

Quest for Zero

Air Force Ground Safety Management



AIR FORCE GROUND SAFETY

It is with great pleasure that I introduce this overview of Air Force Ground Safety. Our programs have grown and been honed since separating from the Army Air Corps on July 26, 1947. At that time, the Air Force Chief of Staff appointed the Inspector General to oversee safety in addition to their inspection responsibilities.

While the mission of Air Force Ground Safety hasn't changed over the years — to protect and preserve combat capability — the implementation has evolved into the thriving and successful program we have today. We continue our “Quest for Zero” and have made great strides in attaining our goal. An historic milestone was achieved in 2012: more than 12 months without any on-duty ground fatalities. We continue to strive for zero on- and off-duty every day; one life lost is one life too many.

On these pages you will find a description of what Air Force Ground Safety does to keep our superb safety professionals educated as well as our outreach efforts for the entire Air Force community: active-duty, reserve, National Guard and civilians. With these efforts we continue to protect our most valuable asset — our people — and preserve our combat capability.



Mr. Bill Parsons
Air Force Chief of Ground Safety



Mr. Bill Walkowiak
Air Force
Deputy Chief of Ground Safety



“Safety is the keystone to our combat readiness, and a robust ground safety mindset ensures our Airmen are ready to fly, fight, and win.”

...Kurt F. Neubauer, Maj. Gen.
Chief, Air Force Safety Center, Jul. 2013 - Present

“There are now new ideas. The faster and better we can get them in the safety mindset, the better we will be as an Air Force.”

...James T. Rubeor, Executive Director
Air Force Safety Center, Aug. 2012 - Present



“Risk is inherent in our Air Force jobs. Safe results come from smart and consistent risk management.”

...Margaret H. Woodward, Maj. Gen.
Chief, Air Force Safety, Sept. 2012 - June 2013

“Safety is really all about leadership and communication. If you do the right thing at the right time, and convince others to do the same, safety will be the result.”

...Frederick F. Roggero, Maj. Gen. (Ret.)
Chief, Air Force Safety, Dec. 2008-Oct. 2010

“Ground safety is the cornerstone for all safety activity. It is the starting point that forms the foundation for all other safety programs.”

...Orin L. Godsey, Brig. Gen. (Ret.)
Chief, Air Force Safety, Jan. 1996-June 1997

“If SAFETY isn't foremost in every personal action and/or reactions, someone will get hurt!”

...Timothy A. Peppe, Maj. Gen. (Ret.)
Chief, Air Force Safety, June 2000-Apr. 2002

AIR FORCE GROUND SAFETY

SNAPSHOT

Air Force Ground Safety evolved after separating from the Army Air Corps in 1947. Since that time, the basic mission has remained the same: preserving lives and combat capability through mishap prevention. Today's AF Ground Safety is comprised of four branches: Standards & Policy; Reports, Analysis & Investigations; Operations, Evaluations & Training and Traffic & Outreach in support of the four pillars of safety management. These branches oversee a diversity of programs that support the worldwide Air Force in advancing their mishap prevention efforts. Throughout the history of the Air Force, safety messages have remained constant; although technology advances have brought new challenges in the application of the message. The four pillars: Policy and Leadership; Risk Management; Assurance; and Promotion and Education, as shown in the graphic below, are the foundation of the safety management system.

With a population of more than 663,000, according to 2012 figures, AF Ground Safety must meet a vast array of needs for all active-duty, Guard and Reserve, and civilian members while adhering to the regulations of the Department of Defense, the Air Force, and the Occupational Safety and Health Administration.

Ground safety programs have significantly reduced the accident rate in the Air Force over the past 60 years. While the population of the Air Force has been reduced by 58 percent since the 1950s, reduction in fatal mishaps has been 86 percent. (Note: Figures were adjusted and based on equal population comparisons throughout the years.)

“We at the Safety Center are always here to support and educate not only our safety professionals, but all Airmen, to accomplish our mission,” said Bill Parsons, Air Force Chief of Ground Safety.



TSgt George Guyott (right) repairs a lawn mower at Greenville AFB, Miss. in 1956. Courtesy photo.

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THE WHITE HOUSE

Washington

SAFETY POLICY FOR THE FEDERAL SERVICE



In accord with our national concern for human life and the well being of all citizens, it is the policy of the Federal Government to safeguard from injury all those who work for it.

To carry out this policy, I charge the heads of Executive departments and agencies and, through them, their supervisory staffs to exert leadership in the establishment of vigorous accident prevention programs to achieve safe conditions of employment, and to promote safe practices by civilian and military personnel in and off duty. Safety programs of the Federal Government should also assure the fullest protection to all who visit our Federal buildings, installations, parks, forest, and other public areas. Similarly, these programs should extend to the safety of the public and Government driver alike, in their use of our public highways.

In order that these programs meet current needs and reflect the rapid changes in both technology and character of the working force, the Federal Government will cooperate with management, labor, State and local governments, and safety organizations in developing and applying modern safety standards.

The Government will take all appropriate means to foster the safety of all those engaged directly or indirectly in the world-wide activities of the Government. To this end, I have directed the Secretary of Labor to provide assistance to all agencies through the Federal Safety Council and its field affiliates.

A handwritten signature in black ink, which appears to be "John F. Kennedy". The signature is written in a cursive style and is located in the bottom right corner of the page.

IN THE BEGINNING...

It was in 1943, while visiting hospitalized Army Air Forces crews in North Africa, that General Henry H. “Hap” Arnold, U.S. Army, became aware that many of the injuries sustained were due to jeep accidents rather than from combat. This prompted Arnold to direct the establishment of the first ground safety program to address the problem. He realized preserving lives had a profound impact on mission capability.

Senior leaders from the Army Air Forces decided the responsibility for the development and supervision of a ground safety program would fall under the Assistant Chief of Air Staff for Personnel. A committee of 10 officers was established with Lt. Col. Will L. Tubbs, Army Air Forces Training Command, as chairman. On November 1, 1943, the committee convened for a five-day conference resulting in a report, with recommendations, that was presented to the Assistant Chief of Air Staff for Personnel.

The outcome was the beginning of our current Ground Safety program.

On December 6, 1943, Tubbs was appointed the first Chief,

Ground Safety Division. Very much like today’s program, emphasis was on safety in the following areas: aero shop; flight line and automobile; aircraft and motor vehicle maintenance; and traffic safety education.

The following pages provide a timeline of major events in the history of Air Force Ground Safety from the birth of the Air Force through the 1950s. Our mission today, to preserve life and combat capability, remains virtually unchanged from the inception of ground safety; the major differences come in the delivery methods of the safety messages. Methods that were once confined to the written word and briefings have been revolutionized by the current technology. With instant communication through the internet, to include social media, safety messages are available Air Force-wide in real time.



General Henry H. “Hap” Arnold



IN THE BEGINNING...

CHIEFS OF GROUND SAFETY

1943-1947

Developed policies and concepts for the Ground Safety Program.

Col. Will L. Tubbs



1942
Evergreen
Construction
Project

1948-1954

Col. Will L. Tubbs

Col. Tubbs returned to active duty in 1948 to revitalize the Ground Safety Program. Tubbs retired in 1954.



1954-1961

Mr. Will L. Tubbs

Mr. Tubbs continued as the Assistant for Ground Safety, HQ USAF, Deputy Chief of Staff/Personnel as a civil service employee.



F-84
ca.
1950



1962-1963

Title changes from Director of Ground Safety to Chief, Ground Safety Division in 1963.

Col. Earl S. Howarth



1963-1965
Col. James F. Risher, Jr.

1965-1970
Col. Willis H. Wood

January 6, 1967

Air Force technicians prepare a McDonnell RF-101 Voodoo for a photo reconnaissance mission.



