Office of Internal Oversight Services

INTERNAL AUDIT DIVISION

REPORT 2015/124

Audit of the implementation of the Electronic Fuel Management System in the United Nations Operation in Côte d'Ivoire

Overall results relating to implementation of the Electronic Fuel Management System were initially assessed as unsatisfactory. Implementation of four critical and five important recommendations remains in progress.

FINAL OVERALL RATING: UNSATISFACTORY

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CONTENTS

AUDIT REPORT

Audit of the implementation of the Electronic Fuel Management System in the United Nations Operation in Côte d'Ivoire

I. BACKGROUND

1. The Office of Internal Oversight Services (OIOS) conducted an audit of the implementation of the Electronic Fuel Management System in the United Nations Operation in Côte d'Ivoire (UNOCI).

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. UNOCI was established by the Security Council with resolution 1528 of 27 February 2004, for an initial period of 12 months. The Security Council has extended its mandate on a number of occasions to reflect the evolving situation on the ground and the needs of the mission.

4. In 2006, the General Assembly, in its resolution 60/266, requested a review of all aspects of fuel management, and the establishment of an electronic fuel accounting system. In response to the request of the General Assembly, the Department of Field Support (DFS) started the development of a Mission Electronic Fuel Accounting System (MEFAS) to record the receipt and issue of fuel in field missions.

5. In 2007, DFS proposed to extend the functionalities provided by MEFAS and establish a single global electronic fuel management system. The system was to provide mission management and users with a full set of tools for fuel planning, consumption and inventory control, analysis and reporting, invoice matching, budgeting and monitoring of the "not-to-exceed" amounts in contracts, with the expectation that substantial fuel efficiencies and savings would occur. DFS prepared a high level business case to establish a standardized Electronic Fuel Management System (EFMS-1) and recommended its implementation with the adoption of a commercial off-the-shelf system. However, after the conduct of extensive tests, it was concluded that the off-the-shelf system did not meet the requirements of the United Nations.

6. In 2013, to address the previous unsuccessful adoption of the off-the-shelf solution for fuel management, the Office of Information and Communications Technology (OICT), in collaboration with the Logistics Support Division (LSD) of DFS, started the development of a new fuel system named EFMS-2. LSD was identified as the owner of this new system.

7. EFMS-2 is an in-house developed application with refocused requirements on the main business processes of fuel management, with Umoja supporting only the financial functionality. Its main features include:

(i) A web-based solution for fuel management.

(ii) Use of handheld devices (scanners) to scan the barcodes associated with both the equipment and the individuals who record fuel transactions. Information from the handheld devices is downloaded via cradles connected to personal computers. The personal computers then transmit – over the Internet – data to the system's databases hosted in Brindisi and Valencia.

(iii) A customer relationship management platform to interface with users for fuel requests and reports.

(iv) Reporting functionalities accessible through a web interface, including inventory reporting, transaction monitoring, alerting and data analytics.

8. UNOCI was the first field mission to deploy EFMS-2 in September 2013 on a pilot basis. Fuel operations were managed by the Fuel Unit which comprised of 15 staff. UNOCI fuel expenditures amounted to $21 million for the financial year 2013/14.

9. The fuel for UNOCI was sourced and managed under a turnkey contract signed in 2013 in the amount of $54.53 million. Under this contract, the contractor was responsible for providing, transporting, storing and dispensing fuel to UNOCI.

10. Comments provided by the Department of Management (DM), DFS and UNOCI are incorporated in italics.

II. OBJECTIVE AND SCOPE

11. The audit was conducted to assess the adequacy and effectiveness of governance, risk management and control processes established by DM, DFS and UNOCI to provide reasonable assurance regarding the **effective implementation of EFMS-2 in UNOCI**.

12. This audit was included in the OIOS 2015 work plan for UNOCI due to the high risks associated with potential weaknesses in the fuel management system, which could lead to fraud and financial loss.

13. The key controls tested for the audit were: (a) project management; and (b) information and communications technology (ICT) support systems. For the purpose of this audit, OIOS defined these key controls as follows:

(a) **Project management** - controls that provide reasonable assurance that appropriate mechanisms are in place to manage the effective implementation and deployment of the EFMS-2 system at UNOCI; and

(b) **ICT support system** - controls that provide reasonable assurance that the EFMS-2 system developed by OICT addresses the needs of fuel operations in UNOCI efficiently and effectively and is configured in accordance with the requirements of business users.

14. The key controls were assessed for the control objectives shown in Table 1.

15. OIOS conducted this audit from February to April 2015. The audit covered the period from January 2012 to April 2015. OIOS: (a) conducted walkthroughs of processes and procedures; (b) visited four fueling points in UNOCI; (c) analyzed the documentation provided by OICT, DFS and UNOCI; (d) tested the effectiveness of project governance, systems development lifecycle and application controls; and (e) tested data security and user access procedures.

