



دولة الامارات العربية المتحدة
الهيئة العامة للطيران المدني
UAE General Civil Aviation Authority

CIVIL AVIATION ADVISORY PUBLICATION

CAAP 36

(16th Feb. 2010)

Runway and Movement Area Inspections

ANA Section
Aviation Security & Infrastructure Department

This CAAP Document is provided by the United Arab Emirates General Civil Aviation Authority (GCAA) to provide guidance to all UAE airports in regard to Runway and Movement Area Inspections. The document, if adopted, should be personalised to the specific aerodrome and reflect the organisational structure and level of resources at the aerodrome.

This CAAP shall also be processed through the airport's Safety Management System (SMS) to assess if it is suitable for the level of aircraft operations at each individual aerodrome. The GCAA Inspectors will require evidence when conducting an audit and inspection of the aerodromes operating procedures, that this document has been assessed and actioned through the Safety Action Group, Safety Review Board or any other formal forum in regard to safety related items.

Enquiries regarding the content of this publication should be addressed to:
ANA Section, General Civil Aviation Authority,
PO Box 6558, Abu Dhabi, UAE

The latest version of this document is available in electronic format at www.gcaa.ae/publications, where you may also register for e-mail notification of amendments.

Table of Contents

Glossary

PART 1

Chapter 1

Introduction

General

Purpose

Scope

Chapter 2

Runway

Introduction

Inspection Periodicity

Trend Analysis

Additional Inspections

Chapter 3

Runway Inspection Procedures

Inspection Vehicle Checks

Operators Training and Competence

Inspection Conditions

Records

APPENDIX 1

[AIRFIELD INSPECTIONS TRAINING AND ASSESSMENT PLAN](#)

PART 2

Airfield Inspection Policy and Procedure

Tier 1 – Airfield Operations Inspections

Tier 2 – Airside Surface Inspections

Tier 3 – Airside Operations Management Inspections

Follow up of issues raised

APPENDIX 2

DIVIDING THE MOVEMENT AREA

APPENDIX 3

LIST OF PARTICIPANTS FOR TIER INSPECTIONS

APPENDIX 4

3 TIER INSPECTION PROGRAMME

Glossary

For the purpose of movement area inspections the following definitions apply:

Air Service.	An airservice operation open to the public and performed by an aircraft for the public transport of passengers, mail or cargo for remuneration or hire.
Aerodrome.	A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft. (ICAO)
Certified aerodrome.	An aerodrome whose operator has been granted an aerodrome certificate.
Hydroplaning.	The condition when a layer of water separates an aircraft's tyres from the runway surface.
Movement area.	That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, consisting of the manoeuvring area and the aprons. (ICAO)
Manoeuvring area.	That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding the aprons. (ICAO)
Wet Runway Surface.	A runway that is soaked but no significant patches of standing water are visible.

NOTE: Standing water is considered to exist when water on the runway surface is deeper than 3 mm.

PART 1

Chapter 1 Introduction

1 General

- 1.1 As an integral part of an Aerodrome Certificate Holder's Safety Management System (SMS), effective monitoring of the manoeuvring area and in particular the runway surface shall be clearly stated in the aerodrome manual or the Safety Management System. The procedure for the inspections of runways and the runway strip shall be clearly set out together with a methodology for documenting and dealing with the results of such monitoring.
- 1.2 Chapter 4, paragraph 4.15.4 of CAR PART IX outlines the requirement, as set out in ICAO Annex 14, Chapter 10, to undertake regular assessments of the manoeuvring area and in particular the runway strip
- 1.3 This document provides guidance on the way the assessment should be carried out to ensure consistency in the manner the inspections are conducted.
- 1.4 The criteria, which are given in this CAAP, reflect the GCAA's interpretation of Standards and Recommended Practices of Annex 14 to the Convention on International Civil Aviation, in so far as these have been adopted by the United Arab Emirates in respect of runway surface inspections.

