

Report on the 2014 Saratoga Race Course Meet Racing & Training Fatalities



**New York Equine Safety Review Board
November 9, 2015**

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I. Introduction:

The purpose of this report is to provide a summary review of the equine fatalities that occurred at NYRA facilities during the 2014 Saratoga race meet in an effort to update the public with regard to the initial Commission findings reported earlier.¹

The Equine Safety Review Board (ESRB) was created in 2012 following a recommendation by the New York Task Force on Racehorse Health and Safety.² The purpose of the ESRB is to review circumstances that may contribute to equine fatalities and use this information to educate stakeholders and design safety measures to prevent or limit equine fatalities in the future. The membership of the ESRB tasked to review fatalities at NYRA racetracks includes: NYRA Safety Steward Hugh Gallagher; NYRA Vice President of Facilities and Racing Surfaces Glen Kozak; NYRA Chief Examining Veterinarian Anthony Verderosa, DVM; and New York State Gaming Commission Equine Medical Director Scott E. Palmer, VMD, who serves as Chair.

This report is not intended to be an exhaustive public recounting of the detail of individual cases, which would be counterproductive to the core mission of the program. This review board is not an adjudicatory body. Rather the ESRB is focused upon education and development of best practices. The ESRB protocols and procedures are continually evolving in response to the challenges and opportunities of the mission.

II. Overview:

According to [The Jockey Club's Equine Injury Database](#), the national average for North American Thoroughbred racing fatalities in 2014 was 1.89/1,000 starts. The 2014 Saratoga racing fatality rate was 1.2/1,000 starts, which is well below the national average.

Although The Jockey Club does not chart training or non-racing equine fatalities, the New York State Gaming Commission records all equine incidents, injuries and fatalities at New York race tracks in the interest of transparency and as an effort to provide the most inclusive database possible to identify problem areas and to evaluate interventions designed to reduce injuries of all types in the future.

There were approximately 2,427 horses stabled in the Saratoga Barn areas during the 2014 Saratoga Race Course Meet. There were 3,289 starts during this 40-day meet. There were a total of 12 equine fatalities, which may be placed into three general categories:

- Three racing and three training musculoskeletal fractures of the distal limb
- One racing, one training and one non-racing accidental deaths due to falls

¹ Statement from NYS Equine Medical Director Scott E. Palmer, VMD regarding the increased number of equine fatalities at the 2014 Saratoga Meet (August 29, 2014), <https://www.gaming.ny.gov/pdf/08.29.14.EMDStatementReSaratoga.pdf>

² Official Report – Investigation of Equine Fatalities at Aqueduct 2011-2012 Fall/Winter Meet. <http://www.governor.ny.gov/sites/governor.ny.gov/files/archive/assets/documents/Report.pdf>

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- Three sudden death (presumed cardiac) episodes

The racing fractures included one carpal slab fracture and two biaxial proximal sesamoid bone fractures. The training fractures included one biaxial proximal sesamoid bone fracture, one mid-shaft cannon bone fracture and one horse with both a condylar and a proximal sesamoid bone fracture. Two horses experienced traumatic falls that resulted in cervical fractures. One of these horses was being led in-hand from the racetrack to the paddock. Within a few steps of leaving the racetrack and entering the horse path, she unexpectedly reared up, fell over the fence at the gap and fractured the third cervical vertebrae. The other cervical fracture occurred during a pitch rotation fall over a steeplechase fence. The third accident occurred when a horse unseated its rider and ran loose on the racetrack during training hours. This horse fell over the outside rail while leaving the racetrack at a gallop and sustained a lumbar fracture. All three sudden death episodes occurred near the finish of the race or as the horses were galloping out after the race or returning to the unsaddling area in front of the grandstand.

III. Individual Equine Fatalities:

A. Fatal Distal Limb Musculoskeletal Injuries (DLMSI):

1. 'Lifeguard on Duty,' 4-year-old filly, trained by Anthony Dutrow:

Incident: On July 24, 2014, 'Lifeguard on Duty' sustained a fracture of her right front fetlock at the 3/8 pole during a morning training workout. The track condition at that time was rated as fast. She was pulled up by the exercise rider and ambulated back to the barn where x-rays revealed biaxial proximal sesamoid bone fractures. Humane euthanasia was performed by Luis Castro, DVM, due to the degree of injury and a poor prognosis for treatment.

Medication: A review of the medical records indicated that the left and right front fetlock joints were injected with methylprednisolone acetate on July 18, 2014 (see below). She was treated with furosemide prior the breeze on July 24, 2015. Following her injury, she was treated with analgesic medication prior to humane euthanasia.

Background: 'Lifeguard on Duty' did not race as a 2-year-old. She raced three times as a 3-year-old (September 22, 2013; October 21, 2013 and October 30, 2013). There was a 7-month gap between the October 30, 2013 race and her next breeze on May 29, 2014. Dutrow indicated that this filly showed promise on the turf early in her career. The owner wanted to race her in New York and elected not to send her to Florida to train for the winter months. For that reason she was rested during the winter and was returned to training with a plan to race on the turf in New York in the spring. There is no evidence that this break in training had anything to do with her soundness.

