APPENDIX H

Malignancy

APPENDIX H: Malignancy

Contents

Table		Page
H-1	Unadjusted Analyses of Followup Participants with Verified and Suspected Neoplasms in the Baseline-Followup Interval by Group (Nonblacks and Blacks, Original Comparisons Only)..	H-1
H-2	Unadjusted Analyses of Nonblack Followup Participants with Verified and Suspected Malignant Skin Neoplasms in the Baseline-Followup Interval by Cell Type and Group (Original Comparisons Only).....	H-3
H-3	Association Between Baseline-Followup Interval Basal Cell Carcinoma Incidence and the Covariates for Combined Followup Ranch Hand and Comparison Nonblack Participants....	H-4
H-4	Association Between Baseline-Followup Interval Sun Exposure-Related Skin Malignancy Incidence and the Covariates for Combined Followup Ranch Hand and Comparison Nonblack Participants.....	H-9
H-5	Summary Results of Main Effects Models for Selection of Covariates for Basal Cell Carcinomas in the Baseline-Followup Interval.....	H-14
H-6	Adjusted Analyses of Nonblack Followup Participants for Malignant Skin Neoplasm Incidence During Baseline-Followup Interval (Original Comparisons Only).....	H-15
H-7	Summary of Group-by-Covariate Interactions for Malignant Skin Neoplasms in the Baseline-Followup Interval (Nonblacks Only).....	H-16
H-8	Summary of Group-by-Covariate Interactions for Malignant Skin Neoplasms in the Baseline-Followup Interval (Original Comparisons Only).....	H-18
H-9	Followup Participants with Verified Malignant Systemic Neoplasms in Baseline-Followup Interval by Group (Original Comparisons Only).....	H-22
H-10	Unadjusted Analyses of Followup Participants with Verified and Suspected Malignant Systemic Neoplasms in the Baseline-Followup Interval by Group (Original Comparisons Only).....	H-23
H-11	Association Between Baseline-Followup Interval Incidence of All Malignant Systemic Neoplasms Combined and the Covariates for the Combined Followup Ranch Hand and Comparison Groups.....	H-24

APPENDIX H: Malignancy

Contents (continued)

Table		Page
H-12	Adjusted Analyses of Followup Participants for the Incidence of All Malignant Systemic Neoplasms During the Baseline-Followup Interval (Original Comparisons Only).....	H-28
H-13	Summary of Group-by-Occupation Interaction for All Malignant Systemic Neoplasms (Verified Plus Suspected) During the Baseline-Followup Interval.....	H-29
H-14	Summary of Group-by-Occupation Interaction for All Malignant Systemic Neoplasms (Verified Plus Suspected) During the Baseline-Followup Interval (Original Comparisons Only).....	H-30
H-15	Unadjusted Analyses of Followup Participants with Lifetime Occurrence of Verified and Suspected Lifetime Neoplasms by Group (Nonblacks and Blacks, Original Comparisons Only).....	H-31
H-16	Unadjusted Analyses of Nonblack Followup Participants with Lifetime Occurrence of Verified and Suspected Lifetime Malignant Skin Neoplasms by Cell Type and Group (Original Comparisons Only).....	H-33
H-17	Association Between Lifetime Incidence of Sun-Exposure Related Skin Malignancies and the Covariates for Combined Followup Ranch Hand and Comparison Nonblack Participants....	H-34
H-18	Summary of Group-by-Covariate Interactions for Lifetime Malignant Skin Neoplasm Incidence (Nonblacks Only).....	H-39
H-19	Adjusted Analyses of Nonblack Followup Participants for Lifetime Malignant Skin Neoplasm Incidence (Original Comparisons Only).....	H-40
H-20	Summary of Group-by-Covariate Interactions for Lifetime Malignant Skin Neoplasm Incidence (Original Comparisons Only*).....	H-41
H-21	Summary of Followup Participants with Lifetime Incidence of Verified Malignant Systemic Neoplasms by Group (Original Comparisons Only).....	H-45
H-22	Unadjusted Analyses of the Lifetime Incidence Rates of All Malignant Systemic Neoplasms Combined, by Group (Original Comparisons Only).....	H-46
H-23	Summary of Group-by-Occupation Interactions for Lifetime Incidence of All Malignant Systemic Neoplasms Combined.....	H-47

APPENDIX H: Malignancy

Contents (continued)

Table		Page
H-24	Adjusted Analyses for Lifetime Incidence of All Malignant Systemic Neoplasms Combined (Original Comparisons Only).....	H-49
H-25	Summary of Group-by-Occupation Interactions for Lifetime Incidence of All Malignant Systemic Neoplasms Combined (Original Comparisons Only).....	H-50
H-26	Unadjusted Exposure Index Analyses for Followup Participants for Occurrence of Malignant Neoplasms in the Baseline-Followup Interval.....	H-52
H-27	Unadjusted Exposure Index Analysis for Followup Participants for Lifetime Occurrence of Malignant Neoplasms.....	H-55

TABLE H-1.

Unadjusted Analyses of Followup Participants with Verified and Suspected Neoplasms in the Baseline-Followup Interval by Group (Nonblacks and Blacks, Original Comparisons Only)

Site	Neoplasm Behavior and Status	Group*					
		Ranch Hand		Original Comparison			
		Number**	Percent	Number**	Percent	Total**	p-Value***
Skin	Malignant						
	Verified	37	3.6	31	3.2	68	0.711
	Verified and Suspected	47	4.6	45	4.7	92	0.999
	Benign						
	Verified	76	7.5	65	6.8	141	0.600
	Verified and Suspected	78	7.7	68	7.1	146	0.667
	Uncertain Behavior and Unspecified Nature:						
	Verified	1	0.1	1	0.1	2	0.999
	Verified and Suspected	1	0.1	1	0.1	2	0.999
	Any Skin Neoplasm[a]						
	Verified	114	11.2	96	10.1	210	0.422
	Verified and Suspected	124	12.2	113	11.8	237	0.835
Systemic	Malignant						
	Verified	8	0.8	6	0.6	14	0.791
	Verified and Suspected	12	1.2	11	1.2	23	0.999
	Benign						
	Verified	42	4.1	41	4.3	83	0.911
	Verified and Suspected	48	4.7	49	5.1	97	0.679
	Uncertain Behavior and Unspecified Nature:						
	Verified	6	0.6	6	0.6	12	0.999
	Verified and Suspected	6	0.6	9	0.9	15	0.442
	Any Systemic Neoplasm[b]						
	Verified	55	5.4	51	5.3	106	0.999
	Verified and Suspected	65	6.4	66	6.9	131	0.652

TABLE H-1. (continued)

Unadjusted Analyses of Followup Participants with Verified and Suspected Neoplasms in the Baseline-Followup Interval by Group (Nonblacks and Blacks, Original Comparisons Only)

Site	Neoplasm Behavior and Status	Group*					
		Ranch Hand		Original Comparison			
		Number**	Percent	Number**	Percent	Total**	p-Value***
All Neoplasms	Malignant, Benign, Uncertain Behavior, Unspecified Nature[c]						
	Verified	161	15.9	140	14.7	301	0.491
	Verified and Suspected	177	17.4	169	17.7	346	0.906

*Sample sizes: 1,016 Ranch Hands, 955 Original Comparisons.

**Number of participants.

***Fisher's exact test.

[a]Participant has one or more malignant, benign, or unspecified skin neoplasms.

[b]Participant has one or more malignant, or benign skin or systemic neoplasms.

[c]Participant has one or more malignant, benign, or unspecified systemic neoplasms.

TABLE H-2.

Unadjusted Analyses of Nonblack Followup Participants with Verified and Suspected Malignant Skin Neoplasms in the Baseline-Followup Interval by Cell Type and Group (Original Comparisons Only)

Cell Type	Status	Statistic*	Group** Ranch Hand		Group** Original Comparison		Est. Relative Risk (95% C.I.)	p-Value
Basal Cell Carcinoma	Verified	Number/%	29	3.0%	22	2.5%	1.24 (0.71,2.18)	0.480
		Total Neoplasms	42		31			
	Verified & Suspected	Number/%	36	3.8%	36	4.0%	0.94 (0.58,1.50)	0.811
		Total Neoplasms	53		46			
Squamous Cell Carcinoma	Verified	Number/%	4	0.4%	3	0.3%	1.25 (0.28,5.61)	0.999
		Total Neoplasms	6		3			
	Verified & Suspected	Number/%	4	0.4%	3	0.3%	1.25 (0.28,5.61)	0.999
		Total Neoplasms	6		3			
Melanoma	Verified	Number/%	1	0.1%	3	0.3%	0.31 (0.03,3.01)	0.359
		Total Neoplasms	2		3			
	Verified & Suspected	Number/%	1	0.1%	4	0.4%	0.23 (0.03,2.10)	0.204
		Total Neoplasms	2		4			
All Malignant Skin Neoplasms	Verified	Number/%	37	3.9%	31	3.5%	1.13 (0.69,1.83)	0.711
		Total Neoplasms	56		41			
	Verified & Suspected	Number/%	47	4.9%	45	5.0%	0.98 (0.64,1.49)	0.999
		Total Neoplasms	70		58			
Sun-Exposure Related Malignant Neoplasms[a]	Verified	Number/%	32	3.4%	25	2.8%	1.21 (0.71,2.06)	0.504
		Total Neoplasms	47		33			
	Verified & Suspected	Number/%	39	4.1%	39	4.4%	0.94 (0.59,1.47)	0.817
		Total Neoplasms	58		50			

*Number and percent of participants; total number of malignant neoplasms of specified cell type.

**Number of participants -- 956 Ranch Hands, 897 Original Comparisons.

[a]Basal cell carcinoma, melanoma, and malignant epithelial neoplasms NOS.

TABLE H-3.

