

## MANAGEMENT SYSTEM FOR KLIAB

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### Abstract

Kuala Lumpur International Airport (KLIA) is one of the mega project currently under construction in Malaysia. KLIA project that is designed and will be equipped with the most modern airport facilities; has to be completed within a period of three years for the design and construction processes. The Malaysian Government has appointed Kuala Lumpur International Airport Berhad (KLIAB) as a project management consultant. With the time constraint and the complexity of the project; KLIAB has created its Quality Management System (QMS) to ensure that the project can be completed as required. The QMS could be described as the organizational structure, responsibilities, procedures, processes and resources for implementing quality management. In the case of KLIA project, the QMS is well documented in the Quality Management Procedures Manual. The QMS procedures describe techniques, methods and plans that control the planning, design and construction processes to ensure the achievement of quality requirements. Despite the full commitment of the KLIAB management, some of the contractors and the consultants do not appreciate the importance of the QMS.

### 1.0 INTRODUCTION

This paper describes the Quality Management System (QMS) of Kuala Lumpur International Airport Berhad (KLIAB). KLIAB is a project management company formed by the Malaysian Government to manage a new major international airport project, i.e., Kuala Lumpur International Airport (KLIA) in Sepang, Malaysia, which is currently under construction. The estimated total development cost of this project is approximately RM10 billion (US\$2.5 billion). The construction has to be completed within 3 years and it is scheduled to be open on the 1 January 1998. The contractual arrangement for this project is design and built and fast tracking. To ensure that this huge project could be completed within the time, the cost and the quality stipulated; KLIAB has created its QMS. This paper highlights certain aspects of the QMS that are essential for the construction and completion of the project.

### 2.0 OBJECTIVE

The objectives of this paper is to:

- (a) Describes some important features of the construction of the Kuala Lumpur International Airport (KLIA);
- (b) Clarifies the importance of the QMS for the KLIAB;
- (c) Outlines the content of the QMS; and
- (d) Explains the implementation and problems of the QMS.

### **3.0 IMPORTANCE FEATURES OF KLIA**

#### **3.1 Area and the Master Plan**

The proposed new KLIA at Sepang is probably the largest and most ambitious single project to be undertaken by the Malaysian government this decade. The area encompassed by the airport reserve is 10,000 hectares that is maybe the largest in the world. The first or opening phase (the current project) will make use of about 25% of the total area. The Master Plan allows for phased modular expansion of the airport to match traffic growth, such that at the ultimate phase KLIA will be able to handle up to 90 million passengers per annum with two megaterminals, four remote satellites, four full service runways and associated facilities.

#### **3.2 Facilities of the New Airport**

The opening phase of KLIA is planned for 25 million passengers per year. It will comprise a main terminal building complex, landside and airside facilities and privatized facilities. The government is responsible for the construction of the core facilities that include runway, apron, perimeter road, utilities, main terminal building and air traffic services. All other facilities such as aircraft fueling system, aircraft maintenance, air cargo complex, airport operation, golf course and theme park that could generate income are privatized through B.O.T. (build-operate-transfer) arrangement. Privatization approach was adopted to encourage private sectors to be actively involved in this project.

#### **3.3 Contractual Arrangement**

Another important feature of the KLIA project is the contractual arrangement that is design and build and fast tracking. Design and build is necessary due to the need of fast tracking due to the urgency of time. Another reason for design and build is that the project requires management and technological input that are not available in this country. It is also due to the need that much technical information and drawing are required and it would be impossible to get all of them at the initial stage. Fast tracking allows project to take-off based on preliminary design whilst the working drawing being produced from time to time throughout the construction process.

#### **3.4 Interfacing**

KLIAB is responsible to monitor and ensure on behalf of the government that consultants and contractors perform their duties according to the contract. There are 83 packages that are awarded to 83 main contractors within the core facilities projects. The big number of contractors who are working in the same area requires a special arrangement that is known as interfacing. Interfacing is an agreed moment where parties interact at a certain location to enable a specified event to take place. There are 1,500 interfacing dates that need to be managed properly.

#### **3.5 Workers Accommodation and Services**

Until June 1996, 18,665 workers are involved in the KLIA project. Malaysian is the biggest workforce with 10,251, followed by Indonesian (4,743), Bangladeshi (1,161), and Pakistani (906). The total number of workforce has increased continuously up to 25,000 in January 1997. In view of the high number of workforce, there is a need for a systematic and well-planned accommodation and services for them. KLIAB has decided that no gypsy camps be allowed at the site. Instead, KLIAB has designated areas for construction of accommodation area and a township that provide services like medical store, restaurant, hawker center, mini market, mini post office and bank. On top of that, an airport hospital was constructed to cater for the daily medical attention and minor operation can be done at the hospital.

