

LENR INVESTIGATIONS BY FRAN TANZELLA

*A PROJECT OF THE LENR RESEARCH
DOCUMENTATION INITIATIVE*

THIRD DRAFT REPORT, UPDATE 2

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1 Introduction

Cold fusion (CF) was announced on March 23, 1989, by Dr. Martin Fleischman and Dr. Stanley Pons. The immense potential energy benefits of CF (also referred to as Low Energy Nuclear Reactions, LENR) were immediately recognized. Humankind's need for a source of cheap, clean, inexhaustible, and safe energy seemed to be realized. However, LENR was rejected by mainstream science within a year or so, and it remains highly marginalized to this day. On the other hand, the phenomenon has continued to be rigorously pursued by many investigators in several countries. The mounting evidence for the reality of LENR shows that its potential benefits may yet be realized.

Because it is a “pariah” science, LENR has attracted relatively few new investigators to the field. Many of the researchers became active in the early months and years after the 1989 announcement. Now 36 years later many of these investigators are leaving the field. The results of their many years of LENR investigation are at risk of being lost, which would be extremely unfortunate not only for the field, but also potentially for humanity.

An initiative is underway to mitigate the risk of loss of research records of LENR investigators. Its objectives are to collect, organize, document, and archive these records. It is being performed by LENRGY, LLC¹, whose President is Dr. Thomas Grimshaw. The LENR Research Documentation Initiative (LRDI) assists researchers in making sure that their efforts are preserved and to keep the records available for additional analysis and interpretation. The LRDI began with a pilot project with Dr. Edmund Storms and now includes 10 projects with 15 participants. It is described in a recent article in *Infinite Energy*² as well as on a dedicated website³.

A project has been initiated under the umbrella of the LRDI to document the LENR research of Dr. Tanzella at SRI and after he retired from that organization. The objective of the Tanzella

¹ LENRGY: LENR Energy – Pursuing the Benefits of Cold Fusion Realization. www.lenrgyllc.com.

² Grimshaw, T., 2020. Documenting Cold Fusion Research: Preserving a Vital Asset for Humankind. *Infinite Energy*, Issue 150, March/April 2020, p. 9-13.

³ LENR Research Documentation Initiative: Collection, Organization, Description, Archiving of LENR Research Records. www.lenr-documentation.org.

LENR Research Documentation Project (TLRDP) is to collect and record as much of his research record as possible.

Dr. Tanzella (Figure 1-1) received his B.S. degree in chemistry at Southeastern Massachusetts University and his Ph.D. in inorganic chemistry from the University of California, Berkeley⁴. He went on for post-doctoral studies at the University of Pennsylvania. He investigated the synthesis of novel electronic conductors using high-end energy oxidizing materials for his Ph.D. degree. In his post-doctoral studies, he researched the electrochemistry of lithium polymer electrolytes.

Dr. Tanzella worked as a chemist at E.I. Dupont for over four years before joining SRI International in 1986. At SRI he used electrochemical methods to monitor chemical reaction rates in many processes, including hydrogen in palladium. He helped develop the LENR electrochemical and calorimetry program at SRI. More information on Dr. Tanzella's LENR career is provided in Section 8.



Figure 1-1
Dr. Fran Tanzella in His LENR Laboratory, Energy Research Center, Belmont, CA.
Photo Taken October 2019.

⁴ Professional Biographies for the Tanzella LENR Research Documentation Project. Memo to Fran Tanzella from Tom Grimshaw, February 3, 2020.

This TLRDP report presents the results of the information collection and interviews of Dr. Tanzella. The components of research record include publications and unpublished reports, electronic files, hardcopy records, and LENR library materials. An interview of Dr. Tanzella regarding his LENR and other research has been conducted and included in the Project. The phases of Dr. Tanzella's LENR research are in preparation, and future potential work is suggested. Memos were used to record the findings as progress was made. A folder on Dropbox has been set up to store the Project documents. More information on how the TLRDP is being conducted is in Section 10.

2 Publications and Unpublished Reports

Dr. Tanzella has authored or co-authored many publications and reports in his long LENR research career. For his professional resume, he selected the following list of publications⁵.

- S. Crouch-Baker, M.C.H. McKubre, and F.L. Tanzella, "Variation of resistance with composition in the β -phase of the H-Pd system at 298 K". *Zeitschrift fuer Physikalische Chemie (Munich)*, Vol. 204, pages. 247-254, (1998)
- P. Tripodi, et al., "Temperature coefficient of resistivity at compositions approaching PdH". *Physics Letters A*, Vol. 276, pages. 122-126, (2000)
- W.B. Clarke, et al., "Search for ^3He and ^4He in Arata-style palladium cathodes II: evidence for tritium production". *Fusion Science and Technology*, Vol. 40, pages. 152-167, (2001)
- M. McKubre, et al., "Finite element modeling of the transient calorimetric behavior of the MATRIX experimental apparatus: ^4He and excess of power production correlation through numerical results". *Conference Proceedings - Italian Physical Society*, Vol. 70, pages. 23-27, (2000)
- V. Violante, et al., "Hydrogen isotopes interaction dynamics in palladium lattice". *Conference Proceedings - Italian Physical Society*, Vol. 70, pages. 409-417, (2000)
- M.C.H. McKubre, et al., "Replication of condensed matter heat production". *ACS Symposium Series*, Vol. 998, pages. 219-247, (2008)
- L.P. Forsley, et al., Comparison of three methods of analyzing nuclear tracks observed in CR-39 detectors used in Pd/D co-deposition experiments, in *Abstracts of Papers, 241st ACS National Meeting & Exposition*, Anaheim, CA, United States, March 27-31, 2011. p. ENVR-33.
- F. L. Tanzella, et al., Detection of high energy particles using CR-39 detectors Part 2: Results of in-depth destructive etching analysis, *International Journal of Hydrogen Energy*, Vol. 42, pages 429-436, (2017)

Dr. Tanzella's publications and reports have been added to the TLRDP as individual reports and other items collected for the Project and as lists of items he has prepared previously.

2.1 Collected Reports

Several individual papers and reports have been added to the TLRDP from Dr. Tanzella's electronic and hardcopy files. They are listed below.

- McKubre, M., et al., 1990. Calorimetry and Electrochemistry in the D/Pd System. in *First Annual Conference on Cold Fusion*. University of Utah Research Park, Salt Lake City, Utah: National Cold Fusion Institute⁶.
- Crouch-Baker, S., M. McKubre, M., and Tanzella, F., 1997. *New Hydrogen Energy Research at SRI International*⁷. SRI Annual Report. March.

⁵ Professional Biographies for the Tanzella LENR Research Documentation Project. Memo to Fran Tanzella from Tom Grimshaw, February 3, 2020.

