

TABLE 92

5-MI Test Bomb Thermal Stability Data at Various Temperatures for  
Fresh and Aged Blends of Diphenyl-<sup>14</sup>C in Type A Jet Fuel<sup>1</sup>

|                                                | Before storage |         |         |         | After 26 weeks at 54.4 ° C (130 ° F) |                      |                      |                      |
|------------------------------------------------|----------------|---------|---------|---------|--------------------------------------|----------------------|----------------------|----------------------|
|                                                | Run 1          | Run 2   | Run 3   | Run 4   | Run 1                                | Run 2                | Run 3                | Run 4                |
| Average percent LT before testing <sup>2</sup> | 96.8           | ---     | ---     | ---     | 7.5                                  | ---                  | ---                  | ---                  |
| Final test temperature, °F                     | Room           | 356     | 379     | 399     | Room                                 | 343                  | 372                  | 390                  |
| Average percent LT after test <sup>2</sup>     | 95.8           | 92.1    | 73.2    | 37.0    | 7.5                                  | 8.5                  | 8.0                  | 6.0                  |
| Δ LT <sup>3</sup>                              | ---            | 4.7     | 23.6    | 59.8    | ---                                  | ---                  | ---                  | 1.5                  |
| Adherent deposits: dpm <sup>4</sup>            | 0              | 0       | 0       | 0       | 0                                    | 0                    | 0                    | 0                    |
| Filterable deposits: dpm                       | 787            | 713     | 678     | 558     | 748 <sup>5</sup>                     | 736 <sup>5</sup>     | 913 <sup>5</sup>     | 1000 <sup>5</sup>    |
| μC                                             | 0.00035        | 0.00032 | 0.00031 | 0.00025 | 528 <sup>6</sup>                     | 408 <sup>6</sup>     | 550 <sup>6</sup>     | 555 <sup>6</sup>     |
| Pct                                            | 0.18           | 0.16    | 0.15    | 0.12    | 0.00034 <sup>5</sup>                 | 0.00033 <sup>5</sup> | 0.00041 <sup>5</sup> | 0.00045 <sup>5</sup> |
| Total deposits: μC                             | 0.00035        | 0.00032 | 0.00031 | 0.00025 | 0.00024 <sup>6</sup>                 | 0.00018 <sup>6</sup> | 0.00025 <sup>6</sup> | 0.00025 <sup>6</sup> |
| Pct                                            | 0.18           | 0.16    | 0.15    | 0.12    | 0.17 <sup>5</sup>                    | 0.17 <sup>5</sup>    | 0.21 <sup>5</sup>    | 0.23 <sup>5</sup>    |
|                                                |                |         |         |         | 0.12 <sup>6</sup>                    | 0.09 <sup>6</sup>    | 0.13 <sup>6</sup>    | 0.13 <sup>6</sup>    |
| Total deposits: μC                             | 0.00035        | 0.00032 | 0.00031 | 0.00025 | 0.00057                              | 0.00052              | 0.00066              | 0.00070              |
| Pct                                            | 0.18           | 0.16    | 0.15    | 0.12    | 0.29                                 | 0.26                 | 0.34                 | 0.36                 |

<sup>1</sup> Specific Activity of blend: 0.040 μ C/ml; Total activity of 5 ml: 0.2020 μ C.

<sup>2</sup> Light transmission at 350 mμ.

<sup>3</sup> Light transmission loss.

<sup>4</sup> dpm: disintegrations per minute.

<sup>5</sup> Required prefiltering through 0.45-μ filter.

<sup>6</sup> Filtrate from 0.45-μ filter passed through 10-mμ filter.

Taken from Reference No. 137

TABLE 93

5-Ml Test Bomb Thermal Stability Data at Various Temperatures for  
Fresh and Aged Blends of DI-t-butyl-<sup>14</sup>C-p-cresol in Type A Jet Fuel<sup>1</sup>

|                                                | Before storage |         |         |         | After 26 weeks at 54.4 °C (130 °F) |                      |                      |                      |
|------------------------------------------------|----------------|---------|---------|---------|------------------------------------|----------------------|----------------------|----------------------|
|                                                | Run 1          | Run 2   | Run 3   | Run 4   | Run 1                              | Run 2                | Run 3                | Run 4                |
| Average percent LT before testing <sup>2</sup> | 97.1           | ---     | ---     | ---     | 5.8                                | ---                  | ---                  | ---                  |
| Final test temperature, °F                     | Room           | 355     | 376     | 395     | Room                               | 353                  | 367                  | 393                  |
| Average percent LT after test <sup>2</sup>     | 96.8           | 93.5    | 79.2    | 62.0    | 5.8                                | 7.2                  | 7.2                  | 5.0                  |
| Δ LT <sup>3</sup>                              | ---            | 3.6     | 17.9    | 35.1    | ---                                | +1.4                 | +1.4                 | -0.8                 |
| Adherent deposits:                             |                |         |         |         |                                    |                      |                      |                      |
| dpm <sup>4</sup>                               | 15             | 10      | 75      | 130     | 305                                | 215                  | 285                  | 290                  |
| μC                                             | 0.00001        | 0.00000 | 0.00003 | 0.00006 | 0.00014                            | 0.00010              | 0.00013              | 0.00013              |
| Pct                                            | ---            | ---     | 0.02    | 0.03    | 0.06                               | 0.05                 | 0.06                 | 0.06                 |
| Filterable deposits:                           |                |         |         |         |                                    |                      |                      |                      |
| dpm                                            | 695            | 737     | 1768    | 2718    | 3111 <sup>5</sup>                  | 3030 <sup>5</sup>    | 5599 <sup>5</sup>    | 6186 <sup>5</sup>    |
| μC                                             | ---            | ---     | ---     | ---     | 4355 <sup>6</sup>                  | 4942 <sup>6</sup>    | 5599 <sup>6</sup>    | 5930 <sup>6</sup>    |
| Pct                                            | 0.00031        | 0.00033 | 0.00080 | 0.00122 | 0.00140 <sup>5</sup>               | 0.00137 <sup>5</sup> | 0.00252 <sup>5</sup> | 0.00279 <sup>5</sup> |
|                                                | 0.15           | 0.16    | 0.38    | 0.58    | 0.67 <sup>6</sup>                  | 0.65 <sup>6</sup>    | 1.20 <sup>6</sup>    | 1.33 <sup>6</sup>    |
|                                                | ---            | ---     | ---     | ---     | 0.94 <sup>6</sup>                  | 1.06 <sup>6</sup>    | 1.20 <sup>6</sup>    | 1.28 <sup>6</sup>    |
| Total deposits:                                |                |         |         |         |                                    |                      |                      |                      |
| μC                                             | 0.00032        | 0.00033 | 0.00083 | 0.00128 | 0.00350                            | 0.00369              | 0.00517              | 0.00559              |
| Pct                                            | 0.15           | 0.16    | 0.40    | 0.61    | 1.67                               | 1.76                 | 2.46                 | 2.67                 |

<sup>1</sup> Specific activity of blend: 0.0423 μC / ml; Total activity of 5 ml: 0.2115 μC

<sup>2</sup> Light transmission at 350 mμ.

