



OIOS

Office of Internal Oversight Services

INTERNAL AUDIT DIVISION

AUDIT REPORT

Capital Master Plan change orders and associated processes

Change orders should be approved in accordance with delegated authorities before commencement of work

8 April 2010

Assignment No. AC2009/514/03

United Nations  Nations Unies

INTEROFFICE MEMORANDUM

MEMORANDUM INTERIEUR

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

TO: Ms. Angela Kane, Under-Secretary-General for
A: Management

DATE: 8 April 2010

Mr. Michael Adlerstein, Assistant Secretary-General and
Executive Director, Capital Master Plan

REFERENCE: IAD: 10- 00233

FROM: Fatoumata Ndiaye, Director
TO: Internal Audit Division, OIOS

SUBJECT: **Assignment No. AC2009/514/03 – Audit of Capital Master Plan change orders and associated processes**
OBJET: **processes**

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 13 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. In the case of recommendations 3, 4, 7-11, 14 and 15, these recommendations remain open pending further examination of change orders to be conducted by OIOS later in 2010/2011.
3. Please note that OIOS will report on the progress made to implement its recommendations, particularly those designated as high risk (i.e., recommendations 3, 4, 5, 7, 10 and 14) in its annual report to the General Assembly and semi-annual report to the Secretary-General.

cc: Mr. Warren Sach, Assistant Secretary-General, Office of Central Support Services
Mr. Swatantra Goolsarran, Executive Secretary, UN Board of Auditors
Ms. Susanne Frueh, Executive Secretary, Joint Inspection Unit
Mr. Moses Bamuwamye, Chief, Oversight Support Unit, Department of Management
Mr. Byung-Kun Min, Special Assistant to the USG-OIOS
Mr. William Petersen, Chief, New York Audit Service, OIOS

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

Audit of Capital Master Plan change orders and associated processes

OIOS conducted an audit of Capital Master Plan (CMP) change orders and associated processes. The overall objective of the audit was to examine the change order process to determine whether changes have been well controlled. The audit was conducted in accordance with the International Standards for the Professional Practice of Internal Auditing.

The major findings of OIOS were as follows:

- (a) Work has been started before change orders have been approved. The work authorization forms used effectively commit expenditures, but have been approved outside the prescribed delegation of authority issued by the Assistant Secretary-General, Office of Central Support Services.
- (b) Change orders have taken an average of 58 days to approve, with those approved by the CMP Executive Director taking 14 days less than those approved by using the standard procurement procedures under the delegation of authority to the Director of Procurement Division.
- (c) Change orders have most commonly arisen because designs were incomplete when bids were solicited for guaranteed maximum price contracts. The Assistant Secretary-General and Executive Director of the CMP stated that this was primarily because of changes in user requirements on the part of staff being relocated to swing space.

OIOS made 16 recommendations to address the major findings of the audit. The Office of the CMP accepted all the recommendations.

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I. INTRODUCTION

1. The Office of Internal Oversight Services (OIOS) conducted an audit of capital master plan (CMP) change orders and associated processes. The audit was conducted in accordance with the International Standards for the Professional Practice of Internal Auditing.

2. The United Nations has entered into a Preconstruction Services Agreement (27 July 2007) and more recently a Coordination Agreement (18 May 2009) with Skanska USA Building Inc. Skanska is hereafter referred to as the construction manager. The United Nations and the construction manager will enter into approximately 21 construction management agreements with guaranteed maximum price (GMP contracts) for the different projects that together comprise the entire CMP project. Each of the GMP contracts is the subject of change orders that could:

- alter the specification or scope
- increase or decrease the cost or duration
- affect other work packages or tasks
- have other contractual implications

3. It is important that changes are properly assessed and approved so that they are not the source of avoidable delays, cost and scope creep.

4. Comments made by the Office of the Capital Master Plan are shown in *italics*.

II. AUDIT OBJECTIVES

5. The main objectives of the audit were to:

- (a) Determine whether the procedures associated with change orders had been recorded and provided adequate control;
 - (b) Determine whether change orders had been approved in a timely manner by a delegated official;
 - (c) Gain assurance that works that were the subject of change orders were not included in existing contracts;
 - (d) Ascertain whether change orders were logically related to their principal contracts;
 - (e) Determine whether change orders had resulted from inadequate planning, drawings or specification;
 - (f) Determine whether change orders had been used to conceal underlying disputes or claims;
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- (g) Ascertain whether change orders have had an adverse effect on financial planning; and
 - (h) Determine whether payments have been accurate and on time.

III. AUDIT SCOPE AND METHODOLOGY

6. OIOS reviewed relevant records including change orders and their supporting documents, and management information produced by the Office of CMP and the construction manager. OIOS interviewed personnel of the Office of CMP, the construction manager and the consultant programme manager. This audit was carried out concurrently with a related audit entitled 'Audit of CMP project budgeting and financial control processes' (AC2009/514/06). It was decided to carry out objective (h) to check that payments related to change orders have been accurate and on time as a part of that audit.

IV. AUDIT FINDINGS AND RECOMMENDATIONS

A. Change orders and associated risks

7. Change orders may be initiated at the request of either the Office of CMP or the construction manager. However, all change orders are issued at the direction of the United Nations ('the Owner'). The construction manager obtains cost estimates from the trade contractors for the works that are required. These costs are subject to scrutiny and negotiation between the construction manager and the trade contractors, with the construction manager acting in the Owner's interest by providing the initial checking of the trade contractors' submissions, before the change order is signed and passed on to the Office of CMP for approval. Change orders are then subjected to further detailed checking by the designers, the consultant programme manager, project managers and the Office of CMP's Director of Construction prior to approval. The checks made can be lengthy with many supporting documents to be reviewed and discussed. Change orders may be approved using the established procurement procedures, or by the CMP Executive Director under his delegated authority.