2 Purpose

- 2.1 The objective of this document is to offer guidance to Aerodrome Operators when undertaking runway & manoeuvring area inspections by describing the key elements of the inspection procedures.
- 2.2 This document also provides guidance to aerodrome operators on how they may vary the frequency of runway assessments in order to adjust maintenance schedules to meet the objective of adequate runway conditions for safe aircraft operations.

3 Scope

- 3.1 The criteria in this document apply to all runways used for air service (Civil Aviation Law, Chapter 1, Definition 22) operations by aircraft.
- 3.2 On any other runways, where prescribed air service operations are not carried out, the application of the procedures is at the discretion of the aerodrome operator.
- 3.3 Contaminated runways should be assessed and the surface conditions reported in accordance with Appendix 1 of this CAAP. A runway is termed contaminated when water deeper than 3 mm is present over 25% or more of the assessed area.
- 3.4 Additionally, it should be borne in mind that, in the time taken to pass assessments to ATC, conditions may have changed.

Chapter 2 Runway

1 Introduction

- 1.1 A runway surface assessment inspection is conducted under ATC controlled conditions, using the procedure as defined within the aerodromes standard operating procedure/instruction to establish the conditions of a runway and to identify those areas of a runway surface and strip that may require maintenance in order to restore/maintain to a serviceable level.
- 1.2 By adopting a systematic and consistent approach to manoeuvring area inspections, the degradation of a runway surface can be determined by the comparison and assessment of data over time. By utilising this data, aerodrome operators should be in a position to target maintenance as required in order to ensure the manoeuvring area, runway, including the strip does not fall below the required standard as outlined in CAR Part IX regulations and internationally accepted levels.

2 Inspection Periodicity

- 2.1 The aerodrome operator should determine the frequency of the inspections that will enable any change in the serviceability of the runway to be identified and, if appropriate, for remedial maintenance to be conducted to ensure the runway and strip remain safe for aircraft operations.
- 2.2 In compliance with CAR Part IX, Chapter 4 the minimum requirement for manoeuvring area inspections is twice daily. The recommended minimum runway inspections per 24 hours are outlined in Table 1.

Table 1 Recommended Minimum Runway Inspections per day (24hours).

Average number of movements on the Runway per day	Minimum Inspections
Less than 250	Two
250 or more	Four

NOTE 1: The total number of movements, on both runway directions, determines the average number of movements on a runway. Either a take-off or a landing constitutes a movement.

3 Trend Analysis

- 3.1 The surface condition of a runway strip will vary over time as the runway is subject to wear and tear (polishing), jet blast erosions, accumulation of rubber deposits and to the effects of weather and other environmental conditions. Aerodrome operators should monitor the results of inspections and should alter the interval between inspections depending on the results. If historical data indicate that the surface is deteriorating relatively quickly, more frequent monitoring may be required in order to ensure that maintenance is arranged before the areas deteriorate to below an acceptable safety level. The

aerodrome operator should record the justification for any variation from the recommended periodicity for assessments through the SMS.

- 3.2 The serviceability of a runway can also alter significantly following maintenance activities, even if the activity was not intended to affect the runway characteristics. Therefore, a runway surface inspection should be conducted following any significant maintenance activity (e.g. surface enrichment course, large scale repairs, repainting of markings) conducted on the runway and before the runway is returned to service.

4 Additional Inspections

- 4.1 Especially on new surfaces, or resurfaced runways, an aerodrome operator should carry out additional runway inspections during adverse weather conditions to identify those areas of the runway where contamination (i.e. water) may build up over a short period of time. This is of particular importance where re-profiling of the runway's lateral, longitudinal or sloping planes has been accomplished as part of any rehabilitation project.
- 4.2 When there are indications that the serviceability of a runway may be reduced because of poor drainage, additional assessment should be conducted. This assessment differs in that water depths in the poorly drained areas are normally greater in local rain conditions. The results are thus more appropriate to identify problem areas having poor drainage values that could induce hydroplaning.
- 4.3 Please be advised that additional specialist inspections of the manoeuvring area shall be conducted, such as AGL, pavement engineering and bird runs. These inspections are in addition to the ones prescribed in this document and should be carried out by fully trained and competent staff delegated to the task.

