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Marshall Laboratory  
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MEMORANDUM REPORT #M-628

PREPARED BY: GEORGE J. HOCKEL

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1953 INSPECTION OF HOUSE TESTS

INTRODUCTION:

The houses that were inspected this year included only those tests which were of active interest at the present time. Eighty-eight houses were inspected throughout the seven general testing areas which included: Philadelphia, Boston, Atlanta, Hialeah-Miami, Houston-Canyon, Denver and Flint.

The test houses inspected involved the following experimental finishing systems and test years:

1. Maleic Modified Oils (Linseed & Soya) 1949, 50, 51
2. Soya P.E. Oil, 1948, 1949
3. Calcium Carbonate Extender 1948
4. Low Lead House Primer 1948, 1949
5. High Hiding White 1949, 1950
6. Alkyd Primer 1949

RESULTS & CONCLUSIONS:

(1) Maleic Modified Oils

1949: The control for house tests in 1949 was #40 Outside White (301-864) containing 20% Soya Oil replacing linseed oil and pigmented with Leaded Zinc Oxide. The test paints were lead-free using either ADM or Spencer Kellogg produced maleic treated soya oil.

The inspections of seven house tests showed that neither Ardol (ADM) nor Drisoy (SK) causes any significant improvement, statistical or practical, in dirt collection or film integrity over the control. The actual inspections indicated equality between both experimental paints and control.

1950: Town and Country White which utilizes a blend of two viscosities of Ardol was tested this year. Two control paints were used, Prewar #40 (301-756) and Chivo House Paint (302-785). After 2-1/2 years' exposure, T&C White was statistically equal in cleanliness, which included both dirt and mildew, but when graded separately

for mildew, the T&C White showed improvement over the Chivo House Paint. This average difference of  $3.0 \pm 1.1$  units occurred on two houses in Florida. Film integrity was  $1.4 \pm .9$  units better than Chivo House Paint on these same two houses. The remaining houses have not shown any decided failure.

Town and Country White did not show any improvement over Prewar #40 and gave an average difference in dirt collection of  $0.1 \pm 0.21$  units and for film integrity an average difference of  $0.05 \pm .23$  units. Both paints collected dirt and mildew equally and film failure occurred equally on both.

1951: Two house paints were tested this year, a linseed maleic (P-301-U-4086) and a soya maleic (P-301-U-4084) with #40 Outside White (301-885) as the control paint. These paints were pigmented the same as 301-885, but at 30% PV instead of 33%. The three finishes were on nine houses ranging in age from 12 to 18 months.

The linseed maleic paint (P-301-U-4086) was rated from 6 to 10 for dirt collection, but the average difference was  $0.13 \pm 0.25$  units, reflecting the equality of experimental and control. In Florida they mildewed equally but sufficient film failure had not occurred in order to give a real difference in durability.

The soya maleic paint (P-301-U-4084) showed practically the same degrees of failure for dirt collection and film integrity giving average differences of  $0.11 \pm 0.26$  units and  $0.02 \pm 0.05$  units respectively.

### (2) Soya P.E. Oil

1948: Three houses were active from the 1948 test series, with Prewar #40 as control. The test paint consisted of straight soya P.E. oil, which contained no glycerol. The soya P.E. Paint was equal to the control in cleanliness on all houses, but did not indicate improvement since the average difference was  $0.07 \pm 0.3$ . There was an average difference of  $1.9 \pm 2.3$  units in film integrity, including moisture failure, in favor of Soya P.E. oil over Prewar #40. There was a real difference on three out of four tests. On the fourth test failure was due to moisture with no difference between tests. This one determination reduced the probability below the 95% level, but there appears to be a real difference between these two paints in durability.

1949: Another Soya P.E. Paint was tested using an improved vehicle (colorwise) with the same pigmentation. The average difference found on 15 tests was  $0.02 \pm 0.11$  units in cleanliness, indicating equality of both paints. Ten houses were graded for film integrity giving an average difference of  $0.11 \pm 0.24$  units. Failure did not occur on all houses but where it did occur, both paints failed equally.

### (3) Calcium Carbonate Extender

Calcium carbonate was tested in 1948 in both outside white and cream tint at 50% of extender concentration and the results obtained showed no difference statistically in dirt collection or film

integrity compared with Prewar #40 and #753 Light Cream Tint. The control paint was 28% PV while the experimental paint was 35% PV. These results are based on three houses which were four and a half years old.

One house test of the same age using all calcium carbonate as extender in cream tint showed a marked improvement in cleanliness (+2.7) compared with Prewar #753 Cream.

(4) Low Lead Primer

Two primers containing half the usual amount of lead were tested on houses in 1949 with house paint primer containing the normal amount of lead pigment. The first low lead primer (P-347-R-14714) was made by reducing the lead pigment by 50% and replacing it with extender, while the second primer (P-347-R-40605) was made by replacing all the lead with lead silicate, also known as "45x" pigment.

From 5 test houses inspected, evidence taken from four tests indicates that both low lead primers are equal to house paint primer (347-817) in durability. The fifth house lacked control area, therefore, we could not evaluate the test properly.

(5) High Hiding White

1949: High Hiding White using 35% soya oil replacing linseed oil was tested on seven houses with two coats versus 301-864 Outside White as the control. The tests are now 3-1/2 years old and show cleanliness equal to the control on all tests. On those tests which involved mildew conditions, there were no differences. The differences encountered in film integrity were such that they did not become noticeable statistically ( $0.24 \pm 1.0$ ). The customary film failure which could be expected due to one coat white did not occur since two coats were applied.

