

MEMORANDUM

BT- Mr. Kimball
BB- Mr. Heim
BBR- Mr. Frazier
BPG- Mr. Tooker
BSS- Mr. King
BE- Mr. Dusty
MB- Mr. Hixon
PB- Mr. Koval

3906A
Reply to _____ Date 8/8/73 From BBH To _____
Subject #2 FUEL OIL AT FBW

Mr. Dusty has requested that I comment on the technical aspects of converting from #2 to #4 fuel oil at the granule plant.

In my opinion, there is no harm likely to occur from making the change. However, to be certain, we suggest that a trial truck-load be run to find out. BBH will sample and test colored granules being run prior, during, and after running the test load of oil to see if any properties of the granule are affected.

Historically, #2 fuel oil has been in use at FBK since the mid-to-late 1940's. Prior to that time, #6 oil was used, since the construction of the granule plant in 1933-1934. The change of oils took place at a time when there was an epidemic of "blooming", or white efflorescence on the granules, particularly on insulating siding, a very popular product at the time.

An analysis showed sulfur compounds to be the principal cause of the blooming. Therefore, all possible sources of sulfur were eradicated, where possible. Since the #6 fuel oil had a heavy sulfur content, the change was made to #2 oil at that time.

It turned out that a far more serious source of sulfur was pyrite (iron sulfide) in the rock. With careful policing of the quarrying activities, rock was rejected which was high in pyrite and the problem kept under reasonable control.

It is probable that the #6 oil was not the major cause of blooming, despite its relatively high sulfur content, for blooming was a serious problem for only a brief period, and the #6 oil used for more than 10 years.

Therefore, it is reasonable to assume that a switch to the relatively low sulfur #4 oil would be a safe move. It is certainly worth a try.

How

LWWeaver/rp

MEMORANDUM

Reply to _____ Date 8/7/73 From G.L.Dusty-BE To W. S. Kimball - BT
 Subject #2 FUEL OIL AT FBW CC: See Below

Responding to Mr. Kimball's various memos concerning the above as well as energy conservation in general, we have developed some information that might be useful in future planning.

1. For the most part our conversations at EXXON were with Mr. Jim Van Alstaine in regard to the use of liquid propane (LP). Though LP is not available for use during the approaching heating season, its availability is subject to different considerations than #2 fuel. With sufficient advance warning, Exxon could drop some winter customers to handle a year round customer. In any event they expect the price to go up 2-1/2¢ which brings a delivered price of about 14.78¢/gal.; comparing this to #2 fuel and considering the BTU content of each would result in about a 30% increase in fuel cost to convert to liquid propane. This represents a yearly increase of about \$18,000 for fuel. Installation cost would be from 20 to \$30,000.
2. While making the above review, we checked into the advisability of converting the #2 oil burners to #4 or even #6 fuel. We realize that the original reason for using gas or #2 fuel was to maintain a low sulphur content as well as maintaining good combustion in order to reduce granule staining or discoloration. Needless to say, sulphur content of fuels has been reduced over the years as pressure has been applied by the environmental agencies. Our #2 fuel burners at FBW have all been converted from steam to air atomization for sometime. Combustion efficiencies of #2 vs. #6 burners should be about the same.

I don't know if the above characteristic changes in the fuel is enough to justify changing fuels at this time, but as the #2 fuel situation becomes more critical, someone should look very hard at the risk of making some tests along these lines.

Following is a comparison of various aspects of fuels.

<u>Type</u>	<u>Sulphur Content</u>	<u>BTU/Gal.</u>	<u>Cost/Gal.</u>	<u>Saving</u>
#2 Distilate	.26	136,000	\$.169/gal.	—
#4 Distilate	.81	143,000	.143/gal.	\$12,200
#4 Mixed	.75	Unknown	.134/gal.	16,400
#6	.85	145,000	.119/gal.	23,500

Actually, the savings will be a little different when the various BTU figures are considered. I would further point out that the #4 Distilate requires no heating as does #6, ^{whereas} #4 Mixed tends to stratify and needs to be airtreated. It also can be mixed with #2 fuel with no burner problems.

