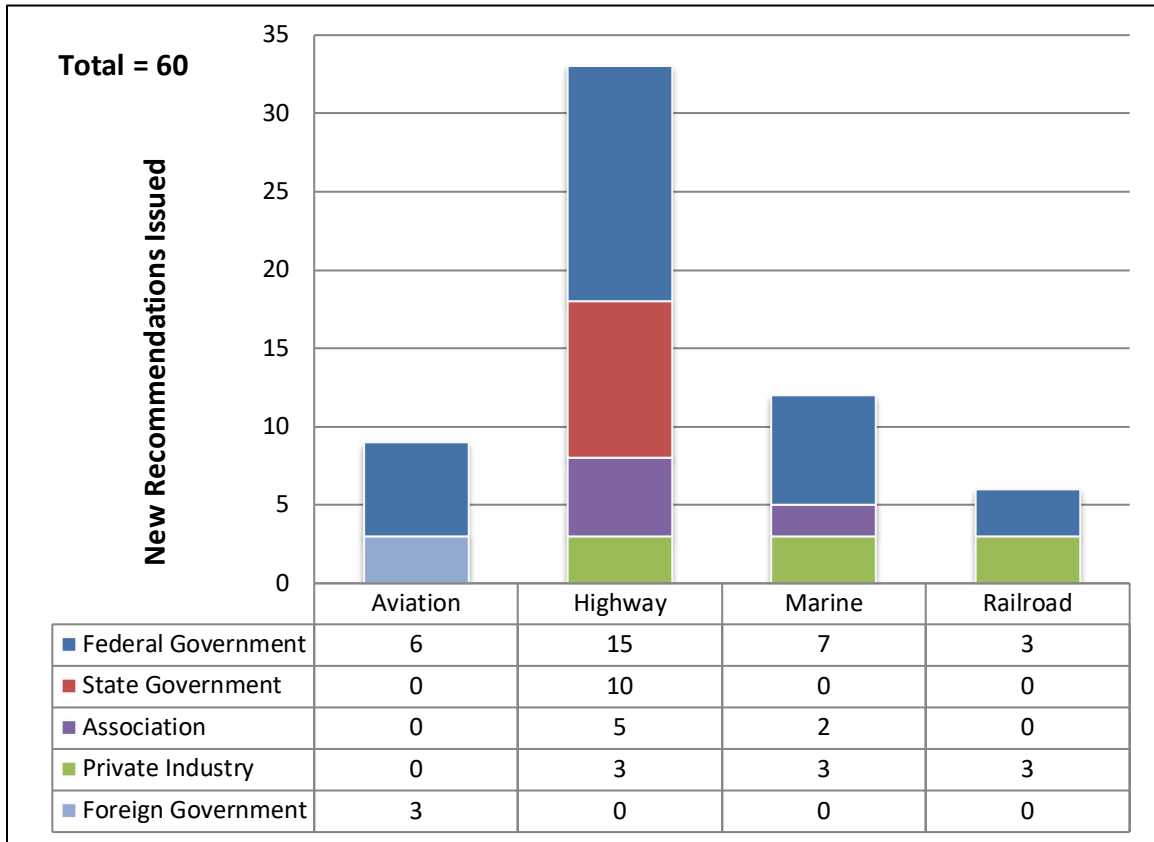
### Recommendations Closed

The chart below shows the distribution by transportation mode (aviation, highway, marine, railroad, pipeline) and recipient type (federal, state, or local government; association; private industry; labor union; or foreign government) of the 115 NTSB safety recommendations closed *Acceptable* from October 1, 2022, through September 30, 2023.