1950: A similar high hiding O.W. (301-754) containing all linseed oil was tested on 10 houses using one coat versus two coats 301-885. These were barely 1 year old and therefore showed nothing in respect to film integrity. However, there were some small differences ( $0.07 \pm 0.17$  units) on the improvement side of cleanliness, but not large enough to show statistically.

(6) Alkyd Primer

1949: An alkyd primer using straight 55% linseed oil alkyd as vehicle, at 35% P. V. was tested on three houses with house paint primer (347-817) as control and five houses with (301-864) outside white self-primed as control. In both experiments, the results did

not show any statistical difference, although failure occurred on all houses in very nearly equal severity. Using house paint primer as control, the results on three houses was  $0.5 \pm 1.12$ , while using self-primed outside white as the control on five houses, the difference was  $0.026 \pm 0.25$  units.

DATA:

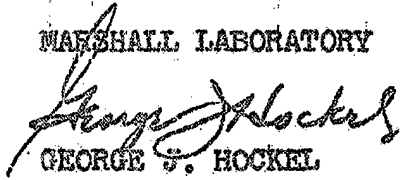
The tables attached hereto were required in calculating the statistical information being reported in this memo. They are a compilation of information taken from each field test house and are being recorded here to eliminate any possibility of having to re-assemble this information at some future date.

In the attached tables are found a number of abbreviations whose explanations are given here:

CH = Checking  
CR = Cracking  
F = Flaking  
P = Peeling  
B = Blistering  
M = Mildew

The numerical ratings are from 10, which is perfect or no failure to 0, which is complete failure.

MARSHALL LABORATORY

  
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8/19/53

TABLE I-A MALEIC MODIFIED OILS IN OUTSIDE WHITE  
1949 HOUSE TEST SERIES

| P-301-R-40627 (301-864) 2 cts. |      |      |                 | P-301-R-40611 (Driscy) 2 cts.   |      |                 |                           | P-301-R-40612 (Driscy) 2 cts. |                 |         |       |
|--------------------------------|------|------|-----------------|---------------------------------|------|-----------------|---------------------------|-------------------------------|-----------------|---------|-------|
| Ft#                            | Side | Dirt | Film.<br>Integ. | Remarks                         | Dirt | Film.<br>Integ. | Remarks                   | Dirt                          | Film.<br>Integ. | Remarks | Dirt  |
| #1324                          | N    | 7    | 10              |                                 | 7    | 10              | Sl. Flaking one board     | 8                             | 10              |         | 8     |
| 3-1/2 yrs.                     | S    | 10   | 9CR             |                                 | 10   | 9CR             |                           | 10                            | 10              |         | 10    |
| Fla.                           | E    | -    | -               | Repainted                       | -    | -               | Repainted                 | -                             | -               |         | -     |
|                                | W    | 9    | 8F              |                                 | 9    | 8F&CR           |                           | 9                             | 8F              |         | 8F    |
| #1285                          | N    | 8    | 10              |                                 | 8    | 10              |                           | 8                             | 10              |         | 8     |
| 3-1/2 yrs.                     | S    | 9    | 8P              | #6 Peeling around window        | 9    | 8P              | #6 Peeling around window  | 9                             | 8P&CR           |         | 8P&CR |
| Atlanta                        | E    | -    | -               | Not comparable                  | -    | -               | Not comparable            | -                             | -               |         | -     |
|                                | W    | 9    | 10              |                                 | 9    | 10              | Sl. flake on bottom board | 9                             | 10              |         | 10    |
| #1282                          | N    | 7    | 10              |                                 | 7    | 10              |                           | 7                             | 10              |         | 7     |
| Colo.                          | S    | 8    | 10              | Cons. chalking                  | 8    | 10              | Cons. chalk               | 8                             | 10              |         | 8     |
| 3-1/2 yrs.                     | E    | 7    | 10              | Sl. chalking                    | 7    | 10              | Sl. chalk                 | 8                             | 10              |         | 8     |
|                                | W    | -    | -               | Paint omitted                   | 6    | -               | Splashed from roof        | 6                             | -               |         | -     |
| #1281                          | N    | 7    | 10              |                                 | 7    | 10              |                           | 7                             | 10              |         | 7     |
| Colo.                          | S    | 7    | 10              |                                 | 7.5  | 7F              |                           | 7.5                           | 7F              |         | 7.5   |
| 3-1/2 yrs.                     | E    | 8    | 9CR             |                                 | 8    | 9CR             |                           | 8                             | 10              |         | 8     |
|                                | W    | -    | -               | No test                         | -    | -               | No test                   | -                             | -               |         | -     |
| #1289                          | N    | -    | -               | Not comparable                  | -    | -               | Not comparable            | -                             | -               |         | -     |
| Flint                          | S    | 7    | 9CR             | Cons. chalking                  | 6    | 9CR             | Cons. chalking            | 6.5                           | 9CR             |         | 6.5   |
| 3-1/2 yrs.                     | E    | 8    | 10              | Heavy chalking                  | 8    | 9F              | Heavy chalking            | 8                             | 8F              |         | 8     |
|                                | W    | 7    | 10              |                                 | 7    | 10              | Local flaking             | 7                             | 10              |         | 7     |
| #1306                          | N    | 7    | 10              |                                 | 8    | 10              |                           | 7                             | 10              |         | 7     |
| Boston                         | S    | 10   | 10              |                                 | -    | -               | Paint omitted             | 10                            | 10              |         | 10    |
| 3 yrs.                         | E    | 9    | 10              |                                 | 9    | 10              |                           | 9                             | 10              |         | 9     |
|                                | W    | 8    | -               | #4 Flake (construction failure) | 8    | 10              |                           | 8                             | 8F              |         | 8     |
| #1287                          | N    | 7    | 10              |                                 | 8    | 10              |                           | 8                             | 10              |         | 8     |
| Phila.                         | S    | -    | -               | Not comparable                  | -    | -               | Not comparable            | -                             | -               |         | -     |
| 3-1/2 yrs.                     | E    | 6    | 10              |                                 | 8    | 10              |                           | 8                             | 10              |         | 8     |
|                                | W    | -    | -               | Not comparable                  | -    | -               | Not comparable            | -                             | -               |         | -     |

