
ANALYSIS OF TRAFFIC SAFETY ENFORCEMENT PROGRAM IMPLEMENTATION IN PT XYZ: A STUDY FROM 2020 TO 2024

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Abstract

The oil and gas industry requires stringent safety measures due to its high-risk operations, particularly in transportation. This study analyzes the implementation of the Traffic Safety Enforcement Program (TSEP) at PT XYZ from 2020 to 2024 to assess its effectiveness in improving driving safety. Using a descriptive-analytical approach, secondary data from internal inspections were examined to identify trends in vehicle compliance, driver performance, and enforcement outcomes. A total of 136 inspections covering 935 vehicles were conducted, with findings categorized into Best Driver, Coaching, and Stop Work Authority. Results indicate fluctuating inspection frequencies and compliance rates, with an initial decline in inspections from 2020 to 2023, followed by an increase in 2024. Findings in the coaching category, improvements were noted in fire extinguisher compliance, but inconsistencies persisted in pre-trip inspections, fatigue management, and journey planning. As for SWA findings, Licensing issues emerged as a key concern, necessitating stricter enforcement. The study underscores the importance of sustained monitoring, driver training, and enhanced enforcement strategies to improve safety standards and minimize risks in vehicle operations.

Keywords: *Vehicle Compliance, Driver Performance, Traffic Enforcement, Transportation Safety.*

A. INTRODUCTION

The oil and gas industry plays a vital role in national development by fulfilling domestic energy demands, supplying essential raw materials for various industries, and serving as a significant source of state revenue through exports and taxation. This sector is a key driver of economic growth, providing employment opportunities and supporting numerous downstream industries (Muslim & Haryanto, 2023).

However, the oil and gas sector are inherently high-risk due to its capital-intensive, labour-intensive, and technology-intensive nature. The exploration, extraction, processing, and distribution of oil and gas involve complex operations that require strict regulatory compliance and risk management to ensure safety, efficiency, and sustainability. Operational hazards such as equipment failures, exposure to hazardous substances, and transportation-related incidents pose significant threats to workers, the environment, and surrounding communities (Rahman et al., 2022).

Given these challenges, the effective management of the oil and gas sector is crucial. This includes the implementation of efficient and responsible industry practices, the adoption of advanced technologies to optimize resource utilization, and adherence to stringent safety and environmental standards.

One of the important aspects of safety management in the oil and gas industry is driving safety management. High mobility in this industry's operations, whether for transporting workers or distributing materials, makes driving safety a crucial factor. Many exploration and production activities take place in remote locations with challenging terrains, such as rocky, muddy, or extreme road conditions that increase the risk of accidents. Additionally, vehicles in

this industry often carry hazardous and highly flammable materials, making even minor incidents potentially catastrophic (Wingate et al., 2023). Several risk factors contribute to motor vehicle crashes in the oil and gas industry, with fatigue, extended work hours, and long commutes being among the most prevalent (Hagan-Haynes et al., 2022). Nearly 30% of workers reported driving over 50,000 miles annually, with motor vehicle fatality rates historically being higher among contractors (Retzer et al., 2013).

According to data from the Traffic Corps of the Indonesian National Police (Korlantas Polri), in 2022, the number of traffic accidents reached 139,258 cases, showing an increase compared to previous years. These accidents resulted in 28,131 fatalities, 13,364 serious injuries, and 160,449 minor injuries. In addition to the impact on safety, the material losses due to traffic accidents were also significant, amounting to IDR 280 billion (Polri, 2024).

In Oil & Gas Industry 2023 motor vehicle crash (MVC) data report indicates that driving-related incidents continue to be the primary cause of fatalities in the International Oil & Gas Producers (IOGP) Member Company operations. In 2023, 7 land transportation-related fatalities accounted for 26% of all work-related fatalities reported to IOGP. Since 2010, 1,403 vehicle rollovers were reported, with 200 resulting in fatalities or lost workday cases (LWDCs). Major contributing factors to these incidents include not wearing seatbelts and driver fatigue. From 2000 to 2023, a total of 375 land transport fatalities were recorded from 329 fatal incidents, with 23 fatalities caused by assaults or violent acts (IOGP, 2024).

