P-ISSN: 1411-240X E-ISSN: 2527-9963
Accreditation No.: 21/E/KPT/2018
Accredited to Vol. 22 No. 3 (October 2020)

JURNAL
TEKNOLOGI REAKTOR NUKLIR
TRI DASA MEGA

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Vol. 22 No. 2 June 2020

JOURNAL OF NUCLEAR REACTOR TECHNOLOGY
TRI DASA MEGA

Tri Dasa Mega	Vol. 22	No. 2	Hal. 41 – 79	Serpong June 2020	P-ISSN: 1411-240X E-ISSN: 2527-9963

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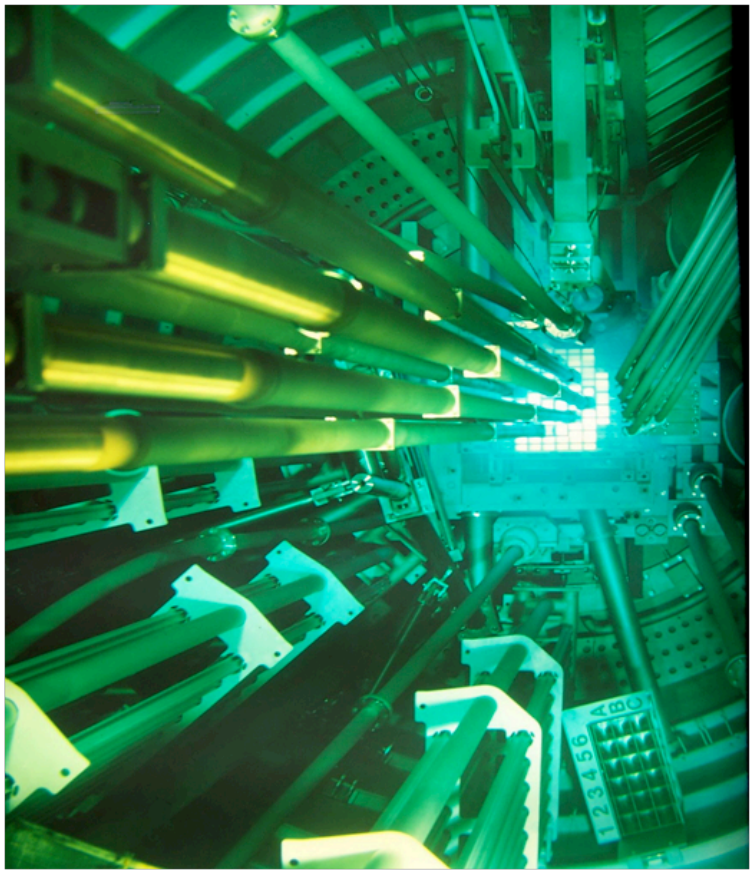
Vol. 22 No. 2 June 2020



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http://jurnal.batan.go.id/index.php/tridam

Vol. 22 No. 2 June 2020

EDITORIAL BOARD

PUBLISHER
Center for Nuclear Reactor Technology and Safety
National Nuclear Energy Agency (BATAN)

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Situs Web: http://jurnal.batan.go.id/index.php/tridam

*Published three times a year in **February**, **June** and **October***

P-ISSN: 1411-240X E-ISSN: 2527-9963
Accreditation No.: 21/E/KPT/2018
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Vol. 22 No. 2 June 2020

PEER REVIEWERS

P-ISSN: 1411-240X E-ISSN: 2527-9963
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P-ISSN: 1411-240X E-ISSN: 2527-9963
Accreditation No.: 21/E/KPT/2018
Accredited to Vol. 22 No. 3 (October 2020)

PREFACE

Dear readers,

With great pleasure we provide you with the second issue of the Jurnal Teknologi Reaktor Nuklir (Journal of Nuclear Reactor Technology) Tri Dasa Mega in 2020 – Vol. 22 No. 2 (June 2020). This issue contains five articles discussing various applications of nuclear technologies and sciences. Articles were written by authors and co-authors from various universities and institutions in Indonesia.

"Analysis on The Performance of The Bandung Conversion Fuel-Plate TRIGA Reactor in Steady State with Constant Coolant Flow Rate" was written by Endiah Puji Hastuti and Sudarmono from the Center for Nuclear Reactor Technology and Safety, National Nuclear Energy Agency (BATAN), Tangerang Selatan in collaboration with Sudjatmi K. Alfa from the Center for Applied Nuclear Science and Technology, National Nuclear Energy Agency (BATAN), Bandung. To overcome the unavailability of TRIGA fuel element, BATAN planned to modify TRIGA 2000 fuel type from rod-type to U_3Si_2-Al plate-type fuel with 19.75% enrichment. The conceptual design of the innovative fuel plate TRIGA reactor cooling system is expected to remove heat generated by fuels with nominal power of 1 MW up to 2 MW. The design is developed through modelling and safety analysis using COOLOD-N2 validated code.

