Review of Dr. Jon Nordby's "Shotgun Death of Col. James E. Sabow"

Summary:

I know Dr. Jon Nordby through his excellent publications. He is a fine scientist and certainly his works are valuable additions to any forensic science library. However, I am mystified by Dr. Nordby's report on this case. His work is not well thought out and the report is not the quality that I would consider appropriate for a scientist of his caliber.

1. Dr. Nordby engages in attacks on Dr. David Sabow that are inappropriate for the apparent mandate of a scientific study of the cause of death of Colonel James Sabow.
2. There is no excuse for not obtaining critical evidence in this case. The evidence exists and its location known. I find it astonishing, considering the nature of this case, that Dr. Nordby could not find the means to obtain this evidence.
3. Critical to this case is the Ithaca 12 gauge shotgun Model 200E, which was "unobtainable." Nordby claims that he could not find a substitute for the Ithaca 200E. He also notes that these shotguns, when found are extraordinarily expensive ($3000 and up). Not true on either issue. The Ithaca 12 gauge Model 200E is available on the internet and costs around $1000.
4. It is inappropriate to use a different brand (Gentry) shotgun in his tests. Considering the conditions of these tests (i.e., none of the critical evidence available), Dr. Nordby should have dropped this case when it became apparent that the critical evidence was not forthcoming.
5. The use of his plywood-constructed "skull boxes" to simulate the internal conditions of a human skull subjected to an intraoral shotgun blast has no apparent foundation in the scientific literature and would pass neither a Daubert nor a Frye challenge.
6. Dr. Nordby does not show that the damaging of the barrel of the Gentry shotgun in one of his tests is a valid feature for all shotguns when the muzzle is pressed hard against human soft tissue. It is inappropriate, due to lack of sufficient data, to consider this shotgun failure as having anything to do with the case.
7. The so-called "sound tests" of the Gentry shotgun conducted by Dr. Nordby are presented in an unscientific manner and, therefore, not valid.
8. There is a vast amount of inappropriate material (e.g., discussion concerning black powder shotguns) included in Dr. Nordby's report. I do not understand why Dr. Nordby felt it necessary include this material, which only obfuscates the issues of this case and the work that he presents.

Introduction.

Dr. David Sabow first contacted me on January 10, 2005 regarding the death of his brother, Colonel James Sabow. He requested that I conduct an investigation concerning the gunshot residue evidence in this case.

On January 11, 2005 I received by FedEx the shotgun and pajama bottoms worn by Colonel Sabow at the time of his death. This was followed (February 8, 2005) by the bathrobe and the rest of the clothing that was worn by Colonel Sabow at his death. The results of my analyses mainly concern gunshot residue (GSR) are in a forthcoming report.

During the first conversation with Dr. Sabow, he noted that an analysis of Colonel Sabow's death was recently issued by Dr. Jon Nordby of Final Analysis Forensics. He stated that was not happy with the conclusions that Dr. Nordby came to in that report and my retention by Dr. Sabow was the result of Dr. Nordby's report.

The Department of Defense apparently issued Dr. Nordby's report on December 30, 2004. I was asked by Dr. David Sabow to review Dr. Nordby's report as part of my investigation into this matter.

The report by Dr. Jon Nordby concerning the death of Colonel James Sabow.

1) My understanding is that the investigation conducted by Jon Nordby was mandated by Congress of the United States. The intent of this mandate was to initiate a multidisciplinary analysis of the evidence. I see no indication from the cover letter or the report itself that this occurred. Indeed, the letter dated December 30, 2004 to Congressman Duncan Hunter by Charles S. Abell lists a number of individuals who allegedly participated in this study, but nowhere in the material that I received were reports from these individuals. There is no indication in Dr. Nordby's report that these individuals generated reports. Until reports are received from these participants, their alleged participation should be considered hearsay and unreliable.

2) Dr. Nordby's report does not direct the reader to appropriate references and is essentially a "tome" of a report. While I was reading, I kept on saying to myself, "please get to the point!" For instance, on page 4, the entire section on "Bloodstain Pattern Analysis" could have been reduced to a single sentence with a reference directing the reader to this information. The self aggrandizement (page 4, third paragraph) belongs in Nordby's CV, not in this report.

