IAF KAMET(7756 m) EXPEDITION APR-MAY 2004

REPORT ON THE PD 100 SUPPLEMENTARY CLIMBING OXYGEN SYSTEM MANUFACTUTED BY SUMMIT OXYGEN LIMITED

Introduction

1. Indian Air Force has been training from Mt Everest since 2001. As part of the training schedule, an expedition to Mt. Kamet (7756 meters) was organized in Apr-May 2004. Mr Bikrum Pandey of Himex, Nepal informed us of the new oxygen system being manufactured by Summit Oxygen, UK and we agreed to carry out trials for the equipment.

Equipment

2. The expedition had already left when the shipment arrived in Delhi on 18.4.04, so it had to sent to us at Base Camp by helicopter. The following equipment was received in well packed original containers:-

(a)	Oxygen cylinders 3Ltr	Qty 2	Wt 7 kg
(b)	Regulators with pressure gauge	Qty 2	
(c)	Face mask insulated	Qty 2	
(d)	Connecting hose	Qty 2	Wt 12 Kg (including container)
(e)	Pulse dose meter with spare batteries	Qty 2	
(f)	Nasal Cannula	Qty 2	
(g)	Flexible carrying case for pulse dose meter	Qty 2	

Usage

3. Oxygen was used by the leader and another member of the team between Camp III (5945 m) and Camp V (7040 m). Later, oxygen was used to revive a hypothermic climber at summit camp. The route between these camps is a mixture of steep rock and ice and takes roughly 4-5 hours between C-II and C-IV and 5-6 hours between C-IV and C-V. The weather was mostly clear but it was extremely windy. Ambient air temperature was between –5 to –10 ^{o} C. Winds were approx 40 to 50 knots.

4. On the first summit attempt, one of our climbers suddenly went into hypothermic shock after climbing from three in the morning till about six. The oxygen was at C IV. A sherpa was dispatched with it C-V, where he met up with the rescue team and the exhausted climber could be revived. He used O_2 all night and was later evacuated by

helicopter. Two other exhausted climbers used oxygen while sleeping at C-IV and C-III. At the end of the expedition, we had used only half the contents of each of the cylinders.

Comments on individual components

4. The comments on the individual components of the system are as follows:-

(a) **Oxygen cylinders** 3Ltr. At 3.5 Kg, the cylinders are light and easy to handle. The protective boot and band are useful protective devices. The cylinder valve is a little difficult to handle with gloved hands and one is always wondering which way it opens. A single sided lever with prominent 'open', 'close' or 'red', 'green' marking may be a useful modification. The boot or band could incorporate small storage pockets for 'O' rings.

(b) **Regulators with pressure gauge**. Very well designed. The combination of therapy unit and pulse dose outlet is very useful. The Therapy flow dial should be of the pull and turn type to prevent accidental opening while the cylinder is being handled.

(c) **Face mask insulated**. The face mask fits well and the insulation is good. The expiration flow is directed downwards to prevent fogging of sunglasses. Condensation, unfortunately, collects inside the mask. The tightening system for the mask is attached to the side of the mask with two plastic connecters. These keep falling off when one removes or tightens the mask and could become critical if one looses them on a steep slope. They definitely need to be modified.

(d) **Connecting hose**. The hoses take care of Murphy's law. The material used is good and stays flexible in the coldest of conditions. No problem here.

(e) **Pulse dose meter**. Excellent piece of equipment. Delivers oxygen when you breathe in and cuts it off when you breathe out. Worked wonderfully, without any problems. The visibility of the 'setting dial' needs to be improved. At extreme altitudes, when the brain is not working too well, it becomes difficult to read. The green confidence light could be 'on' instead of blinking (unless this consumes too much power) as this gives an impression that there's a loose connection.

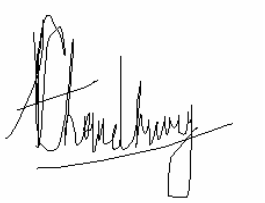
(f) **Nasal Cannula**. This can definitely not be used for climbing. It's a bit uncomfortable to climb with something in your nose, and, you're breathing from the mouth most of the time. It's good for use while sleeping, though.

g) **Flexible carrying case for pulse dose meter**. Definitely needs improvement. We couldn't figure out how and where to attach it. The case could be designed with a Velcro attachment to the waist strap of the rucksack, making things much easier. The elastic restrainers don't fit too well.

Conclusion

5. Overall, the performance of the system was excellent. Given the fact that we were actually not dependent on climbing oxygen, we were very satisfied with it. The saving on oxygen is phenomenal. There are occasions when you remove the mask, to talk, for example, which you can do without losing any O_2 . We would have no hesitation in using the system on Everest (with the suggested modifications) and I have no doubt that most people will switch to this from the continuous flow ones.

6. We had decided not to carry any oxygen, except a very heavy cylinder for medical purposes at Base Camp. We agreed to carry out the trials because we liked this new idea and it seemed to very useful for our Everest venture. In carrying out the trials, we had to carry an extra burden, not usually necessary for a mountain like Kamet. We are happy that we took the decision because, not only did we discover a very useful new system, this helped us save a life very high on the mountain.



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