579/INT. A.T.S.(E) ANALYSES OF ENEMY FUELS AND LUBRICANTS.

4540-1813

[redacted] 10th July 1944

War Cabinet Technical Sub-Committee on Axis Oil

ENEMY OILS AND FUELS COMMITTEE

Sample No. AIR 377

FUEL ex Ju.88 A-4 Trop. [redacted] PL.1214, Jumo 211 J-1, Engine Nos. Port 4755, Starboard 1061302465, shot down at Bradwell Bay, Essex, 19.4.44. Tank from which sample taken undamaged.

Analysis by The Petroleum Board, Vauxhall

Size of Sample .....Approx.	16-gls.
Specific Gravity	.7422
Colour	Blue
Distillation - I.B.P.	44°C
Recovery at 70°C	17%
75°C	23%
100°C	55%
105°C	62%
140°C	90½%
150°C	95%
F.B.P.	165°C
Total Recovery	98%
Residue	1%
Freezing Point	-60°C
Vapour Pressure (lb./sq.in.)	5.9
Total Sulphur	0.004%
Existent Gum (mg./100 mls.)	1.4
Lead Content (mls.T.E.L./I.G.) ...	5.44
Octane Number	91
Octane Number of Base Fuel	71
Bromine Number	1.6
Hydrocarbon Analysis	
Aromatics	15.6%
Paraffins	45.7%
Naphthenes	38.7%
Unsaturateds	-
Individual Aromatics	
Benzene	2.6%
Toluene	5.6%
Xylenes	5.2%
Higher Aromatics	2.4%
Water Solubles	Nil
Phenols	0.0003%
Iron Carbonyls	Nil
Aromatic Free and De-leaded Fuel	
Specific Gravity	.7226
Aniline Point	55.6°C
Octane Number	70

This is a typical German Blue Fuel (B.4).

S.J.M.Auld
Chairman,
for the Enemy Oils and Fuels Committee

The Petroleum Board,
Shell-Mex House,
W.C.2.

CONFIDENTIAL 10th July 1944

War Cabinet Technical Sub-Committee on Axis Oil

ENEMY OILS AND FUELS COMMITTEE

Sample No. AIR 365

FUEL ex Do.217M, U5 + EL, DB 603 A2, Engine Nos. Port 01600019, Starboard 01600361, shot down Westcott, Nr.Dorking, 24.2.44. Bombing attack.

Analysis by The Petroleum Board, Vauxhall

Size of Sample .....Approx.	9-glns.
Specific Gravity	.7408
Colour	Blue
Distillation - I.B.P.	44°C
Recovery at 70°C	16%
75°C	22%
100°C	54½%
105°C	62%
140°C	92½%
150°C	96%
F.B.P.	160°C
Total Recovery	98%
Residue	1%
Freezing Point	Below -60°C
Vapour Pressure (lb./sq.in.)	5.7
Total Sulphur	0.005%
Existent Gum (mg./100 mls.)	3.0 (Oil)
	0.6 (Gum)
Lead Content (mls.T.E.L./I.G.)	5.52
Octane Number	90½
Octane Number of Base Fuel	73
Bromine Number	1.4
Hydrocarbon Analysis	
Aromatics	13.1%
Paraffins	42.6%
Naphthenes	44.3%
Unsaturateds	-
Individual Aromatics	
Benzene	2.1%
Toluene	5.3%
Xylenes	6.0%
Higher Aromatics	-
Aromatic Free and De-loaded Fuel	
Specific Gravity	.7255
Aniline Point	54.0°C
Octane Number	69½

This is a typical German Blue Fuel (B.4).

S.J.M.Auld
Chairman,
for the Enemy Oils and Fuels Committee

The Petroleum Board,
Shell-Mex House,
W.C.2.

