

Jonathan S. Rutchik, MD, MPH
Neurology and Electromyography
Occupational and Environmental Medicine

Diplomat of the American Board of Psychiatry and Neurology (Neurology)

Diplomat of the American Board of Preventive Medicine (Occupational and Environmental Medicine)

<http://www.NEOMA.com>

20 Sunnyside Avenue, Suite A-321
Mill Valley, Ca 94941
Email: jsrutch@neoma.com

PHONE: 415-381-3133
FAX: 415-381-3131
CELL: 415-606-1465

XXXXXX STATE QUALIFIED MEDICAL EXAMINER

San Francisco, Richmond, Petaluma, Sacramento and Arcata, XXXXXX

Law Offices of XXXXXX, PC
413 Eighth Street
PO Box 38
Comfort, TX 78013
FAX: 830-995-2728

RE: Eddie L. XXXXXX v ZZZZZZ Maritime, Inc.

This report aims to summarize my preliminary opinion regarding the above matter.

Please contact me with any questions.

JSR

DR. RUTCHIK'S BACKGROUND AND EXPERIENCE

I am a board certified neurologist and occupational medicine physician who practices in the San Francisco Bay area. I completed my medical school training at Hahnemann University in Philadelphia in 1990 after graduating from Columbia College in New York City with a bachelor of arts in 1986. I then completed an internship at St. Luke's hospital in New York City and then completed a neurology residency at the Mount Sinai Medical Center in New York City in 1995. At that point, I began a fellowship in occupational and environmental neurology with the chairman of neurology, Dr. Robert Feldman, at Boston University Medical Center, as well as an occupational and environmental medicine residency at the Boston University Medical Center. During my two years of fellowship training in Boston between 1995 and 1997, I also completed a Masters in Public Health at Boston University School of Public Health and had electromyography training with Dr. Seward Rutkove, MD in the Neuromuscular Division of the Beth Israel Hospital in Boston, MA.

For 1 ½ years, I worked as a physician for Occupational Health and Rehabilitation, in Boston, Massachusetts developing a department of occupational and environmental neurology. I then moved to New York City where I began doing consulting work as well as started a clinical practice. I moved to the San Francisco Bay area in August of 2000 and presently focus on the evaluation and treatment of individuals and populations with neurological problems with suspected occupational and environmental etiologies. In my practice, I perform nerve conduction velocity testing and electromyography, neurology consultation and treatment in industrial medicine, as well as independent medical examinations for workers compensation, disability, as well as personal injury. I divide my time consulting approximately 50% to plaintiff and 50% to defense attorneys as well as industries.

I've written numerous peer reviewed articles as well as book chapters on subjects pertaining to neurology and occupational medicine. Some of the titles of the book chapters have been, "Toxic neuropathy," "Organic Solvents," and "Industrial dementias." I've also lectured both locally, nationally and internationally in various forums on topics such as neurological toxicity from metals and solvents and the approach to patients with suspected occupational or environmental neurological illness.

I presently have an academic appointment at the University of XXXXXX at San Francisco in the Department of Occupational Medicine. I routinely teach medical students and residents as well as nurses and public health students about occupational environmental medicine and neurology. I've held this position since August of 2000. Prior to that, I taught at Rutgers University Medical Center in New Jersey, as well as Boston University Medical Center in Boston.

INTRODUCTION

I had the opportunity to meet Mr. Eddie Lee XXXXXX and perform an independent medical examination. The patient completed a 12 page questionnaire and also submitted further documentation detailing his occupational exposures. I have detailed the medical record summary below. Also, I have received numerous performance evaluations as well as documentations of surveys taken from his employer which I will mention below.

HISTORY AS EXPLAINED BY THE PATIENT:

The patient is a 62-year-old right handed male whose date of birth is December 25, 1942.

He explains that his chief complaint is bilateral handgrip weakness and pain, bilateral shoulder pain, difficulty with pain into his left leg with problems with balance as well as memory loss.

He explains that he worked as a Seaman, employed aboard oil tankers since 1987 until 2003 when he was taken off work because he was told he could not perform the duties of his job.

He initially developed bilateral hand pain at some point prior to the year 2000 and was seen by a doctor. He reports that he was on a ship and had numbness and tingling. He was given medications.

At some point he was on a ship in the Mediterranean Sea when he had left leg numbness as well as coldness in his foot, right hand, thumb, index finger numbness as well as loss of balance. He was given some pills when someone on the boat spoke with a doctor on shore. He explains that the end of the tour he saw a doctor in XXXXXX for pain in the shoulder. After the tour, he was living in Charleston South Carolina and went to a doctor who did tests. He was told that he had a cervical herniated disc in his neck that needed surgery. In 2000, he did have surgery on his neck and reported that his right handed numbness and his balance got somewhat better. He also reports that the left leg was somewhat better but that he still had occasional sensations down the left leg.

