

757 AIRLIFT SQUADRON



MISSION

The 757 Airlift Squadron, the only fixed-wing aerial spray unit in the Department of Defense, has used the Modular Aerial Spray System, or MASS, for decades primarily to spray insecticide over large areas that are either breeding grounds for, or infested with, disease carrying insects. The system's spray bars, which protrude from a four-inch hole in the paratroop doors and are attached beneath the wings, can be installed on the C-130 in under thirty minutes. Four of the squadron's twelve aircraft have been modified for MASS missions. Known as the Blue Tigers, the squadron is usually called in after a hurricane to spray insecticide over areas of standing water to eradicate disease-carrying mosquitoes.

LINEAGE

757 Bombardment Squadron (Heavy) constituted, 19 May 1943
Activated, 1 Jul 1943
Redesignated 757 Bombardment Squadron, Heavy, 29 Sep 1944
Inactivated, 28 Aug 1945
Redesignated 757 Bombardment Squadron, Very Heavy, 13 Mar 1947
Activated in the Reserve, 12 Jul 1947
Inactivated, 27 Jun 1949
Redesignated 757 Troop Carrier Squadron, Medium, 11 Mar 1955
Activated in the Reserve, 8 Apr 1955
Redesignated 757 Tactical Airlift Squadron, 1 Jul 1967
Redesignated 757 Tactical Air Support Squadron, 25 Jan 1970
Redesignated 757 Special Operations Squadron, 29 Jun 1971
Redesignated 757 Tactical Fighter Squadron, 1 Oct 1973
Redesignated 757 Tactical Airlift Squadron, 1 Jul 1981
Redesignated 757 Airlift Squadron, 1 Feb 1992

STATIONS

Alamogordo AAB, NM, 1 Jul 1943
Kearns AAB, UT, 31 Aug 1943
Davis-Monthan Field, AZ, 22 Sep 1943
Westover Field, MA, 29 Oct 1943-3 Jan 1944
Giulia Afd, Italy, 12 Feb 1944-2 Aug 1945
Sioux Falls AAFld, SD, c. 16-28 Aug 1945
Long Beach AAFld, CA, 12 Jul 1947-27 Jun 1949
Byrd Field, VA, 8 Apr 1955
Youngstown Muni Aprt (later, Youngstown MPT-ARS; Youngstown-Warren Regional Aprt-ARS), OH, 16 Nov 1957

ASSIGNMENTS

459 Bombardment Group, 1 Jul 1943-28 Aug 1945
459 Bombardment Group, 12 Jul 1947-27 Jun 1949
459 Troop Carrier Group, 8 Apr 1955
459 Troop Carrier Wing, 14 Apr 1959
910 Troop Carrier (later, 910 Tactical Airlift; 910 Tactical Air Support; 910 Special Operations; 910 Tactical Fighter; 910 Tactical Airlift; 910 Airlift) Group, 17 Jan 1963
910 Operations Group, 1 Aug 1992

WEAPON SYSTEMS

B-24, 1943-1945
T-6, 1947-1949
T-7, 1947-1949
T-11, 1947-1949
C-45, 1955-1958
C-46, 1955-1957
C-119, 1957-1969
U-3, 1969-1971
A-37, 1971-1981
C-130, 1981

COMMANDERS

Unkn, 1-27 Jul 1943
Maj Frank B. Knepper, 28 Jul 1943
Maj Clifford R. Opper, May 1944
Maj Christy, Oct 1944-1945
Unkn, 12 Jul 1947-27 Jun 1949
Unkn, 8 Apr 1955-Oct 1957
Col Randall W. Hendricks, 16 Nov 1957
LTC Clyde W. McClelland, 17 Jan 1963
LTC Chester A. Amedia, 11 May 1964
LTC Clyde W. McClelland, Jul 1969

