

Experiment Number: 03038 - 03

**P05: INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS  
ABRIDGED) (a)**

Date Report Requested: 06/26/2019

Test Type: CHRONIC

Sodium Tungstate Dihydrate

Time Report Requested: 10:13:17

Route: DOSED WATER

CAS Number: 10213-10-2

First Dose M/F: 01/30/12 / 01/31/12

Species/Strain: RATS/HSD

Lab: BAT

Final Version 2

**NTP Study Number:** C03038  
**Lock Date:** 05/25/2016  
**Cage Range:** ALL  
**Date Range:** ALL  
**Reasons For Removal:** ALL  
**Removal Date Range:** ALL  
**Treatment Groups:** Include ALL  
**Study Gender:** Both  
**TDMSE Version:** 3.0.2.3\_002  
**PWG Approval Date:** NONE

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First Dose M/F: 01/30/12 / 01/31/12

Species/Strain: RATS/HSD

Lab: BAT

Harlan Sprague Dawley RATS MALE	0mg/L male	250mg/L male	500mg/L male	1000mg/L male
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**Disposition Summary**

<b>Animals Initially In Study</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>
<b>Early Deaths</b>				
<b>Moribund Sacrifice</b>	<b>17</b>	<b>14</b>	<b>10</b>	<b>8</b>
<b>Natural Death</b>	<b>21</b>	<b>10</b>	<b>16</b>	<b>13</b>
<b>Survivors</b>				
<b>Natural Death</b>			<b>1</b>	
<b>Terminal Sacrifice</b>	<b>12</b>	<b>26</b>	<b>23</b>	<b>29</b>
<b>Animals Examined Microscopically</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>

## ALIMENTARY SYSTEM

Esophagus	(50)	(50)	(50)	(50)
Intestine Large, Cecum	(50)	(50)	(49)	(50)
Intestine Large, Colon	(50)	(50)	(50)	(50)
Intestine Large, Rectum	(50)	(50)	(50)	(50)
Intestine Small, Duodenum	(50)	(50)	(50)	(50)
Intestine Small, Ileum	(50)	(50)	(49)	(50)
Intestine Small, Jejunum	(50)	(50)	(50)	(50)
Adenocarcinoma	1 (2%)			
Liver	(50)	(50)	(50)	(50)
Carcinosarcoma, Metastatic, Zymbal'S Gland		1 (2%)		
Cholangioma	1 (2%)			
Hepatocellular Adenoma	1 (2%)			1 (2%)
Mesentery	(2)	(5)	(2)	(3)
Paranglioma		1 (20%)		
Pheochromocytoma Malignant, Metastatic, Adrenal Medulla				1 (33%)
Pancreas	(50)	(50)	(50)	(50)
Acinus, Adenocarcinoma	1 (2%)	3 (6%)		2 (4%)
Acinus, Adenocarcinoma, Multiple				1 (2%)
Acinus, Adenoma	6 (12%)	5 (10%)	5 (10%)	5 (10%)
Acinus, Adenoma, Multiple	8 (16%)	15 (30%)	15 (30%)	11 (22%)
Salivary Glands	(50)	(50)	(50)	(50)
Stomach, Forestomach	(50)	(50)	(50)	(50)

a - Number of animals examined microscopically at site and number of animals with lesion

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Harlan Sprague Dawley RATS MALE	0mg/L male	250mg/L male	500mg/L male	1000mg/L male
Squamous Cell Papilloma				1 (2%)
Stomach, Glandular	(50)	(50)	(50)	(50)
Tongue	(0)	(1)	(1)	(0)
Squamous Cell Papilloma			1 (100%)	

## CARDIOVASCULAR SYSTEM

Blood Vessel	(50)	(50)	(49)	(49)
Heart	(50)	(50)	(50)	(50)
Schwannoma Malignant				1 (2%)

