Office of Internal Oversight Services

INTERNAL AUDIT DIVISION

REPORT 2015/082

Audit of engineering support services in the United Nations Interim Force in Lebanon

Overall results relating to the effective management of engineering support services in the United Nations Interim Force in Lebanon were initially assessed as partially satisfactory. Implementation of four important recommendations remains in progress

FINAL OVERALL RATING: PARTIALLY SATISFACTORY

26 August 2015
Assignment No. AP2015/672/01

CONTENTS

AUDIT REPORT

Audit of engineering support services in the United Nations Interim Force in Lebanon

I. BACKGROUND

1. The Office of Internal Oversight Services (OIOS) conducted an audit of engineering support services in the United Nations Interim Force in Lebanon (UNIFIL).

2. In accordance with its mandate, OIOS provides assurance and advice on the adequacy and effectiveness of the United Nations internal control system, the primary objectives of which are to ensure (a) efficient and effective operations; (b) accurate financial and operational reporting; (c) safeguarding of assets; and (d) compliance with mandates, regulations and rules.

3. The Engineering Services Section (ESS) was headed by the Chief Engineer at the P-5 level and consisted of six units. The Section was responsible for construction, renovation and repair and maintenance of facilities, buildings and infrastructures as well as the operation of water and sanitation equipment and plants.

4. The approved operating budgets of ESS for fiscal years 2013/14 and 2014/15 were $7.3 million and $5.3 million, respectively. The approved staffing level and cost for the Section were 142 posts and about $11 million, respectively. The Section was augmented by four military staff and two 20-member military engineering teams.

5. Comments provided by UNIFIL are incorporated in italics.

II. OBJECTIVE AND SCOPE

6. The audit was conducted to assess the adequacy and effectiveness of UNIFIL governance, risk management and control processes in providing reasonable assurance regarding the **effective management of engineering support services in UNIFIL**.

7. The audit was included in the 2014 risk-based work plan of OIOS because of the financial and operational risks relating to engineering support services.

8. The key control tested for the audit was programme management. For the purpose of this audit, OIOS defined this key control as the one that provides reasonable assurance that adequate measures are in place to manage and deliver engineering services efficiently and effectively to support the Mission's operations.

9. OIOS conducted the audit from February to May 2015. The audit covered the period from 1 July 2013 to 31 January 2015.

10. OIOS conducted an activity-level risk assessment to identify and assess specific risk exposures, and to confirm the relevance of the selected key control in mitigating associated risks. Through interviews and analytical reviews, OIOS assessed the existence and adequacy of internal controls and conducted necessary tests to determine their effectiveness.

III. AUDIT RESULTS

11. The UNIFIL governance, risk management and control processes examined were initially assessed as **partially satisfactory**[1] in providing reasonable assurance regarding the **effective management of engineering support services in UNIFIL**. OIOS made four recommendations to address the issues identified. ESS put in place adequate controls over the operation of water and sewage equipment and plants, and provided sufficient power for all Mission locations from generators and solar panels. However, UNIFIL needed to: (a) develop a methodology to better plan and monitor completion of its infrastructure improvement plan; (b) review generator requirements and configurations at all its locations and establish a methodology to improve generator operations and fuel efficiency; (c) put in place procedures and a database to capture and monitor the time taken to complete repair and maintenance tasks; and (d) establish standard operating procedures on engineering support services to better inform and guide staff on the performance of their duties.

12. The initial overall rating was based on the assessment of key control presented in Table 1. The final overall rating is **partially satisfactory** as implementation of four important recommendations remains in progress.

Table 1: Assessment of key control

Business objective	Key control	Control objectives			
		Efficient and effective operations	**Accurate financial and operational reporting**	**Safeguarding of assets**	**Compliance with mandates, regulations and rules**
Effective management of engineering support services in UNIFIL	Programme management	Partially satisfactory	Partially satisfactory	Partially satisfactory	Partially satisfactory
FINAL OVERALL RATING: PARTIALLY SATISFACTORY					

Programme management

Control over completing yearly infrastructure improvement plans needed to be enhanced

13. The UNIFIL approved 2013/14 budget and the ESS infrastructure improvement plan required ESS to complete 441 constructions and renovations of the Mission's facilities, buildings and infrastructures.