<sup>3</sup> Light transmission loss.

<sup>4</sup> dpm: disintegrations per minute

<sup>5</sup> Required prefiltering through 0.45-μ filter.

<sup>6</sup> Filtrate from 0.45-μ filter passed through 10-mμ filter.

Taken from Reference No. 137

# TABLE 94

## 5-Ml Test Bomb Thermal Stability Data at Various Temperatures for Fresh and Aged Blends of Dodecene-1-<sup>14</sup>C in Type A Jet Fuel<sup>1</sup>

|                                             | Before storage |         |         |         | After 26 weeks at 54.4 °C (130 °F) |                      |                      |                      |
|---------------------------------------------|----------------|---------|---------|---------|------------------------------------|----------------------|----------------------|----------------------|
|                                             | Run 1          | Run 2   | Run 3   | Run 4   | Run 1                              | Run 2                | Run 3                | Run 4                |
| Average percent LT before test <sup>2</sup> | 97.1           | ---     | ---     | ---     | 7.0                                | ---                  | ---                  | ---                  |
| Final test temperature, °F                  | Room           | 370     | 387     | 403     | Room                               | 362                  | 381                  | 412                  |
| Average percent LT after test <sup>2</sup>  | 97.0           | 88.8    | 82.0    | 19.2    | 7.0                                | 7.8                  | 6.0                  | 7.0                  |
| Δ LT <sup>3</sup>                           | ---            | 8.3     | 15.1    | 77.9    | ---                                | ---                  | ---                  | ---                  |
| Adherent deposits: dpm <sup>4</sup>         | 0              | 0       | 15      | 0       | 0                                  | 0                    | 35                   | 0                    |
| μC                                          | ---            | ---     | 0.00001 | ---     | ---                                | ---                  | 0.00002              | ---                  |
| Pcl                                         | ---            | ---     | 0.00    | ---     | ---                                | ---                  | 0.03                 | ---                  |
| Filterable deposits: dpm                    | 69             | 125     | 111     | 97      | 214 <sup>5</sup>                   | 194 <sup>5</sup>     | 218 <sup>5</sup>     | 212 <sup>5</sup>     |
| μC                                          | 0.00003        | 0.00006 | 0.00005 | 0.00004 | 87 <sup>6</sup>                    | 73 <sup>6</sup>      | 67 <sup>6</sup>      | 47 <sup>6</sup>      |
| Pcl                                         | 0.06           | 0.11    | 0.10    | 0.09    | 0.00010 <sup>5</sup>               | 0.00008 <sup>5</sup> | 0.00010 <sup>5</sup> | 0.00010 <sup>5</sup> |
| Total deposits: μC                          | 0.00003        | 0.00006 | 0.00006 | 0.00004 | 0.00004 <sup>6</sup>               | 0.00003 <sup>6</sup> | 0.00003 <sup>6</sup> | 0.00002 <sup>6</sup> |
| Pcl                                         | 0.06           | 0.11    | 0.10    | 0.09    | 0.19 <sup>5</sup>                  | 0.16 <sup>5</sup>    | 0.20 <sup>5</sup>    | 0.19 <sup>5</sup>    |
|                                             | ---            | ---     | ---     | ---     | 0.08 <sup>6</sup>                  | 0.06 <sup>6</sup>    | 0.06 <sup>6</sup>    | 0.04 <sup>6</sup>    |
| Total deposits: μC                          | 0.00003        | 0.00006 | 0.00006 | 0.00004 | 0.00014                            | 0.00012              | 0.00014              | 0.00012              |
| Pcl                                         | 0.06           | 0.11    | 0.11    | 0.09    | 0.27                               | 0.22                 | 0.29                 | 0.23                 |

<sup>1</sup> Specific activity of blend: 0.00987 μC / ml; Total activity of 5 ml: 0.04935 μC

<sup>2</sup> Light transmission at 350 mμ.

<sup>3</sup> Light transmission loss.

<sup>4</sup> dpm: disintegrations per minute

<sup>5</sup> Required prefiltering through 0.45-μ filter.

<sup>6</sup> Filtrate from 0.45-μ filter passed through 10-mμ filter.

Taken from Reference No. 137

### 5-MI Test Bomb Thermal Stability Data at Various Temperatures for Fresh and Aged Blends of Tetralin-<sup>14</sup>C in Type A Jet Fuel<sup>1</sup>

**Specific activity of blend: 0.0529  $\mu\text{C} / \text{ml}$ : Total activity of 5 ml: 0.2645  $\mu\text{C}$**

<sup>2</sup> Light transmission at 350 mμ.

### 3 Light transmission loss.

4 dom: disintegrations per minute.

5 Required prefiltering through 0.45- $\mu$  filter.

Filtrate from 0.45- $\mu$  filter passed through 10- $\mu$  filter.

Taken from Reference No. 137

TABLE 96

5-MI Test Bomb Thermal Stability Data at Various Temperatures for  
Fresh and Aged Blends of 2-methyl-<sup>14</sup>C-naphthalene in Type A Jet Fuel<sup>1</sup>

|                                                | Before storage |         |         |                      | After 26 weeks at 54.4 °C (130 °F) |                      |                      |                      |
|------------------------------------------------|----------------|---------|---------|----------------------|------------------------------------|----------------------|----------------------|----------------------|
|                                                | Run 1          | Run 2   | Run 3   | Run 4                | Run 1                              | Run 2                | Run 3                | Run 4                |
| Average percent LT before testing <sup>2</sup> | 97.6           | ---     | ---     | ---                  | 8.5                                | ---                  | ---                  | ---                  |
| Final test temperature, °F                     | Room           | 364     | 382     | 394                  | Room                               | 365                  | 381                  | 396                  |
| Average percent LT after test <sup>2</sup>     | 97.2           | 91.5    | 84.5    | 50.5                 | 8.5                                | 8.5                  | 7.0                  | 6.0                  |
| Δ LT <sup>3</sup>                              | ---            | 6.1     | 13.1    | 47.1                 | ---                                | ---                  | ---                  | ---                  |
| Adherent deposits: dpm <sup>4</sup>            | 0              | 0       | 0       | 0                    | 10                                 | 0                    | 65                   | 0                    |
| μg                                             | ---            | ---     | ---     | ---                  | 0.00000                            | ---                  | 0.00003              | ---                  |
| Pct                                            | ---            | ---     | ---     | ---                  | ---                                | ---                  | 0.02                 | ---                  |
| Filterable deposits: dpm                       | 459            | 647     | 396     | 894 <sup>5</sup>     | 695 <sup>5</sup>                   | 232 <sup>5</sup>     | 815 <sup>5</sup>     | 868 <sup>5</sup>     |
| μg                                             | ---            | ---     | ---     | 551 <sup>5</sup>     | 405 <sup>5</sup>                   | 494 <sup>5</sup>     | 506 <sup>5</sup>     | 789 <sup>5</sup>     |
| Pct                                            | 0.00021        | 0.00029 | 0.00018 | 0.00040 <sup>5</sup> | 0.00031 <sup>5</sup>               | 0.00019 <sup>5</sup> | 0.00037 <sup>5</sup> | 0.00039 <sup>5</sup> |
|                                                | ---            | ---     | ---     | 0.00025 <sup>5</sup> | 0.00018 <sup>5</sup>               | 0.00022 <sup>5</sup> | 0.00023 <sup>5</sup> | 0.00036 <sup>5</sup> |
|                                                | 0.12           | 0.18    | 0.11    | 0.24 <sup>5</sup>    | 0.18 <sup>5</sup>                  | 0.06 <sup>5</sup>    | 0.21 <sup>5</sup>    | 0.23 <sup>5</sup>    |
|                                                | ---            | ---     | ---     | 0.15 <sup>5</sup>    | 0.11 <sup>5</sup>                  | 0.13 <sup>5</sup>    | 0.13 <sup>5</sup>    | 0.21 <sup>5</sup>    |
| Total deposits: μg                             | 0.00021        | 0.00029 | 0.00018 | 0.00065              | 0.00050                            | 0.00033              | 0.00062              | 0.00075              |
| Pct                                            | 0.12           | 0.18    | 0.11    | 0.39                 | 0.29                               | 0.19                 | 0.36                 | 0.44                 |