Association Between Baseline-Followup Interval Basal Cell Carcinoma Incidence and the Covariates for Combined Followup Ranch Hand and Comparison Nonblack Participants

Covariate	Covariate Category	Verified			Verified and Suspected		
		Number*	Percent	p-Value	Number*	Percent	p-Value
Age	Born ≥1942	11	1.3	0.001	14	1.6	<0.001
	Born 1923-41	43	3.6		61	5.1	
	Born ≤1922	5	5.8		9	10.3	
Occupation	Officer	31	3.7	0.047	47	5.5	0.003
	Enlisted Flyer	11	3.1		14	3.9	
	Enlisted Groundcrew	17	1.8		23	2.4	
Total Lifetime Smoking (Pack-Years)	0	16	2.6	0.023	21	3.4	0.005
	>0-20	21	2.1		28	2.8	
	>20-40	12	3.1		24	6.1	
	>40	10	6.4		11	7.0	
Total Lifetime Alcohol Consumption (Drink-Years)	0	4	2.8	0.980	5	3.6	0.800
	>0-5	20	2.8		27	3.8	
	>5-30	18	2.8		24	3.7	
	>30-100	13	2.7		24	5.0	
	>100	4	3.9		4	3.9	
Ethnic Background[a]	A	49	3.1	0.333	72	4.6	0.046
	B	8	1.9		9	2.1	
	C	1	1.6		1	1.6	
	D	0	0.0		0	0.0	
Skin Color	Dark	0	0.0	0.156	0	0.0	0.232
	Medium	1	1.4		2	2.7	
	Pale	3	1.0		5	1.6	
	Dark Peach	43	3.4		56	4.4	
	Pale Peach	12	2.3		21	4.0	

TABLE H-3. (continued)

Association Between Baseline-Followup Interval Basal Cell Carcinoma Incidence and the Covariates for Combined Followup Ranch Hand and Comparison Nonblack Participants

Covariate	Covariate Category	Verified			Verified and Suspected		
		Number*	Percent	p-Value	Number*	Percent	p-Value
Eye Color	Brown	18	2.8	0.590	24	3.7	0.998
	Hazel	17	3.7		18	4.0	
	Green	2	1.7		5	4.2	
	Grey	2	2.2		4	4.3	
	Blue	20	2.4		33	3.9	
Hair Color	Black	11	2.5	0.152	16	3.6	0.040
	Dark Brown	25	2.4		37	3.6	
	Light Brown	18	3.2		24	4.3	
	Red	2	12.5		3	18.8	
	Blond	3	2.8		4	3.7	
Residential History (Average Latitude)	≥37°	21	1.9	0.008	31	2.7	0.004
	<37°	38	3.7		53	5.2	
Skin Reaction to First 30 Min. of Sun Exposure	Burns	7	2.8	0.001	11	4.5	<0.001
	Usually Burns	24	5.6		32	7.5	
	Burns Mildly	17	2.1		22	2.7	
	Rarely Burns	11	1.6		19	2.8	
Skin Reaction to >2 Hrs. of Sun After First Exposure	Burns Painfully	2	1.7	<0.001	4	3.3	0.027
	Burns	21	6.2		23	6.8	
	Becomes Red	22	2.1		35	3.4	
	No Reaction	14	2.1		22	3.3	
Skin Reaction After Repeated Exposure to Sun	Freckles, No Tan	0	0	<0.001	1	2.2	0.001
	Tans Mildly	20	6.4		25	8.0	
	Tans Moderately	22	2.2		33	3.2	
	Tans Deep Brown	16	2.0		24	3.1	

TABLE H-3. (continued)

Association Between Baseline-Followup Interval Basal Cell Carcinoma Incidence and the Covariates for Combined Followup Ranch Hand and Comparison Nonblack Participants

Covariate	Covariate Category		Verified			Verified and Suspected		
			Number*	Percent	p-Value	Number*	Percent	p-Value
Sun Reaction Index	Tends to Burn		2	1.4	<0.001	4	2.8	<0.001
	Mild Reaction		27	6.0		32	7.1	
	Tends to Tan		29	1.9		47	3.0	
Exposures to Carcinogens	Asbestos	Yes	10	2.2	0.519	17	3.7	0.999
		No	49	2.9		67	3.9	
	Nonmedical x rays	Yes	17	3.4	0.272	26	5.3	0.084
		No	42	2.5		58	3.5	
	Industrial Chemicals	Yes	28	2.5	0.511	40	3.6	0.437
		No	31	3.0		44	4.2	
	Herbicides	Yes	40	3.2	0.142	57	4.5	0.072
		No	19	2.1		27	3.0	
	Insecticides	Yes	40	3.1	0.281	55	4.2	0.365
		No	19	2.2		29	3.4	
	Degreasing Chemicals	Yes	35	2.8	0.894	47	3.7	0.735
		No	24	2.7		37	4.1	
Composite Carcinogen Exposure		Yes	15	3.1	0.523	18	3.7	0.999
		No	42	2.5		64	3.9	

TABLE H-3. (continued)

Association Between Baseline-Followup Interval Basal Cell Carcinoma Incidence and the Covariates for Combined Followup Ranch Hand and Comparison Nonblack Participants

Covariate	Covariate Category		Verified			Verified and Suspected		
			Number*	Percent	p-Value	Number*	Percent	p-Value
Exposure to Individual Carcinogens	Anthracene	Yes	0	0.0	0.999	0	0.0	0.999
		No	59	2.7		84	3.9	
	Arsenic	Yes	2	4.9	0.301	3	7.3	0.206
		No	56	2.6		80	3.8	
	Benzene	Yes	4	5.4	0.140	5	6.8	0.207
		No	55	2.6		79	3.8	
	Benzidine	Yes	1	9.1	0.263	1	9.1	0.354
		No	58	2.7		83	3.9	
	Chromates	Yes	3	3.6	0.484	4	4.8	0.558
		No	54	2.6		78	3.8	
	Coal Tar	Yes	1	1.5	0.999	2	2.9	0.999
		No	58	2.8		82	3.9	
	Creosote	Yes	6	3.8	0.441	7	4.4	0.669
		No	53	2.6		77	3.8	
	Aminodiphenyl	Yes	0	0.0	0.999	0	0.0	0.999
		No	58	2.7		83	3.9	
	Chloromethyl Ether	Yes	1	4.8	0.442	1	4.8	0.566
		No	58	2.7		83	3.9	
	Mustard Gas	Yes	0	0.0	0.999	0	0.0	0.999
		No	59	2.7		84	3.9	

TABLE H-3. (continued)

Association Between Baseline-Followup Interval Basal Cell Carcinoma Incidence and the Covariates for Combined Followup Ranch Hand and Comparison Nonblack Participants

Covariate	Covariate Category		Verified			Verified and Suspected		
			Number*	Percent	p-Value	Number*	Percent	p-Value
Exposure to Individual Carcinogens (continued)	Naphthylamine	Yes	3	5.8	0.161	4	7.7	0.136
		No	55	2.6		79	3.7	
	Cutting Oils	Yes	9	4.0	0.200	12	5.3	0.271
		No	50	2.6		72	3.7	
	Trichloroethylene	Yes	4	2.2	0.814	6	3.3	0.842
		No	55	2.8		78	3.9	
	Ultraviolet Light	Yes	2	4.6	0.339	2	4.6	0.688
		No	57	2.7		82	3.9	
	Vinyl Chloride	Yes	0	0.0	0.999	1	3.2	0.999
		No	59	2.8		83	3.9	

*Number of participants with basal cell carcinoma.

[a]Ethnic Background:

A - English, Welsh, Scottish, Irish.
B - Scandinavian, German, Polish, Russian, other Slavic, Jewish, French.
C - Spanish, Italian, Greek.
D - Mexican, American Indian, Asian.

TABLE H-4.

Association Between Baseline-Followup Interval Sun Exposure-Related Skin Malignancy Incidence and the Covariates for Combined Followup Ranch Hand and Comparison Nonblack Participants

Covariate	Covariate Category	Verified			Verified and Suspected		
		Number*	Percent	p-Value	Number*	Percent	p-Value
Age	Born ≥1942	14	1.6	0.004	19	2.2	<0.001
	Born 1923-41	46	3.8		64	5.4	
	Born ≤1922	5	5.8		9	10.3	
Occupation	Officer	33	3.9	0.077	50	5.9	0.006
	Enlisted Flyer	12	3.3		15	4.2	
	Enlisted Groundcrew	20	2.1		27	2.8	
Total Lifetime Smoking (Pack-Years)	0	19	3.1	0.012	24	3.9	0.007
	>0-20	22	2.2		31	3.1	
	>20-40	13	3.3		25	6.4	
	>40	11	7.0		12	7.6	
Total Lifetime Alcohol Consumption (Drink-Years)	0	4	2.8	0.858	5	3.6	0.736
	>0-5	22	3.1		29	4.0	
	>5-30	18	2.8		26	4.0	
	>30-100	15	3.1		26	5.4	
	>100	5	4.8		5	4.8	
Ethnic Background	A	54	3.4	0.213	78	4.9	0.036
	B	8	1.9		10	2.4	
	C	1	1.6		1	1.6	
	D	0	0.0		0	0.0	
Skin Color	Dark	0	0.0	0.116	0	0.0	0.213
	Medium	1	1.4		2	2.7	
	Pale	4	1.3		6	2.0	
	Dark Peach	48	3.8		62	4.9	
	Pale Peach	12	2.3		22	4.2	

TABLE H-4. (continued)

Association Between Baseline-Followup Interval Sun Exposure-Related Skin Malignancy Incidence and the Covariates for Combined Followup Ranch Hand and Comparison Nonblack Participants

Covariate	Covariate Category	Verified			Verified and Suspected		
		Number*	Percent	p-Value	Number*	Percent	p-Value
Eye Color	Brown	20	3.1	0.461	27	4.2	0.999
	Hazel	19	4.2		20	4.4	
	Green	2	1.7		5	4.2	
	Grey	2	2.2		4	4.3	
	Blue	22	2.6		36	4.2	
Hair Color	Black	12	2.7	0.171	17	3.9	0.051
	Dark Brown	27	2.6		40	3.9	
	Light Brown	20	3.6		26	4.6	
	Red	2	12.5		3	18.8	
	Blond	4	3.7		6	5.6	
Residential History (Average Latitude)	≥37°	24	2.1	0.011	34	3.0	0.003
	<37°	41	4.0		58	5.7	
Skin Reaction to First 30 Min. of Sun Exposure	Burns	8	3.2	<0.001	13	5.3	<0.001
	Usually Burns	26	6.1		34	7.9	
	Burns Mildly	20	2.5		26	3.2	
	Rarely Burns	11	1.6		19	2.8	
Skin Reaction to >2 Hrs. of Sun After First Exposure	Burns Painfully	4	3.3	0.001	6	5.0	0.016
	Burns	22	6.5		25	7.4	
	Becomes Red	24	2.3		38	3.6	
	No Reaction	15	2.3		23	3.5	
Skin Reaction After Repeated Exposure to Sun	Freckles, No Tan	0	0	<0.001	1	2.2	<0.001
	Tans Mildly	22	7.0		27	8.6	
	Tans Moderately	23	2.3		35	3.4	
	Tans Deep Brown	19	2.4		28	3.6	

