





INTERNAL AUDIT DIVISION

AUDIT REPORT

Road repairs and maintenance projects in UNMIS

3 March 2008 Assignment No. AP2007/632/04 INTEROFFICE MEMORANDUM

MEMORANDUM INTERIEUR

INTERNAL AUDIT DIVISION # DIVISION DE L'AUDIT INTERNE OFFICE OF INTERNAL OVERSIGHT SERVICES | BUREAU DES SERVICES DE CONTRÔLE INTERNE

то: Mr. Ashraf Jehangir Qazi

DATE: 3 March 2008

A. Special Representative of the Secretary-General United Nations Mission in the Sudan

REFERENCE: IAD: 08- 0/0 \$ 4

FROM Dagfinn Knutsen, Director

DE: Internal Audit Division, OIOS

ECT: Assignment & SUBJECT: Assignment No. AP2007/632/04 - Road repairs and maintenance projects in UNMIS 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 recommendations 4 and 6 in the OIOS recommendations database as indicated in the annex (see Annex I). In order for us to close the remaining recommendations, we request that you provide the additional information as discussed in the text of the report and also summarized in the annex.
- 3. Please note that OIOS will report on the progress made to implement its recommendations, particularly those designated as critical (i.e., recommendations 2, 4 and 6), in its annual report to the General Assembly and semi-annual report to the Secretary-General.

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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

Road repairs and maintenance projects in UNMIS

The Office of Internal Oversight Services (OIOS) conducted an audit of road repairs and maintenance projects in the United Nations Mission in the Sudan (UNMIS) from June to August 2007. The overall objectives of the audit were to evaluate the: (i) adequacy of the Mission's planning procedures for road repairs and maintenance; (ii) efficiency and effectiveness of planning and execution of road repairs and maintenance projects; and (iii) timeliness in deployment of resources. The audit was conducted in accordance with the International Standards for the Professional Practice of Internal Auditing.

UNMIS approved budgets for road infrastructure projects in 2005/06 and 2006/07 aimed at repairing and maintaining almost 3,000 kms of roads to encourage the use of ground transportation and reduce air transport costs. The Mission identified main supply routes to be upgraded in order to provide all year round links between South and North Sudan. In two years of operations, no progress was made except for the installation of two bridges in the earlier period. Total allotments of approximately \$40 million for two years were not spent due to a change in priorities toward construction of pre-fabricated camp accommodation and office premises. Other major findings are as follows:

- Road maintenance plans were not definitive and operational guidelines had not been established;
- One of the bridges installed collapsed in less than one year of its construction, and the Mission had not repaired it, a year after the damage was reported;
- The Mission's collaboration with other interested UN agencies to develop commonly used routes was not successful resulting in the loss of valuable opportunities for cost effective implementation of its projects.

OIOS issued a total of six recommendations to the Mission to address the above weaknesses. The Mission accepted most of the recommendations.

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I. INTRODUCTION

- 1. The Office of Internal Oversight Services (OIOS) conducted an audit of road repairs and maintenance projects in the United Nations Mission in the Sudan (UNMIS) from June to August 2007. The audit was conducted in accordance with the International Standards for the Professional Practice of Internal Auditing.
- 2. The Mission's mandate regarding road infrastructure is to upgrade and maintain gravel roads considered important in achieving its objectives. The condition of the inland transportation network in Sudan has forced the Mission to depend mostly on air transport. However, to reduce air transportation costs, the Mission identified main supply routes on which to focus the upgrading of roads to provide year round links between South and North Sudan. About 700 kms and 2,240 kms of roads were earmarked in budget years 2005/06 and 2006/07 respectively for repairs and regular maintenance, of which 80 per cent were in South Sudan. The priorities for upgrading these roads were based on the need to:
- (a) Connect the sector headquarters to the main supply routes;
- (b) Connect the sector headquarters with their respective team sites; and
- (c) Interconnect South and North Sudan by a reliable road network.
- 3. The UNMIS Engineering Section is responsible for planning, implementing and coordinating road projects. The Section is also responsible for assigning engineering projects to military engineers. Table 1 shows the military engineering troop strength and their initial arrival dates.