1970-1971
Col. Stephen Wysocki

1971-unknown
Col. Robert Erbe



1979
Ford-Ward
LaFrance,
P-8, 70L 674,
March AFB.

1976-unknown
Col. James A. Stebick



Eglin AFB 560th
HR training Aug.
15 1969. Fred
Benda and Don
Croy. Getting
ready to go to
Korea with 554th.

1979-Mar 1980
Col. David E. Raley

Sep 1981-Nov 1984
Col. John T. Halley

Dec 1984-unknown
Col. David W. Thomson



Radio
Maintenance
Technician
during the
1970's.

The chronology below depicts the Chiefs of Ground Safety from 1943 until today. The information was compiled from reports and articles in different archives as well as the memory of Air Force safety professionals currently in the field. This is not a complete listing and will be updated in future editions of this publication.

<p>No data found for the period 1984-1995</p>		<p>Radar maintenance technicians working on a power supply assembly of a radar indicator during the 1980s.</p>	<p>1995-unknown Col. John Lucas</p>		<p>Supplies are unloaded from a KC-10A Extender aircraft during Operation Desert Shield, 1990.</p>	<p>1998-1999 Col. Robert W. Scott</p>	
	<p>Nov 2002-2004 Mr. John Russell</p>		<p>May 2000-2001 Mr. Tom Pazell, Acting Chief</p>	<p>Construction site of the Air Force Center for Engineering and the Environment, then named the Air Force Center of Environmental Excellence, in 1991.</p>			<p>Nov 1999-Apr 2000 Col. William Collins</p>
	<p>2004-2008 Mr. John Phillips</p>	<p>Oct 2008-Jan 2009 Mr. Tom Pazell, Acting chief</p>		<p>Feb 2009-Aug 2009 Mr. Joseph Vigil</p>		<p>Sep 2009-Apr 2010 Col. Roberto Guerrero</p>	
	<p>Mar 2011-Present Mr. Bill Parsons</p>		<p>Aug 2010-Present Mr. William Walkowiak, Deputy Chief</p>		<p>May 2010-Feb 2011 Col. Andrew Salas</p>		

1940s



Women's Air Force Service Pilots (WASP), Romulus AAF, 1944.
(US Air Force photo)

During the rapid expansion of the Army Air Forces, the main job was to train and equip. Little attention was given to an overall safety program and safety training was confined to certain civilian activities, flying safety, and isolated safety work.*

As the expansion period developed, the need of conservation of manpower in all phases became apparent and the Air Inspector brought it to the attention of the Commanding General [General Henry H. "Hap" Arnold].

Management Control determined that the responsibility for the development and supervision of an overall safety program (Exclusive of Flying Safety) for the Army Air Forces was the proper function of the Assistant Chief of Air Staff Personnel. This assignment of responsibility charged the Assistant Chief of Air Staff Personnel with developing an overall safety program that would

integrate such activities which were then performed by the Assistant Chief of Air Staff, Personnel (Civilian Personnel Division), Assistant Chief of Air Staff, Training, and the Air Provost Marshal, supplemented by such additional operations as were required to implement a safety program for military, civilian and contract employees of the Army Air Forces.

The Assistant Chief of Air Staff, Personnel, assigned the responsibility for the establishment of the Ground Safety Division to the Chief of Plans and Liaison Division, Colonel Clayton Dubosque who charged Major C.H. Osthagen with this project. It was determined that in order to develop an overall safety program, it was necessary for the Assistant Chief of Air Staff, Personnel, to initiate the following actions:

- Survey existing and operating safety activities throughout the Army Air Forces.
- Develop definitive statements of overall and specific functions.
- Develop and define limits of responsibility in Headquarters and in various echelons in the field.
- Develop organizational structure for Headquarters and the field.

The April 1945 edition of *AAF Safety* included a "Highlights of the First Year" section which began with following paragraph:

"The primary purpose of Ground Safety in the Army Air Forces is to conserve personnel for the job of winning the war. The function of the Ground Safety Division, under the Assistant Chief of Air Staff, Personnel, is to organize, coordinate and stimulate a safety program which applies everywhere except in the operation of aircraft."

GROUND SAFETY BEGINS...

Develop manning tables for Headquarters and the field.

Develop and prepare regulations necessary to cover the operations of the specific overall safety programs.

Effect complete coordination of proposed program with all staff offices concerned.

Submit appropriate material outlined above to Management Control for organization, manning and regulation clearances.

To accomplish the above, there was established a temporary committee chairman who would report to the Deputy Assistant Chief of Air Staff Personnel. This committee composed of representatives from the various agencies involved was to make a complete survey of the present safety programs of the Army Air Forces and thereafter make such recommendations as were required to establish a comprehensive overall safety program for the Army Air Force.

The Committee for the development of Army Air Forces Ground Safety Program met in the Office of the Assistant Chief of Air Staff, Personnel on November 1, 1943 with the following members present:

Lt. Col. W. L. Tubbs - Army Air Forces Training Command (Chairman).

Lt. Col. G. W. Haskins - Air Transport Command.

Lt. Col. A. S. Koch - Office of the Air Inspector.

Lt. Col. W. D. Merrill - Office of Asst. Chief of Air Staff, Training.

Major H. D. Immel - Air Service Command.

Major N. H. Martell - Office of the Air Provost Marshal.

Major C. H. Osthagen - Office of Asst. Chief of Air Staff, Personnel (Secretary).

Capt. W. J. Caraway - Office of Flying Safety.

Capt. J. S. Parker Jr. - Office of Flying Safety (Alternate).

Capt. C. H. Rees - Office of Management Control.

J. H. Mathewson - Office of Asst. Chief of Air Staff, Personnel (Civilian Personnel Div.)



FA1 Refuel, Odiham, circa 1948
(Courtesy photo)

*The 1940s section of this volume is reprinted from documents provided by the Air Force Historical Research Agency.

1940s

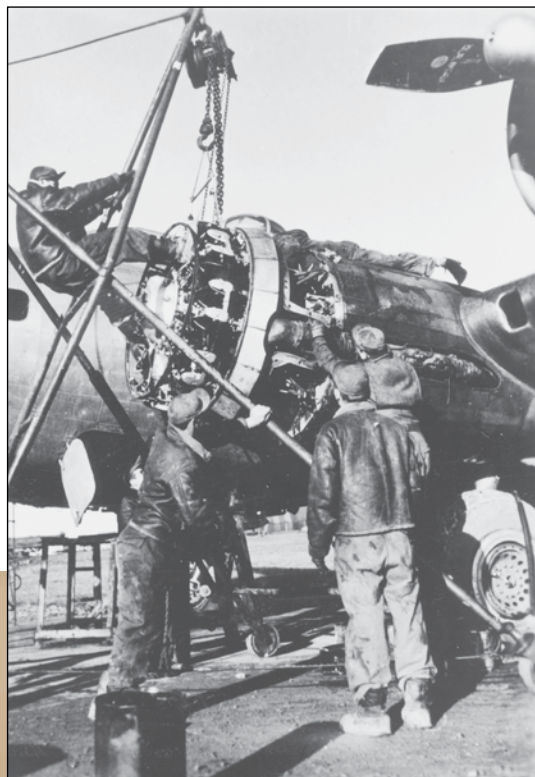
There followed five days of conference; discussion; and debate; but, on 6 November a report and recommendations for the Establishment of the Ground Safety Division was submitted to the Assistant Chief of Air Staff, Personnel together with drafts of necessary regulations to place the plan in operation.

The report of the committee was approved in total by Colonel J. H. McCormick, Deputy Assistant Chief of Air Staff, Personnel, and submitted to Brigadier General J. M. Bevans. General Bevans approved the report and wrote a letter of commendation to each individual member of the committee.

On 11 November 1943 Management Control was asked to increase the manning table for the Office of the Assistant Chief of Air Staff, Personnel to provide additional military and civilian personnel to man the proposed Ground Safety Division on the basis of the committee report.

