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Environmental Auditing and Continuous Improvement in KOC's Gas Projects

Fatemah Al-Baroud[a], Sudharani Shreenivas Kshatriya [b],
[a]*Kuwait Oil Company, Health, Safety and Environment (GAS) Team, Kuwait*
[b]*Kuwait Oil Company, Health, Safety and Environment (GAS) Team, Kuwait*
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Abstract: Kuwait Oil Company (KOC) is a major subsidiary of the Kuwait Petroleum Corporation, a worldwide supplier of energy. KOC's responsibilities include the exploration, drilling, and production of oil and gas within the State of Kuwait. The company's activities have the potential to affect the individual and community health, safety, and the environment in numerous ways. However, the company's management is committed to manage these potential impacts and risks associated with its activities and products. Consequently, Health, Safety and Environment (HSE) policy and management system has been established and designed as a comprehensive set of policies that establish a framework for management and personnel to achieve the required outlined goals. The HSEMS is a two-part system consisting of employees' attitudes and actions, as well as written documentations in a collaborative effort to excel in HSE performance.

One of the environmental monitoring elements for all gas projects is to fulfil with the requirements of KOC HSEMS Procedure. KOC.EV.003 - Environmental and Social Impact Assessment (ESIA), which highlights the regulatory requirements set by Kuwait Environmental Public Authority (KEPA). In addition, the assessment identifies a process in which the potential impacts of the project on the environment (air, water, land, plants, and animals) are predicted and evaluated in order to establish measures to reduce, control, and monitor these potential effects.

Audits on KOC.EV.003 - Environmental and Social Impact Assessment (ESIA) Procedure and implementation of KEPA recommendations for the approved ESIA Study for the Projects is being carried out as a part of KOC HSEMS Procedural requirement and monitoring the implementation of the relevant HSEMS procedures in the project's sites. The audits are aimed to verify the implementation status of procedural requirements and implementation of KEPA recommendations at the Project work sites. The list of the projects that were covered during Theme Audit Program are the following:

1. Project work site (3D SEISMIC Survey)
2. Project work site (Upgradation of Gas & Condensate Network at East Kuwait Area II), and
3. Project work site (Construction of New Production & Projects (Gas) Group Building at NK)

This Auditing process comprehensively focuses on the applied ESIA procedure for gas projects in KOC and itsabilityto reduce the resultant negative impacts on environment from the projects. Upon completion of the audit process, the number of findings and recommendations for each audit were highlighted to the concerned Project Controlling Authorities. The results of the audits revealedthat there was an extensive improvement in the performance towards protecting the Environment. KOC HSEMS procedure KOC.EV.003 is updated and revised periodically,to include the additional itemsfrom the regulatory body,release dates by the government authority, as well asany major changes within the organization.

Keywords: Environmental and Social Impact Assessment (ESIA), Gas & Condensate Network, and Kuwait Environment Public Authority (KEPA), recommendations

I. INTRODUCTION

Studies regarding the effectiveness of the Environmental Theme Audit regarding the continuous development, pollution,cost reduction, and environmental preservation are the main subjects under discussion. Therefore the section below details the various themes of the audit as they relate to previous research.

LITERATURE REVIEW

Luka Ljubisavljević et al. explained the ways in which the environmental audit contributed to the improvement and preservation of environmental protection andinitiated and promoted the concept of sustainable development.(2) The scholar's study used variousmethods of analysis, such as synthesis, analogy, and continuity. Notably, the results of the study indicated there was significant correlation between the environmental audit requirements and the improvement and protection efforts of the various enterprises.(2) The research identified its application as including certain proposals to reduce pollution and enhance the protection of the environment. Specifically, the results of the study indicated that it was important in proposal introduction, application, control,

and the continuity of improvement practices.[2] The process used both internal and external audits of Serbian enterprises.

Gray explored various reviews of recent developments in environmental and social reports that emphasized attestation and the implications of audit.[1] Specifically, the author used the primary aspects of social, sustainability, and environmental reports as the vital components of a well-functioning democracy.The paper has three subjects, and they are: the need to clarify terminology in the field of social and environmental 'audits', the current weakness of attestation practices in the area, and the significant - but unfulfilled - promise offered by professional accounting and auditing education and training.[1]

Wright explained that the environmental auditing is a technique used to evaluate an organization's environmental performance against specified objectives.[4] The practice is gaining wider acceptance and application, particularly following the introduction of BS7750 Specification for Environmental Management Systems and the EU eco-management and audit scheme (EMAS).[4] It summarized some of the gaps encountered in environmental management systems, which prevent the optimization

