

LIGO-T940039-00-B



1501 North Division Street  
Plainfield, Illinois 60544-8929

# FACSIMILE MESSAGE

Fax No. is: 815 439 6010  
Verify No. is: 815 439 6000

Page 1 of 10

November 23, 1994

To: Larry Jones  
LIGO Project Caltech Pasadena, California

Fax No. (818)304-9834

From: M. L. Tellalian Phone (815)439-6517

Plainfield Engineering - PAE

RE: FTIR Reports of the 7' Tube Section Sampling  
LIGO Design & Qualification Test - Caltech Contract C146

Larry,

Attached are the reports and spectra for the three samples associated with the investigation of the 7' tube section. Please give me a call when you receive this fax. Thanks.

Regards,

A handwritten signature in cursive script that reads "Marty".

M. L. Tellalian  
Plainfield Engineering

**R. V. FITZSIMMONS AND ASSOC. INC.**  
**CHEMICAL ANALYSTS AND CONSULTANTS**

1860 Arthur Drive  
West Chicago, Illinois 60185  
(708) 231-0680  
FAX: (708) 231-0811

ALT/930212 FILE 9.2

ANALYSIS REPORT FOR:

CBI TECHNICAL SERVICES  
1501 N. Division St.  
Plainfield, IL 60544

Attn: Steve Peters

PURCHASE ORDER NO. 11-09-003 Rev. 0

DATE

11 / 1 / 94

**REPORT OF MATERIALS ANALYSIS:** Analysis of two propanol solutions for non-volatiles content.  
Determination of amount and type of non-volatiles.

**METHODS:** For both the propanol solvent and the contaminated propanol solution, 50 ml of each liquid was quantitatively oven dried in glass petri dishes.  
The non-volatile materials left after the oven drying were analyzed by FTIR spectral analysis in a KBr matrix.

**RESULTS:**Non-Volatile Content of the Propanol Solvent

The solvent was found to contain 27.5 ppm of non-volatile matter which appears to contain a hydrocarbon type oil and other extraneous matter such as fibers.

Non-Volatile Content of Contaminated Solution

This solution contained 56 mg/l (71 ppm) of non-volatile matter.

FTIR spectral analysis of the non-volatiles indicates that a hydrocarbon oil or grease and other miscellaneous matter is present in the non-volatile matter. This is quite similar to the non-volatiles of the propanol solvent.

