Frontier Analysis, Ltd

TECHNICAL SERVICE RESPONSE NO.: UT098

Subject: Analyses of Two Experiencers' Clothing Worn During an Abduction (Salt Fork State Park, Ohio, August 29-30, 2014) MUFON Case #59428

Date: February 1, 2018

Requested By: Tom Wertman
Ohio MUFON State Director

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Background/Objective:

On August 29-30, 2014 two men were on a fishing/camping trip at an Ohio state park (Salt Fork, Cambridge, Ohio). The older man (43) was accompanied by a young man (19) who was a friend of his daughter. The older man is a construction worker who owns his own business. They were camped by the lake shore with chairs about two feet from the water, and would routinely stoke the fire every hour. There was no one else in the vicinity. Late in the evening the two men saw a light low in the sky. It moved back and forth to tree top level. About 1:30 a.m. they heard a shrill 'woman-sounding" voice. It should be noted that many stories of 'high strangeness' abound (bigfoot, hauntings, UFOs) at Salt Fork.[1] There is a cave in the park with a waterfall where a girl supposedly died. The men became increasing nervous. After 1:30 a.m. the older man's wife and daughter could not contact them. The men have no recollection of what happened for three hours. They became 'aware' at 5:19 a.m. in the morning. The fire was out. The men grabbed their belongings and changed clothes. As the older man changed clothes he noticed his shirt was inside out! It should be noted that no alcohol was in their cooler, only water.

There are two objectives of this analysis. The first is to identify any stains and spots left on various pieces of clothing for anomalies which may be related to the abduction. The second is to compare these results to two analyses, one done on the dress Betty Hill wore during her abduction[2] and the other done on an experiencer's tee shirt worn during an abduction in Winnipeg, Canada[3].

[1] Personal and YouTube communications.
[2] Frontier Analysis Technical Service Response No: 025.
[3] Frontier Analysis Technical Service Response No: 089.

Conclusions:

Objective I: ANALYSIS OF CLOTHING WORN DURING THE SALT FORK ABDUCTION

It should be noted that these clothes were exposed to the environmental conditions encountered on the fishing trip. They were not new and exposed to other contaminants encountered wherever they were worn. For example, the older man did contract work and wore the zippered sweatshirt for that. Laundry soap and fabric softener residues are also a possibility. This analyst understood that finding something anomalous would be like looking for the proverbial "needle-in-a-haystack". But certainly the attempt was worth a shot. Following are the results of this project.

Older Man's Clothing

The cargo shorts and sweatshirt were the only clothing that had visible and UV detectable stains to analyze. The fiber and dye were not attacked in either piece of clothing. Any discoloration is from the stain. All of the stains are on the outside of the clothing, suggesting they came from an external source. The belt, underwear and hat were not examined because there were no visible or ultraviolet fluorescing stain materials that were considered obviously anomalous for examination.

●The **Cargo Shorts** is made of cotton. Found on the shorts are dead grass remains, dirt components (carbonate and silicate minerals; humates), an amide containing material, probably from a dirt component[4], but may be from a number of different protein derived sources. For example, a protein-type substance derives from animal/mold/bacteria, perspiration products, and blood. Some laundry additives contain an amide functionality. In the UV fluorescing areas are long carboxylic acid salts with carbon chain estimated to be 15 - 18 carbons. Specifically, zinc and calcium stearate are possibilities.

●The **Zippered Gray Sweatshirt** is made of a polyester (terephthalate type). Stains and spots consist of dirt components, paint components and amide which appear to be protein derived.[5] UV fluorescing areas contain two long chain carboxylic acid salts which compare closely to zinc stearate and calcium stearate. These long chain carboxylic acid salts have many uses.[6] There is a high probability they may originate from hand soap or stick deodorant. Still, these compounds should be flagged because many experiencers have UV fluorescing material on them after an abduction. (See Objective II Conclusions.)

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[4] Soil contains organic matter which contains partially decomposed material and living organisms like bacteria, algae, fungi, earthworms and microscopic insects.
[5] See cargo shorts explanation of possible amide origins in the first conclusion.
[6] Richard J. Lewis Sr., "Hawley's Condensed Chemical Dictionary", Fourteenth Edition, John Wiley & Sons Inc., New York, 2001. Uses for zinc stearate include: cosmetics, laquers, ointments, dusting powder, lubricant, mold-release agent, filler, antifoamer, heat and light stabilizer, medicine (dermatitis), tablet manufacture, dietary supplement. Uses for calcium stearate include: water repellent, flatting agent in paints, lubricant in making tablets, emulsions, cements, wax crayons, stabilizer for vinyl resins, food additive, mold-release agent, cosmetics.

Younger Man's Clothing

The cargo shorts, striped polo, navy polo and a sleeveless shirt had visible and UV detectable stains to analyze. The fiber and dye were not attacked in any of the clothing. Discoloration is from the stain. All stains, except one (innocuous material found on the inside from of the navy polo shirt), were on the outside of the clothing which indicates external origin. The underwear, belt and socks were not examined due to lack of obviously anomalous stains.

●The **Cargo Shorts** is made of cotton. Materials in the stains consist of an amide from a protein derived source. (See Older Man's cargo shorts analysis on Page 2 for possible sources of the amide.) There is also a long chain carboxylic acid salt which is most similar to zinc stearate.

●The **Striped Polo Shirt (Outside Layer)** is made of a cotton/polyester blend. All areas, which were white, were identified as paint components. The paint components are poly(ethyl acrylate), and calcium carbonate (white pigment/extender).

●The **Navy Polo (Middle Layer)** is made from cotton. Common materials compose the spots such as dirt components (silicate and carbonate minerals) and amides from a protein derived source (probably human skin flakes). The latter material was the only component found on the inside of the shirt.

●The **Sleeveless Shirt (Inside Layer – Undershirt)** fabric is a polyester. An amide was detected which was from perspiration. Also present was dirt and poly(dimethylsiloxane). Poly(dimethylsiloxane) is a commonly found contaminant and has many uses.

●A **Small Vial Containing a Liquid** was found in the cargo shorts pocket. The liquid was identified as a phthalate ester mixture. This is commonly used as insect repellent.

Objective II: COMPARISON OF SALT FORK CLOTHING TO THOSE WORN DURING THE ABDUCTIONS OF BETTY HILL AND A CANADIAN EXPERIENCER

To date, this laboratory has examined clothing from four experiencers. Besides the two Salt Fork experiencers, the clothing worn by of Betty Hill (dress) and a Canadian experiencer (tee-shirt) were examined. Two tables comparing the clothing are presented on pages 24 and 25. The comparison indicates possible component types which appear on clothing from all four experiencers. These are long chain carboxylic acid salts, one of which may specifically be zinc stearate. So this is flagged as a component to look for in future analysis of clothing from experiencers.

Long chain carboxylic acid salts are very ordinary materials, and were not thought to be anomalous in previous analyses. These types of compounds have a plethora of uses. [7] Some are used in bar soap and stick deodorant in personal hygiene products. While

[7] Ibid. Ref 5.

there is a probability some may originate from these products, not all are believed to be from these sources. Some of these components were found on clothing areas where there is low probability of originating from a hygiene source.

It is also interesting that, for the most part, the carboxylic acid salts were found in UV fluorescing areas of the clothing. Many experiencers are reported to have UV fluorescing stains on their person or clothing.[8] It should be noted that something does not have to be exotic or of unknown composition to be of alien origin.

Procedure:

Samples: The following samples were received March 20, 2015 in two cardboard boxes.

From the Older Man:
●Cargo Shorts
●Zippered Sweatshirt
●Belt
●Hat
●Underwear

From the Younger Man: (Note: The young man wore three layers of 'shirts'.)
●Cargo Shorts
●Red and Black Striped Polo Shirt (Outside Layer)
●Navy Blue Long Sleeve Polo (Middle Layer)
●White sleeveless shirt (Inside Layer – Undershirt)
●Underwear
●Belt
●Socks

●The clothing was first examined for any visual stains and spots, and then for any areas which fluoresce under UV light.

Infrared[9] spectra were obtained from visual and UV fluorescing stains/spots considered anomalous. That is, they were taken from selected stains, i.e. those that were not thought to be due to stains/spots commonly found on work clothes such as paint and dirt. These data were acquired mostly 'in situ', i.e. directly off the spot on the fabric. Some were taken from scrapings, and a few were obtained from water extracts. The data were acquired on the Thermo Electron Avatar 360 spectrometer using the Smart Herrick diamond sampling accessory. Photographs were obtained from the clothing and references from a Kodak CX7430 camera. Optical microscope photographs were obtained using a Canon A520 digital camera interfaced to a Leica GZ6 microscope.

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[8] Kathleen Marden, Personal Communication, Derrel Sims Personal Communication.

[9] **FT-IR (Fourier Transform Infrared Spectroscopy):** Infrared spectroscopy is used for the molecular structure identification and quantification of solids, liquids, and gases. An infrared spectrum is the result of light (in the 2 to 25 micron wavelength range) interacting with the vibrations of molecules. The particular set of vibrations of a molecule gives rise to specific spectral absorption bands, often referred to as the "fingerprint" spectrum.

Results:

Objective I. ANALYSIS OF CLOTHING WORN DURING THE SALT FORK ABDUCTION

The analytical results of the individual tests done on the samples follow. These results are summarized in the conclusions section on pages one to three of this report.

Older Man's Clothing

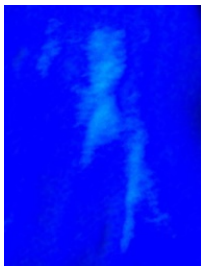
The cargo shorts and sweatshirt only were examined by infrared spectroscopy. The other samples, i.e. belt, underwear and hat, did not have any visible and ultraviolet fluorescing stain material obviously anomalous for examination.

Cargo Shorts

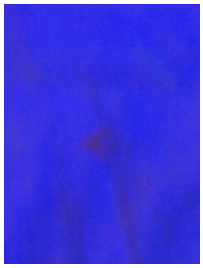
Cargo Shorts Photographs and Sampling Points: Photographs of the outside (front and back) of the shorts show locations of brown stain areas and the sampling sites. There were two areas detected by UV light. No stains were observed on the inside of the clothing, so photographs of the inside back and front are not included. Following are the photographs.

Outside back of cargo Shorts

Outside front of cargo shorts



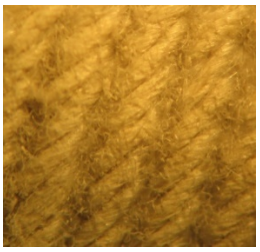
S6



S8

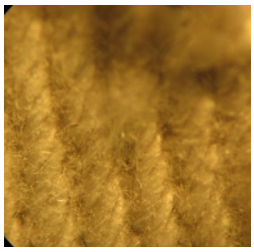
Detected under UV Light

Cargo Shorts Microscope Photographs: Microphotographs were obtained of the outside of three swatches S3 (reference), S5 and S6. They were taken in order to observe if there was any attack to the dye or fiber. None was observed. The remaining swatches had common stains of materials typically found on well-worn work clothing. (Note the frayed end on the top of S6 is the edge of the swatch.) The photographs follow.



S3 Reference

S5



S6

Cargo Shorts Infrared Analysis: Infrared analysis shows the cargo shorts fabric is cotton. The following table presents the results of the infrared inspection of each sampling. All spectra can be found in the appendix.

Sampling	Infrared Characterization	Figs.
S1 (Dark Speck)	Dead grass and mold.	1, 2
S2 (Black Speck)	Amide (probably protein derived source - see comments below).	3
S3 (No Stain)	Taken for reference. Identifies the shorts as being made of cotton.	3
S4 (Brown)	Dirt components (carbonate and silicate minerals, humate).	4
S5 (Brown)	Amide (probably protein type - see comments below)	5
S6*	Ester-type material; two long chain carboxylic acid salts which are indicative of zinc stearate and calcium stearate.	6
S7 (Brown)	Dirt component (silicate mineral).	7
S8*	Two long chain carboxylic acid salts indicated to be zinc stearate and calcium stearate.	8

* UV detected.

Many natural substances contain an amide functional group. It is difficult to be more specific on the identification in these analyses. There was interference of other components and weak amide spectral absorption bands to deal with in a number of spectra. Possibilities include: a protein-type substance which derives from animal/mold/bacteria; perspiration products, blood, some laundry additives. There is a high probability the amide is from a protein derived substance. The amide containing material is not thought to be anomalous.

The UV fluorescing area is indicated to contain two long chain carboxylic acid salts, most similar to zinc stearate and calcium stearate. These were also seen in the sweatshirt. (See below.) There are many uses for these compounds including hygiene products such as in bar soap and stick deodorant. However, a special note should be made because many experiencers have fluorescing materials on them after abduction. This analyst believes that the fluorescing material doesn't have to be something exotic or unknown composition to be of alien origin. So it is worth 'flagging' as a reference for future analysis of clothing from experiencers. Furthermore, carboxylic acid salts have been observed in stains from other experiencers in previous analyses.[10] See the section on "Comparison of Salt Fork Clothing to those Worn During the Abductions of Betty Hill and a Canadian Experiencer" on pages 21-25.

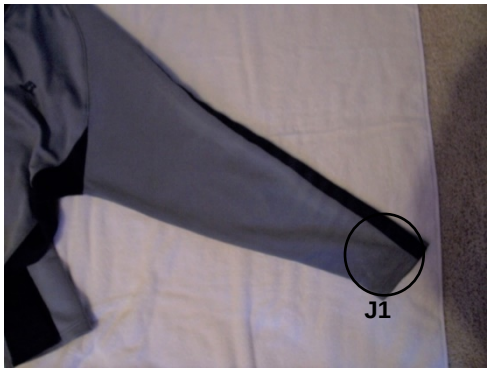
Sweatshirt

Photographs of the sweatshirt show a number of areas on the outside front and two UV fluorescing areas on both sleeves at the wrist areas. Also the outside back displays

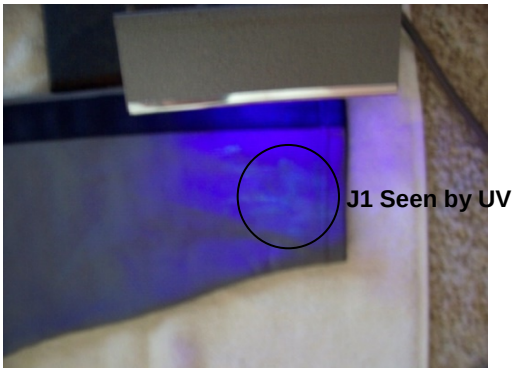
[10] UT025 Frontier Analysis (Betty Hill dress analysis); UT089 Frontier Analysis (Winnipeg, Canada man's tee shirt)

sites which were sampled. Like the cargo shorts, no stains were detected on the inside of the shirt. The photographs follow.

Outside Front of Shirt

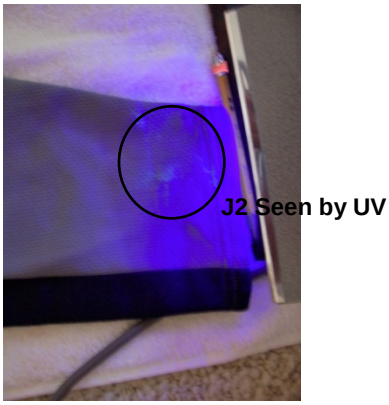


Front outside left sleeve

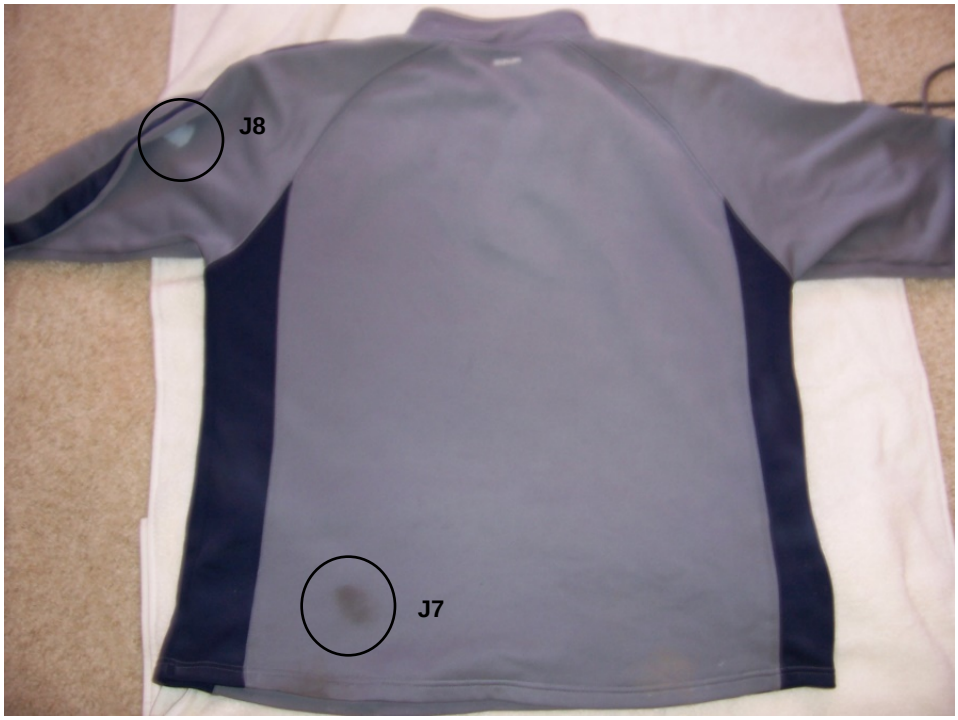


Front outside left sleeve
(Under UV light)

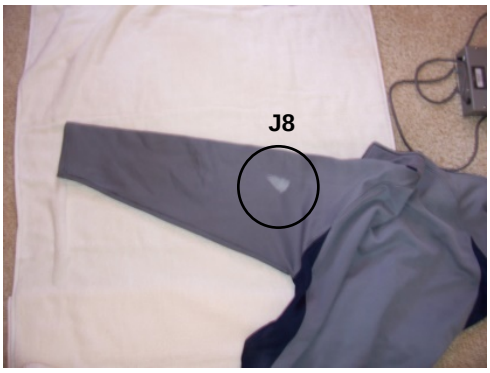
Front outside right sleeve



Front outside right sleeve
(Under UV Light)

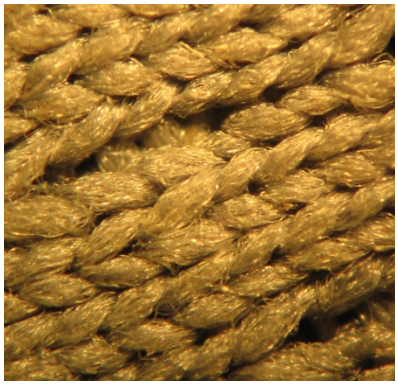


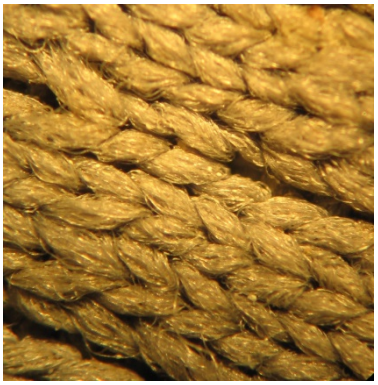
Back 0utside

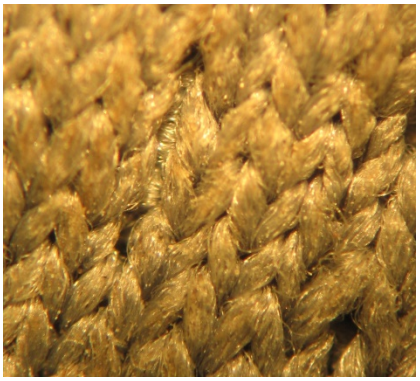


Back outside left sleeve

Sweatshirt Microscope Photographs: Microphotographs were taken selectively of samplings J1, J2 and J6 (reference). No dye or fiber attack is detected. The stains on the remaining swatches contain materials common to well-worn work clothing and not expected to show anything anomalous.


J6 Reference


J1


J2

Sweatshirt Infrared Analysis: Infrared analysis shows the fabric composing the sweatshirt is a polyester. The following table presents the infrared results for each sampling. The spectra are in the appendix.

