

Analysis on the revision of the United States authorizing procedure for the transfer of unclassified nuclear technology

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1. Introduction

The DOE (Department Of Energy) controls the export of unclassified nuclear technology and assistance according to 10CFR810 regulation. And, it enables peaceful nuclear trade by assuring that nuclear technologies exported from the United States not be used for mass destruction purposes.

DOE has not comprehensively update 10CFR810 since 1986. Since then, the global civil nuclear market has expanded, particularly in China, the Middle East, and Eastern Europe, with vendors from France, Japan, the Republic of Korea, Russia, and Canada. In result, DOE issued revised 810 in respond to comments received from the public and commercial nuclear market changes. This regulation revision improves the efficiency of authorization process to promote national nuclear industry while maintaining nonproliferation control [1].

Even though ROK has initiated a legal basis for Intangible technology transfer (ITT) for nuclear export control, working implementation system is not set up. This research proposes recommendable ITT implementation of the ROK according to the analysis result of the US regulation.

2. 10CFR810 regulation

The DOE has statutory responsibility for authorizing the transfer of unclassified nuclear technology and assistance to foreign atomic energy activities within the United States or abroad. 10CFR810 controls the export of nuclear technology and assistance by identifying activities that can be “generally authorized” of “specifically authorized” by the secretary [2, 3].

A general authorization is an authorization granted by the secretary about proposed activity involves the transfer of technical data or assistance relating to the nuclear activities listed in 10CFR810 and the destination is listed in “generally authorized destinations”. Then the proposed export to that destination is generally authorized, subject to the limitations and reporting requirements.

A specific authorization is an authorization granted by the secretary in response to a request by a person to engage in activities within the scope of 10CFR810 for which a general authorization does not apply. Activities requiring specific authorization include transfers of controlled nuclear technology that are not generally authorized, as well as transfers of sensitive

nuclear technology or assistance to such activities in any form.

10CFR810 also delineates the process for applying specific authorization from the secretary and identifies the reporting requirements for activities subject to 810.

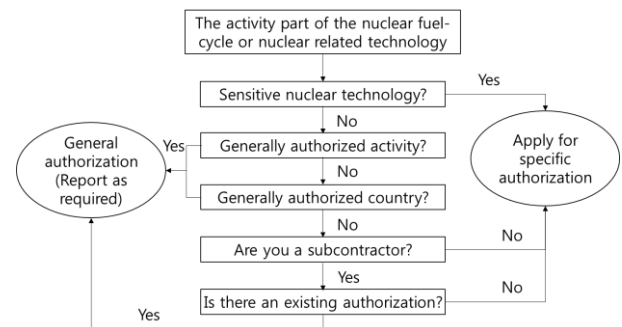


Fig. 1. 10CFR810 application decision tree

3. Revision purpose of 10CFR810

10CFR810 hasn't been updated for 30 years. Therefore, the old list of specific authorization countries was based on Cold War policies, contained countries that no longer existed, and countries that likely will never develop a civil nuclear program. In addition, after working under the regulatory framework for almost 30 years, DOE had experience with where the rule lacked clarity. To reflect these problems, DOE set 3 important goals for updating 10CFR810 [4].

1. Effective threat reduction: 810 should be updated to more effectively address proliferation challenges, as there have been significant changes in geopolitics, economics, technologies and relationships between the US and its nuclear trading partners since the regulation last underwent comprehensive revision in 1986.

2. Effective nuclear trade support: 810 should support US companies competing to provide nuclear technology for peaceful purposes in global civil nuclear reactor markets.

3. Efficient regulation: The 810 licensing process should be efficient, transparent, timely, and predictable. The cost of regulation to the government and industry should not exceed the benefits. Duplicative or unnecessary regulatory requirements should be avoided.

3. Major changes of 10CFR810

Revised 10CFR810 is intended to make a static regulation work in a flexible manner to meet the dynamic world of the commercial nuclear fuel-cycle and scientific pursuit of peaceful nuclear technology. Most importantly, the regulation is consistent with current global civil nuclear trade practices and nonproliferation norms, and updates the activities and technologies subject to the specific authorization and DOE reporting requirements.

