



GHANA  
CIVIL AVIATION AUTHORITY

# ADVISORY CIRCULAR AC 14-034

## GUIDELINES FOR PREPARATION OF A PLAN OF CONSTRUCTION OPERATION (PCO)

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### GENERAL

Ghana Civil Aviation Authority (GCAA) Advisory Circulars from Aerodrome Safety and Standards (ASAS) contain information about standards, practices and procedures that the Authority has found to be an Acceptable Means of Compliance (AMC) with the associated Directives.

An AMC is not intended to be the only means of compliance with a Directive, and consideration will be given to other methods of compliance that may be presented to the Authority.

### PURPOSE

This Advisory Circular provides methods, acceptable to the Authority, for showing compliance with Part 32 of the Ghana Civil Aviation (Aerodrome) Directives, as well as explanatory and interpretative material to assist in showing compliance.

### REFERENCE

The Advisory Circular relates specifically to the Aerodrome GCADs.

### STATUS OF THIS AC

This is the first AC to be issued on this subject.

### FOREWARD

This documents aims at defining a "Plan of Construction Operations (PCO)" and to establish guidelines for the preparation of PCOs for any airport construction or major renovation projects. The contents of a PCO will be described as well as items to be reviewed while preparing a PCO.

## APPROVAL

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## **1. INTRODUCTION**

The "Plan of Construction Operations (PCO)" is part of the airport certification process. The CAA certifies the airport according to certain established criteria, be it airport physical characteristics, operational plans, security measures etc. These physical characteristics and operational plans will be modified, temporary or permanently, during and/or following the realization of a construction or major renovation project. Additional security measures shall be applied during the realization of the project.

Finally, users will find at Appendix "A" and "B", two examples of PCOs that were prepared for major construction project while Appendix "C" deals with a minor construction project.

## **2. CONSTRUCTION OPERATIONS (PCO)**

### **2.1. DEFINITION**

A PCO is a document that describes the mitigation measures that will be taken or applied during the realization of an airside construction or major renovation project. These mitigation measures can be defined, but not exclusively, as: signage, markings, markers, displaced threshold, NOTAMs, voice advisory, escort of personnel on the airside, means and lines of communication between the parties involved in the realization of the project.

### **2.2. RESPONSIBILITIES**

A Plan of Construction Operations (PCO) is a document that is to be prepared by the Airport Operator staff and to be approved by the GCAA. It is the responsibility of the Airport Manager or the person responsible for the operation of the airport to designate a project coordinator who will not only prepare the PCO but will coordinate with the stakeholders (airlines, service providers and the Contract/project manager) the realization of the project. The Airport Operator is assuming full responsibilities for the airport certification vis-à-vis the GCAA.

### **2.3. THE CONSULTATION PROCESS**

It is very likely that the realization of an airside project will impact the airport users at different degrees that could vary from negligible to very significant. Depending on the scope of the project the mitigation measures could vary from a voice advisory to the closure of a runway. As an example, it may happened that, for the overlay of a single runway airport, the runway width will be reduce by 50%, i.e. instead of landing on a 60 meter wide runway, aircraft will land on a 30 meter wide runway. At some other times, the runway length could be reduced. Navigational aids as well as visual aids could be unserviceable for a certain period of time. It may means that airlines will have to modify their regular schedule, to temporary change aircraft types, to schedule more experienced pilots etc... That is to say that the consultation process shall commence long time before the realization of the project. In some cases, consultation with the airlines and service providers should start over one (1) ahead of time. Consultations/communications shall be conducted during the:

- 1) planning stage of the project;
- 2) the pre-construction period and;
- 3) the construction period.

The consultation process is important not only for the airlines and service providers but also for the "to be" selected Contractor. The Contractor working conditions must be known before the tendering process is launched. The airport operating conditions could have a very significant impact on the Contractor's costs. The Contractor may be imposed night working hours, broken hours, waiting time while clearing the runway to allow aircraft movements etc. etc.

It is imperative that the Airport Operator defines with the airlines and service providers the operating conditions during the realization of the project, at a time where the Contractor is not yet selected. Airport operating conditions will be specified in the project tender documents and the Contractor will bid knowing what his working conditions will be. Obviously the process is also coordinated with the project management responsible person as this person is directly responsible for the cost and the scheduling of the project. It should be however bear in mind that ultimately the Airport Operator is assuming responsibility for the Airport Certification.