<sup>1</sup> Specific activity of blend: 0.03305 μC / ml; Total activity of 5 ml: 0.16525 μC

<sup>2</sup> Light transmission at 350 mμ.

<sup>3</sup> Light transmission loss.

<sup>4</sup> dpm: disintegrations per minute.

<sup>5</sup> Required prefiltering through 0.45-μ filter.

<sup>6</sup> Filtrate from 0.45-μ filter passed through 10-mμ filter.

Taken from Reference No. 137

TABLE 97

5-MI Test Bomb Thermal Stability Data at Various Temperatures for  
Fresh and Aged Blends of 1,2,3,5-tetramethylbenzene-<sup>14</sup>C in Type A Jet Fuel<sup>1</sup>

|                                                | Before storage |         |         |                                              | After 26 weeks at 54.4 °C (130 °F)           |                                              |                                              |                                              |
|------------------------------------------------|----------------|---------|---------|----------------------------------------------|----------------------------------------------|----------------------------------------------|----------------------------------------------|----------------------------------------------|
|                                                | Run 1          | Run 2   | Run 3   | Run 4                                        | Run 1                                        | Run 2                                        | Run 3                                        | Run 4                                        |
| Average percent LT before<br>test <sup>2</sup> | 98.0           | ---     | ---     | ---                                          | 9.0                                          | ---                                          | ---                                          | ---                                          |
| Final test temperature,<br>°F                  | Room           | 365     | 384     | 396                                          | Room                                         | 368                                          | 380                                          | 403                                          |
| Average percent LT after<br>test <sup>2</sup>  | 98.0           | 92.2    | 86.8    | 47.5                                         | 9.0                                          | 10.0                                         | 9.5                                          | 5.5                                          |
| $\Delta$ LT <sup>3</sup>                       | ---            | 5.8     | 11.2    | 50.5                                         | ---                                          | ---                                          | ---                                          | ---                                          |
| Adherent deposits:<br>dpm <sup>4</sup>         | 0              | 20      | 10      | 0                                            | 0                                            | 0                                            | 15                                           | 10                                           |
| $\mu$ C                                        | ---            | 0.00001 | 0.00001 | ---                                          | ---                                          | ---                                          | 0.00001                                      | 0.00000                                      |
| Pcl                                            | ---            | 0.00    | 0.00    | ---                                          | ---                                          | ---                                          | 0.00                                         | ---                                          |
| Filterable deposits:<br>dpm                    | 341            | 165     | 256     | 528 <sup>5</sup><br>256 <sup>5</sup>         | 522 <sup>5</sup><br>61 <sup>5</sup>          | 525 <sup>5</sup><br>69 <sup>5</sup>          | 513 <sup>5</sup><br>487 <sup>5</sup>         | 615 <sup>5</sup><br>406 <sup>5</sup>         |
| $\mu$ C                                        | 0.00015        | 0.00007 | 0.00012 | 0.00024 <sup>5</sup><br>0.00012 <sup>5</sup> | 0.00024 <sup>5</sup><br>0.00003 <sup>5</sup> | 0.00024 <sup>5</sup><br>0.00003 <sup>5</sup> | 0.00023 <sup>5</sup><br>0.00022 <sup>5</sup> | 0.00027 <sup>5</sup><br>0.00018 <sup>5</sup> |
| Pcl                                            | 0.12           | 0.06    | 0.09    | 0.18 <sup>5</sup><br>0.03 <sup>5</sup>       | 0.19 <sup>5</sup><br>0.02 <sup>5</sup>       | 0.19 <sup>5</sup><br>0.02 <sup>5</sup>       | 0.19 <sup>5</sup><br>0.18 <sup>5</sup>       | 0.22 <sup>5</sup><br>0.15 <sup>5</sup>       |
| Total deposits:<br>$\mu$ C                     | 0.00015        | 0.00008 | 0.00013 | 0.00036                                      | 0.00026                                      | 0.00027                                      | 0.00045                                      | 0.00046                                      |
| Pcl                                            | 0.12           | 0.06    | 0.09    | 0.27                                         | 0.21                                         | 0.21                                         | 0.37                                         | 0.37                                         |

<sup>1</sup> Specific activity of blend: 0.02660  $\mu$ C / ml; Total activity of 5ml: 0.13300  $\mu$ C

<sup>2</sup> Light transmission at 350 m $\mu$ .

<sup>3</sup> Light transmission loss.

<sup>4</sup> dpm: disintegrations per minute.

<sup>5</sup> Required prefiltering through 0.45- $\mu$  filter.

<sup>6</sup> Filtrate from 0.45- $\mu$  filter passed through 10-m $\mu$  filter.

Table from Reference No. 137

TABLE 98

5-Ml Test Bomb Thermal Stability Data at Various Temperatures for  
Fresh and Aged Blends of Indan-2-<sup>14</sup>C In Type A Jet Fuel<sup>1</sup>

