

OPERATION RAHAT: A TASK FORCE COMMANDER'S ACCOUNT

RAJESH ISSER

ABSTRACT

Disaster struck the state of Uttarakhand, larger than Switzerland and Belgium taken together, on June 16-17, 2013, with unprecedented heavy rains that caused flash floods and landslides. This tragedy of epic proportions left an estimated 6,000-7,000 people dead in its wake. Almost 4,000 villages were severely affected. At the end, more than 1,10,000 pilgrims had been evacuated, including about 45,000 by air. An additional 1,00,000 locals had been moved to safer places elsewhere in the state. All this was done in the most demanding terrain (the high Himalayas) and in the thick of the monsoon season. This personal account is about handling the complexities of mass evacuations, medical aid, and all the other issues involved.

Coordination amongst the various agencies, effective utilisation of all available resources, and common sense solutions were some of the highlights of the operation. The rescue and relief action saw a convergence of multiple and diverse organisations. Swift trust came through the established credibility and reputations of organisation, but a big contributor was the demonstrated performance of actors and individuals, as time went by. This allowed delineation of roles and responsibilities without a strict hierarchy. Shared goals and a common vision of an end-state allowed an environment that facilitated collaboration.

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INTRODUCTION

Disaster struck the state of Uttarakhand (India) on June 15, 2013, with unprecedented heavy rains throughout the night that caused flash floods and landslides. Water levels in all the rivers crossed the danger mark and at many bridges, and portions of roads were washed away (at 2,172 points), snapping road links to many places. This tragedy of epic proportions affected the entire state and some parts of adjoining Himachal Pradesh, leaving an estimated 7,000 people dead or missing in its wake. Almost 4,000 villages were severely affected. After two days of

initial operations and reconnaissance of the affected areas, when the skies stopped pouring, the full extent of the tragedy came to light. This led to the mounting of the biggest humanitarian operation in the history of the Indian Air Force (IAF): Operation Rahat. At the end, more than 1,10,000 pilgrims had been evacuated, including about 45,000 by air. An additional 1,00,000 locals had been moved to safer places elsewhere in the state. All this was done in the most demanding terrain (the high Himalayas) and in the thick of the monsoon season [see Fig 1(a) and Fig 1(b)].

We started operations with just two rooms at Jolly Grant (Dehradun): one operations room and one for the aircrew. The blackboard in the crew room, crammed as it was, provided the first display of the power of team work in the days to come. The signatures on it included those of pilots, engineers, doctors, paramedics and civil administrators who put all their professional acumen and selfless commitment on the line to pull off the most remarkable rescue and relief operations ever witnessed by the country and the world.

Fig 1(a)

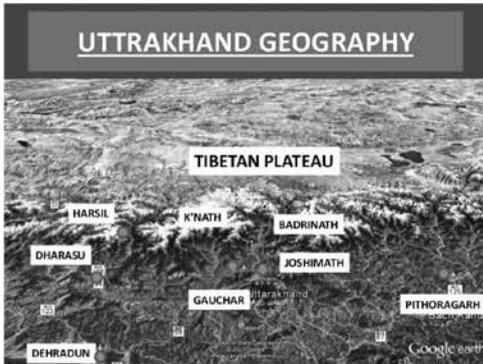


Fig 1(b)



THE DELUGE

Ground Situation: Heavy rains, flash floods and large scale landslides had occurred in various regions of Uttarakhand and eastern Himachal Pradesh. The most severely affected areas were Rudraprayag and Chamoli districts in Uttarakhand, with Kedarnath valley taking the brunt of the calamity, with 160 villages affected and almost all the major roads links snapped due to landslides. Many villages were washed away and many abandoned due to fear of landslides. There were reports of damage in the Kumaon region in Pithoragarh district. Snapping of road links not only resulted in tourists (mostly pilgrims), being stranded, but also shortage of food and medicine, and a total collapse of the public distribution system in the states. Thus, a major requirement of heli-dropping of rations came up along with casualty evacuation. In Himachal Pradesh, the Kinnaur and Rampur districts were badly affected. The roads from north of Rampur to Kaza were washed away in many places, leading to some casualties, stranding of tourists (foreign and Indian) and locals, and also severely affecting the supply of food and other essential items.

Fig 2(a)



Fig 2(b)



KEDARNATH LAYOUT

The temple township of Kedarnath itself is located on glacial outwash deposits at an altitude of 3,581 m Above Mean Sea Level (AMSL). These deposits can be understood as being heaps of unconsolidated rock mass deposited by glaciers and later modified by the action of water. The shrine of Kedarnath was located on a raised middle portion of the deposit that was 20-25 m above the level of the Mandakini at 3,562 m AMSL [Fig 2(a) and Fig 2(b)]. For reaching Kedarnath, one had to trek upstream along the course of the Mandakini from Gaurikund for a distance of 14 km.

A moraine dammed lake, Chorabari Tal, was present a little downstream of the snout of Chorabari glacier. This lake was located in the depression formed in the glacial material to the west of the right lateral moraine of Chorabari glacier and was fed by seepage of the glacial melt water. Even though the depression was around 200 m long, 100 m wide and 15-20 m deep, not more than 2-3 m water used to be there in the lake. There were incessant rains in the area between June 14 and 17, 2013, and rainfall on June 16 and 17, 2013, was particularly heavy (see Table 1).

Tragedy struck Kedarnath on the night of June 16, 2013, and in the morning hours of June 17, 2013. The hitherto abandoned eastern channel of the Mandakini at Kedarnath became active in the evening hours of June 16, 2013. Flooding in Kedarnath was not that devastating on June 16, 2013, though it washed off the pedestrian bridges over the Mandakini connecting Kedarnath to Rambara and turning Kedarnath into an island, but the flood

waters of the Mandakini did not affect the Kedarnath temple premises.

On June 16, 2013, after the flood event, despite heavy rains, most people in Kedarnath assembled in the temple premises and engaged in prayers. A large number of people, however, returned to their respective homes around 0200 hrs, and major devastation took place in Kedarnath in the morning hours of June 17, 2013; Chorabari Tal was intact on June 16, 2013. Rambara and Gaurikund were devastated in the night of June 16, 2013. The

breach of Chorabari Tal took place around 0700 hrs on June 17, 2013, and the flood waters of the Mandakini ravaged Kedarnath completely, and Rambara, Gaurikund and Sonprayag again in the morning hours of June 17, 2013.