| TABLE I-B MALEIC MODIFIED OILS IN OUTSIDE WHITE                           |      |      |             |               |      |             |               |      |             |
|---------------------------------------------------------------------------|------|------|-------------|---------------|------|-------------|---------------|------|-------------|
| 1950 - HOUSE TEST SERIES - GROUP #14 - ALL TWO COATS                      |      |      |             |               |      |             |               |      |             |
| Prewar #40 301-756 (R40660) T & C White 302-794 (Ardol)(R40676) Chivo Hou |      |      |             |               |      |             |               |      |             |
| Ft#                                                                       | Side | Dirt | Film Integ. | Remarks       | Dirt | Film Integ. | Remarks       | Dirt | Film Integ. |
| #1613                                                                     | N    | 7    | 8.0CR       |               | 7    | 8CR         |               | 7    | 8CR         |
| Canyon                                                                    | S    | 10   | 10          |               | 10   | 10          |               | 10   | 10          |
| 2-1/2 yrs.                                                                | E    | 8.5  | 9CR         |               | 8.5  | 9CR         |               | 7.5  | 8F          |
|                                                                           | W    | 8    | 9.5CR       |               | 8    | 8CR         | Local         | 8    | 7.0CR       |
| #1431                                                                     | N    | 8    | 10          |               | 8    | 10          |               | 8    | 10          |
| Boston                                                                    | S    | 9    | 10          |               | 10   | 10          |               | 9    | 10          |
| 2-1/2 yrs.                                                                | E    | 9    | 10          |               | 9    | 10          |               | 9    | 10          |
|                                                                           | W    | 6    | 10          |               | 7    | 10          |               | 6    | 8P          |
| #1600                                                                     | N    | 9.5  | 10          |               | 9.5  | 10          |               | 9.5  | 10          |
| Phila.                                                                    | S    | 9.5  | 10          |               | 9.5  | 10          |               | 9.5  | 10          |
| 3 yrs.                                                                    | E    | 9.5  | 10          |               | 9.5  | 10          |               | 9.5  | 10          |
|                                                                           | W    | 7.5  | 10          |               | 8.5  | 10          |               | 8.5  | 10          |
| #1606                                                                     | N    | 6    | 10          |               | 6    | 10          |               | 6    | 10          |
| Atlanta                                                                   | S    | 7    | 9CR         |               | 7    | 8CR&F       |               | 7    | 8CR&F       |
| 2-3/4 yrs.                                                                | E    | -    | -           | Paint Omitted | 6    | 8CR&F       |               | 6    | 7CR&F       |
|                                                                           | W    | 6    | 10          |               | 6    | 10          |               | 6    | 10          |
| #1448                                                                     | N    | 8M   | 10          |               | 8M   | 10          |               | 6M   | 10          |
| Fla.                                                                      | S    | 8M   | 6F          |               | 8M   | 7F          |               | 6M   | 6F&CH       |
| 2-3/4 yrs.                                                                | E    | -    | -           | No test area  | -    | -           | No test area  | -    | -           |
|                                                                           | W    | 8M   | 8F          |               | 8M   | 8F          |               | 6M   | 6F          |
| #1484                                                                     | N    | 8M   | 8CR         |               | 9M   | 9CR         |               | 4M   | 7F          |
| Fla.                                                                      | S    | -    | -           | Repaint Stage | -    | -           | Repaint Stage | -    | -           |
| 2-3/4 yrs.                                                                | E    | 10   | 4F          |               | 10   | 4F          |               | 10   | 2F          |
|                                                                           | W    | 8M   | 8F&CR       |               | 8M   | 8F&CR       |               | 4M   | 4F          |