16. OIOS conducted an activity-level risk assessment to identify and assess specific risk exposures, and to confirm the relevance of the selected key controls in mitigating associated risks. Through

interviews, analytical reviews and tests of controls, OIOS assessed the existence and adequacy of internal controls and conducted necessary tests to determine their effectiveness.

III. AUDIT RESULTS

17. The DM, DFS and UNOCI governance, risk management and control processes examined were initially assessed as **unsatisfactory**[1] in providing reasonable assurance regarding the **effective implementation of EFMS-2 in UNOCI**. OIOS made nine recommendations to address issues identified in the audit.

18. Project management was assessed as unsatisfactory because governance arrangements for EFMS-2 were not established as required by applicable policies. Resource requirements were not clearly identified and key functionalities of the system were not fully implemented. There was no assurance that: (i) costs associated with the development and implementation of EFMS-2 were identified and controlled; (ii) bulk fuel balances were accurately recorded and reported; (iii) expected efficiencies and savings in fuel management would be achieved; and (iv) potential fraud would be prevented.

19. ICT support system was assessed as unsatisfactory because there were critical control weaknesses arising from: (i) incorrect data; (ii) inadequate monitoring and reporting controls; (iii) inadequate risk assessment of the system; (iv) lack of segregation of duties; and (v) inadequate system logs.

20. The initial overall rating was based on the assessment of the key controls presented in Table 1 below. The final overall rating is **unsatisfactory** as implementation of four critical and five important recommendations remains in progress.

Table 1: Assessment of key controls

Business objective	Key controls	Control objectives			
		Efficient and effective operations	Accurate financial and operational reporting	Safeguarding of assets	Compliance with mandates, regulations and rules
Effective implementation of EFMS-2 in UNOCI	(a) Project management	Unsatisfactory	Partially satisfactory	Partially satisfactory	Unsatisfactory
	(b) ICT support system	Partially satisfactory	Unsatisfactory	Unsatisfactory	Unsatisfactory
FINAL OVERALL RATING: UNSATISFACTORY					

A. Project management

Requirements of the United Nations ICT project management framework were not complied with

21. To ensure the coherent and coordinated global management of ICT initiatives across departments and duty stations, the United Nations Secretariat promulgated Administrative Instruction ST/AI/2005/10 which detailed the governance arrangements for ICT projects, including authority to approve such initiatives. Additionally, OICT established an ICT project management framework which was developed

[1] A rating of **"unsatisfactory"** means that one or more critical and/or pervasive deficiencies exist 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.

in accordance with the project management methodology “Projects in Controlled Environments" (PRINCE-II). The framework defined: (i) ICT projects; (ii) their review process; (iii) the roles of the ICT governance bodies; (iv) a standard methodology; and (v) the baseline tools for managing ICT projects, from the initial proposal stage to benefits realization.

22. According to ST/AI/2005/10 and the ICT project management framework, ICT projects should be supported by:

(i) A high level business case (HLBC) prior to its commencement, documenting reasonable options available for proceeding with the ICT initiative and the justification for preferring the selected option;

(ii) Approval of the HLBC by the ICT Committee and/or Project Review Committee confirming that the initiative is substantively aligned with departmental or office goals and objectives;

(iii) The Department of Management coordinating the HLBC of ICT initiatives that are within the scope of multiple ICT Committees; and

(iv) A Project Board and Project Manager for providing coordination, oversight and management of the project.

23. Although EFMS-2 was intended to overcome the problems encountered during the implementation of EFMS-1, the project was not supported by the governance mechanisms envisaged in the ICT project management framework. In particular, the following control weaknesses were noted:

(i) The original HLBC developed for EFMS-1 was based on an off-the-shelf solution. But EFMS-2 was based on in-house development of a new system with revised requirements. Therefore, the content of the HLBC originally prepared for EFMS-1 was no longer relevant and applicable to EFMS-2. However, a HLBC for EFMS-2 was never developed, documented and approved by the ICT Committee and Project Review Committee to confirm the viability of the project, scope, user requirements, costs, plans and schedules.

(ii) There was no evidence that the EFMS-2 project was supported by a Project Board providing coordination and oversight of the project.

24. This condition was due to the failure to comply with established policies for the development, approval and oversight of ICT initiatives, which increased the risk that the expected benefits from the investment in developing EFMS-2 may not be realized in a cost-efficient manner.

(1) DFS, in coordination with OICT, should ensure compliance with the Organization’s policies for ICT initiatives by: (i) establishing a Project Board to direct and monitor the implementation of EFMS-2 in all missions; and (ii) updating the high level business case for EFMS-2 to confirm its viability.

