



INTERNAL AUDIT DIVISION

AUDIT REPORT

Audit of engineering and construction activities in MONUC

4 April 2008

Assignment No. AP2006/620/08

United Nations  Nations Unies

INTEROFFICE MEMORANDUM

MEMORANDUM INTERIEUR

INTERNAL AUDIT DIVISION - DIVISION DE L'AUDIT INTERNE

OFFICE OF INTERNAL OVERSIGHT SERVICES - BUREAU DES SERVICES DE CONTRÔLE INTERNE

TO: Mr. Alan Doss
A: Special Representative of the Secretary-General
MONUC

DATE: 4 April 2008

REFERENCE: IAD: 08- AUD-7-5:7 (08-)

01178

FROM: Dagfinn Knutsen, Director
DE: Internal Audit Division, OIOS



SUBJECT: **Assignment No. AP2006/620/08 – Audit of engineering and construction activities in MONUC**

OBJET:

1. I am pleased to present the report on the above-mentioned audit.
2. Based on your comments, we are pleased to inform you that we will close recommendation 7 in the OIOS recommendations database as indicated in Annex 1. In order for us to close the remaining recommendations, we request that you provide us with the additional information as discussed in the text of the report and also summarized in Annex 1.
3. Please note that OIOS will report on the progress made to implement its recommendations, particularly those designated as critical (i.e., recommendations 1, 4 and 8), in its annual report to the General Assembly and semi-annual report to the Secretary-General.

cc: Mr. Philip Cooper, Director, Department of Field Support
Mr. Hany Abdel-Aziz, Director of Administration, MONUC
Mr. Swatantra Goolsarran, Executive Secretary, UN Board of Auditors
Mr. Jonathan Childerley, Chief, Oversight Support Unit, Department of Management
Ms. Maria Gomez Troncoso, Officer-in-Charge, JIU Secretariat
Mr. Byung-Kun Min, Programme Officer, OIOS
Ms. Agness Chilinda, Chief Resident Auditor, MONUC

INTERNAL AUDIT DIVISION

FUNCTION

“The Office shall, in accordance with the relevant provisions of the Financial Regulations and Rules of the United Nations examine, review and appraise the use of financial resources of the United Nations in order to guarantee the implementation of programmes and legislative mandates, ascertain compliance of programme managers with the financial and administrative regulations and rules, as well as with the approved recommendations of external oversight bodies, undertake management audits, reviews and surveys to improve the structure of the Organization and its responsiveness to the requirements of programmes and legislative mandates, and monitor the effectiveness of the systems of internal control of the Organization” (General Assembly Resolution 48/218 B).

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EXECUTIVE SUMMARY

Engineering and Construction Activities in MONUC

OIOS conducted an audit of engineering and construction activities in the United Nations Organization Mission in the Democratic Republic of the Congo (MONUC). The overall objectives of the audit were to assess: (i) the adequacy of the level and experience of staffing in the Engineering Section; (ii) compliance with regulations, rules and procedures; and (iii) the adequacy and effectiveness of internal controls. The audit was conducted in accordance with the International Standards for the Professional Practice of Internal Auditing.

OIOS identified several deficiencies which included a lack of approved Engineering Section Standard Operating Procedures (SOPs) for its various units and inadequate staffing levels within the Engineering Section. Moreover, the system for monitoring projects was not effective resulting in a risk of cost and time overruns and substandard work going unnoticed, as well as the risk of fraud not being detected, which is an inherent problem in all types of construction work. The audit also showed that the Mission had not recovered some \$85,000 for services provided to other UN organizations.

OIOS issued several recommendations which include: formulating SOPs to guide the work of the Engineering Section and constituent units; seeking approval for additional engineering staff resources; issuing directives for preparing cost estimates and completion reports; and recovering outstanding amounts from other organizations for the services provided.

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I. INTRODUCTION

1. The Office of Internal Oversight Services (OIOS) conducted an audit of engineering and construction activities in MONUC. The audit was conducted in accordance with the International Standards for the Professional Practice of Internal Auditing.
2. The Engineering Section, which is part of the MONUC Integrated Support Services has authorized civilian staffing for fiscal years 2005-2006 and 2006-2007 as follows.

**Table 1: Engineering Section Authorized Posts
FY 2005-2006 and 2006-2007**

	P5	P4	P3-P2	FS	GS	UNV	NS	Total
2005-2006	1	2	13	22	11	43	162	254
2006-2007	1	2	13	26	14	75	255	386
Variation	0	0	0	4	3	32	93	132

3. The budget allocation for the year 2005-2006 was \$40.3 million and expenditures totaled \$45.8 million. Funds were redeployed to address this shortfall. The major portion of the Engineering Section's budget for the year 2005-2006 (86.4 per cent) was used in Kinshasa and 13.6 per cent was allocated to the regional offices in Kisangani, Bunia, Goma and Bukavu as shown in Table 2 below.