TABLE I-C MALEIC MODIFIED OILS IN OUTSIDE WHITE  
1951 SERIES HOUSE TESTS GROUP III - ALL TWO COATS

| P-301-U-4084 (Soya Oil) |      |      |                | P-301-U-4086 (Linseed Oil) |      |                |                   | P-301-U- |                |
|-------------------------|------|------|----------------|----------------------------|------|----------------|-------------------|----------|----------------|
| Ft#                     | Side | Dirt | Film<br>Integ. | Remarks                    | Dirt | Film<br>Integ. | Remarks           | Dirt     | Film<br>Integ. |
| #1732                   | N    | 8M   | 10             |                            | 8M   | 10             |                   | 8M       | 10             |
| Miami                   | S    | 10   | 10             |                            | 10   | 10             |                   | 10       | 10             |
| 1-1/4 yrs.              | E    | 10   | 10             |                            | 10   | 10             |                   | 10       | 10             |
|                         | W    | 8    | 10             | Shaded area                | 8    | 10             | Shaded area       | 8        | 10             |
| #1733                   | N    | 7M*  | 10             |                            | 4M** | 10             |                   | 7M*/4M** | 10             |
| Miami                   | S    | 9    | 10             |                            | 9    | 7F&CR          |                   | 9        | 7F&CR          |
| 1-1/3 yrs.              | E    | 8    | 10             |                            | 8    | 9.5CR          |                   | 8        | 9.5CR          |
|                         | W    | 8M   | 10             |                            | 8M   | 9F             | Local             | 8M       | 9F             |
| #1734                   | N    | -    | -              | Not comparable             | 9M   | 10             |                   | 9M       | 10             |
| Miami                   | S    | 9.5  | 10             |                            | 9.5  | 10             |                   | 9.5      | 10             |
| 1-1/4 yrs.              | E    | 9M   | 10             |                            | -    | -              | Not comparable    | 9M       | 10             |
|                         | W    | 9M   | 10             |                            | 9M   | 10             |                   | 9M       | 10             |
| #1742                   | N    | -    | -              | Not comparable             | -    | -              |                   | -        | -              |
| Atlanta                 | S    | -    | -              | Not comparable             | -    | -              |                   | -        | -              |
| 1-1/3 yrs.              | E    | 7    | 10             |                            | 6    | 10             | Shaded area       | 7        | 10             |
|                         | W    | 8    | 10             |                            | 7    | 10             |                   | 6        | 10             |
| #1759                   | N    | 7    | 10             |                            | 8    | 10             |                   | 8        | 10             |
| Canyon                  | S    | 10   | 10             |                            | 10   | 10             | Flaking over door | 10       | 10             |
| 1 yr. 4 mos.            | E    | 9    | 9CR            |                            | 9    | 8.5CR          | 8.5CR             | 9        | 9CR            |
|                         | W    | 9    | 10             |                            | 9    | 10             |                   | 9        | 10             |
| #1746                   | N    | 8    | 10             |                            | 8    | 10             |                   | 8        | 10             |
| Phila.                  | S    | -    | -              | Not Comparable             | -    | -              |                   | -        | -              |
| 1 yr. 3 mos.            | E    | 9    | 10             |                            | 9    | 10             |                   | 9        | 10             |
|                         | W    | 8    | 8              | Local Peeling              | 8    | 10             |                   | 8        | 10             |
| #1753                   | NE   | 7    | -              | Not comparable             | 7    | 10             |                   | 7        | 10             |
| Phila.                  | SE   | 9    | 2              | Local peeling              | 9    | 2              | Local peeling     | 9        | 10             |
| 1-1/2 yrs.              | SW   | 9    | 10             |                            | 9    | 10             |                   | 9        | 10             |
|                         | NW   | 7    | 10             |                            | 7    | 10             |                   | 7        | 10             |
| #1705                   | N    | 8    | 10             |                            | 8    | 10             |                   | 8        | 10             |
| Colo.                   | S    | -    | -              |                            | -    | -              |                   | 9        | 10             |
| 1-1/2 yrs.              | E    | 7    | 10             |                            | 7    | 10             |                   | 7        | 10             |
|                         | W    | 8    | 10             |                            | 8    | 10             |                   | 8        | 10             |
| #1706                   | N    | 9    | 10             |                            | 9    | 10             |                   | 9        | 10             |
| Colo.                   | S    | -    | -              |                            | -    | -              |                   | 9        | 10             |
| 1-1/2 yrs.              | E    | 9    | 10             |                            | 9    | 10             |                   | 9        | 10             |
|                         | W    | 8    | 10             |                            | 8    | 10             |                   | 8        | 10             |

TABLE II-A SOYA P.E. OIL IN OUTSIDE WHITE  
1948 SERIES HOUSE TEST

| F301-P77879 (Prewar #40) 2-coats |      |      |                | F301-R14755 (Soya PE) |      |                |            |
|----------------------------------|------|------|----------------|-----------------------|------|----------------|------------|
| PN#                              | Side | Dirt | Film<br>Integ. | Remarks               | Dirt | Film<br>Integ. | Remarks    |
| #1189                            | N    | 9.0  | 10             |                       | 9.0  | 10             |            |
| Flint                            | S    | 8.0  | 8. F           |                       | 8.0  | 9.5CR          |            |
| 4-1/2 yrs.                       | E    | 9.0  | 10             |                       | 9.0  | 10             |            |
|                                  | W    | -    | -              | Repainted             | -    | -              | Repainted  |
| #1153                            | N    | 7.0  | 10             |                       | 7.0  | 10             |            |
| Phila.                           | S    | 9.0  | 10             |                       | 9.0  | 10             |            |
| 4-1/2 yrs.                       | E    | 8.0  | 10             |                       | 8.0  | 10             |            |
|                                  | W    | 6.0  | 10             |                       | 7.0  | 10             |            |
| #1200                            | N    | 9.5  | 6. B           | Heavy chalking        | 9.5  | 6. B           | Heavy chal |
| Phila.                           | S    | 9.5  | 7. F           | Heavy chalking        | 9.5  | 10             | Heavy chal |
| 4-1/2 yrs.                       | E    | 9.5  | 7. P&F         |                       | 9.5  | 10             |            |
|                                  | W    | -    | -              | No test area          | -    | -              | No test ar |