He returned to work at some point and was on a boat in the north slope of Alaska. Midway through the tour he did have hand pain and he was taken off the ship and examined in XXXXXX. He reported difficulty with gripping. He was sent home again to South Carolina. A doctor, who performed surgery on him, examined him and told him that there was no problem on the x-rays. He was told this was possibly carpal tunnel syndrome. He again went home for some rest but then returned to work.

Midway through his next tour of duty, he again had problems with his hands. He was sent to see a doctor in XXXXXX for testing. He was sent back to the ship but did not get information about the testing.

In 2003 he was on another tour of duty, but at some point was taken off the ship.

Disability began at that point. He reports being in Houston, Texas and looked in the phone book for a doctor to take care of his medical problem. A doctor examined him, did testing and told him he could give him treatment for this condition. He began getting monthly intravenous infusion treatment from this doctor. He would go from South Carolina to Texas one per month.

In South Carolina he signed up for Social Security disability and was examined by another doctor. That doctor arranged for him to see a neurologist in Charleston to get the infusion treatment there. He continued getting infusions for a total of approximately one year. He last had an infusion five months ago. He felt that he was somewhat better and it is planned for him to see the doctor again at the end of August.

Presently he is home and spends time at the barber shop with friends. He likes to pray at church in the morning.

OCCUPATIONAL HISTORY:

He reports beginning as an Ordinary Seaman in 1987. In this job would work in the engine room and do a number of tasks including mopping and sweeping, cleaning filters and pumps and checking gauges.

Normally his job would be eight hours while on the ship and for half of that he would be checking gauges; simply writing down information from gauges. For the other four hours he may be involved in maintenance or cleaning or mopping. He did not recall specific names of the cleaning chemicals, but he often poured them into closed tubes or places after opening up a top and enclosing the top. Sometimes he would pour a gallon or as much as 5 gallons of a chemical into a space and let sit.

He reports that he did experience some smells from the chemicals. It was like acid. He never got sick but did get headaches. He recalls that it smelled like fumes from an engine. Every day he might have a headache one time that lasted briefly.

He reports that he was on the ship approximately eight months each year. While he was on the ship he would be involved in cargo loading every 10 days or so. While there was cargo loading, he often would have to be helping load on the deck, and there were often chemical exposures at that point. He reported using a respirator both on the deck and in the engine room. He reports that he would use a respirator on some occasions when he would paint or when he knew there would be chemical exposures. This was not very frequent but possibly one or two days per week. This could be more than that as well. It might be an entire week depending on what they were doing.

At some point he was given a promotion to become an Able Seaman. An Ordinary Seaman works all over the ship, but an Able Seaman is involved with steering the ship or tying up the ship at port or doing work on the deck, he explained. In this job he also did a lot of painting and stripping and had exposures from this work.

When he returned from the cervical surgery, he was promoted to an Oiler. In this position, he did not have to work on the deck any longer. He worked half-time checking gauges and half-time conducting maintenance or cleaning filters or other tasks including mopping.

Prior to his career with ZZZZZZ Maritime, Inc., he reports that he completed high school in 1961 in Louisiana. In 1963 he joined the military, and was honorably discharged in 1966.

After leaving the military he was a garbage man in Houston, Texas for six months. He then worked for a short time for National airlines as a baggage handler. He then worked for 17 or 18 years as a warehouse forklift operator at a grocery distribution company filling orders.

He then worked for Eastern Airlines in South Carolina again for a short period of time.

He then became a Seaman in 1987 for XXXXXX shipping company. He reports that the Company changed its name to ZZZZZZ Maritime, Inc. because of the Alaskan oil spill.

He does report using protective equipment including ear plugs, goggles and face masks, dust masks, gowns and gloves, and a respirator. He also wore overalls.

He reports working mainly eight hours per day but was offered up to four hours of overtime.

He explains that every year he was examined for a benzene testing program, which was routine. He did have blood and urine testing. This exam included a short exam initially and a longer exam every one or two years. He clarifies that this was once per year. This was during the time that he was an Oiler and during the time when he was an Able Seaman.

He explains that he was tested approximate once per year and needed to have a card every tour of duty that confirmed his testing results.

He did do some loading of lead onto the ballast of a ship.

He does remember having a blood test both before and after doing this work.

SECOND JOBS:

He had no second jobs.

Sometimes, when he was off the vessels, he did work at a ship yard two or three times. He performed carpentry work. He put up scaffolds and did other physical work.