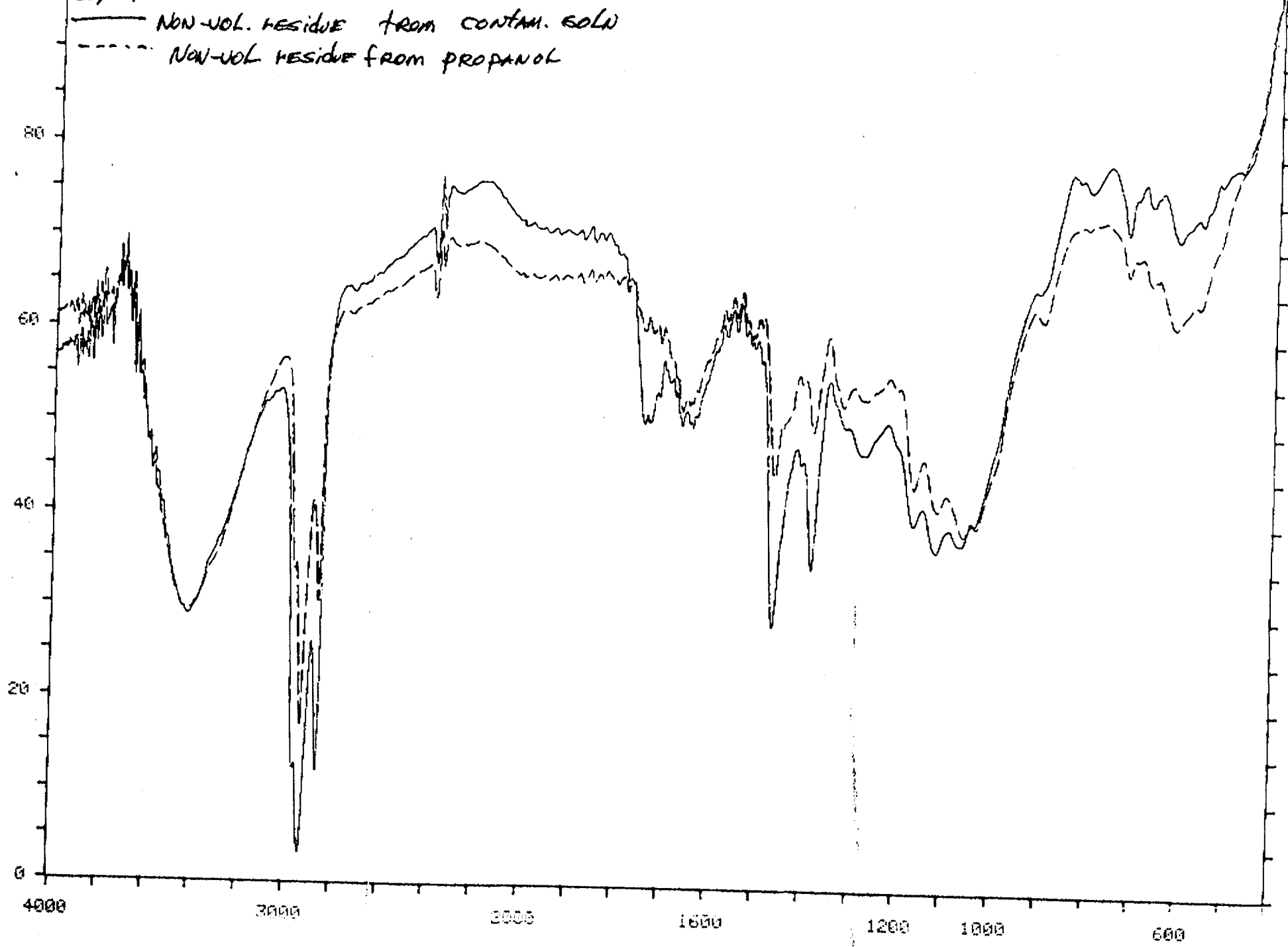
The contaminants found in the earlier solutions that we analyzed for you (Nov. 2, 1994 report) did not seem to be present here in significant amounts.

Copies of the FTIR spectra used in these identifications are enclosed for your examination.

Copies of the FTIR spectra of the non-volatiles are enclosed for your examination.