3) The section, "Brief History of this Case" (pages 5 through 7) should have been placed in an appendix.

4) There are numerous inappropriate references to Dr. David Sabow's activities and conclusions. Colonel Sabow either committed suicide or was murdered. A short description of the two proposed scenarios is all that is necessary. My impression of Nordby's continual referencing Dr. Sabow's position, that Nordby himself has injected bias into his study.

5) On page 11, third paragraph under "Reports vs. Hard Evidence," Dr. Nordby complained that Dr. Sabow has refused to release critically important evidence, the most important of which is the Ithaca 12 gauge shotgun. This complaint was reiterated more times (pages 20, 21 and 25). This is a study, mandated by the Congress of the United States, and Dr. Nordby cannot get the evidence? I find this absurd.

6) Page 14, paragraph 4. "… bird shot shell which is not considered to be extremely powerful load given the small size of bird shot. Consequently, and not surprisingly, there was no exit wound." Considering that this study and report was requested by Congress, I think it would benefit the reader for Dr. Nordby to cite references. Certainly, there must be victims who have committed suicide with a 12 gauge shotgun using the Winchester Game load cartridge or comparable brand. Dr. Nordby has broad expertise in these matters; I think

that it is reasonable to ask that he provide numbers as to how many of suicide victims of record (inquires of MEs over the country) using this ammunition had exit wounds as well as for those victims who used more powerful loads.

7) Page 21, paragraph 2. "Finding a similar Ithaca Model 200E shotgun proved extremely difficult." Nordby then states, "When available, examples were mostly antique versions of the weapon with Damascus steel barrels designed for black powder shooting…" A check (February 8, 2005) on the website, GunBroker.com, showed that there are four Ithaca 12 gauge Model 200E shotguns up for bid. Two of those shotguns have 26-inch barrels. I checked a local gun shop, Duncan's (San Marcos, California) whose proprietor stated that the Ithaca 200E, (circa 1970 – 1980) is rare, but they occasionally come into the shop. He sited a price of $600 and up. According to the listings (Fig. 1, attached) on GunBroker.com, it appears that the price is around $1000. The timeframe of the bids is about a week; likely there would always be Ithaca 200E shotguns available for sale. Another Ithaca 200E, 26-inch barrel was found on gunsamerica.com for $995.00. This shotgun appeared to matched the design of the Sabow shotgun. The point is that the Ithaca 12 gauge Model 200E shotguns (26" barrel) are available for around the price that Nordby paid for his Gentry shotgun. I am surprised that Dr. Nordby was unable to find the shotgun.

8) Page 23, paragraph 2. "It should be noted here that the issue of the barrel's choke, …, remains largely irrelevant for a contact wound…" If so, why does he continue?

9) "Of much more interest is the presence of any GSR on the clothing of living suspects – more specifically, the patterns of GSR, if identifiable, on the clothing. This (sic) data must at the very least indicate that the clothing was near the vicinity of a fire arm's (sic) discharge." My study of the Sabow evidence indicates that a firearm was not discharged either near the bathrobe or the pajama bottoms that were worn by the victim at the time of his death.

10) Page 28, Table (bottom of page). "Listed from least loud to most sound [(measured in decibels]." Apparently, Dr. Nordby interprets the terms "least," "louder" and "most" as decibel measurements. Also page 38, "After the weapon's discharge with the Federal #4, we noted that the sound also minimal (sic) when compared with a discharge of the weapon in the open air:…" It seems that, Dr. Nordby was unable to purchase a decibel meter and just "winged it" for his so-called decibel measurements.

11) The "skull boxes." Nordby goes through a series of experiments in which he constructed plywood "skull boxes" to simulate a human skull. There is no foundation work to support such an association. In the late 1980s, I studied backspatter from close-range shots to heads (Burnett, 1991, "Detection of bone and bone-plus-bullet particles in backspatter from close-rang shots to heads" Journal of Forensic Sciences 36(6):1745-1752). That work relied on experiments performed on livestock (pigs). Nordby could have performed more reliable tests on freshly butchered livestock. In San Diego County, a livestock butcher, whose services I used for my study, made his living by going to small farms and butchering onsite. With compensation to both the butcher and the livestock owner, I was permitted to do my experiments. Likely most rural areas in this country have access to traveling livestock butchers and arrangements could have been made by Dr. Nordby.