Table 2: Engineering Section Budget Allocation 2005-2006

Name of Office	Allotment	Percentage
Kinshasa	\$34,827,400	86.38%
Kisangani	1,063,000	2.64%
Bunia	1,010,000	2.50%
Goma	1,892,000	4.69%
Bukavu	1,527,000	3.79%
TOTAL	\$40,319,400	100%

4. Comments made by the MONUC Administration are shown in *italics*.

II. AUDIT OBJECTIVES

5. The major objectives of the audit were to assess:
 - (a) The adequacy (level and experience) of staffing in the Engineering Section;
 - (b) Compliance with regulations, rules and policies during the planning, execution and monitoring phases of construction projects; and
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- (c) The adequacy and effectiveness of internal controls over the utilization, repair, maintenance and safeguarding of generators.

III. AUDIT SCOPE AND METHODOLOGY

6. The audit reviewed construction projects undertaken by the Engineering Section and the utilization, maintenance and safeguarding of generators from January 2005 to June 2006, and assessed the outsourcing of engineering projects to determine if the process is transparent. The auditors interviewed key staff, analyzed pertinent records and data and conducted site visits in the Kinshasa Region.

IV. AUDIT FINDINGS AND RECOMMENDATIONS

A. Lack of approved standard operating procedures

7. MONUC Administration approved and implemented Standard Operating Procedures (SOPs) on material management and water management in June 2005 and October 2006 respectively. The Engineering Section issued guidelines pertaining to engineering planning and operations, which were placed on the MONUC Intranet to provide guidance for engineering staff. However, comprehensive SOPs regarding the Engineering Plan & Design Unit, Engineering Operations, Generator Fleet Management Unit and Geographic Information System Unit were yet to be developed and approved.

8. The lack of approved SOPs results in inconsistencies in the performance of tasks. There is also a risk that new staff members would require extensive one-to-one coaching sessions with supervisors and colleagues to compensate for the lack of SOPs.

Recommendation 1

(1) The MONUC Administration should ensure that the Chief Engineering Officer develops and implements Standard Operating Procedures for all units/functions in the Engineering Section including Engineering Plan and Design, Engineering Operations and Generator Fleet Management.

9. *The MONUC Administration accepted recommendation 1 and stated that SOPs for the Engineering Section were work-in-progress aimed at aligning the day-to-day activities of engineering staff across the mission with best practices. In 2007 the existing SOPs, guidelines and references were consolidated into one library on the MONUC Policy and Practices Internet site. The MONUC Engineering Section's work-plan had also included a review of procedures as key objective. The achievement of this has only been partially met as a result of a lack of staff. Additional staffing have been requested and we expect favorable*

outcomes from the 2008/09 budget. Recommendation 1 remains open pending the receipt of copies of developed SOPs all units/functions in Engineering Section.

B. Inadequate staffing in the Engineering Section

10. General Assembly resolution 59/296, expressed concern about the use of individual contractors and other individuals engaged through non-regular mechanisms to perform functions of a continuing nature, and requested that missions seek the creation of posts to carry out such functions.

11. During the period under review, the Engineering Section had 355 authorized staff which included 101 posts of the former Facilities and Camp Management Unit that was reassigned to the Section. The Engineering Section had requested 106, 50 and 229 additional posts in the budget submissions for financial years 2004/05, 2005/06 and 2006/07 to provide engineering support for contingent deployment, meet increased requirements in field offices and to reduce reliance on casual daily workers (CDWs) who were engaged for protracted periods. Although the approved posts for the Engineering Section were mostly filled, the Section engaged CDWs such as generator operators, water treatment plant operators and skilled labor for construction work for extended periods. Engineering managers explained that CDWs were used to overcome the shortage of engineering staff. The Engineering Section estimates, that an additional 229 posts (see Table 3) were required to reduce the dependency on CDWs.

Table 3: Engineering Section Civilian Staffing 2006-2007

	P5	P4	P3/P2	FS/GS	UNV	NS	Total
Approved Posts	1	2	13	40	75	255	386
Requested Posts	1	2	16	47	83	466	615
Variation	0	0	3	7	8	211	229

FS/GS: Field Service/General Service; UNV: UN Volunteers; NS: National Staff

12. Inadequate staffing in the Engineering Section may result in over-reliance on CDWs, deficiencies in planning and supervision of tasks and delayed completion of engineering projects. MONUC may also face the risk of failing to complete prescribed periodic maintenance of generators due to understaffing.