Sampling	Infrared Characterization	Figs.
J1*	Two long chain carboxylic acid salts most similar to zinc stearate and calcium stearate; amide which is probably protein derived and close to a reference of perspiration.	9, 10, 11
J2*	Amide probably from protein derived source; long chain carboxylic acid salt suspected present though masked by strong amide absorption.	12
J3 (Brown)	Dirt component (silicate mineral).	13
J4 (White)	Paint components (polyacrylate); metal oxide - white pigment/extender).	14
J5 (White)	Paint component (metal oxide - white pigment/extender).	15
J6 (No Stain)	Taken for reference. Identifies the polo fiber as polyester terephathalic acid.	9
J7 (Brown)	Not enough for a spectrum.	
J8 (White)	Paint components (polyacrylate); metal oxide-white pigment/extender).	16

Younger Man's Clothing

The cargo shorts, both polo shirts, and sleeveless shirt were examined by infrared spectroscopy. The other samples, i.e. underwear, belt and socks, did not have any visible and ultraviolet fluorescing stains obviously anomalous for examination. Overall, the younger man's clothing had far fewer stains compared to the older man. None were UV fluorescing.

Cargo Shorts

Cargo Shorts Photographs and Sampling points: Photographs of the outside (front and back) of the shorts shows the sampling sites. No specific defined spots were noted. There were just areas of stain. Two stain areas were examined. No stains were observed on the inside of the clothing.

Front cargo shorts

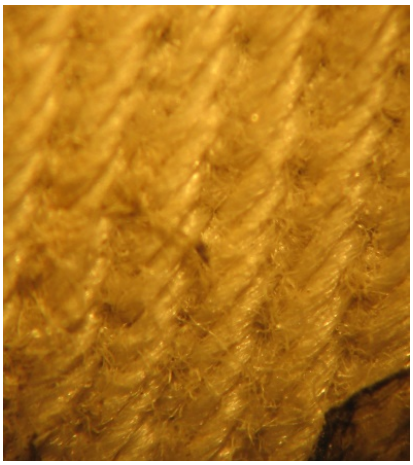
Front cargo shorts right pocket

Back cargo shorts

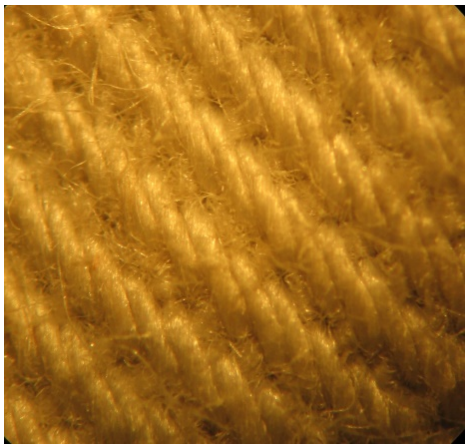
Back cargo shorts right pocket

Cargo Shorts Microscope Photographs: Microphotographs were obtained of CS1, CS2 and CS3 (reference). No dye or fiber attack is detected. Particulates are noted on CS1 and CS3. The photographs follow.

CS3 (Reference)



CS1



CS2

Cargo Shorts Infrared Analysis: Infrared analysis shows the cargo shorts is made of cotton. The identifications of the materials in the stains follow. See the spectra in the Appendix.

Sampling	Infrared Characterization	Figs.
CS1 (Light Brown)	Amide probably from a protein derived source; indication of long chain carboxylic acid salt.	17
CS2 (Light Brown)	Amide probably from a protein derived source; indication of a long chain carboxylic acid salt which may be zinc stearate.	18
CS3 (No Stain)	Taken for reference. Identifies the shorts as being made of cotton.	18

Striped Polo Shirt (Outer Layer)

Striped Polo Shirt Photographs and Sampling points: Three areas which had white spots were sampled. There were two on the outside front and one (of two spots) on the back of the right sleeve. There were no spots/stains observed on the inside of the shirt. These sampling areas are identified in the photographs.

Outside front of polo shirt

Outside back of polo

Outside back of sleeve

Striped Polo Shirt Infrared Analysis:[11] The polo shirt is made of a cotton/polyester blend. The infrared results show no anomalous materials. All white areas were identified as paint. A table below presents the results. See the Appendix for the spectra.

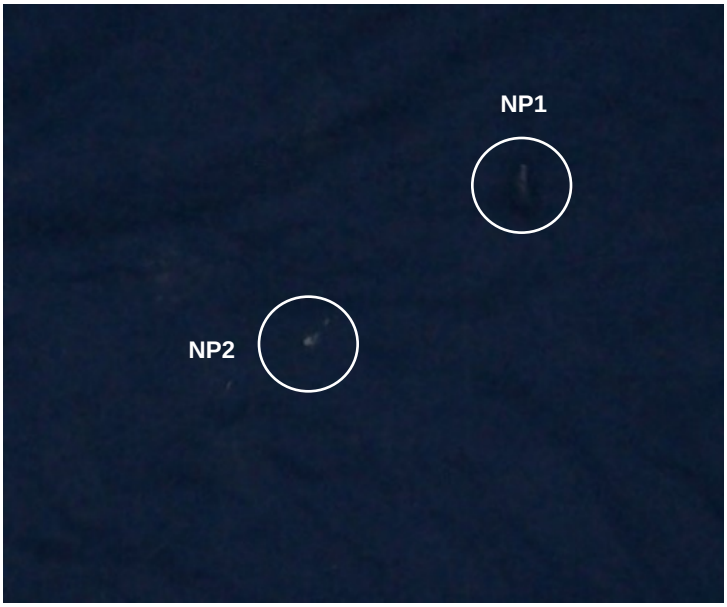
Sampling	Infrared Characterization	Figs.
SP1 (White)	Paint components of poly(ethyl acrylate), calcium carbonate - white pigment/extender).	19
SP2 (White)	No extraneous spectral bands could be detected though it's probably a small amount paint because of the white appearance.	-
SP3 (White)	Paint components of poly(ethyl acrylate), calcium carbonate – white pigment/extender).	20
SP4 (No Spot)	Taken for reference. Identifies the shirt fiber as a cotton/polyester blend.	20

Navy Polo Shirt (Middle Layer)

Navy Polo Shirt Photographs and Sampling points: There are only three small areas of spots on the polo shirt Two are on the outside front of the shirt, and one is on the inside front. None were observed on the inside or outside back. The photographs showing sampling sites follow.

[11] No microscope photographs were taken because the infrared analysis shows only paint.

Outside front of the navy polo shirt



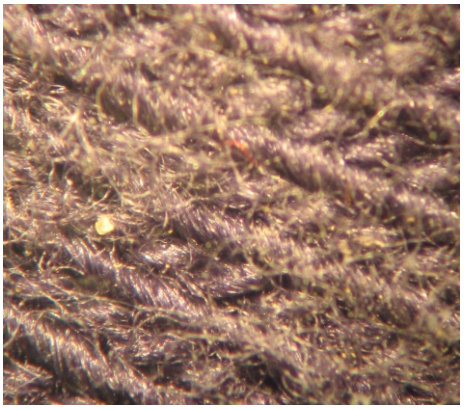
Outside front of the navy polo shirt

Inside front of navy polo shirt

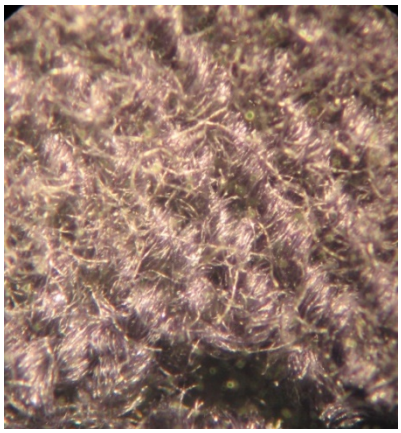
Inside front of navy polo shirt

Navy Polo Shirt Microscope Photographs: Microphotographs of NP2 (shirt outside), NP3 (shirt inside) and NP4 reference (inside and outside) swatches are shown below. No attack of the dye or fabric were observed. Particulates are noted on both NP2 and NP3. The photographs follow.

NP4 outside reference



NP2 outside



NP5 inside reference

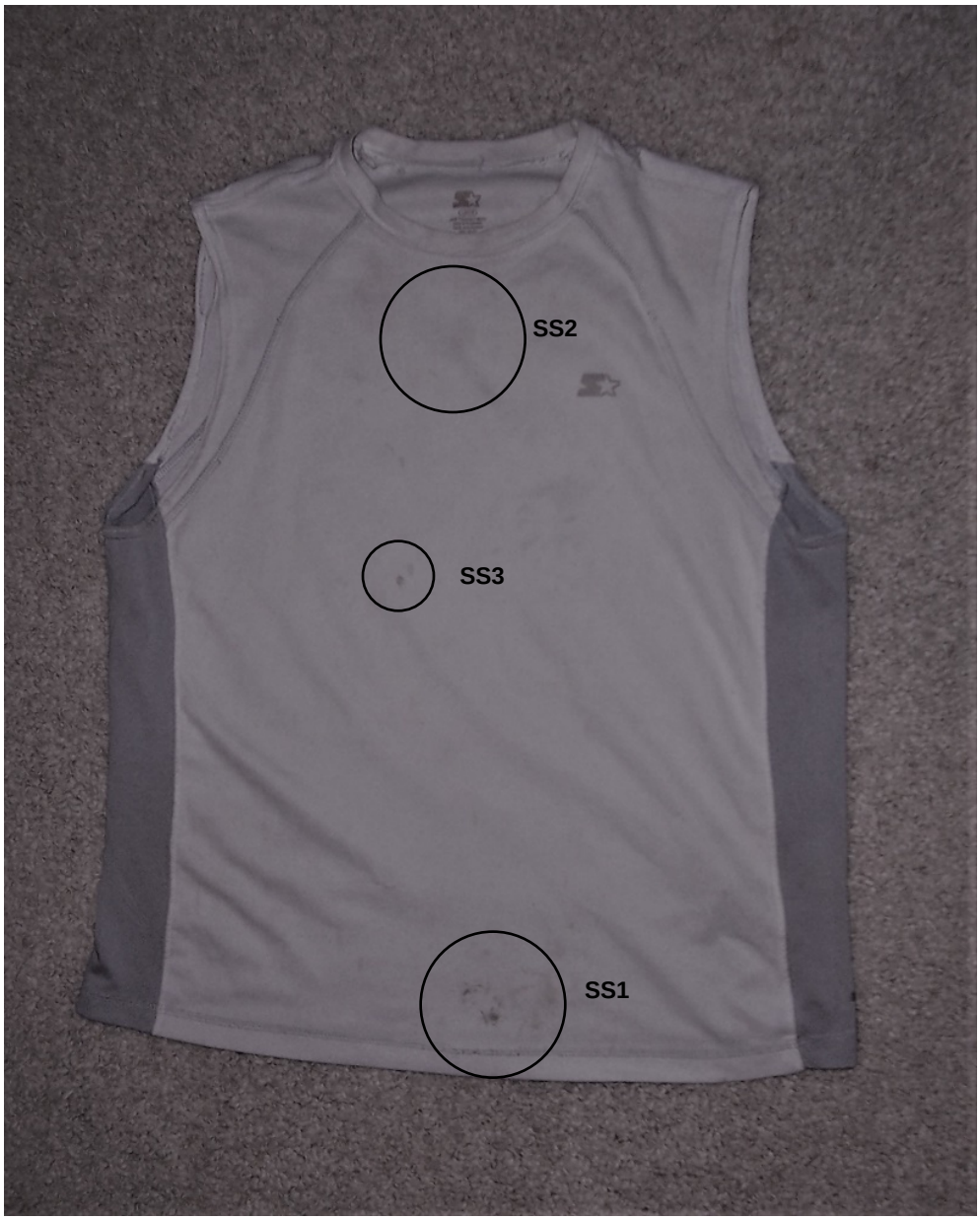
N3 inside

Navy Polo Shirt Infrared Analysis: Infrared analysis shows the polo shirt is made of cotton. The infrared results show no anomalous materials. A table below presents the results. See the Appendix for the spectra.

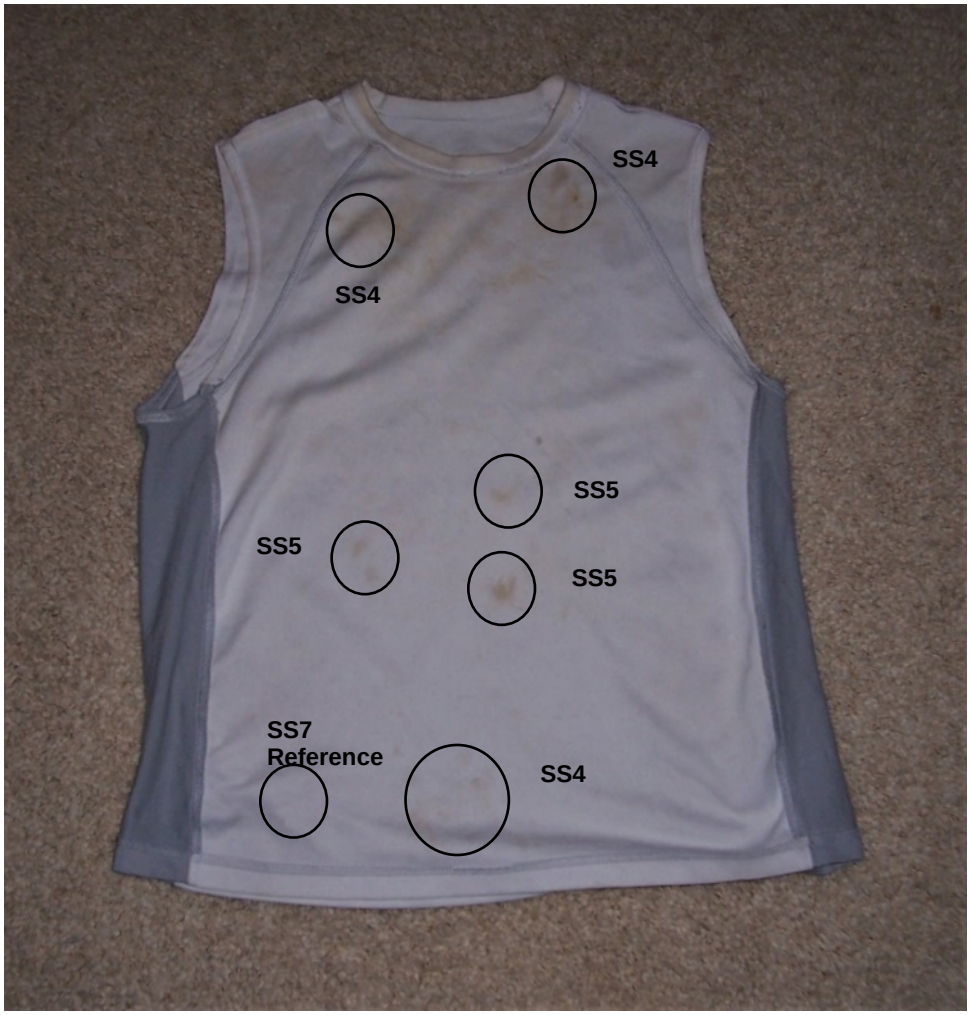
Sampling	Infrared Characterization	Figs.
NP1 (Light Tan)	Dirt components (silicate and carbonate minerals); amide probably from a protein derived source. The spectrum compares best with a reference of human skin flake.	21
NP2 (Light Tan)	Amide probably derived from a protein source.	22
NP3 (Inside Light Tan)	Amide probably derived from a protein source.	23
NP4 (No stain)	Taken for reference. Identifies the polo fiber as cotton.	22 23

Sleeveless Shirt (Inner Layer - Undershirt)

Sleeveless Shirt Photographs and Sampling points: Photographs were taken of stain areas of the sleeveless shirt. There were no defined spots. The stain areas are identical in appearance indicating they are of similar composition. The stains are on the outside front and inside front. They are not in the same respective areas expected if a stain 'bleed-through' the fabric occurred. Following are photographs showing the sampling sites.

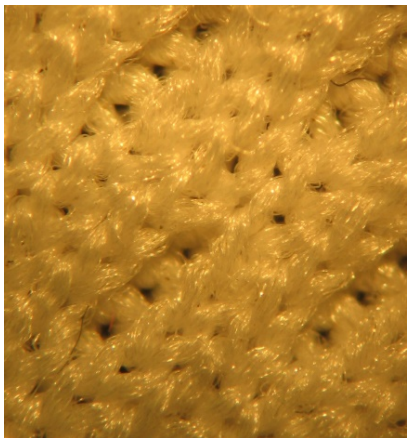


Outside front of sleeveless shirt (undershirt)

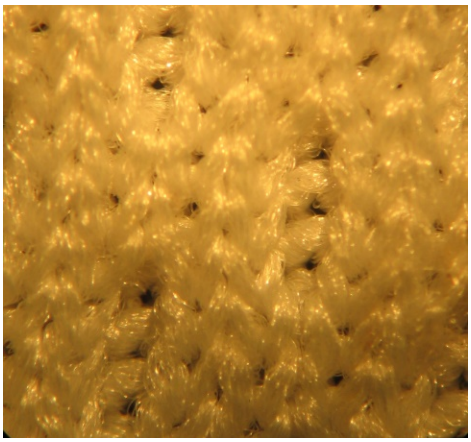


Inside front of sleeveless shirt (undershirt)

Sleeveless Shirt Microscope Photographs: Microphotographs taken of SS1 and SS2 (reference) do not show evidence of dye or fiber attack. They follow.



SS7 (Reference)



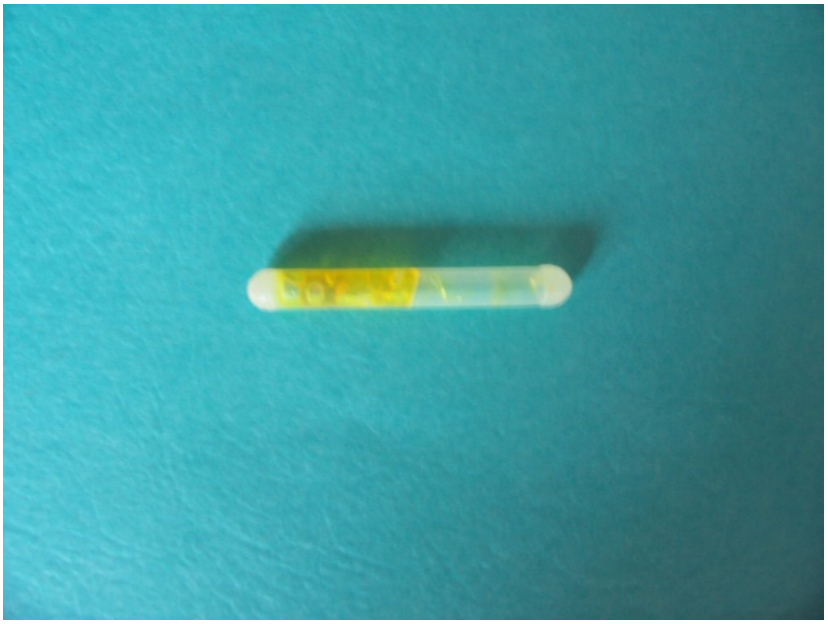
SS1

Sleeveless Shirt Infrared Analysis: The fabric in the shirt is identified by infrared analysis as a polyester. It was difficult to observe extraneous absorption other than the fabric in the "in situ" spectra. The soft texture of the fabric did not permit adequate acquisition of stain components. Only one interpretable difference spectrum (stain area versus reference fiber) was obtained. A water extraction of this area did show additional components in the stain. From the appearances of the stains (dirt-like) there was no reason to believe that anything anomalous relating to the abduction is on this shirt. Following is a table showing the results. See the Appendix for the spectra.

Sampling	Infrared Characterization	Figs.
SS1 in situ	Amide containing material (perspiration); dirt component (silicate mineral).	24
SS7 in situ	Taken for reference. Identifies the fiber as a polyester.	24
SS1 Water Extract	Perspiration; poly(dimethylsiloxane) which is a commonly found contaminant and has many uses.	25

Liquid in Vial

Vial found in Cargo Shorts: A small vial containing a liquid was found in the cargo shorts pocket. A photograph of a vial follows.