TABLE II-B SOYA P.E. OIL IN OUTSIDE WHITE  
1949 SERIES HOUSE TESTS - ALL TWO COAT SYSTEMS

| F301-R40627 (301-864) 2 coats |      |      |                |                                           | F301-R40609 Soya PE over |                |                |  |  |
|-------------------------------|------|------|----------------|-------------------------------------------|--------------------------|----------------|----------------|--|--|
| Flt#                          | Side | Dirt | Film<br>Integ. | Remarks                                   | Dirt                     | Film<br>Integ. | Remarks        |  |  |
| #1327                         | N    | 8.0  | 8.0            | Sl flaking on roof rafter<br>bottom board | 8.0                      | 8.0            | Sl flaking     |  |  |
| Fla.                          | S    | 10   | 8.0CR          |                                           | 10                       | 8.0CR          | Bottom board   |  |  |
| 3-1/2 yrs.                    | E    | 8.5  | 10             |                                           | 8.5                      | 10             |                |  |  |
|                               | W    | 8.0  | 9.5CR          |                                           | 8.0                      | 10             |                |  |  |
| #1314                         | N    | 6.0  | 8.0F           | Localized                                 | 6.0                      | 10             |                |  |  |
| Atlanta                       | S    | 7.0  | 10             |                                           | 7.0                      | 10             |                |  |  |
| 3-1/2 yrs.                    | E    | -    | -              | Not comparable                            | -                        | -              | Not comparable |  |  |
|                               | W    | 7.0  | 8.0F           |                                           | 7.0                      | 8.0F           |                |  |  |
| #1291                         | N    | 7.0  | 8.0B&P         |                                           | 6.5                      | 8.0B&P         |                |  |  |
| Flint                         | S    | 7.5  | 7.0B&P         |                                           | 8.0                      | 8.0F           |                |  |  |
| 3-1/2 yrs.                    | E    | 6.0  | 7.0B&P         |                                           | 6.0                      | 8.0F           |                |  |  |
|                               | W    | -    | -              | Paints Mixed                              |                          |                |                |  |  |
| #1309                         | N    | 8.0  | 8.0F           | Localized                                 | 8.0                      | 8.0F           | Localized      |  |  |
| Canyon                        | S    | 9.0  | 10             |                                           | 9.0                      | 10             |                |  |  |
| 3-1/3 yrs.                    | E    | 7.0  | 9.5CR          |                                           | 6.0                      | 9.5CR          |                |  |  |
|                               | W    | 7.0  | 10             |                                           | 8.0                      | 10             |                |  |  |
| #1284                         | N    | 8.0  |                |                                           | 7.0                      |                | #4 under E     |  |  |
| Phila.                        | S    | 9.0  |                | #2 peeling under eaves                    | 9.0                      |                | #4 peeling     |  |  |
| 3-1/2 yrs.                    | E    | 7.0  |                | #4 peeling gen. (due to<br>leak)          | 7.0                      |                | #4 peeling     |  |  |
|                               | W    | 7.0  |                |                                           | 7.0                      |                | #4 peeling     |  |  |

TABLE II-C SOYA P.E. OIL IN OUTSIDE WHITE  
1949 SERIES HOUSE TESTS

| 301-864 (R40627) #40 O.W. - 2 cts. |      |       |                | P301-R40609 (Soya P.E.) |       |                |            |
|------------------------------------|------|-------|----------------|-------------------------|-------|----------------|------------|
| Flt#                               | Side | Dirt  | Film<br>Integ. | Remarks                 | Dirt  | Film<br>Integ. | Remarks    |
| #1323                              | N    | 7M    | 10             |                         | 7M    | 10             |            |
| Fla.                               | S    | 9M    | 10             |                         | 9M    | 10             |            |
| 3-1/4 yrs.                         | E    | 7M    | 10             |                         | 7M    | 10             |            |
|                                    | W    | 10    | 10             |                         | 10    | 10             |            |
| #1329                              | N    | 9M    | 9F             | Local                   | 9M    | 8F             | Local      |
| Fla.                               | S    | 10    | 8F             |                         | 10    | 8F             |            |
| 3-1/4 yrs.                         | E    | 10    | 8F             |                         | 10    | 9CR            |            |
|                                    | W    | 10    | 8F             | Local, SI yellow        | 10    | 8F             | Local, SI  |
| #1322                              | N    | 6M    | 10             |                         | 8M    | 10             |            |
| Fla.                               | S    | -     | -              | No test                 | -     | -              | No test    |
| 3-1/4 yrs.                         | E    | 8M    | 10             |                         | 8M    | 10             |            |
|                                    | W    | 10    | 10             |                         | 10    | 10             |            |
| #1353                              | N    | 9     | 8F             |                         | 8     | 9.5CR          |            |
| Atlanta                            | S    | 9     | 9CR&CH         | Local                   | 9     | 9CH&CR         | Local      |
| 3-1/2 yrs.                         | E    | 9     | 10             |                         | 9     | 10             |            |
|                                    | W    | -     | -              | Under cover             |       |                |            |
| #1331                              | N    | 4     | 10             |                         | 4     | 10             |            |
| Atlanta                            | S    | 9     | 10             |                         | 9     | 10             |            |
| 3-1/2 yrs.                         | E    | 4     | 10             |                         | 4     | 10             |            |
|                                    | W    | 8(M)? | 10             |                         | 8(M)? | 10             |            |
| #1280                              | N    | 7     | 10             | SI chalk                | 7     | 10             | SI chalk   |
| Colo.                              | S    | 8     | 10             |                         | 8     | 10             |            |
| 3-1/2 yrs.                         | E    | 7.5   | 10             | Cons chalk              | 8     | 10             | Heavy chal |
|                                    | W    | -     | -              | No test                 | -     | -              |            |
| #1279                              | N    | 8     | 10             | SI chalk                | 8     | 9.0CR          | SI chalk   |
| Colo.                              | S    | 8     | 10             | SI chalk                | 8     | 10             | SI chalk   |
| 3-1/2 yrs.                         | E    | -     | -              | No test                 | -     | -              | No test    |
|                                    | W    | -     | -              | No test                 | -     | -              | No test    |

