

Preliminary Analysis of Claim Entitlement and Procedures for NPP Power Plant Projects

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1. Introduction

Since the 2000s, the frequency of international arbitration has steadily increased, peaking after the COVID-19 pandemic in 2020 and continuing to rise [1]. Additionally, contractual difficulties in the construction industry have been continuously increasing [2]. The share of nuclear energy in global power generation capacity is expected to more than double, from 4.5% (371 GWe) in 2022 to a maximum of 5.4% (890 GWe) by 2050 [3]. This increase suggests a likely rise in the occurrence of claims in nuclear power plant exports. While there has been analysis on the Risk clauses within the standard international contract FIDIC [4], there has been no comparative study of claim rights and procedures among the standard contracts (FIDIC, NEC4, AIA, PSSCOC). Therefore, this study aims to analyze and compare the four standard international contracts to derive the crucial claim rights provisions and reasonable claim procedures that should be considered during EPC power plant project contracts and execution.

2. Literature Review

2.1 Study on Claim Entitlement

Zhi (1995) emphasized the need for a systematic classification, identification, evaluation, and response to risks in overseas construction projects, yet did not classify risk factors according to specific contract conditions [5]. Hyun (2016) identified 15 major contractual risk factors under the FIDIC Red Book, noting that this book, being focused on construction contracts, differs in detail from the FIDIC Silver Book, which is intended for EPC contracts [4].

2.2 Study on Claim Procedures

Kululanga (2001) divided the claim process into seven stages: Claim identification, notification, examination, documentation, presentation, negotiation, and use, evaluating the level of awareness among contractors. However, due to the limited work experience of the survey respondents or the small size of the organizations, the study could not reach meaningful conclusions about the understanding of the claim process [2].

Upon reviewing the previous literature, which separates studies on claim entitlements from those on claim procedures, it was found that research on claim entitlements primarily focused on identifying risk elements within the FIDIC. There was a lack of quantitative analysis regarding claim procedures. Additionally, comparative analyses of claim entitlements and procedures across various international contracts were absent. Consequently, this study conducts the research by developing key claim entitlement provisions and reasonable claim procedures based on international standard contracts.

3. Methodology

This study performs a step-by-step research methodology to identify classified claim entitlement clauses and claim procedures. Initially, it compares and organizes the claim entitlement clauses and procedures found in international standard construction contracts (FIDIC, NEC4, AIA, PSSCOC). Secondly, it extracts and classifies relevant clauses and descriptions from the compared data. Thirdly, the initial importance evaluation is conducted on the extracted items, followed by Re-classification. Fourthly, a survey is created based on the Re-classified Clauses and Descriptions, and is conducted along with In-Depth Interviews targeting 30 experts. Finally, major claim entitlement clauses and claim procedures are deduced, reflecting the insights gathered from the expert group's survey results.

3.1 Comparison of Claim Entitlement Clauses and Procedures

The study tabulated claim entitlement clauses and descriptions by comparing them across four international standard contracts. After locating the original phrases from each standard contract, they were classified and matched accordingly. As a result, 29 clauses related to claim entitlement and 15 items related to claim procedures were compared.

3.2 Drafting Classified Descriptions for Each Clause

From the compared data, Classified Descriptions were derived for each Clause. The Classification grouped common aspects from the four contract phrases together and distinguished where differences existed.

After an initial review by construction contract experts, a draft was prepared.

3.3 Initial Evaluation and Reorganization

An initial importance evaluation was conducted on the Classified clauses and procedure data. The importance evaluation quantitatively presented three levels based on consistency and similarity across the four international standard contracts: (1) High for clauses mentioned in all four contracts, (2) Mid for those mentioned in 2-3 contracts, (3) Low for those mentioned in only one contract. Items rated as Low were excluded, and Reorganization was carried out. Tables 1 and 2 below show the 25 Re-Classified Claim Entitlements and 9 Claim Procedures after the initial importance evaluation.

3.4 Conducting Surveys and In-Depth Interviews

After completing the initial importance evaluation and using the Re-classified data, survey questions were formulated. Subsequently, surveys and In-Depth

Interviews were conducted with 20-30 experts experienced in international nuclear power and contract management. The survey evaluated (A) the Importance of Clause to Contractor, and (B) the Riskiness of Classified Description to Contractor on a scale from 1-5. This helped in identifying critical claim entitlement clauses and procedures, and in prioritizing risky descriptions.