On 19 November 1943, Management Control authorized two officers and three civilians which was only fifty percent of the recommended personnel and on 20 November 1943 assigned Room 1534, Gravelly Point, Annex 1 to Assistant Chief of Air Staff, Personnel to accommodate the Ground Safety Division.

On 30 November 1943, Headquarters Office Instruction #20-23 (relevant paragraphs follow) established the Ground Safety Division in the Office of Assistant Chief of Air Staff, Personnel and on the same day the Civilian Personnel



Aircraft mechanics with the 398th Bombardment Group change a B-17 Flying Fortress engine. During the group's stay in England from May 1944 to April 1945, the 398th flew 195 missions and lost 292 men and 70 B-17 aircraft in combat. (Courtesy photo)



Interior photo of the B-29 Superfortress bomber. Shown is the rear pressurized cabin, equipped with four bunks to give crew members a chance for rest on a long mission. This was an important factor in combating flight fatigue. The B-29 was first reported in action on June 5, 1944, in an attack on railway yards at Bangkok, Siam, and on June 15 the first raid was made in Japan from bases in China. (U.S. Air Force photo)



Division of the Assistant Chief of Air Staff, Personnel was instructed to transfer such safety personnel and safety functions as were a part of this division to the Ground Safety Division.

On 6 December 1943, General Bevans detailed Lieutenant Colonel Will L. Tubbs as Chief, Ground Safety Division.

On 11 December 1943 AAF Regulation # 38-1 Ground Safety was published.

There then followed a period of organization and the very great problem of securing trained safety personnel for the Headquarters organization. Contacts were made with other staff and operating offices which related to safety, including the Air Surgeon, Provost Marshal, Air Inspector, Office of Flying Safety, Assistant Chief of Air Staff Training, Department of Labor, War Department Safety Council, National Safety Council.



Mavis Meiers • Hastings, Minnesota:

In 1944, I was a WAC stationed at the 321st Air Force Base, Santa Maria, California, a P-38 training base. I worked as a clerk and part-time with a repair crew.

One day I borrowed a "tug" (see photo) to drive over and visit a friend of mine. It was low on fuel, so, being a helpful person, I decided to "fill 'er up". But instead of drawing from the gasoline barrel, I drew kerosene.

As you might imagine, I was the brunt of many a joke from the 100-plus airmen on the base.

Comment on the photo: Please note that the P-38 behind her seems to have made a "gear-up" landing; a more significant "oops" than putting kerosene in a gas tank.

Reprinted with permission from <http://www.reminisce.com/>

On 1 January 1944, Mr. John H. Mathewson, civilian safety engineer, with the Assistant Chief of Air Staff, Personnel, Civilian Personnel Division, was transferred to the Ground Safety Division and two secretaries Miss Helen Ayers and Miss Francine Sprye were assigned.

On 4 January 1944, Management Control augmented the manning table to a total of five officers and three civilians.

There followed the development of the reporting system for the Commands and Air Forces together with the development of regulations and instructions concerning the same.

The National Safety Council was established as an independent agency by the National Security Act of 1947 (61 Stat. 496), July 26, 1947, with membership consisting of the President; the Secretaries of State, Defense, the Army, the Navy, and the Air Force; the Chairman of the National Security Resources Board; and additional members at the President's discretion.

AFAAP—3
6 November 1943

MEMORANDUM FOR THE ASSISTANT CHIEF OF AIR STAFF, PERSONNEL

Subject: Transmission of Report and Recommendations of Committee for development of Army Air Forces Ground Safety Program.

1. There is transmitted herewith report and recommendations on the Army Air Forces Ground Safety Program prepared by this committee at your direction.

W.L. TUBBS
Lt. Colonel, Air Corps
Chairman

(Editor's note: The following paragraphs are relevant to the responsibilities of the newly established Ground Safety Division as set forth in Instruction #20-23)

5. Relations with Office of Flying Safety. The Ground Safety Division, Assistant Chief of Air Staff, Personnel and the Office of Flying Safety are coordinate organizations. Cooperation in development of material and exchange of information to the maximum extent is directed.

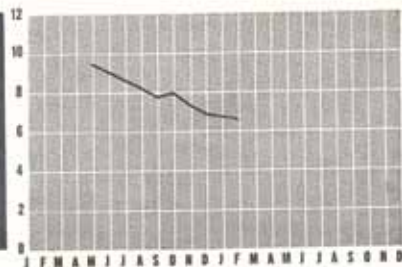
a. The Office of Flying Safety is concerned with all accidents which occur in the operation of aircraft as such either in the air or on the ground. This does not prohibit the Office of Flying Safety from investigation and taking corrective action on materiel, maintenance, or personnel factors directly or indirectly contributing to aircraft accidents. All other accidents are the concern of the Ground Safety Division.

By command of General ARNOLD

CONTINENTAL AAF

MILITARY - CIVILIAN INJURY EXPERIENCE

1944-45 MILITARY ACCIDENT RATES



AIR FORCES AND COMMANDS

	1944-1945		
	FEB	JAN	DEC
First Air Force.....	7.55	5.61	6.76
Second Air Force.....	6.72	6.95	7.40
Third Air Force.....	6.74	3.92	6.30
Fourth Air Force.....	8.21	8.28	7.87
Air Technical Service Command.....	7.29	6.58	6.72
Air Transport Command.....	6.23	8.19	7.13
Personnel Distribution Command.....	5.21	5.41	6.15
Proving Ground Command.....	5.91	3.40	7.87
Tactical Center.....	12.88	13.10	13.90
Training Command.....	6.15	8.37	6.19
1 Troop Carrier Command.....	9.17	10.39	7.52

INDEPENDENT ARMY AIR FORCE ACTIVITIES

	FEB	JAN	DEC
Aeronautical Chart Service.....	0	0	0
Army Airways Communication System.....	26.82	5.69	4.14
Bolling Field.....	2.06	.96	
Office of Flying Safety.....	7.90	0	0
Motion Picture Unit.....	8.25	14.83	0
Weather Wing.....	0.39	0	0

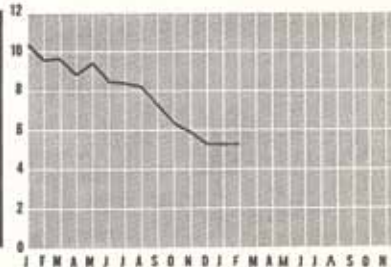
CUMULATIVE MILITARY ACCIDENT RATES - JAN - FEB 1945 BY AIR FORCE AND COMMAND



Military Accident Rate—Number of Disabling Injuries Per 100,000 Man Hours Exposure
Source: Forms AFPGS-1 and AFPGS-10

APRIL 1945

1944-45 CIVILIAN FREQUENCY RATES



AIR FORCES AND COMMANDS

	1944-1945		
	FEB	JAN	DEC
First Air Force.....	7.55	5.56	7.81
Second Air Force.....	5.31	5.29	7.97
Third Air Force.....	6.33	6.13	6.19
Fourth Air Force.....	9.34	11.97	10.74
Air Technical Service Command.....	4.49	4.91	4.29
Air Transport Command.....	7.62	8.40	5.01
Personnel Distribution Command.....	3.78	7.40	9.74
Proving Ground Command.....	14.82	8.60	9.48
Tactical Center.....	17.65	13.57	39.79
Training Command.....	4.18	5.19	4.45
1 Troop Carrier Command.....	9.71	9.93	9.5

INDEPENDENT ARMY AIR FORCE ACTIVITIES

	FEB	JAN	DEC
Aeronautical Chart Service.....	9.57	17.35	0
Army Airways Communication System.....	0	0	0
Bolling Field.....	0	5.63	15.30
Office of Flying Safety.....	0	0	13.68
Motion Picture Unit.....	0	0	0
Weather Division, L.R.R.U.....	0	0	0
Weather Wing.....	0	0	0

CUMULATIVE CIVILIAN FREQUENCY RATE - JAN - FEB 1945 BY AIR FORCE AND COMMAND



Civilian Frequency Rate—Number Disabling Injuries Per 1,000,000 Man Hours Exposure

AAF SAFETY

These tables of accident data are from the first edition of the Army Air Force Safety publication, April 1945.