10/11/94 - CBI

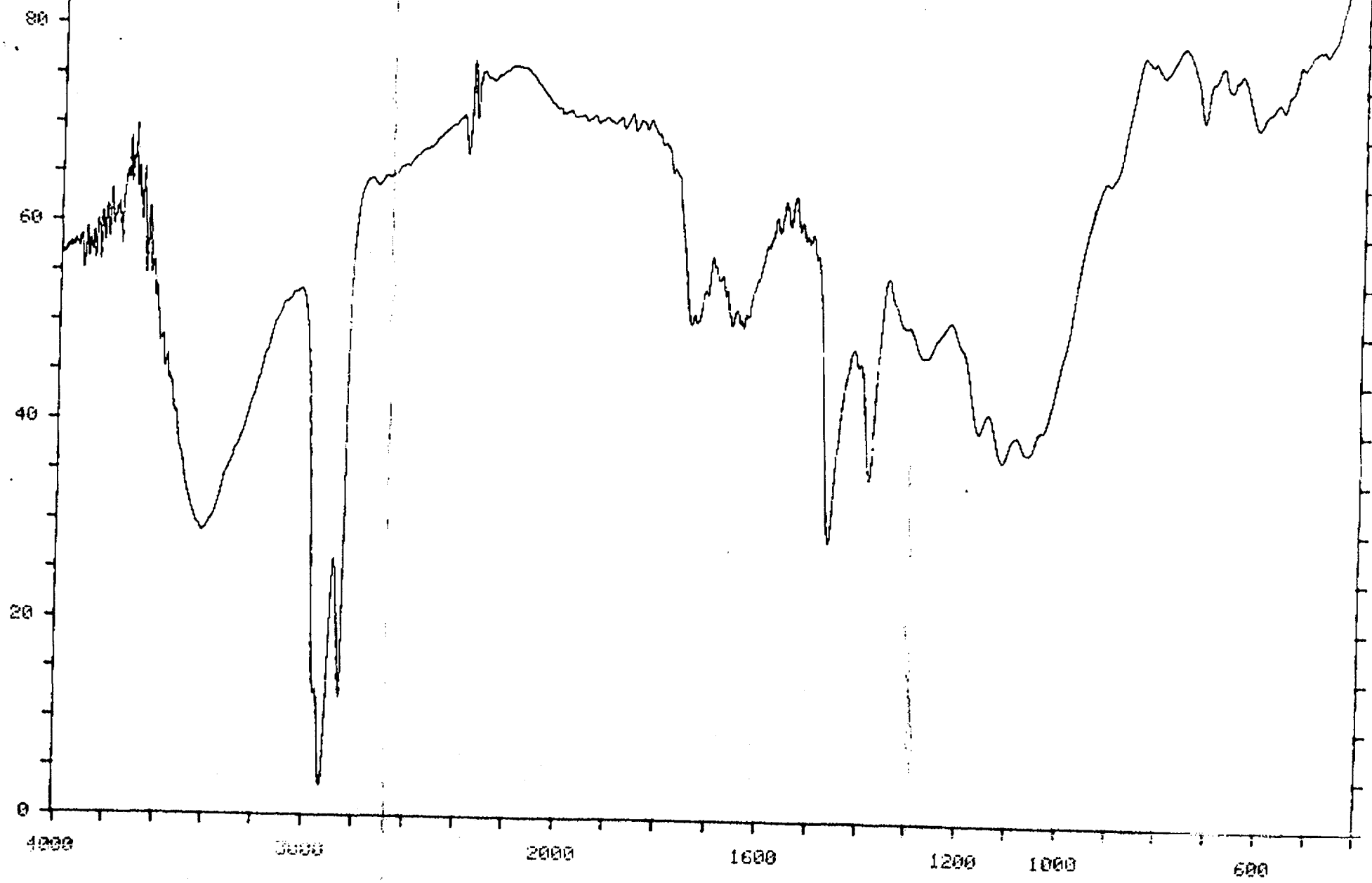
NON-VOL. RESIDUE FROM CONTAM. SOLN  
NON-VOL RESIDUE FROM PROPANOL



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11/10/94 CBI

NON-VOLATILE RESIDUE FROM  
CONTAMINATED LIQUID SOLN.



NOV-23-94 WED 17:51 RV FITZSIMMONS &amp; ASSOC 708 231 0811

P.02

**R. V. FITZSIMMONS AND ASSOC. INC.**  
**CHEMICAL ANALYSTS AND CONSULTANTS**1860 Arthur Drive  
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(708) 231-0680  
FAX: (708) 231-0811

ANALYSIS REPORT FOR:

CBI TECHNICAL SERVICES  
1501 N. Division St.  
Plainfield, IL 60544

Attn: Steve Peters

PURCHASE ORDER NO. 11-22-001 Rev. 0

DATE 11/24/94

**REPORT OF MATERIALS ANALYSIS:** Analysis of two propanol solutions for non-volatiles content. These samples were taken after cleaning the metal surface by washing with 2-propanol. Samples submitted 11/21/94: 3a and 3b and control solvent. Determination of amount and type of non-volatiles.

**METHODS:** For both the propanol solvent and the contaminated propanol solution, 100ml of each liquid was quantitatively oven dried in glass petri dishes. The non-volatile materials left after the oven drying were analyzed by FTIR spectral analysis in a KBr matrix.

