

Efficacy of Various Drying Methods

**National Archives and Records
Administration**



Drying methods compared:

- air-drying
- desiccant drying (dehumidification)
 - on-site in a temporary chamber
 - drying in-situ (boxes left on shelf)
 - drying off-site (sent to vendor)
- vacuum freeze-drying
- thermal vacuum freeze-drying









Boxes packed with like materials in the same order



Boxes in 2" of tap water for 24 hours





-5 degrees F
4 days



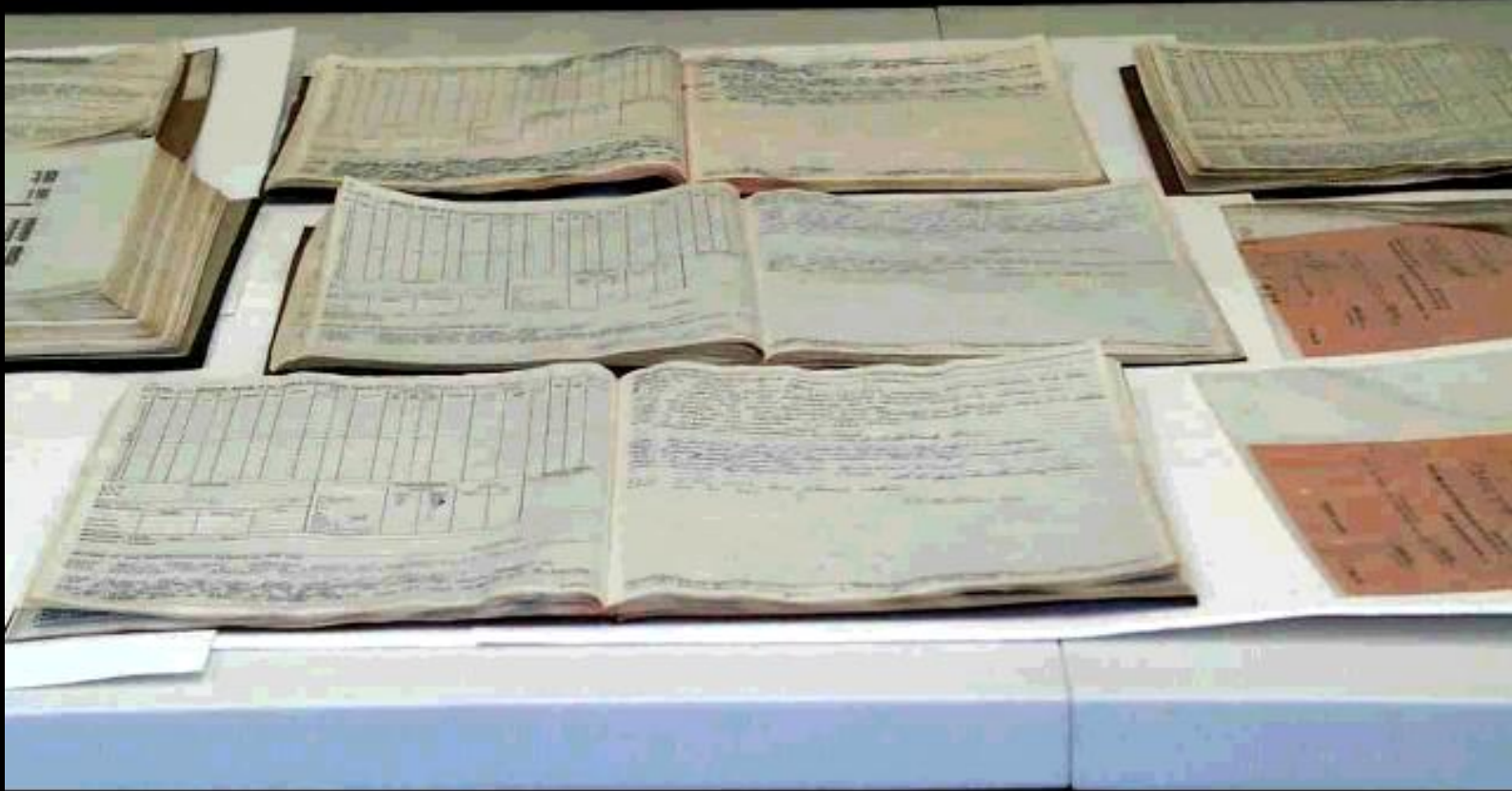
Air Drying



First page Back Continue Last page



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Marine of the Year honored

CAMP HANSEN-In recent correspondence, Sgt. T.J. Karter of 31st Marine Battalion, 1st Marine Division, 3d Marine Amphibious Brigade, was selected as the 31st Marine Battalion's Marine of the Year.

First selected as the Noncommissioned Officer of the Quarter for the Division, Sgt. Karter was then selected as Marine of the Year. He was presented a Balaclava Award, a watch, a plaque from the 31st Marine Division Association and a meritorious award by the commanding general of III MAF. Sgt. Karter was also honorably promoted to his present rank.

When asked how he felt about being selected as Marine of the Year, Sgt. Karter said he was "very proud."

"It was an honor to be selected as Marine of the Year. I was overwhelmed to have a recognized reputation and a meritorious award by the general," said the 25-year-old Laguna, West Virginia native.

Sgt. Karter's platoon sergeant, SSGT. Eric Cook, thinks highly of Karter's accomplishments. Sgt. Karter is the kind of guy that is always willing to improve himself. In a study camp, he makes try job a lot easier," emphasized SSGT. Cook.

Sgt. Karter makes it a point to look out for his troops at all times. "The men are proud of him and they are proud of me," said SSGT. Cook. "There aren't too many Marines like him," he added.

Sgt. Karter is proud of being a Marine and a member of the 31st Marine Battalion. "I like going to the field and I