12) Page 38, paragraph 5. "[no human subjects volunteered for these tests]" I find it inappropriate for Dr. Nordby to resort to this misplaced levity in a report of this nature.

13) Page 38, bottom. "Despite the exit wound to the wooded skull box, this test also shows that with the decedent leaning slightly forward, onto, or toward the shotgun, holding the muzzle barrel would have exploded if the tight contact were made before the weapon's discharge. Since the shotgun recovered at the scene did not have a damaged barrel, one may conclude that this specific scenario did not happen in the death of Col. Sabow." One might also just as well conclude that the experimental shotgun barrel was defective. In addition, Dr. Nordby's conclusion assumes that the construct of the "skull box" accurately simulates a real human skull (he

has not proved this). Finally, there have been no statistical analyses on how many shotguns explode under this circumstance (this is not a tongue-in-cheek statement). It could well be that other brands of shotguns do not explode or have a low likelihood of exploding when subjected to these experimental conditions (i.e., the exploding shotgun was a rare event).

Test # 3 – the exploding shotgun (additional comment). If during the hard forcing of the shotgun into the "skull box," the "skull box" material (ballistic gel and foam) inserted into the barrel of the shotgun. This would be quite different from a muzzle contact with the soft pallet where tissue resistance would likely occur - that tissue would not enter the barrel as the gelatin and the other materials in the box likely did. The pressure buildup causing the barrel rupture would be more probable if the barrel were physically plugged.

14) Page 44 – Summary Conclusions: Since the only large-scale exit of the gases injected in the mouth in the suicide scenario would be the mouth, the shotgun muzzle would partially block that gas exit. The gas then would have to go around the shotgun muzzle past the sides of the mouth. The mouth in the suicide scenario is positioned where the backspatter would at least hit the thighs of the victim. The shotgun does produce GSR from the breech and trigger housing (my report will be forthcoming). It is likely that GSR would have been deposited on the Colonel's hand, if he had depressed the trigger. These results essentially negate Dr. Nordby's conclusion that Colonel Sabow committed suicide.

Comment:

Considering that none of the critical evidence was available to Dr. Nordby, he should have dropped this case when it became apparent that this evidence was not forthcoming.

"In forensic science, 'critical' means 'careful' and ought not to entail a personal attack or the devaluation of a person or an agency doing difficult work under less than desirable circumstances." (Jon Nordby, "Shotgun Death of Col. James E. Sabow" Page 47).

Bryan R. Burnett
CV: Appendix I.