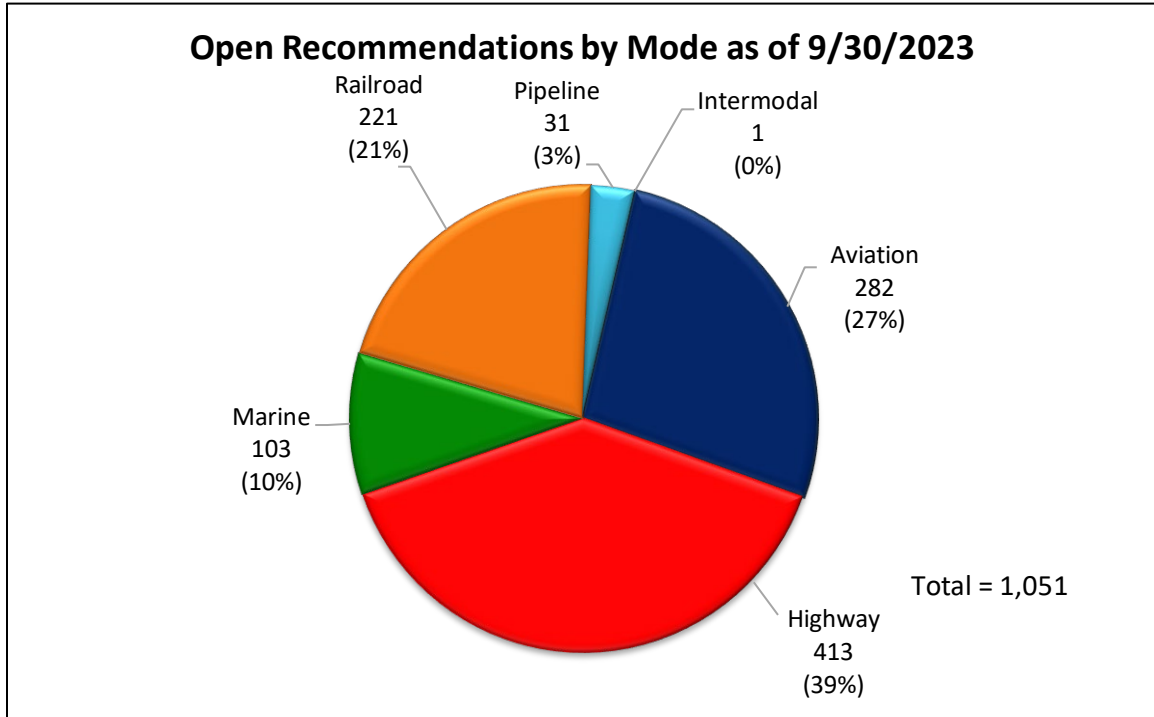
## New Recommendations Issued

The chart below shows the distribution by transportation mode (aviation, highway, marine) and recipient type (federal or state government, association, private industry, or foreign government) of the 60 safety recommendations issued by the NTSB from October 1, 2022, through September 30, 2023.



## Open Recommendations

The chart below displays the distribution by transportation mode of the 1,051 safety recommendations open as of September 30, 2023.





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## APPENDIX E: TRANSPORTATION DISASTER ASSISTANCE

### Significant Activities in FY 2023

#### Transportation Disaster Assistance Support for Accident Investigations

TDA offered information and disaster assistance services to 2,744 accident survivors, family members, and family contacts associated with the following NTSB investigations in from October 1, 2022, through September 30, 2023:

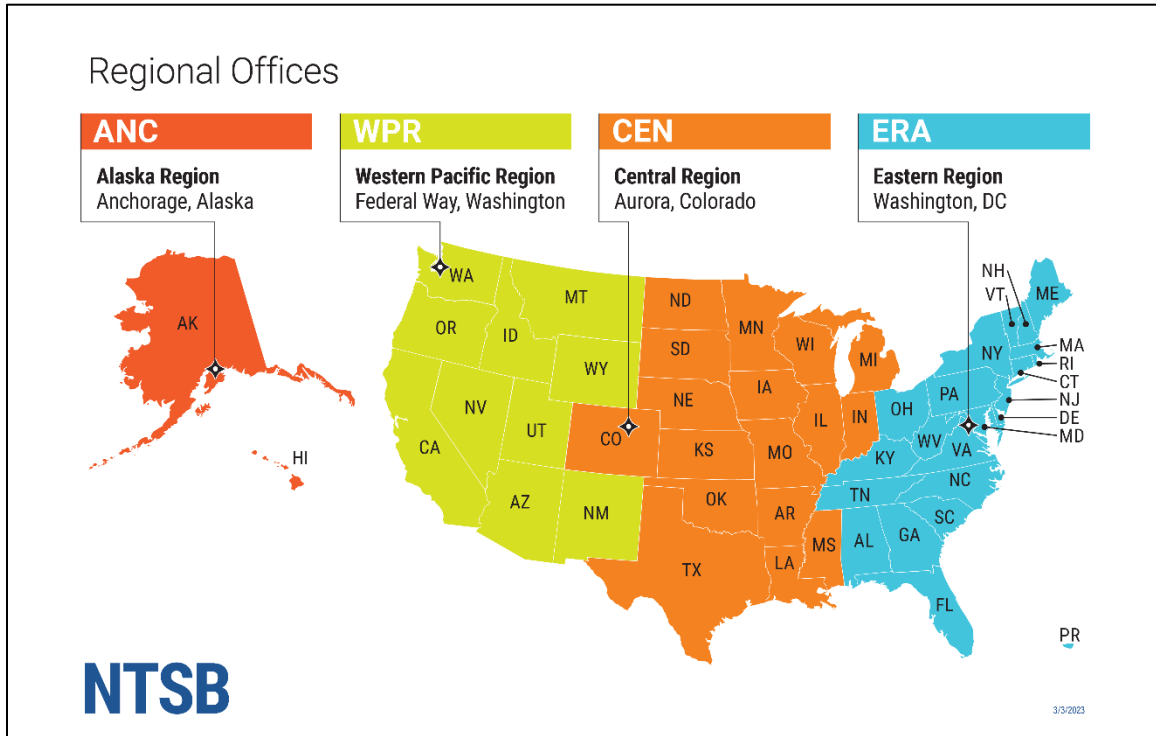
<b>Launches</b>	<b>12</b>
Aviation Safety	6
Marine Safety	0
Highway Safety	5
Rail Safety	0
Pipeline Safety	1
<b>Other investigations</b>	<b>773</b>
Domestic aviation accidents	677
International aviation accidents	8
Rail accidents	35
Highway accidents	36
Pipeline accidents	5
Marine accidents	12

#### Division Outreach and Training Activities

- Staff participated in 64 outreach events, resulting in direct contact with 4,129 participants; additionally, staff responded to inquiries from 430 agencies and organizations.
- Staff supported several ICAO initiatives to promote family assistance programs among contracting States. TDA staff collaborated with the ICAO Global Aviation Training Section to deliver a 3-day family assistance training course and participated in ICAO's Asia Pacific Office Regional Accident Investigation Workshop. Staff also participated in several ICAO-sponsored working groups focused on updating the facilitation manual and addressing recommendations issued following ICAO's 2021 Symposium on Assistance to Aircraft Accident Victims and their Families.
- Staff provided fatality management subject matter support to the Federal Emergency Management Agency under a Stafford Act deployment for the Maui fire response. During the 2-week deployment,

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- staff supported on-scene search and recovery operations and coordinated with other federal agencies regarding the broader fatality management operation.
- The division published a new “Federal Family Assistance Framework for Aviation Disasters” document. This 174-page document highlights the four fundamental concerns of family members with an emphasis on interagency coordination. It also provides guidance to the family assistance response community, with a specific focus on the roles and responsibilities of the NTSB, the American Red Cross, air carriers that hold obligations under Title 49 *U.S.C.* sections 41113 and 41313, and federal agencies that have established relationships with the NTSB.
  - Staff continues to engage in a collaborative effort to enhance the agency’s Employee Assistance, Critical Incident Stress Awareness, and Peer Support Programs.

## APPENDIX F: AVIATION SAFETY REGIONAL OFFICES



	Alaska Region	Western Pacific Region	Central Region	Eastern Region
Coverage Area	Alaska and Hawaii	Arizona, California, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming, as well as the territories of American Samoa, Guam, and the Northern Mariana Islands	Arkansas, Colorado, Illinois, Indiana, Iowa, Kansas, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, Texas, and Wisconsin	Alabama, Connecticut, Delaware, Florida, Georgia, Kentucky, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, and Washington, DC, as well as the territories of Puerto Rico and the US Virgin Islands

## APPENDIX G: HISTORICAL INFORMATION

### NTSB Salaries and Expenses Funding History (in millions)

FY	Amount
2000*	\$56.8
2001*	\$62.8
2002*	\$67.9
2003*	\$72.0
2004*	\$73.1
2005*	\$76.1
2006*	\$75.9
2007	\$79.3
2008	\$84.4
2009	\$91.0
2010	\$98.0
2011*	\$97.8
2012	\$102.4
2013*	\$97.0
2014	\$103.0
2015	\$104.0
2016	\$105.2
2017	\$106.0
2018	\$110.4
2019	\$110.4
2020	\$110.4
2021	\$118.4
2022	\$121.4
2023	\$129.3