DFS accepted recommendation 1 and stated that it will collaborate with OICT to establish a Project Board and prepare a gap analysis for the project requirements. Recommendation 1 remains open pending receipt of evidence demonstrating that: (i) a Project Board has been established to oversee EFMS-2; and (ii) the HLBC has been updated to confirm the viability of the system.

Configuration and implementation of EFMS-2 was incomplete

25. A system development life cycle consists of a number of clearly defined and distinct work phases which are used by systems developers to plan, design, build, test, and deliver information systems configured with adequate controls for: (a) data security; (b) business continuity and disaster recovery; (c) testing; and (d) separation of testing and production data. This methodology should support the development of ICT systems with clearly defined phases, milestones, and cost estimates.

26. OICT developed EFMS-2 using the "waterfall" approach (i.e., a sequential design process) as its system development methodology. This approach required capturing detailed user requirements in the functional requirements documents, which were then transformed into a detailed system design document. The expected benefits of this methodology were to provide the development team with well-defined user requirements on which to build the technical requirements and prevent scope creep.

27. OIOS review of EFMS-2 development showed the following weaknesses:

(i) The high level business requirements document defined 12 deliverables to be produced with EFMS-2. However, this document was prepared on the basis of informally agreed requirements between OICT and DFS/LSD and did not provide sufficient details for the preparation of the technical design document. In particular, the document lacked detailed requirements for data security, availability and integrity as required by the United Nations policy on information security;

(ii) The business continuity and disaster recovery requirement for the system was not defined. For example, there was no procedure in place for ensuring the recovery of scanners' data in the event of their malfunction;

(iii) Testing documents (i.e., test case scenarios, user based scenario testing, and test issues) did not include a detailed testing plan and scenarios based on user requirements and an assessment of key controls. The documented EFMS-2 test case scenarios were also not complete with actual results; and

(iv) Test data was found amongst production data indicating that the production environment was not adequately separated from the test environment.

28. This condition was due to failure to comply with the standards and methodology adopted by OICT for system development, and may impact the reliability and integrity of the system.

(2) OICT should complete the configuration and implementation of EFMS-2 with regard to: (i) data security; (ii) business continuity and disaster recovery; (iii) testing; and (iv) separation of testing and production data.

DM accepted recommendation 2 and stated that OICT will implement data security, business continuity and disaster recovery according to documented business requirements. OICT will also update the test scenarios and change the design in order not to store test/training data in the production environment. Recommendation 2 remains open pending receipt of evidence demonstrating that the configuration of EFMS-2 has been corrected with regard to: (i) data security; (ii) business continuity and disaster recovery; (iii) testing; and (iv) separation of testing and production data.

Resource requirements were not identified and key functionalities were not implemented

29. The professional standards (i.e., Control Objectives for Information and Related Technology, COBIT) recommend the formulation of a plan defining the strategy, sequence of steps, resource requirements, interdependencies, criteria for management agreement, installation requirements, cost management and a transition strategy for the implementation of ICT systems. In addition, the plan should be aligned with the business change management plan and include details of third parties involved in each step of the implementation.

30. OICT documented a deployment checklist for transitioning EFMS-2 to production. However, there was no plan to guide the implementation of the system from development to production in order to ensure its completeness, accuracy and usability. The following weaknesses were noted:

(i) There was no analysis of resource requirements (i.e., equipment, staff) to determine the resources needed for the implementation of the system. For example, there was no evidence of analysis undertaken to determine the number of scanners required;

(ii) The total costs associated with the development and implementation of EFMS-2 were not identified;

(iii) The data conversion plan was not adequate. Critical data (i.e., forward balances for bulk fuel) required to support the accuracy of stock balances was not uploaded as part of the conversion process. Therefore, reports generated from EFMS-2 presented unreliable information and the system showed negative inventory balances; and

(iv) Key phases of the project were not determined and some critical functionalities had not been deployed. A comparison between the EFMS-2 system implemented in UNOCI and the high level business requirements document showed that of the 12 originally defined requirements, only seven were implemented; one was partially implemented; and four were not implemented. The functionalities required for detecting data tampering through electronic signature and the ability to reduce fuel reserve levels through "real-time" inventory were not implemented in EFMS-2. Furthermore, since the deployment phases of the project were undefined, it was unclear when these functionalities would be implemented.

31. This condition was due to control weaknesses which do not provide assurance that: (i) costs associated with the development and implementation of EFMS-2 were identified and controlled; (ii) bulk fuel balances were accurately recorded and reported; (iii) expected efficiencies and savings in fuel management would be achieved; and (iv) potential fraud would be prevented.

(3) OICT, in collaboration with DFS, should complete the deployment plan of EFMS-2 with control mechanisms to ensure clear identification and implementation of: (i) resource requirements; (ii) data conversion items; and (iii) key phases and critical functionalities.