TABLE H-4. (continued)

Association Between Baseline-Followup Interval Sun Exposure-Related Skin Malignancy Incidence and the Covariates for Combined Followup Ranch Hand and Comparison Nonblack Participants

Covariate	Covariate Category		Verified			Verified and Suspected		
			Number*	Percent	p-Value	Number*	Percent	p-Value
Sun Reaction Index	Tends to Burn		4	2.8	<0.001	6	4.1	<0.001
	Mild Reaction		28	6.2		34	7.5	
	Tends to Tan		32	2.1		51	3.3	
Exposures to Carcinogens	Asbestos	Yes	10	2.2	0.283	17	3.7	0.602
		No	55	3.2		75	4.4	
	Nonmedical X Rays	Yes	18	3.6	0.367	27	5.5	0.129
		No	47	2.8		65	3.9	
	Industrial Chemicals	Yes	33	2.9	0.900	45	4.0	0.594
		No	32	3.1		47	4.5	
	Herbicides	Yes	43	3.4	0.203	61	4.8	0.130
		No	22	2.4		31	3.4	
	Insecticides	Yes	42	3.2	0.523	58	4.4	0.664
		No	23	2.7		34	4.0	
	Degreasing Chemicals	Yes	37	2.9	0.899	50	4.0	0.451
		No	28	3.1		42	4.6	
Composite Carcinogen Exposure		Yes	15	3.1	0.879	18	3.7	0.608
		No	48	2.9		72	4.4	

TABLE H-4. (continued)

Association Between Baseline-Followup Interval Sun Exposure-Related Skin Malignancy Incidence and the Covariates for Combined Followup Ranch Hand and Comparison Nonblack Participants

Covariate	Covariate Category		Verified			Verified and Suspected		
			Number*	Percent	p-Value	Number*	Percent	p-Value
Exposure to Individual Carcinogens	Anthracene	Yes	0	0.0	0.999	0	0.0	0.999
		No	65	3.0		92	4.3	
	Arsenic	Yes	2	4.9	0.343	3	7.3	0.246
		No	62	2.9		88	4.1	
	Benzene	Yes	4	5.4	0.280	5	6.8	0.241
		No	61	2.9		87	4.2	
	Benzidine	Yes	1	9.1	0.285	1	9.1	0.380
		No	64	3.0		91	4.2	
	Chromates	Yes	3	3.6	0.734	4	4.8	0.777
		No	60	2.9		86	4.1	
	Coal Tar	Yes	1	1.5	0.721	2	2.9	0.999
		No	64	3.1		90	4.3	
	Creosote	Yes	6	3.8	0.473	7	4.4	0.839
		No	59	2.9		85	4.2	
	Aminodiphenyl	Yes	0	0.0	0.999	0	0.0	0.999
		No	64	3.0		91	4.2	
	Chloromethyl Ether	Yes	1	4.8	0.475	1	4.8	0.600
		No	64	3.0		91	4.3	
	Mustard Gas	Yes	0	0.0	0.999	0	0.0	0.999
		No	65	3.0		92	4.3	

TABLE H-4. (continued)

Association Between Baseline-Followup Interval Sun Exposure-Related Skin Malignancy Incidence and the Covariates for Combined Followup Ranch Hand and Comparison Nonblack Participants

Covariate	Covariate Category		Verified			Verified and Suspected		
			Number*	Percent	p-Value	Number*	Percent	p-Value
Exposure to Individual Carcinogens (continued)	Naphthylamine	Yes	3	5.8	0.197	4	7.7	0.277
		No	61	2.9		87	4.1	
	Cutting Oils	Yes	9	4.0	0.406	12	5.3	0.384
		No	56	2.9		80	4.1	
	Trichloroethylene	Yes	4	2.2	0.653	6	3.3	0.701
		No	61	3.1		86	4.4	
	Ultraviolet Light	Yes	2	4.6	0.384	2	4.6	0.711
		No	63	3.0		90	4.3	
	Vinyl Chloride	Yes	0	0.0	0.999	1	3.2	0.999
		No	65	3.1		91	4.3	

*Number of participants with sun exposure-related skin malignancies.

[a]Ethnic Background:

A - English, Welsh, Scottish, Irish.
B - Scandinavian, German, Polish, Russian, other Slavic, Jewish, French.
C - Spanish, Italian, Greek.
D - Mexican, American Indian, Asian.

TABLE H-5.

Summary Results of Main Effects Models for Selection of Covariates for Basal Cell Carcinomas in the Baseline-Followup Interval

		Basal Cell Carcinoma in Baseline-Followup Interval	
		p-Value	
Covariate	Category	Model 1[a]	Model 2[b]
Group	Ranch Hand, Comparison	0.264	0.259
Age	Born ≥1942, 1923-1941, ≤1922	0.001	0.002
Occupation	Officer, Enlisted Flyer, Enlisted Groundcrew	0.683	0.609
Lifetime Smoking	0-20, >20-40, >40 Pack-years	0.091	0.096
Lifetime Alcohol	0-30, >30	0.743	0.819
Ethnic Background[c]	A, Not A	0.391	0.425
Skin Color	Peach, Not Peach	0.084	0.055
Hair Color	Blond or Red, Other	0.880	0.761
Reaction of Skin to 30 Minutes Sun	Burns, Usually Burns, Other	0.195	--
Reaction of Skin to >2 Hours of Sun	Burns Painfully, Burns, Other	0.007	--
Reaction of Skin to Repeated Sun Exposure	Freckles With no Tan, Tans Easily, Other	<0.001	--
Sun-Reaction Index	Burns With Freckles, Intermediate Reaction, Tans Easily	--	<0.001
Residential History	<37° N latitude, ≥37° N latitude	0.006	0.008

[a]Model includes three reactions of skin to sun variables.
[b]Model includes sun-reaction index.
[c]Ethnic background: A - English, Welsh, Scottish, Irish.

TABLE H-6.

Adjusted Analyses of Nonblack Followup Participants for Malignant Skin Neoplasm Incidence During Baseline-Followup Interval (Original Comparisons Only)

Variable	Status	Adj. Relative Risk (95% C.I.)	p-Value	Covariate Remarks*
Basal Cell Carcinoma	Verified	1.46 (0.82,2.61)	0.198	AGE (p<0.001) LAT (p=0.015) SUNREAC (p=0.001) GRP*SUNREAC (marginal: p=0.051)
	Verified & Suspected	****	****	GRP*SUNREAC (p=0.007) AGE (p<0.001) LAT (p=0.006)
Sun-Exposure Skin Neoplasms	Verified	****	****	GRP*SKIN (p=0.036) AGE (p<0.001) SUNREAC (p=0.003) LAT (p=0.015)
	Verified & Suspected	****	****	GRP*SUNREAC (p=0.030) SKIN*SUNREAC (p=0.042) AGE (p<0.001) LAT (p=0.008)

*Abbreviations:

LAT: average lifetime residential latitude
SUNREAC: sun reaction index
GRP: group
OCC: occupation
SKIN: skin color

****Group-by-covariate interactions--adjusted relative, confidence interval, and p-value are not presented.

TABLE H-7.

Summary of Group-by-Covariate Interactions for Malignant Skin Neoplasms in the Baseline-Followup Interval (Nonblacks Only)

Variable	Interaction	Stratification	Statistic	Group: Ranch Hand Number	Group: Ranch Hand Percent	Group: Comparison Number	Group: Comparison Percent	Adj. Relative Risk (95% C.I.)	p-Value
Basal Cell Carcinoma (Verified Only)	Group-by-Occupation	Officer	n	372		475			
			Yes	14	3.8	16	3.4	1.14 (0.54,2.40)	0.726
			No	358	96.2	459	96.6		
		Enlisted Flyer	n	166		193			
			Yes	9	5.4	2	1.0	6.50 (1.36,31.01)	0.019
			No	157	94.6	191	99.0		
		Enlisted Groundcrew	n	416		539			
			Yes	6	1.4	11	2.0	0.81 (0.29,2.23)	0.680
			No	410	98.6	528	98.0		

TABLE H-7. (continued)

Summary of Group-by-Covariate Interactions for
Malignant Skin Neoplasms in the Baseline-Followup Interval
(Nonblacks Only)

Variable	Interaction	Stratification	Statistic	Group: Ranch Hand Number	Ranch Hand Percent	Comparison Number	Comparison Percent	Adj. Relative Risk (95% C.I.)	p-Value
Basal Cell Carcinoma (Verified Plus Suspected)	Group-by-Sun Reaction Index	Burns Easily	n	68		77			
			Yes	0	0	4	5.2	--[a]	0.121[b]
			No	68	100	73	94.8		
		Intermediate Reaction	n	192		262			
			Yes	17	8.9	15	5.7	1.76 (0.84,3.69)	0.134
			No	175	91.1	247	94.3		
		Tans Easily	n	693		867			
			Yes	19	2.7	28	3.2	0.90 (0.50,1.64)	0.731
			No	674	97.3	839	96.8		

[a]Adjusted relative risk not calculated because of a zero cell count.

[b]Fisher's exact test.

TABLE H-8.