⁶ ICCF-1 Paper: Calorimetry and Electrochemistry in the D/Pd System. Memo to Fran Tanzella from Tom Grimshaw, March 31, 2020.

⁷ SRI Reports for New Hydrogen Energy (NHE). Memo to Fran Tanzella from Tom Grimshaw, March 1, 2020.

McKubre, M., 1997. The Status of NHE Research⁸. SRI Report. September.

Crouch-Baker, S., M. McKubre, and F. Tanzella, 1997. Investigation on Evaluation of New Systems for New Hydrogen Energy Production⁹. SRI Final Report. November.

McKubre, M., et al., 1998. Energy Production Processes in Deuterated Metals, Volume 1¹⁰. EPRI TR-107843-V1. June.

McKubre, M., F. Tanzella and P. Hagelstein, 2009. From “Cold Fusion” to “LENR” to “CMNS” to Fleischmann Pons Effect: 20 Years of Research at SRI. Presentation at ACS 237th National Meeting, Symposium on New Energy Technology. March.¹¹

Tanzella, F., R. Godes, and R. George, 2019. Advanced Isoperibolic Calorimetry in Brillouin’s Reactor. Presentation at 2019 LANR/CF Colloquium at MIT. March¹².

2.2 *Lists of Publications and Reports*

Lists of LENR publications have been found in Dr. Tanzella’s files and from LENR-CANR.org.

They have been added to the TLRDP as follows:

- Selected SRI and Related Reports in “Reports” Section of Electronic Files¹³ (Table 2-1)
- SRI LENR List in Endnote¹⁴ (Table 2-2)
- List of Publications in SciFinder¹⁵ (Table 2-3)
- List of Items Found on LENR-CANR.org with a Search for “Tanzella”¹⁶ (Table 2-4)

Copies of 17 of the 66 items found on LENR-CANR.org have been downloaded and added to the Project as indicated by the last column in Table 2-4.

⁸ SRI Reports for New Hydrogen Energy (NHE). Memo to Fran Tanzella from Tom Grimshaw, March 1, 2020.

⁹ SRI International Report for for the Tanzella LENR Research Documentation Project. Memo to Fran Tanzella from Tom Grimshaw, February 4, 2020.

¹⁰ SRI International Report for EPRI. Memo to Fran Tanzella from Tom Grimshaw, February 6, 2020.

¹¹ PowerPoint Presentations Dated 2009 and 2019. Memo to Fran Tanzella from Tom Grimshaw, February 20, 2020.

¹² PowerPoint Presentations Dated 2009 and 2019. Memo to Fran Tanzella from Tom Grimshaw, February 20, 2020.

¹³ Selected SRI and Related Reports. Memo to Fran Tanzella from Tom Grimshaw, February 21, 2020.

¹⁴ References in Endnote and SciFinder. Memo to Fran Tanzella from Tom Grimshaw, February 22, 2020.

¹⁵ Publications List on Sci Finder for the Tanzella LENR Research Documentation Project. Memo to Fran Tanzella from Tom Grimshaw, February 5, 2020

¹⁶ Tanzella in “All Authors” on LENR-CANR.org: Update. Memo to Fran Tanzella from Tom Grimshaw, May 4, 2019.

Table 2-1
Items Found in "Reports" Section of Electronic Files

No	Title	Date	Description
1	Investigation on Evaluation of New Systems for New Hydrogen Energy Production	11/1997	SRI Final Report
2	Cavitation-Induced Excess Heat in Deuterated Metals	3/1998	EPRI TR 1-108474
3	Development of Energy Production Systems from Heat Produced in Deuterated Metals - Volume 1.	6/1998	EPRI TR-107843-V1
4	Development of Energy Production Systems from Heat Produced in Deuterated Metals - Volume 2.	6/1998	EPRI TR-107843-V2
5	Hydrogen Isotope Fuel Cell	10/2004	United States Patent Application 20060093874
6	Title of the Invention: Electrolytic Cell	12/2004	World Intellectual Property Organization, Publication Number WO 2004/108994 A2
7	Spindletop Tests at SRI: January-June 2005	6/2005	PowerPoint Presentation
8	Patterson Fuel Cell	2006	PowerPoint Presentation
9	New Physical Effects in Metal Deuterides	1/2006	Proceedings of the 11th International Conference on Cold Fusion, Condensed Matter Nuclear Science, Pages 23-59
10	Catalytic Electrode, Cell, System in Process for Storing Hydrogen Deuterium	2/2006	United States Patent and Trade Office, Petition to Make Special
11	Hydrogen Isotope Fuel Cell	5/2006	United States Patent Application Publication, US 2006/0093874 A1
12	EM-Stimulated Low Energy Nuclear Reactions	12/2006	SRI P16072
13	New Physical Effects in Metal Deuterides	3/2007	SRI P16816
14	New Physical Effects in Metal Deuterides: Phase II	2/2010	SRI P18266
15	Coherent X-Ray Generation	10/2013	SRI P21785
16	Final Report on Theoretical Studies in Support of the DARPA Ultrabeam Project	1/2014	Unknown
17	Heat Measurements in Electrolytic Meral-Deuteride Experiments	10/2015	SRI P19120

Table 2-2
Reports Found in SRI LENR EndNote File

- McKubre, M. C. H., et al. (1992). "Aspects of the electrochemical loading of hydrogen and its isotopes into palladium." Proc. - Electrochem. Soc. 92-5(Proc. Symp. Hydrogen Storage Mater., Batteries, Electrochem., 1991): 269-286.
- McKubre, M. C. H., et al. (1992). Method for producing heat from deuterated palladium. Application: WO, (Electric Power Research Institute, Inc., USA). 28 pp.
- McKubre, M. C. H., et al. (1992). Methods for forming films on cathodes. Application: WO, (Electric Power Research Institute, Inc., USA). 25 pp.
- McKubre, M. C. H., et al. (1992). Methods for cleaning cathodes. Application: WO, (Electric Power Research Institute, Inc., USA). 27 pp.
- McKubre, M. C. H., et al. (1992). Apparatus for producing heat from deuterated palladium. Application: WO, (Electric Power Research Institute, Inc., USA). 31 pp.
- Crouch-Baker, S., et al. (1993). Apparatus for producing heat from deuterated palladium alloys. Application: WO, (Electric Power Research Institute, Inc., USA). 22 pp.
- McKubre, M. C. H., et al. (1993). "Excess power observations in electrochemical studies of the deuterium-palladium system; the influence of loading." Front. Sci. Ser. 4(Frontiers of Cold Fusion): 5-19.

