An Analysis of the Fines System for Domestic and Foreign Nuclear Power Plants

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1. Introduction

In accordance with the Korean government's energy conversion and safety enhancement policy, the Nuclear Safety and Security Commission (NSSC), or the Nuclear Safety and Security Commission, promoted strengthening of safety standards for nuclear power plants and site-oriented regulatory activities in 2018 in response to the public's expectations. This can lead to actual inspection points or findings, resulting in reduced utilization rates and increased maintenance costs, making them an important deficit factor. In addition, the Commission reflected policies for enhancing nuclear safety in its 2019 Major Work Plan (2019.03), including the introduction of unlimited liability for compensation by nuclear operators, the introduction of a periodic safety assessment approval system, the application of the latest technology standards, timely reflection of technologies developed during the operational period, and the enhancement of audit and inspection.

Fine system was introduced in 1980 in the process of regaining unfair profits for the purpose of realizing economic justice in Korea, but recently it has been widely spread as a means of securing administrative obligations, and in particular, fines in nuclear power generation projects have been disposed of as a type of that changes work suspension, such as construction and food sanitation. Accordingly, fines that replace work suspensions are frequently raised that the fines are being levied in an unequal and unreasonable manner despite the need to maintain a proportional relationship between administrative disposition of work suspensions and administrative disposition of fines [1]

Therefore, the purpose of this study was to improve the efficiency and equity of imposing a fine on a different basis considering the gravity of the issue depending on the safety importance and recurrence degree of nonconformities in regulatory requirements or violation of operating permit conditions. The improvement plan was derived by investigating, analyzing, and comparing the system of the major overseas nuclear power plant operators in order to give reliability for use in the revision of the Act.

2. Analysis of Korea's Fines System

2.1 Fine System

The Korea's fines system was first introduced in the 1980 (Act on Monopoly Regulation and Fair Trade). But so far, there is no clear definition of fines under the current statute. In general, a fine is a form of administrative sanction imposed on an economic law, such as the Act on Monopoly Regulation and Fair Trade, in order to deprive people of the illegal profits they receive through violation of their obligations under the economic law, and is sometimes referred to as "unfair value." Today, a somewhat modified system has emerged for fines, and there is no fixed basis for levying or amount of levying, and there is no uniform format or content for each individual law. Therefore, although it is very difficult to categorize them, the purpose and nature of the related statutes that stipulate the fines are divided into three types.

Table 1: Fine Type in KOREA

	Type	Law
Type 1	A fine equivalent to the redemption of profits	
Type 2	A fine equivalent to the business suspension	Nuclear Safety Act
Type 3	A fine equivalent to the sanction	

Type 1 : This type is legislation type that stipulates fines are imposed as a system that deprives illegal economic interests obtained by acts of duty violation under economic law, as mentioned above. Its representative law is the Monopoly Regulation and Fair Trade Act.

Type 2 : This type is a legislation type that requires fines to be levied, either optionally or alternately, with revocation of permits and suspensions. Current types of legislation include the High Pressure Gas Safety Management Act, the National Health Insurance Act and the Nuclear Safety Act.

Type 3 : This type does not use the term fines in the written sense of the statute, but defines a similar system in terms of the purpose and nature of the penalty system. The levies prescribed in the laws of this type differ from the penalties in their name, but regardless of their nature, they are similar to those of the fines, which is regarded as a type of penalty.

The fine system, which is currently adopted by many laws, can be called the levy system, a modified form of the system introduced for the first time. The generalized form is the case in which a business suspension is allowed due to violation of the administrative law and fines are imposed on the suspension of the project in consideration of the public interest or user convenience.

The reason for the introduction of the modified fine is that it is most effective in the case of public service business to suspend the project, which is a traditional duty performance assurance group, but inconvenience to the general public due to the nature of the public service project due to the disposition of the service, and is designed to secure the obligatory execution of the business suspension under circumstances where it is difficult to impose criminal punishment on the minor violation of duty, and to continue to deprive the government of the benefits of the project. However, it would be desirable to introduce such fines only if they are feared to harm the public interest, such as causing adverse effects on users' convenience or the national economy.

