

1 OPS KEPALA

A special operation for decommissioning and disposal of high radioactive sources from Hospital Queen Elizabeth II Kota Kinabalu



Malaysian Nuclear Agency has successfully carried out a removal, transfer and transport of the head part of the teletherapy machine from Hospital Queen Elizabeth II (HQEII) located in Kota Kinabalu Sabah in a specially co-ordinated mission referred to as OPS KEPALA.

Teletherapy machine uses gamma rays to treat cancer patients by directing the high intensity beam produced by a Cobalt-60 radioactive source, to kill tumor tissues. The initial radioactivity of the source ranges between 7000 and 12000 Ci. Over time, the source activity decays, thus making the machine no longer effective for treatment purposes. Nevertheless, the activity remains significantly high and is being categorized as Category 1 source according to the IAEA Classification of Radioactive Sources, the category for the most dangerous sources. Hence, comprehensive safety and security elements need to be in place when it comes to the handling, transportation and disposal of the source.



HQEII intended to decommission the machine which coincidentally, the last unit of teletherapy machine in Malaysia. For decommissioning, the machine had to be dismantled, the radioactive source to be recovered, secured and transported from Kota Kinabalu, Sabah to Nuklear Malaysia in Bangi, Selangor. The shipment of the package was itself a complex arrangement, needed to satisfy and comply various requirements with regards to safety and security set by the regulatory authorities including the need to have an armed escort during the transportation.

The OPS Kepala operation called for a joint effort between several Government Agencies, deploying national assets and resources to accomplish the objective. The idea was mooted by the Deputy Secretary General (Management) of the Ministry of Health Malaysia, Dato' Mohd Shafiq bin Abdullah while YBhg Dato' Seri Dr Chen Chaw Min,

Secretary General of the Ministry of Health chaired the Task Force.

Due to the emphasis on the safety and security, the scale of this operation is the biggest ever undertaken by the Malaysian Nuclear Agency. It involved more than 100 personnel across various government agencies. For the record, this was the first decommissioning of radiation installation carried out outside of Peninsular Malaysia. Among the challenges faced were the strict time window for execution, COVID-19 SOP observations, logistics and procedural matters.



Government bodies involved in OPS Kepala



Dismantling of the teletherapy machine

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It was with the advice of the Malaysian Chief Government Security Office (CSGO) that the operation was code-named OPS Kepala and the confidentiality of the operation need to be fully observed until it has been completed. The Malaysian Nuclear Agency worked closely with the Ministry of Health Malaysia primarily the Medical Radiation Safety Division for the planning and execution of the mission.

Cohesive communication and co-ordination is vital to successfully implement an operation of this scale. Detailed planning were construed in the Pelan Kerja and the Pelan Pengangkutan dan Sekuriti documents, both of which were submitted to Atomic Energy Licensing Board (AELB) for approval. Logistics in Kota Kinabalu such as ground transportations, forklift and materials were provided by the Sabah State Health Department, supported by Sedafiat Sdn Bhd. Four divisions from the Malaysian Nuclear Agency were involved, led by the Waste Technology Development Centre of the Waste and Environmental Division. The technical expertise was provided by the Plant and Prototype Development Centre of the Technical Services Support Division.



Monitoring radiation exposure inside the plane.

The Royal Malaysian Air Force played a key role for air transport, which provided a courtesy flight to deliver tools and equipment over to Kota Kinabalu and later a chartered flight from Kota Kinabalu to Subang Airbase. To instill confidence and ensure the safety of the flight crew, a medical doctor from the Malaysian Armed Forces joined the transport flight. The security and traffic control was provided by the Royal Malaysian Police, both in Sabah and Selangor.



Security escorts by the Royal Malaysian Police

OPS Kepala is an another testimony of the professionalism and specialized skills demonstrated by the Malaysian Nuclear Agency particularly in the area of engineering, radiation safety and security, and radioactive waste management. OPS Kepala was a rare opportunity in many regards and everyone involved has stepped up to their best dedication.

The Waste Technology Development Centre wishes to express our utmost gratitude and highest appreciation to all the parties involved, directly or indirectly, towards the completion and successful operation of OPS Kepala.



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