Table1: Data on Military Engineering Companies

Sector	Military Engineering Companies	Troop strength	Arrival in the Mission
Sector 1 – Juba	Bangladesh Engineers	275	May – June 2005
Sector 2 - Wau	Chinese Engineers	275	March - May 2006
Sector 3 - Malakal	Indian Engineers	275	May - October 2005
Sector 4 - Kadugli	Egyptian Engineers	275	July - October 2005
Sector 5 - Ed Damazin	Pakistan Engineers	274	Aug. 05 -89, Jan. 06 - 185
Sector 6 – Abyei	Zambian Engineers	50	September 2005
TOTAL		1,424	

- 4. The approved UNMIS budget for road infrastructure projects was \$13 million in 2005/06 and \$26.88 million in 2006/07. In addition, \$4 million was allotted in the latter period for the acquisition of essential road construction materials.
- 5. Other organizations operating in South Sudan were involved in upgrading and maintaining roads. These organizations include the World Food Programme (WFP), the Government of South Sudan, and the United Nations Office for Project Services (UNOPS). The Mission was collaborating with these organizations in opening commonly used routes.
- 6. Comments made by the Mission are shown in *italics*.

II. AUDIT OBJECTIVES

- 7. The major objectives of the audit were to assess:
 - (a) The adequacy of the Mission's planning procedures for road repairs and maintenance;
 - (b) The effectiveness and efficiency of the planning and execution of road repair and maintenance projects; and
 - (c) The Engineering Section's timeliness in deploying resources for road projects.

III. AUDIT SCOPE AND METHODOLOGY

- 8. The audit covered road infrastructure projects and resource utilization for the periods 2005/06 and 2006/07, and reviewed planning, resource mobilization, execution and coordination of road repair and maintenance projects with other sections and partners.
- 9. The auditors: (a) reviewed procedures, guidelines, and budgets on road infrastructure projects; (b) analyzed cargo movement statistics in the Mission area; (c) interviewed responsible Mission personnel and road project partners; and (d) visited sites in Southern Sudan.

IV. AUDIT FINDINGS AND RECOMMENDATIONS

A. Planning for road projects

Road infrastructure planning

- 10. The Engineering Section had not developed definitive plans with a detailed scope of work, cost estimates and timelines for project implementation in its 2005/06 and 2006/07 budget periods. However, the Section had prepared a concept paper detailing its approach to maintaining roads, which involved forming road maintenance teams and acquiring UN-owned equipment (UNOE) to supplement the work of the military engineering companies. A total of 41 pieces of UNOE had been received by the end of June 2007, and 31 were in procurement status. However, senior management decisions in August 2006 to prioritize projects related to camp accommodation and office premises curtailed progress on road projects. Subsequent quarterly reviews had not elevated road projects in the Mission's priority list until close of the budget period.
- 11. Furthermore, the Section had not developed operational guidelines for implementing road projects. These are important in ensuring that available

resources for implementing road projects are utilized in a safe, efficient and cost effective manner.

Recommendation 1

- (1) The UNMIS Engineering Section should develop a road maintenance plan and operational guidelines to ensure successful implementation of road project
- 12. The UNMIS Administration accepted recommendation 1 and stated that it had drafted a set of road maintenance and management standard operating procedures (SOPs) that would be tested and completed in a pilot project by May 2008. Recommendation 1 remains open pending receipt from the Mission of a copy of the final road maintenance and management SOPs.

B. Implementation of road projects

Programme performance

- 13. The Engineering Section's Results Based Budget (RBB) for the period 2005/06 aimed at achieving access to all sector headquarters for ground transportation of goods and personnel within 240 days of the start of the Mission's mandate, including demining and repairs to roads and bridges. The RBB framework envisaged repairs and maintenance of 700 kilometers and 2,240 kilometers of roads in 2005/06 and 2006/07 respectively.
- 14. The actual output during the two budget periods was the construction of two bridges by military engineers in 2005/06. There were no road maintenance or repair activities during the period. In its 2006/07 RBB monitoring database, the section attributed the cause of this non-performance to: (i) the Mission management's reluctance to use commercial contractors in road maintenance; (ii) the low capacity of the military engineering companies; and (iii) non-availability of UNOE.
- 15. OIOS' examination of requisitions raised in both periods showed that approval had not been granted for outsourcing of road projects due to the shortage of local contractors, long procurement lead times and cost factors. Mission management explained that the Procurement Section at that time lacked adequate staffing capacity to handle major engineering contracts. In anticipation of huge efficiency gains from the use of military engineers, a decision was made not to outsource road projects.
- 16. According to the 29 April 2005 UNMIS Concept of Operations, the construction engineering companies were to give priority to reconstruction of main supply routes, keeping the routes open and supporting the establishment of contingent camps. All military engineering contingents had arrived in the Mission by the close of the 2005/06 period (See table 1) accompanied by 128 pieces of contingent owned equipment. A spare capacity of 41 pieces of UNOE had been acquired for road projects. However, senior management decisions in

August 2006 to prioritize hard-wall accommodation projects had restricted tasking of the military engineers to road projects.