PAST MEDICAL, SOCIAL AND FAMILY HISTORY:

He reports no significant medical history other than that mentioned above. He did have bilateral bunionectomies in the late 1990s. He also did have a vasectomy as well as inguinal hernia surgery.

Family history includes cancer as well as a stroke in his mother and father. He denies any medical problems similar to difficulty walking or any neurological problems.

He does have a family history of high blood pressure.

The family history also does include depression in his father. His family history includes stomach problems as well as depression in his brothers.

He reports being told he had arthritis as well as neck pains.

He does have three brothers and three sisters. Both his parents are deceased.

CURRENT MEDICATIONS:

Currently takes no medication. He did complete infusion for the medical diagnosis five months ago.

CURRENT COMPLAINTS/STATUS:

He does complain of weakness in both hands as well as left hand numbness.

He complains of right shoulder more than left shoulder pain. He reports some memory problems and frustrations with his present inability to work.

He denies any night sweats or difficulty with erections. He reports that he is not sad for more than one week at a time.

He does complain of some dizziness. He reports that if he is feeling down this may happen. This is not very common.

He does have sometimes a loss of balance as well as muscle weakness in the legs and feet.

ACTIVITIES OF DAILY LIVING AND CURRENT TREATMENT PROGRAM:

Patient does drive and did drive today.

Patient lives alone. He was presently in Somerville, South Carolina. He has four children, three live in South, one lives in Texas. He presently separated and does not have a girlfriend.

NEUROLOGY EXAMINATION:

The patient's self-reported height is 5'11" and his weight is 185 pounds.

Mental status: mood appears good. The patient is able spell the word world backwards. Language appears intact. Simple memory appears intact.

Cranial nerves are intact. There is no nystagmus.

The motor exam is normal. There is no notable atrophy.

Sensory exam is significant for reduced temperature in the feet. Vibration is mildly reduced in the feet.

Reflexes are somewhat reduced in the ankles.

They are two plus at the right knee and one plus at the left knee. They are one plus at the right ankle and trace at the left ankle.

Toes are both downgoing.

The patient is able to walk well. He can stand on his heels and his toes well.

Romberg's test is equivocal. Tandem gait is fine

NEUROPHYSIOLOGICAL TESTING:

Upper and lower extremity EMG and NCV studies were accomplished. Results revealed a sensory neuropathy with evidence of axonal and demyelinating features. The upper extremity testing also revealed motor and sensory polyneuropathy with axonal and demyelinating features. Multiple entrapment neuropathies could not be ruled out.

REVIEW OF RECORDS:

9/23/05	Rosemarie Bowler, PHD, MPH. Neuropsychological Assessment	Discussion of Agent Orange exposure, patient believes he did not have any exposure while in Vietnam. Results revealed mild impairment of perceptual organization and mild to moderate impairment of attention and concentration, mild auditory delayed memory impairment for learning memory and mild to moderate visual spatial instructional skills and
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		<p>organization. Cognitive flexibility was borderline to mild and motor efficiency was severely impaired for hand coordination. He had mild levels of anxiety and depression. This doctor wrote that the main cause of his neuropsychological disability is judged be related to his work around and hexane an organic solvents. Summarize work records indicate sufficient exposure as part of his work practices to conclude the association of and hexane and other organic solvents and his present injury. Also prognosis was deemed not positive. Dr. Bowler wrote that this type of exposure has been shown to be associated with premature aging, meaning that the patient will each faster than he would have but for his exposure.</p>
<p>July 15, 2005</p>	<p>Adam Duhan, MD</p>	<p>Phone interviews 7/8/05 and 7/12/05. Occupational exposure to excessive benzene and xylene. Began working with XXXXXX Shipping in 1987, mostly as mess utility worker. Also ordinary seaman, painting 4-6 hours a day, cleaned tanks and maintained ship. Some sandblasting. Later (does not remember year) worked as able-bodied seaman in engine room. 8-12 hours a day. Used cleaning solvents to clean engine, did painting and chipping. Stopped work 7/30/03. Neurological symptoms stopped him from doing full range of job safely. Separated from wife and became homeless for a period of time. Medications: vitamins, IVIG, last dose 3 months ago, Advil. No family history of neurological diseases. Non-smoker. 10-15 ETOH per year. Bilateral hand, right shoulder pain. Feels unsteady on feet. Forgetful. Includes 7 page record review. Diagnosis: History of exposure to</p>