1940s

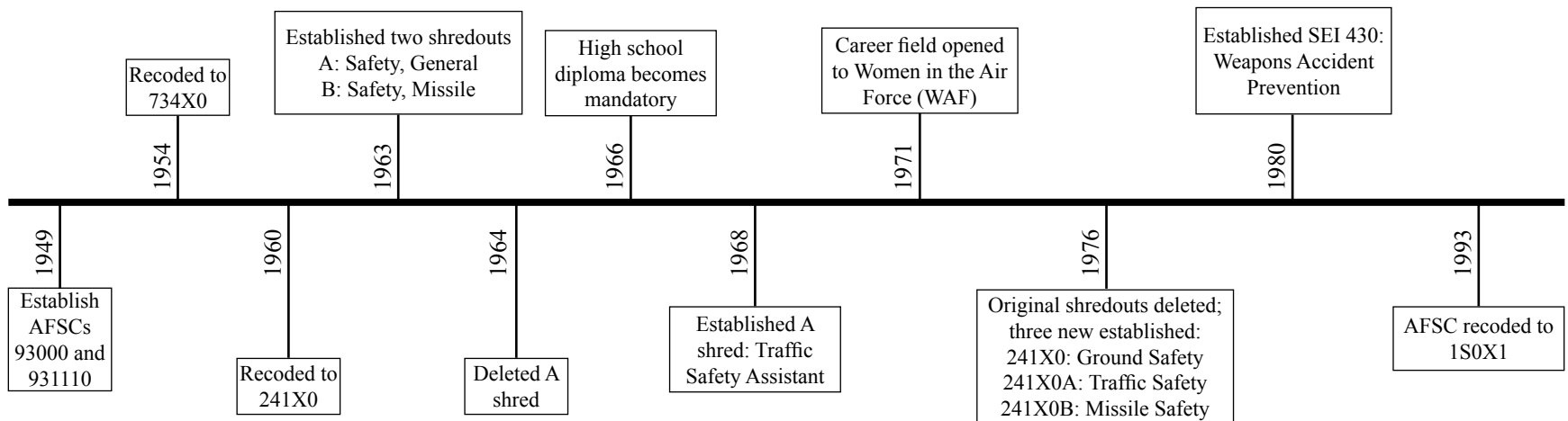
GROUND SAFETY CAREER FIELD BEGINS...

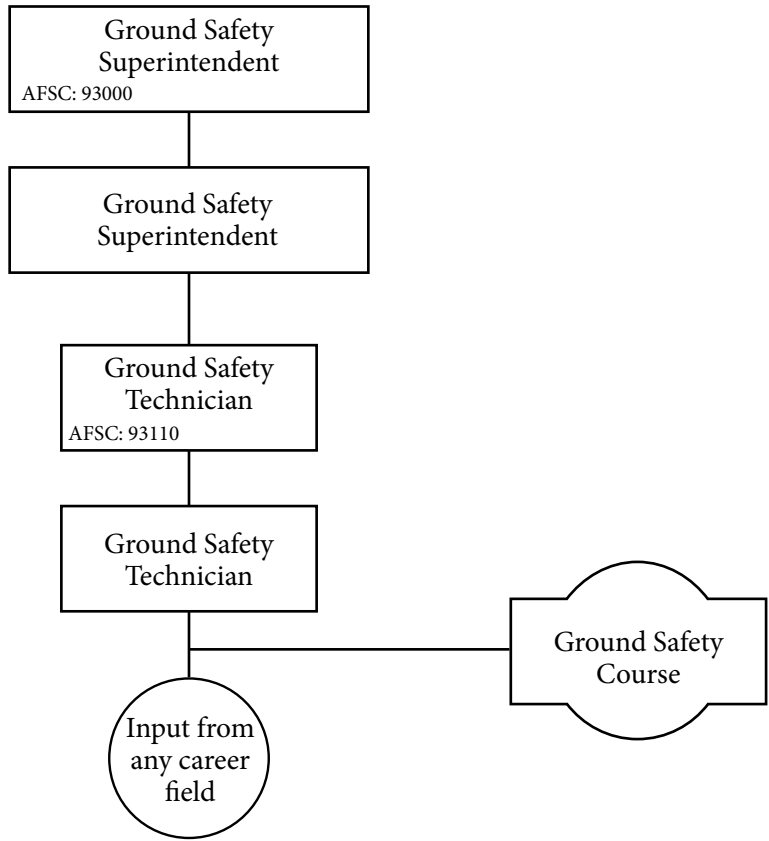
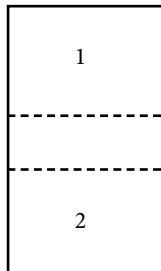
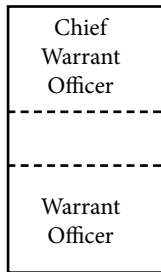
In 1949, the newly formed Ground Safety career field converted the Army Military Occupation Specialty job descriptions to the Air Force Specialty Code protocol. The first two AFSCs were Ground Safety Superintendent (93000) and Ground Safety Technician (93110).

The Ground Safety Superintendent job summary is described as: directs, promotes, and coordinates ground safety program. This function was broken into several categories, i.e., Duties and Tasks, Supervision, Job Requirements, Job Progression, Job Rating and Related Jobs.

The Ground Safety Technician position is described as: Promotes safety consciousness among personnel, analyzes accident causes and trends, and surveys areas and activities to eliminate hazards.

Over the years, the career field has seen many changes to the specialty code designation, but little change in the job function. Today's Ground Safety Professionals have the following specialty codes: 1S031, Ground Safety Apprentice; 1S051, Ground Safety Journeyman; 1S071, Ground Safety Craftsman; and 1S091, Ground Safety Superintendent. The most notable change is the dissolution of officer positions. Below is a timeline of the significant changes to the field.





**June 1949
Organizational Chart**

GROUND SAFETY MISSION EXPANSION...

The 1950s was a progressive decade for Air Force Ground Safety. The Ground Safety Program was divided into three divisions: Education and Training; Engineering and Research; and Reports, Analysis and Survey. These divisions would define the future of Ground Safety in the Air Force. Additionally, traffic safety, and training and education initiatives were introduced and became a mainstay of ground safety.

The decade began with a bang. In 1950, President Harry S. Truman issued Executive Order 10194 establishing the Federal Safety Council in the Department of Labor. Major commands were encouraged to participate in the Field Safety Councils that existed in their area “to encourage safe practices, eliminate work hazards and health risks, and reduce compensable injuries. . .”¹ of civilian employees.



President Truman signs HR1726, an act “to provide for the organization of the Air Force and the Department of the Air Force” a technicality in the unification plans to make the Air Force Department official. Left to right: Chief of Staff of the Air Force, General Hoyt S. Vandenberg; Representative Overton Brooks (D) of La. and Secretary of the Air Force, Thomas K. Finletter. Sept. 19, 1951 (U.S. Air Force photo)

The Air Force was selected to take part in other civilian initiatives along with the Field Safety Councils. This established a way ahead for the Air Force traffic safety and safety education program. The Department of Labor requested a Joint Services meeting with the Air Force, Army and Navy to discuss a program for defense production. The meeting was the introduction of a cooperative effort between DoL, the Department of Defense and individualized states to minimize duplication of effort and ensure a standardization of regulations. The area of primary concern included traffic safety. In another collaborative effort on the heels of the joint services meeting was the Air Force’s effort to enhance the Ground Safety Traffic Safety Program. This effort included other organizations such as the U.S. Public Health Service, Prentice-Hall, Inc., Highway Traffic Safety Center (Michigan State University), and the American Automobile Association. A series of meetings and conferences were held to discuss traffic safety concerns for the Department of Defense.