The sooner the airlines and other stakeholders are consulted, the better it is. Early consultations, in giving sufficient time to react, usually allow for the resolution of operational problems to the satisfaction of all parties.

### **3. AIRPORT OPERATIONS**

Under normal circumstances the Airport Operator is responsible to operate the airport according to the conditions specified in the Airport Operations Manual (AOM).

This Airport Operations Manual has been approved by the Ghana Civil Aviation Authority (CAA) that is to say that the GCAA has approved the operating conditions of the airport. Operating conditions may mean, but not exclusively:

#### **3.1. RUNWAY**

- Runway length
- Runway width
- Runway slope
- Runway surface type
- Touchdown zone elevation
- Thresholds elevation
- Thresholds coordinates
- Runway strip width
- Grades area width
- Obstacles limitation surfaces: approach, transitional and outer surfaces
- Runway lighting system
- Approach lighting
- Visual Approach Slope Indicator System or Precision Approach Path Indicator
- Runway identification lights
- Runway end lights
- Runway centre line lights
- Runway touchdown zone light

- Runway exit lights
- Threshold marking
- Centre line marking
- Touchdown zone marking
- Runway exit marking
- Declared distances: TORA, TODA, ASDA and LDA
- Etc.

### **3.2. Taxiway**

- Taxiway type of surface
- Pavement width
- Intersection lights
- Centre line
- Markers for taxiway edge
- Centre line marking
- Hold position
- Etc.

### **3.3. Apron**

- Dimensions
- Edge lights
- Flood lights
- Aircraft stand taxilane
- Aircraft stand
- Passenger path lines
- Etc.

It is obvious that, when a significant maintenance project or a construction project is going to be realized on the airside, the operation conditions of the airport will be modified in one way or the other. Depending on the scope of the project, a few or many of the characteristics listed above will be modified. The aviation industry must be informed of these changes and these changes must be **approved** by the GCAA.

Therefore, a Plan of Construction Operation (PCO) shall be prepared for each non-routine maintenance project and for any construction project. Runway marking, runway crack filling, grading of graded area, replacement of bulbs on the runway lighting system do not usually require the preparation of a PCO. In some cases, however, the issuance of a NOTAM or a voice advisory is desirable. The airport operator in coordination with the Air Traffic Services is responsible and competent in this matter.

#### **4. CONTENTS OF A PLAN OF CONSTRUCTION OPERATIONS**

A Plan of Construction Operations (PCO) shall contain at least the following information:

##### **4.1. DESCRIPTION OF THE CONSTRUCTION PROJECT**

Provide a full description of the planned construction project.

##### **4.2. STAGES/PHASES OF THE CONSTRUCTION & SCHEDULES**

List the different stages of the construction activities with anticipated start and finish dates.

##### **4.3. TYPES & FREQUENCY OF AIR TRAFFIC**

List the types of aircraft and number of daily movements anticipated during the construction period.

##### **4.4. DISRUPTIONS TO AIR TRAFFIC**

What will be the impact on and disruptions to the air traffic as listed above.

##### **4.5. POSITION AND HEIGHT OF EQUIPMENT (RELATIVE TO RUNWAYS & TAXIWAYS)**

Provide the location and maximum working height of the construction equipment or vehicles and where that equipment will be working in relationship to the taxiway or runway edges/ends. This information is required to assess the impact on Obstacle Limitation Surfaces and object is.

##### **4.6. WORK ADJACENT TO RUNWAY/TAXIWAY:**

Temporary hazards on runway strips. Which zone will you be working in, which restriction and operational conditions will apply to your project.

##### **4.7. MARKINGS, BARRIERS AND LIGHTING PROVIDED:**

Describe all markings, barriers and lighting to be used to indicate unserviceable areas of the airport.

##### **4.8. DISPLACED AND/OR RELOCATED THRESHOLDS:**

If the project will require a displaced or relocated threshold, provide an explanation as to why this is required, what percentage slope the calculations are based on, how will the new threshold be marked and lighted, what buffer is being provided for jet or prop blast, consideration.