She breezed four furlongs on July 14, 2014. On July 16, 2014 radiographs were obtained of both front fetlocks. A small chip fracture was found in the left front

fetlock. No abnormalities were found in the right front fetlock. Based upon a recommendation from a veterinary surgeon, both front fetlocks were injected with methylprednisolone acetate and hyaluronic acid on July 18, 2014. Depending upon their size, location within the joint and degree of chronicity, small fetlock chip fractures may be appropriately managed with conservative medical therapy to reduce inflammation and improve joint health rather than elective surgical intervention, as was the case with this filly.

Necropsy: A necropsy was not performed on this filly nor was a blood sample obtained for testing.³

Interview: Dutrow stated that he asked his veterinarian to radiograph this filly's front fetlocks because he was concerned about the way that she came out of her breeze on July 14. His veterinarians advised him to treat the fetlocks conservatively with medication (see above) and she responded well to that treatment. He indicated that there were no signs of soreness or lameness prior to the workout in which she was injured.

2. 'Father John's Pride,' 3-year-old colt, trained by Ed Kenneally:

Incident: On July 28, 2014, 'Father John's Pride' sustained a fracture of his left front fetlock at the 5/16 pole during a 5 1/2 furlong allowance race on the Saratoga main track. The track condition at that time was rated as sloppy. 'Father John's Pride' was pulled up by the jockey, Irad Ortiz Jr., and the left front leg was placed in a splint. 'Father John's Pride' was ambulated off the racetrack. Radiographs of the left front fetlock revealed a biaxial proximal sesamoid fracture. Because of the extensive nature of the injuries and the poor prognosis for treatment, Dr. Verderosa performed humane euthanasia.

Medication: 'Father John's Pride' was treated with Flunixin, vitamin C and oral electrolytes the day before the race. Furosemide was administered on race day. No intra-articular corticosteroid injections were performed on this horse prior to the race. Blood tests indicated no overages of therapeutic medications or the presence of prohibited substances.

Background: 'Father John's Pride' was in regular training for 10 months leading up to the incident race. He raced twice as a 2-year-old and three times as a 3-year-old before the incident race on July 28, 2014. He raced in allowance company in his last two races. No signs of soreness or lameness were detected at the time of the pre-race examination on race day.

Necropsy: Necropsy of this horse confirmed biaxial proximal sesamoid bone fractures in the left forelimb as well as subchondral bone sclerosis in the medial condyles of the left and right third metacarpal bones. The fractured sesamoid bones had a continuous sclerotic bone bridge from the articular to

³ At the time of this incident, only NYRA racing fatalities and other fatalities of uncertain cause of death were sampled for blood testing at the New York Drug Testing and Research Laboratory and sent to Cornell for a postmortem examination.

the palmar surface. This type of bone remodeling has been associated with proximal sesamoid bone fractures, but is not detectable with conventional diagnostic tests (e.g. radiography).

Interview: Kenneally felt that ‘Father John’s Pride’ was sound going into this race. He noted that the track was muddy and believed that may have had something to do with the fracture. Kenneally’s comments reflect a commonly-held subjective opinion that a muddy racetrack puts horses at increased risk of injury. However, two independent New York research studies conducted in 1986 and 1991 indicated that race track condition has no influence on the incidence of fractures or soft tissue injuries.^{i ii}

3. ‘Ludicrous,’ 2-year-old colt trained by Chad Brown:

Incident: On August 23, 2014, ‘Ludicrous’ sustained a fracture of his right front leg at the 1/16 pole during a six-furlong maiden race on the Saratoga main track. The track condition was rated as good. He was pulled up by the jockey, Irad Ortiz, Jr., who dismounted immediately. Sarah Hinchliffe, DVM examined him on the track and performed humane euthanasia because of the severe nature of the injury and a poor prognosis for recovery.

Medication: No intra-articular corticosteroid injections were performed on this horse within 30 days of this race. Dr. Castro administered phenylbutazone 48 hours prior to the race and electrolytes and flunixin 24 hours before the race. Furosemide was administered on race day. Blood tests indicated no overages of therapeutic medications or the presence of prohibited substances, other than pentobarbital and phenytoin, drugs that were used to perform humane euthanasia.

Background: Brown purchased this colt at a 2-year-old in training sale two months prior to the incident race. ‘Ludicrous’ had only five recorded works prior to his purchase by Mr. Robert LePenta at the sale. The injury occurred in his first race in the United States. No signs of soreness or lameness were detected at the time of the pre-race examination on race day.

Necropsy: Necropsy revealed a biaxial proximal sesamoid bone fracture of the right forelimb. There was also rupture of the medial branch of the suspensory ligament, the medial collateral ligament and the joint capsule. The proximal sesamoid bones in the opposite forelimb were diffusely sclerotic, a finding that has been implicated as a predisposing factor for proximal sesamoid bone fractures. The advanced degree of sclerosis in the proximal sesamoid bones of this horse is inconsistent with only 12 weeks of training. The degree of sclerosis found in the proximal sesamoid bones of this horse suggests that he may have had a number of undocumented⁴ works leading up to the sale.

⁴ The fact that this colt likely had undocumented workouts while training in Europe does not indicate an inappropriate practice as there is no requirement for European trainers to report timed workouts to The Jockey Club.

Interview: Brown indicated that he had been training this horse for only two months and this was his first race. He had no indication of any soundness concerns leading up to this race.

