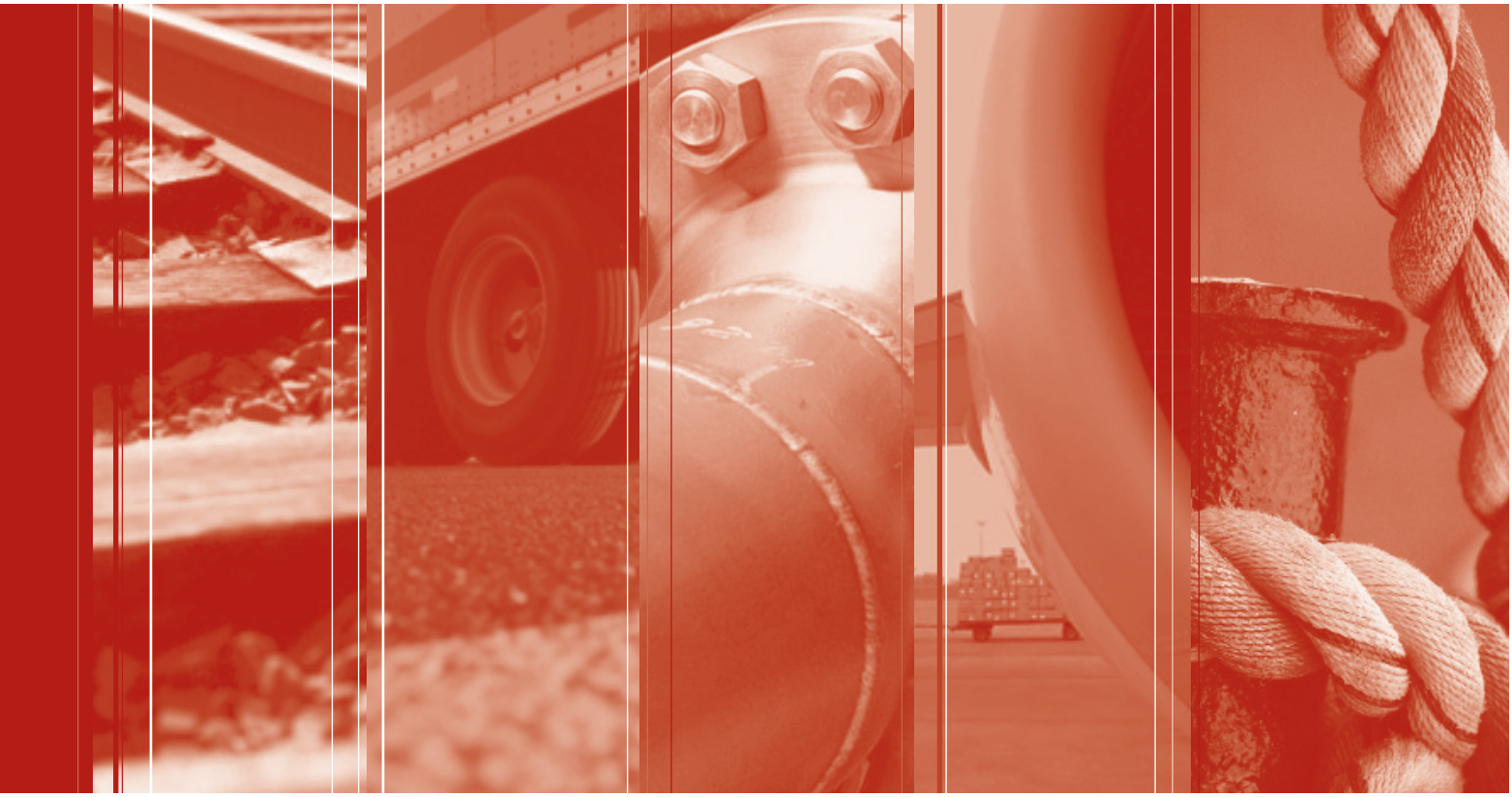
National Transportation Safety Board

Fiscal Year 2017
Budget Request



National Transportation Safety Board

National Transportation Safety Board
Washington, D.C. 20594

Office of the Chairman

February 8, 2016

The Honorable Joseph R. Biden, Jr.
President
United States Senate
Washington, DC 20510

The Honorable Paul D. Ryan
Speaker
United States House of Representatives
Washington, DC 20515

Dear Mr. 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 accidents in other modes of transportation. We determine the probable cause of accidents and issue safety recommendations to prevent future accidents. These recommendations are the focal point of our efforts to improve the safety of the nation's transportation system and are issued to agencies, industry, and other organizations in a position to effect change.

In addition to our investigatory responsibility, the NTSB conducts safety studies and evaluates the effectiveness of other government programs for preventing transportation accidents. We also coordinate public and private efforts for the survivors and families of victims in the wake of transportation disasters in all modes. Additionally, we 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, as well as the appeals of civil penalty actions taken by the FAA.

The enclosed budget submission represents the President's request of $106.0 million for fiscal year (FY) 2017. This level is a decrease of $.6 million from the discretionary level requested in our OMB submission and is below the amount required to cover the President's provisional pay raise effective January 2017. We will focus on the prioritization of our resources to meet the additional pay and absorb the non-pay inflation. In order to further our transportation safety mission, our top priority is to sustain a workforce of 423 full-time equivalent positions (FTEs). We believe that we can maintain 423 FTEs through the attrition of higher-salaried employees, who will be retiring, and their replacement with lower-paid employees. To maintain the integrity of the investigative process as we plan for succession, in FY 2015 we began to use the

Pathways program to hire a group of highly qualified new graduates in a number of critical areas, enabling current highly skilled and seasoned employees to train them.

The NTSB's accomplishments are many, as we have documented in the enclosed budget submission. To foster continuing improvement in transportation safety, we are constantly investing in employee training, systems, and processes. These investments enable us to keep pace with technological advances in transportation and to effectively issue and advocate for the implementation of our recommendations. In addition, we are proud of our sound financial management and the resulting 13th consecutive unmodified (clean) audit opinion for the FY 2015 consolidated financial statements. Although our budget is small, adequate funding is essential to fulfill our mission to advance and support the transportation safety of the American public.

Sincerely,

Christopher A. Hart
Chairman

Enclosure

cc: The Honorable Mario Diaz-Balart
Chairman
Subcommittee on Transportation, HUD, and Related Agencies
Committee on Appropriations
US House of Representatives

The Honorable David Price
Ranking Democratic Member
Subcommittee on Transportation, HUD, and Related Agencies
Committee on Appropriations
US House of Representatives

The Honorable Susan Collins
Chairman
Subcommittee on Transportation, HUD, and Related Agencies
Committee on Appropriations
US Senate

The Honorable Jack Reed
Ranking Democratic Member
Subcommittee on Transportation, HUD, and Related Agencies
Committee on Appropriations
US Senate

National Transportation Safety Board

Fiscal Year 2017 Budget Request

National Transportation Safety Board

490 L'Enfant Plaza, S.W.
Washington, D.C. 20594

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Acronyms and Abbreviations Tab

ACRONYMS AND ABBREVIATIONS

AAIB	Air Accidents Investigation Branch (United Kingdom)
ADMS	accident data management system
APU	auxiliary power unit
AS	NTSB Office of Aviation Safety
ASI	aviation safety investigator
BART	Bay Area Rapid Transit
BNSF	Burlington Northern Santa Fe Railway
CISO	Chief Information Security Officer
CFO	NTSB Office of the Chief Financial Officer
CFR	*Code of Federal Regulations*
CIO	NTSB Office of the Chief Information Officer
CN	Canadian National Railway
CTA	Chicago Transit Authority
CT X-ray	computed tomography nanofocus X-ray
DOT	US Department of Transportation
EA	Enterprise Architect
EEO	Equal Employment Opportunity
EEODI	NTSB Office of Equal Employment Opportunity, Diversity, and Inclusion
ELT	emergency locator transmitter
FAA	Federal Aviation Administration
FISMA	Federal Information Security Management Act
FMCSA	Federal Motor Carrier Safety Administration
FOIA	Freedom of Information Act
FRA	Federal Railroad Administration
FTE	full-time equivalent

FY	fiscal year
GA	general aviation
GSA	General Services Administration
HCA	High Consequence Areas
HR	Human Resources
HS	NTSB Office of Highway Safety
HSPD	Homeland Security Presidential Directive
ICAO	International Civil Aviation Organization
IIC	investigator-in-charge
IMC	instrument meteorological conditions
IMO	International Maritime Organization
IT	information technology
LIDAR	light detection and ranging
LPG	liquified petroleum gas
MP	milepost
MS	NTSB Office of Marine Safety
MTA	Metropolitan Transportation Authority (New York)
MV	marine vessel
MWL	Most Wanted List
NARA	National Archives and Records Administration
NTSB	National Transportation Safety Board
OC	NTSB Office of Communications
OMB	Office of Management and Budget
OPM	Office of Personnel Management
PED	personal electronic device
PHMSA	Pipeline and Hazardous Materials Safety Administration

PIREP	pilot report
PTC	positive train control
QAR	Quick Access Recorder
RMD	Records Management Division
RPH	NTSB Office of Railroad, Pipeline and Hazardous Materials Investigations
SFAR	Special Federal Aviation Regulation
SSA	Safe Skies for Africa
SSD	Systems Support Division
TDA	NTSB Transportation Disaster Assistance Division
TMS	Talent Management System
TSB	Transportation Safety Board of Canada
UAS	unmanned aerial system
UK	United Kingdom
UP	Union Pacific Railroad
UPS	United Parcel Service
USC	*United States Code*
WDS	wavelength dispersive spectrometer
WMATA	Washington Metropolitan Area Transit Authority

Executive Summary Tab

EXECUTIVE SUMMARY

The National Transportation Safety Board (NTSB) is an independent federal agency responsible for investigating and determining the probable cause of every civil aviation accident and significant accidents in other modes of transportation. With this vested responsibility, we develop recommendations to prevent future accidents or reduce their effects in terms of loss of life, injury, or damage to property. The NTSB also conducts safety studies and prepares safety reports based on analyses of transportation accident and incident data. We use the results of these studies to determine factors common to a series of events and to identify safety improvements or evaluate the worth of transportation-related devices or policy. Safety studies enhance our corporate knowledge, enabling us to better perform our transportation safety mission.

The enclosed budget submission reflects the President's request of $106.0 million for fiscal year (FY) 2017. This level is a decrease of $.6 million from the discretionary level requested and is below the amount required to cover the President's provisional pay raise effective January 2017. We will be challenged to prioritize our resources to meet the additional pay and absorb the non-pay inflation. Our number one priority is to sustain a workforce of 423 full-time equivalent positions (FTEs), building on gains made in FY 2015 in adding critical investigative positions throughout the NTSB. A contributing factor in maintaining FTEs is that the agency expects the attrition of higher-salaried employees, who will be retiring, and their replacement with lower-paid employees. To maintain the integrity of the investigative process as we plan for succession, in FY2015 we began to use the Pathways program to hire a group of young, highly qualified new graduates in a number of critical areas, enabling current highly skilled and seasoned employees to train them.

The NTSB is constantly looking into the future to keep pace with rapidly changing technology. Over the last 2 years, we have invested in technologically advanced equipment in the Office of Research and Engineering Materials Laboratory, have upgraded mission-critical software for the office's Vehicle Recorder Division, and have added laser scanning capabilities for the Vehicle Performance Division—all with the aim of providing more accurate and relevant data to modal investigators in a more efficient manner. We are also upgrading the Office of Aviation Safety's Accident Database Management System (ADMS), which is used to store, retrieve, and manage information associated with our aviation accident/incident investigations. NTSB staff relies on data from ADMS to monitor workflow, conduct safety research, support accident investigations, produce annual statistical reviews, respond to Congressional requests, and provide Board Member support. Improvements are aimed at increasing the efficiency and accuracy of the database.

This report highlights major NTSB accomplishments in FY 2015. We are currently investigating over 1,300 domestic aviation accidents and launched to over 215 of these. Board Members launched to seven major accidents investigated by our modal offices. The Board adopted 17 major reports and 42 accident briefs, and held 10 special studies, forums, and events. Additionally, our Office of Research and Engineering laboratories read out more than 660 recorders, wrote over 215 material reports, and produced over 40 vehicle performance products and studies.

This report shows the tremendous effort and challenges that go into each modal office's investigations and demonstrates the ways in which we are a major voice in promoting safety for the nation's traveling public.

Mission and Organization Overview Tab

MISSION AND ORGANIZATION OVERVIEW

Since its creation in 1967 as an accident investigation agency within the newly created US Department of Transportation (DOT), the National Transportation Safety Board's (NTSB's) mission has been to determine the probable cause 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 accidents
- Railroad accidents involving passenger trains or select freight train accidents that result in fatalities or significant property damage
- Major marine 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

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 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 Federal Aviation Administration (FAA)
- Review appeals from airmen and merchant seamen whose certificates have been revoked or suspended by the FAA and the US Coast Guard (USCG), respectively

The NTSB also leads US teams assisting in foreign airline accident investigations conducted by foreign authorities under the provisions of International Civil Aviation Organization agreements. In 1996, the Aviation Disaster Family Assistance Act further assigned us the responsibility of coordinating federal government resources and other organizations to support local, state, and airline efforts to assist aviation disaster victims and their families following accidents in which there is a major loss of life. A subsequent presidential memorandum directed federal agencies to support our agency when we

assume the same responsibilities for major surface transportation accidents. The rail passenger disaster family assistance provisions of the Rail Safety Improvement Act of 2008 assigned us similar responsibilities for rail passenger disasters resulting in a major loss of life, regardless of the cause or suspected cause.

To date, the NTSB has investigated more than 142,500 aviation accidents and thousands of surface transportation accidents. 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 perform investigations. Because of this dedication, we are recognized as the world's leading accident investigation agency.

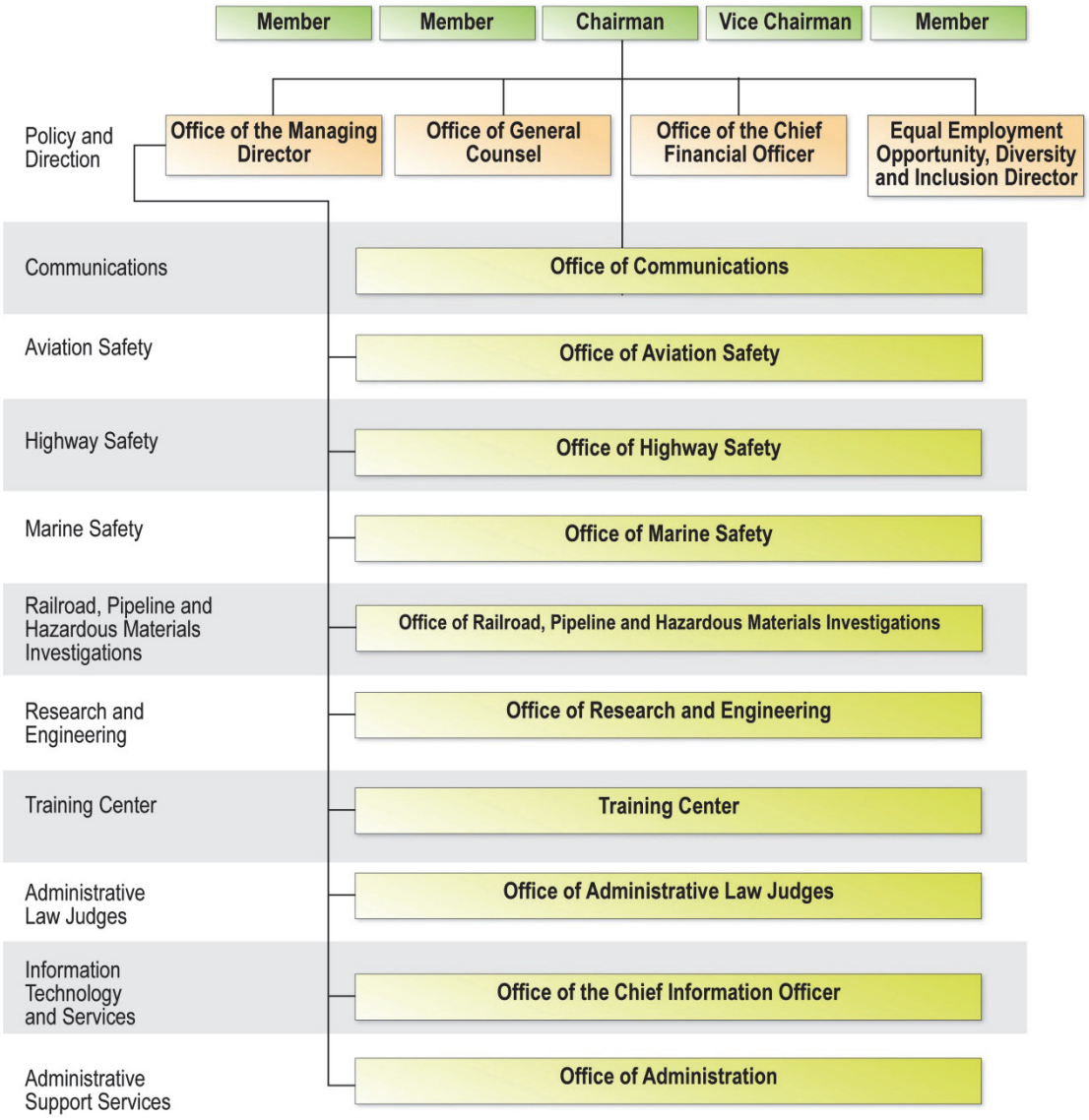
We have issued more than 14,300 safety recommendations to more than 2,300 recipients in all transportation modes as a result of NTSB investigations. Since 1990, we have published a list of "Most Wanted" transportation safety improvements, which highlights safety-critical actions that the DOT modal administrations, the USCG, the states, and other entities should take to help prevent accidents and save lives. Further information concerning the Most Wanted List appears in Appendix A.

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, we have achieved such success in shaping transportation safety improvements that, over the last 5 years, those who are in a position to affect these changes have implemented approximately 72 percent of the agency's recommendations. Many safety features currently incorporated into airplanes, helicopters, automobiles, commercial motor vehicles, trains, pipelines, and marine vessels had their genesis in NTSB safety recommendations. Further information concerning the status of our safety recommendations appears in Appendix B.

The five-member Board is composed of appointees nominated by the President and confirmed by the Senate. A Chairman (who is designated by the President and subject to Senate confirmation) serves as the chief executive officer of the NTSB. The President also designates one of the Members as Vice Chairman.

The NTSB is headquartered in Washington, DC. We also have investigators located in offices in Ashburn, Virginia; Denver, Colorado; Anchorage, Alaska; and Federal Way, Washington. The NTSB's training center is located in Ashburn, Virginia.

National Transportation Safety Board Organization and Program Structure



Resource Requirements Tab

RESOURCE REQUIREMENTS

Appropriation 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. [*United States Code*] 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), $106,000,000 of which not to exceed $2,000 may be used for official reception and representation expenses. The amounts made available to the National Transportation Safety Board in this Act include amounts necessary to make lease payments on an obligation incurred in FY 2001 for a capital lease."

Emergency Fund – 950311

The Administration is not requesting new funding for the Emergency Fund for FY 2017.

NATIONAL TRANSPORTATION SAFETY BOARD
SALARIES AND EXPENSES

Program and Financing Schedule ($000s)

Identification Code: 95-0310-0-1-407		FY 2015	FY 2016	FY 2017
Obligations by Program Activity:				
0001	Policy and Direction	12,946	14,330	14,980
0002	Communications	5,684	6,198	6,307
0003	Aviation Safety	30,571	31,470	32,028
0004	Information Technology and Services	8,913	7,407	7,390
0005	Research and Engineering	13,994	12,313	12,526
0006	Training Center	866	915	931
0007	Administrative Law Judges	2,090	2,436	2,479
0008	Highway Safety	6,295	6,805	6,926
0009	Marine Safety	4,605	5,876	4,834
0010	Railroad, Pipeline, and Hazardous Materials Safety	7,781	8,653	8,680
0011	Administrative Support Services	8,662	8,767	8,919
0091	Direct Program Activities, Subtotal	102,407	105,170	106,000
0100	Sub-Total Direct Obligations	102,407	105,170	106,000
0806	Training Center	712	1,000	1,000
0811	Subleases	593	600	600
0899	Total Reimbursable Obligations	1,305	1,600	1,600
0900	Total New Obligations	103,712	106,770	107,600
Budgetary Resources:				
1000	Unobligated balance brought forward, Oct 1	5,563	5,563	5,563
1050	Unobligated balance (total)	5,563	5,563	5,563
	Budget Authority:			
1100	Appropriation, discretionary	103,981	105,170	106,000
1160	Appropriation (total discretionary)	103,981	105,170	106,000
1700	Spending authority from offsetting collections	1,815	1,600	1,600
1750	Spending authority from offsetting collections, discretionary (total)	1,816	1,600	1,600
1900	Budget authority (total)	105,797	106,770	107,600
1930	Total budgetary resources available	111,360	112,333	113,163
Memorandum (non-add) entries:				
1940	Unobligated balance expiring	-2,060	0	0
1941	Unexpired unobligated balance, end of year	5,563	5,563	5,563

Identification Code: 95-0310-0-1-407		FY 2015	FY 2016	FY 2017
Change in Obligated Balance:				
3000	Unpaid obligations, brought forward Oct 1 (gross)	17,197	17,697	18,497
3010	Obligations incurred, unexpired accounts	103,713	106,770	107,600
3011	Obligations incurred, expired accounts	2,079	0	0
3020	Obligated balance, Outlay (gross)	-101,173	-106,770	-107,600
3041	Recoveries of prior year unpaid obligations, expired	-2,831		
3050	Unpaid obligations, end of year	17,197	17,697	18,497
3100	Obligated balance, start of year (net)	17,197	17,697	18,497
3200	Obligated balance, end of year	18,985	18,497	18,497
Budget Authority and Outlays, Net:				
	Discretionary:			
4000	Budget authority, gross	105,797	106,770	107,600
	Outlays, gross			
4010	Outlays from new discretionary authority	88,464	86,239	86,920
4011	Outlays from discretionary balances	12,708	20,531	20,680
4020	Outlays, gross (total)	101,172	106,770	107,600
	Offsetting Collections Against Gross Budget Authority and Outlays:			
4030	Federal Sources	-961	-848	-848
4033	NonFederal Sources	-855	-752	-752
4040	Total Offsetting Collections	-1,816	-1,600	-1,600
4080	Outlays, net (discretionary)	99,356	105,170	106,000
4180	Budget authority	103,981	105,170	106,000
4190	Outlays, net (total)	99,356	105,170	106,000

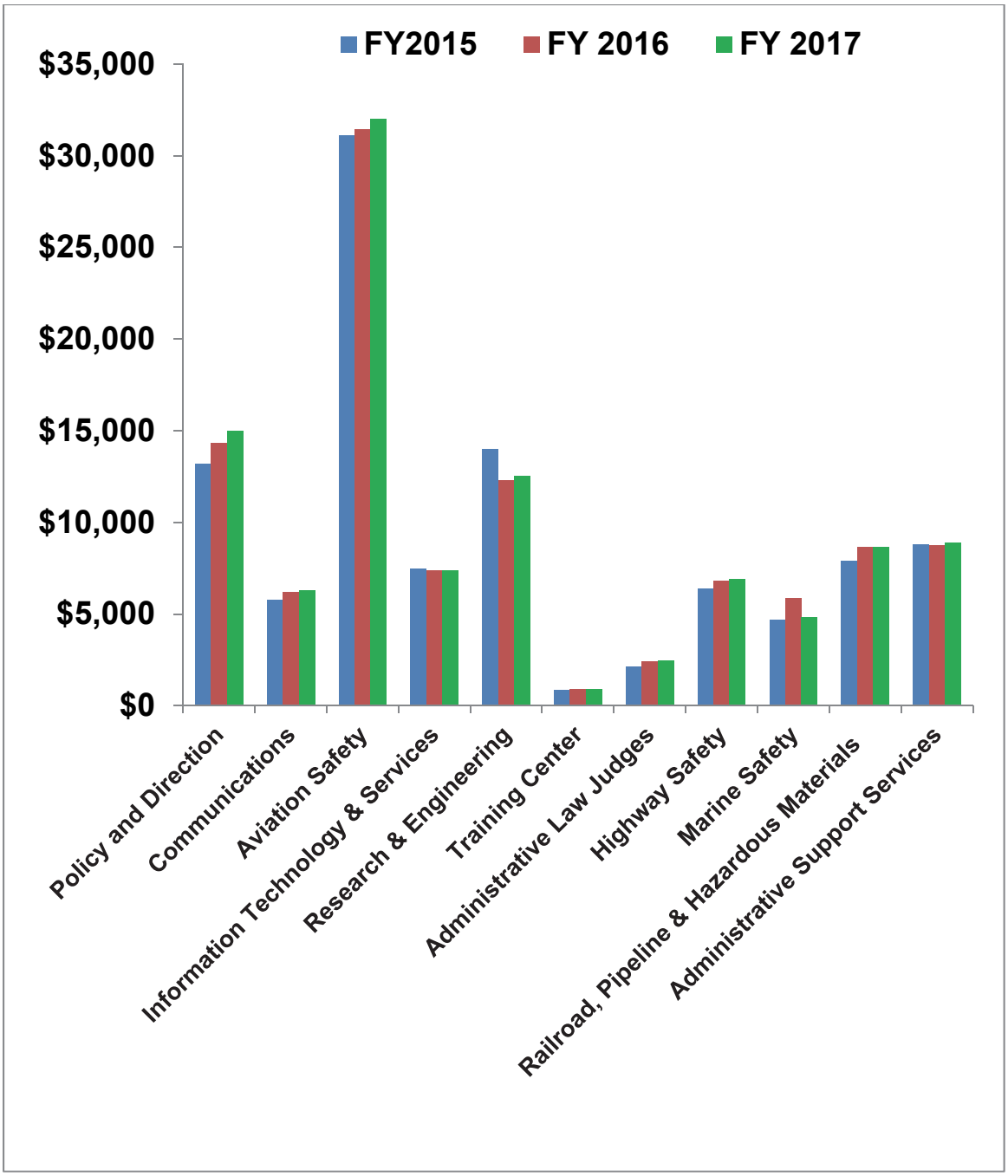
EMERGENCY FUND

Program and Financing Schedule ($000s)

Identification Code: 95-0311-0-1-407	FY 2015	FY 2016	FY 2017
Budgetary Resources:			
Unobligated balance:			
1000 Unobligated balance brought forward, Oct 1	1,998	1,998	1,998
1930 Total budgetary resources available	1,998	1,998	1,998
Memorandum (non-add) entries:			
1941 Unexpired unobligated balance, end of year	1,998	1,998	1,998

NATIONAL TRANSPORTATION SAFETY BOARD
SALARIES AND EXPENSES

Obligations by Program Activity ($000s)



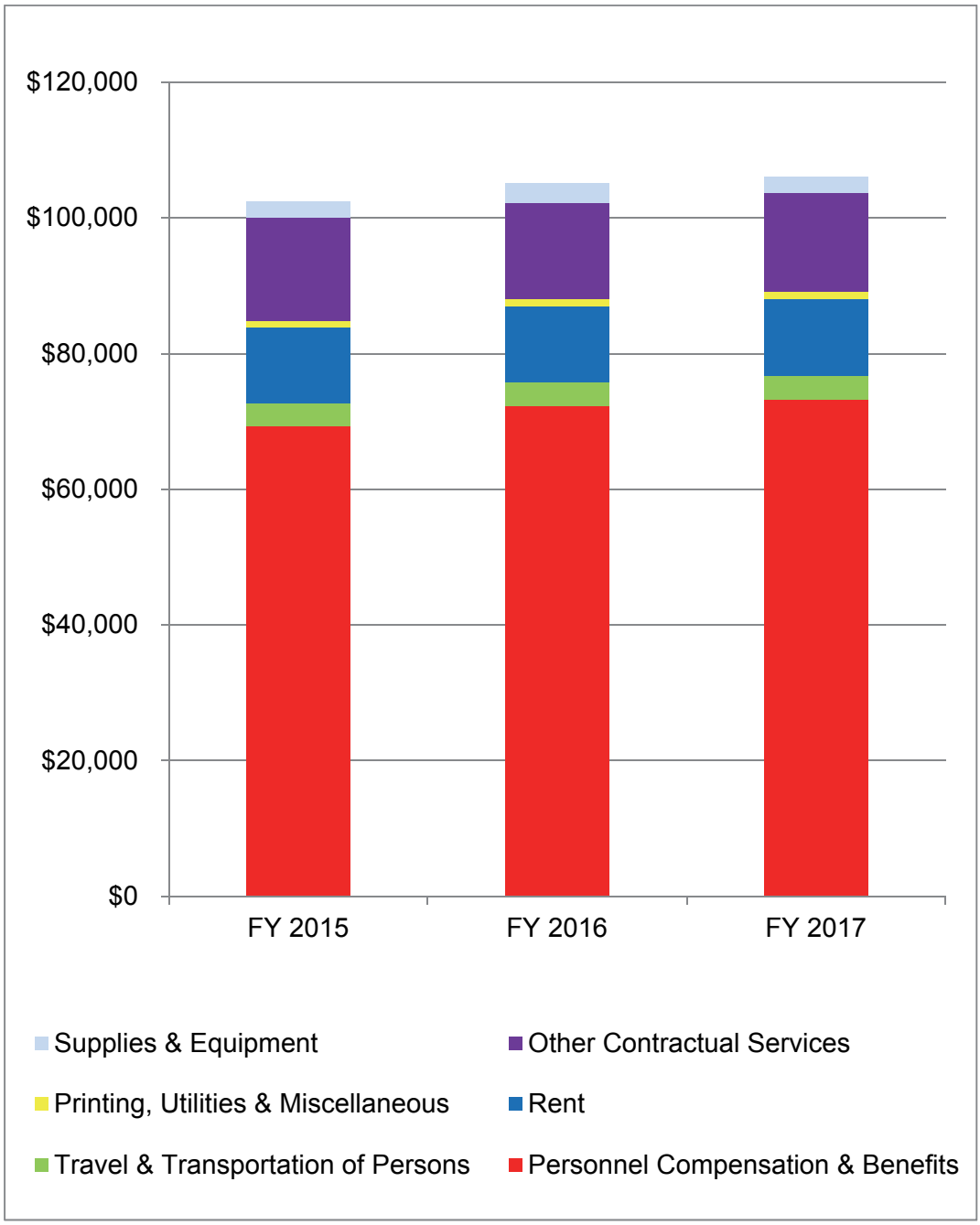
NATIONAL TRANSPORTATION SAFETY BOARD
SALARIES AND EXPENSES

Total Obligations by Program ($000s)

Identification Code: 95-0310-0-1-407	FY 2015	FY 2016	FY 2017
Policy and Direction	13,190	14,330	14,980
Communications	5,785	6,198	6,307
Aviation Safety	31,114	31,470	32,028
Information Technology and Services	7,475	7,407	7,390
Research and Engineering	13,997	12,313	12,526
Training Center	882	915	931
Administrative Law Judges	2,128	2,436	2,479
Highway Safety	6,409	6,805	6,926
Marine Safety	4,690	5,876	4,834
Railroad, Pipeline and Hazardous Materials Investigations	7,924	8,653	8,680
Administrative Support Services	8,813	8,767	8,919
Total	**102,407**	**105,170**	**106,000**

NATIONAL TRANSPORTATION SAFETY BOARD
SALARIES AND EXPENSES

Obligations by Object Classification ($000s)



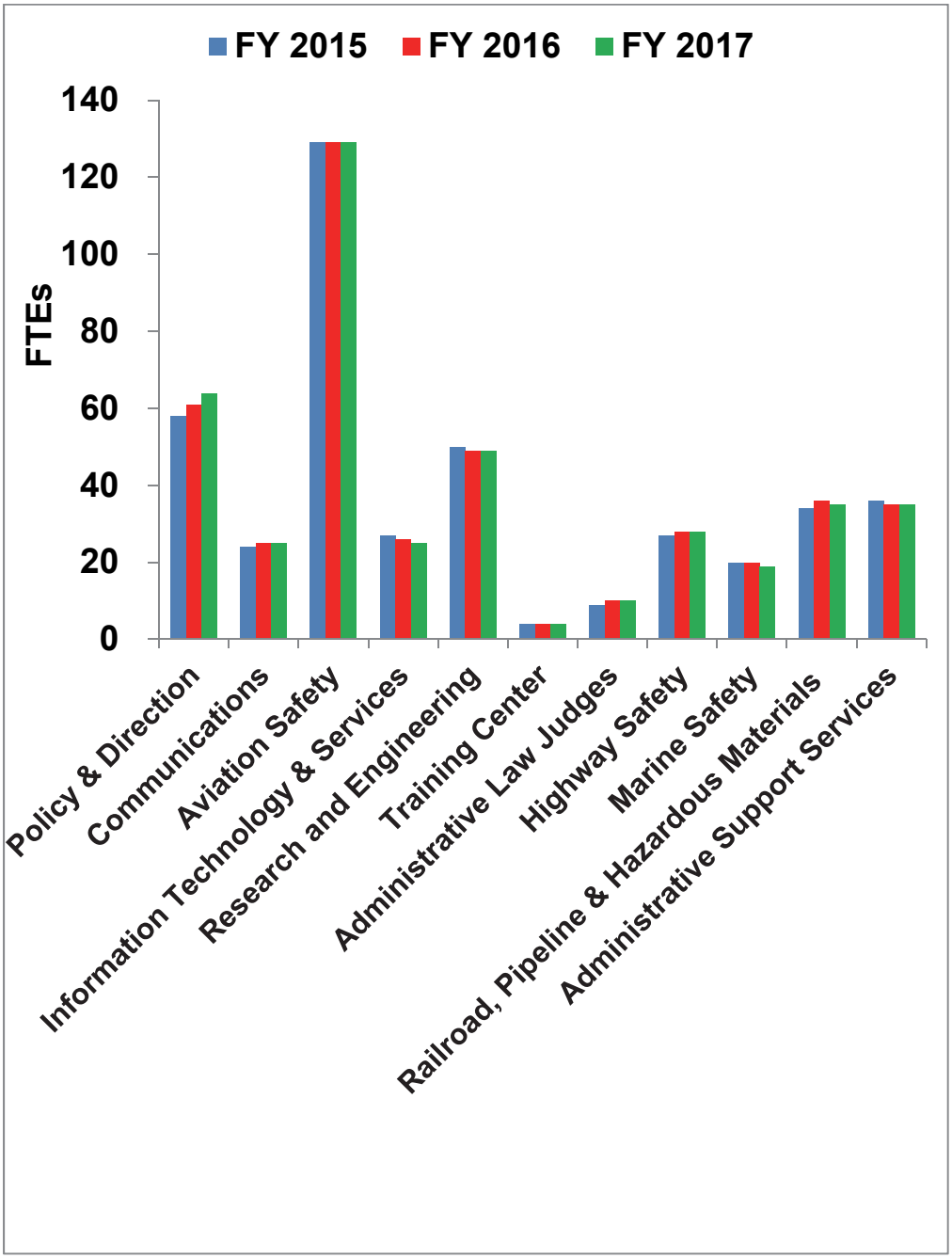
NATIONAL TRANSPORTATION SAFETY BOARD
SALARIES AND EXPENSES

Total Obligations by Object Classification ($000s)

Identification Code:	95-0310-0-1-407	FY 2015	FY 2016	FY 2017
	Personnel Compensation and Benefits:			
11.1	Permanent Positions	48,616	49,412	49,805
11.3	Positions Other Than Permanent	2,303	3,093	3,380
11.5	Other Personnel Compensation	2,144	2,729	2,733
	Total Personnel Compensation	53,063	55,234	55,918
12.1	Personnel Benefits	16,217	17,048	17,256
	Subtotal, Personnel Compensation and Benefits	69,280	72,282	73,174
	Other Than Personnel Compensation and Benefits			
21.0	Travel and Transportation of Persons	3,354	3,339	3,399
22.0	Transportation of Things	72	74	75
23.1	Rental Payments to GSA	8,955	9,115	9,191
23.2	Rental Payments to Others	2,189	2,224	2,264
23.3	Communications, Utilities, and Miscellaneous Charges	907	929	945
24.0	Printing and Reproduction	103	105	107
25.0	Other Contractual Services	15,235	14,208	14,499
26.0	Supplies and Materials	614	612	623
31.0	Equipment	1,698	2,282	1,723
99.9	**Total Obligations**	**102,407**	**105,170**	**106,000**
	Personnel Summary:			
	Full Time Equivalent Employment (FTE)	418	423	423
	- Permanent	418	423	423
	- Other Than Permanent	0	0	0

NATIONAL TRANSPORTATION SAFETY BOARD
SALARIES AND EXPENSES

Staffing by Program Activity



NATIONAL TRANSPORTATION SAFETY BOARD
SALARIES AND EXPENSES

Staffing by Program Activity

Identification Code: 95-0310-0-1-407	FY 2015	FY 2016	FY 2017
Policy and Direction	**58**	**61**	**64**
Chairman, Vice Chairman, Board Members	10	12	15
Office of the Managing Director	22	22	22
Office of the General Counsel	11	11	11
Office of the Chief Financial Officer	12	13	13
Office of EEO, Diversity, and Inclusion	3	3	3
Communications	**24**	**25**	**25**
Aviation Safety	**129**	**129**	**129**
Information Technology and Services	**27**	**26**	**25**
Research and Engineering	**50**	**49**	**49**
Training Center	**4**	**4**	**4**
Administrative Law Judges	**9**	**10**	**10**
Highway Safety	**27**	**28**	**28**
Marine Safety	**20**	**20**	**19**
Railroad, Pipeline and Hazardous Materials	**34**	**36**	**35**
Administrative Support Services	**36**	**35**	**35**
Total	**418**	**423**	**423**

NATIONAL TRANSPORTATION SAFETY BOARD
SALARIES AND EXPENSES

Analysis of Changes – FY 2016 to 2017

$ 0 Staff Increase/Decrease

Staffing will remain at 423 FTEs.