DM accepted recommendation 3 and stated that parts (i) and (ii) of the recommendation have been implemented and the relevant supporting documents were provided to OIOS. Part (iii) of the recommendation is subject to the availability of Umoja. Recommendation 3 remains open pending receipt of evidence demonstrating the completion of the EFMS-2 deployment plan with adequate identification and implementation of key phases and critical functionalities.

Controls related to the inventory of scanners needed to be strengthened

32. The international ICT security management standard adopted by the United Nations Secretariat (ISO/IEC 27001) recommends the creation of an inventory of assets associated with information processing systems. Assets and their inventory should be maintained to reduce their exposure to environmental threats, hazards, and unauthorized access.

33. Hand-held scanners were the main input devices used to capture transaction data in EFMS-2. However, the controls over their inventory, storage, assignment and movement were not adequate. The following control weaknesses were noted:

(i) The location of 23 (out of 150) scanners procured by UNOCI was unknown;

(ii) Eight scanners used for processing fuel transactions were not configured in the scanner master table stored in EFMS-2 but were nonetheless used for fuel transactions. For instance, some of these un-configured scanners were used for more than 40 transactions each between 1 April 2014 and 25 February 2015; and

(iii) Serial numbers and descriptions of the scanners were not logged in the Galileo inventory management system.

34. Furthermore, documents related to the receipt and inspection of scanners wrongly described and classified them as "global positioning system" navigation equipment in Galileo.

(4) UNOCI should implement mechanisms to control the receipt, storage, classification and assignment of scanners.

UNOCI accepted recommendation 4 and stated that all scanning units will be barcoded and recorded in the Galileo system in order to ensure that UNOCI has accurate information regarding the receiving, storage, classification and assignment of scanners. Recommendation 4 remains open pending receipt of evidence demonstrating that UNOCI has implemented mechanisms to control the receipt, storage, classification and assignment of scanners.

B. ICT support system

Data accuracy, monitoring and reporting needed to be strengthened

35. COBIT recommends aligning the documentation and analysis of user requirements with business needs/processes. User requirements should be documented, actionable, measurable, testable, traceable and detailed enough for a system design to include applications controls (i.e., authorization, input, processing and output) ensuring accuracy, completeness, timeliness, availability, and auditability of data.

36. EFMS-2 was developed on the basis of control requirements defined in three documents: (i) functional specifications; (ii) high level technical design; and (iii) technical design of reports. However, these three documents were not based on a detailed risk assessment to establish adequate controls for input, processing, output, security and availability of the system. As a result, the following control weaknesses were noted:

(i) The completeness, accuracy and authorization of data were not adequately controlled in EFMS-2 during the input phase leading to:

(a) A significant volume of manual data input. Approximately 10 per cent of the total volume of fuel transactions between 1 January 2014 and 25 February 2015 had been manually recorded in EFMS-2;

(b) Delays in the synchronization of transactions captured with scanners, causing duplicate entries;

(c) Transactional discrepancies (i.e., manual adjustments based on the supplier's invoice);

(d) Insufficient data input checks to validate or reject inconsistencies in data entries that did not meet specified criteria. For example, the system accepted a lower odometer reading even though the previous odometer reading was higher. There were also: inconsistent date formats; incorrect characters; invalid field lengths (mandatory asset number field contained text "To Be Deleted" instead of an asset number); missing equipment ID, odometer readings and standard fuel consumption unit; and duplicate transaction entries/numbers; and

(e) Insufficient verification checks with master data (i.e., user, equipment and scanners). The system did not check the validity of "Employee identifiers". There was also equipment tagged as inactive in EFMS-2 which could have been used to process fuel transactions (because there was no verification check for inactive equipment during the scanning process).

(ii) Processing controls were not adequately defined and implemented in EFMS-2, as explained below:

(a) EFMS-2 included reports for reviewing average fuel consumption for the purpose of identifying potential cases of fraud. These reports were designed to detect overconsumption on the basis of "standard fuel consumption units". However, for 41 United Nations vehicles recorded in the system (between 1 January 2014 and 26 February 2015), standard fuel consumption units had not been defined. In addition, the field for recording standard fuel consumption units in EFMS-2 was not configured as a mandatory field. There were also no provisions to input standard fuel consumption units for generators; and

(b) In addition to not being defined as a mandatory field, the standard fuel consumption unit field could be edited by the fuel focal point without obtaining any approval.

(iii) Some transactions were deleted or amended in EFMS-2 by OICT at the request of the fuel focal point, without any formal justification and an independent review/approval process. OICT confirmed that the fuel focal point had made 309 requests for deletion of transactions already processed, of which 36 requests had been submitted by email without a formal service request that should have been submitted and processed through the enterprise service desk solution iNeed.