\* Includes across-the-board rescissions

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## Current Board Members

Name	Board Title	Appointment	Term Expiration
Jennifer Homendy	Chair	August 11, 2021	August 10, 2024 <sup>1</sup>
Michael Graham	Member	December 19, 2019	December 31, 2025
Thomas Chapman	Member	December 19, 2019	December 31, 2023

<sup>1</sup> Chair Homendy's term as a Board member ends December 31, 2024

Under Title 49 U.S.C. section 1111(d), when the term of office of a Board member ends, the member may continue to serve until a successor begins service as a Board member.

## Emergency Fund Activity

<b>Fiscal Year</b>	<b>Appropriations (Rescissions)</b>	<b>Obligation Activity</b>	<b>Balance</b>	<b>Purpose/Source</b>
2000			\$2,000,000	No activity
2001			\$2,000,000	No activity
2002		\$491,687	\$1,508,313	Extraordinary costs related to the crash of American Airlines Flight 587 at Belle Harbor, New York
2003		\$4,914	\$1,503,399	Adjustment of FY 2002 obligations
2004		(\$138,000)	\$1,641,399	Adjustment of FY 2002 obligations
2004	\$358,601		\$2,000,000	Appropriation (P.L. 108-199)
2004	(\$2,116)		\$1,997,884	Rescission (P.L. 108-199)
2005			\$1,997,884	No activity
2006			\$1,997,884	No activity
2007			\$1,997,884	No activity
2008			\$1,997,884	No activity
2009			\$1,997,884	No activity
2010			\$1,997,884	No activity
2011			\$1,997,884	No activity
2012			\$1,997,884	No activity
2013			\$1,997,884	No activity
2014			\$1,997,884	No activity
2015			\$1,997,884	No activity
2016			\$1,997,884	No activity
2017			\$1,997,884	No activity
2018			\$1,997,884	No activity
2019			\$1,997,884	No activity
2020			\$1,997,884	No activity
2021			\$1,997,884	No activity
2022			\$1,997,884	No activity
2023			\$1,997,884	No activity

## International Investigations

### Total International Accident Investigation Costs by Fiscal Year from 2012 through 2023\*

FY	Costs
2012 (a)	\$1,641,132
2013 (b)	\$2,366,274
2014 (c)	\$976,642
2015 (d)	\$1,838,241
2016 (e)	\$1,664,764
2017 (f)	\$826,248
2018 (g)	\$902,981
2019 (h)	\$2,126,327
2020	\$632,682
2021	\$935,571
2022	\$895,787
2023	\$901,463

\*Since the beginning of FY 2012, the agency has captured payroll and other direct costs (such as travel) through its cost accounting systems. The totals above reflect these costs.

- (a) Includes \$149,707 billed to the DOT under the Safe Skies for Africa (SSA) Program.
- (b) Includes \$42,727 billed to the DOT under the SSA Program.
- (c) Includes \$64,897 billed to the DOT under the SSA Program.
- (d) Includes \$120,026 billed to the DOT under the SSA Program.
- (e) Includes \$138,115 billed to the DOT under the SSA Program.
- (f) Includes \$35,146 billed to the DOT under the SSA Program.
- (g) Includes \$88,300 billed to the DOT under the SSA Program.
- (h) Includes \$22,785 billed to the DOT under the SSA Program.

