The Design and Operation of a Passive Humidity-Controlled Cold Storage Vault Using Conventional Freezer Technology and Moisture-Sealed Cabinets

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Presented at the IS&T Archiving Conference, San Antonio, Texas, April 22, 2004

Abstract: We report on the design, operation, and long-term performance of a passive, temperature- and humidity-controlled cold storage vault for archival materials. The vault is a walk-in freezer containing several large, pass-through, moisture-sealed cabinets with climate control. The Design and Operation of a Passive Humidity-Controlled Cold Storage Vault Using Conventional Freezer Technology and Moisture-Sealed Cabinets

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Walk-in freezers are readily available due to their widespread use in the food industry. They can be used, for example, for perishable foods requiring cold storage. Additionally, walk-in freezers are generally more readily available and less expensive than smaller refrigeration units, making them an attractive option for housing a cold storage vault. Our vault was located in a fully heated building and away from the outer walls.

The dimensions of the vault were planned to fit the cabinets modularly through the door, with minor modifications needed to ensure proper archiving of the collection.

The vault was designed to be pass-through, allowing for efficient and secure transfer of objects in and out of the vault.

Over four years of trouble-free operation, $1.46/day energy costs!