

Exercise History Report (Full)

Horse #1



UCDAVIS

VETERINARY MEDICINE

*J.D. Wheat Veterinary Orthopedic
Research Laboratory*

Nov-13-2013

Exercise History Report (Full)

J.D. Wheat Veterinary Orthopedic Research Laboratory

This report summarizes the high speed exercise history for Case Horse. There are four parts to this report:

Part 1 is a graph that depicts the races and officially recorded high speed workouts for Case Horse over the horse's career. The graph is useful for visually assessing features of a horse's career like: career length, periods of layup, and exercise consistency. If Case Horse had zero recorded high-speed exercise events, this graph is not produced. Event histories for three breed, sex, age, and event-matched control horses are also plotted.

Part 2 includes graphs which illustrate Case Horse's exercise history alongside that of Control Horses. These graphs are useful for visually comparing periods of layup and specific rates of exercise in the horses' exercise histories.

Part 3 is a chronological listing of races and officially timed works beginning with the most recent event (race or work).

Part 4 is a chart that allows comparison of exercise variables between Case Horse and other racehorses of similar age, sex, and breed that did not die at the same time from an injury. Similar to comparing the results of a blood test to a range of normal values, the values for Case Horse can be assessed in the context of a normal range for 95% of a sample of similar racehorses that did not die during the same time as Case Horse.

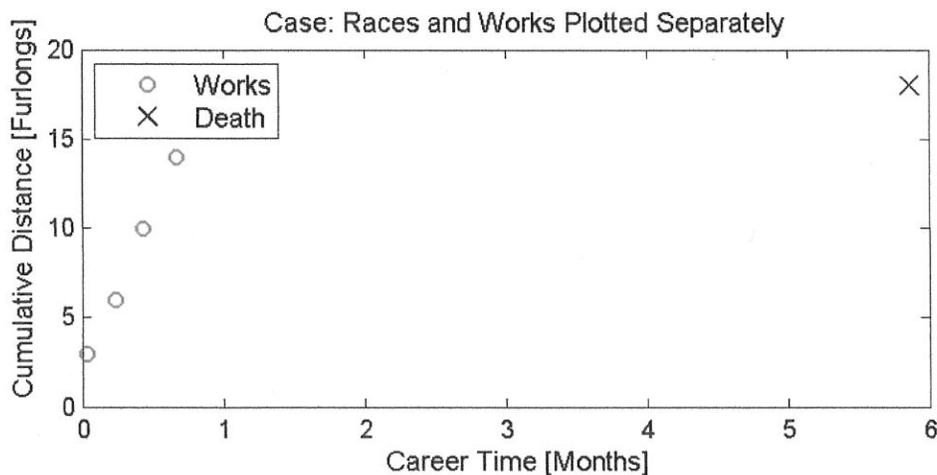
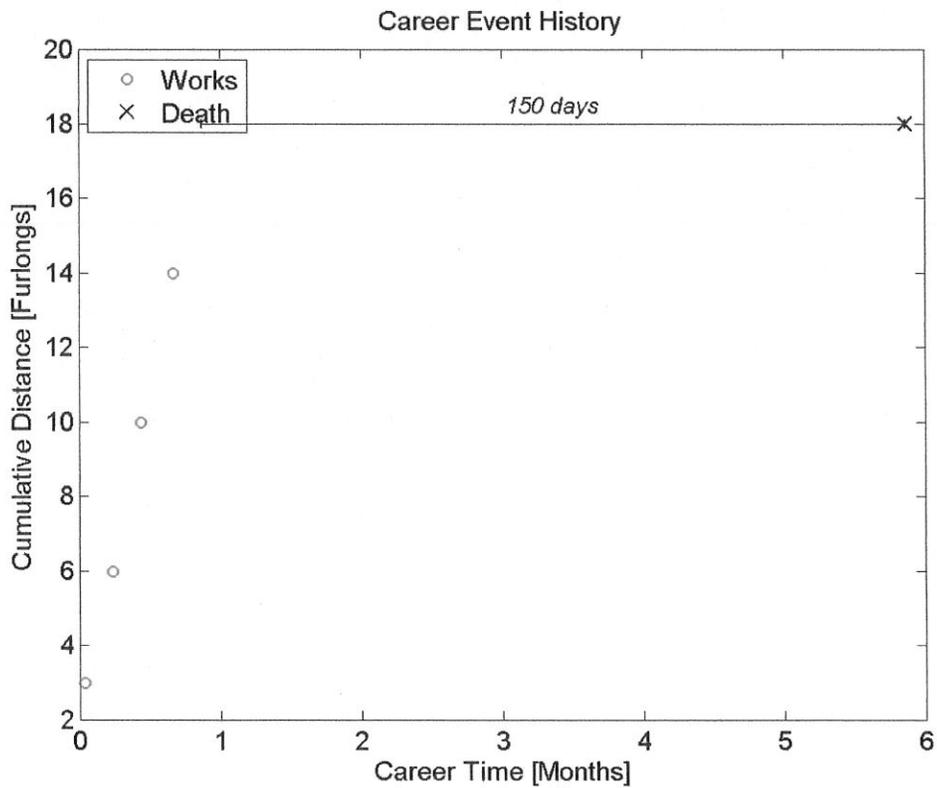
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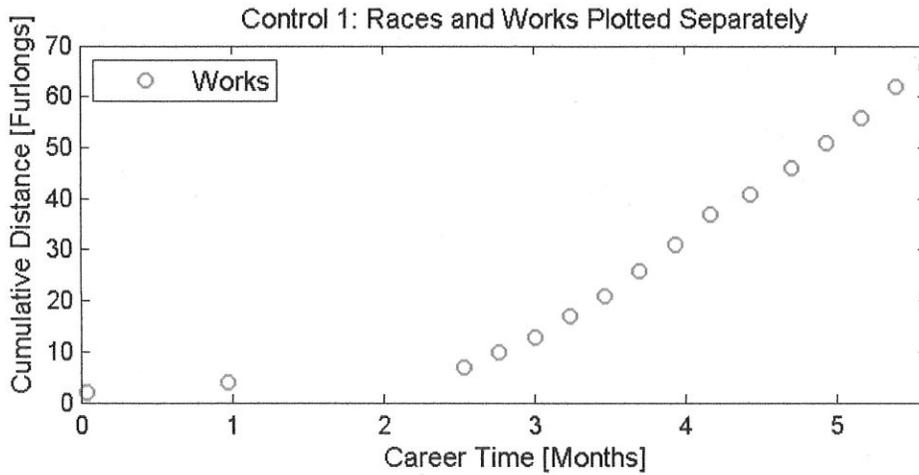
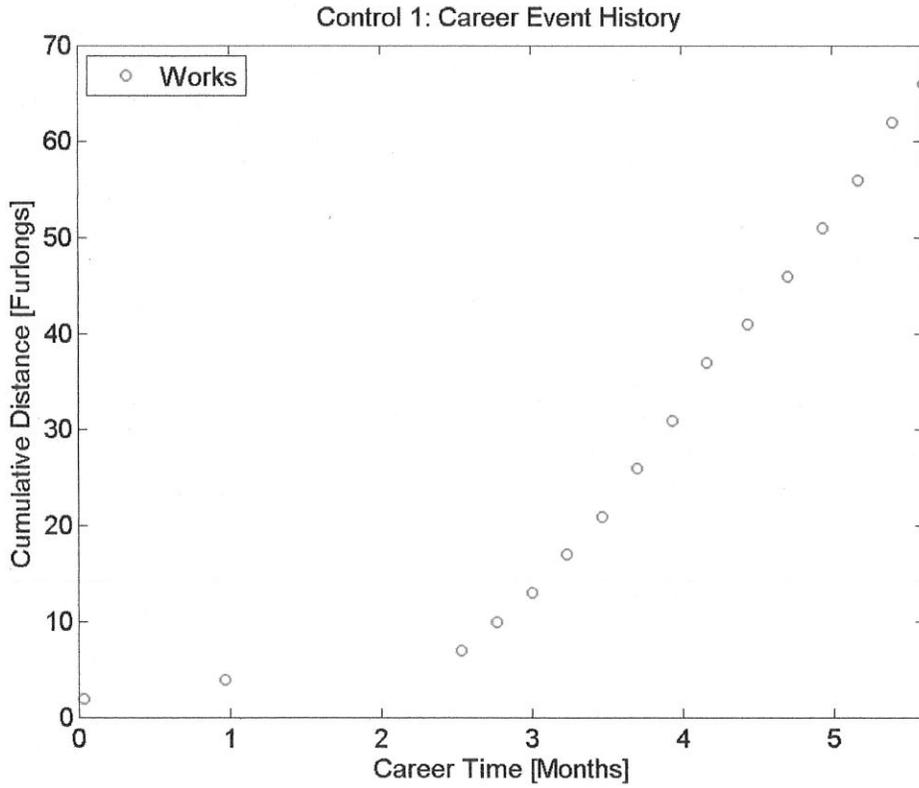
Part 1: Graphical Representation of Individual High-Speed Exercise Histories