14. A review of the status of ESS 2013/14 infrastructure improvement plan showed that ESS completed 27 per cent or 120 of the 441 planned improvement projects. The low completion rate was because ESS did not have adequate methodology for: planning a realistic number and scope of projects based on available resources; and monitoring start and completion dates and allocating resources to ensure that projects were completed on time.

[1] A rating of "**partially satisfactory**" means that important (but not critical or pervasive) deficiencies exist in government, risk management or control processes, such that reasonable assurance may be at risk regarding the achievement of control and/or business objectives under review.

15. As a result, UNIFIL did not make the planned improvements to those Mission facilities, buildings and infrastructures that ESS had assessed as in need of improvement. This in turn resulted in the underutilization of ESS budget by 16 per cent or $1.2 million in fiscal year 2013/14 and 17 per cent or $0.9 million in 2014/15. ESS advised that it would review and prioritize projects in its yearly improvement plan.

(1) UNIFIL should put in place a methodology to: properly plan and scope the construction and renovation projects in the Mission's infrastructure improvement plan; and monitor start and completion dates and allocation of resources to ensure completion of all projects.

UNIFIL accepted recommendation 1and stated that ESS sent an instruction on 29 May 2015 to all unit supervisors for proper planning, needs assessment and preparation of project briefs including resource planning and requirement for assessment and monitoring during the various stages of projects. This process and methodology would be reflected in an official instruction and further developed into standard operating procedures for consistent implementation. Recommendation 1 remains open pending receipt of evidence that a methodology is in place to properly plan and monitor construction and renovation projects.

UNIFIL clarified and reinforced the requirements on hiring individual contractors

16. The administrative instruction for consultants and individual contractors requires hiring managers and the Human Resources Management Section to monitor contracts to ensure that they do not exceed 9 months within a period of 12 consecutive months. The administrative instruction further requires contracts to include detailed measures to closely supervise the work of individual contractors.

17. A review of all contracts totaling $121,500 for the 33 individual contractors hired for ESS tasks showed that none exceeded the maximum 9 working months within a 12-month period. However, UNIFIL did not include in the individual contracts the required: details of work to be done, measurable output, indicators for evaluation, name of staff member assigned to supervise the individual contractor, and United Nations general conditions of contracts. The 33 individual contractors performed tasks that were to be performed by in-house staff and an outsourced contractor, as stated in the approved results-based budget of UNIFIL, such as:

- Landscaping tasks that were included in an annual landscaping contract already in place;
- Electrical work for 24 hours a day/7 days a week duties with 11 electricians already in ESS; and
- Blue-line barrel and demining tasks being performed by military engineering teams.

18. To address the control weaknesses, the Director of Mission Support in June 2015 issued an interoffice memorandum stressing the requirements for proper justification and mandatory use of the standard contract template as well as ensuring individual contractors were not hired to duplicate the work of Mission personnel. A review of the individual contracts entered in July 2015 indicated that the Mission was fully complying with the requirements of the administrative instruction for consultants and individual contractors and the interoffice memorandum in June 2015. Based on the action taken by UNIFIL, OIOS did not make a recommendation.

Engineering staff had the required qualifications and their performance was evaluated on time

19. The Departments of Peacekeeping Operations and Field Support (DPKO/DFS) Engineering Support Manual require ESS engineers to have a college degree in civil engineering with at least five

years of related experience and electricians to have completed secondary education with at least four years apprenticeship or vocational training with five years of practical experience in electrical systems. The administrative instruction for performance appraisal system requires all staff to have work plans and receive mid-point and final appraisals after six months and one year, respectively. A review of qualifications of all 17 skilled engineers and electricians showed that they all met the required qualifications and their performance evaluations were completed in a timely manner. OIOS concluded that controls were in place to ensure that minimum staff qualifications were met and staff performance appraisals were conducted on time.