LTC Melvin B. Clearwater, 8 Jan 1970
Col Donald M. Jenkins, Jun 1971
Maj Richard E. Olson, Dec 1974
LTC William J. Lodwick, 1 Nov 1976
LTC H. James English, Sep 1977
LTC William J. Lodwick, 24 Mar 1979
LTC Eugene R. Cupp, 6 Dec 1979
LTC Kenneth E. Gould, 1 Jun 1981
LTC Edwin A. Koporc, Dec 1984
LTC David E. Search, Jun 1986
LTC Charles L. Micklely, Jan 1988
LTC Richard T. Dietrich, May 1990
LTC James R. Repucci, 1 Jul 1991
LTC Gary W. Kirr, 1 Jan 1993
LTC William W. Sassaman Jr., Jun 1993
LTC Walter G. Kyle III, 15 Oct 1994
LTC Timothy J. Costa
LTC John Williams
LTC Kenneth Saunders

HONORS

Service Streamers

None

Campaign Streamers

World War II

Air Offensive, Europe

Rome-Arno

Normandy

Northern France

Southern France

North Apennines

Rhineland

Central Europe

Po Valley

Air Combat, EAME Theater

Armed Forces Expeditionary Streamers

None

Decorations

Distinguished Unit Citation

Bad Voslau, Austria, 23 Apr 1944

Air Force Outstanding Unit Awards

1 Sep 1983-31 Aug 1985

1 Sep 1995-31 Aug 1997

Republic of Vietnam Gallantry Crosses with Palm

14 Feb-11 Mar 1968

26-28 Oct 1972

EMBLEM



757th Bombardment Squadron, Heavy emblem



757 Troop Carrier Squadron emblem



757th Special Operations Squadron emblem



757th Tactical Fighter Squadron emblem





757th Airlift Squadron emblem: On a disc Or, a cloud base Azure issuing a lightning flash in sinister embowed to chief Argent charged with a cloud base issuing a lightning flash in dexter embowed to chief of the last, overall a winged tiger passant at gaze Celeste, shaded and winged White garnished Sable, eyed and langued Gules, all within a narrow border Blue. Attached above the disc, a White scroll edged with a narrow Blue border and inscribed "BLUE TIGERS" in Blue letters. Attached below the disc, a White scroll edged with a narrow Blue border and inscribed "757TH AIRLIFT SQ" in Blue letters Ultramarine blue and Air Force yellow are the Air Force colors. Blue alludes to the sky, the primary theater of Air Force operations. Yellow refers to the sun and the excellence required of Air Force personnel. (Approved, 21 Feb 1961)

MOTTO

NICKNAME

Blue Tigers

OPERATIONS

Combat in MTO and ETO, 2 Mar 1944-26 Apr 1945. Trained in the Reserve with several different functional missions, 1947-1949 and since 1955. Since 1981, flew airlift missions worldwide and added an aerial spraying mission in 1992.

The aerial spray mission was transferred in January 1992 from the 907th TAG at Rickenbacker ANGB near Columbus, Ohio to the 910th Airlift Wing at Youngstown Air Reserve Station, located at Vienna Ohio. The mission converted from C-130E to C-130H aircraft as part of the functional transfer. The combination of the MASS with the newer, more capable H-model aircraft further enhanced the capabilities of the aerial spray mission.

Aerial spray operations were conducted in south Florida throughout September and into October of 1992 following Hurricane Andrew, again at the request of FEMA. The devastation had damaged or destroyed hundreds of homes and left thousands of people without shelter. In total, more than 288,000 acres were covered during the first four missions.

From November 1992 through most of 1994, air and ground crews of the 91 Oth AW conducted extensive testing in cooperation with an international contingent of oil dispersant experts to determine the feasibility of modifying the MASS for applying dispersing materials to oil slicks. Testing was initiated by a U.S. Coast Guard request to develop a Memorandum of Agreement (MOA) with the USAF for using Air Force Reserve personnel and equipment to apply dispersant during catastrophic oil spills. Testing has been completed which showed that the aerial spray operations can effectively apply oil dispersants. The MOA was approved and officially signed by the USCG and USAF in 1995 and is currently being revised.

The 910th AW is host to one of only four EPA-approved Training Centers for DoD Pesticide Applicator Certification. Recently, the course has been taught in Italy and Germany to serve the overseas DoD pest management community, too.