Infrared analysis of the liquid contents of the vial identifies it as a phthalate ester mixture. This is commonly used as insect repellent. See Figure 26 for the infrared spectrum in the Appendix.

Objective II. COMPARISON OF SALT FORK CLOTHING TO THOSE WORN DURING THE ABDUCTIONS OF BETTY HILL AND A CANADIAN EXPERIENCER

To date, this laboratory has examined clothing from four experiencers. Besides the two Salt Fork experiencers, the clothing worn during the abductions of Betty Hill (dress) and a Canadian experiencer (tee-shirt) were examined. Tables comparing the clothing are presented at the end of this section. They display the type of clothing, clothing history, fiber appearance, fiber/dye changes (if any), particulate amount, analysis, and indicates where a common component was found in all four experiencer's clothing.

The common component is a long chain carboxylic acid salt, specifically it may be a stearic acid zinc salt. This was the only commonality found in the clothing. Long chain carboxylic acid salts are very ordinary materials, and were not thought to be anomalous in previous analyses on the Betty Hill dress and the Canadian experiencer's tee-shirt. However, it was also found on some selected pieces of the clothing from both Salt Fork experiencers in these analyses. While stearic acid zinc salt is a possibility in the clothing in all four experiencers, there is additionally an indication of a stearic acid calcium salt in the Salt Fork older man's sweatshirt.

Long chain carboxylic acid salts have many uses.[12] Some include bar soap and stick deodorant in personal hygiene products. So, there is a probability that some may originate from these products. However, some of locations of the carboxylic acid salt on some experiencer's clothing tend to rule these sources out. (For example, it was on the front skirt mid-section of Betty Hill's dress, upper front left and lower front right of the Salt Fork older man's cargo shorts, the front right pocket and back right pocket of the Salt Fork younger man's cargo shorts.

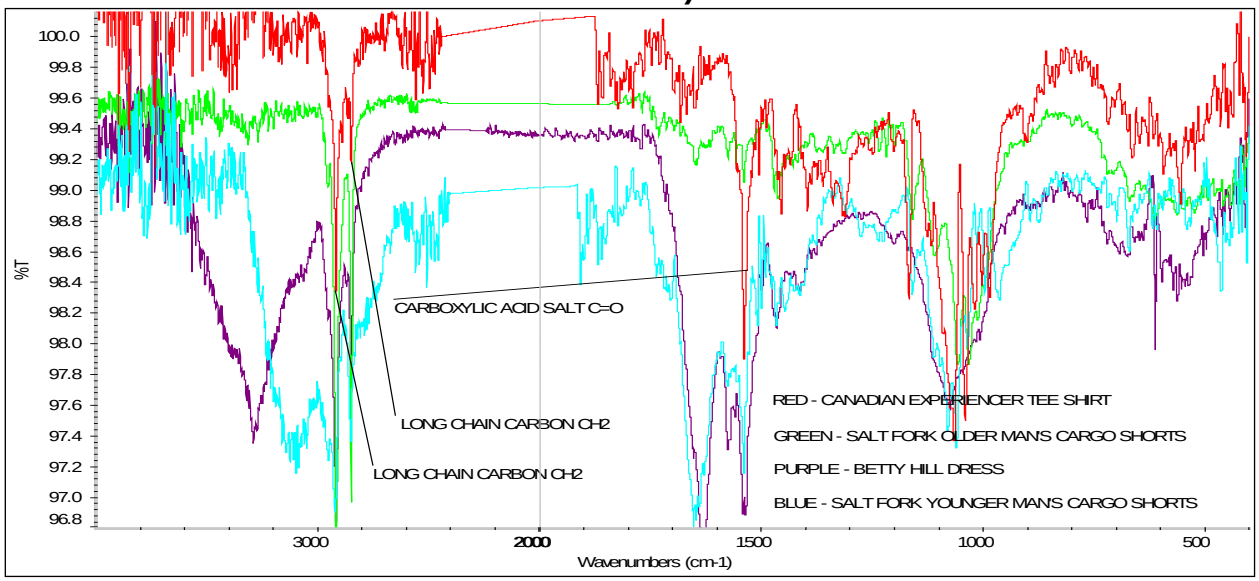
Moreover, it has been reported that experiencers commonly have UV fluorescing material on them, or on their clothing. The long chain carboxylic acid salts, for the most part, were found in the UV fluorescing areas of the 'Salt Fork' clothing. This analysis therefore 'flags' this material as possibly being connected to an abduction, and to be looked for in future clothing from experiencers. More data are needed from other experiencers to establish whether this is the 'needle-in-the-haystack'. It should be noted that something does not have to be exotic or of unknown composition to be of alien origin.

The infrared analytical data which identifies the long chain carboxylic acid commonalties are presented below. Selected infrared spectra of clothing from all four experiencers show the absorption bands due to the carboxylic acid salts at 1540 cm^{-1} (resolution is ±4 cm^{-1}) due to acid salt C=O asymmetric stretch. And there's absorption bands at 2922 cm^{-1} (CH_2 asymmetric stretch) and 2858 cm^{-1} (CH2 symmetric stretch) due to a long carbon chain. The appearance suggests to this analyst that the carbon chain is approximately 15-18 carbons in length. Perhaps it is a stearic acid salt. Zinc stearate

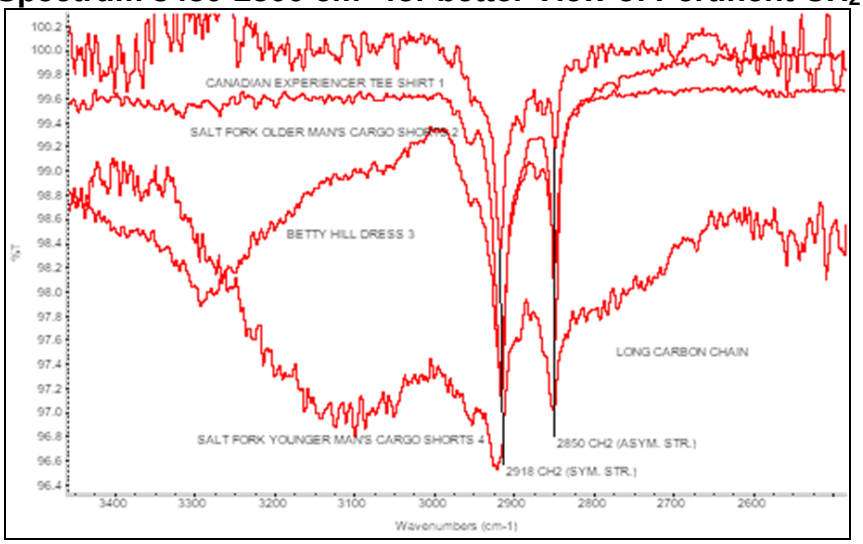
[12] Ibid. Ref 5.

bands compare closest to the bands in the all of the experiencers' spectra. Following are the spectra along with a reference of stearic acid zinc salt (zinc stearate) for comparison.

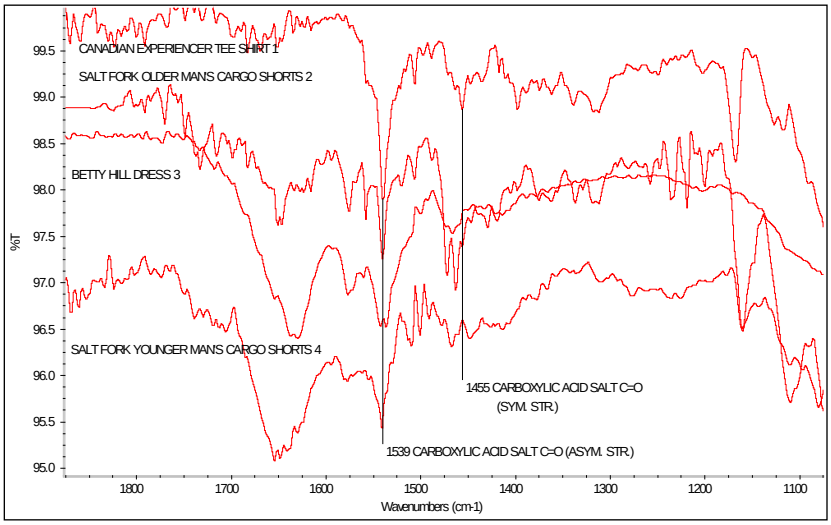
Infrared Spectra of Materials on Clothing worn During Abductions of Betty Hill, a Canadian Experiencer, and the Salt Fork Experiencers (Full Spectrum Range 400-400 cm^{-1})



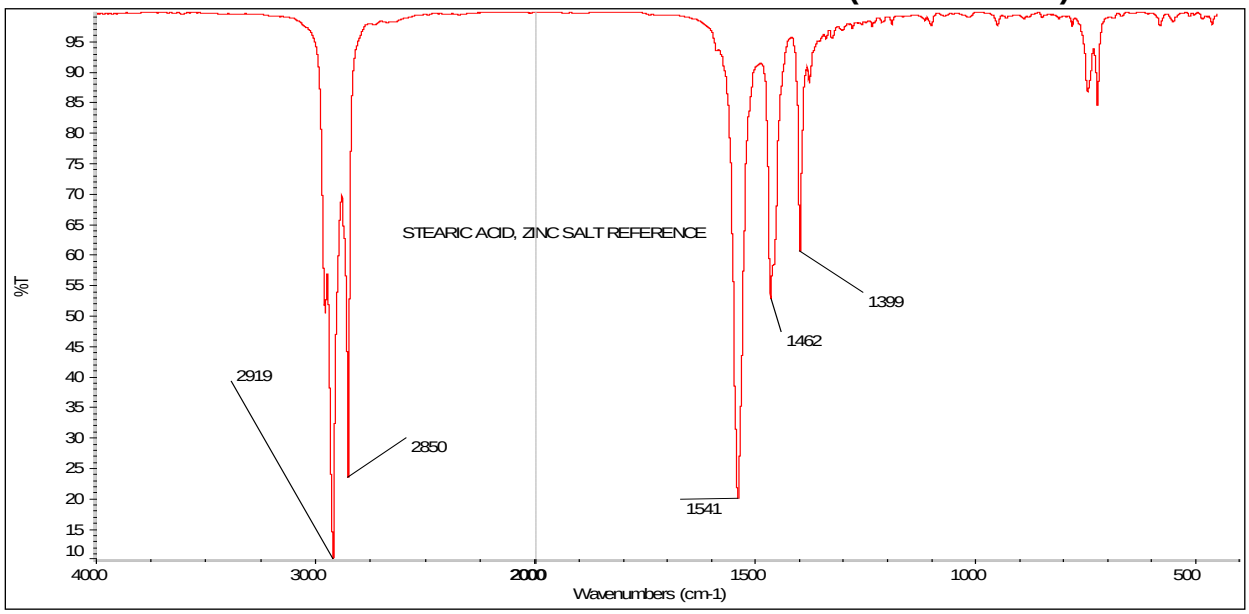
Infrared Spectra of Materials on Clothing worn During Abductions of Betty Hill, a Canadian Experiencer, and the Salt Fork Experiencers (Partial Spectrum 3450-2500 cm^{-1} for better View of Pertinent CH_2 Bands)



Infrared Spectra of Materials on Clothing worn During Abductions of Betty Hill, a Canadian Experiencer, and the Salt Fork Experiencers (Partial Spectrum 1875-1100 cm^{-1} for better View of Pertinent C=O Bands)



Infrared Reference of Stearic Acid Zinc Salt (Zinc Stearate)



Tables comparing the clothing from the four experiencers follow.

Table 1. COMPARISON OF SALT FORK EXPERIENCERS' CLOTHING TO THOSE FROM TWO OTHER EXPERIENCERS (BETTY HILL AND WINNIPEG CANADA MAN)

Experiencer	Clothing History	Fiber Appearance	Speculations on Fiber/Dye changes	Location of Analyzed/Anomalous Stains
Betty Hill (Dress)	Fiber is cellulose acetate. It was a new dress, worn once before and never laundered. It was stored in closet for 40 years before analysis. Handled by many people over the years.	Both fiber and dye were permanently attacked.	Mildew attack.	Predominantly the outside of the dress.
Canadian Man (Tee-shirt)	Fiber is cotton. It has been worn and laundered. The experiencer sleeps in it.	The fiber was intact. Dye was temporarily attacked. It faded to a lighter color, then returned to original color.	It is speculated that the experiencer and shirt/dye may have been exposed to some sort of high energy source. On returning to a lower state over a period of time most of the original color was restored. (1)	Both outside and inside the shirt.
Salt Fork Older Man (Cargo Shorts)	Fiber is cotton. The shorts is old and well-worn.	Fiber and dye intact. Spots/stains caused the appearance.	No change	All outside of the shorts.
Salt Fork Older Man (Zippered Jacket)	Fiber is polyester. It is old well-worn.	Fiber and dye intact. Spots/stains caused the appearance.	No change	All outside of the sweatshirt.
Salt Fork Younger Man (Cargo Shorts)	Fiber is cotton. The shorts is old and well-worn	Fiber and dye intact. Spots/stains caused the appearance.	No change	All outside of the shorts.
Salt Fork Younger Man (Stripped Polo Shirt	Fiber is a cotton/polyester blend. Shirt is worn.	Fiber and dye intact. Spots/stains caused the appearance.	No Change	All outside of the shirt.
Salt For Younger Man (Navy Polo Shirt)	Fiber is cotton. Shirt is worn.	Fiber and dye intact. Spots/stains caused the appearance.	No change	Limited number of spots stains with only one on the inside of the shirt.
Salt For Younger Man (White Sleeveless Shirt - Undershirt	Fiber is polyester. Undershirt is well worn and highly stained.	Fiber and dye intact. Stains caused the appearance.	No change	Highly stained both inside and outside.

1.) It was noted a cell phone, which happened to be on during the experience, recorded neon blue/purple lights at the very end of the recording.

Table 2. COMPARISON OF SALT FORK EXPERIENCERS' CLOTHING TO THOSE FROM TWO OTHER EXPERIENCERS (BETTY HILL AND WINNIPEG CANADA MAN)

Experiencer	Particulates	Analysis	Location of Long Chain Carboxylic Acid Salt	Speculated Source of Carboxylic Acid Salt
Betty Hill (Dress)	Many	Mildew-like residue predominates in the stain areas. Common dust components and pet hair are found. Known DNA consisting of human , a soil bacteria.(alpha proteobacterium), spider and possible mouse. There is a long chain carboxylic acid salt.	Front mid-section of dress skirt.	Unknown
Canadian Man (Tee-shirt)	Few	Predominating are respiratory products (perspiration). Also present is a long chain carboxylic acid salt and traces of common mundane contaminates such as a small oil stain and probable food crumb.	Both underarms and outside, inside back and inside front.	Underarms; Hygiene Product Inside back and front: unknown
Salt Fork Older Man (Cargo Shorts)	Few	Dirt components, dead grass remains and a protein-type amide. Also present are long chain carboxylic acid salts which may be zinc stearate and calcium stearate.	Upper front left and lower front right	Unknown
Salt Fork Older Man (Zippered Jacket)	Few	Dirt components, paint components and a protein-type amide are present. There are long chain carboxylic acid salts which may be zinc stearate and calcium stearate.	Right and left sleeves at wrists	Possible Hygiene Product, e.g. Soap.
Salt Fork Younger Man (Cargo Shorts)	Few	There is a protein-type amide and a long chain carboxylic acid salt which is similar to zinc stearate.	Front right pocket and back right pocket	Unknown
Salt For Younger Man (Stripped Polo Shirt)	Few	Paint components only are detected.	-	-
Salt For Younger Man (Navy Polo Shirt)	Few	There are dirt components and a protein-type amide thought to be skin flakes.	-	-
Salt For Younger Man (White Sleeveless Shirt - Undershirt	Few	There are dirt components and perspiration components. Also detected is a trace amount poly(dimethylsiloxane) which is a very common contaminant.	-	-

cc: Kathleen Marden
George Medich

File: UT098

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Phyllis A. Budinger

APPENDIX

Index to Infrared Figures

(The difference spectra displayed in the appendix were generated by subtracting spectra of control references of fiber comprising each piece of clothing from the spectrum of the swatch with the stain ("in-situ"). Note: much absorption between 1200-900 cm^{-1} wavenumbers can be attributed to uncompensated absorption from the reference fiber.)

OLDER MAN'S CARGO SHORTS

- **#1 Black speck scraped from sampling S1 showing amide (mold), long chain natural ester, and celluloidal material (leaf derived)**
- **#2 Black Speck Scraped from Sampling S1 along with References of Dead Grass and Leaf Mold**
- **#3 "In Situ" Spectrum from Sampling S2 along with Cotton Reference and Difference Spectrum which Shows an Amide Containing Material (Protein Type)**
- **#4 "In Situ" Spectrum of Sampling S4 along with Reference of Cargo Shorts Fiber and Difference Spectrum which Shows Components of Dirt (Carbonate and possible Silicate mineral); possible Humate**
- **#5 "In situ" Spectrum of Sampling S5 along with Reference of Cargo Shorts Fiber and Difference Spectrum which Shows an Amide Containing Material. It is probably a protein type**
- **#6 "In Situ" Spectrum of UV Detected Sampling S6 along with Reference of Cargo Shorts Fiber and Difference Spectrum which Shows an Ester Containing Material and a Long Chain Carboxylic Acid Salt indicative of Zinc and Calcium Stearate.**
- **#7 "In Situ" Spectrum of Sampling S7 along with Reference of Cargo Shorts Fiber and Difference Spectrum which Shows a Dirt Component (Silicate Mineral)**
- **#8 "In situ" Spectrum of UV Detected Sampling S8 along with Reference of Cargo Shorts Fiber and Difference Spectrum which Shows Long Chain Carboxylic Acid Salts indicative of Zinc and Calcium Stearate**

OLDER MAN'S ZIPPERED SWEAT SHIRT

- **#9 "In situ" Spectrum of UV Detected Sampling J1 (Run 1) along with Reference of Sweat Shirt Fiber and Difference Spectrum which shows Long Chain Carboxylic Acid Salts indicative of Zinc Stearate and Calcium Stearate**
- **#10 "In situ" Spectrum of UV Detected Sampling J1 (Run 2) along with Reference of Sweat Shirt Fiber and Difference Spectrum which Shows a Protein Type Amide Containing Material and Long Chain Carboxylic Acid Salt indicative of Zinc and calcium Stearate**

●#11 Two Water Extracts of UV Detected Sampling J1 Suggestive of Perspiration Products and Reference of Perspiration for Comparison
●#12 "In Situ" Spectrum of UV Detected Sampling J2 along with Reference of Sweat Shirt Fiber and Difference Spectrum which Shows an Amide Containing Material (Protein Type)
●#13 "In Situ" Spectrum of Sampling J3 along with Reference of Sweat Shirt Fiber and Difference Spectrum which Show Dirt Components (Silicate And Carbonate Minerals)
●#14 "In Situ" Spectrum of Sampling J4 along with Reference of Sweat Shirt Fiber and Difference Spectrum which Shows Paint Components (Polymethacrylate, Metal oxide - white pigment/Extender)
●#15 "In Situ" Spectrum of Sampling J5 along with Reference of Sweat Shirt Fiber and Difference Spectrum which Shows a Paint Component (Metal Oxide - White Pigment/Extender)
●#16 "In situ" Spectrum of Sampling J8 along with Reference of Sweat Shirt Fiber and Difference Spectrum which Shows Paint Components (Polymethacrylate acid, Metal Oxide - White Pigment/Extender)

YOUNGER MAN'S CARGO SHORTS

●#17 "In Situ" Spectrum of Sampling CS1 along with Reference of Cargo Shorts Fiber (Cotton) and Difference Spectrum which Shows an Amide Containing Material which appears to be a Protein Type. There's Indication of a Long Chain Carboxylic Acid Salt similar of Zinc Stearate.
●#18 "In Situ" Spectrum of Sampling CS2 along with Reference of Cargo Shorts Fiber (Cotton) and Difference Spectrum which shows an Amide Containing Material (Protein Type indicated). A Long Chain Carboxylic Acid Salt Indicated. Silicate Mineral (Dirt) Present.