8. Change orders are of interest to project managers and auditors alike because an inadequate system of change control can affect the successful outcome of a project. Risks that are associated with poor change order management include:

- (a) Changes in scope may not reflect the original business case and could result in failure to meet the original project objectives.
- (b) Change orders may be used because bids for work were solicited before designs and specifications were complete.

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- (c) Change orders may result in increases in cost and failure to meet the original budget.
 - (d) Delays caused by changes may result in late handover of the project, and costs incurred to take mitigating measures.
 - (e) Changes may result in unintended consequences ('knock on' effects) on associated contracts and operations.
 - (f) Changes may result in stakeholder dissatisfaction.
 - (g) Change orders may be used to conceal underlying inefficiencies, or to avoid issues that would be more appropriately dealt with through dispute procedures.
 - (h) Change orders could adversely affect construction quality and finish. For example, if new installations have to be dismantled and reassembled to accommodate new wiring or other services.

B. Documented procedures

Coordination agreement

9. A Coordination Agreement was signed between the construction manager and the United Nations and has an effective date of 18 May 2009. Article 5 of the Construction Management Agreement includes both parties' obligations with regard to change orders and controls such as requiring change orders to be in writing, information to be provided by the construction manager, approvals by the two parties, allowable cost and fees, and impact on scheduling.

Project Manual

10. The Coordination Agreement requires the construction manager to conform to the Project Manual. (The Project Manual was prepared under the terms of the Preconstruction Services Agreement which preceded the Coordination Agreement). OIOS examined relevant sections and flowcharts of the Project Manual which is included on the construction manager's CMP TeamSite web page. Procedures that were included in the manual were found to be adequately recorded and understood by relevant personnel.

Delegation of authority

11. As a part of its comprehensive audit of the capital master plan (A/63/266, dated 11 August 2008), OIOS identified a significant risk that procedural delays in approving change orders could impact the construction schedule. OIOS recommended that the CMP Executive Director be granted an appropriate level of delegated authority to approve change orders, subject to an *ex post facto* review by a contract review committee.

12. On 15 January 2009, the Assistant Secretary-General, Office of Central Support Services (ASG, OCSS) wrote to the CMP Executive Director granting him the authority to approve change orders subject to certain checks and procedures. This delegation was limited so that the total of change orders approved by the CMP Executive Director for a GMP contract would not exceed 10 per cent of its value, and a single change order would not exceed \$5 million. A key control specified by the ASG, OCSS for this delegation was that all change orders authorized by the CMP Executive Director, shall also be subject to *ex post facto* review by a committee established for this purpose. The ASG OCSS wrote again to the CMP Executive Director on 24 November 2009 and stated that he had established a Post Award Review Committee (PARC) and it was expected to commence its operation that month. It is planned that PARC's activities will be reviewed as a part of a forthcoming 2010 audit to be conducted by OIOS.

Procurement manual

13. The Procurement Manual is a key governance document that is issued and maintained by the Procurement Division. It brings together policies, procedures and activities dealing with the UN procurement process and includes sections that are relevant to change orders.

14. OIOS concluded that the governance framework and procedural documentation related to change orders, if properly applied, is adequate for the control of change orders by the Office of CMP. The checks, certifications and meetings that are required between project staff of the construction manager, designers, consultant programme managers, project managers and the Director of Construction provide ample opportunity for scrutiny and objections to be raised prior to final approval of change orders by the CMP Executive Director under his delegated authority, or processed through the standard procurement procedures. The present audit found that the levels of checks and reviews by the staff of the construction manager, the Office of CMP and its consultants offer reasonable assurance that the works that are the subject of change orders were not included in the scope of existing contracts.

Other documented procedures

15. A working method has been adopted as the project has proceeded whereby works are authorized to commence prior to change orders being approved. A standard form has been used to obtain signatures from personnel from the construction manager, consultant programme manager and Office of CMP. The form then requires that signed authorization be obtained from one of four senior personnel of the Office of CMP; either the CMP Executive Director, the Director of Construction, the Director of Facilities or the Chief of Design and Construction.

16. A work authorization procedure flowchart has been prepared by the Office of CMP, but has not yet been consolidated into the Project Manual. OIOS is of the opinion that commencing work before approval of change orders does

not comply with UN procurement rules. This is further discussed in paragraphs 20 - 29 below.

Recommendation 1

(1) The Office of the Capital Master Plan should ensure that the Project Manual is kept up to date when new procedures are introduced.

17. *The Office of the Capital Master Plan accepted recommendation 1 and stated that the Project Manual is updated on a regular basis and the Office of the CMP will ensure that it is updated with the most recent changes as of 30 June 2010. Recommendation 1 remains open pending confirmation that the Project Manual has been updated with the most recent changes.*

C. Contract management matters related to the documented procedures

The Construction Management Agreement

18. The Construction Management Agreement (Article 5, paragraph 5.5.2) stipulates that “there shall be no fee on changes in the work to be undertaken for the Project until such time as the net amount of changes exceeds \$1 million...” However, fees have been applied from the outset and it would be appropriate for the UN to be reimbursed. OIOS calculates the reimbursable amount at \$29,500 (\$1 million x 2.95%). This could be achieved by the construction manager reducing fees in future change orders, or by making payment back to the United Nations.

Recommendation 2

(2) The Office of the Capital Master Plan should seek reimbursement from the construction manager for the fees charged on the initial \$1 million paid for change orders.

19. *The Office of the Capital Master Plan accepted recommendation 2 and stated that the Office has sought reimbursement and will monitor and ensure that such reimbursement is made. Recommendation 2 remains open pending confirmation that reimbursement has been received.*

Work authorizations

20. The Construction Management Agreement (Article 5, paragraph 5.3) states that “no written or oral instructions shall be construed as directing Change Work unless in the form of a Change Order signed by the Owner and the Construction Manager...” This reflects sound procurement practice, as this is also addressed in the Procurement Manual (paragraph 13.7.8) which states: “No corporate contractor shall commence work on an assignment until a valid contract, duly signed and dated by the contractor and countersigned and dated by the authorized representative of the United Nations, has been established.”

