



COUNTRY REPORT OF VIETNAM

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OUTLINE

1. Status of nuclear activities under the Pandemic
2. Activities in response to the Pandemic
3. Conclusion

1. Status of nuclear activities under the Pandemic



1.1. Activities related to research reactor

- **Time in operation of Dalat Nuclear Research Reactor (DNRR):**
 - 2020: ~ 4300 hours
 - January - November 2021: ~3650 hours (~100 hours/ week)



Dalat Nuclear Research Institute

1. Status of nuclear activities under the Pandemic (cont.)



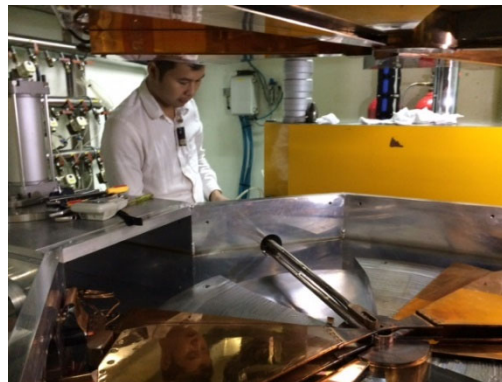
- **The project of the Research Center for Nuclear Science and Technology (a new research reactor 10MW):**
 - Feasibility Study and site approval dossier contract is in preparation.
 - The Center is expected to start its construction in 2023

1. Status of nuclear activities under the Pandemic (cont.)



1.2. Activities related to accelerators in VINATOM

- Research and testing activities using a 13 MeV cyclotron (KONTRO13) which is produced by Korea Samyoung Unitech to get the permission for production and delivery the ^{18}F -FDG from Vietnam Ministry of Health.
- Carrying out 2 main research directions: (1) nuclear reactions at low energy in astrophysical region; and (2) the structure of unstable nuclei based on international collaboration.
- Verification of LINAC technical parameters to ensure its proper operation and accurate delivery of absorbed doses to water for nearly 50 radiotherapy facilities in Vietnam



*Maintenance of PIG
ion source of HIC-
KOTRON13*

2. Activities in response to the Pandemic



Dalat nuclear reactor increases the production of radiopharmaceuticals

- Lacking of imported Radioisotope and Radiopharmaceuticals due to pandemic.
- → Increasing operating time of reactor to 100 hours/week instead of 100 hours/month to produce radioisotopes and radiopharmaceuticals to meet 80% of domestic demand



RI production facilities

Irradiation of medical tools and products

HIC and VINAGAMMA (under the VINATOM), took action to support the country in the pandemic time:

- Free radiation of medical tools and antibacterial masks;
- Safe operation and increase of irradiation time for export products, contributing to national foreign currency revenue.



Irradiated face masks



Irradiated lychees for export

Producing antibacterial silver nanoparticles fabrics (VINAGAMMA)

- Silver nanoparticles content on fabrics ~ 120-160 mg/kg;
- Particle diameter: 5-50 nm;
- Antibacterial efficacy of fabrics was of > 99.9 % after 60 washing cycles for strains, including multi-drug resistant bacteria in hospital;
- None skin-irritation.



Silver nanoparticles fabrics



Silver nanoparticles masks

3. Conclusion

- Applications of nuclear science and technology have made significant contribution to the social and medical well-being development in Viet Nam, especially under the Pandemic.
- Enhancing of nuclear science and technology applications especially in human health, environmental protection and climate change mitigation is essential in the coming time.
- Cooperation among FNCA and other cooperation channels is desired to strong promoting in the region.

**THANK YOU
FOR YOUR ATTENTION**