LICENSING PROCESS OF AN ABWR IN INDONESIA (A PRELIMINARY CONCEPT)

Mauritz L. Tobing[*)]

Abstract

LICENSING PROCESS OF AN ABWR IN INDONESIA (A PRELIMINARY CONCEPT). The formation of an independent nuclear regulatory body within Indonesia is very important in early step due to legislation aspect. Once formed, the Indonesian Regulatory Body will have to established a formal process for licensing of nuclear power plants in Indonesia. Drawing upon GE's experience in obtaining a design certification for the standardized ABWR, a study was performed to look at a possible licensing process that could be established. It was concluded that the Indonesian Regulatory Body should take advantage of the U.S. NRC licensing process using the traditional two-step process, but incorporating selected portions of the recently promulgated one-step process which will minimize the duplication of reviews. Relative to the ABWR design, the Indonesian Regulatory Body can take advantage of the fact that the basic design has been approved by the regulatory bodies in both the United States and Japan, and focus attention on site specific issues.

Abstrak

PROSES LISENSI ABWR DI INDONESIA (SEBUAH KONSEP AWAL). Pembentukan Badan Pengawas Tenaga Nuklir yang independen di Indonesia adalah merupakan langkah awal yang penting ditinjau dari aspek hukumnya. Terbentuknya Badan Pengawas Tenaga Nuklir tentu akan menetapkan proses perizinan formal bagi Pusat Listrik Tenaga Nuklir di Indonesia. Berdasarkan pengalaman GE tentang diperolehnya sertifikasi desain ABWR terstandar, maka kajian ini dimungkinkan dalam penerapan proses perizinan dapat dilaksanakan. Ditarik kesimpulan, bahwa Badan Pengawas Tenaga Nuklir Indonesia sebaiknya dapat mengambil manfaat dari proses perizinan USNRC melalui proses dua-tahap yang tradisional, tetapi berkaitan itu pula, dari bagian yang dapat dipilih dari proses perizinan yang saat ini dikenal dengan tipe satu-tahap tentunya manfaatnya akan sangat mengurangi adanya proses kaji ulang (*review*) yang berulang-ulang. Berkaitan dengan desain ABWR, bahwa Badan Pengawas Tenaga Nuklir dapat juga mengambil manfaat dari fakta desain dasar yang telah disetujui oleh kedua badan pengawas di Amerika Serikat dan Jepang, dan difokuskan perhatiannya pada masalah tapak yang spesifik.

[*)] *Bidang Pengembangan Sistem Energi, P2EN-BATAN*

I. INTRODUCTION

The following study is to determine which portions of the U.S licensing process associated with ABWR are feasible and applicable to the licensing of an ABWR in Indonesia. This study provides the initial phase in the development of Indonesian licensing process by identifying the relationship between the current GOI and U.S. regulatory documents and the need development of GOI nuclear regulations.

The fundamental technical issues relative to nuclear safety and licensing that are necessary for successful implementation of this project are included in this study. Further, this study concludes that there is needed for an Indonesia ABWR application to initially down rate the power to 1000 MWe (77%) and then gradually increase the output power to 1126 MWe (88.5%) and finally 1350 MWe (100%), the full rated power of the ABWR. This program is under the Agreement between BATAN and GE, in which GE proposed the ABWR, be applied in Indonesia.

There are a number of codes and standards dedicated to nuclear reactors (nuclear research reactors) Indonesia. Those specifically for the siting, design, construction and operation of nuclear power plants, however, are only few.

II. STUDY OBJECTIVES

As part of joint studies on the Application of an Advanced Boiling Water Reactor (ABWR) to Indonesia, the current study was conducted to determine which portions of the U.S licensing process associated with ABWR are feasible and applicable to the licensing of an ABWR in Indonesia.

III. METHODOLOGY

Based on the approach for the licensing process of an ABWR as the vendor's country origin, the following documents apply to develop for the licensing process in Indonesia:

1. Identified relationship between current Indonesian Government Regulations and U.S. Regulatory Documents.
2. Developed matrix of stages of plant licensing
3. Identified of USNRC documents to be considered in the detailed development phase of Indonesia documents.
4. Specified matrix of Indonesia regulatory documents development needs.

IV. ANALYSES

IV.1. U.S. Licensing Process

4.1.1 Under Part 50

Part 50 establishes a two step licensing process where the USNRC authorizes construction through issuance of a construction permit and authorizes operation by issuance of an operating license. The purpose of the Part 52 licensing process is to provide a regulatory framework that brings about early resolution of licensing issues in comparison to the Part 50 licensing process.