February 15, 2005

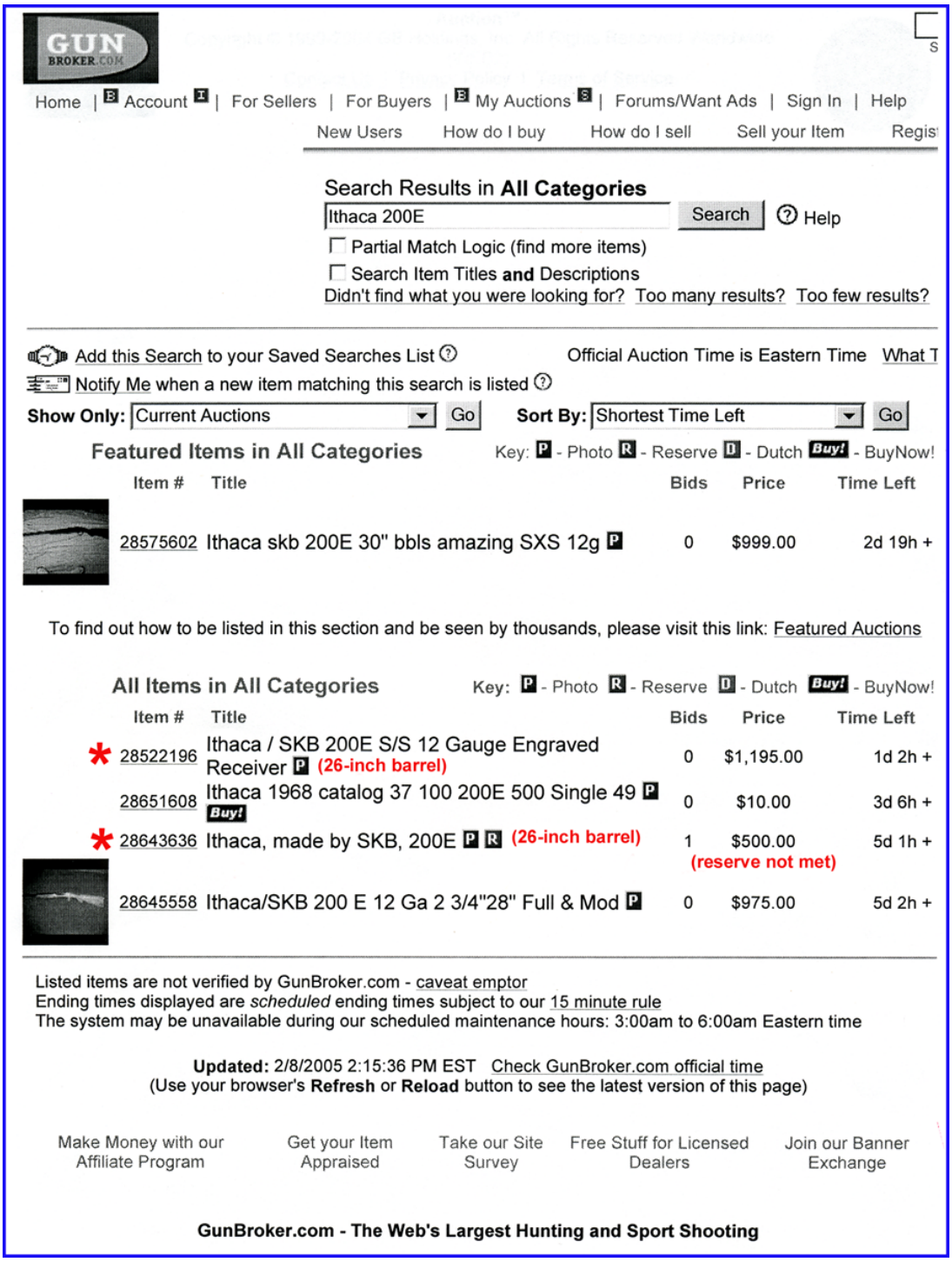

Figure 1. *A internet page from the website Gunbroker.com concerning Ithaca 12 gauge Model 200E shotguns. Red letters are added by author. Asterisks: Marks likely appropriate shotguns for the Nordby study.*

APPENDIX I

CURRICULUM VITAE

BRYAN REEDER BURNETT
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EDUCATION

Scripps Institution of Oceanography: M.S. Marine Biology
San Diego State University: M.S. Biology (Physiology)
San Diego State University: B.S. Zoology

PROFESSIONAL EXPERIENCE

- Scanning electron microscopy - preparation/operation/imaging
- Energy dispersive X-ray analysis - elemental analysis
- Gunshot forensics - Gunshot residue analysis & interpretation
- Quantification of asbestos and non-asbestos particle burden in lung tissue by electron microscopy.
- Digital imaging - application development/training in the PC environment
- Crime-scene reconstruction
- Booth setup, display and demonstrations in technical shows
- Testimony in court (civil and criminal)
- Use of statistics in ecology and other sciences
- Technical/scientific illustration (>30 years experience)
- Beta testing of software for scientists for a digital camera company
- Specialized software development - documentation/debugging (Basic)
- Biological Oceanography/Marine Biology - set up of sampling programs, etc. (6 months total sea time)

EMPLOYMENT

Jan. 1982- Present: General Partner & Director of MEIXA TECH and owner FORENSIC SCIENCE CONSULTANTS GROUP, Cardiff-by-the-Sea, California. We provide:

1)Industrial testing, clients include Maxwell Labs, Cymer Laser, Kelco and Ryan Aeronautical.
2)Beta-test site for major manufacturer of digital cameras
3)Analysis and interpretation of gunshot residue in criminal cases.
4)Crime-scene reconstruction.
5)Documentation of inorganic particle exposure (e.g. asbestos, heavy metals) in lung and other tissue. Meixa Tech has worked on hundreds of pulmonary-injury cases throughout the country.

