



INTERNAL AUDIT DIVISION

REPORT 2019/057

Audit of fuel management in the United Nations Interim Force in Lebanon

The Mission managed the fuel contract and fuel operations adequately but needed to enhance review of data in the electronic fuel management system

27 June 2019
Assignment No. AP2018/672/06

Audit of fuel management in the United Nations Interim Force in Lebanon

EXECUTIVE SUMMARY

The Office of Internal Oversight Services (OIOS) conducted an audit of fuel management in the United Nations Interim Force in Lebanon (UNIFIL). The objective of the audit was to assess the adequacy and effectiveness of fuel management. The audit covered the period from 1 January 2017 to 30 September 2018 and included a review of the: (a) management of the fuel contract; (b) fuel quality assurance; (c) monitoring receipt, storage and consumption of fuel; (d) safety and security practices; (e) billing and payment; and (f) contingency planning.

UNIFIL implemented adequate controls to ensure the contractor's performance was monitored, fuel supplied was of the right quality and adequate strategic fuel reserves were maintained. The Mission also implemented adequate controls over billing and payment and safety and security over its fuel operations. The Mission however, needed to improve the monitoring and reporting fuel efficiency of vehicles and the quality of data in the Electronic Fuel Management System-2 (EFMS-2).

OIOS made two recommendations. To address issues identified in the audit, UNIFIL needed to:

- Review the frequency of monitoring and reporting fuel efficiency in vehicles to ensure more timely identification and implementation of corrective actions; and
- Regularly review data in EFMS-2 for anomalies and take action to correct and prevent errors, including through verifying uploaded pictures of odometer readings and ensuring images are legible.

UNIFIL accepted the recommendations and has initiated action to implement them.

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Audit of fuel management in the United Nations Interim Force in Lebanon

I. BACKGROUND

1. The Office of Internal Oversight Services (OIOS) conducted an audit of fuel management in the United Nations Interim Force in Lebanon (UNIFIL).
2. Fuel management activities in UNIFIL are governed by the 2008 Department of Peacekeeping Operations/Department of Field Support (DPKO/DFS¹) Fuel Operations Manual and various Mission specific fuel management standard operating procedures (SOPs).
3. The Mission's fuel consuming assets and equipment include: seven aircraft, 647 United Nations-owned (UNOE) vehicles and 85 generators, and 2,290 contingent-owned (COE) vehicles and 81 generators. Currently, UNIFIL has a hybrid contract of \$78.5 million for supply of liquefied petroleum gas, Jet A-1, kerosene, petrol and diesel. Over the audit period, the contractor provided fuel worth \$20.2 million to 12 primary distribution points (contractor-operated) and 15 bulk distribution points (contingent-operated) located in Naqoura, Beirut, Sector West and Sector East.
4. The Fuel Unit is responsible for: (a) monitoring the activities of the fuel contractor; (b) providing technical advice; (c) establishing policies, procedures and standards; (d) inspecting fuel facilities; (e) monitoring and analyzing fuel consumption; and (f) ensuring availability of relevant data and information related to fuel in order to support the Mission's mandate. UNIFIL uses the Electronic Fuel Management System-2 (EFMS-2) to record all fuel consuming vehicles/equipment and all fuel transactions, and to monitor consumption of petroleum products. The contractor and contingents are responsible for collecting and maintaining all data on petroleum, oil and lubricants (POL) products from the time of delivery to dispensing.
5. The Fuel Unit is headed by a Fuel Officer at the P-4 level, who reports to the Chief of Life Support Section at the P-5 level. The Fuel Officer is supported by 13 civilian staff comprising 3 international field service staff and 10 national general service staff. The approved fuel budget for fiscal year 2017/18 was \$10.8 million.
6. Comments provided by UNIFIL are incorporated in italics.

II. AUDIT OBJECTIVE, SCOPE AND METHODOLOGY

7. The main objective of the audit was to assess the adequacy and effectiveness of fuel management in UNIFIL.
8. The audit was included in the 2018 risk-based work plan of OIOS due to the criticality of fuel management in supporting implementation of UNIFIL's mandate. The audit covered fuel management activities from 1 January 2017 to 30 September 2018.
9. The audit methodology included: (a) interviews with key personnel in the Mission; (b) review of reports on fuel management; (c) analytical reviews and test of reconciliation of selected transactions; and (d) field visits to selected fuel storage facilities.

¹ Although these departments have been rebranded as part of ongoing reforms, the guidelines are referred to by the names of the departments when the guidelines were issued.

10. Based on activity level risk assessment, areas of focus during the audit were (a) management of fuel contract; (b) fuel quality assurance (c) monitoring receipt, storage and consumption of fuel; (d) safety and security practices; (e) billing and payment; and (f) contingency planning.

