File.

O T T A W A August 31, 1945.

R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1929.

Properties of Two Corrosion-Preventive Compounds For Aircraft Engines.

(Copy No. 10.)

Bureau of Mines
Division of Metallic
Minerals
-
Physical Metallurgy
Research Laboratories

CANADA
DEPARTMENT
OF
MINES AND RESOURCES
Mines and Geology Branch

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Background:

A letter (File 832-330-11; AMSO DAI) dated July 12, 1945, from Air Commodore A. L. Johnson, Director of Aeronautical Inspection, for Chief of the Air Staff, Department of National Defence for Air, Ottawa, Ontario, requested that two corrosion-preventive compounds be tested to Specification C-27-587. These compounds were to come from No. 7 and No. 11 Equipment Depots.

The compounds received were labelled:

1. Oil Anti-Corrosive, Shell Oil Co. Ltd., Contract Air Req. #124, Ser. 8-743342.
2. From Imperial Oil Ltd., C.D.T. P.216. Serial No. 2-R-2689, 34A/94.

Investigation Results:

The following results were reported by the Division of Fuels, Bureau of Mines:

	Specification Requirements	Shell Oil Co.	Imperial Oil Ltd.
(a) Separation after 24 hours, at 210° F.	None.	None.	None.
(c) Pour Point, °F.	20 (max.)	10	15
(d) Viscosity, seconds Saybolt Univ. at 100° F.	--	1707	1733
" " " 210° F. (after elimination of volatile content).	100 to 125	121	123
(e) Flash Point, ° F. (Cleveland open cup)	350 (min.)	475	490
(f) Precipitation number	0.1 (max.)	0.02	0.02
(g) Carbon residue, per cent by weight (Conradson)	2.5 (max.)	1.35	1.45
(h) Corrosion (copper strip, 3 hours at 212° F.)	Negative.	Negative.	Negative.
(i) Ash, per cent by weight	1.0 (max.)	0.42	0.88
(j) Viscosity Index	95 (min.)	97	98
(k) Volatile content, per cent by weight (24 hours at 221° F.)	5 (max.)	0.6	0.75
(o) Effect of the compound on the colour-indicating property of cobalt chloride-impregnated silica gel.	Pass. (No adverse effect).	Pass.	Pass.

The following results were obtained by the Physical Metallurgy Research Laboratories:

	Specification Requirements	Shell Oil Co.	Imperial Oil Ltd.
(m) Protection	No corrosion on panels.	No corrosion on panels.	Corrosion on panels. See Figure 1.
(n) Hydrobromic Neutralization	No corrosion on panels.	Slight corrosion on panels. See Figure 2.	No corrosion on panels.

Conclusions:

1. The sample of Shell Oil Co. corrosion-preventive compound which was submitted conforms with the specification requirements except in the case of the Hydrobromic Acid Neutralization Test. In the latter test the panels were slightly corroded.

2. The sample of Imperial Oil Ltd. corrosion-preventive compound which was submitted conforms with the specification requirements except in the case of the Protection Test.

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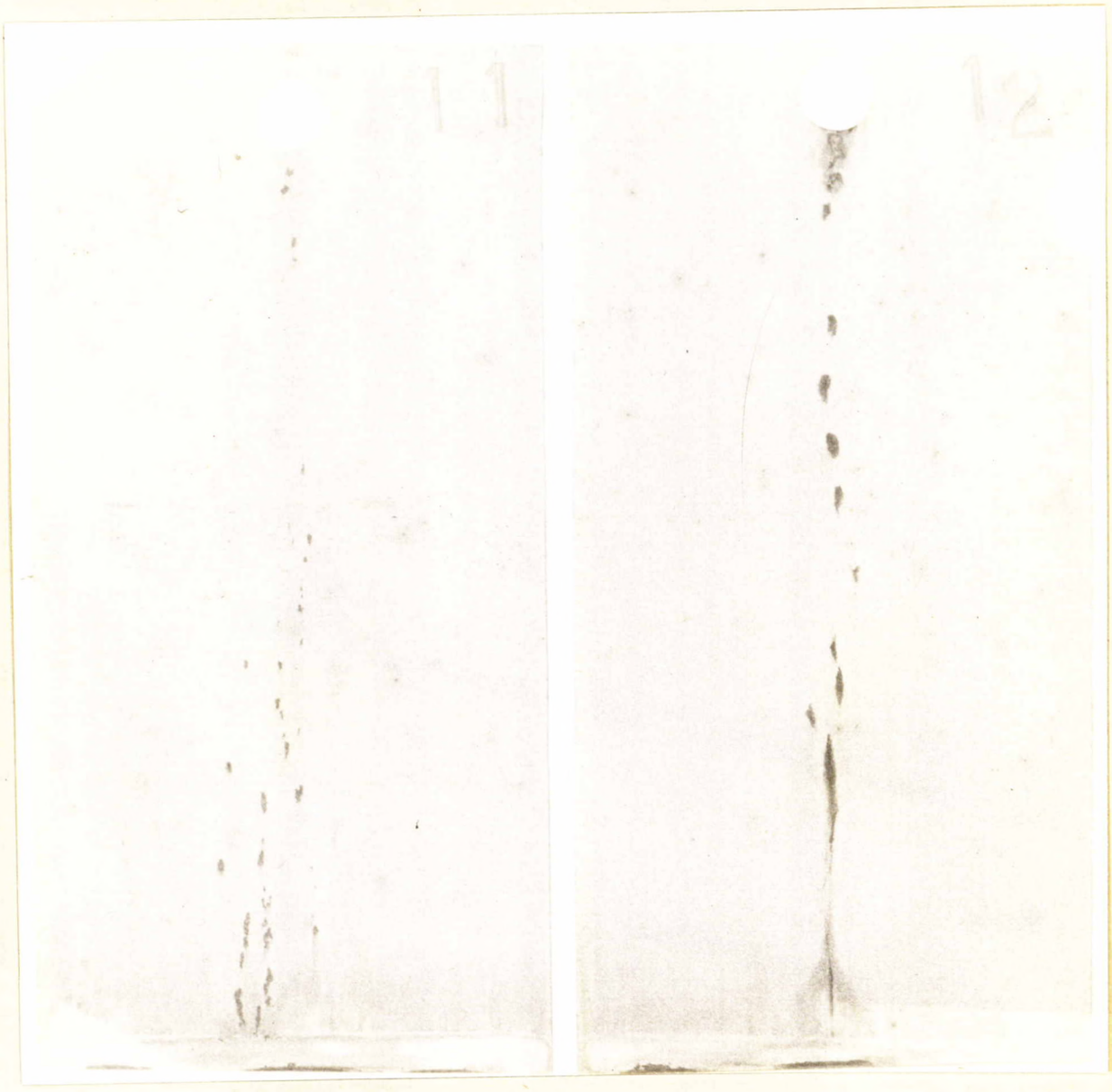
(Pages 4 and 5 contain)
(Figures 1 and 2.)

Figure 1.



CONDITION OF PANELS COATED WITH A MIXTURE CONTAINING IMPERIAL OIL LTD. PREVENTIVE COMPOUND, AFTER 150 HOURS IN THE HUMIDITY CABINET (PROTECTION TEST).

Figure 2.

CONDITION OF TYPICAL PANEL COATED WITH A MIXTURE CONTAINING SHELL OIL CO. PREVENTIVE COMPOUND, AFTER HYDROBROMIC ACID NEUTRALIZATION TEST.

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