17. There was no clear basis for changing the priorities of military engineers to building hard-wall accommodation. A cost benefit analysis had not been done showing the benefits of replacing air by surface transport. The poor condition of the main supply routes put pressure on air assets sometimes causing delays in the delivery of materials. Furthermore, some of the heavy engineering equipment brought by the troops for road work was underutilized for which the Mission incurred a monthly recurring cost of \$308,000. This issue will be taken up in an ongoing audit on the management of contingent owned equipment.

Use of allotted budgets for road infrastructure projects

- 18. The total assessed budget for 2005/06 and 2006/07 allocated to road repairs and maintenance was \$13 million and \$26.9 million respectively. No expenditures were incurred in either year against the budgets. Funds allocated in 2005/06 budget were returned at the close of the year unobligated while the entire allotment for 2006/07 was redeployed in August 2006 to hard-wall accommodation projects leaving no funds available for implementing road projects.
- 19. A separate acquisition budget of \$4 million in 2006/07 had been set aside for procurement of road maintenance materials such as bridges, culverts, soil stabilizers and gabion mattresses. The Engineering Section did not mobilize the materials by close of the year obligating only \$0.6 million of the allotted budget.
- 20. In OIOS' view, the Mission made little progress toward accomplishing the infrastructure mandate. Although it had justified funding for road projects, generally funds were not used for this purpose. Furthermore, the Concept of Operations indicates that the deployment of 1,424 military engineers at the start of the 2006/07 budget period was intended to assist in the construction of hardwall accommodation and other projects such as road work. Outsourcing could have augmented the military engineering capacity in view of successes achieved by other UN agencies such as WFP which upgraded over 2,000 kilometers of roads in its two years of operation using commercial contractors.

Recommendation 2

- (2) The UNMIS Administration should develop longterm strategic plans based on the justifications made in its approved budgets to embark on a road repair and maintenance programme.
- 21. The UNMIS Administration accepted recommendation 2 and stated that it was developing strategic plans in coordination with other road partners in South Sudan (World Bank, WFP and USAID). Ten roads had already been identified and the first, Yei to Maridi would commence as a pilot project once security clearance was obtained. Recommendation 2 remains open pending receipt from the Mission of a copy of the integrated roads plan with other road

partners and OIOS' verification of measures taken to implement road mandates according to approved budgets.

Installation of bridges

- 22. The Engineering Section had initiated transfers of five bailey bridges from other missions of which two had already been received in the Mission's logistics base in El Obeid in June 2005 and February 2006.
- 23. The first bridge was split and installed in two sections of the Juba to Yei road in October and November 2005 by military engineers. The task order had indicated that standard base plates as anchoring bolts had not been supplied with the bridging set and a concrete base had to be improvised. However, the anchor support of one of the bridges (Kulipapa bridge) had broken in less than a year from the date of its installation.
- 24. Other road partners raised this issue with the Mission in September 2006 and the Mission engineers made a site visit a month later. However, recommendations for re-opening the bridge have not been acted upon. In a letter dated 22 August 2007, the Government of South Sudan assessed the bridge as unfit for usage (See photo 1) and called upon the Engineering Section of UNMIS to urgently take steps to rectify the situation.



Photo 1 – Kulipapa Bridge on Juba – Yei Road, August 2007

25. Regular monitoring of Mission priority routes and routine maintenance as required is essential to averting permanent damage to road structures, as well as safeguarding the reputation of the UN where structures erected by the Mission pose a danger to road users.

Recommendations 3 and 4

The UNMIS Engineering Section should:

- (3) Take steps to re-open the Kulipapa Bridge without further delay; and
- (4) Carry out scheduled monitoring of roads on Mission Priority Routes and take remedial actions in a timely manner to avert further damage.
- 26. The UNMIS Engineering Section accepted recommendations 3 and 4, and stated that construction work to re-launch the failed Kulipapa Bridge had started, with the estimated completion date of 28 February 2008. In addition to the Engineering Section's road reconnaissance visits, the Mission had also established a system for reporting road conditions by the UN Military Observers while they are performing their monitoring and verification activities. Based on the action taken by the Mission, recommendation 3 will remain open pending confirmation by the Mission of the completion of the repair of the failed bridge, while recommendation 4 has been closed in OIOS' recommendations database.