$ 895 Pay Raises

Funds cover the annualized costs of the President's 1.3 percent provisional pay raise effective January 2017.

$ 388 Non-Pay Inflation

Inflation of 1.8 percent is used for non-pay based on economic assumptions for discretionary programs.

$ (453) Other

The requested funds cover increases in rent for General Services Administration (GSA) and non-GSA occupancy agreements offset by changes in the composition of the employee base.

$ 830 Total

Summary of Changes

$	105,170	FY 2016 level (423 FTEs)
$	830	Total Increase
$	106,000	FY 2017 level (423 FTEs)

Policy and Direction Tab

POLICY AND DIRECTION

	($000s)	FTEs
FY 2016 Estimate	$14,330	61
FY 2017 Request	$14,980	64
Increase/Decrease	$650	3

Overview of Request

The funding level for this program activity includes increases for a 1.3 percent pay raise for existing staff and a 1.8 percent non-pay inflation factor. An increase of 3 FTEs reflects full staffing of the Board. No other program changes are planned.

Program Description

Policy and Direction program resources fund the offices of the Chairman, Vice Chairman, 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.

Chairman, Vice Chairman, and Members (15 FTEs)

The Chairman serves as the chief executive officer for the agency. The Chairman, Vice Chairman, and Board Members preside at NTSB Board Meetings; review and approve all NTSB reports, safety studies, and safety recommendations; provide appellate review of Federal Aviation Administration certificate and certain civil penalty actions, as well as Coast Guard license actions; and act as spokespersons at accident scenes. They also advocate safety recommendations with the transportation community, federal agencies, state and local governments, and the public.

Office of the Managing Director (22 FTEs)

The Office of the Managing Director assists the Chairman in the discharge of executive and administrative functions. The office coordinates activities of the entire staff, manages the day-to-day operation of the agency, and develops and recommends plans to achieve program objectives. The Managing Director is responsible for the overall leadership, direction, and performance of the agency, as well as its communications and organizational efficiency, including oversight of the NTSB Response Operations Center. The center provides support 24 hours a day, 365 days a year, for agency-wide operational requirements, including accident launches and the collection and dissemination of information related to transportation accidents and incidents.

The Office of the Managing Director consists of two organizational units. The Training Center manages workforce development and external training functions. The Executive Secretariat is responsible for the processing and archiving of external correspondence.

Office of the General Counsel (11 FTEs)

The Office of the General Counsel provides advice and assistance on legal aspects of policy matters, legislation, testimony, NTSB rules, and ethics. The office also provides timely and objective review of airman appeals of certificate actions and certain civil penalties and seaman license actions, acting on behalf of the NTSB on particular procedural aspects of enforcement cases; makes decisions as to the release of official information pursuant to the requests or demands of private litigants, courts, or other authorities 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; provides counsel and staff assistance to the US Department of Justice when the NTSB is a party to judicial proceedings; and provides internal legal assistance and guidance regarding accident and incident investigations, hearings, appearances as witnesses, acquiring evidence by subpoena and other means, and the taking of depositions.

Office of the Chief Financial Officer (13 FTEs)

The Office of the Chief Financial Officer (CFO) manages NTSB financial resources, develops the agency's budget requests for submission to the Office of Management and Budget and Congress, and executes the budget for resources appropriated to the NTSB by Congress. The CFO also prepares the agency's financial statements, as required by the Accountability of Tax Dollars Act; oversees property and inventory control programs; and analyzes the fee structure for services that the agency provides on a reimbursable basis. Additionally, the CFO is responsible for ensuring compliance with the Federal Managers' Financial Integrity Act.

Office of Equal Employment Opportunity, Diversity, and Inclusion (3 FTEs)

The Office of Equal Employment Opportunity, Diversity, and Inclusion (EEODI) advises and assists the Chairman and NTSB office directors in carrying out their responsibilities relative 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. These services are provided to managers, employees, and job applicants by the director and two full-time staff, three collateral-duty employees (one Hispanic employment program manager, one federal women's program manager, and one disability program manager), and volunteer special emphasis program managers. To maintain the integrity and impartiality of the agency's EEO complaints resolution program, external EEO counselors and investigators are contracted to assist employees and job applicants who file formal or informal complaints of alleged discrimination. In addition, the office manages an alternative dispute resolution program. EEODI services also include providing required educational training to NTSB staff, raising diversity awareness at the agency, engaging in targeted outreach, assisting in internal recruitment initiatives, and providing career enhancement advisory services.

Communications Tab

COMMUNICATIONS

	($000s)	FTEs
FY 2016 Estimate	$6,198	25
FY 2017 Request	$6,307	25
Increase/Decrease	$109	0

Overview of Request

The funding level for this program activity includes increases for a 1.3 percent pay raise for existing staff and a 1.8 percent non-pay inflation factor. No program changes are planned.

Program Description

The Office of Communications (OC) comprises four divisions: Safety Advocacy, Public Affairs, Government and Industry Affairs, and Transportation Disaster Assistance (TDA). The OC ensures that the agency's mission and actions are accurately and effectively communicated to congressional stakeholders, victims of transportation accidents and their families, state and local governments, the press, and the public. OC staff also develops postings for the NTSB website and creates videos to support the agency's advocacy program. The goal is communicating a clear message about our mission and about how implementing our recommendations can address critical transportation safety issues.

The OC develops and administers the Most Wanted List (MWL) based, in part, on open safety recommendations. The MWL is the agency's preeminent advocacy tool, highlighting issue areas whose resolution would have significant impact on transportation safety at the national and state levels. A new list is announced annually at a press conference. Although the NTSB actively advocates for the acceptance of all its safety recommendations, follow-up efforts for the recommendations supporting MWL issue areas are generally more aggressive. This includes tracking agency-wide advocacy efforts and coordinating the NTSB's overall strategy for safety advocacy through traditional media outlets, as well as through social media, and with industry and other non-governmental organizations engaged in transportation safety advocacy at the federal and state levels.

Safety Advocacy Division

The Safety Advocacy Division is responsible for the following:

- Leading the development of the advocacy strategy for the MWL.
- Working with Board Members and NTSB staff to promote MWL issue areas.
- Developing and implementing the agency's advocacy program to highlight state-related safety recommendations.

- Collaborating with the Government and Industry Affairs Division to obtain support for programs and legislation at state and local levels consistent with agency recommendations.
- Disseminating safety information and increasing public awareness of NTSB activities in transportation safety through the "Safety Compass" blog, other social media venues, and presentations at conferences.
- Proposing, developing, and managing forums on safety issues and our safety recommendations.
- Developing and maintaining contact with safety advocacy organizations and providing information on NTSB activities and safety recommendations.

Public Affairs Division

The Public Affairs Division is responsible for the following:

- Serving as the primary point of contact for all media (print, radio, television, and Internet-based and social media outlets).
- Disseminating information about NTSB activities to the media.
- Providing media support to Board Members, investigators, and launch teams at accident sites.
- Developing press opportunities to promote the agency's safety message.
- Providing support for the Chairman through speechwriting and producing other written products.
- Producing promotional videos about the NTSB and our activities.
- Collaborating with the web team to write, edit, and maintain content on the agency's website, including updating news and current information, and managing the social media program.
- Maintaining and updating the agency's media room and equipment.

Government and Industry Affairs Division

The Government and Industry Affairs Division is responsible for the following:

- Coordinating NTSB responses to requests for information and assistance from Congress, the White House, the Government Accountability Office, and other federal agencies.
- Assisting congressional committee staffs in developing appropriations and authorization legislation for the NTSB.
- Informing Congress, governors, and state legislatures about NTSB activities, including accident launches, investigations, Board Meetings, recommendations, and others.
- Responding to inquiries and concerns raised by members of Congress and committees, governors, and state legislators.

- Providing comments, when requested, on proposed legislation affecting other transportation agencies.
- Assisting Board Members and NTSB staff in testifying before Congress.
- Providing on-scene support to Board Members and accident investigation teams.
- Providing assistance to other NTSB offices in identifying appropriate resources in state and local governments.
- Collaborating with the Safety Advocacy Division in support of programs and legislation consistent with safety recommendations.
- Monitoring state legislative activity relevant to NTSB recommendations.

Transportation Disaster Assistance Division

The TDA Division carries out the NTSB statutory duty under the Aviation Disaster Family Assistance Act (49 U.S.C. section 1136) and the rail passenger disaster family assistance provisions of the Rail Safety Improvement Act of 2008 (49 U.S.C. sections 1139 and 24316). This division is responsible for the following:

- Responding to all major aviation accidents and rail accidents as required by law.
- Supporting accident investigations in other modes of transportation, including regional aviation.
- Coordinating the federal services provided to accident survivors and victims' families, including crisis counseling, victim recovery and identification, and communication with foreign governments.
- Briefing families during the on-scene phase of the investigation and as needed throughout the investigation to provide updates and to address other family member concerns.
- Notifying victims and their family members regarding all Board proceedings and investigative products.
- Providing training and educational outreach regarding family assistance operations to other government agencies, organizations potentially affected by or involved in NTSB accident investigations, airline and airport personnel, transportation operators in other modes, and state and local governments to help ensure their preparedness for a major transportation disaster.

Accomplishments and Workload

Safety Advocacy Division

The Safety Advocacy team leads the agency's premier advocacy tool, the MWL program. Staff coordinated the development of, and strategy for communicating, the 2015 MWL, which was announced at a press conference in January 2015. This effort included management support for the 10 advocacy teams in developing strategic communication and outreach plans. Safety Advocacy support included identifying or participating in speaking engagements, coordinating advocacy trips, drafting

presentations, and assuming greater responsibility in scheduling and developing social media content, including the NTSB "Safety Compass" blog. During the year, division staff conducted 159 advocacy activities. Safety Advocacy staff have drafted the 2016 MWL proposal, which will be released at a press conference scheduled to take place in January 2016; they are also coordinating the agency's response to the Department of Transportation Report to Congress on the MWL.

Staff participated in the Annual Lifesavers Highway Safety Conference in Chicago, Illinois on March 15-17, 2015. The conference brought together more than 1,500 highway safety professionals to provide a forum for sharing new research and innovative and effective highway safety programs aimed at reducing injuries and deaths on the nation's roadways.

"Distraction is a multimodal problem that requires immediate attention" was the theme of a unique roundtable event held March 31, 2015, titled "Disconnect from Deadly Distractions." Scheduled to mark the beginning of National Distracted Driving Awareness Month in April, the forum brought together 40 experts from government, industry and academia—from all modes of transportation— to discuss solutions for combating distracted driving/piloting, particularly cell phone use.

In April, staff organized a trip for Chairman Hart to the Houston (Texas) Ship Channel to promote the rail tank car and positive train control MWL issue areas. The Chairman met with the Coast Guard and shipping and rail tank car manufacturers including GBW Railcar Services, the Greenbrier facility, and BNSF facilities in various locations in Texas. The trip focused on building working relations with shipping and tank car organizations, understanding their daily operations, and discussing their current plans for improving safety.

During Global Youth Traffic Safety Month in May, the Safety Advocacy team worked closely with the National Organizations for Youth Safety to orchestrate an event aimed at educating teens on how they can reduce and prevent injuries and deaths on our roadways. Later that month, staff addressed government officials in the Caribbean at the International Road Federation's 4th Caribbean Regional Congress. Staff discussed NTSB efforts to combat distracted driving, improve occupant protection, and eliminate impaired driving, and emphasized the importance of using a three-pronged approach of legislation, education, and enforcement to achieve these goals.

The Safety Advocacy team supported the 70th annual national Family, Career and Community Leaders of America Leadership's "Seventy Years Strong" rally on the National Mall in Washington, DC, in June. NTSB Vice Chairman Bella Dinh-Zarr addressed teen leaders about the critical role that teens can play in spreading the highway safety message to their peers.

Staff worked with Loudoun County, Virginia, school officials and other Virginia transportation safety advocates to orchestrate a media event in Ashburn, Virginia, in August, to remind students and parents about the importance of traveling safely in school buses, bikes, and cars during the school year. Advocacy staff also participated in the Governors Highway Safety Association (GHSA) Annual Meeting in Nashville, Tennessee, to educate the audience about issues listed on the current MWL.

In September, Safety Advocacy staff supported the Chairman on a multimodal advocacy outreach trip to Colorado and Kansas to meet with such organizations as the

Colorado Motor Carriers Association and the Kansas City Aviation Department, among others. The trip was designed to learn the measures each organization is taking to develop and maintain a strong safety culture. Advocacy staff also participated in the Virginia Distracted Driving Summit in Virginia Beach, Virginia. The summit brought together approximately 250 industry leaders, scientists, educators, and law enforcement to share ideas, gather information, learn about best practices, and forge solutions for Virginia. Also in September, staff attended the Commercial Vehicle Safety Alliance's annual meeting of highway inspectors and law enforcement to brief on MWL issue areas, and supported presentations before the National Private Truck Council's annual safety meeting. The team presented major corporate truck fleet operators with a one-page flyer highlighting crash lessons learned, a tool to improve the safety of fleet operations nationwide.

This year, staff developed and distributed two editions of the *Advocacy Spotlight* newsletter to focus attention on the division's advocacy campaigns and to highlight advances made in the MWL issue areas. The *Advocacy Spotlight* communicates with stakeholders and advocacy partners within and outside the NTSB, and encourages continued support of safety issue areas. The *Advocacy Spotlight* is released periodically via email and social media outlets.

Staff also coordinated advocacy of safety recommendations issued to the states, including support for legislative efforts in Nebraska (urging lawmakers not to repeal a law requiring mandatory motorcycle helmets), Texas (distracted driving legislation), and California (impaired driving legislation).

Public Affairs Division

In FY 2015, the Public Affairs Division issued 125 press releases and media advisories, launched to support 12 major accident investigations, and responded to more than 7,000 press inquiries. Public Affairs staff have coordinated more than 700 interviews on important NTSB activities; reached out to more than 2,000 reporters; and coordinated media activities for four Board Meetings, and six events including public forums and symposia. Staff coordinated 64 press conferences, including handling communication efforts for several major events—a press conference in New York City for the release of the Metro-North factual reports, forums on drowsy driving and railroad trespassing, and a symposium on tire safety. In addition, staff provided more than 20 media and communications training courses to various stakeholders.

In addition, Public Affairs staff continued to grow the NTSB's social media presence. This year, the number of followers for the agency Twitter account tripled to more than 105,000. Public Affairs has expanded its use of YouTube to inform stakeholders and the public about the agency's investigative work, safety recommendations, and MWL of transportation safety improvements.

Government and Industry Affairs Division

The Government and Industry Affairs Division supported eight accident launches on scene, and the remaining major launches and several general aviation regional investigations from Headquarters. As each of these investigations continues, the division is the main point of contact for additional inquiries from local, state, and Congressional officials. Staff responded to hundreds of requests for information on questions involving each mode of transportation, and initiated outreach to Congressional, state, and local

officials who expressed an interest in improving transportation safety. Staff also prepared NTSB Board Members to testify at 10 Congressional hearings, filed 7 statutorily required reports to Congress, and answered 5 requests for information from the Government Accountability Office.

Government Affairs staff testified in Nebraska in support of legislation to require motorcycle helmet use, provided written statements to state legislative committees on NTSB recommendations regarding meteorological towers, and offered background information to legislators and staff on other NTSB recommendations. Staff made an additional nine appearances before organizations of state and local officials regarding our MWL, rail tank car safety and emergency response, and positive train control. Staff also arranged for Board Member and staff-level briefings for state and local officials on ongoing investigations and recommendations, and facilitated state-level testimony and appearances by NTSB staff from other offices in several states. Additionally, the division oversaw the delivery of three forums and one symposium on the topics of flight data recorders, drowsy driving, tire safety, and railroad trespassing. Finally, Government Affairs staff chaired a panel on emergency response at the public hearing on the January 12, 2015 WMATA accident at L'Enfant Plaza in Washington, DC.

Transportation Disaster Assistance Division

During FY 2015, Transportation Disaster Assistance staff launched to an Amtrak accident that occurred in Philadelphia, Pennsylvania, on May 12, 2015, which met the requirements of the rail passenger disaster family assistance provisions of the Rail Safety Improvement Act of 2008 (49 USC § 1139 and § 24316), and a Part 135 on-demand sightseeing aviation accident that occurred near Ketchikan, Alaska, on June 25, 2015, that met the requirements of the Aviation Disaster Family Assistance Act (49 U.S.C. § 1136 and § 41113). Additionally, staff launched to six general aviation accidents, three rail accidents, and two highway accidents. Staff provided non-launch support for an additional 242 domestic aviation accidents, 15 international aviation accidents, 9 rail accidents, 4 marine accidents, 5 highway accidents, and 3 pipeline accidents. Staff managed an average of 24 cases per week.

Staff also assisted family members and provided related technical assistance to the Chairman and Board Members at four Board Meetings, one investigative hearing, one forum, and one round-table discussion.

Staff participated in 53 outreach training events, resulting in direct contact with 4,115 participants. Staff also responded to inquiries for information from 4 international agencies and organizations, 29 federal agencies, 46 state and local agencies, 75 transportation industry organizations, and 43 professional organizations, educational institutions, and other aid organizations.

Staff coordinated two offerings of TDA 301, a 2.5-day course that provided an overview of family assistance operations associated with transportation disasters. The course, held at the NTSB Training Center, was attended by 27 persons in March and 38 in September from across the transportation industry; local, state, and federal agencies; and other organizations interested in family assistance operations. Staff also coordinated TDA 403, a 3-day course that examines the core principles of the medicolegal response to transportation disasters. This course was attended by 27 medical examiners, coroners, forensic scientists, and others in the medicolegal professions. TDA staff also participated in four modal training courses at the NTSB Training Center.

The division continued its outreach to airport communities, conducting disaster response courses at Norfolk International Airport, Honolulu International Airport, Massachusetts Port Authority's Logan International Airport, Detroit Metropolitan Wayne County Airport, Orlando International Airport, the San Antonio Airport System, Aspen-Pitkin Airport in Colorado, and McCarran International Airport in Las Vegas, Nevada, training a total of 770 persons. At the division's annual 1-day meeting with air carrier emergency response leaders (the "Chicago" Meeting), 95 attendees representing 17 foreign air carriers and 26 domestic air carriers involved in commercial passenger and cargo operations reviewed current air carrier emergency response programs, air carrier use of social media to support post-accident family assistance operations, and NTSB support of family assistance operations outside the United States. In addition, the division hosted a meeting with 21 attorneys from 15 law firms who represent foreign air carriers operating in the United States (Part 129 carriers) to review 49 USC § 41313 and 49 USC § 1136, and to discuss the roles and expectations that the division and DOT have of Part 129 operators following an accident.

The division also organized the first annual 1-day conference for rail passenger carriers. "Planning for a Disaster: Passenger and Family Assistance Operations" brought together passenger rail carrier representatives from across the United States to discuss family assistance operations planning, preparedness, and response. Twenty-two passenger rail professionals representing 10 organizations and 2 representatives from American Red Cross Headquarters attended the conference.

The division developed a partnership with the Federal Emergency Management Agency National Exercise Division to develop the National Exercise Program Large Scale Aviation Accident Response Exercise Series. This is a 1-day seminar and tabletop exercise series designed to explore the complexities of a large scale aviation accident occurring beyond airport boundaries. During this reporting period, this program was offered in Ashburn, Virginia; Detroit, Michigan; Sacramento, California; and Bangor, Maine; to about 415 persons all together from local, state, and federal agencies as well as private sector and non-governmental organizations with a role in transportation mass casualty response operations.

The division also coordinated a series of meetings with NTSB Office of Research and Engineering's Vehicle Recorder Division, the Office of General Counsel, and the Office of Aviation Safety to discuss and develop internal guidelines for the acquisition and management of data obtained from personal electronic devices (PEDs). These guidelines will be released in January 2016, after which a webinar will be held to address questions from investigative staff regarding the document.

Aviation Safety Tab

AVIATION SAFETY

	($000s)	FTEs
FY 2016 Estimate	$31,470	129
FY 2017 Request	$32,028	129
Increase/Decrease	$558	0

Overview of Request

The funding level for this program includes increases for a 1.3 percent pay raise for existing staff and a 1.8 percent non-pay inflation factor. No program changes are planned.

Program Description

The mission of the Office of Aviation Safety (AS) is to

- Investigate all air carrier, commuter, and air taxi accidents; in-flight collisions; fatal and nonfatal general aviation (GA) accidents; and certain public aircraft accidents.
- Participate in the investigation of major airline crashes in foreign countries that involve US carriers, US-manufactured or -designed equipment, or US-registered aircraft to fulfill US obligations under International Civil Aviation Organization (ICAO) agreements.
- Investigate safety issues that extend beyond a single accident, to examine specific aviation safety problems from a broader perspective.

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

Major Investigations Division

The Major Investigations Division of AS performs the following functions:

- Provides investigators-in-charge (IIC) for major domestic aircraft accident and incident investigations.
- Coordinates the preparation of comprehensive aviation accident and incident reports, and manages aviation investigative hearings, forums, and conferences.
- Coordinates and supervises the efforts of NTSB group chairmen and external investigation participants who are provided by industry, other government agencies, and foreign authorities (for investigations involving foreign-registered aircraft that were operating in US territory or foreign-manufactured or -designed aircraft operated by US carriers).

- 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, and informs Federal Aviation Administration (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.)

As applicable for domestic accident and incident investigations, a specialist in operational factors, aviation engineering, human performance, or survival factors (and other NTSB organizational elements, as appropriate) may act as a group chairman on a major investigation to examine issues in their specialty area. Group chairmen lead their respective groups in the technical investigation of an accident under the direction of the IIC and produce a factual report that is placed in the NTSB public docket. They also produce analytical reports that are used in developing 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.

General Aviation Accident Investigations Division

The General Aviation Accident Investigations Division comprises recent graduates selected from the Federal Pathways Program, who are responsible for investigating and documenting minor regional accidents (data collection investigations), conducting some non-fatal limited investigations, and assisting with foreign accident notifications and investigations. The creation of this division has reduced the workload of more senior journeyman and senior accident investigators so that they can better focus on investigating more complex accidents, developing safety recommendations, and advocating safety initiatives.

Operational Factors Division

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

- Air traffic control facilities, procedures, and flight handling, including developing flight histories from air route traffic control centers and terminal facility radar records.
- Operations of the air carrier and airport; training, experience, and operational performance of flight crews; 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.

Aviation Engineering Division

The Aviation Engineering Division examines all issues related to powerplants, structures, systems, system safety, and maintenance:

- 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 systems and 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.

Human Performance/Survival Factors Division

AS 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 work habit patterns and interrelationships among crewmembers and managers, 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, and drug or alcohol use.

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 certification.

Writing and Editing Division

The Writing and Editing Division drafts major aviation reports and edits accident briefs, safety recommendation letters, special investigation reports, responses to notices of proposed rulemaking, and general correspondence.

Regional Offices

See Appendix C for AS regional office locations.

Although many regional accident/incident investigations may be much smaller in scope than those led by IICs at the NTSB Washington, DC, Headquarters, they are conducted in a similar manner. Often, a single aviation safety investigator (ASI) conducts the investigation, gathering detailed information and working with party representatives. During each investigation, ASIs consider ways to prevent similar accidents from recurring through a more immediate and informal solution (known as a safety accomplishment) or

through the formal safety recommendation process. In addition, ASIs often provide support to 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 special investigation report. In these cases, additional staff from Headquarters are often assigned to assist the ASIs in gathering the facts, developing the analysis, and drafting the final report.

Accomplishments and Workload

Completed Major Accident and Incident Investigations

Runway Overrun During Rejected Takeoff, Gulfstream Aerospace Corporation G-IV
Bedford, Massachusetts
May 31, 2014
Aircraft Accident Report

On May 31, 2014, about 2140 eastern daylight time, a Gulfstream Aerospace Corporation G-IV, N121JM, registered to SK Travel, LLC, and operated by Arizin Ventures, LLC, crashed after it overran the end of runway 11 during a rejected takeoff at Laurence G. Hanscom Field (BED), Bedford, Massachusetts. The airplane rolled through the paved overrun area and across a grassy area, collided with approach lights and a localizer antenna, passed through the airport's perimeter fence, and came to a stop in a ravine. The two pilots, a flight attendant, and four passengers died. The airplane was destroyed by impact forces and a postcrash fire. The corporate flight, which was destined for Atlantic City International Airport, Atlantic City, New Jersey, was conducted under the provisions of Title 14 *Code of Federal Regulations* (CFR) Part 91. An instrument flight rules flight plan had been filed. Night visual meteorological conditions prevailed at the time of the accident.

The NTSB determined that the probable cause of this accident was the flight crewmembers' failure to perform the flight control check before takeoff, their attempt to take off with the gust lock system engaged, and their delayed execution of a rejected takeoff after they became aware that the controls were locked. Contributing to the accident were the flight crew's habitual noncompliance with checklists, Gulfstream Aerospace Corporation's failure to ensure that the G-IV gust lock/throttle lever interlock system would prevent an attempted takeoff with the gust lock engaged, and the Federal Aviation Administration's (FAA) failure to detect this inadequacy during the G-IV's certification.

Recommendations: 5 new
Report adopted: September 9, 2015

In-Flight Breakup During Test Flight, Scaled Composites SpaceShipTwo
Near Koehn Dry Lake, California
October 31, 2014
Aircraft Accident Report

On October 31, 2014, at 1007 Pacific daylight time, the SpaceShipTwo (SS2) reusable suborbital rocket, N339SS, operated by Scaled Composites LLC (Scaled), broke up into multiple pieces during a rocket-powered test flight and impacted terrain over a 5-mile area near Koehn Dry Lake, California. The pilot received serious injuries, and the copilot received fatal injuries. SS2 was destroyed, but no one on the ground was injured

by the falling debris. SS2 had been released from its launch vehicle, WhiteKnightTwo (WK2), N348MS, about 13 seconds before the structural breakup. Scaled was operating SS2 under an experimental permit issued by the FAA's Office of Commercial Space Transportation according to the provisions of 14 CFR Part 437.

The NTSB determined that the probable cause of this accident was Scaled Composites' failure to consider and protect against the possibility that a single human error could result in a catastrophic hazard to the SpaceShipTwo vehicle. This failure set the stage for the copilot's premature unlocking of the feather system as a result of time pressure and vibration and loads that he had not recently experienced, which led to uncommanded feather extension and the subsequent aerodynamic overload and in-flight breakup of the vehicle.

Recommendations: 10 new
Report adopted: July 28, 2015

Steep Climb and Uncontrolled Descent During Takeoff, National Air Cargo, Inc., dba National Airlines, Boeing 747-400 BCF
Bagram, Afghanistan
April 29, 2013
Aircraft Accident Report

On April 29, 2013, about 1527 local time, a Boeing 747-400 BCF, N949CA, operated by National Air Cargo, Inc., dba National Airlines, crashed shortly after takeoff from Bagram Air Base, Bagram, Afghanistan. All seven crewmembers—the captain, first officer, loadmaster, augmented captain and first officer, and two mechanics—died, and the airplane was destroyed from impact forces and postcrash fire. The 14 CFR Part 121 supplemental cargo flight, which was operated under a multimodal contract with the US Transportation Command, was destined for Dubai World Central - Al Maktoum International Airport, Dubai, United Arab Emirates.

Although the accident occurred in Afghanistan, the NTSB accepted an October 2014 request from the Afghan government for delegation of the investigation to the US. As the state of the operator, the manufacturer, and registration of the airplane, US interest in the investigation was high. Following delegation of the investigation, the NTSB assumed responsibility for completing the investigation and issuing the final report.

The NTSB determined that the probable cause of this accident was National Airlines' inadequate procedures for restraining special cargo loads, which resulted in the loadmaster's improper restraint of the cargo, which moved aft and damaged hydraulic systems Nos. 1 and 2 and horizontal stabilizer drive mechanism components, rendering the airplane uncontrollable. Contributing to the accident was the FAA's inadequate oversight of National Airlines' handling of special cargo loads.

Recommendations: 6 new
Report adopted: July 14, 2015

Crash Following In-Flight Fire, Fresh Air, Inc., Convair CV-440-38
San Juan, Puerto Rico
March 15, 2012
Aircraft Accident Report

On March 15, 2012, a Convair CV-440-38, N153JR, operated by Fresh Air, Inc., crashed into a lagoon about 1 mile east of the departure end of runway 10 at Luis Muñoz Marín International Airport (SJU), San Juan, Puerto Rico. The two pilots died, and the airplane was destroyed by impact forces. The airplane was operated under the provisions of 14 CFR Part 125 as a cargo flight. Visual meteorological conditions prevailed at the time of the accident, and a visual flight rules flight plan was filed. The flight had departed from runway 10 at SJU destined for Princess Juliana International Airport, St. Maarten. Shortly after takeoff, the first officer declared an emergency, and then the captain requested a left turn back to SJU and asked the local air traffic controllers if they could see smoke coming from the airplane (the two tower controllers noted in postaccident interviews that they had not seen more smoke than usual coming from the airplane). The controllers cleared the flight to land on runway 28, but as the airplane began to align with the runway, it crashed into a nearby lagoon (Laguna La Torrecilla).

The NTSB determined that the probable cause of this accident was the flight crew's failure to maintain adequate airspeed after shutting down the right engine due to an in-flight fire in one of the right augmenters. The failure to maintain airspeed resulted in either an aerodynamic stall or a loss of directional control.

As a result of this investigation, the NTSB issued safety recommendations to the FAA addressing oversight of Part 125 operations.

