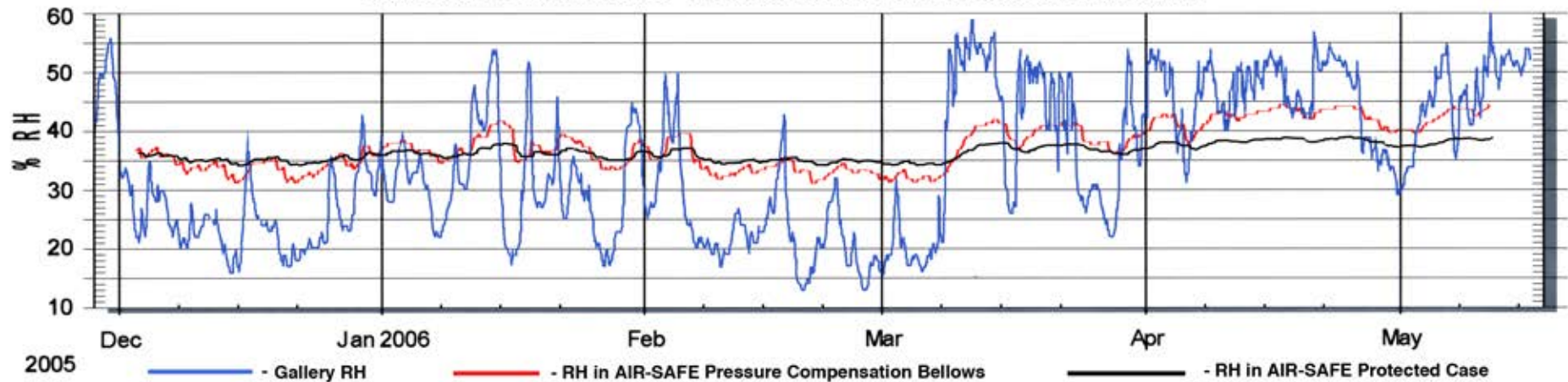


LOG DATA FROM AIR-SAFE™ PROTECTED DOCUMENT CASE AND GALLERY *



AIR-SAFE Protected Document Case

THE EXHIBIT: The monitored case is in a recently remodeled historic brick and masonry building. Modern HVAC controls temperature. There are no RH controls. Gallery RH varied by a total of 47% (13% to 60% RH) during the 5 month monitoring period. The monitored document is in a sealed enclosure attached to a NoUVIR AIR-SAFE™ passive climate control device and lit by fiber optic lighting with zero UV and zero IR. The document, AIR-SAFE and lighting are installed in a historic vault reworked into a display case.

AIR-SAFE OPERATION: All air exchange with the gallery is eliminated by the AIR-SAFE device. Normal case breathing due to HVAC temperature cycles and barometric pressure changes moves air in and out of a pressure compensation bellows through two separate chemical and particulate filters each holding 1.2 lbs of color conditioned silica gel. The AIR-SAFE continually filters the enclosure air for chemical and particulate pollutants while it buffers humidity. Moisture migration through the high density polyethylene pressure compensation bellows in the AIR-SAFE caused RH within the bellows to vary by 13% (31% to 44% RH) during the five month monitoring period. This is less than one third of the gallery variation. Silica gel in the filters within the bellows would continually work to adjust this RH back to the conditioned 35% to 40% RH.

ENCLOSURE RH: Partially buffered air from the bellows cycles through a second particulate and chemical filter containing 1.2 lbs of conditioned color indicator silica gel before it enters the case enclosure. RH within the document case enclosure varied less than 5% (34% to 39% RH) over the 5 month period. This is one tenth of the gallery variation. (Data from one monitor showed only a 1% variation in RH within the actual document enclosure over the 5 month period while internal temperatures varied by 8°F. This monitor seems suspect. See the note below.)

A Note about Temperature and RH: It should be noted that while case enclosures generally buffer internal temperature cycles to roughly 30% of that of gallery HVAC cycles, the acceptable $\pm 4^\circ$ F HVAC gallery variation from 72°F will itself induce a variation of almost 4% in the RH within the enclosure without adding or removing any water from the system. Adjusting both the gallery and the document enclosure for these allowable temperature variations AIR-SAFE did hold the enclosure RH to within 1% over the five month monitoring period. Gallery RH varied by an adjusted 35% during the same period.

* Installation monitoring and data by The National Archives and Records Administration. No endorsement by NARA is suggested or implied.