		<p>paint and solvents. Peripheral neuropathy secondary to this exposure. Probable neurocognitive deficits secondary to this exposure. Paint, solvent, aliphatic and aromatic hydrocarbon exposure and benzene exposure throughout 15 years work on tankers. 4/21/91 monitoring badges showed unacceptably high exposure. First complaints of leg problems 4/6/00. 3/30/01 NCS abnormal. Work-up ruled out underlying conditions such as diabetes, alcoholism and systemic disease. Medically probable that work exposure caused neurological problems. Includes abstracts of multiple journal articles.</p>
March 23, 2005	Robert Chaffin	<p>Cover letter and several medical articles related to n-hexane exposure.</p>
11/27/02-6/30/04	Trident Chiropractic	<p>Treatment records. Cervical and low back pain. 2/19/04 Diagnosed with neuropathy several months ago. Treatment in TX, periodic gait disturbance. Left thigh discomfort comes and goes. 11/27/02 Bilateral weakness, pain in hands. MVA 5 years ago. No treatment. 2-3 years ago, chain hit in back of neck. No treatment. Lifting arms over head exacerbates. Numbness, top of left foot. Can't climb ladder by gripping with hands, must wrap arms around rungs. 11/27/02 New patient questionnaire. Health problem: weakness, work related. First noticed a couple of years ago.</p>
November 9, 2004	Dr. Inbody	<p>Opinions regarding etiology of Mr. Eddie Lee XXXXXX's chronic inflammatory demyelinating polyneuropathy.</p> <p>Patient meets all criteria for the diagnosis of CIDP and appears to be</p>

		<p>stabilizing in regards to his diffuse and generalized weakness.</p> <p>Etiology remains speculative though clearly immune mediated. It has been frequently associated with exposure to toxins such as petroleum products and solvents.</p>
June 30, 2004	Linda Williams, RN	Discharge from residential placement 7/9/04. Denies urges/cravings & can give specific examples of recovery behaviors he is practicing to maintain abstinence. Denies use of all mood altering substances. Selected placement that supports sobriety.
June 18, 2004	Linda Williams, RN	Denies ETOH /drug use.
June 15, 2004	Susan Behrends, RN	No ETOH/drugs. Stated he was craving a beer a few days ago. Stated he stopped drinking when he was 11 years old and at that time, he could drink a quart of wine. Remembers that he would start drinking beer to make his wife angry with him when he felt dominated.
December 19, 2003	Industrial hygiene monitoring of the Wilmington	<p>Three personal samples were collected.</p> <p>Gauging sampling was 0.66 ppm of benzene. Cargo sampling was 15.65 ppm of benzene. This was at the beginning of the loading. After the loading sample was 19.63 ppm. General deck duty sampling or 0.56 ppm over a 9.5 hour, period of time.</p>
November 19, 2003	Dr. Hughes, Carolina neurology clinic in Charleston South Carolina	60-year-old male. Patient carries diagnoses of CIDP manifested by weakness, instability, and loss of sensation. Currently getting treatment with IV IG at every eight weeks. This is a five-day infusion. Having significant problems with walking, dropping things, and diminish dexterity in the hands. He has had no cognitive impairment.

		<p>Diminished muscle strength at 4 plus to 5 minus over five and almost all groups tested. He has absent reflexes. He has diminished vibration and proprioception with an unsteady gait.</p> <p>Muscle weakness and diminished dexterity and gait. Significant disability and safety risk with his previous employment.</p>
November 18, 2003	Laboratory data	Blood urea nitrogen and creatinine normal. Blood chemistries normal. Liver function tests normal. Glucose 108. ESR normal. Complete blood count normal.
August 11, 2003	Laboratory values	Thyroid function normal, vitamin B12 normal, RPR normal, urinalysis normal. Lyme's disease testing non reactive. Total protein normal. Albumin normal. Complement normal. Anti-nuclear antibody negative. Sjogren antibody's negative. Angiotensin converting enzyme normal. rheumatoid factor normal.
August 6, 2003	Evoked response testing	No conclusions
July 30, 2003	Dr. Inbody, Houston, Texas, neurology	<p>Electromyography results.</p> <p>Right peroneal motor amplitude reduced, questionable conduction block. Left peroneal motor amplitude reduced. Peroneal distal latencies normal. Tibial distal latencies normal. Median and ulnar distal latencies normal with the exception of right mildly slowed motor distal latency. Superficial peroneal sensory bilaterally was not obtainable. Comparison sensory studies at the left wrist were slow for median. The right comparison will also slow.</p> <p>F. waves were slow for the peroneal and the tibial bilaterally and for all the</p>