#### 4.0 THE IMPORTANCE OF QMS

The KLIAB responsibility is to complete the KLIAB project within the stated time, budget and quality; with all the constraints and its complexity. The main constraint is the time limit that is three years. Normally the construction of such project will take at least five years. To meet the deadline, all construction activities have to be carried out concurrently and this will need a big number of contractors, consultants and workers. To ensure that KLIAB will be able to deal with all parties consistently, a standard procedure is needed. The QMS will ensure that KLIAB will provide appropriate and consistent project management services to all contractors, consultants and other parties involved in the project.

As a new company formed purposely to handle a one off project, the QMS is needed to explain precisely:

- (a) The responsibility of every division within the KLIAB to avoid any ambiguity and unnecessary assumption;
- (b) The job description of key personnel; and
- (c) The line of communication within the organization.

#### 5.0 THE CONTENTS OF QMS

KLIAB's QMS is a comprehensive well-documented manual and is known as Quality Management Procedures Manual. It has 12 chapters as shown in Table 1.

##### 5.1 Chapter 1 - Quality Plan

Chapter 1 describes KLIAB's Quality Management System including its quality policy, project organization and lines of communication, KLIAB organization, document format guidelines for quality management procedures, quality management procedure change control, and internal quality audits.

Table 1 - Contents of Quality Management Procedures Manual

CHAPTER	PROCEDURE NAME
1	Quality Plan
2	Documentation and Communication
3	Project Data
4	Engineering
5	Procurement and Contracts
6	Project Planning
7	Information Technology
8	Cost Control
9	Construction
10	Finance
11	Administration
12	Privatization
13	

##### 5.1.1 Quality Management System (QMS)

KLIAB's QMS is defined as procedures that describe techniques, methods and plans that control the planning, design and construction process to ensure the achievement of quality requirement, whilst embracing the philosophies of ISO 9000 standards. The QMS defines the means by which KLIAB continuously maintains and improves the quality of its services. The QMS has been designed and implemented in order to provide common framework of activities that are to be carried out by consultants, contractors, departments, and/or individuals that are working together towards a common

goal. The QMS sets out the policies, organisational structure, and self controls of KLIAB and needs to be freely and accurately communicated to all relevant parties in order to be effective.

#### **5.1.2 Quality Policy**

The QMS asserts that KLIAB is committed to achieving Quality Excellence in all aspects of the business process and at all levels of operation. The QMS also mentions that Quality Excellence shall form the core corporate culture and shall be cultivated through strategies outlined to to achieved its objectives. KLIAB believes Quality Excellence shall spearhead the Company to achieve its Corporate Mission, that is, "To develop a leading regional hub airport that will join the ranks of leaders in the world of International Aviation."

#### **5.1.3 KLIAB Organisation**

The QMS outlines the KLIAB organisation and functions. KLIAB has been organised in a matrix structure made up of project units and service units. The project units are headed by project managers who drive the various projects from design to completion. The service units made up by the various divisions that are headed by general managers; who provide necessary supports and resources for the project managers. The responsibility of each division is also outlined in great details. In addition, job description of key personnel that include Managing Director, Senior General Managers and General Managers of all divisions is also explained.

#### **5.2 Chapter 2 - Documentation and Communication**

Chapter 2 contains procedures regarding the KLIAB's file numbering system, document control of correspondence, document numbering, glossary of approved acronyms and abbreviations and meeting hierarchy. Meeting hierarchy is essential to ensure that all information from each package would reach the boardroom every week efficiently. Meetings are scheduled in three levels; that is; package, area and overall project. Therefore, all meetings are organised every week in a formal structure meeting in such way that package level meetings precede area level meetings; and followed by overall project meeting.

#### **5.3 Chapter 3 - Project Data**

Chapter three explains Master Implementation Programme (MIP), Project Data and Construction Packages.

The MIP was formulated for the first phase development to handle a capacity of up to 25 million passengers per annum on the opening day. The MIP is a level 1 programme and meant as a general guideline for all those involved in the project.

Project data describes the works involved including site preparation, passenger terminal complex, airside development, landside development, utilities, air traffic services and privatization. Under site preparation, there are approximately 100,000,000 cubic meters of earth to be excavated and 64,000,000 cubic meters to be filled within the bulk earthworks contract.