37. This condition was due to the absence of a detailed risk assessment that defined the requirements for ensuring the accuracy, completeness, timeliness, availability and auditability of data in EFMS-2.

(5) OICT, in collaboration with DFS, should implement additional control mechanisms to address the weaknesses identified in the EFMS-2 data pertaining to: (i) manual data input; (ii) transactional discrepancies and data inconsistencies; (iii) insufficient verification with master data; (iv) optional and editable standard fuel consumption units; (v) inadequately

reviewed data deletions and changes; and (v) duplicated transactions.

DM accepted recommendation 5 and stated that EFMS-2 is achieving more than 99 per cent of data input via scanners and only one per cent is done via manual data entry because of operational reasons. UNOCI agreed to keep records of manual data entry and approvals. UNOCI will also update its standard operating procedures and enforce compliance regarding the correction of transactions and approval. Recommendation 5 remains open pending receipt of evidence demonstrating: (a) the implementation of additional controls to address the weaknesses identified in manual data input, data inconsistencies, and duplicated transactions; and (b) implementation of the newly established iNeed procedure for reviewing data changes and deletions.

Risk assessment of EFMS-2 was not performed

38. According to Administrative Instruction ST/AI/2005/10 on the governance of ICT projects and the procedures established by OICT for the preparation of high-level business cases, offices and departments should identify the potential risks of the ICT initiatives, with an assessment of their likely impact and associated mitigation plans.

39. DFS did not perform a risk assessment to define reports in EFMS-2 required for monitoring consumption, inefficiencies, potential fraud scenarios and system exceptions. In addition, DFS had not defined the responsibilities for the review, detection and analysis of exceptions. The following control weaknesses were noted:

(i) UNOCI did not request or undertake any formal review of available reports in EFMS-2 since its deployment in the mission. Several key users (i.e., Transport and Security Units) had not received any exception cases or reports since the deployment of EFMS-2;

(ii) There was no defined schedule for the generation and review of exception reports from EFMS-2. Exception reports were generated by OICT and sent to UNOCI for review. However, OICT undertook corrective actions simply on the basis of requests issued from the fuel focal point, without taking into account any control for segregation of duties and/or further review/approval by senior management;

(iii) There was no procedure in place to define and configure new reports in EFMS-2. New reports were configured by OICT based on informal interactions with the Fuel Unit. The report development process did not involve UNOCI management and other key stakeholders;

(iv) There was no process to periodically review and confirm the reliability of master data stored in EFMS-2 (i.e., faulty odometers, unregistered scanners, fuel consumption units and active/inactive fields); and

(v) Duplicated transactions. A pre-defined duplicate transaction report for the period 1 July 2014 to 25 February 2015 showed a total of 81 duplicate transactions (amounting to 36,000 liters of fuel). As of the time of the audit, these transactions had not been reviewed and corrected.

40. This condition was due to the absence of a risk assessment defining the reporting requirements of business users and the responsibility for review of exceptions.

(6) DFS should perform a risk assessment and define reporting requirements and a review process to monitor consumption, inefficiencies, reliability of master data, duplicates, potential fraud scenarios and system exceptions of EFMS-2 transactions.

DFS accepted recommendation 6 and stated that it will conduct the risk assessment for missions that have implemented EFMS-2. It is anticipated that the assessment will be completed in the first quarter of 2016. Recommendation 6 remains open pending receipt of evidence demonstrating that reporting requirements (for monitoring consumption, inefficiencies, reliability of master data, duplicates, potential fraud scenarios and system exceptions of EFMS-2 transactions) have been based on a risk assessment.

Segregation of duties was inadequate

41. COBIT recommends that a system design should include automated controls within the system that supports user access controls and database integrity.

42. User access management procedures were not adequately defined in EFMS-2 for files and database access, and there were no user access procedures to grant or modify access at the mission level. All requests for access were sent directly to OICT, bypassing the locally established procedures at the mission level. OICT confirmed that access and deletion requests were sent through emails, but decisions were not always documented in iNeed.

43. OICT documented an EFMS-2 user list that included various users with their roles assigned in the system. However, there was no evidence that the assignment of roles was reviewed for potential conflicts in segregation of duties.

44. User access roles were not adequately segregated within the Fuel Unit of UNOCI and within OICT for system support and change request management. The fuel focal point had end-to-end control of the whole fuel process because he could: (i) configure the scanners for use; (ii) request the creation/removal of master data for equipment and scanners; (iii) request user access to the system; (iv) make changes to and delete transactions; (v) receive exception reports from OICT and authorize all changes to be made; and (vi) perform the reconciliation of data. OICT staff providing system support were also performing application development functions.