		<p>upper extremities also.</p> <p>Note: I would call this evidence for CTS bilaterally as per comparison studies. There is also motor axonal loss and sensory loss bilaterally as well as prolonged after waves. There is no exam listed</p>
<p>July 30, 2003</p>	<p>Dr. Inbody</p>	<p>Symptoms began four months prior to anterior laminectomy performed in 2000 when he presented with symptoms including neck pain, neck spasms and cramping and weakness of the arms. Diagnosis of cervical cord compression was made and discectomy infusion was performed. Postoperative improvement was noted in terms of less muscle spasms in pain though the weakness and numbness persisted. Also described cramping, spasms, and weakness in the legs as well as the instability.</p> <p>EMG and nerve conduction study shows a probable moderate to severe demyelinating polyneuropathy affecting the arms and legs that profoundly slowed motor nerves more so than sensory nerves. He also has an MRI reports of mild to moderate spondylitic change as well as post operative findings which revealed no acute mild packet process.</p> <p>Worked all his life as a merchant seaman with exposure to petroleum products as he worked frequently on oil tankers. No history of alcohol abuse, diabetes, metabolic arrangement, liver or kidney disease. No family history of neurological conditions. Does admit to arthritis.</p> <p>Neurogenic atrophy distally evident. Weakness of a grade 4minus, over five distally and 4, over five proximally</p>

		<p>with preserved reflexes at the knees.</p> <p>Stocking glove changes to all sensory modalities.</p> <p>Diagnosis is probable CIDP. Cervical and lumbar spondylitic disease.</p> <p>Plan would lead to arrange for testing.</p> <p>Note: weakness not severe and reflexes preserved. Motor: peroneal motor DL normal with reduced amplitudes. Tibials normal DL and amplitudes. F waves are all prolonged. Sensory in LEs: Sural okay and sup peroneal NR. H okay. UE: R median mild slowing, Ulnar okay with nl amplitudes. F waves borderline but symmetrical.</p>
March 24, 2003	Dr. Frates, acting medical director for XXXXXX Maritime	Permanent medical disability because of peripheral.
February 25, 2003	Dr. Marshall white, Charleston neurological Associates	This man has peripheral neuropathy.
January 20, 2003	Dr. White, Charleston South Carolina	I think he can return to full duty. Spinal fluid shows no significant abnormalities. He also had cervical spine surgery, but given his description of work involving very little work at heights, I think he should be safe.
January 16, 2003	Cerebral spinal fluid testing	IgG, elevated albumin, elevated serum albumin index elevated. Protein elevated, 90, normal is 15 to 45. Glucose was 48 and normal, between 40 and 75. Myelin basic protein normal. No oligo clonal bands noted. Cryptococcus normal.
January 16, 2003	Spinal fluid	Elevated protein, 90.
January 14, 2003	Nerve conduction report	Peroneal F-waves are prolonged bilaterally. Peroneal amplitude on the left is small. Questionable right

		<p>conduction block for the peroneal motor nerve. Tibial F-waves also prolonged. Sural sensory distal latencies were also prolonged somewhat with small amplitudes.</p> <p>Median sensory studies were both prolonged, right and left. Median motor studies were reportedly alone, right and left. Ulnar studies were borderline. Ulnar motor studies of both prolonged. Median and Ulnar F-waves were both prolonged period</p>
May 27, 2002	Performance appraisal	Eddie Lee continues to be the hardest working man I know. Categorized as exceptional.
April 8, 2002	Dr. Inbody	Normal Electromyography testing
January 15, 2002	Performance appraisal	Categorized as exceptional with problem-solving being a number two, generally exceeds requirement as well as technical knowledge and skills.
July 30, 2001	Performance appraisal	Categorized as twos, generally exceeds requirement for all except problem-solving, which was a five, not observed. He also scored exceptional for housekeeping and working with others.
March 31, 2001	MRI of the cervical spine	Status Post discectomy. Degenerative disease and spondylosis and cervical 6 – 7 with disc bulge and central protrusion effacing the interior subarachnoid space, but without significant cord compression
March 31, 2001	The MRI of the lumbar spine	Multilevel degenerative discopathy. Slight bulge at lumbar 2 – 3. Large central epidural protrusion, lumbar 3 – 4.
March 30, 2001	Pacific medical Inc., Pleasanton XXXXXX	<p>Bilateral arm pain. EMG results.</p> <p>Prolongation of almost all distal motor latencies slowing of nerve conduction velocities. Prolongation of almost all sensory peak latencies. Prolongation of all F waves.</p> <p>Right median, ulnar, left median</p>