4. 'Elena Strikes,' 3-year-old filly trained by Todd Pletcher:

Incident: On August 23, 2014, 'Elena Strikes' was training during a routine morning workout on the Belmont Park⁵ training track when she sustained a fracture of the left front leg at the 5/8 pole. The track condition was rated as good. Subsequent to an examination by Keith Bogatch, DVM, humane euthanasia was performed due to the extensive nature of the injury and a poor prognosis for successful treatment.

Medication: No medication (including furosemide) was given to this filly within a week prior to this training workout. No intra-articular corticosteroid injections were performed on this horse within 30 days of this workout.

Background: 'Elena Strikes' raced three times as a 2-year-old and five times as a 3-year old prior to the incident race, all on the dirt. She raced in high quality races throughout her career. In her last start on July 30, 2014 she raced on the turf for the first time. She was bumped at the start, was carried wide, but finished fifth. The incident breeze on August 23 was her first timed workout since the race on July 30.

Necropsy: Necropsy revealed a comminuted fracture of the left third metacarpal bone. There was evidence of sclerosis in the distal epiphysis of the left third metacarpal bone. There were chronic marginal chip fractures found in the left carpus as well. There was subchondral bone collapse and necrosis in the epiphysis of the right third metacarpal bone. Although these bone changes in the distal (bottom) portion of third metacarpal bones have been associated with condylar fractures, they do not predispose to fractures of the diaphysis (mid-shaft) of the third metacarpal bone, as was the case with 'Elena Strikes.' There was no evidence of pre-existing stress fractures in the diaphysis of this bone where the fractures occurred. Nor was there evidence of stress fractures in the opposite forelimb.

Interview: Pletcher indicated that he thought this filly was fine leading up to the workout. As a matter of stable routine, Pletcher or his assistant jogs all of his horses for soundness before they go out to the track to train. Pletcher said he received a report from his assistant trainer at Belmont Park, Byron Hughes, that the surface of the training track was deep and not holding together well as horses traveled over it that morning. Regardless, neither Pletcher nor other trainers declined to train over that surface.

5. 'Kamarius,' 2-year-old colt trained by Todd Pletcher:

⁵ Although 'Elena Strikes' was not injured at the Saratoga racetrack, she is included in this report because she was training at Belmont Park in preparation to race at Saratoga.

Incident: On August 23, 2014, 'Kamarius' sustained a comminuted cannon bone and proximal sesamoid bone fracture of the right forelimb following completion of a four-furlong breeze on the Oklahoma training track. The track condition at that time was rated as good. The injured limb was splinted and 'Kamarius' was removed from the track in an ambulance. 'Kamarius' was examined by Bill Yarborough, DVM and humanely euthanized because of the severe nature of the injury and a poor prognosis for recovery.

Medication: No intra-articular corticosteroid injections were performed on this horse within 30 days of this workout. Furosemide was administered prior to a breeze on August 8, 2014 and again prior to her breeze on August 23, 2014. No other medications were administered within eight days of this workout.

Background: 'Kamarius' won a maiden special weight race on July 19, 2014 on the turf at Saratoga with a very strong finish, then breezed routinely (three times) prior to the incident work on August 23. This horse had been in training for a total of five months prior to the incident workout. A review of the medical records provided by Dr. Yarborough indicated that inflammation was diagnosed in the left front fetlock on August 2 following the breeze on August 1 and was treated with systemic anti-inflammatory medication (phenylbutazone and naquasone). There was no indication of lameness in the right front fetlock prior to the incident.

Necropsy: A necropsy was not performed on this filly nor was a blood sample obtained for testing.⁶

Interview: The assistant trainer, Tristen Barry, reported that 'Kamarius' had run twice in his career and was training for a stakes race when this injury occurred.

6. 'Divine Guidance,' 2-year-old filly trained by Rodrigo Ubillo:

Incident: On August 27, 2014, 'Divine Guidance' sustained a carpal fracture during a maiden race of five and one-half furlongs on a firm turf course. She finished the race but was pulled up after the wire by jockey W.A. Garcia with lameness of the right forelimb. She was ambulated to the barn and examined by James Hunt, DVM. Radiographs of the right carpus revealed a comminuted (many pieces) sagittal fracture of the right radial carpal bone and a large chip fracture of the proximal border of the third carpal bone. Because of the poor prognosis associated with this type of fracture, humane euthanasia was performed by Dr. Hunt.

Medication: Dr. Hunt administered phenylbutazone, polysulfated glycosaminoglycan and hyaluronic Acid 48 hours before the race and flunixin 24 hours prior to the race. No furosemide was administered to this filly on race

⁶ At the time of this incident, only NYRA racing fatalities and other fatalities of uncertain cause of death were sampled for blood testing at the New York Drug Testing and Research Laboratory and sent to Cornell for a postmortem examination.

day. No therapeutic overages or prohibited substances were found in the blood of this horse. No intra-articular corticosteroid injections were performed on this horse within 30 days of the race.

Background: 'Divine Guidance' had only five recorded workouts (two at Belmont and three at Saratoga) prior to the incident race at Saratoga on August 27, 2014. Four of these works were three-furlong breezes with only one breeze at four furlongs. No signs of soreness or lameness were detected at the time of the pre-race examination on race day.