CONFIDENTIAL 10th July 1944

War Cabinet Technical Sub-Committee on Axis Oil

ENEMY OILS AND FUELS COMMITTEE

Sample No. AIR 383 (drawn by The Petroleum Board under instructions from R.A.F. 67 M.U., Taunton, April 1944.

SPIRIT ex Ju.88

Analysis by The Petroleum Board, Vauxhall

Size of Sample .....Approx.	14-glns.
Specific Gravity	.735
Colour	Blue
Distillation - I.B.P.	45°C
Recovery at 70°C	19%
75°C	25%
100°C	55%
105°C	63%
140°C	92½%
150°C	96%
F.B.P.	159°C
Total Recovery	98%
Residue	1%
Freezing Point	Below -60°C
Vapour Pressure (lb./sq.in.)	5.6
Total Sulphur	0.003% wt.
Existent Gum (mg./100 mls.)	0.6
Lead Content (mls.T.E.L./I.G.)	5.45
Octane Number	91
Octane Number of Base Fuel	72
Bromine Number	1.2
Hydrocarbon Analysis	
Aromatics	8.5%
Paraffins	42.1%
Naphthenes	49.4%
Unsaturateds	-
Individual Aromatics	
Benzene	1.5%
Toluene	3.3%
Xylenes	4.0%
Higher Aromatics	-
Water Solubles	Nil
Phenols	.0017%
Iron Carbonyls	Nil
Aromatic Free and De-loaded Fuel	
Specific Gravity	.7246
Aniline Point	55.2°C
Octane Number	71

This has rather lower Aromatics than usual but in other respects resembles the normal German Blue Fuel (B.4).

S.J.M.Auld
Chairman,
for the Enemy Oils and Fuels Committee

The Petroleum Board,
Shell-Mex House,
Strand, W.C.2.

CONFIDENTIAL

10th July 1944

War Cabinet Technical Sub-Committee on Axis Oil

ENEMY OILS AND FUELS COMMITTEE

Sample No. AIR 362

BLUE SPIRIT ex Do.217M, 56051, U5 + DK, DB 603 A1, Engine Nos. Port 17192, Starboard 17194, shot down 11.5 p.m. Enfield 23.2.44 and landed without crew on Union Lane Allotments, Milton Road, Cambridge. Tank from which sample taken undamaged.

Analysis by The Petroleum Board, Vauxhall

Size of Sample .....Approx.	16-glns.
Specific Gravity	.7407
Colour	Blue
Distillation - I.B.P.	45°C
Recovery at 70°C	16%
75°C	22%
100°C	54½%
105°C	63%
140°C	93%
150°C	96%
F.B.P.	158°C
Total Recovery	98%
Residue	1%
Freezing Point	Below -60°C
Vapour Pressure (lb./sq.in.)	6.4
Total Sulphur	0.009%
Existent Gum (mg./100 mls.)	0.8
Lead Content (mls.T.E.L/I.G.)	5.51
Octane Number	91
Octane Number of Base Fuel	71
Bromine Number	1.7
Hydrocarbon Analysis	
Aromatics	14.2%
Paraffins	43.7%
Naphthenes	42.1%
Unsaturateds	-
Individual Aromatics	
Benzene	2.4%
Toluene	5.2%
Xylenes	6.7%
Higher Aromatics	-
Water Solubles	Nil
Phenols	0.0034%
Iron Carbonyls	Nil
Aromatic Free and De-leaded Fuel	
Specific Gravity	.7236
Aniline Point	54.8°C
Octane Number	69½

This is a typical German Blue Fuel (B.4).

S.J.M.Auld
Chairman,
for the Enemy Oils and Fuels Committee

The Petroleum Board,
Shell-Mex House,
W.C.2.

CONFIDENTIAL 27th January 1944

War Cabinet Technical Sub-Committee on Axis Oil

ENEMY OILS AND FUELS COMMITTEE

Sample No. AIR 347

Lubricating Oil ex Ju.188 E-1, 3E + AF, BMW 801 - G.2, Port Engine No. 303208, Starboard 306048, shot down nr. Hungerford, Berks. 1.11.43. Tank from which sample taken undamaged. Aircraft on bombing raid.