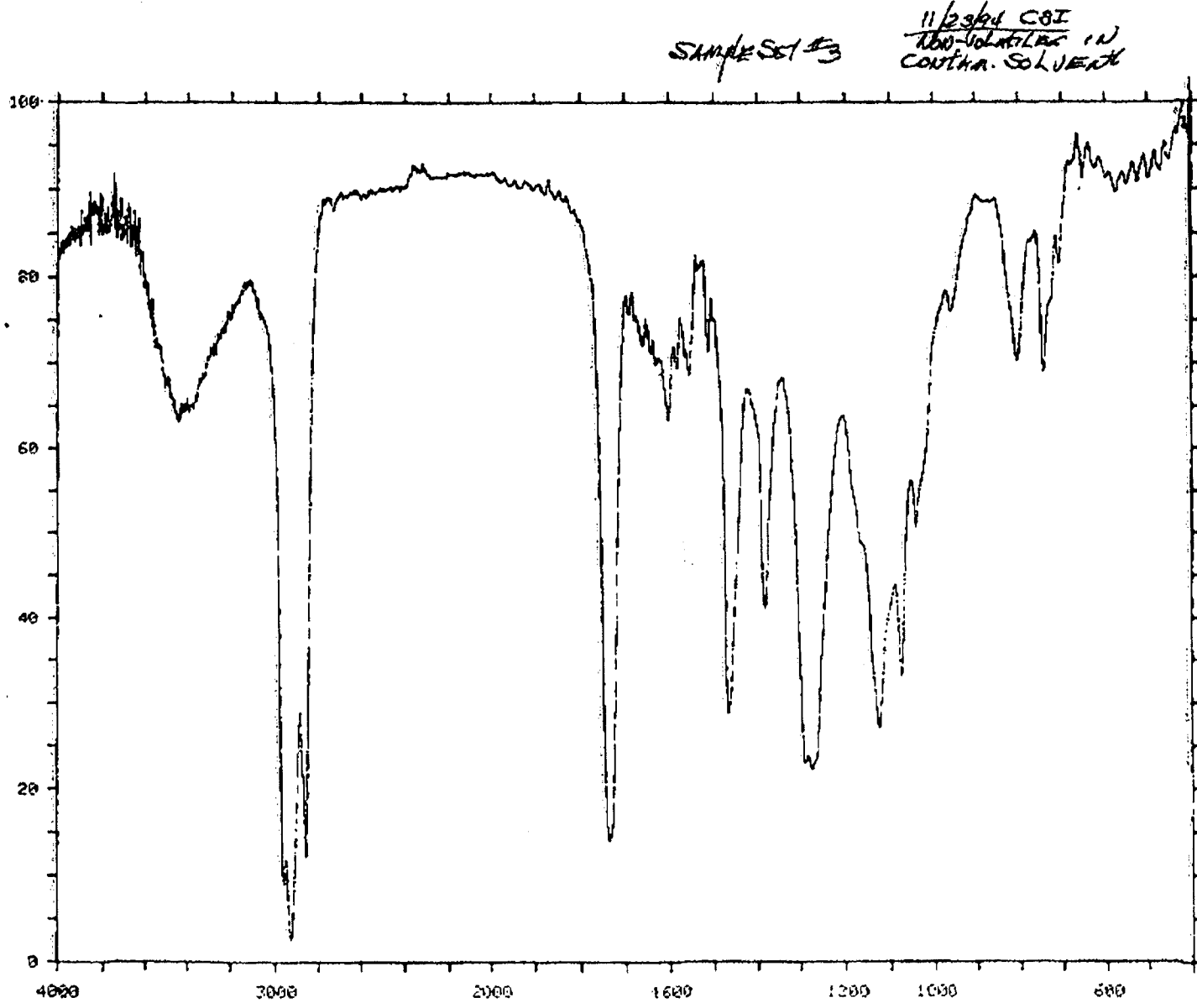
**RESULTS:**Non-Volatile Content of the Propanol Solvent