"Analysis on Flow Pressure in the Pneumatic Braking System of FHS-RDE Using Fluent 6.3 Software" was investigated by Sukmanto Dibyo and Ign. Djoko Irianto from the Center for Nuclear Reactor Technology and Safety, National Nuclear Energy Agency (BATAN), Tangerang Selatan in collaboration with V. I. Sri Wardani from the Center for Applied Nuclear Science and Technology, National Nuclear Energy Agency (BATAN), Bandung and Marliyadi Pancoko from the Center for Nuclear Facility Engineering, National Nuclear Energy Agency (BATAN), Tangerang Selatan. The fuel handling system (FHS) is one of the important processes in HTGR as well as in the design of Reaktor Daya Eksperimental (RDE). In FHS, the fuel pebble is transferred pneumatically along the pipe using carrier gas into the core of the reactor. This work was performed to investigate the pressure drop and flow pattern of the braking system of FHS by various carrier gas inlet pressure. The analysis was carried out by Fluent 6.3 Software.

"Investigation on Inherent Safety of One Fluid-Molten Salt Reactor (OF-MSR) with Various Starting Fuel" was studied by R. Andika Putra Dwijayanto from the Center for Nuclear Reactor Technology and Safety, National Nuclear Energy Agency (BATAN), Tangerang Selatan in collaboration with Dedy Prasetyo Hermawan from the Department of Nuclear Engineering and Physics Engineering, Universitas Gadjah Mada, Yogyakarta. Molten salt reactor (MSR) is often associated with thorium fuel cycle, thanks to its excellent neutron economy and online reprocessing capability. However, since ^{233}U, the fissile used in pure thorium fuel cycle, is not commercially available, the MSR must be started with other fissile nuclides. Different fissile yields different inherent safety characteristics, and thus must be assessed accordingly. This paper investigates the inherent safety aspects of one fluid MSR (OF-MSR) using various fissile fuel, namely low-enriched uranium (LEU), reactor grade plutonium (RGPu), and reactor grade plutonium + minor actinides (PuMA). The calculation was performed using MCNPX2.6.0 programme with ENDF/B-VII library.

"Source Term Assessment for 100 MWe Pressurized Water Reactor" was explored by Pande Made Udiyani and M. Budi Setiawan from the Center for Nuclear Reactor Technology and Safety, National Nuclear Energy Agency (BATAN), Tangerang Selatan. One of the barriers on the implementation of nuclear energy in Indonesia is public perception towards the safety of nuclear power plants (NPPs). Therefore, it is necessary to perform a study about the radiation impact of normal and abnormal operations of an NPP. This paper examined the PWR-100MWe source term under normal and abnormal operating conditions, according to the design and the design basis accident (DBA). The initial trigger of the DBA is Lost of Coolant Accident (LOCA) such as Small LOCA and Large LOCA. Due to the limitations of available SMR data, the study of PWR-100MWe source term refers to the assumption of the release fraction of fission products per subsystem in a larger 1000MWe PWR. It is expected from this assumption that pessimistic source term will be obtained.

"Bandung TRIGA 2000 Reactor Power Analysis as a Function of the Number of Fuel Elements and the Power Peaking Factor" was investigated by Sudjatmi K. Alfa, Prasetyo Basuki, Santiko T. Sulaksono, and Rian Fitriana from the Center for Applied Nuclear Science and Technology, National Nuclear Energy Agency (BATAN), Bandung in collaboration with Endiah Puji Hastuti from the Center for Nuclear Reactor Technology and Safety, National Nuclear Energy Agency (BATAN), Tangerang Selatan. The reactivity value of the Bandung TRIGA 2000 reactor core has decreased over time, so the power generated by the reactor is also getting smaller, despite the control rod position is fully withdrawn. Therefore, it is necessary to reshuffle and refuel the fuel element to increase the excess reactivity by considering the safety parameters, such as axial and radial power peaking factors, DNBR, dT_{sat}, and temperature on the cladding and in the center of the fuel element. The calculations were done using MCNP and COOLOD-N2 programs.

On behalf of the Jurnal Teknologi Reaktor Nuklir (Journal of Nuclear Reactor Technology) Tri Dasa Mega, I would like to thanks to all Editors, Reviewers, Managements, Authors, and Readers for your endless supports.

Editor in Chief