Necropsy: Necropsy revealed severe degenerative arthritic changes in the right carpus and elbow that were not present in the opposite limb. Advanced arthritic changes in a two-year-old filly are unusual, particularly one that had so few high-speed workouts leading up to the incident race. This bone remodeling represents a healing response to a previous injury.

Interview: Ubillo indicated that this filly was anxious and ran this race in a very fast time with early fractions throughout the first half mile. He also indicated that although she did not have bad conformation, she had some arthritis in the right carpus. 'Divine Guidance' trained at a farm before shipping into Belmont Park in June of 2014. This is the explanation for the apparent lack of recorded workouts prior to the incident race.⁷

B. Accidental Deaths:

1. 'Double Gold,' 3-year-old gelding trained by Luis Miranda:

Incident: On the morning of July 25, 2014, 'Double Gold' was training on the main track at Saratoga and became startled. He unseated the rider and galloped loose on the racetrack. As he attempted to enter the gap in the backstretch to leave the racetrack, he failed to safely negotiate the turn. NYRA outriders and other track personnel attempted to catch this horse and prevent the injury but were unable to do so. His momentum carried him over the outside safety rail and he fell into a drainage culvert, causing a spinal fracture that resulted in a bilateral hind limb paralysis. Humane euthanasia was performed by Greg Bennett, DVM due to the poor prognosis for this type of injury.

Medication: A review of the medical records indicated that flunixin, vitamins and electrolytes were administered 15 days prior to this breeze. None of the medication administered to this horse would have been present at therapeutic levels at the time of this training effort.

Background: Two horses that were breezing on the track as a set startled 'Double Gold' and caused the rider to be unseated (see Interview below). This

⁷ The fact that this filly likely had undocumented workouts while training on the farm does not indicate an inappropriate practice as there is no requirement for trainers at training centers to report timed workouts to The Jockey Club.

event caused him to run loose and this led to the fall at the gap in the backstretch of the racetrack.

Necropsy: A necropsy was not performed on this gelding nor was a blood sample obtained for testing.⁸

Interview: Miranda indicated that this horse was not an unusually excitable or difficult horse to ride, but that a new exercise rider was on him the morning of this gallop when two horses that were breezing came along side him. He was spooked, and the exercise rider lost his balance and fell onto the track. He indicated that 'Double Gold' was a good horse that was scheduled to race the following day.

2. 'Lavender Road,' 3-year-old filly trained by Abigail Adsit:

Incident: On July 30, 2014 jockey Roberto Alvarado, Jr. did not like the way this filly was warming-up prior to the race. She was not responsive to his aides and did not want to gallop. He rode 'Lavender Road' to the gate, dismounted and explained his concerns to Dr. Verderosa who scratched the horse. 'Lavender Road' was returned to the pony rider and taken back to the gap in the racetrack leading to the paddock. 'Lavender Road' was then handed to a groom. Within a few strides of entering the horse path, she reared up and fell backwards, striking the outside rail at the gap. She was able to rise, but was unable to remain standing and fell repeatedly. She was treated for acute trauma, myositis and possible heat exhaustion and shipped to the Saratoga Springs Road & Riddle Equine Hospital for further evaluation and treatment by Dr. Travis Tull. During her stay in the hospital, and despite aggressive treatment for trauma and shock, she was unable to rise. Cervical radiographs revealed a fracture of the seventh cervical vertebra. Because of the poor prognosis for this type of injury she was humanely euthanized at the hospital the day following the race.

Medication: A review of the medical records indicated that 'Lavender Road' was treated for tying up from July 26 –July 29 with magnesium sulfate, phenylbutazone, flunixin, estrogen and electrolytes. All of these medications were given within the appropriate restricted administration times prior to the race. On July 22, 2014 both front fetlocks were injected with methylprednisolone acetate. On race day she was treated with furosemide. Since she was euthanized at a private hospital the day following the accident, a blood sample was not drawn for regulatory analysis.

Background: A review of the medical records indicated that she was treated for tying up from July 26 –July 29. There was no evidence of muscle soreness or lameness found during the pre-race inspection of this horse on race day. The fact that the jockey, Junior Alvarado, Jr., was concerned for her safety

⁸ At the time of this incident, only NYRA racing fatalities and other fatalities of uncertain cause of death were sampled for blood testing at the New York Drug Testing and Research Laboratory and sent to Cornell for a postmortem examination.

prior to entering the starting gate justified her being scratched by Dr. Verderosa. This form of muscle cramping does not ordinarily lead to horses becoming fractious nor is likely to have contributed to the occurrence of the cervical fracture that resulted from her fall.

Necropsy: A necropsy examination was performed at the Saratoga Springs Rood and Riddle Equine Hospital adjacent to the racetrack. This examination confirmed the radiographic diagnosis of a fracture of the seventh cervical vertebrae.

Interview: The jockey Roberto Alvarado, Jr. reported to Dr. Verderosa that he did not like the way this filly was warming-up prior to the race. He stated that she was not responsive to his aides and did not want to gallop. Ms. Adsit reported that 'Lavender Road' appeared to be tying up (cramping of back muscles) before the race.

3. 'Makari,' 4-year-old colt, trained by Elizabeth Voss:

Incident: On August 25, 2014, 'Makari' experienced a pitch rotational fall after clearing the final fence in a steeplechase race. The jockey, James Doyle, was not injured. The condition of the turf surface was firm. 'Makari' fractured his third cervical vertebrae and severed his spinal cord. Death was instantaneous.