The major issues for the Air Force that immediately surfaced from this joint venture included: accident reporting forms being revised and manuals recoded for standardization; Public Laws 351 and 377 enacted, which impacted calculations of the costs of the injuries; the clarification of responsibilities and coordinating action plans for

atomic weapons emergencies (which would continue to grow throughout the decade); a response to the numerous injuries which occurred during inflation of motor vehicle tires due to excessive tire pressure and improper maintenance practices; and the lack of directional signals installed on Air Force motor vehicles.

Another milestone that came out of the DoL/DoD meeting was the development of the Air Force's Airman Ground Safety Career Training Course. Since 1947, the Air Force had relied on officers with Master's degrees in Engineering or Administrative Engineering with a major concentration in Safety. The Air Force preferred a more practical, hands-on safety application for those who wanted a career in safety and, therefore, decided this career path was more suited to the enlisted force; the personnel who actually got their hands dirty and performed manual labor. From 1947 to 1950, the Air Force conducted

five Specialized Ground Safety Training courses. The first Airman Ground Safety Career Training Course graduated 50 students at Kelly AFB on October 3, 1950.

Also at the beginning of the decade, the Air Force Chief of Staff designated the Inspector General to oversee all inspection and safety functions through the Air Force Inspections and Safety Center. These activities were consolidated at Norton AFB,



March Air Force Base, 1953, loading a B-47.
(U.S. Air Force photo)

President Harry S. Truman's E.O. 10194 established the Federal Safety Council. Air Force issues identified included:

- Accident reporting forms revised
- Manuals recoded for standardization
- Public Laws 351 and 377 enacted
- Clarifying responsibilities and coordinating action plans for atomic weapons emergencies
- Response to injuries occurring during inflation of motor vehicle tires
- No directional signals installed on Air Force motor vehicles

¹July 1, 1953-December 31, 1953 *History of the Assistant for Ground Safety, DCS/Personnel (Deputy Chief of Staff, Personnel)* report, Air Force Historical Research Agency.

1950s

California as part of the 1002nd Inspector General Group.

In 1951, as the field advanced, an update to the accident reporting system was needed to provide more detailed information. In January 1951, the Air Force introduced a new USAF ground safety accident reporting system, which included the new AF Form 122, *Supervisor's Report of Accident*, which provided supervisors a method of recording accidents involving their personnel. Along with the AF Form 122, an accident reporting coding manual was devised, breaking down every code to be used in accident reports.

Growth of ground safety continued in May 1951 with the establishment of the first enlisted Ground Safety Air Force Specialty Code, 931X0. Two years later, in 1953, other changes occurred that set the stage for the future of ground safety. Changes included the methods of mishap data collection, analysis, and testing.

It was also in 1953 that the Far East Air Forces proposed that the Inspector General, at all levels, not just at the headquarters level, be responsible for all ground safety functions. This proposal was rejected based on previous independent tests through the Air Training Command Command and 1002nd IG Group (Ground Safety). Both organizations rendered the same results—no benefit—and, therefore, the proposal was rejected.

The *Reports, Analysis, and Survey Activities* section of the 1953 report reveals what appears to be the beginning of more complete data compilation for ground mishaps using computers. Mishap data collection, analysis, and testing began in response to requests from some staff offices (e.g., Inspector General, Surgeon General, and the Provost Marshal). The initial request was for “studies of accident experience”² that would provide more “factual and comprehensive accident data.”³ To address this request, analysts determined that a more centralized approach to data would be beneficial. Initial “IBM machine runs” were provided to the University of California, Los



President Eisenhower receives members of the National Traffic Safety Committee in 1954. From left: Donald L. Oakley, Washington; Robert R. Snodgrass, Atlanta; Charles B. Shuman, Chicago; the President; Harlow H. Curtice, Detroit; Charles F. McCahill, Cleveland; and Mrs. Raymond Sayre, Ackworth, Iowa. Photo courtesy of the U.S. Department of Transportation, Federal Highway Administration (<http://www.fhwa.dot.gov/infrastructure/safe17.cfm>).

^{2,3}Ibid, page 21



Airmen of the 117th Tactical Reconnaissance Wing, Georgia Air National Guard, crate a wingtip fuel tank for an RF-80 jet. The 117th was preparing to deploy to Europe. Lawson Air Force Base, Columbus, Georgia, January 1952. Air National Guard photo (www.ang.af.mil)

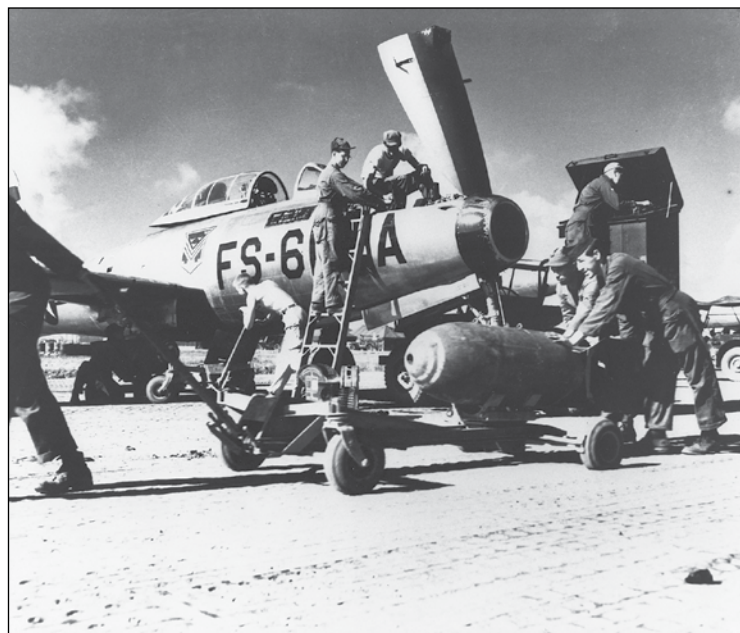
Angeles for analysis.

The review of ground safety accident reports by the Engineering and Research Division brought to light some problems of the time. Included were the determination that an Air Force standard needed to be established for use of explosion-proof electrical fixtures in hangars and that master switches on jet fighter aircraft were not being adequately guarded (i.e., the master switch that prevented fuel tanks or bomb pylons from being jettisoned from aircraft wings). This discovery led to a modification of the switch guard to

prevent accidental release of wing tip tanks. Other developments by the Engineering and Research Division in 1953 included the motorcycle contest safety rules used in USAFE and safety guards for cargo-hatch elevators in C-124 aircraft.

Education continued to expand for ground safety professionals to include new courses at Denver University and New York University for civilian safety engineers and Air Force officers, respectively. Preparation

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Ground crewmen prepare an F-84 of the 159th Fighter Squadron, Florida Air National Guard, for a combat mission. The unit was deployed to a forward air base in Korea at the time. Air National Guard photo (www.ang.af.mil)

USAF WINS TOP HONORS FOR 1952 GROUND SAFETY RECORD

The “Award of Honor,” the highest award presented by the National Safety Council for outstanding achievement in ground safety, was presented to the Air Force on May 13, 1953.

General Nathan F. Twining (left), Vice Chief of Staff (Chief of Staff Designate) is shown receiving the “Award of Honor” from Mr. Ned H. Dearborn, (right), President of the National Safety Council. The Deputy Chief of Staff, Personnel, Headquarters USAF, Lieutenant General Emmett O’Donnell (2nd from right) and Colonel Will L. Tubbs (2nd from left), Assistant for Ground Safety, DCS/P are shown participating in the presentation ceremony at the Pentagon, Washington D.C. This is the third consecutive year that the Air Force has won this award.

