

**Table E.27 Summary Statistics for Laboratory Tests Associated With Renal Functions:
Test – Serum Creatinine**

| Race and Age | Place of Service | N | Mean | S.D. | S.E. | Percentile | | | | | | % Above Reference ^a | |
|--|------------------|------|------|------|-------|------------|------|------|------|------|------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In Milligrams Per Deciliter of Serum) | | | | | | | | | | | | | |
| All Races ^b | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2490 | 1.11 | 0.18 | 0.004 | 0.56 | 0.84 | 0.89 | 1.10 | 1.35 | 1.41 | 3.08 | 5.5 |
| 30-48 yrs | Non-Vietnam | 1972 | 1.11 | 0.17 | 0.004 | 0.64 | 0.85 | 0.90 | 1.10 | 1.34 | 1.41 | 1.87 | 5.3 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1638 | 1.10 | 0.17 | 0.004 | 0.57 | 0.84 | 0.89 | 1.09 | 1.32 | 1.40 | 1.92 | 4.9 |
| 30-39 yrs | Non-Vietnam | 1153 | 1.10 | 0.17 | 0.005 | 0.64 | 0.85 | 0.90 | 1.09 | 1.32 | 1.39 | 1.82 | 4.0 |
| 40-48 yrs | Vietnam | 416 | 1.12 | 0.17 | 0.008 | 0.62 | 0.86 | 0.91 | 1.10 | 1.35 | 1.40 | 1.70 | 4.3 |
| 40-48 yrs | Non-Vietnam | 447 | 1.12 | 0.18 | 0.009 | 0.70 | 0.83 | 0.90 | 1.12 | 1.36 | 1.42 | 1.77 | 6.3 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 211 | 1.16 | 0.22 | 0.015 | 0.56 | 0.83 | 0.88 | 1.16 | 1.45 | 1.56 | 1.75 | 12.3 |
| 30-39 yrs | Non-Vietnam | 181 | 1.15 | 0.19 | 0.014 | 0.73 | 0.86 | 0.92 | 1.15 | 1.40 | 1.47 | 1.87 | 9.4 |
| 40-48 yrs | Vietnam | 75 | 1.18 | 0.30 | 0.034 | 0.73 | 0.82 | 0.90 | 1.16 | 1.41 | 1.45 | 3.08 | 10.7 |
| 40-48 yrs | Non-Vietnam | 58 | 1.18 | 0.19 | 0.025 | 0.81 | 0.89 | 0.96 | 1.17 | 1.42 | 1.67 | 1.67 | 10.3 |

^a Reference value is the 95th percentile of the Vietnam and non-Vietnam cohorts combined.

^b All races include white, black, and other.

**Table E.28 Summary Statistics for Laboratory Tests Associated With Genital Functions:
Test – Testosterone**

| Race and Age | Place of Service | N | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^a | % Above Reference ^b | |
|---------------------------------------|------------------|------|------|-------|------|------------|-----|------|------|------|------|--------------------------------|--------------------------------|-----|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| (In Nanograms Per Deciliter of Serum) | | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2490 | 678 | 238.7 | 4.8 | 83 | 348 | 401 | 651 | 993 | 1109 | 1915 | 5.0 | 5.1 |
| 30-48 yrs | Non-Vietnam | 1972 | 682 | 229.4 | 5.2 | 53 | 349 | 410 | 662 | 967 | 1094 | 1950 | 5.0 | 4.8 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1638 | 686 | 233.5 | 5.8 | 130 | 358 | 414 | 665 | 994 | 1109 | 1915 | 4.4 | 5.1 |
| 30-39 yrs | Non-Vietnam | 1153 | 696 | 228.9 | 6.7 | 57 | 362 | 421 | 676 | 997 | 1124 | 1888 | 4.1 | 5.6 |
| 40-48 yrs | Vietnam | 416 | 633 | 238.4 | 11.7 | 164 | 320 | 369 | 601 | 960 | 1078 | 1843 | 7.2 | 3.6 |
| 40-48 yrs | Non-Vietnam | 447 | 628 | 203.3 | 9.6 | 53 | 335 | 389 | 606 | 887 | 956 | 1763 | 6.7 | 1.6 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 211 | 722 | 260.9 | 18.0 | 211 | 355 | 421 | 689 | 1078 | 1207 | 1846 | 4.7 | 8.5 |
| 30-39 yrs | Non-Vietnam | 181 | 731 | 252.5 | 18.8 | 122 | 340 | 418 | 703 | 1039 | 1255 | 1470 | 5.5 | 7.2 |
| 40-48 yrs | Vietnam | 75 | 630 | 214.7 | 24.8 | 170 | 288 | 363 | 604 | 895 | 1023 | 1280 | 8.0 | 1.3 |
| 40-48 yrs | Non-Vietnam | 58 | 629 | 198.1 | 26.0 | 280 | 330 | 375 | 606 | 885 | 1032 | 1256 | 6.9 | 3.4 |

^a The low reference value is the 5th percentile of the Vietnam and non-Vietnam cohorts combined.

^b The high reference value is the 95th percentile of the Vietnam and non-Vietnam cohorts combined.

^c All races include white, black, and other.

**Table E.29 Summary Statistics for Laboratory Tests Associated With Genital Functions:
Test — Follicle-Stimulating Hormone**

| Race and Age | Place of Service | N | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^a | % Above Reference ^b | |
|------------------------|------------------|------|------|-------|------|------------|-----|------|------|------|------|--------------------------------|--------------------------------|-----|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| All Races ^c | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2490 | 8.0 | 6.65 | 0.13 | 1 | 3 | 3 | 7 | 13 | 16 | 114 | 4.7 | 5.0 |
| 30-48 yrs | Non-Vietnam | 1972 | 7.9 | 6.11 | 0.14 | 1 | 2 | 3 | 7 | 13 | 17 | 86 | 5.2 | 5.0 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1638 | 7.8 | 5.88 | 0.15 | 1 | 2 | 3 | 7 | 13 | 16 | 85 | 5.5 | 4.5 |
| 30-39 yrs | Non-Vietnam | 1153 | 7.7 | 6.22 | 0.18 | 1 | 2 | 3 | 6 | 13 | 16 | 86 | 5.9 | 4.3 |
| 40-48 yrs | Vietnam | 416 | 8.9 | 8.59 | 0.42 | 1 | 3 | 4 | 7 | 14 | 19 | 91 | 3.1 | 7.5 |
| 40-48 yrs | Non-Vietnam | 447 | 8.1 | 5.61 | 0.27 | 1 | 3 | 3 | 7 | 14 | 19 | 44 | 4.0 | 6.7 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 211 | 7.0 | 3.84 | 0.26 | 1 | 3 | 3 | 6 | 11 | 15 | 30 | 4.3 | 2.4 |
| 30-39 yrs | Non-Vietnam | 181 | 8.0 | 6.01 | 0.45 | 1 | 2 | 3 | 7 | 14 | 16 | 65 | 5.0 | 4.4 |
| 40-48 yrs | Vietnam | 75 | 8.5 | 5.77 | 0.67 | 1 | 3 | 4 | 7 | 16 | 21 | 36 | 1.3 | 9.3 |
| 40-48 yrs | Non-Vietnam | 58 | 9.1 | 10.25 | 1.35 | 1 | 2 | 3 | 7 | 16 | 26 | 75 | 6.9 | 8.6 |

^a The low reference value is the 5th percentile of the Vietnam and non-Vietnam cohorts combined.

^b The high reference value is the 95th percentile of the Vietnam and non-Vietnam cohorts combined.

^c All races include white, black, and other.

**Table E.30 Summary Statistics for Laboratory Tests Associated With Genital Functions:
Test – Luteinizing Hormone**

| Race and Age | Place of Service | N | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^a | % Above Reference ^b | |
|---|------------------|------|------|-------|------|------------|-----|------|------|------|------|--------------------------------|--------------------------------|-----|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| (In International Units Per Liter of Serum) | | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2490 | 14.3 | 6.31 | 0.13 | 2 | 7 | 9 | 13 | 21 | 24 | 113 | 5.2 | 4.3 |
| 30-48 yrs | Non-Vietnam | 1972 | 14.0 | 5.26 | 0.12 | 3 | 7 | 9 | 13 | 21 | 24 | 54 | 5.2 | 4.3 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1638 | 14.0 | 5.69 | 0.14 | 2 | 7 | 8 | 13 | 20 | 23 | 113 | 5.4 | 3.5 |
| 30-39 yrs | Non-Vietnam | 1153 | 13.7 | 5.18 | 0.15 | 4 | 7 | 8 | 13 | 20 | 22 | 54 | 5.9 | 3.8 |
| 40-48 yrs | Vietnam | 416 | 14.2 | 5.63 | 0.28 | 2 | 7 | 8 | 13 | 21 | 25 | 39 | 6.5 | 5.3 |
| 40-48 yrs | Non-Vietnam | 447 | 13.7 | 4.92 | 0.23 | 3 | 7 | 8 | 13 | 20 | 23 | 34 | 4.9 | 3.8 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 211 | 15.6 | 5.82 | 0.40 | 6 | 8 | 9 | 14 | 23 | 27 | 44 | 1.9 | 7.6 |
| 30-39 yrs | Non-Vietnam | 181 | 16.2 | 6.04 | 0.45 | 4 | 9 | 10 | 15 | 25 | 27 | 46 | 3.9 | 9.9 |
| 40-48 yrs | Vietnam | 75 | 16.4 | 10.61 | 1.23 | 5 | 8 | 10 | 14 | 24 | 26 | 95 | 1.3 | 6.7 |
| 40-48 yrs | Non-Vietnam | 58 | 15.8 | 5.59 | 0.73 | 6 | 9 | 10 | 15 | 23 | 25 | 34 | 1.7 | 5.2 |

^a The low reference value is the 5th percentile of the Vietnam and non-Vietnam cohorts combined.

^b The high reference value is the 95th percentile of the Vietnam and non-Vietnam cohorts combined.

^c All races include white, black, and other.

Table E.31 Percent and Number of Vietnam and Non-Vietnam Veterans With Positive Laboratory Test Results, by Laboratory Assay

| Test | Vietnam (N = 2490) | | Non-Vietnam (N = 1972) | | OR | Crude Results 95% CI |
|--------------------------------|-----------------------|-----|---------------------------|-----|-----|-------------------------|
| | % | No. | % | No. | | |
| Anergy ^a | 3.5 | 88 | 3.9 | 76 | 0.9 | 0.7-1.2 |
| Serologic test syphilis (RPR) | 0.5 | 13 | 0.9 | 18 | 0.6 | 0.3-1.2 |
| Hepatitis B surface antigen | 0.5 | 13 | 0.9 | 18 | 0.6 | 0.3-1.2 |
| Antibody to HBsAg ^b | 8.9 | 221 | 6.0 | 119 | 1.5 | 1.2-1.9 |
| Antibody to HBcAg ^b | 13.7 | 341 | 11.3 | 223 | 1.2 | 1.0-1.5 |
| Protein, urine dip stick | 15.1 | 376 | 14.0 | 276 | 1.1 | 0.9-1.3 |
| Glucose, urine dip stick | 0.7 | 18 | 0.6 | 12 | 1.2 | 0.6-2.5 |
| Ketones, urine dip stick | 23.5 | 585 | 25.1 | 495 | 0.9 | 0.8-1.1 |
| Bilirubin, urine dip stick | 8.2 | 204 | 7.9 | 155 | 1.0 | 0.8-1.3 |
| Hemoglobin, urine dip stick | 4.7 | 118 | 4.5 | 89 | 1.1 | 0.8-1.4 |
| Urobilinogen | 0.8 | 20 | 0.5 | 9 | 1.8 | 0.8-3.9 |
| White blood cells, urine | 5.3 | 131 | 4.8 | 95 | 1.1 | 0.8-1.4 |
| Red blood cells, urine | 1.6 | 41 | 1.7 | 33 | 1.0 | 0.6-1.6 |
| Hyaline casts | 5.1 | 127 | 4.2 | 82 | 1.2 | 0.9-1.6 |
| Occult blood, feces | 1.3 | 29 | 0.5 | 9 | 2.6 | 1.2-5.5 |

^a < 2 mm response to all seven recall antigens in Cell-Mediated Immunity (CMI) test (see Chapter 8)

^b HBsAg = Hepatitis B surface antigen; HBcAg = Hepatitis B core antigen.

APPENDIX F

Results of Tests Associated With Cardiorespiratory Function

**Table F.1 Summary Statistics of Measurements Associated With Cardiovascular Function:
Measure – Systolic Blood Pressure^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | % Above Reference ^c | |
|----------------------------|------------------|----------------|------|------|------|------------|-----|------|------|------|------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In Milligrams of Mercury) | | | | | | | | | | | | | |
| All Races ^d | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2488 | 124 | 12.4 | 0.25 | 79 | 105 | 110 | 122 | 140 | 145 | 202 | 10.0 |
| 30-48 yrs | Non-Vietnam | 1971 | 123 | 12.2 | 0.27 | 90 | 105 | 110 | 122 | 139 | 145 | 209 | 9.0 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1638 | 123 | 11.9 | 0.29 | 79 | 105 | 109 | 122 | 138 | 144 | 180 | 8.2 |
| 30-39 yrs | Non-Vietnam | 1152 | 122 | 11.4 | 0.33 | 91 | 105 | 109 | 122 | 137 | 141 | 174 | 6.9 |
| 40-48 yrs | Vietnam | 415 | 124 | 12.0 | 0.59 | 84 | 105 | 110 | 123 | 140 | 145 | 162 | 10.6 |
| 40-48 yrs | Non-Vietnam | 447 | 124 | 12.0 | 0.57 | 95 | 106 | 110 | 122 | 140 | 146 | 170 | 10.7 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 210 | 126 | 12.8 | 0.89 | 99 | 108 | 111 | 124 | 145 | 150 | 165 | 16.2 |
| 30-39 yrs | Non-Vietnam | 181 | 127 | 15.3 | 1.14 | 90 | 100 | 110 | 125 | 146 | 153 | 200 | 17.1 |
| 40-48 yrs | Vietnam | 75 | 131 | 19.5 | 2.25 | 92 | 106 | 109 | 126 | 157 | 175 | 202 | 22.7 |
| 40-48 yrs | Non-Vietnam | 58 | 128 | 15.9 | 2.09 | 105 | 107 | 112 | 127 | 148 | 153 | 209 | 13.8 |

^a Average of two readings on the right arm.

^b Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data.

^c Reference value for blood pressure is 140 milligrams mercury.

^d All races include white, black, and other.

**Table F.2 Summary Statistics of Measurements Associated With Cardiovascular Function:
Measure – Diastolic Blood Pressure^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | % Above Reference ^c | |
|------------------------|------------------|----------------|------|-------|------|------------|-----|------|------|------|------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| All Races ^d | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2488 | 84.5 | 9.77 | 0.20 | 50 | 70 | 73 | 84 | 97 | 100 | 136 | 29.8 |
| 30-48 yrs | Non-Vietnam | 1971 | 83.8 | 9.44 | 0.21 | 53 | 69 | 72 | 84 | 95 | 100 | 133 | 26.9 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1638 | 83.7 | 9.43 | 0.23 | 50 | 70 | 72 | 83 | 96 | 100 | 134 | 26.5 |
| 30-39 yrs | Non-Vietnam | 1152 | 83.2 | 8.97 | 0.26 | 55 | 69 | 71 | 83 | 95 | 99 | 112 | 24.1 |
| 40-48 yrs | Vietnam | 415 | 85.1 | 9.28 | 0.46 | 59 | 70 | 73 | 85 | 98 | 100 | 112 | 32.9 |
| 40-48 yrs | Non-Vietnam | 447 | 84.2 | 8.81 | 0.42 | 62 | 70 | 73 | 83 | 95 | 100 | 118 | 27.5 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 210 | 86.5 | 10.58 | 0.73 | 59 | 70 | 73 | 86 | 100 | 106 | 119 | 37.9 |
| 30-39 yrs | Non-Vietnam | 181 | 86.3 | 11.53 | 0.86 | 53 | 69 | 72 | 86 | 100 | 105 | 128 | 38.1 |
| 40-48 yrs | Vietnam | 75 | 90.5 | 13.97 | 1.61 | 70 | 72 | 74 | 90 | 107 | 121 | 136 | 50.7 |
| 40-48 yrs | Non-Vietnam | 58 | 86.9 | 12.18 | 1.60 | 66 | 68 | 73 | 87 | 100 | 105 | 133 | 34.5 |

^a Average of two readings on the right arm.

^b Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data.

^c Reference value for blood pressure is 90 milligrams mercury.

^d All races include white, black, and other.

Table F.3 Percent and Number of Vietnam and Non-Vietnam Veterans With High Blood Pressure, and Odds Ratios

| Condition | Vietnam (N = 2488) | | Non-Vietnam (N = 1971) | | Crude Results | |
|-------------------------------------|-----------------------|-----|---------------------------|-----|---------------|---------|
| | % | No. | % | No. | OR | 95% CI |
| Systolic hypertension ^a | 10.0 | 249 | 9.0 | 178 | 1.1 | 0.9-1.4 |
| Diastolic hypertension ^b | 29.8 | 742 | 26.9 | 531 | 1.2 | 1.0-1.3 |

^a Systolic blood pressure, ≥ 140 mmHg, average of two readings on right arm.

^b Diastolic blood pressure, ≥ 90 mmHg, average of two readings on right arm.

**Table F.4 Summary Statistics for Laboratory Tests Associated With Cardiovascular Function:
Test – Total Cholesterol**

| Race and Age | Place of Service | N | Mean | S.D. | S.E. | Percentile | | | | | | % Above Reference ^a | |
|------------------------|------------------|------|------|------|------|------------|-----|------|------|------|------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| All Races ^b | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2490 | 214 | 42.1 | 0.84 | 61 | 151 | 164 | 211 | 267 | 283 | 631 | 41.4 |
| 30-48 yrs | Non-Vietnam | 1972 | 211 | 41.0 | 0.92 | 74 | 149 | 161 | 209 | 264 | 281 | 384 | 39.4 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1638 | 213 | 42.8 | 1.06 | 80 | 148 | 163 | 210 | 266 | 282 | 631 | 40.3 |
| 30-39 yrs | Non-Vietnam | 1153 | 210 | 39.3 | 1.16 | 92 | 150 | 162 | 207 | 261 | 278 | 384 | 37.0 |
| 40-48 yrs | Vietnam | 416 | 218 | 38.0 | 1.87 | 103 | 159 | 170 | 218 | 269 | 284 | 329 | 46.2 |
| 40-48 yrs | Non-Vietnam | 447 | 216 | 40.0 | 1.89 | 104 | 152 | 165 | 216 | 269 | 282 | 355 | 46.3 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 211 | 209 | 39.7 | 2.74 | 61 | 152 | 164 | 208 | 260 | 277 | 320 | 37.0 |
| 30-39 yrs | Non-Vietnam | 181 | 208 | 46.8 | 3.48 | 74 | 132 | 151 | 208 | 266 | 289 | 376 | 37.6 |
| 40-48 yrs | Vietnam | 75 | 209 | 43.1 | 4.97 | 100 | 142 | 158 | 206 | 273 | 291 | 312 | 37.3 |
| 40-48 yrs | Non-Vietnam | 58 | 218 | 45.2 | 5.93 | 121 | 148 | 156 | 214 | 279 | 293 | 336 | 44.8 |

^a Reference value for total cholesterol is 220 milligrams per deciliter.

^b All races include white, black, and other.

**Table F.5 Summary Statistics for Laboratory Tests Associated With Cardiovascular Function:
Test – High-Density Lipoprotein (HDL) Cholesterol**

| Race and Age | Place of Service | N | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^a | |
|------------------------|------------------|------|------|------|------|------------|-----|------|------|------|------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| All Races ^b | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2490 | 44.5 | 12.4 | 0.25 | 7 | 28 | 31 | 43 | 60 | 66 | 134 | 39.8 |
| 30-48 yrs | Non-Vietnam | 1972 | 44.9 | 12.5 | 0.28 | 9 | 29 | 31 | 43 | 61 | 68 | 126 | 38.6 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1638 | 43.7 | 11.1 | 0.28 | 7 | 28 | 31 | 42 | 59 | 64 | 100 | 40.7 |
| 30-39 yrs | Non-Vietnam | 1153 | 44.1 | 12.0 | 0.35 | 9 | 29 | 31 | 43 | 59 | 66 | 126 | 40.2 |
| 40-48 yrs | Vietnam | 416 | 42.8 | 11.8 | 0.58 | 20 | 28 | 30 | 41 | 58 | 66 | 108 | 45.7 |
| 40-48 yrs | Non-Vietnam | 447 | 44.2 | 11.6 | 0.55 | 14 | 29 | 32 | 43 | 59 | 65 | 109 | 40.0 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 211 | 52.0 | 17.7 | 1.22 | 15 | 28 | 35 | 49 | 73 | 87 | 134 | 24.2 |
| 30-39 yrs | Non-Vietnam | 181 | 50.7 | 15.1 | 1.12 | 23 | 31 | 33 | 48 | 73 | 78 | 103 | 27.1 |
| 40-48 yrs | Vietnam | 75 | 51.3 | 15.6 | 1.80 | 19 | 30 | 36 | 49 | 74 | 88 | 101 | 22.7 |
| 40-48 yrs | Non-Vietnam | 58 | 50.6 | 15.5 | 2.03 | 27 | 32 | 33 | 50 | 69 | 82 | 112 | 25.9 |

^a Reference value for high-density lipoprotein is 40 milligrams per deciliter.

