



INTERNAL AUDIT DIVISION

REPORT 2016/142

Audit of engineering projects in the United Nations Multidimensional Integrated Stabilization Mission in the Central African Republic

There was a need for effective mechanisms to plan, implement and monitor major construction projects

5 December 2016
Assignment No. AP2015/637/05

Audit of engineering projects in the United Nations Multidimensional Integrated Stabilization Mission in the Central African Republic

EXECUTIVE SUMMARY

The objective of the audit was to assess the adequacy and effectiveness of governance, risk management and control processes over engineering projects in the United Nations Multidimensional Integrated Stabilization Mission in the Central African Republic (MINUSCA). The audit covered the period from 14 September 2014 to 31 July 2016 and included reviews of initiation, planning, implementing, monitoring and management of projects.

MINUSCA had prepared standard operating procedures for engineering services and assigned project managers to all major construction projects. However, there was a need for effective mechanisms to plan, implement and monitor major construction projects, as well as establish a mechanism for tracking costs and ensuring timely completion of major engineering projects.

The Office of Internal Oversight Services made six recommendations. To address issues identified in the audit, MINUSCA needed to:

- Conduct detailed technical and environmental impact assessments before starting any major construction project;
- Provide guidance and training to project managers and take appropriate actions to ensure that detailed project plans are prepared, reviewed and approved for all major construction projects;
- Strengthen the monitoring and oversight of major construction projects ;
- Ensure project files are properly maintained; and
- Ensure that project managers monitor outsourced projects.

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Audit of engineering projects in the United Nations Multidimensional Integrated Stabilization Mission in the Central African Republic

I. BACKGROUND

1. The Office of Internal Oversight Services (OIOS) conducted an audit of engineering projects in the United Nations Multidimensional Integrated Stabilization Mission in the Central African Republic (MINUSCA).

2. The Engineering Section was responsible for providing all engineering services in MINUSCA including: planning, designing, constructing and/or maintaining and refurbishing buildings, camps and utility plants. As at June 2016, out of 119 engineering projects planned to be implemented from 2014 to 2016, 41 were completed, 74 were in progress and 4 had not started. These projects included: (a) 52 major (or high value) in-house construction projects such as the construction and maintenance of staff and contingents' accommodations and offices, aircraft parking, waste management disposal yard and power stations with individual budgets of at least \$1 million; (b) 19 minor in-house projects such as the construction of military camps, drilling water wells, rehabilitation of buildings; and (c) 48 minor outsourced construction projects such as, perimeter block walls, walkways, concrete slabs, hangars, Jersey barriers, concrete t-walls and gates. The activities of the Section were guided by the Departments of Peacekeeping Operations (DPKO) and Field Support (DFS) Guidelines on Governance of Major Construction Projects in the Field Missions and Mission-specific standard operating procedures.

Table 1: Engineering construction project as of June 2016 (amounts in \$'000 USD)

Project category	Cost	Number of projects	Completed	Ongoing	Not yet started
Major in-house construction	\$102,831	52	6	42	4
Minor in-house construction	11,375	19	3	16	0
Minor outsourced construction	3,443	48	32	16	0
Total	\$117,649	119	41	74	4

3. The Engineering Section was headed by a Chief Engineer at the P-5 level who reported to the Chief Service Delivery at the D-1 level. The Section had 77 approved posts for fiscal year 2015/16 comprising 41 international, 1 United Nations volunteer and 34 national staff.

4. The budgets for the Engineering Section were \$72.6 million and \$88.5 million for fiscal years 2014/15 and 2015/16 respectively.

5. Comments provided by MINUSCA are incorporated in italics.

II. AUDIT OBJECTIVE, SCOPE AND METHODOLOGY

6. The objective of the audit was to assess the adequacy and effectiveness of governance, risk management and control processes over engineering projects in MINUSCA.

7. This audit was included in the 2015 risk-based work plan of OIOS due to the operational and financial risks related to engineering projects.

8. OIOS conducted this audit from May to August 2016. The audit covered the period from 14 September 2014 to 31 July 2016. Based on an activity-level risk assessment, the audit covered higher and medium risks areas in construction projects, which included: initiation, planning, implementing, monitoring and management of projects, including outsourced ones.

9. The audit methodology included: (a) interviews of key personnel, (b) review of relevant documentation, (c) analytical reviews of data, (d) review of records for all 52 major construction projects with individual cost of at least \$1 million and total cost of \$102 million initiated during the audit period, and (e) physical observation of construction projects in five sectors.