PT XYZ is an oil and gas extraction company with extensive operations in the Sumatra region, supported by more than 300 contracting companies and over 30,000 contract workers. With such a large scale of operations, safety management, particularly in driving safety, becomes crucial. High mobility in a demanding work environment, along with diverse operational terrains, increases the risk of accidents if not properly managed. Company implements driving safety management through a series of programs covering personnel, vehicles, and journey management. Personnel management begins with driver selection and health assessment, safety driving training and practice, and driver authorization. In terms of vehicle management, the process includes vehicle selection, pre-mobilization inspection, issuance of Vehicle Pass, regular vehicle inspections, and mandatory pre-trip inspections to be completed by drivers. Meanwhile, journey management consists of various programs such as the Journey Management Plan (JMP), Traffic Management Plan, vehicle operational standards, speed limits and the use of speed buzzers, the Buddy System, driver compliance and behaviour monitoring, and a driver reward program for safe driving practices.

One of the programs designed to ensure the effective implementation of the overall driving safety program is the Traffic Safety Enforcement Program (TSEP). This program is carried out by conducting inspections on vehicles passing through designated areas. Personnel implementing TSEP will check various safety aspects, including the completion of required forms, the vehicle's condition to ensure it meets standards, the validity of documents such as driver authorization and vehicle pass, and assessing the driver's knowledge of regulations and key safe driving principles.

Previous study on traffic enforcement program by Mashhadi investigates how different types of traffic citations influence motor vehicle crashes (MVCs) on two high-risk highways in Wyoming, US-30 and US-26. The findings reveal that an increase in citations for speeding and seat belt violations leads to a notable decrease in crash rates, demonstrating the effectiveness of law enforcement interventions (Mashhadi et al., 2017). In line with that, In a study conducted by Santana and Enrique (2014), researchers examined the effect of overtime traffic citations on different levels of injury severity in Michigan using five years of citation data. The results indicated that these citations contributed to a decrease in severe injuries and crashes related to alcohol or drug use (Santana, 2014). However, few studies have explored the implementation of such programs in the industry, particularly in the oil and gas sector.

Therefore, it is interesting to examine how the traffic enforcement program is implemented as an internal effort by a company to enhance motor vehicle safety.

B. METHOD

This study employs a descriptive-analytical research design to analyze the implementation of the Traffic Safety Enforcement Program (TSEP) at PT XYZ during the 2020-2024 period. This design is chosen to provide a comprehensive overview of the program's execution and to evaluate its effectiveness in improving traffic safety within the company.

The study utilizes secondary data collected from internal sources of PT XYZ, especially from violation or citation in TSEP data within the company over the past five years (2020-2024). The data will be analyzed to identify trends and compare findings from the Traffic Safety Enforcement Program (TSEP) each year. This analysis will help evaluate the program's effectiveness over time and highlight any significant changes or improvements in traffic safety within PT XYZ.

As previously stated, TSEP conducts inspections on vehicles passing through designated areas. The personnel responsible for implementing TSEP evaluate various safety aspects, including verifying the completion of required forms, assessing the vehicle's condition to ensure compliance with standards, checking the validity of essential documents such as driver authorization and vehicle pass, and evaluating the driver's understanding of regulations and key safe driving principles. The outcomes of the TSEP process involve assigning ratings to vehicles and drivers, categorizing them as Best Driver, conditionally roadworthy with specific remarks (Coaching), or requiring the enforcement of Stop Work Authority (SWA). Furthermore, TSEP provides recommendations for potential improvements, which are then communicated to the Company Management Representative (CMR) and the Contract Owner of the company utilizing the vehicle for necessary follow-up actions.