Odunzeet al.examined the impact of environmental auditing on seven companies in Port Harcourt using a randomized questionnaire survey system.[3]In their study, 235 employees were surveyed in these organizations and the results were analyzed by spearman's rank order coefficient. The study conducted by Odunze et al. revealed that for each of the audited company, the results was: A:15.4%, B:15.2%, C:14.0%, D:15.1%, E:14.1%, F:13.4%, and G:12.8%, and the corresponding environmental pollution was A:15.0%, B:14.9%, C:14.2%, D:14.6%, E:14.9%, F:13.3% and G:13.3%.[3]On the other hand, results from the organizations'sustainable development and healthy environment results were, A:15.1%, B:15.3%, C:13.9%, D:14.7%, E:13.9%,F:14.0%, G:13.8% and A:15.2%, B:15.3%, C:14.2%, D:14.0%, E:13.8%, F:13.8%, G:13.7% respectively.[3]Indeed, the results indicated that environmental auditing and sustainable development were significantly related, similar to the relationship between environmental pollution and healthy environment. Therefore, the protection of the environment requires collaborative efforts from companies, government, and other stakeholders. In particular, awareness campaigns are efficient since they provide information over causes, prevention, and protection of environment from an individual and community levels; thus achieving thedesired sustainable development through auditing.

In view of the above literature reviews, we can concluded that the EnvironmentAudit is one of the monitoringtoolagainst the HSSEprocedures and Kuwait EPA regulations and legislations.[5]This paper focuses onthe Environmental Audit against KOC.EV.003 - Environmental and Social Impact Assessment (ESIA), and evaluation of the compliance and implementations level of the regulatory requirements set by Kuwait Environmental Public Authority (KEPA) at the Gas Projects.[5][7]In particular, the start point is the identification of the Gas projects which will be audited. The study will cover the following projects during the Theme Audit Program:

1. Project work site (3D SEISMIC Survey)
2. Project work site (Upgradation of Gas & Condensate Network at East Kuwait Area II), and
3. Project work site (Construction of New Production & Projects (Gas) Group Building at NK)

This Auditing process comprehensively focuses on the applied ESIA procedure for gas projects in KOC and the effect of this procedure on reducing the negative impacts on environment resulted from projects.

II. METHODOLOGY

2.1 Environmental Auditing:

Environmental Audit is defined as a systematic, documented, periodic, and objective process in assessing the companies' activities and services in relation to:

- Assessing compliance with relevant statutory and internal requirements.
- Facilitating management control of environmental practices.
- Promoting good environmental management.
- Raising staff awareness and enforcing commitment to departmental environmental policy.
- Exploring improvement opportunities.

2.2 The Audit Process:

The Audit Team Membersincluded the following experts:

1. Fully trainedand certified memberswere identified in order to carry out the audit smoothly without any conflict of interest throughout the process.
2. The list of roles and responsibilities were identified in order to ensure the objectives of the audit process were achieved.

Accordingly, Audit Team Members followed the directions of and supported the lead auditor, by preparing adequately to carryout assigned tasks within the audit scope, collecting and analyzing objective evidence to

facilitate accurate findings, preparing working documents under the direction of lead auditor, documenting individual audit findings,and in writing the audit report.
Specifically, the following were the objectives of the audit:
1. To verify and asses the implementation status of procedural requirements at the Project work site with reference to KOC.EV.003 and other applicable KOC HSEMS Procedures.
2. To evaluate the compliance and implementations level of the regulatory requirements set by Kuwait Environmental Public Authority (KEPA) at the Gas Projects.
Therefore,the Audit Program to be used was planned as identified below:
Audit program: Table of the activities' list (opening / closing meeting, field visit, etc.) during the audit along with the date & time was identified. Further, the projects' list was addressed and communicated with the program's facilitators in order to give the controlling teams an opportunityto be prepare adequately. In particular, the list of the projects to be audited were:
a) Project work site (3D SEISMIC Survey)
b) Project work site (Upgradation of Gas & Condensate Network at East Kuwait Area II), and
c) Project work site (Construction of New Production & Projects (Gas) Group Building at NK)

Following the designed program, we emphasized to have different scope for the projects since they were located in different areas in Kuwait.The first project focused on 3D SEISMIC survey, whose scope includedexploring the layers in which hydrocarbon installations are located within the region andthe desert land in which it occupied. In addition, the Seismic surveys in land areas were carried out by sending sound waves into the ground using energy sources on the earth's surface, whereby reflected waves from different layers and depths were received by sensitive clamps (headphones).The time of occurrence was recorded in terms of vibrations, intensity, quality of waves, whether horizontal or vertical, as well as the period during which the vibrations lasted. The Second Scope was focused on the Upgradation of Gas & Condensate Network at East Kuwait Area II, and finally the Construction of New Production & Projects (Gas) Group Building at NK area.

After the implementation of the required processes, Audit team members conducted internal meetings and addressed all the findings and recommendations. A meeting with Auditees and the facilitators also followed, andthe teams discussed the findings and the recommendations and closed the meeting. Finally, the Audit reports were prepared, reviewed, approved and sent to all concerned teams for actions and implementations. See fig. (1) below, which outlines the Audit Process in the company.