11. The audit was conducted in accordance with the International Standards for the Professional Practice of Internal Auditing.

III. AUDIT RESULTS

A. Management of fuel contract

UNIFIL implemented adequate controls to monitor the contractor's performance

12. The Mission awarded a fuel supply contract in June 2013 for a period of three years followed by two annual renewals up to June 2018. The contract was extended in June 2018 for a period of four months to October 2018 with a further extension up to January 2019 when a new contract was signed. The contract provided for supply of fuel to 27 distribution points in Naqoura Headquarters, Sector West, Sector East and Beirut. As required by the contract, the supplier provided bank guarantees within 10 days. Also, for the period under review, UNIFIL assessed and monitored the contractor's performance. OIOS reviewed minutes of 10 out of 21 contract performance meetings and noted that: (a) UNIFIL held contract performance review meetings monthly; (b) minutes of the meetings were adequately recorded; (c) key performance indicators were evaluated; and (d) timely measures were taken to address unsatisfactory issues arising from the meetings.

13. OIOS concluded that UNIFIL had implemented adequate controls for monitoring contractor's performance.

B. Monitoring of receipt, storage and consumption of fuel

Monitoring of receipt, storage and consumption of fuel needed improvement

14. UNIFIL records fuel issued and the odometer or kilowatt hour (Kwh) meter readings of vehicles and generators into EFMS-2. These should normally be accompanied by pictures of the odometer or KWh meter of the receiving vehicle or generator. Also, the UNIFIL Fuel Unit established standard fuel consumption units (FCU) for each vehicle, which are used to analyze the actual consumption of vehicles classified according to their specific use (support/military/special). For generators, various efficiency zones are used to determine generator efficiency as per Table 1.

15. Monthly, the Fuel Unit prepared reports to the Director of Mission Support indicating the fuel efficiency of the Mission against the previous month. Quarterly, the Fuel Unit analyzed fuel efficiency in more detail and requested clarifications from users when efficiency was below standard. Generators and vehicles consumed 15.6 million and 4.9 million litres of diesel respectively during the audit period, which comprised 93.4 per cent of the total fuel expenses.

Generators

16. The Mission continued to experience high fuel consumption on generators as 75 per cent of positions had either "non-efficient" or "low-efficient" generators and only 25 per cent had either "high efficient" or "medium efficient" generators. According to the Engineering Support Section and as shown in Table 1, highly recommended generators were those operating at 60-80 per cent load (high efficiency),

and those recommended as transitional operated at 40-60 per cent load (medium efficiency zone); the rest were restricted as they incurred high financial costs and needed to be replaced. During the audit period, UNOE and COE generators produced 46.2 million kilowatts of power, translating into an overall efficiency of 0.34 (low efficiency zone).

Table 1: Generator efficiency categorizations

	<i>Efficiency level</i>	<i>Categorization</i>
1	<i>Below 0.29</i>	<i>High Efficiency Zone (60 – 80 per cent power generated per litre) - highly recommended</i>
2	<i>0.29 - 0.31</i>	<i>Medium Efficiency Zone (40 – 60 per cent power generated per litre) - transitional</i>
3	<i>0.31 - 0.35</i>	<i>Low Efficiency Zone (25 – 40 per cent power generated per litre) - financial loss</i>
4	<i>Above 0.35</i>	<i>Non-efficient Fuel Zone (0 – 25 per cent power generated per litre) - high financial loss</i>

Source: UNIFIL Fuel Unit

17. A review of EFMS-2 data on generator fuel consumption during the audit period showed that Naqoura Camp had the most efficient generators, while it was observed that the majority of COE were fuel inefficient. One contingent operated multiple smaller and old generators resulting in significantly higher fuel consumption. For this contingent, EFMS-2 data indicated high fuel consumption and low KWh produced in three positions. UNIFIL pointed out that the Department of Operational Support and the Department of Peace Operations were working on a system that would grant incentives to contingents that deployed more efficient generators and more energy efficient equipment.

18. Further, to address the problem of inefficient generators, the Mission embarked on a generator replacement exercise to enhance efficiency levels and replaced approximately 23 generators between January and September 2018. The Mission also embarked on re-sizing generators to operate at optimum efficiency conditions, and on synchronizing multiple generators in power houses. As a result of UNIFIL's efforts, between July 2017 and April 2018, the trend of generator consumption showed a decrease of 3.4 per cent. Therefore, OIOS is not making any recommendation on this issue.