4.1.2 Under Part 52

Utilization of certified standardized nuclear power plant designs under 10CFR52 licensing process is an important US initiative that has the potential for significantly enhancing safety. reliability, availability, reduction in cost of nuclear power plant. The purpose of the Part 52 licensing process is to provide a regulatory framework that brings about early resolution of licensing issues in comparison to the Part 50 licesning process.

Certification by the USNRC under 10CFR52 requires preparation by the license applicant, and review by NRC of: (1) a Standard Safety Analysis Report (SSAR); (2) a design-specific Probabilistic Risk Assessment (PRA) document; (3) proposed technical resolution of unresolved and all generic safety issues; (4) proposed inspection, tests, analyses and acceptance criteria (ITAACs). Following the completion of review of the SSAR, the USNRC prepares a Final Safety Evaluation Report (FSER), which upon USNRC approval will result in the Final Design Approval (FDA) subject to review by the US Advisory Committee on Reactor Safety (ACRS) and USNRC acceptance of the ITAAC, PRA and all other NRC-requested data on safety-related technical issues. Certification will then be issued following a rule making process.

IV.2. ABWR Licensing Status

The first phase of the USNRC certification process applied to the ABWR was iniated by the submittal of the ABWR SSAR to the USNRC in 1987.

The ABWR plant performance characteristics, methods and results of analyses. arrangement and layout drawings are all in sufficient detail to enable the USNRC to complete its standard plant review. The ABWR SSAR includes information that forms the basis of construction verification and compliance reviews when the design is subsequently applied to actual projects.

In the fall of 1987, the USNRC began its technical review of the ABWR under 10CFR50 and somewhat later under the new 10CFR52. On July 1994, the USNRC issued a Final Design Approval (FDA) for GE's ABWR Standard Plant. The receipt of the FDA marked the culmination of the first phase of the overall certification process. With receipt of the FDA, the ABWR became the only advanced plant in the world that has received regulatory approval in two countries, the U.S. and Japan.

In addition to applying for ABWR certification, GE undertook the ABWR First-of-a-Kind Engineering (FOAKE) contract in June 1993 to perform a detailed design of the ABWR for application in the United States. The purpose of this program is to develop the ABWR design to the point where a reliable construction cost estimate can be made.

The second phase of the USNRC certification process, which includes public participation and finally it has been received the overall USNRC Design Certification of the ABWR in May 1997. Once granted, the ABWR will become the first certified US Standard Plant enabling it to be referenced by multiple utilities for use on multiple sites without challenge during subsequent licensing hearing. The design will be approved for a fifteen years period, with optional for renewal.

IV.3. Summary Description Of U.S. And IAEA Regulations

IV.3.1 U.S.Regulations

a. Code of Federal Regulations (CFRs). An utility applicant must follow the CFRs since they are legally binding. There are ten (10) primary regulations for design, construction and operation.

   There are the following additional five regulations that are important to the NPP applicant:

   1. 10CFR1: Statement of Organization and General Information
   2. 10CFR61: Licensing Requirements for Land Disposal of Radioactive Waste
   3. 10CFR73: Physical Protection of Plants and Materials
   4. 10CFR74: Material Control and Accounting of Special Nuclear Materials
   5. 10CFR170: Fees for Facilities, Materials, Import and Export Licenses, and other Regulatory Services under the Atomic Energy Act of 1954, as Amended

   All of the 15 CFRs applies to licensing under Parts 50 and 52 except for 10CFR52 which is Part 52. It should be further noted that many of these CFRs (both groups) contain subparts or appendices. One notable appendix is Appendix-A to 10CFR50, General Design Criteria for Nuclear Power Plants. There are a total of 55 criterion which are used as acceptable criteria for safety reviews by the USNRC.

b. Regulatory Guides (RGs) and Standard Review Plan (SRP). Essentially all of the RGs are cited by the SRP as described below. Since 1970, the NRC has issued about 150 RGs (some were issued as Safety Guides in earlier years) which are recommended by the NRC as guidance, documents for applicants to meet the above mentioned regulations.

   RG 1.70, Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition), is a non-technical RG that addresses the format and content required for submitting safety analysis reports to the NRC.

   The SRP (NUREG-0800) was issued by the NRC in July 1981. It was prepared for the guidance of NRC staff reviewers performing safety reviews of nuclear power plant applications. Each section of the SRP contains an acceptance criteria portion (Section II of the SRP) which states the purpose of the review, an identification of which NRC requirements are applicable, and the technical basis for determining the acceptability of the design within the scope of the area of review of the SRP section.