Jan. 2002- Present: Associate with NYOPTICS, INC. Duties include demonstration of digital cameras to professional engineers and scientists, booth preparation and product demonstration for trade shows, training professionals on the use of

Adobe Photoshop and beta-testing of a manufacturer of scientific digital cameras and software.

Feb. 1997- Oct.2000: Associate with PACIFIC CREST IMAGING SYSTEMS. Duties include demonstration of digital cameras to professional engineers and scientists, booth preparation and product demonstration for trade shows, training professionals on the use of Adobe Photoshop and beta-testing of a major manufacturer of scientific digital cameras and software.

Nov. 1992- Sept. 1997: Senior Scientist with FORENSIC SCIENCE CONSULTING GROUP, Cardiff-by-the-Sea, California (Director: Joseph Orantes). We provided forensic support for almost all aspects in the investigation of criminal cases. My expertise includes gunshot residue and other particle analyses by scanning electron microscopy/energy dispersive X-ray analysis. I also contribute expertise in other forensic areas where scanning electron and light microscopy are applicable.

July 1987- July 1988: Senior Research Analyst with MEC Analytical Systems. 531 Encinitas Blvd., Suite 110, Encinitas, CA 92024.

Oct. 1981- Aug. 1982: Scientific illustrator and illustration consultant for environmental impact reports involving shallow marine and fresh water projects. Lockheed Ocean Systems, San Diego.

Oct. 1980- June 1982: Staff Research Associate, University of California, San Diego. Duties: finding particulates in human lung sections with scanning electron microscopy and identifying elemental composition using X-ray analysis.

June 1980- Oct. 1980: Freelance scientific illustration. Clients included Marine Ecological Consultants and Marine Review Committee.

Oct. 1975- June 1980: Staff Research Associate, Scripps Institution of Oceanography. Duties: ecological impact study for DOE of the abyssal benthos in the central North Pacific. Nano-, meio- and macrobenthos; organisms associated with ferromanganese nodules. Chief scientist in oceanographic expeditions.

AFFILIATIONS

American Academy of Forensic Sciences (Fellow, General Section)
San Diego Forensic Consultants Association
President, 1998, 1999
Secretary, 1992, 1993, 1994
Newsletter Editor, 1992, 1993, 1994
International Association for MicroAnalysis

CONFERENCES ATTENDED

American Academy of Forensic Sciences - 1987, 1988, 1989, 1990, 1991,1994, 1995, 1998, 2000
California Association of Criminalists - 1993, 1995, 1996, 2002
Canadian Society of Forensic Science & Northwest Association Forensic Scientists -
November, 1994, Vancouver, BC - Round Table Discussion on Gunshot Residue
Scanning 96, 1996 – Forensic course/workshops/original papers.
Scanning 97, 1997 – Forensic course/workshops/original papers (presenter).
Scanning 03, 2003 – Forensic course/workshops/original papers.

COURT APPEARANCES (as an expert)

1. July 1988: People v. Joselito Cinco, Superior Court, Orange County, California (accepted as a expert on SEM/ EDXA- gunshot residue)