^b All races include white, black, and other.

**Table F.6 Summary Statistics for Laboratory Tests Associated With Cardiovascular Function:
Test — Ratio of Low-Density Lipoprotein^a and High-Density Lipoprotein (HDL) Cholesterol**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | % Above Reference ^c | |
|------------------------|------------------|----------------|------|------|------|------------|-----|------|------|------|------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| All Races ^d | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2487 | 3.6 | 1.41 | 0.03 | 0 | 2 | 2 | 3 | 5 | 6 | 17 | 61.9 |
| 30-48 yrs | Non-Vietnam | 1968 | 3.4 | 1.35 | 0.03 | 0 | 2 | 2 | 3 | 5 | 6 | 12 | 58.5 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1637 | 3.6 | 1.43 | 0.04 | 0 | 2 | 2 | 3 | 5 | 6 | 17 | 62.2 |
| 30-39 yrs | Non-Vietnam | 1150 | 3.5 | 1.35 | 0.04 | 0 | 2 | 2 | 3 | 5 | 6 | 12 | 59.5 |
| 40-48 yrs | Vietnam | 415 | 3.7 | 1.35 | 0.07 | 1 | 2 | 2 | 4 | 6 | 6 | 9 | 70.4 |
| 40-48 yrs | Non-Vietnam | 446 | 3.6 | 1.34 | 0.06 | 1 | 2 | 2 | 3 | 5 | 6 | 10 | 62.0 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 211 | 3.0 | 1.32 | 0.09 | 1 | 1 | 1 | 3 | 5 | 5 | 9 | 45.0 |
| 30-39 yrs | Non-Vietnam | 181 | 3.0 | 1.41 | 0.10 | 1 | 1 | 1 | 3 | 5 | 5 | 8 | 45.9 |
| 40-48 yrs | Vietnam | 74 | 3.0 | 1.32 | 0.15 | 1 | 1 | 1 | 3 | 5 | 6 | 7 | 45.3 |
| 40-48 yrs | Non-Vietnam | 58 | 3.3 | 1.43 | 0.19 | 1 | 1 | 2 | 3 | 6 | 6 | 7 | 53.4 |

^a Low-density lipoprotein was computed as (total cholesterol-[triglycerides/5.0]-HDL).

^b Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data.

^c Reference value for ratio is 3.

^d All races include white, black, and other.

**Table F.7 Summary Statistics for Laboratory Tests Associated With Cardiovascular Function:
Test – Triglycerides**

| Race and Age | Place of Service | N | Mean | S.D. | S.E. | Percentile | | | | | | | % Above Reference ^a |
|--|------------------|------|-------|-------|-------|------------|-----|------|------|------|------|------|--------------------------------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | Max | |
| (In Milligrams Per Deciliter of Serum) | | | | | | | | | | | | | |
| All Races^b | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2490 | 114.6 | 95.8 | 1.92 | 10 | 38 | 47 | 90 | 206 | 267 | 1678 | 6.0 |
| 30-48 yrs | Non-Vietnam | 1972 | 116.1 | 125.6 | 2.83 | 15 | 36 | 44 | 89 | 209 | 280 | 3743 | 6.7 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1638 | 113.2 | 92.4 | 2.28 | 12 | 37 | 45 | 90 | 203 | 267 | 1443 | 5.6 |
| 30-39 yrs | Non-Vietnam | 1153 | 115.2 | 97.9 | 2.88 | 19 | 36 | 45 | 91 | 208 | 272 | 1174 | 6.3 |
| 40-48 yrs | Vietnam | 416 | 129.4 | 113.8 | 5.58 | 10 | 43 | 52 | 103 | 233 | 297 | 1678 | 8.4 |
| 40-48 yrs | Non-Vietnam | 447 | 126.6 | 190.3 | 9.00 | 15 | 38 | 48 | 94 | 234 | 296 | 3743 | 8.7 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 211 | 87.8 | 54.6 | 3.76 | 16 | 32 | 40 | 77 | 140 | 176 | 404 | 1.9 |
| 30-39 yrs | Non-Vietnam | 181 | 82.8 | 56.3 | 4.18 | 23 | 32 | 37 | 68 | 140 | 174 | 462 | 1.7 |
| 40-48 yrs | Vietnam | 75 | 100.4 | 115.5 | 13.34 | 20 | 40 | 46 | 76 | 159 | 207 | 1002 | 2.7 |
| 40-48 yrs | Non-Vietnam | 58 | 86.0 | 62.5 | 8.20 | 29 | 35 | 40 | 66 | 157 | 213 | 400 | 3.4 |

^a Reference value for triglycerides is 250 milligrams per deciliter.

^b All races include white, black, and other.

**Table F.8 Summary Statistics for Laboratory Tests Associated With Cardiovascular Function:
Test – Creatine Phosphokinase**

| Race and Age | Place of Service | N | Mean | S.D. | S.E. | Percentile | | | | | | % Above Reference ^a | |
|---|------------------|------|-------|-------|-------|------------|-----|------|------|------|------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In International Units Per Liter of Serum) | | | | | | | | | | | | | |
| All Races ^b | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2490 | 140.2 | 200.7 | 4.02 | 12 | 48 | 57 | 105 | 235 | 307 | 5132 | 5.0 |
| 30-48 yrs | Non-Vietnam | 1972 | 139.6 | 155.3 | 3.50 | 19 | 52 | 60 | 107 | 234 | 303 | 4132 | 4.9 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1638 | 120.1 | 107.7 | 2.66 | 12 | 47 | 55 | 97 | 198 | 254 | 2796 | 3.2 |
| 30-39 yrs | Non-Vietnam | 1153 | 120.1 | 114.0 | 3.36 | 27 | 50 | 58 | 98 | 198 | 242 | 2451 | 2.3 |
| 40-48 yrs | Vietnam | 416 | 119.4 | 95.4 | 4.68 | 14 | 48 | 55 | 97 | 188 | 242 | 1058 | 2.6 |
| 40-48 yrs | Non-Vietnam | 447 | 127.9 | 203.9 | 9.65 | 20 | 49 | 59 | 104 | 189 | 249 | 4132 | 2.2 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 211 | 268.9 | 363.7 | 25.04 | 41 | 84 | 94 | 200 | 423 | 639 | 4264 | 18.0 |
| 30-39 yrs | Non-Vietnam | 181 | 243.9 | 181.2 | 13.47 | 54 | 93 | 103 | 195 | 424 | 600 | 1229 | 17.7 |
| 40-48 yrs | Vietnam | 75 | 214.3 | 121.7 | 14.05 | 63 | 80 | 103 | 189 | 367 | 441 | 793 | 17.3 |
| 40-48 yrs | Non-Vietnam | 58 | 269.7 | 219.0 | 28.76 | 61 | 79 | 117 | 216 | 428 | 938 | 1224 | 29.3 |

^a Reference value is the 95th percentile of the Vietnam and non-Vietnam cohorts combined.

^b All races include white, black, and other.

Table F.9 Percent and Number of Vietnam and Non-Vietnam Veterans With Abnormal Findings From the Peripheral Vascular (Doppler) Examination, and Odds Ratios, by Selected Examination Items

| Abnormality | Vietnam (N = 2490) | | Non-Vietnam (N = 1972) | | Crude Results ^a | |
|--|-----------------------|-----|---------------------------|-----|----------------------------|---------|
| | % | No. | % | No. | OR | 95% CI |
| Radial pulse morphology, RT ^b arm | 0.1 | 1 | 0.1 | 1 | — | — |
| Radial pulse morphology, LT ^b arm | — | 0 | — | 0 | — | — |
| Post tibial morphology, RT leg | 0.2 | 3 | 0.1 | 1 | — | — |
| Post tibial morphology, LT leg | 0.4 | 6 | 0.2 | 2 | — | — |
| Resting pressure index, RT <1.0 ^c | 3.9 | 53 | 2.9 | 29 | 1.3 | 0.8-2.1 |
| Resting pressure index, LT <1.0 ^c | 4.6 | 62 | 3.2 | 32 | 1.4 | 0.9-2.2 |

^a A dash (—) indicates the value was not computed. This occurs when there are fewer than 10 cases in both cohorts combined.

^b Abbreviations: RT = right, LT = left.

^c This is a computed index; for details, see Chapter 9.

Table F.10 Percent and Number of Vietnam and Non-Vietnam Veterans With Diminished Pulmonary Function^a and Odds Ratios, by Selected Measures

| Measure | Vietnam (N = 2490) | | Non-Vietnam (N = 1972) | | Crude Results | |
|----------------|-----------------------|-----|---------------------------|-----|---------------|---------|
| | % | No. | % | No. | OR | 95% CI |
| FEV1/FVC, <70% | 6.1 | 153 | 6.1 | 121 | 1.0 | 0.8-1.3 |
| FVC, ≤80% | 7.1 | 178 | 6.8 | 135 | 1.0 | 0.8-1.3 |
| FEV1, ≤80% | 10.2 | 254 | 10.9 | 214 | 0.9 | 0.8-1.1 |

^a FEV1 = forced expiratory volume in one second; FVC = forced vital capacity.

**Table F.11 Summary Statistics of Pulmonary Function Tests:
Test – Forced Expiratory Volume in One Second (FEV1)**

| Race and Age | Place of Service | N | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^a | |
|------------------------|------------------|------|------|------|------|------------|-----|------|------|------|------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In Liters) | | | | | | | | | | | | | |
| All Races ^b | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2490 | 4.0 | 0.6 | 0.01 | 1.4 | 3.0 | 3.2 | 4.0 | 4.9 | 5.1 | 7.1 | 10.2 |
| 30-48 yrs | Non-Vietnam | 1972 | 4.0 | 0.7 | 0.01 | 0.7 | 3.0 | 3.2 | 4.1 | 4.9 | 5.1 | 6.7 | 10.9 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1638 | 4.1 | 0.6 | 0.02 | 2.0 | 3.1 | 3.4 | 4.1 | 5.0 | 5.2 | 7.1 | 9.8 |
| 30-39 yrs | Non-Vietnam | 1153 | 4.1 | 0.6 | 0.02 | 0.7 | 3.1 | 3.3 | 4.1 | 4.9 | 5.2 | 6.7 | 10.6 |
| 40-48 yrs | Vietnam | 416 | 4.0 | 0.6 | 0.03 | 1.8 | 2.8 | 3.1 | 4.0 | 4.7 | 4.9 | 5.8 | 11.8 |
| 40-48 yrs | Non-Vietnam | 447 | 4.1 | 0.7 | 0.03 | 1.5 | 3.0 | 3.3 | 4.1 | 4.9 | 5.1 | 5.9 | 9.2 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 211 | 3.7 | 0.6 | 0.04 | 2.1 | 2.8 | 3.0 | 3.7 | 4.5 | 4.7 | 6.0 | 12.8 |
| 30-39 yrs | Non-Vietnam | 181 | 3.7 | 0.6 | 0.04 | 2.0 | 2.8 | 3.0 | 3.6 | 4.4 | 4.7 | 5.3 | 17.7 |
| 40-48 yrs | Vietnam | 75 | 3.5 | 0.7 | 0.08 | 1.4 | 2.3 | 2.5 | 3.5 | 4.2 | 4.6 | 5.5 | 18.7 |
| 40-48 yrs | Non-Vietnam | 58 | 3.4 | 0.7 | 0.09 | 1.4 | 2.3 | 2.7 | 3.3 | 4.3 | 4.8 | 5.1 | 20.7 |

^a Reference value for FEV1 is 80.1% predicted. (See Chapter 10 for computation of predicted value.)

^b All races include white, black, and other.

**Table F.12 Summary Statistics of Pulmonary Function Tests:
Test – Forced Vital Capacity (FVC)**

| Race and Age | Place of Service | N | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^a | |
|------------------------|------------------|------|------|------|------|------------|-----|------|------|------|------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| All Races ^b | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2490 | 5.0 | 0.8 | 0.02 | 2.1 | 3.7 | 4.0 | 4.9 | 6.0 | 6.3 | 8.6 | 7.1 |
| 30-48 yrs | Non-Vietnam | 1972 | 5.0 | 0.8 | 0.02 | 2.3 | 3.7 | 4.0 | 5.0 | 6.0 | 6.3 | 7.9 | 6.8 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1638 | 5.1 | 0.8 | 0.02 | 2.1 | 3.9 | 4.2 | 5.1 | 6.1 | 6.4 | 8.6 | 6.4 |
| 30-39 yrs | Non-Vietnam | 1153 | 5.1 | 0.8 | 0.02 | 2.4 | 3.9 | 4.2 | 5.1 | 6.1 | 6.4 | 7.9 | 5.6 |
| 40-48 yrs | Vietnam | 416 | 4.9 | 0.7 | 0.04 | 2.8 | 3.6 | 3.9 | 4.9 | 5.9 | 6.1 | 7.3 | 8.9 |
| 40-48 yrs | Non-Vietnam | 447 | 5.0 | 0.8 | 0.04 | 2.3 | 3.7 | 4.0 | 5.0 | 6.0 | 6.3 | 7.2 | 7.6 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 211 | 4.4 | 0.7 | 0.05 | 2.6 | 3.4 | 3.6 | 4.4 | 5.4 | 5.7 | 6.7 | 9.5 |
| 30-39 yrs | Non-Vietnam | 181 | 4.5 | 0.7 | 0.05 | 2.7 | 3.4 | 3.7 | 4.4 | 5.3 | 5.6 | 6.3 | 11.6 |
| 40-48 yrs | Vietnam | 75 | 4.2 | 0.6 | 0.07 | 2.9 | 2.9 | 3.4 | 4.2 | 4.8 | 5.4 | 5.7 | 17.3 |
| 40-48 yrs | Non-Vietnam | 58 | 4.1 | 0.8 | 0.10 | 2.6 | 3.0 | 3.3 | 4.1 | 5.1 | 5.8 | 6.3 | 17.2 |

^a Reference value for FVC is 80.1% predicted. (See Chapter 10 for computation of predicted value.)

^b All races include white, black, and other.

**Table F.13 Summary Statistics of Pulmonary Function Tests:
Test – Ratio of Forced Expiratory Volume in One Second (FEV1) and Forced Vital Capacity (FVC)**

| Race and Age | Place of Service | N | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^a | |
|------------------------|------------------|------|------|------|-------|------------|------|------|------|------|------|--------------------------------|-----|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| All Races ^b | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2490 | 0.81 | 0.07 | 0.001 | 0.40 | 0.68 | 0.72 | 0.82 | 0.89 | 0.91 | 1.00 | 6.1 |
| 30-48 yrs | Non-Vietnam | 1972 | 0.81 | 0.07 | 0.002 | 0.15 | 0.68 | 0.72 | 0.81 | 0.88 | 0.90 | 1.00 | 6.1 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1638 | 0.81 | 0.07 | 0.002 | 0.45 | 0.68 | 0.72 | 0.81 | 0.88 | 0.90 | 1.00 | 6.2 |
| 30-39 yrs | Non-Vietnam | 1153 | 0.80 | 0.07 | 0.002 | 0.15 | 0.68 | 0.72 | 0.81 | 0.88 | 0.90 | 1.00 | 6.6 |
| 40-48 yrs | Vietnam | 416 | 0.81 | 0.07 | 0.004 | 0.49 | 0.67 | 0.71 | 0.81 | 0.89 | 0.92 | 0.99 | 7.7 |
| 40-48 yrs | Non-Vietnam | 447 | 0.81 | 0.07 | 0.003 | 0.45 | 0.69 | 0.72 | 0.81 | 0.88 | 0.90 | 0.99 | 5.6 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 211 | 0.83 | 0.07 | 0.005 | 0.53 | 0.70 | 0.74 | 0.84 | 0.90 | 0.92 | 0.99 | 4.7 |
| 30-39 yrs | Non-Vietnam | 181 | 0.82 | 0.07 | 0.005 | 0.57 | 0.70 | 0.72 | 0.83 | 0.90 | 0.92 | 0.99 | 4.4 |
| 40-48 yrs | Vietnam | 75 | 0.83 | 0.09 | 0.010 | 0.40 | 0.67 | 0.75 | 0.85 | 0.91 | 0.92 | 1.00 | 6.7 |
| 40-48 yrs | Non-Vietnam | 58 | 0.81 | 0.07 | 0.010 | 0.53 | 0.68 | 0.73 | 0.82 | 0.89 | 0.90 | 0.93 | 5.2 |

^a Reference value for FEV1/FVC is 70% predicted. (See Chapter 10 for computation of predicted value.)

^b All races include white, black, and other.

APPENDIX G

Results of Examination and Testing of Neurologic System

Table G.1 Percent and Number of Vietnam and Non-Vietnam Veterans With Abnormal Neurologic Findings, and Odds Ratios, by Selected Examination Items

| Abnormality | Vietnam (N = 2490) | | Non-Vietnam (N = 1972) | | Crude Results ^a | |
|-------------------------------|-----------------------|-----|---------------------------|-----|----------------------------|---------|
| | % | No. | % | No. | OR | 95% CI |
| Smell, RT ^b | 2.4 | 60 | 2.8 | 55 | 0.9 | 0.6-1.2 |
| Smell, LT ^b | 2.2 | 55 | 2.4 | 48 | 0.9 | 0.6-1.3 |
| Visual Field, RT | 0.4 | 9 | 0.3 | 5 | 1.4 | 0.5-4.3 |
| Visual Field, LT | 0.6 | 14 | 0.3 | 5 | 2.2 | 0.8-6.2 |
| Optic Disc, RT | 1.8 | 46 | 2.3 | 46 | 0.8 | 0.5-1.2 |
| Optic Disc, LT | 2.2 | 56 | 2.5 | 49 | 0.9 | 0.6-1.3 |
| Pupil Size, RT ^c | 3.7 | 92 | 3.1 | 62 | 1.2 | 0.9-1.6 |
| Pupil Size, LT ^c | 3.7 | 93 | 3.2 | 63 | 1.2 | 0.8-1.6 |
| Light Reaction, RT | 0.8 | 20 | 0.5 | 10 | 1.6 | 0.7-3.4 |
| Light Reaction, LT | 0.8 | 21 | 0.6 | 11 | 1.5 | 0.7-3.2 |
| Ptosis, RT | 0.6 | 15 | 0.5 | 9 | 1.3 | 0.6-3.0 |
| Ptosis, LT | 0.3 | 8 | 0.8 | 15 | 0.4 | 0.2-1.0 |
| Ocular Mobility, RT | 0.7 | 17 | 0.5 | 9 | 1.5 | 0.7-3.4 |
| Ocular Mobility, LT | 0.6 | 15 | 0.7 | 14 | 0.8 | 0.4-1.8 |
| Nystagmus, RT | 1.2 | 30 | 1.4 | 28 | 0.8 | 0.5-1.4 |
| Nystagmus, LT | 1.1 | 28 | 1.5 | 29 | 0.8 | 0.5-1.3 |
| Jaw Strength | 0.6 | 14 | 1.0 | 20 | 0.6 | 0.3-1.1 |
| Jaw Jerk | 6.7 | 167 | 6.1 | 120 | 1.1 | 0.9-1.4 |
| Facial Pain Perception | 5.3 | 132 | 4.7 | 93 | 1.1 | 0.9-1.5 |
| Corneal Reflex, RT | 1.4 | 35 | 1.0 | 20 | 1.4 | 0.8-2.4 |
| Corneal Reflex, LT | 1.5 | 37 | 1.5 | 30 | 1.0 | 0.6-1.6 |
| Facial Muscles, RT | 0.4 | 10 | 0.5 | 9 | 0.9 | 0.4-2.2 |
| Facial Muscles, LT | 0.2 | 5 | 0.2 | 3 | — | — |
| Palate Motion, RT | 0.1 | 3 | 0.1 | 2 | — | — |
| Palate Motion, LT | 0.0 | 1 | 0.1 | 1 | — | — |
| Gag Reflex | 0.9 | 22 | 1.1 | 22 | 0.8 | 0.4-1.4 |
| Accessory Nerves, RT | 0.2 | 6 | 0.4 | 7 | 0.7 | 0.2-2.0 |
| Accessory Nerves, LT | 0.2 | 5 | 0.2 | 4 | — | — |
| Tongue Motion, RT | 0.2 | 5 | 0.1 | 2 | — | — |
| Tongue Motion, LT | 0.2 | 4 | 0.1 | 2 | — | — |
| Other Cranial Nerve Condition | 1.4 | 36 | 1.0 | 19 | 1.5 | 0.9-2.6 |

