Runway Incursion Report 2009

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INTRODUCTION

Runway incursions are a very serious safety event at any airport. The incorrect presence of vehicles or aircraft on a runway poses the potential for devastating consequences.

Manchester airport uses the internationally agreed definition of a runway incursion as follows:

> *"Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft"*

The airfield layout at Manchester Airport comprises closely spaced parallel runways, featuring multiple crossing points across runway 23R/05L. This results in an unavoidable high number of runway crossings that need to be coordinated. The procedures and communication between Air Traffic Controllers, Pilots and Airfield Drivers is critical to the prevention of incidents and relies on a high standard of discipline and professionalism.

This report is a summary of the runway incursion incidents that occurred at Manchester Airport between ***January and December 2009*** and analysis of data for the preceding three years. It contains data relating to the incidents and some brief analysis and conclusions. The Manchester Airport Runway Safety Committee is focussed to the reduction of runway incursions. This report summarises some key initiatives that have been implemented, but also some of the measures that are being taken which aim to further reduce runway incursion incidents.

The severity of runway incursions in this report are categorised according to the internationally used definitions below:

Category A	Very little separation. Participants take extreme action to narrowly avoid a collision, or the event results in a collision.
Category B	Much reduced separation with significant potential for collision.
Category C	Reduced separation but ample time and distance to avoid a potential collision.
Category D	Very little chance of collision but meets the definition for a runway incursion.

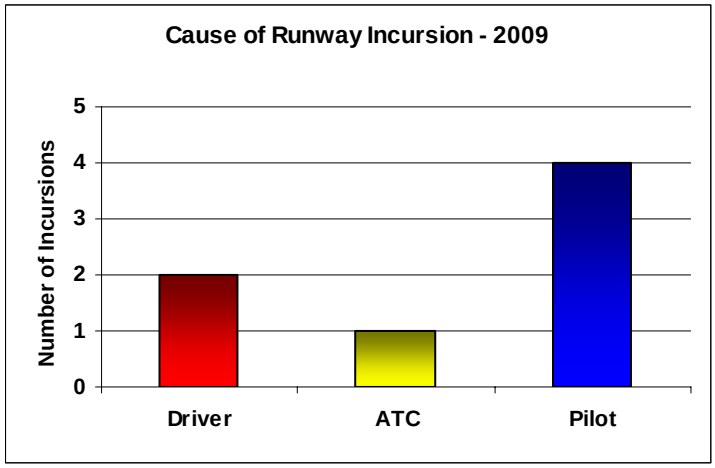
2009 DATA

There were a total of **7** runway incursions in 2009.

1. Primary Cause of Runway Incursion

Of the 7 runway incursions in 2009, **4** were due to pilot error, **2** were due to driver error and **1** were due to Air Traffic Control error.

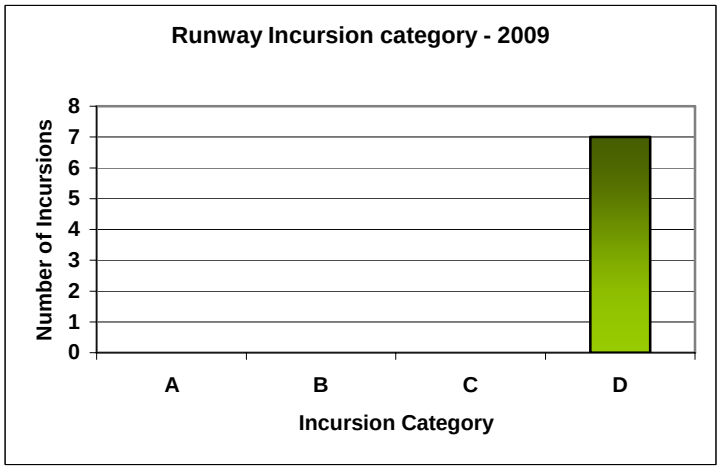
Note that this only shows the primary cause. It is recognised that other contributory factors may be involved.



