

THE ROYAL AIR FORCE MUSEUM'S POLICY FOR MONITORING RELATIVE HUMIDITY AND TEMPERATURE

INTRODUCTION

1. This policy addresses the tracking of temperature and relative humidity (RH) levels through regular measurement and analysis, in both storage and public display areas of the Museum's sites at London, Cosford and Stafford.
2. A variety of environmental control systems are used across the Museum to cater for the different materials that make up the Collection. Notably, environments for smaller and more sensitive objects are locally controlled within sealed cases to exclude dust and moisture, and more delicate parts of the collection (paintings, photographs and uniforms) are stored in areas where control systems for dehumidification are already in place. However, these control systems are limited to only some of the collections storage areas, and the general environments of each building (containing aircraft, other large 3-d objects and fine art) are supported only by background heating for visitor comfort.
3. By monitoring the environment, and therefore its impact on objects, the Museum will be more able to forecast conservation requirements and take steps to avoid excessive rates of change and extremes in temperature and RH.

TARGET ENVIRONMENT

4. Balancing the requirements of the range of materials on display in the Museum's Aircraft Halls and the comfort of the visiting public means the Museum cannot optimise the environment for all media at one time. Instead the Museum targets a compromised temperature and RH range that is tolerable for all materials; see Annex A.
5. The table at Annex A gives a set of materials that define the different environments of the RAF Museum. Each environment has a target for tight control over RH and temperature, and a wider band of moderate control. The Museum aims to meet these standards for 90% of the time, in order to classify environments as moderately, or tightly, controlled.
6. Stable relative humidity is the main aim when controlling temperature and humidity. A stable level of RH, even if it approximates target levels, is preferable to maintaining exact desired levels for only part of the time. In addition, temperature can be allowed to fluctuate moderately in favour of the stability of relative humidity.
7. Repeated fluctuations in humidity and temperature over the course of a few hours to a few days can be particularly damaging to museum objects. Fluctuations should be minimised and should always be less than 10% RH and 4°C in 24 hours.

ACTIVITIES

8. Dataloggers are programmed to measure temperature and RH at set intervals, for that data to be downloaded quarterly and forwarded to the Museum Registrar. Portable thermo-hygrometers are also to be used at key times and in local areas of particular concern.

9. In addition to dataloggers monitoring areas that house the Museum's Collections, a further datalogger at each site records temperature and RH outdoors. This acts as a control sample, against which activities to maintain a stable environment indoors can be measured. To ensure accurate local readings these instruments are shielded against rain and direct sunlight by the use of protective meteorological screens (Stevenson screens).
10. The Museum Registrar collates environmental monitoring data quarterly from across the Museum; producing a report comparing the performance of areas against their agreed target conditions, and suggesting priorities for conservation plans.
11. The Museum Registrar's report is submitted to Heads of the Collections Departments, and to the Director Collections Division so that the impact of the environment on objects can be assessed and departmental conservation plans can be implemented.
12. Any event that exceeds a 10%RH or 4°C in 24 hour rate of change, particularly an event occurring routinely or more than once in 24 hours, will be highlighted by the Museum Registrar for investigation by the Head of the relevant Collections Department.
13. Dataloggers will be purchased for areas not currently monitored as budgets allow.

MAINTENANCE OF EQUIPMENT

14. Datalogger batteries will be checked after each quarterly download and replaced if necessary.
15. Dataloggers will be calibration tested and have their batteries replaced annually.

STANDARDS AND ADVICE

BS 5454-2000 "Recommendations for the Storage and Exhibition of Archival Documents"

BS ISO 18911:2000 "Photography. Processed Safety Photographic Films. Storage Practices"

Paine, Crispin, ed. "Standards in the Museum Care of Larger and Working Objects, 1994", Museum and Galleries Commission; London; 1994

Canadian Conservation Institute "CCI Notes Chapter 13: Textiles and Fibres", Department of Canadian Heritage; Ottawa; 1996

Canadian Conservation Institute "CCI Notes Chapter 16: Care of Photographic Materials", Department of Canadian Heritage; Ottawa; 1996

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Annex A

Material	Temperature	Relative Humidity
Paper	Tight control: 16-19 °C Moderate: 15-20 °C	Tight control: 45-60% Moderate: 40-65%
Textiles	Tight control: 16-20 °C Moderate: 15-25 °C	Tight control: 46-54% Moderate: 20-60%
Fine Art	Tight control: 16-20 °C Moderate: 13-23 °C	Tight control: 46-54% Moderate: 40-60%
Photographs, Film and Sound Recordings	Tight control: Colour; <2 °C B&W; <21 °C Moderate: 0-24 °C	Tight control: Colour; 20-30% B&W; 30-35% Moderate: 20-40%
Mixed Media Storage	Tight control: 16-20 °C Moderate: 13-23 °C	Tight control: 46-54% Moderate: 40-60%
Mixed Media Display: the Aircraft Halls	Tight control: 18-22 °C Moderate: 15-25 °C	Tight control: 46-54% Moderate: 40-60%