10CFR50.34(g) requires that the applicant include an evaluation of the facility against the SRP. The evaluation required includes an identification and description of all differences in design features, analytical techniques, and procedural measures proposed for the facility against the SRP acceptance criteria. The applicant must show that the differences will be equivalent to the SRP acceptance criteria.

c. Unresolved and Generic Safety Issues

The NRC document NUREG-1435 identifies various unresolved and generic safety issues: NUREG-1435, Volume 1-TMI Action Plan Requirements, NUREG-1435, Volume 2-Unresolved Safety Issues, and NUREG-1435, Volume 3-Generic Safety Issues.

d. Codes and Standards

The regulations and the SRP include reference to codes and standards. The most notable codes and standards are summarized in this section.

<u>ASME Codes</u>

ASME III, Boiler and Pressure Vessel Code, is dedicated to design, construction, control and acceptance of pressure retaining equipment for NPP. ASME III is legally binding and is a requirement by the NRC. It is also the base which is followed by utilities and constructors.

<u>IEEE Standards</u>

IEEE standards are electrical and instrument standards developed and maintained by the American Institute of Electrical and Electronic Engineers. Two of the most significant IEEE standards are:

(1) IEEE 279: Criteria for Protection Systems for Nuclear Power Generating Stations

(2) IEEE 323: Standard for Qualifying Class 1-E Equipment for Nuclear Power Generating Stations

<u>ANSI/ANS</u>

ANSI/ANS is a national standard which are approved and issued by NUPPSCO (Nuclear Power Plant Standards Committee) of the American National Standards Institute and American Nuclear Society.

<u>Structural Standards</u>

The standards for structures include:

(1) ACI 349: Code Requirements for Nuclear Safety-Related Concrete Structures

(2) AISC N690: Specifications for the Design, Fabrication, and Erection of Steel Safety-Related Structures for Nuclear Facilities

IV.3.2. IAEA Regulations

Apart from the NUSS-Program, the International Nuclear Safety Advisory Group (INSAG) of IAEA started the establishment of Nuclear Safety Principles and published them in March, 1988 as Safety Series No. 75-INSAG 3, because:

a. the means for assuring the safety of nuclear power plants have improved over the years. and it is believed that commonly shared principles for ensuring a very high level of safety can now be stated for all nuclear power plants
b. the international consequences of the Chernobyl accident have emphasized the need for common safety principles for all countries and all types of nuclear power plants

The basic safety principles of INSAG seem clearly to be influenced by the practices of such countries like France and the UK who had the leadership in the establishment of the Basic Safety Principles, and place emphasis on the reduction of risk down to the level as low as practicable. Further, it is a significant feature to adopt expressly the measures against severe accidents in the safety principles. The concept of the safety objectives and the wide-range utilization of the PSA method are included in the safety principles. In other words, they state the following three points as the basic objectives to be fulfilled by the safety principles:

1. **General Nuclear Safety Objectives**. To protect individuals, society and the environment by establishing and maintaining in nuclear power plants an effective defense against radiological hazard.
2. **Radiation Protection Objectives**. To ensure that radiation exposure within the plant in normal operation and due to any release of radioactive materials from the plant is kept as low as reasonably achievable and below the prescribed limits, and to ensure mitigation of the extent of radiation exposures due to accidents.
3. **Technical Safety Objectives.** To prevent with high confidence accidents in nuclear plants; to ensure that, for all accidents taken into account in the design of the plant, even those of very low probability, radiological consequences, if any, would be minor; and to ensure that the likelihood of severe accidents with serious radiological consequences is extremely small.

The safety principles consist of about 50 Specific Principles for seven subjects of siting, design, manufacturing and construction, commissioning, operation, accident management and emergency preparedness, and of Fundamental Principles which can be commonly applied to these subjects. The Fundamental Principles are of three kinds relating to management, defense in depth and technical issues, and include total of 12 principles.

a. **Quality Assurance**. The IAEA has issued safety series 50-C-QA Rev. 1 "Code on the Safety of Nuclear Power Plants: Quality Assurance" as the main document defining the principles and objectives for a quality assurance program. It covers all aspects of nuclear power plants, e.g. design, fabrication, construction, testing, and operation. In addition, IAEA NUSS safety guides have been issued 11(eleven) Safety Guide from 50-SG-QA1 to QA11
b. **Environment and Safety**. IAEA has published several safety standards and safety guides regarding impact on the environment and siting, e.g.
   - 50 - C - S: Code on the safety of nuclear power plants: Siting
   - 50-SG-S9: Site survey for nuclear power plants