2. Runway Incursion Category

All of the 7 runway incursions in 2009 were category D. There were no category A, B or C runway incursions during 2009.

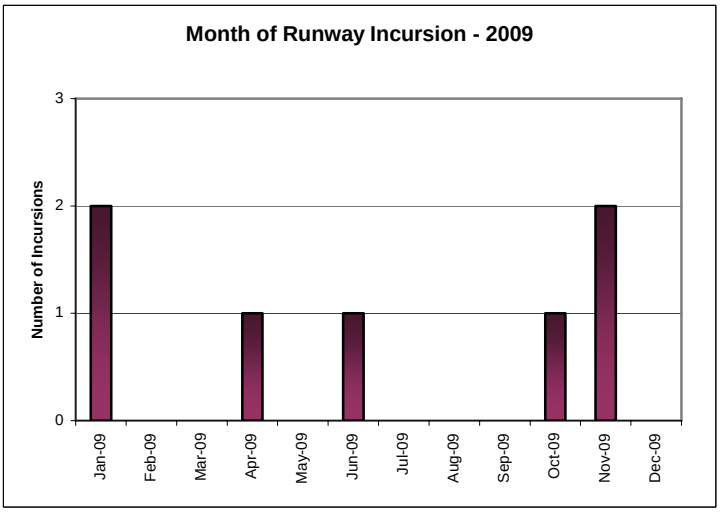
The last significant runway incursion event was in 2007 (Category B).



3. Month of Runway Incursion

The 7 runway incursion events in 2009 were spread generally evenly throughout the year with no apparent spike. For the first time since January 2007, a three month period was recorded without an incursion incident (111 days in total).

(Please see Analysis below for further comment).



4. Analysis

During 2009, two key trends were apparent:

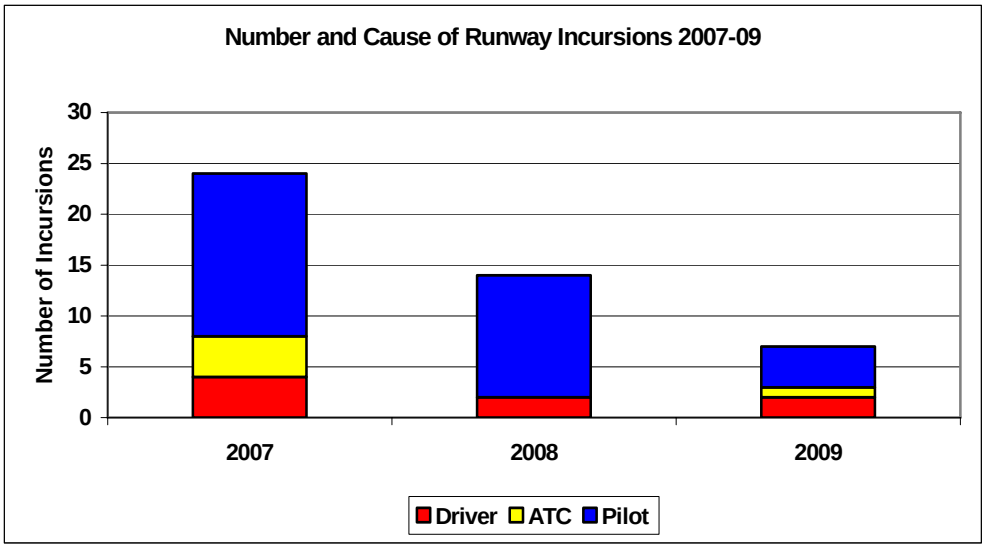
- Most of the incidents (4) occurred in Low Visibility Operations (Jan & Nov).
- The same4 incidents were concentrated in the 23R Hold area.

If data for 2010 is also included, this rises to 6 out of 9 incidents (67%) occurring in LVP in the 23R Hold, making the area a Hot Spot concern. Warnings are provided on airfield driver's maps and a project to make alterations to this area is due to commence in early 2010.