C. Coordination with other UN agencies

- 27. The report of the High-level Panel on United Nations System-wide Coherence in areas of development, humanitarian assistance and the environment (GA document A/61/583 dated 20 November 2006) on 'Delivering as one' underscores the need for the United Nations to overcome its fragmentation and deliver as one through a stronger commitment to working together on the implementation of one strategy, in the pursuit of one set of goals.
- 28. Other UN agencies namely WFP, UNOPS and the UN Mine Action Office (UNMAO) were involved in repairs and maintenance of roads. The Mission was collaborating with these partners through attending joint monthly transport and demining meetings. These meetings aimed at harmonizing work plans and interests of different partners to avoid possible "perceived competition" and interference with ongoing road contracts.
- 29. Table 2 below shows UNMIS planned road infrastructure projects of approximately 1,597 kms in Mission Priority Routes that were overlapping with those of other UN agencies.

Table2: Areas of Collaboration with other Road partners

Name of Road	Kms	Other Road Partners	
Wau - Gogrial - Abyei Road	237	WFP	
Kaya - Yei - Juba Road	160	WFP	
Yei - Faraksika road	130	WFP	
Faraksika – Maridi - Yambio road	185	UNOPS	
Faraksika - Rumbek road	220	WFP	
Juba - Bor Road	100	WFP	
Rumbek - Tonj - Wau Road	200	WFP	

Juba - Torit - Kapoeta - Narus Road	365	WFP	
TOTAL	1,597		

Collaboration with WFP on Wau-Gogrial-Abyei Road

- 30. In 2005/06 budget period, both UNMIS and WFP had planned to upgrade the Wau-Gogrial-Abyei road. The entire stretch of approximately 237 kms was estimated to cost \$15 million for which WFP had secured \$5 million. The agency had already sourced a commercial contractor, but experienced a funding gap of \$10 million, and approached the Mission in November 2005 with a proposal to partner in the project.
- 31. Negotiations began in November 2005 and by April 2006 all related documents were received from WFP. Management explained that an initial misunderstanding about sharing project documents delayed submission of the proposal to DPKO until 23 May 2007. A request raised by DPKO on 22 June 2007 to provide a concept paper detailing the project's benefit and potential savings was not met in view of the time constraint to the close of the 2005/06 fiscal year. The funds were not obligated resulting in the lapse of a pending draft Memorandum of Understanding with WFP.
- 32. Collaborating with WFP in this project was important in opening the western corridor connecting North and South Sudan and reducing dependency on air transport. For instance, a review of cargo movement data from the Mission Logistics base in El Obeid for the two years prior to May 2007 showed that there was:
 - Very limited access for surface transport to Juba, the regional headquarters of South Sudan with only one attempt having been made; and
 - High dependency on aircraft for sector headquarters and adjoining team sites served by the route (see table 3 below).

Table3: Summary of cargo movement from El Obeid to Sectors (July 2005 to May 2007)

	Juba		Wau		Rumbek		Aweil	
Mode	Tons	%	Tons	%	Tons	%	Tons	%
Air	3,257	68%	1,670	48%	598	61%	380	62%
Road	839	17%	1,813	52%	379	39%	235	38%
Barge	722	15%	- 1	0%	-	0%		0%
TOTAL	4,818	100%	3,483	100%	977	100%	615	100%

Provision of road construction materials to partners

33. UNMIS stated that in early 2006/07 budget period it was unable to commit its equipment and manpower to road projects since the resources were tied up in construction of office and living accommodation. However, it intended to complement efforts of other partners on Mission priority routes by providing panel bridges, culverts and gabion mattresses used to control soil erosion.

- 34. In a 20 January 2007 meeting in Juba, UNMIS requested the other UN agencies, WFP and UNOPS to provide their material requirements regarding Mission priority routes in order to raise early requisitions. The Engineering Section received the detailed requests in February 2007 and altered earlier requisitions to reflect the requirements. In May 2007, the Mission reported in the Transport and Demining Steering Group meeting that it had two kilometers of culverts, one Bailey bridge already delivered in Juba and nine other Bailey bridges expected by year end.
- 35. However, UNMIS did not consistently provide the agreed upon materials:
 - WFP requests for culverts to the Mission's offices in Juba were not met. As reported in the May 2007 Transport and Demining Steering Group meeting, there were only enough culverts to meet the camp's construction requirements and none could be issued to partners. The Missions' requisitions for culverts in February 2007 had not been filled by the close of the year, accounting for the Mission's inability to partner in the projects.
 - UNOPS had offered to erect the Bailey bridge on behalf of UNMIS. The Mission had identified Bandame Bridge in the Juba to Yei road for replacement because its condition had deteriorated (See Photo 2 below). The bridge delivered in Juba in April 2007 has not been installed to date pending delivery of special toolkits currently stored in the Mission's logistic base in El Obeid.