- IAEA Safety Series No. 72: Principles for establishing intervention levels for the protection of the public in the event of a nuclear accident or radiological emergency
- IAEA Safety Series No. 77: Principles for limiting releases of radioactive effluents into the environment

IV.4. Development Of Licensing Process In Indonesia

It is the intent of the Owner that the plant covered by the Bid Specification shall comply with all current, applicable licensing requirements of the Republic of Indonesia Government Regulatory Authority. The vendor may comply with the regulatory requirements of the country of origin (i.e. the country in which the vendor's design has been or is being licensed and whose regulatory requirements, criteria, guidance and practices have been adopted). However, to ensure the good quality of the plant, Government of the Republic of Indonesia (GOI) only recognizes the permits and licenses issued by the nuclear regulatory agencies i.e., U.S.A., France, Japan and Canada.

IV.4.1. Indonesia's First Nuclear Power Plant

The recent study issued to assess the feasibility of nuclear power in Indonesia suggested that the base load capability of the first nuclear power plant built and operated might be limited by the grid system currently available. A grid upgrade program is in on-going to meet the projected electricity demands in Indonesia, and it is highly probable that by the time of commercial operation of Indonesia's first nuclear power plant, that the grid capability will be more than adequate to handle the largest of commercially available, operating nuclear power plants. A large plant provides two benefits to Indonesia: 1) it helps to meet the growing demands projected for the next century and beyond and 2) the cost of electricity is very competitive.

With the above in mind, a start up approach has been developed in the event that initially operating the ABWR at full power is not feasible. The plan addressess the concern of initial grid instability, while at the same time provides a power plant which over its life can help to meet the projected electricity demands at very competitive prices. The plan would be to operate the ABWR at 1000 MWe during its initial fuel cycle (18 months), increasing power to an interim level during its second fuel cycle, and finally operating at full power at the beginning of the third eighteen month fuel cycle. Variations of this plan could, of course, be implemented.

From a licensing perspective, this startup process will have to be reviewed and an operating license approach will have to be developed. A single operating license could be considered clearly delineating the graduated startup approach, or each power increase could be treated as a power uprate requiring individual operating licenses.

IV.4.2. Assumptions

The primary assumption of this study is that the licensing process in Indonesia can be

developed by modeling the Indonesian process after the USNRC licensing process.
It is assumed that the public hearing process can be conslutated in Indonesia but this process can be accomplished through the Parliaments of Indonesia (House of Representatives). However, based on the evaluation of this study, some portions of 10CFR50 and 10CFR52 would be neglected.

Table 1 identifies the assumed relationship between the current GOI and U.S. regulatory documents. This relationship is subject to changes during the detailed development of the GOI regulatory process.

Finally, it is assumed that the licensing process for the power uprate of an ABWR in Indonesia if required, includes the safety aspects, core and fuel designs, turbine-generator optimizations, nuclear power constructions and economical aspects; therefore related to design changes can be adopted from 10CFR50.59: "Changes, test, and experiments".

V. RESULTS AND DISCUSSIONS

The flow map of the licensing process for construction and operating of nuclear power reactor in Indonesia are provided in Figure 1 and 2. A corresponding matrix of the stages of plant licensing is provided in Table 2. All the regulations regarding the nuclear power should be established before the site permit, construction permit, operation license and decommissioning license. In this regard the electric utility or consultant as applicant should apply the following:

1. For the first NPP (i.e. ABWR), adopt the licensing process under the regulations of the country of origin. This gives assurance that the rules will be complete and consistent, and will be applicable to the Vendor. Indonesia, during the construction of the project, must adopt a similar set of regulations, modifying them as necessary based on project experience.
2. The Indonesia Regulatory Body should focus on ABWR SSAR documents to enhance the licensing of a future application to build and operate an ABWR.
3. The startup approach of an ABWR in Indonesia may require the ABWR to initiate operation at less than full power. This would have to be reviewed and a licensing approach established.
4. The preparation of each the ABWR SSAR licensing document of the power uprate design which is related to the safety, core and fuel design and other aspects, should be consistent with to 10CFR50.59.
5. The preparation of the ABWR SSAR was guided by RG 1.70 and the SRP (NUREG-0800). The SRP sets forth the methods and acceptance criteria that the USNRC staff will use in performing a safety review of applications to construct and operate a nuclear power plant. The site-specific PSAR and FSAR, which will reference the ABWR SSAR, essentially constitutes the utility's application. In effect, the ABWR SSAR describes in detail the performance evaluation of all non-site dependent design features for the ABWR as required by the SRP, with the addition of a PRA (section on severe accident analysis). Some site-

specific performance evaluations will be required and modest additions to the ABWR PRA.