Mr. Dearborn congratulated the Air Force on its 14% overall reduction in its ground accident experience. He stated that Ground Safety is one activity which effects savings of money and manpower and that this is especially significant during a period of austerity. It has been determined that for every dollar invested in the Air Force Ground Safety Program, there is an estimated net savings of nine dollars. (April 1953, *Ground Accident Digest*, photo courtesy of the National Safety Council)



National Safety News, July 1953

continued from page 23

began for ground safety education to be included in the Air Force Academy curriculum for 1954. Additionally, the Air Command and Staff College and the Squadron Officer's Course began a review of material for inclusion in their curricula.

Another first for safety education in 1953 was funding to purchase National Safety Council materials for use in mishap prevention programs.

In 1954, President Dwight D. Eisenhower began the President's Action Committee for Traffic Safety. The committee intended to show how campaigns and education influenced driving behavior. The Air Force's results were



March Air Force Base, 1953 -- Loading a B-47. (U.S. Air Force photo)



Fire Response, F-86 Accident, Kirtland Air Force Base, August 1, 1954.
Photo courtesy of the Kirtland AFB Historian.

“...publicity [should] be given throughout the country to the parents, wives, and sweethearts of service personnel to encourage them to return to their military station with sufficient time to operate their vehicle in a safe manner.”

— Colonel Will L. Tubbs, speaking at the 1953 National Conference of State Safety Coordinators

significant from 1953 to 1954: a reduction of 100 percent in fatalities; a 70 percent reduction in injuries; and a 43.7 percent reduction in government vehicle damage. Traffic-related campaigns were credited for the decrease.

A staff officer, also in 1954, was assigned to create a program intended to measure effectiveness of traffic safety programs throughout the Air Force. *Project Wheel Check* was developed with the goal to “result in an improved, standardized, and all inclusive approach to the prevention of accidents resulting from vehicular operations.”⁴

Slow Down and Live, explained below, was a nationwide campaign endorsed by the Air Force and is the foundation for what would become the 101 Critical Days of Summer.

'SLOW DOWN AND LIVE' ROAD SAFETY PROGRAM IN STATE SCHEDULED FOR SUMMER PERIOD

RALEIGH, May 26.—Governor Luther H. Hodges has joined with the governors of 47 other states, the Commonwealth of Puerto Rico and the Commissioners of the District of Columbia to declare Memorial Day to Labor Day, 1955, as the period for a “Slow Down and Live” highway safety campaign. The objectives of this nationwide program is to reduce death, injury and property damage on the streets and highways of the nation during the peak period of summer motor travel.

The “Slow-Down and Live” program, sponsored by the National Conference of State Safety Coordinators, was introduced in the Northeast in 1953, and in 1954, operating in 24 states from Maine to Texas, provided the first “across the board” reduction in traffic casualties reported by any group of states since World War II. A total of 601 lives were saved in the 24-state area and noteworthy decreases were effected in personal injury and property damage accidents.

Major C. A. Speed, State Safety Coordinator for North Carolina, points out that “9,511 persons were killed on the highways of

the nation between Memorial Day and Labor Day, 1954. With the prediction that 50,000,000 Americans will travel to vacation destinations by motor vehicles this year, we are faced with a tremendous challenge to reduce the death and injury toll in summer driving.”

“Slow Down and Live” concentrates on the violations associated with speed—the violations typical of the driver who is perpetually “in a hurry” and throws caution and courtesy to the winds. According to Major Speed, “Slow Down and Live” is not a gigantic speed trap. Excessive speed, speed too fast for conditions, improper passing, following too closely and failing to give right-of-way are the violations which constitute the largest single factor in traffic accident causation.

“We have a solemn obligation to protect those using the highways of North Carolina this summer for business and recreational purposes from the ‘Hurry Bugs’ who try to get there first and fastest.”

State and municipal governments, business and industrial leaders, civic and service organi-

zations and safety groups throughout the nation have joined forces for the promotion of “Slow Down and Live.” William H. Greene, of Connecticut, chairman of the national coordinator group, has pointed out that “a 1955 campaign result as good as that of the 24 states last year will mean a saving of over 1,100 lives.”

The 1954 traffic fatality toll for North Carolina covering the period from 6:00 p. m. Friday, May 28, to midnight of Monday, September 6 totaled 265 according to Motor Vehicle Department records. “We are determined to improve that record with the 1955 campaign,” said Major Speed in announcing completion of the plans for North Carolina’s participation in the program.

Clipping from
The Times-News,
Hendersonville, N.C.,
May 26, 1955

It was during 1954 that the Air Force established the Air Force Ground Safety Officer, AFSC 7351, and recoded the Ground Safety Enlisted AFSC to 734X0.*

While statistical information had been kept from the beginnings of ground safety in the 1940s, it was in March 1957 that Assistant Secretary of the Air Force, Mr. David F. Smith received a ground safety briefing that showed private motor vehicle accidents in the Air Force accounted for three-quarters of all fatalities, one-third of all injuries, half of lost man-days, and two-thirds of the total cost of all ground accidents.

One of the actions taken to address the high PMV accident rates was the implementation of Air Force Regulation 32-17, the Private Vehicle Driver Education Program on June 21, 1957. This regulation mandated a driver improvement course for all Airmen under 25 years of age, in 1957 there were more



These student repairmen install a terminal box atop a telephone pole. This is an example of the practical training received in the Air Training Command installer repairman phase of the fixed wire communications course at F.E. Warren AFB. (U.S. Air Force photo)

*Editor’s note: There were no documents received for the years 1955-1956. Any contributions would be welcome.

⁴July 1, 1954-December 31, 1954 *History of the Assistant for Ground Safety DCS/Personnel* report, Air Force Historical Research Agency.



USAF Tactical Air Control Party (TACP) radioman with his jeep at the front lines in 1952 during the Korean War. Air Force radio jeeps were easily identified by the large silver antennae protruding above the roof. (U.S. Air Force photo)

equipment by the end of 1957.

An important step for standardization of investigations procedures began with preparations of the first handbook for ground safety personnel to use in accident investigations.

In August 1957, the Report of the Manpower Reduction Working Group yielded three action recommendations for Ground Safety: consolidate flying safety and ground safety functions (which was opposed by the Assistant for Ground Safety Personnel); second was to place the consolidated function in Operations, (also opposed); and the third was to reduce safety personnel authorizations by 30 percent. By the end of 1957, the actual reduction was reduced to 15 percent.

Budget cuts in 1957 for FY58 had an impact on ground safety's operations. The first of three

than 500,000 Airmen in this age group.

It is interesting to note that in 1957 Airmen under 25 years of age had a higher accident rate than any other age group. The same is true in today's Air Force.

According to the *History of the Assistant for Ground Safety DCS/P* report January 1, 1957-June 30, 1957, this driver's education program was thought to be the largest program of its kind in the United States.

The research activities during the first half of 1957 included promoting the value of "adequately designed restraining devices" for vehicles, i.e., seatbelts. The research division had delved into this topic in 1954 through an effort entitled, "Project Marionette" to reduce the death and injury rate as a result of vehicular accidents. (See pictures of some commonly used 1950s Air Force vehicles on page 31.) The Army and Air Force Exchange Service (AAFES) was asked to ensure that "only adequately designed seatbelts" were procured and installed.

Another significant research effort during the year focused on aircraft sound arrestors to address critical noise levels found at many bases. This initial work on aircraft sound arrestors would serve as the catalyst for sound arrestor systems for decades to come.