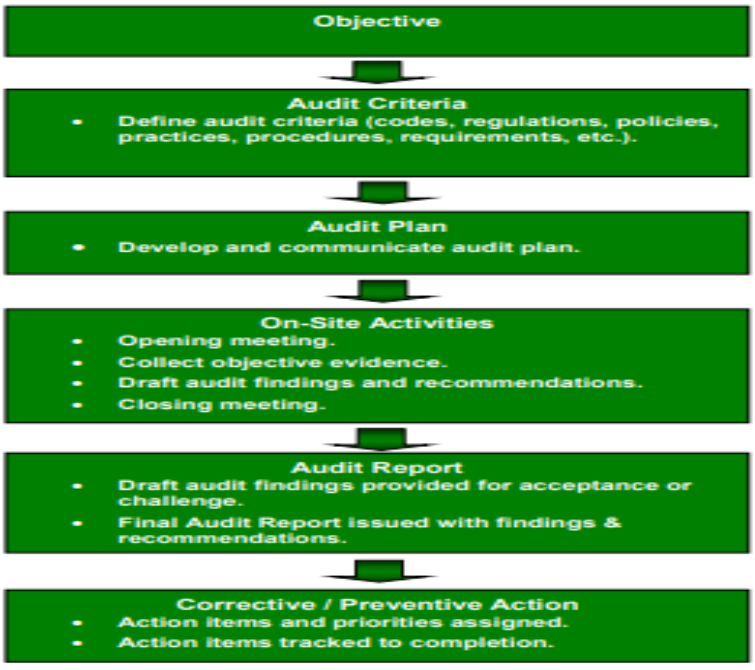

Fig. (1): The Audit Process in the Company

III. RESULTS AND OUTPUTS

The common findings that were found and considered as good practices were:

1. Auditees were positively committed to the Audit Process and facilitated the audit smoothly by providing all the relevant documents and details. In addition, the auditeeswere warm, welcoming, and hospitable towards the audit team.
2. The auditeeprovided a comprehensive presentation about the scope and all the details about the project. In addition, fruitful HSE moment was provided during the audit.
3. The following documents were reviewed, approved, and well documented in the organization:

a) Screening Application Form
b) Environmental Aspects and Impacts Management Registers
c) Environmental and Social Impact Assessment (ESIA) Report
d) Waste Management Plan, HSE plan and Environmental Management Plan
e) Training Matrix for the contractors
f) MOC drill on emergency response
g) Monthly Performance Report
h) Emergency Response plan
i) Internal Environmental Inspection

4. Recycling processes were practiced for the following waste: (wooden pallets and asphalt).
5. ISO 14001/2015 & ISO 45001/2018 Internal Audit was carried out by the contractor at their work site.
6. The organization participated in several awareness campaigns regarding environment preservation.
7. 90 % of the Projects', Contactors' Environment Systems were in line with the Company's requirements for the environment systems.

In addition to the good practices, the observations that were made led to the following recommendations:

1. The updated template of HSE documents was to be used and implemented in order to comply with the company's procedures and requirements.
2. The Environment Survey &Self-monitoring needed to be carried out at the sites.
3. The adequate segregation process was to be activated effectively in order to enhance housekeeping at the sites.
4. Additional environment awareness sessions were to be conducted for employees/contractors.

The above points have been addressed within a specific duration, as agreed by the Audit Team and the Auditees, and as mentioned in the reports.

IV. CONCLUSION AND FUTURE SCOPE:

Environmental Theme Internal Audits have been conducted and focused on the KOC.EV.003 - Environmental and Social Impact Assessment (ESIA) Procedure and implementation of KEPA recommendations for approved ESIA Study for the Projects. The list of the projects under study were **"**1. Project work site (3D SEISMIC Survey - West Kuwait Sub-Region), 2. Project work site (Upgradation of Gas & Condensate Network at East Kuwait Area II, and 3. Project work site (Construction of New Production & Projects (Gas) Group Building at NK) at North Kuwait Area. Further, this auditing process comprehensively focused on the applied ESIA procedure for gas projects in KOC and the ability of the related procedure to reduce the negative impacts on environment resulting from projects. Upon completion of the audit process, number of findings and recommendations for each audit were highlighted to the concerned Project Controlling Authorities. Notably,the results of these auditsindicated there was an extensive improvement in the performance towards protecting the environment. KOC HSEMS procedure KOC.EV.003 is updated, revised periodically based on the new recommendations made by the regulatory body and implications of various issues, such as when it is released by the government authority and any major changes within the organization. Further scope and monitoring audits are carried out in conjunction with the controlling teams in order to verify the current status of the recommendations at the sites and evaluate the contractors' performance towards the required actions.

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[12]. KOC.HE.008 – Chemical Hazard Management and Communication Procedure
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