Medication: 'Makari' was treated with furosemide on race day. No intra-articular corticosteroid injections were performed on this horse within 30 days of the race. Blood tests indicated no overages of therapeutic medications or the presence of prohibited substances.

Background: No signs of soreness or lameness were detected at the time of the pre-race examination on race day. A review of the race video indicated no sign of lameness during the race.⁹ 'Makari' took off to jump this final fence side-by-side with another horse. 'Makari' did not make contact with the padded roll or any of the rigid metal components of the fence. The reason for the pitch rotation fall on landing was not evident, other than the fact that the takeoff point may have been earlier than ideal. It is also possible that fatigue near the end of this race may also have been a factor in the fall.

Necropsy: The necropsy examination revealed a closed, complete, comminuted (many pieces) fracture of the second cervical vertebra and partial transection of the spinal cord.

Interview: Voss reported that 'Makari' was sound going into this race. Doyle reported that Makari misjudged the distance to the fence and took off early as noted above.

⁹ Dr. Palmer and retired Jockey Richard Migliore review video recordings of all NYRA races that include an equine fatality in an effort to observe race conditions and interactions of horses and riders during the race.

C. Sudden Death Episodes:

1. 'Sir William Bruce,' 2-year-old colt, trained by Eric Guillot:

Incident: 'Sir William Bruce' placed fifth in a six-furlong maiden special weight race on August 2, 2014. The track surface was rated as fast. The jockey, Junior Alvarado, Jr., reported that the horse ran well in the race and galloped well after the finish, pulled up normally and turned around well. He did not appear to be exhausted or breathing heavily. After the saddle was removed and the horse was handed to the groom, he noticed that the horse started to act strangely. "Sir William Bruce' stepped sideways then took two-three steps forward and collapsed. 'Sir William Bruce' died on the racetrack.

Medication: A review of medical records revealed that 'Sir William Bruce' was treated with vitamins and IV fluids on July 23, 2014. He was treated with furosemide on race day. A blood sample obtained from this horse after the race revealed the presence of flunixin, furosemide, phenylbutazone and oxyphenbutazone (a metabolite of phenylbutazone). None of these medications were present in levels that represented a therapeutic coverage or otherwise indicated unlawful administration. No prohibited medications were found. Medical treatment records provided by April Downey, VMD, indicated that she last treated the horse on July 23, 2014 with IV fluids and vitamins.

Background: The incident race was his first and only race. He breezed uneventfully at Saratoga eight times in the two months leading up to this race.

Necropsy: Necropsy revealed severe multifocal acute subendocardial hemorrhage in the left auricle and ventricle as well as mild multifocal chronic myocardial fibrosis. These abnormal findings are consistent with both long-standing and recent damage to the heart muscle. Sixty to 70 percent of the lung contained edema and hemorrhage. Myocardial (heart muscle) disease is a recognized cause of acute heart failure in horses and severe cases of exercise induced pulmonary hemorrhage (EIPH) deprive the horse of oxygen. It is likely that this combination of cardiac disease and EIPH contributed to the death of this colt.

Interview: Alvarado reported that the horse ran well in the race and galloped well after the finish, pulled up normally and turned around well. He did not appear to be exhausted or breathing heavily.

2. 'Regretless,' 4-year-old colt trained by John Toscano, Jr.:

Incident: On August 11, 2014, while racing in a one mile, \$40,000 maiden claiming race on the inner turf course, 'Regretless' faltered at the one-half mile pole and was pulled up at the 1/16 pole by jockey C.P. Decarlo, at which point he collapsed and died on the racetrack. The track surface was rated as firm.

Medication: A review of the veterinary treatment records indicated that on July 28, 2014, Tara O'Brien, DVM, flushed a wound, repaired the skin laceration using local anesthesia, and administered gentamycin and phenylbutazone. The antibiotic treatments continued daily until August 3, 2014. On August 9, 2014 he was treated with both phenylbutazone and ketoprofen. On August 10, 2014 he was treated with tetracycline, electrolytes and vitamins. On race day he was treated with furosemide. A blood sample submitted to the lab after the race contained prednisolone. According to Dr. Verderosa, prednisolone was administered on the track by a NYRA veterinarian in an effort to resuscitate this horse.

Background: 'Regretless' raced only three times in 2014 prior to the incident race. He tired or had no rally in the stretch in all of these races. Aside from a break from training in February 2014, he posted timed workouts regularly from September 2013 through July 2014. He worked seven times at Finger Lakes Race Track between September and November of 2013. He came to Belmont in December of 2013 and worked 16 times before his first start at Belmont in June of 2014. No signs of soreness or lameness were detected at the time of the pre-race examination on race day.

Necropsy: Necropsy revealed diffuse, mild, pulmonary edema and diffuse congestion (EIPH) in conjunction with mild, multifocal, chronic degeneration with fibrosis of the heart muscle.

Interview: Toscano reported that 'Regretless' was slow to develop during his training at Belmont Park, so they took their time with him. That is the reason he did not race until June. He did not know who trained the horse at Finger Lakes or what his condition may have been before he received the horse.

3. 'M B and Tee,' 3-year-old filly trained by Dominick Schettino:

Incident: 'M B and Tee' won a 1 1/8 mile maiden special weight race on August 21, 2014 and collapsed as she was being galloped out after the finish line. The track surface was rated as sloppy. She unseated the rider, Junior Alvarado, Jr., and sustained a fracture of her left front fetlock.