Chapter 3 Runway Inspection Procedures

1 Inspection Vehicle Checks

The aerodrome operator should ensure that the vehicle is in full working order and is serviced regularly and is fitted with a compliant anti-collision light. The vehicle should have a daily check list to ensure the brakes, lights, tyres etc are all in working order and meet the requirements of the airport Vehicle Permit Scheme (VPS)

The vehicle used for manoeuvring area inspection should be appropriately equipped for operations on the manoeuvring area including, but not limited to, the following;

- An airfield map
- Radio
- Radio failure procedure
- Lost on airfield procedure (low visibility)
- FOD bin
- Standing depth water measuring tool
- Personal Protective Equipment (PPE) Gloves etc
- Tools for the use of immediate rectification (i.e. shovel for the removal of animal carcass and to remove vegetation obscuring signs and markings)

2 Operators Training and Competence

- 2.1 The success of the manoeuvring area procedures in delivering reliable data depends greatly on the personnel who are responsible for conducting the inspections. All staff should be trained and competent to conduct manoeuvring area inspections. Further guidance on training is provided in Appendix 1 of this CAAP.
- 2.2 Where a contractor carries out the inspections, for example an Air Navigation Service Provider, it is the responsibility of the aerodrome operator to satisfy himself as to the training, competence and experience of the personnel involved.

3 Inspection Conditions

- 3.1 During the inspection of the runway a sterile environment should be adopted with only essential communication conducted within the vehicle. Inspection runs should be completed in a timely manner but no faster than 45kph, with clearance, co-ordination and co-operation from ATC.
- 3.2 Dampness, fog and mist conditions might also affect the outcome of the inspection.

4 Records

- 4.1 As with all elements of the aerodrome operator's SMS, procedures should ensure all appropriate records of all runway and movement area inspections are kept for a period of at least 24 months from the date of inspections.

The following items should be recorded for each assessment, and made available upon request to the GCAA:

- Date and time of assessment, including operative's name;
 - Runway assessed;
 - Any defects or contamination and action taken;
 - Surface condition and air temperature;
- 4.2 Furthermore, should maintenance intervention be indicated, the location, extent, methods employed and results should be recorded.
- 4.3 Aerodrome certificate holders should ensure that procedures in the aerodrome SMS, that manage risks associated with the task in respect of the manoeuvring area inspection procedure, are effective.

PART 2

This gives an example of a 3 tier audit system which may be used for your airport. The document contains the necessary detail but you may choose to add or edit further to ensure it is commensurate with your level of operations.

Chapter 1 Airfield Inspections Policy and Procedure

(Name of International) Airport – **(Airfield Safety Unit)** is responsible for the safe operation of the Airfield. One element of this responsibility is to regularly inspect the movement area for FOD, signs of damage or deterioration to the surface, infrastructure, signage and lighting. **(Name of International)** Airport has developed a 3 tier inspection procedure that engages those responsible for airfield safety at all levels. The policy is detailed below:

Tier 1 – Airfield Operations Inspections

These inspections consist of the daily routine inspections of the runway, taxiways as prescribed in Part 1. These inspections also cover the undershoot/overshoot, aprons, aircraft stands and associated infrastructure, and include a basic AGL check and apron lighting check, all of which are carried out by the **(Airfield Safety Unit)**. These inspections are carried out in accordance with **(Local Operations Procedures)**. Each inspection is recorded. Records of the inspections are reviewed daily by the **(Airfield Duty Manager)**. Any item that requires rectification will be reported to **(Name or job title)** and the information recorded on the next tier 2 inspection form for that area by the **(Airfield Duty Manager)**.