Races (filled circles), officially timed high-speed works (open circles), layoffs (line with endcaps, periods of time greater than 60 days in length without a race or timed work), and time of death (X) are illustrated over time (Career Time in months). With each event (race or work), the number of furlongs the horse exercised in that event is added to the number of furlongs exercised in all previous events.

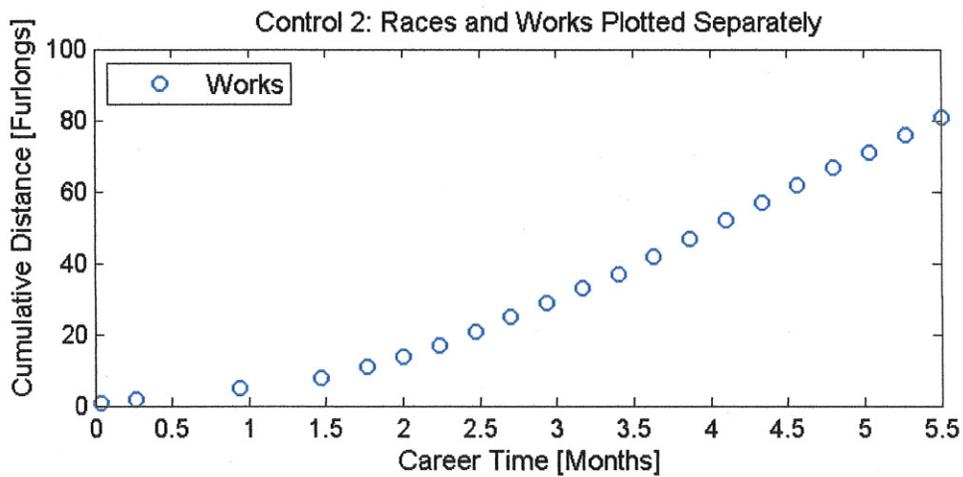
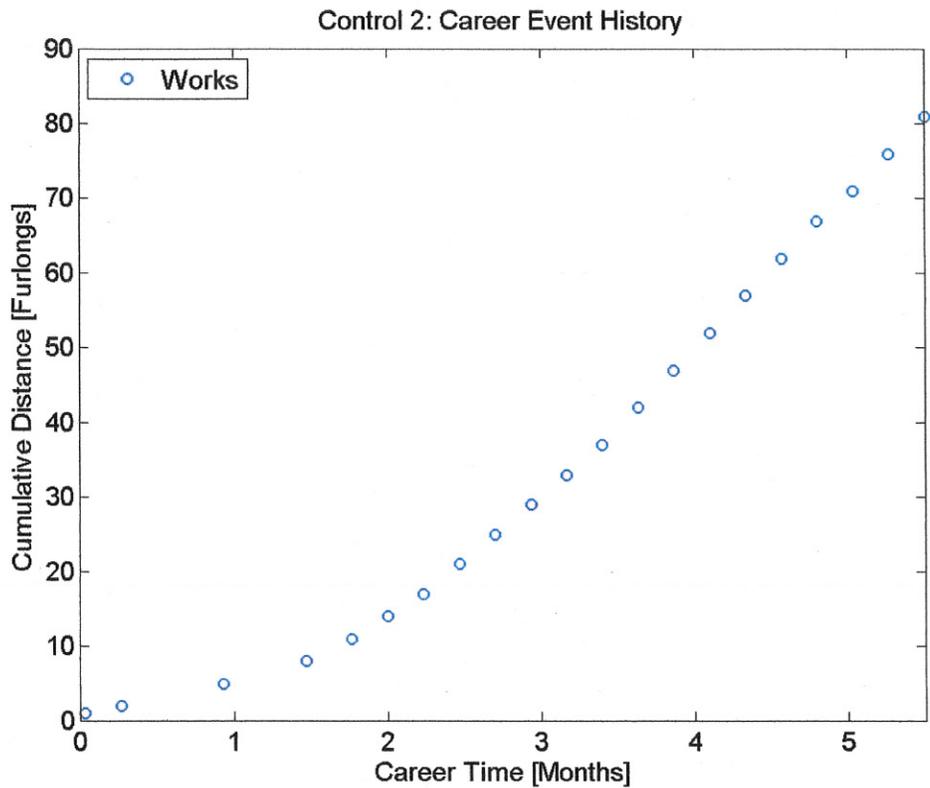
Case Horse High Speed Exercise History