### FY 2023 International Investigation Costs by Accident\*

Description	Location	Amount
Raytheon aircraft in-flight loss of control during approach to land	Elmina, Malaysia	\$185,756
Loss of communication with submersible vessel attempting to view wreckage of <i>Titanic</i>	Atlantic Ocean	\$87,168
B777-236 air turn back after flight crew detected fumes in cockpit	London, United Kingdom	\$53,790
Southwest Airlines Boeing 737-8 #2 engine bird strike after takeoff and initial climb	Havana, Cuba	\$41,726
Aircraft low-pressure turbine uncontainment during climb	Hohn, Germany	\$30,280
Boeing 737-300 crash while fighting fires	Womarden, Australia	\$29,099
Boeing 767 #2 engine fire during takeoff	Incheon, Republic of Korea	\$27,377
Ethiopian Airlines Boeing 737 MAX crash shortly after takeoff	Addis Ababa, Ethiopia	\$25,973
Airbus A320-271 #2 engine uncontained high pressure compressor rotor disk rupture after takeoff	Guadalajara, Mexico	\$23,739
Airbus A320 #2 engine failure	Delhi, India	\$22,430
Beech A100 airplane crash in mountainous terrain shortly before reaching its destination	Charallave, Venezuela	\$21,364
Sikorsky S61 impact with the ground after losing rotational control due to blade failure	Camp Dwyer, Afghanistan	\$20,735
Aircraft left engine fairing and exhaust nozzle separation during takeoff and following rotation	Buenos Aires, Argentina	\$18,901
Aircraft uncommanded flap extension during initial climb	Farnborough, United Kingdom	\$18,516
US flagged yacht <i>UTOPIA IV</i> (176FT 986GT) collision with tank ship <i>Tropic Breeze</i> .	Nassau, Bahamas	\$17,423
Aircraft hydraulic issue when preparing for departure	Democritus, Greece	\$17,126



Description	Location	Amount
Zodiac passenger-carrying boat overturn near shore due to a breaking wave	Elephant Island, Antarctica	\$17,073
Airbus A320 #1 engine failure/in-flight shutdown during climb	Armistar, India	\$15,750
Airbus A320 #1 engine failure during climb to cruise	Shymkent, Kazakhstan	\$14,888
Boeing 737 total engine power loss	Belize City, Belize	\$14,683
Bell 205A aircraft crash for unknown reasons	Haig Lake, Canada	\$12,206
Aircraft with flames under right wing, self-extinguished	Prestwick, United Kingdom	\$11,343
Following a loud thud after takeoff, aircraft experiences a yaw-type movement	Guadalajara, Mexico	\$11,246
Aircraft collision with ground while on the landing approach during a parachute operation	Piotrkow Trybunalski, Poland	\$10,650
Helicopter impact with terrain followed by postcrash fire	Kildare, Ireland	\$10,576
Boeing 777 crew rejected takeoff due to airspeed indication discrepancy	Chek Lap Kok, Hong Kong	\$9,483
Launcher one experienced propulsion anomaly and failed to reach orbit	Near Canary Islands, United Kingdom	\$9,460
Sikorsky S61N collision with terrain	Tongyeong-si, Kiribati	\$8,960
Gulfstream G-IVSP jet reported a hydraulic issue shortly after takeoff and crashed during an emergency landing attempt	Santo Domingo, Dominican Republic	\$8,705
Agusta A109 impact with the ground on a mountain wall while transporting commercial passengers	Apricena, Italy	\$8,435
Cessna 172 crash on approach	Ulsan, Republic of Korea	\$7,757
Boeing 797 right main gear separation during landing	Luxembourg, Luxembourg	\$7,155
Boeing 797 rejected takeoff due to an engine issue	Muscat, Oman	\$6,803
Aircraft failure of multiple electrical systems failures and reduction of both engine torques to zero	Eberdeen, United Kingdom	\$6,411
Boeing 797 #1 engine failure	Sydney, Australia	\$6,184

<b>Description</b>	<b>Location</b>	<b>Amount</b>
Aircraft runway excursion on the left side	Panama City, Panama	\$6,114
McDonnell Douglas aircraft tail strike	Saltillo, Mexico	\$6,029
Airbus A319-115 emergency landing after smoke smell	Barranquilla, Colombia	\$5,972
Cessna 560 left engine cowlings detached during climb, resulting in loss of control	Toronto, Canada	\$5,859
American Mariner vessel fracture after departure	Sault Ste. Marie, Canada	\$5,709
Cessna 402 rapid descent before disappearing	Unknown, Bahamas	\$5,630
Airbus A320 #1 engine failure	Mexico City, Mexico	\$5,480
Piper PA aircraft loss of contact with airport	Stella Maris, Bahamas	\$5,460
Boeing 777 turn back after severe turbulence	Singapore, Singapore	\$5,380
Boeing 757 left system hydraulic failure after takeoff	Georgetown, Guyana	\$5,354
Learjet 35 crash into the ground at a steep angle	Hohn, Germany	\$5,305
<b>Grand Total</b>		<b>\$901,463</b>

\* Note: report includes accidents, whether occurring in the current year or previously, with more than \$5,000 in FY 2023 expenses and is cumulative through September 30, 2023. Costs include payroll as well as travel and other direct costs.