6. The preparation of the PSAR and FSAR for the licensing of an ABWR would require addressing the following major points:
   a. Fuel design and its licensing of fuel (GE-11 in lieu of GE-8))
   b. Safety assessment
   c. Turbine - generator design and its licensing
   d. Application of an ABWR to Ujung Lemahabang Site
   e. Initial Operating Cycles and/or Uprating Power Plan.

In the case for Initial Operating Cycles plan (down/up rate approach), the applicant should be apply the Initial Licensing Application, include the Uprating Power Plan.

Following an understanding of the general procedure for obtaining GOI licensing of the ABWR, this study then turned toward the impact of an ABWR on the licensing process stage. Based on the discussion in this section, it is concluded that the licensing of a ABWR requires that all documents be submitted to the Indonesian Regulatory Authority for reverifications, re-reviews, re-analyses, and re-evaluations. Such an approach will give assurance of NPP safety, cost, and reliability as long as nuclear safety issues are satisfied and finally to get a license and permit.

The first step in the development of the licensing process in Indonesia is to identify the corresponding portions of the USNRC documents that should be considered in the detailed development phase. To this end, Table 3 has been prepared. A corresponding matrix of development need is given in Table 4.

VI. CONCLUSIONS AND RECOMMENDATIONS

VI.1. Conclusions

The following are conclusions as a part of this licensing study:

1. The licensing process of well-experienced countries have been established in the background of the legal system and the practices of their countries, and therefore differ a great deal. However, the licensing process in some countries have contributed to undue risk to nuclear projects. Based on this fact, a recommend licensing process for the First NPP in Indonesia was provided.
2. All criteria, codes, standards and regulations from the country of origin can be adopted, because it is not against to the philosophy of International regulation like, IAEA.
3. The licensing process for the Indonesia ABWR takes advantage of the USNRC licensing process by using 10CFR50 and selected features 10CFR52.
4. The USNRC regulatory documents can be used as a model by Indonesia to develop the GOI regulatory documents.
5. All NPPs subject to the licensing process can be built in Indonesia.
6. Although the ABWR plant is an advanced design having good safety features. GE still

recognizes the need to obtain a design certification .

VI.2. Recommendations

1. The Indonesia Regulatory Body should focus on ABWR SSAR documents to enhance the licensing for the future application which is built and operated an ABWR in Indonesia.
2. For the first NPP in Indonesia, licensing under the regulations of the country of origin should be accepted. This gives assurance that the rules will be complete and consistent. Indonesia, during the construction of the project, must adopt a similar set of regulations, modifying them as necessary, based on project experience.
3. Minimum legislation necessary to promote and implement a nuclear program should be established prior to starting the safety assessment of the first NPP project.
4. A licensing process should be carefully developed so that it will not induce excessive risk and burdens to the electric utility relative to worker and public safety.
5. Taking advantage of the USNRC licensing process can significantly relieve the time frame needed for the development of the Indonesia licensing process.
6. The current draft of using the government regulations, with licensing multi-stage of a NPP in Indonesia, should be continued utilizing the USNRC regulations as models.
7. The ABWR design should be licensed for at least 40 years (applied to the reasonable time) to avoid repeating the license process that may be in the Indonesia Regulatory Body interest.

ACKNOWLEDGMENTS

I would like to express my sincere appreciation to several GE engineers who continually advising me in this work; especially: Mr. Jack Fox, and others Mr. Rick Asamoto, and Mr. Joe Quirk.

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3. RUSSELL, W.T., "ABWR Final Design Approval," Nuclear Regulatory Commission. July 13, 1994.
4. Code Federal Regulation (2 Volumes), Title 10-Energy; Part 0 - 50 and Part 51 - 199, Revised as of January 1, 1996
5. Republic of Indonesia, draft Government Regulation regarding the Construction and Operation of Nuclear Reactors, 1996
6. "Indonesian Nuclear Enery Act" (Rancangan Undang-Undang Republik Indonesia tentang Ketenaganukliran), to established an independent nuclear regulatory authority, 1996