Recommendation 2

(2) The MONUC Administration should review staffing requirements for the Engineering Section and seek approval for any additional staff in its budget submission to the Department of Field Support.

13. *The MONUC Administration accepted recommendation 2 and stated that MONUC had requested additional staffing for engineering functions across the*

Mission in recognition of the very poor support staff ratios. We expect favorable outcomes from the 2008/09 budget. Recommendation 2 remains open pending confirmation that the level of staff in the Engineering Section is sufficient to accomplish its functions without heavy reliance on casual labor.

C. Inadequacy of planning process

Lack of detailed cost estimates for in-house projects

14. The Engineering Section, due to the lack of staffing, did not prepare and approve detailed cost estimates for in-house construction including rehabilitation of Hangars 2, 3 and 4, renovation of the dispatch office and the generator workshop in Kinshasa. The Section prepared bills of quantities for Hangars 4 & 5 and requisitioned construction materials as needed and engaged casual daily workers to do the work.

15. Failure to prepare cost estimates may result in ineffective monitoring of projects and pose a risk of cost overruns. There is also a risk that excessive materials and labor may be requisitioned in the absence of approved cost estimates. Management is also not in a position to effectively monitor the use of materials used in the absence of cost estimates that provide a basis for comparison.

Recommendation 3

(3) The MONUC Administration should ensure that the Engineering Section develops guidelines for the preparation and approval of detailed cost estimates and utilizes them to effectively manage projects.

16. *The MONUC Administration accepted recommendation 3 and stated that the Mission would benefit from more stringent cost estimates, however considering the very fluid nature of peacekeeping operations engineering staff have to work under significant pressure due to tight deadlines, and changing client needs. In these cases, cost estimates can become meaningless, as they require continual review and up-dating. MONUC pointed out that all Engineering projects were defined and justified on one form (Form ES-1) and the required resources on another form (Form ES-2), which are approved, and can be used as a basis for monitoring and controlling of engineering resources (materials and labour). MONUC will review the success of the current procedures and implement necessary improvements. Recommendation 3 remains open pending confirmation that the system for developing cost estimates and monitoring adherence to them has been reviewed, and procedures have been implemented to ensure effective control over cost estimates versus actual costs of engineering projects.*

D. Execution and monitoring of projects

Monitoring engineering projects

17. The Engineering Section monitors the status and progress of construction work by using weekly reports which require several categories of information: work status and progress; casual daily workers status; materials; and miscellaneous items and issues of concern. Some offices did not provide complete information on the previous week's progress, including status of casual daily workers, materials and other miscellaneous issues. However, no action is taken when important information is not provided highlighting a weakness in the monitoring process. The progress report templates also varied from office to office.

18. Furthermore, the weekly reports did not contain information about the financial progress, and achievement of construction targets during the reporting period. Project progress reports or inspection reports pertaining to a car park in Kinshasa, renovation of the dispatch office and generator workshop and rehabilitation of hangars 3 and 4 were not available. The OIC, Engineering Section explained that weekly monitoring meetings were held even when the reports were not received. Minutes of the meetings were not prepared.

19. Lack of an effective monitoring system can pose the risk of cost and time overruns and substandard quality of work going unnoticed. There is also a risk of fraud not being detected, which is an inherent problem in all types of construction work. Such risks could be mitigated by adopting a suitable project monitoring system including programmes like MS Project, which is designed to assist project managers in developing plans, assigning resources to tasks, tracking progress, managing budgets and analyzing workloads.

20. As an example, a contract valued at \$103,899 for the construction of a car park in Kinshasa was signed with a contractor in June 2006. Article 12.1 of the contract stipulated that all work will be of good quality and free from improper workmanship and defective materials. The contractor agreed to replace defective materials at his own risk and expense within the maintenance warranty period of six months after substantial completion of the work. In addition, Article 12.2 of the contract stipulated that the contractor is required to furnish MONUC with a general written warranty covering a one year period for latent defects from the certified substantial completion of the work.

21. The work was substantially completed in September 2006. However, OIOS' site inspection identified a number of deficiencies. For example, the edges of some of the reinforced concrete cement curbs separating the parking spaces were broken and the joints were not properly filled with cement and cured as seen in the picture below. An adequate slope had not been provided for drainage of rain water and not all areas were evenly compacted as required by the scope of work.

Photograph 1: Example of poor quality work



22. The work was neither satisfactorily executed by the contractor as spelled out in the agreement nor was it adequately supervised by the Mission to detect deficiencies.