Tier 2 – Airside Surface Inspections

These are more detailed inspections of the movement area. The movement area is divided into smaller areas (Appendix 2) with the whole airfield covered over a **(4 week period)**. These inspections are carried out on foot by the **(Airfield Duty Managers and Airfield Safety Officers)**. The inspection is recorded on the 2nd tier inspection report form. The form details any defects/deficiencies and actions arising from the inspection. Any faults are also reported to **(airport's reporting scheme)** in accordance with normal procedure. A list of participants for tier 2 inspections is included at Appendix 3. A copy of the completed form for each tier 2 inspection is signed off by the **(AOM or ATM)**. Tier 2 inspections are carried out in accordance with the inspection schedule (Appendix 4). A copy of each tier 2 inspection report is forwarded to the **[Head of Airfield Operations (HoAO)]**.

Tier 3 – Airside Operations Management Inspections

Tier 3 inspections are carried out by the Senior Operations Management Team. They are aligned to the areas in Appendix 2 with the whole airfield covered **(twice a year)**. The inspections are carried out on foot. The inspection is recorded on the 3rd tier inspection report form. The form details any defects/deficiencies and actions arising from the inspection. Any faults are also reported to **(airports reporting scheme)** in accordance with normal procedure. A list of participants for tier 3 inspections is included at Appendix 3. A copy of the completed form for each tier 3 inspection is signed off by the **(HoAO)**. Tier 3 inspections are carried out in accordance with the inspection rota. A copy of each completed tier 3 inspection report is forwarded to the **(Operations Director)**.

Follow up of issues raised

Issues raised during tier 1 inspections will be reported to the **(AOM)** who will action through the **(Airport Fault Reporting system)** as appropriate. Any faults not immediately rectified will be added to the next 2nd tier inspection record form for that area.

Issues raised during tier 2 inspections will be recorded on the inspection record sheet. The **(AOM)** will detail on the rear of the form the follow up action planned to resolve the issue. The **(AOM)** will monitor progress of the follow up action(s) planned on a daily, weekly or monthly basis depending on the timescale set initially for resolution. Once resolved the action taken should be recorded on the rear of the inspection record. Any issue that is not resolved before the next inspection should be carried over to the next inspection record sheet and this should be recorded as an action on the previous sheet to close off all items.

Issues raised during tier 3 inspections will be recorded on the inspection record sheet. The **(HoAO, AOM or ATM)** will detail on the rear of the form the follow up action planned to resolve the issue. The **(AOM/ATM)** will monitor progress of the follow up action(s) planned on a daily, weekly or monthly basis depending on the timescale set initially for resolution. Once resolved the action taken should be recorded on the rear of the inspection record. Any issue that is not resolved before the next inspection should be carried over to the next inspection record sheet and this should be recorded as an action on the previous sheet to close off all items.

The original of each completed tier 2 and 3 inspection record sheets will be filed in the folder for that area. The folders will be reviewed at each subsequent inspection.

APPENDIX 2

DIVIDING THE MOVEMENT AREA

(Insert grid map or plan of airfield at the end of appendix 1 to delineate the examples below. All holds and numbers are for example only and not based on any UAE airport)

AREA 1

Runway and strip area as shown on the plan below:

The area extends from runway holds **(E1, C1 and F1)** bordered by the runway strip ending in line with runway light fittings **(13 and 14)**.

AREA 2

Runway and strip area as shown in the plan below:

The area extends from runway holds **(Tango 1, Lima 1 and Golf)** bordered by the runway strip ending in line with runway light fittings **(13 and 14)**.

AREA 3

Runway and strip area as shown on the plan below:

The area extends from runway holds **(L1, T1 and K1)** then down to **(K2)** bordered by the runway and Taxiway strip ending in line with runway light fittings **(43 and 44)**.

AREA 4

Runway and strip area as shown on the plan below:

The area extends from runway holds **(K1 to B)** bordered by the runway and Taxiway strip beginning in line with runway light fittings **(43 and 44)** and ending in line with **(61 and 62)**.

AREA 5

Runway and strip area as shown on the plan below:

The area extends from runway holds **(B to A1)** bordered by the runway and Taxiway strip ending in line with **(61 and 62)**.

AREA 6

Taxiway and strip area as shown on the plan below:

The area extends from runway hold **(L1)** to the end of **(taxiway Lima)** bordered by holds **(K2, H, J)** and the Taxiway strip.