Photo by Staff Sgt. T.J. Karter



"WILL LOVE MARINE" - Sgt. T.J. Karter

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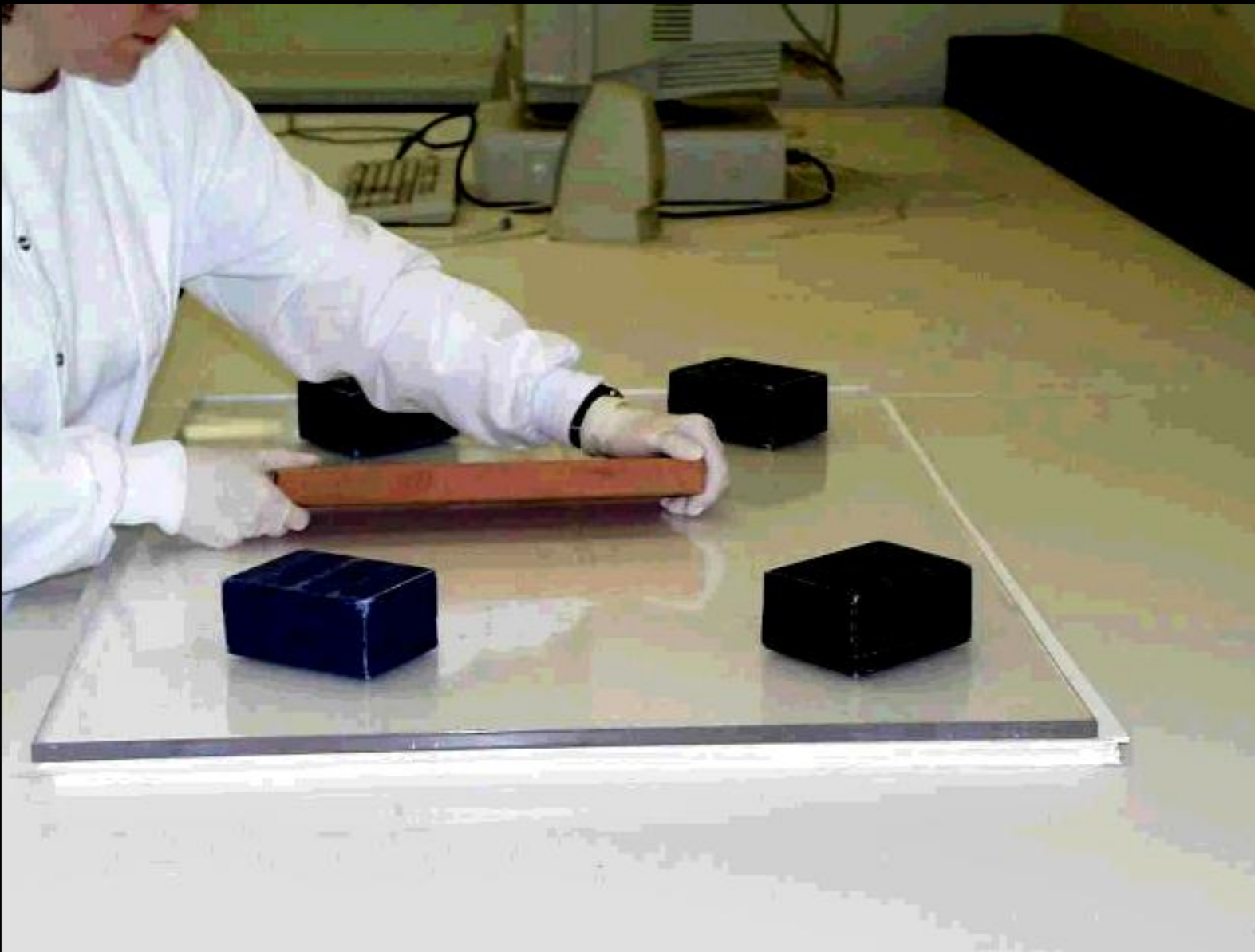
Photo by SSgt. J. O. Russe