23. There was also a risk that the six-month warranty period may expire and that the contractor could claim a refund of the 10 per cent retention without addressing the defects. OIOS was pleased to find that in this case, the construction deficiencies were eventually corrected, nonetheless, in OIOS' view, corrective action would have been taken in a timely manner if there has been a strong monitoring mechanism in place over the implementation of construction projects.

Recommendation 4

(4) The MONUC Administration should adopt a formal planning and management system to effectively supervise and monitor construction work to ensure quality work is executed by contractors.

24. *The MONUC Administration accepted recommendation 4 and stated they would formalize its practices relating to work undertaken by the contractors and develop an SOP for Site Engineers in MONUC. The MONUC added that the management of the Onatra car park project involved formal site meetings and written instructions to the vendor through Procurement Section. The quality issues raised in the audit were addressed as the vendor was not paid for the defects mentioned. Recommendation 4 remains open pending receipt of a copy a SOP for Site Engineers in MONUC.*

Ineffective utilization of the car park

25. The car park discussed above had been constructed on an empty piece of land leased for \$26,400 per annum from a local company effective January 2006. The total cost of the project was \$203,553 consisting of \$103,899 for construction of the car park and \$99,654 for erecting offices for security officers and UN military observers responsible for protecting the vehicles. The car park had a capacity of 68 vehicles.

26. Although the effective date of the lease was January 2006, construction did not start until June 2006 due to delays in the contracting process. A total of \$11,000 was paid as rent for the period January to May 2006. In addition, the construction of the car park was substantially completed in September 2006, but utilization of the facility only commenced in July 2007 due to delays in developing a parking plan and assigning slots to staff. During this period, \$19,800 was paid in rent and security staff was paid \$26,460. OIOS would remind MONUC Administration to ensure that in the future, newly constructed facilities should be allocated to intended users in a timely manner to ensure effective utilization of assets.

Lack of completion reports for construction projects

27. The Engineering Section did not prepare completion reports, which *inter alia* are used to monitor project execution and to identify lessons learned. For instance there were no reports for: (a) construction of the car park; (b) the rehabilitation of Hanger 3, Congo Batiment; (c) rehabilitation of Hangar 4, Congo Batiment; and (d) renovation of Dispatch Office and Generator Workshop Unit.

28. OIOS was informed that the completion reports were not prepared because there were no guidelines requiring engineering staff to do so. The lack of completion reports can result in failure to detect the inefficient implementation of projects, and learn from past mistakes.

Recommendation 5

(5) The MONUC Administration should issue guidelines for engineering staff on how to prepare completion reports. The drafting of such reports will enable MONUC to learn from past mistakes and to ensure more effective project implementation in the future.

29. *The MONUC Administration accepted recommendation 5 and stated that the drafting of completion reports would strengthen the controls already in place. Recommendation 5 remains open pending the development of clear guidelines on drafting completion reports to supplement the forms (ES-1 and ES-2) that are already in place.*

E. Generator Fleet Management Unit

Inadequate long-term maintenance of generators

30. Generator Maintenance Guidelines for DPKO Peacekeeping Missions provide for mandatory periodic maintenance of continuously running and stand-by generators. The 906 generators installed in the mission area were maintained by the Generator Fleet Management Unit (GFMU) daily, every 250 hours and after 10,000 hours of operation. However, the recommended maintenance after 1500 hours, 3,000 hours and 6,000 hours was never carried out.

31. The weekly, 3-monthly, 12-monthly and 24-monthly maintenance schedule recommended by DPKO for standby generators was also not followed by the generator staff. There were no controls in place to oversee the adequate maintenance of generators by the supervisory staff.

32. The GFMU had not adopted the DPKO Guidelines nor developed its own periodic maintenance schedules to provide adequate maintenance of UN-owned generators in accordance with manufacturer-suggested maintenance schedule. Lack of appropriate maintenance will adversely affect the useful life and performance of generators. Also considering that most personnel involved in the maintenance of generators are French speakers, relevant guidelines and procedures should be translated where necessary.

Recommendation 6

(6) The MONUC Administration in conjunction with the Chief Engineer should adopt and disseminate generator maintenance guidelines and operating instructions regarding daily and periodic maintenance of generators to ensure efficient performance of the generators.