YOUNGER MAN'S STRIPED POLO SHIRT

●#19 Spectrum of Scraping from Striped Polo Sampling SP1 which Shows Paint Components (Poly(ethyl acrylate) and Calcium Carbonate White Pigment/Extender)
●#20 "In Situ" Spectrum of Sampling SP3 along with Reference of Striped Polo Shirt Fiber and Difference Spectrum which Paint Components (Poly(ethyl acrylate) and Calcium Carbonate Pigment/Extender)

YOUNGER MAN'S NAVY POLO SHIRT

●#21 Scraping from Navy Polo sampling NP1 which shows Dirt Components (Silicate and Carbonate Minerals) and an Amide Containing Material. The Amide is likely a Protein Type which May be Human Skin Flakes

●#22"In Situ" Spectrum of Sampling NP2 along with Reference of Navy Polo Shirt Fiber (Cotton) and Difference Spectrum Showing Amide Containing Material which is a Protein Type

●#23 "In Situ" Spectrum of Sampling NP3 along with Reference of Navy Polo Fiber (Cotton) and Difference Spectrum which Shows a Protein Type Amide

YOUNGER MAN'S SLEEVELESS SHIRT

●#24 "In Situ" Spectrum of Sleeveless Shirt Sampling SS1 along with Reference of Sleeveless Shirt Fiber (Cotton) and Difference Spectrum Showing an Amide Containing Material (Possibly Perspiration) and a Dirt Component (silicate mineral)

●#25 Spectrum of Water Extract from Sleeveless Shirt Sampling SS1 along with References of Water Extract of Perspiration from a Tee shirt and Poly(dimethylsiloxane) for Comparison

YOUNGER MAN'S VIAL FOUND IN CARGO SHORTS

●#26 Infrared Spectra of Substance in Vial found in Young Man's Cargo Shorts Pocket (Identified as a Phthalate Ester Mixture) and Two References of Phthalates (Butyl Benzyl Phthalate and Dibutyl Phthalate) for Comparison

OLDER MAN'S CLOTHES

CARGO SHORTS

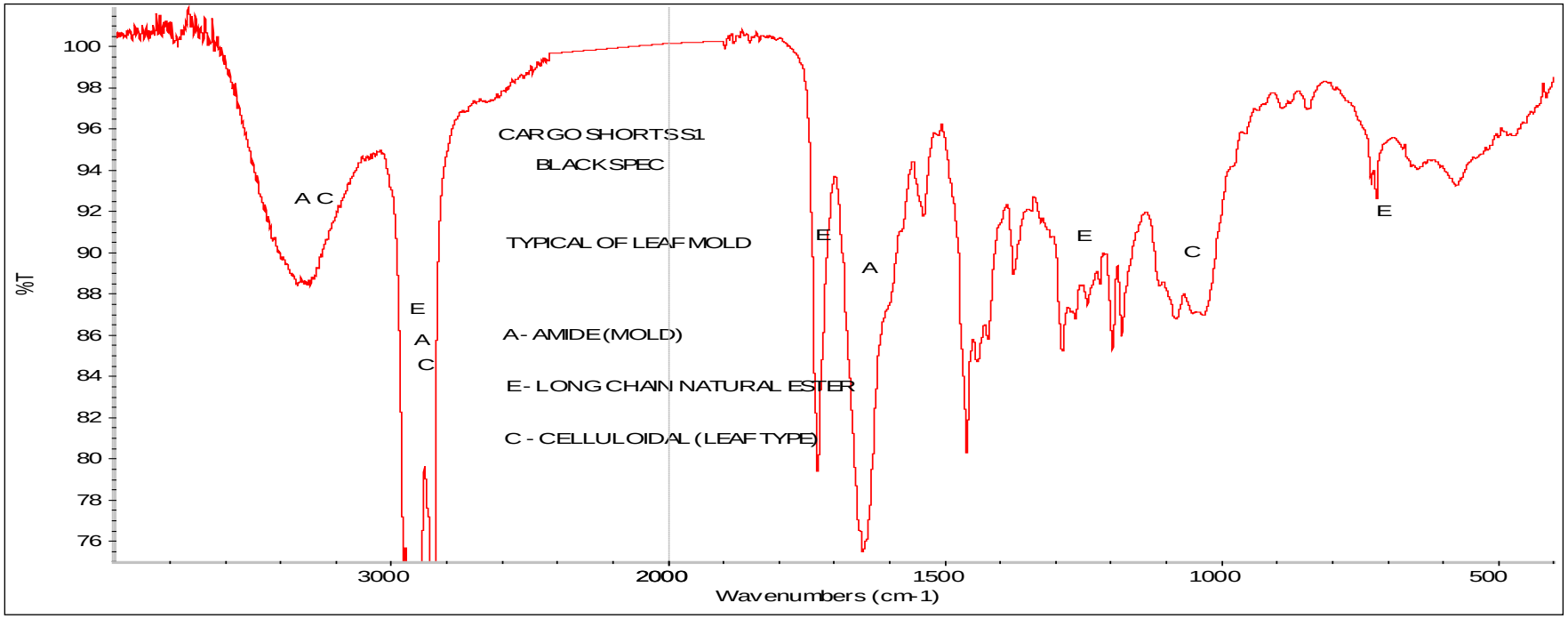

Figure 1. Black speck scraped from sampling S1 showing amide (mold), long chain natural ester, and celluloidal (leaf derived) materials.

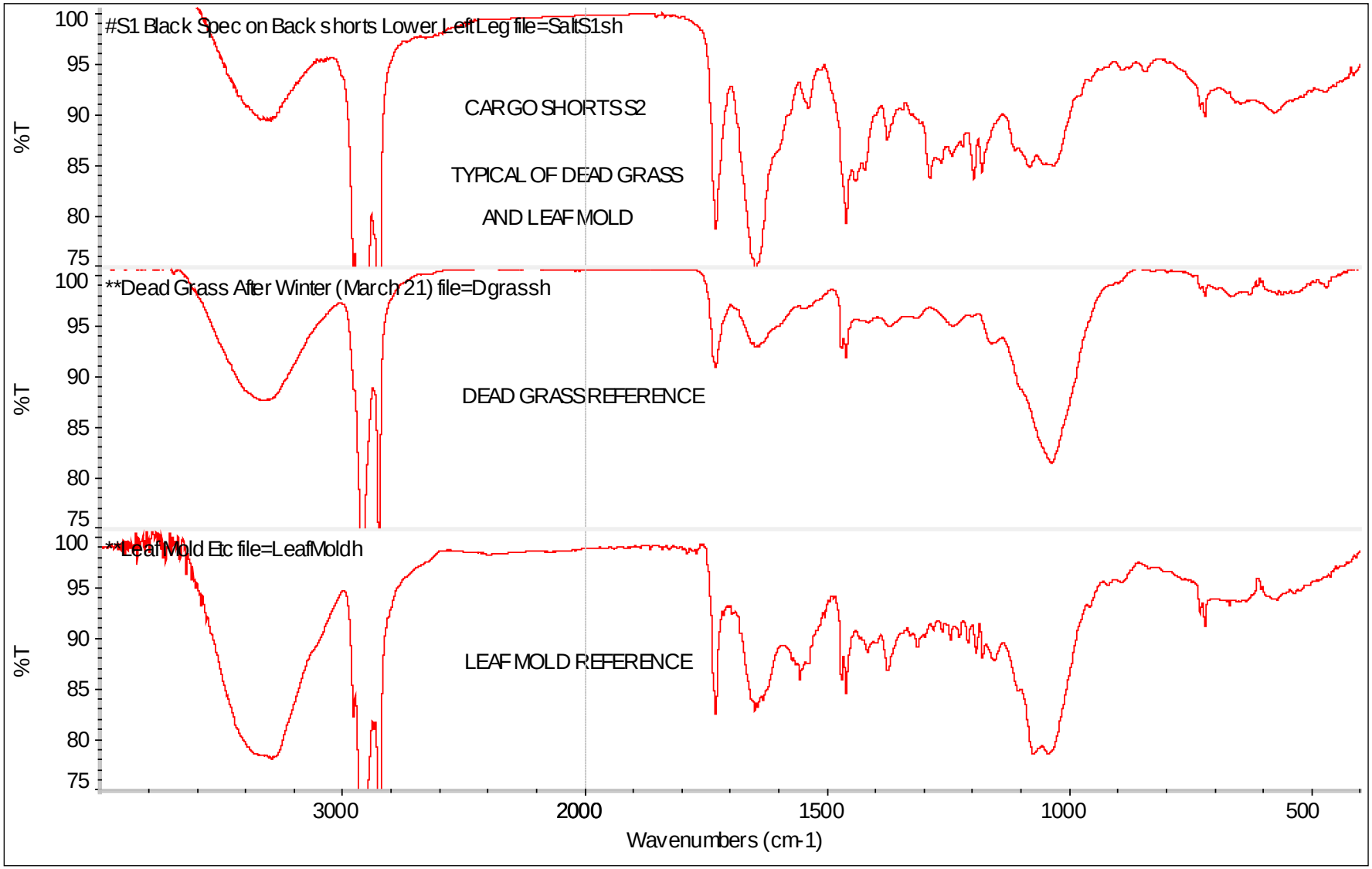

Figure 2. Black speck scraped from sampling S1 along with references of dead grass and leaf mold.

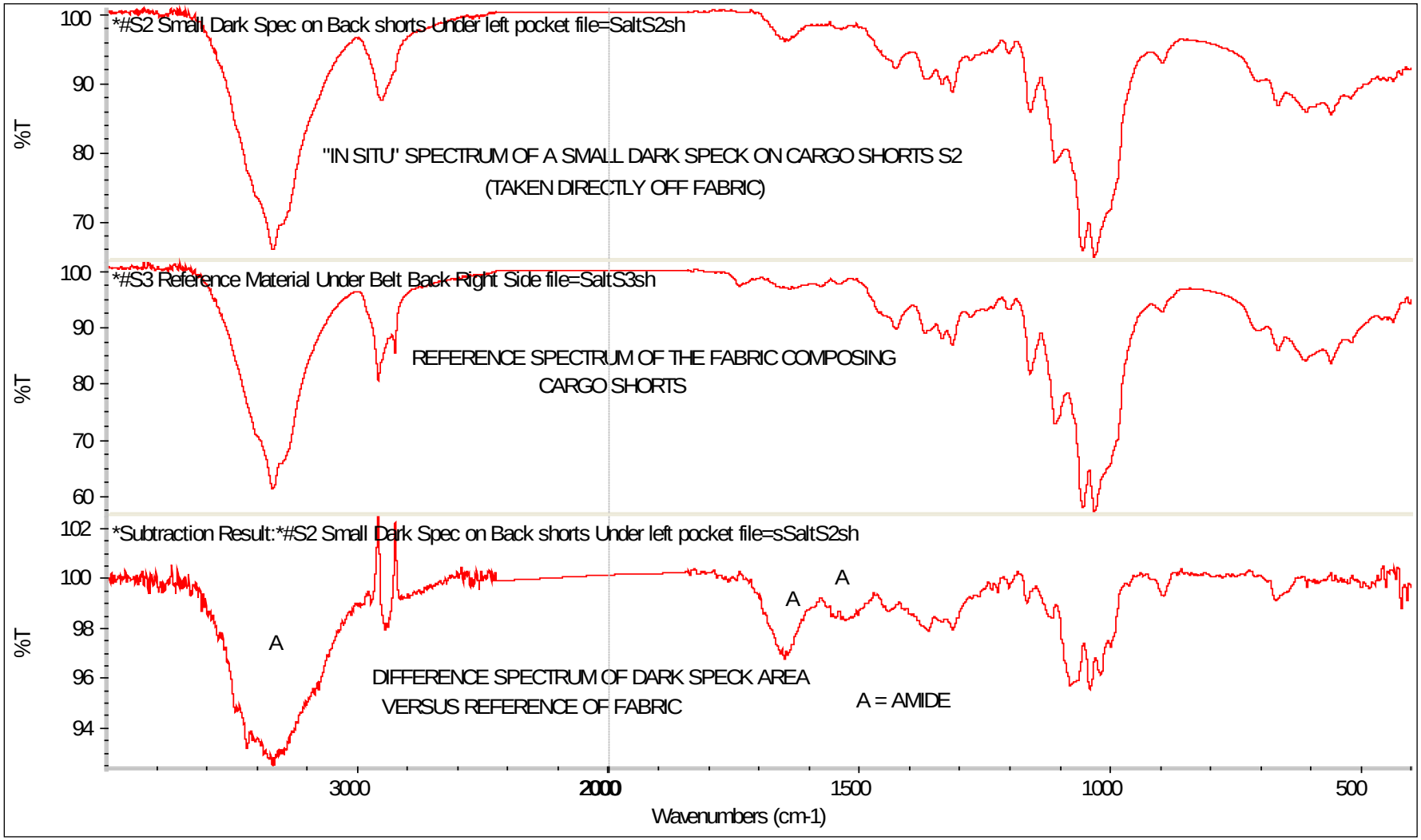

Figure 3. "In Situ" spectrum from sampling S2 along with cotton reference and difference spectrum which shows an amide containing material. It is a protein type.

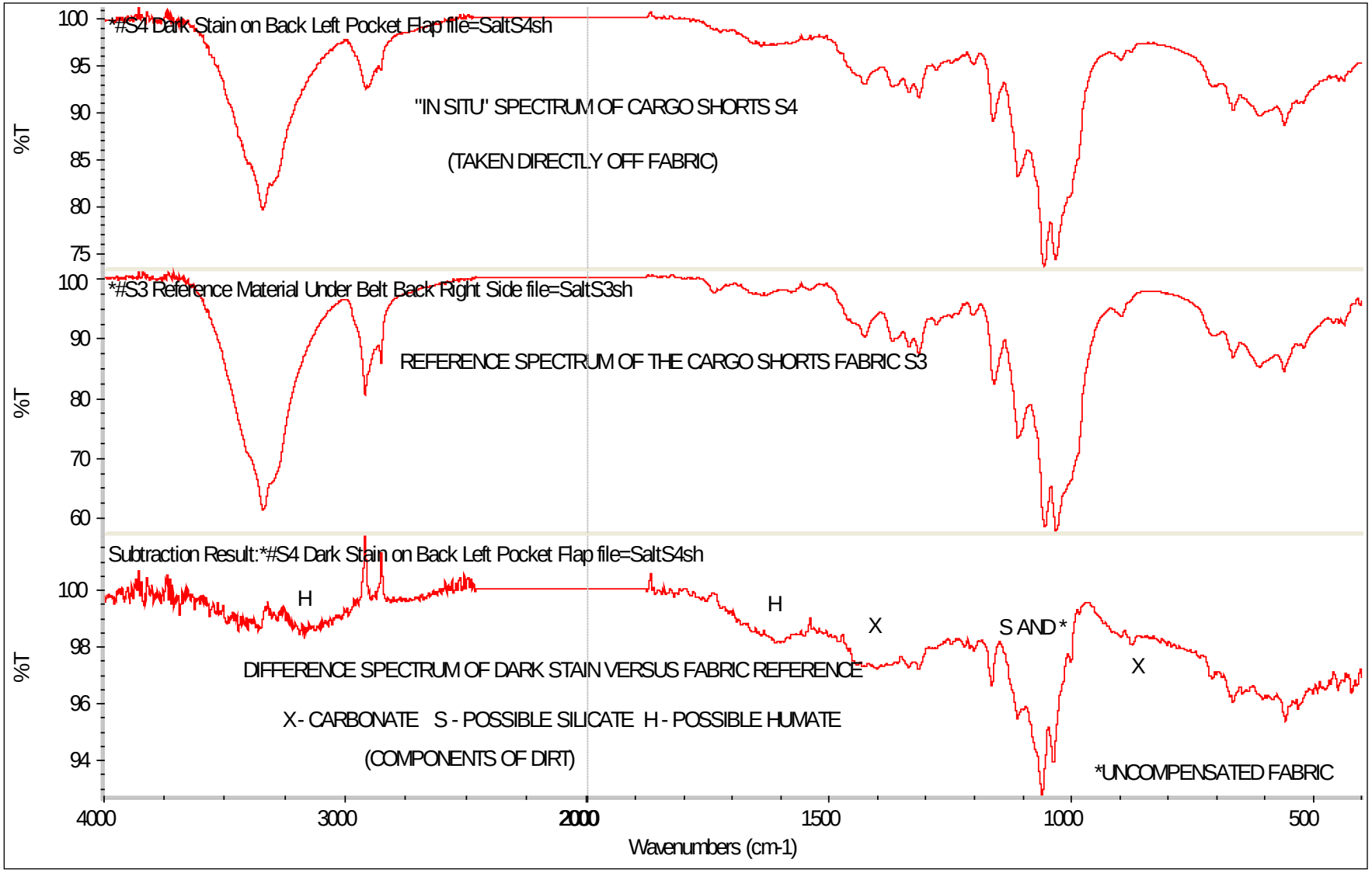

Figure 4. “In situ” spectrum of sampling S4 along with reference of cargo shorts fiber and difference spectrum showing components of dirt (carbonate and possible silicate mineral); possible humate.

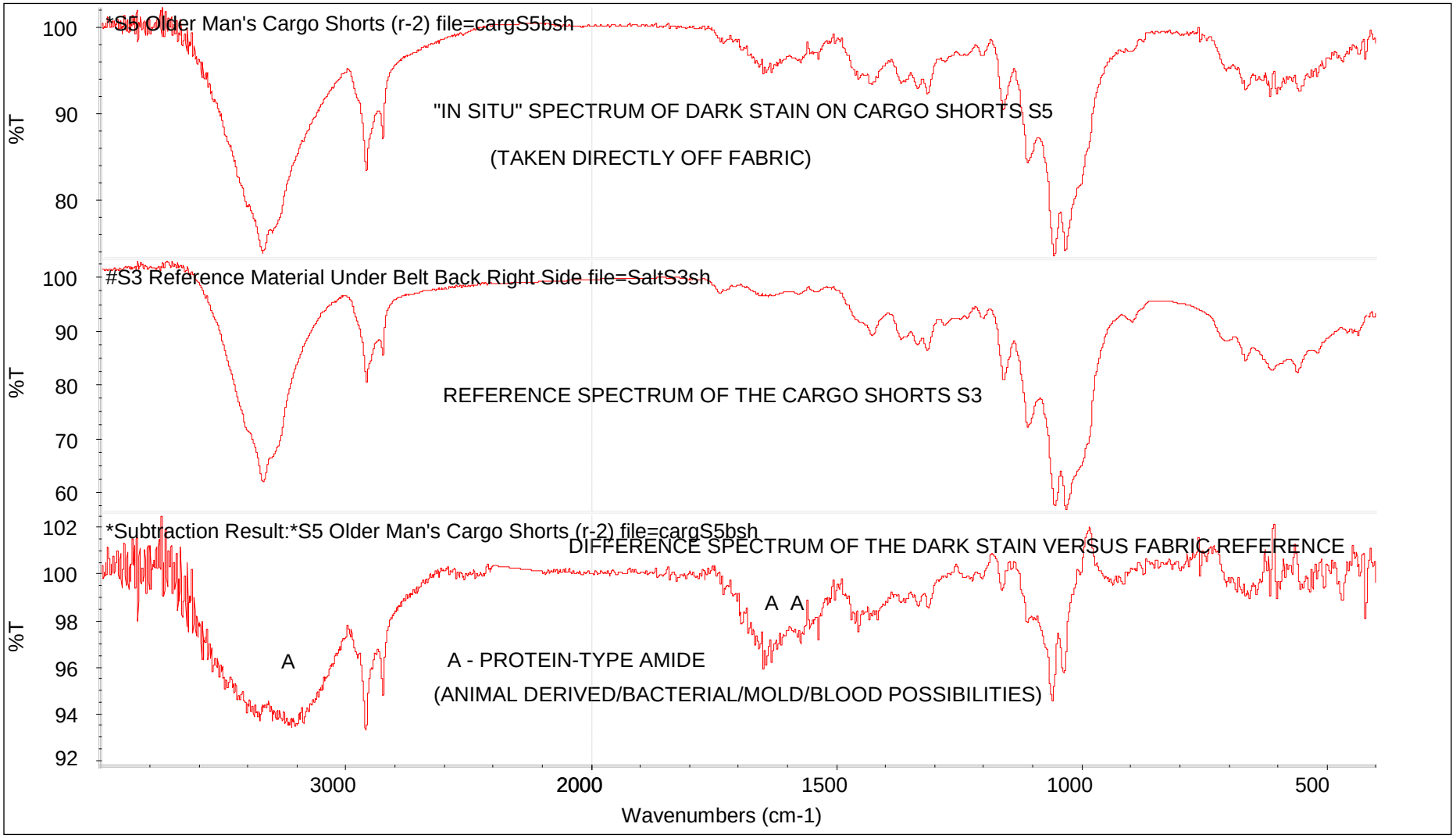

Figure 5. “In situ” spectrum of sampling S5 along with reference of cargo shorts fiber and difference spectrum showing an amide containing material. It is probably a protein type.