|                                                | Before storage |         |         |                      | After 26 weeks at 54.4 °C (130 °F) |                      |                      |                      |
|------------------------------------------------|----------------|---------|---------|----------------------|------------------------------------|----------------------|----------------------|----------------------|
|                                                | Run 1          | Run 2   | Run 3   | Run 4                | Run 1                              | Run 2                | Run 3                | Run 4                |
| Average percent LT before testing <sup>1</sup> | 96.9           | ---     | ---     | ---                  | 8.0                                | ---                  | ---                  | ---                  |
| Final test temperature, °F                     | Room           | 364     | 390     | 396                  | Room                               | 363                  | 377                  | 401                  |
| Average percent LT after test <sup>2</sup>     | 97.0           | 91.2    | 74.5    | 45.0                 | 8.5                                | 8.8                  | 9.0                  | 6.2                  |
| Δ LT <sup>3</sup>                              | ---            | 5.7     | 22.4    | 51.9                 | ---                                | ---                  | ---                  | ---                  |
| Adherent deposits: dpm <sup>4</sup>            | 0              | 10      | 0       | 0                    | 0                                  | 10                   | 5                    | 40                   |
| μC                                             | ---            | 0.00000 | ---     | ---                  | ---                                | 0.00000              | 0.00000              | 0.00002              |
| Pct                                            | ---            | ---     | ---     | ---                  | ---                                | ---                  | ---                  | 0.01                 |
| Filterable deposits: dpm                       | 242            | 540     | 278     | 687 <sup>5</sup>     | 364 <sup>5</sup>                   | 414 <sup>5</sup>     | 330 <sup>5</sup>     | 354 <sup>3</sup>     |
| μC                                             | 0.00011        | 0.00024 | 0.00013 | 0.00031 <sup>5</sup> | 224 <sup>6</sup>                   | 192 <sup>6</sup>     | 211 <sup>6</sup>     | 239 <sup>6</sup>     |
| Pct                                            | 0.09           | 0.19    | 0.10    | 0.25 <sup>5</sup>    | 0.00016 <sup>5</sup>               | 0.00019 <sup>5</sup> | 0.00015 <sup>5</sup> | 0.00016 <sup>5</sup> |
| Total deposits: μC                             | 0.00011        | 0.00024 | 0.00013 | 0.00045              | 0.00016 <sup>5</sup>               | 0.00028              | 0.00025              | 0.00029              |
| Pct                                            | 0.09           | 0.19    | 0.10    | 0.37                 | 0.14 <sup>5</sup>                  | 0.22                 | 0.20                 | 0.23                 |

<sup>1</sup> Specific activity of blend: 0.02504 μC / ml; Total activity of 5 ml: 0.12520 μC

<sup>2</sup> Light transmission at 350 mμ.

<sup>3</sup> Light transmission loss.

<sup>4</sup> dpm: disintegrations per minute.

<sup>5</sup> Required prefiltering through 0.45-μ filter.

<sup>6</sup> Filtrate from 0.45-μ filter passed through 10-mμ filter.

Taken from Reference No. 137

TABLE 99

5-MI Test Bomb Thermal Stability Data at Various Temperatures for  
Fresh and Aged Blends of n-Hendecane-1-<sup>14</sup>C In Type A Jet Fuel<sup>1</sup>

|                                                | Before storage |         |         |                      | After 26 weeks at 54.4 °C (130 °F) |                      |                      |                      |
|------------------------------------------------|----------------|---------|---------|----------------------|------------------------------------|----------------------|----------------------|----------------------|
|                                                | Run 1          | Run 2   | Run 3   | Run 4                | Run 1                              | Run 2                | Run 3                | Run 4                |
| Average percent LT before testing <sup>2</sup> | 97.1           | --      | --      | --                   | 8.5                                | --                   | --                   | --                   |
| Final test temperature, °F                     | Room           | 367     | 380     | 397                  | Room                               | 359                  | 379                  | 392                  |
| Average percent LT after test <sup>2</sup>     | 97.2           | 90.2    | 86.8    | 46.0                 | 8.8                                | 8.2                  | 9.5                  | 8.5                  |
| Δ LT <sup>3</sup>                              | --             | 6.9     | 10.3    | 51.1                 | --                                 | --                   | --                   | --                   |
| Adherent deposits: dpm <sup>4</sup>            | 0              | 0       | 10      | 15                   | 0                                  | 0                    | 10                   | 0                    |
| μC                                             | --             | --      | 0.00000 | 0.00001              | --                                 | --                   | 0.00000              | --                   |
| Pct                                            | --             | --      | --      | 0.00                 | --                                 | --                   | --                   | --                   |
| Filterable deposits: dpm                       | 202            | 150     | 97      | 624 <sup>5</sup>     | 879 <sup>5</sup>                   | 617 <sup>5</sup>     | 802 <sup>5</sup>     | 754 <sup>5</sup>     |
| μC                                             | 0.00009        | 0.00007 | 0.00004 | 103 <sup>6</sup>     | 403 <sup>6</sup>                   | 580 <sup>6</sup>     | 562 <sup>6</sup>     | 584 <sup>6</sup>     |
| Pct                                            | 0.06           | 0.05    | 0.03    | 0.00028 <sup>5</sup> | 0.00040 <sup>5</sup>               | 0.00028 <sup>5</sup> | 0.00036 <sup>5</sup> | 0.00034 <sup>5</sup> |
| Total deposits: μC                             | 0.00009        | 0.00007 | 0.00004 | 0.00005 <sup>5</sup> | 0.00018 <sup>6</sup>               | 0.00026 <sup>6</sup> | 0.00025 <sup>6</sup> | 0.00026 <sup>6</sup> |
| Pct                                            | 0.06           | 0.05    | 0.03    | 0.19 <sup>5</sup>    | 0.28 <sup>5</sup>                  | 0.20 <sup>5</sup>    | 0.26 <sup>5</sup>    | 0.24 <sup>5</sup>    |
|                                                | --             | --      | --      | 0.03 <sup>6</sup>    | 0.13 <sup>6</sup>                  | 0.18 <sup>6</sup>    | 0.18 <sup>6</sup>    | 0.18 <sup>6</sup>    |
| Total deposits: μC                             | 0.00009        | 0.00007 | 0.00004 | 0.00033              | 0.00058                            | 0.00054              | 0.00061              | 0.00060              |
| Pct                                            | 0.06           | 0.05    | 0.03    | 0.22                 | 0.41                               | 0.38                 | 0.44                 | 0.42                 |

<sup>1</sup> Specific activity of blend: 0.02886 μC / ml; Total activity of 5 ml: 0.14440 μC

<sup>2</sup> Light transmission at 350 mμ.

<sup>3</sup> Light transmission loss.

<sup>4</sup> dpm: disintegrations per minute.

<sup>5</sup> Required prefiltering through 0.45-μ filter.

<sup>6</sup> Filtrate from 0.45-μ filter passed through 10-mμ filter.