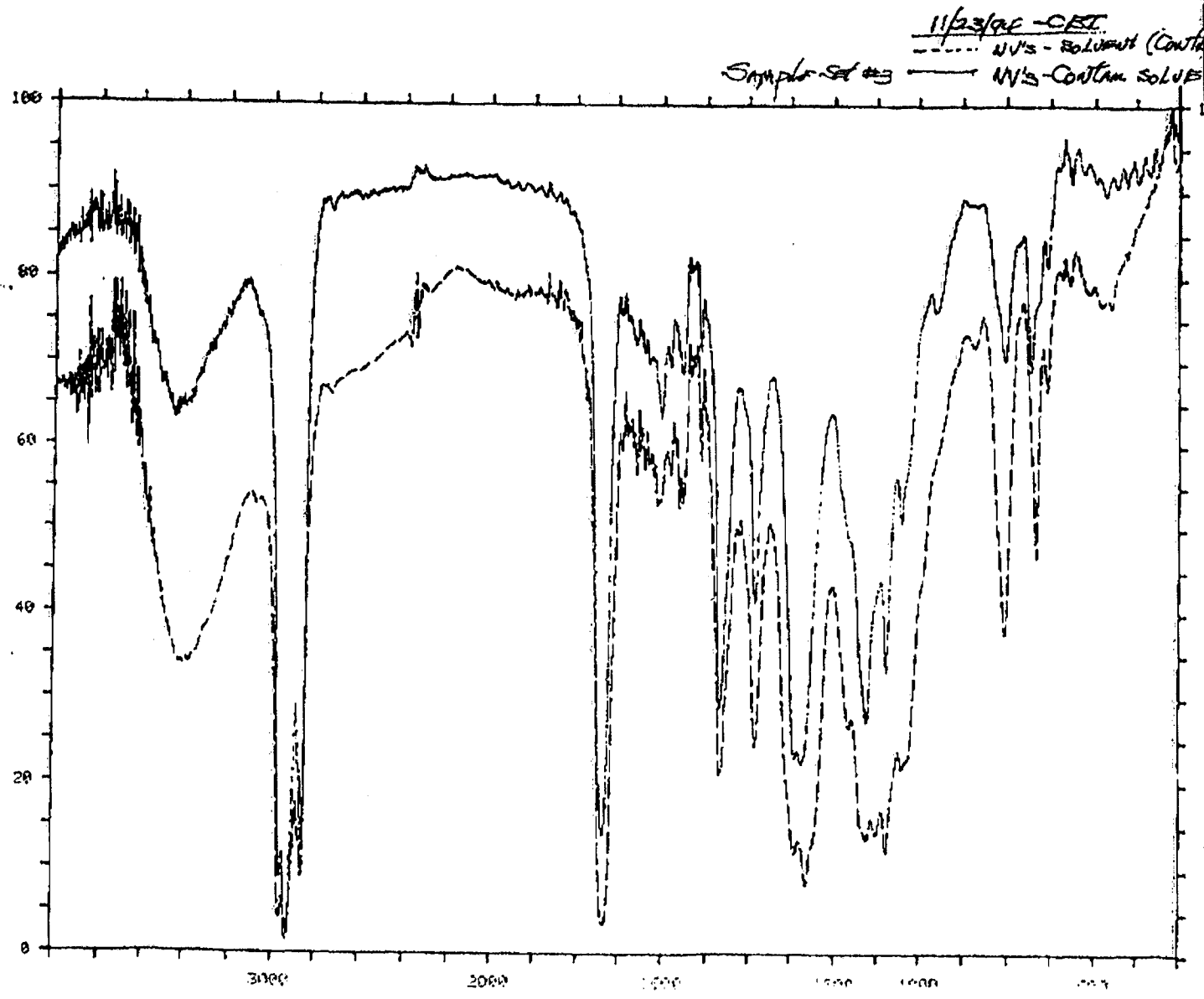
The solvent was found to contain 2.0 mg/l of non-volatile matter which is identified as a mixture of silicone oil or grease and a phthalate ester oil very similar to the mixture of non-volatiles found in your original contaminated liquid solvent which was reported to you on 11/2/94.