Table G.1 Percent and Number of Vietnam and Non-Vietnam Veterans With Abnormal Neurologic Findings, and Odds Ratios, by Selected Examination Items -- Continued

| Abnormality | Vietnam (N=2490) | | Non-Vietnam (N=1972) | | Crude Results ¹ | |
|-----------------------|---------------------|-----|-------------------------|-----|----------------------------|---------|
| | % | No. | % | No. | OR | 95% CI |
| Gait | 1.9 | 48 | 1.6 | 32 | 1.2 | 0.8-1.9 |
| Foot Drop, RT | 0.2 | 6 | 0.1 | 2 | — | — |
| Foot Drop, LT | 0.4 | 10 | 0.2 | 4 | 2.0 | 0.6-3.3 |
| Arm Swing, RT | 0.8 | 20 | 0.7 | 14 | 1.1 | 0.6-3.3 |
| Arm Swing, LT | 0.5 | 12 | 0.4 | 8 | 1.2 | 0.5-2.9 |
| Tandem Gait | 1.8 | 40 | 1.9 | 34 | 0.9 | 0.6-1.5 |
| Station, Eyes Open | 0.2 | 4 | 0.2 | 4 | — | — |
| Station, Eyes Closed | 0.4 | 11 | 0.3 | 6 | 1.5 | 0.5-3.9 |
| Muscle Consistency | 0.4 | 11 | 0.5 | 10 | 0.9 | 0.4-2.1 |
| Muscle Tone | 0.6 | 16 | 1.1 | 22 | 0.6 | 0.3-1.1 |
| Atrophy | 1.4 | 36 | 1.1 | 21 | 1.4 | 0.8-2.3 |
| Muscle Strength | | | | | | |
| RT deltoids | 0.4 | 11 | 0.8 | 15 | 0.6 | 0.3-1.3 |
| LT deltoids | 0.2 | 6 | 0.7 | 13 | 0.4 | 0.1-1.0 |
| RT biceps | 0.6 | 14 | 0.9 | 17 | 0.6 | 0.3-1.3 |
| LT biceps | 0.4 | 10 | 0.7 | 14 | 0.6 | 0.2-1.3 |
| RT triceps | 0.7 | 17 | 0.5 | 10 | 1.3 | 0.6-2.9 |
| LT triceps | 0.6 | 14 | 0.5 | 9 | 1.2 | 0.5-2.9 |
| RT wrist extensor | 0.5 | 13 | 0.5 | 10 | 1.0 | 0.4-2.3 |
| LT wrist extensor | 0.6 | 14 | 0.5 | 10 | 1.1 | 0.5-2.5 |
| RT grip | 0.4 | 10 | 0.6 | 11 | 0.7 | 0.3-1.7 |
| LT grip | 0.4 | 9 | 0.4 | 8 | 0.9 | 0.3-2.3 |
| RT finger abductors | 0.4 | 10 | 0.6 | 11 | 0.7 | 0.3-1.7 |
| LT finger abductors | 0.3 | 8 | 0.3 | 6 | 1.1 | 0.4-3.0 |
| RT hip flexors | 0.6 | 14 | 1.0 | 19 | 0.6 | 0.3-1.2 |
| LT hip flexors | 0.9 | 22 | 0.8 | 16 | 1.1 | 0.6-2.1 |
| RT knee extensors | 0.6 | 16 | 0.6 | 11 | 1.2 | 0.5-2.5 |
| LT knee extensors | 1.0 | 25 | 0.8 | 16 | 1.2 | 0.7-2.3 |
| RT knee flexors | 0.5 | 12 | 0.8 | 15 | 0.6 | 0.3-1.4 |
| LT knee flexors | 0.8 | 21 | 0.8 | 16 | 1.0 | 0.5-2.0 |
| RT ankle dorsiflexors | 0.8 | 20 | 0.8 | 15 | 1.1 | 0.5-2.1 |
| LT ankle dorsiflexors | 1.0 | 24 | 0.6 | 11 | 1.7 | 0.8-3.6 |
| RT plantar flexors | 0.6 | 14 | 0.7 | 13 | 0.9 | 0.4-1.8 |
| LT plantar flexors | 0.6 | 15 | 0.4 | 7 | 1.7 | 0.7-4.2 |
| RT toe extensors | 0.8 | 21 | 0.9 | 18 | 0.9 | 0.5-1.7 |
| LT toe extensors | 0.9 | 23 | 0.7 | 13 | 1.4 | 0.7-2.8 |
| Tremors, RT Arm | 1.4 | 35 | 1.5 | 29 | 1.0 | 0.6-1.6 |

Table G.1 Percent and Number of Vietnam and Non-Vietnam Veterans With Abnormal Neurologic Findings, and Odds Ratios, by Selected Examination Items — Continued

| Abnormality | Vietnam (N=2490) | | Non-Vietnam (N=1972) | | Crude Results ^a | |
|----------------------------|---------------------|-----|-------------------------|-----|----------------------------|---------|
| | % | No. | % | No. | OR | 95% CI |
| Tremors, LT Arm | 1.4 | 36 | 1.5 | 30 | 1.0 | 0.6-1.5 |
| Finger, Nose Ataxia | 0.7 | 17 | 0.5 | 9 | 1.5 | 0.7-3.4 |
| Hand Pronation, Supination | 1.1 | 27 | 1.4 | 28 | 0.8 | 0.4-1.3 |
| Heel, Shin Ataxia | 1.6 | 39 | 1.6 | 31 | 1.0 | 0.6-1.6 |
| Finger Tapping | 1.6 | 39 | 1.2 | 24 | 1.3 | 0.8-2.2 |
| Arm Drift | 0.3 | 7 | 0.5 | 9 | 0.6 | 0.2-1.7 |
| Excess Rebound | 0.5 | 12 | 0.7 | 13 | 0.7 | 0.3-1.6 |
| Speech | 0.2 | 6 | 0.3 | 5 | 1.0 | 0.3-3.1 |
| Other Motor Condition | 1.4 | 36 | 1.4 | 28 | 1.0 | 0.6-1.7 |
| Reflex | | | | | | |
| RT biceps | 26.9 | 670 | 25.9 | 511 | 1.1 | 0.9-1.2 |
| LT biceps | 26.9 | 670 | 25.1 | 495 | 1.1 | 1.0-1.3 |
| RT triceps | 27.9 | 694 | 26.6 | 525 | 1.1 | 0.9-1.2 |
| LT triceps | 27.6 | 687 | 26.1 | 514 | 1.1 | 0.9-1.2 |
| Reflex | | | | | | |
| RT knee | 25.6 | 638 | 24.7 | 487 | 1.1 | 0.9-1.2 |
| LT knee | 25.5 | 634 | 24.3 | 480 | 1.1 | 0.9-1.2 |
| RT ankle | 26.8 | 668 | 25.4 | 501 | 1.1 | 0.9-1.2 |
| LT ankle | 27.0 | 672 | 24.8 | 490 | 1.1 | 1.0-1.3 |
| RT plantar | 20.0 | 498 | 19.7 | 389 | 1.0 | 0.9-1.2 |
| LT plantar | 20.3 | 506 | 20.2 | 398 | 1.0 | 0.9-1.2 |
| Other | 0.2 | 5 | 0.5 | 10 | 0.4 | 0.1-1.2 |
| Pinprick | | | | | | |
| RT arm, PD ^b | 1.4 | 33 | 1.1 | 22 | 1.2 | 0.7-2.1 |
| LT arm, PD | 1.1 | 27 | 0.7 | 14 | 1.6 | 0.8-3.0 |
| RT ARM, PV ^b | 1.0 | 23 | 1.0 | 19 | 1.0 | 0.5-1.8 |
| LT arm, PV | 0.8 | 20 | 0.4 | 8 | 2.0 | 0.9-4.6 |
| RT arm, DD ^b | 1.2 | 29 | 1.1 | 21 | 1.1 | 0.6-1.9 |
| LT arm, DD | 1.3 | 31 | 1.3 | 26 | 1.0 | 0.6-1.6 |
| RT arm, DV ^b | 2.9 | 70 | 2.8 | 54 | 1.0 | 0.7-1.5 |
| LT arm, DV | 4.1 | 100 | 4.6 | 90 | 0.9 | 0.7-1.2 |
| RT leg, PD | 0.5 | 13 | 1.0 | 20 | 0.5 | 0.3-1.0 |
| LT leg, PD | 1.6 | 39 | 1.6 | 31 | 1.0 | 0.6-1.6 |
| RT leg, PV | 0.8 | 20 | 0.8 | 15 | 1.1 | 0.5-2.1 |
| LT leg, PV | 0.8 | 19 | 1.0 | 19 | 0.8 | 0.4-1.5 |
| RT leg, DD | 1.1 | 26 | 0.4 | 8 | 2.6 | 1.2-5.8 |
| LT leg, DD | 1.7 | 40 | 1.1 | 22 | 1.5 | 0.9-2.5 |

Table G.1 Percent and Number of Vietnam and Non-Vietnam Veterans With Abnormal Neurologic Findings, and Odds Ratios, by Selected Examination Items – Continued

| Abnormality | Vietnam (N = 2490) | | Non-Vietnam (N = 1972) | | Crude Results ^a | | |
|----------------------|-----------------------|-----|---------------------------|-----|----------------------------|---------|--|
| | % | No. | % | No. | OR | 95% CI | |
| Pinprick – continued | | | | | | | |
| RT leg, DV | 1.9 | 45 | 1.6 | 31 | 1.2 | 0.7-1.9 | |
| LT leg, DV | 1.6 | 38 | 1.5 | 30 | 1.0 | 0.6-1.6 | |
| Vibratory Sensation | | | | | | | |
| RT lateral malleolus | 2.0 | 48 | 1.4 | 27 | 1.4 | 0.9-2.3 | |
| LT lateral malleolus | 1.6 | 38 | 0.9 | 18 | 1.7 | 1.0-3.0 | |
| RT patella | 0.9 | 19 | 0.8 | 14 | 1.1 | 0.5-2.2 | |
| LT patella | 1.1 | 25 | 1.0 | 18 | 1.1 | 0.6-2.1 | |
| Sensory Extinction | | | | | | | |
| Face | 0.4 | 10 | 0.3 | 6 | 1.3 | 0.5-3.7 | |
| Arms | 0.4 | 8 | 0.2 | 3 | 2.1 | 0.6-3.1 | |
| Legs | 0.6 | 13 | 0.7 | 13 | 0.8 | 0.4-1.7 | |
| Visual field | 1.2 | 27 | 1.1 | 19 | 1.1 | 0.6-2.1 | |

^a A dash (–) indicates the value was not computed.

This occurs when there are fewer than 10 cases in both cohorts combined.

^b Abbreviations: RT = right, LT = left, PD = proximal dorsal, PV = proximal ventral, DD = distal dorsal, DV = distal ventral.

^c Abnormal pupil size was defined as < 2 mm or > 5 mm.

**Table G.2 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure – Median Motor Nerve Conduction Velocity**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | |
|------------------------|------------------|----------------|-------|------|------|------------|-------|-------|-------|-------|-------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In Meters Per Second) | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2484 | 57.32 | 4.38 | 0.09 | 24.63 | 50.24 | 52.08 | 57.54 | 62.12 | 63.68 | 81.11 | 5.6 |
| 30-48 yrs | Non-Vietnam | 1967 | 57.42 | 4.30 | 0.10 | 31.39 | 50.19 | 52.38 | 57.62 | 62.26 | 63.74 | 82.81 | 5.3 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1634 | 57.43 | 4.46 | 0.11 | 24.63 | 50.35 | 52.23 | 57.62 | 62.50 | 63.89 | 76.61 | 5.6 |
| 30-39 yrs | Non-Vietnam | 1151 | 57.65 | 4.42 | 0.13 | 36.98 | 50.71 | 52.58 | 57.83 | 62.50 | 63.78 | 82.81 | 4.7 |
| 40-48 yrs | Vietnam | 415 | 57.03 | 4.30 | 0.21 | 39.33 | 50.00 | 51.53 | 57.22 | 62.07 | 63.57 | 81.11 | 6.3 |
| 40-48 yrs | Non-Vietnam | 446 | 57.24 | 4.06 | 0.19 | 42.58 | 50.17 | 52.38 | 57.30 | 61.55 | 63.57 | 81.52 | 5.6 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 210 | 56.68 | 4.03 | 0.28 | 43.39 | 50.17 | 51.35 | 57.04 | 61.30 | 62.50 | 70.83 | 6.2 |
| 30-39 yrs | Non-Vietnam | 180 | 56.98 | 3.78 | 0.28 | 41.41 | 50.18 | 51.94 | 57.36 | 61.73 | 62.50 | 65.96 | 5.6 |
| 40-48 yrs | Vietnam | 75 | 56.35 | 3.86 | 0.45 | 47.19 | 49.08 | 51.11 | 56.16 | 61.46 | 62.35 | 67.50 | 6.7 |
| 40-48 yrs | Non-Vietnam | 58 | 55.51 | 3.97 | 0.52 | 43.06 | 48.39 | 50.13 | 55.73 | 59.78 | 61.60 | 65.79 | 12.1 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 5th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

**Table G.3 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure – Median Sensory–Distal Nerve Conduction Velocity**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | |
|------------------------|------------------|----------------|-------|------|------|------------|-------|-------|-------|-------|-------|--------------------------------|-----|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In Meters Per Second) | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2466 | 53.53 | 6.39 | 0.13 | 21.21 | 42.07 | 45.34 | 54.17 | 60.83 | 62.50 | 72.12 | 6.0 |
| 30-48 yrs | Non-Vietnam | 1949 | 54.03 | 6.11 | 0.14 | 20.08 | 43.38 | 46.38 | 54.29 | 61.57 | 63.69 | 73.08 | 4.4 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1625 | 53.80 | 6.31 | 0.16 | 21.21 | 42.19 | 45.64 | 54.44 | 60.83 | 62.50 | 72.12 | 5.7 |
| 30-39 yrs | Non-Vietnam | 1141 | 54.39 | 5.98 | 0.18 | 24.49 | 43.58 | 46.88 | 54.69 | 61.66 | 63.71 | 73.08 | 4.0 |
| 40-48 yrs | Vietnam | 409 | 53.12 | 6.64 | 0.33 | 24.67 | 40.27 | 45.35 | 53.57 | 60.71 | 62.66 | 69.27 | 7.3 |
| 40-48 yrs | Non-Vietnam | 444 | 53.70 | 6.28 | 0.30 | 30.48 | 43.01 | 46.13 | 53.79 | 61.21 | 63.92 | 71.15 | 5.0 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 209 | 52.10 | 6.57 | 0.45 | 32.84 | 41.87 | 44.74 | 51.95 | 60.55 | 62.73 | 67.71 | 6.2 |
| 30-39 yrs | Non-Vietnam | 178 | 53.37 | 5.62 | 0.42 | 36.25 | 43.86 | 46.54 | 53.17 | 60.42 | 62.54 | 70.31 | 3.4 |
| 40-48 yrs | Vietnam | 74 | 52.83 | 5.63 | 0.65 | 39.32 | 43.77 | 45.47 | 53.22 | 59.72 | 62.53 | 66.67 | 4.1 |
| 40-48 yrs | Non-Vietnam | 54 | 50.73 | 8.11 | 1.10 | 20.08 | 39.77 | 42.80 | 50.82 | 62.05 | 64.34 | 65.00 | 9.3 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 5th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

**Table G.4 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure – Median Sensory–Proximal Nerve Conduction Velocity**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | |
|------------------------|------------------|----------------|-------|------|------|------------|-------|-------|-------|-------|-------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In Meters Per Second) | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2473 | 61.75 | 5.61 | 0.11 | 17.39 | 54.11 | 56.15 | 62.05 | 67.81 | 69.44 | 83.33 | 6.6 |
| 30-48 yrs | Non-Vietnam | 1949 | 61.99 | 5.60 | 0.13 | 20.03 | 54.94 | 56.68 | 62.31 | 67.65 | 69.50 | 82.81 | 4.8 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1630 | 61.92 | 5.50 | 0.14 | 20.11 | 54.60 | 56.44 | 62.09 | 67.98 | 69.47 | 83.33 | 5.7 |
| 30-39 yrs | Non-Vietnam | 1140 | 62.18 | 5.35 | 0.16 | 20.03 | 55.09 | 56.73 | 62.50 | 67.69 | 69.64 | 78.32 | 4.4 |
| 40-48 yrs | Vietnam | 412 | 61.27 | 5.74 | 0.28 | 22.76 | 53.65 | 55.24 | 61.70 | 67.47 | 69.33 | 78.80 | 8.3 |
| 40-48 yrs | Non-Vietnam | 443 | 61.55 | 5.53 | 0.26 | 26.65 | 54.12 | 56.50 | 61.85 | 67.10 | 69.44 | 80.00 | 5.4 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 208 | 61.09 | 6.05 | 0.42 | 17.39 | 52.04 | 55.04 | 61.49 | 67.30 | 69.10 | 80.95 | 9.6 |
| 30-39 yrs | Non-Vietnam | 181 | 61.29 | 6.45 | 0.48 | 29.74 | 53.57 | 55.64 | 62.10 | 67.58 | 68.79 | 79.47 | 6.1 |
| 40-48 yrs | Vietnam | 74 | 60.08 | 5.63 | 0.65 | 31.87 | 50.56 | 54.30 | 60.40 | 65.26 | 67.33 | 73.92 | 12.2 |
| 40-48 yrs | Non-Vietnam | 54 | 60.12 | 8.89 | 1.21 | 25.31 | 36.80 | 51.77 | 61.45 | 68.03 | 69.25 | 73.11 | 13.0 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 5th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

**Table G.5 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure — Ulnar Sensory Nerve Conduction Velocity**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | |
|------------------------|------------------|----------------|-------|------|------|------------|-------|-------|-------|-------|-------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In Meters Per Second) | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2472 | 55.04 | 5.99 | 0.12 | 24.26 | 45.00 | 47.30 | 55.29 | 62.50 | 64.90 | 72.92 | 5.7 |
| 30-48 yrs | Non-Vietnam | 1965 | 55.32 | 5.97 | 0.13 | 16.24 | 44.82 | 47.79 | 55.65 | 62.50 | 64.90 | 73.28 | 5.4 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1628 | 55.60 | 5.65 | 0.14 | 24.67 | 45.95 | 48.39 | 55.80 | 62.50 | 64.81 | 72.92 | 4.0 |
| 30-39 yrs | Non-Vietnam | 1149 | 55.77 | 5.81 | 0.17 | 28.57 | 45.83 | 48.39 | 56.03 | 62.50 | 64.90 | 73.28 | 4.3 |
| 40-48 yrs | Vietnam | 415 | 54.78 | 5.58 | 0.27 | 38.35 | 46.35 | 47.58 | 54.63 | 62.50 | 65.10 | 71.43 | 3.9 |
| 40-48 yrs | Non-Vietnam | 446 | 55.41 | 5.74 | 0.27 | 31.25 | 45.10 | 48.37 | 55.58 | 62.50 | 64.97 | 69.57 | 4.9 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 209 | 51.48 | 6.93 | 0.48 | 24.26 | 40.52 | 43.57 | 51.72 | 60.10 | 62.50 | 69.50 | 18.7 |
| 30-39 yrs | Non-Vietnam | 180 | 52.86 | 6.08 | 0.45 | 37.50 | 43.76 | 45.23 | 53.31 | 61.04 | 63.52 | 72.73 | 10.6 |
| 40-48 yrs | Vietnam | 71 | 51.31 | 6.06 | 0.72 | 38.52 | 42.18 | 43.45 | 51.95 | 59.12 | 60.89 | 64.58 | 21.1 |
| 40-48 yrs | Non-Vietnam | 58 | 52.49 | 6.77 | 0.89 | 29.57 | 39.93 | 43.90 | 53.44 | 59.54 | 61.53 | 66.50 | 13.8 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 5th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