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Table 1

Date	Rainfall (in mm)		Level of the Mandakini at Rudraprayag (in m/ AMSL)	
	At Rudraprayag	At Gaurikund	Danger Level	Level at 0800 hrs
June 15, 2013	41.4	250.0	626.00	618.12
June 16	105.2	+250.0	626.00	625.00
June 17	100.2	180.0	626.00	633.50
June 18	62.1	0.0	626.00	626.65
June 19	7.0	0.0	626.00	623.00
June 20	0.0	0.0	626.00	622.48

The volume of water was enormous and carried with it huge glacial boulders and outwash materials that choked the western channel of the Mandakini, and the flow of water and debris got diverted towards Kedarnath township that was, thus, ravaged. There was absolutely no warning: most people were taken by surprise and had no time to respond. Besides Kedarnath, this event caused devastation in Rambara, Gaurikund, Sonprayag and other places.

All communication with Kedarnath valley was snapped in the late evening of June 16, 2013. Adverse weather and terrain conditions prevented any resort to alternative probes. The outside world as also the local administration, therefore, remained unaware of the events in Mandakini valley till the afternoon of June 17, 2013.

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A before-and-after comparison in some of the figures (above and below) clearly shows the extent of devastation [Fig 2(a) and Fig 2(b)]. Today, even the temple lists to one side, an indication of the beating it took during the morning of June 17, 2013. The towering temple structure, standing a clear 25-30 ft or more above the ground, now has the ground (rubble) level in line with the main doorway. The entire market place and steps have all been buried. Eye-witness accounts say that about 500 people had congregated at the complex on the night of June 16, 2013 (50 in the temple and others outside). By the morning of June 17, only the 50 in the temple survived by clutching onto various objects inside while it got flooded and rammed by large boulders from all sides.

Rambara: Most Critical: The aerial pictures of the before and after state reveal the complete devastation. An estimate puts it at about 1,500-2,000 people killed in and around Rambara at any given time. On June 16, the first deluge, caused by the giving away of the barrier formed by the debris brought down by the Dudh-Ganga river, occurred; and the momentum provided by a steep gradient, almost like a waterfall, completely gorged out Rambara. The

The sequence of events in the Mandakini valley took everyone by surprise—no one really got the chance of raising an alarm of any sort. Attempts were made to communicate the news of flooding over the high frequency police radio set but the seriousness of the event could not be assessed from the hurriedly communicated incomplete messages. All communication with Kedarnath valley was snapped in the late evening of June 16, 2013. Adverse weather and terrain conditions prevented any resort to alternative probes. The outside world as

next set of pictures [Fig 3(a) and Fig 3(b)] show a part of Rambara before and after. Bodies of people and animals, together with the remnants of the township show the ferocity of nature. Into this cauldron, the gallant aircrew of the IAF flying their Advanced Light Helicopters (ALH) performed the first rescues on June 18.

Fig 3(a)



Fig 3(b)



A special mention needs to be made of Wg Cdr Sachin, who was the first to venture in, and without the possibility of landing, picked up the first most critical cases. That started the massive operations to pick up thousands of critical cases from Rambara, Gaurikund and Jungle Chatti. **What follows is an excerpted personal account:** After entering the valley, we flew following the valley at a safe height, but above the obstructions. The track was broken at various places, starting from the valley entry from Sonprayag till well short of Kedarnath shrine, including various places around Gaurikund and Rambada. There was no prominent site close to the track to land because of the tall vegetation and the presence of low tension electrical lines. We established hover clear of the trees and electric poles, and dropped food packets and water bottles. Due to the impact after the drop from such height, most of the dropped items were damaged. Thereafter, we carried out a recce of the area more thoroughly and spotted an area adequate for the ALH to fit in. This area was close to the Rambara village and was adequate to fit an ALH with one skid [Fig 4(a) and Fig 4(b)]. We utilised this spot to pick up survivors by maintaining low hover at 1-2 ft. This location was subsequently

made known to the other ALH and civil helicopters. In the first sortie, we carried out 4 shuttles and evacuated 32 people, and dropped 350 kg of food items. Post turn-around servicing, we resumed our rescue operations in the Kedar valley. Ahead of Gaurikund, we spotted another adequate landing site supported by a huge flat stone which was close to the track and just on the edge of the river Mandakini. There were a few loose tarpaulin sheets and jute bags which started flying due to the downwash of the aircraft. So we dropped our gunner to ask the people nearby to clear out the area. After clearing the area, the spot was utilised subsequently for the evacuation of people. By the end of the day, we had evacuated 42 people and dropped 900 kg of load at various places in the Kedar valley.

Fig 4(a)

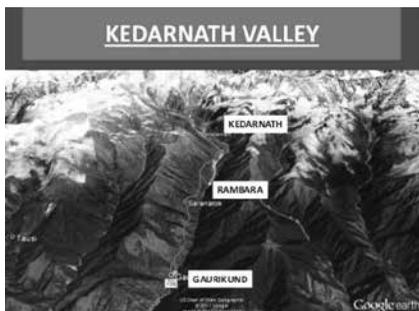


Fig 4(b)



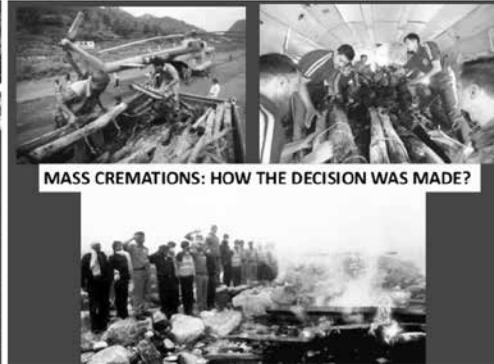
DEATH VALLEY

All along the 14 km route from Gaurikund to Kedarnath, dead bodies were testimony to the violent forces unleashed by nature. It was clear that warnings, if any, had been minimal. Many pilgrims, especially the old or medical cases, lay dead along the path. It was an eerie sight to see the living sticking to their dead loved ones even in an advanced stage of decomposition. The stench was palpable even when flying in the valley.