"WELL DONE, MARINE!" - Sgt. T. J. Kozee holds his

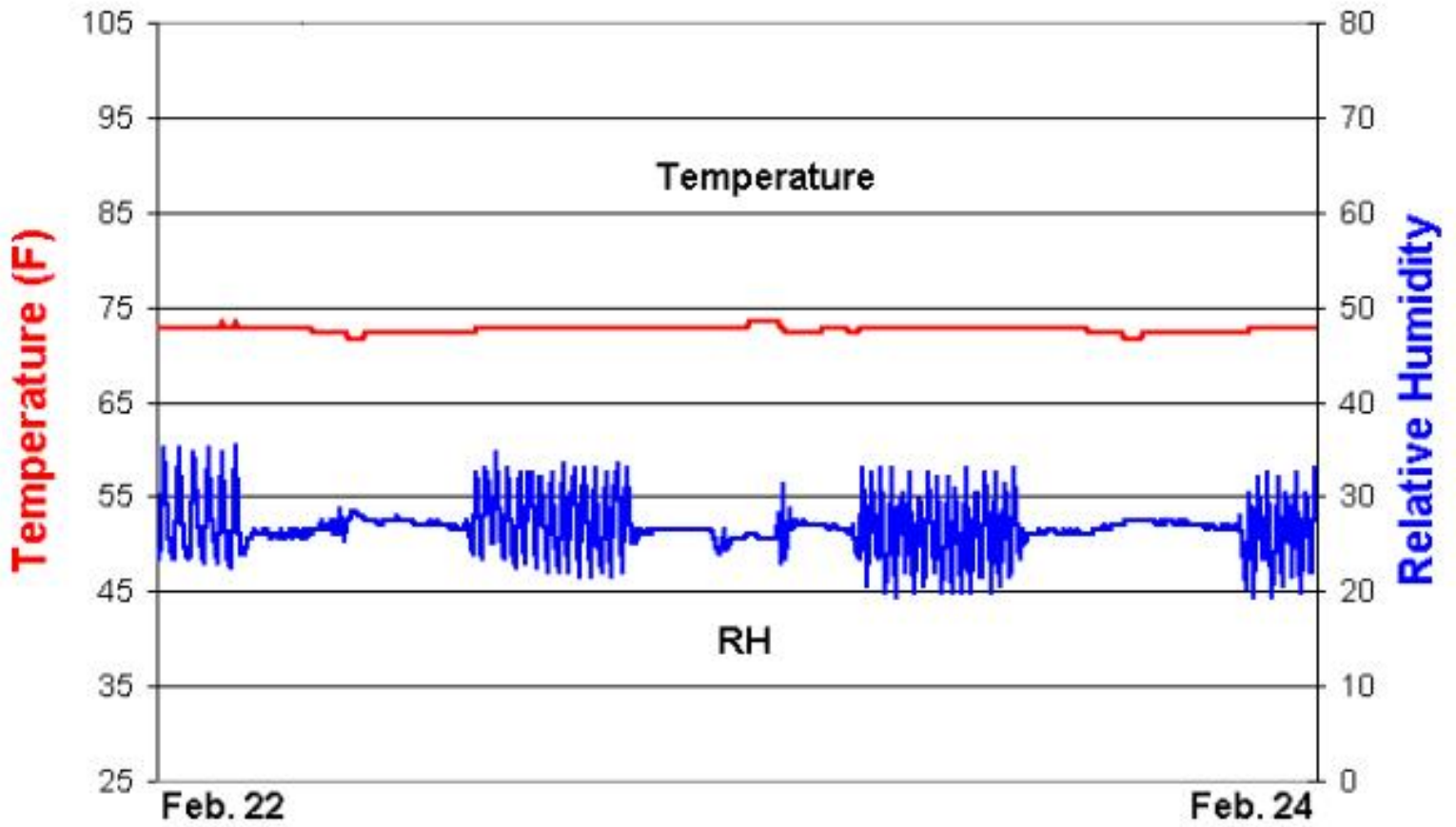








For the 2 Day Period Feb. 22 to Feb. 24, 2002



Desiccant drying on-site





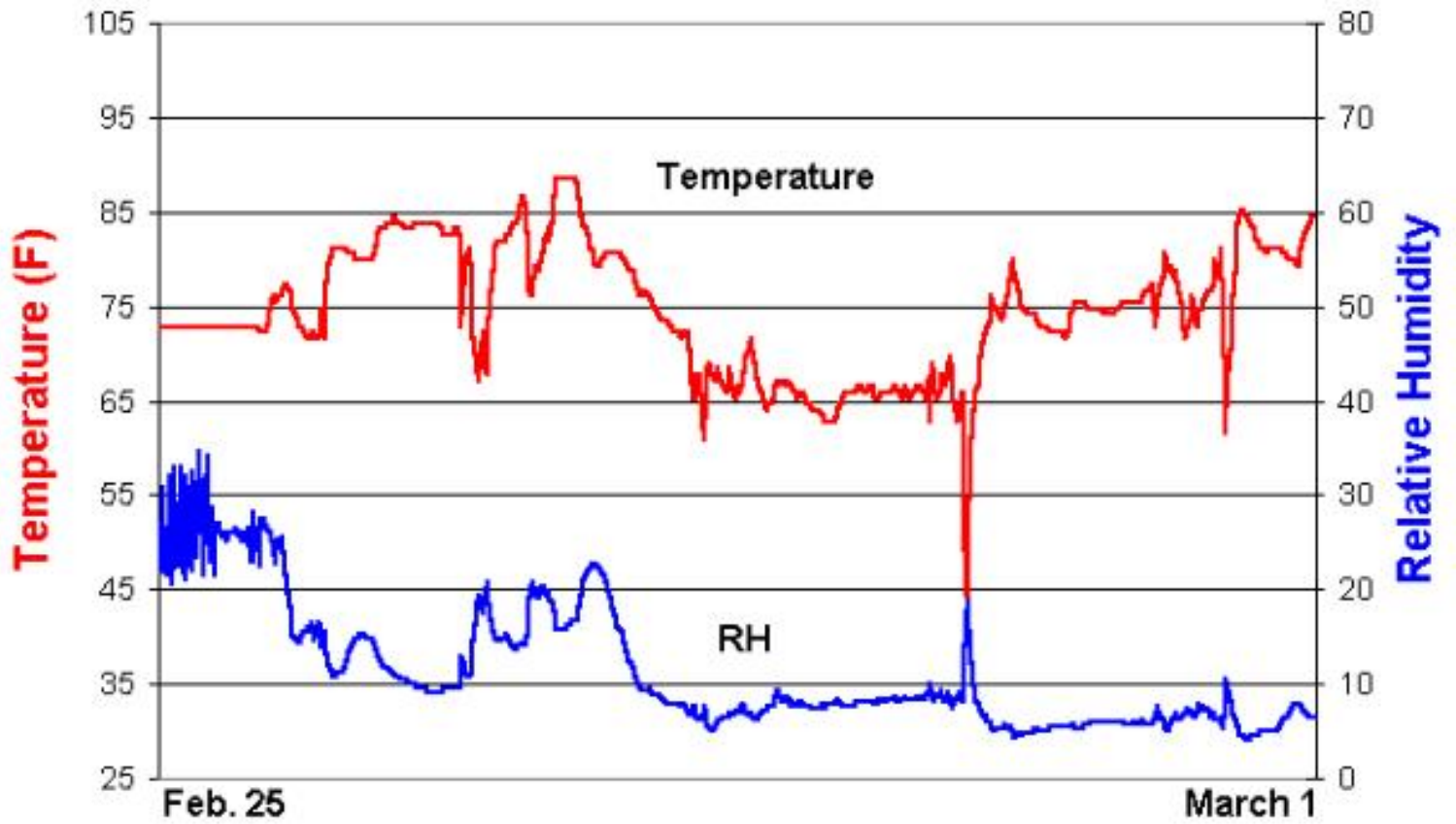


Records set out to desiccant-dry after thawing



Same records after 48 hours of desiccant drying

T and RH of Drying Chamber at Suitland For the 5 Day Period Feb. 25 to March 1, 2002



