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## **AIRFORCE OFFERS A HELPING HAND !**

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At the beginning of this year there was some panic in the northeast of the Netherlands. During high tide and heavy storm some dikes appeared to be unexpected bad which resulted in critical moments. Speed, but also the correct statement was necessary to know how and in what areas there had to be done. Deployment of an F-16 of the airbase Volkel with special recording equipment was a major contribution and thus major disasters were prevented and necessary measures could be taken. This article describes how it was organised.

### **CRISIS DURING HIGH TIDE**

During the flood situation in The Netherlands in the first week of 2012 the 'Eems canal' quay at the small town of Woltersum in the North appeared to be weaker as foreseen by the district water board 'Noorderzijlvest'. It was based on test results from 2006 and an annual inspection. In 2011 it appeared that improvement works would be required, but it was not clear that acute changes were needed. On January 6, 2012 Public Safety region Groningen gave instruction to the Dutch Airforce to make aerial infrared images of the Eems canal quay to learn about the present stage of the dikes. On this basis the District Water Board and some major advice companies some altimetries were done on these embankments and dikes. The combination of these two actions gave a much more detailed image of the quays during the high tides. The first absolute repair measures such as the application of a fat layer of clay could be adapted to this. The infrared images of the F-16 made with a special pod during flight made differences in temperature visible in the critical area. The temperature of the dike itself, and the temperature of the seepage are different. So you can see where there is water 'floating' in the dike where it shouldn't be. This seepage flows slowly through small channels in the dike, doing their devastating job. The F-16 images clearly show the exact locations of the output of the ducts (piping) that were created in the dike.

### **RECCELITE POD**

For this purpose the F-16 flew a number of missions with a special 'reccelite air reconnaissance pod' which can make high resolution images as well as visual as infrared spectrum with Step Framing camera's. These camera's make so called 'stills', a large number of pictures. (not video images) The RecceLite is a successful development of the familiar Litening pod developed by the specialized Israeli company Rafael. For insiders: The targeting system is removed and now accommodates new sensors. The reccelite pod houses a MWIR (3-5 micrometer) Focal Plane Array FPA forward looking infra red (FLIR) system with a 3 FoV InfraRed (IR) sensor mounted. A 3 FoV FPA CCD camera (Zeiss Optronik GmbH) makes images in the visual spectre. next to that an integral Inertial reference System (IRS) provides stable measurements on the right spots. The sensorhead in front of the pod is revolving and this way one is able to 'look' in front and sideways on low-, medium

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and high altitudes. The recelite pod has already proven its value in Afghanistan where it was first used by the Dutch Airforce. The recce system was meant to detect IED's (Improvised Explosive Devices) or roadside bombs. In particular over convoy routes were addressed to see if there were any changes in the landscape (relative to a previous zero-measurement). This way over two million images have already been made. In principle any pilot can fly these missions. There are only restrictions during a normal flight path by atmospheric influences. The quality of the image analysts of the Tactical Air Reconnaissance Center (TARC) that signal subtle changes in the gray image are actually the key to success. The images are stored in the recelite pod directly after taken on a 'solid state recorder', you could say a very advanced memory stick. The images can be analysed immediately after the flight by the experts. The technique implies that, in situations where speed is desired, images optionally with a full duplex wideband digital data link can be sent in real time to the receiver on the ground. So at the moment of shooting in the air, the picture can be viewed and judged the same moment on the ground or even in another airplane. The mission plan can be pre-programmed, but can also be adjusted during flight. Obviously, the pilot can override the authorization on the system manually to take over if necessary.

## **OPERATION.**

When the Public Safety Officer gave the order to the DOPS/J3 unit of the Royal Netherlands Air Force, the operational command came in action. An F-16 of the reconnaissance unit at Volkel Air Base was rolled out and the pilot was briefed. The mission plan was programmed in the pod in advance by the staff of TARC to achieve a particular effect (resolution, mode of shooting) and then the automatic mode could be used.

## **NOT THE FIRST TIME**

In the civil military cooperation more often requests for support by the Air Force have been made and this is also one of the tasks of national defense. It also wasn't the first experience because also in the beginning of 2011 some foto runs were made over the banks of the emerging rivers in the south of the province of Limburg. This time the embankments of the 'Eemskanaal' and 'Winschoterdiep' were mapped by multiple photo runs. It was flown at an altitude of 7000-9000 feet where the runs took a few minutes each. The solid state recorder which has a capacity of from 16 Gigabyte can handle an operational flight time of about 1,5 hours to record and that was enough. The images were subsequently analyzed by the TARC group, part of 107 Battery of the Aerial Systems JISTARC and explanations were given to the principal, which happened on January 6th in the evening.

## **GOOD INSTITUTION**

Hereby it is entirely clear how the Air Force in an appropriate and meaningful way can assist civil authorities in crisis situations. It is a grateful task because in this way, the taxpayers see and feel the benefits of these advanced reconnaissance systems. The pilots speak of routine, because they flew to the safety of people on the ground

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for many hours over Afghanistan, but deep inside they know they have important work to do and that motivates them. Given the diversity of requests for help there is no real plan about the alert status. The Air Force is very flexible and ready for the public as needed. This was proven even more recently when, after a wild and grave chase action (where normally a police helicopter is used) the help was sought of an F-16 to scan quickly a much larger area to find out where possible people could be hiding which is perfectly visible with the heat sensors.

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**Kees Otten & Wim Das**

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