Summary of Group-by-Covariate Interactions for Malignant Skin Neoplasms in the Baseline-Followup Interval (Original Comparisons Only*)

Variable	Interaction	Stratification	Statistic	Group: Ranch Hand Number	Group: Ranch Hand Percent	Group: Original Comparison Number	Group: Original Comparison Percent	Adj. Relative Risk (95% C.I.)	p-Value
Basal Cell Carcinoma (Verified Only)	Group-by-Sun Reaction Index	Burns Easily	n	68		56			
			Yes	0	0	2	3.6	--[a]	0.202[b]
			No	68	100	54	96.4		
		Intermediate	n	192		186			
			Yes	15	7.8	6	3.2	2.81 (1.05,7.55)	0.040
			No	177	92.2	180	96.8		
		Tans Easily	n	694		653			
			Yes	14	2.0	13	2.0	1.13 (0.52,2.43)	0.758
			No	680	98.0	640	98.0		

TABLE H-8. (continued)

Summary of Group-by-Covariate Interactions for
Malignant Skin Neoplasms in the Baseline-Followup Interval
(Original Comparisons Only*)

Variable	Interaction	Stratification	Statistic	Group: Ranch Hand Number	Ranch Hand Percent	Original Comparison Number	Original Comparison Percent	Adj. Relative Risk (95% C.I.)	p-Value
Basal Cell Carcinoma (Verified Plus Suspected)	Group-by-Sun Reaction Index	Burns Easily	n	68		55			
			Yes	0	0	4	7.3	--[a]	0.038[b]
			No	68	100	51	92.7		
		Intermediate	n	192		185			
			Yes	17	8.9	8	4.3	2.38 (0.98,5.76)	0.055
			No	175	91.1	177	95.7		
		Tans Easily	n	694		646			
			Yes	19	2.7	23	3.6	0.86 (0.46,1.60)	0.627
			No	675	97.3	623	96.4		

TABLE H-8. (continued)

Summary of Group-by-Covariate Interactions for Malignant Skin Neoplasms in the Baseline-Followup Interval (Original Comparisons Only*)

				Group					
				Ranch Hand		Original Comparison			
Variable	Interaction	Stratification	Statistic	Number	Percent	Number	Percent	Adj. Relative Risk (95% C.I.)	p-Value
Sun Exposure Related Neoplasms (Verified Only)	Group-by-Skin Color	Peach	n	768		744			
			Yes	31	4.0	20	2.7	0.20 (0.02,1.80)	0.150
			No	737	96.0	724	97.3		
		Not Peach	n	185		150			
			Yes	1	0.5	4	2.7	1.70 (0.95,3.04)	0.073
			No	184	99.5	146	97.3		

TABLE H-8. (continued)

Summary of Group-by-Covariate Interactions for
Malignant Skin Neoplasms in the Baseline-Followup Interval
(Original Comparisons Only*)

Variable	Interaction	Stratification	Statistic	Group: Ranch Hand Number	Ranch Hand Percent	Original Comparison Number	Original Comparison Percent	Adj. Relative Risk (95% C.I.)	p-Value
Sun Exposure Related Neoplasms (Verified Plus Suspected)	Group-by-Sun Reaction Index	Burns Easily	n	68		56			
			Yes	2	2.9	4	7.1	0.47 (0.08,2.74)	0.401
			No	66	97.1	52	92.9		
		Intermediate	n	192		186			
			Yes	18	9.4	8	4.3	2.74 (1.14,6.63)	0.025
			No	174	90.6	178	95.7		
		Tans Easily	n	693		652			
			Yes	19	2.7	26	4.0	0.75 (0.41,1.37)	0.343
			No	674	97.3	626	96.0		

*Blacks excluded.

[a]Adjusted relative risk not calculated because of a zero cell count.

[b]Fisher's exact test.

TABLE H-9.

Followup Participants With Verified Malignant Systemic Neoplasms in Baseline-Followup Interval by Group (Original Comparisons Only)

Site	Group		Total
	Ranch Hand	Original Comparison	
Oral Cavity and Pharynx	2[a,b]	0	2
Thyroid Gland	0	1	1
Bronchus and Lung	1	0	1
Colon	0	3[c,d]	3
Kidney and Bladder	2	1	3
Prostate	1	1	2
Testicles	1	0	1
Connective and Other Soft Tissue	1	0	1
Total	8	6	14

[a]Includes one Ranch Hand with separate malignancies of tongue and epiglottis and also malignant neoplasm of bone.

[b]Includes one Ranch Hand with separate malignant neoplasms of tongue and oropharynx and secondary malignant neoplasm of other site.

[c]Incudes one comparison with secondary malignant neoplasms of liver and bone and bone marrow.

[d]Includes one comparison with secondary malignant neoplasm of liver.

TABLE H-10.

Unadjusted Analyses of Followup Participants with Verified and Suspected Malignant Systemic Neoplasms in the Baseline-Followup Interval by Group (Original Comparisons Only)

Status	Statistic	Group: Ranch Hand		Group: Original Comparison		Est. Relative Risk (95% C.I.)	p-Value
Verified	Number/%	8	0.8%	6	0.6%	1.26 (0.43,3.63)	0.791
	Total Neoplasms	12		9			
Verified & Suspected	Number/%	12	1.2%	11	1.2%	1.03 (0.45,2.34)	0.999
	Total Neoplasms	23		14			

TABLE H-11.

Association Between Baseline-Followup Interval Incidence of All Malignant Systemic Neoplasms Combined and the Covariates for the Combined Followup Ranch Hand and Comparison Groups

Covariate	Covariate Category		Verified			Verified and Suspected		
			Number*	Percent	p-Value	Number*	Percent	p-Value
Age	Born ≥1942		1	0.1	<0.001	4	0.4	0.001
	Born 1923-41		10	0.8		16	1.3	
	Born ≤1922		4	4.6		4	4.6	
Race	Nonblack		15	0.7	0.999	23	1.1	0.999
	Black		0	0.0		1	0.7	
Occupation	Officer		10	1.2	0.056	13	1.5	0.193
	Enlisted Flyer		2	0.5		4	1.0	
	Enlisted Groundcrew		3	0.3		7	0.7	
Total Lifetime Smoking (Pack-Years)	0		2	0.3	0.220	4	0.6	0.374
	>0-20		6	0.6		11	1.0	
	>20-40		5	1.2		7	1.7	
	>40		2	1.3		2	1.3	
Total Lifetime Alcohol Consumption (Drink-Years)	0		0	0	0.082	1	0.7	0.233
	>0-5		2	0.3		5	0.7	
	>5-30		3	0.4		5	0.7	
	>30-100		7	1.4		9	1.8	
	>100		1	0.9		2	1.9	
Exposures to Carcinogens	Asbestos	Yes	3	0.6	0.999	5	1.0	0.999
		No	12	0.7		19	1.1	
	Nonmedical X Rays	Yes	5	0.9	0.364	10	1.9	0.049
		No	10	0.6		14	0.8	

TABLE H-11. (continued)

Association Between Baseline-Followup Interval Incidence of All Malignant Systemic Neoplasms Combined and the Covariates for the Combined Followup Ranch Hand and Comparison Groups

Covariate	Covariate Category		Verified			Verified and Suspected		
			Number*	Percent	p-Value	Number*	Percent	p-Value
Exposures to Carcinogens (continued)	Industrial Chemicals	Yes	5	0.4	0.196	11	0.9	0.682
		No	10	0.9		13	1.2	
	Herbicides	Yes	9	0.7	0.999	14	1.1	0.999
		No	6	0.6		10	1.0	
	Insecticides	Yes	4	0.3	0.014	10	0.7	0.091
		No	11	1.2		14	1.5	
	Degreasing Chemicals	Yes	6	0.5	0.191	14	1.0	0.999
		No	9	0.9		10	1.0	
Composite Carcinogen Exposure		Yes	4	0.8	0.757	5	1.0	0.999
		No	11	0.6		18	1.0	
Exposure to Individual Carcinogens	Anthracene	Yes	0	0.0	0.999	0	0.0	0.999
		No	15	0.7		24	1.0	
	Arsenic	Yes	0	0	0.999	2	4.8	0.069
		No	15	0.7		22	1.0	
	Benzene	Yes	1	1.2	0.424	1	1.2	0.587
		No	14	0.6		23	1.0	
	Benzidine	Yes	1	7.1	0.088	1	7.1	0.131
		No	14	0.6		22	1.0	

TABLE H-11. (continued)

Association Between Baseline-Followup Interval Incidence of All Malignant Systemic Neoplasms Combined and the Covariates for the Combined Followup Ranch Hand and Comparison Groups

Covariate	Covariate Category		Verified			Verified and Suspected		
			Number*	Percent	p-Value	Number*	Percent	p-Value
Exposure to Individual Carcinogens (continued)	Chromates	Yes	2	2.3	0.110	2	2.3	0.232
		No	13	0.6		22	1.0	
	Coal Tar	Yes	2	2.7	0.079	2	2.7	0.175
		No	13	0.6		22	1.0	
	Creosote	Yes	1	0.6	0.999	3	1.8	0.240
		No	14	0.7		21	1.0	
	Aminodiphenyl	Yes	0	0	0.999	1	16.7	0.061
		No	15	0.7		23	1.0	
	Chloromethyl Ether	Yes	1	4.4	0.140	2	8.7	0.023
		No	14	0.6		22	1.0	
	Mustard Gas	Yes	0	0	0.999	1	11.1	0.090
		No	15	0.7		23	1.0	
	Naphthylamine	Yes	2	3.6	0.050	3	5.4	0.019
		No	13	0.6		21	0.9	
	Cutting Oils	Yes	3	1.2	0.204	5	2.1	0.100
		No	12	0.6		19	0.9	
	Trichloroethylene	Yes	3	1.5	0.135	4	2.0	0.149
		No	12	0.6		20	1.0	

TABLE H-11. (continued)

Association Between Baseline-Followup Interval Incidence of All Malignant Systemic Neoplasms Combined and the Covariates for the Combined Followup Ranch Hand and Comparison Groups

Covariate	Covariate Category		Verified			Verified and Suspected		
			Number*	Percent	p-Value	Number*	Percent	p-Value
Exposure to Individual Carcinogens (continued)	Ultraviolet Light	Yes	1	2.0	0.286	1	2.0	0.417
		No	14	0.6		23	1.0	
	Vinyl Chloride	Yes	0	0.0	0.999	1	3.0	0.294
		No	15	0.7		23	1.0	

*Number of participants with malignant systemic neoplasms.

TABLE H-12.

Adjusted Analyses of Followup Participants for the Incidence of All Malignant Systemic Neoplasms During the Baseline-Followup Interval (Original Comparisons Only)

Variable	Adj. Relative Risk (95% C.I.)	p-Value	Covariate Remarks
Systemic Neoplasms (Verified)	1.47 (0.50,4.33)	0.481	AGE (p<0.001)
Systemic Neoplasms (Verified & Suspected)	****	****	GRP*OCC (p=0.028) AGE (p<0.001) RACE*PACKYR (p=0.032)

****Group-by-covariate interaction--adjusted relative risk, confidence interval, and p-value not presented.

TABLE H-13.