Management of ongoing completed construction contracts was adequate

20. The DPKO/DFS Engineering Support Manual, UNIFIL engineering standard operating procedures and UNIFIL Engineering Policy and Guidance require ESS to properly plan, manage and monitor construction projects. A review of 11 (or 28 per cent) of the 40 outsourced construction/renovation contracts during the audit period showed that in all cases ESS: developed adequate technical designs and drawings as well as statement of works; and properly evaluated technical proposals received. Once the Procurement Section selected a contractor, ESS used weekly progress reports and conducted frequent site visits to monitor and ensure actual costs did not exceed contracted amounts and work was completed on time. OIOS concluded that ESS had adequate controls for managing construction contracts.

Generators and fuel efficiency needed improvement

21. The approved 2013/14 and 2014/15 budgets for UNIFIL and the DPKO/DFS Engineering Support Manual require ESS to provide uninterrupted power service, consisting of generator and solar power sources, at UNIFIL headquarters and 52 Mission locations. Additionally, the UNIFIL Fuel Unit established recommends generator efficiency operational load zones for generator specific fuel consumption (GSFC) reduction, as shown in Table 2 below.

Table 2: Efficiency zones for generator specific fuel consumption and generator load capacity

Efficiency zone	Category	GSFC	Load capacity
High	Highly recommended	Less than 0.29	60% - 90%
Medium	Recommended	0.29 – 0.31	40% - 60%
Low	Recommended for transition only	0.31 – 0.35	35% - 40%
Waste of Fuel	Financial losses	More than 0.35	0% - 35%

Source: UNIFIL Supply/Fuel Unit

22. A review of power generation records showed that UNIFIL provided uninterrupted power service as required, consisting of 97 per cent power by generator and 3 per cent power by solar panel at UNIFIL headquarters and 100 per cent of power by generator at all other UNIFIL locations. ESS and contingents were responsible for operating 166 United Nations-owned generators and 80 contingent-owned generators, respectively. These generators were deployed in 64 groups known as generator clusters. A review of generator clusters at 18 selected UNIFIL locations showed that a sufficient number of generators were in place to meet the electrical power needs at each location. UNIFIL had adequate controls to ensure the provision of uninterrupted power service for its operation. However, generator operations were not always efficient, as outlined in the following paragraphs.

23. A review of generator fuel consumption reports showed a 15 per cent reduction in fuel consumption for the six-month period from January to June 2014 as compared to the same period in 2013, resulting in estimated annual savings of $2 million. These reductions in fuel consumption were because

ESS and the Fuel Unit had installed kilowatt hour meters on all generator clusters as of January 2014, and these meters enabled the Fuel Unit to calculate and monitor the generator fuel efficiency and average generator loads. However, a review of GSFC ratings showed that only 15 (or 23 per cent) of 64 generator clusters consisting of 7 United Nations-owned and 8 contingent-owned equipment operated at medium to high efficiency. The following inefficiencies were noted:

- The overall UNIFIL monthly GSFC average was 0.33, indicating that UNIFIL was operating generators at a low fuel efficiency zone;

- Some 35 of the 64 generator clusters at 29 UNIFIL locations operated at the waste of fuel zone, above GSFC of 0.35, with 19 United Nations-owned, 15 contingent-owned equipment, and one mixed generator clusters;

- Six of the 35 generator clusters at one location, that was operating at the waste of fuel zone, showed an unreliable power supply due to faulty electrical work and inefficient generator operations caused by undersized generators; and

- Seventy-five per cent of all UNIFIL generators were running at low load capacities below 40 per cent where waste occurred due to the use of generators that were too large for power requirements at respective locations.