Ensuring that airfield drivers are properly trained and experienced is one of the crucial measures to minimising the number of runway incursions at MAN.

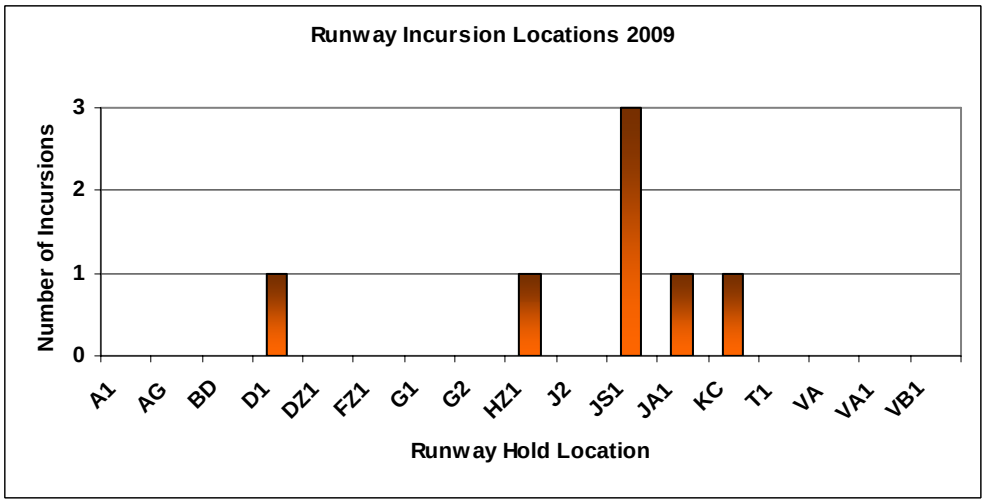
2007 - 2009 Combined Data and Analysis

1. Total Runway Incursions 2007-2009



Runway incursions are shown above throughout 2007 (24), 2008 (14) and 2009 (7) with the primary cause of error. The trend shows a clear continual decrease in the total number of runway incursions year on year. Notably, the number of pilot error caused runway incursions has reduced significantly over the period from 16 in 2007, 12 in 2008, to a very low level of 4 in 2009.