C. RESULTS AND DISCUSSION

From 2020 to 2024, a total of 136 TSEP inspections were conducted, covering 935 vehicles, including 860 light vehicles and 75 heavy vehicles (Bus/Truck/Heavy Equipment). The highest number of inspections occurred in 2020 with 46 executions, inspecting 296 vehicles. However, there was a steady decline in inspections over the next three years, reaching its lowest point in 2023 with only 16 inspections and 123 vehicles checked. In 2024, the number of inspections increased to 29, with 221 vehicles inspected, showing a renewed focus on safety enforcement. Throughout the five years, light vehicles consistently made up most inspections (92%), while heavy vehicles accounted for only 8% of the total.

Table 1. Number of TSEP Inspections

Year	Execution Count	Number of Vehicles Inspected	Light Vehicle	Heavy Vehicle
2020	46	296	268	28
2021	24	140	125	15
2022	21	155	138	17
2023	16	123	116	7
2024	29	221	213	8
Total	136	935	860	75

Source: Internal Data HSE Field PT XYZ

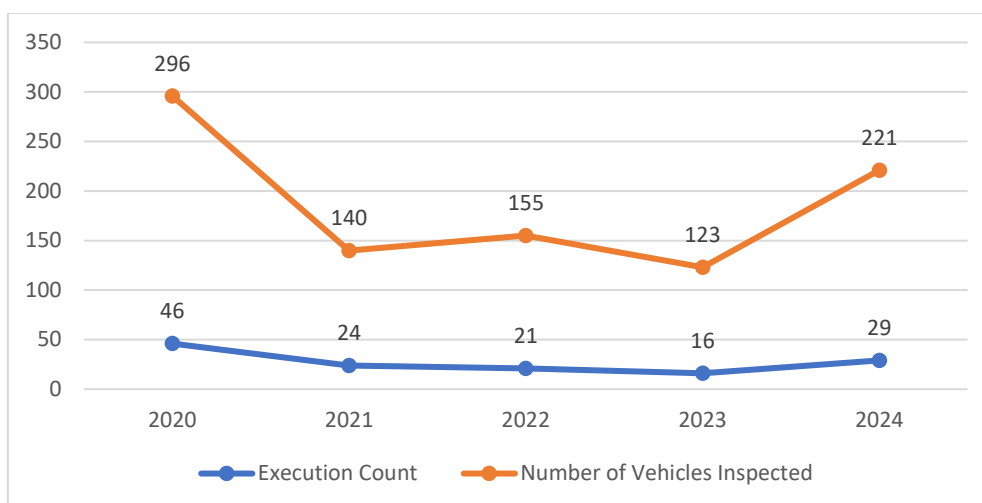


Figure 1. TSEP Execution & Vehicle Inspected by Year

The data from 2020 to 2024 provides valuable insights into driver performance based on three classifications: Best Driver, Coaching, and Stop Work Authority (SWA). Over five years, a total of 332 drivers were recognized as Best Drivers, with the highest number recorded in 2020 (112 drivers). However, this number saw a significant decline in 2021 and 2023, with the lowest being 39 drivers in 2023. In 2024, there was a notable increase to 77 drivers, indicating potential improvements in driver performance or changes in assessment criteria.

The Coaching category, which includes drivers needing improvement, had the highest total across all years, with 542 drivers. The peak was in 2020 (164 drivers), followed by a steady decline in the next three years before rising again in 2024 (133 drivers). This suggests that many drivers required additional training and corrective measures to meet safety standards. The fluctuation in numbers could be attributed to training effectiveness, evolving safety policies, or stricter evaluations over time.

Meanwhile, SWA cases, which indicate serious safety violations, remained relatively low compared to the other two categories. A total of 61 drivers fell under this classification over five years, with the highest number in 2020 (20 cases) and the lowest in 2021 (7 cases). Although the numbers fluctuated, the trend suggests that safety violations were consistently identified and addressed, ensuring that non-compliant drivers were appropriately managed.