8. McKubre, M. C. H., et al. (1993). Apparatus for producing heat from deuterated film-coated palladium. Application: WO, (Electric Power Research Institute, Inc., USA). 19 pp.
9. Smedley, S. I., et al. (1993). "The January 2, 1992, explosion in a deuterium/palladium electrolytic system at SRI International." Front. Sci. Ser. 4(Frontiers of Cold Fusion): 139-151.
10. Crouch-Baker, S., et al. (1994). Apparatus for storing isotopes of hydrogen. Application: WO, (Electric Power Research Institute, Inc., USA). 24 pp.
11. McKubre, M., et al. (1994). "An overview of excess heat production in the deuterated palladium system." Proc. Intersoc. Energy Convers. Eng. Conf. 29th(Pt. 3): 1478-1483.
12. McKubre, M. C. H., et al. (1994). "Isothermal flow calorimetric investigations of the D/Pd and H/Pd systems." J. Electroanal. Chem. 368(1-2): 55-66.
13. McKubre, M. C. H., et al. (1994). Methods for forming films on cathodes. Application: WO, (Electric Power Research Institute, Inc., USA). 30 pp.
14. Wark, A., et al. (1996). "The effect of ultrasound on the electrochemical loading of hydrogen in palladium." J. Electroanal. Chem. 418(1-2): 199-204.
15. Crouch-Baker, S., et al. (1998). "Variation of resistance with composition in the β -phase of the H-Pd system at 298 K." Z. Phys. Chem. (Munich) 204(1/2): 247-254.
16. Tripodi, P., et al. (2000). "Temperature coefficient of resistivity at compositions approaching PdH." Phys. Lett. A 276(1-4): 122-126.
17. Clarke, W. B., et al. (2001). "Search for ^3He and ^4He in Arata-style palladium cathodes II: evidence for tritium production." Fusion Sci. Technol. 40(2): 152-167.
18. Lipilin, A. S., et al. (2005). Liquid anode electrochemical cell. Application: WO, (SRI International, USA). 25 pp.
19. McKubre, M., et al. (2006). "The need for triggering in cold fusion reactions." Condens. Matter Nucl. Sci., Proc. Int. Conf. Cold Fusion, 10th: 199-212.
20. Violante, V., et al. (2006). "Search for nuclear ashes in electrochemical experiments." Condens. Matter Nucl. Sci., Proc. Int. Conf. Cold Fusion, 10th: 405-420.
21. Violante, V., et al. (2006). "Study of lattice potentials on low-energy nuclear processes in condensed matter." Condens. Matter Nucl. Sci., Proc. Int. Conf. Cold Fusion, 10th: 667-680.
22. Dardik, I. I., et al. (2007). Modified electrodes for low energy nuclear reaction power generators. Application: WO, (USA). 37pp.
23. McKubre, M. C. H., et al. (2008). "Replication of condensed matter heat production." ACS Symp. Ser. 998(Low-Energy Nuclear Reactions Sourcebook): 219-247.
24. McKubre, M. C. H. (2009). "From cold fusion to condensed matter nuclear science: 20 years of research." Abstracts of Papers, 237th ACS National Meeting, Salt Lake City, UT, United States, March 22-26, 2009: ENVR-004.
25. McKubre, M. C. (2010). "Cold fusion, LENR, CMNS, FPE: One perspective on the state of the science." Abstracts of Papers, 239th ACS National Meeting, San Francisco, CA, United States, March 21-25, 2010: ENVR-126.
26. Violante, V., et al. (2010). "Material science behind the Fleischmann and Pons effect." Abstracts of Papers, 239th ACS National Meeting, San Francisco, CA, United States, March 21-25, 2010: ENVR-122.

Table 2-3
Reports Listed on "SciFinder" for Tanzella

1. J.O. Albright, F.L. Tanzella, and J.G. Verkade, "Nitrosyl stretching frequency as a function of ligand basicity in nitrosyltrisphosphonickel tetrafluoroborate complexes". Journal of Coordination Chemistry, Vol. 5, pages. 225-229, (1976)
2. H.R. Wenk, et al., "Deerite, $(\text{Fe, Mn})_{12}\text{Si}_8(\text{O, OH})_{32}$, yet another type of chain silicate". Naturwissenschaften, Vol. 63, pages. 433-434, (1976)
3. N. Bartlett, et al., "Salts of aromatic cations and related graphite salts". NATO Conference Series VI Materials Science, Vol. 1, pages. 293-299, (1979)
4. F.L. Tanzella, *Electron oxidation of aromatic molecules and related delocalized-electron solids*. 1980. p. 104 pp.

5. F.L. Tanzella, *Electron oxidation of aromatic molecules and related delocalized electron solids*. 1980, Lawrence Berkeley Lab., Univ. California, Berkeley, CA, USA. p. 108 pp.
6. F.L. Tanzella, et al., "Ion transport in PEO-alkali salt complex polymeric electrolytes". *Solid State Ionics*, Vol. 5, pages. 681-684, (1981)
7. F.L. Tanzella and N. Bartlett, "Quantitative synthesis of diphenylfluoroarsonium hexafluoroarsenate ((C₆H₅)₂AsF₂+AsF₆⁻) and diphenylarsenic fluoride ((C₆H₅)₂AsF₃) via interaction of benzene with arsenic pentafluoride". *Zeitschrift fuer Naturforschung, Teil B Anorganische Chemie, Organische Chemie*, Vol. 36B, pages. 1461-1464, (1981)
8. T.J. Richardson, F.L. Tanzella, and N. Bartlett, "The preparation and characterization of radical cation salts derived from perfluorobenzene, perfluorotoluene, and perfluoronaphthalene". *Journal of the American Chemical Society*, Vol. 108, pages. 4937-4943, (1986)
9. M.C.H. McKubre, S.I. Smedley, and F.L. Tanzella, "The electromotive force of the sodium/sulfur cell". *Proceedings - Electrochemical Society*, Vol. 87-12, pages. 559-568, (1987)
10. M.C.M. McKubre, S.I. Smedley, and F.L. Tanzella, "The electrochemical impedance of the sodium/sulfur cell". *Proceedings - Electrochemical Society*, Vol. 87-5, pages. 214-227, (1987)
11. T.J. Richardson, F.L. Tanzella, and N. Bartlett, "Comparison of polynuclear aromatic hydrocarbon cation salts with salts of simple fluoroaromatic cations". *Advances in Chemistry Series*, Vol. 217, pages. 169-176, (1988)
12. M.C.H. McKubre, S.I. Smedley, and F.L. Tanzella, "The electrochemical impedance of the sodium/sulfur cell. II. Interpretation of results". *Journal of the Electrochemical Society*, Vol. 136, pages. 1969-1972, (1989)
13. M.C.H. McKubre, S.I. Smedley, and F.L. Tanzella, "The electrochemical impedance of the sodium/sulfur cell. I. Experiments and results". *Journal of the Electrochemical Society*, Vol. 136, pages. 1962-1968, (1989)
14. M.C.H. McKubre, F.L. Tanzella, and S.I. Smedley, "The electromotive force of the sodium/sulfur cell". *Journal of the Electrochemical Society*, Vol. 136, pages. 303-305, (1989)
15. R.D. Weaver, et al. *Some reliability considerations of various networks of sodium/sulfur batteries*. in *Intersociety Energy Conversion Engineering Conference*. 1989.
16. M.C.H. McKubre, et al. *Calorimetry and electrochemistry in the deuterium/palladium system*. in *Annu. Conf. Cold Fusion*, 1st. 1990.
17. M.C.H. McKubre, F.L. Tanzella, and B.C. Syrett, "The determination of rates and mechanisms of localized corrosion using harmonic impedance spectroscopy". *International Corrosion Conference Series*, Vol. NACE-9, pages. 191-197, (1990)
18. R.D. Weaver, P.C. Symons, and F.L. Tanzella, "Some considerations of network reliability of sodium/sulfur load-leveling batteries". *Proceedings of the Intersociety Energy Conversion Engineering Conference*, Vol. 25th, pages. 354-361, (1990)
19. R.D. Weaver and F.L. Tanzella, "A novel switch for use in sodium/sulfur load-leveling batteries and a maintenance strategy for its use". *Proceedings of the Intersociety Energy Conversion Engineering Conference*, Vol. 25th, pages. 348-353, (1990)
20. M.C.H. McKubre, et al., "Isothermal flow calorimetric investigations of the deuterium/palladium system". *Conference Proceedings - Italian Physical Society*, Vol. 33, pages. 419-443, (1991)
21. M.C.H. McKubre, S.I. Smedley, and F.L. Tanzella, "The impedance response of sodium sulfur cells". *Proceedings - Electrochemical Society*, Vol. 91-6, pages. 207-223, (1991)
22. M.C.H. McKubre, et al., "Aspects of the electrochemical loading of hydrogen and its isotopes into palladium". *Proceedings - Electrochemical Society*, Vol. 92-5, pages. 269-286, (1992)
23. M.C.H. McKubre, et al., *Method for producing heat from deuterated palladium*. 1992, (Electric Power Research Institute, Inc., USA). Application: WO
24. M.C.H. McKubre, et al., *Methods for forming films on cathodes*. 1992, (Electric Power Research Institute, Inc., USA). Application: WO
25. M.C.H. McKubre, S.I. Smedley, and F.L. Tanzella, *Methods for cleaning cathodes*. 1992, (Electric Power Research Institute, Inc., USA). Application: WO
26. M.C.H. McKubre, et al., *Apparatus for producing heat from deuterated palladium*. 1992, (Electric Power Research Institute, Inc., USA). Application:

27. S. Crouch-Baker, et al., *Apparatus for producing heat from deuterated palladium alloys*. 1993, (Electric Power Research Institute, Inc., USA). Application: WO
28. M.C.H. McKubre, et al., "Excess power observations in electrochemical studies of the deuterium-palladium system; the influence of loading". *Frontiers Science Series*, Vol. 4, pages. 5-19, (1993)
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30. S.I. Smedley, et al., "The January 2, 1992, explosion in a deuterium/palladium electrolytic system at SRI International". *Frontiers Science Series*, Vol. 4, pages. 139-151, (1993)
31. R.D. Weaver and F.L. Tanzella, *Apparatus and method for locating and isolating failed cells in a battery*. 1993, (Electric Power Research Institute, Inc., USA). Application: US
32. S. Crouch-Baker, et al., *Apparatus for storing isotopes of hydrogen*. 1994, (Electric Power Research Institute, Inc., USA). Application: WO
33. M. McKubre, et al. *An overview of excess heat production in the deuterated palladium system*. in *Intersociety Energy Conversion Engineering Conference*. 1994.
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35. M.C.H. McKubre, et al., *Methods for forming films on cathodes*. 1994, (Electric Power Research Institute, Inc., USA). Application: WO
36. B.J. Dougherty, F.L. Tanzella, and R.D. Weaver. *Some nickel-iron and nickel-metal hydride battery cycling results*. in *Annu. Battery Conf. Appl. Adv.*, 10th. 1995.
37. A. Wark, et al., "The effect of ultrasound on the electrochemical loading of hydrogen in palladium". *Journal of Electroanalytical Chemistry*, Vol. 418, pages. 199-204, (1996)
38. S. Crouch-Baker, M.C.H. McKubre, and F.L. Tanzella, "Variation of resistance with composition in the α -phase of the H-Pd system at 298 K". *Zeitschrift fuer Physikalische Chemie (Munich)*, Vol. 204, pages. 247-254, (1998)
39. M. McKubre, et al., "Finite element modeling of the transient calorimetric behavior of the MATRIX experimental apparatus: 4He and excess of power production correlation through numerical results". *Conference Proceedings - Italian Physical Society*, Vol. 70, pages. 23-27, (2000)
40. M. McKubre, et al., "The emergence of a coherent explanation for anomalies observed in D/Pd and H/Pd systems: evidence for 4He and 3H production". *Conference Proceedings - Italian Physical Society*, Vol. 70, pages. 3-10, (2000)
41. P. Tripodi, et al., "Temperature coefficient of resistivity at compositions approaching PdH". *Physics Letters A*, Vol. 276, pages. 122-126, (2000)
42. V. Violante, et al., "Hydrogen isotopes interaction dynamics in palladium lattice". *Conference Proceedings - Italian Physical Society*, Vol. 70, pages. 409-417, (2000)
43. W.B. Clarke, et al., "Search for 3He and 4He in Arata-style palladium cathodes II: evidence for tritium production". *Fusion Science and Technology*, Vol. 40, pages. 152-167, (2001)
44. P. Hagelstein, et al., *A device, system, and method for increasing multiple occupancy of hydrogen isotopes in a host lattice*. 2004, (USA). Application: WO
45. A.S. Lipilin, et al., *Liquid anode electrochemical cell*. 2005, (Sri International, USA). Application: WO
46. P.L. Hagelstein, et al., *Methods and apparatus for energy conversion using materials comprising molecular deuterium and molecular hydrogen-deuterium*. 2006, (Spindletop Corporation, USA). Application: WO
47. M. McKubre, et al., *The need for triggering in cold fusion reactions*, in *Condensed Matter Nuclear Science, Proceedings of the International Conference on Cold Fusion, 10th, Cambridge, MA, United States, Aug. 24-29, 2003*. 2006. p. 199-212.
48. V. Violante, et al., "Search for nuclear ashes in electrochemical experiments". *Condensed Matter Nuclear Science, Proceedings of the International Conference on Cold Fusion, 10th, Cambridge, MA, United States, Aug. 24-29, 2003*, Vol., pages. 405-420, (2006)
49. V. Violante, et al., "Study of lattice potentials on low-energy nuclear processes in condensed matter". *Condensed Matter Nuclear Science, Proceedings of the International Conference on Cold Fusion, 10th, Cambridge, MA, United States, Aug. 24-29, 2003*, Vol., pages. 667-680, (2006)