The Unit added Geographical Information System (GIS) technology in 1996 and Differential Global Positioning System receivers to the spray aircraft in 1997.

Beginning in 1996 to the present, the noxious weed, Musk Thistle, has been controlled at Smoky Hill ANGR in Salina, Kan. using aerial spray applications.

In October 1999, the Aerial Spray Unit deployed, at the request of FEMA, in response to the mosquito infestation generated in North Carolina and Virginia in the aftermath of Hurricane Floyd. Severe mosquito biting rates, as high as 50 bites a minute, were recorded. Approximately 1.7 million acres were sprayed over Virginia and North Carolina significantly lowering the number of nuisance and vector mosquitoes that had been hampering clean-up efforts.

October 2000 saw the 757th Airlift Squadron's primary mission change from Airlift/Airdrop to specifically training for aerial spray. The aerial spray program was further broadened in the year 2000 after successful testing of larvicides (control of mosquito larvae) showed that these materials could be added to the arsenal of mosquito control alternatives.

During 2001 a new control program was developed at Grand Forks Air Force Base, N.D. Using a target specific larvicide to interrupt the development of immature mosquitoes while continuing to treat for the flying adult mosquitoes, the squadron is able to treat both life-stages at the same time.

On July 19-20, 2005, the aerial spray aircrews from the 757th Airlift Squadron conducted the first-ever Air Force aerial spray mission to control adult mosquitoes over Minot Air Force Base and the city of Minot, N.D. as well.

During the months of September and October 2005, the states of Louisiana, Mississippi, and Texas suffered from terrible circumstances resulting in the aftermath of Hurricane's Katrina and Rita. Hundreds of thousands of people were displaced from their homes while entire communities were wiped away by the storms or resulting flood conditions that left prime breeding grounds for mosquitoes and filth flies. The potential for these bugs to spread disease

among the population would have been very high had it not been for the aerial spray mission personnel from the 757th Airlift Squadron who deployed to Duke Field, Fla. to set up a base of operations in order to conduct aerial spray missions over Louisiana and Texas. When it was all said and done, the 757th aircrews had sprayed 2,880,662 acres, or 4,501 square miles—an area equivalent in size to the state of Connecticut. Fourteen thousand gallons of the pesticide Dibrom were used, costing FEMA \$1.6 million. The missions comprised 191.4 hours of total flying time with 46.5 hours of actual "Spray-On" time flying at 150 feet above ground level. This was the largest aerial spray mission ever conducted.

The 757th Airlift Squadron's Aerial Spray mission added another "first" to its list of accomplishments July 19-20 when personnel from the unit conducted the first-ever Air Force aerial spray mission to control adult mosquitoes over Minot Air Force Base and the city of Minot, N.D. Although Air Force officials at Minot had been coordinating aerial spray coverage of the base for about nine months, late spring and early summer rains made it more urgent than ever to have the 757th Aerial Spray mission deploy there to help control the mosquito population. With more than 10 inches of rainfall recorded in the area during the month of June base Public Health officials reported mosquito trap counts in excess of 3,000 per trap indicating extremely high mosquito populations.

According to Capt. Karl Haagsma, a DOD Certified Pest Management Professional with the 757th Airlift Squadron, the execution of the mission went very well. "Operationally, the mission went extremely well, due in large part to excellent weather conditions for aerial application of pesticides. Comments we've received from local people indicate that the application was quite effective," he said. In an e-mail to the 5th Bomb Wing Commander's Action Line, Ms. Jody Ziliak, a dependent of an Air Force member at Minot expressed her feelings about the spray mission. "I wanted to give you some feedback on the spraying that was conducted last night to reduce our mosquito problem.

What a pleasure it was for me to be able to work and visit the neighbors outside today without the swarm! Our children enjoyed not having to be sprayed or medicated for those uncomfortable bite welts. I sincerely hope that the effects will last for a long time. It was an excellent idea that, in my opinion, will improve the quality and quantity of our time outdoors! Thank you." Flying at 200 knots (338 feet per second) 150 feet above ground level, the 757th aircrew members treated 1,000 foot swaths over the base and 2,000-foot swaths over the city, taking advantage of clear skies and good wind conditions to spray three-quarters-of-an-ounce per acre of a product called Trumpet.