Analysis by Shell Marketing Co., Ltd., Fulham

Size of Sample .....Approx..	2-glns.	
Diluent (Gasoline)	2.8%	
Sediment insoluble in I.P.Petroleum Spirit	1.3%	
Ash (sulphated)	0.65%	
Nature of Ash	Iron oxide and lead sulphate	
Oil after removal of diluent and filtration		
Specific Gravity	0.880	
	S.U.	C.s.
Viscosity @ 100°F	1,345"	291.5
210°F	116"	24.42
Viscosity Index	110	
Pour Point	-10°F	
Saponification Value (mg.KOH/gm.)..	0.7	
Sulphur Content	0.35%	
Ramsbottom Coke No.	0.30	

This oil is of the somewhat rare uncompounded "heavy" aircraft type and has a very high V.I. The low coke number suggests that the oil is composed mainly of distillate oils, and it may contain some synthetic material. It has been well dewaxed. The high sediment content of the original used oil should be noted.

S.J.M.Auld
Chairman,
for the Enemy Oils and Fuels Committee

The Petroleum Board,
Shell-Mex House,
W.C.2.

SECRET 10th January 1944

War Cabinet Technical Sub-Committee on Axis Oil

ENEMY OILS AND FUELS COMMITTEE

Sample No. AIR 335 (received through Allied Force Headquarters, Petroleum Section, from North Africa.

Blue Fuel

Analysis by The Petroleum Board, Vauxhall

Size of Sample	1 x 60-gln.barrel
Specific Gravity	.7424
Colour	Blue
Distillation - I.B.P.	40°C
Recovery @ 75°C	21½%
100°C	52½%
105°C	59%
150°C	95%
F.B.P.....	164°C
Total Recovery	98%
Residue	1%
Freezing Point	Below -60°C
Vapour Pressure (lb /sq.in.)	5.4
Existent Gum (mg./100 mls.).....	3.2
Total Sulphur	0.013%
Lead Content (mls.T.E.L./I.G.) ..	5.48
Octane Number (C.F.R. M.M.).....	90
Octane Number-Research Method ...	94.0
3C Rich Mixture Rating	= 85½
Octane Number of Base Fuel.....	73.
Bromine Number	1.0
Hydrocarbon Analysis	
Aromatics	17.5%
Paraffins	49%
Naphthenes	33.5%
Unsaturateds	-
Individual Aromatics	
Benzene	3.3%
Toluene	7.2%
Xylenes	6.3%
Higher Aromatics	0.7%
Phenols	0.002%
Water Solubles	Nil
Iron Carbonyls	Nil
Sulphonated Fuel (deloaded)	
Specific Gravity	.7209
Aniline Point	56.8°C
Octane Number	68½

This is a typical German blue fuel.

S.J.M.Auld
Chairman,
for the Enemy Oils and Fuels Committee

The Petroleum Board,
Shell-Mex House,
W.C.2.

Report No. 2197

IMPROVEMENT IN GERMAN C-3 GREEN AVIATION PETROL.

Summary: Increase in the "Rich Mixture" rating of the German C-3 Green Aviation Petrol from 110 to 125.

On 25th September last year, attention was drawn in A.I.2.(g) Report No.2111, to the high knock rating, under "Rich Mixture" conditions, of the German C-3 green aviation fuel then in use.

It was pointed out that while the standard German B-4 blue fuel, with an octane number of 89 to 90, had a "Rich Mixture" rating of about 81, the German C-3 green fuel - with 92 to 93 octane number - had a "Rich Mixture" performance of about 110.

During the past year there have been comparatively few C-3 fuel samples to examine, but the Committee on Enemy Oils and Fuels stressed in their report of the meeting held on 30th June this year, that this C-3 green fuel gave a potential B.M.E.P. margin, under "Rich Mixture" conditions, which was not fully utilised by the existing German engines.