Vehicles

19. An analysis of EFMS-2 data indicated that 2,936 vehicles had refueled at UNIFIL-operated fuel stations during the audit period. This included 143 vehicles of other United Nations missions or agencies for which UNIFIL recovered the cost of fuel consumed. The analysis indicated anomalies in the fuel consumption of 551 UNIFIL vehicles. However, most of these anomalies were due to errors, for example, for 120 vehicles, the calculated FCU was incorrect; for 62 vehicles used for support, fuel consumption was more than 500 per cent of FCU, while for 369 vehicles, one or more incorrect entries were made in EFMS-2.

20. Four contingents accounted for 193 of the incorrect entries (52 per cent). OIOS review of these cases showed that in 34 of them, the uploaded picture was either unreadable or of the wrong object. Twenty-eight of these cases concerned the same refueling point and a comparison of fuel supply transactions against the mileages recorded strongly indicated that the vehicles were not actually refueled. Therefore, the legitimacy of these transactions could not be established. This was observed during a limited timeframe (two months) with limited quantities (1,000 litres representing \$500). The concerned refueling point was operated by military personnel, and the unit at the time had rotated out of the Mission. As such, this case is assessed as immaterial but indicated that insufficient controls were in place to detect, analyze and correct anomalies.

21. This was because analysis done by Fuel Unit was exclusively on fuel efficiency. Observed inefficiencies were properly reported and followed up with users; however, they were not appropriately

analyzed or verified with uploaded pictures of odometer readings as they were assumed to be genuine human errors. Also conducting detailed analysis of fuel consumption on a quarterly basis may be too long an interval as some of the troops who rotate frequently would have left the Mission. In addition, the Fuel Unit had not updated the standard FCUs in EFMS-2 since they were updated one year ago. Instead, the standards were manually adjusted on a spreadsheet to determine fuel efficiency.

22. This limited the effectiveness and efficiency of monitoring fuel usage in vehicles. The Mission indicated that it had requested the EFMS-2 support team to update the FCUs in the system.

(1) UNIFIL should review the frequency of monitoring and reporting fuel efficiency of vehicles to ensure more timely identification and implementation of corrective actions.

UNIFIL accepted recommendation 1 and stated that it prepared quarterly fuel consumption reports to facilitate timely identification and implementation of corrective actions. In some cases, when needed, the Fuel Unit reviewed and monitored motor vehicle consumption on a daily, weekly or monthly basis. The Unit also carried out comparisons for generator refueling and consumption using not only fuel data but also power production. Based on the action taken by the Mission, recommendation 1 was closed.

(2) UNIFIL should enhance review of data in the Electronic Fuel Management System-2 for anomalies in data entries and take action to correct and prevent errors, including through verifying uploaded pictures of odometer readings and ensuring images are legible.

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C. Quality control

UNIFIL implemented adequate controls to ensure the quality of fuel

23. OIOS visits to nine locations for three troop contributing countries (TCCs) revealed that contingents were issued with fuel quality test kits as required by the UNIFIL SOP on POL. The TCCs conducted appropriate fuel quality tests in all six months sampled over the audit period. The contractor also conducted daily quality checks to take readings of fuel density, temperature and sediments or water in fuel. Further, the Fuel Unit developed a schedule for carrying out regular inspections at the fuel distribution points and the results of the inspections were adequately documented. Independent fuel inspection certificates were provided for the period sampled and fuel, oils and other lubricants were issued on a First in First out basis.

24. OIOS concluded that UNIFIL implemented adequate controls to ensure fuel quality control.

D. Safety and security

UNIFIL implemented adequate controls over safety and security of fuel operations

25. During the field visits to nine positions, OIOS observed that adequate safety and emergency response measures had been implemented as outlined in the Fuel Operations Manual. For example, (a) fuel distribution points had appropriate signage; (b) fuel points had adequate lighting and were clean, free from grease or oil spillage; (c) firefighting equipment, first aid kits and spill kits were provided in all fuel and other petroleum products distribution points; and (d) fuel stocks were maintained in fuel tanks that were appropriately labeled and secured to prevent unauthorized access.

26. The Mission also developed adequate procedures on the Fuel Emergency and Response Plan, which were periodically tested in coordination with all sections/units involved in fuel safety including medical, military, fire safety and security. Contingent officers accompanied the contractor’s fuel trucks from the entry point to the fuel storage facilities until their exit after delivering fuel. In addition, the contractor had developed a fire safety plan for the fuel distribution points.

27. OIOS concluded that UNIFIL had implemented adequate controls to ensure fuel operations were conducted in a safe and secure environment.