- Articulating clearly the activities and technologies that are within the scope of 810
- Relisting from countries requiring specific authorization to generally authorized destinations, which are based on the US agreements for civil nuclear cooperation (so-called Section 123 Agreements)
- providing expanded general authorizations for operational safety activities, the separation of medical isotopes from spent nuclear fuel, and for transfers to foreign nationals working at NRC-licensed facilities and granted Unescorted Access in accordance with NRC regulations
- Improving process by developing an electronic submission and tracking system, called e810

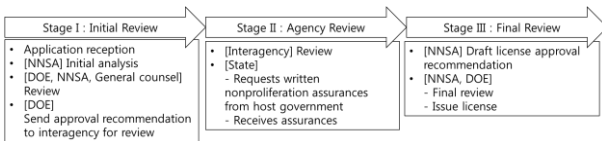


Fig. 2. 10CFR810 specific authorization process steps

4. Economic effect of revision

DOE conducted the analysis of the economic impacts of the changes contained in final rule. The primary mechanism of possible economic impact in the final rule is the reclassification of export destination status it proposes. Destinations that are specific authorization require a more rigorous set of export transactions associated with a specific authorization is the primary postulated cause of economic impact, with the possible reduction of US nuclear technology export trade the postulated impact [5].

Of 124 countries currently classified as GA under part 810, the final rule reclassified 80 into the SA category. The primary motivation for this change is to require more rigorous review of exports to countries and territories that do not now have significant civil nuclear programs or benefit from large nuclear trade volumes, but collectively represent a significant possible risk of technology transfer and eventual proliferation. At the same time, the final rule reclassified three countries currently designated as SA for nuclear technology exports (Ukraine, United Arab Emirates, and Kazakhstan) as GA. Though Croatia and Vietnam are added final rule, they are not considered when this

analysis conducted. Using these economic data, DOE calculated expected trade volumes by year as shown in Fig. 3.

In this economic analysis, the annual U.S. technology export trade volume forecast for the SA to GA country set (Ukraine, Kazakhstan, and UAE) is greater than that forecast for the 80 countries proposed for reclassification from GA to SA. While this estimates cannot be considered a reliable quantitative figure for a specific year, the fact is that this revision makes positive economic effect.

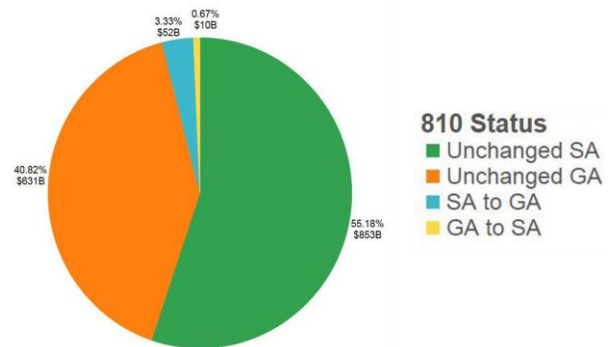


Fig. 3. Trade volume diagram of each status

5. Improvement points of the ROK's technology transfer control

Korea laid the legal foundation to implement strategic trade control measures by establishing provisions in the Foreign Trade Act in accordance with the norms of the international community. Exporting large-scale nuclear projects such as UAE nuclear power plant, Jordan research reactor, and nuclear fuel supply can raise a great administrative burden and economic loss to licensor and licensee simultaneously when applying the individual licenses for the nuclear technology under the current provisions. Although, in addition, Korea has initiated a legal basis for technology transfer for nuclear export control, implementation system is not prepared yet.

According to the analysis result of the US nuclear technology transfer control regulation, several improvement points of ROK's are suggested. First, classification of countries based on nuclear proliferation is needed to effectively and efficiently fulfill export control. Second, "fast track" is needed to save authorization time that is obstructive of export procedure.

6. Conclusions

In this revision, of 124 countries had been classified as general authorization under 10CFR810, 80 countries reclassified into the specific authorization. And 5 countries (Croatia, Kazakhstan, Ukraine, United Arab Emirates, and Vietnam) are reclassified as general authorization. In addition, DOE expands not only destinations but also activities broadly. By remaining

“fast track” for specific authorization, in particular, time frames for internal DOE and interagency reviews are reduced. This means the US government actively copes with commercial nuclear market expands to promote their industry.

Meanwhile, by remaining some of nuclear-weapon states (China, Russia, India) as specific authorization maintaining that the determinations are consistent with current US national security, diplomatic, and trade policy.

By benchmarking the US regulation, Korea can improve the efficiency of the technology transfer authorization process easing the regulatory burden by reducing uncertainty and timelines while maintaining the highest level of nonproliferation control.

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