Medication: The blood sample submitted for this filly found trace levels of phenylbutazone, flunixin and ketoprofen below regulatory thresholds. None of these medications were present in levels that represented a therapeutic overage or otherwise indicated unlawful administration. No prohibited medications were found. Veterinary treatment records submitted by attending veterinarian Don Baker, DVM indicated that the right and left front fetlocks were injected with Vetalog (triamcinolone acetate) on August 13, 2014. On August 19, 2014, she was treated with ketoprofen and on August 20, 2014 she was treated with IV fluids and electrolytes. On race day she was treated with furosemide.

Background: ‘M B and Tee’ raced only once prior to the incident race. In that race she finished in fifth place. She breezed four times in 2013 and seven times in 2014. Her first recorded workout was in January of 2013 and the second workout was in February. No workouts were recorded between February and December of 2013. She had another break in training between December 2013 and May of 2014. She breezed regularly between May and August of 2014. The reasons for these interruptions are provided in the interview below.

Necropsy: Necropsy revealed mild acute multifocal hemorrhage in the lung along with moderate acute generalized pulmonary congestion (EIPH) as well as a lateral condylar fracture and a medial proximal sesamoid bone fracture of the left forelimb. Necropsy also revealed diffuse sclerosis of the distal portion of the left front cannon bone, a finding that has been commonly associated with lateral condylar fractures. No gross or histologic abnormalities were present in the heart. Condylar fractures do not cause sudden death in horses. In light of no other definitive necropsy findings as to the cause of death in this filly, it seems likely that a cardiac conduction disturbance was the actual cause of the collapse of this filly on the track. The fracture likely occurred as a result of non-physiologic loading of the fetlock joint as she was galloping out.

Interview: Schettino stated that the reasons for the breaks in her training in 2013 and the early months of 2014 were related to problems she had with her hind end, particularly her stifles. Although she was never lame behind, she was not progressing in her training, so he and the owner decided to take their time with her. He stated that she did not train well until the spring of 2014. ‘M B and Tee’ worked the week before the race, trained well and seemed to be fine. Dr. Baker speculated in retrospect that this filly may have experienced atrial fibrillation, a condition associated with poor performance and sudden death in racehorses.

IV. Conclusions, Interventions & Action Plans:

A. Distal Limb Musculoskeletal Fractures:

In three of the six distal limb musculoskeletal fractures, there was evidence of pre-existing bone injury. In one case (‘Divine Guidance’) necropsy findings revealed advanced arthritic changes in the joint. Such bone remodeling indicates a healing response to a previous injury. Many horses compete successfully with varying degrees of arthritis and do not ordinarily sustain fatal musculoskeletal injuries. From a review of the medical records, it was apparent that ‘Divine Guidance’ was being treated for arthritis and there was no evidence of lameness or active joint inflammation found during the pre-race inspection. Because no radiographs were taken of this horse within 60 days of the race, it is not possible to determine if there were pre-existing injuries that could have been detected prior to the incident race. In two other cases (‘Father John’s Pride’ and ‘Ludicrous’) necropsy examinations revealed a pattern of bone remodeling in the fractured bones that is consistent with pre-existing microfractures or bone swelling. Detection of this type

of bone remodeling is extremely difficult. Research is underway at Cornell University to develop methods to identify horses that are at increased risk of injury, including use of epidemiology, serum bone markers and advanced imaging techniques.

The Commission's medication rules (9 NYCRR §§ 4043.2 and 4043.3) were amended in January 2015 to include measures that reduce the amount of corticosteroids given to race horses in proximity to racing and move treatment with all non-steroidal anti-inflammatory medications (e.g., phenylbutazone and flunixin) to at least 48 hours before the race. Although the use of these therapeutic medications has not been directly associated with catastrophic injury, administration of anti-inflammatory medications in close proximity to a race can mask clinical signs of lameness that might otherwise be detected in the pre-race examination that is conducted early in the morning on race day. Further, the intra-articular use of methylprednisolone acetate has been shown to have significant unintended adverse effects on cartilage health in racehorses.ⁱⁱⁱ Recent Commission medication rule amendments discourage intra-articular use of methylprednisolone acetate.¹⁰

Research has shown that hardness and shear strength of the racing surface determines, in part, the deceleration forces and distribution of load during racing.^{iv} In the past year, NYRA began a multi-year program to renovate the irrigation system of the turf courses at Belmont Park and Saratoga Race Course. At this time, Belmont Park employs a computer-controlled irrigation system on the turf courses, coupled with state-of-the-art monitoring of the moisture content at 24 locations around the track to ensure precise and uniform application of water across the track. This same system is being installed at Saratoga Race Course. This modernization of the irrigation systems will help to improve the condition and durability of the turf courses and ensure a more consistent and safe racing surface.

At the start of every meet, Michael "Mick" Peterson, Ph.D., Director of the University of Maine Racetrack Testing Laboratory, performs soil analysis for all of the dirt racetracks. In addition to Dr. Peterson's analysis, NYRA uses regular internal soil analysis and a mechanical hoof tester which replicates a horse's foot impact, as well as ground penetrating radar to monitor the racing surfaces and help provide a safe and consistent racetrack. These maintenance interventions are tracked and matched with changing weather conditions throughout the meet.