Fig 5(a)



Fig 5(b)



Mass Cremations: With the IAF's experience in Humanitarian Assistance and Disaster Relief (HADR), I was clear on June 19 itself that the number of dead would touch 5,000-7,000, while most, including the state government and army, maintained that it would not cross even 50-100. The home minister was advised against mass cremations, while I was the only voice that argued for the same. I reiterated that it was not possible to preserve even one body under the circumstances. Finally, prudence prevailed and mass cremations, after DNA sampling and photographs, was ordered by the Government of India [Fig 5(a) and Fig 5(b)]. Today, the actual estimates are closer to 7,000 dead or missing, discounting more unregistered poor people or beggars.

MISSION STATEMENT

The mission statement was: **To rescue all pilgrims and locals from the affected areas in order of priority determined by life-criticality, age/gender vulnerability and location in the shortest possible time.** I had given my assessment in the core-group meeting as eight clear-weather days, however, the Government of India's informal assessment was up to two months. Despite bad and intermittent good weather days, the main evacuation of critical pilgrims (19,600) was done in just 12 days.

Fig 6



OPERATIONS

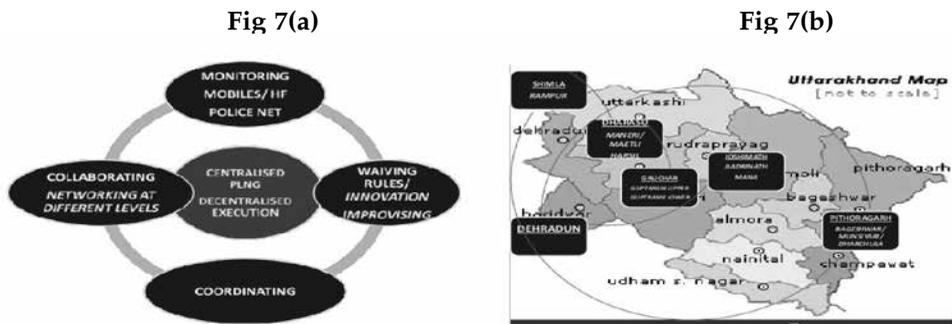
The three real considerations were time, terrain and weather: all of which affected, together or singly, the mission statement (Fig 6).

Time/Terrain/Weather: This was of essence since thousands of critical cases were involved. In general, these comprised old people, mostly suffering from various medical ailments. People ran out of medicines, as also some cardiac cases turned critical due to stress and the inhospitable environment. To cut down on time, forward basing of operations was the key. It depended on fuel being positioned at the forward locations. Since most roads were washed away, the state government could only position this after 3-5 days. Overnight, the Mi-26 heavy lift helicopter was used to position fuel bowsers at Dharasu (Gangotri valley) and Gauchar (Kedarnath) (see Fig 1(b)). The C-130 defuelled its fuel into bowsers at Dharasu. The more critical case of Gauchar was addressed by hundreds of barrels of fuel positioned by the Mi-26 directly from Chandigarh. This contribution of the IAF that ensured the operations of all IAF, civil and army helicopters on June 19, 20 and 21, truly saved thousands of lives.

Rules had to be waived off by the minute. The Chief of the Air Staff (CAS) had allowed me to professionally vet, and waive, rules. For example, no flying is allowed in the mountains beyond one hour before sunset; however, the windows of opportunity in Kedarnath valley were present only in the dying hours of the day. Considering the experience of the pilots, the maturity

of the supervisors, familiarisation in the sector and other such factors, on the critical dates of June 19-23, I allowed operations till sunset and, sometimes, on a case-to-case basis, beyond that. The IAF's herculean effort in getting the grounded Mi-26 (the world's largest helicopter) flying in record time was truly a great enabler.

CONOPS



The 'Concept of Operations' or CONOPS revolved around centralised planning, monitoring, tracking and coordinating with all the agencies. However, decentralised execution and evacuation ensured that no time was lost. I was in regular touch with all the detachment commanders and even individual captains, especially at the start and end of flying activity. All special missions and waiver of rules were done explicitly by me [Fig 7(a) and Fig 7(b)]. Tracking was done through every possible means; mobiles, High Fidelity, Very High Fidelity, Very Small Aperture Terminal (HF, VHF, VSAT) and police wireless nets, etc.

As seen above in the forward-basing plan, while the five major hubs with reasonably operational infrastructure remained constant, further sub-nodes kept getting added or subtracted as detachments, depending on the assessed requirements. Some of the sub-nodes are depicted above. The continuous flow of orders, directions and information flowed from the Task Force Command (TFC); while, at the same time, modifications and changes in plans were completely dependent on the reverse flow of feedback. For example,

As the month of July began, the need to relocate thousands of locals and to replace hundreds of National Disaster Response Force (NDRF) and Indo-Tibetan Border Police (ITBP) personnel, state government officials, police, etc took primacy. Coordination of a very high order was required with all the agencies to effect an optimum air movement plan.

the focus on building a clearing at Jungle Chatti on a war-footing was based on a correct assessment by an IAF ALH pilot who was operating in a winching mode there.

TARMAC/ TRANSIT MANAGEMENT

Thousands of pilgrims passed through all the major hubs; on June 23, some 4,500 evacuations were carried out. These were the IAF figures—a few hundred were added by civilian helicopters. Managing this stream of people, some seriously injured, required innovative local Standard Operating Procedures (SOPs); and the help of all uniformed personnel and disciplined volunteers [Fig 8(a) and Fig 8(b)]. After a few days, the SOPs got honed to a very fine level. As the month of July began, the need to relocate thousands of locals and to replace hundreds of National Disaster Response Force (NDRF) and Indo-Tibetan Border Police (ITBP) personnel, state government officials, police, etc took primacy. Coordination of a very high order was required with all the agencies to effect an optimum air movement plan.