##### **4.9. DECLARED DISTANCE DURING ALL PHASES**

Based on the above calculation what will be the revised declared distances.

##### **4.10. ACCESS CONTROL, VEHICLE OPERATIONS AND ESCORTS**

How will vehicles and equipment access the construction site, will Airport Vehicle Operator Permit be issued, are radio licenses required, will vehicles be escorted, whom will be providing the escorts.

#### **4.11. COMMUNICATIONS PLAN (PRIOR TO CONSTRUCTION & DURING CONSTRUCTION)**

Every construction project requires a Communication Plan. The Plan will cover communication with the airport's clients/users, Air Traffic Services and GCAA during all phases of the project;

#1: Planning Phase,

#2: Pre-construction Phase

#3: Construction Phase.

Airport Ops ↔ ATS;

ATS ↔ Construction Site;

Airport Ops ↔ Construction Site;

Airport Ops ↔ Users (Stakeholders);

Airport Ops ↔ CAA.

#### **4.12. NOTAMS AS PER THE NOTAM PROCEDURE MANUAL:**

Provide a draft of all anticipated NOTAMS. NOTAMS revising declared distances must be pre-approved by CAA.

#### **4.13. DRAWING OR BLUEPRINTS**

Provide any drawings required to support your Plan of Construction Operation. It is the airport operator's responsibility to ensure the drawings and final product meet Aerodrome Certification requirements.

### **5. ISSUES TO BE REVIEWED**

Here are some Issues to review while preparing a PCO:

- Location of equipment under approach and transitional surfaces
- The height of obstacles & distance from the threshold
- Relocation or displacement of threshold
- Revised TORA, TODA, ASDA, LDA
- Declared clearway available
- Marking of relocated or displaced threshold
- Operation of visual aids when the threshold is relocated or displaced
- Is the PAPI off when the threshold is relocated or displaced
- Coordination with airport & ATS for turning off lighting
- Work in zones 1,2 & 3
- Work adjacent to taxiways & aprons
- Interference with any electronic nav aids, such as a localizer when in any/all of the zones.

- Size of trenches
- Trenching & backfilling
- Procedures to reopen full length when requested, emergency or weather limits are down.
- Inspection checks before reopening areas
- Lighting of runway during closures.
- Closed markings on new runway during construction, & before relocation of lighting
- Barricades lighting & markings at threshold, denoting construction area.
- Spacing & colours
- Barriers & lighting adjacent to trenches
- NOTAM's
- Commissioning of nav aids & visual aids (when & by whom)
- Escort for contractor's employees when working on the airside
- Vehicle Operator Permit on the airside.

## **6. PCO (EXAMPLES)**

Attached are three (3) examples of PCOs that were prepared for different airport projects. No template can cover all the possibilities that could arise from an airside construction project. No project is exactly similar to another. The proponent judgment shall be exercised.

These three (3) examples are as follows:

### **6.1. Appendix "A":**

The project consists in the extension of a gravel runway from 5,000 feet to 6,500 feet in length and from 100 feet to 150 feet in width. The project also includes the installation of a new runway edge lighting system, a PAPI, a windsock etc. The aircraft parking area is to be enlarged from approximately 5,900 square meters to 22,000 square meters. This airport is a one-runway airport. The purpose of the project is to allow for the landing of B737-200. Prior to the extension the airport is used by Dash-8 and Challenger 600 (jet ambulance).

### **6.2. APPENDIX "B"**

This project has been developed for the overlay of a one-gravel runway airport. The unique runway is 3,600 feet long by 100 feet wide. The SAAB-340 being the critical aircraft. During the realization of the project half of the runway will be available at all times, i.e. 3,600 feet in length by 50 feet in width.

### **6.3. APPENDIX "C"**

This construction project is having low impact on the airport operation. It concerns the replacement of the Runway Identification Lights (RIL) and associated wiring at one end of a one-runway airport. In this case, no runway closure will be required. NOTAMs will be issued and voice advisories will be broadcasted.

## **7. ADDITIONAL INFORMATION**

Additional information and assistance concerning the preparation of a "Plan of Construction Operations" can be obtained by contacting the Aerodrome Safety and Standards (ASAS) Section of the Safety Directive Department.