Since June, 1945, however, tests have revealed that the composition of the C-3 green fuel has altered. The specific gravity is lower at around .771 and, while the octane number is slightly up, at 95 to 96, the "Rich Mixture" rating, as determined by the 3C test (equivalent to the supercharged C.F.R. engine) has increased very considerably to around 125.

The most recent analyses give the following readings:

Sample No.	Origin	Specific Gravity	Octane No.	"3C" Rich Mixture Rating.
(AVERAGE OVER 1942:-		.782	93 to 94	110)
RECENT SAMPLES.				
C-3 285	Ju 88-9.5.45.	.773	97.5	118½
C-3 305	Fw 190-4.6.45.	.770	96.4	Greater than 125
C-3 311	Fw 190-20.6.45.	.766	95.5	124
C-3 317	Mersa Matruh 1945.	.770	95	Greater than 125
C-3 318 to 321 & 327	Middle East 1943.	.771	95	" " "
C-3 328/9 & 236	" " "	.772	95	" " "

The reasons for this increase in the "Rich Mixture" rating are difficult to account for, since even with the original C-3 green fuel, the German aero-engines were not capable of taking full advantage of the fuel's potentiality. Nor are there indications of such improvement in the design of current German service aero-engines as to suggest that these can take any greater advantage of either the original or the modified fuel.

The potentialities of this fuel should, however, be borne in mind, as, in an improved design of engine, it would permit an appreciable increase in boost and B.M.E.P.

(G.E.P. FOSTER)
Wing Commander.

A.I.2.(g),
16th September, 1945.
20/Gen.16/P.

/DISTRIBUTION

DISTRIBUTION:

AIR MINISTRY:	
A.C.A.S.(I)	1
A.C.A.S.(T.R.)	1
D. of I.(O)	1
D.O.R.	1
D.D.I.2.	1
D.D.I.3.	1
A.D.I.K.	1
A.I.2.(a)	1
A.I.3.(b)	1
O.R.(F)	1
A.I.1.(c)	1
A.I.3.(U.S.A.)	9
No.30 Mission	1
D. of I., RAFDEL, Washington.	3
Air Tech.Sect.,T.I., ETOUSA.	21
A.F.L.7.	1
HOME COMMANDS:	
Fighter Command.	8
Bomber Command.	1
S/Ldr. Cockburn, c/o Bomber Cmd.	7
Coastal Command.	1
Tactical Air Force.	1
ADDITIONAL:	
A.F.D.U.	1
OVERSEAS COMMANDS:	
H.Q.,Med. Air Command.	1
H.Q.,N.W. African Air Forces.	1
H.Q.,R.A.F.,M.E.	1
H.Q.,R.A.F.,Malta.	1
A.H.Q.,India.	2
A.H.Q.,Iraq & Persia.	1
DOMINION H.Q. IN G.B.	
H.Q.,R.C.A.F.,in G.B.	2
H.Q.,R.A.A.F.,in G.B.	3
H.Q.,R.N.Z.A.F., in G.B.	2
S.A. Air Liaison Officer.	2
ADMIRALTY:	
D.N.I.	5
N.A.D.	1
M.A.P.	
D.S.R.	1
C.R.D.	1
D.T.D.	1
D.D.(1)/R.D.E.	1
D.S.P.	1
D.G.E.P.	1
A.D./R.D.T.1.	1
R.D.T.1.(b).	1
R.D.E.1.(c)	1
R.T.P.2.	5
R.A.E.(E/A Section).	5

The Director of Intelligence,
Air Ministry (A.I.2.(g)),
King Charles Street, S.W.1.

30th December 1943

SECRET

Sample No. AIR 350

Fuel from auxiliary tank of F.W.190 landed at Christ's Hospital 22.11.43. Tank from which sample taken damaged.

