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India debuts manpack VTOL UAVs for HADR

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Search and rescue agencies operating in Northern India have successfully used man-portable VTOL UAVs for the first time in humanitarian assistance/disaster relief (HADR) operations, it has emerged.

Industry sources described to *Shephard* how the UAVs were used to find survivors of the recent flood and landslide disaster in Uttarakhand State, conducted by the National Disaster Response Force (NDRF).

Four **Netra** VTOL UAVs manufactured by **Idea Forge** were deployed to Gaurikund before being split into two teams with a ground control station each.

Idea Forge was already in talks with the NDRF to supply a demonstration system when it received the call to assist in HADR operations in Uttarakhand.

'They called us up to offer help,' explained the company's chief marketing officer, Amardeep Singh. 'No other [manpacked VTOL] UAV was being used there'.

Stationed at the Gaurikund basecamp, a small heli-pad only a few metres in size was secured and the NDRF teams operated the UAVs, scanning the mountains and valleys for survivors. 'We could see the other side of the mountain by flying the system and confirming people on the ground,' Singh continued.

Officials said 40,000km² of land was affected by flash floods and landslides and according to figures published last week, with some 95,000 people having been evacuated with a further 10,000 waiting to be rescued.

Agencies operating under NDRF umbrella included the Indo-Tibet Border Police (ITBP), Indian Army and Air Force, operated the systems with any two of the UAVs airborne at any one time.

Teams then deployed on foot with the UAVs to inaccessible areas and operated the UAVs to check for survivors in evacuated areas. Then Indian paratroopers were sent to escort survivors by foot to helicopter landing sites for rescue.

Singh confirmed that the Idea Forge systems had now returned to base with the HADR operation due to wrap up in the next couple of days. However, he asserted a number of valuable lessons learned from the operation.

'We regret getting the call a little late. The disaster happened three days earlier and we were tracking the news. But we were unsure if we were to be deployed. Response in the first 24 hours of a disaster is most critical,' he told *Shephard*.

Speak about the VTOL UAVs, one NDRF officer described to the Times of India: 'Not only has it helped us to locate hundreds of trapped victims but with these machines we scan even those areas where the possibility of their presence is little and thus ensure that none of them is left behind. We can also arrange for food or water once we receive the images sent by the UAVs,' the official continued. Local media reported that around 190 personnel had been positively identified by the UAVs.

Netra UAV weighs 1.5kg and measures 90cm x 90cm using four propeller blades can operate for up to 30 minutes per battery charge and is capable of travelling in wind speeds of 15 knots. The vehicle was developed as a collaborative effort by Idea Forge and the DRDO.

It usually carries a high-resolution daylight camera or thermal camera with pan and tilt control system and has a line of sight communications range of 1.5km.

Conditions in Uttarakhand were far from ideal, Singh explained. Netra operated at altitudes up to 8,000ft with visibility restricted to a few metres due to thick fog.

'There was not a good GPS signal with the mountains screening the satellites. We were always getting signals but did not lose it at any time,' he added.

'It was very foggy and cloudy and challenging for the UAVs. We had to wait for the fog to clear sometimes. We do have thermal imaging cameras but even in thick fog, that doesn't help,' he said.

Singh described how Netra's 35 minute endurance capability was sufficient for the task although he admitted that the company was looking to extend this to 50 minutes. He added that Idea Forge has plans to introduce additional manual controls of the UAV.

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