Trumpet is used throughout the Air Force for bases requesting mosquito spraying and has an effective kill rate of 99.9 percent. "Aerial spraying is a valuable tool in our ongoing mosquito control program which includes encouraging people on base to eliminate standing water which serves as breeding sites for mosquitoes, extensive larviciding to control immature mosquitoes and ground fogging," said Vicki Johnson, pest control supervisor with the 5th Civil Engineer Squadron at Minot. Col. Tim Thomson, commander of the 910th Airlift Wing, accompanied the crew on the mission to gain familiarity with the process and flying procedures used during spray missions. "As a one-of-a-kind special mission, the C-130 aerial spray mission requires strict attention to detail and close coordination with all concerned agencies in the way it is planned, a

high degree of very precise airmanship in the way it is flown, and detailed documentation as to the results achieved. It is best conducted by a highly trained and well motivated crew force supported by a specialized team of entomologists and aerial spray system/aircraft maintenance personnel. That is precisely what we have here at Youngstown,” said Col. Thomson. According to Minot officials, the spray mission professionals from Youngstown are more than welcome to return again to help control what some people from North Dakota refer to as their state bird—the dreaded mosquitoes.

The Youngstown Air Reserve Station’s 757th Airlift Squadron officially took control of the prototype Remotely Controlled Aerial Vehicle for Application of Pesticides (RCAVAP) here Saturday, June 4. The Air Force Research Laboratory recently tested and demonstrated the unmanned aerial vehicle for pesticide application before delivering the RCAVAP to Youngstown. The RCAVAP is an unmanned helicopter equipped for aerial spray to control insectborne diseases in areas that are difficult for a C-130 to access. Warfighters may be sent into smaller areas where a C-130 can not reach. The RCAVAP can fit into these smaller areas before they have been checked for landmines and clear the area of harmful insects before troops even enter. “Military Public Health officers often remind us that disease has killed more people during warfare than bullets.

The RCAVAP is an important tool for preventing insect-borne illness,” said Capt. Mark Breidenbaugh, Command Entomologist for the Air Force Reserve Command in Youngstown, Ohio. The RCAVAP performed two demonstration flights at Quantico consisting of automatic take-off, waypoint navigated flight, automatic payload delivery, and automatic landing. The flight path was between 0-100 feet altitude and in an area of approximately 1000 square feet. When using aerial spray, the vehicle can dispense a maximum of over 20 pounds of chemicals within a four kilometer range.

Directorate’s Airbase Technologies Division initially demonstrated the vehicle’s capabilities at the Force Protection Equipment Demonstration (FPED) at Quantico Marine Corps Base, Va. The prototype was developed by AFRL under a Force Protection Battlelab initiative with the Armed Forces Pest Management Board, the Naval Disease Vector Ecology Control Center and the 757th Aerial Spray Flight. The demonstration, conducted by members of the Airbase Technologies Division’s Robotics Research Group, informed government organizations about the existence of the system and the possibilities of using the RCAVAP for management of pests as well as other applications.

The final report from the prototype development phase will provide an opportunity for technology transfer, and a prototype system will be delivered to 757th Aerial Spray Flight, the Department of Defense’s only full-time aerial spray operation, in Youngstown, Ohio for user assessment. During the official transfer to the 757th Aerial Spray flight, Capt. Haagsma said he was looking forward to seeing what new potential the UAV could offer the aerial spray mission.