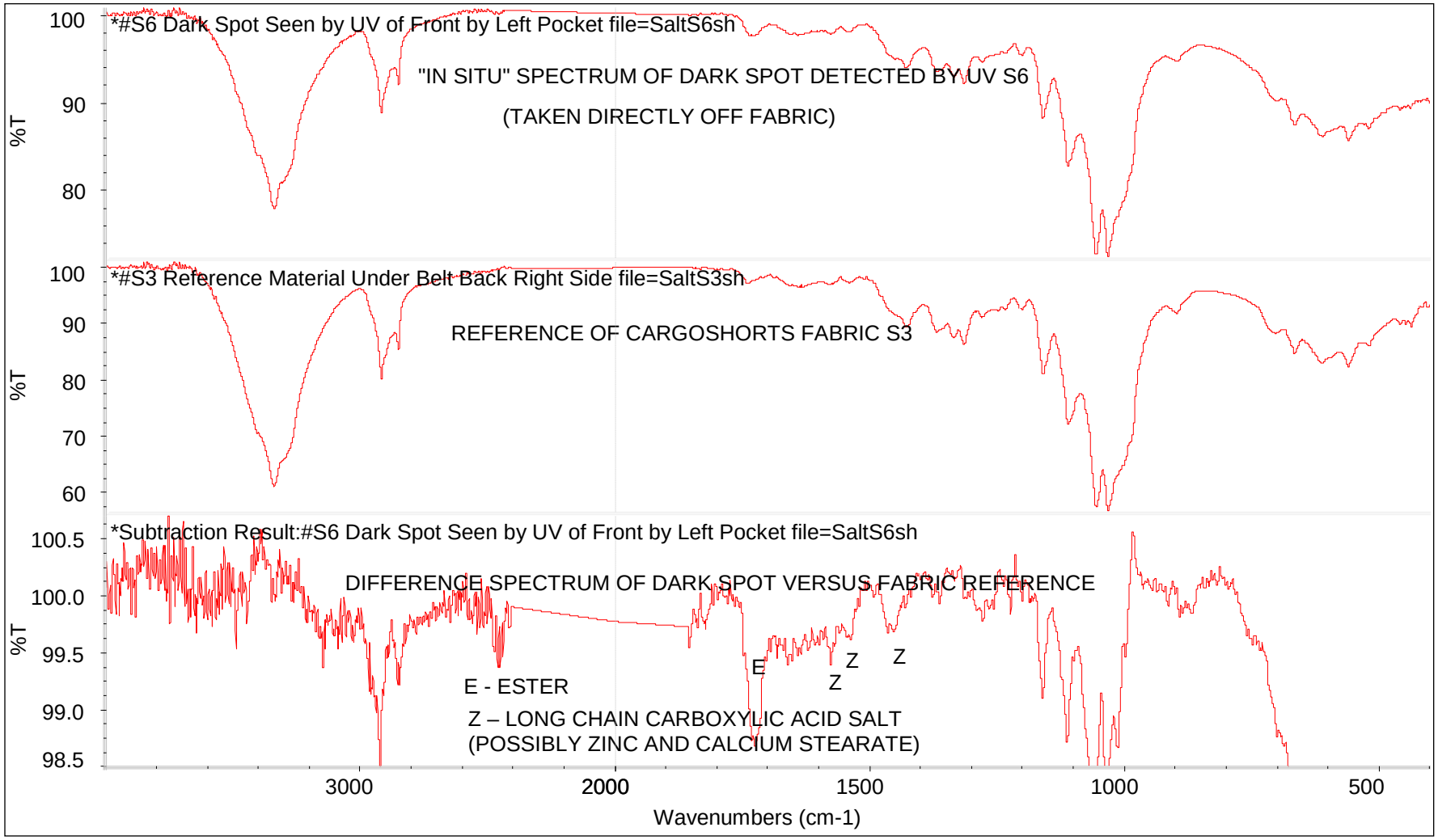

Figure 6. In situ" spectrum of UV detected sampling S6 along with reference of cargo shorts fiber and difference spectrum showing an ester,.type material and indications of a long chain carboxylic acid salt indicative of zinc stearate and calcium stearate.

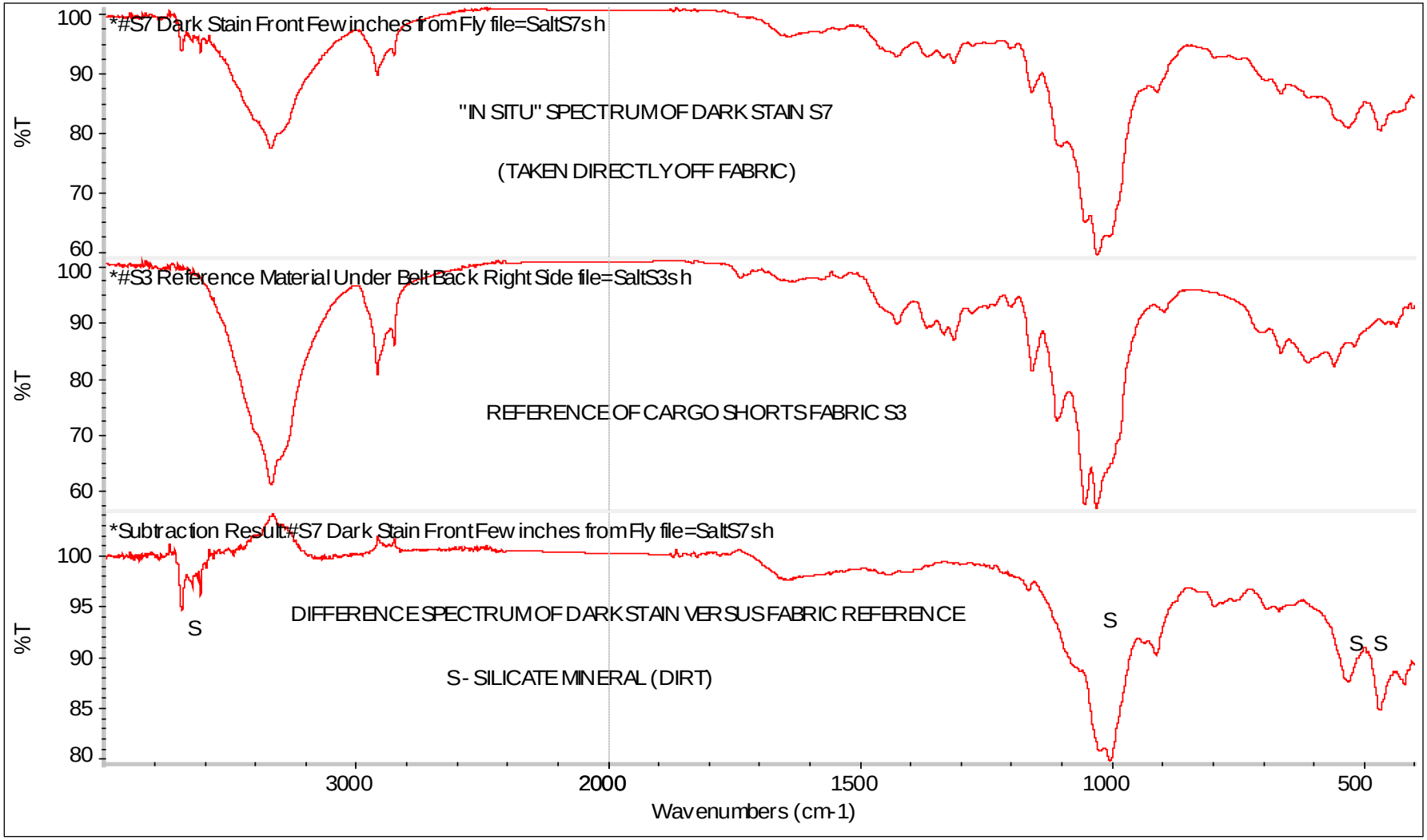

Figure 7. “In situ” spectrum of sampling S7 along with reference of cargo shorts fiber and difference spectrum which shows a dirt component (silicate mineral).

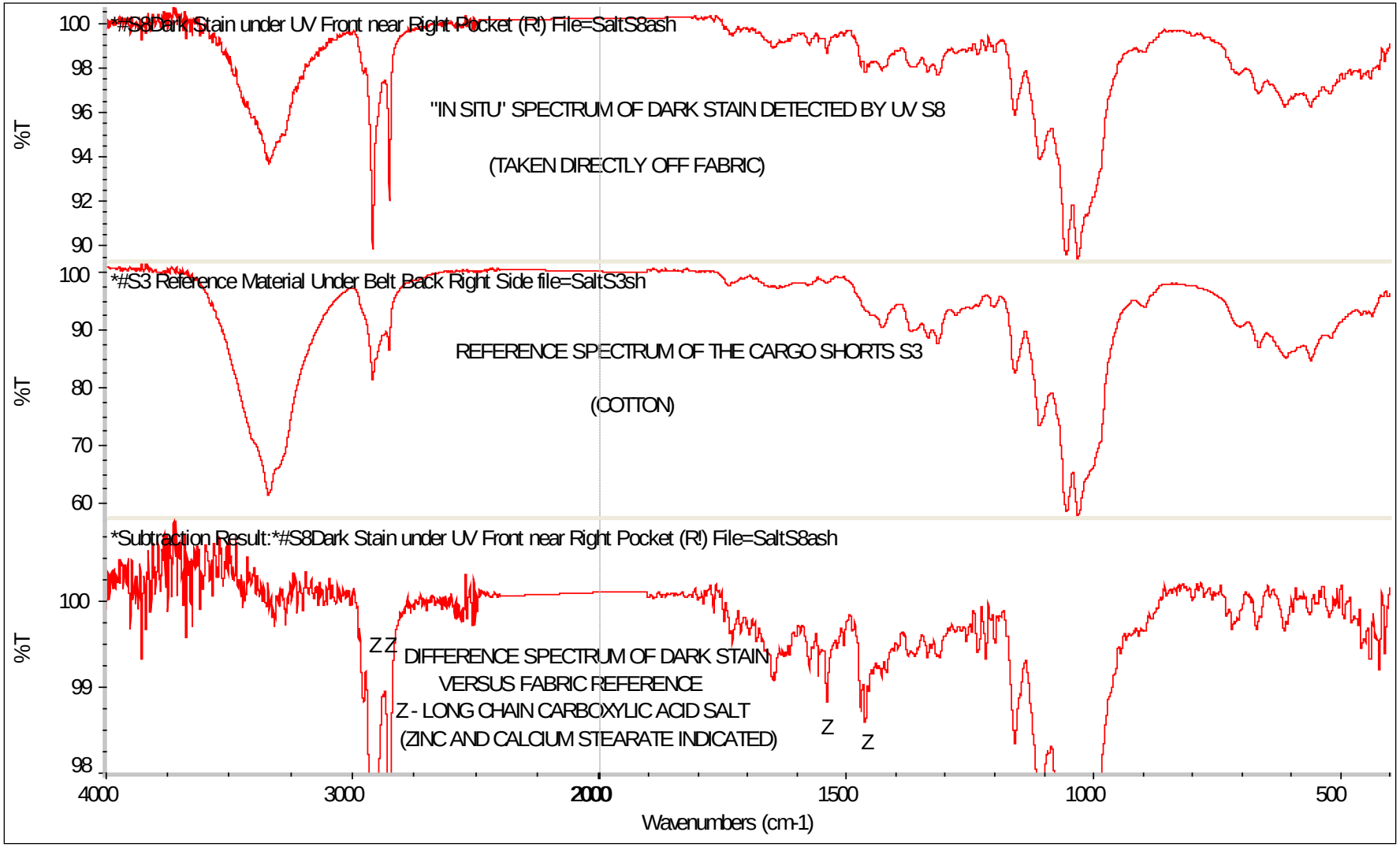

Figure 8. “In situ” spectrum of UV detected sampling S8 along with reference of cargo shorts fiber and difference spectrum which shows long chain carboxylic acid salts indicatiive of zinc stearate and calcium stearate.

OLDER MAN'S ZIPPERED SWEATSHIRT

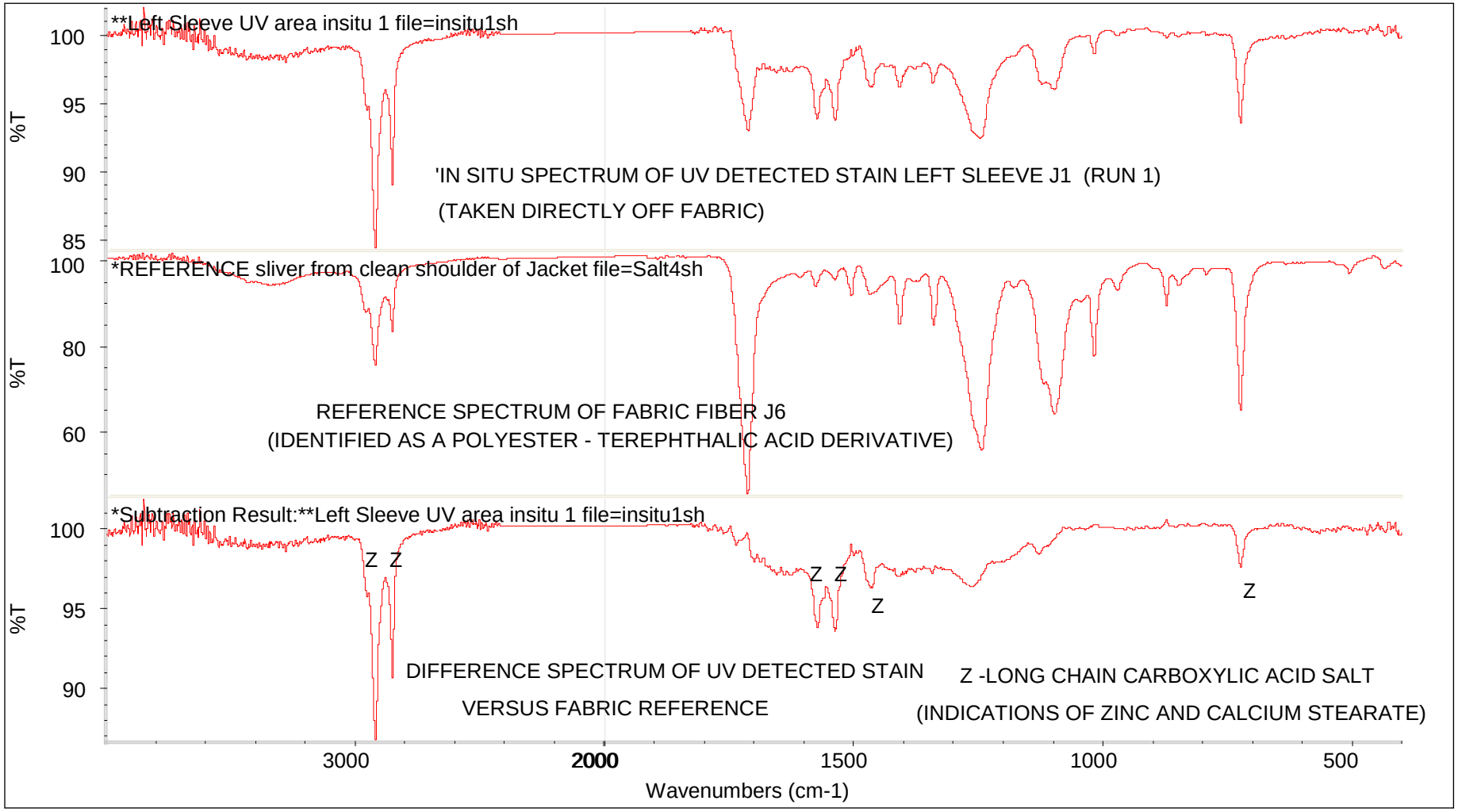

Figure 9. "In situ" spectrum of UV detected sampling J1 (Run 1) along with reference of sweatshirt fiber and difference spectrum which shows long chain carboxylic acid salts indicative of zinc stearate and calcium stearate.

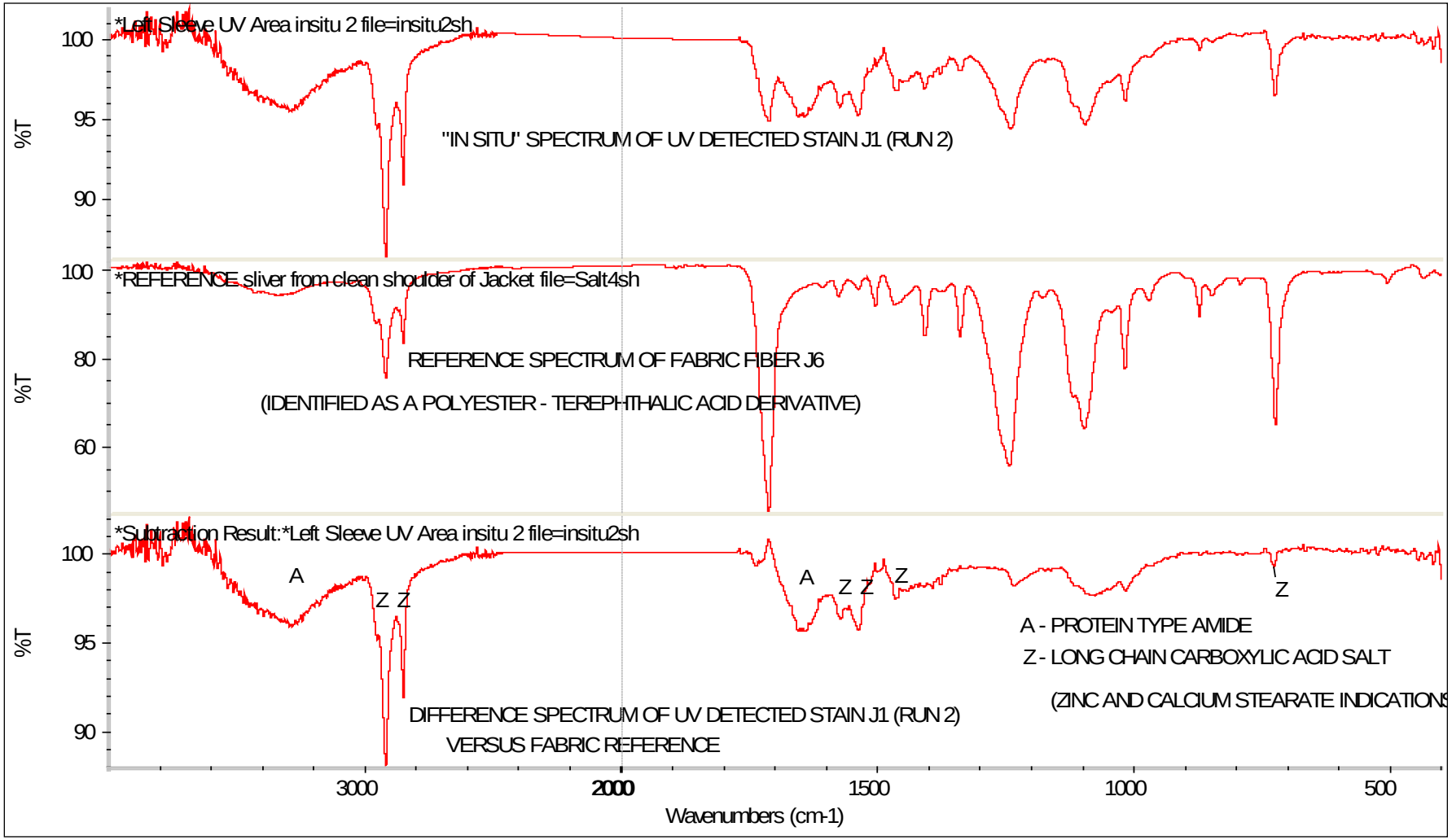

Figure 10. “In situ” spectrum of UV detected sampling J1 (Run 2) along with reference of sweatshirt fiber and difference spectrum which shows a protein type amide containing material and long chain carboxylic acid saltsindicative of zinc stearate and calcium stearate. The amide appears to be protein derived.