TABLE II-C CONT'D

| Film                           | Side | Dirt | Film<br>Integ. | Remarks          | Dirt | Film<br>Integ. | Remarks     |
|--------------------------------|------|------|----------------|------------------|------|----------------|-------------|
| #1302<br>Boston<br>2 yrs.      | N    | 7    | 10             |                  | 7    | 10             |             |
|                                | S    | 8    | 10             | Local Blistering | 8    | 10             | Local Blis  |
|                                | E    | -    | -              | No test          | -    | -              | No test     |
|                                | W    | 4    | 10             | Under Porch      | 4    | 10             | Under poro  |
| #1356<br>Boston<br>3 yrs.      | N    | 4    | 4CR            |                  | 4    | 4CR            |             |
|                                | S    | 4    | 4CR            |                  | 5    | 4CR            |             |
|                                | E    | -    | -              | No test          | -    | -              | No test     |
|                                | W    | 4*   | 4CR            | *Under Roof      | 4*   | 4CR            | *Under Roof |
|                                | W    | 6**  |                | **Lower area     | 6**  |                | **Lower ar  |
| #1332<br>3-1/2 yrs.<br>Atlanta | N    | 9    | 8F&CR          |                  | 9    | 8F             |             |
|                                | S    | 10   | 9F&CR          |                  | 10   | 9F             |             |
|                                | E    | 10   | 7F             |                  | 10   | 7F             |             |
|                                | W    | 10   | 7F             | Local            | 10   | 9F             | Local       |

TABLE III-A CALCIUM CARBONATE EXTENDER IN HOUSE PAINT LT. CREAM  
1948 SERIES HOUSE TESTS - ALL TWO COAT SYSTEMS

| P301-R-14712 (301-801) |      |      |                |                 | P301-R14705 (50% CaCO <sub>3</sub> ) |                |         |      |                | P301-R1470 |                |
|------------------------|------|------|----------------|-----------------|--------------------------------------|----------------|---------|------|----------------|------------|----------------|
| FT#                    | Side | Dirt | Film<br>Integ. | Remarks         | Dirt                                 | Film<br>Integ. | Remarks | Dirt | Film<br>Integ. | Dirt       | Film<br>Integ. |
| 1132-A                 | N    | 6    | 10             |                 | 6                                    | 10             |         |      |                |            |                |
| Color.                 | S    | 7    | 8P             |                 | 7                                    | 8P             |         |      |                |            |                |
| 4-1/2 yrs.             | E    | 7.5  | 10             |                 | 7.5                                  | 10             |         |      |                |            |                |
|                        | W    | 7    | 10             |                 | 7                                    | 10             |         |      |                |            |                |
| 1132-B                 | N    | 6    | 9.5CR          |                 | 6                                    | 9.5CR          |         |      |                |            |                |
| Color.                 | S    | 8    | 9.0            | Cons. fading    | 8                                    | 7.5CR          |         |      |                |            |                |
| 4-1/2 yrs.             | E    | 7.5  | 7CR            |                 | 7.5                                  | 7. CR          |         |      |                |            |                |
|                        | W    | 7    | 10             |                 | 7                                    | 10             |         |      |                |            |                |
| 1182                   | N    | 6    | 10             | Cons. fading    |                                      |                |         | 9    | 10             |            |                |
| Phila.                 | S    | -    | -              | No test         |                                      |                |         | -    | -              |            |                |
| 4-1/2 yrs.             | E    | 6    | 10             | 8M              |                                      |                |         | 9    | 10             |            |                |
|                        | W    | 7    | 10             | 6M Cons. fading |                                      |                |         | 9    | 10             |            |                |

TABLE III-B CALCIUM CARBONATE EXTENDER IN #40 OUTSIDE WHITE

| P301-P77879 (Prewar #40) 2 cts. |      |      |                |          | P301-R14707 (50% CaCO <sub>3</sub> ) |                |            |
|---------------------------------|------|------|----------------|----------|--------------------------------------|----------------|------------|
| Film                            | Side | Dirt | Film<br>Integ. | Remarks  | Dirt                                 | Film<br>Integ. | Remarks    |
| 1193                            |      |      |                |          |                                      |                |            |
| Colo.                           | N    | -    | -              | No test  | 8                                    | 9CR            | Cons. chal |
| 4-1/2 yrs.                      | S    | 8    | 10             | S1 chalk | 8                                    | 10             | S1 chalk   |
|                                 | E    | 7.5  | 8F             | S1 chalk | 7.5                                  | 8F             | S1 chalk   |
|                                 | W    | 8    | 10             | S1 chalk | 8                                    | 10             | S1 chalk   |

TABLE IV-A LOW LEAD HOUSE PRIMER  
 1948 HOUSE TEST SERIES-3COAT SYSTEM

301-864 (self-primed) F347-R14714 (Low Lead)