Also introduced at this time was reflective markings of ground equipment on the flightline. This became a mandatory item for all aerospace ground and support

1957 Air Force Honors

1st Annual
President's Safety Award

National Safety Council's
Annual Traffic Safety Citation

National Safety Council's
Award of Honor
(7th consecutive year)

measures was imposed by the Secretary of the Air Staff to reduce personnel by three positions. The second, ordered by the Adjutant General “deferred” printing of safety materials. Ground safety personnel noted that this step “...would result in greater fluctuation of organizational accident rates and some loss of identification of some Air Force-wide safety objectives.”⁵ The third, levied by the Air University and Director of Training, required a 50 percent reduction in training authorizations for safety professionals.

The second half of 1957 brought a continued emphasis on traffic safety. One change to promote safety on the road was made to AFR32-16. This regulation advocated a safety briefing focused on long-distance driving and was replaced with Change A to AFR32-7. In the language of the day, from the *History of the Assistant for Ground Safety DCS/P* report July 1, 1957-December 30, 1957:

“...unit commanders are responsible for insuring that personnel...are properly indoctrinated in safe driving practices prior to extended trips by automobile. ...The directive also suggests that travel limitations may be necessary where sleepiness and fatigue are contributing to accidents during overnight and weekend passes.”

In applying the budget cuts, the *Ground Accident Digest*, *Ground Accident Abstracts*, quarterly statistical reports, and the ground accident reference book were discontinued (*Ground Accident Digest* was reinstated in May 1958). However, AFP 32-16-1, *Get There Alive*, continued to be printed.

An interesting outlook of the era is highlighted in the disagreement between the Vice Chief of Staff of the Air Force, General Thomas D. White, and ground safety personnel. Ground safety proposed a policy to discourage “auto speed contests” (car racing by non-professional drivers). Gen. White opposed and disapproved this part of the proposal stating “a competitive spirit should be encouraged in the Air Force.” Ground safety personnel changed the proposal and it was approved.

While the first indication of a summer increase in fatalities was in 1955, it was in 1957 that mention of a seasonal spike in vehicle accidents during the December holidays occurred. General Emmett “Rosie” O’Donnell, requested all major commanders (MAJCOM) give personal attention to this problem. In his message, General O’Donnell said, “...exemplary conduct would be the standard expected of all personnel using the highways during the holiday season.”⁶

Also in August 1957, Colonel John P. Stapp, Chief, Aero Medical Field



General Emmett “Rosie” O’Donnell
(US Air Force photo)



Dr. John Paul Stapp was not only the “fastest human on earth,” he was the quickest to stop. In 1954, America’s original Rocketman attained a then world record land speed of 632 mph, going from a standstill to a speed faster than a .45 bullet in five seconds on an especially-designed rocket sled, and then screeched to a dead stop in 1.4 seconds, sustaining more than 40g’s of thrust, all in the interest of safety. (US Air Force photo)



Retired Col. (Dr.) John Paul Stapp sits on the track, where in 1954 he rode a rocket sled at 632 mph, providing important research data for aviation and automobile safety. Col. Stapp died in 1999. (US Air Force Photo)

Laboratory, Air Force Missile Development Center, Holloman AFB, N.M., testified before a Congressional Subcommittee about his research into life-saving seatbelts and restraining devices.

Other personal safety equipment to become mandatory included reflective belts and suspenders for personnel assigned to traffic control and/or accident investigation and, in September 1957, helmet use for all active-duty Air Force members when “mounted on or riding” motorcycles or other two-wheeled vehicles. In a memo to the Chief of Staff, it was reported that deaths were reduced by up to 89 percent when helmets were worn.

Education advanced with the introduction of ground accident prevention to the curriculum at the U.S. Air Force Academy and NCO Academies. Additionally, a training course was developed for ground safety personnel to support missile weapons systems.

The Air Force magazine was changed from Aircraft Accident and Maintenance Review to Aerospace Accident and Maintenance Review, and now included news from the missile community.

In January 1958, Vice Chief of Staff, General Curtis LeMay, in a letter to his MAJCOM commanders, expressed “grave concern over manpower losses from private motor vehicle accidents.” To combat these losses, Gen. LeMay wanted to step up accident prevention measures. His letter continued requiring that driver improvement training already in place must have the “personal attention and unqualified support of every commander.” Gen. LeMay wanted emphasis on drinking and driving as well as more severe disciplinary action for those who didn’t respond positively to educational efforts.

Advances in missile technology increased missile weapons systems inventories, and would bring about new hazards in ground operations. Hazards included storage and transfer of new chemical fuels, high pressure fuel systems, potential explosions and radiological hazards. Education was needed and developed for ground safety personnel in the weapons systems using the new technology. Also driven by these changes was a need for additional personnel. A request for additional personnel was



General Curtis LeMay
(US Air Force photo)



General Curtis LeMay, mid-1957, sometime during his transition from Commander-in-Chief of the Strategic Air Command [1948-1957] to Vice Chief of Staff, U.S. Air Force [1957-1961]. [Photo source: U.S. National Archives, Still Pictures Division, RG 342B, Box 507 B&W]

⁵July 1, 1957December 31, 1957 *History of the Assistant for Ground Safety DCS/Personnel* report, Air Force Historical Research Agency.

⁶Ibid.

1950s

submitted in March 1958. That request would be slow in coming due to budget constraints and the prior reduction in safety personnel.

The Engineering and Research Division in 1958 documented a number of significant projects to promote safety throughout the Air Force. The projects included: revision to AFM 32-3, *Accident Prevention Handbook for Air Force Personnel*; motor vehicle crash injury research; pedestrian-type accidents (for on-duty activities); noise hazards control; hydrant and single point refueling issues; ramp hazards; and crash helmets.

The September 1960 edition of *Aerospace Safety*, reported there were four safety disciplines by the late 1950s: flight, missile, nuclear, and ground. The Nuclear Weapon System Safety Group was already located at Kirtland AFB, N.M. while the other disciplines were operating elsewhere. This caused “resultant problems of duplication, coordination, jurisdiction, reporting, manning, and administration.”⁷

As the nuclear field began to grow, 1958 saw a growing safety concern due to the arrival of an increase of missiles with warheads into the operational inventory. For this reason, Gen. LeMay, in April 1959, created the position Deputy Inspector General for Safety. Gen. LeMay amended

the chain of command so that all safety functions would report to the DIG/Safety, not the chief of staff. Lt. Gen. Elmer J. Rogers, Jr. was the first in this position. Later, explosives safety would also fall under the DIG/Safety. The safety directorates were separately located: missile and ground in Washington, D.C.; nuclear at Kirtland AFB; and flight at Norton AFB, Calif. Towards the end of 1959 the missile and ground directorates were transferred to Norton AFB.

The 1950s was an up and down decade for ground safety. An increase in funding, safety marketing, and personnel followed by decreases of the same. At decade’s end, the development of the organization began to look more like the Air Force Safety Center of today.



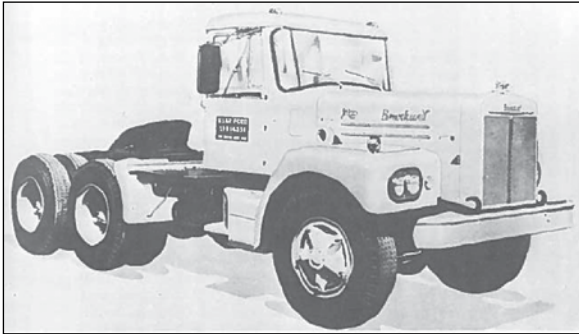
Lt. Gen. Elmer J. Rogers, Jr.
(US Air Force photo)



Altus AFB Air Police Gas Training, 15th Air Force History, Jan-Jun 1956. Photo courtesy of the 97th Air Mobility Wing, Office of History, Altus AFB, Okla.

⁷ *Aerospace Safety*, September 1960, page 1.