Recommendations: 3 new
Report adopted: November 17, 2014

Crash Following Encounter with Instrument Meteorological Conditions After Departure from Remote Landing Site, Alaska Department of Public Safety, Eurocopter AS350 B3
Talkeetna, Alaska
March 30, 2013
Aircraft Accident Report

On March 30, 2013, at 2320 Alaska daylight time, a Eurocopter AS350 B3 helicopter, N911AA, impacted terrain while maneuvering during a search and rescue flight near Talkeetna, Alaska. The airline transport pilot, an Alaska state trooper serving as a flight observer for the pilot, and a stranded snowmobiler who had requested rescue were killed, and the helicopter was destroyed by impact and postcrash fire. The helicopter was registered to and operated by the Alaska Department of Public Safety as a public aircraft operations flight under 14 CFR Part 91. Instrument meteorological conditions (IMC) prevailed in the area at the time of the accident. The flight originated at 2313 from a frozen pond near the snowmobiler's rescue location and was destined for an off-airport location about 16 miles south.

The NTSB determined that the probable cause of this accident was the pilot's decision to continue flight under visual flight rules into deteriorating weather conditions, which resulted in the pilot's spatial disorientation and loss of control. Also causal was the Alaska Department of Public Safety's punitive culture and inadequate safety management, which prevented the organization from identifying and correcting latent

deficiencies in risk management and pilot training. Contributing to the accident was the pilot's exceptionally high motivation to complete search and rescue missions, which increased his risk tolerance and adversely affected his decision-making.

As a result of this investigation, the NTSB made safety recommendations to the FAA addressing training for inadvertent IMC, and guidance for attitude indicator limits. The NTSB also issued recommendations to the state of Alaska, 44 additional states, the Commonwealth of Puerto Rico, and the District of Columbia addressing flight risk evaluation, formalized dispatch and flight following, night vision goggles, simulator training in inadvertent IMC, tactical flight officer training, and safety management systems.

Recommendations: 10 new
Report adopted: November 5, 2014

Auxiliary Power Unit Battery Fire, Japan Airlines, Boeing 787-8, JA829J
Boston, Massachusetts
January 7, 2013
Aircraft Incident Report

On January 7, 2013, about 1021 eastern standard time, smoke was discovered by cleaning personnel in the aft cabin of a Japan Airlines (JAL) Boeing 787-8, JA829J, which was parked at a gate at General Edward Lawrence Logan International Airport (BOS), Boston, Massachusetts. About the same time, a maintenance manager in the cockpit observed that the auxiliary power unit (APU) had automatically shut down. Shortly afterward, a mechanic opened the aft electronic equipment bay and found heavy smoke coming from the lid of the APU battery case and a fire with two distinct flames at the electrical connector on the front of the case. None of the 83 passengers or 11 crewmembers were aboard the airplane at the time, and none of the maintenance or cleaning personnel aboard the airplane were injured. Aircraft rescue and firefighting personnel responded, and one firefighter received minor injuries. The airplane had arrived from Narita International Airport, Narita, Japan, as a regularly scheduled passenger flight operated as JAL flight 008 and conducted under the provisions of 14 CFR Part 129.

The NTSB determined that the probable cause of this incident was an internal short circuit within a cell of the APU lithium-ion battery, which led to thermal runaway that cascaded to adjacent cells, resulting in the release of smoke and fire. The incident resulted from Boeing's failure to incorporate design requirements to mitigate the most severe effects of an internal short circuit within an APU battery cell and the FAA's failure to identify this design deficiency during the type design certification process.

As a result of this investigation, the NTSB made safety recommendations to the FAA addressing oversight of production approval holders and their suppliers, safety standards for lithium-ion batteries, thermal safety of batteries, certification guidance, safety assessments for new technologies, methods of compliance for type designs with special conditions, and airborne flight data recorders; to Boeing addressing oversight of suppliers and validation of safety assessments; and to GS Yuasa addressing cell manufacturing processes.

Recommendations: 18 new, 5 previously issued
Report adopted: November 21, 2014

Crash Following Takeoff, deHavilland DHC-3 Otter
Soldotna, Alaska
July 6, 2013
Accident Brief and Recommendations

On July 7, 2013, about 1120 Alaska daylight time, a deHavilland DHC-3 Otter airplane, N93PC, collided with terrain shortly after takeoff from Soldotna Airport, Soldotna, Alaska. The commercial pilot and nine passengers were fatally injured, and the airplane was destroyed. The airplane was registered to Rediske Family Limited Partnership, Nikiski, Alaska, and was operated by Rediske Air, Nikiski, Alaska, under the provisions of 14 CFR Part 135 as an on-demand charter flight. Visual meteorological conditions prevailed, and no flight plan was filed for the flight, which was destined to Bear Mountain Lodge, about 90 miles southwest of Soldotna.

The NTSB determined that the probable cause of this accident was the operator's failure to determine the actual cargo weight, leading to the loading and operation of the airplane outside of the weight and center of gravity limits specified in the airplane flight manual, which resulted in an aerodynamic stall. Contributing to the accident was the FAA's failure to require weight and balance documentation for each flight in 14 CFR Part 135 single-engine operations.

Recommendations: 1 new
Report adopted: August 18, 2015

Hard Landing, Southwest Airlines flight 345, Boeing 737
LaGuardia International Airport (LGA), Flushing, New York
July 22, 2013
Accident Brief

On July 22, 2013, about 1744 eastern daylight time, a Boeing 737-700, N753SW, operated as Southwest Airlines flight 345, landed hard on runway 4 at LaGuardia International Airport (LGA). Of the 144 passengers and 5 crewmembers on board, 8 sustained minor injuries, and the airplane was substantially damaged. The flight was operated under the provisions of 14 CFR Part 121 and had departed from Nashville International Airport, Nashville, Tennessee, about 1433 central daylight time. Visual meteorological conditions prevailed at the time of the accident flight, which operated on an instrument flight rules flight plan.

The NTSB determined that the probable cause of this accident was the captain's attempt to recover from an unstabilized approach by transferring airplane control at low altitude instead of performing a go-around. Contributing to the accident was the captain's failure to comply with standard operating procedures.

Recommendations: None
Brief adopted: June 25, 2015

Loss of Hydraulic Systems After Departure, JetBlue Airways flight 194, Airbus A320-232
Las Vegas, Nevada
June 17, 2012
Accident Brief

On June 17, 2012, about 1608 Pacific daylight time, JetBlue Airways flight 194, an Airbus A320-232, N552JB, experienced a loss of two of its three hydraulic systems after departure from McCarran International Airport (LAS). After restoring one of the lost hydraulic systems and flying a holding pattern to burn off fuel, the flight crew returned to land at LAS and the airplane was towed to the gate. The flight was operating under the provisions of 14 CFR Part 121 as a regularly scheduled passenger flight with an intended destination of John F. Kennedy International Airport, Jamaica, New York. Visual meteorological conditions prevailed at the time of the incident.

The NTSB determined that the probable cause of this accident was the failure of the right main landing gear door retraction flexible hydraulic line in the Green hydraulic system, which led to prolonged operation of the power transfer unit and subsequent overheating and loss of pressure in the Yellow hydraulic system, resulting in the airplane's operation with only one hydraulic system. Contributing to the incident was the lack of incorporation of aircraft manufacturer service bulletins that describe procedures for aircraft modifications intended to prevent this occurrence.

Recommendations: None
Brief adopted: March 25, 2015

Loss of Control During Approach to Airport, Mitsubishi MU-2B-25
Owasso, Oklahoma
November 10, 2013
Accident Brief

On November 10, 2013, about 1546 central standard time, a Mitsubishi MU-2B-25 twin-engine airplane, N856JT, impacted wooded terrain while maneuvering near Owasso, Oklahoma. The commercial pilot, the sole occupant of the airplane, was fatally injured. The airplane was destroyed. The airplane was registered to Anasazi Winds LLC, Tulsa, Oklahoma, and was operated by the pilot under the provisions of 14 CFR Part 91 as a personal flight. Visual meteorological conditions prevailed for the flight, and an instrument flight plan had been filed. The flight departed Salina Regional Airport, Salina, Kansas, about 1500 and was en route to Tulsa International Airport, Tulsa, Oklahoma.

The NTSB determined that the probable cause of this accident was the pilot's loss of airplane control during a known one-engine-inoperative condition. The reasons for the loss of control and engine shutdown could not be determined because the airplane was not equipped with a crash-resistant recorder, and postaccident examination and testing did not reveal evidence of any malfunction that would have precluded normal operation.

As a result of this investigation, the NTSB made safety recommendations to the FAA addressing Special Federal Aviation Regulation (SFAR) No. 108 approach to stall guidance, the need to establish a method to revise flight training materials in SFAR No. 108 outside of the rulemaking process, and the use of checklists not accepted by the FAA in the flight training and operation of MU-2B-series airplanes (this recommendation was also

made to Mitsubishi Heavy Industries). The NTSB also reiterated a safety recommendation on crash-resistant flight recorder systems.

Recommendations: 4 new, 1 reiterated
Brief adopted: October 23, 2014

Collision with Utility Pole Following a Go-around, Beechcraft Corporation 390 Premier
Thomson, Georgia
February 20, 2013
Accident Brief

On February 20, 2013, about 2006 eastern standard time (EST), a Beechcraft Corporation 390 Premier (Premier IA), N777VG, collided with a utility pole, trees, and terrain following a go-around at Thomson-McDuffie County Airport, Thomson, Georgia. The airline transport-rated pilot and copilot were seriously injured, and the five passengers were fatally injured. The airplane was registered to the Pavilion Group and was operated under the provisions of 14 CFR Part 91 as a business flight. Night visual meteorological conditions prevailed, and an instrument flight rules flight plan was filed. The flight originated at John C. Tune Airport, Nashville, Tennessee, about 1827 central standard time (1927 EST).

The NTSB determined that the probable cause of this accident was the pilot's failure to follow airplane flight manual procedures for an antiskid failure in flight and his failure to immediately retract the lift dump after he elected to attempt a go-around on the runway. Contributing to the accident were the pilot's lack of systems knowledge and his fatigue due to acute sleep loss, and his ineffective use of time between flights to obtain sleep.

Recommendations: None
Brief adopted: October 21, 2014

Ongoing Major Aviation Accident and Incident Investigations

Location	Date	Description	Fatalities
Las Vegas, NV	09/08/2015	British Airways uncontained engine failure	0
San Diego, CA	08/16/2015	Midair collision between Cessna 172 and Sabreliner	5
Moncks Corner, SC	07/07/2015	Midair collision between Cessna 150 and F-16	2
Ketchikan, AK	06/25/2015	Sightseeing flight impact with terrain	9
Flushing, NY	03/05/2015	Delta Airlines runway excursion	0
Gaithersburg, MD	12/18/2014	Embraer Phenom 500 crash on approach	6
Philadelphia, PA	03/13/2014	US Airways aborted takeoff	0
St. Mary's, AK	11/29/2013	Cessna 208B crash short of airport	4

Domestic Investigative Workload Summarized by State

The following table summarizes statistical information on domestic accident/incident investigations initiated from October 1, 2014 through September 30, 2015, by state. Investigation types are defined following the table.

State/Territory	Major Investigation	Field Investigation	Field Investigation, Public Aircraft	Limited Investigation	Data Collection Investigation	Incident Investigation	Limited Investigation, Public Aircraft	Totals
Alabama	0	2	0	8	13	0	0	23
Alaska	1	9	0	24	36	1	1	72
Arizona	0	3	0	20	18	4	1	46
Arkansas	0	4	0	11	6	1	0	22
California	1	23	2	41	38	3	1	109
Colorado	0	11	0	10	17	3	0	41
Connecticut	0	0	0	5	4	1	0	10
District of Columbia	0	0	0	0	0	0	0	0
Delaware	0	0	0	0	0	0	0	0
Florida	0	18	0	44	38	3	0	103
Georgia	0	5	0	12	14	1	0	32
Hawaii	0	1	0	5	2	0	0	8
Idaho	0	2	0	9	17	1	0	29
Illinois	0	7	0	15	11	4	0	37
Indiana	0	1	0	9	7	0	0	17
Iowa	0	1	0	6	5	0	0	12
Kansas	0	5	0	6	8	0	0	19
Kentucky	0	2	0	6	4	0	0	12
Louisiana	0	3	0	7	7	2	0	19
Maine	0	1	0	1	2	0	0	4
Maryland	1	2	0	8	8	1	0	20
Massachusetts	0	1	0	3	6	0	0	10
Michigan	0	3	0	11	14	0	0	28
Minnesota	0	2	0	3	11	0	0	16
Mississippi	0	2	0	4	4	0	0	10
Missouri	0	6	0	10	13	0	0	30
Montana	0	4	0	8	8	0	0	20
Nebraska	0	0	0	4	3	1	0	8

State/Territory	Major Investigation	Field Investigation	Field Investigation, Public Aircraft	Limited Investigation	Data Collection Investigation	Incident Investigation	Limited Investigation, Public Aircraft	Totals
Nevada	0	4	0	14	5	0	1	24
New Hampshire	0	1	0	3	3	0	0	7
New Jersey	0	3	0	5	6	1	0	15
New Mexico	0	5	0	9	11	0	1	25
New York	0	8	0	9	13	0	0	30
North Carolina	0	6	0	11	21	1	0	39
North Dakota	0	0	0	1	3	0	0	4
Ohio	0	3	0	5	10	1	0	19
Oklahoma	0	3	0	9	4	0	1	17
Oregon	0	5	0	13	9	0	0	27
Pennsylvania	0	2	0	13	12	0	0	27
Puerto Rico	0	1	0	5	1	0	0	7
Rhode Island	0	0	0	0	2	0	0	2
South Carolina	2	1	0	3	7	0	0	13
South Dakota	0	1	0	1	7	0	0	9
Tennessee	0	4	0	7	11	0	0	22
Texas	0	20	0	57	35	1	1	114
Utah	0	2	0	8	17	0	0	27
Vermont	0	0	0	3	2	0	0	5
Virginia	0	5	0	8	8	0	0	21
Washington	0	7	0	13	14	0	0	34
West Virginia	0	1	0	2	1	0	0	4
Wisconsin	0	7	0	11	11	0	0	29
Wyoming	0	2	0	8	5	0	0	15
Atlantic Ocean	0	0	0	1	0	0	0	1
Pacific Ocean	0	0	0	2	0	0	0	2
Gulf of Mexico	0	0	0	2	0	1	0	3
Guam	0	0	0	0	2	0	0	2
TOTAL	**5**	**209**	**2**	**512**	**535**	**31**	**7**	**1,301**

***Major Investigation*:** A major investigation is a significant event, involving the launch of a team consisting of an IIC and one or more NTSB investigators or the use of significant NTSB investigative resources. These accidents typically involve loss of life, multiple injuries, considerable property damage, a new aircraft design, or significant public interest.

***Field Investigation*:** A field investigation requires at least one NTSB investigator to travel to the accident site and conduct a followup investigation. Field accidents typically involve at least one fatality in an airplane that is FAA certified in the "normal" category.

***Field Investigation, Public Aircraft*:** This former category encompassed field investigation of an accident involving an aircraft operated by a federal, state, or local government. As of January 1, 2015, field investigations involving public aircraft are included in the category of Field Investigations.

***Limited Investigation*:** An investigation for which we do not travel to the scene. An FAA inspector documents the accident site, and an NTSB investigator conducts the remainder of the investigation from the office or during a followup examination. These accidents typically do not involve fatalities.

***Data Collection Investigation*:** An investigation that does not involve investigator travel and does not require significant investigative efforts. A one-page report is completed within 90 days. These accidents must meet the following criteria:

- No fatalities.
- No major airline involved.
- Statement from the pilot documenting that no mechanical malfunctions or safety issues were known.
- Lack of any obvious safety issues.
- Lack of high public or industry visibility.

***Incident Investigation*:** An investigation of an occurrence involving one or more aircraft in which there is a hazard or potential hazard to safety, but the event is not classified as an accident because of the degree of injury or the extent of damage, or because the circumstances of the injury or damage fall outside the definition of an accident contained in 49 CFR 830.2. Incident investigations cover a broad range of events and may include the following:

- Damage to an aircraft that does not occur while passengers are on board.
- Runway incursion.
- Pilot deviation.
- Near midair collision.
- Aircraft malfunction.

When we conduct a full investigation of an incident, similar to an accident investigation, we determine probable cause. We focus on those incidents that involve

safety issues of a systemic, recurring nature. An incident investigation may involve investigator travel.

***Limited Investigation, Public Aircraft*:** This former category encompassed limited investigations as described above, involving an aircraft that is operated as a public use aircraft. As of January 1, 2015, limited investigations involving public aircraft are included in the category of Limited Investigations.

Ongoing Special Investigations

Pilot Reports (PIREPs) of Weather in the National Airspace System
Special Investigation Report

PIREPs are one of the most important datasets for real-time identification of aviation weather hazards. Pilot- and aircraft-reported information provide the only in-situ identification and verification of icing and turbulence severity, cloud tops and bases, and altitudes and strength of low level wind shear. The information provided can be used in real time by air traffic controllers and meteorologists to provide warnings and alerts to pilots in the national airspace system. This investigation will examine PIREP-related findings across a number of accident investigations conducted since 2012 and explore how weather information is communicated between pilots and controllers. The aim of this report is to identify common breaking points that result in the failure to disseminate accurate and pertinent weather information, and to make recommendations to enhance safety.

Single-Engine Failures in Multiengine Aircraft
Special Investigation Report

Multiengine aircraft are designed to be safely flown on a single-engine in the event of a loss of engine power on one engine. However, in the past 5 years, we have investigated 46 such fatal accidents in which pilots lose control of an airplane following a single-engine failure. Investigators will begin a more in-depth look into future accidents and examine past investigations to determine whether commonalities exist in these accidents regarding why pilots are unable to safely reach an airport following the failure of one engine.

International Investigations

The United States is a signatory to the Convention on International Civil Aviation, which is administered by ICAO. The NTSB is charged with fulfilling the US obligations for accident and incident 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 around the world. When a foreign accident involves a US operator or an aircraft that was designed, manufactured, or registered in the US, NTSB participation in that investigation enables the United States to ensure the airworthiness and operation of its aircraft.

The NTSB has issued numerous safety recommendations to the FAA and to other organizations as a result of our participation in foreign investigations. These recommendations bring about safety improvements worldwide. ICAO Annex 13 protocols also define the NTSB engagement with international authorities whose products or operations are involved in US accidents. It is important to note that the majority of major accidents that have occurred over the past 10 years in the United States have

involved foreign-manufactured aircraft. This international process of collaboration plays an important role in enabling us to identify safety concerns and issue appropriate recommendations.

In FY 2015, AS was notified and assisted on 250 international investigations. Of these, AS investigators launched or traveled in support of 16 investigations. Several accidents required significant US involvement, including the following:

- On October 29, 2014, a SkyWay Enterprises cargo flight, a Shorts 360-100, crashed shortly after takeoff from Sint Maarten-Juliana Airport (SXM), Netherlands Antilles. Both crewmembers aboard were fatally injured. The accident is being investigated by the Sint Maarten Civil Aviation Authority. We appointed a US-accredited representative in accordance with ICAO Annex 13, because the United States is the state of registry of the operator and the airplane.
- On February 4, 2015, TransAsia Airways flight GE-235, an ATR-72, crashed during initial climb from Taipei-Sung Shan Airport (TSA), Taipei, Taiwan. Of the 53 passengers and 5 crewmembers onboard, 35 were fatally injured. The Transportation Safety Council of Taiwan is investigating the accident. We appointed a US-accredited representative in accordance with ICAO Annex 13, because the United States is the state of manufacture and design of the propeller.
- On August 12, 2015, a Bristow Helicopters Sikorsky S-76C crashed en route from an offshore oil platform to Lagos, Nigeria. Of the 12 passengers and crew on board, 6 were fatally injured. The Nigeria Accident Investigation Bureau is investigating the accident. We appointed a US-accredited representative in accordance with ICAO Annex 13, because the United States is the state of manufacture of the helicopter.

In addition, AS has conducted followup efforts in support of 21 ongoing international investigations including significant US involvement in the following:

- On March 8, 2014, Malaysia Airlines flight MH370, a Boeing 777-200, was declared missing while en route from Kuala Lumpur International Airport (KUL), Kuala Lumpur, Malaysia, to Beijing-Capital International Airport (PEK), Beijing, China. There were 227 passengers and 12 crewmembers aboard. The Air Accident Investigation Bureau of Malaysia is investigating the accident. We appointed a US-accredited representative in accordance with ICAO Annex 13, because the United States is the state of manufacture and design of the airplane.

- On July 17, 2014, Malaysia Airlines flight MH17, a Boeing 777-200ER, crashed during cruise flight while over eastern Ukraine en route from Amsterdam Airport Schiphol, Amsterdam, Netherlands, to Kuala Lumpur International Airport, Kuala Lumpur, Malaysia. All 283 passengers and 15 crew were fatally injured. The Dutch Safety Board investigated the accident and released the final report on October 13, 2015. We appointed a US-accredited representative in accordance with ICAO Annex 13, because the United States is the state of manufacture and design of the airplane.

- On July 24, 2014, Air Algérie flight AH5017, a McDonnell Douglas MD-83, crashed near Gossi, Mali, while en route from Ouagadougou Airport (OUA), Ouagadougou, Burkina Faso, to Algiers-Houari Boumediene Airport (ALG), Algiers, Algeria. All 110 passengers and 6 crewmembers aboard were fatally injured. The accident is being investigated by a Malian Commission of Inquiry. We appointed a US-accredited representative in accordance with ICAO Annex 13, because the United States is the state of manufacture and design of the airplane.

In FY 2015, we completed comments on behalf of the US on several international investigations in which the United States had significant involvement under Annex 13.

Crash on Approach to Freeport Airport, Learjet 35A
Freeport, Bahamas
November 9, 2014
US Comments/Foreign Accident Report

On November 9, 2014, a Learjet 35A, US registration N17UF, collided with a crane in a shipyard, during approach to landing at Grand Bahama International Airport, Freeport, Bahamas. The corporate flight was being operated on an instrument flight rules flight plan under Bahamian regulations. The flight was transporting a prominent pastor/evangelist in the Bahamas, six other passengers, and the two pilots on a planned 30-minute flight from Nassau to Freeport, Bahamas. All nine occupants were fatally injured in the accident.

The NTSB appointed a US-accredited representative in accordance with ICAO Annex 13, because the United States is the state of manufacture and design of the airplane and engines. The US team—including representatives from the NTSB, the FAA, and Bombardier Learjet—traveled to the scene of the accident and, with the addition of Honeywell, provided further technical support to the investigation following the work on scene. The US provided comments in May 2015.

Ethiopian Airlines, Boeing 787 Ground Fire Incident
London, United Kingdom
July 12, 2013
US Comments/Foreign Incident Report

On July 12, 2013, an unoccupied Ethiopian Airlines Boeing 787-8, registration ET-AOP, experienced a fire event while parked and electrically unpowered at a gate at London Heathrow International Airport, London, United Kingdom (UK). The investigation was conducted by the Air Accidents Investigation Branch (AAIB) of the UK. The AAIB reported the existence of extensive heat damage in the upper portion of the aircraft's rear fuselage, particularly in an area coincident with the location of the emergency locator transmitter (ELT). The absence of any other aircraft systems in this area containing stored energy capable of initiating a fire, together with evidence from forensic examination of the ELT, led the investigation to conclude that the fire had originated within the ELT battery. As a result of this investigation, the AAIB issued five safety recommendations.

The US team—including representatives from the NTSB, the FAA, and Boeing—traveled to the scene of the incident and provided additional technical support to the AAIB's investigation following the work on scene. The US provided comments in May 2015, and the final report was released to the public on August 19, 2015.

Appendix D of this report provides additional information on NTSB participation and costs associated with international accidents and incidents during FY 2015.

Completed Safety Recommendation Letters and Safety Alerts

Investigators in the Office of Aviation Safety often identify safety issues during the course of field, limited, or incident investigations that warrant further scrutiny. Stand-alone safety recommendation letters are used to make recommendations on issues identified during such investigations where a major report is not warranted. In FY 2015, the Office of Aviation Safety issued a standalone safety recommendation letter issuing recommendations to the FAA concerning the issuance of landing clearances with multiple airports in the vicinity and minimum safe altitude warning software limitations.

Safety Alerts are primarily used to alert the general aviation community of safety issues identified during the course of multiple investigations. This community may not otherwise be reached through safety recommendations. Safety Alerts provide information on the problem, examples of accidents, what pilots can do so they don't repeat the same mistakes, and references for pilots to find additional information. These alerts are posted on our website; in addition, NTSB staff distributes Safety Alert brochures at outreach events throughout the year. In FY 2015, the Office of Aviation Safety issued Safety Alerts on the following topics:

- Mastering Mountain Flying
- Understanding Flight Experience
- Pilots: Perform Advanced Preflight After Maintenance
- Mechanics: Prevent Misrigging Mistakes
- See and Be Seen: Your Life Depends on It
- Flight Control Locks: Overlooking the Obvious

Ongoing Focus Areas in Aviation Safety

Loss of Control Accidents
Most Wanted List Outreach

One of the issue areas highlighted in the 2015 Most Wanted List of transportation safety improvements is "Prevent Loss of Control in General Aviation." Between 2001 and 2011, over 40 percent of fixed-wing GA fatal accidents occurred because pilots lost control of their airplanes. Statistically, approach to landing, maneuvering, and climb are the deadliest phases of flight for loss-of-control accidents. GA pilots typically need to complete a flight review, consisting of 1 hour of ground training and 1 hour of flight training, every 24 months. They almost exclusively maintain and improve skills on their own, and their conduct of safe flight depends more on individual abilities and judgment, potentially leaving them unprepared for situations that can lead to loss of control. Staff has focused on the issue of loss-of-control accidents during outreach presentations throughout the year, including at Sun 'n Fun in April 2015, Experimental Aircraft Association's AirVenture in July 2015, and numerous local fly-in celebrations throughout the country.

Strengthen Procedural Compliance
Most Wanted List Outreach

"Strengthen Procedural Compliance" is one of the issue areas on the 2015 Most Wanted List. Over the last 10 years, the NTSB has investigated more than a dozen airline or commercial charter accidents involving procedural, training, or compliance issues. Such accidents can be prevented through collaborative efforts by crews, operators, and the regulator to ensure that crews do what they are trained to do. At times, crews do not comply with air carriers' standard operating procedures, but accidents can also result from poor procedures or training that does not adequately prepare crews. Both air carrier management and professional pilots must put safety first.

The NTSB has developed two videos for recurrent air carrier and pilot training that emphasize the importance of procedural compliance. The first video is based on the UPS 1354 accident that occurred in July 2013 in Birmingham, Alabama; staff members discuss the findings from that accident to help pilots understand that they, too, can make mistakes if they don't follow procedures. The second video focuses on the operations and human factors of procedural compliance, and draws on numerous accidents and the expertise of our investigators.

Collision Risk Between Aircraft and Drones
Position Paper

Unmanned aircraft systems (UAS, or drones) operating in the United States have exponentially increased in numbers over the last few years. UAS platforms range from quadrotor toys, weighing less than a pound, to government and research UAS as large as conventional corporate aircraft. UAS have no pilot on board to see and avoid other aircraft, and most are small and incapable of carrying collision avoidance technology (such as traffic alert and collision avoidance systems). Although the FAA is currently exploring ways to regulate UAS operation in the National Airspace System to reduce this risk, particularly near airports, given the proliferation of UAS, the risk of a collision remains, and we currently don't know what will happen when it does occur. Understanding the factors that can contribute to collision risk, including potential damage that UAS strikes pose to manned aircraft, is critical to ensuring safety. This knowledge, paired with historical lessons learned from collisions involving human-piloted aircraft, will assist those performing research as well as the FAA, as they seek to put safety measures in place. Such knowledge will also help the accident and incident investigation community seeking to understand what to expect in collisions of manned aircraft and UAS.

Highway Safety Tab

HIGHWAY SAFETY

	($000s)	FTEs
FY 2016 Estimate	$6,805	28
FY 2017 Request	$6,926	28
Increase/Decrease	$121	0

Overview of Request

The funding level for this program activity includes increases for a 1.3 percent pay raise for existing staff and a 1.8 percent non-pay inflation factor. No program changes are planned.

Program Description

The Office of Highway Safety (HS) investigates accidents that have a significant effect on public confidence in highway transportation safety, highlight national safety issues, or generate high public interest and media attention. Such accidents may include collapses of highway bridge or tunnel structures, mass casualties and injuries on public transportation vehicles (such as motorcoaches and school buses), and collisions at highway–railroad grade crossings. We are also interested in accidents that involve new safety issues or technologies. HS conducts special studies based on trends emerging from NTSB accident investigations and from other research and accident data that identify common risks or underlying causes of accidents.

The NTSB is the only organization that performs independent, comprehensive, and transparent multidisciplinary investigations to determine the probable causes of highway accidents, with the goal of making recommendations to prevent similar accidents. Our investigations restore public confidence in the nation's highway systems and provide policymakers with unbiased analysis.

HS comprises the Investigations Division and the Report Development Division.

Investigations Division

The HS Investigations Division manages the multidisciplinary go-teams launched to accident sites to collect the factual and analytical information for investigations. Currently, major HS accident investigations are conducted by one of two teams, with six investigators on each team (for a total of 12 investigators). Each team is led by an investigator-in-charge and includes five other investigators with expertise in vehicle, highway, human performance, survival, and motor carrier factors. In FY 2015, the division began an expansion to three teams. The formation of this third team increases HS's ability to deliver effective accident investigations by ensuring that we have adequate resources to respond to crashes of interest. In addition, a third team will increase by 50 percent the office's ability to launch to accidents, conduct special investigations, and participate in forums, thereby increasing the NTSB's ability to reduce the more than 30,000 fatalities that occur on our nation's roadways each year. To enhance geographic

coverage and reduce response time, team members are located throughout the country, including in Colorado, Delaware, Massachusetts, Texas, and Washington, DC.

HS staff is augmented by personnel from other NTSB offices, who provide expertise in vehicle simulations, medical issues, occupant protection, fire science, metallurgy/materials, hazardous materials, statistical data analysis, video analysis, communications (accident notification), public/government/family affairs, and recommendation followup.

Report Development Division

The HS Report Development Division manages the development of accident investigation reports. Project managers and writer-editors review the contents of the docket provided by the investigators for accuracy and completeness, research and develop national highway safety issues based on this information, and write and edit the report. This division is also responsible for managing public hearings and forums on national highway safety issues.

Accomplishments and Workload

Completed Major Accident Investigations

Multi-vehicle Work Zone Crash
Cranbury, New Jersey
June 7, 2014
Highway Accident Report

About 12:55 a.m. on Saturday, June 7, 2014, a 2011 Peterbilt truck-tractor in combination with a 2003 Great Dane semitrailer operated by the motor carrier Walmart Transportation LLC (Walmart Transportation truck) was traveling northbound on the New Jersey Turnpike (part of Interstate 95) near Cranbury, New Jersey, in the center lane of the three-lane roadway. Near milepost 71.4, the Walmart Transportation truck encountered traffic that had slowed to less than 10 mph along a construction corridor, due to closure of the center and right-hand lanes. The truck was traveling 65 mph in a nighttime work zone that had a posted speed limit of 45 mph.

The Walmart Transportation truck struck the left rear of a slowly moving 2012 Mercedes-Benz limo van (limo van) that was in the center lane. The impact from the Walmart Transportation truck accelerated the limo van forward and caused it to turn to the right. The limo van collided with a 2006 Freightliner tractor-trailer traveling in the right lane. Contact from the Freightliner and Walmart Transportation trucks forced the limo van to roll over one quarter turn onto its left (driver) side. During its roll, the limo van struck the rear of a 2011 Buick Enclave, which then struck the rear of a 2011 Ford F-150 pickup truck. The limo van came to rest overturned onto its left (driver) side across the center lane. After striking the limo van, the Walmart Transportation truck continued into the left lane and struck a 2005 Nissan Altima in the rear before colliding with a guardrail and stopping on the shoulder against a concrete barrier.

Twenty-one people in six vehicles were involved in the crash. As a result of the crash, one limo van passenger, who had been riding in the vehicle's passenger compartment, died on scene, and the other four passengers in this compartment were seriously injured. Five more persons had minor injuries.

The NTSB determined that the probable cause of the Cranbury, New Jersey, crash was the Walmart Transportation LLC truck driver's fatigue, due to his failure to obtain sleep before reporting for duty, which resulted in his delayed reaction to slowing and stopped traffic ahead in an active work zone, and his operation of the truck at a speed in excess of the posted limit. Contributing to the severity of the injuries was the fact that the passengers seated in the passenger compartment of the limo van were not using available seat belts and properly adjusted head restraints.

The investigation focused on the following safety issues: driver fatigue, improving work zone safety, in-vehicle forward collision avoidance systems, safety data through critical event recording systems, passenger awareness of occupant restraint systems, vehicle modifications, and minimum standard of care provided by emergency responders.

Recommendations: 9 new, 6 reiterated
Report adopted: August 11, 2015

Truck-Tractor Double Trailer Median Crossover Collision With Motorcoach and Postcrash Fire
Orland, California
April 10, 2014
Highway Accident Report

On April 10, 2014, about 5:40 p.m., a 2007 Volvo truck-tractor in combination with double trailers, operated by FedEx Freight, Inc., was traveling southbound in the right lane of Interstate 5 (I-5) in Orland, California. At the same time, a 2014 Setra motorcoach, operated by Silverado Stages, Inc., was traveling northbound on I-5 in the right lane. In the vicinity of milepost 26, the combination vehicle moved into the left lane, entered the 58-foot-wide center median, and traveled into the northbound traffic lanes of I-5.

