SALT FOG TESTS
ON RUST-PROOFING SYSTEM

CRIQ File 670-PX20795

Technical Report

Mr. Serge Meunier
211, rue De Galais
Boisbriand (Québec) J7G 1P6

YVES PÉLOQUIN
TECHNOLOGICAL DEVELOPMENT ADVISOR

BENOÎT HAMEL, TECH.
PROJECT LEADER
LA DIRECTION PRODUITS ET ESSAIS

GINETTE DELISLE, ENG.
DIRECTOR

MONTREAL, JULY 15, 1997

CRIQ
CENTRE DE RECHERCHE
INDUSTRIELLE DU QUÉBEC

The tests were performed from June 16 to July 11, 1997. The samples were received at CRIQ on June 17, 1997.

This report must not be reproduced without the written authorization of the Centre de recherche industrielle du Québec (CRIQ), except in whole by the client identified on the title page.

Total number of pages: 6.

The results presented in this report refer only to the products described in this report.

The equipment and instruments used in the tests were checked and/or calibrated. The calibration certificates are all traceable to standards of the National Research Council of Canada (CNRC) and/or the National Institute of Standards and Technology (NIST) of the United States, and are available on request.

CRIQ is ISO 9001 certified: 1987, certificate no. 167-0075-18, and the Testing activity (Essais) is certified by the Standards Council of Canada, registration no. 138.

CRIQ
CENTRE DE RECHERCHE
INDUSTRIELLE DU QUÉBEC

PX20795 / Salt fog tests on rust-proofing system iii

TABLE OF CONTENTS

CRIQ
CENTRE DE RECHERCHE
INDUSTRIELLE DU QUÉBEC

1. INTRODUCTION

Following a request from Mr. Serge Meunier, salt fog tests were performed at CRIQ according to standard *ASTM B 117-94 Operating Salt Spray (Fog) Testing Apparatus*, most recent version, on nine specimens on an automobile rust-proofing system supplied by *The Auto Saver System Inc.* company. These systems consist of conductive wax for automobiles and two anodes, which when combined, slow down the corrosion phenomenon. The purpose of the tests was to demonstrate that the systems actually slow down the corrosion on steel plates under specific conditions. The specimens were visually inspected and compared to untreated steel plates. This report describes the tests and the observations.

2. DESCRIPTION OF THE WORK

To carry out the tests, SAE 1018 steel plates were prepared. Each of the nine plates received the rust-proofing treatment and were equipped with two anodes. In addition, ten other plates were not treated in order to be used as comparative plates. The nineteen plates were then placed in a salt fog apparatus containing a concentrated spray with 5% salt in distilled water, as prescribed in standard ASTM B 117-94. The nine systems were energized (12V).

The following table shows the duration of the exposure of each plate to the fog.

SPECIMEN No.	PLATE No.	EXPOSURE TIME (HOURS)
-------	1	1
------	2	2
-------	3	3
------	4	3 (discards)
-------	5	4
------	6	5
------	7	6
------	8	7
-------	9	24
-----	10	48
E007210	11	1
E007211	12	3
E007212	13	5
E007213	14	7
E007214	15	24
E007215	16	48
E007216	17	72

CRIQ
CENTRE DE RECHERCHE INDUSTRIELLE DU QUÉBEC

SPECIMEN No.	PLATE No.	EXPOSURE TIME (HOURS)
E007217	18	72
E007218	19	72

When the exposure time for each plate was reached, the plate was removed from the fog, washed with running water, and dried with a cloth to remove the excess salt. A visual inspection was done at the end of the tests by comparing each treated plate to the comparative plates (untreated).

3. EQUIPMENT USED

- **Singleton** salt fog apparatus
  model: 22
  S/N: 27480

- **Hanna Instruments** pH meter
  model: HI9025
  S/N: 1100303

- **Xantrex** power supply unit
  model: LXD20-315
  S/N: 1066

4. RESULTS

The tests were carried out on the following specimens. The observations were done at the end of the tests by the CRIQ representative and are presented in the following table:

SPECIMEN No.	PLATE No.	OBSERVATIONS
E007210	11 (1 h)	comparable to a no. 1 control plate (1 h)
E007211	12 (3 h)	comparable to a no. 3 control plate (3 h)
E007212	13 (5 h)	comparable to a no. 3 control plate (3 h)
E007213	14 (7 h)	comparable to a no. 5 control plate (4 h)
E007214	15 (24 h)	comparable to a no. 8 control plate (7 h)
E007215	16 (48h)	comparable to a no. 8 control plate (7 h)
E007216	17 (72 h)	comparable to a no. 10 control plate (48 h)

CRIQ
CENTRE DE RECHERCHE
INDUSTRIELLE DU QUÉBEC

SPECIMEN No.	PLATE No.	OBSERVATIONS
E007217	18 (72 h)	comparable to a no. 9 control plate (24 h)
E007218	19 (72 h)	comparable to a no. 10 control plate (48 h)

The nine specimens were therefore successfully tested. We note, according to the results in the above table, that the corrosion phenomenon is slowed down as a result of the application of the rust-proofing system. Looking at specimen E007215, the result obtained is that the protected steel plate, which was subjected to 48 hours of salt fog, is comparable to a plate made of the same unprotected steel that was subjected to only seven hours of exposure under the same conditions.

5.   CONCLUSION

The results described in this report are in no cases applicable to all conditions. The tests were performed under specific conditions, namely on SAE 1018 steel plates 102 mm (4 inches) in width by 152 mm (6 inches) in length by 4 mm (0.125 inch) in thickness, treated with a rust-proofing system supplied by *The Auto Saver System Inc.* company and performed in compliance with standard ASTM B 117-94, in a concentrated salt fog containing 5% salt. The tests were carried out according to generally accepted engineering practices imposed by our quality assurance and neutrality policy. From the results obtained, it can be stated that the systems supplied by *The Auto Saver System Inc.* company slow down the natural corrosion process if they are applied according to the specific above-mentioned conditions, since a difference in degree of corrosion is observed between a protected plated and another unprotected plate that were exposed for the same amount of time to the salt fog.

CRIQ
CENTRE DE RECHERCHE
INDUSTRIELLE DU QUÉBEC