Analysis by The Petroleum Board, Vauxhall

Size of Sample .....Approx.	600 ccs.
Specific Gravity	.7855
Colour	Green
Distillation - I.B.P.	68°C
Recovery at 70°C	1%
75°C	1½%
100°C	33½%
105°C	43%
140°C	80%
150°C	86½%
F.B.P.	179°C
Total Recovery	98%
Residue	1%
Octane Number	95½ (approx.)

This appears to be a typical German green fuel. Sample is insufficient for more detailed analysis.

S.J.M.Auld
for The Petroleum Board

The Petroleum Board,
Shell-Mex House,
W.C.2.

A.I. 2G. 1336
AIR MINISTRY

The Director of Intelligence,
Air Ministry (A.I.2.(g)),
King Charles Street, S.W.1.

30th December 1943

SECRET

Sample No. AIR 348 (received through U.S.Embassy from A.F.H.Q., Petroleum Section - Compare Analysis B.34 of No.1 Mobile Petroleum Laboratory, R.A.S.C.)

Der 41. Fl. Anlass Kraftstoff

Analysis by The Petroleum Board, Vauxhall

Size of Sample .....Approx.	½-gln.
Specific Gravity	.6615
Colour	Yellow, Green fluorescence
Distillation - I.B.P.	24°C
Recovery at 40°C	34.5%
70°C	82½%
75°C	86%
100°C	90½%
105°C	90½%
F.B.P.	131°C
Total Recovery	92%
Residue	4%
Existent Gum (mg./100 mls.)	(Gum) 2
	(Oil) 1482
Octane Number	72½

This is probably a cold starting fuel. It contains oil which may have been deliberately added.

S.J.M.Auld
for The Petroleum Board

The Petroleum Board,
Shell-Mex House,
W.C.2.

The Director of Intelligence,
Air Ministry (A.I.2.(g)),
King Charles Street, S.W.1.

30th December 1943

SECRET

Samples Nos. AIR 336 and AIR 342 (received through Allied Force Headquarters, Petroleum Section, from North Africa

Green C3 Aviation Petrol

Analyses by The Petroleum Board, Vauxhall

	AIR 336	AIR 342
Size of Sample .....Approx.	50-gln.barrel	3 x 50-gln.barrels
Specific Gravity	.7706	.7705
Colour	Green	Green
Distillation - I.B.P.	42°C	42°C
Recovery at 75°C	13%	12½%
100°C	44%	42½%
105°C	51%	50%
150°C	88%	87½%
F.B.P.	177°C	176°C
Total Recovery	98%	97½%
Residue	1%	1½%
Freezing Point	Below -60°C	Below -60°C
Vapour Pressure (lb./sq.in.)	5.1	4.4
Total Sulphur	0.01%	0.01%
Existent Gum (mg./100 mls.)	1.6	2.0
Lead Content (mls.T.E.L./I.G.) ...	5.28	5.38
Octane Number	95½	95½
Octane Number of Base Fuel	82½	82½
Octane Number - Research Method...	0.39 ccs.T.E.L. /U.S.gln.in Iso-Octane	0.39 ccs.T.E.L./ U.S.gln.in Iso-Octane
3C Rich Mixture Rating	3.25 ccs.T.E.L. /U.S.gln.in S2 = 116% of 130 grade	4.0 ccs.T.E.L./ U.S.gln.in S2 = 120% of 130 grade
Bromine Number	1.4	1.3
Hydrocarbon Analysis		
Aromatics	40.8%	40.2%
Paraffins	35.3%	39.7%
Naphthenes	23.9%	20.1%
Unsaturateds	Nil	Nil
Individual Aromatics		
Benzene	8.0%	8.3%
Toluene	12.0%	12.1%
Xylenes	14.5%	13.5%
Higher Aromatics	6.3%	6.3%
Phenols	0.003%	0.003%
Water Solubles	Nil	Nil
Iron Carbonyls	Nil	Nil
Sulphonated Fuel - deloaded		
Specific Gravity	.7164	.7161
Aniline Point	62.2°C	62.2°C
Octane Number	78	78

These two samples are similar and typical of German green fuels. The Rich Mixture Rating is not of the extremely high value noted in one or two recent samples.