The truck-tractor collided with a 2013 Nissan Altima four-door passenger car, which then rotated counterclockwise and departed the highway to the east. The truck tractor continued moving south in the northbound lanes and collided with the front of the motorcoach, and both vehicles partially departed the highway to the east. A postcrash fire ensued. Both the truck and the motorcoach drivers died, along with eight motorcoach passengers. The remaining 37 motorcoach passengers received injuries of varying degree. The two occupants of the passenger car received minor injuries.

The NTSB determined that the probable cause of the Orland, California, crash was the inability of the FedEx Freight truck driver to maintain control of the vehicle due to his unresponsiveness for reasons that could not be established from available information. Contributing to the severity of some motorcoach occupant injuries were high impact forces; the release of combustible fluids, leading to a fast-spreading postcrash fire; difficulties in motorcoach egress; and lack of restraint use.

The investigation focused on the following safety issues: lack of adequate fire performance standards for commercial passenger vehicle interiors, pre-trip safety briefings, vehicle design to facilitate evacuation, and event data recorder survivability.

Recommendations: 4 new, 7 reiterated
Report adopted: July 14, 2015

Highway Railroad Grade Crossing Accident
Rosedale, Maryland
May 28, 2013
Highway Accident Report

On May 28, 2013, about 1:59 p.m., a 2003 Mack Granite three-axle roll-off straight truck, operated by Alban Waste, LLC, was traveling northwest on a private road in Rosedale, Maryland, toward a private highway–railroad grade crossing. The grade crossing consisted of two tracks and was marked on each side with a crossbuck sign. The truck was carrying a load of debris to a recycling center located 3.5 miles from the carrier terminal. About the same time, a CSX Transportation Company freight train—which consisted of 2 locomotives, 31 empty cars, and 14 loaded cars—was traveling southwest at a recorded speed of 49 mph. As the train approached the crossing, the train horn sounded three times. The truck did not stop, and, as the train traversed the crossing, it struck the truck on the right side, causing the truck to rotate and overturn before coming to rest on the earthen embankment on the northwest side of the tracks. The first 15 cars of the 45-car train derailed.

Three of the 15 rail cars (cars 7, 8, and 15) contained hazardous materials. The other derailed cars contained non-US Department of Transportation-regulated commodities or were empty. The seventh car (loaded with sodium chlorate crystal) and the ninth through twelfth cars (loaded with terephthalic acid) released their products. Following the derailment, a postcrash fire resulted in an explosion at 2:04 p.m. The overpressure blast from the explosion shattered windows and damaged property as far as approximately 0.5 mile from the site. The fire remained confined to the derailed train cars. The truck driver was seriously injured in the collision. Three workers in a building adjacent to the railroad tracks and a Maryland Transportation Authority police officer who responded to the initial incident received minor injuries as a result of the explosion.

The NTSB determined that the probable cause of the Rosedale, Maryland, crash was the truck driver's failure to ensure that the tracks were clear before traversing the highway–railroad grade crossing. Contributing to the crash were (1) the truck driver's distraction due to a hands-free cell phone conversation; (2) the limited sight distance due to vegetation and roadway curvature; and (3) the Federal Motor Carrier Safety Administration's (FMCSA) inadequate oversight of Alban Waste, LLC, which allowed the new entrant motor carrier to continue operations despite a serious and consistent pattern of safety deficiencies. Contributing to the severity of the damage was the postcrash fire and the resulting explosion of a rail car carrying sodium chlorate, an oxidizer.

The investigation focused on the following safety issues: distraction due to hands-free cell phone use and FMCSA oversight of new entrant motor carriers.

Recommendations: 12 new, 3 reiterated
Report adopted: October 8, 2014

Tire Deflation and Tread Separation Cross-Median Crash
Centerville, Louisiana
February 15, 2014
Highway Accident Brief

On Saturday, February 15, 2014, about 11:30 a.m. local time, a 2004 Kia Sorento sport utility vehicle (SUV), occupied by a 37-year-old driver and four passengers, was traveling westbound on US Route 90 (US-90) near Centerville, Louisiana. The SUV was traveling in the right lane at a witness-estimated speed of 70 mph (roadway speed limit) when the driver lost control of the vehicle due to a tread separation and rapid air loss in the left rear tire. The SUV veered into the left westbound lane, rotating in a counterclockwise direction, and departed the roadway into a 64-foot-wide depressed earthen median. It continued through the median, now rotating in a clockwise direction; entered the eastbound traffic lanes of US-90; and collided with a 2005 IC Bus (66-passenger school bus), which was traveling in the right lane. The left front of the SUV contacted the right front of the school bus, resulting in the rapid clockwise rotation of the SUV and secondary impacts along the right side of the school bus. The driver of the SUV and three rear passengers were ejected. The fourth passenger remained in the vehicle.

As a result of the crash, the Kia driver and the three rear seat passengers died. The fourth SUV passenger was seriously injured. Of the 35 school bus occupants, one student received serious injuries, 29 passengers and the bus driver sustained minor injuries, and four passengers were uninjured. The bus driver was wearing a seat belt, but the bus was not equipped with passenger seat belts. At the time of the crash, the weather was clear and the road conditions were dry.

The NTSB determined that the probable cause of the Centerville, Louisiana, crash was the Kia SUV driver's loss of control due to the tread separation and rapid air loss of the left rear tire, which altered vehicle handling characteristics. Contributing to the crash was the deteriorated condition of the tire due to inadequate maintenance.

Recommendations: None
Report adopted: July 7, 2015

Ongoing Major and Field Highway Accident Investigations

Location	Date	Description	Fatalities
Seattle, WA	09/24/2015	A Seattle Ride the Ducks amphibious vehicle left its northbound lane and struck a motorcoach heading southbound. Five students were killed in the crash.	5
Houston, TX	09/15/2015	A passenger vehicle located to the left of a school bus collided with the left front of the bus, causing it to veer to the right. The bus departed from the highway overpass and landed on the roadway below.	2
Chattanooga, TN	06/25/2015	A tractor trailer combination unit collided with eight vehicles.	6
Moore Haven, FL	03/30/2015	A 15-passenger van crashed into an embankment and came to rest in a partially filled canal.	8
Oxnard, CA	02/24/2015	A Metrolink commuter train struck a 1-ton truck towing a trailer near an active highway-railroad grade crossing.	1
Penwell, TX	01/14/2015	A bus operated by the Texas Department of Criminal Justice departed from the highway and collided with a train.	10
Knoxville, TN	12/02/2014	A school bus crossed the center median and collided with a second school bus, causing it to roll to the right.	3

Location	Date	Description	Fatalities
Seattle, WA	09/24/2015	A Seattle Ride the Ducks amphibious vehicle left its northbound lane and struck a motorcoach heading southbound. Five students were killed in the crash.	5
Houston, TX	09/15/2015	A passenger vehicle located to the left of a school bus collided with the left front of the bus, causing it to veer to the right. The bus departed from the highway overpass and landed on the roadway below.	2
Chattanooga, TN	06/25/2015	A tractor trailer combination unit collided with eight vehicles.	6
Davis, OK	09/26/2014	A tractor-trailer crossed the center median and collided with a medium-size bus.	4
Red Lion, DE	09/21/2014	A Setra motorcoach rolled over while negotiating an exit ramp.	2
Anaheim, CA	04/24/2014	A school bus departed the roadway and collided with two trees.	0
Lake City, FL	02/21/2014	A 15-passenger van experienced a tire failure, resulting in the vehicle departing the roadway and rolling over.	2
Naperville, IL	01/27/2014	A combination vehicle collided with vehicles stopped in a traffic lane attempting to assist a disabled truck-tractor semitrailer.	1

Completed Investigative Hearings and Forums

Awake, Alert, Alive: Overcoming the Dangers of Drowsy Driving Forum
October 21, 2014

Estimates of the prevalence of driver drowsiness in highway crashes have varied widely. One study found that 7 percent of all crashes, 13 percent of nonfatal crashes, and 17 percent of fatal crashes involved a drowsy driver. Surveys of drivers have found that nearly 1 in 10 drivers reported falling asleep or nodding off while driving within the past 12 months, and nearly 1 in 3 admitted to driving when they were so tired that they had difficulty keeping their eyes open at some point in the past month. We have investigated numerous accidents caused by commercial driver fatigue; however, little has been said about fatigue issues relating to noncommercial drivers.

This 1-day forum was held to (1) describe the problem of drowsy driving, its prevalence, and how it affects driving safety; (2) examine the risk factors associated with drowsy driving; (3) discuss various countermeasures to address drowsy driving and drowsy driving crashes; (4) consider the challenges associated with mitigating the risk of drowsy driving in a noncommercial driver population; and (5) critically evaluate the potential success of a range of drowsy driving countermeasures. Forum participants included researchers, physicians, regulators, vehicle manufacturers, and safety advocates. The participants discussed drowsy driving as it relates to such shift workers as medical staff, oil field personnel, and police officers, as well as high school students. They discussed safety programs that have been implemented to combat drowsy driving, such as fatigue management and schedule adjustments. Participants examined how technology in vehicles may help to reduce the risk of drowsy driving. We plan to use the information from the forum to support future drowsy driving investigations and recommendations.

Completed and Ongoing Special Investigations

Use of Forward Collision Avoidance Systems to Prevent and Mitigate Rear-End Crashes Special Investigation Report

NTSB investigators have launched to seven major rear-end accidents in the past several years; in all, these crashes resulted in 29 fatalities and 77 persons being injured. A total of 37 vehicles were involved in these collisions in Annapolis, Maryland (July 19, 2013); Murfreesboro, Tennessee (June 13, 2013); Elizabethtown, Kentucky (March 3, 2013); Springfield, Virginia (December 27, 2012); Paynes Prairie, Florida (January 29, 2012); Kit Carson, Colorado (October 13, 2011); and Casper, Wyoming (December 5, 2009). These accidents were included in a special investigation report on the use of forward collision avoidance technology as a means of preventing future crashes.

In 2012 alone, more than 1.7 million rear-end crashes occurred on our nation's highways, resulting in more than 1,700 fatalities and 500,000 persons injured. Many of these crashes could have been mitigated, or possibly even prevented, had rear-end collision avoidance technologies been in place. However, slow and insufficient action on the part of the National Highway Traffic Safety Administration to develop performance standards for these technologies and to require them in passenger and commercial vehicles, as well as a lack of incentives for manufacturers, has contributed to the ongoing and unacceptable frequency of rear-end crashes.

This special investigation report described the common causes of rear-end crashes, considered some of the latest potential solutions and countermeasures, reiterated and reclassified previous recommendations, and issued new recommendations aimed at reducing the number and severity of such crashes. Specifically, the main goals of this report included the following: reviewing the progress of the implementation of previous recommendations related to rear-end crash mitigation, examining the real-world and predicted efficacy of currently available collision avoidance technologies and the potential for such technologies to mitigate or prevent rear-end crashes, examining current methods of assessment and rating systems for collision avoidance technologies, and exploring options for increasing the presence of such technologies in newly manufactured vehicles.

Ultimately, our investigation found that currently available forward collision avoidance technologies for passenger and commercial vehicles show clear benefits that could reduce rear-end crash fatalities. It also found that more must be done to speed up deployment of these technologies in all vehicle types. As a result of these findings, the NTSB made six new recommendations to speed the implementation of forward collision avoidance systems. In addition, we issued a Safety Alert to inform consumers about the safety benefits of forward collision avoidance systems.

Recommendations: 6 new, 2 reiterated
Report adopted: May 19, 2015

Commercial Vehicle Onboard Video Systems Safety Report

We have investigated many highway accidents in which onboard video systems recorded critical crash-related information. Onboard video systems are continuous, recording uninterrupted audio and video footage while the vehicle ignition is in the "on"

position—or event-based, recording for a short time surrounding a triggering event, such as a crash or hard braking. This safety report focused on commercial vehicle onboard video systems as they relate to the evaluation of both driver and passenger behaviors and collision analysis. It featured the following two crashes in which continuous video systems were installed on commercial vehicles:

- 2012 school bus crash in Port St. Lucie, Florida: The video recording system captured all three phases of the crash, including precrash driver and passenger behaviors and vehicle motion; vehicle and occupant motion during the crash; and such postcrash events as passenger evacuation, short-term injury outcomes, and emergency response.
- 2011 motorcoach crash in Kearney, Nebraska: The video recording system captured critical precrash information but had certain limitations that negated the potential benefits of crash and postcrash event data.

This report summarized the documentation and analysis of the onboard video systems from these two crashes in particular. It also discussed the benefits of onboard video systems and recommended specific improvements. Further, the video analysis and subsequent extensive injury documentation from the Port St. Lucie investigation were presented to advance biomechanical and pediatric trauma-based research. Finally, the NTSB issued a Safety Alert to bus companies and camera installers to explain the benefits provided by the cameras and the importance of proper installation.

Recommendations: 3 new
Report adopted: March 3, 2015

Selected Issues in Passenger Vehicle Tire Safety
Special Investigation Report

Passenger Vehicle Tire Safety Symposium
December 9–10, 2014

NTSB investigators launched to multiple-fatality crashes in Centerville, Louisiana (February 15, 2014), and Lake City, Florida (February 21, 2014), that were initiated by tire tread separation events. These accident investigations will be combined into a special investigation report on tire safety, which will examine such issues as tire maintenance, tire aging, the tire recall process, and crash prevention technology.

In December 2014, we hosted a symposium on passenger vehicle tire safety to gather information from experts about factors leading to tire failure. The symposium's primary focus was on passenger and light truck tires, although several topics applied to all pneumatic tires. The symposium included participants from industry, consumer organizations, and the federal government. It covered such topics as the causes of tire failure, available data on tire-related crashes, factors that contribute to tire aging, tire safety recalls, current technological initiatives, and consumer awareness of tire maintenance procedures.

The information gathered at the symposium is currently available through the NTSB symposium website and docket. Using past crash investigations and the information gathered during the symposium, we identified four general issues of concern: (1) lack of reliable data on tire-related crashes, (2) low rates of tire registration leading to fewer tires recovered during recalls, (3) lack of consensus regarding the risks of tire aging, and

(4) poor maintenance practices by consumers. As a result of the symposium, the NTSB issued a Safety Alert to drivers about the importance of properly maintaining the tires on their vehicles. The symposium will also be referenced in a special investigation report on selected issues in passenger vehicle tire safety. The Board Meeting to discuss the special investigation report is scheduled for October 27, 2015.

Marine Safety Tab

MARINE SAFETY

	($000s)	FTEs
FY 2016 Estimate	$5,876	20
FY 2017 Request	$4,834	19
Increase/Decrease	($1,042)	(1)

Overview of Request

The funding level for this program activity includes increases for a 1.3 percent pay raise for existing staff and a 1.8 percent non-pay inflation factor. A reduction in staff of one FTE is required to meet the FY 2017 request. Funding level normalizes investigation related expenses from unusually high FY 2016 level. No other program changes are planned.

Program Description

The Office of Marine Safety (MS) investigates major marine accidents in US territorial waters, including accidents involving US-flagged merchant vessels worldwide and those involving both US public and nonpublic vessels in the same casualty. In addition, the office investigates select catastrophic marine accidents or those of a recurring nature. The Coast Guard conducts preliminary investigations of all marine accidents and notifies the NTSB if an accident qualifies as a major marine casualty, which is defined as resulting in at least 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 as $500,000 or more.
- a serious threat (as determined by the Coast Guard Commandant and concurred in by the NTSB Chairman) to life, property, or the environment due to hazardous materials.

MS investigates and determines the probable cause of all major marine casualties. For select major marine casualties, the office launches a full investigative team and presents the investigative product to the Board. For all other major marine casualties, MS launches marine investigators to the scene to gather sufficient factual information to develop a marine accident brief report. Most of these brief investigation reports are adopted by the MS director through delegated authority; brief reports involving public-nonpublic marine casualties are adopted by the Board.

MS is also responsible for the overall management of the NTSB international marine safety program, under which we investigate 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 in US territorial waters accounted for 31 percent of NTSB marine accident investigations during the past 5 years.

MS also participates with the Coast Guard, under the International Maritime Organization (IMO) Casualty Code as a substantially interested state (SIS), in investigating serious marine casualties involving foreign-flagged vessels in international waters, for example, a casualty that involves a foreign-flagged cruise ship with US citizens on board. Every year, more than 10 million US citizens travel on board foreign-flagged cruise ships.

The MS international program involves reviewing US administration position papers related to marine accident investigations and participating in select IMO meetings. During the last year, MS staff attended IMO meetings with topics including review and classification of maritime accidents and accident reporting, certification and training of mariners, and technical standards and requirements for voyage data recorders.

As part of the international program, MS coordinates with other US and foreign agencies to ensure consistency with IMO conventions, most notably for joint US/flag state marine accident investigations. MS also cooperates with other accident investigation organizations worldwide, such as the Marine Accident Investigators' International Forum, and tracks developments related to marine accident investigation and prevention.

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

MS comprises the Office of the Director, the Major Investigations Division, and the Product Development Division.

Major Investigations Division

The Major Investigations Division manages the multidisciplinary go-teams that are launched to accident sites to collect factual information for investigations, which is later analyzed. Currently, major accident investigations are conducted by 1 of 2 teams with 6 investigators on each team, for a total of 12 investigators. Each team is led by an investigator-in-charge and includes investigators with expertise in nautical operations, marine engineering/naval architecture, survival factors, and human performance.

Product Development Division

The Product Development Division oversees the investigative quality management program. The division consists of technical writer-editors who are responsible for drafting and editing major marine accident reports, marine accident briefs, safety recommendation letters, special investigation reports, *Safer Seas* annual digests, responses to notices of proposed rulemaking, and general correspondence. Staff also reviews the contents of the accident dockets provided by the investigative specialists.

Accomplishments and Workload

Completed Major Accident Investigations

Allision of Crane Barge, Pushed by Towing Vessel *Cory Michael*, with the Florida Avenue Bridge
New Orleans, Louisiana
August 13, 2014
Marine Accident Report

About 2355 on August 13, 2014, a crane barge transported by the towing vessel *Cory Michael* struck the raised lift span of the Florida Avenue Bridge while transiting on the Industrial Canal in New Orleans, Louisiana. The crane boom fell onto the towing vessel's upper wheelhouse, fatally injuring the captain. Damage to the crane and the vessel totaled $2.3 million.

Safety issues identified in this investigation included the inadequate oversight of bridge and towing vessel operations. Investigators learned that the Coast Guard's Bridge Administration did not know that the lift span of the Florida Avenue Bridge was not being raised to its fullest extent for vessel passage since Hurricane Katrina damaged the bridge in 2005.

Although the operating company of the towing vessel had a safety policy in place, it was not being successfully implemented on board. Further, the captain allowed the crane boom to be transported in an unsupported and dangerous manner, and he did not establish the correct air draft of his tow before attempting to pass under the Florida Avenue Bridge.

The NTSB determined that the probable cause of the allision of the *Cory Michael* tow with the Florida Avenue Bridge was the captain's failure to establish the correct air draft of his tow and ensure that the bridge was raised to an adequate height before attempting the passage. Contributing to the accident was the failure of the bridge operator for the Port of New Orleans to raise the lift span to the fullest extent as required by regulations and port policy.

Recommendations 5 new
Report adopted: September 22, 2015

Collision between Bulk Carrier *Summer Wind* and the *Miss Susan* Tow
Lower Galveston Bay, Texas
March 22, 2014
Marine Accident Report

On March 22, 2014, about 1235 central daylight time, the 607-foot-long bulk carrier *Summer Wind* with a Houston pilot on board collided with the 670-foot-long *Miss Susan* tow (a 70-foot-long towing vessel and two 300-foot-long tank barges loaded with fuel oil) in the Houston Ship Channel, Lower Galveston Bay, Texas. The visibility was restricted at the time due to fog. The bulk carrier was inbound to Houston, traveling northward. The tow was bound for Port Bolivar on the east side of the Houston Ship Channel, traveling eastward. The collision breached the hull of the forward tank barge in the *Miss Susan* tow, and about 168,000 gallons of fuel oil spilled into the waterway. Two crewmembers on board the *Miss Susan* sustained minor injuries from inhaling fuel vapor.

The total estimated damage was nearly $1.3 million (excluding oil response and recovery efforts).

The NTSB determined that the probable cause of the collision was the *Miss Susan* captain's attempt to cross the Houston Ship Channel ahead of the *Summer Wind*, thereby impeding the passage of the bulk carrier, which could transit only within the confines of the channel. Contributing to the accident was the failure of the Houston pilot and the *Summer Wind* master to set a safe speed given the restricted visibility and nearby towing vessel traffic, and the failure of the *Miss Susan* captain and the Houston pilot to establish early radio communication with one another. Also contributing to the accident was the failure of Vessel Traffic Service Houston/Galveston to interact with the two vessels in a developing risk of collision, and the lack of a Coast Guard vessel separation policy for the Bolivar Roads Precautionary Area.

Recommendations: 4 new, 3 reiterated
Report adopted: June 9, 2015

Partial Sinking of Small Passenger Vessel *Spirit of Adventure*
Seward Boat Harbor, Seward, Alaska
December 6, 2014
Marine Accident Brief

The *Spirit of Adventure*, a 99-gross ton catamaran small passenger vessel, flooded and partially sank while alongside its pier in Seward Boat Harbor, Alaska, before dawn on December 6, 2014. The vessel was out of service for the winter, and no one was on board. No injuries or pollution occurred as a result of the sinking. Damage to the vessel and its pier was estimated at $2 million, and the vessel was declared a constructive total loss by its insurer. The *Spirit of Adventure* was one of eight vessels operated by Major Marine Tours on sightseeing tours from Seward to Kenai Fjords National Park and Prince William Sound, Alaska.

The NTSB determined that the probable cause of the partial sinking of the *Spirit of Adventure* was the failure to ensure watertight integrity during the vessel's winter maintenance period, which resulted from the operator's lack of a formal safety system, including a lock-out/tag-out policy and a vessel winterization procedure.

Recommendations: None
Brief adopted: September 30, 2015

Engine Room Fire on Board Recreational Vessel *La Pietra*, with Subsequent Sinking
About 4 miles southwest of Destruction Island, Washington
July 4, 2014
Marine Accident Brief

On July 4, 2014, at 1058 local time, a fire broke out in the engine room on board the 79-foot-long recreational vessel *La Pietra* when the vessel was near Destruction Island, Washington. The onboard vessel owners (a husband and wife) were rescued by the Coast Guard; the husband was treated for smoke inhalation and minor burns. *La Pietra* burned to the waterline and sank with 600 gallons of diesel fuel on board.

The NTSB determined that the probable cause of the *La Pietra* accident was an engine room fire of unknown origin. Contributing to the loss of the vessel was the owners' inability to access and shut off the engine room ventilation system, which diminished the effectiveness of the fire suppression system and extinguishing efforts.

Recommendations: None
Brief adopted: September 1, 2015

Allision of Offshore Supply Vessel Tristan Janice with Natural Gas Platform
Ship Shoal 119 W natural gas platform, Gulf of Mexico
February 18, 2014
Marine Accident Brief

About 0712 local time on February 18, 2014, the US-registered offshore supply vessel *Tristan Janice* allided with a natural gas production platform in the northern Gulf of Mexico, about 54 miles south-southwest of Houma, Louisiana. No one was injured, and no water pollution resulted from the allision. However, the vessel and the platform sustained about $545,000 in total damage, and a substantial amount of natural gas escaped into the atmosphere from a ruptured supply pipe.

The NTSB determined that the probable cause of the *Tristan Janice* allision was the poor watchkeeping and operational practices of the captain and the mate to ensure that the vessel was safely navigated, and the vessel owner's inadequate procedures and oversight of the vessel's safety management system.

Recommendations: None
Brief adopted: August 25, 2015

Sinking of Towing Vessel *Nalani*
About 1.5 miles west of Barbers Point, Honolulu, Oahu, Hawaii
January 22, 2015
Marine Accident Brief

About 1510 local time on January 22, 2015, the uninspected towing vessel *Nalani* began taking on water and sank in 2,200 feet of water while conducting sea trials off the southwest coast of Oahu, Hawaii. All 11 persons on board were rescued after abandoning the vessel. No one was injured. An oil sheen was observed by responders and crewmembers. The vessel was not salvaged due to the water depth and was declared a constructive total loss.

The NTSB determined that the probable cause of the flooding and eventual sinking of the *Nalani* was the captain's decision to get under way without sufficient freeboard at the stern and without ensuring proper watertight integrity.

Recommendations: None
Brief adopted: August 19, 2015

Collision of Offshore Supply Vessel *Gloria May* and Fishing Vessel *Capt Le*
Gulf of Mexico, 16 nautical miles south of Pascagoula, Mississippi
August 24, 2014
Marine Accident Brief

The offshore supply vessel *Gloria May* collided with the uninspected fishing vessel *Capt Le* in the Gulf of Mexico about 2040 on the evening of August 24, 2014. As a result of the collision, the hull of the *Capt Le* was breached, and the vessel flooded and sank; the bow of the *Gloria May* suffered minor damage. Three crewmembers from the *Capt Le* abandoned their sinking vessel into a liferaft and were rescued by the crew of the *Gloria May*. No injuries resulted from the accident. Total damage was estimated at $225,000.

The NTSB determined that the probable cause of the collision between the *Gloria May* and the *Capt Le* was the failure of both vessels' operators to maintain a proper lookout.

Recommendations: None
Brief adopted: August 10, 2015

Subsea Pipeline Damage by Tug and Barge *Valiant/Everglades*
Gulf of Mexico, about 120 nautical miles southeast of Galveston, Texas
November 17, 2014
Marine Accident Brief

The articulated tug and barge unit *Valiant/Everglades* lost propulsion and drifted to within about 20 yards of the East Cameron 321A production platform in the Gulf of Mexico, forcing the shutdown of the platform and evacuation of its 35 crewmembers about 0600 on November 17, 2014. The captain of the *Valiant* ordered the anchor dropped to slow the vessel until propulsion was restored, and in the process of backing away, the anchor ruptured a subsea pipeline, causing an estimated $2 million in damage and the release of a total of about 249,800 mcf (thousands of cubic feet) of natural gas. Neither the platform nor the vessel was damaged, and no one was injured.

The NTSB determined that the probable cause of the damage to the subsea natural gas pipeline was the anchor from the *Valiant/Everglades* dragging across the pipeline after the vessel lost starting air pressure and propulsion due to the opening of an unprotected air system valve on deck.

Recommendations: None
Brief adopted: July 31, 2015

Launch Capsizing of the Yacht *Baaden*
Fidalgo Marina ramp, Anacortes, Washington
May 18, 2014
Marine Accident Brief

The newly built yacht *Baaden* was being launched stern first down the Fidalgo Marina boat ramp in Anacortes, Washington, with eight shipyard personnel on board when it capsized after entering the water at 2050 on May 18, 2014. The yacht was salvaged but was declared a constructive total loss, estimated at $10 million. Three

shipyard personnel who were trapped below deck for up to a half hour were treated for minor cuts and injuries at local hospitals. No pollution was reported.

The NTSB determined that the probable cause of the capsizing of the *Baaden* during its initial launch was the vessel's low margin of stability due to the combined effects of a recording error during the final vessel weigh, which resulted in an incorrect assessment of the vessel's center of gravity, and an overestimation of the weight of installed ballast.

Recommendations: None
Brief adopted: July 23, 2015

Sinking of Towing Vessel *Jim Marko*
Upper Mississippi River, mile marker 181.6, near St. Louis, Missouri
July 1, 2014
Marine Accident Brief

About 1200 on July 1, 2014, the uninspected towing vessel *Jim Marko* sank at mile marker 181.6 on the Upper Mississippi River, near St. Louis, Missouri. At the time, the vessel was transiting upriver with a crew of four to a barge fleeting area near Venice, Illinois, immediately northeast across the river from St. Louis. No one was injured in the accident; however, the sinking resulted in damage exceeding the insured value of the vessel, and an undetermined amount of oil was released into the river.

The NTSB determined that the probable cause of the sinking of the *Jim Marko* was the captain's decision to continue operations with a known hull breach in the vicinity of the vessel's waterline. Contributing to the rapid sinking was a lack of watertight integrity due to watertight doors on the main deck left open while under way.

Recommendations: None
Brief adopted: July 9, 2015

Sinking of the Tank Barge *Nash*, Towed by Towing Vessel *Calvin*
Pacific Ocean, 3 nautical miles west of Point Conception, California
June 8, 2014
Marine Accident Brief

The tank barges *Nash* and *Kenny* were fully loaded with liquid magnesium chloride and being towed by the uninspected towing vessel *Calvin* from Guerrero Negro, Mexico, to British Columbia, Canada, when the *Nash* began to list noticeably to its starboard side about 1145 on June 8, 2014. Listing and trimming by the stern increased over the next 6 hours, and the Coast Guard directed the *Calvin* captain to tow the *Nash* to a nearby anchorage. About 1805, the *Nash* sank stern first in 240 feet of water, about 3 nautical miles west of Point Conception, California. About a week after the sinking, a salvage team partially refloated the *Nash* and towed it to its disposal location about 17 nautical miles from shore.

The NTSB determined that the probable cause of the sinking of the *Nash* was flooding of the aft starboard side void tank. The mechanism for entry of flooding water to

this tank could not be determined because the barge was not salvaged and was not available for examination after it sank.

Recommendations: None
Brief adopted: June 16, 2015

Breakwater Pier Collapse in Eastport, Maine
Eastport, Maine
December 4, 2014
Marine Accident Brief

A 200-foot section on the western side of the Eastport breakwater pier in Eastport, Maine, collapsed about 0200 local time on December 4, 2014, damaging several vessels that were moored alongside. No injuries and minor pollution were reported.

The NTSB determined that the probable cause of the collapse of the Eastport Port Authority breakwater pier was the failure of the lateral restraint system due to the structure's long-term deterioration.

Recommendations: None
Brief adopted: June 12, 2015

Grounding of Mobile Offshore Drilling Unit *Kulluk*
Near Ocean Bay, Sitkalidak Island, Alaska
December 31, 2012
Marine Accident Brief

The ice-class mobile offshore drilling unit *Kulluk*, owned by Shell Offshore, Inc., and operated by Noble Drilling, grounded in heavy weather near Ocean Bay on the eastern coast of Sitkalidak Island off Kodiak Island, Alaska, about 2040 local time on December 31, 2012. The *Kulluk*, under tow by the ice-class anchor-handling tow supply vessel *Aiviq*, departed Captains Bay near Unalaska, Alaska, 10 days earlier for the Seattle, Washington, area for maintenance and repairs. Four crewmembers on the *Aiviq* sustained minor injuries as a result of the accident.

The NTSB determined that the probable cause of the grounding of the *Kulluk* was Shell's inadequate assessment of the risk for its planned tow of the *Kulluk*, resulting in implementation of a tow plan insufficient to mitigate that risk.

Recommendations: None
Brief adopted: May 22, 2015

Capsizing and Sinking of the Fishing Vessel *Christopher's Joy*
Gulf of Mexico, near Southwest Pass, Louisiana
September 23, 2014
Marine Accident Brief

About 1430 on September 23, 2014, the fishing vessel *Christopher's Joy* capsized while trawling in the Gulf of Mexico near Southwest Pass, Louisiana. The vessel sank later that day at 2057. The master and one crewmember suffered minor lacerations, and the remaining two crewmembers were presumed dead.

The NTSB determined that the probable cause of the loss of the *Christopher's Joy* was the master's disregard for the impact of the deployed fishing gear upon the vessel's reserve stability while performing turning maneuvers. Contributing to the loss of life were inadequate safety training and practices.

Recommendations: None
Brief adopted: May 6, 2015

Allision of Bulk Carrier *Anna Smile* with Louis Dreyfus Grain Elevator
Louis Dreyfus Grain Elevator dock, Woodhouse Terminal, Houston, Texas
July 14, 2014
Marine Accident Brief

The 738-foot-long bulk carrier *Anna Smile* allided with the Louis Dreyfus Grain Elevator in Houston, Texas, at 0504 local time on July 14, 2014, while maneuvering during docking operations. Damage to the grain elevator and its foundation was estimated at $2.5 million. The *Anna Smile* suffered minor insets on the hull plating on its starboard quarter for a length of about 30 feet. No injuries or pollution were reported.

The NTSB determined that the probable cause of the Anna Smile allision was a lack of communication from the engineering staff to the vessel's bridge team and pilots while the vessel was experiencing problems with the starting system of the main engine as well as the absence of specific procedures and training for emergency engine operations.

Recommendations: None
Brief adopted: April 30, 2015

Collision of Bulk Carrier *Mesabi Miner* and US Coast Guard Cutter *Hollyhock*
Straits of Mackinac, Michigan
January 5, 2014
Marine Accident Brief

The Coast Guard cutter *Hollyhock* was breaking through ice west of the Straits of Mackinac on the morning of January 5, 2014, to establish a path for six merchant vessels heading west into Lake Michigan when it ran into thicker ice and had difficulty continuing ahead. The 1,004-foot-long *Mesabi Miner*, the first merchant vessel in the convoy, was unable to slow quickly enough to avoid striking the stern of the *Hollyhock* at 1042. No injuries or pollution resulted from the accident. Both vessels sustained significant damage but remained operational.

The NTSB determined that the probable cause of the collision of the *Hollyhock* and the *Mesabi Miner* was the lack of effective communications between the two vessels' bridge teams during icebreaking operations, which resulted in an insufficient amount of time to take action to avoid a collision.

Recommendations: None
Brief adopted: April 8, 2015

Grounding and Sinking of Commercial Fishing Vessel *Pacific Queen*
Lung Island, Sumner Strait near Duncan Canal, southeast coast of Alaska
August 14, 2013
Marine Accident Brief

The *Pacific Queen*, a 113-gross ton, wooden-hulled commercial fishing vessel, ran aground, flooded, and sank in about 200 feet of water off Lung Island near Duncan Canal, Alaska, about 0100 on August 14, 2013. The three crewmembers abandoned the vessel and were rescued without injury. The Coast Guard reported a light sheen on the water in the vicinity of the vessel after the sinking, but no additional evidence of pollution was found during searches conducted from the air and on the water over the next 2 days.