2. May 1990: Royal v. Colvin, Superior Court, Contra Costa County, California (accepted as a expert on SEM/EDXA- particle analysis)
3. Dec. 1991: Jacobs v. Wittaker Corporation, Superior Court, Los Angeles County, South Central District, Compton, CA (accepted as a expert on SEM/EDXA- particle analysis)
4. Oct. 1993: USMC v. Williams. Military Court, Camp Pendleton, California (accepted as a expert on SEM/EDXA- gunshot residue)
5. Aug. 1994: People v. Edmunds. Superior Court, El Cajon, California (accepted as an expert on SEM/EDXA- gunshot residue)
6. Sept. 1995: People v. Morrison. Oklahoma City, Oklahoma (accepted as an expert on SEM/EDXA- gunshot residue)
7. Oct. 1995: People v. Rogers. Superior Court, San Diego (accepted as an expert on SEM/EDXA- gunshot residue)
8. May 1996: People v. Leon, Superior Court, Orange County (accepted as an expert on SEM/EDXA - gunshot residue)
9. Nov. 1996: USMC v. Quintanilla. Military Court, Camp Pendleton, California (accepted as a expert on SEM/EDXA- gunshot residue, paint analysis)
10. Dec. 1996: People v. Murphy. Superior Court, Los Angeles (accepted as an expert on SEM/EDXA - gunshot residue)
11. Mar. 1997: People v. Chrisman. Superior Court, San Diego (accepted as an expert on SEM/EDXA - gunshot residue)
12. Apr. 1997: People v. Pena. Superior Court, San Diego (accepted as an expert on SEM/EDXA - gunshot residue)
13. July 1999: People v. Contreras. Superior Court, San Diego (accepted as an expert on SEM/EDXA, crime scene reconstruction & gunshot residue).
14. Oct. 2000: Emrick v. Asbestos Defendants. Superior Court, Portland, OR. (asbestos injury)
15. Feb. 2003: People v. Pasillas. Superior Court, San Diego (accepted as an expert on SEM/EDXA - gunshot residue)
16. Feb. 2004: People v. Lepore. Superior Court, Pasadena, CA (accepted as expert on SEM/EDXA & crime scene reconstruction).
17. Feb. 2004: People v. Rountree. Superior Court, San Diego, CA (accepted as expert on SEM/EDXA - gunshot residue)
18. May 2004: People v. Crowder. Superior Court, San Diego, CA (accepted as expert on SEM/EDXA - gunshot residue)
19. Sept. 2004: People v. Plasencia. Superior Court, Riverside, CA (accepted as expert on SEM/EDXA –gunshot residue)

DEPOSITIONS & ARBITRATIONS

1. Weeks v. Fibreboard et al.; Duda vs. Fibreboard et al., February 10, 1987 (asbestos injury)
2. Lostal v. Johns-Mansville Corp., et al., March 26, 1987 (asbestos injury)
3. Zaragoza v. Solis, et al., July 16, 1987, November 2, 1987 & October 14, 1988 (gunshot forensics)
4. Johnson v. Pfizer Corp., et al., March 15, 1991 (asbestos injury)
5. Jacobs v. Whittaker Corp. et al. November 9, 1991 (industrial exposure)
6. Hollywood v. Becker, March, 1992 (asbestos injury)
7. Jablon v. A.U.M., July, 1993 (paint analysis)
8. Prafke v. Alvarado Hospital, October, 1993 (surgical error)
9. Barry v. Owens-Illinois, Inc., February, 1994 (asbestos injury)
10. Wild v. AC and S, Inc., et al. 1995 (asbestos injury)
11. Blanco v. McMillin Realty et al. December, 1995 (paint analysis)
12. Sparco Trial Group - limited to Mitchell, October, 1997 (asbestos injury)
13. Hilgen v. Burlington Northern, Inc. March, 1998 (asbestos injury)
14. Edwards: PA2 Trial Group, Wilmington, DE. August, 1999 (asbestos injury)
15. Mabile v. The Executive Officers et al. April, 2000 (industrial exposure)
16. Hernandez v. Acheson Industries et al. November, 2003 (industrial exposure)
17. Pannell v. Nalco et al. February, 2004 (industrial exposure)
18. Nuriddin v. Asbestos Defendants (BHC). November, 2004 (asbestos injury)
19. Lopez v. U.S. Filter. December, 2004 (industrial exposure)
20. Coulter v. AC and S et al. January, 2005 (asbestos injury)

CASE LOAD

Approximately 90 cases per year (total career cases = approximately 2500).

CERTIFICATIONS

Early '90s: certified by the EPA for asbestos analysis by PLM.

Provisional certification to Meixa Tech as a medical laboratory (CLIA# 05D0565549) by the U.S. Department of Health and Human Services. Certification is contingent that Meixa Tech's director has a M.D. or Ph.D. degree - all other requirements for certification have been met.

PUBLICATIONS

1966. Burnett, B.R. The fifty dollar inverted green: a new variety. Paper Money. **5**:45.

1972. Burnett, B.R. Aspects of the circulatory system of *Pollicipes polymerus* J.B.Sowerby (Cirripedia: Thoracica). Journal of Morphology. **136**:79-107.

1972. Burnett, B.R. Notes on the lateral arteries of two stomatopods. Crustaceana 23:303-305.

1973. Burnett, B.R. and R.R.Hessler. Thoracic epipodites in the Stomatopoda (Crustacea): a phylogenetic consideration. Journal of Zoology. **169**:381-392.