However, in the course of the audit, it was observed that it has been common practice for work to be initiated before a change order has been approved using work authorization forms that have been generally approved by the Office of CMP's Director of Construction. In a sample of 25 work authorizations for the North Lawn Conference Centre that were examined by OIOS, the work authorization forms had been approved around 20 days before a change order was submitted by the construction manager, and 65 days before a change order was approved by the Owner.

21. There are risks to both parties of a contract by proceeding with works before a change order has been approved. The amount to be charged is not agreed in advance, and if it is later rejected by the United Nations, then a dispute may arise with the construction manager. On the other hand, carrying out the approval process before works on a change order commence could result in costly delays to a GMP contract with further consequential adverse effects on other contracts. In some cases a judgement was made to proceed with works prior to their approval as the cost of delay would exceed the benefit of obtaining prior approval. This course of action relies on a level of trust between the construction manager and personnel of the Office of CMP that goes beyond the terms of the contract. OIOS' enquiries have all indicated that relationships between the construction manager and the United Nations' team remain positive and there have not been any disputes.

22. OIOS recognizes that efforts have been made to minimize the risks presented by proceeding with works before the change order has been approved. Acceptable rates are known for different trades and are enforced by the Office of CMP and the consultant programme manager. Unit prices of commodities are also checked and checks are made of all supporting documentation by different disciplines within the project team. Site supervision is applied and a series of meetings are held to enhance coordination within the project organization.

23. Work authorization forms include an 'Order of Magnitude' financial estimate and details of the works to be carried out and grant approval to the construction manager to execute trade contracts as necessary to accomplish this work. OIOS is of the opinion that the use of work authorization forms has effectively replaced the issuance of change orders. This is not in compliance with the delegation of authority granted by the Assistant Secretary-General, Office of Central Support Services to the CMP Executive Director, as work authorizations have been used to execute changes that have been approved by a staff member who has not been delegated the authority to commit expenditure. The sub-delegation of the CMP Executive Director's delegation was limited to \$5,000 and subject to conditions. OIOS found that most work authorizations exceeded this amount and had an average order of magnitude of \$98,845 for the 153 work authorizations that had been approved as at 22 January 2010 for the North Lawn Conference Building, 380 Madison Avenue and 305 East 46th Street contracts.

24. OIOS discussed the procedures using work authorizations with the Office of CMP and the Procurement Division. The motivation for adopting the procedure was to ensure that essential and urgent works proceeded without delay

to the schedules. In this respect it would be useful to review whether the delegation to approve change orders should be extended to include the Director of Construction. It may also be appropriate to review the level of delegation granted to the CMP's Procurement Officer.

25. The Office of CMP stated that it is not always possible to gauge the exact cost of the works at the time work authorizations are issued as it may involve cost elements that cannot be accurately quantified in advance. OIOS is of the opinion that compliance with regulations and rules would be best achieved by reverting to using change orders to be approved in advance using the approved level of delegation either within the Office of CMP, or Procurement Division. In the event that costs cannot be accurately determined at the time of the change order, the change order could include a clear statement that the final amount payable would be subject to verification and checks by personnel of the Office of CMP and their consultants, prior to approval for payment. It would be prudent for the Office of the CMP to consult with the Office of Legal Affairs to finalize a suitable statement.

Recommendation 3

(3) The Office of the Capital Master Plan should stop using work authorization forms to commence works that will be included as changes to a guaranteed maximum price contract.

26. *The Office of the Capital Master Plan accepted recommendation 3 and stated that in March 2010 the Office ceased using the work authorization form and introduced a new form titled "Change Order – Value of Work to be determined."* Recommendation 3 remains open pending a further examination of change orders to be conducted by OIOS later in 2010/2011.

Recommendation 4

(4) The Office of the Capital Master Plan should ensure that change orders are approved in advance of associated works commencing, and only by authorized persons in accordance with the delegation of authority.

27. *The Office of the Capital Master Plan accepted recommendation 4 and stated that it agreed with the intention of this recommendation and will seek to implement it, but noted the paramount importance of not interrupting or delaying the CMP construction schedule. Unforeseen field conditions will on occasion require immediate decision-making in order to maintain the pace of construction work. Delays to the project can be exceedingly expensive, upwards of \$14 million per month. In the event that the construction manager commences work prior to the receipt of a finalized change order, it is with the understanding that any fiduciary obligation remains subject to negotiation and final commitment on the part of the authorized delegated official, whether the Director of Procurement or the Executive Director of the CMP. The form explained in the comments in response the Recommendation 3 above was developed in response to OIOS'*

concerns and is considered to be an appropriate step taken to address OIOS' observation. Recommendation 4 remains open pending further examination of change orders to be conducted by OIOS later in 2010/2011.

Recommendation 5

(5) The Office of the Capital Master Plan should ensure that change orders include a statement making it clear that the final amount payable will be subject to verification and checks by personnel of the Office of CMP and their consultants, prior to approval for payment. The Office of Legal Affairs should be consulted prior to the wording of the statement being finalized.

28. *The Office of the Capital Master Plan accepted recommendation 5 and stated that implementation was in progress. Recommendation 5 remains open pending confirmation that implementation has been finalized.*

Recommendation 6

(6) The Office of the Capital Master Plan should review the existing delegation of authority for approving change orders and, if appropriate, request the Assistant Secretary-General, Office of Central Support Services to revise the delegation. Similarly, the Director of the Procurement Division should review the CMP Procurement Officer's delegation of authority and if appropriate request a revised delegation from the Assistant Secretary-General, Office of Central Support Services.

29. *The Office of the Capital Master Plan accepted recommendation 6 and stated that a review would be undertaken in 2010. Recommendation 6 remains open pending the results of the review.*

D. Analysis of change orders

The overall picture

30. OIOS reviewed management information that was available within the Office of CMP. A summary of change orders as at 18 November 2009 is given at Annex 2. At that time, 194 change orders with a total value of \$41,995,724 had been approved. A further 106 change orders with an estimated value of \$14,957,645 had been submitted and were deemed to be 'outstanding', (i.e. not yet approved).