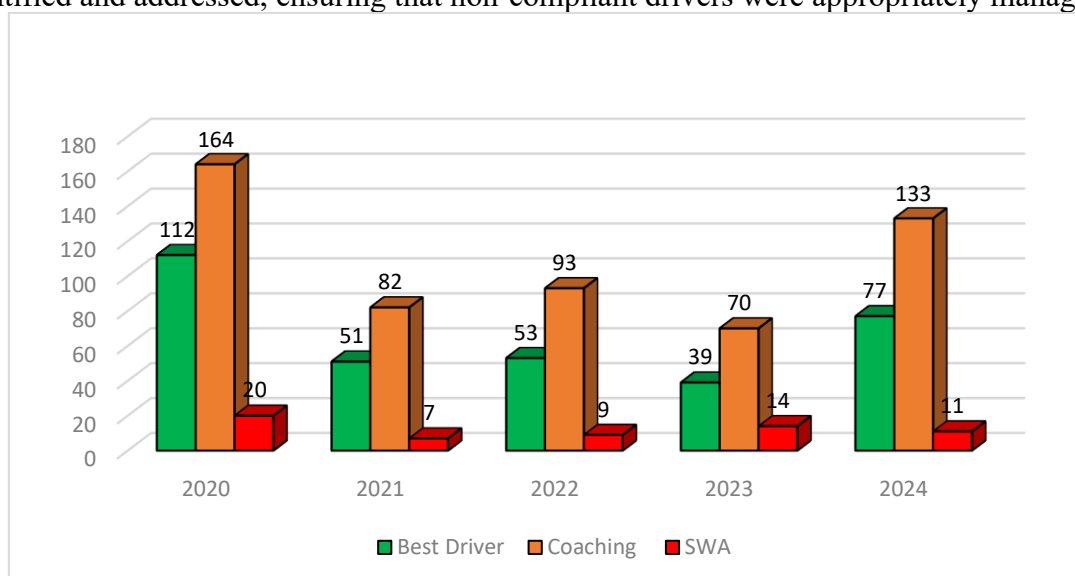


Figure 2. Rating of Inspected Driver/Vehicles

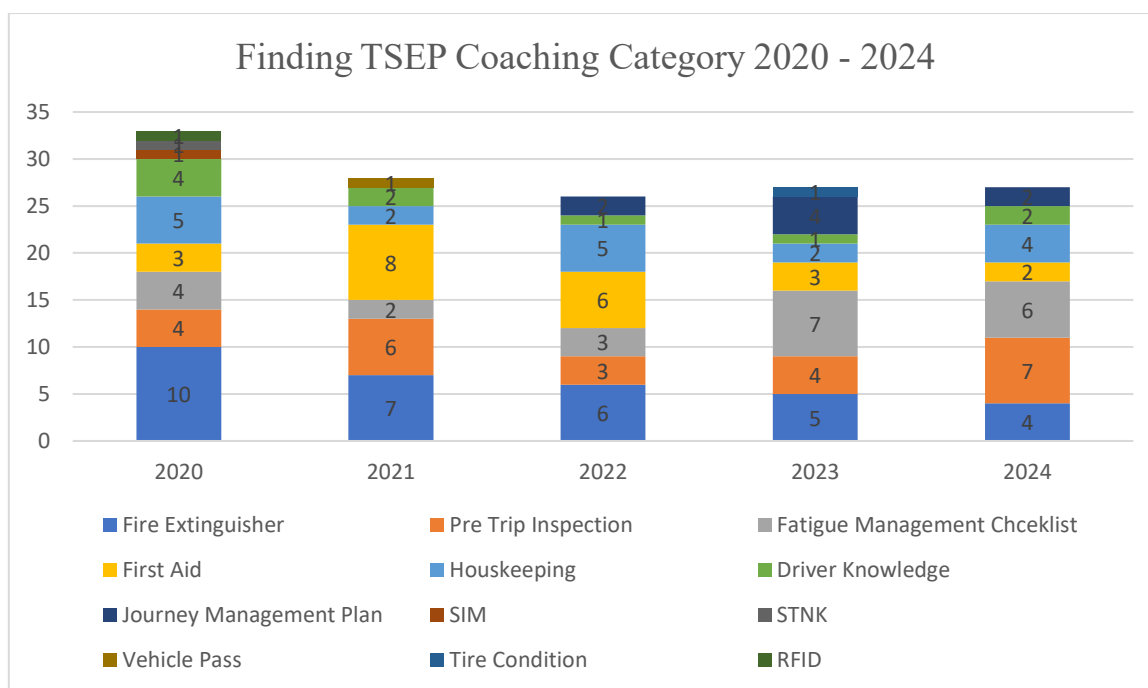


Figure 3. Finding TSEP Coaching Category 2020-2024

The findings of the TSEP conducted from 2020 to 2024 in the Coaching category are as follows (Figure 1.3). A significant trend observed is the decline in fire extinguisher violations, which dropped from 10 cases in 2020 to just 4 in 2024. This indicates an improvement in fire safety compliance, possibly due to better equipment maintenance, training programs, or stricter enforcement. The high number of findings related to fire extinguishers in vehicles also indicates a lack of worker awareness regarding the importance of their presence and readiness. A fire extinguisher in a vehicle is crucial for early fire prevention and response. The risk of fire can arise from electrical short circuits, fuel leaks, or other factors, making the presence of a fire extinguisher essential to minimize danger and protect lives and assets. Additionally, it is a mandatory safety requirement in transportation regulations. With a well-maintained and readily accessible fire extinguisher, quick action can be taken before a fire spreads, making it a vital tool for ensuring road safety (Chattaway et al., 2012).

However, despite this positive trend, other critical areas such as pre-trip inspections and fatigue management continue to show fluctuations, suggesting inconsistent adherence to safety protocols. The irregular trends in pre-trip inspections, with findings fluctuating between 3 to 7 cases per year, highlight inconsistencies in safety enforcement that could increase accident risks. This aligns with the Auckland Car Crash Injury Study, which found that vehicles without a current inspection certificate were over three times more likely to be involved in injury crashes, and those without recent tyre pressure checks had nearly double the crash risk. These findings emphasize the need for more consistent and reinforced pre-trip inspections to enhance vehicle safety and accident prevention (Blows et al., 2003).