The NTSB determined that the probable cause of the sinking of the *Pacific Queen* was the fatigued captain's leaving the bridge unattended before he was properly relieved of his watch, resulting in the vessel continuing on its heading without navigational control and then grounding.

Recommendations: None
Brief adopted: March 19, 2015

Fire On Board Fish Processing Vessel *Juno*
Grays Harbor, Westport, Washington
December 28, 2013
Marine Accident Brief

In the early morning hours on December 28, 2013, the 138-foot-long fish processing vessel *Juno* caught fire while moored at its pier in Westport, Washington. Shoreside firefighters extinguished the blaze, which caused extensive damage. The master received minor injuries, and no pollution was reported as a result of the fire.

The NTSB determined that the probable cause of the fire on board the *Juno* was a space heater that experienced an electrical fault (short circuit). Contributing to the extent of the fire's damage was the improper stowage of flammable materials near the heater. Also contributing was the vessel's lack of structural fire protection and use of combustible materials in interior finishes.

Recommendations: None
Brief adopted: February 23, 2015

Allision of the ITB [Integrated Tug and Barge] *Krystal Sea/Cordova Provider* with US Coast Guard Cutter *Sycamore*
Cordova Harbor, Alaska
July 28, 2013
Marine Accident Brief

The integrated tug and barge *Krystal Sea/Cordova Provider* with four crewmembers on board was maneuvering to dock at the Alaska Marine Lines pier in Cordova, Alaska, when the bow ramp of the barge struck the moored Coast Guard cutter *Sycamore* at the adjacent pier at 0616 on July 28, 2013. The *Sycamore*, with 11 crewmembers on board, sustained about $244,000 in damage. The *Cordova*

Provider's bow ramp sustained about $5,000 in damage. No injuries or pollution was reported.

The NTSB determined that the probable cause of the allision of the *Krystal Sea/Cordova Provider* with the *Sycamore* was the loss of directional control of one of two azimuthing stern drive propulsion units during an unsuccessful attempt by the *Krystal Sea's* new captain to transfer from autopilot to manual control while approaching the intended dock. Contributing to the accident was the lack of function testing of manual steering and propulsion control after disengaging the autopilot at a distance from the dock sufficient to allow time for corrective action.

Recommendations: None
Brief adopted: February 18, 2015

Collision between US Fishing Vessel *American Dynasty* and Canadian Naval Frigate *Winnipeg*
Esquimalt, British Columbia, Canada
April 23, 2013
Marine Accident Brief

On April 23, 2013, at 0817 local time, the US-flag commercial fishing vessel *American Dynasty* was approaching the graving dock at Esquimalt in British Columbia, Canada, when it lost electrical power and propulsion control. The vessel veered off course and collided with a Canadian Navy frigate, HMCS (Her Majesty's Canadian Ship) *Winnipeg FFH 338*, moored nearby. Both vessels sustained extensive structural damage, and the naval pier required repairs. Six shipyard workers suffered minor injuries.

The NTSB determined that the probable cause of the collision of the *American Dynasty* and the *Winnipeg* was the *American Dynasty's* master and chief engineer's insufficient planning regarding vessel arrival procedures and emergency maneuvering and the poor crisis communications between the bridge and the engine room. Contributing to the accident were the status and condition of the *American Dynasty's* emergency generator and emergency batteries, which were not prepared to supply power at a critical time.

Recommendations: None
Brief adopted: February 3, 2015

Fire on Board Saturation Diving Support Vessel *Ocean Patriot*
Gulf of Mexico, about 50 miles south-southwest of Port Fourchon, Louisiana
November 28, 2013
Marine Accident Brief

A fire that broke out in the forward machinery space of the saturation diving support vessel *Ocean Patriot* while under way in the Gulf of Mexico on the evening of November 28, 2013, was brought under control by the vessel's fixed fire suppression system without serious injury, and no pollution resulted from the accident. Damage to the *Ocean Patriot* was estimated to be $9.8 million.

The NTSB determined that the probable cause of the fire on board the *Ocean Patriot* was damage to electrical cables due to the tightly installed metal securing bands in a cable tray, chafing the protective layers of the cables and creating an ignition point.

Contributing to the extensive damage was the combustible material stored immediately below the cable tray area, fueling the fire.

Recommendations: None
Brief adopted: January 21, 2015

Allision and Sinking of Offshore Supply Vessel *Celeste Ann*
Gulf of Mexico, 20 nautical miles southeast of Grand Isle, Louisiana
June 14, 2013
Marine Accident Brief

The offshore supply vessel *Celeste Ann* was receiving passengers from West Delta oil platform 73 about 20 nautical miles south of Grand Isle, Louisiana, when the vessel allided with the platform about 0836 on June 14, 2013. The allision punctured the hull, and the *Celeste Ann* subsequently flooded and sank. All passengers and crew evacuated to another vessel, and no one was injured.

The NTSB determined that the probable cause of the *Celeste Ann* allision was the inability of the junior master to compensate for and overcome wind forces that pushed the vessel into the platform. Contributing to the hull breach and subsequent sinking of the *Celeste Ann* were underwater protrusions from the platform and open watertight doors on board the vessel.

Recommendations: None
Brief adopted: January 14, 2015

Allision of Towing Vessel *Bayou Lady* with Bayou Blue Bridge
Houma, Louisiana
December 7, 2013
Marine Accident Brief

The uninspected towing vessel *Bayou Lady* was pushing a flotilla of six empty hopper barges destined for a scrap yard in Morgan City, Louisiana, when the forward portside barge struck the southern fixed section of the pontoon Bayou Blue Bridge near Houma, Louisiana, about 0630 on December 7, 2013. Repairs to the bridge were estimated at more than $715,000. The *Bayou Lady* was undamaged; the lead barge sustained minor damage that was deemed inconsequential due to its destination for scrap. No injuries or pollution resulted from the accident.

The NTSB determined that the probable cause of the *Bayou Lady* allision was the decision of the captain to transit the bridge opening in windy conditions and the reported temporary loss of steering control after the rudder was fouled by submerged debris.

Recommendations: None
Brief adopted: December 29, 2014

Fire on Board Towing Vessel *Shanon E. Settoon*
Bayou Perot, Louisiana
March 12, 2013
Marine Accident Brief

The *Shanon E. Settoon* was pushing a loaded tank barge in Bayou Perot about 20 miles south of New Orleans, Louisiana, when it struck a submerged pipeline. The collision caused a release of liquefied petroleum gas, which entered the air intake for the main propulsion engines and ignited. The *Shanon E. Settoon* was destroyed by the fire; the tank barge had limited fire damage and did not release any of the 93,000 gallons of crude oil it was carrying. The four crewmembers on board the *Shanon E. Settoon* escaped from the vessel, but one of them sustained second- and third-degree burns from which he died 1 month later.

The NTSB determined that the probable cause of the explosion and fire on board the *Shanon E. Settoon* was the introduction of petroleum gas into the main engines after the vessel struck and ruptured a submerged pipeline due to incomplete navigational information provided to the captain by the vessel company.

Recommendations: None
Brief adopted: December 10, 2014

Breakaway of Tanker *Harbour Feature* from its Moorings and Subsequent Allision with the Sarah Mildred Long Bridge
Portsmouth, New Hampshire
April 1, 2013
Marine Accident Brief

On April 1, 2013, at 1324 local time, the 473-foot-long tanker *Harbour Feature*, with 20 persons on board, allided with the Sarah Mildred Long Bridge in Portsmouth, New Hampshire, after the vessel broke free from its moorings at the New Hampshire State Port Authority, Marine Terminal Wharf. No injuries or pollution resulted from the accident. The bridge sustained $2.5 million in damage; the *Harbour Feature* sustained $1 million in damage.

The NTSB determined that the probable cause of the breakaway of the *Harbour Feature* and subsequent allision with the Sarah Mildred Long Bridge was the inadequate mooring arrangement made by the master and the pilot for the vessel's location and the prevailing tidal conditions.

Recommendations: None
Brief adopted: November 12, 2014

Grounding and Sinking of the Harbor Tug *Kaleen McAllister*
Baltimore, Maryland
May 4, 2013
Marine Accident Brief

Near sunset on the evening of May 4, 2013, the harbor assist tug *Kaleen McAllister* got under way from its berth in Baltimore Harbor with a crew of three to assist in docking a tow and barge entering the port. A few minutes later, the tug struck the charted edge of an adjacent collapsed pier and began flooding. The tug returned to its berth, where

the crew and shoreside support personnel attempted to control the flooding, but the effort was unsuccessful, and the vessel sank alongside the pier within 30 minutes. No one was injured; the sinking resulted in the discharge of about 2,400 gallons of diesel fuel and estimated vessel repair costs of $1.5 million.

The NTSB determined that the probable cause of the grounding and sinking of the *Kaleen McAllister* was the mate's practice of transiting near a submerged portion of a collapsed pier, a known and charted underwater hazard, which ultimately resulted in the vessel's striking the obstruction.

Recommendations: None
Brief adopted: November 3, 2014

Allision of Bulk Carrier *Herbert C. Jackson* with the Jefferson Avenue Bridge
Rouge River at Jefferson Avenue Bridge, city of River Rouge, near Detroit, Michigan
May 12, 2013
Marine Accident Brief

About 0212 on May 12, 2013, the bulk carrier *Herbert C. Jackson* was cleared for passage through the Jefferson Avenue Bridge over the Rouge River about 6 miles southwest of Detroit, Michigan, when the bridge tender, who was legally intoxicated at the time, lowered the drawbridge, striking the bulk carrier's bow. Damage to the vessel was estimated at $5,000. The bridge, a registered historic structure, was extensively damaged and expected to remain closed until 2015 for repair and restoration. No one was injured.

The NTSB determined that the probable cause of the *Herbert C. Jackson* allision was the intoxicated bridge tender's closing of the drawbridge as the vessel began its transit through the open bridge span.

Recommendations: None
Brief adopted: October 1, 2014

Ongoing Major Marine Accident Investigations

Location	Date	Description	Fatalities
36 nautical miles northeast of Crooked Island, Bahamas	10/01/2015	Roll-on/roll-off cargo ship *El Faro*, sinking	33
Light 86, Morgan's Point, Houston Ship Channel, TX	03/09/2015	Chemical tanker *Carla Maersk* and bulk carrier *Conti Peridot*, collision	0
Virgin Passage, USVI	09/23/2014	Coast Guard cutter *Key Largo* and fishing vessel *Sea Shepherd*, collision (Coast Guard public–nonpublic)	0
Gretna, LA	08/13/2014	Bulk carrier *Flag Gangos*, collision	0
Waterproof, LA	07/18/2014	Uninspected towing vessel *Riley Elizabeth*, collision (US Army Corps of Engineers public–nonpublic)	0

Ongoing Marine Accident Briefs (Brief Report without Board vote or meeting)

Location	Date	Description	Fatalities
Near Bahamas	09/17/2015	Cruise ship *Carnival Pride*, engine fire (IMO SIS investigation)	0
St. Thomas, USVI	09/07/2015	Cruise ship *Carnival Liberty*, engine fire	0
Kelp Bay, AK	09/04/2015	Recreational vessel *Sierra Allene*, fire and sinking	0
Columbus, KY	09/02/2015	Uninspected towing vessels *PB Shah* and *Dewey R*, collision	0
Convent, LA	08/31/2015	Crane barge *Margaret*, sinking	0
10 nautical miles southeast of Pt. Au Fer, LA	08/30/2015	Commercial fishing vessel *Capt Richie Rich*, sinking	0
Bayonne, NJ	08/01/2015	Uninspected towing vessel *Peter F. Gellatly*, allision	0
Ventura Harbor, CA	07/29/2015	Commercial fishing vessel *Ferrigno Bay*, allision	0
Falmouth, Jamaica	07/22/2015	Cruise ship *Freedom of the Seas*, engine room fire (IMO SIS investigation)	0
GICW near HSC, Bolivar, TX	07/20/2015	Uninspected towing vessels *Capt Shorty* and *Jackie*, collision	0
Pier 35, Galveston, TX	07/08/2015	Bulk carrier *Asia Zircon II*, crane/cargo damage	0
Cape Fairweather, AK	06/10/2015	Commercial fishing vessel *Kupreanof*, sinking	0
North Sea, Europe (UK)	06/02/2015	Vehicle carrier *Courage* (US), fire	0
New Orleans, LA	05/30/2015	Uninspected towing vessel *Miss Natalie*, sinking	1
Pago Pago, American Samoa	05/22/2015	Fishing vessel *Sea Hawk No. 68*, grounding	0
Elizabeth River, Chesapeake, VA	04/26/2015	Uninspected towing vessel *Simone* and barge *Gayle Force*, allision with railroad bridge	0
Shuyak Island, off Kodiak Island, AK	04/21/2015	Fishing vessel *Northern Pride*, grounding	0
Lower Mississippi River mile 161, Convent, LA	04/06/2015	Bulk carrier *Privocean*, uninspected towing vessel *Texas*, and towing vessel *Bravo*, breakaway and collisions	0
Light 40, Houston Ship Channel, Red Fish, TX	03/05/2015	Chemical tanker *Chembulk Houston* and container ship *Monte Alegre*, collision	0
South of Freshwater Bayou, Gulf of Mexico, LA	03/02/2015	Small passenger vessel *Diamond Edge* and offshore supply vessel *B.W. Haley*, collision	0
Departing Port of Antwerp, Belgium	02/22/2015	Container ships *St Louis Express* (US) and *Hammersmith Bridge*, collision	0
Kodiak Island, AK	02/16/2015	Fishing vessel *Savannah Ray*, grounding	0
5 nautical miles south of Port Fourchon, LA	01/23/2015	Offshore supply vessel *Connor Bordelon*, collision	0
Punta Leona, Costa Rica	01/08/2015	Passenger vessel *Pura Vida Princess* (IMO SIS investigation), sinking	3
Avalon, Catalina Island, CA	12/30/2014	Small passenger vessel *King Neptune*, breakaway and grounding	1
Port Castries, St. Lucia	12/11/2014	Cruise ship *Insignia*, fire	3
Columbia River, Ilwaco, WA	12/05/2014	Fishing vessel *Titan*, grounding	0
Port Fourchon, LA	12/01/2014	Fishing vessel *Miss Eva*, fire	0
8 nautical miles west of Siletz Bay, OR	11/29/2014	Fishing vessel *Blazer*, sinking	0

Location	Date	Description	Fatalities
New Roads, LA	10/31/2014	Uninspected towing vessel *Dennis Hendrix*, fire	0
Freeport, Bahamas	10/31/2014	Cruise ship *Bahamas Celebration*, grounding (IMO SIS investigation)	0

Railroad, Pipeline and Hazardous Materials Tab

RAILROAD, PIPELINE AND HAZARDOUS MATERIALS INVESTIGATIONS

	($000s)	FTEs
FY 2016 Estimate	$8,653	36
FY 2017 Request	$8,680	35
Increase/Decrease	$27	(1)

Overview of Request

The funding level for this program activity includes increases for a 1.3 percent pay raise for existing staff and a 1.8 percent non-pay inflation factor. A reduction in staff of one FTE is required to meet the FY 2017 request. No other program changes are planned.

Program Description

The Office of Railroad, Pipeline and Hazardous Materials Investigations (RPH) consists of four divisions: Railroad, Pipeline and Hazardous Materials, Human Performance and Survival Factors, and Report Development. RPH investigates accidents involving railroads, pipelines, and hazardous materials, and evaluates the associated emergency response. On the basis of these investigations, the NTSB may issue safety recommendations to federal and state regulatory agencies, industry and safety standards organizations, carriers and pipeline operators, equipment and container manufacturers, producers and shippers of hazardous materials, and emergency response organizations.

Railroad Division

Since 1967, Congress has assigned the primary responsibility for railroad accident investigations to the NTSB. As in the other surface modes, we investigate and analyze select accidents, determine their probable causes, and issue recommendations to prevent similar accidents.

The Railroad Division investigates accidents and incidents involving passenger and freight railroads, as well as commuter rail transit systems and other fixed guideway systems. These accidents are typically collisions or derailments, some of which involve fatalities, severe injuries, release of hazardous materials, and evacuation of residences.

The small staff of the Railroad Division does not investigate every railroad accident reported to the Federal Railroad Administration (FRA) or every rail transit accident. To most efficiently use NTSB resources, criteria has been established to help highlight for investigation those accidents that pose significant safety issues. The division also assesses selected railroad safety issues, often based on a set of accident investigations specifically undertaken as the basis for such study. In other cases, the special studies may focus on analyses of regulations, railroad safety programs and procedures, and audit reviews of management and operations practices.

Pipeline and Hazardous Materials Division

The Pipeline and Hazardous Materials Division investigates 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. This division may also investigate select hazardous materials accidents that highlight safety issues of national importance or involve a specific accident prevention issue.

The hazardous materials staff investigates accidents involving the release of hazardous materials in all modes of transportation, including aviation, highway, rail, and marine. An investigation may include analysis of the performance of hazardous materials containers, such as rail tank cars, highway cargo tanks, and smaller nonbulk packaging. The division also investigates environmental response issues in all modes, including pipeline.

Human Performance and Survival Factors Division

The Human Performance and Survival Factors Division investigates the human factors in railroad, pipeline, and hazardous materials accidents. These factors may include individual actions, training, and tools; work crew resource management, oversight, and supervision; and organizational safety management and emergency response processes. The actions and decisions of those involved in emergency situations are often central to understanding accident scenarios.

Human factors occur within the context of an operational system, the boundaries of which typically extend well beyond the debris field of an accident site. Once system failures are identified and understood, the staff works to develop corresponding safety recommendations. Specific topics evaluated include drug and alcohol testing, work/rest cycles and human fatigue, training, work processes and safety climate, organizational safety culture and safety management, public awareness, and railroad survivability factors.

Report Development Division

The Report Development Division is responsible for drafting and editing railroad, pipeline, and hazardous materials reports and briefs. Staff reviews, writes, and edits work products to ensure the adequacy of logic, organization, and structure. In addition, the division's editors ensure the quality of NTSB reports, responses to notices of proposed rulemaking, papers, congressional testimony, and speeches (or portions thereof) on matters pertaining to railroad, pipeline, and hazardous materials safety. The division is also responsible for the effective development of NTSB transportation safety policy, guidance, protocols, applicable portions of NTSB orders, and replies to safety inquiries from Congress, other federal agencies, state and local agencies, industry, and the general public.

Accomplishments and Workload

Completed Major Railroad Accident Investigations

Collision Involving Three BNSF Railway Freight Trains
Near Amarillo, Texas
September 25, 2013
Railroad Accident Report

On September 25, 2013, at 4:17 a.m. central daylight time, BNSF Railway (BNSF) eastbound train 7891 East struck the rear end of standing BNSF train 6746 East on main track no. 2 near Amarillo, Texas. Several cars from 7891 East derailed and fell across the adjacent track, main track no. 1. Approaching BNSF westbound train 6943 West struck the derailed cars. Five of the six involved train crewmembers received injuries and were hospitalized. Estimated damage was $4.4 million.

The NTSB determined that the probable cause of the accident was the failure of the 7891 East train crew to comply with the requirement to stop and proceed at restricted speed when encountering a dark or improperly displayed signal. Contributing to the accident was the use of a dim headlight to indicate the rear end of the standing train, which the 7891 East engineer misinterpreted as the headlight of an opposing train on the adjacent track and the conductor misinterpreted as an upcoming yellow signal. Also contributing to the accident was a lack of a positive train control system that could have prevented the accident.

As a result of this investigation, the NTSB issued one new safety recommendation to the Federal Railroad Administration requesting that it prohibit the use of a white light as a marking device on the rear of a train. The NTSB also issued one new safety recommendation to BNSF Railway requesting that it discontinue the use of a white light as a marking device on the rear of a train.

Recommendations: 2 new
Report adopted: June 25, 2015

Chicago Transit Authority Train Collides with Bumping Post and Escalator at O'Hare Station
Chicago, Illinois
March 24, 2014
Railroad Accident Report

About 2:49 a.m. on March 24, 2014, Chicago Transit Authority (CTA) train No. 141 collided with the bumping post near the end of the center pocket track at O'Hare Station. The lead car rode over the bumping post and went up an escalator at the end of the track. The escalator provided public access to enter O'Hare International Airport from the platform in the station, but no one was using it at the time of the accident. About 50 people were on the train at the time of the accident. Thirty-three injured passengers and the injured train operator were taken to the hospital. The estimated damage was over $11 million.

The NTSB determined that the probable cause of the accident was the failure of the train operator to stop the train at the appropriate signal due to falling asleep as a result of fatigue, which was the result of the challenges of working shiftwork, circadian factors, and acute sleep loss resulting from her ineffective off-duty time management. In addition, CTA

failed to effectively manage the operator's work schedule to mitigate the risk of fatigue. Contributing to the severity of the accident was CTA's failure to identify the insufficient stopping distance and inadequate speed restriction at the center pocket track at O'Hare Station.

As a result of this investigation, the NTSB issued six new safety recommendations to the Federal Transit Administration involving (1) developing a work scheduling program for rail transit agencies that incorporates fatigue science, (2) requiring rail transit agencies to implement transmission-based train control systems that prevent train collisions, and (3) requiring that new or rehabilitated rail transit vehicles be equipped with event recorders to meet the Institute of Electrical and Electronics Engineers Standard for rail transit vehicle event recorders. The NTSB also issued one new safety recommendation to the CTA to install a transmission-based train control system on all passenger train routes.

Recommendations: 7 new
Report adopted: April 28, 2015

Collision of Union Pacific Railroad Freight Train with BNSF Railway Freight Train
Chaffee, Missouri
May 25, 2013
Railroad Accident Report

On May 25, 2013, at 2:30 a.m. central daylight time, near Chaffee, Missouri, Union Pacific Railroad (UP) freight train UP 5668 South collided with a BNSF Railway freight train U-KCKHKM0-05T at Rockview Interlocking, where tracks of the two railroads cross. The BNSF train was moving through the interlocking when the UP train struck the 12th car behind the locomotives of the BNSF train. As a result of the collision, 13 cars of the BNSF train derailed. Two locomotives and 11 cars on the UP train also derailed. Diesel fuel spilled from the derailed UP locomotives and caught fire. The engineer and the conductor on the UP train were injured and transported to a local hospital.

The Missouri State Highway M bridge crossed over the Rockview Interlocking, and derailed train cars struck bridge supports and collapsed portions of the bridge. After the bridge collapsed, two motor vehicles struck damaged highway elements. Five occupants of the motor vehicles were transported to a local hospital.

As a result of their variable work schedules, both UP crewmembers had experienced disruptions to their normal circadian rhythms for several days before the accident, and at the time of the accident experienced fatigue caused by circadian disruption and the requirement to operate the train during the window of a circadian low. Prior to the collision, both UP crewmembers failed to comply with four wayside signals because of likely fatigue-induced performance degradation. Obstructive sleep apnea likely contributed to the engineer's fatigue. Damage was estimated to be more than $11 million.

The NTSB determined that the probable cause of the accident was the failure of the UP train crewmembers to comply with wayside signals leading into the Rockview Interlocking as a result of their disengagement from their task likely because of fatigue-induced performance degradation. Contributing to the accident was the lack of (1) a positive train control system, (2) medical screening requirements for employees in safety-sensitive positions for sleep apnea and other sleep disorders, and (3) action by the Federal Railroad Administration (FRA) to fully implement the fatigue management components required by the Rail Safety Improvement Act of 2008. Likely contributing to the engineer's

fatigue was undiagnosed obstructive sleep apnea. Also contributing to the accident was inadequate crew resource management.

As a result of this investigation, the NTSB issued one safety recommendation to UP to develop and implement an accelerated schedule for delivering crew resource management training to all employees in safety-sensitive positions. The NTSB also reiterated safety recommendations to the FRA and all Class 1 Railroads to require the installation, in all controlling locomotive cabs and cab car operating compartments, crash- and fire-protected inward- and outward-facing audio and image recorders.

Recommendations: 1 new, 6 reiterated
Report adopted: November 17, 2014

National Passenger Rail Corporation Maintenance-of-Way Employee Fatality
Clermont, New York
October 29, 2014
Accident Brief

On October 29, 2014, at 10:56 a.m. eastern daylight time, National Railroad Passenger Corporation (Amtrak) train A280 struck and killed an Amtrak signal helper. Earlier that morning, the Amtrak employee had provided protection for a contractor who was installing cable earlier near milepost 100.9 in Clermont, New York. At the time of the accident, the sky was overcast with occasional rain; the temperature was 58°F. There were 128 passengers on board the train. An engineer and an engineer who was qualifying for a new territory were in the locomotive cab; a conductor and an assistant conductor were in the passenger cars. No one on the train was injured. Audio and video from the outward-facing camera shows the signal helper walking between the rails of the main track with her back to the approaching train. Although the engineer saw the signal helper wave her arm to acknowledge the presence of a train, she continued to walk between the rails. The gesture was not caught clearly on the video. According to event recorder data, the horn was sounded continuously from 10:55:20 a.m. to 10:55:36 a.m. The engineer activated the emergency air brakes at 10:55:28 a.m. The video clearly shows the signal helper did not turn around to observe the approaching train; her gait did not change nor did she exhibit a startle response, which suggests she was unaware the train was on the track where she was walking. The employee was struck 16 seconds after the horn first sounded.

The NTSB determined that the probable cause of the accident was that the signal helper was occupying main track 1 without securing on-track protection.

Recommendations: None
Brief adopted: August 7, 2015

Employee Switching Fatality
Colorado Springs, Colorado
October 8, 2014
Accident Brief

On October 8, 2014, at 12:30 p.m. mountain daylight time, a BNSF Railway (BNSF) conductor died while BNSF local train L-PWR0223-8 I was pulling nine railroad cars on an industry track on the Pikes Peak Subdivision near Colorado Springs, Colorado. After several attempts, the conductor was successful in coupling with two empty flat railroad cars and

then instructed the engineer to pull the railroad cars out of the track. However, the conductor became caught between the railroad cars.

The NTSB determined that the probable cause of the accident was the conductor leaving cars on track 813 with insufficient clearance to the adjacent track and then instructing the engineer to move the railroad cars on track 816 before stepping clear of the moving cars. The conductor's focus on successfully coupling the railroad cars on track 816 likely contributed to the accident.

Recommendations: None
Brief adopted: July 14, 2015

Collision of Union Pacific Railroad Freight Train MSIDV 16 with Standing Railroad Cars
Hays, Kansas
July 16, 2013
Accident Brief

On July 16, 2013, at about 1:20 a.m., central daylight time, westbound UP freight train MSIDV 16 unexpectedly encountered a hand-operated main track switch at milepost 288 in the reverse position diverting the train from the main track onto two adjacent tracks at the Sharon Springs subdivision in Hays, Kansas. The switch was not equipped with technology to warn oncoming trains that it was in the reverse position. At the time of the accident, the train was traveling in nonsignaled track warrant territory at a timetable speed of 49 mph. The lead locomotive collided with standing cars on the spur track. Diesel fuel leaked from the ruptured locomotive fuel tanks, ignited, and burned. The three crewmembers were injured. Damage was estimated by the UP to be $1.4 million.

The NTSB determined that the probable cause of the accident was the failure of the brakeman of train LDG89 15 to return a main track switch to the normal position after the crew had secured the train on a siding track. Contributing to the accident was the inability of the crew of train MSIDV 16 to determine the position of the main track switch in nonsignaled territory.

Recommendations: None
Brief adopted: April 14, 2015

Collision of Two Chicago Transit Authority Trains
Forest Park, Illinois
September 30, 2013
Railroad Accident Brief

On September 30, 2013, at 7:42 a.m. central daylight time, a set of unoccupied Chicago Transit Authority (CTA) passenger cars collided with CTA passenger train 110 at the Harlem-Congress passenger station in Forest Park, Illinois. The unoccupied cars were moving about 24 mph when they struck the stopped train. Thirty-three passengers and the train operator were taken to local hospitals and later released. The CTA estimated the property damage to be $6.4 million.

The NTSB determined that the probable cause of the accident was water in the control cables of two cars, which caused errant control signals to be sent to the cars' power systems. Contributing to the accident was the CTA's practice of not securing unattended equipment.

As a result of this investigation, the NTSB issued two urgent safety recommendations to the CTA to (1) review its operating and maintenance procedures for stored unoccupied cars to ensure the propulsion and brake systems are left in a condition that would not facilitate unintended movement, and (2) immediately implement redundant means of preventing unintended rail car movements, such as wheel chocks or a derail device.

The NTSB also issued one urgent safety recommendation to the Federal Transit Administration to issue a safety advisory to all rail transit properties asking them to review their operating and maintenance procedures for stored, unoccupied cars to ensure (1) the propulsion and brake systems are left in a condition that would not facilitate unintended movement and (2) redundant means of stopping unintended rail car movements, such as wheel chocks.

Recommendations: 3 new
Brief adopted: April 13, 2015

Bay Area Rapid Transit Train 963 Struck Roadway Workers
Walnut Creek, California
October 19, 2013
Railroad Accident Brief

On October 19, 2013, at 1:44 p.m. Pacific daylight time, Bay Area Rapid Transit District (BART) train 963 struck and killed two engineering employees while they were working on BART's main tracks near Walnut Creek, California. The train, which included four passenger cars, was traveling north on the Pittsburg/Bay Point-SFO (San Francisco International Airport) Line between the Walnut Creek and Pleasant Hill stations. It was one of two trains being operated by BART managers because BART's union employees were on strike. Both trains were transporting management employees who were being trained as substitute operators and system maintenance workers. No paying passengers were being transported by either train. At the time of the accident, there were six BART employees on the train: the supervisor who was training the operator trainees, two operator trainees, and three equipment maintenance employees. An operator trainee was operating the train at the time of the accident. No one on the train was injured.

The NTSB determined that the probable cause of the accident was BART's use of simple approval for granting roadway worker access to the track, which required the workers to provide their own protection.

Recommendations: None
Brief adopted: April 13, 2015

Film Crew Trespassing on CSX Right-of-Way
Jesup, Georgia
February 20, 2014
Railroad Accident Brief

On February 20, 2014, about 4:30 p.m. eastern standard time, a crew of at least 12 people was filming a movie scene on a railroad bridge near Jesup, Georgia, when northbound CSX Transportation (CSX) freight train Q12519 approached. As the train passed the film crew's location on the bridge, it struck a prop—a metal-framed bed. Debris from the prop struck some crewmembers on the bridge walkway. One film

crewmember was killed, and six others with injuries were transported to local hospitals. The accident occurred in the CSX Nahunta Subdivision at milepost A543.7 on the railroad bridge across the Altamaha River. At the time of the accident, the train was operating on a single main track, with 2 locomotives and 37 freight cars. The train was traveling about 56 mph, in a region of track having a maximum authorized speed of 70 mph.

The NTSB determined that the probable cause of the accident was the film crew's unauthorized entry onto the CSX right-of-way at the Altamaha River bridge with personnel and equipment, despite CSX Transportation's repeated denial of permission to access the railroad property. Contributing to the accident was the adjacent property owner's actions to facilitate the film crew's access to the right-of-way and bridge.

As a result of this investigation, the NTSB issued one safety recommendation to the International Alliance of Theatrical Stage Employees, Moving Picture Technicians, Artists and Allied Crafts; Location Managers Guild of America; The International Cinematographers Guild Camera Local 600; Producers Guild of America; Screen Actors Guild and the American Federation of Television and Radio; Society of Motion Picture & Television Engineers; Directors Guild of America; Writers Guild of America; Teamsters Local 399; International Brotherhood of Electrical Workers, Local 40; Studio Utility Employees, Local 724; and Operation Lifesaver to work to create and distribute educational materials emphasizing that (1) railroads are private property requiring the railroad's authorization to enter and (2) if authorization is given, everyone on scene must follow the railroad's safety procedures to reduce hazards.

Recommendation: 1 new
Brief adopted: March 23, 2015

Collision of BNSF Railway Company and Union Pacific Railroad Trains
Keithville, Louisiana
December 30, 2013
Railroad Accident Brief

On Monday, December 30, 2013, at 6:37 a.m. central standard time, southbound Union Pacific Railroad (UP) freight train MPBSR 30 collided head on with BNSF Railway Company train CMNRNAJ 23. The collision happened at milepost 218.5 near Keithville, Louisiana, about 20 miles south of Shreveport, Louisiana, on the UP Lufkin Subdivision. The three leading locomotives and one car from the UP train derailed. Two locomotives and 11 cars from the BNSF train derailed. At the time of the accident, it was dark and overcast with visibility of about 10 miles. There were three crewmembers aboard each train. All of the UP crewmembers and one BNSF crewmember were injured. There was no significant fire or release of hazardous materials. Damages were estimated at $7.8 million.

The NTSB determined that the probable cause of the accident was the BNSF train conductor's improper positioning of a switch for movement into the siding occupied by the BNSF train.

Recommendations: None
Brief adopted: December 1, 2014

The following five significant accidents on the Metro-North Railroad were the subject of a Special Investigation Report detailed in the "Completed and Ongoing Special Investigations–Railroad" section.

Derailment and Subsequent Collision of Two Metro-North Passenger Trains
Bridgeport, Connecticut
May 17, 2013
Railroad Accident Brief

On Friday, May 17, 2013, at 6:01 p.m. eastern daylight time, eastbound Metro-North Railroad (Metro-North) passenger train 1548, which had departed Grand Central Terminal (GCT), New York, New York, headed toward New Haven, Connecticut, derailed from main track 4 at milepost 53.25 on the New Haven Line Subdivision 7. The derailed train was then struck by westbound Metro-North passenger train 1581, which had departed New Haven, Connecticut, bound for GCT. As a result of the collision, at least 65 persons were injured. Metro-North estimated about 250 passengers were on each train at the time of the accident.