III. OVERALL CONCLUSION

10. MINUSCA had prepared standard operating procedures for engineering services and assigned project managers to all major construction projects. However, MINUSCA needed to: (a) conduct detailed technical and environmental impact assessments before starting any major construction project; (b) ensure that detailed plans are prepared, reviewed and approved for all major construction projects; (c) strengthen the monitoring and oversight of major construction projects; and (d) ensure that project managers complied with established requirements for monitoring outsourced projects.

IV. AUDIT RESULTS

A. Project initiation

Technical and environmental impact assessments of major construction projects need to be documented

11. The MINUSCA standard operating procedures on the management of engineering projects require the Engineering Section to: (i) conduct detailed technical assessments, carry out site/topographical surveys, and site measurements; and (ii) coordinate with the Environment Unit to ensure the completion of an environmental assessment before the implementation of each project.

12. The Engineering Section advised that it had conducted technical assessments for major construction projects. However, a review of records for all 52 major construction projects and interviews with the Chief Engineer indicated the lack of evidence for these assessments and the Section did not coordinate with the Environmental Unit to obtain environmental impact assessments. This was because the Mission did not implement measures to enforce the requirement for the Engineering Section to conduct detailed technical assessments before starting any major construction project. Therefore, there was no assurance that MINUSCA had identified appropriate site/land to implement its construction projects and the environmental impact and possible mitigating measures. For example, MINUSCA:

- Acquired a greenfield site in Bambari in February 2015; however, the head of the sector office and substantive sections refused to relocate to the new site stating that it was too far from local communities. In March 2016, the Mission identified and requested for another site to build additional offices and accommodation units; however, the host Government did not approve the request. As a result, staff in Bambari were still working and living in substandard conditions.
- Began constructing new offices and accommodation units at various sites; however, there was no evidence of environmental impact assessments for these sites to establish action plans and measures to be undertaken to ensure effective waste management at those locations.

(1) MINUSCA should implement measures to ensure that the Engineering Section conducts detailed technical assessments and coordinates with the Mission’s Environmental Unit to obtain environmental impact assessment before starting any major construction project.

MINUSCA accepted recommendation 1 and stated that it would look into the establishment of a full-time position for a Waste Management Officer and recruit a senior engineer on temporary duty to supplement the resources of the Engineering Section in addressing environmental matters. Recommendation 1 remains open pending receipt of evidence that MINUSCA has allocated additional staffing resources to the Engineering Section and is conducting detailed technical and environmental impact assessments for major construction projects.

B. Project planning

Need for improved planning of major construction projects

13. The MINUSCA standard operating procedures on the management of engineering projects require designated project managers to prepare detailed plans for all major construction projects identifying project activities, requirements, sequence, timing and milestones.

14. A review of files for all 52 major construction projects indicated that the Engineering Section did not prepare detailed project plans for any of these projects. This occurred because the Section had not provided adequate guidance and trained project managers. As a result, there was no evidence and assurance could not be provided that all potential impediments had been considered such as delayed delivery of construction materials, weather conditions and the capacities of military engineering companies, which invariably impacted on the timely completion of projects. For instance: (a) the Mission procured prefabricated units on 15 January 2015, which were delivered only in the first quarter of 2016; (b) deliveries of construction material and equipment such as cement, electrical cables, water pipes and generators from Bangui to sectors and subsectors were delayed, delaying the completion of the prefabricated units; and (c) the Engineering Section assigned projects to military engineering companies, which was later found to be inadequately equipped and staffed to handle the assigned tasks.

(2) MINUSCA should provide guidance and training to project managers and take appropriate actions to ensure that detailed plans are prepared, reviewed and approved for all major construction projects.

MINUSCA accepted recommendation 2 and stated that major construction projects were mostly implemented using in-house engineering teams and the major challenges relating staffing would be overcome after allocating adequate staff to the Section. The Mission also advised that it would provide engineering staff with relevant training. Recommendation 2 remains open pending receipt of evidence that MINUSCA has allocated sufficient staffing resources to the Engineering Section and provided the required guidance and training to project managers.

C. Project implementation

Need for improved monitoring of major construction projects

16. The DPKO/DFS Engineering Support Manual requires MINUSCA to: implement its construction projects within timeframes established in the relevant plans; and maintain records of engineering activities including project budgets and actual costs, planned and actual start dates of projects, planned and actual completion dates and details of change orders. The MINUSCA standard operating procedures

on the management of engineering projects require designated project managers to: prepare a detailed project management plan identifying project activities, sequence, timing and milestones; and submit weekly progress reports to the Chief Engineer for review.