45. This condition was due to critical weaknesses in the design and configuration of EFMS-2 which increased the risk of fraud and misuse because the system allowed: (i) the assignment of conflicting roles to ICT staff and end users; and (ii) ICT staff to change and delete transactions in the system without necessary controls for detection and reporting.

(7) OICT, in collaboration with DFS, should review the assignment of roles to ICT staff and users in EFMS-2 and implement an adequate segregation of duties.

DM accepted recommendation 7 and stated that OICT has now ensured that none of its EFMS-2 support staff has access to application development. UNOCI stated that it will review the assignment of user roles in EFMS-2 for its staff and implement an adequate segregation of duties. Recommendation 7 remains open pending receipt of evidence demonstrating that user assignment roles in EFMS-2 have been reviewed and segregation of duties has been implemented.

System logs were not visible

46. ISO/IEC 27001 recommends the safekeeping of event logs recording critical activity (i.e., user activities, exceptions, faults and information security events).

47. The event logs of EFMS-2 were not sufficiently visible for tracking abnormalities and changes made to transaction data and system parameters (i.e., changes made to the quantity of fuel provided), which increased the risk of fraud.

48. This condition was due to the lack of detailed user requirements for capturing relevant event logs and may prevent the Organization from investigating the potential misuse of EFMS-2.

(8) DFS, in collaboration with OICT, should define the event logs required for the review of critical activities in EFMS-2.

DFS accepted recommendation 8 and stated that it will define the critical activities to be logged and reviewed in EFMS-2 and will work closely with OICT to configure them in the system. Recommendation 8 remains open pending receipt of evidence demonstrating that event logs required for the review of critical activities in EFMS-2 have been defined.

Interface design and fraud prevention controls were inadequate

49. COBIT recommends documenting interface requirements of information systems, including expected deliverables, any constraints to its design, specifications about the data to be exchanged, timing and sequencing dependencies, and capacity and performance requirements.

50. OICT had included the system architecture of EFMS-2 in the functional specification document showing interfaces with three systems (i.e., Galileo, Identity Management, and Electronic Contingent Owned Equipment "eCOE"). However, this document did not sufficiently describe the interface requirements. The following control weaknesses were noted:

(i) The identifiers of assets and equipment information were uploaded into the equipment table of EFMS-2 from eCOE and Galileo. However, the interfaces were not designed to update EFMS-2 with any subsequent changes made to the assets (i.e., removals) in the source data, causing inactive equipment to remain in EFMS-2 with an active status.

(ii) There was no defined procedure to inform the Fuel Unit about obsolete equipment from the Contingent Owned Equipment and Transport Units. However, UNOCI was in the process of updating its standard operating procedures to include accounting for obsolete equipment in a timely manner.

(iii) One of the key controls expected from the implementation of EFMS-2 was the prevention of potential fraud by ensuring that only eligible staff would receive fuel via interface with the mission identity management system. However, as implemented in UNOCI, the EFMS-2 system did not have any control mechanisms to validate the identity of fuel recipients.

51. This condition was due to insufficient definition of requirements and controls in the EFMS-2 system which increased the risk of fraud.

(9) OICT, in collaboration with DFS, should: (i) improve the interface of EFMS-2 with eCOE and Galileo to ensure timely updates of the equipment master data in EFMS-2; and (ii) establish controls to validate the accuracy of the identity of fuel recipients.

DM accepted recommendation 9 and stated that Galileo is to be retired and compensatory controls in the standard operating procedures will be updated and enforced by UNOCI in order to always keep equipment data in sync between the two systems. Recommendation 9 remains open pending

receipt of evidence showing that controls have been implemented to: (i) improve the interface of EFMS-2 with eCOE and Galileo to ensure timely updates of the equipment master data in EFMS-2; and (ii) confirm the accuracy of staff identification numbers used for fueling transactions.

IV. ACKNOWLEDGEMENT

52. OIOS wishes to express its appreciation to the Management and staff of DM, DFS and UNOCI for the assistance and cooperation extended to the auditors during this assignment.

(*Signed*) David Kanja
Assistant Secretary-General, Acting Head
Office of Internal Oversight Services

ANNEX I

STATUS OF AUDIT RECOMMENDATIONS

Audit of the implementation of the Electronic Fuel Management System in the United Nations Operation in Côte d'Ivoire