Summary of Group-by-Occupation Interaction for All Malignant Systemic Neoplasms (Verified Plus Suspected) During the Baseline-Followup Interval

Variable	Interaction	Stratification	Statistic	Group: Ranch Hand Number	Ranch Hand Percent	Comparison Number	Comparison Percent	Adj. Relative Risk (95% C.I.)	p-Value
Systemic Cancer (Verified Plus Suspected)	Group-by-Occupation	Officer	n	380		484			
			Yes	5	1.3	8	1.7	0.79 (0.25,2.44)	0.679
			No	375	98.7	476	98.3		
		Enlisted Flyer	n	175		209			
			Yes	4	2.3	0	0	--[a]	0.042[b]
			No	171	97.7	209	100		
		Enlisted Groundcrew	n	457		598			
			Yes	3	0.7	4	0.7	0.93 (0.20,4.26)	0.923
			No	454	99.3	594	99.3		

[a]Adjusted relative risk not calculated because of a zero cell.

[b]Fisher's exact test.

TABLE H-14.

Summary of Group-by-Occupation Interaction for All Malignant Systemic Neoplasms (Verified Plus Suspected) During the Baseline-Followup Interval (Original Comparisons Only)

Variable	Interaction	Stratification	Statistic	Group: Ranch Hand Number	Ranch Hand Percent	Original Comparison Number	Original Comparison Percent	Adj. Relative Risk (95% C.I.)	p-Value
All Systemic Cancer (Verified Plus Suspected)	Group-by-Occupation	Officers	n	380		350			
			Yes	5	1.3	7	2.0	0.72 (0.22,2.30)	0.577
			No	375	98.7	343	98.0		
		Enlisted Flyers	n	175		174			
			Yes	4	2.9	0	0.0	--[a]	0.123[b]
			No	171	97.1	174	100.0		
		Enlisted Groundcrew	n	457		430			
			Yes	3	0.7	4	0.9	0.71 (0.16,3.28)	0.666
			No	454	99.3	426	99.1		

[a]Adjusted relative risk not calculated because of a zero cell count.

[b]Fisher's exact test.

TABLE H-15.

Unadjusted Analyses of Followup Participants with Lifetime Occurrence of Verified and Suspected Lifetime Neoplasms by Group (Nonblacks and Blacks, Original Comparisons Only)

Site	Neoplasm Behavior and Status	Group: Ranch Hand Number**	Ranch Hand Percent	Comparison Number**	Comparison Percent	Total**	p-Value***
Skin	Malignant						
	Verified	66	6.5	48	5.0	114	0.177
	Verified and Suspected	75	7.4	62	6.5	137	0.479
	Benign						
	Verified	84	8.3	67	7.0	151	0.310
	Verified and Suspected	86	8.5	70	7.3	156	0.360
	Uncertain Behavior and Unspecified Nature:						
	Verified	1	0.1	1	0.1	2	0.999
	Verified and Suspected	1	0.1	1	0.1	2	0.999
	Any Skin Neoplasm[a]						
	Verified	150	14.8	111	11.6	261	0.046
	Verified and Suspected	159	15.7	128	13.4	287	0.160
Systemic	Malignant						
	Verified	17	1.7	14	1.5	31	0.722
	Verified and Suspected	21	2.1	19	2.0	40	0.999
	Benign						
	Verified	51	5.0	52	5.5	103	0.687
	Verified and Suspected	57	5.6	60	6.3	117	0.568
	Uncertain Behavior and Unspecified Nature:						
	Verified	15	1.5	11	1.2	26	0.560
	Verified and Suspected	15	1.5	14	1.5	29	0.999
	Any Systemic Neoplasm[b]						
	Verified	81	8.0	71	7.4	152	0.673
	Verified and Suspected	91	9.0	86	9.0	177	0.999

TABLE H-15. (continued)

Unadjusted Analyses of Followup Participants with Lifetime Occurrence of Verified and Suspected Lifetime Neoplasms by Group (Nonblacks and Blacks, Original Comparisons Only)

Site	Neoplasm Behavior and Status	Group: Ranch Hand Number**	Ranch Hand Percent	Comparison Number**	Comparison Percent	Total**	p-Value***
All Neoplasms	Malignant, Benign, Uncertain Behavior, Unspecified Nature[c]						
	Verified	216	21.3	167	17.5	383	0.035
	Verified and Suspected	231	22.7	196	20.5	427	0.251

*Sample sizes: 1,016 Ranch Hands, 955 Original Comparisons.

**Number of participants.

***Fisher's exact test.

[a]Participant has one or more malignant, benign, or unspecified skin neoplasms.

[b]Participant has one or more malignant, benign, or unspecified systemic neoplasms.

[c]Participant has one or more malignant or benign skin or systemic neoplasms.

TABLE H-16.

Unadjusted Analyses of Nonblack Followup Participants with Lifetime Occurrence of Verified and Suspected Lifetime Malignant Skin Neoplasms by Cell Type and Group (Original Comparisons Only)

Cell Type	Status	Statistic	Group: Ranch Hand		Group: Original Comparison		Est. Relative Risk (95% C.I.)	p-Value
Basal Cell Carcinoma	Verified	Number/%	53	5.5%	34	3.8%	1.49 (0.96,2.32)	0.079
		Total Neoplasms	77		52			
	Verified & Suspected	Number/%	59	6.2%	48	5.4%	1.16 (0.79,1.72)	0.486
		Total Neoplasms	88		68			
Squamous Cell Carcinoma	Verified	Number/%	4	0.4%	5	0.6%	0.75 (0.20,2.80)	0.747
		Total Neoplasms	6		6			
	Verified & Suspected	Number/%	4	0.4%	5	0.6%	0.75 (0.20,2.80)	0.747
		Total Neoplasms	6		6			
Melanoma	Verified	Number/%	5	0.5%	5	0.6%	0.94 (0.27,3.25)	0.999
		Total Neoplasms	6		6			
	Verified & Suspected	Number/%	5	0.5%	6	0.7%	0.78 (0.24,2.57)	0.768
		Total Neoplasms	6		7			
All Malignant Skin Neoplasms	Verified	Number/%	66	6.9%	48	5.4%	1.31 (0.89,1.93)	0.176
		Total Neoplasms	103		73			
	Verified & Suspected	Number/%	75	7.9%	62	6.9%	1.15 (0.81,1.63)	0.478
		Total Neoplasms	117		90			
Sun-Exposure Related Malignant Neoplasms[a]	Verified	Number/%	59	6.2%	39	4.4%	1.45 (0.96,2.19)	0.096
		Total Neoplasms	90		58			
	Verified & Suspected	Number/%	65	6.8%	53	5.9%	1.16 (0.80,1.69)	0.448
		Total Neoplasms	101		75			

*Number and percent of participants; total number of malignant neoplasms of specified cell type.

**Number of participants -- 956 Ranch Hands and 897 Original Comparisons.

[a]Basal cell carcinoma, melanoma, and malignant epithelial neoplasms NOS.

TABLE H-17.

Association Between Lifetime Incidence of Sun-Exposure Related Skin Malignancies and the Covariates for Combined Followup Ranch Hand and Comparison Nonblack Participants

Covariate	Covariate Category	Verified			Verified and Suspected		
		Number*	Percent	p-Value	Number*	Percent	p-Value
Age	Born ≥1942	8	9.2	<0.001	28	3.2	<0.001
	Born 1923-41	83	6.9		99	8.3	
	Born ≤1922	23	2.6		12	13.8	
Occupation	Officer	60	7.1	0.009	75	8.8	0.001
	Enlisted Flyer	17	4.7		20	5.6	
	Enlisted Groundcrew	37	3.9		44	4.6	
Total Lifetime Smoking (Pack-Years)	0	35	5.7	0.021	40	6.5	0.012
	>0-20	40	4.0		49	4.9	
	>20-40	24	6.1		34	8.7	
	>40	15	9.6		16	10.2	
Total Lifetime Alcohol Consumption (Drink-Years)	0	8	5.7	0.140	9	6.4	0.341
	>0-5	39	5.4		45	6.3	
	>5-30	29	4.4		36	5.5	
	>30-100	24	5.0		35	7.3	
	>100	11	10.6		11	10.6	
Ethnic Background[a]	A	95	6.0	0.055	118	7.5	0.007
	B	16	3.8		17	4.0	
	C	1	1.6		1	1.6	
	D	0	0.0		0	0.0	
Skin Color	Dark	0	0.0	0.285	0	0.0	0.190
	Medium	2	2.7		2	2.7	
	Pale	10	3.3		12	3.9	
	Dark Peach	76	6.0		90	7.1	
	Pale Peach	26	5.0		35	6.7	

TABLE H-17. (continued)

Association Between Lifetime Incidence of Sun-Exposure Related Skin Malignancies and the Covariates for Combined Followup Ranch Hand and Comparison Nonblack Participants

Covariate	Covariate Category	Verified			Verified and Suspected		
		Number*	Percent	p-Value	Number*	Percent	p-Value
Eye Color	Brown	34	5.3	0.466	40	6.2	0.960
	Hazel	31	6.8		32	7.0	
	Green	4	3.4		7	5.9	
	Grey	5	5.4		7	7.5	
	Blue	40	4.7		53	6.2	
Hair Color	Black	22	5.0	0.230	26	5.9	0.096
	Dark Brown	46	4.4		58	5.6	
	Light Brown	36	6.4		42	7.5	
	Red	2	12.5		3	18.8	
	Blond	8	7.4		10	9.3	
Residential History (Average Latitude)	≥37°	48	4.2	0.026	56	4.9	0.003
	<37°	66	6.5		83	8.1	
Skin Reaction to First 30 Min. of Sun Exposure	Burns	23	9.3	<0.001	28	11.3	<0.001
	Usually Burns	39	9.1		47	11.0	
	Burns Mildly	34	4.2		38	4.7	
	Rarely Burns	17	2.5		25	3.7	
Skin Reaction to >2 Hrs of Sun After First Exposure	Burns Painfully	13	10.8	<0.001	15	12.5	<0.001
	Burns	32	9.5		35	10.4	
	Becomes Red	46	4.4		59	5.7	
	No Reaction	23	3.5		30	4.5	
Skin Reaction After Repeated Exposure to Sun	Freckles, No Tan	5	11.1	<0.001	6	13.3	<0.001
	Tans Mildly	33	10.5		38	12.1	
	Tans Moderately	40	3.9		51	5.0	
	Tans Deep Brown	35	4.5		43	5.5	