S.J.M.Auld
for The Petroleum Board

The Petroleum Board,
Shell-Mex House,
W.C.2.

The Director of Intelligence,
Air Ministry (A.I.2.(g)),
King Charles Street, S.W.1.

9th December 1943

SECRET

Sample No. AIR 343

Lubricating Oil from a British "Tiger Moth" flown from Denmark October 1943. Plane lying at Turnhouse, Scotland. Particulars on label: DH Moth, OY-DEH, Engine type: Gypsy. Landed 19.10.43. Tank from which sample taken undamaged.

Analysis by Shell Marketing Co., Ltd., Fulham

Size of Sample	Approx.	1-qt.
Appearance		Dark used oil
Diluent (gasoline)		1%
Sediment insoluble in I.P.Petroleum Spirit		0.01%
Sulphated Ash		0.08%
Nature of Ash		Essentially iron oxide with some lead sulphate.
Tests after removal of diluent and filtration		
Specific Gravity		0.903
Viscosity @ 100°F		S.U. 912" / C.s. 197.2
210°F		79" / 15.55
Viscosity Index		85
Pour Point		5°F
Saponification Value (mg.KOH/gm.)..		1.3
Ramsbottom Coke No.		0.79

This oil is of the "light" aircraft lubricating type, is uncompounded, of medium viscosity index and appears to contain Bright Stock. It is in good condition for a used oil.

S.J.M.Auld
for The Petroleum Board

The Petroleum Board,
Shell-Mex House,
W.C.2.

The Director of Intelligence,
Air Ministry (A.I.2.(g)),
King Charles Street, S.W.1.

9th December 1943

SECRET

Sample No. AIR 341 (received through Allied Force Headquarters, Petroleum Section)

Liquido Avio II R.A. (Hydraulic Fluid)

Analysis by Shell Marketing Co., Ltd., Fulham.

This sample is of the castor oil base type and has the following approximate composition:

Ethyl acetate	5%
Diacetone alcohol	30%
Water	1%
Castor Oil	64%

Size of Sample .....Approx.	1-litre
Appearance	Clear, mobile amber fluid having an odour of castor oil
Specific Gravity	0.958
Kinematic Viscosity @ 32°F...C.s.	646
70°F... "	137
100°F... "	59.4
Water	1.4%
Ash	Less than 0.01%
Flash Point, P.M., Closed	142°F
Pour Point	-45°F
D.T.D.Cold Test	The material was solid after 2 hours at -36°C
Neutralization Value (mg.KOH/gm.).	0.5
Saponification Value (mg.KOH/gm.).	127
Total free and combined fatty acids	61%
Nature of fatty acids	Castor oil fatty acids
Distillation - I.B.P.	55°C
35% recovered at	165°C Decomposition, distillation stopped.
Total Recovery	37%

Fractionation of Distillate

Boiling Point °C.	% Vol.	Specific Gravity at 60°F/60°F.	Refractive Index at 20°C	Nature of Fraction
55-80 (main bulk 77°)	6	0.900	1.372	Ethyl Acetate
163-165	29	0.945	1.423	Diacetone Alcohol

Nature of Residue from distillation. Essentially castor oil

S.J.M.Auld
for The Petroleum Board

The Petroleum Board,
Shell-Mex House,
W.C.2.

The Director of Intelligence,
Air Ministry (A.I.2.(g)),
King Charles Street, S.W.1.