Taken from Reference No. 137

TABLE 100

**Results of Sample Analyses for MIL-F-45121 Fuel,  
Compression - Ignition and Turbine Engine, Referee Grade**

|                                 | ASTM D-381,<br>Existent gum<br>(mg/100 ml) | ASTM D-1661,<br>Thermal<br>Stability | ASTM D-524,<br>Carbon<br>Residue<br>(% wt.) | ASTM D-2550<br>W.S.I.M. |
|---------------------------------|--------------------------------------------|--------------------------------------|---------------------------------------------|-------------------------|
| <b>Specification Limit</b>      | <b>7 max.</b>                              | <b>3/13<sup>1</sup></b>              | <b>N.R.<sup>2</sup></b>                     | <b>75</b>               |
| <b>4th. Month Sampling From</b> |                                            |                                      |                                             |                         |
| Lab Control <sup>3</sup>        | 3                                          | 1/0.2                                | 0.02                                        | -                       |
| Sample Tank <sup>4</sup>        | 3                                          | 2/0.5                                | 0.05                                        | 19                      |
| Control S <sup>5</sup>          | 2                                          | -                                    | 0.02                                        | -                       |
| Control W <sup>6</sup>          | 5                                          | 1/0.1                                | 0.03                                        | 50                      |
| Control E <sup>7</sup>          | 3                                          | -                                    | 0.03                                        | -                       |
| <b>6th Month Sampling From</b>  |                                            |                                      |                                             |                         |
| Lab Control                     | 3                                          | 1/0.0                                | 0.03                                        | -                       |
| Sample Tank                     | 6                                          | 4/0.1                                | 0.09                                        | 13                      |
| Control S                       | 3                                          | -                                    | 0.03                                        | -                       |
| Control W                       | 5                                          | 1/0.1                                | 0.03                                        | 55                      |
| Control E                       | 4                                          | -                                    | 0.04                                        | -                       |
| <b>8th Month Sampling From</b>  |                                            |                                      |                                             |                         |
| Lab Control                     | 3                                          | 2/1.1                                | 0.04                                        | -                       |
| Sample Tank                     | 9                                          | 4/0.3                                | 0.09                                        | 15                      |
| Control S                       | 4                                          | -                                    | 0.04                                        | -                       |
| Control W                       | 5                                          | 2/0.0                                | 0.03                                        | 45                      |
| Control E                       | 5                                          | -                                    | 0.03                                        | -                       |
| <b>12th Month Sampling From</b> |                                            |                                      |                                             |                         |
| Lab Control                     | 1                                          | 2/0.2                                | 0.03                                        | -                       |
| Sample Tank                     | 10                                         | 4/0.1                                | 0.11                                        | 17                      |
| Control S                       | 2                                          | -                                    | 0.05                                        | -                       |
| Control W                       | 5                                          | 1/0.1                                | 0.05                                        | 53                      |
| Control E                       | 1                                          | -                                    | 0.03                                        | -                       |

<sup>1</sup>Maximum of 3 preheater rating and/or maximum of 13" Hg filter pressure differential.

<sup>2</sup>Not required for this specification.

<sup>3</sup>One gallon of fuel stored at controlled laboratory temperature.

<sup>4</sup>Fuel stored in 500-gallon collapsible container.

<sup>5</sup>Fuel stored in 55 gallon standard olive drab drum at ambient conditions.

<sup>6</sup>Fuel stored in 55 gallon white drum at ambient conditions.

<sup>7</sup>Fuel stored in 55 gallon drum with experimental solar reflective olive drab exterior coating at ambient conditions.

Taken from Reference No. 69

TABLE 101

Storage Stability of Jet Fuel Blends Containing 3 ppm of 1-Ethylindan-3-<sup>14</sup>C

| Jet Fuel | Treatment                 | Contribution of radiotracer<br>to total deposits, percent |                                       | Radioactivity<br>recovery, percent |
|----------|---------------------------|-----------------------------------------------------------|---------------------------------------|------------------------------------|
|          |                           | Before<br>Storage                                         | After 52 weeks at<br>54.4 °C (130 °F) |                                    |
| 1-65-2   | Neat                      | 0.060                                                     | 0.037                                 | 98.5                               |
|          | Contaminated <sup>1</sup> | .000                                                      | .108                                  | 99.8                               |
|          | Depolarized <sup>2</sup>  | .041                                                      | .075                                  | 100.4                              |
| 2-65-2   | Neat                      | .067                                                      | .015                                  | 99.8                               |
|          | Contaminated              | .015                                                      | .005                                  | 100.1                              |
|          | Depolarized               | .143                                                      | .029                                  | 99.2                               |
| 3-65-2   | Neat                      | .001                                                      | .027                                  | 100.0                              |
| 4-65-2   | Neat                      | .038                                                      | .988                                  | 99.2                               |
| 5-65-2   | Neat                      | .013                                                      | .083                                  | 101.4                              |
|          | Contaminated              | .048                                                      | .023                                  | 101.4                              |
|          | Depolarized               | .019                                                      | .654                                  | 96.7                               |

<sup>1</sup> Contained red iron oxide and water.<sup>2</sup> Depolarized by percolation through silica gel.

Taken from Reference No. 136

**TABLE 102**  
**Storage Stability of Jet Fuel Blends Containing 2 ppm of 1-Ethylindene-3-<sup>14</sup>C**

| Jet Fuel | Treatment                 | Contribution of radiotracer<br>to total deposits, percent |                                       | Radioactivity<br>recovery, percent |
|----------|---------------------------|-----------------------------------------------------------|---------------------------------------|------------------------------------|
|          |                           | Before<br>Storage                                         | After 52 weeks at<br>54.4 °C (130 °F) |                                    |
| 1-65-2   | Neat                      | 0.140                                                     | 0.068                                 | 99.9                               |
|          | Contaminated <sup>1</sup> | .080                                                      | .137                                  | 99.5                               |
|          | Depolarized <sup>2</sup>  | .018                                                      | .044                                  | 98.6                               |
| 2-65-2   | Neat                      | .026                                                      | .124                                  | 100.1                              |
|          | Contaminated              | .129                                                      | .085                                  | 99.9                               |
|          | Depolarized               | .004                                                      | .121                                  | 99.9                               |
| 3-65-2   | Neat                      | .122                                                      | .080                                  | 101.5                              |
| 4-65-2   | Neat                      | .155                                                      | 5.317                                 | 95.9 <sup>3</sup>                  |
| 5-65-2   | Neat                      | .108                                                      | .560                                  | 102.4                              |
|          | Contaminated              | .096                                                      | .161                                  | 100.3                              |
|          | Depolarized               | .062                                                      | 3.080                                 | 92.5 <sup>3</sup>                  |

<sup>1</sup> Contained red iron oxide and water.

<sup>2</sup> Depolarized by percolation through silica gel.

<sup>3</sup> Reflects a loss of radioactivity during storage period.

Taken from Reference No. 136

TABLE 103

Storage Stability of Jet Fuel Blends Containing 1-Methylindan-3-<sup>14</sup>C, Tetralin-<sup>14</sup>C, 1,2,3,5-Tetramethylbenzene-<sup>14</sup>C, 1-Methylindene-3-<sup>14</sup>C, and n-Hendecane-1-<sup>14</sup>C