2.2 Characteristic of A Fine

Fines are no different from criminal penalties or administrative fines in that they are monetary sanctions. It is also very similar to fines as an orderly punishment among administrative punishments in that it is a means to secure the effectiveness of administrative laws.

However, fines differ in the following respects:

1) Under the administrative law, a violation of duty is not a punishment due to its nature.
2) The standard for setting a levy is also set to the extent of the , but the is based on the expected profit from the violation.
3) The reason for non-conformity is also subject to the Non-Transfer Case Procedure Act, while the is subject to the Administrative Procedure Act.

Since there are differences in the above nature, the imposition of fines, administrative and criminal penalties can be compatible logically. In reality, however, imposing both sets of penalties and fines together as the same financial burden could cause double-burdening or double-punishment problems. Under the basic premise that the system, in principle, deprives illegal gains from violations of the law, there is no sanction factor that further aggravates the state of interest even before the offence, and thus, even with punishment or other administrative sanctions and illness, there is basically no problem of double punishment and double risk.

2.3 Enforcement method

In the nuclear safety statute system, licensing and safety regulations are divided into construction and operation stages in the case of power-generating nuclear reactors, and enforcement methods for nonconformities in regulatory requirements or violations of licensing conditions found in regulatory activities such as inspection and examination are stipulated in the Act, such as corrective actions, orders, fines, suspension of duties, changes in operational permits and cancellations. However, verbal and written warnings are also used, although they are not stipulated in the decree.

The criteria for imposing fines on operational nuclear power plants are stipulated in Article 175 Annex 11. For example, if the approval criteria of Article 21 of the Act on the Violation of the Schedule are found to have fallen short, the first violation would result in a three-month suspension or a fine equivalent to 1.2 billion won. However, the recent decline in public confidence in nuclear safety has led to "financial compensation for the suspension" of nuclear power plants, adding to the general public's anxiety and demanding that they be suspended as a rule.

3. Analysis of USA's Fines System

3.1 Fine System

NRC's authority to conduct nuclear safety-related regulatory enforcement in the United States stems from the AEA (Atomic Energy Act)[2] and the ERA (Energy Reorganization Act). AEA grants general authority to authorize and regulate the civilian use of nuclear material, and the ERA provides for the establishment of NRC and its key NRC departments. In particular, section AEA 161 gives NRC the power to carry out and order inspections and investigations, section 186 stipulates the right to revoke permits, and section 234 gives the right to impose fines.

NRC applies the Code of Federal Regulations to practical enforcement programs. The formal procedures relating to the use of NRC's executive powers are described in double 10 CFR Part 2[3].

The US NRC's regulatory enforcement policy[3] has been established and implemented in this legal framework. NRC's enforcement policy also provides measures to assess the general principles and nonconformities in the execution program and violations of regulatory requirements or operating permit conditions, to present NRC's expectations regarding disposal based on such assessments, and to enable organizations or individuals subject to enforcement actions to provide input to the enforcement procedures.

3.2 Enforcement method

NRC's Implementation Policy (NRC) [4], as amended in May 2018, specifies the following enforcement methods to address regulatory requirements, nonconformities, or violations of operating license conditions : Minor Violation, Noncited Violation, NCV, Notice of Violation, NOV, Civil , Orders, Demand for Information, Administrative Actions, Reopening Closed Enforcement Actions, Enforcement Guidance Memoranda, EGM, Commission Notification and Consultation on Enforcement Actions, Inaccurate and

Incomplete Information, Reporting of Defects and Noncompliance.

Among the ways in which action can be taken against a violation are the violation notification Notice of Violation, Civil , and Orders.

Notice of Violation : Violation notices based on 10 CFR 2.201 (NOV) are written notices that specify nonconformities in regulatory requirements that are legally binding or violations of operating license terms. This method may be issued for all violations, but may require a performance commitment for the types of violations (severe I, II, III and SDP white, yellow and red), except for minor violations. This method generally requires the licensee to submit in writing the relevant grounds, 2 corrective actions and results taken by the licensee or others, 3 corrective actions scheduled to be performed, and 4 schedule for resolving expected discrepancies when the cause or objection is made.