Recom. no.	Recommendation	Critical[2]/ Important[3]	C/ O[4]	Actions needed to close recommendation	Implementation date[5]
1	DFS, in coordination with OICT, should ensure compliance with the Organization's policies for ICT initiatives by: (i) establishing a Project Board to direct and monitor the implementation of EFMS-2 in all missions; and (ii) updating the high level business case for EFMS-2 to confirm its viability.	Critical	O	Provide evidence demonstrating that: (i) a Project Board has been established to oversee EFMS-2; and (ii) the HLBC has been updated to confirm the viability of the system.	30 June 2016
2	OICT should complete the configuration and implementation of EFMS-2 with regard to: (i) data security; (ii) business continuity and disaster recovery; (iii) testing; and (iv) separation of testing and production data.	Important	O	Provide evidence demonstrating that the configuration of EFMS-2 has been corrected with regard to: (i) data security; (ii) business continuity and disaster recovery; (iii) testing; and (iv) separation of testing and production data.	30 June 2017
3	OICT, in collaboration with DFS, should complete the deployment plan of EFMS-2 with control mechanisms to ensure clear identification and implementation of: (i) resource requirements; (ii) data conversion items; and (iii) key phases and critical functionalities.	Important	O	Provide evidence demonstrating the completion of the EFMS-2 deployment plan with adequate identification and implementation of key phases and critical functionalities.	31 December 2018
4	UNOCI should implement mechanisms to control the receipt, storage, classification and assignment of scanners.	Important	O	Provide evidence demonstrating that UNOCI has implemented mechanisms to control the receipt, storage, classification and assignment of scanners.	31 December 2015
5	OICT, in collaboration with DFS, should implement additional control mechanisms to address the weaknesses identified in the EFMS-2	Critical	O	Provide evidence demonstrating that: (a) the implementation of additional controls to address the weaknesses identified in manual data input,	31 December 2015

[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 DM, DFS and UNOCI in response to recommendations.

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Recom. no.	Recommendation	Critical[2]/ Important[3]	C/ O[4]	Actions needed to close recommendation	Implementation date[5]
	data pertaining to: (i) manual data input; (ii) transactional discrepancies and data inconsistencies; (iii) insufficient verification with master data; (iv) optional and editable standard fuel consumption units; (v) inadequately reviewed data deletions and changes; and (v) duplicated transactions.			data inconsistencies, and duplicated transactions; and (b) implementation of the newly established iNeed procedure for reviewing data changes and deletions.	
6	DFS should perform a risk assessment and define reporting requirements and a review process to monitor consumption, inefficiencies, reliability of master data, duplicates, potential fraud scenarios and system exceptions of EFMS-2 transactions.	Critical	O	Provide evidence demonstrating that reporting requirements (for monitoring consumption, inefficiencies, reliability of master data, duplicates, potential fraud scenarios and system exceptions of EFMS-2 transactions) have been based on a risk assessment.	31 March 2016
7	OICT, in collaboration with DFS, should review the assignment of roles to ICT staff and users in EFMS-2 and implement an adequate segregation of duties.	Critical	O	Provide evidence demonstrating that user assignment roles in EFMS-2 have been reviewed and segregation of duties has been implemented.	31 December 2016
8	DFS, in collaboration with OICT, should define the event logs required for the review of critical activities in EFMS-2.	Important	O	Provide evidence demonstrating that event logs required for the review of critical activities in EFMS-2 have been defined.	30 June 2016
9	OICT, in collaboration with DFS, should: (i) improve the interface of EFMS-2 with eCOE and Galileo to ensure timely updates of the equipment master data in EFMS-2; and (ii) establish controls to validate the accuracy of the identity of fuel recipients.	Important	O	Provide evidence demonstrating that controls have been implemented to: (i) improve the interface of EFMS-2 with eCOE and Galileo to ensure timely updates of the equipment master data in EFMS-2; and (ii) confirm the accuracy of staff identification numbers used for fueling transactions.	31 December 2016

APPENDIX I

Management Response

United Nations Nations Unies

INTEROFFICE MEMORANDUM MEMORANDUM INTERIEUR

TO: Mr. Gurpur Kumar, Deputy Director
A: Internal Audit Division, Office of Internal Oversight Services

DATE 14 October 2015

THROUGH: Christian Saunders, Director
S/C DE: Office of the Under-Secretary-General for Management

FROM: Mario Baez, Chief, Policy and Oversight Coordination Service
DE: Office of the Under-Secretary-General for Management

SUBJECT: **Draft report on an audit of the implementation of the Electronic Fuel Management System in the United Nations Operation in Côte d'Ivoire (Assignment No. AT2015/615/01)**
OBJET:

1. With reference to your memorandum dated 28 August 2015, please find the consolidated comments of the Department of Management, the Department of Field Support and the United Nations Operation in Côte d'Ivoire on the above subject draft report in the attached Appendix I.