1973. Burnett, B.R. Observations of the microfauna of the deep-sea benthos using light and scanning electron microscopy. Deep-Sea Research. **20**:413-418.

1975. Burnett, B.R. Blood circulation in four species of barnacles (*Lepas, Conchoderma*: Lepadidae). Transactions San Diego Society of Natural History. **17**:293-304.

1975. Burnett, B.R. A new method for serially mounting resin sections (Spurr) for light microscopy. Stain Technology **50**:288-290.

1977. Burnett, B.R. Blood circulation in the balanomorph barnacle, *Megabalanus californicus* (Pilsbry). Journal of Morphology. **153**:299-306.

1977. Burnett, B.R. Quantitative sampling of microbiota of the deep-sea benthos - I. Sampling techniques and some data from the abyssal central North Pacific. Deep-Sea Research **24**:781-789.

1977. Burnett, B.R. Microbiota. In: Annual Report of Sandia Laboratories Seabed Disposal Program: Benthic biological studies. D. Talbert (ed.) pp. 38-45.

1978. Hessler, R.R., C.L.Ingram, Yayanos,A.A. and Burnett, B.R.. Scavenging amphipods from the floor of the Philippine Trench. Deep-Sea Research **25**:1029-1047.

1978. Burnett, B.R. Microbiota and meiofauna. In: Annual Report of the Sandia Laboratories Seabed Disposal Program: Benthic biological studies. D. Talbert (ed.) pp. 29-47.

1979. Burnett, B.R. Quantitative sampling of microbiota of the deep-sea benthos- II. Evaluation of technique and introduction to the biota of the San Diego Trough. Transactions of the American Microscopical Society. **98**:233-242.

1981. Burnett, B.R. and K.Nealson. Organic films and microorganisms associated with manganese nodules. Deep-Sea Research **28**:637-645

1981. Burnett, B.R. Compound eyes in the cephalocarid crustacean *Hutchinsoniella macracantha*. Journal of Crustacean Biology. **1**:11-15.

1981. Burnett, B.R. Quantitative sampling of nanobiota (microbiota) of the deep-sea benthos- III. The bathyal San Diego Trough. Deep-Sea Research. **28**:649-663.

1982. Abraham, J.L., B.R.Burnett and R.Rodriguez-Roisin. Correlated environmental, radiological, physiologic, pathologic and mineralogical analysis in asbestos workers. American Review of Respiratory Diseases. 125:154.

1983. Burnett, B.R. and K.H.Nealson. Energy dispersive X-ray analysis of the surface of a deep-sea ferromanganese nodule. Marine Geology **53**:313-329.

1983. Abraham, J.L. and B.R.Burnett. Quantitative analysis of inorganic particle burden *in situ* in tissue sections. Scanning Electron Microscopy/1983/II pp. 681-696.

1984. Burnett, B.R. Striated muscle in the wall of the dorsal abdominal aorta of the California spiny lobster, *Panulirus interruptus*. Journal of Crustacean Biology. **4**:560-566.

1984. Snider, L., B.R. Burnett and R.R. Hessler. The composition and distribution of meiofauna and nanobiota in a central North Pacific deep-sea area. Deep-Sea Research. **31**: 1225-1249.

1984. Abraham, J.L., C.M. Smith and B.R. Burnett. Changes in lung chrysotile asbestos burden during and following six weeks exposure in rats. Abstract. Laboratory Investigation **50**: 1A.

1986. Abraham, J.L. and B.R. Burnett. Inorganic particulates in human lungs-quantitative *in situ* analysis in 156 cases. Lab Invest **54**:2A.

1987. Burnett, B.R. The cirripede circulatory system and its evolution. pp. 175-190 In: Crustacean Issues 5 - Barnacle Biology. A.J. Southward (ed.), F.R. Schram (gen.ed). A.A. Balkema, Rotterdam.

1988. Burnett, B.R. Modification of gunshot residue as a result of exposure to blood, bone fragments and water. *Abstract* D20, p 77. American Academy of Forensic Sciences, Philadelphia, PA.