AREA 7

Taxiway and strip area as shown on the plan below:

The area extends from runway hold **(T1 to T6)** bordered by the Taxiway strip.

AREA 8

Taxiway and strip area as shown on the plan below:

The area extends from runway hold **(E7 towards T5)** bordered by the Taxiway strip and the rear of the **(80's)** stands.

AREA 9

Taxiway and strip area as shown on the plan below:

The area extends from runway hold **(D1 toA5)** bordered by the Taxiway strip.

AREA 10

Taxiway and strip area as shown on the plan below:

The area extends from runway hold **(A1 toA5)** including the loop bordered by the Taxiway strip.

AREA 11

Taxiway, taxiway strip and Apron area as shown on the plan below:

The area extends from runway holds **(F1 and G)** around to taxiway holds **(H and J)** bordered by the Taxiway strip. The area includes the **(Name of)** Apron.

AREA 12

Taxiway and taxiway strip area as shown on the plan below:

The area extends from runway hold **(E1 around to taxiway hold E4)** bordered by the Taxiway strip

AREA 13

Taxiway and taxiway strip area as shown on the plan below:

The area extends from taxiway hold **(E4 around to taxiway hold D1)** bordered by the Taxiway strip

AREA 14

Taxiway and taxiway strip area as shown on the plan below:

The area extends from taxiway hold **(E2 around to taxiway hold E7 via taxiway Delta)** bordered by the Taxiway strip..

AREA 15

Taxiway and taxilanes including their strips as shown on the plan below:

The area covers Taxiway (***Victor and Taxilanes Whiskey***), and (***Yankee***) bordered by the (***Taxilane***) strip.

AREA 16

Aircraft Stands and apron roads as shown on the plan below:

The area covers Stands (***80, 81, 82, 83, 84, 85, and 86***) and the apron roads bordering them.

AREA 17

Aircraft Stands and apron roads as shown on the plan below:

The area covers Stands (***70, 71, 72, 73, 74, 75, 76***) and the apron roads bordering them.

AREA 18

Aircraft Stands and apron roads as shown on the plan below:

The area covers Stands (***62, 61, 60, 59, 58, 57***), and the apron roads bordering them.

AREA 19

Aircraft Stands and apron roads as shown on the plan below:

The area covers Stands (***45, 50, 51, 52, 53, 54, 55, 56***), and the apron roads bordering them.

AREA 20

Aircraft Stands and apron roads as shown on the plan below:

The area covers Stands (***40, 41, 42***), and the apron roads bordering them.

AREA 21

Aircraft Stands and apron roads as shown on the plan below:

The area covers Stands (***10, 11, 12, 13, 14, 15 16***), and the apron roads bordering them.

AREA 22

Aircraft Stands and apron roads as shown on the plan below:

The area covers Stands (***1, 2, 3, 4, 5, 6, 7***), and the apron roads bordering them.

AREA 23

Aircraft Stands and apron roads as shown on the plan below:

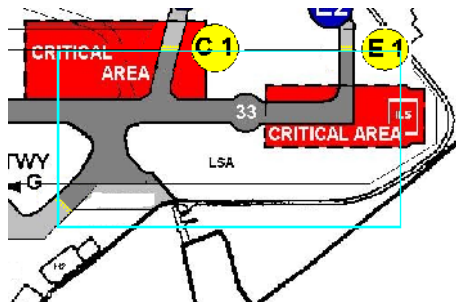
The area covers Stands (20, 21, 22, 23, 24, 25), and the apron roads bordering them.

(EXAMPLES OF AREAS)

AREA 1

Runway and strip area as shown on the plan below:

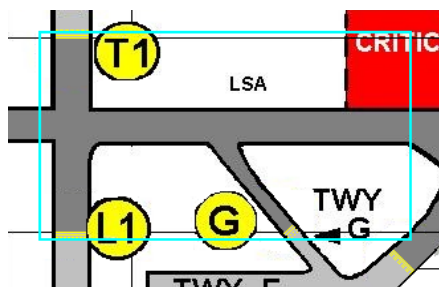
The area extends from runway holds E1, C1 and F1 bordered by the runway strip ending in line with runway light fittings 13 and 14.