TABLE H-17. (continued)

Association Between Lifetime Incidence of Sun-Exposure Related Skin Malignancies and the Covariates for Combined Followup Ranch Hand and Comparison Nonblack Participants

Covariate	Covariate Category		Verified Number*	Verified Percent	Verified p-Value	Verified and Suspected Number*	Verified and Suspected Percent	Verified and Suspected p-Value
Sun Reaction Index	Tends to Burn		14	9.7	<0.001	16	11.0	<0.001
	Mild Reaction		42	9.3		48	10.6	
	Tends to Tan		57	3.7		74	4.7	
Exposures to Carcinogens	Asbestos	Yes	19	4.2	0.288	26	5.7	0.520
		No	95	5.6		113	6.6	
	Nonmedical X Rays	Yes	31	6.3	0.252	39	7.9	0.143
		No	83	5.0		100	6.0	
	Industrial Chemicals	Yes	54	4.8	0.336	65	5.8	0.220
		No	60	5.8		74	7.1	
	Herbicides	Yes	74	5.9	0.144	91	7.2	0.076
		No	40	4.4		48	5.3	
	Insecticides	Yes	76	5.8	0.200	90	6.9	0.324
		No	38	4.5		49	5.7	
	Degreasing Chemicals	Yes	64	5.1	0.697	77	6.1	0.534
		No	50	5.5		62	6.9	
Composite Carcinogen Exposure		Yes	21	4.3	0.355	24	4.9	0.141
		No	91	5.5		113	6.8	

TABLE H-17. (continued)

Association Between Lifetime Incidence of Sun-Exposure Related Skin Malignancies and the Covariates for Combined Followup Ranch Hand and Comparison Nonblack Participants

Covariate	Covariate Category		Verified			Verified and Suspected		
			Number*	Percent	p-Value	Number*	Percent	p-Value
Exposure to Individual Carcinogens	Anthracene	Yes	0	0.0	0.999	0	0.0	0.999
		No	114	5.3		139	6.4	
	Arsenic	Yes	4	9.8	0.163	5	12.2	0.181
		No	109	5.1		133	6.3	
	Benzene	Yes	6	8.1	0.281	7	9.5	0.327
		No	108	5.2		132	6.3	
	Benzidine	Yes	1	9.1	0.449	1	9.1	0.519
		No	113	5.3		138	6.4	
	Chromates	Yes	4	4.8	0.999	5	6.0	0.999
		No	108	5.2		132	6.4	
	Coal Tar	Yes	2	2.9	0.580	3	4.4	0.799
		No	112	5.3		136	6.5	
	Creosote	Yes	9	5.7	0.715	10	6.3	0.999
		No	105	5.2		129	6.4	
	Aminodiphenyl	Yes	0	0.0	0.999	0	0.0	0.999
		No	113	5.2		138	6.4	
	Chloromethyl Ether	Yes	2	9.5	0.305	2	9.5	0.641
		No	112	5.2		137	6.4	
	Mustard Gas	Yes	0	0.0	0.999	0	0.0	0.999
		No	114	5.3		139	6.4	

TABLE H-17. (continued)

Association Between Lifetime Incidence of Sun-Exposure Related Skin Malignancies and the Covariates for Combined Followup Ranch Hand and Comparison Nonblack Participants

Covariate	Covariate Category		Verified			Verified and Suspected		
			Number*	Percent	p-Value	Number*	Percent	p-Value
Exposure to Individual Carcinogens (continued)	Naphthylamine	Yes	3	5.8	0.751	4	7.7	0.570
		No	110	5.2		134	6.3	
	Cutting Oils	Yes	12	5.3	0.999	15	6.6	0.886
		No	102	5.3		124	6.4	
	Trichloroethylene	Yes	5	2.7	0.120	7	3.8	0.156
		No	109	5.5		132	6.7	
	Ultraviolet Light	Yes	5	11.4	0.078	5	11.4	0.200
		No	109	5.1		134	6.3	
	Vinyl Chloride	Yes	0	0.0	0.406	1	3.2	0.718
		No	114	5.3		138	6.5	

*Number of participants with sun-exposure related skin malignancies.

[a]Ethnic Background:

A—English, Welsh, Scottish, Irish.
B—Scandinavian, German, Polish, Russian, other Slavic, Jewish, French.
C—Spanish, Italian, Greek.
D—Mexican, American Indian, Asian.

TABLE H-18.

Summary of Group-by-Covariate Interactions for Lifetime Malignant Skin Neoplasm Incidence (Nonblacks Only)

Variable	Interaction	Stratification	Statistic	Group: Ranch Hand Number	Ranch Hand Percent	Original Comparison Number	Original Comparison Percent	Adj. Relative Risk (95% C.I.)	p-Value
Basal Cell Carcinoma (Verified Plus Suspected)	Group-by-Sun Reaction Index	Burns Easily	n	68		77			
			Yes	3	4.4	9	11.7	0.29 (0.07,1.28)	0.102
			No	65	95.6	68	88.3		
		Intermediate Reaction	n	192		262			
			Yes	25	13.0	21	8.0	1.97 (1.04,3.73)	0.038
			No	167	87.0	241	92.0		
		Tans Easily	n	693		867			
			Yes	31	4.5	36	4.2	1.15 (0.70,1.88)	0.591
			No	662	95.5	831	95.8		

TABLE H-19.

Adjusted Analyses of Nonblack Followup Participants for Lifetime Malignant Skin Neoplasm Incidence (Original Comparisons Only)

Variable	Status	Adj. Relative Risk (95% C.I.)	p-Value	Covariate Remarks
Basal Cell Carcinoma	Verified	****	****	GRP*SUNREAC (p=0.010) SKIN*SUNREAC (p<0.001) OCC*AGE (p=0.010) OCC*SUNREAC (p=0.007) LAT (p=0.006)
	Verified & Suspected	****	****	GRP*SUNREAC (p=0.003) AGE (p<0.001) LAT (p=0.002) SUNREAC*OCC (p=0.043) SKIN*SUNREAC (p<0.001)
Sun-Exposure Skin Neoplasms	Verified	****	****	GRP*SUNREAC (p=0.045) SKIN*LAT (p=0.028) SKIN*SUNREAC (p<0.001) OCC*AGE (p=0.023)
	Verified & Suspected	****	****	GRP*SUNREAC (p=0.016) AGE (p<0.001) SUNREAC*LAT (p=0.017) SKIN*SUNREAC (p<0.001)

****Group-by-covariate interactions--adjusted relative risk, confidence interval, and p-value not presented.

TABLE H-20.

Summary of Group-by-Covariate Interactions
for Lifetime Malignant Skin Neoplasm Incidence
(Original Comparisons Only*)

Variable	Interaction	Stratification	Statistic	Group: Ranch Hand Number	Ranch Hand Percent	Original Comparison Number	Original Comparison Percent	Adj. Relative Risk (95% C.I.)	p-Value
Basal Cell Carcinoma (Verified Only)	Group-by-Sun Reaction Index	Burns Easily	n	68		56			
			Yes	3	4.4	6	10.7	0.17 (0.02,1.67)	0.128
			No	65	95.6	50	89.3		
		Intermediate	n	192		186			
			Yes	23	12.0	8	4.3	3.76 (1.60,8.86)	0.002
			No	169	88.0	178	95.7		
		Tans Easily	n	693		652			
			Yes	27	3.9	19	2.9	1.45 (0.79,2.67)	0.226
			No	666	96.1	633	97.1		

TABLE H-20. (continued)

Summary of Group-by-Covariate Interactions for
Lifetime Malignant Skin Neoplasm Incidence
(Original Comparisons Only*)

Variable	Interaction	Stratification	Statistic	Group: Ranch Hand Number	Group: Ranch Hand Percent	Group: Original Comparison Number	Group: Original Comparison Percent	Adj. Relative Risk (95% C.I.)	p-Value
Basal Cell Carcinoma (Verified Plus Suspected)	Group-by-Sun Reaction Index	Burns Easily	n	68		56			
			Yes	3	4.4	8	14.3	0.19 (0.03,1.15)	0.070
			No	65	95.6	48	85.7		
		Intermediate	n	192		186			
			Yes	25	13.0	10	5.4	3.25 (1.47,7.18)	0.003
			No	167	87.0	176	94.6		
		Tans Easily	n	693		652			
			Yes	31	4.5	29	4.4	1.10 (0.65,1.86)	0.719
			No	662	95.5	623	95.6		

TABLE H-20. (continued)

Summary of Group-by-Covariate Interactions for
Lifetime Malignant Skin Neoplasm Incidence
(Original Comparisons Only*)

Variable	Interaction	Stratification	Statistic	Group: Ranch Hand Number	Ranch Hand Percent	Original Comparison Number	Original Comparison Percent	Adj. Relative Risk (95% C.I.)	p-Value
Sun Exposure Related Cancers (Verified Plus Suspected)	Group-by-Sun Reaction Index	Burns Easily	n	68		56			
			Yes	7	10.3	8	14.3	1.20 (0.34,4.22)	0.777
			No	61	89.7	48	85.7		
		Intermediate	n	192		186			
			Yes	26	13.5	10	5.4	3.98 (1.70,9.33)	0.002
			No	166	86.5	176	94.6		
		Tans Easily	n	693		652			
			Yes	32	4.6	34	5.2	1.17 (0.31,4.41)	0.819
			No	661	95.4	618	94.8		

TABLE H-20. (continued)

Summary of Group-by-Covariate Interactions for
Lifetime Malignant Skin Neoplasm Incidence
(Original Comparisons Only*)

Variable	Interaction	Stratification	Statistic	Group: Ranch Hand Number	Ranch Hand Percent	Original Comparison Number	Original Comparison Percent	Adj. Relative Risk (95% C.I.)	p-Value
Sun Exposure Related Cancers (Verified Only)	Group-by-Sun Reaction Index	Burns Easily	n	68		56			
			Yes	7	10.3	6	10.7	0.80 (0.25,2.53)	0.700
			No	61	89.7	50	89.3		
		Intermediate	n	192		186			
			Yes	24	12.5	8	4.3	3.42 (1.56,7.51)	0.002
			No	168	87.5	178	95.7		
		Tans Easily	n	693		652			
			Yes	28	4.0	24	3.7	0.97 (0.59,1.61)	0.911
			No	665	96.0	628	96.3		

*Blacks excluded.