Similarly, the fatigue management checklist findings indicate ongoing challenges, as numbers fluctuate without a clear downward trend. The data also indicates growing attention to journey management planning, which was first recorded in 2022. The increase in findings from 2 in 2022 to 4 in 2023 suggests that more violations are being identified as the enforcement of journey planning gains momentum. Other findings, such as issues with documentation (SIM, STNK, Vehicle Pass, RFID), appear to be minimal, with only one recorded case in each category. This suggests that documentation compliance is generally well-maintained but should still be monitored to prevent lapses. On the other hand, the "Tire Condition" issue, recorded only in 2023, raises a concern as tire-related failures can lead to

severe accidents. Continuous checks should be implemented to ensure tire safety remains a priority.

Similarly to the previous study, the fluctuating trends in pre-trip inspections and fatigue management findings suggest gaps in safety enforcement that could increase accident risks. The lack of strict adherence to safety protocols in both cases emphasizes the need for more consistent enforcement measures, structured journey management planning, and enhanced monitoring systems to improve compliance and reduce transportation-related incidents. Furthermore, the minimal but existing documentation and tire condition issues highlight the importance of maintaining vehicle roadworthiness, as evidenced by studies linking poor vehicle maintenance to higher crash risks. These findings collectively stress the necessity for comprehensive vehicle safety programs and stricter policy enforcement to ensure worker safety in transportation-heavy industries (Stanojević et al., 2013).