**Table G.6 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure – Peroneal Motor Nerve Conduction Velocity**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | |
|------------------------|------------------|----------------|-------|------|------|------------|-------|-------|-------|-------|-------|--------------------------------|-----|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In Meters Per Second) | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2465 | 46.28 | 4.38 | 0.09 | 23.11 | 38.94 | 41.13 | 46.47 | 51.14 | 52.60 | 73.08 | 6.7 |
| 30-48 yrs | Non-Vietnam | 1957 | 46.48 | 4.04 | 0.09 | 25.51 | 40.20 | 41.35 | 46.52 | 51.17 | 52.60 | 78.70 | 4.0 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1624 | 46.29 | 4.26 | 0.11 | 24.22 | 39.11 | 41.27 | 46.50 | 51.19 | 52.55 | 70.60 | 6.3 |
| 30-39 yrs | Non-Vietnam | 1142 | 46.48 | 3.97 | 0.12 | 25.51 | 40.18 | 41.56 | 46.51 | 51.17 | 52.47 | 65.52 | 3.9 |
| 40-48 yrs | Vietnam | 409 | 45.95 | 4.47 | 0.22 | 23.11 | 38.10 | 40.18 | 46.05 | 50.91 | 52.52 | 61.27 | 8.6 |
| 40-48 yrs | Non-Vietnam | 445 | 45.93 | 3.85 | 0.18 | 32.01 | 39.87 | 41.14 | 46.09 | 50.43 | 51.48 | 68.02 | 5.2 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 210 | 45.80 | 4.29 | 0.30 | 30.50 | 39.02 | 41.52 | 46.16 | 49.97 | 52.21 | 66.59 | 6.2 |
| 30-39 yrs | Non-Vietnam | 180 | 46.84 | 4.71 | 0.35 | 35.46 | 40.48 | 41.31 | 46.78 | 51.44 | 52.80 | 78.70 | 3.3 |
| 40-48 yrs | Vietnam | 75 | 45.70 | 5.49 | 0.63 | 27.01 | 37.79 | 40.21 | 46.12 | 50.83 | 51.84 | 73.08 | 9.3 |
| 40-48 yrs | Non-Vietnam | 57 | 46.52 | 4.33 | 0.57 | 32.77 | 39.88 | 40.23 | 46.97 | 52.35 | 53.76 | 54.38 | 3.5 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 5th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

**Table G.7 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure – Sural Sensory Nerve Conduction Velocity**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | |
|------------------------|------------------|----------------|-------|------|------|------------|-------|-------|-------|-------|-------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In Meters Per Second) | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2386 | 44.50 | 5.86 | 0.12 | 15.86 | 36.00 | 37.83 | 44.11 | 51.32 | 54.97 | 72.92 | 5.4 |
| 30-48 yrs | Non-Vietnam | 1916 | 44.48 | 5.74 | 0.13 | 15.51 | 36.35 | 37.87 | 44.09 | 51.34 | 54.17 | 74.40 | 4.9 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1586 | 44.53 | 5.77 | 0.14 | 15.86 | 36.23 | 38.04 | 44.12 | 51.25 | 54.84 | 72.50 | 4.7 |
| 30-39 yrs | Non-Vietnam | 1123 | 44.64 | 5.62 | 0.17 | 18.64 | 36.85 | 38.26 | 44.12 | 51.33 | 54.48 | 74.40 | 3.7 |
| 40-48 yrs | Vietnam | 397 | 44.61 | 5.85 | 0.29 | 21.80 | 36.13 | 38.00 | 44.10 | 51.30 | 55.01 | 72.92 | 4.8 |
| 40-48 yrs | Non-Vietnam | 433 | 44.32 | 5.66 | 0.27 | 15.51 | 36.56 | 38.08 | 43.75 | 50.90 | 53.53 | 71.81 | 4.6 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 193 | 43.32 | 6.41 | 0.46 | 16.19 | 33.91 | 35.97 | 43.13 | 50.85 | 55.42 | 67.13 | 10.4 |
| 30-39 yrs | Non-Vietnam | 171 | 43.06 | 6.00 | 0.46 | 29.46 | 33.98 | 35.62 | 42.76 | 51.30 | 53.83 | 64.66 | 12.3 |
| 40-48 yrs | Vietnam | 71 | 43.10 | 5.79 | 0.69 | 30.63 | 34.44 | 35.73 | 42.65 | 50.48 | 53.41 | 57.87 | 12.7 |
| 40-48 yrs | Non-Vietnam | 56 | 43.88 | 6.51 | 0.87 | 33.20 | 35.25 | 36.20 | 42.98 | 52.98 | 58.11 | 61.67 | 8.9 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 5th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

**Table G.8 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure – Sural Sensory Nerve Conduction Velocity-Undetectable Included as 15 Meters Per Second**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | |
|------------------------|------------------|----------------|-------|-------|------|------------|-------|-------|-------|-------|-------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In Meters Per Second) | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2486 | 43.31 | 8.16 | 0.16 | 15.00 | 31.75 | 36.58 | 43.86 | 51.16 | 54.69 | 72.92 | 9.2 |
| 30-48 yrs | Non-Vietnam | 1971 | 43.65 | 7.46 | 0.17 | 15.00 | 34.44 | 37.21 | 43.92 | 51.29 | 53.88 | 74.40 | 7.5 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1634 | 43.67 | 7.56 | 0.19 | 15.00 | 33.99 | 37.41 | 43.92 | 51.21 | 54.69 | 72.50 | 7.5 |
| 30-39 yrs | Non-Vietnam | 1152 | 43.90 | 7.24 | 0.21 | 15.00 | 35.47 | 37.74 | 44.04 | 51.29 | 54.44 | 74.40 | 6.2 |
| 40-48 yrs | Vietnam | 416 | 43.26 | 8.43 | 0.41 | 15.00 | 25.15 | 37.18 | 43.75 | 50.96 | 54.84 | 72.92 | 9.1 |
| 40-48 yrs | Non-Vietnam | 447 | 43.40 | 7.56 | 0.36 | 15.00 | 33.94 | 37.23 | 43.60 | 50.56 | 53.49 | 71.81 | 7.6 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 211 | 40.90 | 10.02 | 0.69 | 15.00 | 15.00 | 29.54 | 42.57 | 50.77 | 55.25 | 67.13 | 18.0 |
| 30-39 yrs | Non-Vietnam | 181 | 41.51 | 8.68 | 0.64 | 15.00 | 15.00 | 33.95 | 42.19 | 51.13 | 53.54 | 64.66 | 17.1 |
| 40-48 yrs | Vietnam | 75 | 41.60 | 8.49 | 0.98 | 15.00 | 15.00 | 34.44 | 42.59 | 50.43 | 53.36 | 57.87 | 17.3 |
| 40-48 yrs | Non-Vietnam | 58 | 42.89 | 8.32 | 1.09 | 15.00 | 32.29 | 35.68 | 42.94 | 52.49 | 57.83 | 61.67 | 12.1 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 5th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

**Table G.9 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure – Median Sensory Amplitude**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | |
|------------------------|------------------|----------------|-------|------|------|------------|-------|-------|-------|-------|-------|--------------------------------|-----|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In Microvolts) | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2480 | 23.25 | 8.58 | 0.17 | 1.17 | 10.15 | 12.71 | 23.04 | 34.37 | 37.89 | 58.59 | 5.5 |
| 30-48 yrs | Non-Vietnam | 1960 | 23.89 | 8.67 | 0.20 | 0.83 | 10.93 | 13.67 | 23.43 | 34.76 | 39.45 | 59.79 | 4.2 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1633 | 23.18 | 8.54 | 0.21 | 1.17 | 10.15 | 12.50 | 23.04 | 34.37 | 37.50 | 58.59 | 5.3 |
| 30-39 yrs | Non-Vietnam | 1146 | 24.02 | 8.72 | 0.26 | 1.29 | 11.14 | 13.67 | 23.43 | 35.54 | 39.31 | 58.20 | 3.8 |
| 40-48 yrs | Vietnam | 413 | 22.58 | 8.35 | 0.41 | 1.78 | 9.38 | 13.05 | 21.87 | 33.04 | 37.50 | 56.25 | 6.3 |
| 40-48 yrs | Non-Vietnam | 446 | 22.83 | 8.26 | 0.39 | 2.40 | 10.68 | 13.28 | 21.87 | 32.81 | 39.84 | 59.79 | 4.7 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 209 | 23.71 | 8.66 | 0.60 | 1.46 | 9.57 | 13.67 | 23.43 | 33.98 | 39.45 | 53.12 | 5.3 |
| 30-39 yrs | Non-Vietnam | 181 | 24.82 | 8.41 | 0.63 | 1.03 | 12.14 | 14.84 | 24.21 | 36.01 | 39.37 | 49.60 | 2.8 |
| 40-48 yrs | Vietnam | 75 | 22.29 | 7.51 | 0.87 | 2.85 | 8.44 | 12.34 | 24.02 | 31.01 | 32.19 | 37.50 | 6.7 |
| 40-48 yrs | Non-Vietnam | 55 | 22.23 | 8.52 | 1.15 | 7.30 | 8.75 | 10.38 | 21.48 | 33.98 | 36.71 | 42.18 | 9.1 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 5th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

**Table G.10 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure – Ulnar Sensory Amplitude**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | |
|------------------------|------------------|----------------|-------|------|------|------------|------|-------|-------|-------|-------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In Microvolts) | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2473 | 21.35 | 9.01 | 0.18 | 1.01 | 8.34 | 10.82 | 20.31 | 33.51 | 37.89 | 57.61 | 5.6 |
| 30-48 yrs | Non-Vietnam | 1958 | 21.74 | 8.87 | 0.20 | 1.07 | 8.98 | 11.67 | 20.70 | 33.59 | 38.08 | 59.76 | 4.9 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1627 | 21.56 | 8.94 | 0.22 | 1.01 | 8.20 | 10.93 | 20.70 | 33.20 | 37.34 | 55.46 | 5.5 |
| 30-39 yrs | Non-Vietnam | 1143 | 22.12 | 8.91 | 0.26 | 1.33 | 9.02 | 11.71 | 21.48 | 33.98 | 38.24 | 58.98 | 4.2 |
| 40-48 yrs | Vietnam | 416 | 21.07 | 9.02 | 0.44 | 1.44 | 8.98 | 10.81 | 20.31 | 34.10 | 38.08 | 51.17 | 4.8 |
| 40-48 yrs | Non-Vietnam | 445 | 20.88 | 8.61 | 0.41 | 1.07 | 8.59 | 11.05 | 19.92 | 32.58 | 38.08 | 59.76 | 5.2 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 210 | 19.97 | 8.98 | 0.62 | 1.21 | 6.86 | 9.41 | 18.75 | 31.25 | 37.28 | 57.61 | 7.6 |
| 30-39 yrs | Non-Vietnam | 180 | 20.23 | 8.02 | 0.60 | 1.52 | 8.21 | 10.76 | 19.72 | 31.25 | 35.89 | 42.96 | 6.7 |
| 40-48 yrs | Vietnam | 72 | 19.42 | 8.93 | 1.05 | 2.34 | 6.87 | 9.76 | 17.96 | 32.92 | 38.44 | 44.14 | 5.6 |
| 40-48 yrs | Non-Vietnam | 58 | 19.17 | 9.18 | 1.21 | 2.56 | 5.18 | 7.38 | 18.55 | 32.24 | 36.38 | 37.89 | 13.8 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 5th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

**Table G.11 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure – Sural Sensory Amplitude**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | |
|------------------------|------------------|----------------|-------|-------|------|------------|------|------|-------|-------|-------|--------------------------------|-----|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In Microvolts) | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2381 | 16.52 | 10.18 | 0.21 | 1.09 | 4.10 | 5.47 | 14.64 | 30.46 | 37.10 | 59.97 | 4.9 |
| 30-48 yrs | Non-Vietnam | 1904 | 16.94 | 10.48 | 0.24 | 0.64 | 4.10 | 5.66 | 14.84 | 31.25 | 38.28 | 59.57 | 5.0 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1582 | 16.13 | 9.93 | 0.25 | 1.09 | 3.91 | 5.47 | 14.06 | 30.07 | 36.13 | 59.97 | 5.2 |
| 30-39 yrs | Non-Vietnam | 1115 | 17.47 | 10.60 | 0.32 | 0.64 | 4.30 | 6.11 | 15.42 | 32.22 | 39.06 | 58.10 | 4.1 |
| 40-48 yrs | Vietnam | 398 | 17.66 | 10.57 | 0.53 | 1.32 | 4.09 | 5.45 | 15.72 | 32.05 | 38.59 | 53.90 | 4.8 |
| 40-48 yrs | Non-Vietnam | 431 | 16.64 | 10.27 | 0.49 | 1.15 | 4.04 | 5.86 | 14.84 | 29.60 | 37.10 | 57.15 | 5.3 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 192 | 15.66 | 10.52 | 0.76 | 2.34 | 3.91 | 4.62 | 12.79 | 30.34 | 38.30 | 58.59 | 6.2 |
| 30-39 yrs | Non-Vietnam | 170 | 14.38 | 10.06 | 0.77 | 1.31 | 3.38 | 4.30 | 12.50 | 27.92 | 36.85 | 59.57 | 7.6 |
| 40-48 yrs | Vietnam | 71 | 15.41 | 9.42 | 1.12 | 3.46 | 4.75 | 5.47 | 14.45 | 26.65 | 38.51 | 51.75 | 2.8 |
| 40-48 yrs | Non-Vietnam | 55 | 15.60 | 8.91 | 1.20 | 2.93 | 3.97 | 6.25 | 14.06 | 27.73 | 31.32 | 48.82 | 5.5 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 5th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

**Table G.12 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure – Sural Sensory Amplitude- Undetectable Included as 0.5 Microvolts**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | |
|------------------------|------------------|----------------|-------|-------|------|------------|------|------|-------|-------|-------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2480 | 15.88 | 10.46 | 0.21 | 0.50 | 2.15 | 4.53 | 14.06 | 30.25 | 36.71 | 59.97 | 8.7 |
| 30-48 yrs | Non-Vietnam | 1957 | 16.49 | 10.68 | 0.24 | 0.50 | 3.13 | 4.88 | 14.45 | 31.05 | 37.89 | 59.57 | 7.6 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1630 | 15.67 | 10.13 | 0.25 | 0.50 | 3.05 | 4.81 | 13.67 | 29.68 | 35.93 | 59.97 | 8.0 |
| 30-39 yrs | Non-Vietnam | 1143 | 17.06 | 10.79 | 0.32 | 0.50 | 3.20 | 5.08 | 14.84 | 32.14 | 39.06 | 58.10 | 6.5 |
| 40-48 yrs | Vietnam | 416 | 16.92 | 10.91 | 0.54 | 0.50 | 1.92 | 4.30 | 15.23 | 31.48 | 37.66 | 53.90 | 8.9 |
| 40-48 yrs | Non-Vietnam | 445 | 16.14 | 10.50 | 0.50 | 0.50 | 2.96 | 4.88 | 14.06 | 29.29 | 36.87 | 57.15 | 8.3 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 210 | 14.36 | 10.92 | 0.75 | 0.50 | 0.50 | 3.33 | 11.71 | 29.64 | 35.74 | 58.59 | 14.3 |
| 30-39 yrs | Non-Vietnam | 179 | 13.68 | 10.27 | 0.77 | 0.50 | 0.50 | 3.51 | 11.71 | 26.17 | 36.32 | 59.57 | 12.3 |
| 40-48 yrs | Vietnam | 75 | 14.61 | 9.77 | 1.13 | 0.50 | 0.50 | 4.75 | 14.06 | 26.26 | 38.20 | 51.75 | 8.0 |
| 40-48 yrs | Non-Vietnam | 57 | 15.07 | 9.19 | 1.22 | 0.50 | 2.69 | 4.23 | 13.67 | 27.54 | 30.69 | 48.82 | 8.8 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 5th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

**Table G.13 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure – Median Motor Amplitude**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | |
|------------------------|------------------|----------------|-------|------|------|------------|------|------|-------|-------|-------|--------------------------------|-----|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In Microvolts) | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2488 | 10274 | 3495 | 70 | 728 | 4394 | 5664 | 10300 | 14600 | 16000 | 25000 | 4.9 |
| 30-48 yrs | Non-Vietnam | 1971 | 10504 | 3466 | 78 | 1240 | 4492 | 5859 | 10700 | 14760 | 16200 | 23600 | 4.6 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1636 | 10134 | 3438 | 85 | 728 | 4379 | 5566 | 10200 | 14400 | 16000 | 21400 | 5.0 |
| 30-39 yrs | Non-Vietnam | 1152 | 10451 | 3438 | 101 | 1240 | 4653 | 5693 | 10600 | 14600 | 16000 | 20100 | 4.4 |
| 40-48 yrs | Vietnam | 416 | 10314 | 3486 | 171 | 1562 | 4296 | 5664 | 10650 | 14460 | 15600 | 25000 | 5.3 |
| 40-48 yrs | Non-Vietnam | 447 | 10289 | 3327 | 157 | 1464 | 4394 | 6132 | 10400 | 14400 | 15720 | 23600 | 4.7 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 211 | 11274 | 3793 | 261 | 2160 | 4941 | 6250 | 11200 | 16160 | 18380 | 21800 | 2.8 |
| 30-39 yrs | Non-Vietnam | 181 | 11498 | 3836 | 285 | 2050 | 4706 | 6367 | 11700 | 16200 | 18060 | 23000 | 3.9 |
| 40-48 yrs | Vietnam | 75 | 11056 | 3822 | 441 | 3125 | 3867 | 5820 | 11000 | 15800 | 17980 | 20100 | 5.3 |
| 40-48 yrs | Non-Vietnam | 58 | 10225 | 3570 | 469 | 1757 | 3256 | 4814 | 10500 | 13880 | 16055 | 18700 | 8.6 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 5th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

**Table G.14 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure — Peroneal Motor Amplitude**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | |
|------------------------|------------------|----------------|------|------|------|------------|------|------|------|-------|-------|--------------------------------|-----|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In Microvolts) | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2458 | 6824 | 2940 | 59 | 430 | 2047 | 3027 | 6689 | 10500 | 12000 | 19100 | 5.6 |
| 30-48 yrs | Non-Vietnam | 1955 | 6973 | 2988 | 68 | 468 | 2343 | 3222 | 6738 | 10900 | 12300 | 19100 | 3.8 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1620 | 6771 | 2840 | 71 | 430 | 2050 | 3125 | 6738 | 10300 | 11600 | 17900 | 5.3 |
| 30-39 yrs | Non-Vietnam | 1142 | 6791 | 2920 | 86 | 468 | 2246 | 3027 | 6640 | 10700 | 11900 | 17300 | 4.2 |
| 40-48 yrs | Vietnam | 406 | 6492 | 2958 | 147 | 547 | 1855 | 2636 | 6250 | 10500 | 11600 | 19100 | 7.6 |
| 40-48 yrs | Non-Vietnam | 443 | 6756 | 2773 | 132 | 664 | 2265 | 3320 | 6542 | 10500 | 11780 | 16700 | 4.3 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 209 | 7752 | 3479 | 241 | 859 | 1855 | 3222 | 7519 | 12300 | 13600 | 18700 | 6.7 |
| 30-39 yrs | Non-Vietnam | 180 | 8423 | 3411 | 254 | 2343 | 2842 | 4013 | 8105 | 12800 | 14370 | 19100 | -- |
| 40-48 yrs | Vietnam | 75 | 7269 | 3193 | 369 | 2050 | 2402 | 3086 | 7128 | 11560 | 13120 | 15200 | 2.7 |
| 40-48 yrs | Non-Vietnam | 57 | 7235 | 3193 | 423 | 781 | 1527 | 3007 | 7128 | 11900 | 12800 | 14600 | 7.0 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 5th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

**Table G.15 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure – Ratio of Median Sensory-Distal to Ulnar Sensory Nerve Conduction Velocities**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | |
|------------------------|------------------|----------------|------|------|-------|------------|------|------|------|------|------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2470 | 0.98 | 0.14 | 0.003 | 0.30 | 0.77 | 0.83 | 0.98 | 1.12 | 1.16 | 2.43 | 5.4 |
| 30-48 yrs | Non-Vietnam | 1957 | 0.99 | 0.15 | 0.003 | 0.35 | 0.79 | 0.85 | 0.99 | 1.12 | 1.16 | 3.31 | 4.6 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1627 | 0.98 | 0.14 | 0.003 | 0.34 | 0.77 | 0.83 | 0.98 | 1.12 | 1.16 | 2.43 | 5.8 |
| 30-39 yrs | Non-Vietnam | 1144 | 0.99 | 0.14 | 0.004 | 0.39 | 0.79 | 0.85 | 0.99 | 1.11 | 1.15 | 2.59 | 4.7 |
| 40-48 yrs | Vietnam | 413 | 0.98 | 0.16 | 0.008 | 0.45 | 0.75 | 0.82 | 0.98 | 1.11 | 1.15 | 2.35 | 6.1 |
| 40-48 yrs | Non-Vietnam | 445 | 0.98 | 0.13 | 0.006 | 0.53 | 0.79 | 0.84 | 0.97 | 1.11 | 1.15 | 1.93 | 4.3 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 208 | 1.02 | 0.13 | 0.009 | 0.30 | 0.81 | 0.88 | 1.02 | 1.16 | 1.21 | 1.50 | 1.9 |
| 30-39 yrs | Non-Vietnam | 180 | 1.04 | 0.17 | 0.012 | 0.70 | 0.80 | 0.90 | 1.02 | 1.18 | 1.21 | 2.18 | 4.5 |
| 40-48 yrs | Vietnam | 72 | 1.05 | 0.16 | 0.019 | 0.57 | 0.85 | 0.89 | 1.04 | 1.23 | 1.33 | 1.73 | 1.4 |
| 40-48 yrs | Non-Vietnam | 56 | 1.02 | 0.29 | 0.039 | 0.35 | 0.70 | 0.75 | 0.99 | 1.21 | 2.00 | 2.08 | 11.1 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 5th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