Although this new vehicle may enhance the aerial spray mission, it will not be able to replace the existing C-130 spray mission. “This unit would only help reach places that are too small or dangerous for the C-130. Obviously there’s no way the UAV can cover the area that our C-130s can. They also have a very limited payload capacity and range. We’re excited to see where the

UAV will add to our capabilities but it certainly can't replace our current aircraft," said Capt. Karl Haagsma, member of the 757th Aerial Spray flight and coordinator of development of the RCAVAP program. AFRL's Materials and Manufacturing 2005

No-see-ums, sand fleas and flying teeth are all names for the same pest, the biting midge. These insects have been a nuisance to many Marines at Parris Island Marine Corps Recruit Depot, S.C. Similar to the weather, everyone gripes about them but what can be done? This is where "bug docs," Majors Mark Breidenbaugh and Karl Haagsma come in. They are entomologists with the 757th Airlift Squadron at Youngstown Air Reserve Station, Ohio, home of the only large fixed-wing aircraft aerial spray unit in the Department of Defense. Since 1992 YARS has been conducting the aerial spray mission.

While the primary aspect of the spray mission is pest insect control, the unit also has the capability of applying defoliants to areas such as artillery and bombing ranges and aiding the Coast Guard and other agencies in oil spill containment. The 910th has been called upon during the aftermath of hurricanes to provide relief to residents of several gulf coast states from overpopulations of mosquitoes and other nuisance insects. Airmen and aircraft from YARS sprayed more than 3 million acres following Hurricanes Katrina, Rita, Gustav and Ike. The 757th was at Parris Island, Oct. 5 to 9, to conduct their annual aerial spray mission to help combat the overwhelming biting midge population that has plagued the area. This year, they tested a new weapon in the battle. This weapon is a new product called Duet, a two-stage insecticide. Duet's first stage is designed to excite the pests into flying, making them susceptible to the second stage, or killing stage, of the product.

Duet was previously tested, with some success, against mosquitoes, said the entomologists. The Parris Island mission tested the potency of the product against biting midges. The aerial spray mission normally uses an insecticide known as Dibrom, which requires the mission to spray twice. The first application would exterminate the adult population; the second would destroy the juvenile population that had matured. The goal of the new product was to reduce the insect population with one spray application.

For Marines at the depot, relief from the biting midges provided by the spray mission was welcome. "We celebrate the arrival of the spray mission," said Tim Harrington, the deputy natural resources and environmental affairs officer. "I hate them," said Cpl. Sara J. Hill, a supply specialist assigned at Parris Island. "They eat and eat, and they bite and bite, and when they bite, I welt." The success of the aerial spray mission is measured by the reduction of training time lost due to infection or illness by Marine recruits, said Staff Sgt. Andrew F. Causey, a Parris Island drill instructor. The recruits are not allowed to scratch bites and neither are the drill instructors, said Sergeant Causey.

If a bug bite is scratched, it increases the chance that it will lead to an infection known as cellulitis. If left untreated, the infection could become life threatening. The objective of the aerial spray mission seemed straightforward, there were obstacles. In this case, the weather deteriorated as soon as the 757th arrived at Parris Island. According to Major Breidenbaugh, high winds rendered the results of the Parris Island spray mission inconclusive. Additional trials are planned for spring 2010 to better gauge the effectiveness of the new product.

More than 50 Youngstown Air Reserve Station Airmen and two Modular Aerial Spray System (MASS)-equipped aircraft were deployed to the Gulf Coast, April 30, to aid in oil spill cleanup efforts there.

The group from YARS, comprised of members from operations, maintenance, communications and administration, have a unique mission—to spray oil dispersant, which works like detergent, over the oil slick. As of May 18, the 910th AW members have performed 91 aerial spray flights and applied more than 146,000 gallons of oil dispersant. The 910th AW is home to the Department of Defense's (DoD's) only large area, fixed-wing aerial spray mission. In addition to oil dispersion, aerial spray capability is designed to control or eradicate insect populations to prevent the spread of disease and to provide large-scale vegetation control at DoD installations. This mission is the first time the aerial spray program has used its oil dispersing capability during an actual emergency. For approximately two decades, the 910th AW has participated in oil spill cleanup exercises with the U.S. Coast Guard in the Gulf of Mexico, as well as both the Atlantic and Pacific coasts. YARS Airmen are scheduled to participate in this mission for as long as they are needed. 910th Aerial Spray attacks Gulf oil spill.