Table 1. Relationship Between the Current GOI and U.S. Regulatory Documents

GOI Document Name/No.	U.S. Document Name/No.
Act No. 10, 1997 on Nuclear Energy	"The Atomic Energy Act of 1954 as Amended"
"Environmental Protection Act" Law No. 4/1982	10CFR51 "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions"
-BATAN D.G. Decree No.134/1982 Nuclear Reactor Siting. -BATAN D.G. Decree - No.PS.05.11/57/DJ/1990, Quality Assurance Programme. -BATAN D.G. Decree No.45/1992, Preparation of the Environmental Impact Analysis for the construction plan of nuclear power plant. - A full, consistent set of nuclear codes and standards have not yet been established. Therefore, codes and standards of the country of origin should be applied, provided that they are in concurrence with the IAEA and ICRP recommendations.	10CFR100 "Reactor Site Criteria" Appendix A to 10CFR50 "General Design Criteria for Nuclear Power Plants" Appendix B to 10CFR50 "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants" 10CFR52 "Early Site Permits; Standard Design Certificates, and Combined Licenses for Nuclear Power Plants" 10CFR55 "Operators Licenses"
BAPEDAL-RG "Standard Format and Content of Environmental Reports for NPP"	RG 4.2 "USNRC Guidance for Environmental Report Preparation"

Table 2. Safety License of Nuclear Power Plant (as suggested)

Stages	Preliminary Feasibility Study (PFS)	Feasibility Study (FS), or Siting	Construction	Commissioning	Operation	Decommissioning
Responsible Agency	BATAN. BAKOREN	BATAN. BAPETEN	BAPETEN, GOI	BAPETEN/ Indonesia Regulatory Body or GOI	BAPETEN, GOI	BAPETEN. GOI
Safety Licenses	Preliminary Feasibility Study (PFS)	Review Report for Siting of Nuclear Installation or Site Permit (SP)	Construction Permit (CP)	Fuel Loading License (FLL) Temporary Operating License (TOL)	Operating License (OL)	Decommissioning License (DL)
Duration to Review		12 months	24 months	24 months	18 months	12 months
Required information to be submitted	PFSR (Preliminary Feasibility Study Report)	FSR (Feasibility Study Report) Candidate Site Basic Design EIAR Approval QAP (Site permit)	(1) PSAR (2) QAP (Design and construction) (3) EIAR Authorization (>1 month) (4) FSR Authorization	(1) FSAR (2) EIAR Authorization (>1 month) (3) Emergency Plan (>6 month) (4) QAP (Commissioning) (5) Nuclear Materials License (>1 month) (6) Commissioning Program (7) Commissioning Report (8) Operator Licenses (>1 month) (9) Construction Proceeding Report (>1 month) (10) In-Service Inspection (>1 month) (11) Pre-Service Inspection (>1 month) (12) Maintenance Program (>6 months) (13) Operation Rules List	(1) RFSAR (2) EIAR (3) Commissioning and Operating Report (4) QAP (Operation)	(1) Decommissioning Report (2) EIAR Authorization (decommissioning stage) (3) QAP (decommissioning)

GOI/State Planning Committee (to be developed)
BAPETEN: National Nuclear Energy Regulatory Body/Authority
BAPEDAL: National Environmental Protection Agency

PSAR: Preliminary Safety Analysis Report
FSAR: Final Safety Analysis Report

RFSAR: Revised Final Safety Analysis Report
EIAR: Environmental Impact Analysis Report

Table 3. Needed Development of GOI Nuclear Regulations

GOI Document Name / No.		**Model after U.S. Document Name / No.**	
Republic of Indonesia, draft the Government of the Republic of Indonesia (GOI) Regulations regarding the "Constructions and Operations of Nuclear Reactors, 1996 (still being processed in the Parliament and Department of Justice)			
Chapter 1	General Definitions	10CFR50.1	Basis, Purpose, and Procedures Applicable
		10CFR1.5	Location of Principal Offices and Regional Offices
		10CFR1.11	The Commission
Chapter 3	Licensing	10CFR52.47	Contents of Application
		10CFR52.53	Referral to ACRS
		10CFR52.54	Issuance of Standard Design Certification
		10CFR52.79	Contents of Applications; Technical Information
		10CFR52.87	Referral to ACRS
		10CFR52.97	Issuance of Combined Licenses
Chapter 4	Inspection and Reports	10CFR50.70	Inspection
		10CFR50.71	Maintenance of Records; Making of Reports
		10CFR50.72	Immediate Notification Requirements for Operating Nuclear Power Reactors
		10CFR50.73	License Event Report System
		10CFR50.74	Notification of Change in Operator or Senior Operator Status
Chapter 7	Criminal Provisions	10CFR52.3	Definitions
		10CFR52.110	Violations
		10CFR52.113	Criminal Penalties