## ENDOCRINE SYSTEM

Adrenal Cortex	(50)	(50)	(50)	(50)
Adenoma				1 (2%)
Adrenal Medulla	(50)	(50)	(50)	(50)
Ganglioneuroma	1 (2%)			
Pheochromocytoma Benign	10 (20%)	8 (16%)	11 (22%)	8 (16%)
Pheochromocytoma Complex				1 (2%)
Pheochromocytoma Malignant	2 (4%)	2 (4%)	2 (4%)	3 (6%)
Bilateral, Pheochromocytoma Benign			1 (2%)	
Islets, Pancreatic	(50)	(50)	(50)	(50)
Adenoma	1 (2%)	3 (6%)	2 (4%)	5 (10%)
Adenoma, Multiple	1 (2%)	1 (2%)	1 (2%)	1 (2%)
Carcinoma	1 (2%)	3 (6%)	4 (8%)	
Parathyroid Gland	(43)	(45)	(45)	(45)
Adenoma		1 (2%)		2 (4%)
Pituitary Gland	(50)	(50)	(50)	(50)
Schwannoma Malignant, Metastatic, Peripheral Nerve		1 (2%)		
Pars Distalis, Adenoma	8 (16%)	5 (10%)	5 (10%)	7 (14%)
Pars Distalis, Carcinoma	1 (2%)	2 (4%)	1 (2%)	
Pars Intermedia, Adenoma	1 (2%)			1 (2%)
Pars Intermedia, Carcinoma			1 (2%)	
Pars Nervosa, Schwannoma Malignant	1 (2%)			

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Harlan Sprague Dawley RATS MALE	0mg/L male	250mg/L male	500mg/L male	1000mg/L male
Thyroid Gland	(50)	(50)	(50)	(50)
C-cell, Adenoma	4 (8%)	3 (6%)	5 (10%)	5 (10%)
C-cell, Adenoma, Multiple				1 (2%)
C-cell, Carcinoma		1 (2%)	4 (8%)	3 (6%)

## GENERAL BODY SYSTEM

None

## GENITAL SYSTEM

Epididymis	(50)	(50)	(50)	(49)
Penis	(0)	(0)	(1)	(0)
Preputial Gland	(50)	(50)	(50)	(50)
Prostate	(50)	(50)	(50)	(50)
Schwannoma Malignant, Metastatic, Spinal Cord		1 (2%)		
Seminal Vesicle	(50)	(50)	(50)	(50)
Hemangiosarcoma	1 (2%)			
Testis	(50)	(50)	(50)	(49)
Interstitial Cell, Adenoma	1 (2%)	1 (2%)		

## HEMATOPOIETIC SYSTEM

Bone Marrow	(50)	(50)	(50)	(50)
Carcinosarcoma, Metastatic, Zymbal'S Gland		1 (2%)		
Lymph Node	(3)	(5)	(3)	(3)
Lymph Node, Mandibular	(50)	(50)	(50)	(50)
Carcinoma, Metastatic, Thyroid Gland			1 (2%)	
Lymph Node, Mesenteric	(50)	(50)	(50)	(49)
Spleen	(50)	(50)	(50)	(50)
Thymus	(48)	(48)	(49)	(50)
Carcinoma, Metastatic, Thyroid Gland			1 (2%)	
Thymoma Malignant		1 (2%)		

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Harlan Sprague Dawley RATS MALE	0mg/L male	250mg/L male	500mg/L male	1000mg/L male
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## INTEGUMENTARY SYSTEM

Mammary Gland	(48)	(47)	(50)	(49)
Adenocarcinoma				1 (2%)
Fibroadenoma		2 (4%)	1 (2%)	
Skin	(50)	(50)	(50)	(50)
Basal Cell Carcinoma				1 (2%)
Keratoacanthoma	1 (2%)			1 (2%)
Squamous Cell Papilloma		1 (2%)		
Subcutaneous Tissue, Carcinoma, Metastatic, Thyroid Gland			1 (2%)	
Subcutaneous Tissue, Fibroma	3 (6%)	2 (4%)	2 (4%)	2 (4%)
Subcutaneous Tissue, Lipoma		2 (4%)		2 (4%)
Subcutaneous Tissue, Sarcoma		1 (2%)		
Subcutaneous Tissue, Schwannoma Malignant			1 (2%)	
Subcutaneous Tissue, Schwannoma Malignant, Metastatic, Spinal Cord		1 (2%)		

## MUSCULOSKELETAL SYSTEM

Bone	(50)	(50)	(50)	(50)
Tarsal, Osteoma				1 (2%)
Skeletal Muscle	(0)	(1)	(0)	(0)

## NERVOUS SYSTEM

Brain	(50)	(50)	(50)	(50)
Glioma Malignant	2 (4%)			1 (2%)
Granular Cell Tumor Malignant	1 (2%)			
Oligodendroglioma Malignant				1 (2%)
Cranial Nerve, Schwannoma Malignant		1 (2%)	1 (2%)	
Peripheral Nerve	(1)	(3)	(0)	(0)
Spinal Cord	(1)	(1)	(0)	(0)
Schwannoma Malignant		1 (100%)		