33. *The MONUC Administration accepted recommendation 6 and stated that MONUC Engineering would issue new SOPs and training guides across the Mission that would adhere strictly to manufacturer specifications and meet or exceed DPKO/DFS guidelines. The MONUC Administration would also ensure that the SOPs covered any generators that meet the "standby" criteria. Recommendation 6 remains open pending development and dissemination of SOPs relating to generator maintenance to staff with copies to OIOS.*

Integrity of maintenance tracking module in Galileo

34. The generator maintenance tracking module in the Galileo system contained discrepancies in the recorded costs. For example, the maintenance tracking report showed generator maintenance costs of \$27,318 while the work order document, ENG-WO1-05-00169, dated 17 May 2005 showed \$13,699 and

the remarks column showed a total of \$14,040. For the same period, the maintenance tracking report showed costs of \$19,805 while the supporting work order ENG-WO1-05-00190 dated 9 June 2005 showed repair costs of \$9,926.50 while the remarks column showed \$10,358.51. The supervisor could not explain these differences and promised to look into this matter. In addition, the name of the document creator and the receiver of materials were blank. The unit in charge of GFMU explained that the data was corrupted during its migration to Galileo in September 2005.

35. Lack of data integrity results in unreliable management and financial reporting. For example, a review of repair and maintenance data items for four out of ten selected generators for the period May 2005 to July 2006 revealed that expenditures were overstated by \$29,083 in the maintenance tracking module report (See Annex 2).

Recommendation 7

(7) The MONUC Administration should ensure that all financial errors relating to generator maintenance are brought to the attention of Galileo database administrators for corrective action.

36. *The MONUC Administration accepted recommendation 7 and stated that it is concerned about these apparent anomalies arising after the data migration to Galileo. The discrepancies noted have been reported to the Galileo database administrator for necessary action.* Recommendation 7 remains open pending receipt of evidence that corrective action taken and the reasons for the financial errors have been identified and satisfactorily resolved.

Non-recovery of cost of support services provided to other organizations

37. The SOP for the provision of support services to other organizations on a cost recovery basis required the advance recovery of the cost of services after approval of the request for services by the Director of Mission Support. Section 2.7.3 of Field Finance Procedure Guidelines provided for a charge of a 14 per cent administrative fee for providing services.

38. Four MONUC-owned generators were provided to UNDP and WHO offices in Kindu in May 2005 and May 2006 for the provision of electricity. The UNFPA and WFP also connected to the generators in January and December 2006. The Administration provided fuel and oil for the generators from May 2005 to December 2006.

39. There was no evidence that the cost of providing these items to the UN agencies was recovered. OIOS calculated that a total of \$84,907 was recoverable from the agencies for the services provided, as follows:

Cost of fuel (65,704*\$1.12)	\$73,588
Cost of oil (495.5*\$1.80)	892
Total	\$74,480

Add: 14% administrative fee	10,427
Total recoverable cost	\$84,907

Recommendation 8

(8) The MONUC Administration should recover \$84,907 from four UN agencies (UNDP, WHO, UNFPA and WFP) for the cost of fuel and oil for generators and the related 14 per cent administrative fee for the period from May 2005 to December 2006.

40. *The MONUC Administration accepted recommendation 8 and stated that the recommendation is being implemented immediately. The Chief of Administrative Services has been instructed by the Director of Mission Support to send a strong written reminder to all the agencies involved to pay the cost of the services provided. Recommendation 8 remains open pending confirmation by OIOS that \$84,907 has been recovered from UN agencies provided services by MONUC.*

V. ACKNOWLEDGEMENT

41. We wish to express our appreciation to the Management and staff of MONUC for the assistance and cooperation extended to the auditors during this assignment.

STATUS OF AUDIT RECOMMENDATIONS

Recom. no.	C/O ¹	Actions needed to close recommendation	Implementation date ²
1	O	Receipt of copies of developed SOPs all units/functions in Engineering Section	31 March 2009
2	O	Confirmation that the level of staff in the Engineering Section is sufficient to accomplish its functions without heavy reliance on casual labor.	June 2008
3	O	Confirmation that the system for developing cost estimates and monitoring adherence to them has been reviewed, and procedures have been implemented to ensure effective control over cost estimates versus actual costs of engineering projects.	June 2008
4	O	Submission of a SOP for Site Engineers in MONUC.	December 2008
5	O	Receipt of copies of clearer guidelines on drafting completion reports to supplement the forms (ES-1 and ES-2) that are already in place.	June 2008
6	O	Dissemination to staff of SOPs relating to generator maintenance.	July 2008
7	O	Evidence that corrective action taken and the reasons for the financial errors have been identified and satisfactorily resolved.	Not provided
8	O	Confirmation by OIOS that \$84,907 has been recovered from UN agencies provided services by MONUC.	Immediate

1. C = closed, O = open

2. Date provided by MONUC in response to recommendations.