B. Accidental Deaths:

Accidental deaths are by their very nature unpredictable. However, a number of interventions were put in place following the 2014 Saratoga Race Meet to prevent similar accidental deaths in the future.

¹⁰9 NYCRR §§ 4043.2(k)

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There are two gaps in the backstretch of the main track at Saratoga that have been re-engineered to reduce the chance of a loose horse leaving the racetrack and falling over a rail or into the drainage culvert alongside of the racing surface. Both gaps have been changed from a 90-degree departure or entrance angle to a 45-degree angle, similar to the angled entrance ramps on a highway. This change makes it much less likely for a loose horse to make sharp turns at the gap and decreases the chance of a fall. It also provides a greater opportunity to catch a loose horse if it enters the gap from the racetrack.

The drainage culverts have been filled in for 25 feet on either side of the gaps with drainage pipe buried beneath the fill in order to eliminate the chance of a horse falling into a depression opposite the outside rail of the racetrack.

Finally, large foam pads have been placed in each of the corners at these two gaps to reduce the chance of laceration if a horse contacts either of these rail edges. On the front side of the racetrack, additional foam rail pads have been installed at that gap to reduce the chance of a horse falling over the rail where the bridle path from the paddock enters the racetrack.

With regard to the steeplechase fatality, there are multiple factors that can contribute to injuries over the fences and the National Steeplechase Association (NSA) introduced several safety initiatives in the past year to address them:

- The roll pad on the approach side of the fence is green with a white border placed at the bottom of the roll, creating a “ground line.” In 2015, a second white border has been created at the top of the roll pad to create a “knee line.” This innovation is designed to improve visibility of the fence and enable horses and riders to better judge the height and location of the fence.
- Another improvement is the addition of an extended safety rail on the fence located at the top of the stretch. This rail extends approximately 52 feet straight back from the inside edge of the fence. This safety rail has been used successfully in European steeplechase races and reduces the chances of horses converging at an angle in the approach to the last fence on the course often located at the top of the stretch.

These innovations in fence design and rails should help to reduce falls over steeplechase fences. Pre-race safety briefings with the jockeys are conducted prior to all steeplechase races to emphasize safe riding, particularly over fences, and safely pulling up horses that experience fatigue during the race.

In spite of these interventions, another pitch rotation fatality occurred over the final fence in the New York Turf Writer’s Cup Handicap at Saratoga during the 2015 race meet. This incident raised the question of what additional interventions may be necessary to further reduce injuries in Steeplechase races, particularly over the fences that horses encounter in the final furlongs of races that generally are contested over distances in excess of 2 miles.

The fatality rate of horses racing in steeplechase races is higher than that of horses racing in flat races.^{v.vi,vii} Vertebral fractures, in particular, are more common in steeplechase races than in flat races.^{vii} The odds of a fatality are increased for horses racing on city racecourses (e.g. Saratoga Race Course and Belmont Park) than on country racecourses (e.g. Far Hills).^{vii} The prevalence of falls over the final fence in steeplechase races is greater than that of other fences in the race.^{viii} Anecdotally, this has been the experience in New York steeplechase races held at Saratoga Race Course and Belmont Park over the past two years.

As a result of these observations and the intuitive assumption that a horse's fatigue increases proportional to the distance of the race, the Commission's Equine Medical Director recommended that the final fence in the steeplechase races held at Saratoga Race Course and Belmont Park be positioned at the top of the backstretch, resulting in a flat half-mile sprint to the finish. The rationale for this intervention is to reduce the impact of fatigue as a risk factor when horses encounter fences during the final furlongs of the race. The NSA Safety Committee agreed, and this modification was put in place for the final two New York steeplechase races of the 2015 season, held at Belmont Park on September 24, 2015. Although one rider was unseated in one of these races, no horse or rider injuries resulted from that incident and there were no falls over the final fence in either of those races. Further evaluation of this race modification will continue during the 2016 New York Steeplechase races.

C. Sudden Death Episodes:

Sudden death syndrome is a rare but well-documented cause of death in young athletes, including human athletes who collapse during strenuous athletic competition. Anomalous coronary vessels, non-atherosclerotic coronary artery disease and heart valve disease are often associated with sudden death in human athletes and underlying gross or histologic cause is not evident in up to 25 percent of cardiac death cases.^{ix} Similarly, in a large multi-center study of sudden death in Thoroughbred racehorses, the cause of death was not identified in 22 percent of cases.^x Some cardiac diseases, especially ion channel disorders, can be identified using only genetic analysis, a molecular diagnostic modality not available at this time for equine heart disease.

All three of the horses that experienced episodes of sudden death during the 2014 Saratoga race meet did so early in their racing careers. Two of the horses ('Regretless' & 'Sir William Bruce') had evidence of pre-existing myocardial disease (scar tissue in the heart muscle). The third horse ('M B and Tee') experienced a moderate episode of EIPH but no gross or histologic heart abnormalities were detected. As a group, these findings are consistent with the absence of cardiac necropsy findings in 25 percent of young healthy human athletes.^{xi}

Multi-center research into the causes of sudden cardiac deaths at racetracks throughout the world has provided information to help reduce these fatalities in the future.^x These episodes can be related to abnormal EKG waveforms detected following high-speed exercise as the horse's heart rate slows from approximately

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240 beats-per-minute to a resting rate of approximately 40 beats-per-minute.^{xi} This is consistent with experience of horses that collapse after the race when galloping out or returning to the unsaddling area. A review of this research provides an excellent starting point for designing interventions and planning future research.