Fig 8(a)



Fig 8(b)

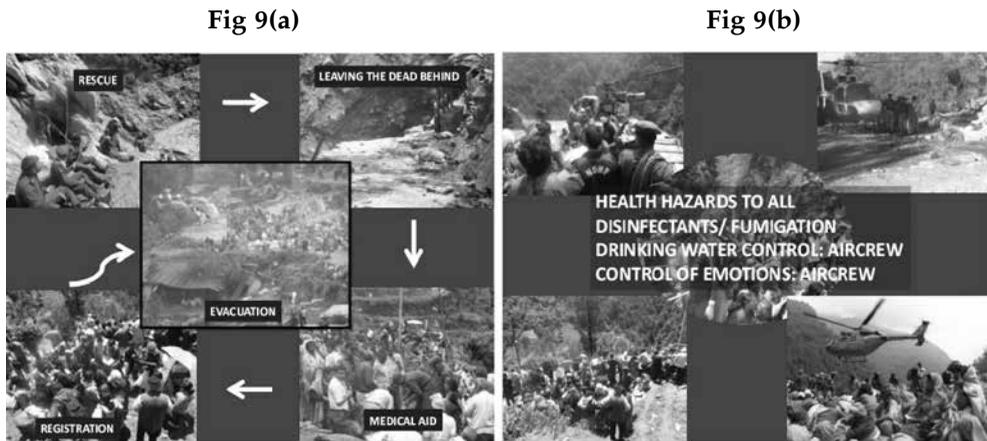


SYNERGY IN RESCUE OPERATIONS

Since Kedarnath valley was the only life-and-death critical case, the focus was on picking up survivors from there. A grand plan was offered by the IAF in the presence of the union home secretary, chief minister, cabinet members and the chief secretary. It was explained that if the helicopters were to evacuate all the way to Dehradun, precious time would be lost and lives would be at stake. An alternate route from Guptkashi–Mayali–Tehri–Rishikesh was reconnoitred by me on June 19. The same was activated by the orders of the central government with immediate effect. It could support only light vehicles, and, therefore, these were requisitioned in the hundreds. On June 20, a convoy of more than 500 light vehicles moved on the road to ensure speedy evacuation. All along, food, and medical and psychiatric help were arranged in the form of transit camps. The most severe cases were taken by the Mi-17s to Jolly Grant directly. Similar models were suggested for all the valleys affected in Uttrakhand and Himachal Pradesh, and were activated on June 20 itself by the orders of the central government.

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The front end of the rescue was picking up the injured and survivors from remote and inaccessible places in the deep and narrow valleys. The first step was to place specialist troops such as the NDRF, ITBP and, later, army paratroopers, by winching them down. They had a two-fold task: firstly, to make clearings for the helicopters to land; and secondly, to find, and help, survivors to reach the pick-up point [Fig 9(a) and Fig(b)].



Since the dead and living were together in these places, it was quite a task to convince the living to leave their loved ones (dead) behind. Heart rending tales in the hundreds were witnessed by the rescuers. After evacuation, immediate medical aid was administered in various degrees, including resuscitation and emergency medical procedures. Teams of specialist doctors had already been positioned at all the sub and main nodes. Severe cases were marked for air evacuation while the rest, after registration, were moved by convoys. Satellite phones were installed so that people could talk to their relatives. This entire synergised effort was the real reason of the success of Operation Rahat's relief and rescue phase. All the helicopters, while going in for rescue, carried relief rations and bottled water to be dropped at various places.

HEALTH HAZARDS: GROUND ZERO, GAURIKUND TO RAMBARA

While all the valleys had problems of overcrowding, lack of infrastructure, shortage of medicines and doctors and an unhygienic environment all around, the Rambara-Gaurikund area was the worst affected [Fig 9(a) and Fig 9(b)]. By June 22, the stench of dead bodies and animals had grown so strong that it could be discerned in a helicopter while hovering. Cases of diarrhoea, poisoning and other ailments were common. Special precautions were taken in disinfecting the helicopters and personnel regularly. In the case of death onboard or dead bodies, fumigation for

the night was mandatory. Aircrews were forbidden to drink any water except bottled mineral water directly supplied by the task force at Jolly Grant. All detachment commanders were directed to keep a strict vigil on food supplied by the civil agencies. A larger issue was the emotional counselling of the aircrew so that they did not get carried away and cross limits. Also, beyond a certain duration of operating in, and among, the dead and injured, the stress cases were moved out to more benign operations. A case in point was an ALH crew that had done some severe stressful work in Jungle Chatti and beyond. They were moved out to Dharasu after four days of hectic operations.

GROUND(ED) PROBLEMS

Ground management of panic-stricken and injured people, many of whom had lost many, if not all, of their family members, was a nightmare. Fig 10(a) and Fig 10(b) below show an IAF pilot who had to switch off because of being completely overwhelmed by hundreds of people. He borrowed a loud hailer from the police, and only after an hour of cajoling, was able to pacify the panicked crowd. Later on, there were many cases of pony-wallas blocking helipads to coerce the state government to stop using helicopters. Stone-throwing incidents in Pithoragarh district were rampant till I personally took up the matter with chief minister and chief secretary. In most cases, the aircrew briefed NDRF/ITBP/police personnel individually about the SOP to be followed. The Director General (DG) of Police of Uttarakhand had a long meeting with me on this and other police related issues on the June 25. After this, problems of such nature subsided. There were many psychiatric and trauma related cases on the ground that could be a hazard to a helicopter.

Fig 10(a)

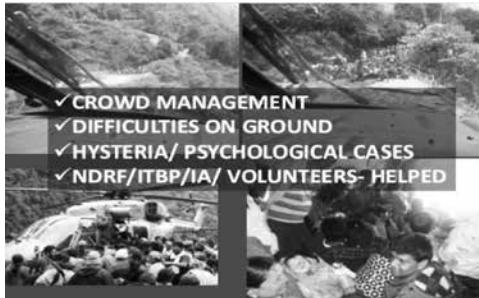


Fig 10(b)



PRIORITISATION

The state administration had very little in terms of assessments from the ground viz District Magistrates (DMs), tehsildars, Sub-Divisional Magistrates (SDMs), etc. After my recce with the union home secretary, DG Border Roads, DG ITBP, DG NDRF on June 19, I got in touch with the DMs of Uttarkashi, Rudraprayag, Chamoli and Pithoragarh for ground reports. Unfortunately, no holistic reports or credible assessments were available. In fact, the DM of the most critical Rudraprayag district had suffered a heart attack and the new incumbent was at a complete loss. A rough plan of relief drops was undertaken immediately. Over the next two days, based on pilot reports and survivor accounts, a mosaic of priority areas was prepared. Based on this, relief, medicines, doctors, policemen, civil servants were heli-dropped as part of the evacuation plan. All the DMs and the commissioner of Kumaon were in daily touch with me and the Disaster Centre for their requirements. This was vetted in the evening by me with Mr Umakant Pawar, secretary to the state government, as the state representative. However, the trust reposed by the state on the IAF was so great that all final decisions of prioritisation were left to the IAF. Sortie planning had to factor in alternate sites/ missions so that there was a minimum number of complete aborts or Did Not Check Outs (DNCOs). Any major hiccups or changes to a plan were immediately informed to me by the detachment commanders. They were given enough freedom to react to situations and pass the information later on to me.