50. M.C.H. McKubre, et al., "*Replication of condensed matter heat production*". ACS Symposium Series, Vol. 998, pages. 219-247, (2008)
51. P.L. Hagelstein, et al., "*Progress toward a Theory for Excess Heat in Metal Deuterides*". AIP Conf. Proc., Vol. 1154, pages. 257-271, (2009)
52. J. Marwan, et al., "*A new look at low-energy nuclear reaction (LENR) research: a response to Shanahan*". J. Environ. Monit., Vol. 12, pages. 1765-1770, (2010)
53. F. Tanzella and M. McKubre, "*Cryogenic calorimetry of exploding PdDx wires*". Abstracts of Papers, 239th ACS National Meeting, San Francisco, CA, United States, March 21-25, 2010, Vol., pages. ENVR-123, (2010)
54. V. Violante, et al., "*Material science behind the Fleischmann and Pons effect*". Abstracts of Papers, 239th ACS National Meeting, San Francisco, CA, United States, March 21-25, 2010, Vol., pages. ENVR-122, (2010)
55. L.P. Forsley, et al., "*Comparison of three methods of analyzing nuclear tracks observed in CR-39 detectors used in Pd/D co-deposition experiments*", in *Abstracts of Papers, 241st ACS National Meeting & Exposition, Anaheim, CA, United States, March 27-31, 2011*. 2011. p. ENVR-33.
56. M.C. McKubre and F. Tanzella, "*Modes of excess heat production in the Fleischmann-Pons Effect*". Abstracts of Papers, 241st ACS National Meeting & Exposition, Anaheim, CA, United States, March 27-31, 2011, Vol., pages. ENVR-28, (2011)
57. F. Tanzella, M. McKubre, and J. Bao, "*Helium and energy measurements from exploding PdDx wires at 77- ∞ K*". Abstracts of Papers, 241st ACS National Meeting & Exposition, Anaheim, CA, United States, March 27-31, 2011, Vol., pages. ENVR-50, (2011)
58. S. Reed, et al., "*Manufacturing payment card system comprising metal, polymer, thermal stabilizer, and plasticizer*. 2012, (Visa International Service Association, USA). Application: US

Table 2-4
List of Items Found for "Tanzella" on LENR-CANR.org

<u>No</u>	<u>Author</u>	<u>Year</u>	<u>Title</u>	<u>L-C?</u>
1	Apicella, M.	2005	Apicella, M., et al. Reproducibility of Excess of Power and Evidence of 4He in Palladium Foils Loaded with Deuterium (PowerPoint slides). in American Physical Society Meeting. 2005. Los Angeles.	
2	Apicella, M.	2005	Apicella, M., et al. Some recent results at ENEA. in The 12th International Conference on Condensed Matter Nuclear Science. 2005. Yokohama, Japan.	
3	Castagna, E.	2008	Castagna, E., et al. Metallurgical characterization of Pd electrodes employed in calorimetric experiments under electrochemical deuterium loading. in ICCF-14 International Conference on Condensed Matter Nuclear Science. 2008. Washington, DC.	
4	Clarke, B. W.	2001	Clarke, B.W., et al., Search for 3He and 4He in Arata-Style Palladium Cathodes II: Evidence for Tritium Production. Fusion Sci. & Technol., 2001. 40: p. 152.	X
5	Crouch-Baker, S.	1995	Crouch-Baker, S., M.C.H. McKubre, and F.L. Tanzella. Some Thermodynamic Properties of the H(D)-Pd System. in 5th International Conference on Cold Fusion. 1995. Monte-Carlo, Monaco: IMRA Europe, Sophia Antipolis Cedex, France.	
6	Crouch-Baker, S.	1996	Crouch-Baker, S., M.C.H. McKubre, and F.L. Tanzella, Calorimetric study of two metallic samples. 1996.	X
7	Crouch-Baker, S.	1998	Crouch-Baker, S., M.C.H. McKubre, and F.L. Tanzella, Variation of Resistance with Composition in the beta-Phase of the H-Pd System at 298k. Z. fur Phys. Chemie, 1998. 204: p. 247.	
8	D'Aulerio, L.	2005	D'Aulerio, L., et al. Thermal analysis of calorimetric systems. in The 12th International Conference on Condensed Matter Nuclear Science. 2005. Yokohama, Japan.	X

9	Godes, R.	2014	Godes, R., et al., Controlled Electron Capture and the Path toward Commercialization. <i>J. Condensed Matter Nucl. Sci.</i> , 2014. 13.	
10	Hagelstein, P. L.	2009	Hagelstein, P.L., M.C.H. McKubre, and F.L. Tanzella. Electrochemical models for the Fleischmann-Pons experiment. in 15th International Conference on Condensed Matter Nuclear Science. 2009. Rome, Italy: ENEA.	
11	Lipson, A. G.	2007	Lipson, A.G., et al. Analysis of the CR-39 detectors from SRI's SPAWAR/Galileo type electrolysis experiments #7 and #5. Signature of possible neutron emission. in Proceedings of the 8th International Workshop on Anomalies in Hydrogen / Deuterium Loaded Metals. 2007. Sicily, Italy.	
12	Lipson, A. G.	2009	Lipson, A.G., et al. Evidence for Fast Neutron Emission During SRI's SPAWAR/Galileo-Type Electrolysis Experiments #7 and #5, Based on CR-39 Track Detector Record (PowerPoint slides). in 15th International Conference on Condensed Matter Nuclear Science. 2009. Rome, Italy: ENEA.	
13	Marwan, J.	2010	Marwan, J., et al., A new look at low-energy nuclear reaction (LENR) research: a response to Shanahan. <i>J. Environ. Monit.</i> , 2010. 12(9): p. 1765-1770.	
14	McKubre, M. C. H.	1990	McKubre, M.C.H., et al. Calorimetry and Electrochemistry in the D/Pd System. in The First Annual Conference on Cold Fusion. 1990. University of Utah Research Park, Salt Lake City, Utah: National Cold Fusion Institute.	
15	McKubre, M. C. H.	1991	McKubre, M.C.H., et al. Isothermal Flow Calorimetric Investigations of the D/Pd System. in Second Annual Conference on Cold Fusion, "The Science of Cold Fusion". 1991. Como, Italy: Societa Italiana di Fisica, Bologna, Italy.	
16	McKubre, M. C. H.	1992	McKubre, M.C.H., et al. Excess Power Observations in Electrochemical Studies of the D/Pd System; The Influence of Loading. in Third International Conference on Cold Fusion, "Frontiers of Cold Fusion". 1992. Nagoya Japan: Universal Academy Press, Inc., Tokyo, Japan.	
17	McKubre, M. C. H.	1993	McKubre, M.C.H., et al. Loading, Calorimetric and Nuclear Investigation of the D/Pd System. in Fourth International Conference on Cold Fusion. 1993. Lahaina, Maui: Electric Power Research Institute 3412 Hillview Ave., Palo Alto, CA 94304.	X
18	McKubre, M. C. H.	1994	McKubre, M.C.H., et al. An overview of excess heat production in deuterated palladium system. in IECEC Conference. 1994. Monterey, CA.	X
19	McKubre, M. C. H.	1994	McKubre, M.C.H., et al., Development of Advanced Concepts for Nuclear Processes in Deuterated Metals, TR-104195. 1994, Electric Power Research Institute.	
20	McKubre, M. C. H.	1994	McKubre, M.C.H., et al., Isothermal Flow Calorimetric Investigations of the D/Pd and H/Pd Systems. <i>J. Electroanal. Chem.</i> , 1994. 368: p. 55.	
21	McKubre, M. C. H.	1995	McKubre, M.C.H., et al. Concerning Reproducibility of Excess Power Production. in 5th International Conference on Cold Fusion. 1995. Monte-Carlo, Monaco: IMRA Europe, Sophia Antipolis Cedex, France.	
22	McKubre, M. C. H.	1996	McKubre, M.C.H., S. Crouch-Baker, and F.L. Tanzella. Electrochemistry and calorimetry in a packed-bed flow-through electrochemical cell. in Sixth International Conference on Cold Fusion, Progress in New Hydrogen Energy. 1996. Lake Toya, Hokkaido, Japan: New Energy and Industrial Technology	