		<p>motor prolonged distal latencies with relatively normal amplitude.</p> <p>0.5 ms slowing across right wrist. Left wrist comparison study normal. Left median study however prolonged as was left ulnar study as was the right radial and the right median study.</p> <p>Comment: Motor studies: nearly all UE distal latencies slow. Amplitudes are ok. Sensories are also slow with borderline to normal amplitudes.</p>
March 30, 2001	Dr.Rao	<p>Neurological exam is normal. No motor weakness or century reflex deficit in the upper or lower extremities.</p> <p>Patient complains of stiffness in both wrists, some burning and tingling in the left leg below the knee to the foot intermittently throughout the day.</p>
March 28, 2001	Dr. Gunderson, Concord XXXXXX, occupational medicine	Handwritten note. Arrange for MRI.
September 15, 2000	Mike Tyler, MD	<p>History of C6-7 disc, responding to conservative treatment. Presents with feelings of legs being rubbery and wanting to give way and being easily fatigue, left > right. Also has some sort of dysthetic pain, which does not sound exactly radicular. Known to have a diffuse peripheral neuropathy, etiology unknown. MRI of lumbar and cervical spine reveals he may have a mild Arnold-Chiari type malformation, but not producing any symptoms. Very large ventral disc C4-5 with compression of spinal cord, smaller disc at C5-6, large disc at C6-7. Lumbar spine shows diffuse degenerative changes with disc bulging and compression of nerve roots in neuroforamin.</p> <p>Admitted for 3 level anterior cervical discectomy.</p>

June 9, 2000	Dr. white	Evidence of diffuse peripheral neuropathy for which we have not been able to identify a specific metabolic cause. Increasingly concerned about the spinal cord lesion. Evaluation by Dr. Mike Tyler. Currently seen Dr. Ruston about carpal tunnel
April 28, 2000	Dr. White	Possibility of peripheral compressive neuropathy. Question of right upper extremity superficial radial neuropathy. Left lower extremity symptoms are more radicular, but not clearly so. History is suggestive of possible demyelinating disease, but not within demographic category that would consider for this disorder. Consider broad workup.
April 28, 2000	Dr. White	Liver hemangioma and not a malignancy. Testing normal
April 20, 2000	Nerve conduction report and a Electromyography	Generalized peripheral neuropathy, nonspecific sensory motor type. Ulnar motor distal latency was normal with normal amplitude. Median sensory was prolonged with reduced amplitude. Ulnar sensory was prolonged with borderline amplitude. Peroneal distal latency was normal with reduced amplitude. Not the latter Mouties were noted.
April 17, 2000	MRI of the brain	Significant artifact with no gross abnormality
April 17, 2000	Cervical spine MRI	Mild disc bulging at cervical 3 – 4. There is superimposed protrusion impressing upon thecal sac centrally. Cervical 4 – 5: moderate diffuse bulge with protrusion slightly right greater than left.
April 17, 2000	Lumbar spine MRI	Moderate diffuse disk bulging with moderate impression upon thecal sac at lumbar 3 – 4. Mild to moderate neural from all narrowing.
April 6, 2000	Dr. White	Patient referred with numbness and tingling in left thigh and knee. Little

		<p>numbness and tingling in right hand.</p> <p>Could have peripheral nerve pathology informal of lumbar and cervical disc disease and maybe even peripheral compressive neuropathy. Not easily explained constellation of symptoms.</p> <p>Laboratory testing includes negative HIV. A subtle choline antibody negative.</p>
July 12, 1999	Benzene questionnaire	Patient admitting having exposure to benzene without protection from respirator in 1999. Admits to family member having disease of the blood.
July 12, 1999	Laboratory values.	Normal thyroid function, complete blood count, liver function and chemistries.
July 21, 1998	Hazcom survey results for ZZZZZZ Maritime MV Wilmington.	Lists of numerous paints.
June 17, 1998	Benzene questionnaire	Admits to benzene exposures without protection on April 1, 1998.
June 16, 1998	Laboratory values	Abnormal total cholesterol.
April 6, 1995	XXXXXX Maritime industrial hygiene survey, see River Philadelphia	<p>Benzene and total hydrocarbon exposure potentials exist primarily during the hot water, washing of the tanks using a portable wash machines. This activity involves dropping a portable Butterworth machine to reject played with the Hydro hoist. During the lowering and raising of the portable machine, visible steam, inert gas, and hydrocarbon vapors are blown out of the Butterworth hole and into the AB's breathing zone. Rest curb protection was warned by personnel during tank entry. Several areas collected on deck downwind of the venting tanks and portable watching operations resulted in elevated benzene concentrations.</p> <p>During protection should be required. On board MSDS compilation was</p>