AIR FORCE VEHICLES OF THE 1950s



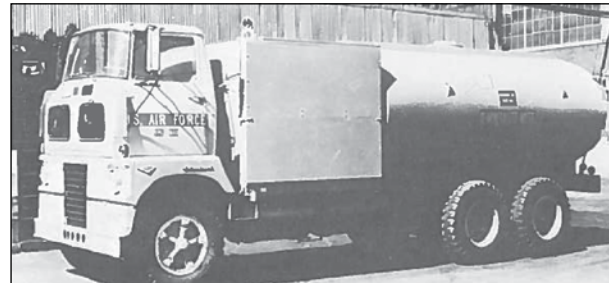
Brockway provided the US Air Force with a fleet of these Model 260 LQM Huskie tractors around 1958-1959. Strictly commercial, with no modifications to meet military requirements, they were used to carry the Titan and Atlas missiles and missile components. The 260 LQM used a Brockway-Continental Model 46-FD six-cylinder engine which developed 200 horsepower from 513 cubic inches, and was coupled to a Fuller five-speed main transmission with two-speed auxiliary.



The major difference in the Air Force's O-8 crash truck and the earlier O-7 was the addition of 200 gallons of Carbon Dioxide to the payload, and the provisions of two remotely controlled nozzles, one on each front fender. The two vehicles were probably built about the same time, as their serial numbers are only one digit apart. The elaborate greenhouse enabled the driver and nozzle operator to have excellent visibility. The same 295 horsepower engine was used in both the O-7 and O-8, as was a five-speed synchromesh transmission and T-77-3 two-speed transfer case. Both types were 31 feet, 3 inches long, and 126 inches high at the top of the siren, while the wheelbase was 217 inches. The tires were 12-ply 14:00x20, single all around.



GMC's Series 550 cab-over-engine models got the same over done styling treatment that the conventional models inherited, panoramic windshield included. But the foreshortened nature of this 1957 COE makes the styling look even more clumsy. Powered by a 370.7 cubic inch gasoline GMC V-8 developing 232 horsepower, it carried a 5,000 gallon Heil fuel tank body filled with JP4 fuel for jet aircraft. A 600 gallon per minute pump assured fast service. Photographed in October, 1960, it was intended to serve as an aircraft ground support vehicle and would see very little over-the-road service. Known officially as a Fuel Servicing Tank Truck Type AFI532R-2, it weighed 22,000 pounds and was 30 feet long.



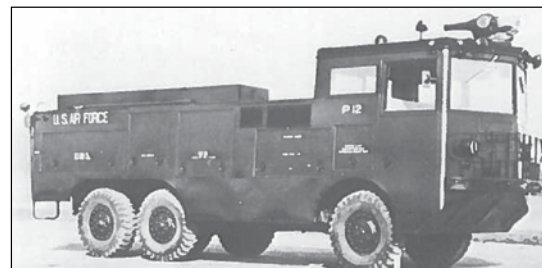
Although not garish in design, this International "Sightliner," a very flat-fronted cab over engine model of around 1959, can certainly qualify as one of the oddest looking vehicles ever. The cab, which was nine feet high at the roof and only 48 inches deep, was fitted with an extra pair of windshields (complete with another set of wipers) at foot level to assist the crew in maneuvering in the crowded areas where it was anticipated this extra-short overhang model would be operating. A V-8 International gasoline Model V345 engine of 189 horsepower and 345 cubic inches drove through an IHC T-51 five-speed transmission. The body, which carried 2,600 gallons of demineralized water for aircraft use, was built by the Heil Company of Milwaukee, Wisconsin. Total cost in 1969 was \$14,970.

AIR FORCE VEHICLES OF THE 1950s



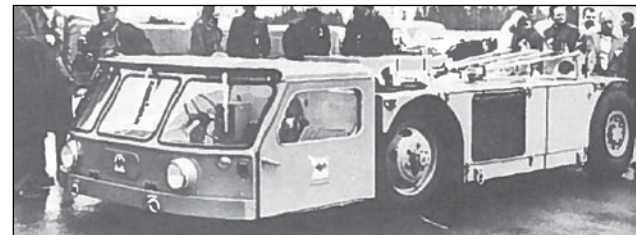
(Left) Crash Fire Truck Type 0.6 was the designation given to this big Cardox unit which entered the Air Force inventory in 1951. Although it carried most of its apparatus enclosed in the compartmented body, it had basically the same capacity as the open Class 150s which had served during W.W. II. Built by Sterling in Milwaukee, Wisconsin, it weighed 36,900 pounds including 5,600 pounds of fire fighting foam and chemicals. Aircraft were growing larger and carrying more fuel for longer ranges, and the capabilities of the crash equipment had to grow commensurately. The 290 horsepower engine drove the O.S at a maximum speed of 55 miles per hour, through a five-speed synchromesh transmission 6x6 Fire Trucks and Model T-77-3 two-speed transfer, while the 748 cubic inch six was running at 2800 rpm. The 0-6 was no small truck at over 28 feet in length, 108 inches in width, and a very tall 142 inches in height. Note that the 14.00x20 tires have been equipped with devices which allow the pressure to be changed from the cab while the vehicle is operating.

(Right) The U.S. Air Force has employed numerous types of crash trucks over the years, but there were probably no others which were as universally used and long-lived as the 0-10 and 0-11 series. Shown here is the 0-10 which was introduced in 1950, and was built by both Mannon-Herrington and American La France. It was an extremely versatile vehicle, and could throw foam while still in motion and with the operator still inside the cab. It weighed 26,900 pounds completely loaded with 4,500 pounds of fire fighting agents, which were primarily carbon dioxide and a foam solution. Mechanically the 0-10 fit very well into the contemporary military fleet in that it used the same Continental Model R6602-71 engine used in the M series 5-ton trucks, and the Spicer 6455 five-speed transmission and Timken T-136-1 two-speed transfer were also already in the supply system. The 602 cubic inch 240 horsepower engine gave a top speed of 60 miles per hour, fueled by a 50 gallon tank. A 300 gallon per minute Hale pump was separately powered by a small four-cylinder Continental Model PE 90 engine. The 0-10 cost \$39,184.



(Left) The Air Force used the 0-6 designation again in 1955 when they christened this little Cardox Corporation model as a crash, fire, and rescue truck. It also used many components which were already in the supply system such as M-series 5-ton engine (Continental six-cylinder, 203 horsepower, 602 cubic inch Model R-6602), five-speed transmission (Spicer 6455), and two-speed transfer (Timken T-136). The axles were from the M34 series 2Yz-ton 6x6. It carried emergency rescue equipment, and held 4,000 pounds of CO2 as the extinguishing agent. The White Motor Company assembled the chassis and some of the fire fighting components. It used a 164-inch wheelbase, 12.00x20 tires, weighed 23,545 pounds gross, and cost \$39,600.

(Right) Here is another vehicle on which no technical details seem to be available. Built by NAPCO around 1957-1958, it is identified only as the NAPCO Turbo Tug for the B-52 bomber. NAPCO is a firm which has built much military equipment over the years, and currently markets repair parts to keep obsolete military vehicles in operation. The Turbo Tug was certainly a fascinating exercise in engineering, with the top of the cab being barely 3 feet off of the ground. The driver sat very low in the center of the cab, looking through the steering wheel. The engine was a Boeing Model 502 gas turbine, but the drive train, drawbar capacity, and dimensions and weight remain unknown.





“ Regardless of where you work:
on the flight line, in construction,
in maintenance, or in an office
environment...No mission is more
important than your safety. ”

...Dr. David Michaels,
Assistant Secretary of Labor for OSHA

“ Work-related injuries, illnesses, and deaths
are unacceptable by any measure. We
must never become complacent and we
must never forget that any work-related
death, injury, or illness is one too many. ”

...Dr. Christine Branche
Principal Associate Director of NIOSH



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The Quest Continues...