**Table G.16 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure – Ratio of Median Sensory to Ulnar Sensory Amplitudes**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | |
|------------------------|------------------|----------------|------|------|-------|------------|------|------|------|------|------|--------------------------------|-----|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2471 | 1.28 | 1.18 | 0.024 | 0.00 | 0.57 | 0.68 | 1.10 | 1.83 | 2.17 | 26.00 | 5.1 |
| 30-48 yrs | Non-Vietnam | 1956 | 1.26 | 1.43 | 0.032 | 0.08 | 0.57 | 0.70 | 1.11 | 1.77 | 2.14 | 52.76 | 4.8 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1628 | 1.24 | 1.09 | 0.027 | 0.00 | 0.57 | 0.68 | 1.09 | 1.78 | 2.05 | 18.75 | 4.7 |
| 30-39 yrs | Non-Vietnam | 1143 | 1.25 | 1.68 | 0.050 | 0.08 | 0.57 | 0.70 | 1.09 | 1.75 | 2.11 | 52.76 | 4.9 |
| 40-48 yrs | Vietnam | 413 | 1.26 | 1.00 | 0.049 | 0.11 | 0.50 | 0.65 | 1.11 | 1.82 | 2.18 | 12.64 | 6.8 |
| 40-48 yrs | Non-Vietnam | 445 | 1.24 | 0.96 | 0.046 | 0.19 | 0.59 | 0.71 | 1.12 | 1.73 | 2.04 | 15.87 | 4.1 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 208 | 1.54 | 2.10 | 0.145 | 0.08 | 0.58 | 0.69 | 1.22 | 2.13 | 2.48 | 26.00 | 4.3 |
| 30-39 yrs | Non-Vietnam | 180 | 1.42 | 1.00 | 0.074 | 0.30 | 0.66 | 0.74 | 1.22 | 2.35 | 2.81 | 11.34 | 2.8 |
| 40-48 yrs | Vietnam | 72 | 1.44 | 0.96 | 0.113 | 0.08 | 0.54 | 0.65 | 1.28 | 2.33 | 3.14 | 6.83 | 4.2 |
| 40-48 yrs | Non-Vietnam | 56 | 1.38 | 0.99 | 0.132 | 0.28 | 0.54 | 0.77 | 1.20 | 1.96 | 2.31 | 7.78 | 5.5 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 5th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

**Table G.17 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure — Vibration Threshold of Index Finger**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Above Reference ^b | |
|------------------------|------------------|----------------|------|------|-------|------------|------|------|------|------|------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In Volts) | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2486 | 2.26 | 1.22 | 0.024 | 0.37 | 1.10 | 1.30 | 2.02 | 3.42 | 4.05 | 30.00 | 5.8 |
| 30-48 yrs | Non-Vietnam | 1970 | 2.18 | 0.92 | 0.021 | 0.22 | 1.02 | 1.23 | 2.00 | 3.40 | 3.90 | 9.87 | 4.8 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1636 | 2.18 | 1.00 | 0.025 | 0.37 | 1.07 | 1.27 | 1.97 | 3.35 | 3.88 | 13.75 | 4.8 |
| 30-39 yrs | Non-Vietnam | 1151 | 2.13 | 0.89 | 0.026 | 0.22 | 0.97 | 1.20 | 1.95 | 3.20 | 3.71 | 9.87 | 3.6 |
| 40-48 yrs | Vietnam | 415 | 2.38 | 1.15 | 0.056 | 0.55 | 1.17 | 1.32 | 2.12 | 3.68 | 4.48 | 10.02 | 9.2 |
| 40-48 yrs | Non-Vietnam | 447 | 2.17 | 0.91 | 0.043 | 0.27 | 1.03 | 1.27 | 1.95 | 3.38 | 3.96 | 7.10 | 4.9 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 211 | 2.41 | 2.16 | 0.149 | 0.60 | 1.22 | 1.38 | 2.05 | 3.49 | 3.90 | 30.00 | 4.3 |
| 30-39 yrs | Non-Vietnam | 181 | 2.43 | 1.09 | 0.081 | 0.60 | 1.25 | 1.43 | 2.12 | 3.92 | 4.71 | 7.75 | 9.9 |
| 40-48 yrs | Vietnam | 74 | 2.79 | 2.04 | 0.238 | 0.77 | 1.26 | 1.40 | 2.36 | 4.21 | 5.32 | 17.50 | 14.9 |
| 40-48 yrs | Non-Vietnam | 58 | 2.57 | 1.06 | 0.139 | 0.97 | 1.34 | 1.62 | 2.21 | 4.20 | 4.82 | 6.20 | 12.1 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 95th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

**Table G.18 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure – Vibration Threshold of Great Toe**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Above Reference ^b | |
|------------------------|------------------|----------------|------|------|-------|------------|------|------|------|-------|-------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In Volts) | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2486 | 5.48 | 3.24 | 0.065 | 0.42 | 1.92 | 2.27 | 4.90 | 9.12 | 11.12 | 48.75 | 5.6 |
| 30-48 yrs | Non-Vietnam | 1970 | 5.32 | 2.95 | 0.066 | 0.55 | 1.82 | 2.17 | 4.82 | 8.67 | 10.45 | 29.75 | 4.7 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1634 | 5.33 | 3.09 | 0.076 | 0.82 | 1.90 | 2.25 | 4.72 | 9.00 | 11.00 | 31.25 | 5.3 |
| 30-39 yrs | Non-Vietnam | 1152 | 5.11 | 2.92 | 0.086 | 0.55 | 1.72 | 2.07 | 4.56 | 8.47 | 10.27 | 29.75 | 4.2 |
| 40-48 yrs | Vietnam | 416 | 5.72 | 2.91 | 0.143 | 0.42 | 2.12 | 2.40 | 5.25 | 9.51 | 10.88 | 21.25 | 5.5 |
| 40-48 yrs | Non-Vietnam | 446 | 5.94 | 2.96 | 0.140 | 1.12 | 2.18 | 2.60 | 5.45 | 9.25 | 11.31 | 21.50 | 7.2 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 211 | 6.29 | 4.69 | 0.323 | 0.55 | 1.95 | 2.40 | 5.45 | 9.77 | 13.25 | 48.75 | 7.6 |
| 30-39 yrs | Non-Vietnam | 181 | 5.46 | 2.76 | 0.205 | 0.70 | 1.83 | 2.20 | 5.07 | 8.69 | 10.18 | 15.38 | 3.9 |
| 40-48 yrs | Vietnam | 75 | 7.15 | 3.85 | 0.444 | 2.12 | 2.64 | 2.84 | 6.50 | 12.10 | 14.45 | 22.13 | 16.0 |
| 40-48 yrs | Non-Vietnam | 58 | 6.58 | 4.01 | 0.526 | 1.72 | 1.89 | 2.31 | 6.50 | 9.92 | 11.42 | 28.50 | 6.9 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 95th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

**Table G.19 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure – Thermal Threshold of Index Finger**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Above Reference ^b | |
|-------------------------|------------------|----------------|------|------|-------|------------|------|------|------|------|------|--------------------------------|-----|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In Degrees Centigrade) | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2475 | 0.84 | 0.72 | 0.014 | 0.10 | 0.22 | 0.30 | 0.66 | 1.52 | 2.00 | 12.14 | 5.5 |
| 30-48 yrs | Non-Vietnam | 1955 | 0.81 | 0.73 | 0.017 | 0.10 | 0.21 | 0.29 | 0.65 | 1.45 | 1.88 | 12.26 | 4.7 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1629 | 0.83 | 0.68 | 0.017 | 0.10 | 0.22 | 0.30 | 0.66 | 1.50 | 1.93 | 10.69 | 5.0 |
| 30-39 yrs | Non-Vietnam | 1144 | 0.78 | 0.64 | 0.019 | 0.10 | 0.20 | 0.27 | 0.64 | 1.37 | 1.72 | 8.15 | 3.4 |
| 40-48 yrs | Vietnam | 411 | 0.82 | 0.68 | 0.034 | 0.11 | 0.22 | 0.34 | 0.65 | 1.53 | 1.97 | 7.26 | 5.1 |
| 40-48 yrs | Non-Vietnam | 444 | 0.86 | 0.78 | 0.037 | 0.12 | 0.22 | 0.30 | 0.65 | 1.63 | 2.17 | 7.74 | 7.0 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 211 | 0.88 | 0.71 | 0.049 | 0.12 | 0.22 | 0.32 | 0.69 | 1.73 | 2.15 | 5.55 | 7.1 |
| 30-39 yrs | Non-Vietnam | 179 | 0.93 | 1.18 | 0.088 | 0.12 | 0.24 | 0.29 | 0.66 | 1.60 | 2.59 | 12.26 | 6.7 |
| 40-48 yrs | Vietnam | 74 | 0.98 | 1.43 | 0.166 | 0.14 | 0.18 | 0.26 | 0.69 | 1.95 | 2.32 | 12.14 | 9.5 |
| 40-48 yrs | Non-Vietnam | 57 | 0.87 | 0.85 | 0.112 | 0.15 | 0.20 | 0.24 | 0.64 | 1.71 | 3.63 | 4.02 | 8.8 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 95th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

**Table G.20 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure – Thermal Threshold of Great Toe**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Above Reference ^b | |
|-------------------------|------------------|----------------|------|------|-------|------------|------|------|------|------|------|--------------------------------|-----|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In Degrees Centigrade) | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2419 | 0.90 | 1.29 | 0.026 | 0.10 | 0.16 | 0.22 | 0.60 | 1.70 | 2.44 | 18.12 | 5.5 |
| 30-48 yrs | Non-Vietnam | 1923 | 0.82 | 0.96 | 0.022 | 0.10 | 0.15 | 0.21 | 0.57 | 1.59 | 2.35 | 13.50 | 4.8 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1597 | 0.87 | 1.27 | 0.032 | 0.10 | 0.16 | 0.22 | 0.59 | 1.68 | 2.41 | 18.12 | 5.3 |
| 30-39 yrs | Non-Vietnam | 1127 | 0.79 | 0.92 | 0.027 | 0.10 | 0.15 | 0.20 | 0.56 | 1.55 | 2.31 | 13.50 | 4.4 |
| 40-48 yrs | Vietnam | 398 | 0.84 | 1.01 | 0.051 | 0.11 | 0.19 | 0.25 | 0.59 | 1.64 | 2.39 | 14.56 | 5.0 |
| 40-48 yrs | Non-Vietnam | 437 | 0.86 | 1.14 | 0.055 | 0.10 | 0.15 | 0.20 | 0.57 | 1.70 | 2.56 | 13.38 | 5.5 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 208 | 1.09 | 1.44 | 0.100 | 0.10 | 0.16 | 0.22 | 0.72 | 2.04 | 2.86 | 11.63 | 7.7 |
| 30-39 yrs | Non-Vietnam | 174 | 0.95 | 0.97 | 0.074 | 0.11 | 0.20 | 0.26 | 0.62 | 2.00 | 3.05 | 6.71 | 6.3 |
| 40-48 yrs | Vietnam | 72 | 1.26 | 2.69 | 0.317 | 0.14 | 0.16 | 0.17 | 0.66 | 2.15 | 2.69 | 17.55 | 5.6 |
| 40-48 yrs | Non-Vietnam | 55 | 0.88 | 0.86 | 0.117 | 0.12 | 0.17 | 0.24 | 0.60 | 2.05 | 3.29 | 4.50 | 7.3 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 95th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

**Table G.21 Summary Statistics for Diagnostic Tests Associated With Peripheral Nervous System:
Measure — Thermal Threshold of Great Toe—Undetectable Included as 20 Degrees Centigrade**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Above Reference ^b | |
|--------------------------------|------------------|----------------|------|------|-------|------------|------|------|------|------|-------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| <i>(In Degrees Centigrade)</i> | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 2466 | 1.26 | 2.91 | 0.059 | 0.10 | 0.16 | 0.22 | 0.61 | 1.90 | 2.88 | 20.00 | 7.3 |
| 30-48 yrs | Non-Vietnam | 1952 | 1.11 | 2.51 | 0.057 | 0.10 | 0.15 | 0.21 | 0.59 | 1.77 | 2.78 | 20.00 | 6.2 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 1621 | 1.16 | 2.63 | 0.065 | 0.10 | 0.16 | 0.22 | 0.59 | 1.81 | 2.71 | 20.00 | 6.7 |
| 30-39 yrs | Non-Vietnam | 1143 | 1.06 | 2.43 | 0.072 | 0.10 | 0.15 | 0.20 | 0.57 | 1.70 | 2.55 | 20.00 | 5.8 |
| 40-48 yrs | Vietnam | 411 | 1.44 | 3.50 | 0.173 | 0.11 | 0.19 | 0.25 | 0.60 | 1.95 | 3.39 | 20.00 | 8.0 |
| 40-48 yrs | Non-Vietnam | 441 | 1.03 | 2.14 | 0.102 | 0.10 | 0.15 | 0.20 | 0.57 | 1.80 | 2.74 | 20.00 | 6.3 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 211 | 1.36 | 2.66 | 0.183 | 0.10 | 0.16 | 0.23 | 0.72 | 2.22 | 3.16 | 20.00 | 9.0 |
| 30-39 yrs | Non-Vietnam | 179 | 1.49 | 3.29 | 0.246 | 0.11 | 0.20 | 0.27 | 0.64 | 2.16 | 3.99 | 20.00 | 8.9 |
| 40-48 yrs | Vietnam | 75 | 2.01 | 4.54 | 0.525 | 0.14 | 0.16 | 0.18 | 0.69 | 2.40 | 18.04 | 20.00 | 9.3 |
| 40-48 yrs | Non-Vietnam | 57 | 1.55 | 3.65 | 0.483 | 0.12 | 0.17 | 0.25 | 0.61 | 2.72 | 6.05 | 20.00 | 10.5 |

^a Numbers do not add to 2,490 for Vietnam or 1,972 for non-Vietnam veterans because of missing data or exclusions (see Chapter 7).

^b Reference value is the 95th percentile of the Vietnam and non-Vietnam cohorts combined after excluding those with specific conditions (see Chapter 7).

^c All races include white, black, and other.

Table G.22 Percent and Number of Vietnam and Non-Vietnam Veterans With Elevated Hearing Level Thresholds^a, and Odds Ratios, by Selected Tone Frequencies and Ear

| Tone Frequency and Ear | Vietnam (N = 2490) | | Non-Vietnam (N = 1972) | | Crude Results | |
|-------------------------|-----------------------|-----|---------------------------|-----|---------------|---------|
| | % | No. | % | No. | OR | 95% CI |
| 500 Hz, LT ^b | 1.0 | 26 | 0.9 | 17 | 1.2 | 0.7-2.2 |
| 500 Hz, RT ^b | 1.0 | 25 | 0.7 | 14 | 1.4 | 0.7-2.7 |
| 1000 Hz, LT | 0.6 | 16 | 0.8 | 15 | 0.8 | 0.4-1.7 |
| 1000 Hz, RT | 1.0 | 24 | 0.6 | 11 | 1.7 | 0.8-3.6 |
| 2000 Hz, LT | 2.5 | 62 | 1.3 | 25 | 2.0 | 1.2-3.2 |
| 2000 Hz, RT | 1.9 | 48 | 1.3 | 25 | 1.5 | 0.9-2.5 |
| 3000 Hz, LT | 12.0 | 298 | 8.2 | 162 | 1.5 | 1.2-1.9 |
| 3000 Hz, RT | 8.7 | 216 | 6.1 | 121 | 1.5 | 1.2-1.8 |
| 4000 Hz, LT | 19.6 | 487 | 14.4 | 283 | 1.5 | 1.2-1.7 |
| 4000 Hz, RT | 16.0 | 398 | 11.1 | 218 | 1.5 | 1.3-1.8 |
| 6000 Hz, LT | 25.7 | 639 | 19.6 | 386 | 1.4 | 1.2-1.6 |
| 6000 Hz, RT | 22.9 | 569 | 16.5 | 326 | 1.5 | 1.3-1.7 |
| 8000 Hz, LT | 18.5 | 461 | 13.0 | 257 | 1.5 | 1.3-1.8 |
| 8000 Hz, RT | 16.5 | 410 | 11.4 | 225 | 1.5 | 1.3-1.8 |

^a Elevated hearing level threshold was defined as > 50 decibels at each tone frequency.

^b Abbreviations: Hz = Hertz, RT = right, LT = left.

Table G.23 Percent and Number of Vietnam and Non-Vietnam Veterans With Impaired Vision^a, and Odds Ratios, by Selected Measurement Items and Eye

| Vision Measurement and Eye | Vietnam (N = 2490) | | Non-Vietnam (N = 1972) | | Crude Results | |
|--|-----------------------|-----|---------------------------|-----|---------------|---------|
| | % | No. | % | No. | OR | 95% CI |
| Distance, uncorrected ^b LT ^c | 28.1 | 696 | 31.9 | 628 | 0.8 | 0.7-0.9 |
| Distance, uncorrected ^b RT ^c | 28.8 | 715 | 32.7 | 643 | 0.8 | 0.7-0.9 |
| Distance, uncorrected both | 28.1 | 664 | 30.8 | 574 | 0.9 | 0.8-1.0 |
| Near, uncorrected LT | 12.8 | 317 | 15.8 | 311 | 0.8 | 0.7-0.9 |
| Near, uncorrected RT | 13.5 | 335 | 16.2 | 318 | 0.8 | 0.7-1.0 |
| Near, uncorrected both | 13.2 | 283 | 15.6 | 261 | 0.8 | 0.7-1.0 |
| Distance, corrected LT | 4.6 | 36 | 4.7 | 34 | 1.0 | 0.6-1.6 |
| Distance, corrected RT | 4.7 | 37 | 4.7 | 34 | 1.0 | 0.6-1.6 |
| Distance, corrected both | 5.3 | 39 | 4.7 | 32 | 1.1 | 0.7-1.8 |
| Near, corrected LT | 3.1 | 24 | 2.7 | 19 | 1.2 | 0.6-2.2 |
| Near, corrected RT | 3.5 | 27 | 2.5 | 18 | 1.4 | 0.8-2.6 |
| Near, corrected both | 3.8 | 27 | 2.3 | 15 | 1.7 | 0.9-3.2 |

^a Impaired vision was defined as a vision level of 20/50 or worse.

^b Corrected and uncorrected refer to measurement with and without corrective lenses, respectively

^c Abbreviations: LT = left, RT = right.

Table G.24 Percent and Number of Vietnam and Non-Vietnam Veterans With Impaired Peripheral Vision, and Odds Ratios, by Selected Measurements and Eye

| Visual Field and Eye | Vietnam (N = 2490) | | Non-Vietnam (N = 1972) | | Crude Results ^a | |
|--------------------------|-----------------------|-----|---------------------------|-----|----------------------------|---------|
| | % | No. | % | No. | OR | 95% CI |
| Temporal | | | | | | |
| 85°, RT ^b eye | 3.7 | 93 | 4.0 | 79 | 0.9 | 0.7-1.3 |
| 70°, RT eye | 0.3 | 7 | 0.1 | 2 | — | — |
| 55°, RT eye | 0.2 | 5 | 0.1 | 1 | — | — |
| 85°, LT ^b eye | 3.7 | 91 | 4.1 | 81 | 0.9 | 0.7-1.2 |
| 70°, LT eye | 0.4 | 9 | 0.2 | 3 | 2.4 | 0.6-8.8 |
| 55°, LT eye | 0.3 | 8 | 0.3 | 5 | 1.3 | 0.4-3.9 |
| Nasal | | | | | | |
| 35°, RT eye | 0.7 | 17 | 0.5 | 9 | 1.5 | 0.7-3.4 |
| 35°, LT eye | 0.7 | 17 | 0.7 | 14 | 1.0 | 0.5-2.0 |

^a A dash (—) indicates the value was not computed. This occurs when there are fewer than 10 cases in both cohorts combined.

^b Abbreviations: RT = right, LT = left.