PRESSURES FOR PRIORITISATION

As expected, with people from all states of India involved, anxiety manifested in thousands of telephone calls and messages (SMS) asking for the rescue of particular persons or groups. There were calls from high political offices, senior bureaucrats, generals, admirals, air marshals and others, with frantic requests. But we held our ground on a matter of a simple principle: **priority was in the sequence of injured/ critical, old, women and children and, lastly, able-bodied men.** Every feedback to us praised our completely unbiased stand, unlike the civil helicopters whose operations were run with some nefarious agendas. My simple refrain to everyone was: **we will rescue or evacuate all; that is the commitment of our chief.**

FORMULATION OF PROCEDURES

As most of the aircrew were either not current in, or were new to, operations in these mountains, alongwith the large number of obstructions, the pattern of weather and turbulence, the presence of other helicopters (civil) operating in the same valleys and operating with civil agencies on the ground that were not familiar with helicopter operations, certain procedures were evolved to ensure safe and optimal utilisation of the available effort. These were as follows:

- All helicopters maintained an open valley frequency.
- All take-offs were staggered. All helicopters maintained right of the valley. Inbound and outbound heights were specified for each valley. For example, a unique procedure was adopted in Harsil. The stretch of the valley spanning 9 Nautical Miles (NM) to 5 NM, inbound Harsil is a very narrow one. It was named "narrow valley" for ease of understanding by all the aircrew and specific Radio/Telephony (R/T) calls were to be made while entering and exiting the narrow valley. The minimum height to be maintained to cross this narrow valley for the Mi-17 V5 was 2,500 m and the level to be maintained was positively below the cloud base. Also, all traffic was to be maintained in the centre of the narrow valley. In the case of two aircraft operating at the same time, vertical separation was to be maintained after an announcement on R/T. No pressure of any kind was

imposed upon the pilots in the execution of any task. All the captains had the full authority to abort any sortie for any reason of safety.

- All maps were updated for obstructions and this was personally supervised by me.
- Minimum descent heights were specified for each valley. Descent was carried out only when in contact with the destination helipad, and clear of obstructions.
- Morning briefings were carried out regularly, reiterating adherence to SOPs and flight safety as paramount. Weather reports were obtained from nearby air force bases. Additionally, satellite pictures were downloaded from the internet. Also, a system of obtaining weather reports from the NDRF and police on wireless nets was evolved. Gram pradhans of villages enroute at critical locations also provided weather reports. This was of great assistance whenever there was a rapid deterioration of weather. Pilots were warned well in advance, which enabled timely safe decisions.
- Availability of the mobile network was explored to improve safety and efficiency. The establishment of real time communication with the crew of different helicopters was ensured by a system of SMS on mobiles using 'Whatsapp'. This enhanced the safety, especially in fast deteriorating weather. On many occasions, it allowed timely diversion or holding on forward helipads rather than getting into bad weather.
- In addition to the IAF helipad directories, directories were also taken from the state government and matched for any variations.
- All aircrew and technicians were briefed on controlling the movement of vehicles. Only authorised vehicles were permitted on the helipad, under the direct control of IAF personnel.

Execution of Relief Operations: The relief operations were executed as follows:

- The civil aviation authorities, after consultation with me, planned sorties as per the requirement of the state government. A daily flying programme, giving tasking in terms of sorties to specific locations, was

prepared at Jolly Grant.

- Initial sorties were planned to helipads at higher elevation, especially prone to severe air turbulence.
- The priority was to induct the NDRF and evacuate the stranded and injured pilgrims from the places which were cut off completely. The highest priority was Kedarnath valley.
- Air logistics operations were carried out to places which were inaccessible by road. Food, rations, medicines and State Electricity Board equipment was delivered. All positioning sorties for evacuation ensured maximum load.
- Optimal utilisation of the air effort was ensured. No leg was flown empty. If a certain number of personnel evacuated / cargo was carried from a higher elevation helipad, then additional personnel / cargo were picked up from helipads enroute at lower elevations.

Tarmac Management: A helicopter, being a most versatile platform, needs the least form of organised tarmac and airfield facilities. However, some degree of tarmac management is necessary for every operation. The make-shift tarmac arrangements put up at helipads merit special mention. There was a regular requirement to marshal small and big vehicles for loading relief material, taking out casualties, and refuelling, and smaller vehicles to collect role equipment/ lashing materials from each helicopter. All air warriors were sensitised to the need to escort each and every vehicle and personnel close to the helicopter. This was meticulously executed and their untiring and smart movements sustained for the entire duration.

At detachments where helicopters were operating with the ITBP or police, the respective agencies provided security and lodging. In general, after intense liaison, all administrative requirements were met by the state government. Food, lodging and transport were provided for all personnel adequately. At civil helipads, the security for the aircraft and helipad was provided by the state police. Security was beefed up by doubling of the Central Industrial Security Force (CISF)/ police guards when deemed necessary, with the ground crew visiting helipads throughout the night. The state agencies/

ITBP/army established an organised and systematic reception of passengers brought by helicopters at the helipads. Local volunteers established dawn to dusk kitchens to provide food to one and all operating and assisting at various helipads.

FUEL CONSTRAINTS

The detachments at various locations were restricted in operations by the availability of fuel. Availability of fuel was a major restraining factor in the initial few days. This problem sometimes came up during the later part of the operations in Phase II also as the roads kept getting washed away due to the incessant rains and landslides.

- **Fuel Availability at Dharasu:** Dharasu was temporarily cut off by road from Rishikesh and the Indian Oil Corporation (IOC) fuel bowser was stuck enroute. Both the helicopters at Dharasu had just sufficient fuel to carry out only one hour sorties each. I was apprised of the same. The Mi-26 was tasked to position two fuel bowsers early in the morning on June 22. Post arrival of the bowsers, the C-130J was landed to defuel into Aviation Turbine Fuel (ATF) bowsers [Fig 10(a) and Fig 10(b)]. A total of about 15KL was defuelled from the C-130J in two shuttles which sufficed for the day's requirements. The IOC bowser and the tankers maintained continuous fuel supply from June 23.
- **Fuel Availability at Upper Guptkashi:** With the rebuilding of Kedarnath as one of the major focus areas of the civil government, the requirement of positioning material from Upper Guptkashi came to the fore. The non-availability of bowsers, due to the unserviceability of the deteriorated road conditions, hampered the positioning of fuel. This was communicated to the state officials through written correspondence as well as during various meetings.