3.5 Synthesis of Major Claim Entitlement and Procedure Provisions

Following the survey and in-depth interviews with the expert group, the study synthesizes the major claim entitlement provisions and claim procedures that reflect the collective insights and assessments of the experts. This involves integrating the responses concerning the importance and risks associated with each classified clause and description. This comprehensive assessment enables the identification and prioritization of critical claim entitlement clauses and procedures that are deemed significant and important according to experts.

Table 1. Classified Clauses regarding the Entitlement of Claim After Initial Assessment

No.	Clause	Description	Classification	Initial Assessment
1	Right of Access to the Site	The Employer provides the Contractor with the right of access and occupancy to the site from the commencement date. If this is not provided, the Contractor can claim (EOT, Cost, Profit) .	[F], [N], [P]	Mid
2	Co-operation	If there are delays and costs caused by unforeseeable events involving the Employer or public authority personnel, the Contractor can claim (EOT, Cost, Profit) .	[F], [N], [A], [P]	High
3	Access Route	If the access route is made unavailable by the Employer or a third party, causing delays and incurring costs, a claim is possible (EOT, Cost)	[F], [N]	Mid
4	Archaeological and Geological Findings	If archaeological findings are reported to the Employer and instructions are followed while causing delays and costs, a claim can be made (EOT, Cost)	[F], [N]	Mid
5		If the Contractor encounters human remains, or recognizes the existence of burial markers, archaeological sites, or wetlands not indicated in the documents, compensation is warranted (EOT, Cost, Profit)	[A]	
6	Testing by the Contractor	If the Employer does not attend the Contractor's tests, leading to delays and costs, a claim can be made (EOT, Cost, Profit)	[F]	High
7		If the Employer requests a test for reasons not attributable to the Contractor, the Contractor is compensated for the incurred inspection costs (EOT, Cost, Profit)	[N], [A], [P]	
8	Remedial Work	If remedial work is delayed or incurs costs due to the Employer, a claim can be made (EOT, Cost, Profit)	[F], [N], [P]	Mid
9	Consequences of Employer's Suspension	If the Employer's instruction to suspend the work leads to delays and costs, a claim can be made (EOT, Cost, Profit)	[F], [N], [A], [P]	High
10	Prolonged Suspension	If the suspension lasts during certain period and the Employer does not issue a notice to resume work, a claim can be made (EOT, Cost, Profit) .	[F], [N]	Mid
11	Interference with Tests on Completion	If the Employer's interference prevents completion tests from being performed, leading to delays and costs, a claim can be made (EOT, Cost, Profit)	[F], [N], [A], [P]	High

Table 1. Classified Clauses regarding the Entitlement of Claim After Initial Assessment (Continue)

No.	Clause	Description	Classification	Initial Assessment
12	Delayed Tests	If tests after completion are delayed due to the Employer's fault, the Contractor can claim costs (Cost, Profit).	[F], [N], [P]	Mid
13	Failure to Pass Tests after Completion	If the Employer unreasonably delays the Contractor's access, causing additional costs for investigating the reasons for failing the tests after completion, the Contractor can claim (Cost, Profit).	[F], [N], [P]	Mid
14	Variation Procedure	Variations ordered by directive result in an extension of time and an adjustment of the contract amount, explicitly stated as a change in the construction amount without a claim for Profit (EOT, Cost).	[F], [N], [A], [P]	High
15	Adjustments for Changes in Laws	If changes in laws result in delays and costs to the Contractor, claims can be made (EOT, Cost).	[F], [N], [A], [P]	High
16	Delayed Payment	If the Contractor does not receive payment on time, they can claim the compound interest on the financial costs incurred during the delay period (Cost, Interest).	[F], [N], [A]	Mid
17	Termination by Contractor	If, after a certain period following a suspension of work, the Employer fails to fulfill contractual obligations, or is in a state of bankruptcy or insolvency, the Contractor can claim (EOT, Cost, Profit).	[F], [N], [A], [P]	High
18	Contractor's Obligations After Termination	After termination, the Contractor must cease all additional work and perform only the tasks directed by the Employer. If this results in additional costs, the Contractor can claim (EOT, Cost, Profit).	[F], [N]	Mid
19	Liability for Care of the Works	The Contractor is not liable for any loss caused by specified events such as unavoidable result, occupancy and defects due to Employer's reasons, and unexpected scenarios even for an experienced contractor. The Contractor can claim (EOT, Cost, Profit).	[F], [N]	Mid
20	Consequences of an Exceptional Event	Exceptional Event includes events beyond the control of any party, cannot be reasonably prepared for, and cannot be reasonably avoided after occurrence. In such cases, the Contractor can claim (EOT, Cost).	[F], [N], [P]	High
21		The Contract Time may be extended if the Contractor is delayed due to the Owner's actions, changes in the work, labor disputes, fire, unusual delay in deliveries, or other causes beyond the control. (EOT only).	[A]	
22	Errors in the Employer's Requirements	If there are undetectable errors in the Employer's requirements that result in construction delays or increased costs for the Contractor, the Contractor can claim after notification (EOT, Cost, Profit).	[F], [P]	Mid
23	Unforeseeable Physical Conditions	If the Contractor encounters unforeseeable physical conditions even by an experienced contractor, the Contractor can claim (EOT, Cost).	[F], [N], [A], [P]	High
24	Taking Over of Parts of the Works	If the Contractor incurs costs due to the Employer taking over or using parts of the works, the Contractor must notify the engineer and can make a claim (EOT, Cost, Profit).	[F], [N]	Mid
25	Uncovering of Work	The Employer can inspect parts of the work that the Contractor has covered. If the work is done according to the documents, the Contractor can claim (EOT, Cost, Profit).	[A], [P]	Mid