APPENDIX H
Results of Semen Analysis

**Table H.1 Summary Statistics for Motility Semen Analysis:
Sperm Measure – Concentration (Combined Magnifications X 1.0 and X 1.5)^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^c | % Above Reference ^d | |
|------------------------------|------------------|----------------|-------|-------|------|------------|-----|------|------|------|------|--------------------------------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| (In Millions Per Milliliter) | | | | | | | | | | | | | | |
| All Races ^e | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 264 | 98.0 | 81.2 | 5.0 | 0 | 9 | 13 | 79 | 209 | 261 | 474 | 15.9 | 7.6 |
| 30-48 yrs | Non-Vietnam | 210 | 112.2 | 84.8 | 5.8 | 0 | 13 | 22 | 89 | 247 | 282 | 386 | 9.5 | 11.9 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 153 | 86.6 | 74.9 | 6.1 | 0 | 8 | 11 | 72 | 183 | 219 | 474 | 19.6 | 3.9 |
| 30-39 yrs | Non-Vietnam | 125 | 117.5 | 85.5 | 7.6 | 3 | 14 | 25 | 94 | 257 | 296 | 378 | 8.8 | 13.6 |
| 40-48 yrs | Vietnam | 66 | 116.4 | 90.2 | 11.1 | 0 | 9 | 17 | 86 | 251 | 301 | 369 | 10.6 | 12.1 |
| 40-48 yrs | Non-Vietnam | 51 | 113.4 | 85.7 | 12.0 | 0 | 11 | 27 | 99 | 242 | 305 | 386 | 7.8 | 9.8 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 18 | 89.1 | 78.1 | 18.4 | 7 | 7 | 16 | 68 | 193 | 337 | 337 | 11.1 | 5.6 |
| 30-39 yrs | Non-Vietnam | 14 | 82.1 | 83.3 | 22.3 | 0 | 0 | 5 | 48 | 235 | 250 | 250 | 14.3 | 7.1 |
| 40-48 yrs | Vietnam | 14 | 88.6 | 61.7 | 16.5 | 11 | 11 | 11 | 96 | 186 | 208 | 208 | 14.3 | — |
| 40-48 yrs | Non-Vietnam | 5 | 131.1 | 109.3 | 48.9 | 19 | 19 | 19 | 79 | 267 | 267 | 267 | 20.0 | 40.0 |

^a Magnification refers to the ocular lens setting at time of videotaping. (See Chapter 12 for further details.)

^b Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 324 for Vietnam and 247 for non-Vietnam veterans because of missing data. If there was spillage during sample collection, the value of concentration was excluded.

^c The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^e All races include white, black, and other.

**Table H.2 Summary Statistics for Motility Semen Analysis:
Sperm Measure – Concentration (Magnification X 1.5)^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^c | % Above Reference ^d | |
|------------------------------|------------------|----------------|-------|-------|------|------------|-----|------|------|------|------|--------------------------------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| (In Millions Per Milliliter) | | | | | | | | | | | | | | |
| All Races ^e | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 200 | 97.8 | 81.2 | 5.7 | 6 | 10 | 15 | 78 | 211 | 262 | 474 | 14.5 | 7.5 |
| 30-48 yrs | Non-Vietnam | 134 | 117.9 | 85.1 | 7.3 | 7 | 19 | 27 | 92 | 246 | 281 | 386 | 6.7 | 12.7 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 117 | 84.4 | 74.1 | 6.9 | 6 | 10 | 11 | 69 | 185 | 219 | 474 | 18.8 | 3.4 |
| 30-39 yrs | Non-Vietnam | 80 | 120.6 | 84.0 | 9.4 | 7 | 17 | 23 | 96 | 255 | 280 | 378 | 8.8 | 13.8 |
| 40-48 yrs | Vietnam | 48 | 125.7 | 91.4 | 13.2 | 8 | 13 | 30 | 93 | 297 | 327 | 369 | 6.2 | 12.5 |
| 40-48 yrs | Non-Vietnam | 32 | 122.0 | 93.0 | 16.4 | 17 | 23 | 30 | 97 | 273 | 357 | 386 | 3.1 | 12.5 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 15 | 83.7 | 78.4 | 20.2 | 7 | 7 | 21 | 56 | 210 | 337 | 337 | 6.7 | 6.7 |
| 30-39 yrs | Non-Vietnam | 10 | 101.7 | 91.1 | 28.8 | 11 | 11 | 12 | 60 | 247 | 250 | 250 | 10.0 | 10.0 |
| 40-48 yrs | Vietnam | 10 | 80.8 | 49.7 | 15.7 | 11 | 11 | 11 | 96 | 133 | 134 | 134 | 20.0 | – |
| 40-48 yrs | Non-Vietnam | 2 | 153.4 | 104.6 | 73.9 | 79 | 79 | 79 | 153 | 227 | 227 | 227 | – | 50.0 |

^a Magnification refers to the ocular lens setting at time of videotaping. (See Chapter 12 for further details.)

^b Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 226 for Vietnam and 151 for non-Vietnam veterans because of missing data. If there was spillage during sample collection, the value of concentration was excluded.

^c The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^e All races include white, black, and other.

**Table H.3 Summary Statistics for Motility Semen Analysis:
Sperm Measure – Concentration (Magnification X 1.0)^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^c | % Above Reference ^d | |
|------------------------------|------------------|----------------|-------|-------|------|------------|-----|------|------|------|------|--------------------------------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| (In Millions Per Milliliter) | | | | | | | | | | | | | | |
| All Races ^e | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 59 | 106.8 | 79.8 | 10.4 | 8 | 10 | 16 | 89 | 208 | 293 | 339 | 13.6 | 8.5 |
| 30-48 yrs | Non-Vietnam | 73 | 106.3 | 82.9 | 9.7 | 6 | 12 | 21 | 74 | 253 | 295 | 322 | 11.0 | 11.0 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 33 | 102.0 | 76.0 | 13.2 | 8 | 9 | 13 | 89 | 186 | 307 | 339 | 15.2 | 6.1 |
| 30-39 yrs | Non-Vietnam | 44 | 114.4 | 88.1 | 13.3 | 6 | 13 | 29 | 75 | 290 | 299 | 322 | 6.8 | 13.6 |
| 40-48 yrs | Vietnam | 16 | 102.8 | 82.3 | 20.6 | 9 | 9 | 13 | 74 | 235 | 257 | 257 | 12.5 | 12.5 |
| 40-48 yrs | Non-Vietnam | 18 | 104.6 | 69.6 | 16.4 | 9 | 9 | 12 | 100 | 223 | 247 | 247 | 11.1 | 5.6 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 3 | 116.1 | 87.0 | 50.2 | 17 | 16 | 16 | 154 | 177 | 177 | 177 | 33.3 | — |
| 30-39 yrs | Non-Vietnam | 3 | 43.9 | 16.0 | 9.2 | 29 | 29 | 29 | 42 | 61 | 61 | 61 | — | — |
| 40-48 yrs | Vietnam | 4 | 107.9 | 91.7 | 45.8 | 27 | 27 | 27 | 98 | 208 | 208 | 208 | — | — |
| 40-48 yrs | Non-Vietnam | 3 | 116.2 | 132.7 | 76.6 | 19 | 19 | 19 | 62 | 267 | 267 | 267 | 33.3 | 33.3 |

^a Magnification refers to the ocular lens setting at time of videotaping. (See Chapter 12 for further details.)

^b Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 70 for Vietnam and 82 for non-Vietnam veterans because of missing data. If there was spillage during sample collection, the value of concentration was excluded.

^c The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^e All races include white, black, and other.

**Table H.4 Summary Statistics for Motility Semen Analysis:
Measure — Sperm Cells Per Ejaculate (Combined Magnifications X 1.0 and X 1.5)^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | | % Below Reference ^c | % Above Reference ^d |
|-----------------------------|------------------|----------------|-------|-------|------|------------|-----|------|------|------|------|------|--------------------------------|--------------------------------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | Max | | |
| (In Millions Per Ejaculate) | | | | | | | | | | | | | | |
| All Races ^e | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 263 | 248.8 | 234.9 | 14.5 | 0 | 18 | 28 | 184 | 588 | 793 | 1156 | 14.4 | 9.9 |
| 30-48 yrs | Non-Vietnam | 209 | 300.9 | 295.1 | 20.4 | 0 | 20 | 44 | 227 | 630 | 984 | 1746 | 10.0 | 11.0 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 152 | 241.7 | 227.9 | 18.5 | 0 | 14 | 23 | 179 | 614 | 804 | 1005 | 17.1 | 10.5 |
| 30-39 yrs | Non-Vietnam | 125 | 351.9 | 337.9 | 30.2 | 5 | 19 | 48 | 257 | 823 | 1117 | 1746 | 8.0 | 13.6 |
| 40-48 yrs | Vietnam | 66 | 279.0 | 255.4 | 31.4 | 0 | 18 | 49 | 221 | 622 | 988 | 1156 | 7.6 | 9.1 |
| 40-48 yrs | Non-Vietnam | 50 | 241.5 | 187.0 | 26.4 | 0 | 16 | 35 | 168 | 560 | 639 | 820 | 10.0 | 8.0 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 18 | 227.2 | 264.4 | 62.3 | 6 | 6 | 24 | 103 | 756 | 815 | 815 | 16.7 | 16.7 |
| 30-39 yrs | Non-Vietnam | 14 | 146.8 | 111.4 | 29.8 | 0 | 0 | 11 | 150 | 314 | 367 | 367 | 28.6 | — |
| 40-48 yrs | Vietnam | 14 | 184.0 | 146.3 | 39.1 | 18 | 18 | 20 | 158 | 423 | 489 | 489 | 28.6 | — |
| 40-48 yrs | Non-Vietnam | 5 | 158.2 | 81.4 | 36.4 | 27 | 27 | 27 | 182 | 241 | 241 | 241 | 20.0 | — |

^a Magnification refers to the ocular lens setting at time of videotaping. (See Chapter 12 for further details.)

^b Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 324 for Vietnam and 247 for non-Vietnam veterans because of missing data. If there was spillage during sample collection, the value of sperm cells per ejaculate was excluded.

^c The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^e All races include white, black, and other.

**Table H.5 Summary Statistics for Motility Semen Analysis:
Measure – Sperm Cells Per Ejaculate (Magnification X 1.5)^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | | % Below Reference ^c | % Above Reference ^d |
|-----------------------------|------------------|----------------|-------|-------|------|------------|-----|------|------|------|------|------|--------------------------------|--------------------------------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | Max | | |
| (In Millions Per Ejaculate) | | | | | | | | | | | | | | |
| All Races ^e | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 200 | 250.3 | 243.8 | 17.2 | 5 | 20 | 31 | 176 | 657 | 820 | 1156 | 13.0 | 11.0 |
| 30-48 yrs | Non-Vietnam | 134 | 317.3 | 300.4 | 26.0 | 11 | 31 | 55 | 240 | 596 | 1010 | 1746 | 6.7 | 9.7 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 117 | 237.8 | 234.0 | 21.6 | 5 | 18 | 23 | 174 | 653 | 823 | 1005 | 16.2 | 11.1 |
| 30-39 yrs | Non-Vietnam | 80 | 366.7 | 343.7 | 38.4 | 17 | 31 | 55 | 292 | 873 | 1115 | 1746 | 5.0 | 12.5 |
| 40-48 yrs | Vietnam | 48 | 312.2 | 276.7 | 39.9 | 13 | 42 | 52 | 243 | 761 | 1108 | 1156 | 4.2 | 12.5 |
| 40-48 yrs | Non-Vietnam | 32 | 261.0 | 189.7 | 33.5 | 11 | 24 | 68 | 168 | 547 | 696 | 820 | 6.3 | 6.3 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 15 | 185.7 | 226.9 | 58.6 | 6 | 6 | 24 | 101 | 704 | 750 | 750 | 13.3 | 13.3 |
| 30-39 yrs | Non-Vietnam | 10 | 160.1 | 116.2 | 36.7 | 21 | 21 | 23 | 166 | 357 | 367 | 367 | 30.0 | – |
| 40-48 yrs | Vietnam | 10 | 165.9 | 116.1 | 36.7 | 18 | 18 | 19 | 158 | 351 | 358 | 358 | 30.0 | – |
| 40-48 yrs | Non-Vietnam | 2 | 162.5 | 27.5 | 19.4 | 143 | 143 | 143 | 162 | 182 | 182 | 182 | – | – |

^a Magnification refers to the ocular lens setting at time of videotaping. (See Chapter 12 for further details.)

^b Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 226 for Vietnam and 151 for non-Vietnam veterans because of missing data. If there was spillage during sample collection, the value of sperm cells per ejaculate was excluded.

^c The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^e All races include white, black, and other.

**Table H.6 Summary Statistics for Motility Semen Analysis:
Measure – Sperm Cells Per Ejaculate (Magnification X 1.0)^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^c | % Above Reference ^d | |
|-----------------------------|------------------|----------------|-------|-------|-------|------------|-----|------|------|------|------|--------------------------------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| (In Millions Per Ejaculate) | | | | | | | | | | | | | | |
| All Races ^e | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 58 | 265.2 | 201.1 | 26.4 | 11 | 26 | 34 | 213 | 494 | 789 | 821 | 12.1 | 6.9 |
| 30-48 yrs | Non-Vietnam | 72 | 282.8 | 285.3 | 33.6 | 9 | 19 | 28 | 197 | 647 | 1023 | 1297 | 12.5 | 13.9 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 32 | 278.5 | 202.5 | 35.8 | 11 | 26 | 36 | 253 | 570 | 799 | 821 | 12.5 | 9.4 |
| 30-39 yrs | Non-Vietnam | 44 | 332.9 | 329.6 | 49.7 | 9 | 16 | 31 | 249 | 873 | 1180 | 1297 | 11.4 | 15.9 |
| 40-48 yrs | Vietnam | 16 | 214.4 | 155.8 | 39.0 | 27 | 27 | 41 | 188 | 483 | 488 | 488 | 6.3 | — |
| 40-48 yrs | Non-Vietnam | 17 | 218.8 | 180.0 | 43.7 | 20 | 20 | 27 | 188 | 633 | 650 | 650 | 11.8 | 11.8 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 3 | 435.0 | 395.2 | 228.2 | 26 | 26 | 26 | 463 | 815 | 815 | 815 | 33.3 | 33.3 |
| 30-39 yrs | Non-Vietnam | 3 | 151.4 | 90.9 | 52.5 | 64 | 64 | 64 | 146 | 245 | 245 | 245 | — | — |
| 40-48 yrs | Vietnam | 4 | 229.3 | 220.2 | 110.1 | 21 | 21 | 21 | 204 | 489 | 489 | 489 | 25.0 | — |
| 40-48 yrs | Non-Vietnam | 3 | 155.3 | 113.4 | 65.5 | 27 | 27 | 27 | 199 | 241 | 241 | 241 | 33.3 | — |

^a Magnification refers to the ocular lens setting at time of videotaping. (See Chapter 12 for further details.)

^b Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 70 for Vietnam and 82 for non-Vietnam veterans because of missing data. If there was spillage during sample collection, the value of sperm cells per ejaculate was excluded.

^c The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^e All races include white, black, and other.

**Table H.7 Summary Statistics for Motility Semen Analysis:
Sperm Measure – Motile Cells (Combined Magnifications X 1.0 and X 1.5)^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | | % Below Reference ^c | % Above Reference ^d |
|------------------------|------------------|----------------|------|-------|------|------------|-----|------|------|------|------|-----|--------------------------------|--------------------------------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | Max | | |
| (In Percent) | | | | | | | | | | | | | | |
| All Races ^e | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 297 | 56.9 | 23.14 | 1.34 | 0 | 17 | 24 | 60 | 86 | 89 | 97 | 11.8 | 6.7 |
| 30-48 yrs | Non-Vietnam | 231 | 60.4 | 24.45 | 1.61 | 0 | 14 | 24 | 65 | 90 | 92 | 98 | 10.8 | 13.4 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 175 | 55.3 | 24.23 | 1.83 | 0 | 12 | 20 | 60 | 85 | 88 | 97 | 14.9 | 5.7 |
| 30-39 yrs | Non-Vietnam | 128 | 62.2 | 23.84 | 2.11 | 5 | 16 | 24 | 69 | 90 | 92 | 98 | 10.9 | 15.6 |
| 40-48 yrs | Vietnam | 68 | 58.9 | 20.32 | 2.46 | 18 | 23 | 32 | 60 | 86 | 90 | 96 | 5.9 | 7.4 |
| 40-48 yrs | Non-Vietnam | 59 | 60.5 | 26.11 | 3.40 | 0 | 5 | 24 | 65 | 90 | 92 | 97 | 11.9 | 15.3 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 24 | 58.8 | 22.77 | 4.65 | 7 | 12 | 25 | 65 | 89 | 94 | 95 | 12.5 | 12.5 |
| 30-39 yrs | Non-Vietnam | 20 | 50.4 | 22.84 | 5.11 | 1 | 2 | 20 | 44 | 84 | 90 | 90 | 10.0 | 5.0 |
| 40-48 yrs | Vietnam | 14 | 54.2 | 24.36 | 6.51 | 15 | 15 | 18 | 54 | 87 | 87 | 87 | 14.3 | — |
| 40-48 yrs | Non-Vietnam | 6 | 67.7 | 20.39 | 8.32 | 37 | 37 | 37 | 69 | 95 | 95 | 95 | — | 16.7 |

^a Magnification refers to the ocular lens setting at time of videotaping. (See Chapter 12 for further details.)

^b Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 324 for Vietnam and 247 for non-Vietnam veterans because of missing data.

^c The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^e All races include white, black, and other.

**Table H.8 Summary Statistics for Motility Semen Analysis:
Sperm Measure – Motile Cells (Magnification X 1.5)^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^c | % Above Reference ^d | |
|------------------------|------------------|----------------|------|-------|-------|------------|-----|------|------|------|------|--------------------------------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| All Races ^e | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 226 | 54.6 | 23.13 | 1.54 | 7 | 16 | 22 | 58 | 86 | 89 | 97 | 13.7 | 6.6 |
| 30-48 yrs | Non-Vietnam | 151 | 57.9 | 24.45 | 1.99 | 0 | 10 | 24 | 60 | 88 | 91 | 98 | 13.2 | 9.9 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 132 | 52.5 | 24.01 | 2.09 | 8 | 12 | 20 | 54 | 85 | 88 | 97 | 17.4 | 5.3 |
| 30-39 yrs | Non-Vietnam | 83 | 58.6 | 23.95 | 2.63 | 5 | 11 | 23 | 62 | 89 | 91 | 98 | 13.3 | 10.8 |
| 40-48 yrs | Vietnam | 51 | 57.8 | 20.13 | 2.82 | 18 | 22 | 32 | 60 | 86 | 90 | 96 | 5.9 | 7.8 |
| 40-48 yrs | Non-Vietnam | 38 | 60.6 | 24.92 | 4.04 | 0 | 14 | 24 | 63 | 92 | 93 | 97 | 13.2 | 13.2 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 20 | 55.8 | 23.21 | 5.19 | 7 | 8 | 25 | 63 | 87 | 95 | 95 | 15.0 | 10.0 |
| 30-39 yrs | Non-Vietnam | 16 | 51.4 | 24.91 | 6.23 | 1 | 1 | 14 | 43 | 86 | 90 | 90 | 12.5 | 6.3 |
| 40-48 yrs | Vietnam | 10 | 49.8 | 23.68 | 7.49 | 15 | 15 | 16 | 49 | 85 | 86 | 86 | 20.0 | — |
| 40-48 yrs | Non-Vietnam | 2 | 68.9 | 14.37 | 10.16 | 59 | 59 | 59 | 69 | 79 | 79 | 79 | — | — |

^a Magnification refers to the ocular lens setting at time of videotaping. (See Chapter 12 for further details.)

^b Includes veterans without vasectomies who were examined after May 18, 1986.

^c The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^e All races include white, black, and other.