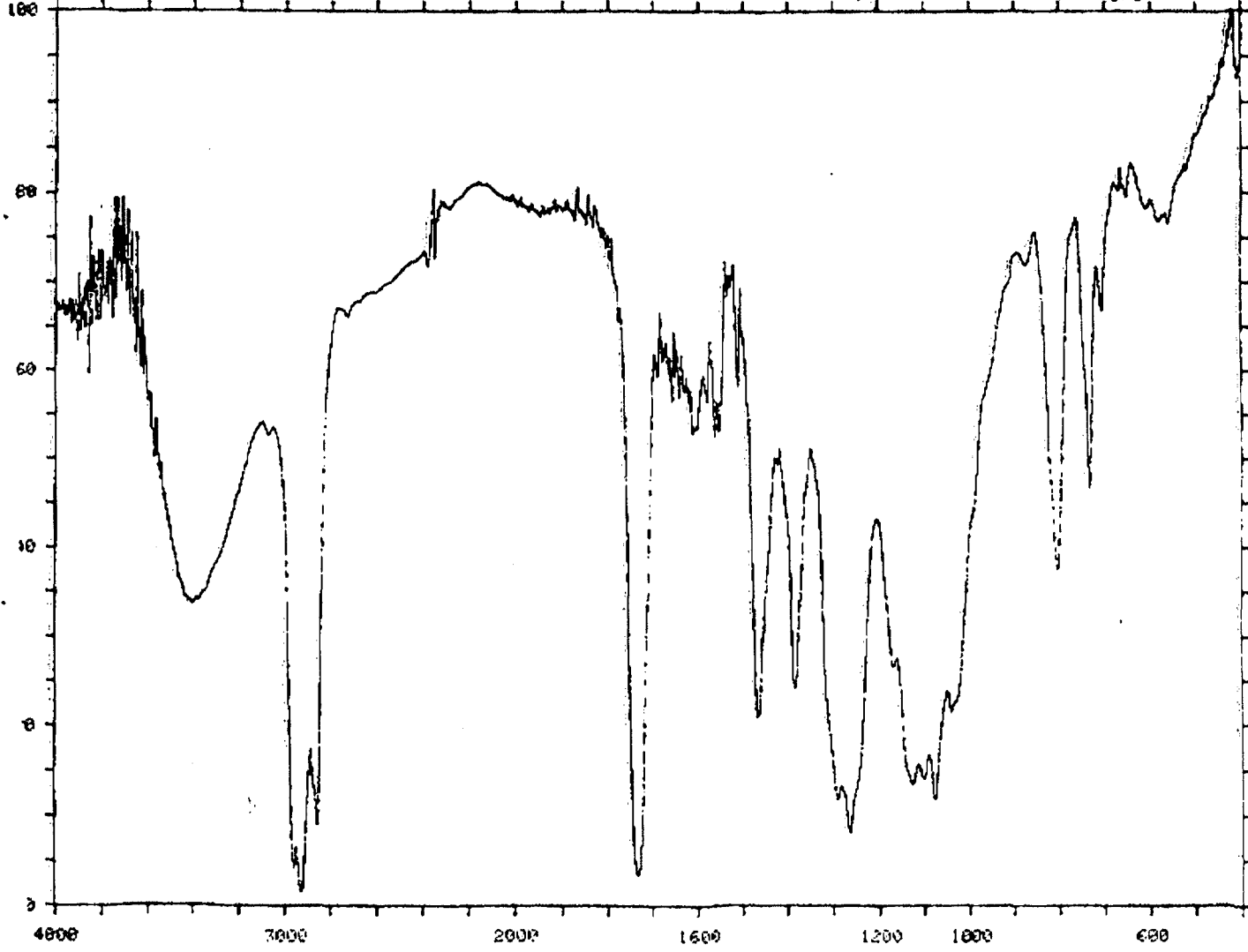
Non-Volatile Content of Contaminated Solution

This solution contained 16.0 mg/l (20.0 ppm) of non-volatile matter. The non-volatiles here are the same as those found in the propanol solvent control sample, i.e. a mixture of silicone oil or grease and phthalate ester oil similar to the non-volatiles found in the contaminated solution reported to you on 11/2/94.