		complete and up-to-date. The entire crew knew the location of the MSDS and could understand information provided.
July 2, 1994	Certificate of discharge, Eddie Lee XXXXXX	
May 23, 1994	Industrial hygiene survey	<p>Evaluate potential benzene exposures and take cleaning operations. Tesla was docked in Anacortes, Washington.</p> <p>Monitoring the document time weighted average exposures above the current permissible exposure limit for US Coast Guard as well as the short-term exposure limit. Crew members were wearing half face respirators with organic vapor cartridges.</p> <p>Only one of the several main deck area grab samples was in excess of 1 ppm. It may be appropriate to require any person opening or closing purge pipes or other tank openings to wear at least a half face respirator with organic vapor cartridges.</p>
April 12, 1994	XXXXXX Co. letter from industrial hygienist specialist	<p>Airborne samples of benzene or less than the permissible exposure limit. A questionnaire evaluating crew complaints of odors and symptoms. This indicated that 61% of the personnel associated headaches with a stack gas odor while loading ANS crude.</p> <p>Concentrations of benzene and total hydrocarbons found when the bullets began to lift, especially during topping off, or higher than the previous studies had indicated.</p> <p>There were complaints of voters and symptoms by the Fleet personnel. Air monitoring was done during a time that represented the worst case in terms of odors and associated</p>

		<p>symptoms.</p> <p>To personal samples worn by able seaman exceeded the permissible exposure limit for an eight hour day for total hydrocarbons and benzene. Both were wearing respirators, so that their actual exposure would have been less. Two of the five short-term samples, one by able seaman and a gauger, exceeded the short-term exposure level of five for benzene. Neither were wearing respirators.</p>
August 6, 1992	Dean Gilman, sure five industrial hygienist. Certificate of analysis. Sampling site is east north slope.	<p>n-hexane parts per million for sample one is 49. For tank three c, 1 ppm. 2 ppm for sample three. 1 ppm for tank three P. 3 ppm for sample 005. 6 ppm for N hexane sample number 006.</p> <p>Less than 1 ppm sample 007. Port slot tank and hexane 835 ppm; sample number 008. Page 11.</p>
December 13, 1991	Letter from XXXXXX to Eddie Lee XXXXXX.	April 20, 1991 sample result of total hydrocarbons equaled 734.748 parts for million. This sample was repeated in the same day and was 252 .266 ppm. Recommended exposure limits were listed as 100 ppm.
April 24, 1991	Laboratory sampling.	Benzene 5 ppm, total hydrocarbon 252.266 ppm. Volume was 203 minutes.
Undated	Handwritten history from patient to	I went to work in 1988 as an ordinary Seaman. I cleaned tanks as part of my job for the next 11 years through 1999. In the first four years, we used to scoop with a bucket in the tanks to mock the material. I did this 12 to 20 times or so for years or more. We wore paper masks. I would get covered with oil and mock and would be on my skin. After 1995 we wore masks was cartridges but I still got

		<p>covered with oil.</p> <p>I had to clean the tanks and smell the gas from the tank. I did this off and on for my whole career and did not wear a mask. I had to lower tapes down into tanks while they were topping off. This took 2 to 4 hours. I did not wear a mask in the first four or so years later we wore masks, but took them off to talk to the control room.</p> <p>I would lower hoses for butter wording, Tank cleaning and stand on deck. I did not wear a mask in early four or so years, or else a paper mask. After that, I also took it off to talk on the radio.</p> <p>I would help cook up cargo lines for taking on in discharging cargo, put on phalanges, and most of the time to not wear a mask and could smell the fumes.</p> <p>I would breathe fumes at night, get headaches, and still fumes in the living quarters when they took on cargo. Sometimes at night, I would put on my respirator and sleep with it on. Most of my work until 2000, was chipping and painting. I used all kinds of paints and solvents. I did not wear masks while painting on deck. After my surgery in 2000, a work in the engine room, wiping oil products and again got covered in oil. It would be on my clothes and in my skin. We use the lot of chemicals in the engine room.</p> <p>We clean filters and stainer's and turbochargers with it. They got rid of stuff we used an early years. I had to get into the engine and clean them out</p>
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		wiping the oil out. I would get covered with oil and grease.
	Material safety data sheet for crude oil.	
Undated	Sheila Butler, MD	21 page hand-written review of records and opinion.
	Material safety data sheet for hexane solvent	Product contains 55% and hexane. Product is called Exxsol hexane solvent. Product category is petroleum solvent.

DIAGNOSIS

1. Status post cervical laminectomy and three level fusion.
2. Peripheral polyneuropathy, chronic inflammatory demyelinating polyneuropathy, CIDP
3. Multiple bilateral entrapment neuropathies
4. Mild to moderate cognitive dysfunction

EXPOSURE DISCUSSION (Summarized from surveys and reports noted above)

Mr. XXXXXX has been employed as a Seaman for ZZZZZZ Maritime, Inc. from 1987 to 2003 when he was removed from his position due to not being able to perform the duties of his job (Dr. Frates, 2003).

