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CONSIDERATIONS ON ESTABLISHMENT OF AN INDEPENDENT TSO IN INDONESIA

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ABSTRACT. To strengthen the national safety infrastructure is absolutely needed for countries those are embarking to nuclear power. Establishment of an independent technical support organization (TSO) is one of important steps in strengthening the safety infrastructure. TSO is dedicated to provide independent scientific and technical advices to the *regulatory body* in conducting regulatory process effectively. Indonesia is one of countries those have already had a function of TSO within its Regulatory Body's organization (*internal TSO*). So, the independence of TSO is remarkably questioned. In this case, an independent TSO could be achieved by excluding the Internal TSO or strengthening its legal position in a different organization. In addition, since the TSO might also be needed by the *executing body*, a hybrid-organization of TSO with dual-function is being considered. Present paper provides some considerations regarding the establishment of independent TSO in Indonesia.

Keywords: TSO, independent TSO, hybrid-organization, regulatory function.

1. INTRODUCTION

Indonesia is one of countries considering to establish the Nuclear Power Plants (NPPs). Planning to build the first NPP has been initiated from last several decades. To initiate the planning stages, three research reactors have been built and operated to do research and development in nuclear science and technology, especially in reactor safety. Existence of the research reactors has also given huge experiences in regulatory control to the regulators, especially during construction and operation.

The regulatory control is performed by the *Indonesian Nuclear Energy Regulatory Agency* (BAPETEN) through three main functions: (1) Regulation setting, (2) Licensing Process, and (3) Inspection. BAPETEN has several working units that are relevant to developing and establishing regulations, conducting licensing process, and inspection. To make the regulatory control effective, BAPETEN is equipped with several working units, which are dedicated to provide scientific and technical supports in performing the regulatory functions (so called *Internal TSO*, since it is available in the internal organization of BAPETEN).

To support the current regulatory activities, the position of the Internal TSO is reasonably strong. However, if the NPP establishment is initiated, then Regulatory Body shall be further strengthened, or to be excluded and reorganized as an independent organization. Establishment of

¹ Stoiber¹¹ defined TSO as an organization established to provide independent technical or scientific advice or assistance to a regulatory body or operating organization concerning matters affecting the safety of facilities, activities or practices involving nuclear energy or ionizing radiation.

independent TSO is of utmost important steps in the light of strengthening the national safety infrastructure. Present paper gives some considerations regarding the establishment of TSO.

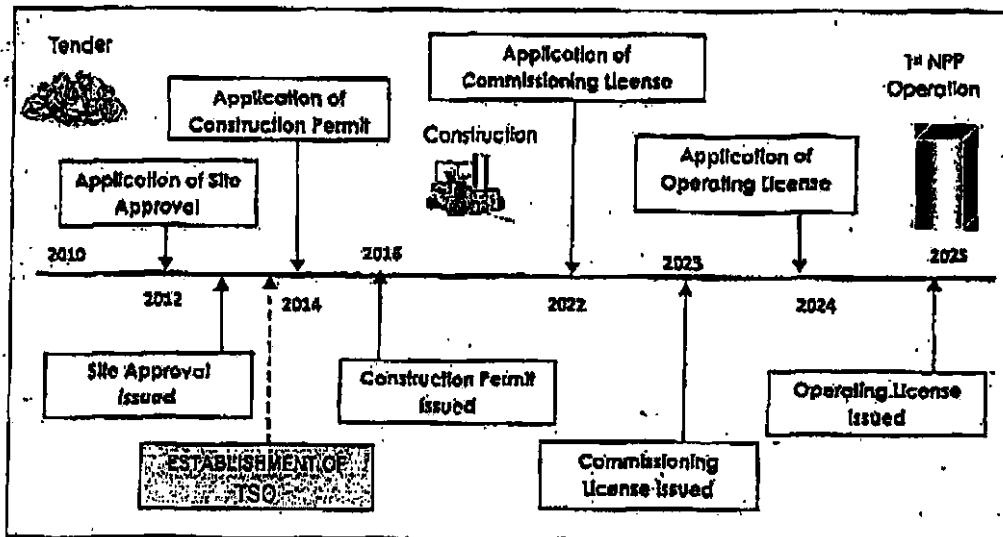
2. NATIONAL NUCLEAR PROGRAM

There are three research reactors and several non-reactor nuclear installations currently operating in Indonesia. Most of them are used to carry out research and development in nuclear technology. Currently, nuclear technology in Indonesia is also widely applied in various activities. There are about 2000 users who are using the nuclear energy in medical activities, more than 500 users in industry, and many more applications in other fields.

The nuclear energy is planned to be used also in power generation (Nuclear Power Plant, NPP) in the future. Indeed, the plan to utilize nuclear energy for power generation has been started in the 1970's. The National Nuclear Energy Agency (BATAN) as an Executing Body has been making promotion and continuous effort in order to win confidence from the public and the decision makers toward the importance of nuclear as a future energy source. In parallel to this effort, several national universities have established some new study programs relevant to the nuclear science and technology in order to prepare the manpower to support the nuclear program.