31. The level of approved change orders as at 18 November 2009 had resulted in a 7.8 per cent overall increase in contract prices. The different projects comprising the CMP have been the subject of varying changes as at that date and this is partly explained by the fact that some projects are complete and occupied, while others are in different stages of construction and more changes

could be processed as they progress. As at 18 November 2009, the three CMP projects that had been the subject of most changes were:

- **380 Madison Avenue** had been the subject of 11 change orders that had added 44.1 per cent (\$14,997,511) to the cost of the contract.
- **The North Lawn Conference Building** had been the subject of 94 change orders that had added 16.1 per cent (\$21,494,756) to its cost.
- **305 East 46th Street** had been the subject of 71 change orders which had added 14.1 per cent (\$3,133,806) to its cost.

32. In addition to the approved change orders there were a number categorized as 'outstanding' and these change orders had been submitted for approval but were still undergoing checks and certifications prior to being approved. If these outstanding change orders are approved, this will increase the value of work executed by means of change orders. Annex 2 gives a more detailed summary of change orders as at 18 November 2009.

33. Because of the risks outlined at paragraph 7 above, project managers generally consider it best practice to seek to minimize the number of changes that a project is subjected to. There is no correct or generally accepted ideal level of change orders, but OIOS' research indicates that up to 5 per cent of construction costs is not unusual and this is borne out by the American Institute of Architects. Opinions from the staff of the construction manager and Office of CMP varied from less than 10 per cent up to 17 per cent. OIOS observes that it is common for contracts to allow a 10 per cent contingency.

34. A sample of change orders was selected for examination and a larger sample was selected for the GMP contracts where changes had resulted in a higher proportion of added costs (i.e. the three contracts identified in paragraph 30 above). The average approval time for change orders has been 58 calendar days (with considerable variances around this figure). The checks made before approval are considerable and involve a number of different personnel, but OIOS holds the view that these should be speeded up. The target to approve a full GMP contract has been set at 30 days (although this target has not been met: Internal Audit Report AC2009/514/02, Audit of the construction manager's procurement process refers). Twenty-two of the 171 (13 per cent) change orders issued for 380 Madison Avenue, North Lawn Conference Centre and 305 East 46th Street took longer than 100 days to be approved.

Recommendation 7

(7) The Office of the Capital Master Plan should set realistic targets for review and approval of change orders, and make every effort to reduce approval times.

35. *The Office of the Capital Master Plan accepted recommendation 7 and stated that during the course of 2010 the Office will seek to further reduce approval times for change orders. Recommendation 9 remains open pending further examination of change orders to be conducted by OIOS later in 2010/11.*

The CMP Executive Director's delegated authority to approve change orders

36. The aim of granting the delegation of authority to the CMP Executive Director was to enable change orders to be processed faster than would have been the case had normal procurement procedures been applied. Nonetheless, when possible, the CMP Executive Director has not used his delegated authority and normal procurement procedures have been followed. This has increasingly been the case as construction work has progressed. As at 18 November 2009, only 60 out of 188 (32 per cent) approved change orders had been approved by the CMP Executive Director. The remainder were approved using the delegation of authority to the Director of the Procurement Division.

37. OIOS determined that the aim of speeding up approvals had been achieved by granting the delegation to the Executive Director. The time to approve change orders by this delegated authority has averaged 14 days less than occasions when the standard procurement processes were used. However, it still exceeded the time target for full GMP contracts.

38. At the time of OIOS' examination, the average duration of the approval process was as follows:

| | |
|--|---------|
| Overall average approval time for all change orders: | 58 days |
| Ave. approval time when CMP Exec. Director used delegated authority: | 48 days |
| Ave. approval time when using standard procurement procedures: | 62 days |

39. OIOS conducted checks and determined that the change orders that had been approved by the CMP Executive Director were in compliance with the financial limits of his delegated authority.

E. Review of change orders

40. OIOS examined selected change orders in detail. Emphasis was given to change orders from the three guaranteed maximum price contracts where analysis had shown that there had been a greater proportion of works carried out by change orders (paragraph 30 refers). It was not practicable for OIOS to examine all of the change orders that had been approved because change orders of the magnitude examined are generally supported by lengthy documentation and correspondence, together with contractors' quotations and cost calculations.

General observations

41. Some observations were made that were common to change orders for all GMP contracts. These are presented below:

- (a) Calculations applied by the construction manager were checked and found to be correct and in accordance with the contract.
- (b) Price calculations from trade contractors were found to have been checked by the construction manager and consultant programme managers. OIOS' checks confirmed their accuracy.

(c) It has been common for comments and arithmetical adjustments to be made on supporting documents by staff of the construction manager, designers, consultant programme managers or the Office of CMP. Sometimes these were not signed, or the signature was not legible. It would be preferable for persons making handwritten notes to use a rubber stamp giving their name and organization.

(d) Change orders were approved correctly and in accordance with laid down procedures, with the exception of works commencing before change orders have been approved as discussed in paragraph 20 above.

(e) Change orders that resulted in extension in the 'contract time for performance' provided the extension in the form of a number of days. (For example: 'Contract Time for Performance is extended by 28 Calendar Days'). For the sake of clarity, and in case of possible future disputes and contested liquidated damages, OIOS considers that this information should include the revised completion date. This would be similar in style to the representation of revised costs. This could be presented in a similar way to revised costs: i.e.

| | |
|---|-------------|
| Original completion date | 1 Feb 2010 |
| +Extensions in GMP 1 change order 1 through 4 | 10 days |
| +Extension approved in this change order 5 | 5 days |
| Revised completion date | 16 Feb 2010 |

(f) There is no evidence that the construction manager has used the change orders to mask potential disputes or negotiate unwarranted extensions of time, and relationships between the Office of CMP and the construction manager are reportedly generally good.