He has had a long history of unprotected exposure to benzene, N-hexane, total hydrocarbons (THC) or total petroleum hydrocarbons (TPH), and other volatile organic compounds (VOC). He began working for ZZZZZZ Maritime, Inc. in 1987 as an ordinary Seaman aboard the vessel S/R North Slope. According to Mr. XXXXXX duties included, but were not limited to, cleaning holding tanks, painting, working in the engine room, mopping, general maintenance, and checking gauges. From 1987 until 2003 he worked on a number of different vessels, but his job duties for those 16 years continued to include the cleaning of holding tanks, painting, and working in the engine room, just to name a few.

Throughout his career with ZZZZZZ Maritime, Inc. industrial hygiene (IH) surveys have been conducted aboard many different XXXXXX and YYYYYr vessels. Mr. XXXXXX was assigned to many of the ships surveyed and present during the survey period.

According to IH surveys provided, Mr. XXXXXX was exposed on several occasions to benzene at levels exceeding the both the permissible exposure limits (PEL) and short-term exposure limits (STEL) as set forth by the Occupational Safety and Health Administration (OSHA) under regulation standard 29 CFR 1910.1028 (OSHA, 2005).

He was also exposed to elevated levels of total polyaromatic hydrocarbons on several occasions according to the IH surveys. For example, in a letter dated December 13, 1991 from XXXXXX to Mr. XXXXXX it was noted that Mr. XXXXXX was exposed to elevated levels of total hydrocarbon. The letter stated that in an IH survey performed on April 20, 1991 air samples of TPH were collected and resulted in concentrations of 734.748 parts per million (ppm) with an exposure limit of 100 ppm. Sampling was conducted again later that same day, and TPH concentrations were recorded at 252.266 ppm.

An IH survey conducted by David Risis, C.I.H. (1994) noted that approximately 61% of the crew complained of headaches due to petroleum odors while loading crude oil, 32% of the crew complained of throat irritations, and 24% of the crew complained of feelings of nausea. Sample collections resulted in benzene concentrations exceeding the PEL of 1 ppm in 21 of 27 samples taken.

Furthermore, XXXXXX conducted a survey near the port slope tank on August 6, 1992 (XXXXXX Biomedical Sciences, Inc.). Air samples showed concentrations of N-hexane at 835 ppm, benzene at 198 ppm, and toluene at 102 ppm.

Material Safety Data Sheets (MSDS) provided by ZZZZZZ Maritime, Inc. indicate that a multitude of products used aboard these vessels contained volatile organic hydrocarbons. Most notably were benzene, toluene, ethylbenzene, and xylenes (BTEX), N-hexane, crude oil (containing BTEX and N-hexane), methyl tert-butyl ether, tetrachloroethylene (PCE), and blended VOCs (including N-hexane, benzene, and toluene). Examples include crude oil containing approximately 10-20% toluene, 15-30% xylenes, and 0-1% benzene by weight (XXXXXX, 1996), and Exxsol Hexane Solvent, which contains approximately 55% N-hexane by weight (XXXXXX, 1997)

Although surveys were not always specific to vessels that Mr. XXXXXX was working on, this information estimates and characterizes the occupational exposures aboard the vessels he did work. This is evidence for significant exposure to Mr. XXXXXX.

N- HEXANE NEUROTOXICITY:

N-hexane is a volatile organic hydrocarbon that has been associated with polyneuropathy since the 1960s in industrial workers. Nerve pathology has been documented for many workers and for those abusing this solvent. A central-peripheral dying back neuropathy has been described in the literature, supporting the neurocognitive symptoms that are commonly associated with exposure. This is the result of the toxic metabolite 2,5 hexane dione. EMG abnormalities have also been well described.

CONCLUSION:

Based on my review of his medical history from an interview and various medical records, a neurological examination and review of performance evaluations, company documents including surveys and a neuropsychological assessment, as well as MSDS

provided, it is my opinion that based on reasonable medical probability, Mr. XXXXXX's chronic occupational exposure to organic hydrocarbons, including n-hexane, with insufficient respiratory protection during the course of his job with ZZZZZZ Maritime, has caused or contributed to cause his medical condition of motor and sensory polyneuropathy and mild to moderate cognitive dysfunction, as evidenced by the neuropsychological testing by Dr. Bowler. This disease is mildly progressive and will lead to him having more difficulties as he ages compared to one without his condition.

Pain is Mr. XXXXXX's biggest complaint. Pain is consistent and resultant from the polyneuropathy from which he suffers. This makes it difficult for him to accomplish routine daily activities.

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