			Development Organization, Tokyo Institute of Technology, Tokyo, Japan.	
23	McKubre, M. C. H.	1996	McKubre, M.C.H., et al. New Hydrogen Energy Research at SRI. in Sixth International Conference on Cold Fusion, Progress in New Hydrogen Energy. 1996. Lake Toya, Hokkaido, Japan: New Energy and Industrial Technology Development Organization, Tokyo Institute of Technology, Tokyo, Japan.	
24	McKubre, M. C. H.	1998	McKubre, M.C.H., et al., Energy Production Processes In Deuterated Metals. 1998, EPRI.	X
25	McKubre, M. C. H.	1998	McKubre, M.C.H. and F.L. Tanzella. Materials Issues of Loading Deuterium into Palladium and the Association with Excess Heat Production. in The Seventh International Conference on Cold Fusion. 1998. Vancouver, Canada: ENECO, Inc., Salt Lake City, UT.	
26	McKubre, M. C. H.	1999	McKubre, M.C.H., S. Crouch-Baker, and F.L. Tanzella, Conditions for the observation of excess power in the D/Pd system. 1999.	X
27	McKubre, M. C. H.	2000	McKubre, M.C.H., et al. Finite Element Modeling of the Transient Colorimetric Behavior of the MATRIX Experimental Apparatus: 4He and Excess of Power Production Correlation through Numerical Results. in 8th International Conference on Cold Fusion. 2000. Lerici (La Spezia), Italy: Italian Physical Society, Bologna, Italy.	X
28	McKubre, M. C. H.	2000	McKubre, M.C.H., et al. The Emergence of a Coherent Explanation for Anomalies Observed in D/Pd and H/Pd System: Evidence for 4He and 3He Production. in 8th International Conference on Cold Fusion. 2000. Lerici (La Spezia), Italy: Italian Physical Society, Bologna, Italy.	
29	McKubre, M. C. H.	2002	McKubre, M.C.H., et al. Progress towards replication. in The 9th International Conference on Cold Fusion, Condensed Matter Nuclear Science. 2002. Tsinghua Univ., Beijing, China: Tsinghua Univ. Press.	
30	McKubre, M. C. H.	2005	McKubre, M.C.H. and F.L. Tanzella. Using resistivity to measure H/Pd and D/Pd loading: method and significance. in The 12th International Conference on Condensed Matter Nuclear Science. 2005. Yokohama, Japan.	
31	McKubre, M. C. H.	2008	McKubre, M.C.H. and F.L. Tanzella. Mass Flow Calorimetry. in ICCF-14 International Conference on Condensed Matter Nuclear Science. 2008. Washington, DC.	
32	McKubre, M. C. H.	2008	McKubre, M.C.H., et al., Replication of Condensed Matter Heat Production, in Low-Energy Nuclear Reactions Sourcebook. 2008, American Chemical Society: Washington, DC. p. 219-247.	X
33	McKubre, M. C. H.	2008	McKubre, M.C.H., F.L. Tanzella, and V. Violante. The Significance of Replication (PowerPoint slides). in American Physical Society Meeting. 2008. New Orleans.	
34	McKubre, M. C. H.	2011	McKubre, M.C.H. and F.L. Tanzella, Cold Fusion, LENR, CMNS, FPE: One Perspective on the State of the Science Based on Measurements Made at SRI. J. Condensed Matter Nucl. Sci., 2011. 4: p. 32-44.	
35	McKubre, M. C. H.	2012	McKubre, M.C.H. and F.L. Tanzella, What is needed in LENR/FPE studies? J. Condensed Matter Nucl. Sci., 2012. 8.	
36	McKubre, M. C. H.	2014	McKubre, M.C.H., et al., Calorimetric Studies of the Destructive Stimulation of Palladium and Nickel Fine Wires. J. Condensed Matter Nucl. Sci., 2014. 13.	
37	McKubre, M. C. H.	2015	McKubre, M.C.H. and F.L. Tanzella, Flux Effects in Metal Hydrogen Loading: Enhanced Mass Transfer. J. Condensed Matter Nucl. Sci., 2015. 15: p. 1.	