Desiccant drying in-situ



Moisture content was measured daily and recorded

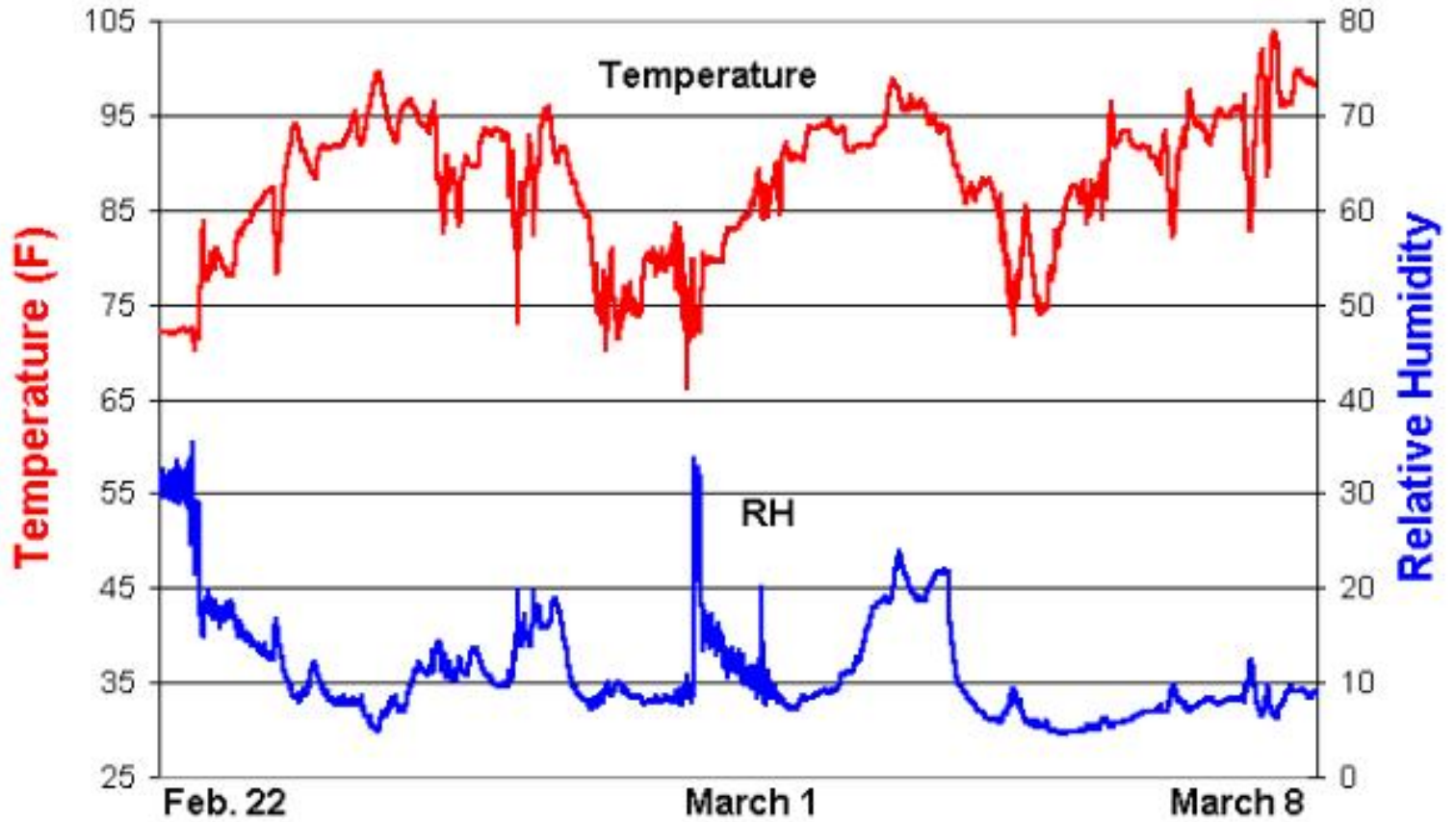




Delmhorst moisture meter with 12" probe

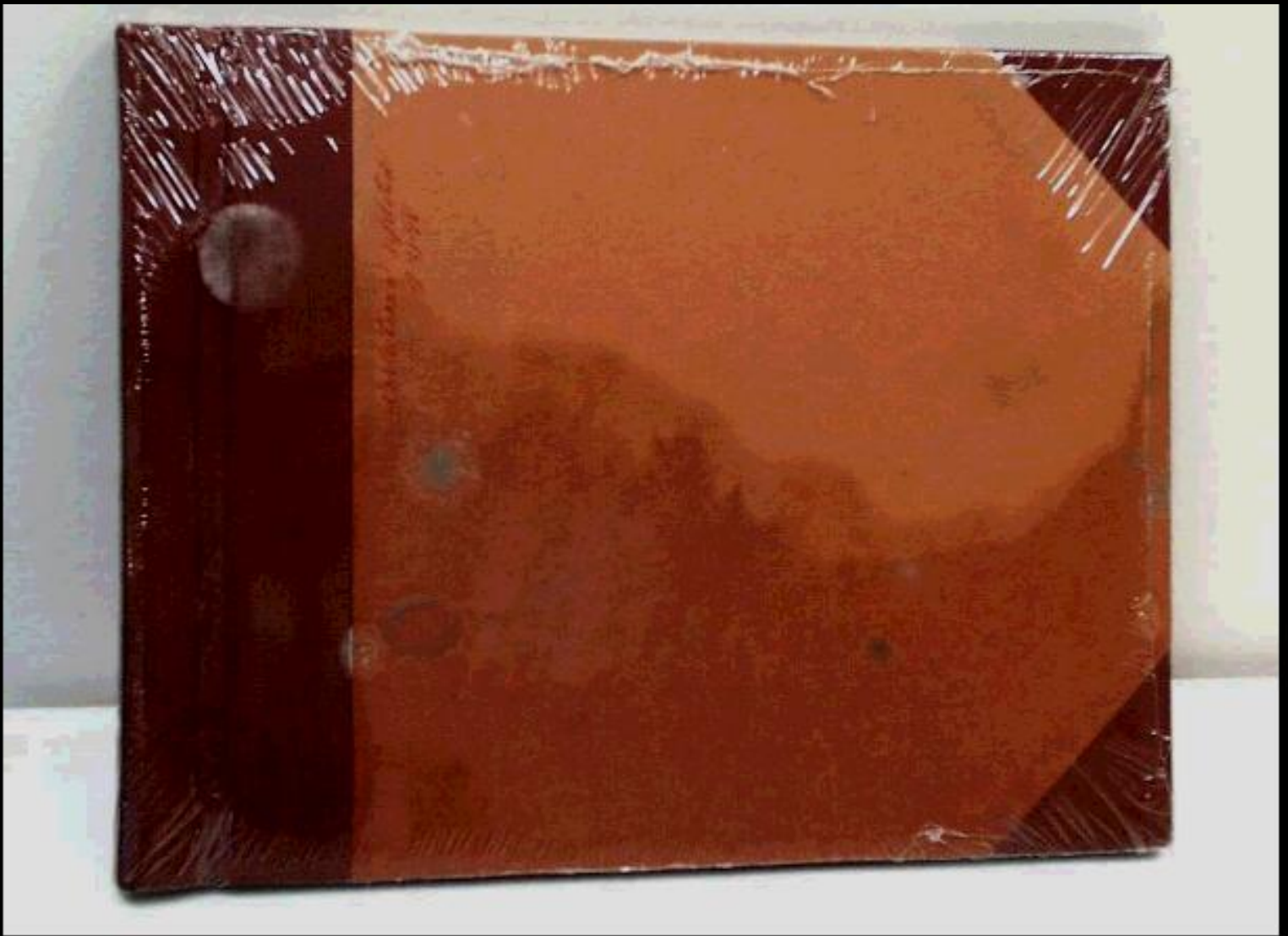


T and RH of Drying Chamber at Suitland For the 13 Day Period Friday, Feb. 22 to Thursday, March 7, 2002