The NTSB determined that the probable cause of the derailment was an undetected broken pair of compromise joint bars on the north rail of track 4 on the Metro-North Railroad New Haven subdivision at milepost 53.25 resulting from: (1) the lack of a comprehensive track maintenance program that prioritized the inspection findings to schedule proper corrective maintenance; (2) the regulatory exemption for high-density commuter railroads from the requirement to traverse the tracks they inspect; and (3) Metro-North's decisions to defer scheduled track maintenance.

As a result of this investigation, the NTSB issued safety recommendations to the Federal Railroad Administration to revise its track safety standards. The NTSB also issued one recommendation to Metro-North to revise its track inspection program to include requirements (1) to traverse each main track by vehicle or inspect each main track on foot at least once every 2 weeks, and (2) to traverse and inspect each siding, either by vehicle or on foot, at least once every month.

Recommendations: 2 new
Brief adopted: October 24, 2014

In addition, the NTSB issued two stand-alone safety recommendations to the Federal Railroad Administration to (1) require the existing forward-end corner post strength requirements for the back-end corner posts of passenger railcars and (2) incorporate a certificate of construction and require the certificate be furnished prior to the in-service date of the railcar. The NTSB also issued one safety recommendation to Metro-North requesting that it replace the Grade 5 mounting bolts in its M-8 passenger railcar fleet with stronger bolts.

Stand-alone recommendations: 3 new
Stand-alone recommendations adopted: January 28, 2015

Metro-North Railroad Employee Fatality
Manhattan, New York
March 10, 2014
Railroad Accident Brief

On March 10, 2014, at 12:55 a.m. eastern daylight time, a Metro-North Railroad electrician was fatally struck by northbound train 897 near milepost 3.2 at control point 3 interlocking in Manhattan, New York. Three employees were attempting to re-energize tracks that had been out of service for maintenance. Two of the workers cleared the approaching train, but the third worker was struck by the train.

The NTSB determined that the probable cause of the accident was the miscommunication of the limits of on-track protection resulting from incomplete and inaccurate roadway worker job briefings. Contributing to the accident was use of a reference point for on-track protection (the AB Split) that was poorly understood by some of the workers on the track.

Recommendations: None
Brief adopted: October 24, 2014

Metro-North Railroad Derailment
Bronx, New York
December 1, 2013
Railroad Accident Brief

On December 1, 2013, at 7:19 a.m. eastern standard time, southbound Metro-North Railroad (Metro-North) passenger train 8808 derailed at milepost 11.35 on main track 2 of the Metro-North Hudson Line. The train originated in Poughkeepsie, New York, with a destination of Grand Central Station in New York, New York. The train consisted of seven passenger cars and one locomotive; the locomotive was at the rear of the train in a push configuration. All passenger cars and the locomotive derailed. The derailment occurred in a 6° left-hand curve where the maximum authorized speed was 30 mph. The train was traveling at 82 mph when it derailed. As a result of the derailment, 4 people died and at least 61 persons were injured. Metro-North estimated about 115 passengers were on the train at the time of the derailment. Metro-North estimated damages at more than $9 million.

The NTSB determined that the probable cause of the accident was the engineer's noncompliance with the 30 mph speed restriction because he had fallen asleep due to undiagnosed severe obstructive sleep apnea exacerbated by a recent circadian rhythm shift required by his work schedule. Contributing to the accident was the absence of a Metro-North policy or a Federal Railroad Administration regulation requiring medical screening for sleep disorders. Also contributing to the accident was the absence of a positive train control system that would have automatically applied the brakes to enforce the speed restriction. Contributing to the severity of the accident was the loss of the window glazing that resulted in the fatal ejection of four passengers from the train.

Recommendations: None
Brief adopted: October 24, 2014

In addition, as a result of this investigation, the NTSB issued a stand-alone safety recommendation to the FRA requesting that it develop a performance standard to

ensure that windows are retained in the window opening structure during an accident and then requiring the use of the performance standard by incorporating it into federal regulations.

Stand-alone recommendation: 1 new
Stand-alone recommendation adopted: November 20, 2014

Metro-North Railroad Derailment
Bronx, New York
July 18, 2013
Railroad Accident Brief

On July 18, 2013, at 8:29 p.m. eastern daylight time, northbound CSX Transportation train Q70419, derailed on the Metro-North Railroad (Metro-North) Hudson Line at milepost 9.99 on main track 2.1. The train consisted of 2 locomotives and 24 modified flat cars. Each flat car was loaded with four containers containing municipal refuse. The 11th through 20th cars derailed. Northbound Metro-North train 781 was stopped on main track 1 at Marble Hill Station (Milepost 9.8) when the CSX train passed. The Metro-North engineer reported seeing sparks and dust flying when the CSX train derailed. He also reported seeing no dragging equipment or anything unusual prior to seeing the sparks and dust. There were no injuries. CSX and Metro-North estimated the damage at $827,700.

The NTSB determined that the probable cause of the accident was excessive track gage due to a combination of fouled ballast, deteriorated concrete ties, and profile deviations resulting from Metro-North's decision to defer scheduled track maintenance.

Recommendations: None
Brief adopted: October 24, 2014

The NTSB issued two new stand-alone safety recommendations to the FRA requesting that it (1) define specific allowable limits for combinations of track conditions that require remedial action when combined and (2) program its geometry inspection vehicles to detect these combinations that require remedial action.

Stand-alone recommendations: 2 new
Stand-alone recommendations adopted: December 23, 2014

Metro-North Railroad Employee Fatality
West Haven, Connecticut
May 28, 2013
Railroad Accident Brief

On May 28, 2013, at 11:57 a.m. eastern daylight time, Metro-North Railroad (Metro-North) passenger train 1559, which was traveling westbound at 70 mph on the New Haven Line main track 1, struck and killed a track foreman in West Haven, Connecticut. The accident location was about 100 feet west of catenary bridge 1021 at milepost 69.56.

The NTSB determined that the probable cause of this accident was the student rail traffic controller's removal (while working without direct supervision) of signal blocking protection for the track segment occupied by the track foreman and the failure of

Metro-North to use any redundant feature to prevent this single point failure. Contributing to the accident was the FRA's failure to require redundant signal protection, as recommended in NTSB Safety Recommendation R-08-6.

Recommendations: None
Brief adopted: October 24, 2014

Ongoing Major Railroad Accident Investigations

Location	Date	Description	Fatalities
Kansas City, KS	09/29/2015	Train struck RCL operator	1
Lesterville, SD	09/19/2015	Six ethanol cars derailed into Beaver Creek	0
Texarkana, TX	09/08/2015	Two UP trains collided at an interlocking	0
Petal, MS	08/12/2015	Trainee pinned between two railcars	1
Homewood, IL	07/25/2015	Conductor fell from moving locomotive	1
Minneapolis, MN	05/25/2015	Passing train struck panel that hit and killed a maintenance-of-way employee	1
Philadelphia, PA	05/12/2015	Amtrak train derailed. Urgent recommendations: 2 issued on September 22, 2015	8
Heimdal, ND	05/06/2015	BNSF crude oil train derailed; fire; evacuation	0
Roswell, NM	04/28/2015	Two Southwestern Railroad freight trains collided	1
Pine Bluff, AR	04/04/2015	UP conductor struck by locomotive while switching cars	1
Richmond, VA	04/01/2015	Remote-controlled CSX locomotive struck inspector	1
Mount Carbon, WV	02/16/2015	CSX crude oil train derailed; subsequent fire and town evacuation. Urgent recommendations: 4 issued on April 2, 2015.	0
Valhalla, NY	02/03/2015	Metro-North train struck SUV; subsequent explosion and fire	6
Washington, DC	01/12/2015	Smoke in Washington Metropolitan Area Transit Authority tunnel at L'Enfant Plaza. Urgent recommendations: 2 issued on September 15, 2015, 1 issued on June 4, 2015, 6 issued on February 10, 2015	1
Brentwood, AR	10/16/2014	Collision of Arkansas & Missouri locomotive and passenger train	0
Galva, KS	09/25/2014	Two UP trains collided	0
Hoxie, AR	08/17/2014	Two UP trains collided; town evacuation. Urgent recommendations: 3 issued on February 2, 2015	2
Arden, NV	08/07/2014	UP engineer had epileptic seizure while operating train	0
Lynchburg, VA	04/30/2014	Crude oil train derailed/fire/investigation	0
Casselton, ND	12/30/2013	Oil train struck derailed grain train; subsequent fire and evacuation	0

Completed Investigative Hearings and Forums - Railroad

Washington Metropolitan Area Transit Authority (WMATA) Smoke and Electrical Arcing Accident
Washington, DC
Investigative Hearing
June 23-24, 2015

The NTSB held an investigative hearing on the January 12, 2015, Washington Metropolitan Area Transit Authority (WMATA) Metrorail Train 302 incident involving heavy smoke and arcing that affected passengers. As a result of the smoke, 86 passengers were transported to local medical facilities for treatment. One passenger fatality occurred. Initial damages were estimated by WMATA to be $120,000. Safety issues discussed included the conditions leading to the arcing, emergency response efforts, WMATA's efforts to improve its overall safety and safety culture, the state of WMATA's infrastructure, the status of the FTA's rulemaking on public transportation safety, and the Tri-State Oversight Committee's oversight responsibilities.

Trains and Trespassing: Ending Tragic Encounters
Forum
March 24-25, 2015

The NTSB held a public forum on the dangers of trespassing on railroad rights-of-way. While railroad tracks have long held a cultural resonance with Americans and are featured in motion pictures, TV shows, music videos, and photography, they are private property. They can also be a deadly place. In 2013, 476 people were killed and 432 were injured in trespassing accidents, according to preliminary data from the Federal Railroad Administration.

The forum featured speakers who have been seriously injured by trains, those whose communities have been affected, and railroad employee assistance program employees whose train crews have struck people on railroad property. The forum drew on the expertise of railroads, regulators, and researchers, among others, to review the diversity of trespassing accidents and incidents, and to look at current and future prevention strategies.

Completed and Ongoing Special Investigations - Railroad

Organizational Factors in Metro-North Railroad Accidents
Special Investigation Report
November 20, 2014

Between May 2013 and March 2014, the NTSB launched investigative teams to five significant accidents on the Metro-North Railroad (Metro-North): (1) the May 17, 2013, derailment and subsequent collision in Bridgeport, Connecticut; (2) the May 28, 2013, employee fatality in West Haven, Connecticut; (3) the July 18, 2013, CSX Transportation derailment on Metro-North tracks in The Bronx, New York; (4) the December 1, 2013, derailment in The Bronx, New York; and (5) the March 10, 2014, employee fatality in Manhattan, New York. Combined, these accidents resulted in 6 fatalities, 126 injuries and more than $28 million in damages. The continued safe operation of Metro-North is vital to New York City and the tri-state area of New York, New Jersey, and Connecticut. As our investigations progressed, it became apparent that several organizational factors issues

were involved in the accidents. The November 2013 NTSB investigative hearing on the Bridgeport and West Haven accidents (the NTSB hearing) explored the role of Metro-North and Federal Railroad Administration (FRA) organizational factors in these accidents. We were not alone in observing that organizational factors were relevant to the series of Metro-North accidents. Subsequent actions by the FRA, which conducted a focused audit, and the Metropolitan Transportation Authority (MTA), which formed a Blue Ribbon Panel to review safety and created an MTA Board Safety Committee to monitor safety, have reinforced the need to examine both the role of Metro-North and FRA organizational factors in relation to these five accidents.

This special investigation report discusses all five of the recent Metro-North accidents investigated by the NTSB, examines some of the common elements of these accidents, and addresses the steps that Metro-North, the MTA, and the FRA have taken as a result of these investigations. The report also highlights lessons learned and provides recommendations to Metro-North, MTA, and several other entities to improve railroad safety on Metro-North and elsewhere.

Recommendations: 17 new, 6 previously issued, 3 reclassified, 3 reiterated
Report adopted: November 20, 2014

Completed Pipeline Accident Investigations

Natural Gas-Fueled Building Explosion and Resulting Fire
New York City, New York
March 12, 2014
Pipeline Accident Report

On March 12, 2014, about 9:30 a.m. eastern daylight time, two adjacent multiuse five-story buildings were destroyed by a natural gas-fueled explosion and resulting fire. The buildings were situated on the west side of Park Avenue between East 116th Street and East 117th Street in the East Harlem district of the Borough of Manhattan in New York City. The violent explosion damaged buildings on the east and west sides of Park Avenue and along East 116th and East 117th Streets. Eight people died, more than 50 people were injured, and more than 100 families were displaced from their homes as a result of this accident. The accident investigation focused on the following safety issues: the adequacy of Consolidated Edison's (Con Edison) quality assurance and quality control procedures for joining plastic pipes, the effectiveness of its public awareness program, the adequacy of its gas odor report response, the effectiveness of the New York City Department of Environmental Protection sewer integrity program, and the effectiveness of federal and state oversight. We issued safety recommendations to the New York State Public Service Commission, the City of New York, and Con Edison.

The NTSB determined that the probable cause of the accident was (1) the failure of the defective fusion joint at the service tee, installed by Con Edison in 2011, which allowed natural gas to leak from the gas main and migrate into the building where it ignited and (2) a breach in the sewer line that had gone unrepaired by the New York City Department of Environmental Protection since at least 2006, allowing groundwater and soil to flow into the sewer, leading to a loss of support for the gas main, which in turn caused the line to sag and overstressed the defective fusion joint.

As a result of this investigation, the NTSB issued safety recommendations to the New York State Public Service Commission, the City of New York, and Con Edison addressing the need for improved safety regarding the installation, maintenance, and repair of infrastructure pipelines.

The NTSB issued a Safety Alert stating that cleaning and surface preparation procedures can ensure fusion joint reliability in plastic natural gas pipelines.

Recommendations: 4 new
Report adopted: June 9, 2015

Ongoing Major Pipeline Accident Investigations

Location	Date	Description	Fatalities
Centreville, VA	09/21/2015	4,000 gallons of gasoline in retention pond	0
Birmingham, AL	12/17/2013	Natural gas explosion of a 2-story duplex building	1

Hazardous Materials Support to Foreign Accident Investigation

CN Railroad
Plaster Rock, New Brunswick, Canada
January 7, 2014
Support to Foreign Accident Investigation

On January, 7, 2014, about 7:00 p.m., an eastbound CN Railroad freight train derailed 17 cars and the DP locomotive in Plaster Rock, New Brunswick. The derailment involved the release of crude oil that resulted in a fire and an evacuation of about 150 residents near the accident site. The derailed cars included five tank cars of crude oil, five cars of liquefied petroleum gas, and one car with hydrochloric acid residue. Two tank cars were breached and released about 60,000 gallons of crude oil. Burning crude oil flowed north in a drainage ditch, stopping nearby a residential structure. The resulting pool fire impacted adjacent crude oil and liquified petroleum gas (LPG)/butane tank cars. Two LPG cars continued to release burning vapor for 3 days from their pressure relief devices. The emergency response was supported by local and provincial fire and police departments to control and suppress the fire and execute the evacuation. There were no injuries or fatalities.

We launched an investigator to participate with the Transportation Safety Board of Canada (TSB) in evaluating the performance of three crude oil tank cars that were manufactured to industry standard CPC-1232, as this was the first reported derailment involving tank cars of this specification. The information gathered was used together with findings from other accidents to develop our position that the CPC-1232 standard does not constitute an effective solution for the poor puncture resistance exhibited by US Department of Transportation Specification 111 (DOT-111) general service tank cars.

The TSB investigation report R14M0002 was released on June 19, 2015. Among other findings related to the cause of the derailment, the TSB determined "If Class 111 tank cars that do not meet enhanced protection standards transport flammable liquids, there is an ongoing risk of product loss and significant damage to persons, property, and the environment when these cars are involved in accidents."

Research and Engineering Tab

RESEARCH AND ENGINEERING

	($000s)	FTEs
FY 2016 Estimate	$12,313	49
FY 2017 Request	$12,526	49
Increase/Decrease	$213	0

Overview of Request

The funding level for this program activity includes increases for a 1.3 percent pay raise for existing staff and a 1.8 percent non-pay inflation factor. No program changes are planned.

Program Description

The Office of Research and Engineering provides technical support to NTSB accident investigations in all modes of transportation. The office, which includes four divisions and one program area, also conducts safety studies, generates periodic statistical reviews of aviation accidents, and provides medical and toxicology support for investigations in all modes.

Safety Research Division

The Safety Research Division examines accidents, accident trends, and technological changes to identify problems and associated remedial actions that will reduce transportation risk and improve the safety of the transportation system. The division also responds to requests for data analysis and statistical information from other NTSB offices, Board Members, Congress, and the public. Some of these requests require a rapid response to support Board Members and investigators during the initial phase of an accident investigation.

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 support, as well as technical advice and support 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 and cockpit voice recorders, as well as from recorders installed in locomotives, large ships, and some highway vehicles. Staff also examines recorded electronic audio and video information captured by aircraft, ship, train, and support communication systems; provides electronic engineering support for all accident investigation modes in examining communication and control systems; provides time

synchronization to correlate voice, data, and video recorder outputs; uses advanced digital and analog filtering and signal representation techniques to extract critical recorder information; and performs 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 support; 3-D laser scanning and accident reconstruction; photogrammetry and video analysis; and animation and graphics support for all modes. Staff uses computational and visualization technology to provide accurate time-motion histories of the sequence of events, and evaluates data from multiple sources to determine vehicle and occupant motion and the underlying causes of that motion. The division also develops video animations of accident scenarios, evaluates occupant injury mechanisms, and participates in and directs research into other special projects as required.

Medical Factors Division

The RE medical staff advises the NTSB on all medical aspects of investigations, including pathology, toxicology, human performance, and biomechanics. Examples of medical issues addressed include operator incapacitation, night vision, hypoxia, substance impairment, obstructive sleep apnea, and use of over-the-counter medications.

Accomplishments and Workload

Safety Research Division

Safety Research Division staff respond to requests for statistical data from Congress and the public, and develop safety studies and other safety research products.

Integrity Management of Gas Transmission Pipelines in High Consequence Areas (HCA) Safety Study

The NTSB undertook this study because of concerns about deficiencies in the pipeline operators' integrity management programs and the oversight of these programs by the Pipeline and Hazardous Materials Safety Administration (PHMSA) and state regulators—concerns we had also identified in three gas transmission pipeline accident investigations conducted by the NTSB in the last five years. This study used both quantitative and qualitative approaches. Staff combined data analysis with insights on industry practices and inspectors' experiences obtained through interviews and discussions with pipeline operators, state and federal inspectors, industry associations, and other stakeholders.

This study found that, while PHMSA's gas integrity management requirements have kept the rate of corrosion failures and material failures of pipe or welds low, there is no evidence that the overall occurrence of gas transmission pipeline incidents in HCA pipelines has declined. This study identified areas where improvements can be made to further enhance the safety of gas transmission pipelines in HCAs. Areas identified for safety improvements include (1) expanding and improving PHMSA guidance to both operators and inspectors for the development, implementation, and inspection of operators'

integrity management programs; (2) expanding the use of in-line inspection, especially for intrastate pipelines; (3) eliminating the use of direct assessment as the sole integrity assessment method; (4) evaluating the effectiveness of the approved risk assessment approaches; (5) strengthening aspects of inspector training; (6) developing minimum professional qualification criteria for all personnel involved in integrity management programs; and (7) improving data collection and reporting, including geospatial data.

Report adopted: January 27, 2015

Materials Laboratory Division

Materials Laboratory engineers examine parts and wreckage from more than 150 accidents in a typical year, involving all transportation modes.

Natural Gas-Fueled Building Explosion and Resulting Fire
New York, New York
March 12, 2014

Two adjacent multiuse five-story buildings were destroyed by a natural gas-fueled explosion and resulting fire. The buildings were situated on the west side of Park Avenue between East 116th Street and East 117th Street in the East Harlem district of the Borough of Manhattan in New York City. Natural gas accumulated in the building due to a leak at a service tee in a nearby 2-inch-diameter gas service line to the building adjacent to the destroyed buildings. Staff conducted a materials failure analysis of the gas pipeline evidence.

Report adopted: June 9, 2015

Auxiliary Power Unit (APU) Battery Fire, Japan Airlines Boeing 787-8
Boston, Massachusetts
January 7, 2013

Smoke was discovered by cleaning personnel in the aft cabin of a Japan Airlines Boeing 787-8, JA829J, which was parked at a gate at General Edward Lawrence Logan International Airport (BOS), Boston, Massachusetts. Shortly afterward, a mechanic opened the aft electronic equipment bay and found heavy smoke coming from the lid of the APU battery case and a fire with two distinct flames at the electrical connector on the front of the case. Staff conducted a failure analysis of the APU battery assembly and a fire investigation.

Report adopted: November 21, 2014

Washington Metropolitan Area Transit Authority (WMATA) Smoke and Electrical Arcing Accident
Washington, DC
January 12, 2015

Two WMATA Metrorail trains encountered heavy smoke and stopped while traveling in a tunnel near L'Enfant Plaza Station. Passengers of both trains, as well as passengers on the station platforms, were exposed to the heavy smoke. Staff conducted on scene and laboratory investigations and determined that the smoke in the tunnel was generated by thermal damage to about 16 feet of third rail electrical power cable and

insulation, portions of fiberglass cable connector covers, and portions of the fiberglass third rail cover. Staff is conducting a fire investigation, which resulted in the June 8, 2015, NTSB safety recommendation letter calling for WMATA to ensure that all its third rail power cable connector assemblies are installed in accordance with its engineering design specifications. Investigators found improper electrical connections that can allow moisture and contaminants to create electrical short circuiting that could result in fire and smoke events.

Investigative hearing held: June 23-24, 2015

Grade Crossing Accident Involving Metro-North Train and Passenger Vehicle
Valhalla, New York
February 3, 2015

A Metro-North commuter train struck a passenger vehicle at an active highway/railroad grade crossing. As a result of the crash, the vehicle driver and five train occupants died. Staff from the Materials Laboratory evaluated and documented the on-scene fire damage, supported the track reconstruction effort, and conducted flammability studies of the interior materials from an adjacent railcar.

CSX Crude Oil Train Derailment, Subsequent Fire, and Evacuation
Lynchburg, Virginia
April 30, 2014

A CSX Transportation unit oil train derailed in Lynchburg, Virginia, resulting in a fire and evacuation. Thirteen tank cars derailed and there was a release of crude oil into the James River. Staff conducted on scene and laboratory investigations of tank car pieces and rail track pieces.

15-Passenger Van Tire Disablement and Rollover
Lake City, Florida
February 21, 2014

A 2002 Ford 350 XLT 15-passenger van occupied by three adults and seven children, ranging in age from 12 to 16 years old, was traveling northbound on Interstate 75 (I-75) near Lake City, Florida, when it experienced a complete tread belt separation of the left rear tire, and the driver lost control of the vehicle, which departed the roadway onto a grassy embankment and rolled over before coming to a rest on its left side. Staff conducted a failure analysis of the tire with the separated tread in support of an ongoing special investigation report on passenger vehicle tire safety.

Accident Involving Two Freight Trains
Casselton, North Dakota
December 30, 2013

A westbound BNSF grain train derailed 13 cars at milepost 28.5 near Casselton, North Dakota. One of the derailed cars fouled main track 2, and eastbound BNSF petroleum crude oil unit train collided with the derailed car, derailing head-end locomotives and the first 21 cars of the petroleum crude oil unit train, leading to a post-crash fire. Staff continues work on this accident and has conducted a metallurgical evaluation of a failed axle from the fouling car and determined the origin of the failure. Laser-scanned reconstruction of the fracture surfaces enabled finite element modeling to

verify the stresses in the axle. Staff also evaluated the flammability characteristics of the crude oil.

Upgrades to Laboratory Technology

The Materials Laboratory technological capability has grown steadily over the past several years. In FY 2014, some of the larger capital purchases included a computed tomography nanofocus X-ray system (CT X-ray), a wavelength dispersive spectrometer (WDS), and a mapping microhardness tester. This equipment was fully in use in FY 2015.

The newly installed CT X-ray system allows the lab to create three-dimensional (3D) X-ray tomographs of a part, which allows the lab to image defects in materials or components before any destructive testing. Although the instrument is just coming online, it will allow the lab to image defects in microcircuit devices and other electronic components such as solenoids, switches, breakers, and batteries. Additionally, the technology will enable defect evaluation in hydraulic and fuel hoses, valves, heat exchangers, and polymer composite materials.

The WDS allows elemental chemical microanalysis using the electron source from the scanning electron microscope. Typically, the WDS enables elemental compositional spectra and maps to be created for a sample. For example, the laboratory recently analyzed an aluminum airplane propeller failure that occurred when a portion of the blade fractured and separated from the propeller during flight. The fracture occurred because of metal fatigue, which had initiated at an unusual oxide inclusion defect from the aluminum mill. The WDS was used to determine the compositional nature of the inclusion. Work is ongoing to determine how such defects went undetected in the propeller.

The mapping microhardness tester enables the laboratory to create hardness maps on a material sample. For example, when analyzing structural welds in pipelines, hardness maps of the weld cross section allow metallurgists to understand the physical metallurgy of the welding process. The mapping microhardness tester has been used to analyze welds in failed aircraft landing gear and engine mount components.

Vehicle Recorder Division

In a typical year, the Vehicle Recorder Laboratory completes more than 600 readouts, transcripts, and studies in support of aviation, rail, marine, and highway investigations. This division is often involved in forums and symposiums, as well.

Emerging Flight Data and Locator Technology
Forum and Recommendation Letter
October 7, 2014

This forum focused on highlighting effective flight data and locator technologies currently being used, exploring technologies in development, and determining what policy, industry, and technological impediments need to be addressed. Forum panelists included those with expertise in the development, implementation, and deployment of innovative flight data and locator technologies. Vehicle Recorder Division staff planned and organized the forum and served on the forum's technical panel. As a result of safety issues identified in this forum, Vehicle Recorder Division staff drafted eight safety recommendations to address aircraft position reporting, more effective location of

underwater wreckage, supplemental methods to recover flight data, and cockpit image recording systems. These recommendations were subsequently adopted by the Board and have helped to frame discussions in the international community as efforts are underway to address these issues.

Recommendations issued: 8
Report adopted: January 22, 2015

Organizational Factors in Metro-North Railroad Accidents
Special Investigation Report

A Board Meeting was convened to discuss the special investigation report on five Metro-North railroad accidents that had occurred between May 2013 and March 2014. Vehicle Recorder Division engineers completed factual reports on locomotive event recorders for several of these accidents. In addition, they downloaded maintenance recorders, reviewed image data, and processed personal electronic devices. This work helped staff identify safety issues.

Report adopted: November 20, 2014

Gulfstream G-IV Runway Overrun
Bedford, Massachusetts
May 31, 2014

On May 31, 2014, about 2140 eastern daylight time, a Gulfstream Aerospace Corporation G-IV, N121JM, registered to SK Travel, LLC, and operated by Arizin Ventures, LLC, crashed after it overran the end of runway 11 during a rejected takeoff at Laurence G. Hanscom Field in Bedford, Massachusetts. Division engineers recovered and analyzed information from the cockpit voice recorder, flight data recorder, and quick access recorder (QAR). Staff's extensive efforts revealed that flight crewmembers had routinely omitted complete flight control checks before 98 percent of their last 175 flights.

Report adopted: September 9, 2015

Commercial Space Launch Accident
Koehn Dry Lake, California
October 31, 2014

The SpaceShipTwo reusable suborbital rocket experienced an in-flight anomaly during a rocket-powered test flight, resulting in a loss of control of the vehicle. The vehicle broke up into multiple pieces and impacted terrain over a 5-mile area near Koehn Dry Lake, California. In addition to providing on-scene support, staff led group efforts to document extensive data and video recordings; this resulted in three factual reports.

Report adopted: July 28, 2015

Crash of National Air Cargo Boeing 747-400
Bagram Air Force Base, Afghanistan
April 29, 2013

On April 29, 2013, about 1527 local time, a Boeing 747-400 BCF, N949CA, operated by National Air Cargo, Inc., dba National Airlines, crashed shortly after takeoff from the

Bagram Air Base, Bagram, Afghanistan. Division engineers recovered and analyzed information from the airplane's flight data recorder and cockpit voice recorder. Engineers also performed extensive analysis on surveillance videos and time correlated the different sources of recorded information.

Report adopted: July 14, 2015

Collision Between Bulk Carrier *Summer Wind* and the *Miss Susan* Tow
Houston Ship Channel, Texas
March 22, 2014

On March 22, 2014, about 1235 central daylight time, the 607-foot-long bulk carrier *Summer Wind* with a Houston pilot on board collided with the 670-foot-long *Miss Susan* tow (a 70-foot-long towing vessel transporting two 300-foot-long tank barges loaded with fuel oil) in the Houston Ship Channel, Lower Galveston Bay, Texas. A staff member launched to the scene to recover information from the voyage data recorder, the pilot's laptop, a global positioning unit (GPS), and cell phone records.

Report adopted: June 9, 2015

Chicago Transit Authority Train Collides with Bumping Post and Escalator at O'Hare Station
Chicago, Illinois
March 24, 2014

Chicago Transit Authority train No. 141 collided with the bumping post near the end of the center pocket track at O'Hare Station, then rode over the bumping post and up an escalator at the end of the track. Vehicle Recorder Division engineers worked on extensive surveillance video and an event recorder recommendation to address the lack of recorded data.

Report adopted: April 28, 2015

Alaska State Troopers Helicopter Crash
Talkeetna, Alaska
March 30, 2013

On March 30, 2013, a Eurocopter AS 350 B3 helicopter, operated by the Alaska State Troopers, crashed during a search and rescue operation near Talkeetna, Alaska. Vehicle Recorder Division engineers downloaded information from multiple recording devices, including a cockpit image recorder. Division engineers' efforts to document pilot actions and extract flight data from the video were crucial to the NTSB's investigation.

Report adopted: November 5, 2014

WMATA Smoke and Electrical Arcing Accident
Washington, DC
January 12, 2015

Two WMATA Metrorail trains encountered heavy smoke and stopped while traveling in a tunnel near L'Enfant Plaza Station. Passengers of both trains, as well as passengers on the station platforms, were exposed to the heavy smoke. Staff documented extensive sets of event recorder data for the accident and subsequent

testing data sets. They also analyzed and documented station surveillance videos. In addition, staff is supporting an analysis of the communications systems being used at the time of the accident and served on the technical panel as part of the investigative hearing held on June 23, 2015.

Investigative hearing held: June 23-24, 2015

Collision of an Amphibious Vehicle and Motorcoach
Seattle, Washington
September 24, 2015

On September 24, 2015, A Duck Tour amphibious vehicle was involved in a collision with a motorcoach; four motorcoach occupants died. Division staff launched to the scene and recovered electronic control modules and on-board video recordings.

Amtrak Passenger Train Derailment
Philadelphia, Pennsylvania
May 12, 2015

Amtrak train No. 188 derailed at milepost 81.62 near Shore Interlocking. This is an area with a high degree curve with a permanent speed restriction of 50 mph. A staff member launched to support on-scene activities and download locomotive event recorders. Engineers also processed forward-facing video, recovered surveillance video, portable electronic devices (PED), and phone records from this event.

MV *Conti Peridot* and *Carla Maersk* Collision
Morgan's Point, Texas
March 9, 2015

The outbound Danish-registered chemical tanker *Carla Maersk* collided head-on with the inbound Liberian registered freighter M/V *Conti Peridot* at Light 86 in the upper Houston Ship Channel, near Morgan's Point, Texas. Engineers launched to assist in the investigation and downloaded data recorders and other devices from the two ships.

T/V *Chembulk Houston* and M/V *Monte Alegre* Collision
Houston, Texas
March 5, 2015

The tanker vessel *Chembulk Houston* and the container vessel *Monte Alegre* collided in the vicinity of Houston Ship Channel Light 40. Engineers launched and downloaded multiple devices from both vessels and processed PEDs.

Delta MD-88 Runway Excursion at LaGuardia Airport
New York, New York
March 5, 2015

Delta Air Lines flight 1086, an MD-88, exited the left side of the runway after landing and came to rest with its nose on an embankment. Staff received the flight data recorder, cockpit voice recorder, and a quick access recorder from the event aircraft and evaluated four flight data recorders and a QAR from other aircraft to compare data sets.

Grade Crossing Accident involving a Metrolink Train and Truck
Oxnard, California
February 24, 2015

A Metrolink commuter train struck a 1-ton truck towing a trailer near an active highway/railroad grade crossing. The division's staff launched to support on-scene activities. In addition, engineers downloaded and processed event recorders, locomotive forward-facing video, and other electronic devices recovered from the wreckage site.

Grade Crossing Accident involving Metro North Train and Passenger Vehicle
Valhalla, New York
February 3, 2015

A Metro-North commuter train struck a passenger vehicle at an active highway/railroad grade crossing. As a result of the crash, the vehicle driver and five train occupants received fatal injuries. Staff launched to assist, and downloaded and read out several event recorders and performed follow-up sound spectrum work.

Engineering Support

Staff from the Vehicle Recorder Division supported several activities related to the creation of international recording standards and supported informational and advocacy efforts for the recommendations issued. Engineers participated in working groups for the development of standards for underwater-locating device brackets, operational specification performance parameters for triggered data, and standards for rail image recordings. The division also assisted in supporting the issued recommendations by responding to media and congressional inquiries on the subject, and preparing the Chairman for Capitol Hill testimony, and participation in the International Civil Aviation Organization High Level Safety Conference.