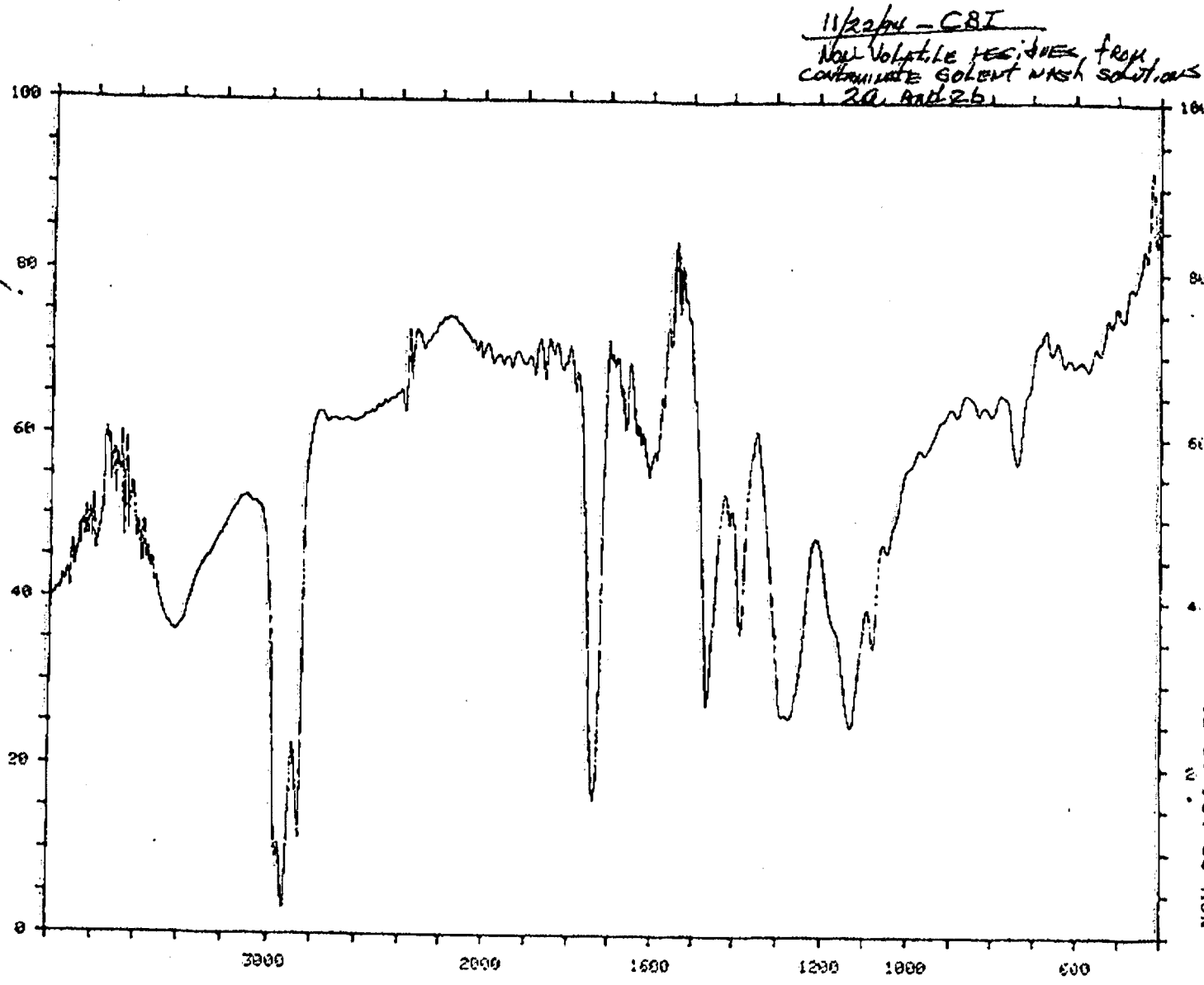
Copies of the FTIR spectra used in these identifications will be sent with this report.

