Frontier Analysis, Ltd.

TECHNICAL SERVICE RESPONSE NO.: UT014

Subject: Examination of Residue Relating to an Excised Bull Found 10-16-2000 (St. Paul, Alberta, Canada)

Date: July 21, 2001

Requested By: W. C. Levengood
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Background/Objective:

A mutilated six year old Charolais bull was discovered 10-16-2000 near Derwent Alberta (south of St. Paul). He was facing east and lay on his right side. Excisions included the following: left ear; tongue; rectum, oval shape incision on the stomach (flesh untouched); scrotum with penis out between his hind legs; two teats. Several small willow branches had what appears as blood on them. The blood-like residue on the branches was submitted for identification. Of specific interest is whether the residue is pure hemoglobin, which has been identified in two other mutilation events[1].

Conclusions:

The data show the residue is mostly the hemogloblin component of blood. This would suggest some processing/separation from the whole blood had occurred.

Procedure:

Sample: The sample was submitted with the following identification.

•KS-05-51- Four sections of branches with dark stains.

Several infrared spectra were acquired directly from the stains on the branches and from particles of substance removed from the branches. These were obtained using the Harrick SplitPea™ cell on the Nicolet Avatar 360

[1] See Frontier Analysis T.S.R. Nos: 005 & 012.

spectrometer. The ATR crystal was silicon. Microscope photographs shown in this report were obtained by both Dr. Levengood's Biophysical Pinlandia Laboratory and this laboratory. The photographs at this laboratory were taken using the Leika GZ6 stereomicroscope interfaced to a Kodak digital Science MDS 120 camera.

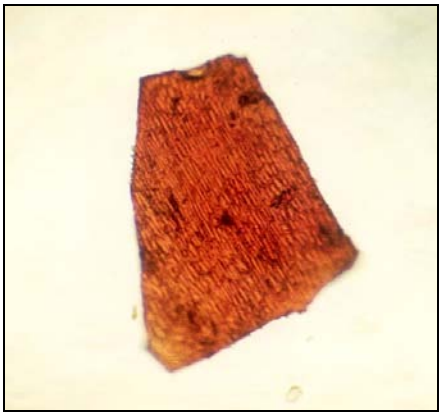
Results:

A microphotograph obtained by this laboratory follows. It was taken at 60X magnification and shows the "as received" substance on the branch.

Dark Residue on Branch
(Frontier Analysis, Ltd.)

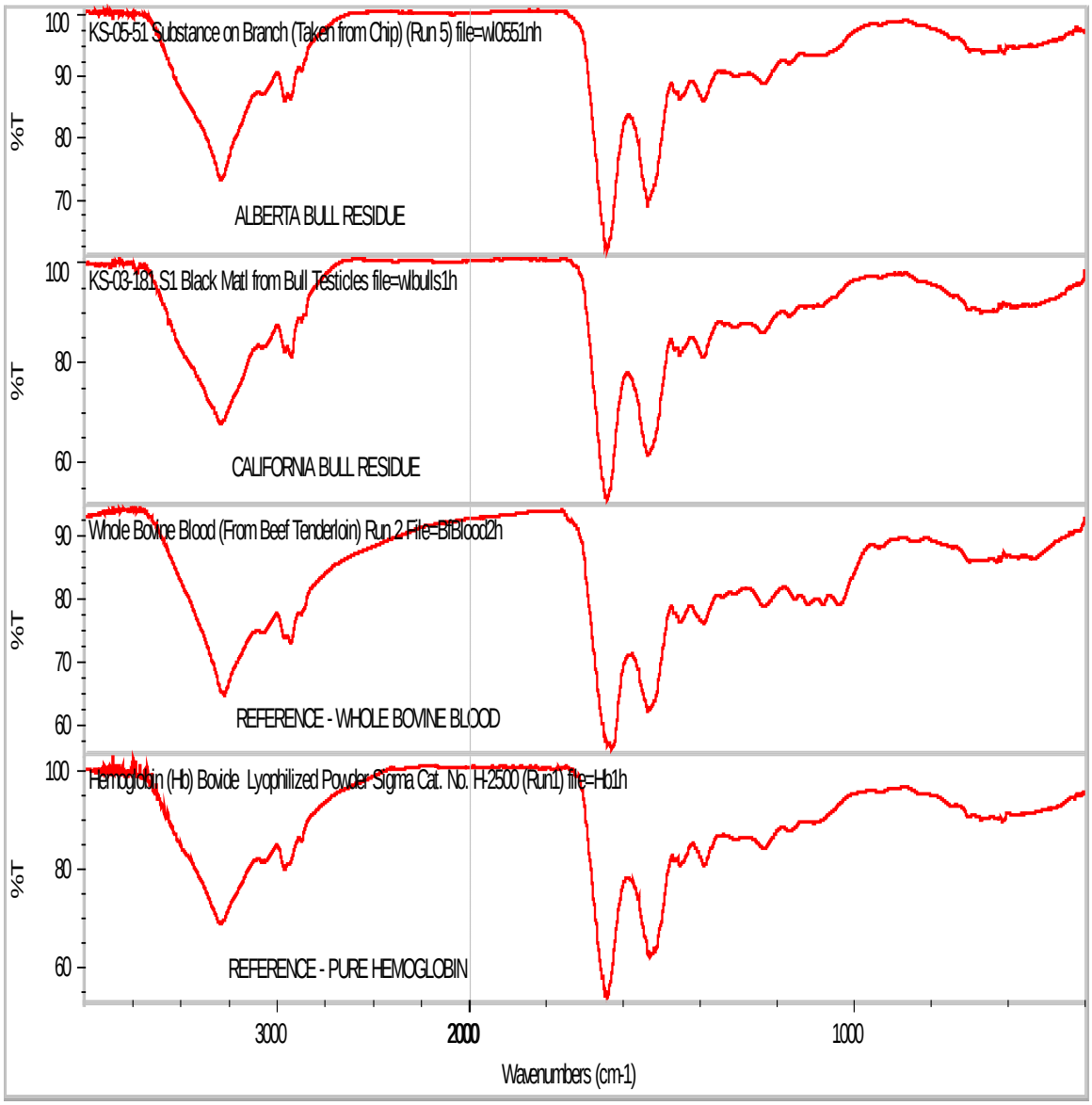
Pinlandia photographs follow. Both were taken at 100x magnification. The first is of a particle removed from the branch. The second shows tension cracking after hydration followed by dehydration.