2. Thank you for giving us the opportunity to provide comments on the draft report.

15-02618
14 Oct 2015

APPENDIX I

Management Response

Audit of the implementation of the Electronic Fuel Management System in the United Nations Operation in Côte d'Ivoire

Rec. no.	Recommendation	Critical[1]/ Important[2]	Accepted? (Yes/No)	Title of responsible individual	Implementation Date	Client comments
1	DFS, in coordination with OICT, should ensure compliance with the Organization's policies for ICT initiatives by: (i) establishing a Project Board to direct and monitor the implementation of EFMS-2 in all missions; and (ii) updating the high level business case for EFMS-2 to confirm its viability.	Critical	Yes	Chief Fuel Officer, Logistics Support Division, DFS EFMS Project Manager, OICT	30 June 2016	The Logistics Support Division (LSD) of DFS and OICT will collaborate to establish the project Board. LSD will prepare a gap analysis for the project requirements.
2	OICT should complete the configuration and implementation of EFMS-2 with regard to: (i) data security; (ii) business continuity and disaster recovery; (iii) testing; and (iv) separation of testing and production data.	Important	Yes	EFMS Project Manager, OICT	30 June 2017	OICT will implement data security, business continuity and disaster recovery according to documented business requirements. OICT will also update the test scenarios and change the design in order not to store test/training data in the production environment.

[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 the implementation of the Electronic Fuel Management System in the United Nations Operation in Côte d'Ivoire

Rec. no.	Recommendation	Critical[1]/ Important[2]	Accepted? (Yes/No)	Title of responsible individual	Implementation Date	Client comments
3	OICT, in collaboration with DFS, should complete the deployment plan of EFMS-2 with control mechanisms to ensure clear identification and implementation of: (i) resource requirements; (ii) data conversion items; and (iii) key phases and critical functionalities.	Important	Yes	EFMS Project Manager, OICT	31 December 2018	Parts (i) and (ii) of the recommendation have been implemented and the relevant supporting documents were provided to OIOS through Unite Connections. Part (iii) of the recommendation is pending subject to the availability of Umoja.
4	UNOCI should implement mechanisms to control the receipt, storage, classification and assignment of scanners.	Important	Yes	Officer-in-Charge, Supply Section, UNOCI	31 December 2015	All scanning units in the mission will be barcoded and recorded in the Galileo system in order to ensure that UNOCI has updated and accurate information regarding the receiving, storage, classification and assignment of scanners.
5	OICT, in collaboration with DFS, should implement additional control mechanisms to address the weaknesses identified in the EFMS-2 data pertaining to: (i) manual data input; (ii) transactional discrepancies and data inconsistencies; (iii) insufficient verification with master data; (iv) optional and editable standard fuel consumption units; (v) inadequately reviewed data deletions and changes; and (vi) duplicated transactions.	Critical	Yes	Officer-in-Charge, Supply Section, UNOCI	31 December 2015	EFMS-2 is achieving more than 99 per cent of data input via scanner and only one per cent is done via manual data entry because of operational reasons. UNOCI agrees to keep records of manual data entry and approvals. UNOCI will also update its standard operating procedures and enforce compliance regarding the correction of transactions and approval.

APPENDIX I

Management Response

Audit of the implementation of the Electronic Fuel Management System in the United Nations Operation in Côte d'Ivoire

Rec. no.	Recommendation	Critical[1]/ Important[2]	Accepted? (Yes/No)	Title of responsible individual	Implementation Date	Client comments
6	DFS should perform a risk assessment and define reporting requirements and a review process to monitor consumption, inefficiencies, reliability of master data, duplicates, potential fraud scenarios and system exceptions of EFMS-2 transactions.	Critical	Yes	Chief Fuel Officer, Logistics Support Division, DFS	31 March 2016	DFS will conduct the risk assessment for missions that have implemented EFMS-2. It is anticipated that the assessment will be completed in the first quarter of 2016.
7	OICT, in collaboration with DFS, should review the assignment of user roles in EFMS-2 and implement an adequate segregation of duties.	Critical	Yes	EFMS Project Manager, OICT Officer-in-Charge, Supply Section, UNOCI	31 December 2016	OICT has now ensured that none of its EFMS-2 support staff has access to application development. UNOCI will review the assignment of user roles in EFMS-2 for its staff and implement an adequate segregation of duties.
8	DFS, in collaboration with OICT, should define the event logs required for the review of critical activities in EFMS-2.	Important	Yes	Chief Fuel Officer, Logistics Support Division, DFS	30 June 2016	DFS will define the critical activities to be logged and reviewed in EFMS 2, and will work closely with OICT to configure them in the system.
9	OICT, in collaboration with DFS, should: (i) improve the interface of EFMS-2 with eCOE and Galileo to ensure timely updates of the equipment master data in EFMS-2; and (ii) establish controls to validate the accuracy of the identity of fuel recipients.	Important	Yes	Officer-in-Charge, Supply Section, UNOCI	31 December 2016	Galileo is to be retired and compensatory controls in the standard operating procedures will be updated and enforced by UNOCI in order to always keep equipment data in sync between the two systems.