#### **5.4 Chapter 4 - Engineering**

Chapter 4 consists of procedures with regard to drawing layout and numbering, design change control, management of drawing, management of design for tendering purposes and geotechnical investigation and topographical survey procedure.

#### **5.5 Chapter 5 - Procurement and Contracts**

Chapter 5 describes procedures that have been formulated for tender and contract documentation, prequalification, tender evaluation, tender award, purchasing, insurance, appointment of consultants, payment of consultants and management of consultants.

#### **5.6 Chapter 6 - Project Planning**

Chapter 6 deals with programme levels, work breakdown structure, establishment of programme procedure, programme change control procedure, progress reporting, contractor's progress reports, project planning interfacing procedure, monitoring offsite facilities and utilities.

#### **5.7 Chapter 7 - Information Technology**

Chapter 7 contains procedures which specifically addressed the critical planning required to ensure that KLIAB is adequately prepared for a disaster affecting its IT/System and the operations support framework for KLIAB's information system.

#### **5.8 Chapter 8 - Cost Control**

Chapter 8 describes procedures on the process of preparing and maintaining the project cost budget, the project cost plan, the overall monitoring of the project cashflow and the overall monitoring of the project's costs.

#### **5.9 Chapter 9 - Construction**

Chapter 9 outlines procedures that required to manage the actual work on site that include: advancepayment; progress payment; site instruction and variation order; extension of time for substantial completion; provisional sum; claim processing; commissioning; non-conforming procedure; taking-over procedure; approval of contractor's quality assurance plan; approval of contractor's health and safety plan; approval of contractor's environmental plan; approval of consultant's quality plan; delegation of power; contract administration; cost control - on site; and post contract documentation flow and distribution

#### **5.10 Chapter 10 - Finance**

Chapter 10 explains the processes involved in the management of KLIAB's fixed asset.

#### **5.11 Chapter 11 - Administration**

Chapter 11 consists of procedures dealing with recruitment, induction, training, land acquisition, sale of documents and stationery control.

#### **5.12 Chapter 12 - Privatization**

Chapter 12 describes procedures for the privatized projects. These procedures include; management of drawings, management of design documents, appointment of concessionnaires, evaluation change, monitoring and progress report.

### **6.0 IMPLEMENTATION AND PROBLEMS**

The responsibility for ensuring the implementation of the QMS rests with every individual within KLIAB and all parties related to the development of KLIA. Development, implementation and maintenance of procedures lies with the General Manager of that specific department. The Quality Manager shall be responsible for: maintaining the QMS; establishing and maintaining a system of corrective action to ensure the effective procedures are in place; and ensuring that timely and effective action is taken by appropriate staff to maintain the integrity of the QMS.

KLIAB top management has shown their full commitment in implementing the QMS. At the beginning of the project, the top management have to provide training programmes to increase the awareness of the staff towards the importance of the implementation of the QMS. At the moment, most of the KLIAB staff accept the fact that the QMS is vital to ensure that they can deliver the project as required.

Unlike KLIAB, some of the consultants and contractors do not appreciate the importance of the QMS. This is due to their lack of knowledge and awareness about the importance of the quality management system. They feel comfortable with the routine that they have followed for so long and reluctant to adopt a better approach. They do not understand that by having QMS they actually written down the sound processes that subsequently produced quality results and higher profit margin. To overcome this problem, KLIAB has taken certain measures that include campaigning, organising quality meeting and providing training to the consultants' and contractors' staff.

Another factor that is slowing down the implementation of the QMS is that certain procedures could not be implemented due to certain items that could not be foreseen at the beginning of the project. These procedures need some modifications so that it can be implemented practically. In this regard, the QMS is a dynamic and flexible procedures that can be adjusted whenever necessary.

## 7.0 CONCLUSIONS

KLIA is one of the mega project undertaken by the Malaysian Government that has to be completed within a comparatively short period of time. KLIAB as the project management consultant appointed by the government has created the QMS to standardized their services to all parties that involved in the development of the project. The QMS is a comprehensive well-documented manual that contains all procedures that required by the KLIAB to manage and to complete the project. It has 12 chapters that outline all essential procedures that embrace the philosophy of the ISO 9000. Human factor, i.e., lack of knowledge and awareness of the contractors and consultants is the major problem that impedes the implementation of the QMS. The QMS is a dynamic and flexible set of procedures that can be changed to cope with the possible changes that would arise in the mega project. Finally, it is proven that by having the QMS, KLIAB has shown a good performance up to this stage in managing the KLIA project. Therefore, any project management consultant dealing with a mega project is recommended to have its QMS to ensure that it can manage and deliver the project within time, cost and quality.

## REFERENCES

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