MEMORANDUM

Reply to _____ Date 8/7/73 From G.L.Dusty - BE To W. S. Kimball - BT
Subject #2 FUEL OIL AT FBW (CONTINUED) CC: See Below

-2-

2. (Continued)

As you can see from the attached letter from Sprague & Son, it is available in 6000 gallon quantities. Possibly a test should be considered at this time.

3. We have not started the investigation of the reactivation of the ER-FB steam line, but we expect to start within a month. Our initial review has revealed that no formal investigation of the advantages and disadvantages was made in 1967 when the line was discontinued. Many new problems have arisen since that time. We now burn saturator fumes in the FB boiler. Steam line deterioration has been considerable. In any event we plan to conduct a full investigation of capital and operating costs involved.

MD
GLD/ad
Attach.

CC: J. P. Koval - PB
J. Hixon - MB
R. E. Heim - BB
D. E. Frazier - BBR
K. M. King - BSS
G. J. Tooker - BPG
L. W. Weaver - BBH ✓



A SPRAGUE ENERGY COMPANY
C. H. SPRAGUE & SON CO.
125 High Street, Boston, Mass. 02110 Tel (617) 542-7807

August 3, 1973

Bird & Son, Inc.
East Walpole,
Massachusetts 02032

Attn: Mr. William S. Kimball
Director of Purchases

Gentlemen:

We are pleased to offer Sprague's #4 CVP fuel oil for your Norwood, Mass. plant. This is a straight-run refinery product which we feel is suitable for your operation at this plant.

Based on Sprague's Portsmouth, New Hampshire tank car posting of this date \$5.37 per barrel, your delivered price would be \$6.00 per barrel. This price is subject to any fluctuation in our posting.

Delivery would be made in 6,000 gallon lots.

Enclosed is a recent analysis of this product.

If you decide to try this product, please let me know your requirements and when you would want to commence shipments.

Very truly yours,

Ralph F. Seretto
New England Sales Manager

RFS/kmk

Enclosure

SUPERINTENDENCE COMPANY INC.
SURVEYORS OF BULK LIQUIDS

MAIN OFFICE: 17 BATTERY PLACE NORTH
NEW YORK, N. Y. 10004
TELEPHONE (212) 344-6430
CABLES: "SUPERVISE"

BRANCH OFFICES:

BALTIMORE, MD. - CHICAGO, ILL.
HOUSTON, TEX. - NEW ORLEANS, LA.
PHILADELPHIA, PA.

DATED May 3, 1973

AT: New York

ISSUED TO: C. H. Sprague and Sons Company
125 High Street
Boston, Massachusetts 02110

QUALITY CERTIFICATE

ALL INTERVENTIONS ARE CARRIED OUT TO THE BEST OF OUR KNOWLEDGE AND ABILITY AND OUR RESPONSIBILITY IS LIMITED TO THE EXERCISE OF REASONABLE CARE.

M/T OLYMPIC GULF (2243)

Port of Loading: Curacao

Port of Discharge: Portsmouth, New Hampshire

53,987.32 net barrels No. 4 Fuel Oil

A.P.I. Gravity ° 26.1

Sulfur 0.81

BS & W 0.2

Pour Point °F -30°F

Flash Point °F 160

Viscosity SUS @ 100°F 51.3

Sediment by Extraction 0.029

Water by Distillation 0.03

Ash .022

Vanadium 38.4 ppm

HEAT OF COMBUSTION:

BTU/Lbs. Gross 19195

BTU/Lbs. Net 18055

BTU/Gal. Gross 143,400

BTU/Gal. Net 134,980

SUPERINTENDENCE COMPANY INC

A. F. Bianchi
Operations Department

AFB/pa

BIRD 010735

MOBIL OIL CORPORATION, BEAUMONT, TEXAS
SOLVENT AND FUEL REPORT
SHORE TANKS FOR S/S MOBIL MERIDIAN

Grade Mobil Heating Oil #2 (H.S.)