17. A review of files for all 52 major construction projects indicated that MINUSCA: (a) did not start four in-house projects on schedule in 2015/16 including the construction of waste and property disposal yard at various locations in MINUSCA; and (b) was delayed in implementing 13 major construction projects with an estimated value of \$22 million for extended periods, for instance, one project was delayed by 537 days, another by 417 days, and 11 others were delayed by an average of 37 days. The 13 projects included renovation/construction of offices and accommodations and other support infrastructure such as the drilling of water wells. As a result, there were substandard living conditions for civilian staff and some contingent personnel were still working and residing in tents two years after the inception of the Mission.

18. The above occurred due to the lack of detailed project planning referred to in the preceding observation and a lack of monitoring and oversight of projects as indicated below:

- Weekly progress reports were sometimes inaccurate. As a result, there was a reduced capacity of the Chief Engineer to take corrective actions. For example, although weekly progress reports included the activities completed and the challenges faced, they did not contain information on the actual materials and labour used and the percentage of completion were inaccurate. OIOS site visit to Bambari on 25 July 2016 indicated that the construction of a contingent camp was near completion; however, it was reported as 25 per cent complete in the report for the week ended 30 June 2016. Also, the ground preparation for the construction of a prefabricated integrated camp in Berberati was still ongoing as at 20 July 2016, but the report for the week ended 30 June 2016 showed that construction works were 40 per cent complete.
- The Mission only established the Project Management Group (PMG) in April 2016 to formally review and approve projects and related changes; oversee the planning and execution of major construction projects; and provide direction in all aspects of projects being implemented. Even though the Mission had provided the PMG with terms of reference, as at 31 July 2016, the Group's discussions in all three of its meetings focused mainly on the purpose of the PMG, its scope and composition, instead of performing its mandated functions.

19. Additionally, the Engineering Section did not maintain any form of records with summaries of actual project costs and was therefore unable to determine the actual costs of MINUSCA projects. MINUSCA did not implement a system for recording engineering activities even though the Galileo system had a project estimation and cost tracking module, which could have been used to monitor the status of projects, including estimation of labour, materials and actual cost through work orders. As a result, MINUSCA did not effectively monitor projects to ensure their timely completion within approved resources. This posed a further risk of financial loss and reduced capacity of the Mission to implement its mandate.

(3) MINUSCA should take actions to strengthen the monitoring and oversight of major construction projects by the Engineering Section and the Project Management Group, respectively.

MINUSCA accepted recommendation 3 and stated that it was crucial for the PMG to establish the Mission's priority projects in close coordination with client stakeholders and to increase efficiency in implementation, monitoring and oversight of projects. Recommendation 3 remains open pending receipt of evidence that MINUSCA has strengthened the monitoring and oversight of

major construction projects by the Engineering Section and PMG, respectively.

(4) MINUSCA should implement a system for tracking, monitoring, analyzing and reporting the actual costs of engineering projects.

MINUSCA accepted recommendation 4 and stated that it was following the procedures established by DFS for the valuation of assets under construction and advised that the Engineering Section had used Galileo to open project work orders and capture costs as accurately as possible. However, capturing full cost of projects would be possible only after Galileo is decommissioned next year to align assets and materials with Umoja. Recommendation 4 remains open pending receipt of evidence that MINUSCA has implemented a system for tracking, monitoring, analyzing and reporting the actual costs of construction projects.

Project files not well maintained for major construction projects

20. The DPKO/DFS Guidelines on the Governance of Major Construction Projects in Field Missions require project managers to maintain project files containing project approvals, meeting minutes and decisions made, as well as project planning documents, environmental impact assessments, and project completion reports. The MINUSCA standard operating procedures for management of major engineering projects require the Engineering Section to maintain the following records to ensure effective implementation of projects: approved drawings, related maps, bills of quantity, as-built drawings, and minutes of meetings.

21. A review of the files for 20 of 52 ongoing or completed major construction projects during the audit period indicated that the files did not contain, among others, the following documents: appropriate project approvals, project plans, initial assessments, project completion reports, and bills of quantity.

22. The above occurred because the Engineering Section management did not implement adequate supervisory procedures and provide necessary guidance to ensure the maintenance of project files. As a result, there was a risk that the required procedures were not complied with. There was also an increased risk of loss of important documents to support the design and implementation of construction projects.