910th Airlift Wing Public Affairs A U.S. Air Force C-130 aerial spray aircraft from the 910th Airlift Wing is prepared at Stennis International Airport in Kiln, Miss., May 4, to go on a chemical dispersing mission. Senior Airman Justin C. Johnson, an aerospace maintenance apprentice with the 910th Aircraft Maintenance Squadron, prepares to launch a C-130H Hercules tactical cargo transport aircraft on a chemical dispersing mission from Stennis International Airport, Miss., May 7. Members of the wing are in the Gulf Coast region to assist with the Deepwater Horizon oil spill. The 910th Airlift Wing specializes in aerial spraying and is the Department of Defense's only large area, fixed-wing aerial spray unit. Tech. Sgt. Phil Walsh, a flight equipment craftsman with the 910th Operations Support Squadron, checks the satellite signal on an aircraft tracking device at Stennis International Airport, Miss., May 10. Tech. Sgt. Tom E. Neiswanger, an aerial spray aircraft maintainer with the 910th Aircraft Maintenance Squadron, refills a chemical dispersing C-130H Hercules aircraft at Stennis International Airport in Kiln, Miss., May 4. Master Sgt. Brad Franken, a loadmaster with the 773rd Airlift Squadron, monitors tanks containing oil dispersants while flying in a C-130H Hercules tactical cargo transport aircraft over the Gulf of Mexico, May 7. A communication headset lies in front of a Modular Aerial Spray System prior to a chemical dispersant mission at Stennis International Airport in Kiln, Miss., May 4.

Assigned to Air Force Reserve Command's 910th Airlift Wing, the 757th AS is the only large-area, fixed-wing aerial spray unit in the US Department of Defense. Aircrews, maintainers, and a couple of the unit's six entomologists—almost half of the insect specialists in the US Air Force—deploy more than twenty-five times a year for extended operations at locations ranging from southern Florida to Mountain Home AFB, Idaho, and from Parris Island, South Carolina, to Hill AFB, Utah.

Flying C-130Hs equipped with palletized Modular Aerial Spray System, or MASS, units, the 757th AS crews spray thousands of acres every spring, summer, and fall. "A C-130 can spray up

to 150,000 acres per day,” noted Lt. Col. (Dr.) Mark Breidenbaugh, who heads the entomology department at Youngstown. “Some places, a spray-equipped Hercules is literally the only way to manage invasive plants or to apply pesticide.”

The mission of the 757th AS, known as the Blue Tigers, dates back to the Pacific theater in World War II. Eradicating disease-carrying insects, or vectors, from the air became a priority once the US military saw how many hundreds of thousands of Soldiers and Marines became incapacitated—and how many died—from malaria and other diseases. The Special Aerial Spray Flight was created soon after the Air Force became a separate service in 1947

Air Force crews flew insect spray missions during the Korean War with T-6 and C-46 aircraft. During the Vietnam conflict, aircrews, primarily flying the UC-123 Provider transport, carried out 1,500 insect control missions in addition to the thousands of flights spraying the controversial defoliant Agent Orange.

“There is now an executive order preventing using herbicide in war,” noted Breidenbaugh. “And in this unit, we are stricter than the strictest state environmental laws and safety requirements when it comes to handling and applying pesticides and herbicides. We closely monitor the health of everyone involved. That all came about because of Agent Orange.”

On 1 April 1973, the active duty Air Force UC-123K spray aircraft and the service’s entomology staff were transferred to the Air Force Reserve. The aerial spray mission shifted from the 355th Tactical Airlift Squadron at Rickenbacker ANGB, Ohio, to the 757th AS at Youngstown in January 1992. At the same time, the spray aircraft changed from the C-130E to the C-130H.

A dedicated spray maintenance flight was also established in 1992 to take care of, load, and operate the MASS units. This group of twenty technicians, part of the wing’s 910th Maintenance Squadron, works out of its own garage at one end of the Youngstown flightline. “Many of us have been here for twenty years,” notes CMSgt. Ken Pauley, the aerial spray flight chief. “You have to be a bit of a zealot in this job.”