STAGING FORWARD

Between June 19-21, the strength of IAF helicopters rose to 45 – the single largest commitment ever in the history of the IAF for Humanitarian Response and Disaster Relief (HADR). As has been explained earlier, 6-8

bases were only the forward main nodes; during the operations, there were numerous sub-nodes such as Maitli, Munsiyari, Dharchula, etc. in all the sectors. An extremely dynamic situation was met by an equally flexible and responsive system. By July 1, 2013, 19,600 persons and casualties had been evacuated from this most difficult terrain encompassing two mountain states. More than 650 tonnes of relief supplies had been pumped in, including thousands of packets of survival rations (Table 2). Almost 1,500 NDRF, para medics, doctors, volunteers, etc had been moved forward to help out in the evacuation plan: the first phase of Operation Rahat had been successfully achieved in record time and effort.

Table 2

OP RAHAT						
OPS SUM - HEPTRS : AS ON 19 AUG 13 (A WORLD RECORD)						
TYPE	RELIEF OPS		LOAD		PAX	
	SOR	HRS	LDG	DROP	LAND	WING HING
MI17 IV	492	201:14	123.875	0.700	4860	0
MI-17 V5	1373	509:51	348.669	5.256	12565	31
ALH	1371	448:44	185.828	4.800	5598	115
CTA	78	28:20	0.752	0.150	114	18
MI-26	19	16:30	86.780	0.000	201	0
TOTAL	3333	1204:39	745.904	10.906	23338	164

Besides helicopters, the operation was backed by a fleet of fixed-wing aircraft. Almost eight aircraft were dedicated for operations in the sector in support of the helicopter effort. The latest in the IAF's inventory of communications and networking equipment was deployed at the earliest. The task force was in communication with the entire IAF, and this greatly facilitated the supply chain management to keep all 45 helicopters serviceable at all times. Innovation and adaptability were key words in setting up a rudimentary maintenance infrastructure to support this operation which lasted two months: Phase I for rescue and relief ; Phase II for rehabilitation support.

Innovative Use of C-130J Hercules 'Weather Bird': A demanding situation brings out the best in air warriors. The need of the hour was to undertake missions in a most professional manner, with adequate safety.

Close liaison was kept with the civil authorities for the coordination of the relief task. A joint operation room was established at the airfield dispersal at Jolly Grant airport for smooth flow of operations.

The overflying C-130J 'Weather Bird' would be contacted on R/T by the lead helicopter. The 'Weather Bird' would now act as the weather guide and also relay VHF communication to the following train of helicopters. Information, including specific speeds and heights to be maintained at various locations in the valley and general weather conditions at every turning point, would be passed to the following helicopters based on the real time situation faced by the leader. This not only facilitated the weather assessment but gave considerable confidence to the aircrew following the lead helicopter.

COORDINATION WITH CIVIL ADMINISTRATION

Close liaison was kept with the civil authorities for the coordination of the relief task. A joint operation room was established at the airfield dispersal at Jolly Grant airport for smooth flow of operations. Daily and hourly meetings were held with the civil authorities wherein critical areas were discussed and the thrust for the day decided. Representatives of the state government, ITBP, state police and NDRF were always present at the airfield, as also Non-Governmental Organisations (NGOs) and the media. Extensive use of the civil communication network was made for information like aircraft position and weather reporting where there was no R/T contact. I had regular meetings at the Secretariat with the core group headed by the Chief Secretary and Mr VK Duggal of the National Disaster Management Agency (NDMA). On June 19, the home secretary, and on June 22 and 27, the home minister, were briefed in detail on the progress of the operations and critical requirements. Handling all hierarchies of the HADR set-up is critical in understanding the evolution of a highly successful endeavour. More about this in later paragraphs.

ADMINISTRATION

At detachments where the helicopters were operating with the ITBP or police, the respective agencies provided security and lodging. In general, after intense liaison, all administrative requirements were met by the state government. Food, lodging and transport were provided for all personnel adequately. At civil helipads, the security for the aircraft and helipad was provided by the state police. Security was beefed up by doubling of the CISF/police guards when deemed necessary, with the ground crew visiting the helipads throughout the night.

The state agencies/ ITBP/army had established an organised and systematic reception of passengers brought by helicopters at the helipads, with proper registration and a computerised missing person's bureau. This was critical in getting dispersed and separated families together and contacting family members across the country. Local volunteers established dawn to dusk kitchens to provide food to one and all operating and assisting at various helipads.

MOBILE COMMUNICATION

During the initial days of the operations when things were still settling down and the number of aircraft was continuously increasing, passing of information was an issue. The younger aircrew came up with an ingenious plan of usage of smart phones for this purpose. A user group on Operation Rahat was formed on 'Whatsapp': this acted as a notice board for the aircrew where important information was available to everyone with a single post on Whatsapp. The efficacy of such a system was clearly evident during the operations; however, it was limited to the areas with mobile network availability and mainly in the unsecured realm. Wherever available, the use of the mobile network was made to the fullest for easy flow of information.

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SOPs were put in place for the requisitioning agencies to provide 'prepaid local SIM cards' to key persons. The detachments were provided with low cost handsets so that these SIM cards could be used exclusively for service purposes. On completion of the task, these SIM cards and mobile phones were returned to the respective agencies.

MANAGEMENT OF CIVILIAN INPUTS/ INTERFACE

It is important to understand the civilian-military interface, and even interference, during this operation. It truly exemplified how extreme complexities bring about frictions at all levels which need to be managed effectively. The evolution of a successful campaign which involves multiple agencies is an end result of negotiations, bickering, hot debates on perceived priorities, and gross political and bureaucratic interference. In the military, the idea of responsibility and accountability are well-ingrained and laid out. As the TFC, I was clear that how air operations evolved was my baby, and command and control of IAF assets, and in general, the air effort was my responsibility. However, such clear-cut divisions were not equally perceived by all. In the paragraphs that follow, the evolution of all the operations is chronicled to bring out this aspect.