(5) MINUSCA should implement adequate supervisory control procedures to ensure that complete project files are maintained.

MINUSCA accepted recommendation 5 and stated that the Engineering Section would update project files with the missing documents. Recommendation 5 remains open pending OIOS verification that complete project files are being maintained.

D. Management of outsourced projects

Need for monitoring of outsourced engineering projects

23. The MINUSCA standard operating procedures on the management of outsourced engineering activities requires the Chief Engineer to appoint a project manager to: (a) supervise the day-to-day management of the project; (b) obtain weekly progress reports of contractors; (c) conduct quality control of the contractors' work; (d) obtain project completion reports before certifying payments of final invoices; (e) conduct weekly and monthly progress and performance review meetings with the contractor; and (f) evaluate the performance of each contractor with regards to quality, delivery, timeliness as well as other performance indicators regarding promised goods, services or works.

24. The Mission had outsourced 48 minor construction projects to two contractors since January 2016. These projects comprised of, among others, the construction of perimeter block walls, walkways, concrete slabs, hangars, Jersey barriers, concrete t-walls and various types of gates. A review of files for 14 out of 48 outsourced projects indicated that the Engineering Section did not: (a) ensure that the contractor submitted the required weekly progress reports for 5 out of 14 projects; (b) provide evidence of quality control in any of the 14 sampled projects; and (c) submit project completion reports for 4 projects for which MINUSCA made the final payments to the contractors in the amount of \$212,513. Additionally, the Section did not conduct weekly or monthly performance meetings with the contractors during the audit period.

25. The above resulted because the Engineering Section did not implement adequate supervisory and review procedures to ensure that project managers comply with established requirements.

26. Inadequate monitoring and supervision of outsourced engineering projects may lead to poor quality of work, increased cost and delay in project completion thereby affecting the operations of the Mission. For example, the contractors indicated that they were delayed in implementing four projects for periods ranging from 7 to 60 days because of lack of construction materials and poor weather conditions.

(6) MINUSCA should implement adequate supervisory and review procedures to ensure that project managers comply with established requirements for the monitoring of outsourced projects.

MINUSCA accepted recommendation 6 and stated that with the expected increase in staffing capacity, the Engineering Section would implement adequate supervisory procedures in the monitoring of all projects. Recommendation 6 remains open pending receipt of evidence that project managers are complying with established requirements for the monitoring of outsourced projects.

V. ACKNOWLEDGEMENT

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

(Signed) Eleanor T. Burns
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Office of Internal Oversight Services

STATUS OF AUDIT RECOMMENDATIONS

Audit of engineering projects in the United Nations Multidimensional Integrated Stabilization Mission in the Central African Republic

Rec. no.	Recommendation	Critical ¹ / Important ²	C/ O ³	Actions needed to close recommendation	Implementation date ⁴
1	MINUSCA should implement measures to ensure that the Engineering Section conducts detailed technical assessments and coordinates with the Mission's Environmental Unit to obtain environmental impact assessment before starting any major construction project.	Important	O	Receipt of evidence that MINUSCA has allocated additional staffing resources to the Engineering Section and is conducting detailed technical and environmental impact assessments for major construction projects.	January 2017
2	MINUSCA should provide guidance and training to project managers and take appropriate actions to ensure that detailed plans are prepared, reviewed and approved for all major construction projects.	Critical	O	Receipt of evidence that MINUSCA has allocated sufficient staffing resources to the Engineering Section and provided the required guidance and training to project managers.	31 July 2017
3	MINUSCA should take actions to strengthen the monitoring and oversight of major construction projects by the Engineering Section and the Project Management Group, respectively.	Critical	O	Receipt of evidence that MINUSCA has strengthened the monitoring and oversight of major construction projects by the Engineering Section and PMG, respectively.	July 2017
4	MINUSCA should implement a system for tracking, monitoring, analyzing and reporting the actual costs of engineering projects.	Important	O	Receipt of evidence that MINUSCA has implemented a system for tracking, monitoring, analyzing and reporting the actual costs of construction projects.	July 2017
5	MINUSCA should implement adequate supervisory control procedures to ensure that complete project files are maintained.	Important	O	OIOS verification that complete project files are being maintained.	31 July 2017
6	MINUSCA should implement adequate supervisory and review procedures to ensure that project managers comply with established requirements for the monitoring of outsourced projects.	Important	O	Receipt of evidence that project managers are complying with established requirements for the monitoring of outsourced projects.	31 July 2017

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 MINUSCA in response to recommendations.