| Jet Fuel<br>(neat) | Radiotracer                                 | Contribution of radiotracer<br>to total deposits, percent |                                       | Radioactivity<br>recovery, percent |
|--------------------|---------------------------------------------|-----------------------------------------------------------|---------------------------------------|------------------------------------|
|                    |                                             | Before<br>Storage                                         | After 52 weeks at<br>54.4 °C (130 °F) |                                    |
| 1-65-2             | 1-Methylindan-3- <sup>14</sup> C            | 0.012                                                     | 0.088                                 | 100.8                              |
| 2-65-2             | 1-Methylindan-3- <sup>14</sup> C            | .007                                                      | .055                                  | 99.3                               |
| 3-65-2             | 1-Methylindan-3- <sup>14</sup> C            | .018                                                      | .057                                  | 99.9                               |
| 4-65-2             | 1-Methylindan-3- <sup>14</sup> C            | .027                                                      | 1.310                                 | 96.7                               |
| 5-65-2             | 1-Methylindan-3- <sup>14</sup> C            | .062                                                      | .060                                  | 98.5                               |
| 1-65-2             | Tetralin- <sup>14</sup> C                   | .038                                                      | .003                                  | 99.4                               |
| 2-65-2             | Tetralin- <sup>14</sup> C                   | .061                                                      | .094                                  | 101.0                              |
| 3-65-2             | Tetralin- <sup>14</sup> C                   | .001                                                      | .008                                  | 100.0                              |
| 4-65-2             | Tetralin- <sup>14</sup> C                   | .033                                                      | .773                                  | 96.6                               |
| 5-65-2             | Tetralin- <sup>14</sup> C                   | .037                                                      | .089                                  | 98.8                               |
| 1-65-2             | 1,2,3,5-Tetramethylbenzene- <sup>14</sup> C | .010                                                      | .013                                  | 100.0                              |
| 1-65-2             | 1-Methylindene-3- <sup>14</sup> C           | .013                                                      | .019                                  | 98.8                               |
| 2-65-2             | 1-Methylindene-3- <sup>14</sup> C           | .056                                                      | .105                                  | 99.6                               |
| 3-65-2             | 1-Methylindene-3- <sup>14</sup> C           | .105                                                      | .169                                  | 99.5                               |
| 4-65-2             | 1-Methylindene-3- <sup>14</sup> C           | .121                                                      | 7.142                                 | 85.9                               |
| 5-65-2             | 1-Methylindene-3- <sup>14</sup> C           | .111                                                      | .268                                  | 98.6                               |
| 1-65-2             | n-Hendecane-1- <sup>14</sup> C              | .033                                                      | .055                                  | 98.2                               |
| 2-65-2             | n-Hendecane-1- <sup>14</sup> C              | .029                                                      | .036                                  | 101.9                              |
| 3-65-2             | n-Hendecane-1- <sup>14</sup> C              | .060                                                      | .014                                  | 99.6                               |
| 4-65-2             | n-Hendecane-1- <sup>14</sup> C              | .202                                                      | .373                                  | 101.6                              |
| 5-65-2             | n-Hendecane-1- <sup>14</sup> C              | .143                                                      | .147                                  | 101.2                              |

Taken from Reference No. 136

**TABLE 104**  
**Storage Stability of Jet Fuel Blends Containing 0.7 ppm of 2-Methyl-<sup>14</sup>C-naphthalene**

| Jet Fuel | Treatment                 | Contribution of radiotracer<br>to total deposits, percent |                                       | Radioactivity<br>recovery, percent |
|----------|---------------------------|-----------------------------------------------------------|---------------------------------------|------------------------------------|
|          |                           | Before<br>Storage                                         | After 52 weeks at<br>54.4 °C (130 °F) |                                    |
| 1-65-2   | Neat                      | 0.031                                                     | 0.096                                 | 99.7                               |
|          | Contaminated <sup>1</sup> | 0.02                                                      | .101                                  | 100.3                              |
|          | Depolarized <sup>2</sup>  | .002                                                      | .025                                  | 98.8                               |
| 2-65-2   | Neat                      | .103                                                      | .033                                  | 99.2                               |
|          | Contaminated              | .056                                                      | .061                                  | 98.7                               |
|          | Depolarized               | .039                                                      | .038                                  | 100.4                              |
| 3-65-2   | Neat                      | .117                                                      | .029                                  | 100.2                              |
|          | Contaminated              | .070                                                      | .014                                  | 100.0                              |
| 4-65-2   | Neat                      | .087                                                      | .064                                  | 99.7                               |
|          | Contaminated              | .124                                                      | .122                                  | 99.8                               |
|          | Depolarized               | .088                                                      | .051                                  | 98.4                               |
| 5-65-2   | Neat                      | .166                                                      | .023                                  | 101.1                              |
|          | Contaminated              | .109                                                      | .031                                  | 99.3                               |
|          | Depolarized               | .049                                                      | .074                                  | 100.3                              |

<sup>1</sup> Contained red iron oxide and water.

<sup>2</sup> Depolarized by percolation through silica gel.

Taken from Reference No. 136

TABLE 105

Storage Stability of Jet Fuel Blends Containing 8 ppm of 2,6-Di-t-butyl-<sup>14</sup>C-p-cresol

| Jet Fuel | Treatment                 | Contribution of radiotracer<br>to total deposits, percent |                                       | Radioactivity<br>recovery, percent |
|----------|---------------------------|-----------------------------------------------------------|---------------------------------------|------------------------------------|
|          |                           | Before<br>Storage                                         | After 52 weeks at<br>54.4 °C (130 °F) |                                    |
| 1-65-2   | Neat                      | 0.160                                                     | 0.196                                 | 95.7                               |
|          | Contaminated <sup>1</sup> | .201                                                      | .261                                  | 99.5                               |
|          | Depolarized <sup>2</sup>  | .000                                                      | .068                                  | 94.9                               |
| 2-65-2   | Neat                      | .038                                                      | .040                                  | 100.2                              |
|          | Contaminated              | .033                                                      | .036                                  | 98.7                               |
|          | Depolarized               | .037                                                      | .102                                  | 99.9                               |
| 3-65-2   | Neat                      | .044                                                      | .076                                  | 98.2                               |
| 4-65-2   | Neat                      | .078                                                      | .115                                  | 99.7                               |
| 5-65-2   | Neat                      | .107                                                      | .074                                  | 99.3                               |
|          | Contaminated              | .038                                                      | .085                                  | 98.0                               |
|          | Depolarized               | .048                                                      | .106                                  | 99.2                               |

<sup>1</sup> Contained red iron oxide and water.<sup>2</sup> Depolarized by percolation through silica gel.

Taken from Reference No. 136

**TABLE 106**  
**Storage Stability of Jet Fuel Blends Containing N,N'-di-sec-butyl-4-<sup>14</sup>C-p-phenylenediamine**

| Jet Fuel | Treatment                 | Radiotracer conc., ppm | Contribution of radiotracer to total deposits, percent |                                    | Radioactivity recovery, percent |
|----------|---------------------------|------------------------|--------------------------------------------------------|------------------------------------|---------------------------------|
|          |                           |                        | Before Storage                                         | After 52 weeks at 54.4 °C (130 °F) |                                 |
| 1-65-2   | Neat                      | 5                      | 40.06                                                  | 16.60                              | 56.8 <sup>3</sup>               |
|          | Contaminated <sup>1</sup> | 2                      | 42.47                                                  | 16.92                              | 59.5 <sup>3</sup>               |
|          | Depolarized <sup>2</sup>  | 3                      | 35.04                                                  | 0.92                               | 17.3 <sup>4</sup>               |
| 2-65-2   | Neat                      | 2.5                    | 2.20                                                   | 1.60                               | 90.5                            |
|          | Contaminated              | 2.5                    | 1.21                                                   | 1.79                               | 92.7                            |
|          | Depolarized               | 2.5                    | 7.16                                                   | 0.64                               | 73.2                            |
| 3-65-2   | Neat                      | 3                      | 10.49                                                  | 4.68                               | 77.1                            |
| 4-65-2   | Neat                      | 2.5                    | 17.99                                                  | 21.43                              | 62.3                            |
| 5-65-2   | Neat                      | 3                      | 49.88                                                  | 44.15                              | 70.9 <sup>5</sup>               |
|          | Contaminated              | 3                      | 53.03                                                  | 56.75                              | 80.8 <sup>5</sup>               |
|          | Depolarized               | 2.5                    | 15.11                                                  | 8.60                               | 65.4 <sup>5</sup>               |

<sup>1</sup> Contained red iron oxide and water.