TABLE H-21.

Summary of Followup Participants With Lifetime Incidence of Verified Malignant Systemic Neoplasms by Group (Original Comparisons Only)

Site	Group		Total
	Ranch Hand	Original Comparison	
Eye	1	0	1
Oral Cavity and Pharynx	3[a,b]	0	3
Larynx	0	1	1
Thyroid Gland	0	2	2
Bronchus and Lung	2	0	2
Colon	0	4[c,d]	4
Kidney and Bladder	4	3	7
Prostate	2	2	4
Testicles	3	0	3
Connective and Other Soft Tissue	1	1	2
Ill-Defined Sites	1[e]	1[f]	2
Total	17	14	31

[a]Includes one Ranch Hand with separate malignancies of tongue and epiglottis and also malignant neoplasm of bone.

[b]Includes one Ranch Hand with separate malignant neoplasms of tongue and oropharynx and secondary malignant neoplasm of other site.

[c]Incudes one Comparison with secondary malignant neoplasms of liver and bone and bone marrow.

[d]Includes one Comparison with secondary malignant neoplasm of liver.

[e]Malignant neoplasm of thorax.

[f]Malignant neoplasm of face, head, or neck.

TABLE H-22.

Unadjusted Analyses of the Lifetime Incidence Rates of All Malignant Systemic Neoplasms Combined, by Group (Original Comparisons Only)

Status	Statistic	Group: Ranch Hand		Group: Original Comparison		Est. Relative Risk (95% C.I.)	p-Value
Verified	Number/%	17	1.7%	14	1.5%	1.14 (0.56,2.33)	0.722
	Total Neoplasms	25		19			
Verified & Suspected	Number/%	21	2.1%	19	2.0%	1.04 (0.56,1.95)	0.999
	Total Neoplasms	36		24			

TABLE H-23.

Summary of Group-by-Occupation Interactions for Lifetime Incidence of All Malignant Systemic Neoplasms Combined

Variable	Interaction	Stratification	Statistic	Group: Ranch Hand Number	Ranch Hand Percent	Comparison Number	Comparison Percent	Adj. Relative Risk (95% C.I.)	p-Value
Malignant Systemic Neoplasm (Verified Only)	Group-by-Occupation	Officer	n	380		484			
			Yes	8	2.1	12	2.5	0.84 (0.34,2.08)	0.698
			No	372	97.9	472	97.5		
		Enlisted Flyer	n	177		210			
			Yes	5	2.8	0	0	--[a]	0.019[b]
			No	172	97.2	210	100		
		Enlisted Groundcrew	n	459		599			
			Yes	4	0.9	5	0.8	1.07 (0.28,4.03)	0.922
			No	455	99.1	594	99.2		

[a]Adjusted relative risk not calculated because of a zero cell.

[b]Fisher's exact test.

TABLE H-23. (continued)

Summary of Group-by-Occupation Interactions for Lifetime Incidence of All Malignant Systemic Neoplasms Combined

Variable	Interaction	Stratification	Statistic	Group: Ranch Hand Number	Ranch Hand Percent	Comparison Number	Comparison Percent	Adj. Relative Risk (95% C.I.)	p-Value
Malignant Systemic Neoplasm (Verified plus Suspected)	Group-by-Occupation	Officer	n	380		484			
			Yes	9	2.4	14	2.9	0.80 (0.34,1.89)	0.616
			No	371	97.6	470	97.1		
		Enlisted Flyer	n	175		209			
			Yes	7	4.0	0	0	--[a]	0.004[b]
			No	168	96.0	209	100		
		Enlisted Groundcrew	n	457		598			
			Yes	5	1.1	8	1.3	0.79 (0.26,2.47)	0.690
			No	452	98.9	590	98.7		

[a]Adjusted relative risk not calculated because of a zero cell.

[b]Fisher's exact test.

TABLE H-24.

Adjusted Analyses for Lifetime Incidence of All Malignant Systemic Neoplasms Combined (Original Comparisons Only)

Variable	Adj. Relative Risk (95% C.I.)	p-Value	Covariate Remarks
Malignant Systemic Neoplasms (Verified)	****	****	GRP*OCC (p=0.034) AGE (p<0.001)
Malignant Systemic Neoplasms (Verified & Suspected)	****	****	GRP*OCC (p=0.003) AGE (p<0.001) RACE*PACKYR (p=0.033)

****Group-by-covariate interaction--adjusted relative risk, confidence interval, and p-value not presented.

TABLE H-25.

Summary of Group-by-Occupation Interactions for Lifetime Incidence of All Malignant Systemic Neoplasms Combined (Original Comparisons Only)

Variable	Interaction	Stratification	Statistic	Group: Ranch Hand Number	Ranch Hand Percent	Original Comparison Number	Original Comparison Percent	Adj. Relative Risk (95% C.I.)	p-Value
Malignant Systemic Neoplasms (Verified Only)	Group-by-Occupation	Officer	n	380		350			
			Yes	8	2.1	9	2.6	0.90 (0.34,2.38)	0.834
			No	372	97.9	341	97.4		
		Enlisted Flyer	n	177		174			
			Yes	5	2.8	0	0	--[a]	0.061[b]
			No	172	97.2	174	100		
		Enlisted Groundcrew	n	459		431			
			Yes	4	0.9	5	1.2	0.81 (0.21,3.07)	0.757
			No	455	99.1	426	98.8		

TABLE H-25. (continued)

Summary of Group-by-Occupation Interactions
for Lifetime Incidence of All Malignant
Systemic Neoplasms Combined
(Original Comparisons Only)

Variable	Interaction	Stratification	Statistic	Group: Ranch Band Number	Ranch Band Percent	Original Comparison Number	Original Comparison Percent	Adj. Relative Risk (95% C.I.)	p-Value
Malignant Systemic Neoplasms (Verified Plus Suspected)	Group-by-Occupation	Officer	n	380		350			
			Yes	9	2.4	11	3.1	0.81 (0.33,1.98)	0.638
			No	371	97.6	339	96.9		
		Enlisted Flyer	n	175		174			
			Yes	7	4.0	0	0	--[a]	0.015[a]
			No	168	96.0	174	100		
		Enlisted Groundcrew	n	457		430			
			Yes	5	1.1	8	1.9	0.59 (0.19,1.85)	0.369
			No	452	98.9	422	98.1		

[a]Adjusted relative risk not calculated because of zero cell.

[b]Fisher's exact test.

TABLE H-26.

Unadjusted Exposure Index Analyses for Followup Participants
for Occurrence of Malignant Neoplasms
in the Baseline-Followup Interval

Variable	Occupation	Statistic	Exposure Index[a] Low Number	Low Percent	Medium Number	Medium Percent	High Number	High Percent	Contrast	Est. Relative Risk (95% C.I.)	p-Value
Basal Cell Carcinoma (Verified Only)[b]	Officer	n	125		127		121		Overall		0.178
		Abnormal	3	2.4	8	6.3	3	2.5	M vs. L	2.73 (0.71,10.55)	0.216
		Normal	122	97.6	119	93.7	118	97.5	H vs. L	1.03 (0.21,5.23)	0.999
	Enlisted Flyer	n	54		61		52		Overall		0.073
		Abnormal	6	11.1	2	3.3	1	1.9	M vs. L	0.27 (0.05,1.41)	0.145
		Normal	48	88.9	59	96.7	51	98.1	H vs. L	0.16 (0.02,1.35)	0.113
	Enlisted Groundcrew	n	138		149		129		Overall		0.627
		Abnormal	3	2.2	2	1.3	1	0.8	M vs. L	0.61 (0.10,3.72)	0.674
		Normal	135	97.8	147	98.7	128	99.2	H vs. L	0.35 (0.04,3.42)	0.623
Basal Cell Carcinoma (Verified and Suspected)[b]	Officer	n	125		127		121		Overall		0.042
		Abnormal	4	3.3	12	9.4	4	3.3	M vs. L	3.16 (0.99,10.07)	0.068
		Normal	121	96.8	115	90.6	121	96.7	H vs. L	1.03 (0.25,4.23)	0.999
	Enlisted Flyer	n	54		61		52		Overall		0.073
		Abnormal	6	11.1	2	3.3	1	1.9	M vs. L	0.27 (0.05,1.41)	0.145
		Normal	48	88.9	59	96.7	51	98.1	H vs. L	0.16 (0.02,1.35)	0.113
	Enlisted Groundcrew	n	138		149		129		Overall		0.372
		Abnormal	4	2.9	2	1.3	1	0.8	M vs. L	0.46 (0.08,2.53)	0.432
		Normal	134	97.1	147	98.7	128	99.2	H vs. L	0.26 (0.03,2.37)	0.372

TABLE H-26. (continued)

Unadjusted Exposure Index Analyses for Followup Participants
for Occurrence of Malignant Neoplasms
in the Baseline-Followup Interval

Variable	Occupation	Statistic	Exposure Index[a] Low Number	Low Percent	Medium Number	Medium Percent	High Number	High Percent	Contrast	Est. Relative Risk (95% C.I.)	p-Value
Sun-Exposure Related Malignancies (Verified Only)[b]	Officer	n	125		127		121		Overall		0.096
		Abnormal	3	2.4	9	7.1	3	2.5	M vs. L	3.10 (0.82,11.74)	0.136
		Normal	122	97.6	118	92.9	118	97.5	H vs. L	1.03 (0.21,5.23)	0.999
	Enlisted Flyer	n	54		61		52		Overall		0.073
		Abnormal	6	11.1	2	3.3	1	1.9	M vs. L	0.27 (0.05,1.41)	0.145
		Normal	48	88.9	59	96.7	51	98.1	H vs. L	0.16 (0.02,1.35)	0.113
	Enlisted Groundcrew	n	138		149		129		Overall		0.929
		Abnormal	3	2.2	3	2.0	2	1.6	M vs. L	0.93 (0.18,4.66)	0.999
		Normal	135	97.8	146	98.0	127	98.4	H vs. L	0.71 (0.12,4.31)	0.999
Sun-Exposure Related Malignancies (Verified and Suspected)[b]	Officer	n	125		127		121		Overall		0.021
		Abnormal	4	3.2	13	10.2	4	3.3	M vs. L	3.45 (1.09,10.89)	0.042
		Normal	121	96.8	114	89.8	117	96.7	H vs. L	1.03 (0.25,4.23)	0.999
	Enlisted Flyer	n	54		61		52		Overall		0.073
		Abnormal	6	11.1	2	3.3	1	1.9	M vs. L	0.27 (0.05,1.41)	0.145
		Normal	48	88.9	59	96.7	51	98.1	H vs. L	0.16 (0.02,1.35)	0.113
	Enlisted Groundcrew	n	138		149		129		Overall		0.742
		Abnormal	4	2.9	3	2.0	2	1.6	M vs. L	0.69 (0.15,3.13)	0.714
		Normal	134	97.1	146	98.0	127	98.4	M vs. L	0.53 (0.10,2.93)	0.685

