**Author: Dr David Gallacher**

**Work: Atmospheric Dispersion of Radioactive Gaseous Discharges in the Near Field of Buildings**

**Explanation of files in the repository (see also ReadMe file for additional details)**

[1] Introduction and Contents

Sub-folders: 0

Files: 4

Files detail outline requirements for the initial investigations and the PhD project proposal.

[2] Calculations and Results

Sub-folders: 9

Files: 8,161

1. Analysed Site Gamma Monitoring Data

These are the gamma monitoring files for the detectors on the EW building during the construction phase of the East Wing cladding

1. CERC ADMS Supplied Data

An ADMS receptor points map and doses calculated from the concentration field and gamma-ray dose module of ADMS, these are detailed in the paper reproduced in the thesis

1. Detectors and layouts

This sub-folder contains details of the detector positions on the EW building and the wind logger calibration test certificate

1. Experiment #2 Results

This folder contains sub-folders with the results according to the experimental numbering scheme specified in chapter 3 of the PhD thesis

1. Experiment #3 Results
2. This folder contains sub-folders with the results according to the experimental numbering scheme specified in chapter 3 of the PhD thesis. Also included are processed results showing the measured velocity flow field for the cube and EW clad buildings. Data is also included showing the puff release measurements and continuous release measurements. Graphical data is included on the measurement planes with respect to the EW building.
3. Experiment #4 Results

Experiment #4 methods document details the experimental investigations. Results are presented for the cube and EW flow fields. Also, the leading-edge effective distance from the building of the release point is shown.

1. Experiment #5 Results

An experiment series #5 data spreadsheet is given summarizing the results along with the document covering the experimental investigations. Along with this there are graphical results from the flow field for different cases using a plotting program. Spreadsheets are presented that contain the experimental results for various building configurations and downstream distances, X.

1. Paper #1 Results

Various spreadsheets are presented showing the calculations for the initial first paper reproduced in the thesis.

1. Photographs

Photographs of smoke releases are shown for the EW full building model. Also, a variety of photographs of the wind tunnel cube experiments.

[3] Monte Carlo Results

Sub-folders: 18

Files: 495

1. 20190301\_MC\_Data.xlsx: contains physical constants and other data for the set-up of the Monte Carlo calculation runs
2. The 18 sub-folders contain results from the cases of:

CA: Continuous Analysis; AV: active vertical release when shown; A/B: release positions

SGP/DGP: single Gaussian plume and dual Gaussian plume modelling methods

Building: Cube/EW clad/EW unclad; Angle in degrees of building to flow; *Zrh*: release height

[4] Experiment Results Summary

Sub-folders: 5

Files: 264

1. 20190729\_Experiment\_Results\_Summary.xlsx

Full data on the plume parameterization used for the MC calculations is given in this file

1. 20190802 Full Scale Results Summary.xlsx

A summary of the full-scale gamma-ray dose measurements on the EW building is given in this file

1. 20200723\_MC\_results\_summary.xlsx

The Monte Carlo dose results are selectable via Excel pivot table in this file

1. Experiment Series#5 Analysed.xlsx

Flow field measurement results are selectable via Excel pivot tables in this file

1. Experiment Series#5 Building Cases Analysed.xlsx

This file uses Excel pivot tables to present results from the different building configurations tested in the experiments

1. Puff\_Releases\_Analysis\_all\_data.xlsm

This file shows a summary of the puff release results and statistical parameters

The following sub-folders contain more experimental results:

1. Analysed Full Scale Data

All full-scale gamma-ray peaks for the EW measurements are provided here

1. Continuous\_Analysis\_Cube

Various Excel results files showing the spread parameters for the range of cube experimental cases with passive horizontal releases into the flow are provided

1. Continuous\_Analysis\_Cube\_AV

Various Excel results files showing the spread parameters for the range of cube experimental cases with active vertical releases into the flow are provided

1. EW\_Clad

Various Excel files showing the concentration field measurements for the EW clad building analysed using pivot table

1. EW\_Unclad

Various Excel files showing the concentration field measurements for the EW unclad building analysed using pivot table

[5] Conclusions and Output Reports

Sub-folders: 0

Files: 19

The files cover presentations presented at different forums during the course of the PhD work about findings from the project. Also included is a radiological assessment report submitted to the Environment Agency after the initial radiological assessment of the site discharges. There are various power-point presentations made on completion of the PhD work. Another set of files cover the reports submitted by CERC, Cambridge, that were referenced in the first published paper cited in the PhD thesis. The folder includes the final PhD thesis after corrections and award.