Desiccant dry in-situ





Shrink wrapped volume



Parchment sample within folder of papers

Desiccant drying in-situ

Due to the **mold**, the samples were eliminated from further comparison

Comparisons and Observations

- Original order
- Physical effects of drying treatment

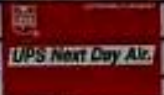
Desiccant dry on-site



Boxes returned from vendor



CLIENT _____
BOX NO. _____
LOCATION _____
CONTENTS _____



CLIENT _____
BOX NO. _____
LOCATION _____
CONTENTS _____



Boxes returned from vendor



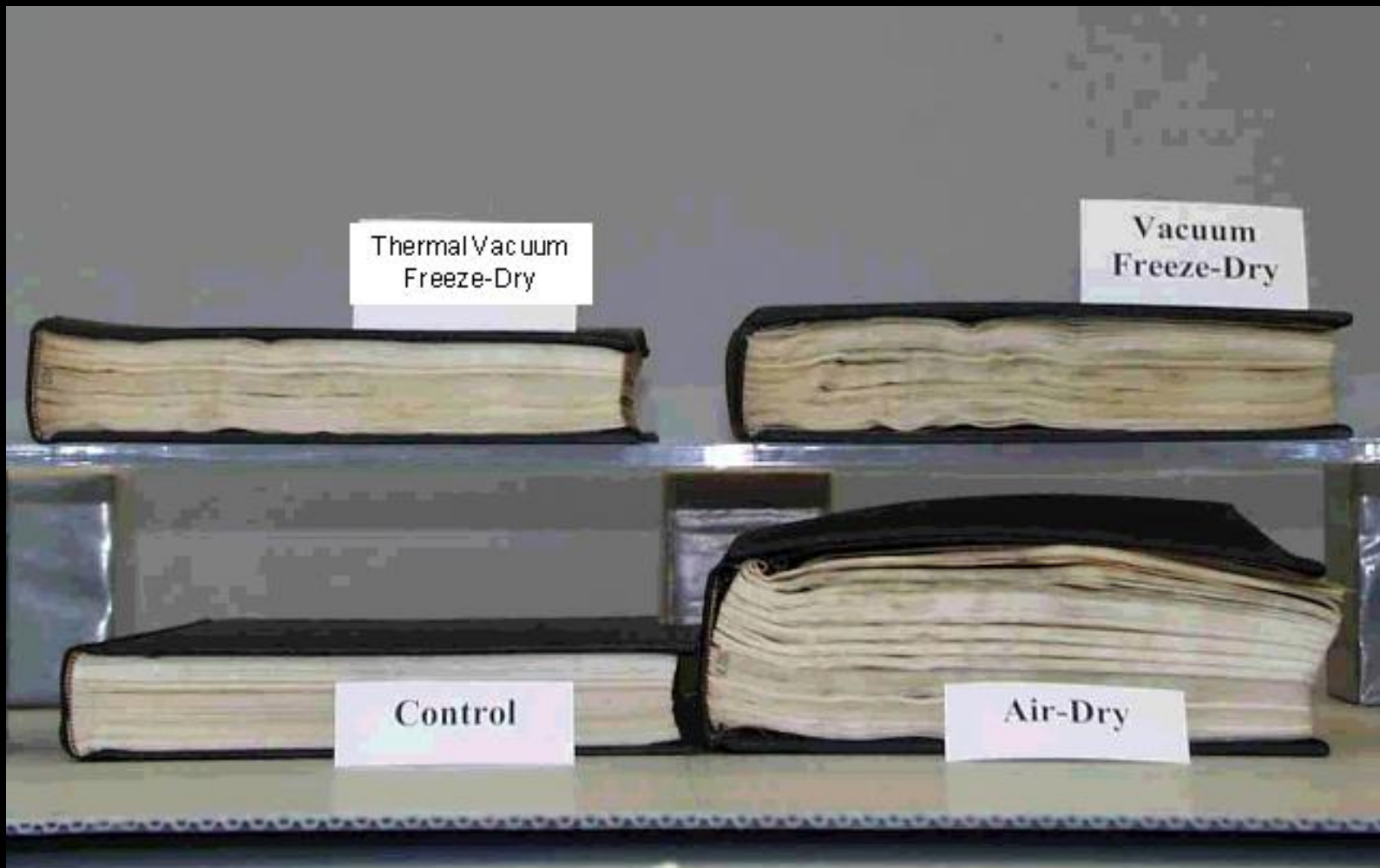
Boxes returned from vendor



Vendor boxes



Bound Records



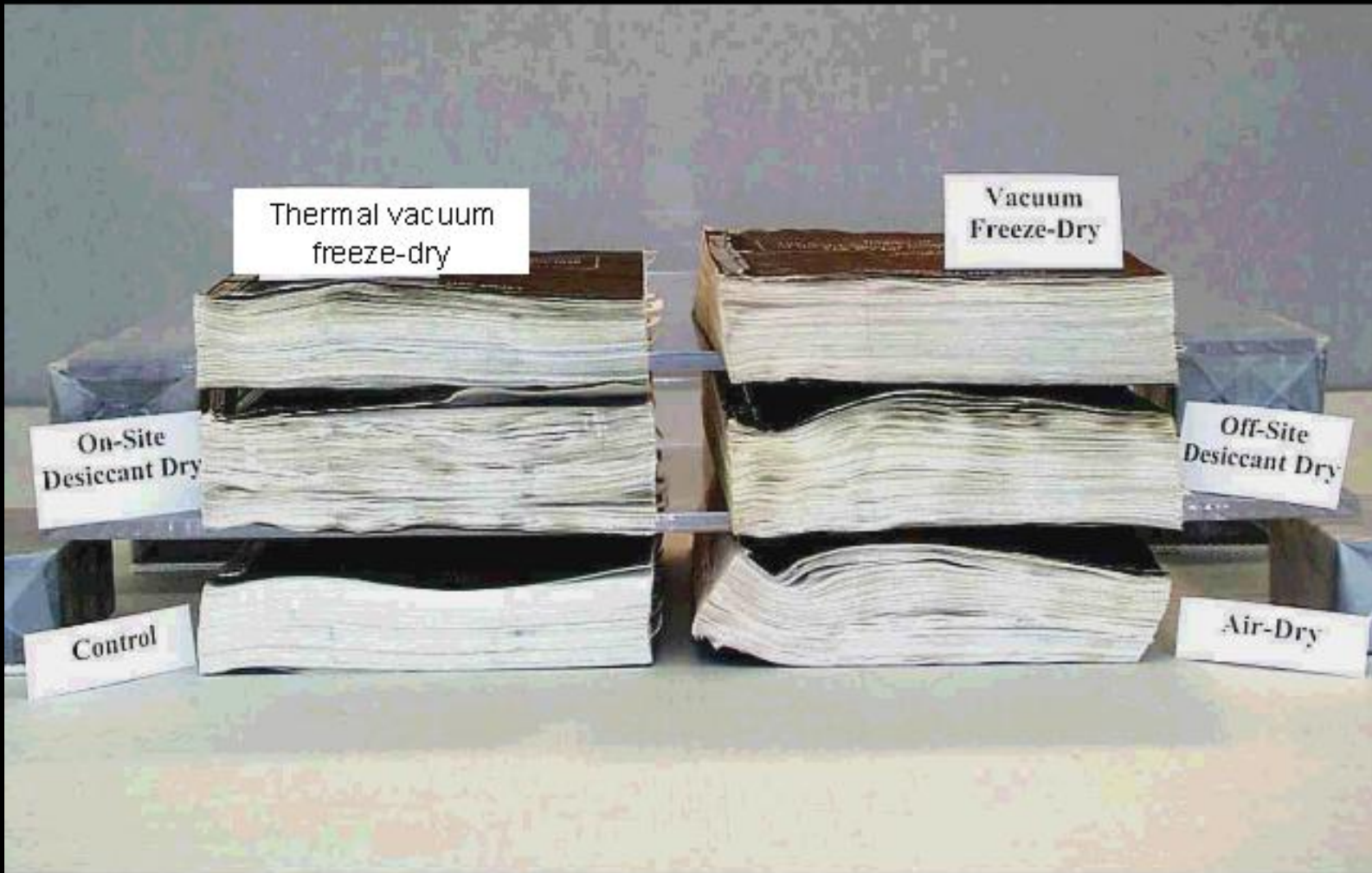
Control

Air-dry



**Thermal vacuum
freeze-dry**

Vacuum freeze-dry



Air dry

On-site
desiccant dry

Off-site
desiccant-dry

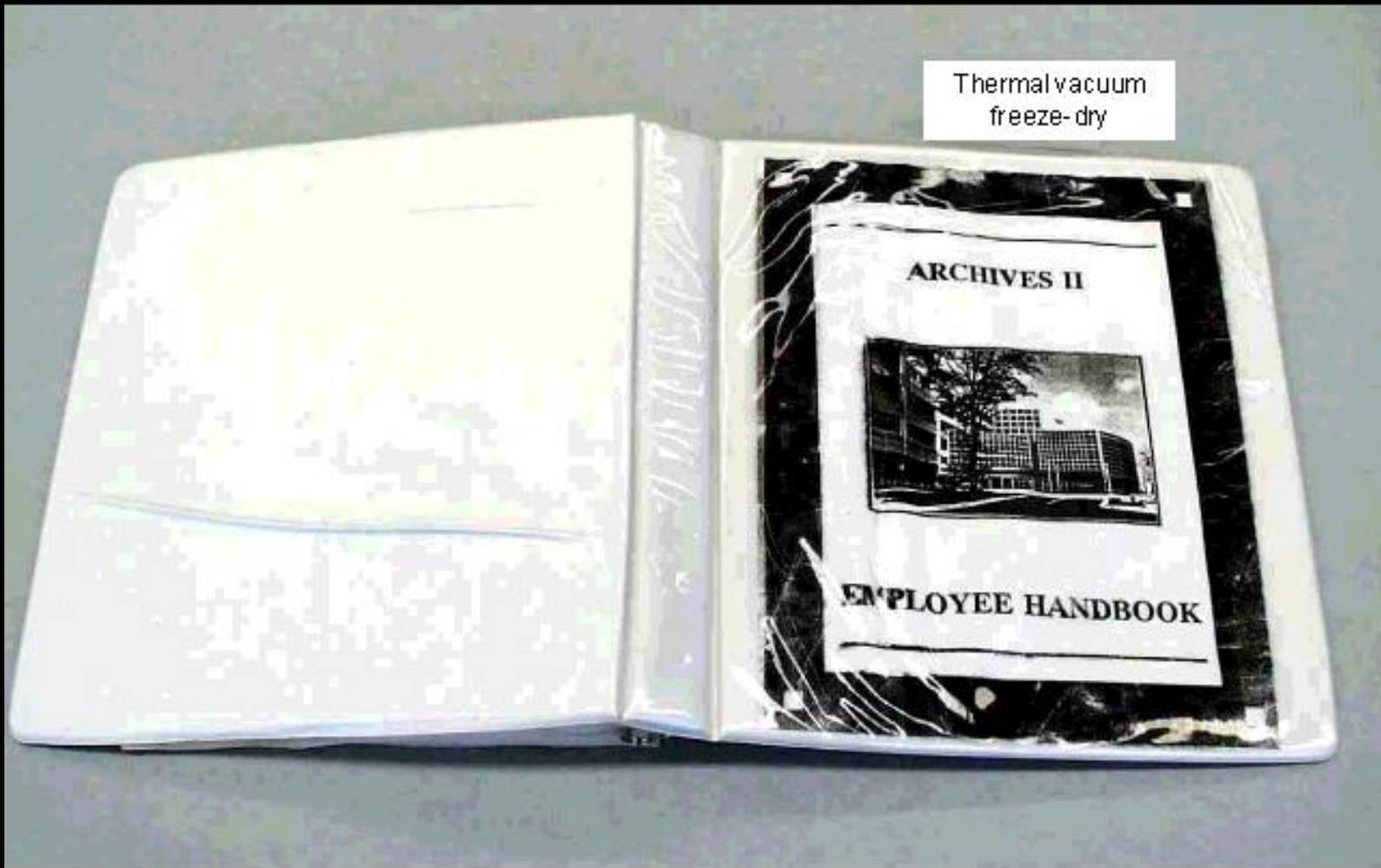
Vacuum thermal
freeze-dry

Vacuum freeze-
dry

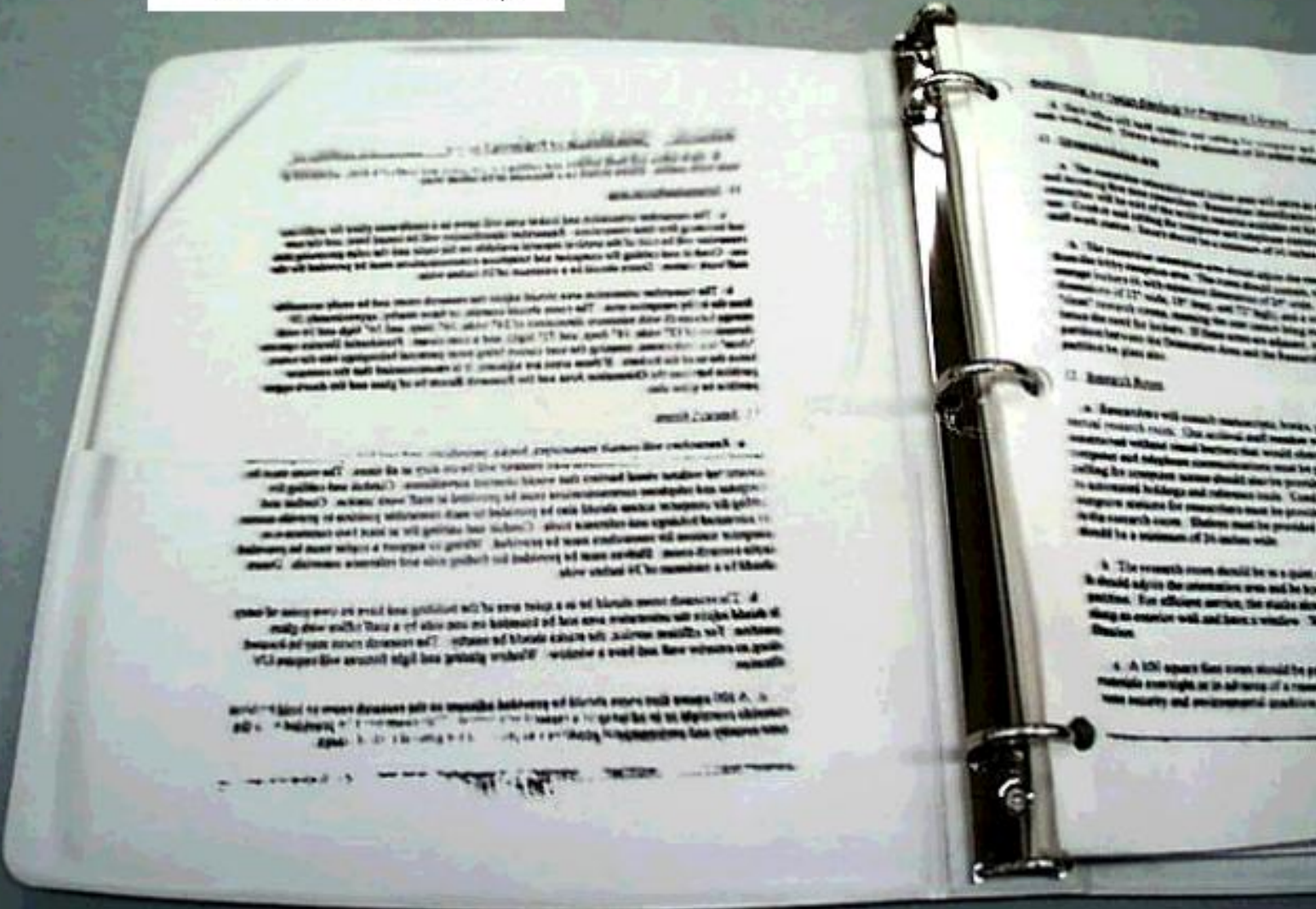


Control

Thermal vacuum
freeze-dry



Thermal vacuum freeze-dry



- 1. The research room should be a quiet, well-ventilated room with a window and a door. The window should be closed and the door should be locked. The room should be clean and free of clutter.
- 2. The research room should be a minimum of 24 inches wide.
- 3. The research room should be a minimum of 24 inches high.
- 4. The research room should be a minimum of 24 inches deep.
- 5. The research room should be a minimum of 24 inches long.