(g) Change orders have been logically related to their principal contracts.

Recommendation 8

(8) The Office of the Capital Master Plan should ensure that persons making annotations on CMP records as supporting documentation for change orders be properly identified, preferably through use of a rubber stamp detailing their name, designation and organization.

42. *The Office of the Capital Master Plan accepted recommendation 8 and stated that the Office will implement this recommendation by 30 September 2010. Recommendation 8 remains open pending further examination of change orders to be conducted by OIOS later in 2010/11.*

Recommendation 9

(9) The Office of the Capital Master Plan should ensure that change orders resulting in an extension (or reduction) in the contract time for performance should include the original completion date, the revised completion date and the number of days extended or reduced.

43. *The Office of the Capital Master Plan accepted recommendation 9 and stated that it had been implemented.* Recommendation 9 remains open pending a further examination of change orders to be conducted by OIOS later in 2010/11.

380 Madison Avenue

44. As at 18 November 2009, eleven change orders had been approved for 380 Madison Avenue. The average time taken for the approval process was 46 days and this can be broken down as follows:

Table 1: 380 Madison Avenue – Times taken to approve change orders

| No. of days taken to approve change orders | No. of change orders |
|--|----------------------|
| 1 – 20 | 2 |
| 21 – 40 | 3 |
| 41 – 60 | 4 |
| 61 – 80 | 1 |
| 81 – 100 | 0 |
| Over 100 | 1 |

45. OIOS examined 5 approved change orders for the 380 Madison Avenue swing space and these are outlined in the table below:

Table 2: Sample of change orders examined for 380 Madison Avenue

| Change order reference and description | Reason for change given in instruction to construction manager or supporting records | Value (\$) |
|---|--|------------|
| 1. Changes due to Design Bulletin 1 | Scope of work changed significantly on 12 floors because Design Bulletin 1 was issued after drawings used for bidding. Changes were mainly due to user requirements being changed. | 2,676,834 |
| 2. (Rev 1). Bulletin 3 architectural changes – additional work. | Scope of work changed because of significant design changes to 13 floors. Bulletin 3 was issued after drawings used for bidding. Changes were mainly due to user requirements being changed. | 2,714,209 |
| 3. (Rev 1). Acceleration. | Due to the change in move-in dates, Skanska's construction | 3,155,377 |

| | | |
|---|--|-----------|
| | completion dates were considerably altered, causing several trades to accelerate. | |
| 4. Installation of addn'l sockets on floors 15, 16 & 19. | Need for additional outlets on floors 15, 16 and 19. | 238,215 |
| 5. (Rev 1). Bulletin 3 – Mechanical, Electrical & Plumbing (MEP) trades and security. | Scope of work changed because of significant design changes to 13 floors. Bulletin 3 was issued after drawings used for bidding. | 4,873,106 |

46. OIOS makes the following observations relating to 380 Madison Avenue change orders:

(a) The supporting documents for change orders provided evidence of checks and scrutiny. Some savings were made, including the construction manager's review of a submission for 'acceleration' and negotiations with an electrical trade contractor that secured a \$471,403 reduction in price.

(b) Change orders have mostly been issued because of changes to the scope of works. In the case of 380 Madison Avenue, the high level of change orders was due to:

- The decision to seek bids for guaranteed maximum price contracts before designs were completed;
- Instances where user requirements were not available in time. This was sometimes because of poor levels of response by users and inadequate consultations. The inadequate consultations occurred both within client departments and at the interface between client departments and the Office of CMP.
- The need to accelerate trades to enable staff to be accommodated in time has proven costly (the table above shows a change order in the amount of \$3,155,377). The CMP Executive Director stated that the decision to accelerate works made economic sense as the cost of acceleration would have been exceeded by the rental costs for swing space.

47. The reason for proceeding with the GMP contract before design was wholly complete has been the need to avoid delays. This has resulted in the issuance of some change orders. Delays have always been seen as one of the major risks to the success of the project, by both the Office of CMP and OIOS, and it was explained to OIOS that a judgement had sometimes been made to take a course of action that minimized cost and disruption, when it has not been possible to eliminate it entirely. While accepting that it will never be possible to eliminate change orders completely, OIOS regrets that they have been used because of the incomplete designs and breakdowns in the determination of user requirements. It is likely that contractors have not offered the best value for money in bidding for GMP contracts because of the level of uncertainty in design. OIOS is of the opinion that the sound determination of user requirements

and the completion of designs before fitting out the building are two prerequisites for the successful completion and handover of the forthcoming GMP contract for the Secretariat building renovation. The lessons learned in the completion of swing space accommodation need to be applied in sufficient time before staff are moved back to the Secretariat. The CMP Executive Director stated that most floors would have a similar layout and so the GMP contract for the Secretariat would largely be bid as a fairly generic schedule of rates.

48. The Office of CMP stated that the staff that had approved the swing space designs for their departments' locations had not always gained the commitment of the highest level of management within their departments. This had led to requests for changes after the works had been substantially progressed.

Recommendation 10

(10) The Office of the Capital Master Plan should determine the locations of departments and offices within the Secretariat building as soon as possible, and designs should be produced and completed as far as possible, before the fitting out work commences.

49. *The Office of the Capital Master Plan accepted recommendation 10 and stated that the "Restack Plan" for the occupancy of the renovated Secretariat is currently under preparation and is at an advanced development stage, and will be finalized prior to fit-out work commencing.* Recommendation 9 remains open pending review of the Restack Plan as part of a further examination of change orders to be conducted by OIOS later in 2010/11.

Recommendation 11

(11) The Office of the Capital Master Plan should determine user requirements for the Secretariat building as soon as possible, so that the experience of users with regard to the move to swing space is still current.

50. *The Office of the Capital Master Plan accepted recommendation 11 and stated that the determination of user requirements is part and parcel of the Restack Plan as discussed in the comments to recommendation 10 above.* Recommendation 11 remains open pending review of the Restack Plan as part of a further examination of change orders to be conducted by OIOS later in 2010/11.