24. While there were annual savings of $2 million from the 15 generator clusters operating at medium to high efficiency, the remaining 49 generator clusters were operating at low (or below) load capacities resulting in fuel inefficiency. This inefficiency was because UNIFIL had not reviewed the matching of power requirements, generator configuration, and electrical network at each location. Such a review would have enabled the Mission to develop a methodology for improving the low generator load levels and inefficient generator consumption ratings across the Mission. The inefficient operations of generators resulted in high fuel costs and additional costs for the reimbursement and maintenance of unnecessary larger generators comprising of both United Nations-owned and contingent-owned equipment.

(2) UNIFIL should review the power requirements, generator cluster configuration, and electrical network at each Mission location and establish a methodology to optimize generator power supply and improve fuel efficiency of all generators.

UNIFIL accepted recommendation 2 and stated that the Mission already started reviewing the power requirements, configuration and network for five mission locations. UNIFIL would extend the review to cover all UNIFIL locations. Recommendation 2 remains open pending receipt of the results of review of all locations and the methodology established to improve fuel efficiency of generators.

Management of water treatment and sewage removal operations was adequate

25. The DPKO/DFS Engineering Support Manual and UNIFIL Engineering Policy and Guidance require ESS to operate and maintain water and sewage facilities, structures and equipment such as water wells, water treatment/distribution plants, and wastewater treatment and disposal plants in accordance with various technical requirements to meet the Mission's needs. A review of maintenance records of all 15 water wells, 16 water treatment plants, and 24 sewage treatment plants of UNIFIL showed that ESS put in place operational and maintenance procedures and staff resources to ensure water and sewage removal operations without disruption for all 53 active locations. OIOS concluded that the Mission had

adequate controls over its water and sewage removal operations except for the environmental aspect which OIOS will further review in the ongoing audit of waste management in UNIFIL.

Management of repair and maintenance needed improvement

26. The UNIFIL standard operating procedures on repair and maintenance of generators, facilities, and water and sanitation plants and tanks require ESS to track and complete requested repairs and scheduled maintenance tasks in a timely manner.

27. A review of the database used for repair and maintenance tasks for generators showed that ESS completed 3,971 or 99.9 per cent of the 3,974 repair and maintenance requests made during the audit period within a reasonable time of 10 days. ESS used Lotus Notes to receive requests and Galileo Business Objects to manage work orders and required parts and supplies. OIOS concluded that ESS had adequate controls over repairs and maintenance of generators.

28. However, a review of the e-Request system used to track and manage repair and maintenance requests for facilities showed that:

- Only 7,152 (or 87 per cent) of 8,600 requests during the audit period were completed and closed. Further, it took more than one month to close 2,085 (or 30 per cent) of the 7,152 requests;

- Some 1,148 (or 13 per cent) of the 8,600 requests were still open as of 31 January 2015 and waiting to be processed; 943 (or 82 per cent) of the 1,148 requests were open for more than two months including 336 (or 30 per cent), which were open for more than one year. In May 2015, ESS issued a memorandum to unit supervisors reminding them to follow up on the status of the 1,148 open requests; and

- The actual time taken to start and complete a request could not be verified because the responsible units did not enter all necessary data into e-Request, and the system captured the date of data entry at time of creation and closure of the request which were not the actual start and completion dates of the task.

29. Further, a review of repairs and maintenance works completed for water and sanitation requests showed that ESS manually kept records of the work performed in ledgers. The ledgers did not contain necessary information such as the identification of the equipment serviced, details of the services performed, start and completion dates, assigned staff and parts used.

30. Due to lack of adequate procedures and systems to capture necessary data, and to manage repair and maintenance tasks, UNIFIL was unable to assess whether it delivered repair and maintenance services for facilities, water and sanitation efficiently and in a timely manner.

(3) UNIFIL should put in place procedures and a database to capture all engineering-related repair and maintenance requests, and track the status and time taken to complete resultant tasks to measure and improve the Engineering Support Section's delivery of services.