38	Mosier-Boss, P. A.	2015	Mosier-Boss, P.A., et al., Condensed matter nuclear reaction products observed in Pd/D co-deposition experiments. <i>Curr. Sci.</i> , 2015. 108(4).	X
39	Mosier-Boss, P. A.	2015	Mosier-Boss, P.A., et al., Use of CR-39 detectors to determine the branching ratio in Pd/D co-deposition. <i>Curr. Sci.</i> , 2015. 108(4).	X
40	Roussetski, A. S.	2009	Roussetski, A.S., et al. Evidence for Fast Neutron Emission During SRI's SPARWAR/GALILEO Type Electrolysis Experiments #7 and #5, Based on CR39 Track Detector Record. in 15th International Conference on Condensed Matter Nuclear Science. 2009. Rome, Italy: ENEA.	
41	Smedley, S. I.	1992	Smedley, S.I., et al. The January 2, 1992, Explosion in a Deuterium/Palladium Electrolytic System at SRI International. in Third International Conference on Cold Fusion, "Frontiers of Cold Fusion". 1992. Nagoya Japan: Universal Academy Press, Inc., Tokyo, Japan.	
42	Tanzella, F. L.	1996	Tanzella, F.L., et al. Parameters affecting the loading of hydrogen isotopes into palladium cathodes. in Sixth International Conference on Cold Fusion, Progress in New Hydrogen Energy. 1996. Lake Toya, Hokkaido, Japan: New Energy and Industrial Technology Development Organization, Tokyo Institute of Technology, Tokyo, Japan.	
43	Tanzella, F. L.	1998	Tanzella, F.L., M.C.H. McKubre, and P.L. Hagelstein. Methods for Observing Anomalous Energy Transfer in Solids. in The Seventh International Conference on Cold Fusion. 1998. Vancouver, Canada: ENECO, Inc., Salt Lake City, UT.	
44	Tanzella, F. L.	2009	Tanzella, F.L. and M.C.H. McKubre. Calorimetry Of Pulse Electro-Melting of PdDx Wires. in 15th International Conference on Condensed Matter Nuclear Science. 2009. Rome, Italy: ENEA.	
45	Tanzella, F. L.	2009	Tanzella, F.L., et al. Triggered Energy Release From Palladium Deuteride (PowerPoint slides). in 15th International Conference on Condensed Matter Nuclear Science. 2009. Rome, Italy: ENEA.	
46	Tanzella, F. L.	2012	Tanzella, F.L., J. Bao, and M.C.H. McKubre. CMNS Research at SRI (PowerPoint slides). in International Low Energy Nuclear Reactions Symposium, ILENRS-12. 2012. The College of William and Mary, Williamsburg, VA 23185.	
47	Tanzella, F. L.	2012	Tanzella, F.L., J. Bao, and M.C.H. McKubre, Cryogenic Calorimetry of "Exploding" PdDx Wires. <i>J. Condensed Matter Nucl. Sci.</i> , 2012. 6: p. 90-100.	
48	Tanzella, F. L.	2012	Tanzella, F.L., et al., Stimulation of Metal Deuteride Wires at Cryogenic Temperatures. <i>J. Condensed Matter Nucl. Sci.</i> , 2012. 8.	
49	Tanzella, F. L.	2016	Tanzella, F.L., et al., Seeking X-rays and Charge Emission from a Copper Foil Driven at MHz Frequencies. <i>J. Condensed Matter Nucl. Sci.</i> , 2016. 19.	
50	Tanzella, F. L.	2017	Tanzella, F.L., et al., Controlled Electron Capture: Enhanced Stimulation and Calorimetry Methods. <i>J. Condensed Matter Nucl. Sci.</i> , 2017. 24: p. 301-311.	
51	Tanzella, F. L.	2018	Tanzella, F.L., Isoperibolic Hydrogen Hot Tube Reactor Studies. 2018, SRI International.	X
52	Tanzella, F. L.	2019	Tanzella, F.L., R. Godes, and R. George. Advanced Isoperibolic Calorimetry in Brillouin's Reactor. in 2019 LANR/CF Colloquium at MIT. 2019. Cambridge, MA.	
53	Tripodi, P.	2000	Tripodi, P., et al., Temperature coefficient of resistivity at compositions approaching PdH. <i>Phys. Lett. A</i> , 2000. 276: p. 122.	X
54	Violante, V.	2000	Violante, V., et al. Hydrogen Isotopes Interaction Dynamics in Palladium Lattice. in 8th International Conference on Cold Fusion.	X

		2000. Lerici (La Spezia), Italy: Italian Physical Society, Bologna, Italy.	
55	Violante, V.	2002 Violante, V., et al. Metallurgical effects on the dynamic of hydrogen loading in Pd. in The 9th International Conference on Cold Fusion, Condensed Matter Nuclear Science. 2002. Tsinghua Univ., Beijing, China: Tsinghua Univ. Press.	
56	Violante, V.	2002 Violante, V., et al. X-ray emission during electrolysis of light water on palladium and nickel thin films. in The 9th International Conference on Cold Fusion, Condensed Matter Nuclear Science. 2002. Tsinghua Univ., Beijing, China: Tsinghua Univ. Press.	
57	Violante, V.	2003 Violante, V., et al. Search For Nuclear Ashes In Electrochemical Experiments. in Tenth International Conference on Cold Fusion. 2003. Cambridge, MA: LENR-CANR.org.	
58	Violante, V.	2003 Violante, V., et al. Study Of Lattice Potentials On Low Energy Nuclear Processes In Condensed Matter. in Tenth International Conference on Cold Fusion. 2003. Cambridge, MA: LENR-CANR.org.	
59	Violante, V.	2005 Violante, V., et al. Progress In Excess Power Experiments With Electrochemical Loading Of Deuterium In Palladium. in The 12th International Conference on Condensed Matter Nuclear Science. 2005. Yokohama, Japan.	X
60	Violante, V.	2005 Violante, V., et al. Progress in Excess Power Production by Laser Triggering. in The 12th International Conference on Condensed Matter Nuclear Science. 2005. Yokohama, Japan.	X
61	Violante, V.	2005 Violante, V., et al. Progress in Excess Power Production by Laser Triggering (PowerPoint slides). in The 12th International Conference on Condensed Matter Nuclear Science. 2005. Yokohama, Japan.	
62	Violante, V.	2007 Violante, V., et al. Joint Scientific Advances in Condensed Matter Nuclear Science. in Proceedings of the 8th International Workshop on Anomalies in Hydrogen / Deuterium Loaded Metals. 2007. Sicily, Italy.	
63	Violante, V.	2009 Violante, V., et al. Evolution and Progress in Material Science for Studying the Fleischmann and Pons Effect (FPE). in 15th International Conference on Condensed Matter Nuclear Science. 2009. Rome, Italy: ENEA.	
64	Violante, V.	2009 Violante, V., et al. Evolution and Progress in Material Science for Studying the Fleischmann and Pons Effect (PowerPoint slides). in 15th International Conference on Condensed Matter Nuclear Science. 2009. Rome, Italy: ENEA.	
65	Violante, V.	2012 Violante, V., et al., The Study of the Fleischman and Pons Effect through the Materials Science Development. J. Condensed Matter Nucl. Sci., 2012. 8.	
66	Wark, A. W.	1996 Wark, A.W., et al., The effect of ultra sound on the electrochemical loading of hydrogen in palladium. J. Electroanal. Chem., 1996. 418: p. 199.	X

3 Electronic Files

Dr. Tanzella's electronic files for the TLRDP are located on a small external hard drive¹⁷ (Figure 3-1). Files from two folders on the hard drive, "Reports" and "Literature" have been copied for the Project. Screenshots of the contents of these folders are shown in Figures 3-2 and 3-3. The electronic files have been stored in the Project supplemental hard drive instead of the Dropbox folder because of the large amount of storage required. Folders and files of experimental data that are also on Dr. Tanzella's hard drive have not yet been included to the Project.