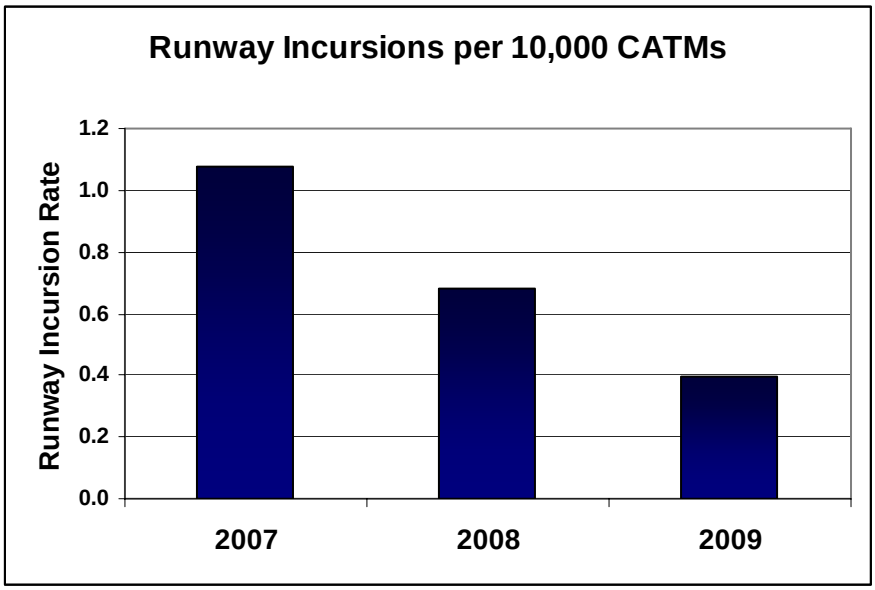
2. Runway Incursion Location 2009

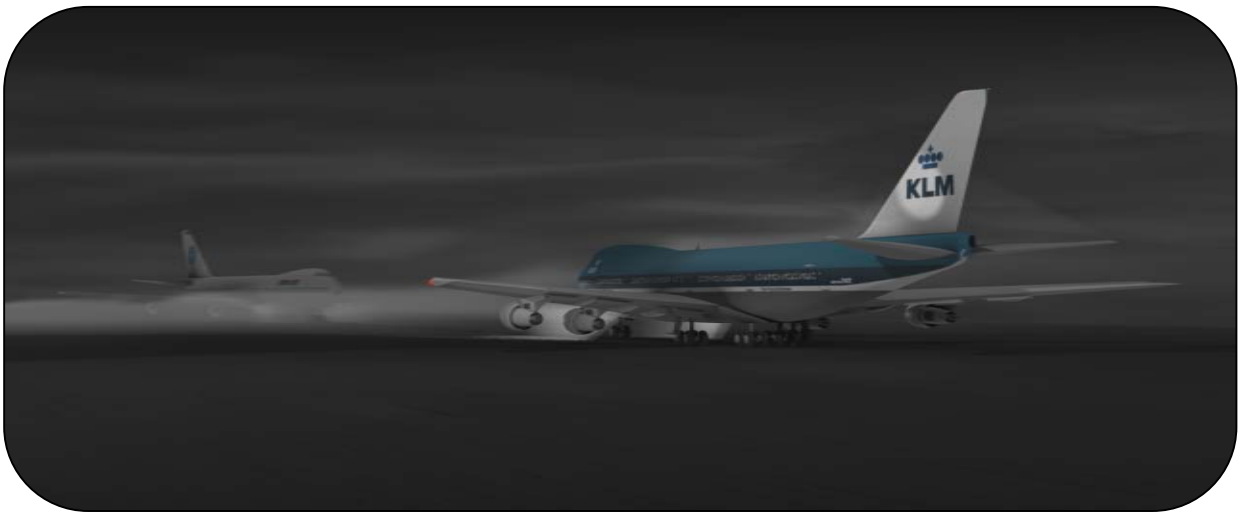


The above graph shows the location of each runway incursion in 2009. There is concentration in the 23R Hold, including JA1 and JS1, with 4 of the 7 runway incursions occurring in this area. Weaknesses in the existing design of the infrastructure layout are an underlying cause and are discussed in the improvement plans at the end of this report.

3. Incursion Rate per 10,000 Movements

In order to benchmark the runway incursion occurrences at Manchester, the graph below illustrates the rate per 10,000 Commercial Air Transport Movements (CATMs). This again illustrates the significant reduction in runway incursion events over the last three years from **1.1** in 2007 down to **0.4** events per 10,000 CATMs in 2009.





An illustration of the moments before the most devastating runway incursion in aviation history (Tenerife, 1977)