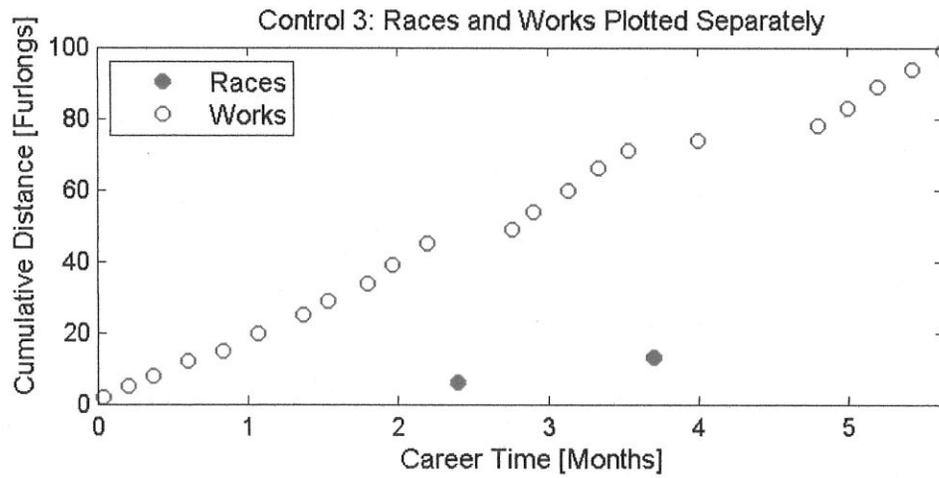
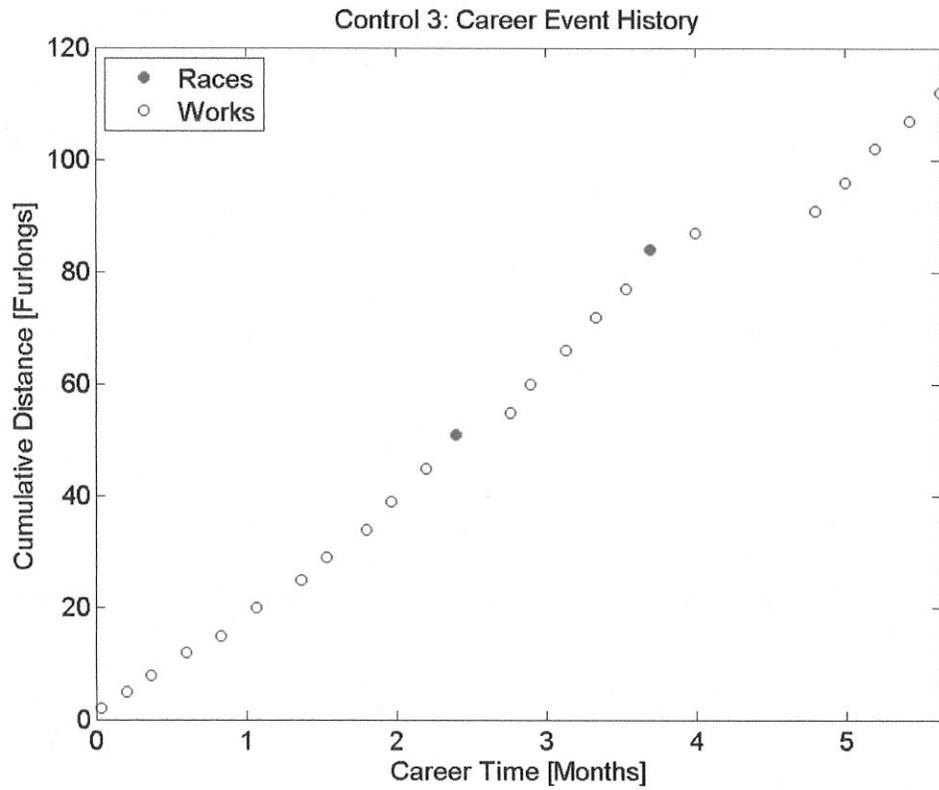
Control 1 High Speed Exercise History