Particle Removed from Branch
(Pinlandia Biophysical Lab.)



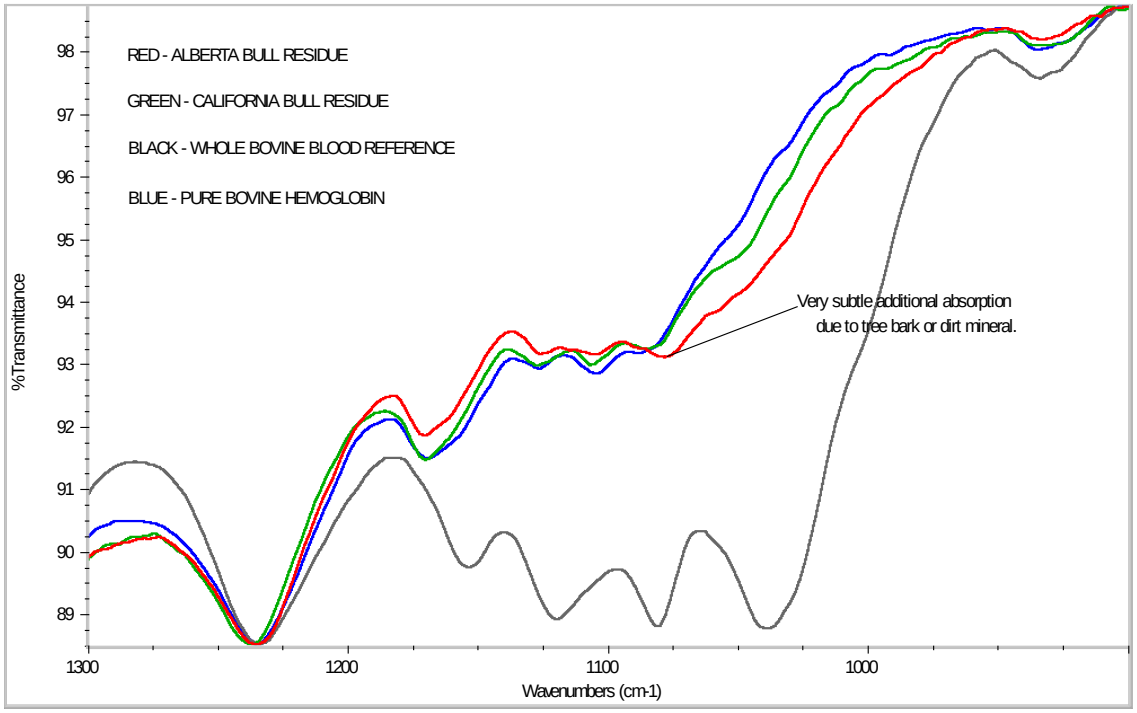
Residue ShowsTension Cracks
(Pinlandia Biophysical Lab.)

Infrared spectra of the residues are characteristic pure hemoglobin. There is subtle, extremely weak absorption between 1200-1000 cm^{-1} due to interference from the branch and "dirt "minerals, but it is not enough to mask information needed to identify hemoglobin. Following is the most representative spectrum of the dark substance[2] from this current Alabama mutilation and a spectrum from a previous mutilation in California[3], which was also identified as hemoglobin. Also included are references of whole bovine blood and pure hemoglobin for comparison.



[2] Numerous spectra were obtained of the material.
[3] See Frontier Analysis, Ltc. T.S.R. No.:UT005.

Partially expanded spectra between 1300 - 900 cm^{-1} of the above spectra are shown below, displaying a more obvious comparison. Additional, very weak absorption between 1100 - 1000 cm^{-1} is due to tree bark and/or dirt mineral interference in the Alabama bull residue spectrum. Also, further information is imparted when examining the region between 1180 – 1100 cm^{-1}. The spectrum of the residue shows missing bands and less absorption compared to that of the whole blood. This shows other whole blood components are missing, e.g. lipids and other unidentified constituents. This is indication that a separation of the blood components has occurred.



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Phyllis A. Budinger