RUNWAY INCURSION EVENTS FOR 2009

DATE	HOLD	RWY	CAT	CAUSE	DESCRIPTION
4 Jan	JS1	23R	D	Driver	Vehicle passed between J2 and J1 during LVP ops.
4 Jan	JA1	23R	D	ATC	Vehicle was at Hold JA1 when LVP cloud was selected.
8 Apr	D1	23R	D	Pilot	Aircraft entered D1 and lined up on 23R without clearance. Green centreline route was lit as stop bar not reselected after crossing of previous aircraft.
29 Jun	HZ1	05L	D	Pilot	Aircraft instructed to hold at FZ1 but taxied to HZ1 and stopped beyond stopbar, which set off incursion alarm. A departure was just airborne from 05L.
19 Oct	KC	23R	D	Driver	RFFS attending Emergency at midpoint of 23R given clearance to enter runway at D1 but entered at KC instead, across lit stopbar, to achieve best response.
9 Nov	JS1	05L	D	Pilot	During LVP Ops, Aircraft cleared to Taxiway J but vacated onto JS, infringing the ILS Localiser Sensitive Area.
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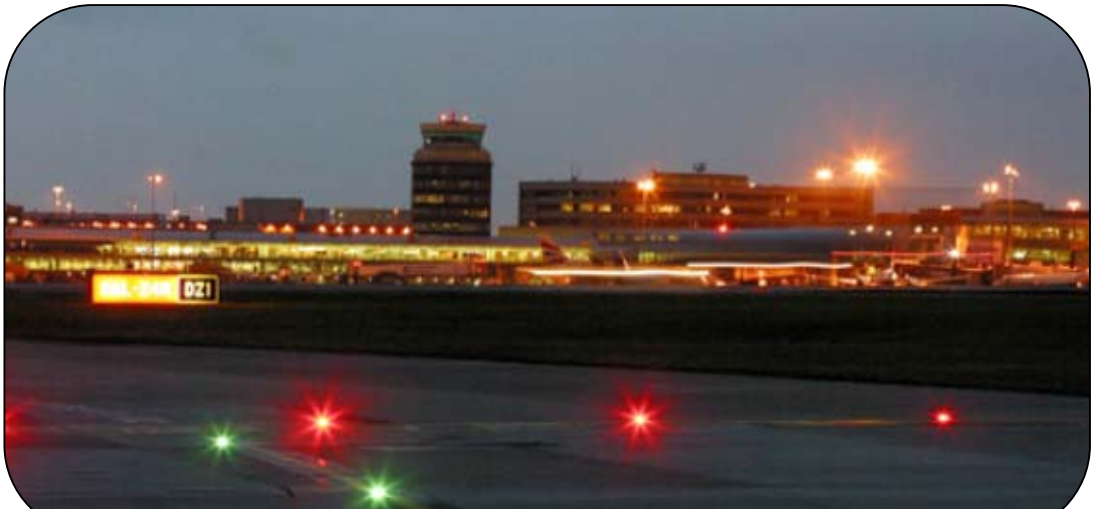

Using lit stop bars 24 hours a day (H24) dramatically improves the visibility of runway holding points

PLANNED IMPROVEMENT ACTIVITY

Runway incursions have been reducing continually at Manchester Airport from 2007 to 2009. Safety measures and improvement activity have taken place throughout the period with the aim of making a reduction in the runway incursion rate. Some key examples have been the use of runway stopbars at all times of day and night, lighting trials at stopbar FZ1 and changes to ATC procedures. It is our aim to continually reduce the number of runway incursions as far as possible, and as such, some specific plans for 2010-2011 are outlined below.

Competence for drivers

The Runway Safety Committee will oversee the development of robust competence requirements and testing for manoeuvring area drivers. Work has been taking place in conjunction with the CAA to develop a new UK standard for Airside driver training. The proposals include implementing a new training regime including practical testing and VHF training requirements for "A" Permits. It is envisaged that the new requirements will be implemented from late 2010.

Runway Entrance and Stopbar improvements

A project will commence in 2010 to combine the hold positions on the north side of Runway 05L-23R to a single position at each entrance point, along with lighting, markings and signage improvements.

It is planned to continue the improvements into 2011 with the addition of LED style light fittings and to install the improved lighting layout that has been successfully trialled at FZ1.

New Stopbars for ILS Localiser protection

The runway holding points at Juliet-Alpha, Juliet-Sierra and Alpha-Golf have all been locations where runway incursions have occurred in Low Visibility conditions. In these locations, the lighting does not provide a proper protection of the ILS localiser sensitive area. Improvements will be made to install red stopbars at these runway entrances in projects during 2010.

GPS Runway warning tool for Operations vehicles

A GPS (satellite navigation system) based tool has been developed by Airfield Engineering. This will give an audible warning of approaching a runway entrance to vehicle drivers. The system will be completely installed into vehicles used by Airfield Operations, Airfield Engineering and the Airport Fire Service by April 2010.


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