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## RESPIRATORY SYSTEM

Lung	(50)	(50)	(50)	(50)
Alveolar/Bronchiolar Adenoma	1 (2%)	1 (2%)		1 (2%)
Alveolar/Bronchiolar Carcinoma	1 (2%)			1 (2%)
Carcinoma, Metastatic, Thyroid Gland			1 (2%)	
Carcinosarcoma, Metastatic, Zymbal'S Gland		1 (2%)		
Nose	(50)	(50)	(50)	(50)
Trachea	(50)	(50)	(50)	(50)

## SPECIAL SENSES SYSTEM

Eye	(50)	(50)	(50)	(50)
Schwannoma Malignant, Metastatic, Brain		1 (2%)		
Harderian Gland	(50)	(50)	(50)	(50)
Schwannoma Malignant, Metastatic, Brain		1 (2%)		
Zymbal's Gland	(1)	(1)	(1)	(0)
Adenocarcinoma	1 (100%)			
Adenoma			1 (100%)	
Carcinosarcoma		1 (100%)		

## URINARY SYSTEM

Kidney	(50)	(50)	(50)	(50)
Nephroblastoma			1 (2%)	
Oncocytoma Benign				1 (2%)
Renal Tubule, Adenoma	2 (4%)	1 (2%)		1 (2%)
Urinary Bladder	(50)	(50)	(50)	(50)

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\* Number of animals with any tissue examined microscopically

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**P05: INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)**

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Lab: BAT

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Harlan Sprague Dawley RATS MALE

0mg/L male

250mg/L male

500mg/L male

1000mg/L male

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SYSTEMIC LESIONS

Multiple Organ

\*(50)

\*(50)

\*(50)

\*(50)

Leukemia Mononuclear

1 (2%)

2 (4%)

Lymphoma Malignant

1 (2%)

1 (2%)

2 (4%)

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\* Number of animals with any tissue examined microscopically

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Harlan Sprague Dawley RATS MALE	0mg/L male	250mg/L male	500mg/L male	1000mg/L male
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**Tumor Summary for Males**

Total Animals with Primary Neoplasms (b)	36	42	37	38
Total Primary Neoplasms	65	68	68	76
Total Animals with Benign Neoplasms	29	36	31	29
Total Benign Neoplasms	50	52	50	58
Total Animals with Malignant Neoplasms	14	14	14	17
Total Malignant Neoplasms	15	16	18	18
Total Animals with Metastatic Neoplasms		3	1	1
Total Metastatic Neoplasms		8	4	1
Total Animals with Malignant Neoplasms Uncertain Primary Site				
Total Animals with Neoplasms Uncertain- Benign or Malignant				
Total Uncertain Neoplasms				

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\*\*\* END OF MALE \*\*\*

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b - Primary tumors: all tumors except metastatic tumors

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Lab: BAT

Harlan Sprague Dawley RATS FEMALE	0mg/L female	250mg/L female	500mg/L female	1000mg/L female
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**Disposition Summary**

<b>Animals Initially In Study</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>
<b>Early Deaths</b>				
<b>Moribund Sacrifice</b>	<b>13</b>	<b>10</b>	<b>13</b>	<b>9</b>
<b>Natural Death</b>	<b>7</b>	<b>7</b>	<b>6</b>	<b>10</b>
<b>Survivors</b>				
<b>Moribund Sacrifice</b>				<b>1</b>
<b>Terminal Sacrifice</b>	<b>30</b>	<b>33</b>	<b>31</b>	<b>30</b>
<b>Animals Examined Microscopically</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>

## ALIMENTARY SYSTEM

Esophagus	(50)	(50)	(49)	(50)
Intestine Large, Cecum	(50)	(50)	(50)	(49)
Intestine Large, Colon	(50)	(50)	(50)	(50)
Intestine Large, Rectum	(50)	(50)	(50)	(50)
Intestine Small	(1)	(0)	(0)	(0)
Intestine Small, Duodenum	(50)	(50)	(50)	(50)
Intestine Small, Ileum	(50)	(50)	(50)	(49)
Intestine Small, Jejunum	(50)	(50)	(50)	(50)
Liver	(50)	(50)	(50)	(50)
Cholangioma			1 (2%)	1 (2%)
Hepatocellular Adenoma	1 (2%)	2 (4%)		1 (2%)
Leiomyosarcoma, Metastatic, Vagina			1 (2%)	
Mesentery	(1)	(0)	(1)	(2)
Granulosa Cell Tumor Malignant, Metastatic, Ovary	1 (100%)			
Leiomyosarcoma, Metastatic, Vagina			1 (100%)	
Pancreas	(50)	(50)	(50)	(50)
Granulosa Cell Tumor Malignant, Metastatic, Ovary	1 (2%)			
Salivary Glands	(50)	(50)	(49)	(50)
Stomach, Forestomach	(50)	(50)	(50)	(50)
Stomach, Glandular	(50)	(50)	(50)	(50)