347-817 (House Pt. Pri

| Film       | Side | Film.<br>Integ. | Remarks   | Film<br>Integ. | Remarks   | Film<br>Integ. | Remarks |
|------------|------|-----------------|-----------|----------------|-----------|----------------|---------|
| #1173      | N    | -               | No test   | 9F             |           | 9F             |         |
| Atlanta    | S    | -               | Repainted | -              | Repainted | -              | Repair  |
| 3-1/2 yrs. | E    | -               | Repainted | -              | Repainted | -              | Repair  |
|            | W    | 10              |           | 9F             |           | 9F             |         |

P347-R40605 (45x Pigment)

TABLE IV-B

LOW LEAD HOUSE PRIMER  
1949 HOUSE TEST SERIES - THREE COAT SERIES  
P347-R-14714 (Low Pb)

347-817 (I

| FT#        | Side | Film Integrity                   | Remarks   | Film Integrity                     | Remarks        | Film Integrity |
|------------|------|----------------------------------|-----------|------------------------------------|----------------|----------------|
| #1335      | N    | 10                               |           | 10                                 |                |                |
| Atlanta    | S    | 4 Flaking                        |           | 8 Flaking                          |                | -              |
| 3-1/2 yrs. | E    | 9 Flaking (Bad Nailhead Rusting) |           | 9 Blistering Locally, bad nailhead |                | -              |
|            | W    | 6 Flaking                        |           | 6 Flaking & bad nailhead rusting   |                | -              |
| #1340      | N    | 10                               |           | 9F                                 |                | 9F             |
| Atlanta    | S    | 7F                               |           | 8F                                 |                | 7F             |
| 3-1/2 yrs. | E    | 7F                               |           | 9F                                 | Not comparable | 7F             |
|            | W    | 8F                               |           | 8F                                 |                | 8F             |
| #1286      | N    | 9F                               | Repainted | 10                                 |                | 9F             |
| Atlanta    | S    | -                                | Repainted | -                                  | Repainted      | -              |
| 3-1/2 yrs. | E    | 9F                               |           | 9F                                 |                | 9F             |
|            | W    | -                                | Repainted | -                                  | Repainted      | -              |
| #1359      | N    | 7CR                              | Local     | 8.5CR                              | Local          | 8CR            |
| Canyon     | S    | 7F                               | Local     | 7F                                 | Local          | 7F             |
| 3-1/2 yrs. | E    | -                                | No test   | -                                  | No test        | -              |
|            | W    | 8.5 CR                           | Local     | -                                  | No test        | 9.0CR          |

TABLE V-A HIGH-HIDING WHITE HOUSE PAINT  
1949 SERIES HOUSE TESTS - 2 COAT SYSTEM

(R40627) 301-864 O.W. 2 cts.

(R40632) 301-754 H1-H1

| Test #     | Side | Dirt | Film<br>Integ. | Remarks          | Dirt | Film<br>Integ. | Remarks          |
|------------|------|------|----------------|------------------|------|----------------|------------------|
| #1316      |      |      |                |                  |      |                |                  |
| 3-1/2 yrs. | N    | -    | -              | New construction | -    | -              | New construction |
| Fla.       | S    | 10   | 10             | Cons. yellowing  | 10   | 10             | Cons. yellowing  |
|            | E    | 8M   | 10             | Sl "             | 8M   | 10             | Sl "             |
|            | W    | 7M   | 9CR            | Sl "             | 7M   | 10             | Sl "             |
| #1318      | N    | 8M   | 10             |                  | 8M   | 10             |                  |
| Fla.       | S    | -    | -              | No test          | -    | -              | No test          |
| 3 yrs.     | E    | 8M   | 10             | Under porch      | 9M   | 10             | V.sl yellowing   |
|            | W    | 8M   | 4F             | V.sl yellowing   | 9    | 8F             | Cons.            |
| #1310      | N    | 6M   | 10             |                  | 6M   | 10             |                  |
| Atlanta    | S    | 9M   | 10             |                  | 9M   | 10             |                  |
| 3-1/2 yrs. | E    | 5M   | 10             |                  | 5M   | 10             |                  |
|            | W    | 9    | -              | Not comparable   | 9    | -              | Not comparable   |
| #1277      | N    | 8    | 10             |                  | 8    | 10             |                  |
| Colo.      | S    | 7.0  | 10             | Sl. chalk        | 7    | 10             | Sl. chalk        |
| 3-1/2 yrs. | E    | -    | -              | Not comparable   | -    | -              | Not comparable   |
|            | W    | -    | -              | No test          | -    | -              | No test          |
| #1298      | N    | 7    | 10             | Cons. chalk      | 7    | 10             | Cons. chalk      |
| Flint      | S    | 9    | 8B             |                  | 9    | 7B             |                  |
| 3-1/2 yrs. | E    | 9    | 10             |                  | 9    | 10             |                  |
|            | W    | 9    | 10             | Cons. chalk      | 9    | 10             | Cons. chalk      |
| #1299      | N    | 9    | 6              | Cons. chalk      | 9    | 8              | Cons. chalk      |
| Flint      | S    | 9    | 6F             | Heavy chalk      | 9    | 6F             | Heavy chalk      |
| 3-1/2 yrs. | E    | 9    | 6F             |                  | 9    | 7F             |                  |
|            | W    | 9    | 6F             | Heavy chalk      | 9    | 6F             | Heavy chalk      |
| #1332      | N    | 9    | 8F&CR          |                  | 9    | 8F             |                  |
| Atlanta    | S    | 10   | 9F&CR          |                  | 10   | 9F             |                  |
| 3-1/2 yrs. | E    | 10   | 7F             |                  | 10   | 7F             |                  |
|            | W    | 10   | 7F             | Local            | 10   | 7F             | Local            |