TABLE H-26. (continued)

Unadjusted Exposure Index Analyses for Followup Participants
for Occurrence of Malignant Neoplasms
in the Baseline-Followup Interval

Variable	Occupation	Statistic	Exposure Index[a] Low Number	Low Percent	Medium Number	Medium Percent	High Number	High Percent	Contrast	Est. Relative Risk (95% C.I.)	p-Value
Systemic Malignancies (Verified Only)[c]	Officer	n	127		130		123		Overall		0.186
		Abnormal	1	0.8	3	2.3	0	0.0	M vs. L	2.98 (0.31,29.00)	0.622
		Normal	126	99.2	127	97.7	123	100.0	H vs. L	0.34 (0.01,8.46)*	0.999
	Enlisted Flyer	n	55		65		57		Overall		0.612
		Abnormal	1	1.8	1	1.5	0	0.0	M vs. L	0.84 (0.05,13.81)	0.999
		Normal	54	98.2	64	98.5	57	100.0	H vs. L	0.32 (0.01,7.92)*	0.491
	Enlisted Groundcrew	n	154		163		142		Overall		0.598
		Abnormal	0	0.0	1	0.6	1	0.7	M vs. L	2.85 (0.12,70.55)*	0.999
		Normal	154	100.0	162	99.4	141	99.3	H vs. L	3.28 (0.13,81.06)*	0.480
Systemic Malignancies (Verified and Suspected)[c]	Officer	n	127		130		123		Overall		0.081
		Abnormal	1	0.8	4	3.1	0	0.0	M vs. L	4.00 (0.44,36.29)	0.370
		Normal	126	99.2	126	96.9	123	100.0	H vs. L	0.34 (0.01,8.46)*	0.999
	Enlisted Flyer	n	55		65		57		Overall		0.708
		Abnormal	2	3.6	1	1.5	1	1.8	M vs. L	0.41 (0.04,4.69)	0.593
		Normal	53	96.4	64	98.5	56	98.2	H vs. L	0.47 (0.04,5.37)	0.615
	Enlisted Groundcrew	n	154		163		142		Overall		0.323
		Abnormal	0	0.0	1	0.6	2	1.4	M vs. L	2.85 (0.12,70.55)*	0.999
		Normal	154	100.0	162	99.4	140	98.6	H vs. L	5.50 (0.26,115.51)*	0.229

[a]Number and percent of total participants.
[b]Nonblacks only.
[c]Blacks and nonblacks.
*0.5 added to each cell to calculate relative risk and confidence interval, due to zero cell frequency.

TABLE H-27.

Unadjusted Exposure Index Analysis for Followup Participants for Lifetime Occurrence of Malignant Neoplasms

Variable	Occupation	Statistic	Exposure Index[a] Low Number	Low Percent	Medium Number	Medium Percent	High Number	High Percent	Contrast	Est. Relative Risk (95% C.I.)	p-Value
Basal Cell Carcinoma (Verified Only)[b]	Officer	n	125		127		121		Overall		0.641
		Abnormal	7	5.6	11	8.7	9	7.4	M vs. L	1.60 (0.60,4.27)	0.464
		Normal	118	94.4	116	91.3	112	92.6	H vs. L	1.36 (0.49,3.76)	0.613
	Enlisted Flyer	n	54		61		52		Overall		0.030
		Abnormal	7	13.0	2	3.3	1	1.9	M vs. L	0.23 (0.05,1.15)	0.081
		Normal	47	87.0	59	96.7	51	98.1	H vs. L	0.13 (0.02,1.11)	0.060
	Enlisted Groundcrew	n	138		149		129		Overall		0.984
		Abnormal	5	3.6	6	4.0	5	3.9	M vs. L	1.12 (0.33,3.74)	0.999
		Normal	133	96.4	143	96.0	124	96.1	H vs. L	1.07 (0.30,3.80)	0.999
Basal Cell Carcinoma (Verified and Suspected)[b]	Officer	n	125		127		121		Overall		0.419
		Abnormal	8	6.4	14	11.0	10	8.3	M vs. L	1.81 (0.73,4.49)	0.265
		Normal	117	93.6	113	89.0	111	91.7	H vs. L	1.32 (0.50,3.46)	0.630
	Enlisted Flyer	n	54		61		52		Overall		0.030
		Abnormal	7	13.0	2	3.3	1	1.9	M vs. L	0.23 (0.05,1.15)	0.081
		Normal	47	87.0	59	96.7	51	98.1	H vs. L	0.13 (0.02,1.11)	0.060
	Enlisted Groundcrew	n	138		149		129		Overall		0.980
		Abnormal	6	4.3	6	4.0	5	3.9	M vs. L	0.92 (0.29,2.93)	0.999
		Normal	132	95.7	143	96.0	124	96.1	H vs. L	0.89 (0.26,2.98)	0.999

TABLE H-27. (continued)

Unadjusted Exposure Index Analysis for Followup Participants for Lifetime Occurrence of Malignant Neoplasms

Variable	Occupation	Statistic	Exposure Index[a] Low Number	Low Percent	Medium Number	Medium Percent	High Number	High Percent	Contrast	Est. Relative Risk (95% C.I.)	p-Value
Sun-Exposure Related Malignancies (Verified Only)[b]	Officer	n	125		127		121		Overall		0.625
		Abnormal	9	7.2	13	10.2	9	7.4	M vs. L	1.47 (0.61,3.57)	0.504
		Normal	116	92.8	114	89.8	112	92.6	H vs. L	1.04 (0.40,2.70)	0.999
	Enlisted Flyer	n	54		61		52		Overall		0.058
		Abnormal	7	13.0	3	4.9	1	1.9	M vs. L	0.35 (0.09,1.42)	0.186
		Normal	47	87.0	58	95.1	51	98.1	H vs. L	0.13 (0.02,1.11)	0.060
	Enlisted Groundcrew	n	138		149		129		Overall		0.910
		Abnormal	5	3.6	7	4.7	5	3.9	M vs. L	1.31 (0.41,4.23)	0.772
		Normal	133	96.4	142	95.3	124	96.1	H vs. L	1.07 (0.30,3.80)	0.999
Sun-Exposure Related Malignancies (Verified and Suspected)[b]	Officer	n	125		127		121		Overall		0.382
		Abnormal	10	8.0	16	12.6	10	8.3	M vs. L	1.66 (0.72,3.81)	0.301
		Normal	115	92.0	111	87.4	111	91.7	H vs. L	1.04 (0.42,2.59)	0.999
	Enlisted Flyer		54		61		52		Overall		0.058
		Abnormal	7	13.0	3	4.9	1	1.9	M vs. L	0.35 (0.09,1.42)	0.186
		Normal	47	87.0	58	95.1	51	98.1	H vs. L	0.13 (0.02,1.11)	0.060
	Enlisted Groundcrew	n	138		149		129		Overall		0.945
		Abnormal	6	4.3	7	4.7	5	3.9	M vs. L	1.09 (0.36,3.31)	0.999
		Normal	132	95.7	142	95.3	124	96.1	M vs. L	0.89 (0.26, 2.98)	0.999

TABLE H-27. (continued)

Unadjusted Exposure Index Analysis for Followup Participants for Lifetime Occurrence of Malignant Neoplasms

Variable	Occupation	Statistic	Exposure Index[a] Low Number	Low Percent	Medium Number	Medium Percent	High Number	High Percent	Contrast	Est. Relative Risk (95% C.I.)	p-Value
Systemic Malignancies (Verified Only)[c]	Officer	n	127		130		123		Overall		0.876
		Abnormal	2	1.6	3	2.3	3	2.4	M vs. L	1.48 (0.24,8.99)	0.999
		Normal	125	98.4	127	97.7	120	97.6	H vs. L	1.56 (0.26,9.52)	0.680
	Enlisted Flyer	n	55		65		57		Overall		0.825
		Abnormal	2	3.6	2	3.1	1	1.8	M vs. L	0.84 (0.12,6.18)	0.999
		Normal	53	96.4	63	96.9	56	98.2	H vs. L	0.47 (0.04,5.37)	0.615
	Enlisted Groundcrew	n	154		163		142		Overall		0.205
		Abnormal	0	0.0	3	1.8	1	0.7	M vs. L	6.74 (0.35,131.53)*	0.248
		Normal	154	100.0	160	98.2	141	99.3	H vs. L	3.28 (0.13,81.06)*	0.480
Systemic Malignancies (Verified and Suspected)[c]	Officer	n	127		130		123		Overall		0.730
		Abnormal	2	1.6	4	3.1	3	2.4	M vs. L	1.98 (0.36,11.03)	0.684
		Normal	125	98.4	126	96.9	120	97.6	H vs. L	1.56 (0.26,9.52)	0.680
	Enlisted Flyer	n	55		65		57		Overall		0.784
		Abnormal	3	5.5	2	3.1	2	3.5	M vs. L	0.55 (0.09,3.42)	0.660
		Normal	52	94.5	63	96.9	55	96.5	H vs. L	0.63 (0.10,3.93)	0.676
	Enlisted Groundcrew	n	154		163		142		Overall		0.261
		Abnormal	0	0.0	3	1.8	2	1.4	M vs. L	6.74 (0.35,131.53)*	0.248
		Normal	154	100.0	160	98.2	140	98.6	H vs. L	5.50 (0.26,115.51)*	0.229

[a]Number and percent of total participants.
[b]Nonblacks only.
[c]Blacks and nonblacks.
*0.5 added to each cell to calculate relative risk and confidence interval due to zero cell.