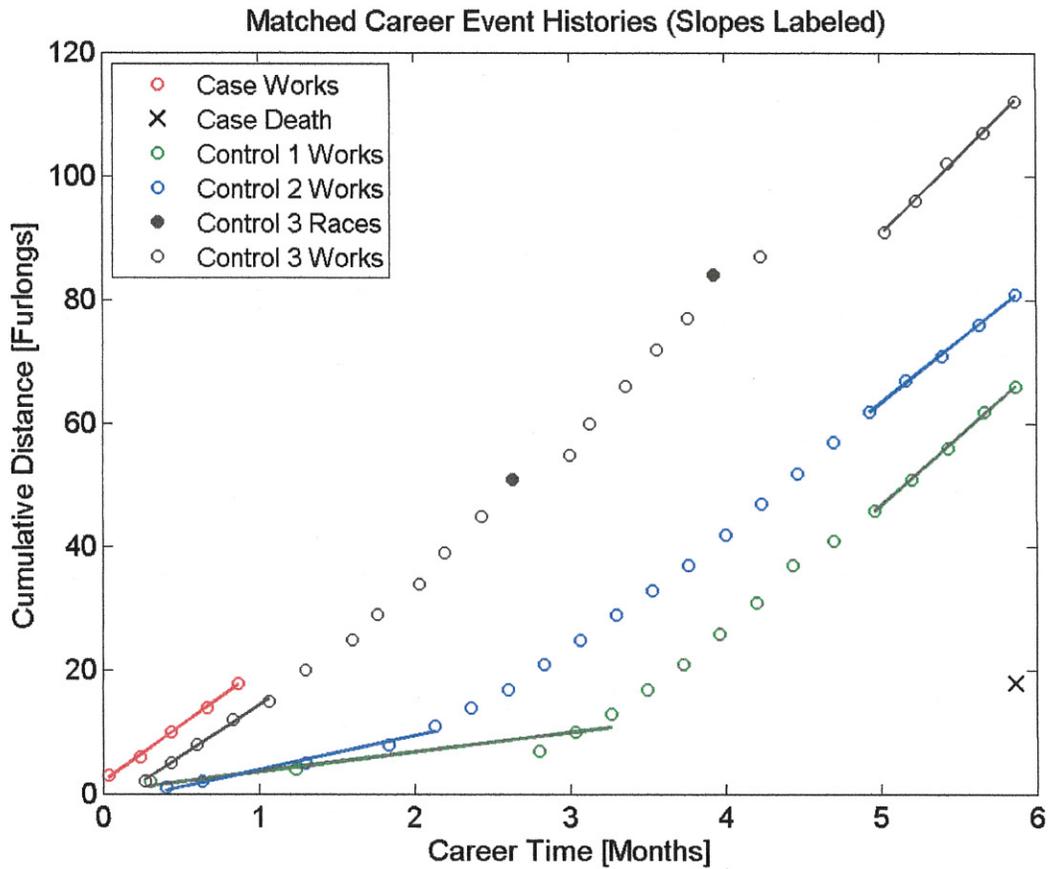
Control 2 High Speed Exercise History



Control 3 High Speed Exercise History



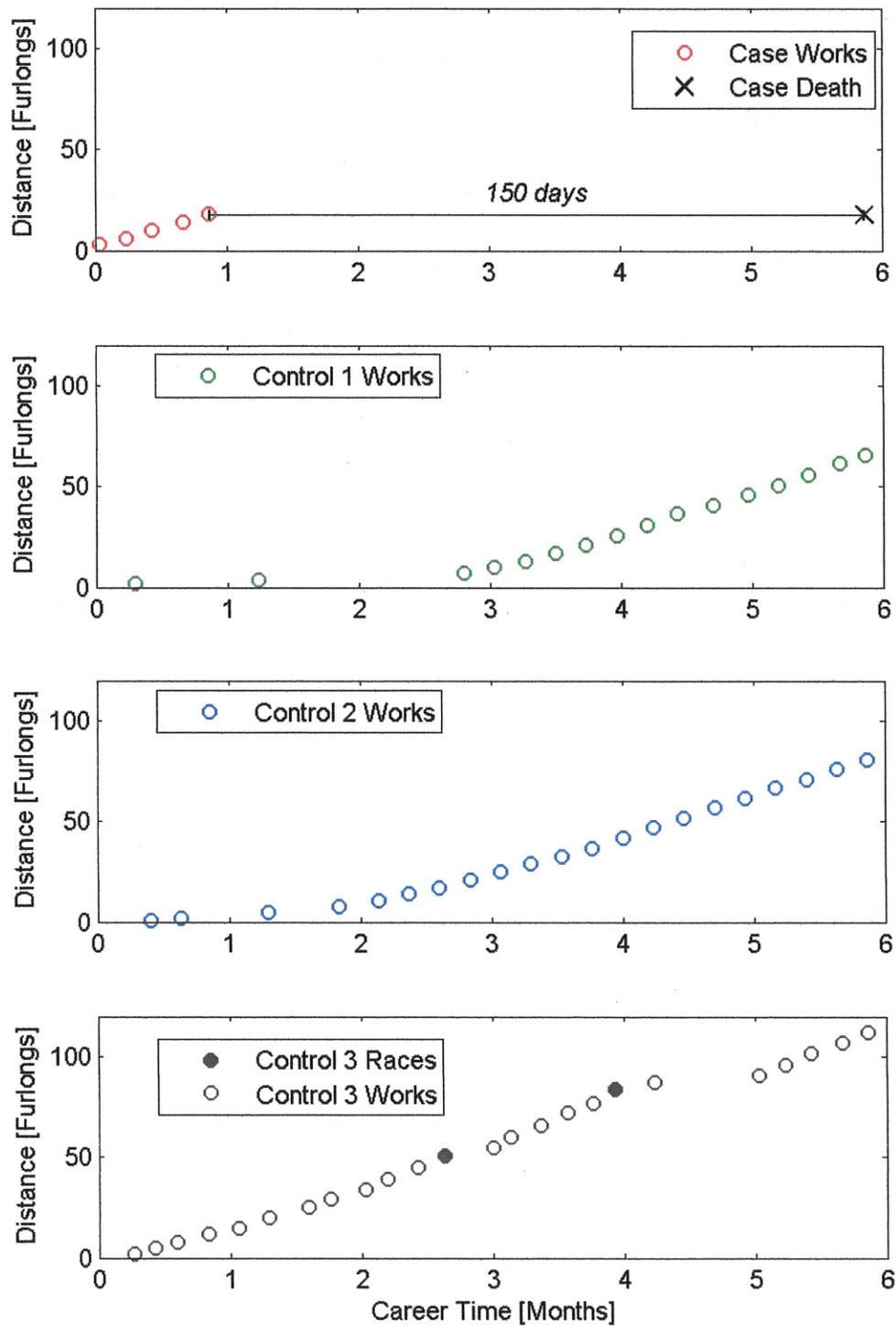
Part 2: Case and Control Horses Plotted Together



Case and Control Horses' exercise event histories are plotted on the same axes. The plots are aligned by the match date (equal to the date of death of Case Horse). Lines segments indicate specific rates of exercise at the start of career, end of career (for Case Horse), and match date (for Control Horses). Event rates are calculated as the slopes of the plots over 2 to 5 events not spanning a layup period, in units of furlongs per month.