<sup>2</sup> Depolarized by percolation through silica gel.

<sup>3</sup> Approximately one-fourth of the loss of radioactivity occurred during storage.

<sup>4</sup> One-half of the loss occurred during storage.

<sup>5</sup> Approximately one-tenth of the loss occurred during storage.

Taken from Reference No. 136

**TABLE 107**  
**Storage Stability of Jet Fuel Blends Containing 250 ppm of Oleic-1-<sup>14</sup>C Acid**

| Jet Fuel | Treatment                 | Contribution of radiotracer<br>to total deposits, percent |                                       | Radioactivity<br>recovery, percent |
|----------|---------------------------|-----------------------------------------------------------|---------------------------------------|------------------------------------|
|          |                           | Before<br>Storage                                         | After 52 weeks at<br>54.4 °C (130 °F) |                                    |
| 1-65-2   | Neat                      | 0.004                                                     | 0.339                                 | 96.8                               |
| 1-65-2   | With Cadmium <sup>2</sup> | .001                                                      | 1.681                                 | 92.0 <sup>1</sup>                  |
| 2-65-2   | Neat                      | .002                                                      | .258                                  | 91.5 <sup>1</sup>                  |
| 2-65-2   | With Cadmium              | .116                                                      | 1.184                                 | 88.9                               |
| 3-65-2   | Neat                      | .529                                                      | .341                                  | 91.0 <sup>1</sup>                  |
| 3-65-2   | With Cadmium              | .414                                                      | .982                                  | 90.9                               |
| 4-65-2   | Neat                      | .433                                                      | 2.218                                 | 90.5 <sup>1</sup>                  |
| 4-65-2   | With Cadmium              | .527                                                      | 2.721                                 | 88.8 <sup>1</sup>                  |
| 5-65-2   | Neat                      | .679                                                      | .312                                  | 92.8 <sup>1</sup>                  |
| 5-65-2   | With Cadmium              | .885                                                      | 1.284                                 | 88.9 <sup>1</sup>                  |

<sup>1</sup> About half of the loss of radioactivity occurred during storage.

<sup>2</sup> Cadmium plated screws added to simulate cadmium parts of fuel tanks.

Taken from Reference No. 136

TABLE 108

Storage Stability of Jet Fuel Blends Containing 2 ppm of 1,5-Hexadiene-1,6-<sup>14</sup>C

| Jet Fuel (neat) | Contribution of radiotracer<br>to total deposits, percent |                                       | Radioactivity<br>recovery, percent <sup>1</sup> |
|-----------------|-----------------------------------------------------------|---------------------------------------|-------------------------------------------------|
|                 | Before<br>Storage                                         | After 52 weeks at<br>54.4 °C (130 °F) |                                                 |
| 1-65-2          | 0.214                                                     | 0.484                                 | 39.7                                            |
| 2-65-2          | .253                                                      | .438                                  | 50.1                                            |

<sup>1</sup> About one-third of the loss of radioactivity occurred during storage.

Taken from Reference No. 136

TABLE 109

Storage Stability of Jet Fuel Blends Containing 10 ppm of  
N,N'-disalicylidene-1,2-diaminopropane-1-<sup>14</sup>C

| Jet Fuel (neat) | Contribution of radiotracer<br>to total deposits, percent |                                       | Radioactivity<br>recovery, percent |
|-----------------|-----------------------------------------------------------|---------------------------------------|------------------------------------|
|                 | Before<br>Storage                                         | After 26 weeks at<br>54.4 °C (130 °F) |                                    |
| 1-65-2          | 7.71                                                      | 13.40                                 | 98.3                               |
| 2-65-2          | 2.11                                                      | 0.79                                  | 87.2 <sup>1</sup>                  |
| 3-65-2          | 3.46                                                      | 1.95                                  | 93.1                               |
| 4-65-2          | 5.55                                                      | 19.42                                 | 30.0 <sup>2</sup>                  |
| 5-65-2          | 20.26                                                     | 21.14                                 | 86.1                               |

<sup>1</sup> One-half of the loss of radioactivity occurred during storage.<sup>2</sup> Approximately three-fourths of the loss of radioactivity occurred during storage.

Taken from Reference No. 136

TABLE 110

Storage Stability of Jet Fuel Blends Containing Dilinoleic Acid-<sup>14</sup>C

| Jet Fuel (neat) | Contribution of radiotracer<br>to total deposits, percent |                                       | Radioactivity<br>recovery, percent <sup>1</sup> |
|-----------------|-----------------------------------------------------------|---------------------------------------|-------------------------------------------------|
|                 | Before<br>Storage                                         | After 24 weeks at<br>54.4 °C (130 °F) |                                                 |
| 1-65-2          | 1.050                                                     | 1.288                                 | 76.9                                            |
| 2-65-2          | 1.141                                                     | 2.316                                 | 74.5                                            |
| 3-65-2          | .666                                                      | 1.163                                 | 71.5                                            |
| 4-65-2          | .526                                                      | 1.198                                 | 81.1                                            |
| 5-65-2          | 1.074                                                     | 3.756                                 | 69.9                                            |

<sup>1</sup> About one-half of the loss of radioactivity occurred during storage.

Taken from Reference No. 136

TABLE 111

Effects of 2,5-Dimethylpyrrole (DMP)  
and n-Decanoic Acid on Sediment Formation in JP-5<sup>1</sup>

| DMP      | Presence Of |        |       | Sediment (g/500g Fuel) At |          |  |
|----------|-------------|--------|-------|---------------------------|----------|--|
|          | Acid        | Oxygen | Light | 28 Days                   | 160 Days |  |
| 2000 ppm | 2000 ppm    | -      | +     | 2.61                      | 4.07     |  |
| 2000 ppm | 2000 ppm    | +      | +     | 3.43                      | 5.39     |  |
| 500 ppm  | --          | -      | +     | 0.81                      | 1.62     |  |
| 500 ppm  | --          | +      | -     | 0.98                      | 1.73     |  |
| 500 ppm  | 500 ppm     | -      | +     | 0.92                      | 1.75     |  |
| 500 ppm  | 500 ppm     | +      | +     | 1.10                      | 1.74     |  |
| 500 ppm  | 500 ppm     | -      | -     | 0.38                      | 0.92     |  |
| 100 ppm  | 100 ppm     | -      | +     | 0.30                      | 0.31     |  |
| 100 ppm  | 100 ppm     | +      | +     | 0.28                      | 0.28     |  |
| 50 ppm   | 50 ppm      | -      | +     | 0.14                      | 0.15     |  |
| 50 ppm   | 50 ppm      | +      | +     | 0.18                      | 0.20     |  |
| --       | --          | +      | +     | --                        | --       |  |
| --       | 500 ppm     | +      | +     | --                        | --       |  |

<sup>1</sup> Stored at room temperature.

