

# Always the first

In the year in which it celebrates a half-century of existence and 35 years operating the M-18 Dromader, **Dirk Jan de Ridder** visits the firefighting specialists of the Hellenic Air Force's 359 MAEDY.

**T**he 359 Moira Aeroporikis Exypiretisis Dimosion Ypiresion (MAEDY, Public Services Air Support Unit) was established in 1968 and initially flew ten Bell 47 crop-dusting helicopters from Elefsis air base, west of Athens. The unit moved to Tatoi air base, on Athens' northern outskirts, two years later. Fifty years after its establishment, and after operating C-47 Dakotas and Grumman G-164 Ag-Cats in the same role, the unit currently includes 22 PZL M-18 Dromader aircraft, three of which are twin-seat M-18BS training aircraft. During the Cold War, these were the only aircraft manufactured in an Eastern Bloc country serving with a NATO air

arm. Thirty single-seaters were delivered in 1983, but the aircraft's attrition rate is testament to the dangers of aerial firefighting. Five aircraft were lost in the first three years and four more by the turn of the century – in 2002 the survivors were supplemented by the three two-seaters to enhance in-house training.

The 359 MAEDY is not the Hellenic Air Force's only firefighting squadron. For a very brief period, the unit was also equipped with CL-215 Scoopers, but in 1975 these were transferred to 355 Mira Taktikon Metaforon (MTM, Tactical Transport Squadron) to form their own squadron (see *Greek multi-mission legends*, April 2017, p76-82). A total of 11

CL-215s are still flown by 355 MTM and the firefighting fleet was reinforced with the purchase of ten CL-415 Super Scoopers in 1999, seven of which are still active with 383 Moira Eidikon Epicheiriseon & Aeropyrosvesis (MEEA, Special Operations & Air Firefighting Squadron), based at Thessaloniki Airport.

## View from the cockpit

At first glance, the CL-215 and CL-415 appear vastly more capable than a small aircraft like the M-18. Colonel Ioannis Kaloudis, deputy commander of 359 MAEDY and one of the unit's most experienced pilots, clarified: "The PZL [M-18] is a very misunderstood aircraft. Most believe that CL-415s or helicopters are better for attacking fires. But imagine we have a fire on the mainland, relatively close to the airfield and pairs of CL-415s, helicopters and PZLs take off and go to the fire at the same time. What happens? The CL-415s and the helicopters have no water. The PZL can drop it immediately. The time factor is essential, and the first attack is our advantage. If there is a fire in your house, would you prefer to have a fire extinguisher or to have to call the fire department? The PZL is the fire extinguisher. The longer you wait, the more water you need to extinguish the fire. The CL-415 first has to find a calm surface of water to land on and come back. It takes 30 minutes, sometimes up to an hour. In the same time, the PZLs will complete three or four attacks.

"Also, CL-415s and helicopters drop the water in long patterns. Our aircraft really targets the fire. We use a five-to-ten-degree dive angle



Up to 549 imp gal of water leaves the aircraft in a matter of seconds. Even after 35 years of service, 18 single-seat M-18s are typically available for firefighting missions throughout the summer season. All photos Dirk Jan de Ridder

Getting the M-18 safely on the ground is one of the challenging aspects when experienced pilots convert to the type. Although the Dromader is considered a dangerous aircraft to fly without the right amount of experience, the aircraft is cheap and easy to maintain, and the Hellenic Air Force sees no need to replace it.

with surgical accuracy at a release altitude of just 10m [33ft]. I can drop the water in a garden without destroying the buildings around it. It's a 1.5-ton 'bomb' [approaching the fire] with the velocity of the aircraft. The effect is the same as three or four water drops from 40m [131ft]. From that release altitude, the water will be widely dispersed."

### Dromader mods

The M-18 has been extensively modified during its service life. Larger wing fuel tanks were installed to double the aircraft's autonomy from around two to four hours. They also received new flaps in order to

increase agility. Finally, a 13 imp gal (60 lit) tank was installed to add retarding foam to the water. Pilots use a portable GPS for navigating around the country and a pair of radios to communicate with air traffic control and firefighters on the ground.

A year for 359 MAEDY is roughly divided into a six-month training and recovery phase from November to May and a firefighting period in the remainder. Maintenance and other inspections are normally planned off-season, so that every aircraft is available during the firefighting season. The unit then abandons its home base, sending its aircraft in pairs to around eight airfields

across the country. The exact locations vary each year, but in recent years have included Amygdaleónas, Corfu, Epitalio, Kalamata, Kefalonia, Lamia, Lesbos, Sparta and Trípoli. Each detachment has a large water tank, so personnel can refill the aircraft without having to depend on support from the local airfield's firefighting department. If needed, the aircraft can also be refilled directly by fire trucks.

With all pre-flight checks carried out early in the morning and with water and fuel tanks filled, pilots can be airborne in about ten minutes. The unit's main goal is to prevent fires and extinguish them early on, rather than tackling bigger blazes. For this reason, the aircraft also carry out preventive surveillance flights with a water load when requested by the fire department. A secondary role is aerial spraying against mosquitos, but this has diminished in importance since the number of fires has increased in recent years and after retirement of the Ag-Cat.