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Harlan Sprague Dawley RATS FEMALE	0mg/L female	250mg/L female	500mg/L female	1000mg/L female
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## CARDIOVASCULAR SYSTEM

Blood Vessel	(50)	(50)	(50)	(49)
Heart	(50)	(50)	(49)	(50)
Leiomyosarcoma, Metastatic, Vagina			1 (2%)	
Schwannoma Malignant	2 (4%)			

## ENDOCRINE SYSTEM

Adrenal Cortex	(50)	(50)	(50)	(50)
Adenoma			1 (2%)	
Adrenal Medulla	(50)	(50)	(50)	(50)
Pheochromocytoma Benign	1 (2%)	3 (6%)		1 (2%)
Pheochromocytoma Malignant	1 (2%)	1 (2%)		
Islets, Pancreatic	(50)	(50)	(50)	(50)
Adenoma	1 (2%)	1 (2%)		2 (4%)
Carcinoma	1 (2%)			1 (2%)
Parathyroid Gland	(46)	(47)	(44)	(44)
Carcinoma, Metastatic, Thyroid Gland		1 (2%)		
Pituitary Gland	(50)	(50)	(50)	(50)
Pars Distalis, Adenoma	16 (32%)	9 (18%)	12 (24%)	9 (18%)
Pars Distalis, Adenoma, Multiple			1 (2%)	1 (2%)
Pars Distalis, Carcinoma	1 (2%)	2 (4%)		
Thyroid Gland	(50)	(50)	(49)	(50)
Schwannoma Malignant, Metastatic, Peripheral Nerve		1 (2%)		
Bilateral, C-cell, Adenoma	1 (2%)	1 (2%)		1 (2%)
C-cell, Adenoma	4 (8%)	11 (22%)	13 (27%)	7 (14%)
C-cell, Adenoma, Multiple		1 (2%)		
C-cell, Carcinoma	2 (4%)	2 (4%)	2 (4%)	4 (8%)

## GENERAL BODY SYSTEM

None

a - Number of animals examined microscopically at site and number of animals with lesion

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## GENITAL SYSTEM

Clitoral Gland	(50)	(50)	(50)	(49)
Carcinoma		1 (2%)		
Ovary	(50)	(50)	(50)	(50)
Granulosa Cell Tumor Malignant	1 (2%)			
Granulosa-Theca Tumor Malignant	1 (2%)			
Paraovarian Tissue, Leiomyosarcoma, Metastatic, Vagina			1 (2%)	
Uterus	(50)	(50)	(50)	(50)
Adenocarcinoma	3 (6%)		2 (4%)	5 (10%)
Adenoma				1 (2%)
Granulosa Cell Tumor Malignant, Metastatic, Ovary	1 (2%)			
Leiomyosarcoma, Metastatic, Vagina			1 (2%)	
Squamous Cell Carcinoma	1 (2%)			2 (4%)
Cervix, Sarcoma Stromal	1 (2%)			
Cervix, Squamous Cell Carcinoma	1 (2%)			
Cervix, Endometrium, Polyp Stromal	1 (2%)			
Endometrium, Polyp Stromal	3 (6%)	4 (8%)	7 (14%)	7 (14%)
Endometrium, Polyp Stromal, Multiple	1 (2%)			1 (2%)
Vagina	(49)	(50)	(50)	(50)
Leiomyosarcoma			1 (2%)	
Polyp	1 (2%)			

## HEMATOPOIETIC SYSTEM

Bone Marrow	(50)	(50)	(50)	(50)
Lymph Node	(3)	(3)	(1)	(2)
Renal, Leiomyosarcoma, Metastatic, Vagina			1 (100%)	
Lymph Node, Mandibular	(50)	(50)	(49)	(50)
Lymph Node, Mesenteric	(50)	(50)	(50)	(50)
Leiomyosarcoma, Metastatic, Vagina			1 (2%)	
Spleen	(50)	(50)	(50)	(50)

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Thymus	(47)	(49)	(49)	(50)