APPENDIX I

Management Response

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Rec. no.	Recommendation	Critical ⁵ / Important ⁶	Accepted? (Yes/No)	Client comments ⁷
1.	MINUSCA should implement adequate and effective measures to ensure that detailed technical assessments are conducted by the Engineering Section and the Section coordinates with the Mission Environmental Unit to obtain environmental impact assessment before the commencing of any major construction project.	Important	Yes	According to the response from the USG/DFS's fax dated 04/10/2016, the mission shall look into establishment of full time position for Waste Management Officer. Additionally a P-5 senior engineer on TDY to supplement Engineering Section in environmental matters is advised. This would increase capacity of the section in assisting Environmental Unit for necessary assessment, fact findings, etc. Implementation likely January 2017.
2.	MINUSCA should provide guidance and training to project managers and take appropriate actions to ensure that detailed project management plans are prepared, reviewed and approved for all major construction projects.	Critical	Yes	Projects in the cost range of \$5,000-\$100,000 is called major construction projects. These projects are mostly implemented via Engineering in-house team handling various daily tasks with frequently changing priorities. Understaffing still remains as bottleneck and will be over with finalization of 2016-17 staff on board. The current challenge leads to incomplete documentations in the office due to the site engineers having fully occupied on the field. IMTC to advise relevant training for Engineering staff to attend. Additionally in-house training will be arranged. Deadline to complete missing documents and training - 31 July 2017.
3.	MINUSCA should take actions to strengthen the monitoring and oversight of major construction projects by the Engineering Section and the Project Management Group, respectively.	Critical	Yes	It is crucial the Project Management Group establishes mission priority projects in close coordination with client stakeholders to assist Engineering for realignment of resources to increase efficiency in implementation, monitoring and oversight of the projects. Engineering Section and Project Management Group are going to do to strengthen the monitoring and oversight of major construction projects. Deadline July 2017.
4.	MINUSCA should implement a system for tracking, monitoring, analyzing and reporting the actual costs of engineering projects.	Critical	Yes	Engineering reports to UNHQ monthly basis AUCs (assets under construction) for those above US\$100,000 threshold. The report includes infrastructure, fixed buildings and mobile assets according to DFS catalogue. Cost tracing is also incorporated with information manually entered in Galileo. With the implementation

⁵ 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.

⁶ 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.

⁷ Please indicate feasibility and realistic timelines for implementation of the recommendation.

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Rec. no.	Recommendation	Critical ⁵ / Important ⁶	Accepted? (Yes/No)	Client comments ⁷
				<p>of IPSAS RE, this is the only cost tracking, monitoring system accepted by the DFS.</p> <p>In the previous financial years Engineering opened Project Work Orders (PWO) in Galileo according to DFS catalogue of Infrastructure and Fixed Buildings for each location to enable issuing expendables accordingly and to register cost capturing as accurate as we can. Expendable materials started being registered as per PWO in Galileo for Infrastructure and Fixed building. Then drawings have been developed according to Real Estate Infrastructure and Fixed Buildings assets with completion of codification as at today. The drawings of the projects can be submitted upon request. AUC Reporting documents and UMOJA Internal orders was completed in 2014-15 financial year as whole but from Nov 2015 onwards we began to report AUCs monthly basis as per the instruction from the UNHQ. Engineering weekly progress reports sent from sections and Bangui projects have been modified since then as per the DFS catalog to fit into the expected reporting format in valuation and reports are being sent regularly as at today.</p> <p>In brief, full cost capturing in projects (regardless of cost magnitude) is possible only after decommissioning of Galileo next year to align assets and materials database connection to UMOJA. Basically what is currently happening in all missions is GALILEO and UMOJA not communicating with each other electronically in the system leading to inaccuracy in cost capturing. The matter to be addressed as required when transition is materialized. Tentative timeline is Jul 2017.</p>
5.	MINUSCA should implement adequate and effective supervisory control procedures to ensure that complete project files are maintained.	Important	Yes	The missing documentation in the project files to be completed by 31 July 2017.
6.	MINUSCA should implement adequate supervisory and review procedures to ensure that project managers comply with established requirements for the monitoring of outsource	Important	Yes	With the expected increased capacity of Engineering, the section will implement adequate supervisory in monitoring all projects by 31 July 2017.

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Rec. no.	Recommendation	Critical⁵/ Important⁶	Accepted? (Yes/No)	Client comments⁷
	projects.			