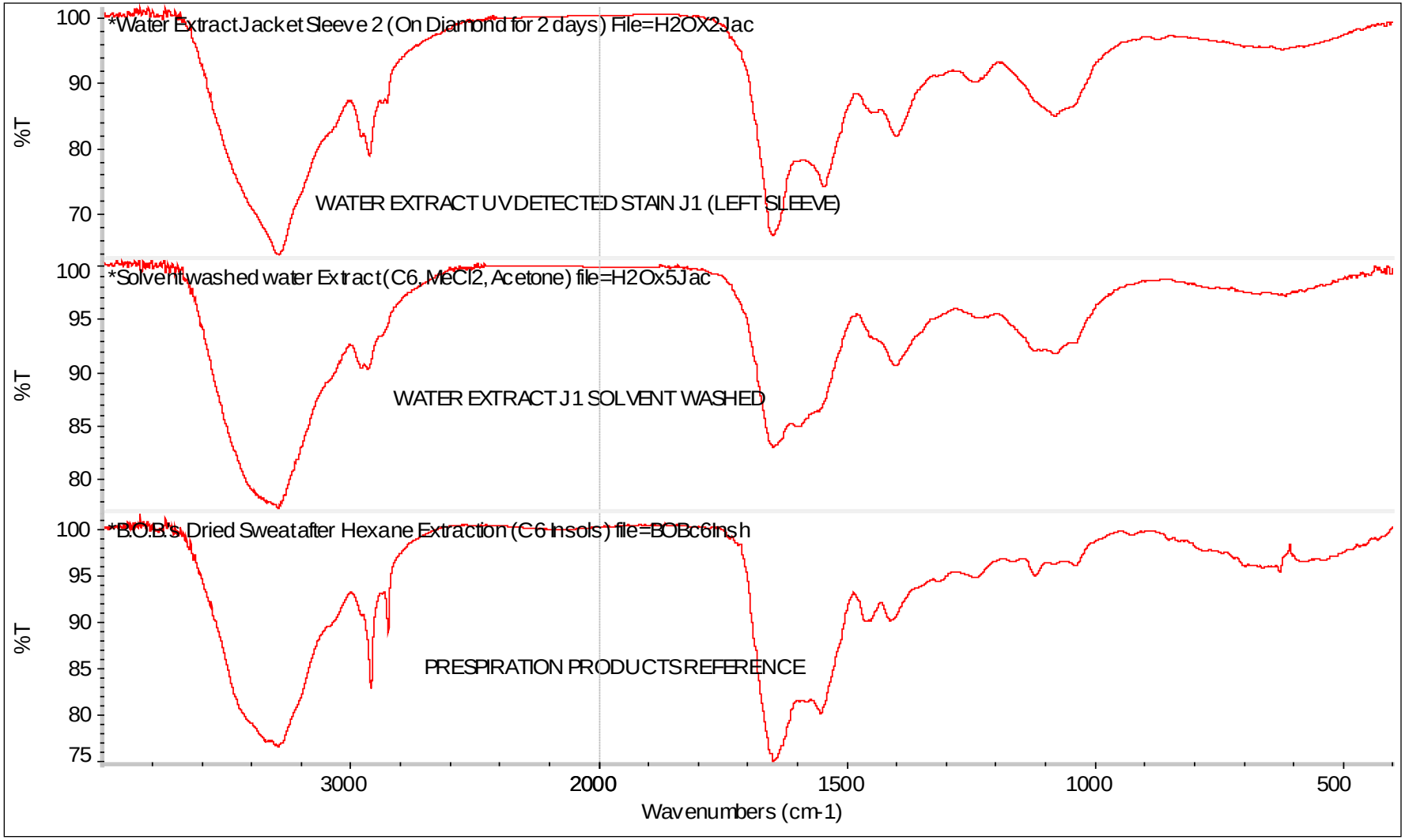

Figure 11. Two water extracts of UV detected sweatshirt sampling J1 suggestive of amide which are perspiration products and reference of perspiration for comparison.

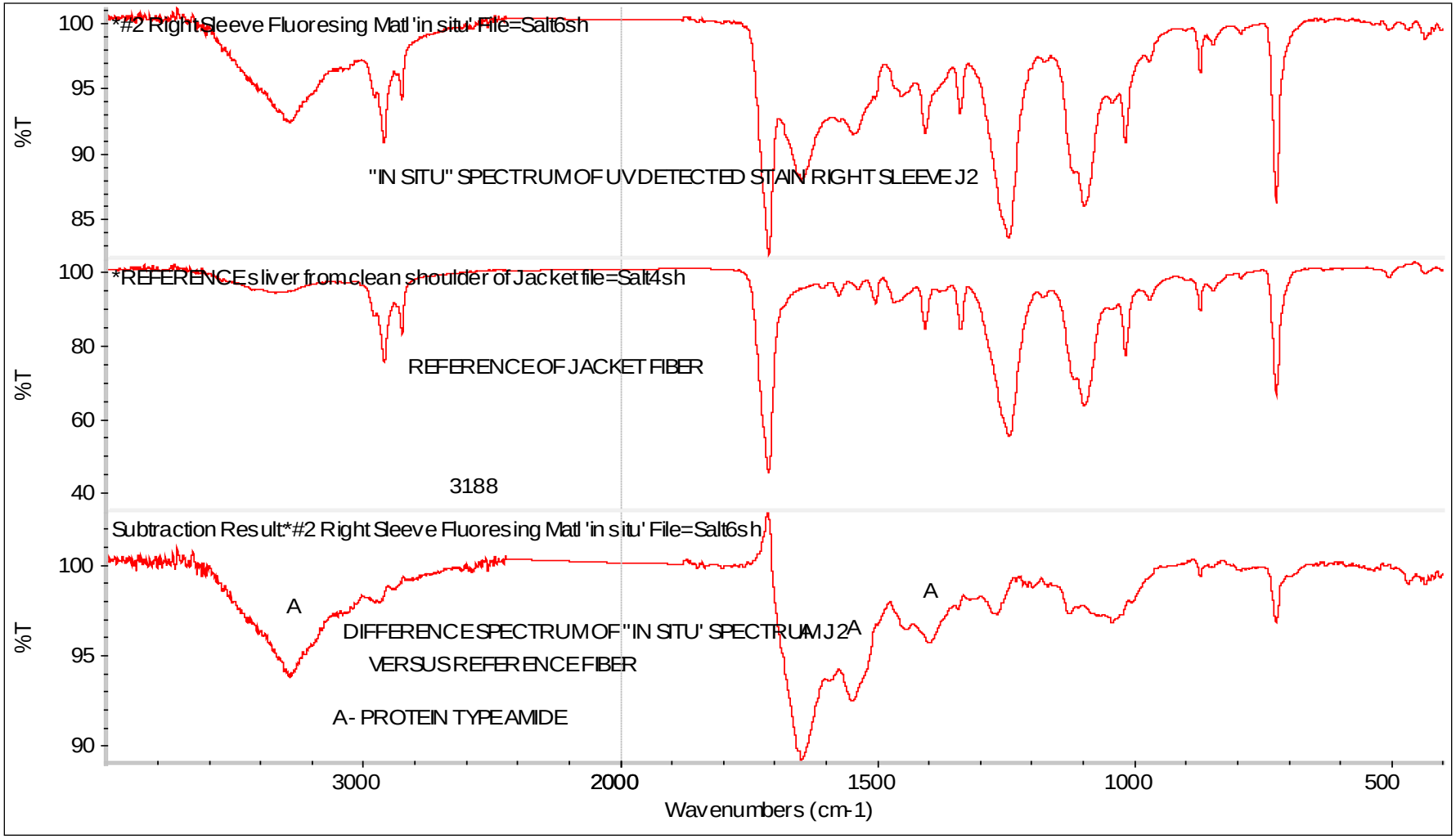

Figure 12. “In situ” spectrum of UV detected sampling J2 along with reference of sweatshirt fiber and difference spectrum which shows an amide containing material. The amide appears to be a protein type.

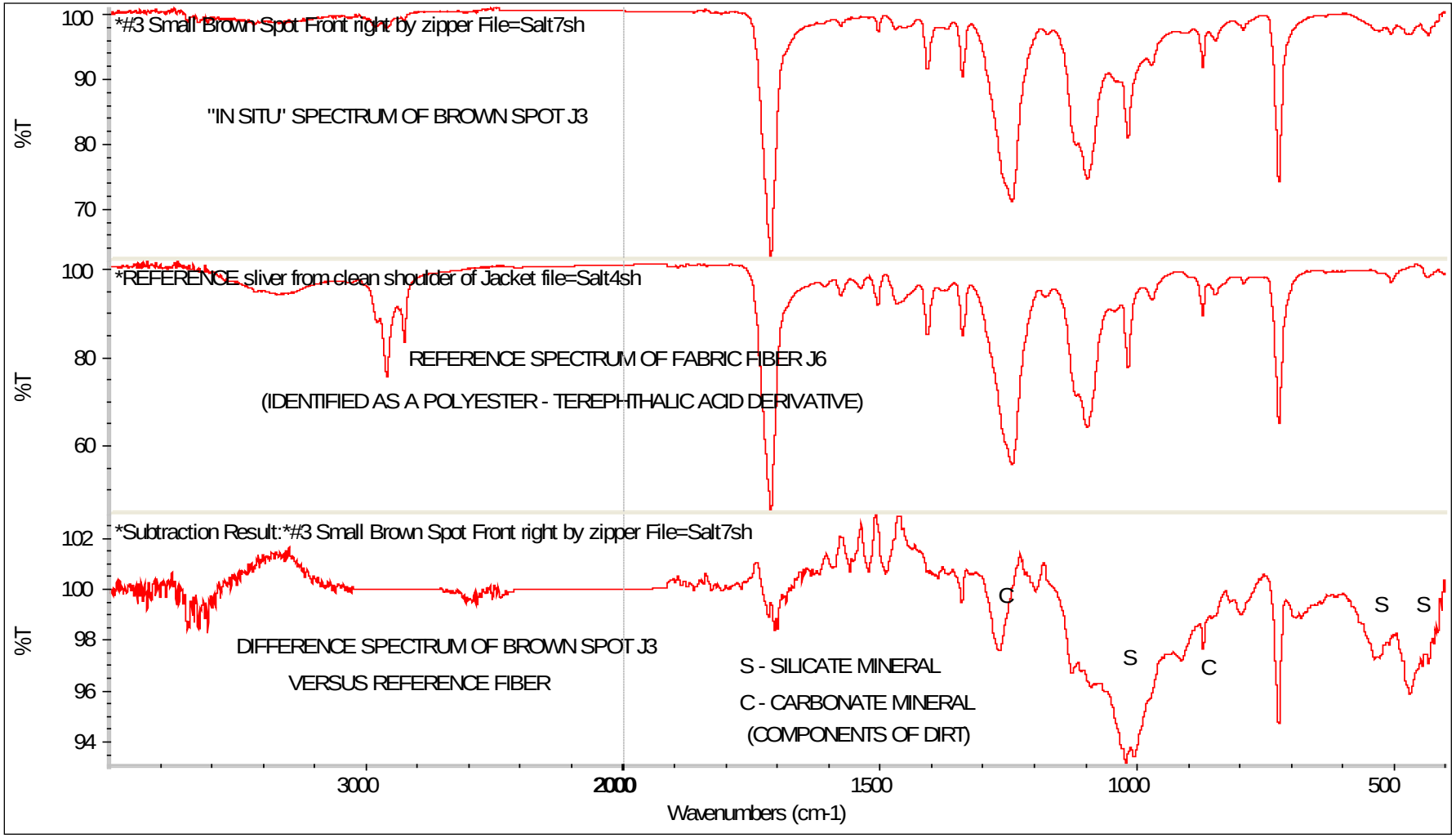

Figure 13. “In situ” spectrum of sampling J3 along with reference of sweat shirt fiber and difference spectrum which shows dirt components (silicate and carbonate minerals).

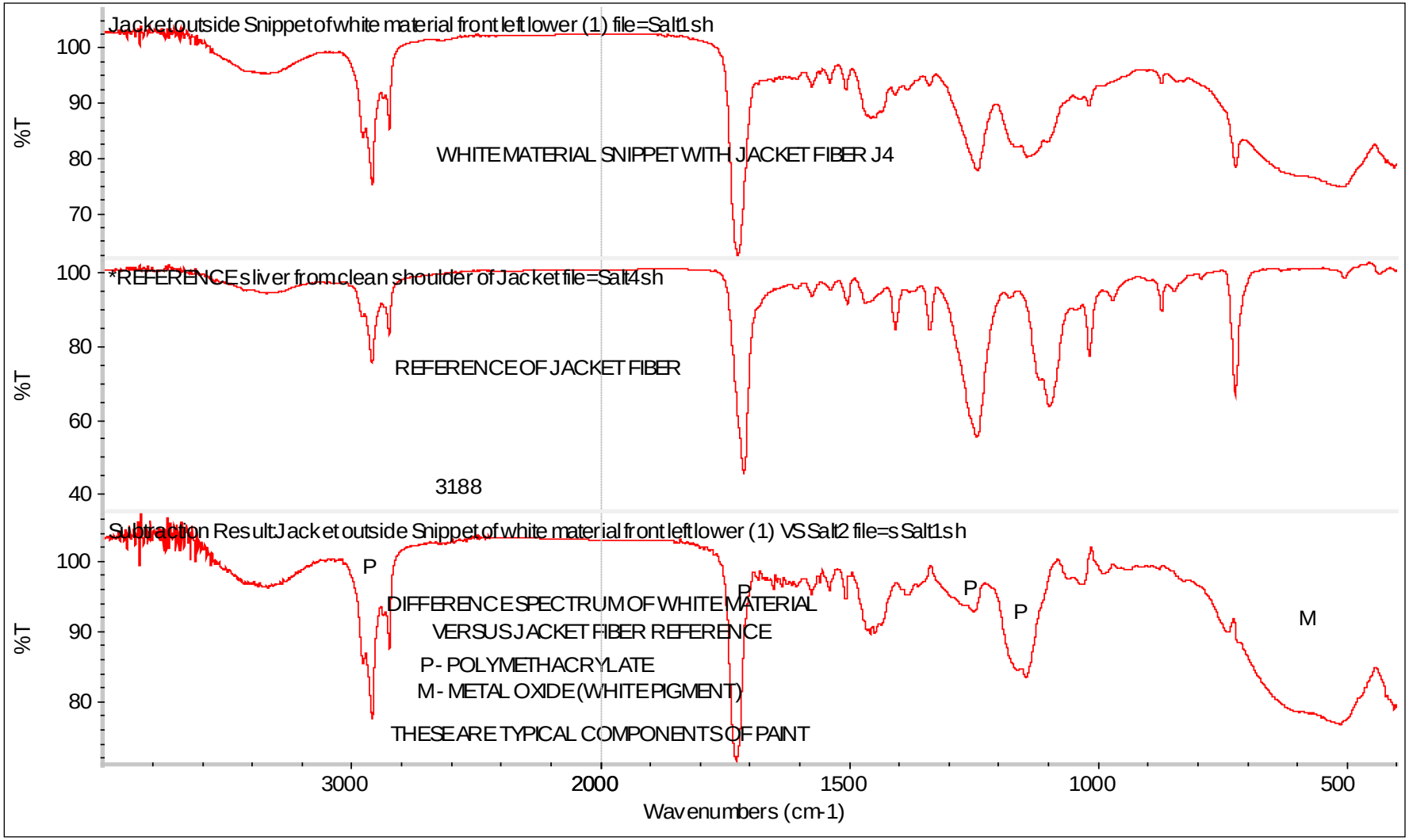

Figure 14. “In situ” spectrum of sampling J4 along with reference of sweatshirt fiber and difference spectrum which shows paint components (polymethacrylate, metal oxide white pigment/extender).

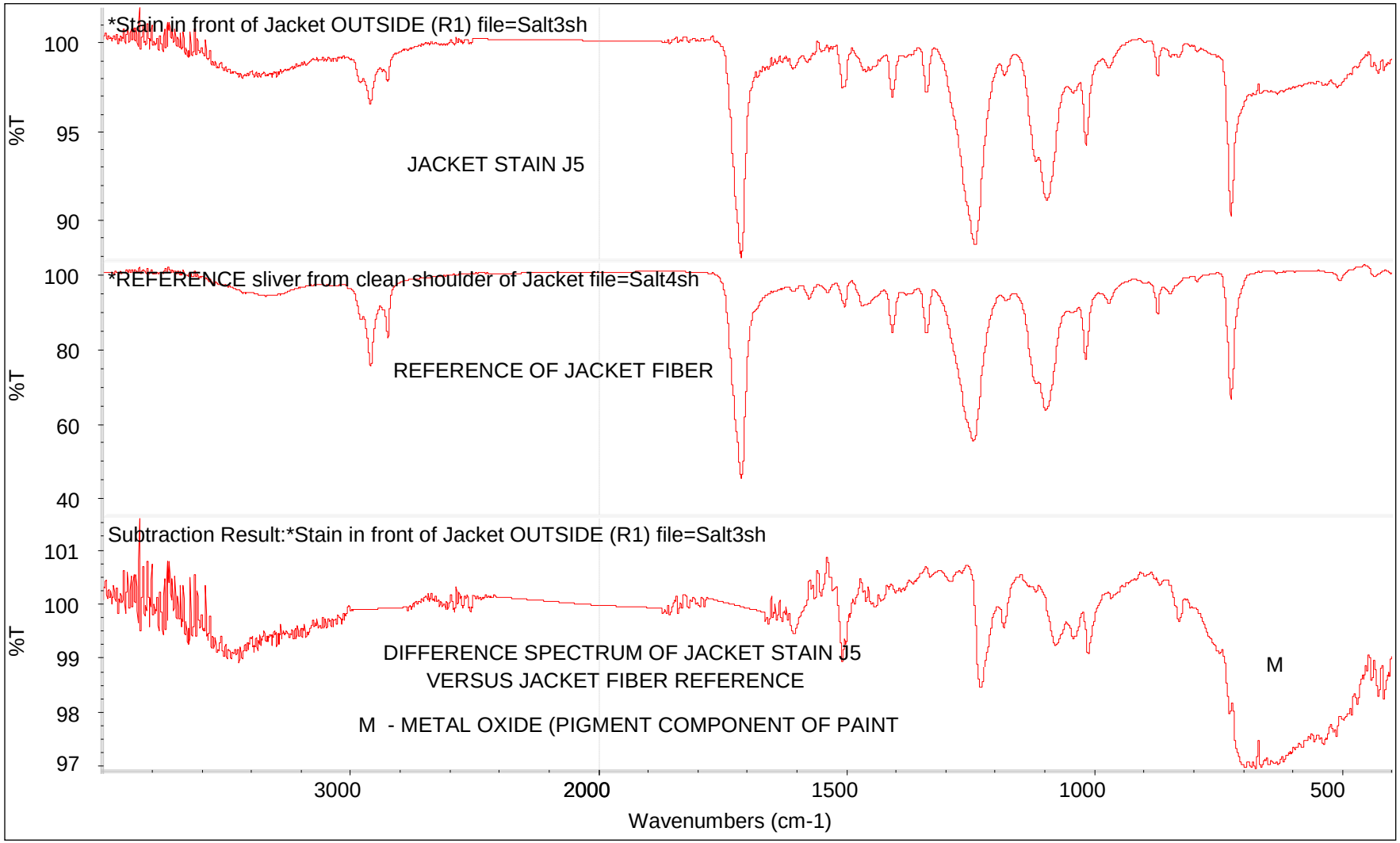

Figure 15. “In situ” spectrum of sampling J5 along with reference of sweatshirt fiber and difference spectrum which shows a paint component (metal oxide - white pigment/extender).