Table 2. Classified Procedures of Claim After Initial Assessment

No.	Item	Description	Classification	Initial Assessment
1	Burden of Proof in Claims	The party initiating the claim bears the burden of proof.	[F], [N], [A], [P]	High
2	Time Bar for Claim Request	The contractor loses the right to claim if notification is not made within a specified period. If the employer fails to respond within a specified period, the claim is considered valid.	[F], [N], [A], [P]	High
3	Progress and Payment of Work During Claim	The contractor must diligently proceed with the performance of the contract, and the employer must continue to make progress payments.	[F], [N], [A], [P]	High
4	Time Bar for Detailed Proof of Claim	After recognizing a claim, it must be submitted within a specific period with detailed information such as contemporary records, construction costs, and time.	[F], [N], [A], [P]	High
5	Time Bar for Claim Decision	The employer must notify of any agreements or decisions within a specified period.	[F], [N], [A]	Mid
6	Contemporary Records	The contractor must maintain contemporaneous records as reasonably necessary to support subsequent claims.	[F], [P]	Mid
7	Access to Supporting Documents	The employer has access rights to all important books, documents, papers, or records related to claims.	[F], [P]	Mid
8	Claim of continuing effect	If a claim continues to have an effect, it is considered interim, and periodic updates must be submitted.	[F], [P]	Mid
9	Preventive Action Through Early Warning	Both parties perform early warnings to minimize damage before proceeding with a claim through the Advance warning clause.	[F], [N]	Mid

4. Result & Discussion

4.1 Results on Claim Entitlement

The clauses that were highly rated in importance and risk under claim entitlement included Variation, Liability for Care of the Works, Consequences of an Exceptional Event, Unforeseeable Physical Conditions, and Consequences of Employer's Suspension. In particular, the clauses Consequences of an Exceptional Event and Unforeseeable Physical Conditions were seen as highly risky, suggesting that careful management of detailed records is crucial to secure claim entitlements.

4.2 Results on Claim Procedures

In claim procedures, the clauses that scored high in importance and risk were Time Bar for Claim Request, Time Bar for Detailed Proof of Claim, Contemporary Records, Preventive Action Through Early Warning, and Time Bar for Claim Decision. This indicates that the time limits for making a claim are most crucial, followed by the time limits for providing proof. The time limit for decisions was found to be less critical compared to request and proof. Additionally, the importance of Contemporary Records was highlighted,

affirming the significance of document management during the claim process.

5. Conclusions

This study has comprehensively analyzed and compared claim entitlement clauses and procedures across four leading international standard contracts (FIDIC, NEC4, AIA, PSSCOC) within the context of EPC contracts for nuclear power plant projects. By leveraging insights from experienced professionals through surveys and in-depth interviews, this study offers a nuanced understanding of which clauses are most vital and risky, thus providing a valuable framework for contract managers and parties involved in nuclear power plant projects. This proactive approach can significantly contribute to smoother project execution and a reduction in costly litigation, ensuring the sustainable growth of nuclear power infrastructure globally.

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