Upgrades to Laboratory Technology

To meet the division's expanding needs to work with a wide variety of recorded information, in FY 2014 and FY 2015, the NTSB invested in further enhancements to the Vehicle Recorder Division's core set of investigative tools. For example, the Vehicle Recorder Division is currently upgrading its primary tool for data review and analysis to more efficiently process onboard image recorder data, rail event recorder data and tape-based flight recorder data, and to update core functionality and communications, to optimize parameter extraction algorithms, and to develop a plan to migrate the legacy plotting function to a current open-source plotting library.

Further, the Vehicle Recorder Division currently uses two separate software tools to conduct transcription and audio sound spectrum analysis on audio recordings recovered from devices such as cockpit voice recorders, video cameras, and air traffic control communications. Division engineers have used the transcription tool to document all audio recordings over the last decade, including the cockpit voice recorder from the 2013 Asiana Airlines accident in San Francisco. Engineers have used the current sound spectrum software tool in numerous investigations to extract such critical information as engine data. In FY 2014 and FY 2015, the NTSB invested in enhancements to these tools to refine capabilities for performing detailed and accurate transcription and audio sound spectrum analysis. These efforts will also begin the integration of both tools into one application to provide the capability of reviewing transcripts as well as time and

frequency content of audio information, permit the measurement and documentation of key parameters, and support the construction of algorithms for the advanced processing of audio data.

Vehicle Performance Division

In a typical year, the Vehicle Performance Division produces more than 50 studies and animations, launches to accident sites to acquire evidence for performance evaluations, and participates in the development of safety recommendations included in modal accident reports.

Gulfstream G-IV Runway Overrun
Bedford, Massachusetts
May 31, 2014

While attempting takeoff, the airplane did not lift off the runway, but instead ran off the end of the runway and crashed. A staff member analyzed recorded data to help identify the reason for the accident and used simulations to evaluate scenarios considering potential pilot actions that might have prevented the accident. Vehicle Performance staff members used the recorded data to develop an animation used at the Board Meeting to aid in explaining the circumstances of the accident.

Report adopted: September 9, 2015

Multivehicle Work Zone Crash on Interstate 95
Cranbury, New Jersey
June 7, 2014

Traffic had slowed on the New Jersey Turnpike because of construction. A truck-tractor and semitrailer combination vehicle operated by Wal-Mart Transportation struck the rear of a Mercedes-Benz Sprinter limo van. The two vehicles moved forward and were involved in secondary impacts with other vehicles that were slowed in the traffic queue. A staff member used computer simulation tools to determine speed and vehicle position that were consistent with the physical evidence. The data calculated from the simulation work were used by other Vehicle Performance staff members to develop an animation, which was used at the Board Meeting to aid in explaining the circumstances of the accident.

Report adopted: August 11, 2015

Commercial Space Launch Accident
Koehn Dry Lake, California
October 31, 2014

The SpaceShipTwo reusable suborbital rocket experienced an in-flight anomaly during a rocket-powered test flight, resulting in a loss of control of the vehicle. The vehicle broke up into multiple pieces and impacted terrain over a 5-mile area near Koehn Dry Lake, California. A staff member evaluated the aerodynamic loads on the vehicle during the sequence of events, and calculated the flight path of the vehicle to determine whether it had stayed within the zone of operations approved by the Federal Aviation Administration (FAA).

Report adopted: July 28, 2015

Crash of National Air Cargo Boeing 747-400
Bagram Air Force Base, Afghanistan
April 29, 2013

In support of the Office of Aviation Safety investigation of the crash of a National Air Cargo Boeing 747-400 at Bagram Air Force Base on April 29, 2013, a staff member analyzed data from the flight data recorder and cockpit voice recorder, along with airplane systems and aerodynamic data from Boeing, and damage to various components in the wreckage, to determine the sequence of events in the accident.

Report adopted: July 14, 2015

Truck-Tractor Double Trailer Median Crossover Collision With Motorcoach
Orland, California
June 7, 2014

On April 10, 2014, about 5:40 p.m., a 2007 Volvo truck-tractor in combination with double trailers, operated by FedEx Freight, Inc., was traveling southbound in the right lane of Interstate 5 (I-5) in Orland, California. At the same time, a 2014 Setra motorcoach, operated by Silverado Stages, Inc., was traveling northbound on I-5 in the right lane. In the vicinity of milepost 26, the combination vehicle moved into the left lane, entered the 58-foot-wide center median, and traveled into the northbound traffic lanes of I-5. The truck-tractor collided with a 2013 Nissan Altima four-door passenger car, which then rotated counterclockwise and departed the highway to the east. The truck-tractor continued moving south in the northbound lanes and collided with the front of the motorcoach, and both vehicles partially departed the highway to the east. A postcrash fire ensued. A staff member used computer simulation tools to reconstruct the speeds and vehicle positions that were consistent with the physical evidence. The data calculated from the simulation work were used to develop an animation, which was used at the Board Meeting to aid in explaining the circumstances of the accident.

Report adopted: July 14, 2015

Natural Gas-Fueled Building Explosion and Resulting Fire
New York, New York
March 12, 2014

Two adjacent multiuse five-story buildings were destroyed by a natural gas-fueled explosion and resulting fire. The buildings were situated on the west side of Park Avenue between East 116th Street and East 117th Street in the East Harlem district of the Borough of Manhattan in New York City. Natural gas accumulated in the building due to a leak at a nearby gas service tee. Staff conducted finite element modeling of the gas pipeline fusion joint to evaluate the effects of various loading scenarios.

Report adopted: June 9, 2015

Collision Between Bulk Carrier *Summer Wind* and the *Miss Susan* Tow
Houston Ship Channel, Texas
March 22, 2014

On March 22, 2014, about 1235 central daylight time, the 607-foot-long bulk carrier Summer Wind with a Houston pilot on board collided with the 670-foot-long Miss Susan tow (a 70-foot-long towing vessel transporting two 300-foot-long tank barges loaded with fuel oil) in the Houston Ship Channel, Lower Galveston Bay, Texas. Staff members created an animation used at the Board Meeting to help explain the circumstances of the accident.

Report adopted: June 9, 2015

Chicago Transit Authority Train Collides with Bumping Post and Escalator at O'Hare Station
Chicago, Illinois
March 24, 2014

Chicago Transit Authority train No. 141 collided with the bumping post near the end of the center pocket track at O'Hare Station, then rode over the bumping post and up an escalator at the end of the track. Staff members created an animation used at the Board Meeting to help explain the circumstances of the accident. The animation was coupled with surveillance video and a still photograph of the final position of the train after the crash.

Report adopted: April 28, 2015

Alaska State Troopers Helicopter Crash
Talkeetna, Alaska
March 30, 2013

On March 30, 2013, a Eurocopter AS 350 B3 helicopter, operated by the Alaska State Troopers, crashed during a search and rescue operation near Talkeetna, Alaska. A staff member evaluated the motion of the helicopter, which was equipped with an onboard recording system that included video showing the pilot and instruments as well as the aircraft's position (based on GPS) and orientation. Staff correlated the recorded data with the video of the instruments during the accident sequence. Other Vehicle Performance staff members subsequently developed an animation with voiceover

narration that was used at the Board Meeting to aid in explaining the circumstances of the accident.

Report adopted: November 5, 2014

Commercial Vehicle Onboard Video Systems
Highway Safety - Safety Report

A Vehicle Performance Division staff member was involved in the development of this Highway report, which highlighted the benefits and limitations of commercial vehicle onboard video systems that have been encountered in accident investigations. These systems record video either continuously or as the result of a triggering event, and many commercial vehicles, such as school buses and motorcoaches, are equipped with onboard video systems. After a crash, the NTSB uses information from onboard video systems to help determine the probable cause of the crash, to make recommendations to prevent future crashes, and to reduce loss of life and injury when crashes do happen. The report reviewed past crashes of vehicles equipped with both continuous and triggered video systems and highlighted two recent crash investigations in which continuous video systems were installed on commercial vehicles: a 2012 truck and school bus collision in Port St. Lucie, Florida, and a 2011 crash involving a motorcoach and a truck-tractor semitrailer in Kearney, Nebraska. The report made three recommendations and included a Safety Alert emphasizing these recommendations for improving the utility of commercial vehicle onboard video systems.

Report adopted: March 3, 2015

WMATA Smoke and Electrical Arcing Accident
Washington, DC
January 12, 2015

Two WMATA Metrorail trains encountered heavy smoke and stopped while traveling in a tunnel near L'Enfant Plaza Station. Passengers of both trains, as well as passengers on the station platforms, were exposed to the heavy smoke. One division staff member is directing a review of the civil engineering state of good repair of the WMATA tunnel system and also served as a panelist for the investigative hearing for the accident. A second division staff member served as the hearing officer, and a third also served as a panelist for the investigative hearing for the accident.

Investigative hearing held: June 23-24, 2015

Amtrak Passenger Train Derailment
Philadelphia, Pennsylvania
May 12, 2015

Amtrak train No. 188 derailed at milepost 81.62 near Shore Interlocking. This is an area with a high degree curve with a permanent speed restriction of 50 mph. Three division staff members launched to the accident scene to perform laser scanning and mapping of the accident site and vehicles, and to evaluate the structural crashworthiness of the railcars.

Accident Involving Two Freight Trains
Casselton, North Dakota
December 30, 2013

A westbound BNSF grain train derailed 13 cars at milepost 28.5 near Casselton, North Dakota. One of the derailed cars fouled main track 2, and eastbound BNSF petroleum crude oil unit train collided with the derailed car, derailing head-end locomotives and the first 21 cars of the petroleum crude oil unit train, leading to a post-crash fire. One division staff member is using finite element analysis to evaluate a fracture in an axle from the grain train, and a second Vehicle Performance Division staff member used vehicle simulations to evaluate train braking performance.

A press release announcing that the Train Braking Study was publicly available in the docket for the Casselton accident was issued on July 23, 2015.

Passenger Vehicle Tire Safety
Highway Safety - Symposium
December 9, 2014

The symposium gathered information and expert opinion on the causes of tire disablement, the role of safety recalls and consumer awareness, ongoing safety-related initiatives, and advances in tire technology. The primary focus of the symposium was on passenger vehicle and light truck tires, although many issues apply to all pneumatic tires. A division staff member participated in the two-day symposium on the panel discussing vehicle dynamics. The NTSB published a transcript of the symposium, and may use information gathered from the symposium to develop safety recommendations that, if implemented, could reduce the incidence of tire disablement-related crashes.

Highway Safety – Special Investigations

Vehicle Performance Division staff members supported two Highway Safety special investigations through simulations of vehicle performance. The first investigation was focused on the use of forward collision avoidance technology to help prevent rear-end crashes. The second investigation evaluated the causes and effects of tire blowouts. In addition to performing simulations, staff used the newly acquired highway driving simulator to put drivers into the situations. The TruckSim and CarSim software incorporate the critical vehicle dynamics found in accident situations.

Wet Runway Stopping Performance

Vehicle Performance Division Division staff are evaluating the runway friction and stopping performance for two accidents involving Embraer jets that were unable to stop on wet runways. The first accident involved an Embraer 505 that ran off the end of the runway in Conroe, Texas, on September 19, 2014. The second accident involved an Embraer 500 that ran off the end of the runway in Sugar Land, Texas, on November 21, 2014. The NTSB has investigated a number of accidents that suggest that stopping performance on wet runways may not be as good as predicted using FAA guidelines. On January 21, 2015, the FAA issued two draft Advisory Circulars dealing with takeoff and landing performance; Vehicle Performance Division staff drafted the agency response to those documents, which was sent on March 4, 2015. The FAA issued a Safety Alert for Operators on August 11, 2015, noting that advisory data for wet runway landings may not provide a safe stopping margin. The FAA has also tasked an Aviation Rulemaking Advisory

Committee with evaluating wet runway stopping performance. The results of the NTSB accident investigations will help to inform the FAA's evaluations.

Laser Scanning to Document Accident Scenes and Vehicles

Vehicle Performance Division staff continue to support the documentation of accident scenes and vehicles using NTSB's laser scene scanners. The scanning technology creates a permanent record of 3D position data of physical objects, along with photographically based color information at each scanned point. The scanned data is used to make accurate measurements of the accident site geometry, vehicle positions and orientations, sight lines, and damage to vehicles. These measurements are used to reconstruct the accident, identify obstructions blocking visibility, evaluate survivable space and options for egress, and form the basis for accurate animations after the fact. The scanned data allows for measurements to be made in the computer at any time, and between any objects, recorded in the scans (even if the scene or vehicles have been completely changed, and even if there was no plan to make such a measurement at the time the scans were performed). The scans themselves can also be used to provide visualizations, either interactively through a 3D graphics program or through simple animated fly-through videos. NTSB staff scanned the accident scene and vehicles for a prison bus that had run off the road and collided with a train in Penwell, Texas, on January 14, 2015; a collision between a passenger train and a sport utility vehicle at a grade crossing in Valhalla, New York, on February 3, 2015; the collision of a passenger train and a truck in Oxnard, California, on February 24, 2015; the Amtrak train derailment in Philadelphia, Pennsylvania, on May 12, 2015; a multiple-vehicle highway accident in Chattanooga, Tennessee, on June 25, 2015; and the collision of a sightseeing amphibious vehicle and a motorcoach in Seattle, Washington, on September 24, 2015. The laser scanner is also being used to evaluate the visibility from the cockpits of airplanes in two midair collisions: one involving an F-16 and Cessna 150 in Moncks Corner, South Carolina, and the second involving a Sabreliner and a Cessna 172 in San Diego, California.

Medical Factors Division

Medical Factors Division staff participated in numerous accident investigations in all transportation modes, evaluating and addressing medical issues through formal factual and analytical reports, safety recommendations, coordination with other agencies, and made more than 10 formal presentations to the NTSB and external audiences. Staff completed analyses of medical information including autopsy and toxicology findings for 100 general aviation accidents and participated in major accident investigations and safety studies as outlined below.

Multivehicle Work Zone Crash on Interstate 95
Cranbury, New Jersey
June 7, 2014

Traffic had slowed on the New Jersey Turnpike because of construction. A truck-tractor and semitrailer combination vehicle operated by Wal-Mart Transportation struck the rear of a Mercedes-Benz Sprinter limo van. The two vehicles moved forward and were involved in secondary impacts with other vehicles that were slowed in the traffic queue. Medical Factors Division staff participated with Survival Factors Division staff

in the evaluation of the emergency medical response and the development of two medical safety recommendations adopted by the Board.

Report adopted: August 11, 2015

Safety of Air Show Pilots with Medical Conditions Affecting Their *g*-tolerance

Based on a series of fatal accidents involving air show pilots (two of which occurred during air shows), Medical Factors Division staff developed a recommendation to the FAA recommending that pilots with known medical conditions that could affect their *g*-tolerance not be allowed to perform low altitude aerobatic maneuvers in front of the public.

Recommendation issued: June 23, 2015

WMATA Smoke and Electrical Arcing Accident
Washington, DC
January 12, 2015

Two WMATA Metrorail trains encountered heavy smoke and stopped while traveling in a tunnel near L'Enfant Plaza Station. Passengers on both trains, as well as passengers on the station platforms, were exposed to the heavy smoke. Medical Factors Division staff has worked with the survival factors group chairman to evaluate the injuries of train occupants and rescue personnel.

Investigative hearing held: June 23-24, 2015

Amtrak Passenger Train Derailment
Philadelphia, Pennsylvania
May 12, 2015

Amtrak train No. 188 derailed at milepost 81.62 near Shore Interlocking, an area with a high degree curve with a permanent speed restriction of 50 mph. A Medical Factors Division staff member launched on scene to begin two aspects of the medical investigation: (1) to evaluate the train engineer for medical conditions or medications that may have contributed and (2) to describe and evaluate the complex emergency medical response to this mass casualty incident, which necessitated nearly 200 patients to be transported to area hospitals.

MV *Conti Peridot* and *Carla Maersk* Collision
Morgan's Point, Texas
March 9, 2015

The outbound Danish-registered chemical tanker *Carla Maersk* collided head-on with the inbound Liberian registered freighter M/V *Conti Peridot* at Light 86 in the upper Houston Ship Channel, near Morgan's Point, Texas. Medical Factors Division staff has worked with the human performance team to evaluate whether medical conditions or the use of impairing medications affected the performance of the crewmembers or vehicle traffic service staff.

Grade Crossing Accident Involving Metro-North Train and Passenger Vehicle
Valhalla, New York
February 3, 2015

A Metro-North commuter train struck a passenger vehicle at an active highway/railroad grade crossing. As a result of the crash, the vehicle driver and five train occupants died. Medical Factors Division staff launched to the scene and began an evaluation of the mechanisms of injury to occupants and analyzed medical information related to the vehicle driver.

Tractor Trailer vs. Medium Size Bus
Davis, Oklahoma
September 26, 2014

A truck-tractor crossed the center median of Interstate 35 and collided with a mid-sized bus on the southbound side of the highway. Four occupants of the bus were fatally injured. Medical Factors Division staff worked extensively with Human Performance Division staff regarding medical conditions and substance use by the truck driver.

Training Center Tab

TRAINING CENTER

	($000s)	FTEs
FY 2016 Estimate	$915	4
FY 2017 Request	$931	4
Increase/Decrease	$16	0

Overview of Request

The funding level for this program activity includes increases for a 1.3 percent pay raise for existing staff and a 1.8 percent non-pay inflation factor. No program changes are planned.

Program Description

The NTSB Training Center is an organizational component of the Office of the Managing Director. Budget exhibits have historically shown these activities as program resources outside the policy and direction line that incorporates the Office of the Managing Director. The Training Center is responsible for training our partners in investigations as well as NTSB staff, developing training plans, and overseeing the development and implementation of workforce development programs.

Accomplishments and Workload

The Training Center is continuing to upgrade its evaluation of courses to further refine the offerings and improve instruction in all areas. We continue to offer courses in investigative skills, specifically targeting processes, procedures, and technical issues that are critical to the NTSB mission of accident investigation. These courses are generally open only to NTSB investigative and support staff.

FY 2015 was the agency's second full year utilizing the Talent Management System (TMS), which was introduced in FY 2013 as a means of scheduling, approving, providing, and evaluating all staff training. The TMS tracks and maintains a permanent record of all staff education and training activities, and provides a valuable tool for developing and tracking staff competencies and skills. It is used as an on-line training portal, as well as a course evaluation tool.

Full-time training officers and advisers coordinate the development of group training by conducting needs analyses for each office and focusing on longer term training requirements. Workforce development course offerings undergo continuous evaluation to adapt to the changing needs and priorities of the NTSB. The skills developed and enhanced by workforce development training are highly transferable and add significant value to the investigative processes, as well as mission support functions. Plans for the Training Center include the following:

- ***Provide General Aviation forums/symposia.*** Several years ago, the Training Center developed and hosted a Volunteer Pilots Safety Stand Down Day. The success of this safety seminar prompted the Training Center to develop

and present seminars on a regular basis. The NTSB partners with the Federal Aviation Administration (FAA) and other interested groups to develop programs that cover the safety, regulatory, and private aspects of general aviation safety. In FY 2015, the Training Center presented two general aviation safety seminars, one addressing technically advanced aircraft and the other addressing instructional accidents. Because these seminars have been so well received in the general aviation community, our goal for FY 2016 will be to hold four seminars, the first of which will address air traffic control. Each seminar offers FAA WINGS program credit. We are examining the possibilities for webcasting or presenting these seminars at other locations.

Future safety seminars will continue to concentrate on areas of general aviation operations, which have the highest fatality rates. Potential topics include aircraft emergencies, substance impairment, aviation weather, and accident survivability. As appropriate, we continue to partner with the FAA and such private organizations as the Aircraft Owners and Pilots Association, the Experimental Aircraft Association, and the Society of Aviation and Flight Educators.

- ***Increase emphasis on technical training for NTSB investigators.*** Such courses include root cause analysis, system safety fundamentals, mobile digital forensics for investigators, interviewing techniques (basic, cognitive, and advanced), composite materials, unmanned aerial vehicles, commercial space accident investigation, accident site photography, experimental aircraft accident investigation, technically advanced aircraft training, experimental amateur built aircraft construction, fire and explosion investigation, accident investigation, and tailored accident report writing. In addition, the workforce development program will continue to offer courses in the areas of lead investigator training, communication, time management, project management, and computer skills.
- ***Roll out new initiative on supervisory skills and training.*** With increasing numbers of new supervisors at the NTSB, the Training Center developed a program to provide comprehensive supervisory training.
- ***Evaluate and update current courses, and develop courses to produce new revenue streams.*** The Training Center is examining the possibilities for expanding public course offerings in other modes, such as highway and pipeline, as well as new investigative skills courses, such as fire and explosion investigation, and unmanned aerial vehicles. A course on working with the media at a transportation accident site has been very successful. It is offered both at the Training Center and on a limited basis at other locations.
- ***Evaluate the use of virtual learning platforms for internal training.*** The Training Center is examining virtual learning platforms and virtual training courses that would allow NTSB field investigators to attend and actively participate in classes and events remotely, thereby saving high travel costs for onsite attendance. Our goal is to present a pilot program in early 2016 and deploy an agency-wide virtual training platform by mid-2016.
- ***Continue to increase awareness of the NTSB and its mission by offering TWA 800 briefings to other federal agencies and groups involved with transportation safety and security.***

- ***Enter training partnership with other Federal Agencies.*** The NTSB Training Center is working with several other Federal Agencies to develop tailored and comprehensive courses in accident investigation for them. Agencies that we are currently engaged in discussions with are the following:
    - US Air Force Reserve
    - US Coast Guard (Aviation)
    - US Army National Guard
    - US Department of Energy
    - FBI Civilian Aviation Security Program
- **Continue and expand offsite class offerings.** The Training Center has successfully deployed two classes at offsite locations; Managing Communications Following a Major Transportation Accident and Accident Investigation for Rail Professionals. We plan to continue offering these on a limited, but slightly expanded basis. We are also examining our other classes as to their suitability for offsite presentation.

FY 2015 Courses

Courses With Public Enrollment	Students
Aircraft Accident Investigation, AS101 (2 courses)	94
Accident Investigation Orientation for Aviation Professionals, AS301 (2 courses)	38
Accident Site Photography, IM300S	25
Cognitive Interviewing Series, IM401S (2 courses)	76
Managing Communications Following an Aircraft Accident or Incident, PA302	68
Managing Communications Following a Major Transportation Accident, PA303 (4 courses)	184
Accident Investigation for Rail Professionals, RPH301	79
NTSB Investigation Process, RPH303 (2 courses)	107
Passenger Rail Conference - Planning for a Disaster: Passenger and Family Assistance, TDA701	22
Transportation Disaster Response - Family Assistance, TDA301 (2 courses)	63
Mass Fatality Incidents for Medicolegal Professionals, TDA403	24
Safety Seminar - The Benefits and Challenges of Technically Advanced Aircraft	77
Safety Seminar Flight Instruction	46
Helicopter Accident Investigation, AS103	26
NTSB Investigations: What Legal Professionals Need to Know GC101	98
Investigating Human Fatigue Factors IM303	37
Total (October 1, 2014 – September 30, 2015)	**1,064**

Courses Conducted Exclusively for NTSB Employees	Students
Accident/Incident Report Writing	17
Adapting to Change (PDP Competency)	8
Appropriations Law I	22
Appropriations Law II	19
AS-20 Initial Training	5
Audio Books	150
Basic Interviewing	8
Cessna G-1000 Training 1	4
Comprehensive Project Management	13
Confined Space Entry	17
Contracting Officer Representative	22
Crane Operator	12
Forklift Operator	12
Forklift Train the Trainer	2
General Aviation Program	16
Hazwoper Refresher	17
Influencing and Negotiating Skills (PDP Competency)	9
Integrated Appropriations Law Seminar I	17
Integrated Appropriations Law Seminar II	21
Introduction to Advanced Composite Aircraft Materials	13
Leadership Development Series: SES – How to Get There and Succeed Once There	22
Leadership Development Series: SES & ECQs – Preparing for The SES	22
Media Training for NTSB Investigators	22
Microsoft On-line	78
NTSB Advocacy Training	15
NTSB Ethics Training	418
OSHA 6000	16

Courses Conducted Exclusively for NTSB Employees	Students
Project Management	27
Retirement On-Line	30
Root Cause Analysis	27
Structured Development Training	8
System Safety Fundamentals	18
Telework for Supervisors	13
Time Management	17
Trench Safety	7
Turning Technologies Use of Interactive Presentations	19
Unmanned Aerial Vehicles	8
WebTA WebEx (Time and Attendance System) – Employees	24
WebTA WebEx – (Time and Attendance System) Supervisors	16
WebTA WebEx – (Time and Attendance System) Timekeepers	13
Total (October 1, 2014 – September 30, 2015)	**1,224**

Administrative Law Judges Tab

ADMINISTRATIVE LAW JUDGES

	($000s)	FTEs
FY 2016 Estimate	$2,436	10
FY 2017 Request	$2,479	10
Increase/Decrease	$43	0

Overview of Request

The funding level for this program activity includes increases for a 1.3 percent pay raise for existing staff and a 1.8 percent non-pay inflation factor. No program changes are planned.

Program Description

The NTSB serves as the "court of appeals" for airmen, mechanics, or mariners whenever the Federal Aviation Administration (FAA) or the US Coast Guard take a certificate action. The agency's administrative law judges hear, consider, and issue initial decisions on administrative appeals regarding FAA aviation enforcement actions. Included are appeals of 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 airmen certificates
- Certain FAA civil penalty orders issued against individuals, pilots, flight engineers, mechanics, or repairmen 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.

The NTSB currently has three judges assigned to Headquarters in Washington, DC (one of whom is a full-time teleworker in Arlington, Texas), and one assigned to the Denver, Colorado, office. They hold hearings based on their circuit assignments. The Pilot's Bill of Rights, Public Law No. 112-53 (August 3, 2012), requires judges to apply the Federal Rules of Evidence and Federal Rules of Civil Procedure to their proceedings. Either the certificate holder or the FAA can appeal a judge's decision in these cases to the five-member Board. The Board's review on appeal of an administrative law judge's decision is based on the record of the proceeding, which includes hearing testimony (transcript), exhibits, the judge's decision, and appeal briefs submitted by the parties.

The FAA has the right to appeal the Board's decisions to the US Court of Appeals when it determines that the decisions "will have a significant adverse impact" with

respect to aviation safety duties and powers designated to be carried out by the FAA. Under the Pilot's Bill of Rights, airmen and mechanics now have the right to appeal all adverse Board decisions to a US District Court or to a US Court of Appeals. The District Court's review of the Board's decision is based on the evidence from the record before the Board, including hearing testimony, transcripts, exhibits, decisions, and briefs submitted by the parties. The Court of Appeals has the power to affirm, modify, or set aside the decision, in whole or in part, or, if the need is determined, to order further proceedings by the Board. The decision of the Court of Appeals is subject to review by the US Supreme Court on writ of certiorari.

Section 716 of the Aviation Investment and Reform Act for the 21st Century, Public Law 106-181 (April 5, 2000), expanded the NTSB's jurisdiction to include, upon petition by the affected certificate holder, reviews of FAA designations of safety enforcement actions as emergencies that require the order to be effective immediately. The Board has delegated this review authority to its administrative law judges. However, in the event of an appeal to the Board from a law judge's decision on the merits of the emergency or other immediately effective order, the Board may, at its discretion, note in its order disposing of the appeal its views on the law judge's ruling on the petition, and such views serve as binding precedent in all future cases. The Pilot's Bill of Rights provides for substantive independent and expedited review by the US District Court of any decision by the FAA Administrator to make such an order effective immediately.

Marine certificate actions are heard first by the Coast Guard administrative law judges and may be appealed to the Commandant of the Coast Guard. The ruling of the Commandant may then be appealed to the NTSB. The same higher appellate process is followed for marine certificate actions.

Accomplishments and Workload

FY 2015 Activities

The Office of Administrative Law Judges accomplished the following:

- Met its goal of providing notices of hearings at least 30 days prior to the hearing in 100 percent of non-emergency cases.
- Met its goal of conducting hearings and rendering decisions in emergency cases within 30 days of the filing of an appeal; the office rendered decisions on 54 emergency appeals and held 13 emergency hearings.
- Made rulings on 20 petitions challenging the FAA Determination that an Emergency Exists in Air Safety within the 5-day statutory timeframe.
- Issued 124 decisions and held 18 hearings.
- Processed 207 new appeals and processed 20 appeals to the full Board of decisions made by NTSB administrative law judges.

The NTSB issued ten final decisions (Opinions and Orders) during FY 2015, affirming the judge's decision in four, affirming in part and remanding in part one, reversing and remanding one, and remanding one. The NTSB issued three orders dismissing appeals.

Information Technology and Services Tab

INFORMATION TECHNOLOGY AND SERVICES

	($000s)	FTEs
FY 2016 Estimate	$7,407	26
FY 2017 Request	$7,390	25
Increase/Decrease	($17)	(1)

Overview of Request

The funding level for this program activity includes increases for a 1.3 percent pay raise for existing staff and a 1.8 percent non-pay inflation factor. A reduction in staff of one FTE is required to meet the FY 2017 request. No other program changes are planned.

Program Description

The Office of the Chief Information Officer (CIO) 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 consists of four divisions and one program area, as described below.

Computer Services Division

The Computer Services Division (CSD) 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 help desk staff performs a wide range of tasks, including desktop/laptop setup, repair, and replacement; network connectivity; and software installation and upgrades.

Systems Support Division

The Systems Support Division (SSD) develops, distributes, and maintains agency-specific applications, provides web design and content management, and provides database administration services. Applications include accident data collection, storage, analysis, and dissemination for all modes, as well as management of systems for accident records, safety recommendations, correspondence, Freedom of Information Act (FOIA) requests, and general administration. This division also develops office-centric applications for modal and/or support office business functions.

Records Management Division

Records Management Division (RMD) maintains the archives of accident investigation files, NTSB reports, and other agency records. It is responsible for fulfilling public requests for information, including FOIA requests; providing training for the docket management system and guidance on redaction policies and techniques; and monitoring the privacy and confidentiality of data and information. This division also provides general records management.

Enterprise Architecture Division

The Chief Enterprise Architect (EA) supports the NTSB mission and strategic goals by providing a blueprint—in logical or business terms, as well as technology terms—for how the organization operates today, plans to operate in the future, and intends to invest in technology. Enterprise architecture defines the business, processes, and information necessary to operate the business, support technologies, and transitional processes required to implement new technologies in response to changing business needs.

Information Technology (IT) Security Program

The Chief Information Security Officer (CISO) protects the availability, confidentiality, and integrity of IT resources through the application of requirements specified in Office of Management and Budget Circular A-130, the Federal Information Security Management Act, 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 against future vulnerabilities and threats.

Accomplishments and Workload

The FY 2015 accomplishments of the CIO include infrastructure upgrades, compliance improvements, enhancements to internal and external-facing applications, and development and implementation of improved processes for managing the IT program.

The CSD successfully resolved more than 3,800 help desk requests within the past year for NTSB's distributed locations (Headquarters, regional offices, and teleworkers). The division's IT specialists also launched on all major accidents to further assist members and staff when on scene at an investigation. Additionally, the division assisted the Administration Division with the rollout of the agency's upgrade to the physical security system for compliance with Homeland Security Presidential Directive -12. Other improvements included collaboration on future IT initiatives (e.g. cloud services), as well as a transition from Microsoft Exchange Server 2003 to Exchange 2010. In an effort to keep current with the developing technology, CSD put in place a baseline to enable deployment of Microsoft Windows 2012 servers, in which they implement MS Office 365 (Mobile Device Management). In partnership with other CIO divisions, the CSD ensures appropriate system availability and integration for application installation and upgrades. Working with the CISO, the CSD continued to maintain and improve the overall IT security of the NTSB.

The SSD provided several new enterprise-wide applications. These included external website replacement and office-centric applications: Supply Inventory System, Office's Project Status application, Aviation Accident Classification system, and various office-specific intranet applications on the agency's portal. The division maintained support for core legacy applications (for example, Web Portal and SharePoint custom design applications). This division was integral to the migration of the FOIA application to a cloud-based solution. In addition, they supported ongoing enhancements associated with redesigns or replacement of legacy applications, while embracing newer agile methodologies. The SSD developed an application for the agency's Records Management Division pursuant to a recent National Archives and Records Administration (NARA) audit, and is currently developing an enterprise-wide Product Management

Application to track the status of mission-critical products, including publications (such as accident reports and reports to Congress), safety recommendations, associated external correspondence, and other products. The division signed and implemented a Data Analytical tool on the public website to help Research and Engineering display its statistical data in a more user-friendly format. The SSD continues to provide the support needed to maintain compliance with the Federal Information Security Management Act (FISMA).

The RMD implemented an updated docket management system and continued the online posting of all newly published accident dockets. As of September 30, 2015, 11,465 dockets were posted on the NTSB public website. The division also continued to manage the FOIA request workload and received 566 requests during this period. The RMD, in partnership with other OCIO division and applications vendors, successfully moved the on-premises application, FOIAXpress, to the cloud.

During FY 2015, the EA Division proposed and initiated the implementation of Scrum, an agile software methodology to improve and encourage end-user collaboration. The approach embraces methods that focus on the value of the users' business needs within the development of the software. The division replaced the paper-intense administrative law judge case appeal filing process with an application developed through the agile process. The process was highly praised and is being used on other application developments as well. Furthermore, in partnership with the other divisions, the division led the agency in initiating, planning, and implementing cloud-based solutions. The cloud services provide OCIO the ability to achieve infrastructure efficiency. In addition to satisfying the OMB's Cloud First Policy, it provides a viable option for disaster recovery, continuity of operations plan and improved IT innovations (for example, MS Office 365, Mobile Device Management).