Recommendation 12

(12) The Office of the Capital Master Plan should make every effort to impress on all stakeholders the need to respond promptly to all requests for information, and the adverse effects that changes have on the construction schedule and costs.

51. *The Office of the Capital Master Plan accepted recommendation 12 and stated that it would require continuous effort through the duration of the project. Recommendation 12 remains open pending receipt of evidence that measures have been taken to inform stakeholders about the need to respond promptly to requests for information.*

Recommendation 13

(13) The Office of the Capital Master Plan should record lessons learned with regard to user requirements and design finalization in the lessons learned register.

52. *The Office of the Capital Master Plan accepted recommendation 13 and stated that in February 2010, the Office organized an interdepartmental lessons learned exercise which resulted in a document as recommended. OIOS has determined that lessons learned with regard to user requirements have been logged in the lessons learned register, and based on the action taken, recommendation 13 has been closed.*

Recommendation 14

(14) The Office of the Capital Master Plan should ensure that designs are agreed at the USG level within client departments before construction work is undertaken.

53. *The Office of the Capital Master Plan accepted recommendation 14 and stated that this recommendation is addressed by the Restack Plan, as discussed in the comments to recommendation 10 above. Recommendation 14 remains open pending review of the Restack Plan as part of a further examination of change orders to be conducted by OIOS later in 2010/11.*

North Lawn Conference Building

54. As at 18 November 2009, ninety-two change orders had been approved for the North Lawn Conference Building. The average time taken for the approval process was 55 days and this can be broken down as follows:

Table 3: North Lawn Conference Building – Times taken to approve change orders

| No. of days taken to approve change orders | No. of change orders |
|---|-----------------------------|
| 1 – 20 | 9 |
| 21 – 40 | 23 |
| 41 – 60 | 26 |
| 61 – 80 | 17 |
| 81 – 100 | 7 |
| Over 100 | 10 |

55. OIOS examined 13 approved change orders for the North Lawn Conference Building and these are outlined in the table below:

Table 4: Sample of change orders examined for the North Lawn Conference Building

| Change order reference and description | Reason for change given in instruction to construction manager or supporting records | Value (\$) |
|--|--|-------------------|
| 1. Remove sculpture foundations and pedestals | This work was identified as an alternative option in the trade contract, and it was subsequently decided to take up this option. | 198,070 |
| 5. Pile casings and rock sockets. Quantity overrun. | Quantities of piles needed revision as drilling progressed. | 306,737 |
| 11. Blast criteria. Metal sidings. | Revisions made to 'blast criteria' design on drawings issued after bidding. | 147,199 |
| 14. Added blast criteria for store front and windows. | Revisions made to 'blast criteria' design on drawings issued after bidding. | 545,144 |
| 16. Fifty-seven micro piles at new Con-Ed vault. | Fifty-seven piles required for redesigned vault instead of 17 piles originally bought before a design was finalized. | 1,035,213 |
| 21A. Temporary power contract B electrical (supersedes 21 which was based on 60% progress drawings). | Previous change order 21 estimates were based on 60% design drawings which required assumptions to be made. | 3,353,213 |
| 21B. Temp power contract B electrical. | Previous change order 21 estimates were based on 60% design drawings which required assumptions to be made. | 1,102,348 |
| 28. Clarity of foundations, footings and concrete slabs at normal and emergency switch gear rooms. | This work was excluded from the trade contract as there was not enough information at the time to adequately price this work. | 925,464 |
| 44A. Temporary power service – civil work. | Change of scope. | 365,847 |
| 45. Added fire smoke dampers. | Change of scope requiring 30 day extension to contract duration. | 887,870 |
| 68. Monitoring and grouting of Good vs. Evil statue. | This work was not anticipated by the contract documents. | 372,370 |
| 79. Miscellaneous steel changes. | To incorporate designer sketches. | 80,112 |
| 82. Exterior door/frame/hardware changes – Bulletin 2. | Design revisions. | 19,924 |

56. Similarly to 380 Madison Avenue, changes have been the result of design changes because of changing user requirements and drawings that were not 100 per cent complete when bids for GMP contracts were sought. OIOS' comments and recommendations related to 380 Madison Avenue in this respect are also relevant to the North Lawn Conference Building.

305 East 46th Street

57. As at 18 November 2009, sixty-eight change orders had been approved for 305 East 46th Street. The average time taken for the approval process was 61 days and this can be broken down as follows:

Table 5: 305 East 46th Street – Times taken to approve change orders

| No. of days taken to approve change orders | No. of change orders |
|--|----------------------|
| 1 – 20 | 11 |
| 21 – 40 | 26 |
| 41 – 60 | 13 |
| 61 – 80 | 7 |
| 81 – 100 | 0 |
| Over 100 | 11 |

58. OIOS examined 15 approved change orders for the 305 East 46th Street swing space and these are outlined in the table below:

Table 6: Sample of change orders examined for 305 East 46th Street

| Change order reference and description | Reason for change given in instruction to construction manager or supporting records | Value (\$) |
|--|--|------------|
| 1. Replace ceiling mounted A/C units with floor mounted units. | Change to facilitate servicing of A/Cs. | 26,081 |
| 2. Schedule acceleration | Client requested an accelerated schedule to meet the earlier date for the Certificate of Occupancy. | 1,023,307 |
| 6. Security office redesign. | It was explained that the designs were timely, but the security consultant made recommendations after the plans were submitted. | 39,983 |
| 7. Decommissioning of elevator C and monthly maintenance of 2 freight elevators. | Construction manager took over the maintenance and repair of the 2 freight elevators from the landlord to ensure their functionality during the construction period. | 100,755 |
| 8. Rev 1. Various works. | Changes to construction drawings after award of trade contracts. | 120,048 |
| 11. Window repairs and adjustments on all floors at landlord's cost. | To prevent infiltration of outside air and maximize the efficiency of insulation and HVAC systems. | 84,831 |