June 19: Immediately after arrival, I called for a meeting of all the agencies. Till that time, the DM of Dehradun was the chief coordinator from the civil side. He was clueless about the extent of damage because he had taken over on June 18 after the then DM suffered a heart attack. On the issue of prioritisation, he requested me to do whatever the IAF assessed best. I had a meeting with the available Commanding Officers (COs) and pilots for a holistic assessment. It was clear that in the light of the three major factors i.e. time-criticality, terrain and weather, it was imperative that assets be forward based in order to save thousands of lives. However, the civil set-up, seeing the logistics of the plan, was not keen at all and kept putting up a number of hurdles. Also linked to this concept was the opening up of a number of alternate roads to facilitate evacuation since all the major arterial roads were cut off. This too was vehemently opposed because of the elaborate effort required on the ground. For example, the alternate route from Guptkashi via

Mayali and Tehri allowed only light vehicles and some urgent patch repair by the Public Works Department (PWD) [Fig 11(a) and Fig 11(b)].

Fig 11(a)

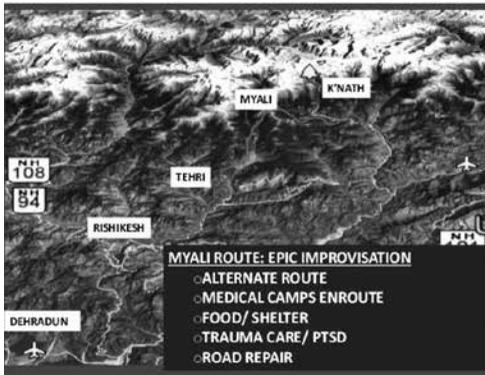
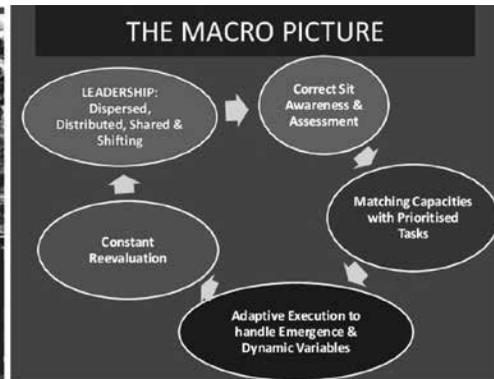


Fig 11(b)



In the afternoon, after an aerial recce with the home secretary, a meeting was chaired by Shri RK Singh with the chief secretary, all the secretaries, DGs of the ITBP, NDRF and state police. In a one-on-one session earlier, I had explained my broad plan which he was convinced about. He passed the necessary orders (backed by written minutes by Fax from the Home /Ministry). Both issues of forward basing and alternate roads for further evacuation in all valleys were addressed. Another important issue discussed in the one-on-one session with me was a comparison of the airlift between civilian and IAF helicopters. It was alleged that the civilians were lifting far more than the IAF. By that time, I had got inputs from various sources, including civil pilots (my retired coursemates). I put forward the following issues:

- While civilian helicopters were present in and around Guptkashi from the date of deluge (June 16), no rescues were undertaken from the Gaurikund-Rambara stretch where people were dying in scores. The first foray into the area was on June 18 when an IAF ALH first ventured there. A second IAF ALH joined it in the evening yet no civil helicopter came. This despite the state government knowing that there were no gravely

The civilian helicopter evacuations were exaggerated since no manifests or requisitions were being documented. Each passenger was linked to state reimbursement, therefore, there was an incentive to make money, with no checks and balances in place.

injured people in Kedarnath—it was only cut off—while the near-dead and injured in the lower valley required immediate attention.

- Hundreds were evacuated on June 17 and 18 by civilian helicopters; however, with an elaborate arrangement with the state police, only people by name were evacuated. The TV sting that showed money changing hands was just the tip of the iceberg. An extremely dirty money-game was on.

- The civilian helicopter evacuations were exaggerated since no manifests or requisitions were being documented. Each passenger was

linked to state reimbursement, therefore, there was an incentive to make money, with no checks and balances in place.

As a result of the above inputs, the home secretary immediately passed instructions to the chief secretary and secretary aviation for remedial measures. From the next day itself, there was a drastic drop in the civil numbers—from thousands to a few hundred daily. The other important issue discussed on June 19 was about positioning of fuel at the forward bases of Rampur, Dharasu, Guptkashi, Gauchar, Joshimath, Bageshwar, Dharchula and Munsiyari. IOC gave its commitment to the strategy, however, in the light of the positioning time and road conditions, asked for a few more days. In the light of the time-critical nature of the operations, the plan to launch the Mi-26 with bowsers and fuel barrels was hatched and implemented. The union home secretary used to call on a daily basis to check on the progress of the above issues. Had the IAF not insisted on the plan and avoided compromises, the number of days for the successful rescue operations would have doubled.

June 20: While the detachment plan was being executed, there were numerous glitches, clarifications from the DMs, and refusal to comply at the tehsildar level. Virtually, the whole day was spent along with state government officials to iron out all the administrative aspects. The IAF was

given urgent feedback on the requirements to beef up the infrastructure, including communications, logistics, maintenance, security and vehicles. The command responded with alacrity and things started moving immediately. An input from Sqn Ldr Naidu (ALH pilot) on survivors cut off at Jungle Chatti, galvanised everyone into action. A plan was made and the next day, 16 NDRF personnel were winched down to clear a helipad and aid the survivors. The fuel plan involving a variety of aircraft and helicopters also required constant liaison with the civil authorities on a variety of issues.

Another important issue was management of people on the helicopter tarmacs at various places. An SOP was made and modified to local conditions, which the civil side was persuaded to follow. The command and control of all activities shifted to the task force/ detachments. This was a vital aspect for flight safety since movement of thousands of pilgrims, and hundreds of other agency personnel and volunteers was involved on a daily basis.

June 21: While the rescue phase was actively on, the core group got together to discuss about rebuilding of the infrastructure. The IAF's assessments of road damage, done jointly with the Border Roads Organisation (BRO) proved to be realistic and effective. Also, a plan involving moving of heavy equipment such as dozers and compressors by the Mi-26 was suggested to the authorities. This plan and its execution proved critical even when the rescue/ relief phase was on. Importantly, it also optimised the flying effort of the IAF.