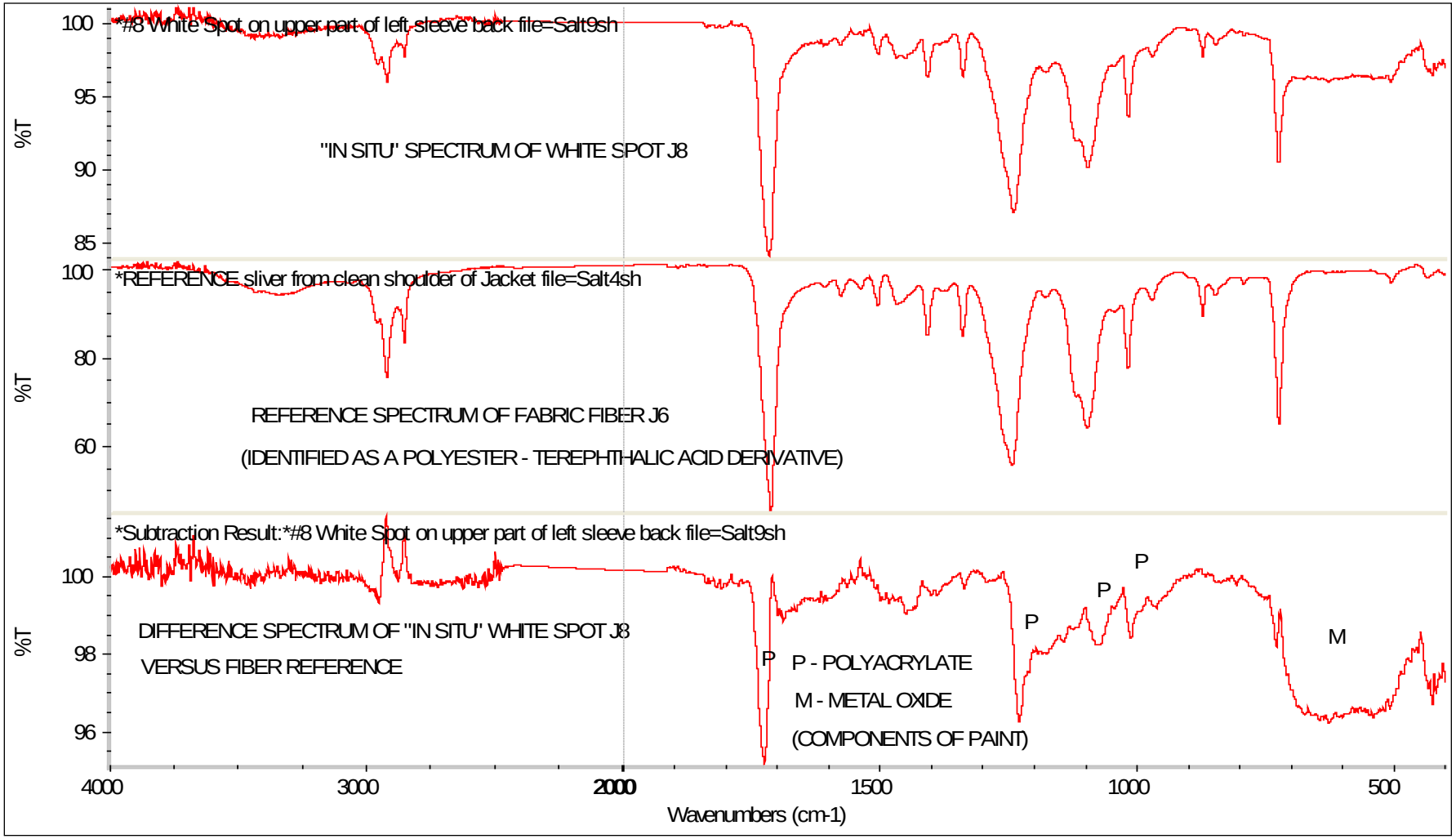

Figure 16. “In situ” spectrum of sampling J8 along with reference of sweatshirt fiber and difference spectrum which shows paint components (polymethacrylate, metal oxide - white pigment/extender).

YOUNG MAN'S CLOTHES

YOUNG MAN'S CARGO SHORTS

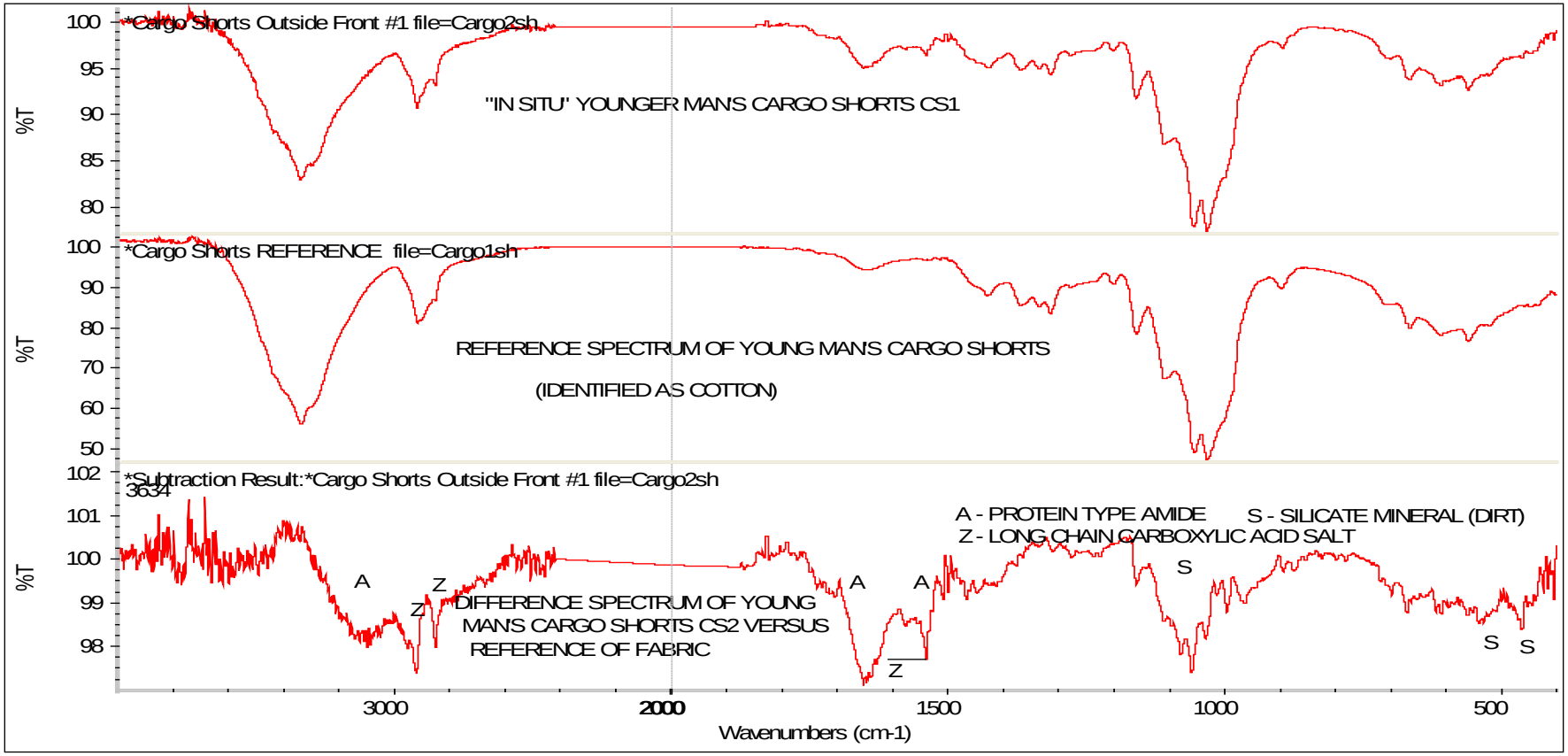

Figure 17. "In situ" spectrum of sampling CS1 along with reference of cargo shorts fiber (cotton) and difference spectrum showing an amide containing material which appears to be a protein type. There's indication of a long chain carboxylic acid salt which is similar to zinc stearate.

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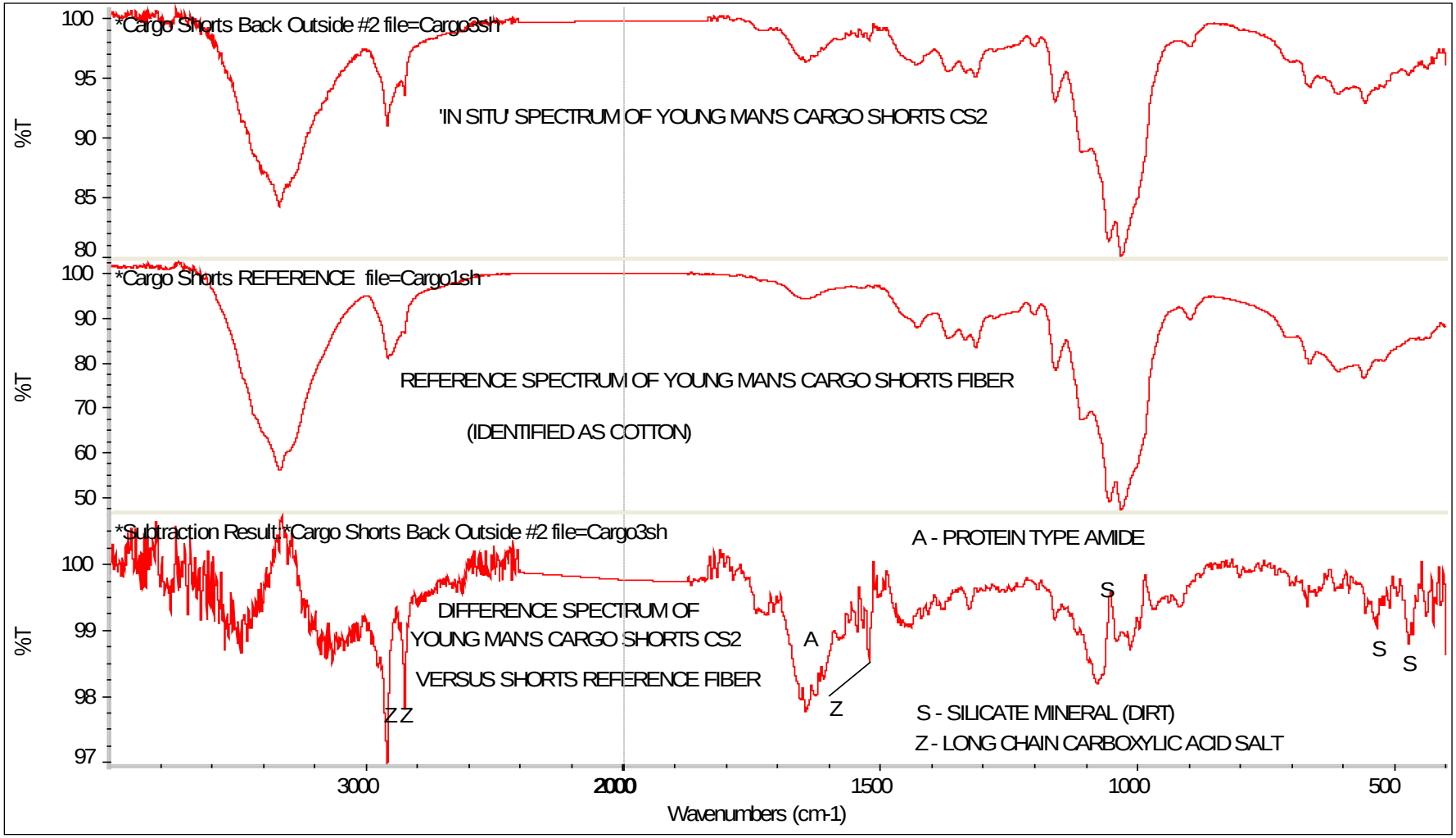

Figure 18. "In situ" spectrum of sampling CS2 along with reference of cargo shorts fiber (cotton) and difference spectrum which shows an amide containing material (a protein type indicated). A long chain carboxylic acid salt indicated. Silicate mineral (dirt) present.

STRIPED POLO

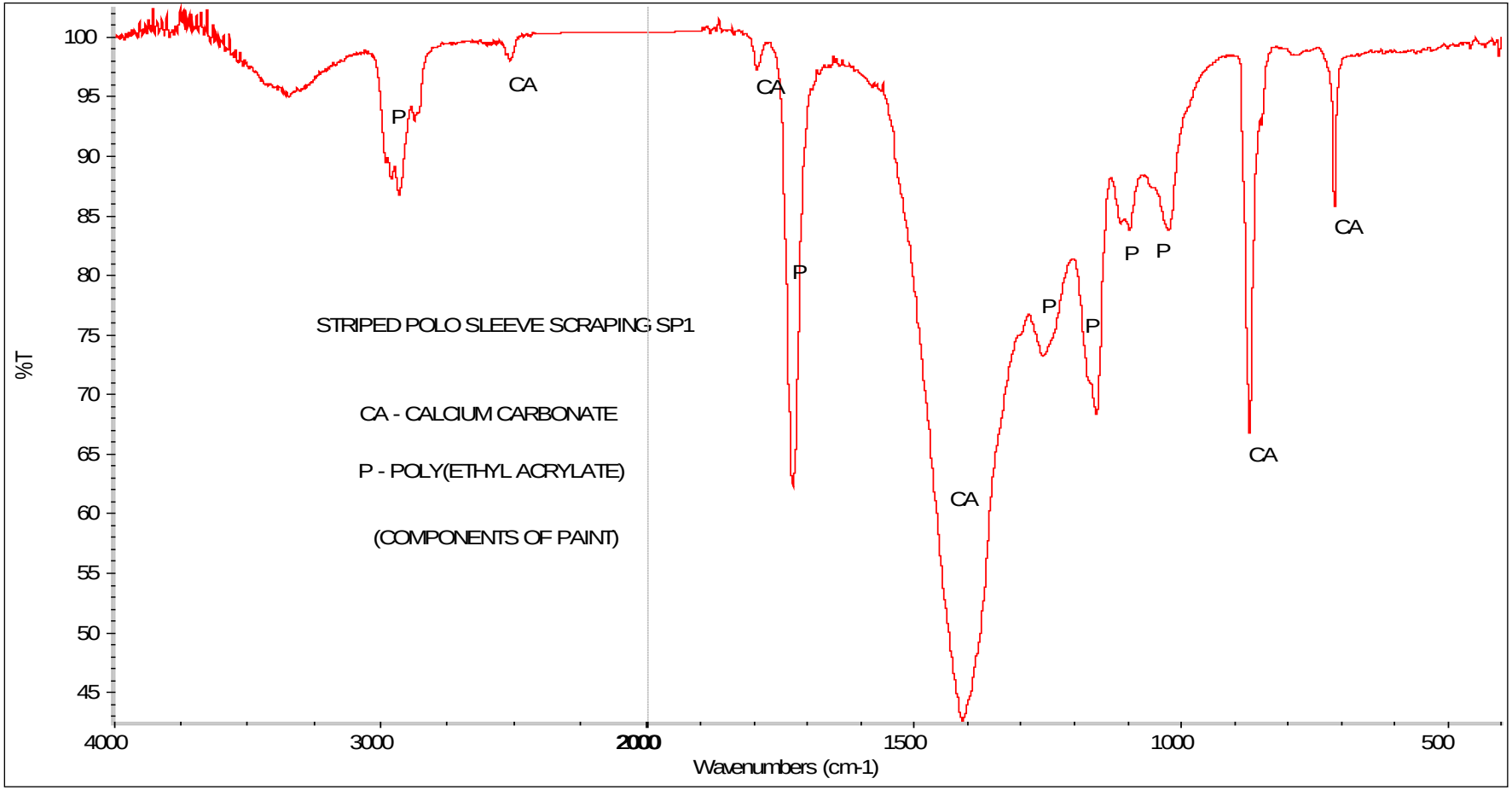

Figure 19. Spectrum of scraping from striped polo shirt sampling SP1 which shows paint components (poly(ethyl acrylate) and calcium carbonate pigment/extender).

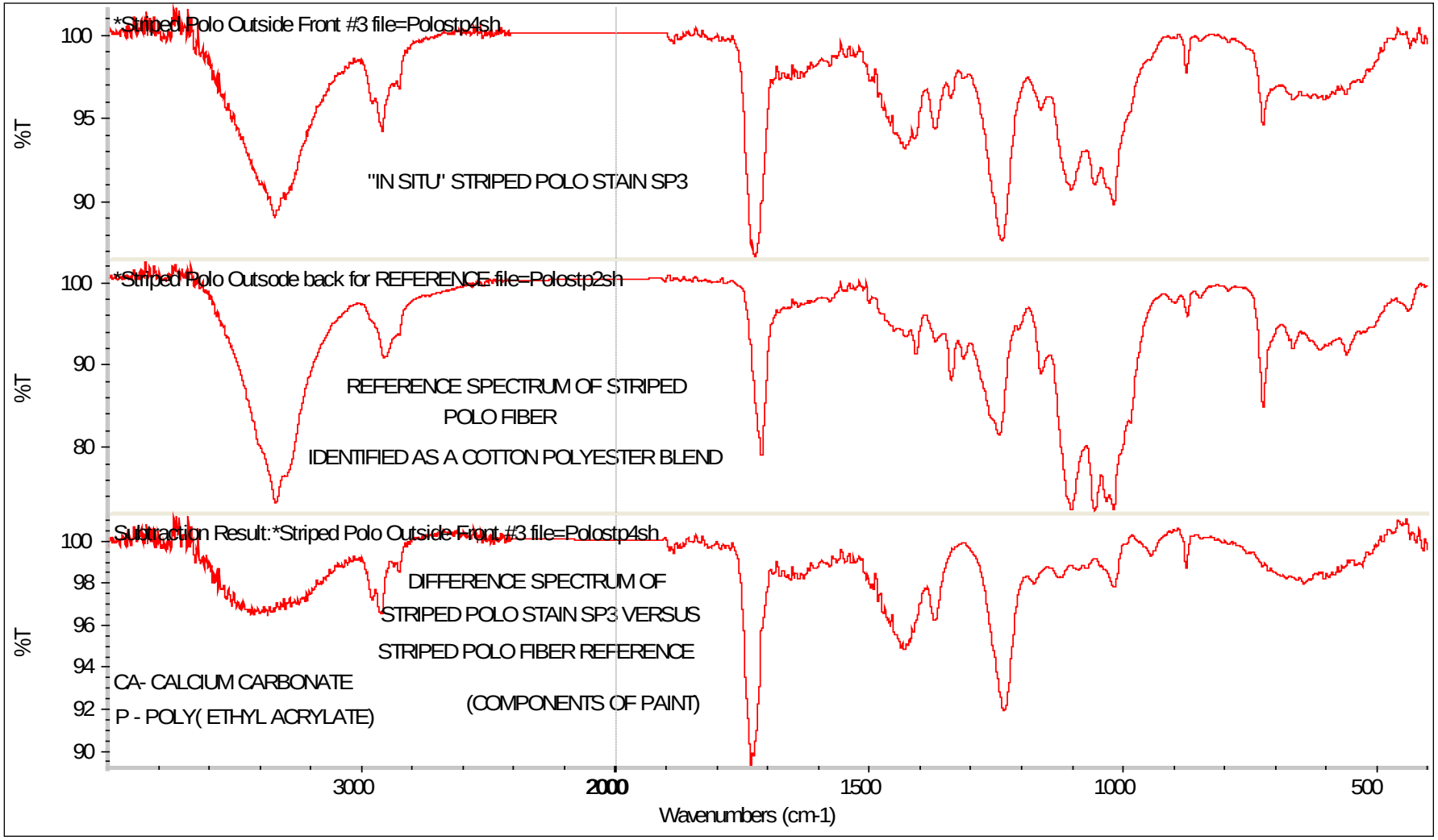

Figure 20. "In situ" spectrum of sampling SP3 along with reference of striped polo shirt fiber (cotton/polyester blend) and difference spectrum which shows paint components (poly(ethyl acrylate) and calcium carbonate pigment/extender).

