

<p align="center">UNITED NATIONS DEVELOPMENT PROGRAMME In LAO PDR</p>	<p align="center">MISSION REPORT SUMMARY Date: July 2018</p>
<p>1. Unit: UXO Unit</p>	<p>2. Mission period (incl. of Travel): 13-16 Jan 2018</p>
<p>3. Purpose of the Mission:</p> <ul style="list-style-type: none"> - Participate in the UXO Technology Working Group Meeting - Explore new technologies for UXO Survey and Clearance - 	
<p>6. Mission member(s): Olivier Bauduin, Chief Technical Advisor and Head of UXO Unit</p>	<p>7. Costs: UXO Lao project</p>
<p>8. Summary of the mission</p> <p>The UXO Technology Working Group Meeting takes places every two years. This meeting was attended by around 60 participants representing different organizations, especially from South-East Asia including the national authorities in charge of Mine Action from Thailand, Cambodia, Laos and Vietnam. This is the largest technology event of this kind (for Mine Action) in the last six years. INGOs were well represented with Golden West, HALO Trust, Mines Advisory Group (MAG) and Norwegian People’s Aid (NPA).</p> <p>This meeting was organized by Sean Burke, who is in charge of the Humanitarian Demining Research and Development programme supported by the U.S. Government. This programme is managed by the “Technology guys”, and does not provide funding for normal ongoing clearance operations. In 2018, 76 technologies were developed in 16 countries, mainly with HALO Trust and Mines Advisory Group as partners.</p> <p>Their objective is to develop, demonstrate and validate technologies, with a focus on key technologies now commercially available (commercial modified technology).</p> <p>This workshop was focused on UXO clearance.</p> <p>The agenda had four main topics (all relevant for the UXO work in the Lao PDR):</p> <ol style="list-style-type: none"> 1) Survey 2) Area preparation / Clearance 3) Detection of UXO 4) Information Management / QA <p>A few highlights:</p> <ul style="list-style-type: none"> - The evidence-based survey methodology (initially developed by Norwegian People’s Aid) was highlighted. This is well known by us in Lao PDR, but it attracts the attention at global level. The best quality control (of the technical survey) remains the area clearance. 	

- Drones: In Laos, both NPA and Halo Trust have drones but it is currently used to get the aerial images in support to the survey or surveillance during UXO demolition (for safety, to ensure that there is no people around), not really for detection so far. The most interesting information was a presentation by MAG Cambodia with a drone detecting the level of vegetation for better work planning. This drone generates 2D and 3D maps, indicating low/medium/high vegetation density. It shows more details in preparation of the deployment. Vegetation is a major obstacle in some provinces of Lao PDR and more generally in South-East Asia. At global level, Norwegian People's Aid is currently working in 26 countries, and every single country considers drone as an option for survey. To be followed, there is a willingness to get more from the drones.
- The Thailand Mine Action Center presented some mechanical assets but it remains a challenge in rough terrain, dense vegetation, etc... MAG in Lao PDR has used JCB 3CX mechanical assets for the last three years, but access is particularly difficult and they stopped to use for vegetation cutting. MAG is now using these machines for excavation or to move large items.
- In terms of Information Management, more and more operators are moving from paper form to data collection via a tablet. For instance, HALO Trust is using Fulcrum to record all the results from the Cluster Munitions Survey.
- The INGO HALO Trust did an interesting presentation on detection of UXO, they tested various detectors: Minelab F3 Yellow Cap & Red Cap, Ebinger PIDD, Vallon VMXC1. I got the details of their detector trial in Laos. In terms of clutter rejection, the Vallon detector performed the best. Our counterpart UXO Lao has different models of detectors, but the Vallon VMXC1 detector is the main model used in the field. It is positive to see another detector trial to confirm that the model currently used is a solid performer. But we should remain open to try other tools because the technology is evolving.
- The most interesting presentation, for NRA Deputy Director and for me, was the Scorpion Advance Detection System on wheels to enable the scanning of a contaminated area. MAG Cambodia tested the Scorpion (2 prototypes are existing in Cambodia, 1 additional is under development for Vietnam), they compared the Scorpion against their usual detector large loop 740. The testing took place in Eastern Cambodia (Rattanakiri province) with a very similar contamination to Lao PDR, mainly with Cluster Munitions. To deploy the Scorpion is effective: higher clutter rejection, higher productivity, and the data processing is simple (no need for high skilled expensive specialists). *"Scorpion is a man-portable unexploded ordnance (UXO) detection system that utilizes differential global positioning system (DGPS) for centimeter accuracy of target locations, navigation assistance and ground mapping"*.

I found very positive that both the NRA Deputy Director and a representative of the Humanitarian Teams of the Lao Army were present. Firstly, they were interested by the technologies presented by MAG Cambodia. Secondly, they are the persons who could influence a decision on the necessary authorization for the testing of such new technologies. To get our national counterparts on board is essential to make it happen.

I would like to highlight that at the end of the second day, we had a joint meeting NRA, Lao Army representative, MAG, US representatives and UNDP, to discuss the possibility of the Scorpion trial.

Recommendations:

- 1) To promote the testing of the technologies presented by MAG Cambodia, through an exchange between MAG Cambodia and the NRA Office in Lao PDR. Next step would probably be to test it in Laos.
- 2) To share the information at the upcoming Clearance Technical Working Group.
- 3) To continue to follow-up the use of drones for more advanced options.

9. Follow-up Action Matrix

Actions	By whom and when
Share the information with members of the Clearance Technical Working Group.	CTA, August 2018.

10. Distribution:

Innovation team in Vientiane, Alexandru Oprunenco in Bangkok.