## INTEGUMENTARY SYSTEM

Mammary Gland	(50)	(50)	(50)	(50)
Adenocarcinoma	2 (4%)	1 (2%)	2 (4%)	2 (4%)
Adenoma	3 (6%)		3 (6%)	2 (4%)
Fibroadenoma	22 (44%)	26 (52%)	15 (30%)	15 (30%)
Fibroadenoma, Multiple	8 (16%)	3 (6%)	8 (16%)	3 (6%)
Skin	(50)	(50)	(50)	(50)
Subcutaneous Tissue, Fibroma	1 (2%)	2 (4%)		
Subcutaneous Tissue, Fibrosarcoma	1 (2%)			
Subcutaneous Tissue, Hemangiopericytoma	1 (2%)			
Subcutaneous Tissue, Osteosarcoma	1 (2%)			
Subcutaneous Tissue, Schwannoma Malignant		1 (2%)		

## MUSCULOSKELETAL SYSTEM

Bone	(50)	(50)	(50)	(50)
Skeletal Muscle	(0)	(0)	(1)	(0)
Diaphragm, Leiomyosarcoma, Metastatic, Vagina			1 (100%)	

## NERVOUS SYSTEM

Brain	(50)	(50)	(50)	(50)
Glioma Malignant				1 (2%)
Schwannoma Malignant, Metastatic, Peripheral Nerve		1 (2%)		
Peripheral Nerve	(0)	(1)	(0)	(0)
Trigeminal, Schwannoma Malignant		1 (100%)		

## RESPIRATORY SYSTEM

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Lung	(50)	(50)	(49)	(50)
Adenocarcinoma, Metastatic, Mammary Gland	1 (2%)			
Adenocarcinoma, Metastatic, Uterus			1 (2%)	
Granulosa Cell Tumor Malignant, Metastatic, Ovary	1 (2%)			
Leiomyosarcoma, Metastatic, Vagina			1 (2%)	
Nephroblastoma, Metastatic, Kidney		1 (2%)		
Nose	(50)	(50)	(50)	(50)
Trachea	(50)	(50)	(49)	(50)

## SPECIAL SENSES SYSTEM

Eye	(50)	(50)	(50)	(50)
Schwannoma Malignant, Metastatic, Peripheral Nerve		1 (2%)		
Harderian Gland	(50)	(50)	(50)	(50)
Bilateral, Schwannoma Malignant, Metastatic, Peripheral Nerve		1 (2%)		
Zymbal's Gland	(0)	(0)	(1)	(0)
Adenocarcinoma			1 (100%)	

## URINARY SYSTEM

Kidney	(50)	(50)	(50)	(50)
Lipoma				1 (2%)
Nephroblastoma		1 (2%)		
Urinary Bladder	(50)	(50)	(50)	(50)
Leiomyosarcoma, Metastatic, Vagina			1 (2%)	
Urothelium, Papilloma		1 (2%)		

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\* Number of animals with any tissue examined microscopically

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First Dose M/F: 01/30/12 / 01/31/12

Species/Strain: RATS/HSD

Lab: BAT

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Harlan Sprague Dawley RATS FEMALE

0mg/L female

250mg/L female

500mg/L female

1000mg/L female

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SYSTEMIC LESIONS

Multiple Organ

\*(50)

\*(50)

\*(50)

\*(50)

Leukemia Mononuclear

2 (4%)

Lymphoma Malignant

2 (4%)

4 (8%)

1 (2%)

3 (6%)

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a - Number of animals examined microscopically at site and number of animals with lesion

\* Number of animals with any tissue examined microscopically

Test Type: CHRONIC

Sodium Tungstate Dihydrate

Time Report Requested: 10:13:17

Route: DOSED WATER

CAS Number: 10213-10-2

First Dose M/F: 01/30/12 / 01/31/12

Species/Strain: RATS/HSD

Lab: BAT

Harlan Sprague Dawley RATS FEMALE	0mg/L female	250mg/L female	500mg/L female	1000mg/L female
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**Tumor Summary for Females**

Total Animals with Primary Neoplasms (b)	47	45	39	39
Total Primary Neoplasms	86	78	72	71
Total Animals with Benign Neoplasms	39	40	36	32
Total Benign Neoplasms	65	64	61	53
Total Animals with Malignant Neoplasms	17	11	10	14
Total Malignant Neoplasms	21	14	11	18
Total Animals with Metastatic Neoplasms	2	3	2	
Total Metastatic Neoplasms	5	6	11	
Total Animals with Malignant Neoplasms Uncertain Primary Site				
Total Animals with Neoplasms Uncertain- Benign or Malignant				
Total Uncertain Neoplasms				

\*\*\* END OF REPORT \*\*\*

a - Number of animals examined microscopically at site and number of animals with lesion

b - Primary tumors: all tumors except metastatic tumors