**Table H.9 Summary Statistics for Motility Semen Analysis:
Sperm Measure – Motile Cells (Magnification X 1.0)^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | | % Below Reference ^c | % Above Reference ^d |
|------------------------|------------------|----------------|------|-------|-------|------------|-----|------|------|------|------|-----|--------------------------------|--------------------------------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | Max | | |
| (In Percent) | | | | | | | | | | | | | | |
| All Races ^e | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 69 | 66.1 | 19.04 | 2.29 | 19 | 27 | 37 | 72 | 87 | 90 | 93 | 2.9 | 7.2 |
| 30-48 yrs | Non-Vietnam | 79 | 65.9 | 22.90 | 2.58 | 5 | 24 | 30 | 72 | 90 | 94 | 97 | 5.1 | 20.3 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 41 | 67.0 | 18.64 | 2.91 | 19 | 27 | 33 | 74 | 86 | 90 | 92 | 2.4 | 7.3 |
| 30-39 yrs | Non-Vietnam | 45 | 68.9 | 22.38 | 3.34 | 12 | 20 | 33 | 74 | 91 | 95 | 97 | 6.7 | 24.4 |
| 40-48 yrs | Vietnam | 17 | 62.2 | 21.16 | 5.13 | 24 | 24 | 26 | 67 | 86 | 93 | 93 | 5.9 | 5.9 |
| 40-48 yrs | Non-Vietnam | 20 | 63.3 | 25.91 | 5.79 | 5 | 6 | 28 | 70 | 90 | 90 | 90 | 5.0 | 20.0 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 4 | 73.8 | 14.36 | 7.18 | 60 | 60 | 60 | 72 | 90 | 90 | 90 | – | 25.0 |
| 30-39 yrs | Non-Vietnam | 4 | 46.3 | 13.18 | 6.59 | 30 | 30 | 30 | 46 | 62 | 62 | 62 | – | – |
| 40-48 yrs | Vietnam | 4 | 65.4 | 25.61 | 12.80 | 39 | 39 | 39 | 67 | 87 | 87 | 87 | – | – |
| 40-48 yrs | Non-Vietnam | 4 | 67.1 | 24.96 | 12.48 | 37 | 37 | 37 | 68 | 95 | 95 | 95 | – | 25.0 |

^a Magnification refers to the ocular lens setting at time of videotaping. (See Chapter 12 for further details.)

^b Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 70 for Vietnam and 82 for non-Vietnam veterans because of missing data.

^c The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^e All races include white, black, and other.

**Table H.10 Summary Statistics for Motility Semen Analysis:
Sperm Measure – Mean Linear Velocity (Combined Magnifications X 1.0 and X 1.5)^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | | % Below Reference ^c | % Above Reference ^d |
|-----------------------------|------------------|----------------|------|-------|------|------------|-----|------|------|------|------|-----|--------------------------------|--------------------------------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | Max | | |
| (In Micrometers Per Second) | | | | | | | | | | | | | | |
| All Races ^e | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 294 | 49.9 | 10.14 | 0.59 | 14 | 32 | 36 | 51 | 62 | 65 | 79 | 11.6 | 11.2 |
| 30-48 yrs | Non-Vietnam | 227 | 50.6 | 10.34 | 0.69 | 12 | 32 | 37 | 51 | 62 | 67 | 75 | 10.6 | 10.6 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 172 | 50.4 | 10.64 | 0.81 | 14 | 31 | 36 | 51 | 63 | 68 | 79 | 12.2 | 12.2 |
| 30-39 yrs | Non-Vietnam | 128 | 50.3 | 10.00 | 0.88 | 26 | 31 | 37 | 51 | 62 | 66 | 73 | 10.9 | 9.4 |
| 40-48 yrs | Vietnam | 68 | 48.9 | 10.19 | 1.24 | 31 | 32 | 35 | 48 | 62 | 68 | 74 | 14.7 | 11.8 |
| 40-48 yrs | Non-Vietnam | 56 | 52.6 | 9.83 | 1.31 | 26 | 34 | 39 | 52 | 65 | 68 | 75 | 7.1 | 16.1 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 24 | 51.1 | 8.10 | 1.65 | 39 | 39 | 39 | 52 | 62 | 67 | 68 | — | 12.5 |
| 30-39 yrs | Non-Vietnam | 19 | 47.4 | 12.01 | 2.75 | 12 | 12 | 31 | 50 | 60 | 60 | 60 | 15.8 | — |
| 40-48 yrs | Vietnam | 14 | 48.4 | 8.83 | 2.36 | 31 | 31 | 35 | 47 | 61 | 62 | 62 | 7.1 | — |
| 40-48 yrs | Non-Vietnam | 6 | 51.2 | 8.37 | 3.42 | 40 | 40 | 40 | 52 | 60 | 60 | 60 | — | — |

^a Magnification refers to the ocular lens setting at time of videotaping. (See Chapter 12 for further details.)

^b Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 324 for Vietnam and 247 for non-Vietnam veterans because of missing data.

^c The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^e All races include white, black, and other.

**Table H.11 Summary Statistics for Motility Semen Analysis:
Sperm Measure — Mean Linear Velocity (Magnification X 1.5)^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^c | % Above Reference ^d | |
|-----------------------------|------------------|----------------|------|-------|------|------------|-----|------|------|------|------|--------------------------------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| (In Micrometers Per Second) | | | | | | | | | | | | | | |
| All Races ^e | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 225 | 49.0 | 10.67 | 0.71 | 14 | 31 | 35 | 49 | 62 | 68 | 79 | 13.8 | 11.1 |
| 30-48 yrs | Non-Vietnam | 149 | 48.7 | 10.58 | 0.87 | 12 | 30 | 36 | 49 | 61 | 65 | 75 | 13.4 | 8.1 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 131 | 49.6 | 11.19 | 0.98 | 14 | 30 | 33 | 50 | 63 | 71 | 79 | 13.7 | 12.2 |
| 30-39 yrs | Non-Vietnam | 83 | 48.3 | 9.82 | 1.08 | 26 | 29 | 37 | 49 | 61 | 65 | 73 | 12.0 | 7.2 |
| 40-48 yrs | Vietnam | 51 | 48.1 | 11.03 | 1.54 | 31 | 32 | 34 | 47 | 62 | 72 | 74 | 19.6 | 13.7 |
| 40-48 yrs | Non-Vietnam | 37 | 50.9 | 10.33 | 1.70 | 26 | 32 | 35 | 50 | 63 | 71 | 75 | 10.8 | 10.8 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 20 | 49.6 | 7.85 | 1.75 | 39 | 39 | 39 | 51 | 60 | 68 | 68 | — | 5.0 |
| 30-39 yrs | Non-Vietnam | 15 | 46.4 | 12.69 | 3.28 | 12 | 12 | 23 | 49 | 60 | 60 | 60 | 20.0 | — |
| 40-48 yrs | Vietnam | 10 | 47.0 | 9.41 | 2.98 | 31 | 31 | 32 | 46 | 61 | 61 | 61 | 10.0 | — |
| 40-48 yrs | Non-Vietnam | 2 | 44.3 | 5.85 | 4.14 | 40 | 40 | 40 | 44 | 48 | 48 | 48 | — | — |

^a Magnification refers to the ocular lens setting at time of videotaping. (See Chapter 12 for further details.)

^b Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 226 for Vietnam and 151 for non-Vietnam veterans because of missing data.

^c The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^e All races include white, black, and other.

**Table H.12 Summary Statistics for Motility Semen Analysis:
Sperm Measure – Mean Linear Velocity (Magnification X 1.0)^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^c | % Above Reference ^d | |
|-----------------------------|------------------|----------------|------|------|------|------------|-----|------|------|------|------|--------------------------------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| (In Micrometers Per Second) | | | | | | | | | | | | | | |
| All Races ^e | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 69 | 52.6 | 7.64 | 0.92 | 34 | 38 | 43 | 54 | 62 | 64 | 71 | 4.3 | 11.6 |
| 30-48 yrs | Non-Vietnam | 78 | 54.4 | 8.76 | 0.99 | 30 | 36 | 39 | 55 | 65 | 67 | 71 | 5.1 | 15.4 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 41 | 52.9 | 8.24 | 1.29 | 34 | 37 | 39 | 54 | 63 | 66 | 71 | 7.3 | 12.2 |
| 30-39 yrs | Non-Vietnam | 45 | 53.9 | 9.41 | 1.40 | 30 | 34 | 38 | 55 | 65 | 69 | 71 | 8.9 | 13.3 |
| 40-48 yrs | Vietnam | 17 | 51.0 | 6.90 | 1.67 | 41 | 41 | 41 | 51 | 62 | 65 | 65 | — | 5.9 |
| 40-48 yrs | Non-Vietnam | 19 | 55.9 | 8.09 | 1.86 | 39 | 39 | 39 | 55 | 67 | 67 | 67 | — | 26.3 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 4 | 58.2 | 5.61 | 2.80 | 51 | 51 | 51 | 60 | 63 | 63 | 63 | — | 50.0 |
| 30-39 yrs | Non-Vietnam | 4 | 50.9 | 9.61 | 4.80 | 38 | 38 | 38 | 53 | 60 | 60 | 60 | — | — |
| 40-48 yrs | Vietnam | 4 | 51.9 | 7.05 | 3.52 | 46 | 46 | 46 | 50 | 62 | 62 | 62 | — | — |
| 40-48 yrs | Non-Vietnam | 4 | 54.7 | 7.56 | 3.78 | 44 | 44 | 44 | 57 | 60 | 60 | 60 | — | — |

^a Magnification refers to the ocular lens setting at time of videotaping. (See Chapter 12 for further details.)

^b Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 70 for Vietnam and 82 for non-Vietnam veterans because of missing data.

^c The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^e All races include white, black, and other.

**Table H.13 Summary Statistics for Motility Semen Analysis:
Sperm Measure — Mean Straight Line Velocity (Combined Magnifications X 1.0 and X 1.5)^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^c | % Above Reference ^d | |
|------------------------|------------------|----------------|------|-------|------|------------|-----|------|------|------|------|--------------------------------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| All Races ^e | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 294 | 35.6 | 9.26 | 0.54 | 5 | 21 | 24 | 35 | 47 | 50 | 70 | 11.2 | 9.2 |
| 30-48 yrs | Non-Vietnam | 227 | 36.3 | 9.52 | 0.63 | 8 | 20 | 25 | 36 | 48 | 53 | 64 | 9.3 | 10.6 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 172 | 36.5 | 10.22 | 0.78 | 5 | 20 | 24 | 37 | 48 | 52 | 70 | 12.8 | 12.2 |
| 30-39 yrs | Non-Vietnam | 128 | 36.4 | 9.59 | 0.85 | 16 | 20 | 25 | 36 | 49 | 53 | 64 | 8.6 | 12.5 |
| 40-48 yrs | Vietnam | 68 | 34.6 | 8.54 | 1.04 | 11 | 21 | 24 | 34 | 45 | 49 | 57 | 10.3 | 7.4 |
| 40-48 yrs | Non-Vietnam | 56 | 37.5 | 9.47 | 1.27 | 12 | 19 | 25 | 38 | 49 | 53 | 64 | 8.9 | 10.7 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 24 | 35.2 | 6.83 | 1.39 | 23 | 23 | 26 | 35 | 45 | 47 | 48 | 8.3 | 4.2 |
| 30-39 yrs | Non-Vietnam | 19 | 33.0 | 8.81 | 2.02 | 8 | 8 | 20 | 35 | 42 | 43 | 43 | 10.5 | — |
| 40-48 yrs | Vietnam | 14 | 34.2 | 6.77 | 1.81 | 23 | 23 | 24 | 35 | 43 | 43 | 43 | 7.1 | — |
| 40-48 yrs | Non-Vietnam | 6 | 34.2 | 7.12 | 2.91 | 24 | 24 | 24 | 35 | 41 | 41 | 41 | 16.7 | — |

^a Magnification refers to the ocular lens setting at time of videotaping. (See Chapter 12 for further details.)

^b Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 324 for Vietnam and 247 for non-Vietnam veterans because of missing data.

^c The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^e All races include white, black, and other.

**Table H.14 Summary Statistics for Motility Semen Analysis:
Sperm Measure – Mean Straight Line Velocity (Magnification X 1.5)^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^c | % Above Reference ^d | |
|-----------------------------|------------------|----------------|------|-------|------|------------|-----|------|------|------|------|--------------------------------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| (In Micrometers Per Second) | | | | | | | | | | | | | | |
| All Races ^e | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 225 | 35.0 | 9.70 | 0.65 | 5 | 20 | 24 | 35 | 47 | 51 | 70 | 12.9 | 10.2 |
| 30-48 yrs | Non-Vietnam | 149 | 34.8 | 9.51 | 0.78 | 8 | 19 | 25 | 34 | 46 | 53 | 64 | 10.1 | 6.7 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 131 | 35.9 | 10.77 | 0.94 | 5 | 18 | 22 | 36 | 49 | 52 | 70 | 14.5 | 13.7 |
| 30-39 yrs | Non-Vietnam | 83 | 34.5 | 9.19 | 1.01 | 16 | 20 | 25 | 33 | 46 | 53 | 64 | 9.6 | 8.4 |
| 40-48 yrs | Vietnam | 51 | 34.1 | 9.11 | 1.28 | 11 | 20 | 23 | 33 | 45 | 49 | 57 | 11.8 | 7.8 |
| 40-48 yrs | Non-Vietnam | 37 | 36.7 | 10.11 | 1.66 | 12 | 18 | 23 | 37 | 46 | 59 | 64 | 10.8 | 5.4 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 20 | 33.7 | 6.43 | 1.44 | 23 | 23 | 25 | 33 | 44 | 47 | 48 | 10.0 | 5.0 |
| 30-39 yrs | Non-Vietnam | 15 | 32.4 | 9.42 | 2.43 | 8 | 8 | 15 | 34 | 42 | 43 | 43 | 13.3 | — |
| 40-48 yrs | Vietnam | 10 | 33.6 | 7.21 | 2.28 | 23 | 23 | 23 | 35 | 43 | 43 | 43 | 10.0 | — |
| 40-48 yrs | Non-Vietnam | 2 | 30.1 | 1.60 | 1.13 | 29 | 29 | 29 | 30 | 31 | 31 | 31 | — | — |

^a Magnification refers to the ocular lens setting at time of videotaping. (See Chapter 12 for further details.)

^b Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 226 for Vietnam and 151 for non-Vietnam veterans because of missing data.

^c The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^e All races include white, black, and other.

**Table H.15 Summary Statistics for Motility Semen Analysis:
Sperm Measure – Mean Straight Line Velocity (Magnification X 1.0)^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^c | % Above Reference ^d | |
|-----------------------------|------------------|----------------|------|------|------|------------|-----|------|------|------|------|--------------------------------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| (In Micrometers Per Second) | | | | | | | | | | | | | | |
| All Races ^e | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 69 | 37.6 | 7.38 | 0.89 | 22 | 24 | 26 | 38 | 47 | 48 | 58 | 5.8 | 5.8 |
| 30-48 yrs | Non-Vietnam | 78 | 39.1 | 8.94 | 1.01 | 19 | 24 | 25 | 40 | 50 | 53 | 62 | 7.7 | 17.9 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 41 | 38.2 | 8.10 | 1.26 | 22 | 23 | 25 | 39 | 47 | 52 | 58 | 7.3 | 7.3 |
| 30-39 yrs | Non-Vietnam | 45 | 39.8 | 9.49 | 1.41 | 19 | 21 | 25 | 41 | 51 | 55 | 62 | 6.7 | 20.0 |
| 40-48 yrs | Vietnam | 17 | 36.0 | 6.53 | 1.58 | 23 | 23 | 27 | 35 | 45 | 48 | 48 | 5.9 | 5.9 |
| 40-48 yrs | Non-Vietnam | 19 | 39.2 | 8.08 | 1.85 | 24 | 24 | 27 | 38 | 51 | 53 | 53 | 5.3 | 21.1 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 4 | 42.4 | 3.59 | 1.79 | 39 | 39 | 39 | 43 | 46 | 46 | 46 | — | — |
| 30-39 yrs | Non-Vietnam | 4 | 35.3 | 6.51 | 3.25 | 26 | 26 | 26 | 38 | 40 | 40 | 40 | — | — |
| 40-48 yrs | Vietnam | 4 | 35.6 | 6.24 | 3.12 | 29 | 29 | 29 | 35 | 43 | 43 | 43 | — | — |
| 40-48 yrs | Non-Vietnam | 4 | 36.3 | 8.16 | 4.08 | 24 | 24 | 24 | 40 | 41 | 41 | 41 | 25.0 | — |

^a Magnification refers to the ocular lens setting at time of videotaping. (See Chapter 12 for further details.)

^b Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 70 for Vietnam and 82 for non-Vietnam veterans because of missing data.

^c The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^e All races include white, black, and other.

**Table H.16 Summary Statistics for Motility Semen Analysis:
Sperm Measure – Mean Linearity (Combined Magnifications X 1.0 and X 1.5)^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^c | % Above Reference ^d | |
|------------------------|------------------|----------------|------|------|------|------------|-----|------|------|------|------|--------------------------------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| (Trajectory Index) | | | | | | | | | | | | | | |
| All Races ^e | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 294 | 6.9 | 0.89 | 0.05 | 1.5 | 5.7 | 6.0 | 7.0 | 7.8 | 8.1 | 9.8 | 10.9 | 9.9 |
| 30-48 yrs | Non-Vietnam | 227 | 6.9 | 0.78 | 0.05 | 3.9 | 5.7 | 6.0 | 6.9 | 7.9 | 8.2 | 9.5 | 9.7 | 10.1 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 172 | 7.0 | 0.99 | 0.08 | 1.5 | 5.7 | 6.0 | 7.0 | 7.9 | 8.3 | 9.8 | 10.5 | 14.5 |
| 30-39 yrs | Non-Vietnam | 128 | 7.0 | 0.77 | 0.07 | 5.1 | 5.8 | 6.1 | 7.0 | 8.0 | 8.4 | 9.5 | 7.8 | 11.7 |
| 40-48 yrs | Vietnam | 68 | 6.8 | 0.73 | 0.09 | 3.6 | 5.5 | 6.0 | 7.0 | 7.6 | 7.7 | 8.1 | 8.8 | 2.9 |
| 40-48 yrs | Non-Vietnam | 56 | 6.8 | 0.79 | 0.11 | 3.9 | 5.2 | 5.9 | 6.9 | 7.8 | 8.0 | 8.4 | 10.7 | 7.1 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 24 | 6.7 | 0.69 | 0.14 | 5.4 | 5.5 | 5.7 | 6.8 | 7.6 | 7.6 | 7.6 | 25.0 | — |
| 30-39 yrs | Non-Vietnam | 19 | 6.8 | 0.53 | 0.12 | 6.0 | 6.0 | 6.0 | 6.9 | 7.3 | 8.1 | 8.1 | 10.5 | 5.3 |
| 40-48 yrs | Vietnam | 14 | 7.0 | 0.84 | 0.22 | 5.8 | 5.8 | 6.0 | 6.9 | 8.5 | 9.4 | 9.4 | 7.1 | 7.1 |
| 40-48 yrs | Non-Vietnam | 6 | 6.4 | 0.53 | 0.22 | 5.5 | 5.5 | 5.5 | 6.5 | 6.9 | 6.9 | 6.9 | 16.7 | — |

^a Magnification refers to the ocular lens setting at time of videotaping. (See Chapter 12 for further details.)

^b Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 324 for Vietnam and 247 for non-Vietnam veterans because of missing data.

^c The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^e All races include white, black, and other.

**Table H.17 Summary Statistics for Motility Semen Analysis:
Sperm Measure – Mean Amplitude Lateral Head Displacement(Combined Magnifications X 1.0 and X 1.5)^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^c | % Above Reference ^d | |
|------------------------|------------------|----------------|------|------|------|------------|-----|------|------|------|------|--------------------------------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| (In Micrometers) | | | | | | | | | | | | | | |
| All Races ^e | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 287 | 2.1 | 0.53 | 0.03 | 0.4 | 1.2 | 1.4 | 2.0 | 2.7 | 3.1 | 4.0 | 11.5 | 11.5 |
| 30-48 yrs | Non-Vietnam | 224 | 2.1 | 0.46 | 0.03 | 0.9 | 1.3 | 1.4 | 2.1 | 2.6 | 2.9 | 3.3 | 10.3 | 8.9 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 166 | 2.0 | 0.53 | 0.04 | 0.4 | 1.2 | 1.4 | 2.0 | 2.6 | 3.0 | 4.0 | 12.7 | 9.6 |
| 30-39 yrs | Non-Vietnam | 127 | 2.0 | 0.46 | 0.04 | 0.9 | 1.2 | 1.4 | 2.0 | 2.5 | 2.8 | 3.1 | 11.8 | 7.9 |
| 40-48 yrs | Vietnam | 67 | 2.1 | 0.52 | 0.06 | 1.2 | 1.2 | 1.4 | 2.0 | 2.7 | 3.1 | 3.9 | 10.4 | 11.9 |
| 40-48 yrs | Non-Vietnam | 56 | 2.2 | 0.44 | 0.06 | 1.1 | 1.2 | 1.6 | 2.2 | 2.6 | 3.0 | 3.3 | 5.4 | 7.1 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 24 | 2.3 | 0.46 | 0.09 | 1.4 | 1.5 | 1.7 | 2.3 | 3.1 | 3.1 | 3.2 | 4.2 | 16.7 |
| 30-39 yrs | Non-Vietnam | 18 | 2.1 | 0.43 | 0.10 | 1.3 | 1.3 | 1.4 | 2.1 | 2.7 | 2.9 | 2.9 | 11.1 | 11.1 |
| 40-48 yrs | Vietnam | 14 | 2.2 | 0.65 | 0.17 | 0.8 | 0.8 | 1.1 | 2.2 | 3.1 | 3.3 | 3.3 | 14.3 | 21.4 |
| 40-48 yrs | Non-Vietnam | 6 | 2.2 | 0.52 | 0.21 | 1.3 | 1.3 | 1.3 | 2.3 | 2.9 | 2.9 | 2.9 | 16.7 | 16.7 |

^a Magnification refers to the ocular lens setting at time of videotaping. (See Chapter 12 for further details.)