### Areas of operation

Fires mainly occur in the central and southern parts of the country, the majority of them in August and September. Personnel are on duty at their airfields from sunrise to sunset and facilities are provided for them to rest and keep fit. In case of a major fire, additional personnel can be called to reinforce them. Col Kaloudis explained how this is centrally managed: "We have a department in Athens co-ordinating how we combat the fires. First, we go to hit the fire as soon as possible and to see if more aircraft are needed. If the fire is big or dangerous, ☐



**Above:** Serial 029 (c/n 12010-29), a single-seat M-18B, approaches a practice target at very low level. Dromader pilots work at extremely low level, making them just as effective as a CL-415 dropping four times the amount of water from a slightly higher altitude. **Below:** Squadron commander Vasileios Theodorakis in front of his aircraft.



## Greek firefighters


for example because of the wind, they decide to hit the fire with CL-415s or other aircraft. They have an overview of all the aircraft available and the fires around the country."

Last year was the worst in a decade with the Dromaders logging well over 2,000 flying hours working on fires. Col Kaloudis continued: "There was a spot fire on the island of Corfu in August, some 10 miles [16km] north of the airport. We took off to find the fire area and we dropped the water. Firefighting personnel on the ground asked us to refill and make another drop. On the approach to the airport, we overflew Dafnili [a tourist area with several hotels] and everything was fine there. When we took off again, there was suddenly a big fire. The tourists in the hotels were panicking as there was no way out because of the smoke. I told the fire department we were going to this new fire. We made 12 water drops with two aircraft. The chief of the fire department in Corfu had already requested reinforcement. A CL-415 soon took off from Andravida and landed three hours later, but the fire was already extinguished and the people at the hotels were unharmed. The PZLs did the job without any help, because we are all over the country in order to make the first attack. Some 80 to 90% of wildfires are extinguished by PZLs or ground personnel. In the media, you only hear about the ten per cent."

### Years of experience

Few of the unit's pilots are under the age of 40. Flying the M-18 in the firefighting role requires a lot of experience. Most aircrew coming to the unit have a long career behind them flying fighters. The senior staff have flown aircraft including the CL-215, F-4, F-5, P-3, T-33 and even the C-47 (which remained in active service until some ten years ago).

Newcomers begin their flying training on the two-seat M-18BS with an instructor sitting in the front, because the rear seat better resembles the pilot's position in the single-



*The unit always works with two, sometimes up to three, aircraft on the same fire.*


seater. In perfect weather conditions the conversion training can be completed in around a month. One of the most difficult things to learn is landing the aircraft. Most aircraft require the pilot to pull the stick back during landing, but an M-18 pilot needs to push the stick forward in order to land using the front wheels. Push it too far forward though and the propeller will hit the ground, causing the aircraft to crash. It's very difficult to make a perfect landing, especially because the aircraft is very sensitive to wind. After mastering take-off and landing, aviators learn to handle the aircraft's limits and complete the course with operational training. The latter comprises carrying out water drops, all of which are solo flights. The M-18BS has a small water tank, but in practice the aircraft is so close to its maximum take-off weight with two pilots on board that it makes no sense to use it for water drops. Various ground targets are in use and new pilots gradually build up their confidence hitting their objectives with increasing quantities of water, while working their way down to an altitude of 33ft (10m).

The M-18 has a water capacity of 549 imp gal (2,500 lit), but the aircraft usually lifts off with 329 imp gal (1,500 lit) due to take-off weight limitations. As the aircraft consumes fuel and its weight reduces, the amount of water carried is gradually increased. The water tank is installed in the nose and the pilot can

actually see the water through a little window, with marking points showing the quantity available. A full water drop takes around one to two seconds to leave the aircraft, but the pilot is also able to produce a fire-line which takes between seven and ten seconds. This is mainly used in case of smoke without flames.

Right next to the water reservoir is the tank with flame-retardant foam. Depending on the fire, before each water drop the pilot can choose to add 0.6, 2.0 or 3.7 imp gal (3, 9 or 17 lit) of foam to the water. Foam is always used, except when there is only some smoke or if the fire is under unburnt trees. In the latter case, the foam-water combination would simply not reach the surface.

The unit's aircraft are getting older, but according to Col Kaloudis this is not an issue: "Our aircraft still have many years left. If you follow the maintenance programme, the aircraft doesn't get 'old'. In my personal opinion, I would like to have the Air Tractor [AT-802]. I prefer small aircraft for firefighting and it has a very good engine and larger load. Air Tractors are more effective against fires due to their load and velocity, but you have to consider the price. It's expensive. It also has another disadvantage, which is that its turboprop engine, like the CL-415, cannot fly through smoke. As long as the pilot can see the terrain, our aircraft can fly through light smoke." **AFM**



*The squadron has three twin-seat M-18BS aircraft, which are only used for training.*