1988. Burnett, B.R. and H. Thiel. The nanofauna (Chp.15). In: Introduction to the Study of Meiofauna. R.P.Higgins & H. Thiel (eds.) Smithsonian Institution Press. Blue Ridge Summit, PA. 488pp.

1989 Abraham, J.L. and B.R.Burnett. Quantitative *in situ* analysis of inorganic particle burden in tissue sections - an update. In: Microprobe Analysis in Medicine. Ingram, Shelburne and Roggli (eds). Hemisphere Publishing Corporation, New York. 352pp.

1989. Burnett, B.R. The form of gunshot residue is modified by target impact. Journal of Forensic Sciences. **34**: 808-822. (also Abstract B51 p.58. American Academy of Forensic Sciences, Las Vegas, NV)

1989. Burnett, B.R. Evidence for elemental fractionation in the formation of gunshot residue. Abstract B49, p 58. American Academy of Forensic Sciences, Las Vegas, NV.

1990. Abraham, J.L., A. Hunt, B.R. Burnett, M. Allison and E. Gerszten. Light microscopic and microanalytic study of lungs from pre-Columbian Chilean mummies. Paleopathology Newsletter 41.

1990. Abraham, J.L., B.R. Burnett, and A. Hunt. Asbestosis and mesothelioma: Non commercial amphibole asbestos fibers in New York State talc miners. Abstract: presented at American Thoracic Society, Toronto, Canada, September, 1990

1991. Burnett, B.R. Detection of bone and bone-plus-bullet particles in backspatter from close-range shots to heads.

Journal of Forensic Sciences. **36** (6): 1745-1752. (Also Abstract B30, p 68. American Academy of Forensic Sciences, Cincinnati, OH., 1990)

1991. Abraham, J.L., B.R. Burnett, and A. Hunt. Development and use of a pneumoconiosis database of human pulmonary inorganic particulate burden in over 400 lungs. Scanning Microscopy. **5** (1): 95-108.

1992. Abraham, J.L., B.R. Burnett, and A. Hunt. Talcosis and asbestosis in New York talc miners: dose-response analysis of occupational exposure, lung pathology and lung particulate burden.: Abstract, American Thoracic Society Meeting, 1992.

1993. Burnett, B.R. Detection of gunshot residue on fabric that has been previously been soaked in blood. Abstract, California Association of Criminalists, Semiannual Meeting, October, 1993.

1994. Abraham, J.L., L.E. Stettler, B.R. Burnett, A.Hunt and F. Platck. Interlaboratory comparison of non-fibrous particle lung burden, Quantitative techniques. Ann.occup.Hyg. **38**:541-550.

1994. Abraham, J.L., A.Hunt and B.R. Burnett. Steel (Fe-Cr) particles as a marker of welding fume exposure, frequency of occurrence and prevalence in a series of over 400 human lungs. Ann.occup.Hyg. **38**:551-557.

1994. Abraham, J.L., and B.R. Burnett. Mineralogic analysis in lung tissue using scanning electron microscopy-energy dispersive X-ray analysis. In: Structural methods in experimental lung research. J.Gill and J. Kleinerman (eds.)

1995. Burnett, B.R. Scanning electron microscopy/energy dispersive X-ray analysis of gunshot residue associated with clothing. Proceedings of the American Academy of Forensic Sciences. **1**:85.

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1997. Burnett, B.R. Shooting from the hip: Gunshot residue evidence collection, analysis and interpretation. Proceedings. Scanning '97, Scanning **19**(3): 183.

1997. Burnett, B.R. and Orantes, J.M. An unusual bloodstain case. Journal of Forensic Sciences. **42**: 519-523.

1997. Hunt, A., Burnett, B.R., Basford, T.M. and Abraham, J.L. Lead and other metals in play-kit craft items composed of vinyl and leather. American Journal of Public Health. **87**(10):1724-1727.

1998. Burnett, B.R. The forensic analysis of interior semi-gloss house paint. Proceedings American Academy of Forensic Sciences, **4**:58.

1998. Burnett, B.R. The form and composition of .22 caliber gunshot residue from muzzle and breech deposits. Proceedings American Academy of Forensic Sciences, **4**:26.

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2001. Burnett, B.R. A shot through the window. Journal of Forensic Sciences, **46** (2): 379-385.

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