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Experience on the Assessment of Exercises for Emergency Preparedness and Response at the Center for Accelerator Science and Technology

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Experience on the Assessment of Exercises for Emergency Preparedness and Response at the Center for Accelerator Science and Technology. Center for Accelerator Science and Technology (CAST) is curently operating nuclear facilities such as accelerator neutron generator, electron beam machine, uranium purification laboratory, and Kartini Research Reactor. According to the national rule, CAST should have a program and plan for radiological emergency preparedness and response (EPR) with at least practically exercised annually. The primary goals of preparedness and response for a nuclear or radiation emergency are: to ensure that arrangements are in place for an effective response at the scene and, as appropriate, at the local, regional, national and international levels, to a nuclear or radiation emergency; to ensure that, for reasonably foreseeable incidents, radiation risks would be minor; for any incidents that do occur, to take practical measures to mitigate any consequences for human life, health and the environment [1].

CAST is located at the central Java, surrounded by several active volcanoes, the most active volcano is mount Merapi 30 km away from the CAST. Java is the most dense populated and a relatively small island in Indonesia, it has a highest concentration of active volcanoes (45 active volcanoes). Mount Merapi has erupted more than 80 times [2]. The International Association of Volcanology and Chemistry of the Earth's Interior has named Mount Merapi as a Decade Volcano since 1995 because of its high volcanic activity [3]. Therefore, the external events: earthquqes and volcano eruptions should be considered in the emergency preparadness of CAST nuclear facilities. While in the recent decade the terorist threat is also increasing and should be accomodated in the safety-security analysis, and emergency preparadness and response, therefore, the local design basis threat has been established [4,5].

As a regulation mandatory, CAST through CAST's Radiation Emergency Response Team (RERT or PKDR) has conducted exercises simulating radiological emergencies relating to Kartini research reactor operation, anually, and the assessment was performed accordingly. CSTA hosted an EPR exercises for emergency conditions (on- and off-site) anually. This exercise was designed to evaluate the initial response to the incident and the management of the consequences associated with external events such as earthquakes and volcano eruptions, terrorism, and work incidents. The exercise scenario for year 2013 was a fire occurred in reactor ventilation system followed by explotion, causing two workers as victim have to be evacuated. The exercise is participated by several government's agency such as: nuclear regulatory body (BAPETEN, local police departement, hospital, fire brigade, local government, emergency response division, university staff, etc. The exercise focused on key emergency responder coordination and critical decision-making processes for integrating local government assets necessary to protect public health following a radiation incident. The whole exercise can be monitored by video system from the central alarm station (CAS).

The assessment of the exercise showed that the victims can be evacuated within 9 minutes and the event can be overcame within 20 minutes. In general the advantages and the objective of exercises of EPR have been met [6]. This result is in accordance with the general objectives i.e. exercises of emergency preparedness and response (EPR): test and validate plans and procedures, test the readiness of response capabilities, and increase the confidence and skill of personnel. In addition, exercises allow emergency response staff to identify weaknesses so they can improve performance during an actual response. Interagency exercises also allow the various agencies' personnel to become familiar with each other and learn to coordinate and operate together [7].

The experience on actual response CAST's RERT have also been proven when big earthquake with acceleration of 0,15g hit the reactor complex on 26 May 2006 as well as a big eruption of mount Merapi in 5 November 2010 which is the worst eruption since 1872. During this two events the CAST's RERT/PKDR have been worked with a good performance [8].

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Country or International Organisation

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