In an effort to better understand the incidence and causes of cardiac disorders in Thoroughbred racehorses and to reduce the incidence of sudden death in New York racehorses, the following protocols and initiatives have been implemented:

- After the 2014 Saratoga meet, the Commission introduced an expanded sudden death necropsy protocol created by [Dr. Katie Kelly, a veterinary cardiologist at Cornell University](#), which includes both gross dissection and histologic examination of myocardial tissue and conduction pathways of the heart.
- Drug testing protocols are in place to detect use of drugs that might contribute to cardiac arrhythmias (e.g., Cobalt).
- NYRA and Commission veterinarians are evaluating the use of cardiovascular screening procedures prior to racing in order to detect atrial fibrillation, a rare but well-recognized cardiac arrhythmia that can cause poor performance and lead to sudden death during exercise. Horses that evidence atrial fibrillation or other non-physiologic arrhythmias prior to the race will be scratched and placed on the vet's list. A more complete cardiac work-up will follow with corrective treatment administered before the horse may be entered to race.
- The Commission's Equine Medical Director, in consultation with [N. Sydney Moise, DVM, MS, Chief of Cardiology at Cornell University](#), and [Romain Pariaut, Associate Professor of Cardiology at Cornell University](#), is using stall-side electrocardiographic examinations to detect cardiac abnormalities at the racetrack that may be difficult to detect by routine auscultation (listening to the heart). This mobile ECG technology is also being used to monitor horses' heart rates and rhythm during the recovery period following the race.
- Horsepersons are encouraged to reduce the administration of intravenous calcium, magnesium and stimulants to horses in close proximity to the race, particularly in horses being treated with furosemide. Given together, these drugs can alter the functions of the autonomic nervous system that is responsible for controlling the normal gradual decline in heart rate following exercise.

These action plans represent an ongoing process of study and intervention that are consistently being re-evaluated. For example, an initial review of the 2015 Saratoga meet indicated that there were approximately 2,427 horses stabled in the Saratoga Barn areas during the 2015 Saratoga Race Course Meet. There were 3,450 starts during this 40-day meet. In 2015 there were three racing musculoskeletal fractures of the distal limb, four training musculoskeletal fractures of the distal limb, one accidental death (steeplechase fall) and no episodes of sudden death on the racetrack for a total of eight fatalities. This represents a 33

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percent decrease in the total number of fatalities during the 2015 Saratoga meet compared with the 2014 Saratoga meet.

All parties involved with New York's Thoroughbred racing are committed to reducing injuries and fatalities of horses and riders. We learn from the review of racing injuries and use this information to design proactive measures, as outlined above that can help to reduce equine fatalities. In this way we honor the memory of the horses no longer with us and protect the athletes that are the centerpiece of the sport.

V. References:

- ⁱ Hill, Carmichael, Maylin. Track conditions and racing injuries in Thoroughbred horses. *Cornell Vet.* 1986; 76:361-379.
- ⁱⁱ Mohammed HO, Hill T, Lowe J. Risk Factors associated with injuries in thoroughbred horses. *Equine Vet J.* 1991;23(6):445-448.
- ⁱⁱⁱ Byron C, Benson B, Stewart A, Pondenis H. Effects of Methylprednisolone on proteoglycans production in equine chondrocytes. *AJVR.* 2008; 69:9, 1123-1128.
- ^{iv} Peterson M, Roepstorff L, Thomason JT, Mahaffey C, McIlwraith CW. Racing Surfaces White Paper. www.grayson-jockeyclub.org/resources/White_Paper_final.pdf
- ^v Stephen JO, White NA, McCormick WH, Cowles RR, Corley KTT. Risk factors and prevalence of injuries during various types of steeplechase races. *JAVMA.* 2003;223(12), 1788-1790.
- ^{vi} Pinchbeck GL, Clegg PD, Proudman CJ, Morgan KL, French NP. A prospective cohort study to investigate risk factors for horse falls in UK hurdle and steeplechase racing. *Eq. Vet J.* 2004;36:7, 595-601.
- ^{vii} Boden LA, Anderson GA, Charles JA, Morgan KL, Morton JM, Parkin TDH, Clarke AF, Slocombe RF. Risk factors for Thoroughbred racehorse fatality in jump starts in Victoria, Australia (1989-2004). *Eq Vet J.* 2007; 39:5, 422-428.
- ^{viii} Unpublished information, NSA Safety Committee
- ^{ix} Harmon KG, et al. Incidence, cause, and comparative frequency of sudden cardiac death in National Collegiate Athletic Association Athletes: A decade in review. *Circulation* 2015;132:1, 10-9.
- ^x Lyle CH, et al. Sudden death in racing Thoroughbred horses: An international multicenter study of postmortem findings. *Equine Vet J.* 2011;43:3, 324-331.
- ^{xi} Physick-Sheard PW, McGurin MKJ. Ventricular arrhythmias during race recovery in Standardbred racehorses and associations with autonomic activity. *J Vet Intern Med* 2010;24:1158-1166.