

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 (In Milligrams Per Deciliter of Serum)					% Above Reference ^a		
						Min	5th	10th	50th	90th		95th	Max
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			
All Races ^c															
30-48 yrs	Vietnam	2490	678	238.7	4.8	83	348	401	651	993	1109	1915	1915	5.0	5.1
30-48 yrs	Non-Vietnam	1972	682	229.4	5.2	53	349	410	662	967	1094	1950	1950	5.0	4.8
White															
30-39 yrs	Vietnam	1638	686	233.5	5.8	130	358	414	665	994	1109	1915	1915	4.4	5.1
30-39 yrs	Non-Vietnam	1153	696	228.9	6.7	57	362	421	676	997	1124	1888	1888	4.1	5.6
40-48 yrs	Vietnam	416	633	238.4	11.7	164	320	369	601	960	1078	1843	1843	7.2	3.6
40-48 yrs	Non-Vietnam	447	628	203.3	9.6	53	335	389	606	887	956	1763	1763	6.7	1.6
Black															
30-39 yrs	Vietnam	211	722	260.9	18.0	211	355	421	689	1078	1207	1846	1846	4.7	8.5
30-39 yrs	Non-Vietnam	181	731	252.5	18.8	122	340	418	703	1039	1255	1470	1470	5.5	7.2
40-48 yrs	Vietnam	75	630	214.7	24.8	170	288	363	604	895	1023	1280	1280	8.0	1.3
40-48 yrs	Non-Vietnam	58	629	198.1	26.0	280	330	375	606	885	1032	1256	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
						(In International Units Per Liter of Serum)								
						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
						(In International Units Per Liter of Serum)								
						Min	5th	10th	50th	90th	95th	Max		
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.	Min	Percentile					% Above Reference ^c	
							5th	10th	50th	90th	95th		Max
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
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.	Min	5th	10th	Percentile			% Above Reference ^a	
									50th	90th	95th		Max
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 (In Liters)	10th	50th	90th		95th	Max
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.	Min	5th	Percentile			% Below Reference ^a		
								10th	50th	90th		95th	Max
(In Liters)													
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.	Min	Percentile					% Below Reference ^a	
							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 ^a	
	%	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	0.6-2.3
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.	Min	Percentile					% Below Reference ^b	
							5th	10th	50th	90th	95th		Max
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.	Min	Percentile					% Below Reference ^b	
							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.	Min	Percentile					% Below Reference ^b	
							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.	Min	Percentile					% Below Reference ^b	
							5th	10th	50th	90th	95th		Max
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.	Min	Percentile					% Below Reference ^b	
							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.	Min	Percentile					% Below Reference ^b	
							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.	Min	Percentile					% Below Reference ^b	
							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.	Min	Percentile (In Microvolts)					Max	% Below Reference ^b
							5th	10th	50th	90th	95th		
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.	Min	5th	Percentile			95th	Max	% Below Reference ^b
								10th	50th	90th			
(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.	Min	Percentile					% Below Reference ^b	
							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.	Min	Percentile (In Microvolts)					% Below Reference ^b	
							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.	Min	Percentile (In Microvolts)					% Below Reference ^b	
							5th	10th	50th	90th	95th		Max
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.	Min	Percentile					% Below Reference ^b	
							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.	Min	Percentile					% Below Reference ^b	
							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.	Min	Percentile					% Below Reference ^b	
							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.	Min	Percentile					% Above Reference ^b	
							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.	Min	Percentile					% Above Reference ^b	
							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.	Min	Percentile (In Degrees Centigrade)					% Above Reference ^b	
							5th	10th	50th	90th	95th		Max
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:

Race and Age	Place of Service	N ^a	Mean	S.D.	S.E.	Min	Percentile (In Degrees Centigrade)					95th	Max	% Above Reference ^b	
							5th	10th	50th	90th					
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		
	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		
30-48 yrs															
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		
	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		
30-39 yrs															
Black															
30-39 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		
	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		
40-48 yrs															
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		
	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		
30-39 yrs															
Black															
30-39 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		
	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 2,450 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-Undefectable Included as 20 Degrees Centigrade**

Race and Age	Place of Service	N ^a	Mean	S.D.	S.E.	Min	Percentile (In Degrees Centigrade)					% Above Reference ^b	
							5th	10th	50th	90th	95th		Max
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
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
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	0.6-1.8
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
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					Max	% Below Reference ^c	% Above Reference ^d	
						Min	5th	10th	50th	90th				95th
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.	Min	5th	10th	Percentile			Max	% Below Reference ^c	% Above Reference ^d
									50th	90th	95th			
(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.	Min	Percentile					% Below Reference ^c	% Above Reference ^d	
							5th	10th	50th	90th	95th			Max
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	182	241	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
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		
						(In Millions Per Ejaculate)	Min	5th	10th	50th			90th	95th
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.	Min	Percentile							% Below Reference ^c	% Above Reference ^d
							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.	Min	Percentile							% Below Reference ^c	% Above Reference ^d
							5th	10th	50th	90th	95th	Max			
(In Percent)															
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.	Min	Percentile					% Below Reference ^c	% Above Reference ^d	
							5th	10th	50th	90th	95th			Max
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.	Min	Percentile					% Below Reference ^c	% Above Reference ^d	
							5th	10th	50th	90th	95th			Max
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					Max	% Below Reference ^c	% Above Reference ^d	
						Min	5th	10th	50th	90th				95th
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.	Min	Percentile							% Below Reference ^c	% Above Reference ^d
							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.	Min	5th	Percentile					% Below Reference ^c	% Above Reference ^d	
								10th	50th	90th	95th	Max			
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
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.	Min	Percentile (Trajectory Index)					% Below Reference ^c	% Above Reference ^d	
							5th	10th	50th	90th	95th			Max
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.	Min	Percentile					% Below Reference ^c	% Above Reference ^d	
							5th	10th	50th	90th	95th			Max
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.	Min	Percentile					% Below Reference ^c	% Above Reference ^d	
							5th	10th	50th	90th	95th			Max
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.	Min	Percentile (In Percent)					% Below Reference ^b	% Above Reference ^c	
							5th	10th	50th	90th	95th			Max
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.	Min	Percentile					Max	% Below Reference ^b	% Above Reference ^c
							5th	10th	50th	90th	95th			
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.	Min	5th	Percentile					% Below Reference ^b	% Above Reference ^c	
								10th	50th	90th	95th	Max			
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	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	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	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	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	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	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	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	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	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	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.	Min	Percentile					% Below Reference ^b	% Above Reference ^c	
							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.	Min	Percentile					% Below Reference ^b	
							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	2	5	6	9	6.6	
White													
30-39 yrs	Vietnam	170	2.9	1.50	0.11	0	1	3	5	6	8	6.5	
30-39 yrs	Non-Vietnam	132	3.0	1.55	0.14	0	1	3	5	6	9	5.3	
40-48 yrs	Vietnam	69	2.7	1.50	0.18	0	1	2	5	6	7	4.3	
40-48 yrs	Non-Vietnam	56	2.4	1.51	0.20	0	0	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	2	5	6	6	5.9	
40-48 yrs	Vietnam	15	2.2	1.08	0.28	1	1	2	4	4	4	6.7	
40-48 yrs	Non-Vietnam	5	1.6	0.97	0.43	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.	Min	Percentile					% Outside Reference Range ^b	
							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	8	8	8	9	9	5.1
40-48 yrs	Vietnam	73	7.8	0.25	0.03	7	7	8	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	8	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.