Table 4. Guidance for Licensing Types and Categories

Licensing Types	**Nuclear Safety Licenses for Nuclear Installations**	**Nuclear Materials Licenses**	**Qualification Licensing for Pressure Retaining Components**	**Reactor Operator Licenses**
The Regulations	Need to develop	Need to develop	Need to develop	Need to develop
The Competent Department of the Examiner	Need to develop	Need to develop	Need to develop	Need to develop
Competent Department of Approving the Granting of Licenses	Need to develop	Need to develop	Need to develop	Need to develop
Categories of License	(1) Siting of Nuclear Installation (2) Construction Permit (3) First Fuel Loading Authorization (4) Operation License (5) Decommissioning Authorization	The Control, Account, and Physical Protection of the Nuclear Material	(1) Design License (2) Manufacturer License (3) Installation License	(1) Operator License (2) Senior Operator License

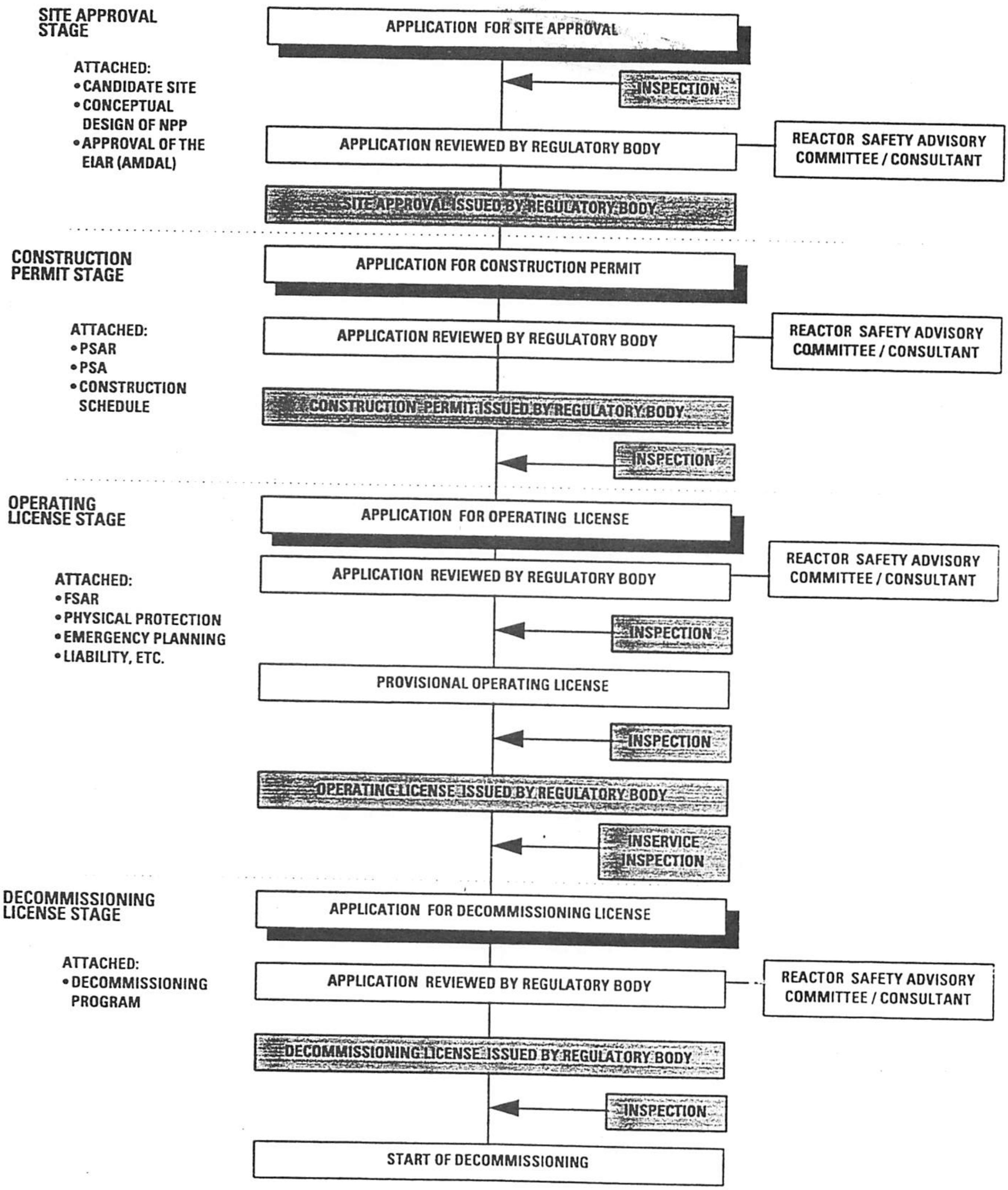

Figure 1. Licensing Procedures According to Draft the Government of the Republic of Indonesia (GOI) Regulations