Taken from Reference No. 113

TABLE 112

43.3 °C (110 °F) Storage Test on Ten JP - 4 Turbine Fuels (gum, mg/100ml)

| Initial |       |         | 4th Week       |       |         | 8th Week       |       |         | 16th Week      |       |         | 32nd Week      |       |         |
|---------|-------|---------|----------------|-------|---------|----------------|-------|---------|----------------|-------|---------|----------------|-------|---------|
| Soluble | Insol | Precip. | Soluble        | Insol | Precip. | Soluble        | Insol | Precip. | Soluble        | Insol | Precip. | Soluble        | Insol | Precip. |
| 0.3     | 0     | 0       | A-0.2<br>B-0.1 | 0.7   | 0.1     | A-2.4<br>B-2.0 | 0.3   | 0       | A-0.7<br>B-0.5 | 0.8   | 0.4     | A-0<br>B-0     | 0     | 0.6     |
| 0.2     | 0     | 0       | A-0.1<br>B-0   | 0     | 0       | A-0.1<br>B-0.2 | 0.6   | 0.1     | A-1.5<br>B-1.2 | 0.8   | 0.2     | A-0<br>B-0     | 0.4   | 0.2     |
| 0       | 0     | 0       | A-0<br>B-0.1   | 0.3   | 0.1     | A-0<br>B-0     | 0.3   | 0       | A-0<br>B-0     | 0.8   | 0       | A-0.1<br>B-0   | 0.4   | 0       |
| 0.7     | 0     | 0       | A-0.2<br>B-0.2 | 0.5   | 1.5     | A-0.7<br>B-0.7 | 0.5   | 0.3     | A-1.9<br>B-1.9 | 0.5   | 0       | A-0.3<br>B-0.4 | 0.5   | 0.1     |
| 0.8     | 0     | 0       | A-0.3<br>B-0.8 | 0.4   | 0.7     | A-1.2<br>B-1.1 | 0.3   | 0.4     | A-0.2<br>B-0.3 | 0.3   | 0.6     | A-1.1<br>B-1.1 | 1.0   | 0.8     |
| 0.6     | 0     | 0       | A-4.5<br>B-0.3 | 0.8   | 0.5     | A-0.9<br>B-0.8 | 0.8   | 0.1     | A-1.1<br>B-0.2 | 0.8   | 1.1     | A-1.2<br>B-2.5 | 1.1   | 0.1     |
| 0.3     | 0     | 0       | A-0.2<br>B-0.3 | 0.5   | 1.2     | A-0.5<br>B-0.7 | 0.6   | 0.5     | A-0<br>B-0     | 0.9   | 0.9     | A-3.3<br>B-2.4 | 1.1   | 0.2     |
| 0       | 0     | 0       | A-0.3<br>B-0.3 | 0.5   | 0.1     | A-1.8<br>B-0.4 | 0.5   | 0       | A-1.2<br>B-1.1 | 0.6   | 0.1     | A-1.9<br>B-2.6 | 0.8   | 0.1     |
| 0.2     | 0     | 0       | A-0.6<br>B-0.4 | 0.6   | 0.5     | A-0.2<br>B-0.1 | 0.8   | 0       | A-2.4<br>B-0.7 | 0.6   | 0.2     | A-0.9<br>B-1.8 | 1.1   | 0.5     |
| 0       | 0     | 0       | A-0.9<br>B-0.7 | 0.3   | 0.1     | A-0.3<br>B-0.3 | 0.5   | 0.1     | A-0.3<br>B-1.1 | 0.3   | 0.1     | A-0.5<br>B-0.6 | 0.5   | 0.2     |

1 Jet fuels, petroleum, from 10 military bases across United States

2 Two independent determinations of soluble gum

Taken from Reference No. 10

TABLE 114

Deposition of Gum in Jet A Fuel Spiked  
with Various Nitrogen Compounds<sup>1</sup>

| Compound added              | Deposit <sup>2</sup><br>(g/mm <sup>2</sup> ) x 10 <sup>7</sup> |
|-----------------------------|----------------------------------------------------------------|
| Pyrrrole                    | 3.5 ± 0.5                                                      |
| N-Methylpyrrole             | 8.7 ± 0.6                                                      |
| 2-Pyrrolidone               | 4.2 ± 0.8                                                      |
| 1,2,5-Trimethylpyrrole      | 3.7 ± 0.3                                                      |
| Indole                      | 3.9 ± 0.3                                                      |
| N-Methylindole              | 3.6 ± 0.3                                                      |
| 2-Methylindole              | 5.9 ± 0.3                                                      |
| 3-Methylindole              | 2.3 ± 0.5                                                      |
| Indoline                    | 6.7 ± 0.2                                                      |
| Carbazole                   | 2.6 ± 0.3                                                      |
| N-Ethylcarbazole            | 4.4 ± 0.6                                                      |
| Pyridine                    | 3.6 ± 0.3                                                      |
| 2-Acetylpyridine            | 3.5 ± 0.5                                                      |
| 2-Methylpyridine            | 7.9 ± 0.8                                                      |
| 4-Methylpyridine            | 8.8 ± 0.5                                                      |
| 2-Ethylpyridine             | 5.9 ± 0.3                                                      |
| 2,6-Dimethylpyridine        | 10.0 ± 1.4                                                     |
| 2,4,6-Trimethylpyridine     | 4.7 ± 0.2                                                      |
| Quinoline                   | 7.7 ± 0.0                                                      |
| 2,4-Dimethylquinoline       | 8.2 ± 0.7                                                      |
| 7,8-Benzquinoline           | 2.8 ± 0.5                                                      |
| 4-Hydroxy-2-methylquinoline | 9.1 ± 0.4                                                      |
| 8-Hydroxyquinoline          | 8.1 ± 0.2                                                      |
| Control (no spike)          | 3.4 ± 0.3                                                      |

<sup>1</sup> Concentration of each compound corresponded to 5 ppm N; Blends aged at 120 °C (248 °F) for 158 hours.

<sup>2</sup> Deposited on microscope cover slip

Taken from Reference No. 142

TABLE 113

Deposition of Gum in Jet A Fuel Spiked  
with Various Nitrogen Compounds<sup>1</sup>

| Compound added        | ppm N added | Deposit <sup>2</sup><br>(g/mm <sup>2</sup> ) x 10 <sup>7</sup> |
|-----------------------|-------------|----------------------------------------------------------------|
| Quinoline             | 5.42        | 3.6                                                            |
| Carbazole             | 4.18        | 3.7                                                            |
| Indole                | 5.97        | 6.2                                                            |
| 2,6-Dimethylquinoline | 4.45        | 10.2                                                           |
| 7,8-Benzquinoline     | 3.91        | 3.7                                                            |
| 2-Methylindole        | 5.34        | 8.6                                                            |
| Indoline              | 5.87        | 7.2                                                            |
| 2-Acetylpyridine      | 5.78        | 9.2                                                            |
| Pyrrrole              | 10.43       | 3.5                                                            |
| 2-Pyrrolidone         | 8.22        | 7.2                                                            |

<sup>1</sup> Each compound was added at a concentration of 50 ppm of compound; Blends aged at 121 °C (249.8 °F) for 144 hours.

<sup>2</sup> Gum deposited on microscope cover slip.

Taken from Reference No. 29