## Status of Action by State and the District of Columbia for Select Motor Vehicle Safety Recommendations

State	Child Passenger Safety	Primary Seat Belt Enforcement	Passenger Restriction *	Cell Phone	Ignition Interlock	Motorcycle Helmets
Alabama	Partial	Partial	Yes	Partial	Yes	Partial
Alaska	Yes	Yes	Yes	Partial	Yes	
Arizona	Yes		Partial	Partial	Yes	
Arkansas	Partial	Partial	Yes	Partial	Yes	
California	Yes	Yes	Yes	Partial		Yes
Colorado	Yes		Yes	Partial	Yes	
Connecticut	Yes	Partial	Yes	Partial	Yes	
Delaware	Yes	Yes	Yes	Partial	Yes	
District of Columbia	Yes	Yes	Yes	Partial	Yes	Partial
Florida	Partial	Partial		Partial		
Georgia	Yes	Partial	Yes	Partial		Yes
Hawaii	Yes	Yes	Partial	Partial	Yes	
Idaho	Partial		Partial	Partial	Yes	
Illinois	Yes	Yes	Yes	Partial	Yes	
Indiana	Yes	Yes	Yes	Partial		
Iowa	Partial	Partial		Partial	Yes	
Kansas	Yes	Yes	Partial	Partial	Yes	
Kentucky	Yes	Yes	Yes	Partial	Yes	
Louisiana	Yes	Yes	Partial	Partial	Yes	Yes
Maine	Yes	Yes	Yes	Partial		
Maryland	Yes	Yes	Partial	Partial	Yes	Yes
Massachusetts	Yes		Partial	Partial		Yes
Michigan	Yes	Partial	Yes	Partial		
Minnesota	Yes	Yes	Yes	Partial		
Mississippi	Yes	Yes		Partial	Yes	Partial
Missouri	Yes		Partial	Partial	Yes	
Montana	Partial		Partial			
Nebraska	Yes		Partial	Partial	Yes	Yes
Nevada	Yes		Partial	Partial		Yes
New Hampshire	Partial		Yes	Partial	Yes	
New Jersey	Yes	Yes	Yes	Partial	Yes	Yes
New Mexico	Partial	Yes	Yes	Partial	Yes	
New York	Yes	Yes	Yes	Partial	Yes	Yes
North Carolina	Yes	Yes	Yes	Partial		Yes
North Dakota	Yes			Partial		
Ohio	Yes		Yes	Partial		
Oklahoma	Yes	Partial	Yes	Partial	Yes	
Oregon	Yes	Yes	Yes	Partial	Yes	Yes



State	Child Passenger Safety	Primary Seat Belt Enforcement	Passenger Restriction *	Cell Phone	Ignition Interlock	Motorcycle Helmets
Pennsylvania	Yes		Partial	Partial		
Rhode Island	Yes	Yes	Yes	Partial		
South Carolina	Yes	Yes	Partial	Partial		
South Dakota				Partial		
Tennessee	Yes	Partial	Yes	Partial	Yes	Yes
Texas	Yes	Yes	Yes	Partial	Yes	
Utah	Yes	Yes	Yes	Partial	Yes	
Vermont	Yes		Yes	Partial	Yes	Yes
Virginia	Yes		Yes	Partial	Yes	Partial
Washington	Yes	Yes	Yes	Partial	Yes	Yes
West Virginia	Yes	Yes	Yes	Partial	Yes	Yes
Wisconsin	Yes	Yes	Yes	Partial		
Wyoming	Yes		Partial	Partial		
Total	Yes = 41 + DC Partial = 8	Yes = 25 + DC Partial = 9	Yes = 31 + DC Partial = 14	Yes = 0 Partial = 49 + DC	Yes = 31 + DC	Yes = 15 Partial = 3 + DC

\* "Restriction" refers to drivers in the intermediate (also referred to as provisional, or second) stage. Unless accompanied by a supervising driver who is at least 21 years old, these drivers are limited to no more than one passenger under age 20, family excepted, until they receive an unrestricted license or for at least 6 months.

# NTSB | National Transportation Safety Board



The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in the other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate and issue safety recommendations aimed at preventing future occurrences.

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