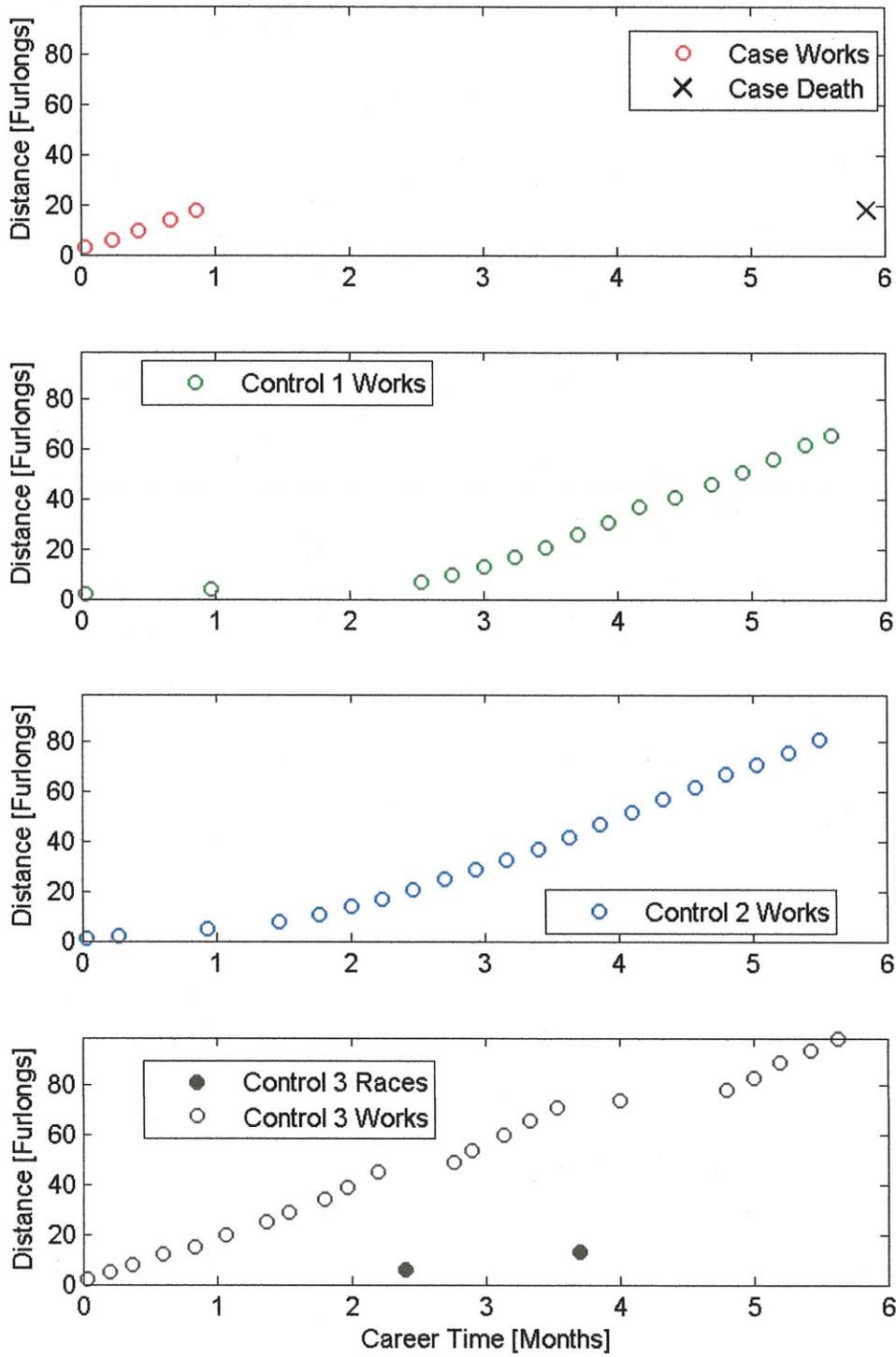
Part 2: Case and Control Horses Plotted Together