Tank No. 2A Blender

Approx. Bbls. or Gauge

Gravity, °API 32.5

Haze 40

Color 11.5

Flash, TCC, °F.

Flash, PM, °F. 174

Cloud, °F.

Pour, °F. -10

Doctor

Sulfur, % 0.26

Mercaptan Factor 15

Corrosion 1A

Gum, ASTM, mgs./100 ml.

Catalytic Stability

Freeze Point 7.7

Viscosity @ 77°F.

Viscosity @ 100°F. 2.63

Viscosity @ 122°F.

Burning Quality - 24 Hrs.

Aniline No., °F.

Cetane Index 42.0

Cetane No.

Sediment, mgs./liter

Sediment, %

Water, %

B. S. & W., %

Conductivity, picomhos/meter 70

Ash, %

C.C.R., %

C.C.R., (10% Resid.), % Less than 0.15

Turbidity

Odor

I.B.P., °F. 328

10%, Rec., °F. 417

20%, Rec., °F.

50%, Rec., °F. 498

90%, Rec., °F. 574

95%, Rec., °F.

End Point, °F. 610

Recovery, % 98

6-6-72

RZG:bs

W. W. MOORE

Checked by: *[Signature]*

BIRD 010736

ABLE ADDRESS "SAYBOLTOIL"
 L. CODES USED - SPECIFY
 /X 710.996-5976
 TELEPHONE-AREA CODE (201)
 5-3100
 EQUIPMENTS IN TANK CALIBRATING
 S. ON OF BULK CARGOES,
 T. UM AND OTHER LIQUIDS,
 CENSED WEIGHERS AND SAMP-
 RS OF VEGETABLE OILS, WAXES
 ID FATS.

E. W. SAYBOLT & CO., INC.

JOS. H. MCCABE JOS. H. MCCABE, JR.
 APPROVED AND LICENSED BY
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 KENILWORTH, N.J. 07033

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 CHICAGO, ILL.
 BOSTON, MASS.
 WEST HAVEN, CONN.

ER

LABORATORY ANALYSIS REPORT

SAMPLE DESIGNATED BY CLIENT AS No. 6 FUEL OIL 1% SULFUR

BOSTON, MASS.

NOVEMBER 14, 1972

LAB. No. 16850

FROM S/S NEPCO DAUNTLESS - 11/12/72
 @ C.H. SPRAGUE & SON COMPANY

PROVIDENCE, R.I.
 FOR C.H. SPRAGUE & SON COMPANY NEW ENGLAND PETROLEUM CORP.
 125 HIGH STREET - 825 THIRD AVENUE
 BOSTON, MASS. 02110 NEW YORK, N.Y. 10022

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 WRITING FROM E. W. SAYBOLT & CO., INC. RESULTS ARE BASED ON ANALYSIS MADE AT THE TIME SAMPLES ARE RECEIVED AT LABORATORY.

TESTS	RESULTS
GRAVITY, API @ 60°F	22.6
FLASH POINT, PM/CC	200±°F
VISCOSITY, SSU @ 100°F	243
POUR POINT	20°F
CARBON RESIDUE, CONRADSON	4.75%
SULFUR, ASTM D1552	0.92%
WATER & SEDIMENT	0.1%
SEDIMENT BY EXTRACTION	0.01%
WATER BY DISTILLATION	0.05%
BTU'S PER POUND	19,093 Gross
BTU'S PER GALLON	145,985 Gross
ASH	0.03%

E. W. SAYBOLT & CO., INC.

Signature
 DEPUTY INSPECTOR OF PETROLEUM

APPROVED BY NEW YORK PRODUCE EXCHANGE

MEMBERS OF A. S. T. M. - A. P. I. - S. A. E.