- 6. The research room should be a minimum of 24 inches wide.
- 7. The research room should be a minimum of 24 inches high.
- 8. The research room should be a minimum of 24 inches deep.
- 9. The research room should be a minimum of 24 inches long.
- 10. The research room should be a minimum of 24 inches wide.
- 11. The research room should be a minimum of 24 inches high.
- 12. The research room should be a minimum of 24 inches deep.
- 13. The research room should be a minimum of 24 inches long.
- 14. The research room should be a minimum of 24 inches wide.
- 15. The research room should be a minimum of 24 inches high.
- 16. The research room should be a minimum of 24 inches deep.
- 17. The research room should be a minimum of 24 inches long.
- 18. The research room should be a minimum of 24 inches wide.
- 19. The research room should be a minimum of 24 inches high.
- 20. The research room should be a minimum of 24 inches deep.

Shrink Wrapping



Photographs



Dried in Blotter Packs



Air Dried on Clips



Air Dried on Table



**On-Site
Desiccant Dry**



**Off-Site
Desiccant Dry**





**Off-Site
Desiccant Dry**



**Vacuum
Freeze-Dry**



NEW-YORK TIMES PHOTOS N.Y. 1-15-64

LA CRISE DU LOGEMENT SE VIT A TOULON

TOULON - LA CRISE DU LOGEMENT EST UNIVERSELLE -
DANS TOULON BORGARDE - CETTE FAMILLE AIT JAMAIS UN
VEILL AUTOURS ARRIVONS

NEW-YORK TIMES PHOTOS (ACOTION 0615175118)