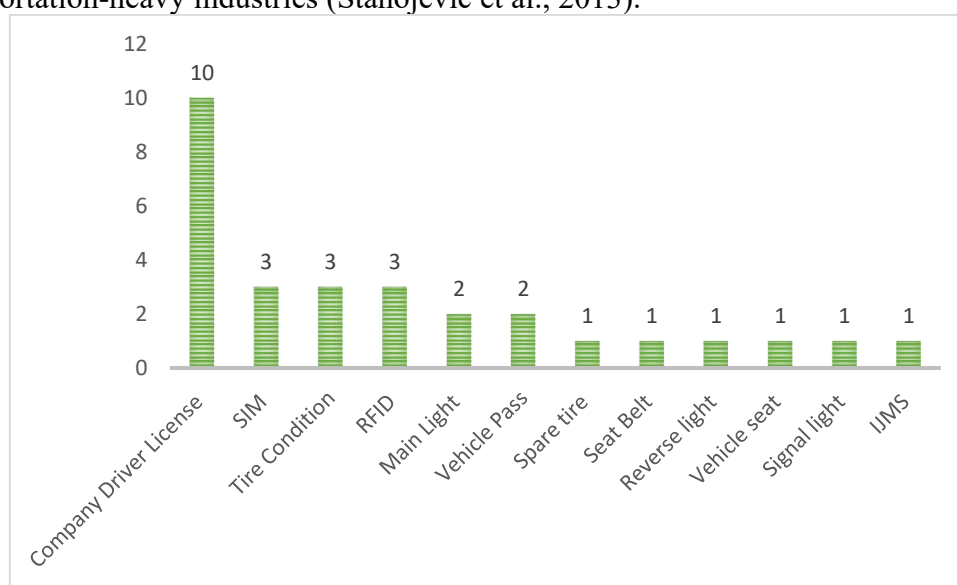


Figure 4. Finding TSEP SWA Category 2020-2024

The findings under the TSEP SWA Category from 2020 to 2024 highlight significant compliance and safety issues related to vehicle operation and driver documentation. The most frequent finding is "Company Driver License" with 10 instances, indicating that many drivers may not have proper authorization or updated licenses to operate vehicles. This suggests a need for stricter enforcement of licensing policies and regular audits to ensure all drivers meet the required standards. Other notable concerns include "SIM," "Tire Condition," and "RFID," each recorded three times, reflecting issues in personal documentation, vehicle maintenance, and identification compliance.

In the mid-range findings, "Main Light" and "Vehicle Pass" were each noted twice, pointing to recurring issues in vehicle lighting and access documentation. Proper vehicle lighting is crucial for road safety, and repeated non-compliance could increase accident risks, especially in low-visibility conditions. The "Vehicle Pass" finding may indicate challenges in ensuring that only authorized vehicles operate within controlled areas. The presence of findings such as "Spare Tire," "Seat Belt," "Reverse Light," "Vehicle Seat," "Signal Light," and "IJMS," each appearing once, suggests isolated but critical concerns related to vehicle functionality and passenger safety.

D. CONCLUSION

The analysis of TSEP inspections from 2020 to 2024 reveals a fluctuating trend in both the number of inspections conducted and the compliance levels of drivers and vehicles. While the highest number of inspections occurred in 2020, a noticeable decline followed in the

subsequent years, reaching its lowest in 2023. However, the renewed focus on safety enforcement in 2024, evidenced by an increase in inspections and vehicle checks, suggests an effort to reinforce compliance and safety standards. Light vehicles consistently made up most inspections, highlighting their dominance in the overall fleet, while heavy vehicle inspections remained comparatively low.

The TSEP data showed that while a significant number of drivers were recognized as Best Drivers, the trend fluctuated over the years. The Coaching category had the highest number of cases, indicating that many drivers required improvement through additional training and corrective measures. The Stop Work Authority (SWA) category, which highlights serious safety violations, remained relatively low but still necessary for identifying and addressing non-compliance towards motor vehicle safety standard. Improvements in fire safety compliance were observed, yet issues such as pre-trip inspections, fatigue management, and journey management planning continued to show inconsistency, requiring sustained efforts for better enforcement.

The findings of the TSEP SWA Category highlight major concerns related to driver documentation, vehicle maintenance, and operational compliance. The most frequent issue was the lack of valid Company Driver Licenses, emphasizing the need for stricter enforcement of licensing policies. Recurring issues with SIM cards, tire conditions, and RFID compliance suggest gaps in both documentation management and vehicle maintenance. While certain safety concerns, such as lighting, seating, and signal compliance, were identified in isolated instances, they remain critical for overall safety. Moving forward, organizations should implement continuous monitoring, training, and stricter enforcement measures to address these concerns and enhance safety standards in vehicle operations.

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