Conair Aviation, a Canadian aviation services company, delivered the first MASS unit in 1988. Each unit weighs 8,900 pounds empty and takes up three pallet positions in the C-130. The sixth and final unit arrived at Youngstown in 1992. “These spray systems are the only ones in the world like them,” Pauley noted

Each MASS unit can carry 2,000 gallons of pesticide, herbicide, or dispersant, but only one type of agent is carried at a time. The system consists of two 500-gallon stainless steel tanks, two 500-gallon aluminum tanks, one 200-gallon aluminum flush tank, in addition to pumps, pipes, and a control station. The heavier stainless steel tanks are required for agents that are corrosive to aluminum, which limits overall capacity for missions requiring those agents. The four main tanks are tilted up toward the flight deck to use gravity to help them drain completely.

In the maintenance flight garage, the MASS units are stored on individual flatbed trailers. Each unit has a dedicated crew chief and assistant, who are allowed to personalize the systems

with artwork on the control panel. The flatbeds allow for ease of transport and installation of the MASS units in one of the four 757th AS C-130s that have been modified for aerial spray. The units are transferred from the flatbed to a cargo loader and then rolled directly onto the aircraft. Installation takes about an hour.

The primary spray aircraft, all delivered in the late 1980s and early 1990s, feature upgraded electrical connections, paratroop doors with a sealable port that accommodates the four-inch diameter pipe for the spray nozzles, and internal plumbing for an inner and outer set of spray bars mounted under each wing. "The spray bars give us extra coverage per pass, but they are not used on most missions," notes Townsend. "We mainly use the door nozzles." The nozzles and spray bars are installed on the aircraft after arrival at a deployed location.

Two C-130s assigned to Youngstown's second flying squadron, the 773rd AS, are partially modified for spray operations. "We only have manning authorization for the four primary aircraft," said Townsend. "We'd only use the other aircraft in an emergency. Those C-130s are the ultimate spares."

"Flying at low altitudes and fairly high speeds in congested areas with towers isn't for everyone," observed Townsend. "This is a high-competency, high-visibility program. Experience and performance really matter. It may take five years for an experienced copilot to become a spray mission commander." Qualification for spray navigators and flight engineers is much the same.

"Loadmasters have to have about 1,000 hours of flight time before we'll consider them for the spray mission," said Townsend. Two loadmasters are carried on spray missions, one to operate the MASS control panel and the other to monitor the tanks, lines, and pumps and to ensure the agent is being dispensed. "There is, by necessity, a lot of coordination between the flight deck crew and the two spray operators in the back of the aircraft," added Pauley.

Once trained, a MASS-qualified crewmember has to participate on two training or operational flights every six months and at least one actual spray mission every calendar year. The training missions can come at Youngstown or at the end of a deployment when one final mission is flown over the previously sprayed area to flush the large tanks with water or, for some agents, with mineral oil. One of the spray units, MASS 6, is only used for local training flights. It has never been filled with anything but water as both a safety and a liability concern.

"Spraying is not just quantity dumping," stated Townsend. "We need to make sure the agent goes where we want it to and doesn't drift onto a farmer's field. We also have to put out the exact dosage per acre." For instance, a shot glass of insecticide mixed with water is enough to kill mosquitoes over an entire acre. Breidenbaugh noted that the right size droplet to kill a flying mosquito is roughly twenty microns. "A fifty micron droplet will kill a mosquito simply on impact, but it wastes material and puts more chemicals in the environment than necessary." Although the 757th AS now has seven fully qualified spray crews, it is working to get all of its aircrew members qualified because business is booming.

After Hurricanes Katrina and Rita in 2005, squadron crews treated nearly 2.9 million acres for mosquitoes and flies in Louisiana and Texas, the largest aerial spray mission ever conducted under AFRC. More than 771,000 acres were treated in Louisiana after Hurricane Gustav in 2008. More than 30,000 acres of open water in the Gulf of Mexico were treated with dispersant in the aftermath of the Deepwater Horizon oil rig disaster in 2010.

