

Technical Examination Summary

SA.1954.017.a-c

Visible, spectral, radiographic, material, and dimensional records



RECORD STATUS

Scope and authority

This public summary records the non-destructive examination undertaken before exhibition of SA.1954.017.a-c. It distinguishes measured findings from cataloguer commentary. The object was examined in its accessioned, relaxed configuration. No modern attempt was made to draw or string the assembly.

The 1909 phrase 'black glassy stone' is retained as a field description. It is not repeated here as a material identification.

OBJECT COMPONENTS

Component	Record	Present condition
a - limb assembly	Two dark curved limbs joined at wrapped grip	Stable in relaxed state; old repairs present
b - cord	Separate bast-fibre cord with dressing	Not tensioned; stored on inert support
c - case	Fitted dark stone case	Stable; seal and flood residues documented

EXAMINATION PROGRAM

Each method answers a narrower question

01 - Dimensional survey and 3D capture

Established. The present barque-state was recorded to sub-millimetre precision. The relaxed dimensions agree with the approximate 1909 field entry.

Stated limit. No modern bow-state was attempted. Historical geometry is compared through photographs rather than recreated under load.

02 - Visible, raking, and cross-polarised photography

Established. Tool marks, coatings, surface wear, and two old repairs were mapped. Worn marks at the terminal fittings remain unreadable.

Stated limit. A narrow spectral bloom is repeatable through a small range of crossed-polariser angles. It is an imaging response, not a free-standing arc.

03 - Ultraviolet and infrared imaging

Established. UV fluorescence separates later consolidants from original surface. Reflected IR differentiates grip wrapping, limb coating, and repair material.

Stated limit. No concealed inscription was recovered. Material differentiation does not supply an iconographic reading.

EXAMINATION PROGRAM - CONTINUED

04 - Digital radiography

Established. Overlapping exposures show that the limbs are not homogeneous stone. A dense outer shell surrounds a laminated internal construction.

Stated limit. A whole-object CT volume was not acquired because length, metal fittings, and loan restrictions make segmented radiography the lower-risk record.

05 - XRF, Raman, FTIR, and microscopy

Established. The fittings are a gold-silver-copper alloy. The dark surface is silicate-rich. The cord is a bast fibre with a proteinaceous dressing.

Stated limit. The internal binder and fibre species remain unassigned without destructive sampling, which was not approved for the loan.

06 - Historical image comparison

Established. The 1909 trestle series is consistent with relaxed, transitional, and drawn configurations. The current geometry matches the relaxed field state.

Stated limit. A photograph records former appearance. It does not establish that recreating that load is safe now.

FINDINGS

What the combined record permits

Finding A - The field description was visually accurate and materially incomplete.

The limbs look like polished black stone. Radiography and surface analysis instead indicate layered construction beneath a dense, silicate-rich exterior. The modern record corrects a material assumption without correcting the original observation.

Finding B - The object formerly occupied more than its displayed posture.

Historical photographs and internal construction support the three recorded physical configurations. Conservation evidence does not justify drawing it again.

Finding C - The spectral response is recorded without a causal claim.

The response changes with incidence and polariser orientation. No identification is made between that response and the atmospheric arc observed at Tomb R.14 in 1909.

Finding D - Examination does not supply meaning.

Technical methods identify construction, condition, alteration, and risk. They do not decide whether barque and bow were intended as one image, or what a viewer should infer from a solar disk placed within the curve.

The object does not refuse to be recorded. It refuses to be reduced to one record.

The sentence above is a cataloguer's summary, not a finding of the Conservation Department.

RISK DECISION

Why the bow was not drawn

The internal laminations make former flexure plausible; they do not make present flexure safe. The load path at the grip, the old repairs, the unknown internal binder, and the absence of a validated mechanical model together make a drawn-state demonstration unjustifiable for exhibition.

The museum therefore exhibits the object in barque-state, reproduces the historical bow-state only through the 1909 image record, and identifies the transitional configuration as a documented state rather than a public demonstration.

APPROVED RECORDS

Record	Public status
Visible and raking-light survey	Released in summary
UV and reflected-IR survey	Released in summary
Segmented radiographs	Described; plates restricted
3D surface model	Gallery terminal only
Raw spectroscopy	Conservation file
Drawn-state mechanical trial	Not undertaken

CONCLUSION

A complete technical program; an incomplete total image

The Department finds no basis for saying that the object evades imaging, defeats instrumentation, or changes material under observation. The examination is complete within the non-destructive scope approved for the loan.

Its remaining difficulty is the ordinary difficulty of every complex object made unusually visible: each method has its own wavelength, scale, geometry, and risk. The surface photograph does not contain the radiograph. The radiograph does not contain the spectral response. The historical drawn state cannot be placed inside the modern relaxed-state scan without becoming a reconstruction.

For that reason the public record preserves several views and declines to call any single one the true appearance.

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Object: SA.1954.017.a-c

Status: public technical summary; raw analytical files retained by the Conservation Department