^b Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 324 for Vietnam and 247 for non-Vietnam veterans because of missing data.

^c The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^e All races include white, black, and other.

**Table H.18 Summary Statistics for Motility Semen Analysis:
Sperm Measure – Mean Beat/Cross Frequency (Combined Magnifications X 1.0 and X 1.5)^a**

| Race and Age | Place of Service | N ^b | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^c | % Above Reference ^d | |
|------------------------|------------------|----------------|------|------|------|------------|-----|------|------|------|------|--------------------------------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| (In Hertz Per Second) | | | | | | | | | | | | | | |
| All Races ^e | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 287 | 14.9 | 1.87 | 0.11 | 6 | 12 | 13 | 15 | 17 | 18 | 21 | 10.5 | 10.8 |
| 30-48 yrs | Non-Vietnam | 224 | 14.9 | 1.88 | 0.13 | 6 | 12 | 13 | 15 | 17 | 17 | 23 | 10.7 | 8.9 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 166 | 15.0 | 1.97 | 0.15 | 6 | 12 | 13 | 15 | 17 | 18 | 21 | 10.2 | 13.3 |
| 30-39 yrs | Non-Vietnam | 127 | 14.8 | 1.74 | 0.15 | 9 | 12 | 13 | 15 | 17 | 17 | 22 | 11.0 | 7.9 |
| 40-48 yrs | Vietnam | 67 | 15.0 | 1.73 | 0.21 | 8 | 12 | 13 | 15 | 17 | 17 | 20 | 9.0 | 7.5 |
| 40-48 yrs | Non-Vietnam | 56 | 14.9 | 1.75 | 0.23 | 6 | 12 | 13 | 15 | 16 | 17 | 18 | 10.7 | 1.8 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 24 | 14.6 | 1.61 | 0.33 | 12 | 12 | 12 | 15 | 17 | 17 | 17 | 16.7 | 8.3 |
| 30-39 yrs | Non-Vietnam | 18 | 15.6 | 1.90 | 0.45 | 12 | 12 | 13 | 16 | 18 | 20 | 20 | 11.1 | 22.2 |
| 40-48 yrs | Vietnam | 14 | 14.3 | 2.41 | 0.65 | 9 | 9 | 10 | 14 | 17 | 18 | 18 | 21.4 | 7.1 |
| 40-48 yrs | Non-Vietnam | 6 | 14.7 | 3.15 | 1.29 | 9 | 9 | 9 | 16 | 17 | 17 | 17 | 16.7 | 16.7 |

^a Magnification refers to the ocular lens setting at time of videotaping. (See Chapter 12 for further details.)

^b Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 324 for Vietnam and 247 for non-Vietnam veterans because of missing data.

^c The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^e All races include white, black, and other.

**Table H.19 Summary Statistics for Morphology Semen Analysis:
Sperm Head Measure – Normal Shaped Cells**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | % Above Reference ^c | |
|------------------------|------------------|----------------|------|-------|------|------------|-----|------|------|------|------|--------------------------------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| (In Percent) | | | | | | | | | | | | | | |
| All Races ^d | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 321 | 57.9 | 16.66 | 0.93 | 8 | 26 | 32 | 61 | 77 | 81 | 88 | 12.1 | 7.2 |
| 30-48 yrs | Non-Vietnam | 245 | 60.8 | 15.29 | 0.98 | 8 | 30 | 37 | 64 | 78 | 81 | 89 | 8.2 | 8.6 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 186 | 59.3 | 16.78 | 1.23 | 8 | 25 | 34 | 63 | 78 | 82 | 88 | 11.8 | 8.6 |
| 30-39 yrs | Non-Vietnam | 137 | 63.2 | 13.67 | 1.17 | 10 | 35 | 44 | 66 | 78 | 81 | 85 | 5.1 | 9.5 |
| 40-48 yrs | Vietnam | 73 | 57.6 | 14.26 | 1.67 | 25 | 28 | 35 | 60 | 76 | 78 | 81 | 9.6 | 4.1 |
| 40-48 yrs | Non-Vietnam | 62 | 59.6 | 15.63 | 1.98 | 23 | 28 | 36 | 64 | 79 | 84 | 89 | 8.1 | 9.7 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 30 | 54.0 | 18.75 | 3.42 | 12 | 12 | 23 | 57 | 76 | 82 | 83 | 10.0 | 6.7 |
| 30-39 yrs | Non-Vietnam | 22 | 47.5 | 18.54 | 3.95 | 8 | 10 | 22 | 52 | 70 | 79 | 81 | 27.3 | 4.5 |
| 40-48 yrs | Vietnam | 15 | 51.7 | 20.78 | 5.37 | 21 | 21 | 24 | 56 | 79 | 80 | 80 | 26.7 | 6.7 |
| 40-48 yrs | Non-Vietnam | 6 | 70.7 | 7.71 | 3.15 | 63 | 63 | 63 | 69 | 84 | 84 | 84 | — | 16.7 |

^a Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 324 for Vietnam and 247 for non-Vietnam veterans because of missing data.

^b The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^c The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d All races include white, black, and other.

**Table H.20 Summary Statistics for Morphometry Semen Analysis:
Sperm Head Measure – Mean Cell Area**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | % Above Reference ^c | |
|--------------------------------|------------------|----------------|------|------|------|------------|-----|------|------|------|------|--------------------------------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| (In Micrometers ²) | | | | | | | | | | | | | | |
| All Races ^d | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 321 | 9.1 | 1.08 | 0.06 | 6.4 | 7.4 | 7.8 | 9.1 | 10.3 | 11.0 | 14.3 | 9.7 | 10.9 |
| 30-48 yrs | Non-Vietnam | 245 | 8.9 | 0.91 | 0.06 | 6.2 | 7.3 | 7.7 | 8.9 | 10.0 | 10.5 | 11.6 | 11.4 | 7.3 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 186 | 9.1 | 0.98 | 0.07 | 6.4 | 7.4 | 7.8 | 9.1 | 10.2 | 10.6 | 12.4 | 9.1 | 9.7 |
| 30-39 yrs | Non-Vietnam | 137 | 8.9 | 0.85 | 0.07 | 6.2 | 7.3 | 7.8 | 8.9 | 9.9 | 10.3 | 11.4 | 9.5 | 6.6 |
| 40-48 yrs | Vietnam | 73 | 9.0 | 1.16 | 0.14 | 7.2 | 7.4 | 7.8 | 8.8 | 10.3 | 11.5 | 14.3 | 8.2 | 9.6 |
| 40-48 yrs | Non-Vietnam | 62 | 8.9 | 1.00 | 0.13 | 7.1 | 7.3 | 7.5 | 8.8 | 10.1 | 10.7 | 11.6 | 14.5 | 8.1 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 30 | 9.6 | 1.30 | 0.24 | 7.1 | 7.4 | 8.3 | 9.5 | 11.5 | 12.3 | 12.8 | 6.7 | 26.7 |
| 30-39 yrs | Non-Vietnam | 22 | 8.8 | 1.18 | 0.25 | 6.9 | 6.9 | 7.4 | 8.4 | 10.6 | 11.3 | 11.4 | 18.2 | 13.6 |
| 40-48 yrs | Vietnam | 15 | 8.6 | 1.32 | 0.34 | 6.6 | 6.6 | 6.7 | 8.3 | 10.9 | 11.0 | 11.0 | 26.7 | 13.3 |
| 40-48 yrs | Non-Vietnam | 6 | 9.2 | 0.24 | 0.10 | 8.9 | 8.9 | 8.9 | 9.2 | 9.6 | 9.6 | 9.6 | – | – |

^a Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 324 for Vietnam and 247 for non-Vietnam veterans because of missing data.

^b The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^c The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d All races include white, black, and other.

**Table H.21 Summary Statistics for Morphometry Semen Analysis:
Sperm Head Measure – Mean Cell Perimeter**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | % Above Reference ^c | |
|------------------------|------------------|----------------|------|------|------|------------|------|------|------|------|------|--------------------------------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| (In Micrometers) | | | | | | | | | | | | | | |
| All Races ^d | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 321 | 12.4 | 0.87 | 0.05 | 10.4 | 11.2 | 11.4 | 12.2 | 13.5 | 14.0 | 16.0 | 8.7 | 12.8 |
| 30-48 yrs | Non-Vietnam | 245 | 12.2 | 0.75 | 0.05 | 10.8 | 11.1 | 11.4 | 12.1 | 13.2 | 13.6 | 15.9 | 9.8 | 6.5 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 186 | 12.4 | 0.80 | 0.06 | 10.6 | 11.2 | 11.5 | 12.3 | 13.4 | 13.8 | 16.0 | 8.6 | 11.3 |
| 30-39 yrs | Non-Vietnam | 137 | 12.1 | 0.65 | 0.06 | 10.8 | 11.1 | 11.4 | 12.1 | 13.1 | 13.3 | 14.0 | 9.5 | 3.6 |
| 40-48 yrs | Vietnam | 73 | 12.3 | 0.92 | 0.11 | 11.0 | 11.2 | 11.4 | 12.2 | 13.6 | 14.5 | 15.0 | 8.2 | 13.7 |
| 40-48 yrs | Non-Vietnam | 62 | 12.2 | 0.82 | 0.10 | 10.8 | 11.1 | 11.3 | 11.9 | 13.4 | 13.9 | 14.7 | 12.9 | 9.7 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 30 | 12.9 | 1.21 | 0.22 | 10.4 | 10.7 | 11.6 | 12.6 | 14.7 | 15.5 | 15.7 | 6.7 | 26.7 |
| 30-39 yrs | Non-Vietnam | 22 | 12.5 | 1.14 | 0.24 | 10.8 | 10.9 | 11.2 | 12.2 | 14.4 | 15.7 | 15.9 | 9.1 | 18.2 |
| 40-48 yrs | Vietnam | 15 | 12.2 | 0.94 | 0.24 | 11.0 | 11.0 | 11.0 | 12.1 | 13.9 | 14.1 | 14.1 | 20.0 | 13.3 |
| 40-48 yrs | Non-Vietnam | 6 | 12.3 | 0.16 | 0.07 | 12.2 | 12.2 | 12.2 | 12.3 | 12.6 | 12.6 | 12.6 | — | — |

^a Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 324 for Vietnam and 247 for non-Vietnam veterans because of missing data.

^b The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^c The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d All races include white, black, and other.

**Table H.22 Summary Statistics for Morphometry Semen Analysis:
Sperm Head Measure – Mean Cell Length/Width Ratio**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | % Above Reference ^c | |
|------------------------|------------------|----------------|------|-------|-------|------------|------|------|------|------|------|--------------------------------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| All Races ^d | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 321 | 1.67 | 0.189 | 0.011 | 1.32 | 1.41 | 1.45 | 1.64 | 1.95 | 2.04 | 2.55 | 9.7 | 13.4 |
| 30-48 yrs | Non-Vietnam | 245 | 1.65 | 0.191 | 0.012 | 1.24 | 1.41 | 1.45 | 1.61 | 1.86 | 1.98 | 2.86 | 9.8 | 8.6 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 186 | 1.67 | 0.189 | 0.014 | 1.40 | 1.43 | 1.46 | 1.63 | 1.92 | 2.04 | 2.55 | 8.6 | 12.4 |
| 30-39 yrs | Non-Vietnam | 137 | 1.62 | 0.153 | 0.013 | 1.24 | 1.41 | 1.45 | 1.61 | 1.84 | 1.88 | 2.14 | 9.5 | 4.4 |
| 40-48 yrs | Vietnam | 73 | 1.65 | 0.169 | 0.020 | 1.38 | 1.41 | 1.46 | 1.63 | 1.89 | 2.00 | 2.09 | 8.2 | 11.0 |
| 40-48 yrs | Non-Vietnam | 62 | 1.64 | 0.189 | 0.024 | 1.32 | 1.41 | 1.44 | 1.60 | 1.93 | 2.01 | 2.29 | 14.5 | 12.9 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 30 | 1.69 | 0.222 | 0.040 | 1.32 | 1.36 | 1.42 | 1.69 | 2.05 | 2.13 | 2.16 | 20.0 | 16.7 |
| 30-39 yrs | Non-Vietnam | 22 | 1.83 | 0.330 | 0.070 | 1.40 | 1.42 | 1.54 | 1.76 | 2.35 | 2.79 | 2.86 | 4.5 | 22.7 |
| 40-48 yrs | Vietnam | 15 | 1.71 | 0.189 | 0.049 | 1.41 | 1.41 | 1.46 | 1.71 | 1.98 | 2.01 | 2.01 | 6.7 | 20.0 |
| 40-48 yrs | Non-Vietnam | 6 | 1.59 | 0.098 | 0.040 | 1.41 | 1.41 | 1.41 | 1.61 | 1.67 | 1.67 | 1.67 | 16.7 | – |

^a Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 324 for Vietnam and 247 for non-Vietnam veterans because of missing data.

^b The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^c The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d All races include white, black, and other.

**Table H.23 Summary Statistics for Morphometry Semen Analysis:
Sperm Head Measure — Mean Cell Major Axis Length**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Below Reference ^b | % Above Reference ^c | |
|------------------------|------------------|----------------|------|-------|-------|------------|------|------|------|------|------|--------------------------------|--------------------------------|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | | Max |
| (In Micrometers) | | | | | | | | | | | | | | |
| All Races ^d | | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 321 | 4.43 | 0.382 | 0.021 | 3.48 | 3.92 | 4.01 | 4.36 | 4.92 | 5.15 | 6.31 | 8.4 | 11.5 |
| 30-48 yrs | Non-Vietnam | 245 | 4.35 | 0.348 | 0.022 | 3.59 | 3.91 | 3.99 | 4.30 | 4.78 | 4.94 | 6.46 | 9.8 | 7.3 |
| White | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 186 | 4.42 | 0.365 | 0.027 | 3.73 | 3.94 | 4.02 | 4.35 | 4.90 | 5.10 | 6.31 | 7.0 | 10.8 |
| 30-39 yrs | Non-Vietnam | 137 | 4.31 | 0.285 | 0.024 | 3.65 | 3.89 | 3.98 | 4.27 | 4.73 | 4.89 | 4.96 | 10.9 | 5.1 |
| 40-48 yrs | Vietnam | 73 | 4.39 | 0.371 | 0.043 | 3.81 | 3.92 | 3.98 | 4.30 | 4.94 | 5.20 | 5.42 | 9.6 | 9.6 |
| 40-48 yrs | Non-Vietnam | 62 | 4.33 | 0.371 | 0.047 | 3.59 | 3.80 | 3.98 | 4.26 | 4.76 | 5.20 | 5.53 | 9.7 | 8.1 |
| Black | | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 30 | 4.59 | 0.523 | 0.095 | 3.48 | 3.62 | 3.95 | 4.51 | 5.44 | 5.62 | 5.75 | 10.0 | 20.0 |
| 30-39 yrs | Non-Vietnam | 22 | 4.57 | 0.582 | 0.124 | 3.92 | 3.93 | 3.97 | 4.39 | 5.33 | 6.30 | 6.46 | 9.1 | 18.2 |
| 40-48 yrs | Vietnam | 15 | 4.35 | 0.392 | 0.101 | 3.82 | 3.82 | 3.90 | 4.30 | 5.05 | 5.15 | 5.15 | 20.0 | 20.0 |
| 40-48 yrs | Non-Vietnam | 6 | 4.35 | 0.142 | 0.058 | 4.14 | 4.14 | 4.14 | 4.34 | 4.54 | 4.54 | 4.54 | — | — |

^a Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 324 for Vietnam and 247 for non-Vietnam veterans because of missing data.

^b The low reference value is the 10th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^c The high reference value is the 90th percentile of those with no reported infertility problem, Vietnam and non-Vietnam cohorts combined.

^d All races include white, black, and other.

**Table H.24 Summary Statistics for Semen Analysis:
Semen Measure – Volume**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | | % Below Reference ^b |
|------------------------|------------------|----------------|------|------|------|------------|-----|------|------|------|------|-----|--------------------------------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | Max | |
| (In Milliliters) | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 295 | 2.7 | 1.48 | 0.09 | 0 | 1 | 1 | 2 | 5 | 6 | 8 | 7.5 |
| 30-48 yrs | Non-Vietnam | 226 | 2.7 | 1.57 | 0.10 | 0 | 1 | 1 | 2 | 5 | 6 | 9 | 6.6 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 170 | 2.9 | 1.50 | 0.11 | 0 | 1 | 1 | 3 | 5 | 6 | 8 | 6.5 |
| 30-39 yrs | Non-Vietnam | 132 | 3.0 | 1.55 | 0.14 | 0 | 1 | 1 | 3 | 5 | 6 | 9 | 5.3 |
| 40-48 yrs | Vietnam | 69 | 2.7 | 1.50 | 0.18 | 0 | 1 | 1 | 2 | 5 | 6 | 7 | 4.3 |
| 40-48 yrs | Non-Vietnam | 56 | 2.4 | 1.51 | 0.20 | 0 | 0 | 1 | 2 | 4 | 6 | 9 | 7.1 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 26 | 2.0 | 1.39 | 0.27 | 0 | 0 | 1 | 2 | 5 | 6 | 6 | 15.4 |
| 30-39 yrs | Non-Vietnam | 17 | 2.2 | 1.43 | 0.35 | 1 | 1 | 1 | 2 | 5 | 6 | 6 | 5.9 |
| 40-48 yrs | Vietnam | 15 | 2.2 | 1.08 | 0.28 | 1 | 1 | 1 | 2 | 4 | 4 | 4 | 6.7 |
| 40-48 yrs | Non-Vietnam | 5 | 1.6 | 0.97 | 0.43 | 1 | 1 | 1 | 1 | 3 | 3 | 3 | 40.0 |

^a Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 324 for Vietnam and 247 for non-Vietnam veterans because of missing data. If there was spillage during sample collection, the value of volume was excluded.

^b The reference value is 1 milliliter.

^c All races include white, black, and other.

**Table H.25 Summary Statistics for Semen Analysis:
Semen Measure – pH Level**

| Race and Age | Place of Service | N ^a | Mean | S.D. | S.E. | Percentile | | | | | | % Outside Reference Range ^b | |
|------------------------|------------------|----------------|------|------|------|------------|-----|------|------|------|------|--|------|
| | | | | | | Min | 5th | 10th | 50th | 90th | 95th | | Max |
| (In pH Units) | | | | | | | | | | | | | |
| All Races ^c | | | | | | | | | | | | | |
| 30-48 yrs | Vietnam | 324 | 7.9 | 0.27 | 0.02 | 7 | 8 | 8 | 8 | 8 | 8 | 9 | 6.5 |
| 30-48 yrs | Non-Vietnam | 246 | 7.9 | 0.31 | 0.02 | 6 | 7 | 8 | 8 | 8 | 8 | 9 | 6.1 |
| White | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 189 | 7.9 | 0.26 | 0.02 | 7 | 7 | 8 | 8 | 8 | 8 | 9 | 5.3 |
| 30-39 yrs | Non-Vietnam | 137 | 7.9 | 0.30 | 0.03 | 7 | 7 | 7 | 8 | 8 | 9 | 9 | 5.1 |
| 40-48 yrs | Vietnam | 73 | 7.8 | 0.25 | 0.03 | 7 | 7 | 7 | 8 | 8 | 8 | 9 | 8.2 |
| 40-48 yrs | Non-Vietnam | 62 | 7.9 | 0.30 | 0.04 | 6 | 7 | 8 | 8 | 8 | 8 | 9 | 4.8 |
| Black | | | | | | | | | | | | | |
| 30-39 yrs | Vietnam | 30 | 7.9 | 0.35 | 0.06 | 7 | 7 | 8 | 8 | 8 | 9 | 9 | 6.7 |
| 30-39 yrs | Non-Vietnam | 23 | 7.9 | 0.30 | 0.06 | 7 | 7 | 8 | 8 | 8 | 8 | 9 | 4.3 |
| 40-48 yrs | Vietnam | 15 | 7.9 | 0.29 | 0.07 | 7 | 7 | 7 | 8 | 8 | 9 | 9 | 13.3 |
| 40-48 yrs | Non-Vietnam | 6 | 7.9 | 0.16 | 0.07 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | — |

^a Includes veterans without vasectomies who were examined after May 18, 1986. Numbers do not add to 247 for non-Vietnam veterans because of missing data.

^b The reference range is pH 7.5-8.5.

^c All races include white, black, and other.