Career Event Histories for Case and Controls with Layups



Part 2: Case and Control Horses Plotted Together

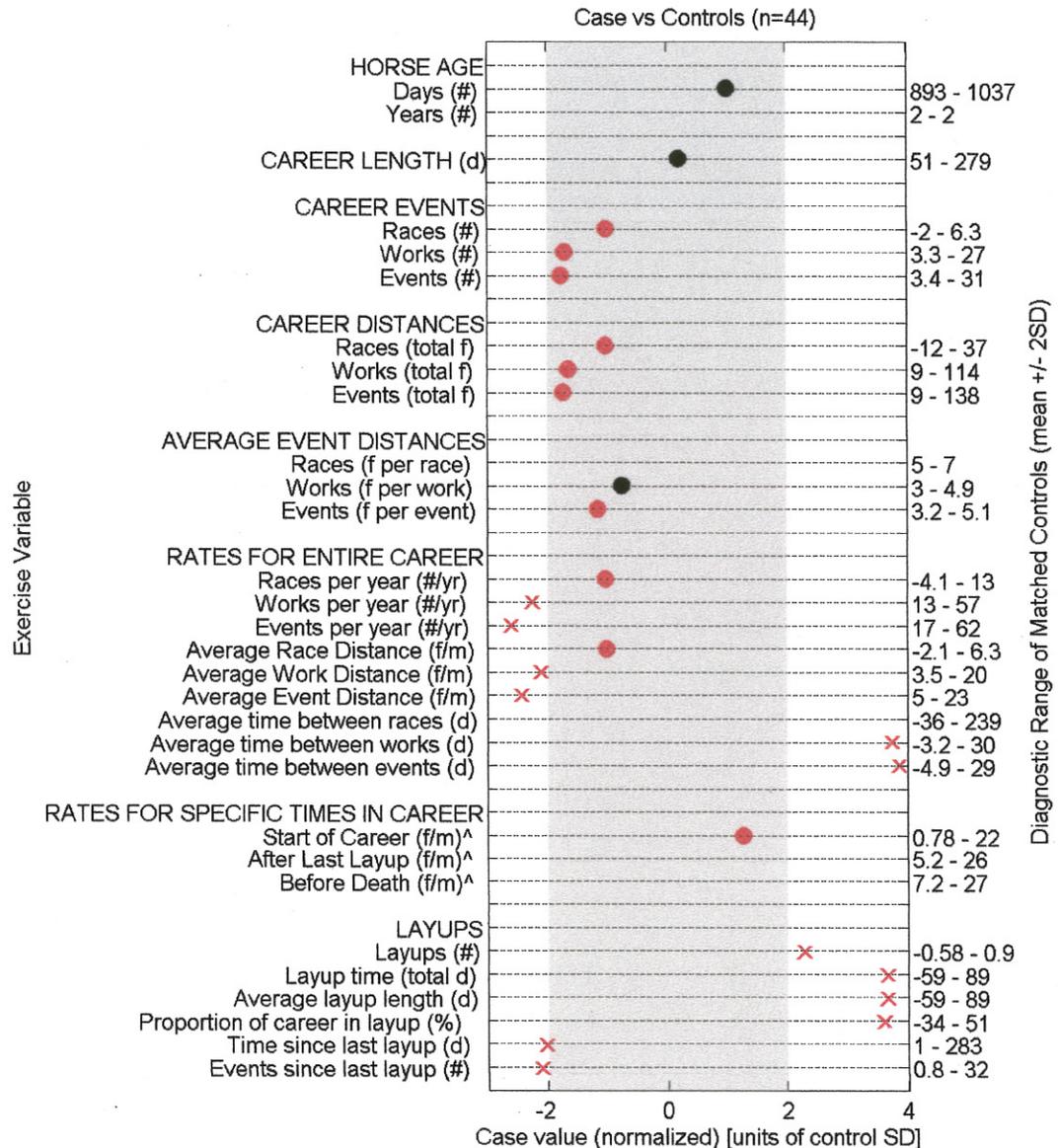
Races and Works Plotted Separately



Part 3: Case Horse's Event History

Date	Race/Work	Fur-longs	Track	Surface	Track Cond.	Time	Age/Sex	Race Class	Earnings	Finish
6/7/2011	W	4.0	SA	Dirt	Fast	:48.20				
6/1/2011	W	4.0	SA	Dirt	Fast	:48.00				
5/25/2011	W	4.0	SA	Dirt	Fast	:48.00				
5/19/2011	W	3.0	SA	Dirt	Fast	:37.60				
5/13/2011	W	3.0	SA	Dirt	Fast	:37.20				
Date	Race/Work	Fur-longs	Track	Surface	Track Cond.	Time	Age/Sex	Race Class	Earnings	Finish
6/7/2011	W	4.0	SA	Dirt	Fast	:48.20				
6/1/2011	W	4.0	SA	Dirt	Fast	:48.00				
5/25/2011	W	4.0	SA	Dirt	Fast	:48.00				
5/19/2011	W	3.0	SA	Dirt	Fast	:37.60				
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6/1/2011	W	4.0	SA	Dirt	Fast	:48.00				
5/25/2011	W	4.0	SA	Dirt	Fast	:48.00				
5/19/2011	W	3.0	SA	Dirt	Fast	:37.60				
5/13/2011	W	3.0	SA	Dirt	Fast	:37.20				

Part 4: Comparison of Exercise Variables between Case Horse and 44 Control Horses (2 year old, male, Thoroughbred)