E. Fuel contingency planning and strategic reserves

UNIFIL implemented adequate controls over fuel contingency plan and strategic reserves

28. As per the Fuel Contingency Plan for UNIFIL, at least 42 days of supply of fuel reserves should be maintained in the area of operation, comprising 14 days of supply each for local reserves, contingent reserves and strategic fuel reserve. In addition, the fuel agreement requires UNIFIL to purchase and own 42 days of supply of Jet-A1 strategic fuel reserve.

29. As shown in Table 2, the Mission maintained adequate fuel stocks for both ground and aviation operations. The Mission stated that they held higher reserves of diesel because it was more convenient and cheaper to have the contractor replenish all the fuel distribution points within a certain location whenever one point ran low on diesel to reduce the transportation costs, which would rise if each point was to be replenished independently as and when needed. The fuel stocks were monitored by both Fuel Unit and the contractor to ensure that the required minimum days of supplies were met. Site visits to nine locations for three TCCs also revealed that the Mission conducted quarterly inspections to verify the quantity and quality of strategic fuel reserves.

Table 2: Analysis of fuel days of supply

Product	Days of Supply				
	30-06-2017	31-12-2017	21-03-2018	30.06-2018	30-09-2018
Diesel	50	53	55	50	53
Jet A1	50	51	46	46	47
Petrol	42	42	42	42	42

Source: UNIFIL Fuel Unit

30. OIOS also reviewed the risk management plan submitted by the contractor and noted that it provided adequate mitigations to ensure that fuel supply to UNIFIL was not unreasonably disrupted in cases of terrorist attacks, bomb threats, civil unrest and rioting, fire, economic crisis and natural disasters.

31. OIOS concluded that UNIFIL had implemented adequate controls over implementation of the fuel contingency plan and maintenance of strategic reserves.

F. Billing and payment

Controls over billing and payments for petroleum products were adequately implemented

32. The UNIFIL POL SOP requires the contractor to submit invoices and supporting documents to the Finance and Budget Management Section for settlement. The contract for fuel supply also entitles UNIFIL to a discount of 0.1 per cent on the amount of any invoice, or portion thereof, which is paid within 30 working days after submission.

33. A review of Umoja and EFMS-2 records indicated that a total of \$13.8 million was paid to the contractor during the audit period. This amount included an accounts payable balance of \$600,000 relating to 2016/17 fiscal year, \$11.5 million related to fuel products supplied during the 2017/18 fiscal year, while \$1 million was for operating and maintenance fees and charges as per the contract. Except for \$139,000 of mostly recoverable, non-budget expenses, all funds were committed with purchase orders. OIOS assessed that all payments for fuel products were properly supported by invoices and verified deliveries from the contractor. Discounts were recorded at \$11,000 reflecting prompt payment on 80 per cent of the invoices.

34. As per the contract, the prices for diesel, petrol and LPG were determined by decree by the Lebanese Government, while the prices for Jet A-1 and kerosene were based on Platts European Marketscan. As a result of increased fuel prices during the audit period, a total of \$1.3 million was redeployed to the fuel budget because the payments for the year exceeded the initial fuel budget. OIOS verified the monthly fuel deliveries and prices charged during the audit period.

35. OIOS concluded that controls over billing and payments for petroleum products were adequate.

IV. ACKNOWLEDGEMENT

36. OIOS wishes to express its appreciation to the management and staff of UNIFIL for the assistance and cooperation extended to the auditors during this assignment.

(Signed) Eleanor T. Burns
Director, Internal Audit Division
Office of Internal Oversight Services

STATUS OF AUDIT RECOMMENDATIONS

Audit of fuel management in the United Nations Interim Force in Lebanon

Rec. no.	Recommendation	Critical ² / Important ³	C/ O ⁴	Actions needed to close recommendation	Implementation date ⁵
1	UNIFIL should review the frequency of monitoring and reporting fuel efficiency of vehicles to ensure more timely identification and implementation of corrective actions.	Important	C	Action completed	26 June 2019
2	UNIFIL should enhance review of data in the Electronic Fuel Management System-2 for anomalies in data entries and take action to correct and prevent errors, including through verifying uploaded pictures of odometer readings and ensuring images are legible.	Important	O	Receipt of evidence of enhancement of review of data in Electronic Fuel Management System-2 for anomalies in data entries and taking of action to correct and prevent errors, including through verifying uploaded pictures of odometer readings and ensuring images are legible.	31 December 2019

² Critical recommendations address critical and/or pervasive deficiencies in governance, risk management or control processes, such that reasonable assurance cannot be provided with regard to the achievement of control and/or business objectives under review.

³ Important recommendations address important (but not critical or pervasive) deficiencies in governance, risk management or control processes, such that reasonable assurance may be at risk regarding the achievement of control and/or business objectives under review.