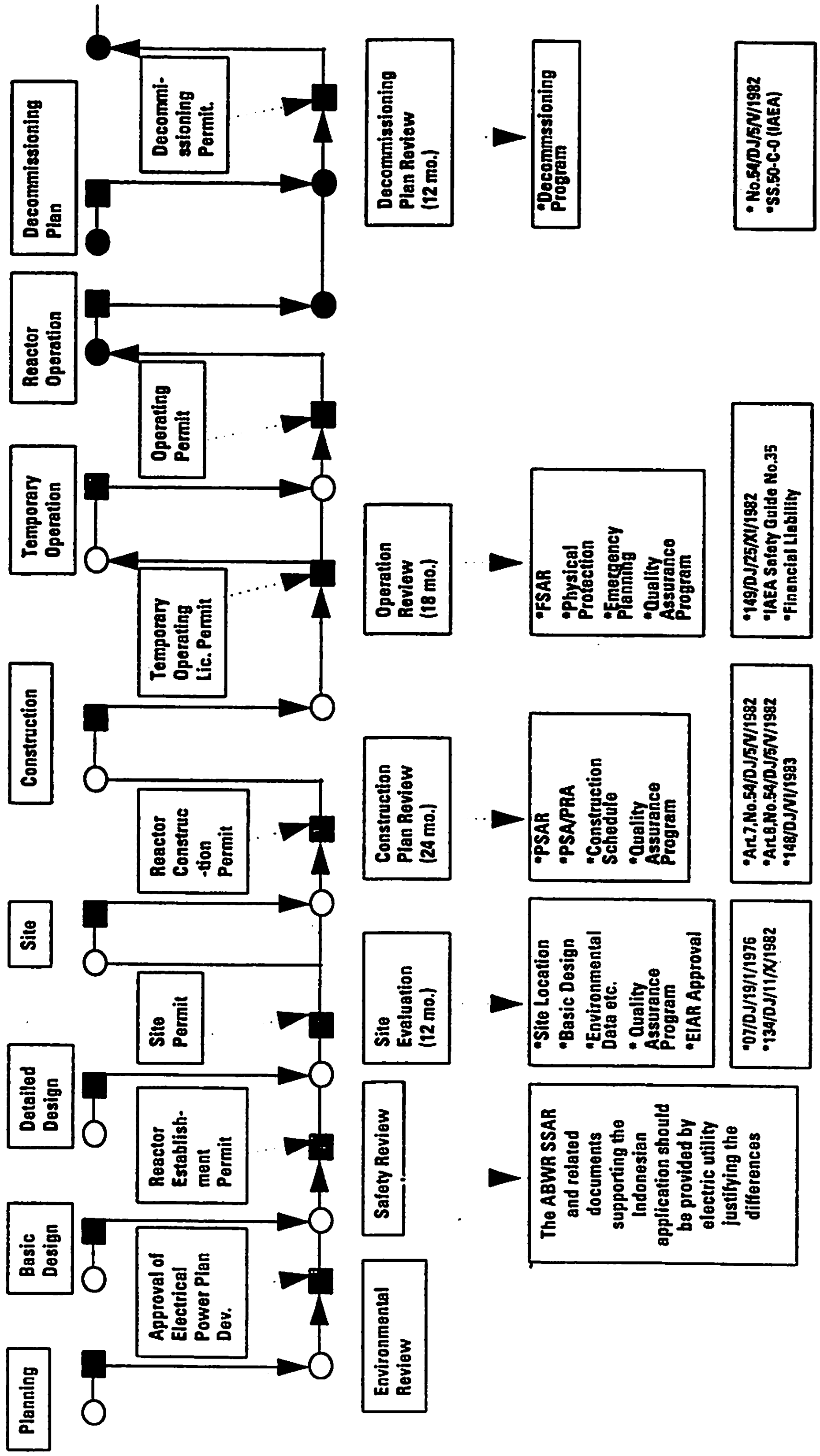

Figure 2. Licensing Process Map Plan of an ABWR in Indonesia