4th December 1943

A.I. 2G. - 1361

SECRET

AIR MINISTRY

Sample No. AIR 333

Blue Spirit ex Me. 108 B.1, F8 + CA, Argus AS 10, R.1, Engine No. 4462131, shot down at Ford 11.9.43. Plane from Chateaubrun, France. Tank from which sample taken undamaged.

Analysis by The Petroleum Board, Vauxhall

Specific Gravity	.7400
Colour	Blue
Distillation - I.B.P.	48°C
Recovery at 75°C	22%
105°C	64%
150°C	96½%
F.B.P.	158½°C
Total Recovery	98%
Residue	1%
Freezing Point	Below -60°C
Vapour Pressure (lb./sq.in.)	5.3
Total Sulphur	0.011%
Existent Gum (mg./100 mls.)	½
Lead Content (mls.T.E.L./I.G.)	3.0
Octane Number (C.F.R. M.M.)	86
Octane Number of Base Fuel	72
Bromine Number	1.6

Hydrocarbon Analysis

Aromatics	11.4%
Paraffins	48.2%
Naphthenes	39.4%
Unsaturateds	1.0%

Individual Aromatics

Benzene	2.8%
Toluene	4.8%
Xylenes	3.1%
Higher Aromatics	0.7%

Phenols	0.006%
Water Solubles	Nil
Iron Carbonyls	Nil

This is not typical of the German blue fuel. It has a lower octane number and smaller lead content. It may be of Italian origin.

The Petroleum Board,
Shell-Mex House, W.C.2.

S.J.M.Auld
for The Petroleum Board

A.I. 2G.

AIR MINISTRY

The Director of Intelligence,
Air Ministry (A.I.2.(g)),
King Charles Street, S.W.1.

18th November 1943

SECRET

Sample No. AIR 322 (received from Russia through Ministry of Economic Warfare - Ref.: M.E.W. No. 193)

Aviation Gasoline, type B-2, Stalingrad Front, March 10th, 1943.

Analysis by The Petroleum Board, Vauxhall

Size of Sample .....Approx.	1-litre
Specific Gravity	.7414
Colour	Yellow
Distillation - I.B.P.	53°C
Recovery at 70°C	3½%
100°C	30%
140°C	72%
F.B.P.	178°C
Total Recovery	97½%
Residue	1%
Freezing Point	Below -60°C
Total Sulphur	0.01%
Existent Gum (mg./100 mls.)	23.0
Lead	Present
Bromine Number	2.3

Hydrocarbon Analysis

Aromatics	11.6%
Paraffins	54.8%
Naphthenes	33.6%
Unsaturateds	-

Sample insufficient for further tests.

This is a straight run leaded gasoline, probably fairly severely weathered. It is difficult in the circumstances to comment on the quality.

S.J.M.Auld
for The Petroleum Board

The Petroleum Board,
Shell-Mex House,
W.C.2.

The Director of Intelligence,
Air Ministry (A.I.2.(g)),
King Charles Street, S.W.1.

18th November 1943

SECRET

Sample No. AIR 323 (received from Russia through Ministry of Economic Warfare - Ref.: M.E.W. No. 193)

Aviation Gasoline from German plane, "Heinkel", shot down on 17.6.43.

Analysis by The Petroleum Board, Vauxhall

Size of Sample .....Approx.	½-litre
Specific Gravity	.7386
Colour	Blue
Distillation - I.B.P.	52°C
Recovery at 75°C	15%
105°C	63½%
150°C	95%
F.B.P.	161°C
Total Recovery	97½%
Residue	1%
Freezing Point	Below -60°C
Total Sulphur	0.01%
Existent Gum ... (mg./100 mls.) ..	7.6
Lead	Present
Bromine Number	0.6
Hydrocarbon Analysis	
Aromatics	10.8%
Paraffins	48.8%
Naphthenes	40.4%
Unsaturateds	-

This would appear to be a typical German blue fuel.

S.J.M.Auld
for The Petroleum Board

The Petroleum Board,
Shell-Mex House,
W.C.2.