⁴ C = closed, O = open

⁵ Date provided by UNIFIL in response to recommendations.

APPENDIX I

Management Response



19 June 2019

To: Ms. Muriette Lawrence-Hume, Chief, New York Audit Service
Internal Audit Division, OIOS

From: Major-General Stefano Del Col
Head of Mission and Force Commander, UNIFIL



Subject: **Draft report on an audit of fuel management in UNIFIL (Assignment No. AP2018/672/06)**

1. We refer to your memorandum on the above subject, reference No. OIOS-2019-MO0602 dated 13 June 2019. Please find attached UNIFIL's response to the recommendations contained in the subject Draft Report.
2. In following the usual procedure, copies of any supporting documents will only be provided to MERAO based at UNIFIL HQ and will not be transmitted to you with this Mission's response.

Best regards.

Cc: Mr. Effendi Syukur, Audit Focal Point, UNIFIL
Mr. John Banda, OiC Resident Auditor, MERAO, Internal Audit Division, OIOS
Ms. Cynthia Avena-Castillo, Professional Practices Section, Internal Audit Division, OIOS

Management Response

Audit of fuel management in the United Nations Interim Force in Lebanon

Rec. no.	Recommendation	Critical ¹ / Important ²	Accepted? (Yes/No)	Title of responsible individual	Implementation date	Client comments
1	UNIFIL should review the frequency of monitoring and reporting fuel efficiency of vehicles to ensure more timely identification and implementation of corrective actions.	Important	Yes	Chief Fuel Unit	Implemented	Fuel Unit completes a fuel consumption report on a quarterly basis allowing for timely identification and implementation of corrective actions. The Electronic Fuel Management System (eFMS), provides the Fuel Unit with FCU (Fuel Consumption Unit) data. In order to ensure FCU accuracy, a number of refueling transactions are required. The FCU for each vehicle platform is determined based on at least three or more transactions in the system. Any vehicles exceeding established FCU's are checked, verified and investigated for each Contingent on a quarterly basis. When FCU's are exceeded, an email is sent to the Contingent with analysis details and they are requested to provide a detailed explanation for high consumption. Overall vehicle fuel consumption is also monitored, verified and analyzed and reports are shared with senior Mission management on a quarterly basis. Justification is requested from Contingents who exceed more than 10%

¹ Critical recommendations address critical and/or pervasive deficiencies in governance, risk management or control processes, such that reasonable assurance cannot be provided with regard to the achievement of control and/or business objectives under review.

² Important recommendations address important (but not critical or pervasive) deficiencies in governance, risk management or control processes, such that reasonable assurance may be at risk regarding the achievement of control and/or business objectives under review.

Management Response

Audit of fuel management in the United Nations Interim Force in Lebanon

Rec. no.	Recommendation	Critical ¹ / Important ²	Accepted? (Yes/No)	Title of responsible individual	Implementation date	Client comments
						<p>of vehicle average from previous two months consumption.</p> <p>Fuel Unit reviews and monitor vehicle consumption and vehicle FCU's on a daily, weekly and monthly basis and implements corrective actions. The Fuel Unit also analyzes FCU data. It must be noted that the majority of annual vehicle fuel consumption (75%) is utilized by COE vehicles.</p> <p>Fuel Unit also carries out comparisons for generator refueling and consumption, using not only fuel data, but also Kwh power production which is already a substantial increase to the unit's workload. Fuel Unit utilizes both internal resources and eFMS Reports when following up on UNOE & COE generator & vehicle data and eFMS scans (images). With 14,000 (avg) refueling transactions / month, the Unit relies on standardized eFMS reports and follow up / sampling of eFMS images. Corrective actions are recommended whenever anomalies are found.</p>
2	UNIFIL should enhance review of data in the Electronic Fuel Management System-2 for anomalies in data entries and take action to correct and prevent errors, including through verifying uploaded pictures of odometer readings and ensuring images are legible.	Important	Yes	Chief Fuel Unit And EFMS Program Integrity Officer	31 Dec. 2019	UNIFIL will enhance the review of data captured by the Electronic Fuel Management System-2 (EFMS) for anomalies in data entries and take action to correct and prevent errors, through increased verification of uploaded pictures of odometer readings to ensure images are legible.

Management Response

Audit of fuel management in the United Nations Interim Force in Lebanon

Rec. no.	Recommendation	Critical ¹ / Important ²	Accepted? (Yes/No)	Title of responsible individual	Implementation date	Client comments
						UNIFIL will develop an enhanced data review process and improved verification procedures of uploaded pictures through increased frequency of inspections and reviews.