NEW-YORK TIMES PHOTOS

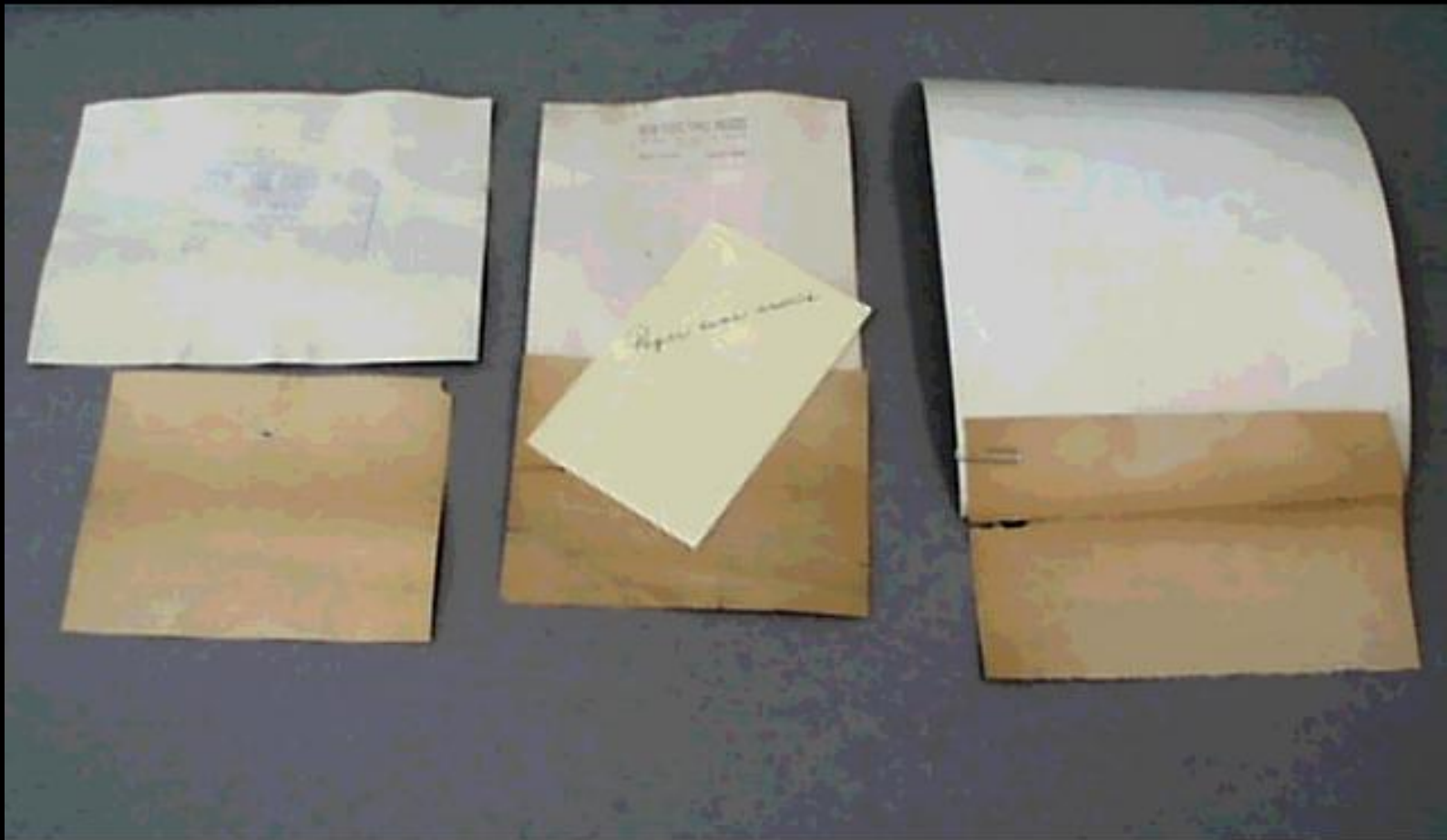
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LA HIC & TRIN

LES HOMMES VENANT DU QUARTIER GENERAL BRITANNIQUE
DE LUT, ARRIVENT A TOULON POUR SEPLACER A LA
COURTES, LES BUDGETS SONT JOINTS DE LA
COMMISSION DEVANT LE PALAIS IMPERIAL

NEW-YORK TIMES PHOTOS (ACOTION 0615175118)

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Paper Records





Control

PROPERTY OF SERVICE		SOURCE OF REQUEST/STAFF	
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency

DO NOT REMOVE FROM RECORD

**Off-Site
Desiccant Dry**

PROPERTY OF SERVICE		SOURCE OF REQUEST/STAFF	
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency

DO NOT REMOVE FROM RECORD

Air-Dry

PROPERTY OF SERVICE		SOURCE OF REQUEST/STAFF	
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency

DO NOT REMOVE FROM RECORD

**Vacuum
Thermal-Dry**

PROPERTY OF SERVICE		SOURCE OF REQUEST/STAFF	
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency

DO NOT REMOVE FROM RECORD

**On-Site
Desiccant Dry**

PROPERTY OF SERVICE		SOURCE OF REQUEST/STAFF	
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency

DO NOT REMOVE FROM RECORD

**Vacuumthermal
freeze-dry**

PROPERTY OF SERVICE		SOURCE OF REQUEST/STAFF	
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency
Requesting Agency	Requesting Agency	Requesting Agency	Requesting Agency