Photo 2 – Bandame Bridge on Juba-Yei Road

- Out of the nine other bridges expected to be delivered by the close of the year, only three were acquired by mid -2007.
- 36. Mission management explained during the exit conference that correspondence between the Engineering Section and the partners was informal and requirements had not been formally communicated to managers in UNMIS headquarters.
- 37. In OIOS' view, the Mission had raised expectations with the partners which were not met thereby resulting in the loss of valuable opportunities for cost effective implementation of road projects.

Recommendation 5

- (5) The UNMIS Administration should establish formal mechanisms for engaging other interested partners and enhance collaboration efforts to facilitate cost effective and timely delivery of road infrastructure projects.
- 38. The UNMIS Administration accepted recommendation 5 and stated that the Mission was attending the monthly stakeholders' meetings coordinated by the UN joint logistics team in an effort to 'deliver as one' and formally addressing partners' requests. Further, the acquisition of culverts and bridges were at various stages of the procurement process. Recommendation 5 remains open pending OIOS' verification of the minutes of the UN joint coordination meetings and formal communication (such as memorandum of understanding and official correspondence) established with other partners for the effective delivery of common projects.

Demining of roads for repairs and maintenance

- 39. The Mission submitted its road priorities to the United Nations Mine Action Office on 1 October 2006 with instructions to clear roads for emergency use. The International Mine Action Standards do not specify the minimum clearance width for roads. However, in practice UNMAO clears roads to a minimum 8 meters, standard for emergency use with the width varying for different uses.
- 40. The UN agencies, including the UNMAO were of the view that an 8 meter width was not adequate to ensure the safety of workers implementing road infrastructure projects. The agencies had expanded clearance widths to 26 meters at their own expense to allow room for turning and parking of heavy equipment, construction of storm water drainage structures and access to materials on the roadside such as gravel.
- 41. However, a total of 12 roads, 1,700 kms in length (See Table 4) and earmarked for maintenance during the 2007/08 budget period had been cleared up to 8 meters wide. Expanding the width would require additional funding that had not been provided in the current road maintenance budget.

Table4: Mission Priority Routes Cleared of Mines to 8 metres width

#	Mission Supply Route (MSR)	Distance in Kms
1	Yei – Faraskika Road	130
2	Faraskika - Maridi - Yambio	185
3	Malakal Merlut	160
4	Ed Damazin - Dindirou - Kurmuk	150
5	Wau – Aweil	100
6	Kadugli – Kauda	100
7	Juba – Bor	100
8	Juba – Torit – Kapoeta – Narus	365
9	Malakal – Nasser	200
10	Kadugli – Julud	100
11	Kadugli – Talodi	80
12	Malakal – Doleib Hills	30
110	TOTAL	1,700

42. Mission management noted that the initial eight meter clearance was aimed at the emergency opening of roads and agreed that the width of cleared areas needed to be expanded in certain sections during road maintenance but not along the entire road.

Recommendation 6

- (6) The UNMIS Administration should assess mine risk threats with respect to the width of cleared roads in implementing its future road projects and take appropriate safety measures.
- 43. The UNMIS Administration accepted recommendation 6 and stated that it had developed a mine awareness, security and safety checklist in its roads maintenance and management SOPs, to be followed by road maintenance teams. The Security Section also coordinates and obtains regular updates from the UN Mine Action Office (UNMAO), and issues security clearance for all personnel movements in the Mission area. Based on the action taken by the Mission, recommendation 6 has been closed.

V. ACKNOWLEDGEMENT

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

STATUS OF AUDIT RECOMMENDATIONS

Recom.	C/		Implementation
no.	\mathbf{O}^{1}	Actions needed to close recommendation	date ²
1	0	Submission to OIOS of a copy of the final road maintenance and management SOPs.	31 May 2008
2	0	Submission to OIOS of a copy of the integrated roads plan with other road partners and OIOS' verification of measures taken to implement road mandates according to approved budgets.	Not provided
3	0	Submission of completion reports for re-launch of the bridge	28 February 2008
4	С	Action completed	Implemented
5	0	Submission to OIOS of copies of the minutes of the UN joint coordination meetings and formal communication (such as MoUs, official correspondence) with the partners	Not provided
6	С	Action completed	Implemented

¹ C = closed, O = open ² Date provided by UNMIS in response to recommendations