UNIFIL accepted recommendation 3 and stated that ESS in coordination with the Information and Communication Technology Section would develop a database capturing all engineering-related repair and maintenance requests, their status and the time taken to complete resultant tasks. Also, the Head of Mission directed ESS to integrate the Force Headquarters Support Unit with civilian

mission support elements to provide a coordinated response to maintenance and repair requests. Recommendation 3 remains open pending receipt of evidence of procedures and database implemented to monitor and complete engineering-related repair and maintenance requests.

Engineering policy guidance and standard operating procedures needed to be updated

31. The UNIFIL Engineering Policy and Guidance require specific standard operating procedures for each ESS unit to guide supervisors and staff in performing their duties.

32. A review of the UNIFIL Engineering Policy and Guidance and other ESS standard operating procedures showed that ESS had 10 units while in reality ESS comprised only 7 units. The remaining three units had been transferred to other sections in the Mission. Of the seven ESS units, only the standard operating procedures for the Generator Unit, Water and Sanitation Unit and Sector Support Unit had been finalized. The Facilities Management Unit and Force Engineer Unit had drafted their standard operating procedures but had not finalized them. The Design and Contracts Unit and Planning and Construction Units had not developed their standard operating procedures. Further, the UNIFIL Engineering Policy and Guidance was outdated; it included five areas on environment protection, geographical support, terrain study, fire safety and heavy equipment that were areas under the responsibility of three units that were no longer part of ESS. Also, the UNIFIL ESS Policy and Guidance did not contain: applicable guidance for handling defense and mine clearance materials; and job descriptions for skilled staff as required under the DPKO/DFS Engineering Support Manual.

33. This was because ESS had not considered the development and updating of standard operating procedures as a priority. As a result of incomplete and outdated standard operating procedures, ESS staff did not have adequate guidance in performing their duties.

(4) UNIFIL should develop and update its policy guidance and standard operating procedures on engineering support services to better inform and guide the staff of the Engineering Support Section on the performance of their duties.

UNIFIL accepted recommendation 4 and stated that ESS was in the process of updating its standard operating procedures. Recommendation 4 remains open pending receipt of a copy of updated ESS standard operating procedures.

IV. ACKNOWLEDGEMENT

34. 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*) David Kanja
Assistant Secretary-General for Internal Oversight Services

ANNEX I

STATUS OF AUDIT RECOMMENDATIONS

Audit of engineering support services in the United Nations Interim Force in Lebanon

Recom. no.	Recommendation	Critical[1]/ Important[2]	C/ O[3]	Actions needed to close recommendation	Implementation date[4]
1	UNIFIL should put in place a methodology to properly plan and scope the construction and renovation projects in the Mission's infrastructure improvement plan and monitor start and completion dates and allocation of resources to ensure completion of all projects.	Important	O	Receipt of evidence that a methodology for planning and monitoring construction and renovation projects is in place.	31 December 2015
2	UNIFIL should review the power requirements, generator cluster configuration, and electrical network at each Mission location and establish a methodology to optimize generator power supply and improve fuel efficiency of all generators.	Important	O	Receipt of the results of review of all locations and the methodology established to improve fuel efficiency of generators.	31 January 2016
3	UNIFIL should put in place procedures and a database to capture all engineering-related repair and maintenance requests, and track the status and time taken to complete resultant tasks to measure and improve the Engineering Support Section's delivery of services.	Important	O	Receipt of evidence of procedures and database implemented to monitor and complete engineering-related repair and maintenance requests.	31 December 2015
4	UNIFIL should develop and update its policy guidance and standard operating procedures on engineering support services to better inform and guide the staff of the Engineering Support Section on the performance of their duties.	Important	O	Receipt of a copy of updated ESS standard operating procedures.	31 October 2015

[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.
[3] C = closed, O = open
[4] Date provided by UNIFIL in response to recommendations.