The CISO continued to ensure agency compliance with FISMA by implementing new tools to support the continuous monitoring of network and computer assets, and to maintain certification and accreditation for general agency support, accident investigation, and laboratory support systems.

Administration Tab

ADMINISTRATIVE SUPPORT SERVICES

	($000s)	FTEs
FY 2016 Estimate	$8,767	35
FY 2017 Request	$8,919	35
Increase/Decrease	$152	0

Overview of Request

The funding level for this program activity includes increases for a 1.3 percent pay raise for existing staff and a 1.8 percent non-pay inflation factor. No program changes are planned.

Program Description

The Office of Administration coordinates and manages infrastructure and support activities for the NTSB. This office provides support in the areas of human resource management, labor relations, facilities management, safety, security, acquisition, and lease management. Physical inventory, shipping and receiving, and management of the NTSB conference center are also major functions. The office's work is carried out by four divisions: Administrative Operations and Security, Acquisition and Lease Management, Human Resources, and Safety.

Accomplishments and Workload

In FY 2015, the Human Resources (HR) Division used the trends and results of the previous fiscal years' recruitment program to establish an extended recruitment process that was designed to keep pace with anticipated attrition for the fiscal year. In collaboration with the Offices of the Chief Financial Officer and the Managing Director, and program offices throughout the agency, 12 new employees entered on duty during the first quarter of the fiscal year. This early start yielded 58 agency-wide selections to permanent positions for the fiscal year. The Federal Pathways Program was used to hire 17 highly qualified summer students and 5 recent graduates as Air Safety Investigator Assistants to work in the newly formed General Aviation Division within the Office of Aviation Safety.

To ensure that new employees acquire the necessary entry information, training and familiarization, we continue to build on our reengineering effort for the agency onboarding process. As part of this effort, we incorporated feedback from supervisors and administrative staff and updated employee resources and access to agency information for the new employee with an update to the "Get On Board" page on the agency internal portal. We also developed onboarding checklists for supervisors and administrative staff. In response to comments from internal listening sessions, a team was formed to take a look at orientation day activities and to identify ways to improve the experience. This includes updating online information, updating presentation schedules, and engaging other program components to share knowledge and instructions. The goal is to improve the "first-day" experience and look for opportunities to use online communication tools in the process. One such tool, Onboarding Manager, allows newly

hired employees to fill required forms online and submit them for their electronic personnel file in advance of reporting. Other efforts within Human Resources include the implementation of a new time and attendance system (WebTA) and continuing support for the telework program. The time and attendance system was developed exclusively for the federal government and supports the agency's ongoing labor cost accounting efforts. After training and two full pilot test operations, the system was implemented in March 2015. As we continue to increase the agency's telework program, Human Resources has gathered information from NTSB managers about areas needing improvement, internal controls and any clarity that is needed regarding the policy and the intent of the policy.

As in past years, employees at all levels in the organization were encouraged to participate in the annual Office of Personnel Management (OPM) Employee Viewpoint Survey. Over the past 5 years, the NTSB response rate has significantly exceeded the government-wide response rate. The 2015 NTSB survey response rate of 59 percent was again much better than the government-wide rate of slightly below 50 percent. From listening sessions related to the survey, a need was identified to continue to identify ways to improve support for, and training of, supervisors in our performance management system. During the fiscal year, the office updated its General Schedule Performance Planning and Monitoring online portal with guidance and instructions on developing performance standards, monitoring employee performance, and effective feedback sessions. Through a designated HR resource, supervisors received individual assistance in developing performance standards, conducting feedback sessions, and handling difficult situations. We continue to track the trends in feedback on our General Schedule performance management process through OPM's Federal Employee Viewpoint Survey so that we can continue to make improvements.

The Office of Administration maintains the agreement with the General Services Administration (GSA) to meet the requirements of Homeland Security Presidential Directive 12 (HSPD-12), which requires all agencies to implement the governmentwide standard for a secure and reliable form of identification for federal employees and contractors. All employees and contractors have received their personal identity verification credential and all Headquarter employees and contractors have their personal identity verification credential programmed for access to the NTSB Headquarters space using the HSPD-12 compliant physical access control system. The Office of Administration is continuing the implementation of the HSPD-12-compliant physical control access systems for the regional offices and the Training Center.

During FY 2015, the Office of Administration's Administrative Operations and Security Divisions completed an audio visual upgrade to the NTSB Conference Center and Boardroom. The upgrades provided the NTSB with a digital audio visual system for the Conference Center and Boardroom, which replaced aged equipment with new and current technology components and ensured reliable service for Board Meetings, forums, and other events.

In FY 2015, the Acquisition and Lease Management Division executed over 520 contract actions, totaling $17.1 million, to support the mission of the agency. It facilitated the transition of the agency to the General Services Administration's Federal Strategic Sourcing Initiative (GSAFSSI) for Wireless Services to take advantage of government-wide volume-pricing and price-maintenance controls negotiated by GSA. The division also continues to provide support to the NTSB Office of Research and Engineering's ongoing capital upgrade plan.

The Safety Division leads the NTSB Safety Committee and Safety Council in continually improving the NTSB safety program. The division implemented a new occupational safety and health program manual that integrates the Safety Management System. Over the next 2 years, the Safety Division will continue to implement the Occupational Safety and Health Program through internal audits, increased safety-related training, and the addition of a Fatigue Risk Management Program. In FY 2017, a review of the Occupational Safety and Health Program Manual will be conducted to ensure the manual continues to meet the needs of the NTSB.

Appendix A: Most Wanted List Tab

APPENDIX A: MOST WANTED LIST

The NTSB issued its first Most Wanted List (MWL) of Transportation Safety Improvements in October 1990 to highlight specific recommendations that could significantly reduce transportation accidents, deaths, and injuries. The current MWL highlights up to 10 general safety issues that are supported by safety recommendations. We believe that this broader approach of focusing on issue areas rather than individual recommendations provides greater opportunity to effect change. See http://www.ntsb.gov/safety/mwl/Pages/ for more information on the current MWL issue areas.

Listed below are the 10 MWL issue areas that the NTSB is currently highlighting through its advocacy efforts:

REDUCE FATIGUE-RELATED ACCIDENTS

Human fatigue affects the safety of the traveling public in all modes of transportation. Twenty percent of the 182 major NTSB investigations completed between 2001 and 2012 identified fatigue as a probable cause, contributing factor, or a finding. Combating fatigue requires a comprehensive approach focused on research, education and training, technologies, treatment of sleep disorders, hours-of-service regulations, and on- and off-duty scheduling policies and practices.

IMPROVE RAIL TRANSIT SAFETY OVERSIGHT

Rail transit systems must constantly be monitored and improved to maintain and enhance safety, to catch small problems before they become big ones, and to provide extras layers of protection against disasters. Yet oversight of rail transit is sometimes unreliable. Recent investigations have found that oversight authorities of some rail transit systems lacked the ability to oversee safety and take corrective action quickly, despite warnings.

PROMOTE AVAILABILITY OF COLLISION AVOIDANCE TECHNOLOGIES IN HIGHWAY VEHICLES

Highway vehicle crashes kill and injure thousands of people each year. But these crashes are largely preventable. Currently available collision avoidance technologies for passenger and commercial vehicles (such as trucks and buses) could prevent crashes or minimize their impact, and should be standard equipment on all new vehicles.

STRENGTHEN OCCUPANT PROTECTION

The NTSB has investigated many accidents where strengthened occupant protection systems could have reduced injuries and saved lives. Needed improvements include increased use of existing restraint systems, and better design and implementation of occupant protection systems that preserves survivable space and ensures ease of evacuation.

DISCONNECT FROM DEADLY DISTRACTIONS

Since 2003, the NTSB has found personel electronic device (PED) distraction as a cause or contributing factor in accidents across all modes of transportation. A cultural change is needed for drivers and operators to disconnect from deadly distractions. In regulated transportation, the strict rules minimizing the threat of distraction must be embraced by every operator on every trip. Removing unnecessary distractions is the first step in safely operating any vehicle.

PREVENT LOSS OF CONTROL IN FLIGHT IN GENERAL AVIATION

While airline accidents have become relatively rare in the United States, pilots and passengers involved in general aviation operations still die at alarming rates. Between 2008 and 2014, about 47 percent of fatal fixed-wing GA accidents in the U.S. involved pilots losing control of their aircraft in flight, resulting in 1,210 fatalities. Pilots can reduce these accidents through education, technologies, flight currency, self-assessment, and vigilant situational awareness in the cockpit.

PROMOTE THE COMPLETION OF RAIL SAFETY INITIATIVES

Laws and regulations require implementation of Positive Train Control – proven to be a life-saving technology that can prevent collisions and derailments – and improved tank car design to prevent ruptures. Yet rail operators continue to be slow to make these required improvements. Further delays must be avoided.

END SUBSTANCE IMPAIRMENT IN TRANSPORTATION

In the last 15 years, data show that one-third of highway deaths involved an alcohol-impaired driver. Our new reality is this: impaired driving now involves drugs – including prescribed and over-the-counter medicines – that can affect the ability to drive or operate any vehicle. More and better data will help us understand the scope of the problem and the effectiveness of countermeasures.

REQUIRE MEDICAL FITNESS FOR DUTY

When safety-critical personnel, such as public vehicle operators, have untreated or undiagnosed medical conditions preventing them from doing their job safely, people can be seriously injured or die. However, medical certification for safety-critical personnel varies across the modes of transportation. The NTSB has recommended comprehensive medical certification systems for safety-critical transportation personnel to ensure that these professionals are medically fit for duty before operating a vehicle.

EXPAND USE OF RECORDERS TO ENHANCE TRANSPORTATION SAFETY

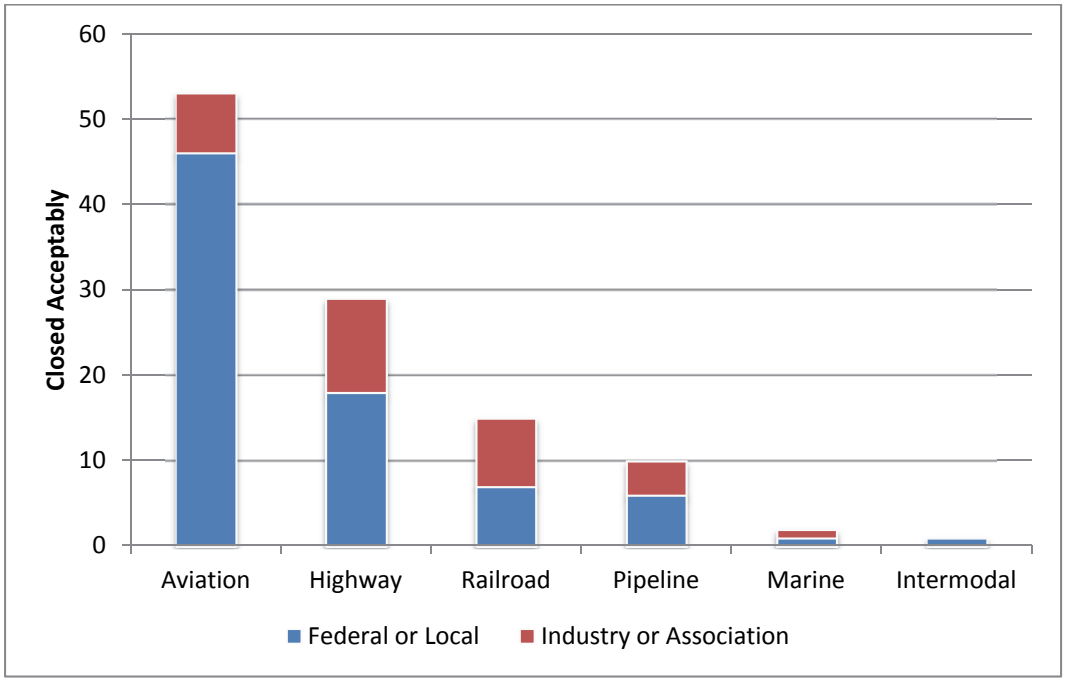
Transportation operators and investigators must have an accurate picture of an accident to prevent future accidents. No single tool has helped determine what went wrong more than recorders. Yet, certain categories of aircraft, trains, ferries, and buses are still not equipped with these critical technologies.

Appendix B: Status of Safety Recommendations Tab

APPENDIX B: STATUS OF SAFETY RECOMMENDATIONS

Recommendations Closed

The chart below lists the number of NTSB recommendations closed acceptably from the beginning of FY 2015 through September 30, 2015, by mode of transportation.



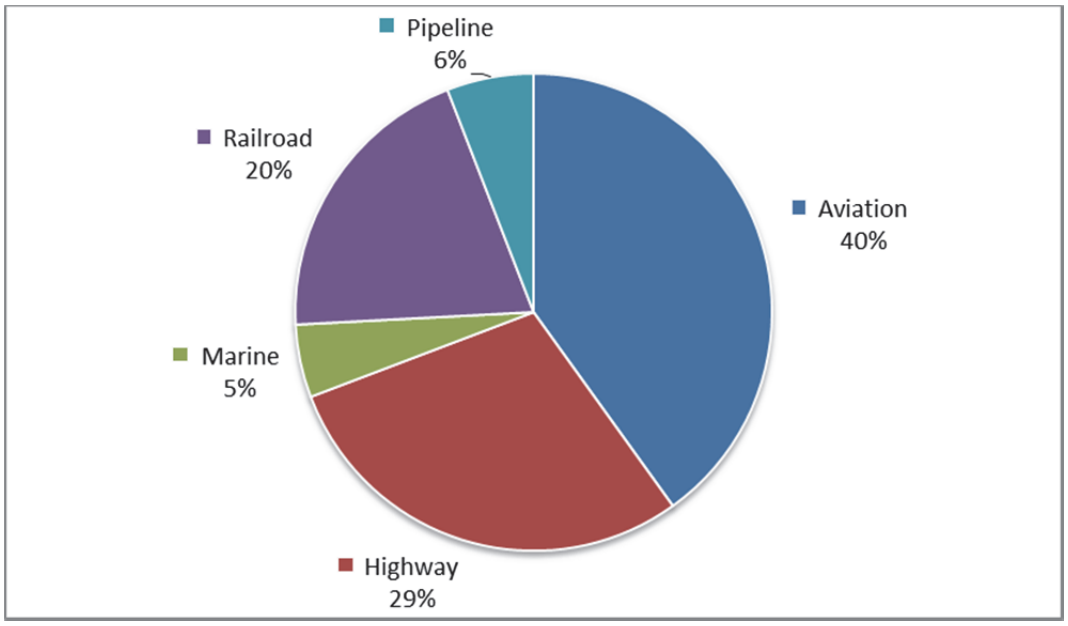
New Recommendations Issued

The following table displays the number of new recommendations issued by the NTSB from the beginning of FY 2015 through September 30, 2015, by mode of transportation:

Mode	Federal	State	Industry or Association	Total
Aviation	54	7	8	69
Highway	17	1	10	28
Marine	4	0	3	7
Railroad	48	2	26	76
Pipeline	24	1	9	34
Intermodal	0	0	0	0
Total	**147**	**11**	**56**	**214**

Open Recommendations

The chart below displays the distribution of the 1,057 open safety recommendations by transportation mode as of September 30, 2015.



Appendix C: Aviation Safety Regional Offices Tab

APPENDIX C: AVIATION SAFETY REGIONAL OFFICES

	Eastern Region	Central Region	Western Pacific Region	Alaska Region
Coverage Area	Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Maryland, Delaware, Virginia, West Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Mississippi, Alabama, Georgia, and Florida, as well as the District of Columbia, Puerto Rico, and the US Virgin Islands	Ohio, Michigan, Indiana, Wisconsin, Illinois, Minnesota, Iowa, Missouri, Arkansas, Louisiana, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Texas, Wyoming, Colorado, and New Mexico	Montana, Idaho, Utah, Arizona, Nevada, Washington, Oregon, California, and Hawaii, as well as the territories of Guam and American Samoa	Entire state of Alaska
Staff Office Location	Main office: Ashburn, Virginia Satellite work sites: Alton Bay, New Hampshire; Naples, Florida; Atlanta and Marietta, Georgia; Randolph, New Jersey; Brooklyn, New York; and Berryville, Clear Brook, and Purcellville, Virginia	Main office: Denver, Colorado Satellite work sites: Gill, Fort Upton, and Idaho Springs, Colorado; Barrington, Bartlett, Burbank, Carol Stream, Geneva, Morris, and Naperville, Illinois; Dallas, Houston, and Mansfield, Texas; and Greenville, Wisconsin	Main office: Federal Way, Washington Satellite work sites: Rochester, Minnesota; Chandler and Gilbert, Arizona; Long Beach, Los Angeles, Palm Springs, Rolling Hills Estates, San Dimas, Vacaville, and Yucca Valley, California; Portland, Oregon; and Lynnwood, Washington	Main office: Anchorage Satellite worksite: Fairbanks

Appendix D: Historical Information Tab

APPENDIX D: 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

*Includes across-the-board rescissions

Current Board Members

Name	Board Title	Appointment	Term Expiration
Christopher A. Hart	Chairman	March 12, 2015	December 31, 2017*
Bella Dinh-Zarr	Vice Chairman	March 30, 2015	December 31, 2018**
Robert L. Sumwalt	Member	August 21, 2006	December 31, 2016
Earl F. Weener	Member	June 22, 2010	December 31, 2015***
Vacant	Member		

* Expiration date as an NTSB Member. Expiration date as Chairman is March 15, 2017.
** Expiration date as an NTSB Member. Expiration date as Vice Chairman is March 29, 2017.
***Under 49 U.S.C. § 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

Fiscal Year	Appropriations (Rescissions)	Obligation Activity	Balance	Purpose/Source
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, NY
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

Training Center

Costs and Revenues

	FY 2013	FY 2014	FY 2015
Earned revenue	1,064,798	1,074,447	797,072
Subleases	584,434	577,525	593,329
Total revenue	**1,649,232**	**1,651,972**	**1,390,401**
Costs:			
Pay	757,523	751,481	770,086
Travel	51,082	63,927	96,655
Contracts	442,081	137,729	359,725
Supplies	34,536	37,656	10,105
Equipment	11,388	27,616	0
Sub-Total	1,296,610	1,018,409	1,236,571
Space rental	2,659,370	2,659,875	2,670,206
Net operating costs	**3,955,980**	**3,678,284**	**3,906,777**
Overall deficit	**2,306,748**	**2,026,312**	**2,516,376**

FTE Staffing

FY 2000 - FY 2015

FY	FTE
2000	427
2001	416
2002	426
2003	427
2004	421
2005	417
2006	387
2007	377
2008	388
2009	393
2010	384
2011	403
2012	412
2013	412
2014	402
2015	418

FTE Staffing at Year-End by Headquarters and Field Offices

FY	Headquarters	Regional	Total
2000	346	81	427
2001	345	71	416
2002	337	89	426
2003	329	98	427
2004	314	107	421
2005	308	109	417
2006	286	101	387
2007	292	85	377
2008	286	102	388
2009	293	100	393
2010	283	101	384
2011	296	107	403
2012	304	108	412
2013	307	105	412
2014	299	103	402
2015	307	111	418

FTE Staffing by State and Region
FY 2015

Location	Administrative Law Judges	Aviation Safety	Highway Safety	Information Technology Services	Marine Safety	Office of Administration	Office of Communications	Policy & Direction	Rail, Pipeline & Hazardous Materials	Research & Engineering	Training Center	Total
Alaska		5										5
Colorado	1	10	2									13
Illinois		9		1					2			12
Indiana									1			1
Kansas		1										1
Louisiana									1			1
Minnesota		1										1
Texas	1	6	6									13
Wisconsin		1										1
Connecticut								1				1
Delaware			1									1
Florida		3			1		1					5
Georgia		3		1								4
Massachusetts			1									1
New Hampshire		1										1
New Jersey		1										1
New York		1										1
North Carolina		3										3
Virginia		12		1		1		1	1		4	20
Washington, DC	7	49	17	24	19	35	23	57	26	50		307
Arizona		2										2
California		9							3			12
Hawaii		1										1
Montana		1										1
Oregon		1										1
Washington		8										8
Grand Total	9	128	27	27	20	36	24	59	34	50	4	418

*Regions:

- Alaska
- Central
- Eastern
- Western

International Investigation Costs*
FY 2015

Description	Location	Costs
National Air Cargo B747-400 crashed shortly after takeoff.	Bagram Air Force Base, Afghanistan	292,701
Aircraft was en route when it crashed into a lagoon under unknown circumstances.	Lagos, Nigeria	138,376
Short Bros, Shorts SD3-60, operated by Skyway Enterprises as a cargo flight, crashed on takeoff.	Sint Maartin-Juliana, Netherlands	135,826
Communication was lost with Socata TBM700 and it impacted the water.	Open Water, Unknown (North of Jamaica)	121,288
Gulfstream GIV, operated by Universal Jet Aviation, exited the left side of runway. The airplane was destroyed by impact forces and fire.	Le Castellet, France	115,385
MH17, B777 crashed during cruise over Ukraine.	Hrabove, Ukraine	75,869
Boeing McDonnell Douglas DC-9-83, operated by Air Algerie, was on an instrument flight plan and reportedly was in the vicinity of convective activity. The flight crashed under undetermined circumstances. There was a fire and the airplane was destroyed.	Gossi, Mali	58,291
Boeing 787-824 operated by United Airlines from London to Houston, Texas was struck by lightning and three multi-function displays went blank. It landed uneventfully.	London, United Kingdom	52,823
An Air India 787-8 airplane with GE Genx-1B engines, en route from London to India, had right engine failure and was diverted to Budapest.	Budapest, Hungary	46,987
Passenger ship Insignia experienced an engine room fire at one of the main diesel engines while in port.	Port Castries, Saint Lucia	44,266
US-registered container ship St. Louis Express collided with the Panama-registered containership Hammersmith Bridge near the Port of Antwerp.	Antwerp, Belgium	42,717
During the landing approach, a Robinson R44 helicopter collided with terrain.	Bulli Tops, Australia	38,462
Malaysian Airlines Flight MH370, a Boeing 777-200, disappeared enroute from Kuala Lumpur, Malaysia to Beijing, China.	Kuala Lumpur, Malaysia	32,483
While departing pier, a cruise ship ran aground and returned to port via tow after sustaining hull damage, flooding, and loss of power.	Freeport, Bahamas	31,933
A Jetstream 31 airplane landed and exited the runway, impacted trees, and a postcrash fire ensued.	Punta Cana, Dominican Republic	30,023
An Embraer ERJ170 experienced a bleed system failure during climb after take-off from New Chitose Airport in Japan. The aircraft diverted to Niigata Airport.	Niigata, Japan	28,496
A MD-11 cargo plane operated by Martinair experienced an uncontained engine failure.	Tenerife, Spain	28,014
Gates Learjet Corp 35A impacted a 200-foot crane during second instrument landing system approach.	Freeport, Bahamas	25,184
A Boeing 737-8KN, operated by Corendon Airlines, experienced a cockpit fire following pushback.	Antalya, Turkey	23,269
A Boeing 767-300ER, operated by Delta Airlines, experienced loss of directional control during emergency landing.	Madrid, Spain	18,094
A catamaran passenger vessel capsized approximately 5 nautical miles northwest of Punta Leona, Costa Rica.	Gulf of Nicoya, Costa Rica	18,064
ATR72-212A propeller hub damage found following excessive vibration. In-flight shutdown during approach.	Visby, Sweden	17,267
Bombardier CRJ700, powered by GE CF34-8C turbofan engines, experienced an uncontained engine failure.	Hodeida, Yemen	16,439
During takeoff, the pilot reported that the engine failed. The pilot attempted to land back on a runway, but the airplane impacted a field.	Sarayacu, Pastaza, Ecuador	16,027
Beechcraft King Air 90 crashed shortly after takeoff.	Punta del Este, Uruguay	15,720
Asiana Airlines B747-400, Flight OZ-991 from Seoul, South Korea to Shanghai, China. Main deck cargo fire while enroute.	Jeju Island, Republic of Korea	15,399

Description	Location	Costs
An Airbus A330 powered by GE CF6-80E turbofan experienced a low pressure turbine failure. Crew reduced thrust and was able to continue with the flight and made an uneventful landing.	Lahore, Pakistan	15,341
B787 ground fire in crown.	London, United Kingdom	14,358
Boeing 234 helicopter, operated by Columbia Helicopters, impacted the ground shortly after departing Pucallpa Airport.	Pucallpa, Peru	13,881
Boeing 767-36N experienced a tail strike during landing at Kabul International Airport.	Kabul, Afghanistan	13,700
A Swearingen SA226-TC cargo plane took off and about 6 minutes later broke up in flight.	North Vancouver, Canada	13,269
During an agricultural spraying operation, the pilot reported feeling a "shuddering" through the cyclic control, so he landed the helicopter immediately. On inspection, it was found that a crack had developed on one main rotor blade.	Waikaia, New Zealand	12,806
Cargo flight was involved in a runway excursion during landing. Plane landed hard during which the landing gear collapsed and no. 2 engine separated.	Accra, Ghana	11,563
A Jet Airways Boeing 737-800 had its left main landing gear collapse while landing. The airplane came to a stop on the runway about 1200 meters from the approach end, resting on right main gear, left engine, and nose gear.	Khajuraho, India	11,366
Bell 214ST crashed 7 miles South of Camp Bastion.	Camp Bastion, Afghanistan	11,274
Runway excursion involving Embraer EMB-145.	Shanghai, China	11,156
An ATR72-500 turboprop airplane experienced high vibration in flight.	Makassar, Indonesia	9,242
TransAsia Airways flight GE-235 and ATR-72 crashed during initial climb in Taipei.	Taipei, Taiwan	8,633
Boeing 767-200ER powered by CF6-80A2 experienced an uncontained engine failure.	Islamabad, Pakistan	8,376
An MD-83 was on approach when it crashed in a residential area about 4 km short of the destination airport.	Lagos, Nigeria	8,298
Cessna 172P aircraft operating a route training flight with 2 student pilots collided into mountainous terrain after being lost from radar contact.	Khaoyai National Park, Thailand	7,155
Fish processing vessel American Dynasty reported engine control failure, collided with a moored Royal Canadian Navy frigate.	Esquimalt Harbor, British Columbia, Canada	6,995
Bell 206L-4 crash; uncontained engine failure.	Remote Location, South Africa	6,856
Republic of Poland Sky Dive operations, Piper PA-31, crashed on takeoff after an engine issue.	Czestochowska, Poland	6,224
DC-9 Runway excursion; nose landing gear damage.	Valencia, Venezuela	5,842
Pilot of Piper PA-25-260 reported a failure of the control stick during an aerial application flight.	Tolima, Colombia	5,661
CENIPA Brazil Airplane experienced a loss of control in flight during a training flight and crashed.	Marica, Brazil	5,498
A precautionary landing following engine casing burn-through.	Belfast, Northern Ireland, United Kingdom	5,493
Airbus A330-223 experienced an aborted takeoff due to an engine failure.	Melbourne, Australia	5,350
Ecuadorian AF helicopter FAE-605 crashed soon after take off. Helicopter was destroyed by impact/post-crash fire.	Tena, Ecuador	5,252
Ecuadorian helicopter FAE-603 crashed into lake.	Guayaquil, Ecuador	5,139
Cessna 172M airplane, lost total engine power and ditched into the ocean about 5 miles from Bimini.	Bimini, Bahamas	5,078
The cruise ship Freedom of the Seas suffered a fire in a mechanical space. The fire was contained to deck 15 and the stack was damaged.	Falmouth Harbor, Jamaica	5,005
Safe Skies for Africa Program	South Africa, Kenya, Tanzania, and Uganda	120,026
Grand Total		**$1,838,241**

*Report includes accidents with more than $5,000 through September 30, 2015 and includes payroll as well as travel and other direct costs.

Costs of International Accident Investigations by Fiscal Year*

FY	Costs
2012 (a)	1,641,132
2013 (b)	2,366,274
2014 (c)	976,642
2015 (d)	1,838,241

*Beginning with FY 2012, the agency can capture both payroll and other directs costs such as travel through its cost accounting systems. The totals above reflect these costs.

(a) Includes $149,707 billed to DOT under the Safe Skies for Africa (SSA) Program.
(b) Includes $42,727 billed to DOT under the SSA Program.
(c) Includes $64,897 billed to DOT under the SSA Program.
(d) Includes $120,026 billed to DOT under the SSA Program.

US Transportation Fatalities, 2011 - 2013

Mode	Description	2011	2012	2013(a)
Highway:	Passenger cars	12,014	12,361	11,977
	Light trucks and vans	9,302	9,418	9,155
	Pedestrians	4,457	4,818	4,735
	Motorcycles	4,630	4,986	4,668
	Pedalcycles [b]	682	734	743
	Medium and heavy trucks	640	697	691
	Buses	55	39	48
	Other [c]	699	729	702
	Total, Highway	32,479	33,782	32,719
Grade Crossings: [d]		(250)	(230)	(231)
Rail:	Intercity [e]			
	Trespassers and nontrespassers [f]	497	490	520
	Employees and contractors	24	19	20
	Passengers	6	5	6
	Transit [g]	0	0	0
	Light, heavy, and commuter rail	230	326	345
	Total, Rail	757	840	891
Marine:	Recreational boating	758	651	560
	Cargo transport	10	9	13
	Commercial fishing [h]	27	34	24
	Commercial passengers	8	17	18
	Total, Marine	803	711	615
Aviation:	General aviation	448	440	387
	Airlines	0	0	9
	Air taxi	41	9	27
	Commuter	0	0	6
	Foreign/unregistered [i]	9	2	14
	Total, Aviation	498	451	443
Pipeline:	Gas	13	9	9
	Liquids	1	3	1
	Total, Pipeline	14	12	10
	Total	**34,551**	**35,796**	**34,678**

(a) Aviation data are from the NTSB; marine data are from the US Department of Homeland Security; all other data are from the DOT.

(b) Includes bicycles or other cycles.

(c) Includes vehicle nonoccupants other than pedestrians and occupant fatalities in other vehicle types, such as farm or construction equipment.

(d) Grade crossing fatalities are not counted as a separate category for determining the grand total because they are included in the highway and rail categories, as appropriate.

(e) As reported to FRA, DOT.

(f) Includes persons on railroad property without permission (trespassers) and with permission, such as repair personnel (nontrespassers). Does not include motor vehicle occupants killed at grade crossings.

(g) As reported to FTA. Fatalities for commuter rail operations may also be reported to the FRA and may be included in intercity railroad fatalities.

(h) Refers to operational fatalities.

(i) Includes non-US registered aircraft involved in accidents in the United States.

Status of Action by State for Motor Vehicle Safety Recommendations

State	Child Passenger Safety	Primary Seat Belt Enforcement	Passenger Restriction (a)	Cell Phone (b)	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	Partial	Partial	Yes	Partial	Yes	
Delaware	Yes	Yes	Yes	Partial	Yes	
District of Columbia	Yes	Yes	Yes	Partial		Partial
Florida	Partial	Partial		Partial		
Georgia	Yes	Partial	Yes	Partial		Yes
Hawaii	Yes	Yes	Partial	Partial	Yes	
Idaho	Partial		Partial	Partial		
Illinois	Yes	Yes	Yes	Partial	Yes	
Indiana	Yes	Yes	Yes	Partial		
Iowa	Partial	Partial		Partial		
Kansas	Yes	Yes	Partial	Partial	Yes	
Kentucky	Yes	Yes	Yes	Partial		
Louisiana	Partial	Yes	Partial	Partial	Yes	Yes
Maine	Yes	Yes	Yes	Partial	Yes	
Maryland	Yes	Yes	Partial	Partial		Partial
Massachusetts	Yes		Partial	Partial		Yes
Michigan	Yes	Partial	Yes	Partial		
Minnesota	Yes	Yes	Yes	Partial		
Mississippi	Partial	Partial		Partial	Yes	Partial
Missouri	Yes		Partial	Partial	Yes	Yes
Montana	Partial		Partial			
Nebraska	Partial		Partial	Partial	Yes	Yes
Nevada	Partial		Partial	Partial		Partial
New Hampshire	Partial		Yes	Partial	Yes(d)	
New Jersey	Yes	Yes	Yes	Partial		Yes
New Mexico	Partial	Yes	Yes	Partial	Yes	
New York	Yes	Partial	Yes	Partial	Yes	Yes
North Carolina	Yes	Yes	Yes	Partial		Yes
North Dakota	Partial			Partial		
Ohio	Yes		Yes	Partial		

State	Child Passenger Safety	Primary Seat Belt Enforcement	Passenger Restriction (a)	Cell Phone (b)	Ignition Interlock	Motorcycle Helmets
Oklahoma	Yes	Partial	Yes	Partial		
Oregon	Yes	Yes	Yes	Partial	Yes	Yes
Pennsylvania	Yes		Partial	Partial		
Rhode Island	Yes	Yes	Yes	Partial		
South Carolina	Partial	Yes	Partial	Partial		
South Dakota				Partial		
Tennessee	Yes	Partial	Yes	Partial	Yes	Yes
Texas	Yes	Yes	Yes	Partial		
Utah	Yes	Yes(c)	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	Partial	Yes	Partial	Yes	Partial
Wisconsin	Yes	Yes	Yes	Partial		
Wyoming	Yes		Partial	Partial		
Total	Yes = 35 + DC Partial = 15	Yes = 22 + DC Partial = 12	Yes = 31 + DC Partial = 14	Yes = 0 Partial = 49 + DC	Yes = 25	Yes = 13 Partial = 6 + DC

(a) "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.

(b) "Partial" with respect to cell phone laws means that the state has a law restricting some use of portable electronic devices, including texting bans, handheld device bans, or bans affecting certain driving populations.

(c) Utah's primary seat belt law applies to all seating positions but is only effective May 15, 2015 through July 1, 2018.

(d) New Hampshire's all offender ignition interlock law will be effective January 1, 2016.

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