DO NOT REMOVE FROM RECORD

On-site
desiccant dry

Air dry

Off-site
desiccant dry



Control

Air Dry

Off-Site
Desiccant Dry



Vacuum
Freeze-Dry

Vacuum
Thermal-Dry

Control

Vacuum freeze-dry

Vacuum thermal freeze-dry

Coated Paper

Off-Site
Desiccant Dry



Thermal
vacuum
freeze-dry



Vacuum
Freeze-Dry



Control



Air-Dry



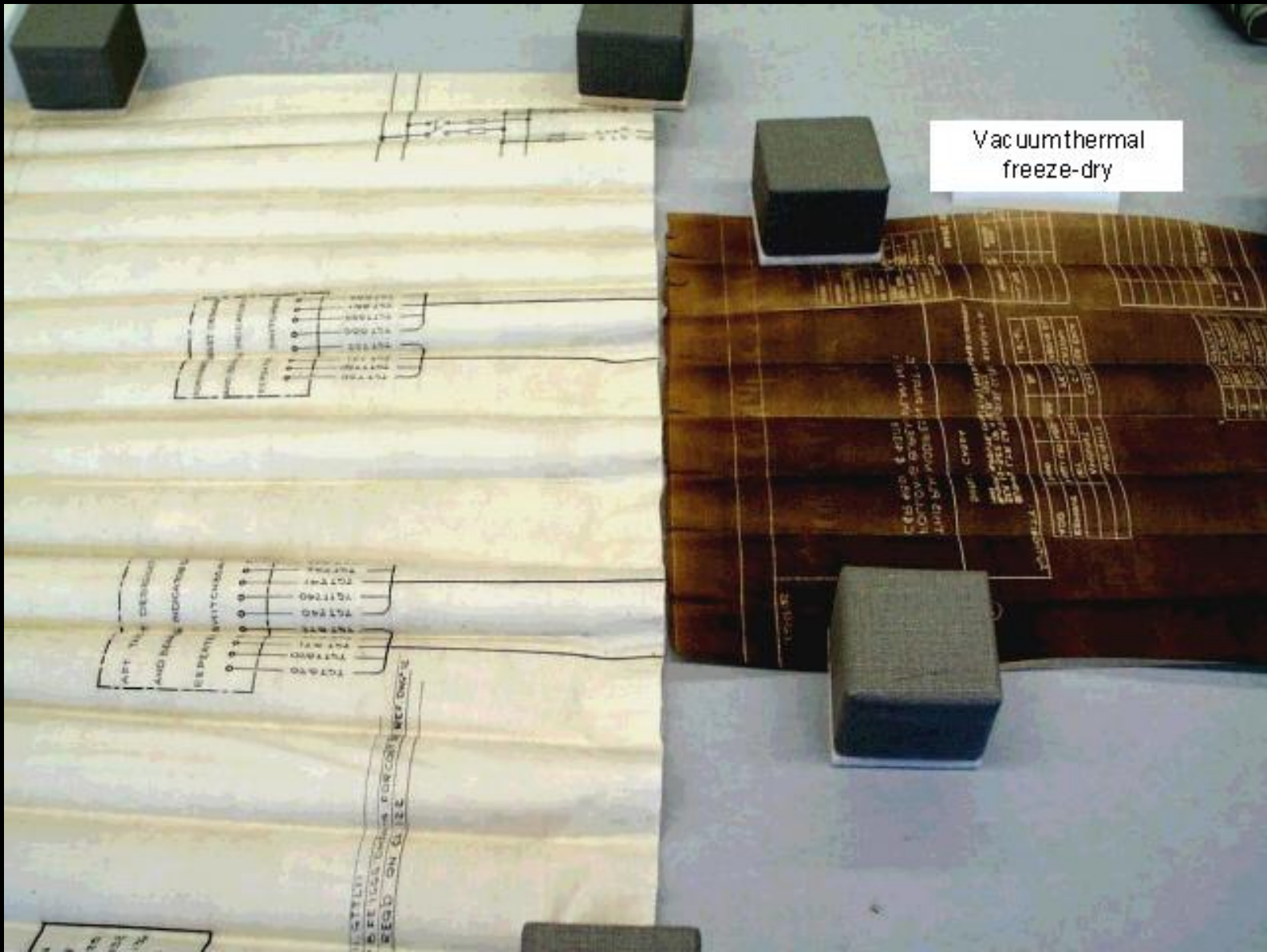
On-Site
Desiccant Dry

Rolled Records





**Vacuum thermal
freeze-dry**



Vacuum thermal
freeze-dry

LEFT TAP CREDITS
AND BILLS INDICATED
SERIAL SWITCHES
0 1 2 3 4 5 6 7 8 9
707900
707901
707902
707903
707904
707905
707906
707907
707908
707909

CONTROL
REGULATIONS FOR CONT. MEASUREMENT
READ ON CL 122

CELLS 4-4015
LITHIUM BATTERY
THIS UNIT IS NOT TO BE USED
FOR OTHER PURPOSES
DATE: 10/10/80
BY: [illegible]
REVISION: 1.0

NO.	DATE	BY	REVISION
1	10/10/80	[illegible]	1.0







**Vacuum Thermal
Freeze-Dry**

**Vacuum
Freeze-Dry**

Air-Dry

Polyester L-sleeves

Control



Air-Dry



On-Site
Desiccant Dry



Off-Site
Desiccant Dry



Thermal
vacuum freeze-
dry



Vacuum
Freeze-Dry









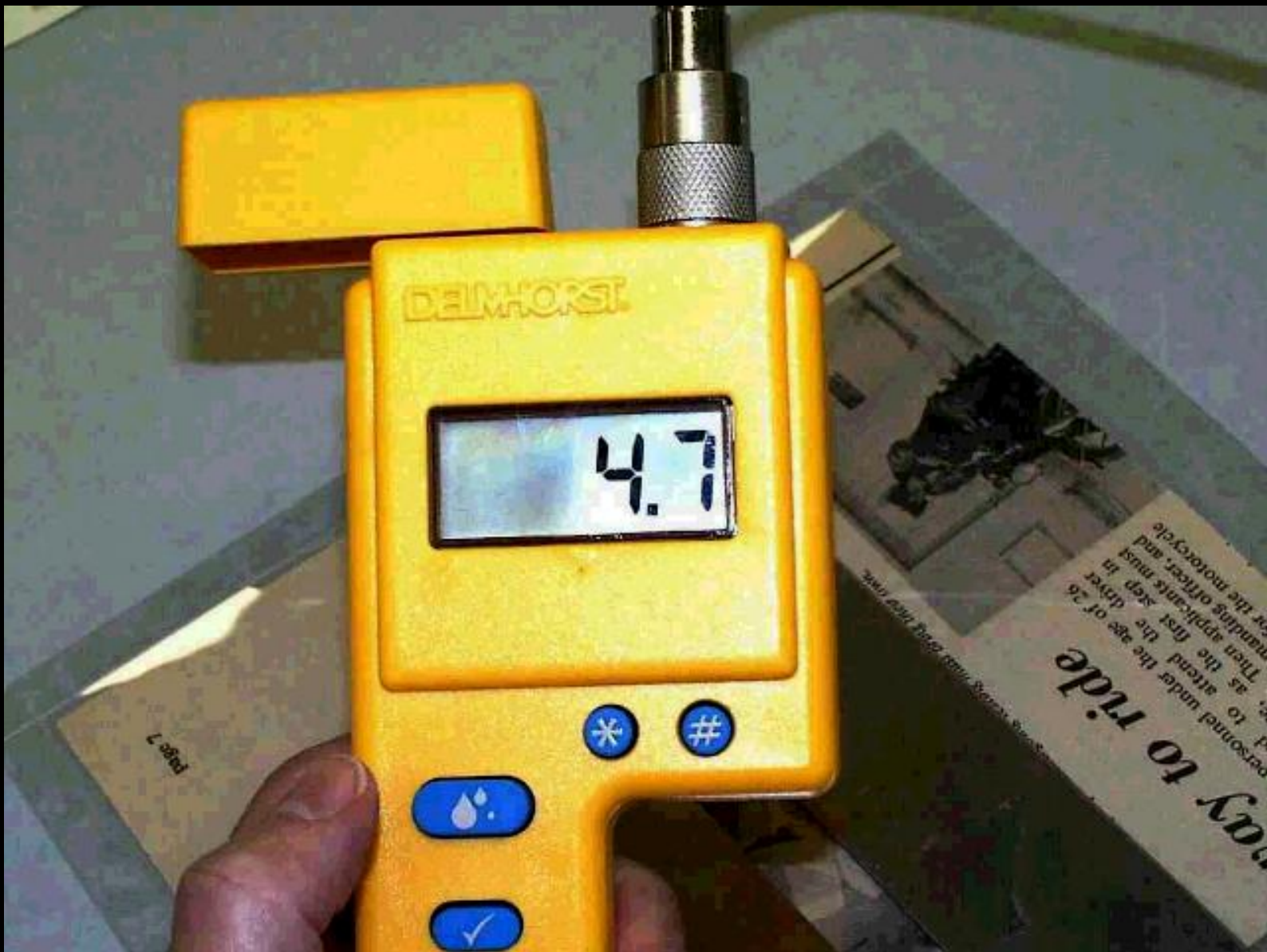
Encapsulation



*Motorcycle operators going
must bring their own.*



26
ver in
ust
and
ycle



Fasteners



On-Site
Desiccant Dry



Air-Dry



Off-Site
Desiccant Dry



Control



Vacuum
Freeze-Dry



Thermal vacuum
freeze-dry



Conclusions

Lessons Learned

- items may receive additional treatment that you are not aware of
- original order may be disrupted
- intellectual control may not be preserved
- records may not be returned or become lost
- fees may be added without prior consultation or authorization
- one record storage box is often billed as 1.2 cubic ft.
- minimum fees can make a small drying project expensive
- specify how you would like groupings of records re-associated if their fasteners, folders, etc. cannot be preserved
- carefully consider method of delivery to the drying facility
- make sure you and your vendor are using the same technology terminology

Acknowledgements

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