| | | |
|------------------------------------|---|----------|
| 12. Temporary sprinklers. | Design omission resulted in existing temporary sprinkler lines conflicting with construction operations | 102,874 |
| 14. Air handler repairs. | Landlord deficiencies in the building air handlers. Several units were found to be inoperable. | 35,159 |
| 16. Revised security hardware. | It was explained that the security consultant made recommendations after the plans were submitted. | 151,489 |
| 18. Mold resistant paint. | To prevent potential development of mold, bacteria or mildew behind new insulated/sheetrock. | 194,144 |
| 27. Security electronics. | Subsequent to the approval of change order 16, the security consultant changed the scope. | (52,916) |
| 30. Final MER air handler repairs. | Landlord deficiencies in the building air handlers. | 165,725 |
| 41. Security added scope. | Owner directed change. | 255,765 |
| 59. Teledata revision. | Owner directed change. | 203,127 |
| 67. Passenger elevator repairs. | To minimize shutdowns until recommended modernization. | 93,062 |

59. OIOS makes the following observations relating to the 305 East 46th Street Swing space:

(a) It was not always clear from the documentation whether user requirements had changed, or whether drawings were late or incomplete. This is important because it is not easy to determine where the accountability lies for the added expense, and whether redress has been sought by the Office of CMP, if appropriate.

(b) OIOS enquired about the reason for the acceleration (change order 2) and was informed that the start of works was delayed after the building was found to contain numerous violations to building codes and because a building permit was not received until 11 September 2008. The UN's due diligence did not discover the violations, but action was taken to stop payment to the realtor and deduct payment from the landlord. This should be considered a lesson learned, and in future, greater care should be taken to inspect premises and conduct due diligence carefully before acceptance.

(c) With regard to change orders 14 and 30, OIOS enquired about whether the landlord had an obligation to hand over the building with properly functioning air handlers. An explanation was received that the lease is clear that the equipment was handed over 'as is' and it would not be possible to seek redress. This should be considered lesson learned, and in future, greater care should be taken to inspect premises carefully before acceptance.

Recommendation 15

(15) The Office of the Capital Master Plan should ensure that change orders and the records supporting them, make clear the reasons and accountabilities for their initiation.

60. *The Office of the Capital Master Plan accepted recommendation 15 and stated that this recommendation has been implemented. Recommendation 15 remains open pending further examination of change orders to be conducted by OIOS later in 2010/11.*

Recommendation 16

(16) The Office of the Capital Master Plan should ensure that lessons learned with regard to acceptance of leased premises be recorded in the lessons learned register and that greater care be taken in future to inspect premises carefully before signing of the lease agreement.

61. *The Office of the Capital Master Plan accepted recommendation 16 and stated that the lessons learned exercise discussed in the comments in response to recommendation 13 included lessons related to the acquisition and acceptance of leased office space. Recommendation 16 remains open pending OIOS' receipt and review of a copy of the lessons learned register referring to the issues relating to the acceptance of leased premises.*

V. ACKNOWLEDGEMENT

62. We wish to express our appreciation to the Management and staff of the Office of the Capital Master Plan for the assistance and cooperation extended to the auditors during this assignment.

STATUS OF AUDIT RECOMMENDATIONS

| Recom. no. | Recommendation | Risk category | Risk rating | C/O ¹ | Actions needed to close recommendation | Implementation date ² |
|------------|---|----------------------|-------------|------------------|---|---|
| 1. | The Office of the Capital Master Plan should ensure that the Project Manual is kept up to date when new procedures are introduced. | Governance | Medium | O | Updating of the Project Manual with the most recent changes. | 30 June 2010 |
| 2. | The Office of the Capital Master Plan should seek reimbursement from the construction manager for the fees charged on the initial \$1 million paid for change orders. | Financial Management | Medium | O | OIOS has been informed that reimbursement has been sought and this recommendation can be closed when reimbursement has been received from the construction manager. | Reimbursement sought. Receipt to be confirmed target date not stated. |
| 3. | The Office of the Capital Master Plan should stop using work authorization forms to commence works that will be included as changes to a guaranteed maximum price contract. | Governance | High | O | The Office of CMP has informed OIOS that it has ceased using the work authorization forms. However, this recommendation remains open pending a further examination of change orders to be conducted by OIOS later in 2010/11. | March 2010 |
| 4. | The Office of the Capital Master Plan should ensure that change orders are approved in advance of associated works commencing, and only by authorized persons in accordance with the delegation of authority. | Governance | High | O | The Office of the Capital Master Plan agreed with the intention of this recommendation and will seek to implement it, but noted the paramount importance of not interrupting or delaying the CMP construction schedule. This recommendation remains open pending further examination of change orders to be conducted by OIOS later in 2010/11. | Implemented. |

| Recom. no. | Recommendation | Risk category | Risk rating | C/O | Actions needed to close recommendation | Implementation date ² |
|------------|---|---|-------------|-----|---|----------------------------------|
| 5. | The Office of the Capital Master Plan should ensure that change orders include a statement making it clear that the final amount payable will be subject to verification and checks by personnel of the Office of CMP and their consultants, prior to approval for payment. The Office of Legal Affairs should be consulted prior to the wording of the statement being finalized. | Financial Management | High | O | Confirmation that the Office of Legal Affairs has been consulted and a suitable statement is included in change orders. | 30 June 2010 |
| 6. | The Office of the Capital Master Plan should review the existing delegation of authority for approving change orders and, if appropriate, request the Assistant Secretary-General, Office of Central Support Services to revise the delegation. Similarly, the Director of the Procurement Division should review the CMP Procurement Officer's delegation of authority and if appropriate request a revised delegation from the Assistant Secretary-General, Office of Central Support Services. | Governance | Medium | O | OIOS receipt of the results of the review of delegations of authority. | 31 December 2010 |
| 7. | The Office of the Capital Master Plan should set realistic targets for review and approval of change orders, and make every effort to reduce approval times. | Procurement and Contract Administration | High | O | This recommendation remains open pending further examination of change orders to be conducted by OIOS later in 2010/11. | 30 June 2010 |