NAVY POLO

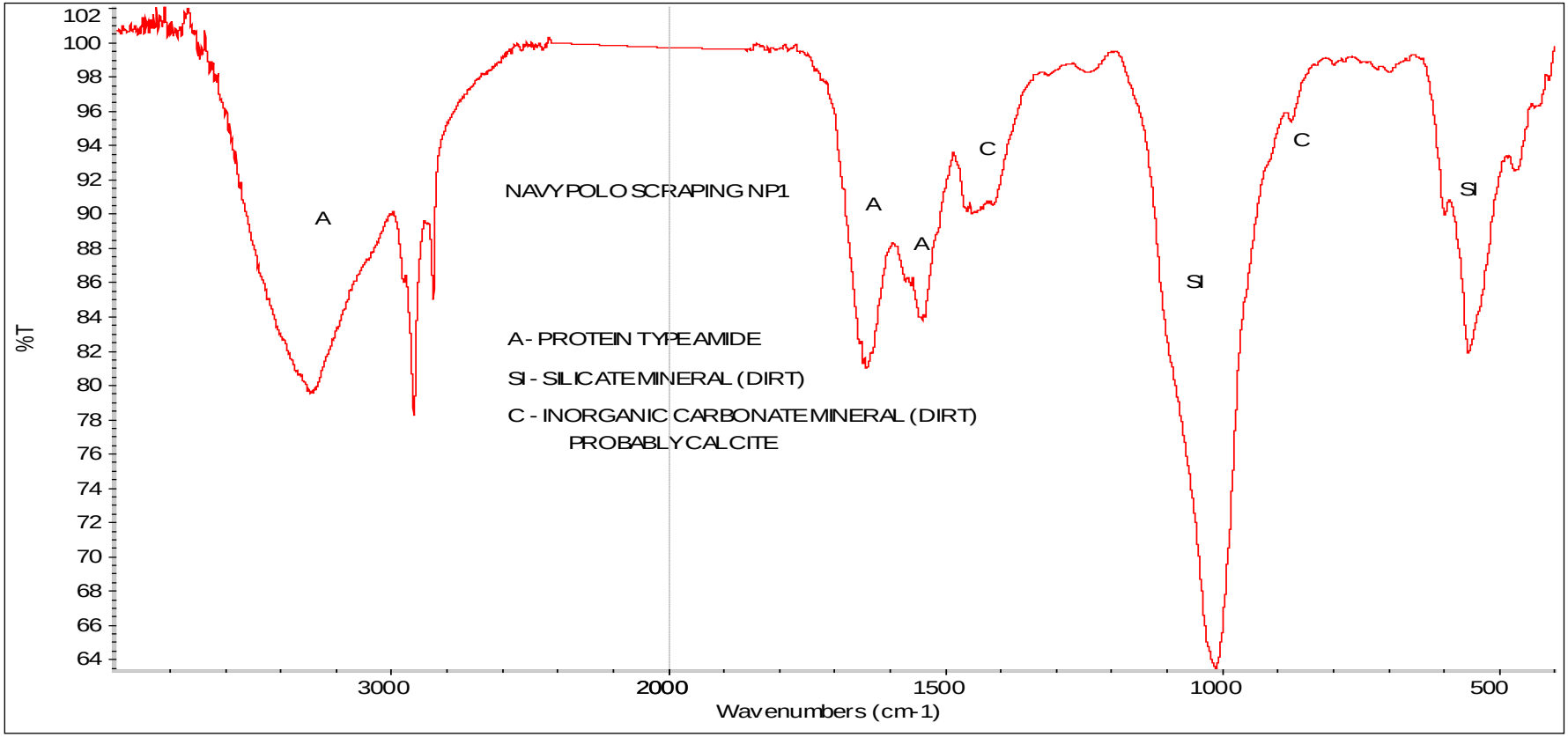

Figure 21. Scraping from navy polo shirt sampling NP1 which shows dirt components (silicate and carbonate minerals) and an amide containing material. The amide is likely a protein type, which may be human skin flakes.

Figure 22. “In situ” spectrum of sampling NP2 along with reference of navy polo shirt fiber (cotton) and difference spectrum showing amide containing material which is a protein type.

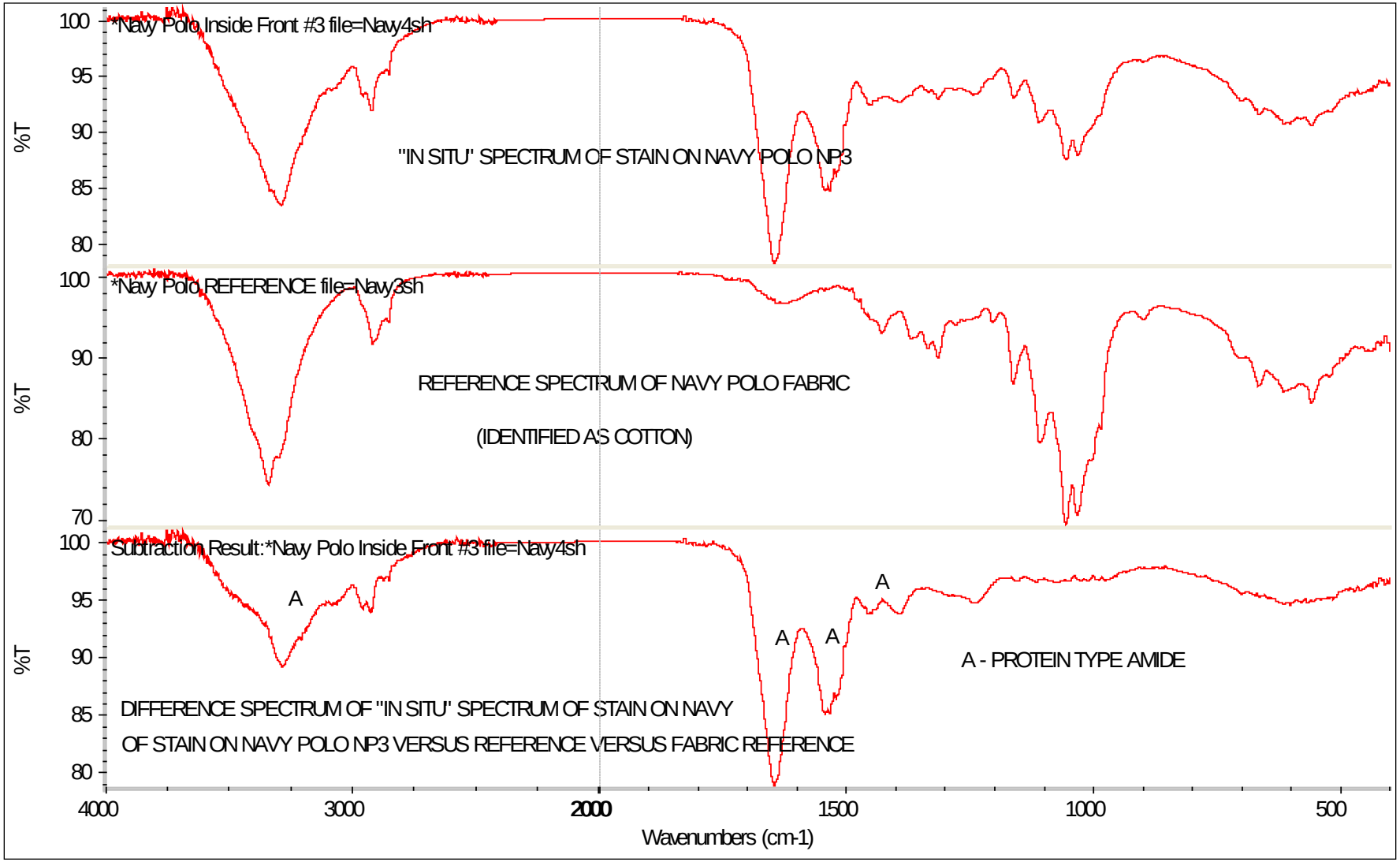

Figure 23. “In situ” spectrum of sampling NP3 along with reference of navy polo shirt fiber (cotton) and difference spectrum which shows a protein type amide.

YOUNGER MAN'S SLEEVELESS SHIRT

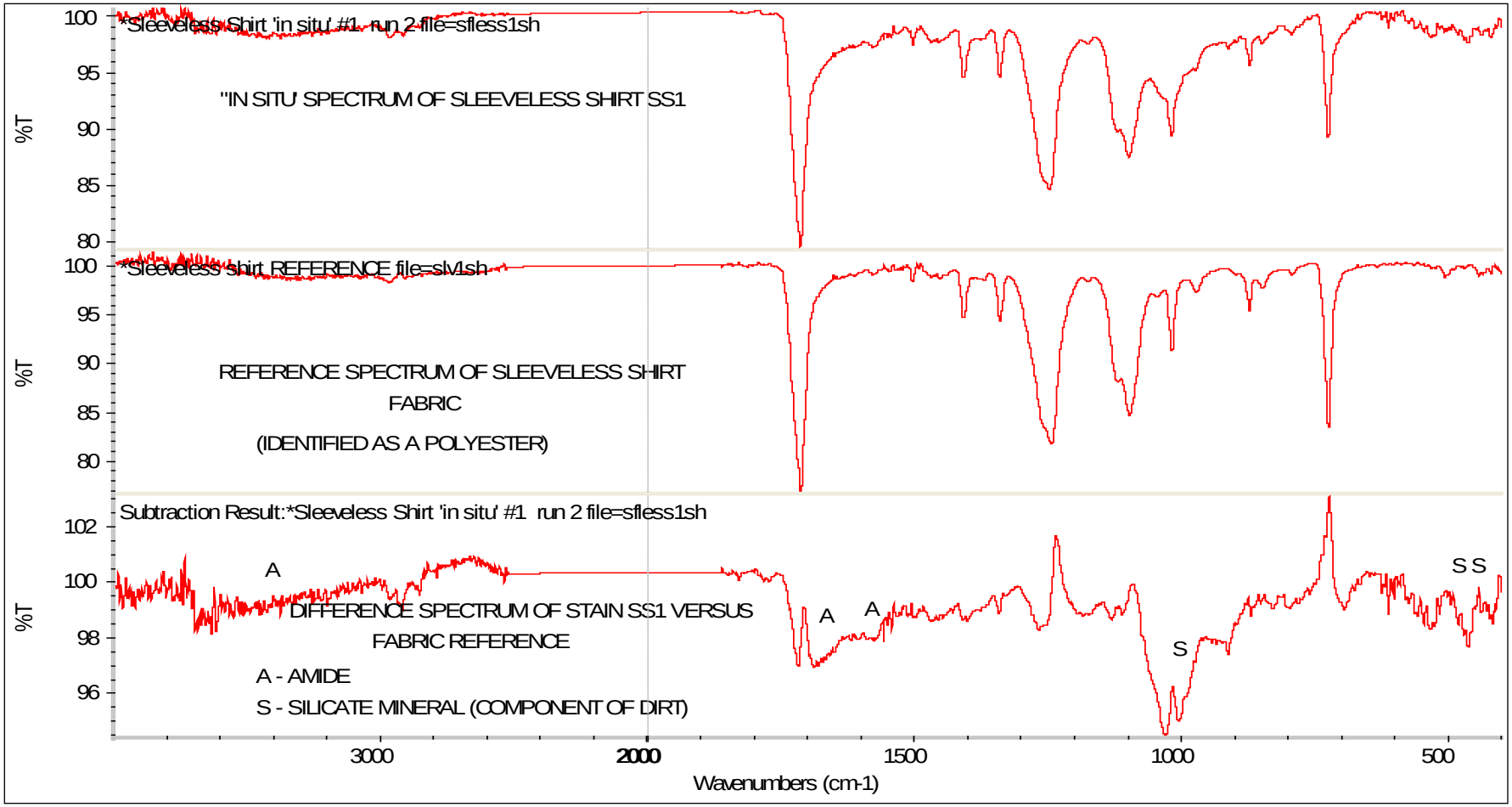

Figure 24. "In situ" spectrum of sleeveless shirt sampling SS1 along with reference of sleeveless shirt fiber (cotton) and difference spectrum showing an amide containing material (possibly perspiration) and a dirt component (silicate mineral).

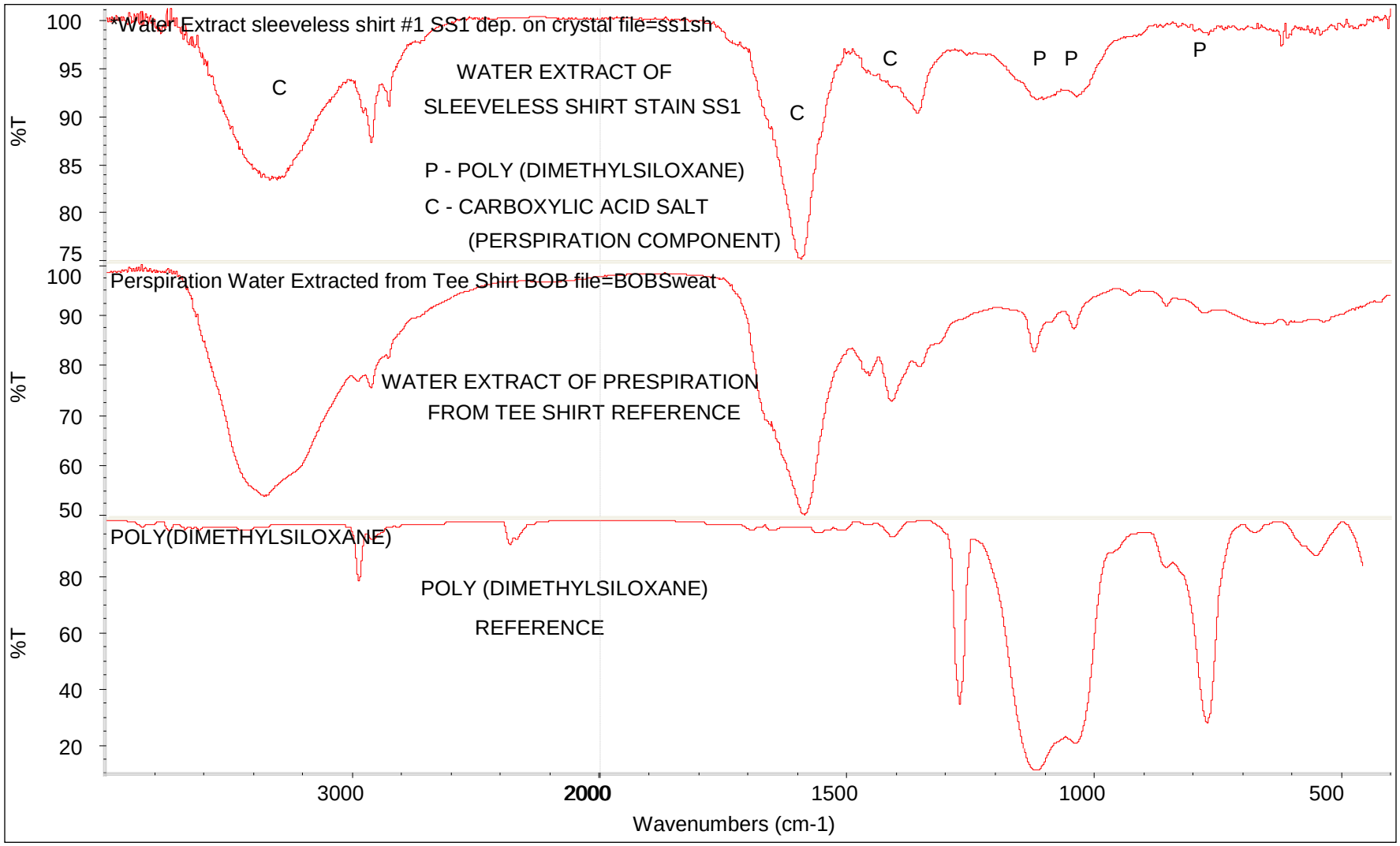

Figure 25. Spectrum of water extract from sleeveless shirt sampling SS1 along with references of water extract of perspiration from a tee shirt and poly(dimethylsiloxane) for comparison.

VIAL CONTENTS

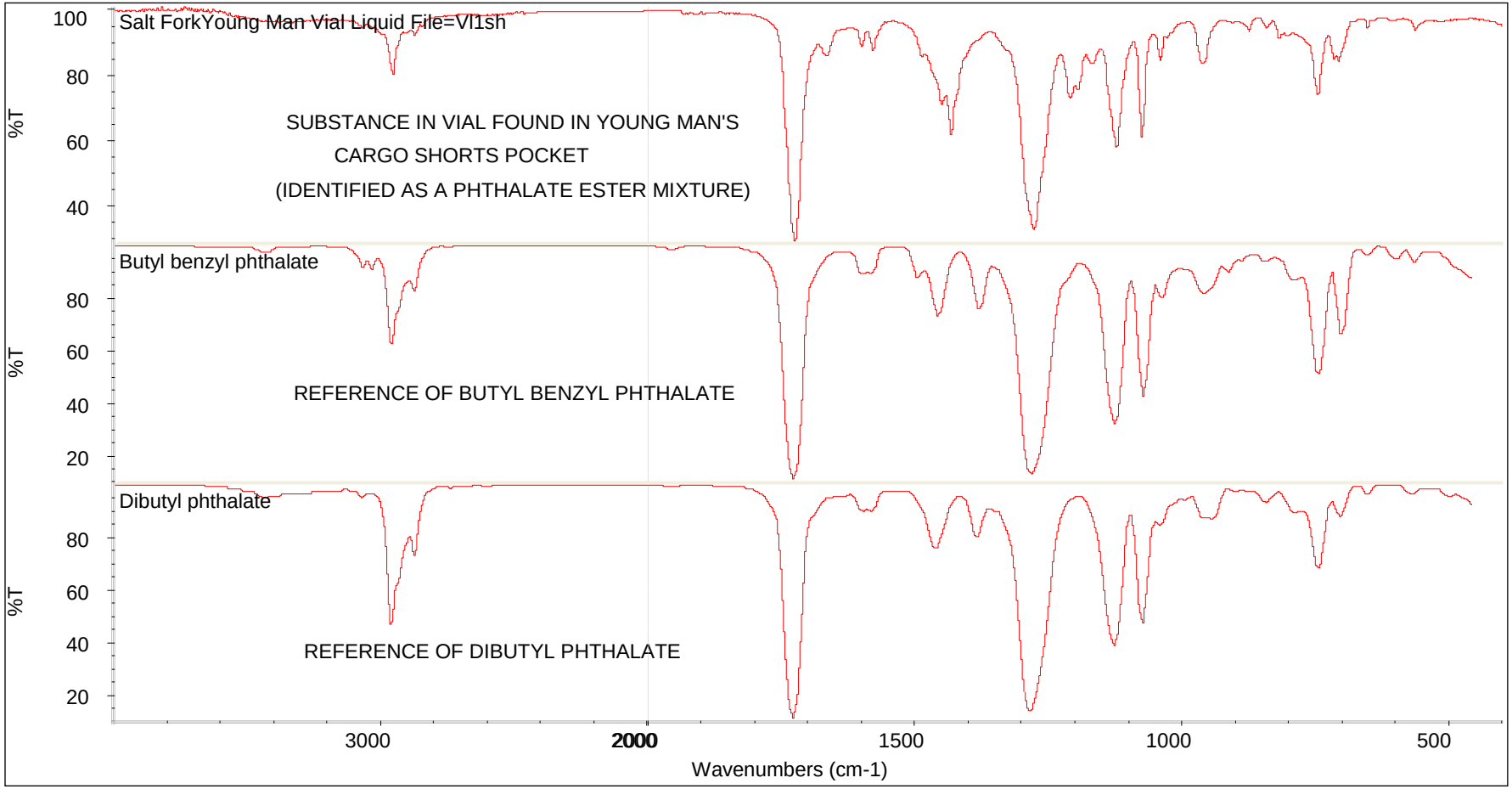

Figure 26. Infrared spectra of substance in vial found in young man's cargo shorts pocket (identified as a phthalate ester mixture) and two references of phthalates (butyl benzyl phthalate and dibutyl phthalate) for comparison.