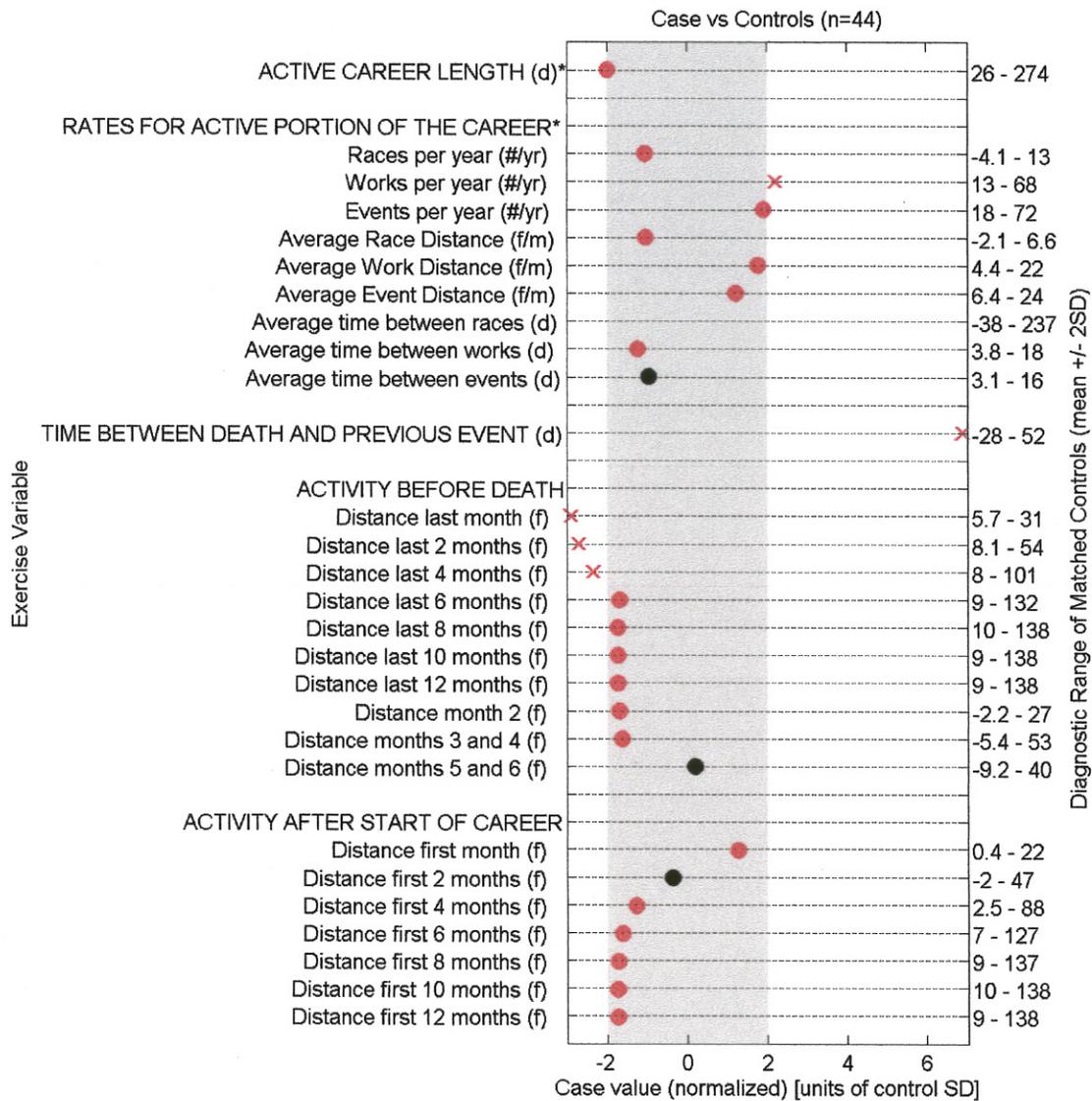


Case Horse values are indicated by black or red symbols: circles indicate values considered normal for 95% of 2 year old, male, Thoroughbreds (n=44) (gray region) (black and red indicate within 1 and 2 SD, respectively, of mean value of controls), X's indicate values outside of the normal range. Two and 3 year old case horses are also matched to control horses by the quarter in which the case horse died (Jan-Mar, Apr-Jun, Jul-Sep, Oct-Dec). Variables that are not calculable are not plotted (e.g. time between races for a horse with zero events). f=furlongs; yr=year; m=month; d=days.

^Rates are calculated over 2 to 5 events.

*Active Career Length is the career length excluding the time during layups.

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**California Animal Health & Food Safety
Laboratory System**

105 W. Central Avenue
San Bernardino, CA 92408-2113
(909) 383-4287

**Addendum
Version 3**

*This report supersedes all
previous reports for this case*

CAHFS Case #: Horse #1

Referral #: [REDACTED]

Date Collected: 11/04/2011

Date Received: 11/04/2011

Case Coordinator: F.A. Uzal, DVM,
MSc, PhD, Dipl ACVP

Electronically Signed and Authorized

By: Uzal, Francisco A. on 2/12/2013
8:02:40AM

Email To:
ARTHUR, RICK M
RMARTHUR@UCDAVIS.EDU

Incident Track:
HOLLYWOOD PARK RACETRACK
1050 S PRAIRIE AVE
Inglewood, CA 90301

Comments: CHRB

Case Contacts

Bill To	CALIFORNIA HORSE RACING BOARD	916-263-6000	1010 HURLEY WAY SUITE 300 ATTENTION: ACCOUNTS PAYABLE SACRAMENTO, CA 95825
Owner	[REDACTED]	[REDACTED]	[REDACTED]
Report To	UZAL, FRANCISCO	909-383-4287	CAHFS 105 WEST CENTRAL SAN BERNARDINO, CA 92408
Report To	ARTHUR, RICK M	626-665-8130	311 E GRAND VIEW AVE SIERRA MADRE, CA 91024
Attending Vet	CARPENTER, RYAN	909-980-0170	10542 WALKER Norwalk, CA 90650
Submitter	BAILEY, JILL	626-574-6355	285 W HUNTINGTON DR SANTA ANITA RACETRACK ARCADIA, CA 91006
Trainer	BAFFERT, BOB	714-969-2377	6122 EAGLECREST DRIVE Huntington Beach, CA 92648

CHRB - Related Information

Horse's Name:	[REDACTED]	Human Injury?	N
Tattoo:	[REDACTED]	Death Related to:	Training
Age:	2.00 Years	Track Surface:	Synthetic
Gender:	Male	Location on Track:	1/2 pole
Taxonomy:	Thoroughbred Horse	Insured?	N

Medications: "none" As Written By The Veterinarian;

Laboratory Findings/Diagnosis

Thoroughbred colt; history of sudden death during exercise:

1-Inflammation of atrio-ventricular node of the heart, eosinophilic and pleocellular, focal, mild to moderate. Etiology: undetermined

Cause of death: likely failure of cardiac conduction system

Other findings:

- 1-Pulmonary hemorrhage, dorsal areas of both lungs, acute, diffuse, severe
- 2-No other significant gross or histological abnormalities observed
- 3-No significant bacterial pathogens isolated from liver or lung
- 4-Heavy metal screen unremarkable
- 5-Normal brain cholinesterase activity
- 6-No toxic compounds detected in stomach content by GCMS or LCMS
- 7-Negative Avicides screen

Case Summary

11/6/11: The cause of death of this horse was not evident on gross examination. I specifically looked for (but I could not find any evidence of) skull and cervical fractures, and gross changes in the heart and large vessels. The pulmonary hemorrhage was severe, but at this stage I cannot be certain if this was cause or consequence of the collapse of this horse. A full diagnostic work up is currently under way (including bacteriology, histology and toxicology). I have also stored multiple samples from this horse should additional samples be required for further testing in the future. I will keep you posted with our results, but in the meantime, please do not hesitate to contact me if you would like to discuss any aspects of this report.

11/10/11: This horse had focal inflammation of the atrio ventricular node within the right ventricle of the heart. This change was relatively subtle and it was detected only because a full cardiac examination (including 11 critical areas of the heart) was performed. This is the second such case I have seen in a few months and, although the etiology of the problem could not be determined, it stresses the need for a complete cardiac examination in horses with sudden death, as the lesion was very focal. The pulmonary hemorrhage was very acute (no hemosiderin pigment was seen within the lungs), which suggests that this was likely a consequence rather than the cause of the sudden death. This concludes testing in this case.

11/23/11: GCMS did not detect the presence of toxic compounds in stomach content of this horse. This concludes testing in this case.

2/21/12: Additional toxicology performed by our Davis Toxicology Laboratory, including LCMS and avicides screen, was unrewarding. This concludes testing in this case.

Clinical History

Horse was galloping on the main track, rider pulled the horse up, he became weak and fell over and was dead.

Additional request: Owner would like a complete necropsy and toxicology - please bill the owner.

Gross Observations

Necropsy of a [redacted] Thoroughbred [redacted] began at 2.45 pm on November 4th, 2011.