TABLE V-B HIGH-HIDING WHITE HOUSE PAINT  
1951 SERIES HOUSE TESTS- 2 CTS. VS 1 CT.

| P301-U-4088 (301-885) 2 coats  |      |      |             | P301-U-4089 (301-754) |      |             |         |
|--------------------------------|------|------|-------------|-----------------------|------|-------------|---------|
| Site                           | Side | Dirt | Film Integ. | Remarks               | Dirt | Film Integ. | Remarks |
| #1741<br>1-1/3 yrs.<br>Atlanta | N    | 6    | 10          |                       | 6    | 10          |         |
|                                | S    | 7    | 10          |                       | 7    | 10          |         |
|                                | E    | 8    | 10          |                       | 9    | 10          |         |
|                                | W    | 7    | 10          |                       | 6    | 10          |         |
| #1744<br>Atlanta<br>1-1/3 yrs. | N    | 6    | 10          |                       | 6    | 10          |         |
|                                | S    | -    | -           | Not comparable        | -    | -           | Not com |
|                                | E    | 8    | 10          |                       | 8    | 10          |         |
|                                | W    | 6    | 10          |                       | 7    | 10          | SCR Loc |
| #1729<br>Miami<br>1-1/4 yrs.   | N    | 9    | 10          |                       | 9    | 10          |         |
|                                | S    | 10   | 10          |                       | 10   | 10          |         |
|                                | E    | 10   | 10          |                       | 10   | 10          |         |
|                                | W    | -    | -           | Not comparable        | -    | -           | Not com |
| #1731<br>Hialeah<br>1 yr.      | N    | 8M   | 9CR         |                       | 8M   | 9CR         |         |
|                                | S    | 9    | 10          |                       | 9    | 10          |         |
|                                | E    | 10   | 10          |                       | 10   | 10          |         |
|                                | W    | 9M   | 7F          |                       | 9M   | 7F          |         |
| #1758<br>Canyon<br>1 yr.       | N    | 6    | 10          |                       | 8    | 10          |         |
|                                | S    | 9    | 10          |                       | 9    | 10          |         |
|                                | E    | -    | -           | No test               | -    | -           | No test |
|                                | W    | 8    | 10          |                       | 7    | 10          |         |
| #1722<br>Canyon<br>1 yr.       | N    | 8    | 10          |                       | 8    | 10          |         |
|                                | S    | 9    | 10          |                       | 9    | 10          |         |
|                                | E    | 9    | 10          |                       | 8    | 10          |         |
|                                | W    | 8    | 10          |                       | 8    | 10          |         |
| #1745<br>Phila.<br>1 yr.       | N    | 7    | 10          |                       | 7    | 10          |         |
|                                | S    | 9    | 6Blisters   | (Local)               | 9    | 6Blisters   | (L      |
|                                | E    | 7    | 10          |                       | 9    | 10          |         |
|                                | W    | 8    | 10          |                       | 8    | 10          |         |

TABLE V-B CONT'D

| FT#        | Side | Dirt | Film<br>Integ. | Remarks                                                  | Dirt | Film<br>Integ. | R       |
|------------|------|------|----------------|----------------------------------------------------------|------|----------------|---------|
| #1738      | N    | -    | -              | No test                                                  | -    | -              | No test |
| Phila.     | S    | -    | -              | No test                                                  | -    | -              | No test |
| 10 mos.    | E    | 9    | 10             | (Note: These two results<br>may have been re-<br>versed) | 8    | 10             |         |
|            | W    | 8    | 10             |                                                          | 9    | 10             |         |
| #1704      | N    | 8    | 10             |                                                          | 8    | 10             |         |
| Colo.      | S    | 8    | 10             |                                                          | 7    | 10             |         |
| 1-1/2 yrs. | E    | 8    | 10             |                                                          | 8    | 10             |         |
|            | W    | -    | -              | No test                                                  | -    | -              | No test |
| #1703      | N    | 7    | 10             |                                                          | 7    | 10             |         |
| Colo.      | S    | 7    | 10             |                                                          | 7    | 10             |         |
| 1-1/2 yrs. | E    | 8    | 10             |                                                          | 9    | 10             |         |
|            | W    | 8    | 10             |                                                          | 8    | 10             |         |

TABLE VI ALKYD PRIMER  
1949 SERIES HOUSE TESTS-PRIMER TEST

P-67-R14736 -- 1 ct. (alkyd primer)

347-817 - 1 ct. - (Ho

| Flt#          | Side | Film<br>Integ. | Remarks        | Film Integrity |     |
|---------------|------|----------------|----------------|----------------|-----|
| #1336         | N    | 10             | Repainted      | 10             |     |
| Atlanta       | S    | -              | No test        | -              | Not |
| 3-1/2 yrs.    | E    | 10             | Repainted      | 10             |     |
|               | W    | 10             | REpainted      | 10             |     |
| #1370         | N    | 10             |                | 10             |     |
| Florida       | S    | 7F             |                | 7F             |     |
| 3-1/4 yrs.    | E    | 8F             |                | 8F             |     |
|               | W    | 6F             |                | 4F             |     |
| #1373 (house) | N    | -              | Not comparable | -              | Not |
| Canyon        | S    | -              | Not comparable | -              | Not |
| 3 yrs.        | E    | 9.5CR          |                | 9.5CR          |     |
|               | W    | 10             |                | 8.0CR          |     |