Civil : The U.S. fine is based on 10 CFR 2.205 (Civil Penalties). This method is a monetary that can be imposed for violations of NRC rules or orders related to nuclear security under section 4 § 147 of the reporting requirements under section 3ERA 206 or for violations of NRC rules relating to nuclear security, or violation of NRC's Supplementary NRC Rules or Orders in accordance with paragraph 1. It may also be imposed on violations of severity I, II and III and violations of the SDP, such as white, yellow and red. Based on the circumstances of a particular case, NRC is making sure that the proposed fine reflects the safety importance of that case. In this case, fines may be waived for low safety importance or, in severe cases, up to double the basic fine (US$290,000 for power plants).

Orders : Orders are NRC's written instructions to change, suspend, or cancel operational licenses, suspend practices or activities, or take other appropriate actions. Orders may be issued instead of penalties for violations of severity I, II and III, or may be issued with penalties.

3.3 Procedure for Levying A Fine

Evaluation of safety significance of violation : After the violation is confirmed, NRC evaluates the severity (SL) and safety significance of the violation. These assessments are carried out before a fine is imposed in accordance with the process of imposing a fine. Most violations by reactor operators are assessed through the ROP (Reactor Overweight Process) that utilizes risk and performance information. The safety-critical assessment through the ROP classifies violations into colors according to their importance.

Past Safety Performance Evaluation : The licensee's past execution history is reviewed here only if the found violation is unintentional and severity III. If the operator has not received any other enhanced measures in the last two years or two of the inspection periods, taking into account this, no action will be taken to impose double the basic fine, and in some cases no fines will be levied or only the basic fine will be imposed. These factors include IAEA GSG-13 3.308-(b) Repeatability, (c) Intentionality, and (f) Safety Performance Trends.

Conformity assessment for identifying and reporting violations : The second factor is to encourage rapid identification of violations of NRC regulatory requirements. This includes IAEA GSG-13 item 3.308-(c) the deliberate nature of the nonconformity, (d) the identification and reporting of violations, and (g) the consistency and openness of problem handling.

Conformity assessment of corrective action : If the first evaluation element (Evaluation of safety significance of violation) is satisfied, i.e. if the first evaluation element is not satisfied, the operator has identified the violation on its own, even if it is an unintentional first violation or the assessment element 2) for a longer period of two or two years, i.e. if the first evaluation element is not met, it is also intentionally violated or violated in the past two years (Severe I or II).

4. Conclusions

The reasons for the differences (including weak or harsh parts) were identified mainly by investigating and analyzing the Korean and U.S. regulatory enforcement methods and the fine system. From the results, improvements were derived as follows: Numbers 1 through 2 are engineering improvements, and number 3 is legal improvements.

1. Implementation of Graded Execution Method

It is necessary to establish a system to enforce regulatory enforcement and fines differently. In particular, it is necessary to have a system that can be imposed in proportion to the safety importance, severity, and contribution to overall risk of violation.

2. Establishing a Safety Significance and Decision Making System

The importance of the offence shall not be determined by subjective understanding or discussion or law, but shall be clearly determined by an engineering assessment (deterministic and probabilistic). In addition, it is necessary to systematically implement procedures for responding to regulations in various ways, supporting their decisions, and presenting alternatives in case they occur through these assessment of importance.

3. Fine Amount

Nuclear operators and regulators need to be concerned about some opinions that the standards for levying fines are disproportionate to each statute. Of course, each statute has different legislative purposes

and different personalities, but it is often difficult to say that the amount and limit of the fines were calculated on a certain basis, and there is an imbalance between similar Business.

REFERENCES

[1] A Study on the Improvement for the Rationalization of the Charges, Seoul Administrative Association (2013)
[2] Energy Reorganization Act of 1974 (P.L. 93–438)
[3] NRC, Title 10, Code of Federal Regulations
[4] NRC, “NRC Enforcement Policy”(2018. 5. 15)