APPENDIX I
Management Response

UNITED NATIONS
INTERIM FORCE IN LEBANON

NATIONS UNIES
FORCE INTERIMAIRE AU LIBAN

Inter Office Memorandum

07 August 2015

To: Ms. Eleanor T. Burns
Director Peacekeeping Audit Service
Internal Audit Division, OIOS

From: Major General Luciano Portolano
Head of Mission and Force Commander
UNIFIL

Subject: Draft report on an Audit of Engineering Support Services in UNIFIL (Assignment No. AP2015/672/01)

1. We refer to your memorandum on the audit of Engineering Support Services in UNIFIL, reference IAD: MO150702 dated 22 July 2015. Please find attached UNIFIL's response to the recommendations contained in the subject draft audit report.

2. In following the usual procedure, copies of supporting documents will only be provided to the Middle East Regional Audit Office (MERAO) based at UNIFIL HQ and will not be transmitted to you with this Mission's response.

Best regards.

Cc: Mr. Fabio Bendinelli, OIC Mission Support Division, UNIFIL
Mr. Effendi Syukur, Chief, Audit Response, Risk Management and BOI Unit, UNIFIL
Ms. Cynthia Avena-Castillo, Professional Practices Section, Internal Audit Division, OIOS

APPENDIX I

Management Response

Audit of Engineering Support Services in 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 put in place a methodology to properly plan and scope the construction and renovation projects in the Mission's infrastructure improvement plan and monitor start and completion dates and allocation of resources to ensure completion of all projects.	Important	Yes	Chief, Engineering Support Section (ESS)	31 December 2015	ESS sent an instruction to all unit supervisors on project management dated 29 May 2015 for proper planning, need assessment and preparation of project briefs including resource planning. The instruction clearly indicates the stages of project preparation, and requirement for assessment and monitoring during the various stages of execution stage until the final completion. All present projects undertaken by ESS are in strict adherence to the mentioned instruction. This process and methodology will be reflected in an official instruction and further developed into an SOP for consistent implementation.
2	UNIFIL should review the power requirements, generator cluster configuration, and electrical network at each Mission location and establish a methodology to optimize generator power supply and improve fuel efficiency of all generators.	Important	Yes	Chief, ESS	31 January 2016	UNIFIL has already started the process of reviewing the power requirements, configuration and network for the mission locations. The review has currently been carried out for only five positions, We will extend the review to cover all of the UNIFIL positions as recommended and utilize the results of the review to develop and implement plans for optimization of power usage and efficiency.

[1] Critical recommendations address significant and/or pervasive deficiencies or weaknesses in governance, risk management or internal control processes, such that reasonable assurance cannot be provided regarding the achievement of control and/or business objectives under review.
[2] Important recommendations address important deficiencies or weaknesses in governance, risk management or internal control processes, such that reasonable assurance may be at risk regarding the achievement of control and/or business objectives under review.

APPENDIX I

Management Response

Audit of Engineering Support Services in United Nations Interim Force in Lebanon

Rec. no.	Recommendation	Critical[1]/ Important[2]	Accepted? (Yes/No)	Title of responsible individual	Implementation date	Client comments
3	UNIFIL should put in place procedures and a database to capture all engineering-related repair and maintenance requests, and track the status and time taken to complete resultant tasks to measure and improve the Engineering Support Section's delivery of services.	Important	Yes	Chief, ESS assisted by the Information and Communication Technology Section for database implementation	31 December 2015	UNIFIL ESS has been directed by the Head of Mission to integrate the Force Headquarters Support Unit with mission support elements to provide a coordinated response to maintenance and repair requests. In this context a procedure will be put in place to reflect this integrated structure along with the implementation of a database for tracking.
4	UNIFIL should develop and update its policy guidance and standard operating procedures on engineering support services to better inform and guide the staff of the Engineering Support Section on the performance of their duties.	Important	Yes	Chief, ESS	31 October 2015	The updating and completion of all ESS related SOPs is ongoing.