“We now regularly conduct mosquito abatement operations on federal installations in nine states,” noted Breidenbaugh. “We’ve been very successful at controlling the cheatgrass at Mountain Home, which allows native prairie grasses to reestablish, which reduces the potential for range fires. We’ve done research on droplet drift through foliage and validated computer models. We’ve got a lot going on.”

Since 1983, one of the regular stops for the 757th AS is Hill AFB, Utah. This spring, two aircrews and six spray maintenance flight technicians deployed to the base near Salt Lake City to treat the bombing ranges in the North Utah Test & Training Range, an isolated, desolate expanse of land west of the Great Salt Lake. The objective of the mission is to rid the ranges of Halogeton, an invasive, nonnative succulent plant that grows fast and is toxic to animals. Killing this plant clears the range to allow weapons testers to see results immediately and explosive ordnance disposal technicians to disarm weapons unimpeded.

The herbicide used on the Hill ranges is called Krovar. Like all the agents used by the MASS crews, Krovar is delivered from local vendors—spray materials are never transported in raw form on the aircraft as a safety precaution. The load crews mix the Krovar with blue dye and water in specific amounts, an additive to keep the mix from foaming in the tanks, and an agent to increase the surface tension of each droplet to control drift. After the first batch of 1,800 gallons is loaded into the MASS unit, a second batch is prepared for the second aircraft. Crews apply about twenty-two gallons of mixture per acre.

The aircrews stagger their takeoffs, so while one crew is spraying, the second aircraft is being loaded. Each lift, as the crews call them at Hill, requires about twenty minutes of transit time, about thirty minutes to spray, and about twenty minutes back. Each crew flew two lifts per day over the ten-day deployment.

A commercial agricultural spray GPS attached to the upper escape hatch provides an additional tool for the navigator on most missions. But at Hill, the spray crews take advantage of an old navigational tool—the human eye. The Utah ranges are so wide open, a truck is parked at each end of the areas to be sprayed—which, in 2011, were the nearly 1,300 acres designated as Targets 21 and 24. The C-130 pilot lines up on the truck, and the navigator, taking winds into account for drift, calls “spray on” as the aircraft passes over the first vehicle. The loadmaster then opens the nozzles. The navigator calls “spray off” before the aircraft passes over the truck at the other end of the target. The aircrew repositions, and the drivers in the trucks move forward thirty-five feet to park in the middle of the next swath to be sprayed. Because of the dye, it appears the crew is using a roller to tint the desert blue as they fly back and forth.

As at all operating locations, the MASS unit tanks were flushed at Hill. But just like after every operation, the units were taken apart and thoroughly cleaned and reassembled once back at Youngstown. The biggest issue with the MASS units is their age, increasing the need for upkeep and maintenance, and their uniqueness. Because these systems were the only MASS units ever built, spare parts are becoming a serious issue. "We now make a lot of our own parts," said Pauley. "One of our crew chiefs found some new and better pipe endcaps in a junkyard."

"We continue to get calls from other Department of Defense installations as word gets out about what we can do," concluded Townsend. "New missions for us are being discussed, such as supporting US Africa Command and fighting malaria there or providing a capability to remediate large chemical spills. We have a big job, and it's getting bigger."

Squadron aircrews sprayed more than 700,000 acres after Hurricanes Gustav and Ike struck the Texas and Louisiana coasts in 2008. But last year, 757th AS crews carried out their first-ever operational missions to spray dispersant on oil polluting open water in the Gulf of Mexico in the aftermath of the Deepwater Horizon oil rig disaster. During a six-week operation and ninety two sorties, squadron crews sprayed 145,000 gallons of dispersant and covered more than 30,000 acres of Gulf waters. "Although we had trained for this mission, we had never done it," noted Adams. "We found that an actual operation on open water was different from what we had practiced. We're going to have to make some adjustments to our training."

Air Force Lineage and Honors

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Sources

Air Force Historical Research Agency. U.S. Air Force. Maxwell AFB, AL.

The Institute of Heraldry. U.S. Army. Fort Belvoir, VA.

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