

Review on Overseas Contracts of a Nuclear Research Institute in Korea

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1. Introduction

Since its establishment, Korea Atomic Energy Research Institute (KAERI) has made various contracts in research, design, engineering and consultation with a lot of foreign counterparts all over the world, including international organizations. As one of the global nuclear energy research leaders, KAERI can make a large scale contract because it has already procured a turnkey EPC (Engineering, Procurement, Construction) contract for a research and training reactor in the spring of 2010 by forming a consortium with a construction and engineering company. A contract in nuclear business industries is to be made under the limited control of regulatory authorities because the contractors must ensure nuclear safety and follow the international nuclear non-proliferation guidelines to secure the peaceful use of nuclear energy at an international level [1]. The export and import of strategic technologies, products or materials (including nuclear materials) must be directly controlled by the authorities in accordance with the applicable law [1]. In 2009, KAERI organized a new team to manage the overseas contracts and to make the limited control reflected in the contract documentation [2]. In large scale project contracts, more attention shall be given to the contracts to prevent claims and also to the consideration of the regulatory requirements. In this context, the nature of the past KAERI contracts was reviewed. The conditions of several recent KAERI contracts were also individually reviewed based on the FIDIC (Federation Internationale des Ingenieurs-Conseils) model service agreement, which is generally accepted by service contractors. Ways to increase the quality of future contracts and to improve the standard model agreement which is used to prepare the draft contract were also considered.

2. Review Approach and Results

KAERI's 299 contracts (155 contracts for technology export and 144 contracts for technology outsourcing, including joint research) were made between 2001 and the end of June 2010. All the contracts were reviewed and analyzed based on the total contract payment for each contract for convenience. The payment of each contract was converted into the US dollars with the exchange rate on the first effective date of the contract

for review reference. The conversion of Korean currency Won to the US dollar was made by the transaction reference exchange rate and that of the other currencies was made by their direct exchange rates to the US dollar. At the authors' discretion, the export contracts were grouped by market and the outsourcing and joint research contracts were grouped by the development cycle of the product to analyze the nature of the contracts.

2.1 Technology Export

Exports showed a growing trend over the years as shown in Fig. 1(a). The achievement in 2010 was remarkable due to the contribution of the turnkey EPC contract. The exported items could be classified into five (5) groups by market aspects such as "technology service of neutron doping using HANARO", "research reactor EPC", "research, design and engineering services", "product and equipment" and "computer code and software" as shown in Fig. 1(b).

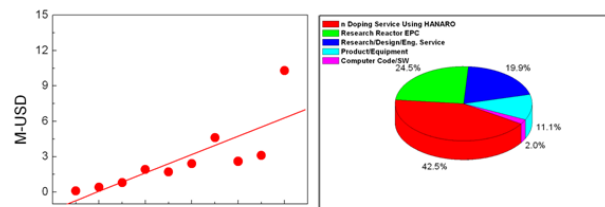


Fig. 1 Export of KAERI technologies: (a) export trend (b) export group

2.2 Technology Outsourcing and Joint Research

Fig. 2 (a) shows the outsourcing cost of foreign technologies and joint research (hereinafter called "outsourcing") for developing new technologies with foreign counterparts. The annually increasing trend of the outsourcing costs was repeated every three years except for the cost of 2007. The cost peak of 2007 came from big contracts such as those for irradiation testing, joining in the safety-related OECD project, and the integrity test and post irradiation examination of fuel assemblies. Fig. 2(b) shows the major outsourcing groups. The "test and analysis" group and "design and development" group accounted for 59.4% and 23.6%, respectively.

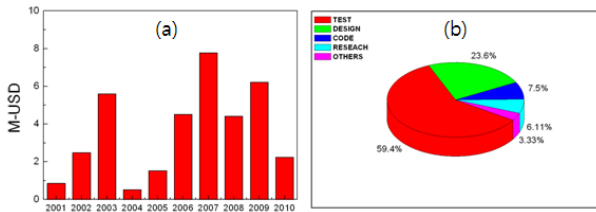


Fig. 2 Outsourcing summary: (a) annual outsourcing cost (b) outsourcing items

The major outsourcing countries were the USA, Norway and Russia as shown in Fig. 3, and the number of contracts with USA was forty four, with Norway was four and with Russian was thirty one. The big contracts with Norway were related to irradiation testing.

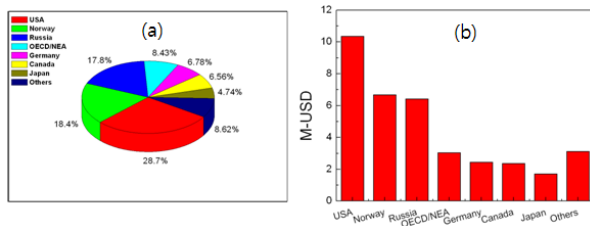


Fig. 3 Outsourcing majors: (a) occupation percentage (b) outsourcing cost

2.3 Reviews on the Contract Requirements

The KAERI standard model agreement has been developed and applied to the preparation of KAERI contracts for years. The model agreement is focused on the contract conditions to ensure KAERI's title and advantage in regard to invention, patent, information safety, and intellectual and industrial properties.

The FIDIC silver book (a kind of model agreement) was developed to provide contract conditions for works of civil engineering construction (hereinafter called "FIDIC conditions"). The purpose of developing the FIDIC conditions was to minimize the disputes or risks between the contracting parties. [3,4]. The FIDIC conditions were designed for practical use by practitioners and have been optimized by being tried and tested over 50 years. The book is considered as an international contract standard in about 60 countries around the world, including the World Bank and the Asia Development Bank [4]. The FIDIC model service agreement (FIDIC white book) was developed for the service contract between client and consultant. The FIDIC books provide a simple risk management process as a good risk management tool. The FIDIC conditions of the books are flexible and cost effective as well as reflect both market demand and international best practice for local application [4]. So, the FIDIC conditions are trusted by thousands of clients, contractors, consultants, financiers and lawyers [4].

Several recent KAERI contracts were reviewed based on the conditions of the 3rd edition of the FIDIC white book for general provisions, the clauses for the client and the consultant, those for commencement,

completion, variation and termination, those for payment, liabilities, insurance, dispute and arbitration. Since it is a general practice that the final contract requirements depend on the negotiation between both contracting parties, the commercial contract is not usually open to the third parties [1,3]. Most of the KAERI contracts selected for review have some clauses for keeping the contract confidential. It was noted that a consultation with a lawyer could be one of key contributions to deciding which the contracts were advantageous to KAERI. It was also found that the FIDIC conditions of the white book will be useful for KAERI staff to establish the specific contract requirements which are acceptable to the contracting parties.

3. Conclusions

The KAERI export has been an increasing trend. KAERI keeps searching for promising technologies and is trying to promote the marketing activities on selected technologies. The technology outsourcing costs of KAERI tended to increase in three years cycles. Major costs for the outsourcing were related to the irradiation tests for the qualification of the products which were being developed by KAERI. The contract conditions of the FIDIC white book are usable for the preparation of service contracts in addition to the existing standard model agreement. Considering the importance of nuclear non-proliferation, it is suggested that the requirements of nuclear export control should be reflected in the preparation of overseas contracts.

REFERENCES

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