June 22: This was an extremely important day. The home minister convened a meeting with the chief ministers of Uttarakhand and Himachal Pradesh, all state government secretaries, and a number of secretaries from the Centre holding critical portfolios. This was a meeting wherein critical decisions/ revisions were to be made. As brought out earlier, the home secretary (union) was personally briefed by me on the grand plan and he had been in touch with me since June 19. However, in the meeting, he brought out a changed deployment which was just not feasible, since it was politically influenced. I stood firm on my plan which was fully adaptive, and carried out a presentation detailing the logic behind it. Everyone was finally convinced of the professional plan. In fact, it was this very plan which ensured that

the Kedar valley was cleared by June 23, Gangotri (Harsil) by June 30 and Badrinath by July 2.

The success of the operations removed all misgivings and I got repeated (almost daily) calls from the home secretary on the progress till he retired on June 30. Shri Shinde, the union home minister, personally congratulated me on June 26, when he came down for the funeral of the martyrs. He complimented me on the extremely complex but good and do-able plan that the IAF was executing.

June 25: I was suddenly requested by the chief minister's office at 0900 hrs to brief the Members of Parliament (MPs) on my assessments. I conducted a half-hour session wherein they were shocked by the numbers of dead that I gave them (5,000-7,000). Their briefing in Delhi had a maximum figure of 500. They seemed to be completely convinced about my logic on the issue as well as on the priorities of the overall effort. After this, I had the complete trust and faith of all the state government ministers and officials; at least, in terms of non-interference with operational plans.

The Medical Plan: This was as complex as the helicopter operations. Some vignettes follow [Fig 10(a) and Fig 10(b)]. Air-dropped specialist troops made the clearings for the helicopters to land, and find and help survivors to reach the pickup point. After first-stage evacuation, immediate medical aid was administered in various degrees, including resuscitation and emergency medical procedures. Severe cases were marked for further air evacuation while the rest, after registration, were moved by convoys. While all the valleys had problems of overcrowding, lack of infrastructure, shortage of medicines and doctors, an unhygienic environment all around, it was Kedarnath valley that was the worst affected, with thousands dead. Based on pilot reports and survivor accounts, a mosaic of priority areas was prepared, and relief, medicines, doctors, policemen and civil servants were heli-dropped at various sites.

- **Forward Throw:** Since many of the places had no medical set-ups or only rudimentary ones, detachments of paramedics were identified and despatched to the forward locations. However, the number of patients requiring immediate or continuous care overwhelmed the

initial deployments. Volunteers from major hospitals did not want to be deployed at field bases where conditions were raw and difficult. Such teams consisting of surgeons and super-specialists were positioned at large relief camps such as at Rishikesh.

- **Recruitment of Interns:** Seeing the large volume and the critical need of triage, I suggested to the chief minister and chief secretary that young doctors who could bring greater energy and passion to the difficult task at the forward locations be hired. About 27 interns were hired with the promise of permanent jobs depending on their performance during the crisis management.
- **Adaptive Response:** The situation at Guptkashi, where the maximum number of patients was received and triage carried out, was extremely dynamic and fast changing. From unmanageable psychiatric patients (one had lost all 16 family members) to handling thousands in a day (post discovery of Jungle Chatti), a very flexible and adaptive system was adopted. At times, additional doctors / paramedics were shifted from one valley to another as a temporary surge. Since most patients were old pilgrims who had lost all their possessions, monitoring their health and medication was a humungous effort.
- **Centralised Resource Distribution:** Based on active 24X7 inputs from many such points, medical supplies, including drinking water, were despatched from Dehradun. The Chief Medical Officer (CMO) of the state and his team were continuously on this job. The Indian Army looked after the food and organising at Harsil and Badrinath, involving tens of thousands of people. A major army medical set-up was put in place at Joshimath to cater for medical traffic from Badrinath.

Fig 12(a)



Fig 12(b)



NDMA Interactions: Shri VK Duggal, ex-union home secretary, was deputed as the chief coordinator for relief and rehabilitation. After the first few meetings, he became aware that he was dealing with an independent, fair and professional leadership of the IAF. True to his style, pressures were created and calls made to the Ministry of Defence and Air Headquarters (HQ), however, seeing the no-nonsense approach of both, he fell in line. After some time, a very healthy working relationship developed where he trusted my judgment even on aspects removed from the air operations. For example, the way ahead in reclaiming Kedarnath, BRO tasks, quantification of the never-ending appetite for relief supplies of some districts, etc. The politicis of Kumaon versus Garhwal region relief package became a major bone of contention. The political games played by parties comprise a reality that exists around the world. The necessary corrective action was taken by the chief minister, including posting out of some senior officers.

Media Handling: For the first 3-4 days, I did not allow the media to come in, since the focus was required on assessments, drafting safe SOPs and prioritisation. We started to give short updates when permission was granted by the CAS. Later, the media were taken on board without compromising on the mission. The basic premise in handling the media was to give out correct facts only and keep away from politically-loaded questions. Finally, what matters is the substance; and our efforts got appreciated as time passed. The presence of two

defence public relations officers (IAF officers) helped greatly as the preliminary sifting, prioritising and fairness to all was ensured without detracting from the main effort.

CONCLUSION

Operation Rahat was one of the biggest, and definitely the most complex, HADR mission so far for the IAF. Coordination amongst various agencies, effective utilisation of all available resources and common sense solutions were some of the factors in its success. Some make-shift arrangements helped in improving effectiveness during the course of these operations. A high level of coordination was achieved between the aircrew and ground crew, ensuring successful completion of missions. Both man and machine operated to their limits within the safety margins to execute all missions in record time. Regular interaction with the civil administration and all other agencies ensured better planning and optimal execution.

The rescue and relief action in Operation Rahat saw a convergence of organisations from the government, NGOs and different communities. In the dynamism and complexity that the problem presented lay the foundation of trust and coordination that allowed very effective collaboration, albeit with some obstacles and issues along the way. Swift trust came through established credibility and reputations of organisations. But a big contributor was the demonstrated performance of actors and individuals as time went by. This allowed delineation of roles and responsibilities without a strict hierarchy. The shared goals and the vision of an end-state allowed an environment that facilitated a collaborative approach.