AREA 2

Runway and strip as shown in the plan below:

The area extends from runway holds Tango 1, Lima 1 and Golf bordered by the runway strip ending in line with runway light fittings 13 and 14.



APPENDIX 3

LIST OF PARTICIPANTS FOR TIER INSPECTIONS

3-Tier Inspection Process - Participants

	Core Participants	Additional Participants	RT Cover
3rd Tier Inspections	<p><i>Head of Airfield Operations</i> <i>Airfield Technical Manager</i> <i>Airfield Operations Manager</i></p> <p><i>Snr Airfield & Estates Mgr</i></p> <p><i>Ops Duty Manager</i></p>	<p><i>Operations Director</i> <i>Managing Director</i> <i>Finance Director</i> <i>Aviation Planning Manager</i> <i>General Mgr</i> <i>Engineering Services Major Projects Manager</i></p>	AOM / MASO
2nd Tier Inspections	<p><i>Ops Duty Manager</i></p> <p><i>MASO's</i></p> <p><i>Airfield Electrical Engineer*</i></p>	<p><i>Airfield Technical Manager</i> <i>Airfield Operations Manager</i> <i>Head of Airfield Operations</i></p>	MASO
1st Tier Inspections	<p><i>MASO's</i></p>	<p><i>Ops Duty Manager</i> <i>Airfield Operations Manager</i> <i>Head of Airfield Operations</i></p>	MASO

* Runway 2nd Tier Only

Legend for table below

Red – Numbers in red indicate runway inspections as part of the 3 tier audit programme (not to be confused with daily routine runway inspections)

Day	Week number																									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Mon	6	11	16	21	8	13	18	23	10	15	19	6	11	16	21	8	13	18	23	10	15	19	6	11	16	21
Tue	7	12	17	22	9	14	19	6	11	15	20	7	12	17	22	9	14	19	6	11	15	20	7	12	17	22
Wed	1	6	7	8	9	2	10	11	12	13	3	14	15	16	17	4	18	19	20	21	5	22	23	6	7	1
Thur	8	13	18	23	10	15	20	7	12	16	21	8	13	18	23	10	15	20	7	12	16	21	8	13	18	23
Fri	9	14	18	6	11	16	21	8	13	17	22	9	14	18	6	11	16	21	8	13	17	22	9	14	18	6
Sat	10	15	20	7	12	17	22	9	14	18	23	10	15	20	7	12	17	22	9	14	18	23	10	15	20	7
Sun	2	3	4	5	1	3	4	5	1	2	4	5	1	2	3	5	1	2	3	4	1	2	3	4	5	2

Day	Week number																									
	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
Mon	8	13	18	23	10	15	19	6	11	16	21	8	13	18	23	10	15	19	6	11	16	21	8	13	18	23
Tue	9	14	19	6	11	15	20	7	12	17	22	9	14	19	6	11	15	20	7	12	17	22	9	14	19	6
Wed	8	9	10	11	2	12	13	14	15	3	16	17	18	19	4	20	21	22	23	5	6	7	8	9	1	10
Thur	10	15	20	7	12	16	21	8	13	18	23	10	15	20	7	12	16	21	8	13	18	23	10	15	20	7
Fri	11	16	21	8	13	17	22	9	14	18	6	11	16	21	8	13	17	22	9	14	18	6	11	16	21	8
Sat	12	17	22	9	14	18	23	10	15	20	7	12	17	22	9	14	18	23	10	15	20	7	12	17	22	9
Sun	3	4	5	1	3	4	5	1	2	4	5	1	2	3	5	1	2	3	4	1	2	3	4	5	2	3

(E.G. Area overview plan)

Yellow- 3rd tier audit

CAAP 36

16th Feb. 2010

APPENDIX 4 (EXAMPLE) 3 TIER INSPECTION PROGRAMME.