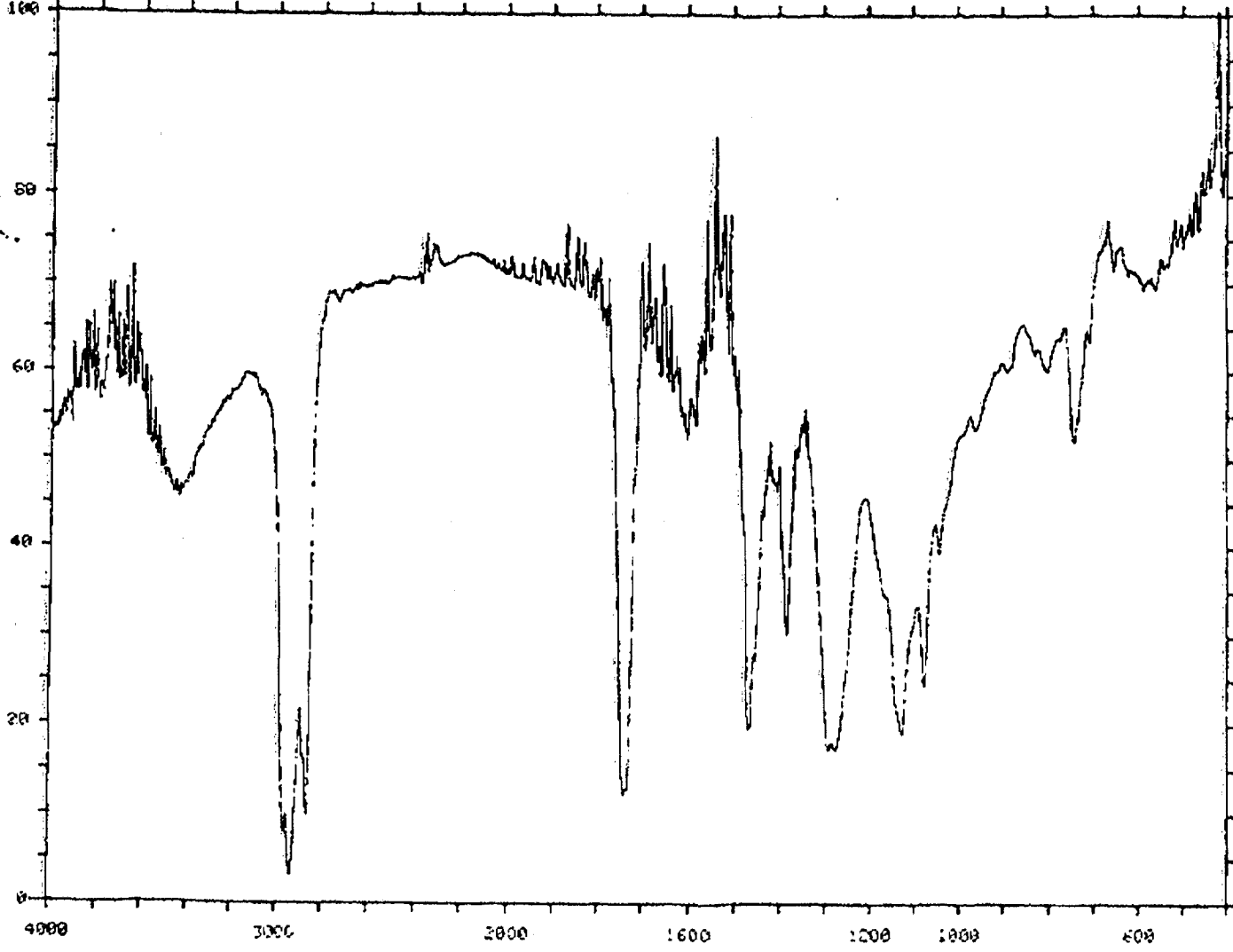












11/23/94 - CBI  
 New Volatile Residue from  
 PROPANOL (CONTROL) SOLVENT