A new law on nuclear energy, namely Act No. 10 year 1997 on Nuclear Energy^[2] was enacted, which directs the separation between regulatory body and promoting body. Based on the act, the Indonesian Nuclear Energy Regulatory Agency (BAPETEN) was established.

In the middle of year 1998 economic crisis happened, causing the nuclear program in Indonesia to be virtually in a state of 'apparent death'. However, concerning the global energy crisis recently and the dwindling of oil reserve in Indonesia, the nuclear program has been revitalized recently^[1]. Now after the nuclear program was revitalized, more serious challenge came out, which is relating to public confidence. Availability of safety regulations, human resources program and establishment of TSO are among key issues in respect of public confidence. These challenges should be answered by implementing a plan of actions or milestones as below:



3. REGULATORY FUNCTIONS

According to the IAEA's documents of Safety Standards⁴³⁴, in general sense the regulatory functions includes: (1) development of regulation and guides, (2) authorization, (3) inspection and enforcement, (4) review and assessment, (5) emergency preparedness, and (6) public information. Nevertheless, depending on national legal framework and complexity of national nuclear program, the national regulatory function may be different from State to State.

For Indonesia's case, the national regulatory function refers to the Act No. 10 Year 1997 on Nuclear Energy, i.e. the main regulatory function includes: (1) development of regulation, (2) licensing/authorization, and (3) inspection. Review and assessment is a part of licensing process, and carried out by the Directorate for Licensing. In case that technical and scientific supports are needed, such as for conducting calculation for verification, the Directorate for Licensing will look for helps from the Center for Nuclear Safety Assessment (hereinafter so-called the Center), which is also in the internal organization of BAPETEN. The Center provides also the technical and scientific advices to the other directorates, if needed, such as those for development of regulations and for effectiveness of regulatory inspection system.

In general, the Center is dedicated to support BAPETEN in conducting its regulatory functions by providing technical and scientific recommendation for making decision during regulatory process. By this kind of mechanism, all regulatory functions can be conducted by BAPETEN. Here, the Center behaves as an 'Internal TSO for Regulatory Body'. In this context, the existence of the internal TSO is essential.

In the meantime, with the current resources, BAPETEN is able to discharge its responsibility in conducting the regulatory control of the existing nuclear facilities. However, for the future when the nuclear power plants (NPPs) are introduced, BAPETEN would need more resources with a high competence, and it would also need an external independent Technical Support Organization (TSO).

4. EXPECTED ROLES OF TSO

When the nuclear program is expanded to introducing NPPs, the TSO is absolutely important. It would be needed not only by BAPETEN in conducting regulatory process, but also needed by BATAN in doing research and development of nuclear technology. Considering the fact, that both BAPETEN and BATAN would need supports from the TSO, it is advisable that the TSO would be established as a hybrid organization, with main functions are as follows:

(1) In supporting to the Regulatory Body (BAPETEN):

- providing technical advices to BAPETEN in conducting regulatory safety control, and in ensuring the safety of public and environment;
- responding to the emerging technical issues, such as enhancement of nuclear security;
- updating the safety guides, code and standards; and
- providing feedback of operational experiences in safety analysis, including feedback of lessons learned from events.

(2) In supporting to the Executing Body (BATAN):

- conducting research on nuclear and radiation safety to support BATAN in developing a safe nuclear technology;
- accumulating and dealing with knowledge management in nuclear and radiation safety; and
- conducting public communication to obtain the public's confidence in nuclear safety.

5. LEGAL POSITION OF TSO

TSO shall have a strong legal position in the national infrastructure to ensure its independence. Legal status of organization of TSO can be chosen based on the national needs and legal infrastructure from the following alternatives:

- (1) *Government*. As a part of government TSO should be funded from the national budget, and be separated from the budget of BATAN and BAPETEN.
- (2) *Semi-Government*. TSO of this form is partly funded by government (from national budget) and partly supported by the clients. The clients can be government (BAPETEN/BATAN) or private users. The scheme of budget can be 25-75, 50-50, or 75-25. For instance, 25-75 means 25% funded by national budget and remaining 75% is fulfilled from the service fee, based on working contracts.
- (3) *Private*. If the TSO is private entity, it should be able to finance itself from the service fee. In this case TSO is private consultant and profit-oriented.

Although a deeper assessment in respect of establishment of Independent TSO is still needed, taking sustainability issues into consideration, alternative (1) may be the best choice among others.

6. CONCLUSION

The main conclusion of this paper is that Indonesia as a country embarking to nuclear power should have an adequate national safety infrastructure. To do so, the existing regulatory body should be strengthened by enhancing the legal position of the internal TSO or excluding it from internal organization of BAPETEN (to be external TSO). The internal TSO of BAPETEN could be merged with the similar sub-organization in BATAN and converted into an independent TSO. A hybrid organization of the TSO with dual-function may be the most effective solution.

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