| Recom. no. | Recommendation | Risk category | Risk rating | C/O | Actions needed to close recommendation | Implementation date ² |
|------------|---|---|-------------|-----|---|----------------------------------|
| 8. | The Office of the Capital Master Plan should ensure that persons making annotations on CMP records as supporting documentation for change orders be properly identified, preferably through use of a rubber stamp detailing their name, designation and organization. | Procurement and Contract Administration | Medium | O | This recommendation remains open pending further examination of change orders to be conducted by OIOS later in 2010/11. | 30 September 2010 |
| 9. | The Office of the Capital Master Plan should ensure that change orders resulting in an extension (or reduction) in the contract time for performance should include the original completion date, the revised completion date and the number of days extended or reduced. | Procurement and Contract Administration | Medium | O | This recommendation remains open pending further examination of change orders to be conducted by OIOS later in 2010/11. | Implemented |
| 10. | The Office of the Capital Master Plan should determine the locations of departments and offices within the Secretariat building as soon as possible, and designs should be produced and completed as far as possible, before the fitting out work commences. | Programme and Project Management | High | O | Finalization of the "Restack Plan" | 30 June 2010 |
| 11. | The Office of the Capital Master Plan should determine user requirements for the Secretariat building as soon as possible, so that the experience of users with regard to the move to swing space is still current. | Programme and Project Management | Medium | O | Finalization of the "Restack Plan" | 30 June 2010 |

| Recom. no. | Recommendation | Risk category | Risk rating | C/O ¹ | Actions needed to close recommendation | Implementation date ² |
|------------|---|----------------------------------|-------------|------------------|---|----------------------------------|
| 12. | The Office of the Capital Master Plan should make every effort to impress on all stakeholders the need to respond promptly to all requests for information, and the adverse effects that changes have on the construction schedule and costs. | Programme and Project Management | Medium | O | This recommendation remains open pending further audit reviews over the course of the project. | Duration of project. |
| 13. | The Office of the Capital Master Plan should record lessons learned with regard to user requirements and design finalization in the lessons learned register. | Programme and Project Management | Medium | C | OIOS has determined that lessons learned with regard to user requirements have been logged in the lessons learned register, and based on the action taken, recommendation 13 has been closed. | February 2010 |
| 14. | The Office of the Capital Master Plan should ensure that designs are agreed at the USG level within client departments before construction work is undertaken. | Programme and Project Management | High | O | Finalization of the "Restack Plan" | 30 June 2010 |
| 15. | The Office of the Capital Master Plan should ensure that change orders and the records supporting them, make clear the reasons and accountabilities for their initiation. | Governance | Medium | O | This recommendation remains open pending further examination of change orders to be conducted by OIOS later in 2010/11. | Implemented |
| 16. | The Office of the Capital Master Plan should ensure that lessons learned with regard to acceptance of leased premises be recorded in the lessons learned register and that greater care be taken in future to inspect premises carefully before signing of the lease agreement. | Programme and Project Management | Medium | O | This recommendation remains open pending OIOS receiving a copy of the lessons learned register referring to the issues relating to the acceptance of leased premises. | Implemented |

1. C = closed, O = open. 2. Date provided by the Office of the Capital Master Plan in response to recommendations.

ANALYTICAL REVIEW – CHANGE ORDERS AS AT 18 NOVEMBER 2009

| Project | (a) Original Contract Value (\$) | Number of Change Orders | | | (e) Value of Change Orders Approved (\$) | (f) Estimated Value of Change Orders Outstanding (\$) | (g) = (a)+(e) Current Contract Value and % increase on Original Contract Value (\$) | (h) = (f)+(g) Contract Value if Outstanding COs are approved and % increase on Original Contract Value (\$) |
|--------------------------------|--|-------------------------|--------------------|----------------------------------|--|---|---|---|
| | | (b) Approved | (c) Outstanding | (d) = (b)+(c) Total Submitted | | | | |
| Basement Package 1 | 12,645,161 | 6 | 1 | 7 | 578,846 | 93,080 | 13,224,007 | 13,317,087 |
| North Lawn Conference Building | *133,550,436 | 94 | 61 | 155 | 21,494,756 | 9,190,021 | 155,045,192 | 164,235,213 |
| Basement Package 2 | 166,893,319 | 1 | 2 | 3 | 295,238 | 11,892 | 167,188,557 | 167,200,449 |
| Curtain Wall | 128,337,747 | 5 | 2 | 7 | 1,186,090 | 428,514 | 129,523,837 | 129,952,351 |
| 305 East 46th Street | 22,220,151 | 71 | 9 | 80 | 3,133,806 | 708,261 | 25,353,957 | 26,062,218 |
| UNFCU | 8,588,900 | 1 | 1 | 2 | 991 | 22,162 | 8,589,891 | 8,612,053 |
| 380 Madison Ave | 34,033,002 | 11 | 3 | 14 | 14,997,511 | 605,525 | 49,030,513 | 49,636,038 |
| Furniture - Swing Spaces | 13,744,754 | 5 | 22 | 27 | 308,486 | 3,807,757 | 14,053,240 | 17,860,997 |
| Construction Hoists | 20,934,300 | 0 | 5 | 5 | 0 | 90,433 | 20,934,300 | 21,024,733 |
| All Projects | 540,947,770 | 194 | 106 | 300 | 41,995,724 | 14,957,645 | 582,943,494 | 597,901,139 |

*Includes more than 1 GMP contract

ANNEX 2

*Use this page if the orientation of Annex 2 is portrait. If the orientation is landscape, insert a section break at the end of Annex 1 and continue on the new page. (On the **Insert** menu, point to **Break**, select **Next page** under **Section break types**.) Leave the page blank if not required; do not delete it.*