The carcass was in good nutritional condition, with adequate amount of fat reserves, well fleshed and in mild state of post-mortem decomposition.

There were many variable size (~ 1- 4cm diameter) shallow ulcers with raised edges on the esophageal portion of the gastric mucosa, close to the margo plicatus.

There was diffuse, severe hemorrhage of the dorsal 1/3 of both lungs and multifocal petechiae on the anteroventral portions of both lungs. There was a large amount of stable forth in trachea and lower airways.

No other significant gross abnormalities were observed in the rest of the carcass. In particular, paramedial section of head and neck did not reveal fractures or gross changes in brain, spinal cord or associated tissues. Detailed examination of the heart did not reveal significant gross changes either. Examination of both front legs did not reveal fractures or significant degenerative joint disease.

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
[redacted]	[redacted]	Liver Tissue	Mixed flora Rare
[redacted]	[redacted]	Lung Tissue	Mixed flora Sm#

Histology

Eleven sections of heart (including: right ventricular free wall with right atrial posterior wall, right coronary artery, and parietal leaflet of the tricuspid valve; right ventricular outflow tract including the pulmonic valve and the pulmonary artery;

right atrial appendage; sinoatrial node region; left atrial appendage; left ventricular free wall with left atrium; left coronary artery, and parietal leaflet of the mitral valve; anterior and posterior papillary muscle of the left ventricle; atrioventricular node region; left ventricular outflow tract including the aortic valve and aorta) are examined.

Changes found:

1-Atrio-ventricular node: mild multifocal pleocellular (eosinophils, neutrophils, lymphocytes) interstitial infiltration. Blood vessels are also engorged with these cells.

Addendum (11/9/11): Sections of lung (multiple areas of both lungs), kidney, liver, spleen, adrenal gland, skeletal muscle, sciatic nerve, small intestine, colon and stomach are examined.

Changes found:

1-Lung: hemorrhage, interstitial and alveolar, acute, diffuse and interstitial and alveolar edema

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

The submitted liver had the listed metals, including selenium, in acceptable concentrations for horses.

The submitted brain had an acceptable cholinesterase activity for horses (adequate > 2.1 uM/g/min).

No toxic compounds were detected on the submitted stomach contents by our gas chromatography - mass spectrometry (GC/MS) organic chemical screen. The GC/MS screen is designed to potentially detect a large number of organic compounds belonging to diverse chemical classes (pesticides, environmental contaminants, drugs and natural products). Control matrices were obtained to compare analytical results with those obtained from the submitted specimen. No unexpected chemicals were identified. Within the limits of the samples tested and the analytical procedures performed, chemical contamination of the submitted specimens appears unlikely.

No toxic compounds were detected in the submitted specimens (urine and liver) by our accurate mass liquid chromatography - mass spectrometry (LC-MS) organic chemical screen. The LC-MS screen is designed to potentially detect a large number of organic compounds belonging to diverse chemical classes (pesticides, drugs, natural products, and other toxins). Control matrices were obtained to compare analytical results with those obtained from the submitted specimen. No unexpected chemicals were identified. Within the limits of the samples tested and the analytical procedures performed, chemical contamination of the submitted specimens appears unlikely.

The liver also did not contain avitrol or staricide at or above the stated reporting limit.

The submitted specimen contained none of the listed anticoagulant rodenticides in a concentration greater than the stated reporting limits.

ANTICOAGULANT SCREEN

Animal/Source	Specimen	Specimen Type	Analyte	Result	Units	Rep. Limit	Units
[REDACTED]	[REDACTED]	Liver Tissue	Brodifacoum	Not Detected	ppm	0.01	ppm
			Bromadiolone	Not Detected	ppm	0.05	ppm
			Chlorophacinone	Not Detected	ppm	0.25	ppm

Coumachlor	Not Detected	ppm	0.05	ppm
Difethialone	Not Detected	ppm	0.25	ppm
Diphacinone	Not Detected	ppm	0.25	ppm
Warfarin	Not Detected	ppm	0.05	ppm

AVICIDES

Animal/Source	Specimen	Specimen Type			
[REDACTED]	[REDACTED]	Liver Tissue			
Analyte		Result	Units	Rep. Limit	Units
AVITROL		Not Detected	ppb	50 ppb	ppb
STARLICIDE		Not Detected	ppb	50 ppb	ppb

CHOLINESTERASE

Animal/Source	Specimen	Specimen Type	Results	Units	Rep. Limit	Ref. Range
[REDACTED]	[REDACTED]	Brain Tissue	4.9	uM/g/min	0.1	2.1-4.7

GCMS Screen

Animal/Source	Specimen	Specimen Type			
[REDACTED]	[REDACTED]	Stomach Contents			
Analyte		Result	Units	Rep. Limit	Units
negative		See comment under Toxicology	NA	NA	NA

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type				
[REDACTED]	[REDACTED]	Liver Tissue				
Analyte		Result	Units	Rep. Limit	Units	Ref. Range
Lead		Not Detected	PPM	1.000	PPM	<3.0
Manganese		1.7	PPM	0.040	PPM	1-6
Iron		190	PPM	0.200	PPM	100-300
Mercury		Not Detected	PPM	1.000	PPM	<1.0
Arsenic		Not Detected	PPM	1.000	PPM	<1.0
Molybdenum		0.62	PPM	0.400	PPM	<2.0
Zinc		36	PPM	0.100	PPM	40-125
Copper		4.3	PPM	0.100	PPM	4-7.5
Cadmium		Not Detected	ppm	0.300	ppm	<20

ORGANIC COMPND BY REQUEST

Animal/Source	Specimen	Specimen Type	Analyte	Result	Units	Rep. Limit	Units
[REDACTED]	[REDACTED]	Liver Tissue	LC-MS Screen	See comment under Toxicology		N/A	

Animal/Source	Specimen	Specimen Type	Analyte	Result	Units	Rep. Limit	Units
[REDACTED]	[REDACTED]	Urine	LC-MS Screen	See comment under Toxicology		N/A	

SELENIUM - TISSUE/OTHER

Animal/Source	Specimen	Specimen Type	Results	Units	Rep. Limit	Ref. Range
[REDACTED]	[REDACTED]	Liver Tissue	0.47	ppm	0.020 ppm	0.3-1.0