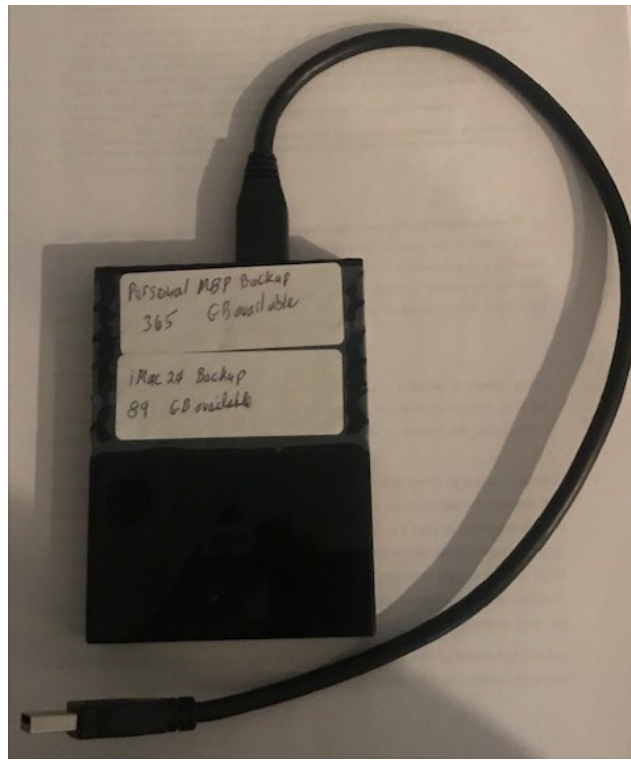
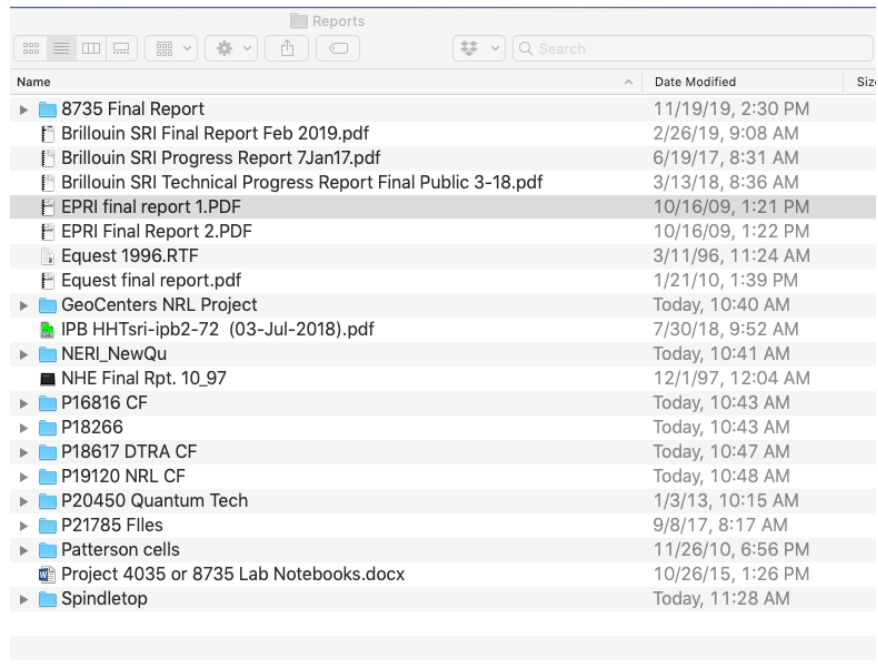


Figure 3-1
Dr. Tanzella's External Hard Drive Containing LENR Files

¹⁷ Hard Drive Contents for Tanzella LENR Research Documentation Project. Memo to Fran Tanzella from Tom Grimshaw, December 6, 2019.



Name	Date Modified	Size
▶ 8735 Final Report	11/19/19, 2:30 PM	
▶ Brillouin SRI Final Report Feb 2019.pdf	2/26/19, 9:08 AM	
▶ Brillouin SRI Progress Report 7Jan17.pdf	6/19/17, 8:31 AM	
▶ Brillouin SRI Technical Progress Report Final Public 3-18.pdf	3/13/18, 8:36 AM	
▶ EPRI final report 1.PDF	10/16/09, 1:21 PM	
▶ EPRI Final Report 2.PDF	10/16/09, 1:22 PM	
▶ Equest 1996.RTF	3/11/96, 11:24 AM	
▶ Equest final report.pdf	1/21/10, 1:39 PM	
▶ GeoCenters NRL Project	Today, 10:40 AM	
▶ IPB HHTsri-ipb2-72 (03-Jul-2018).pdf	7/30/18, 9:52 AM	
▶ NERI_NewQu	Today, 10:41 AM	
▶ NHE Final Rpt. 10_97	12/1/97, 12:04 AM	
▶ P16816 CF	Today, 10:43 AM	
▶ P18266	Today, 10:43 AM	
▶ P18617 DTRA CF	Today, 10:47 AM	
▶ P19120 NRL CF	Today, 10:48 AM	
▶ P20450 Quantum Tech	1/3/13, 10:15 AM	
▶ P21785 Files	9/8/17, 8:17 AM	
▶ Patterson cells	11/26/10, 6:56 PM	
▶ Project 4035 or 8735 Lab Notebooks.docx	10/26/15, 1:26 PM	
▶ Spindletop	Today, 11:28 AM	

*Figure 3-2
Contents of “Reports” Folder on Hard Drive*

Name	Date Modified	Size	Kind
60 Minutes CF.mp2	2/28/14, 3:20 PM	23.9 MB	MP2
1704.00694.pdf	9/21/17, 11:10 AM	3.2 MB	PDF
2004Valone-USPTO-Hearing.pdf	4/12/06, 9:21 AM	339 KB	PDF
2006-DTRA-LENR-Krivit-FOIA.pdf	10/3/11, 3:48 PM	3.4 MB	PDF
2006Steorn-McCarthyFull-Aug24.mp3	8/25/06, 1:08 PM	9.2 MB	MP3
2009Krivit-ElsevierEncycl-95.pdf	1/13/10, 5:01 PM	1.8 MB	PDF
ACS 2009 Salt Lake	Today, 10:51 AM	--	Folde
ACS 2010 SFO	11/14/11, 1:58 PM	--	Folde
ACS 2011 Anaheim	Today, 11:07 AM	--	Folde
ACS 2012 San Diego	8/31/11, 9:16 AM	--	Folde
ACS.3.dot	8/2/07, 8:28 AM	3.2 MB	Micro
Ahern	Today, 11:09 AM	--	Folde
APS 02 abstracts.html	3/27/06, 2:16 PM	19 KB	HTML
APS 2011 Dallas	Today, 11:10 AM	--	Folde
Arata 2008 procedure	Today, 2:01 PM	--	Folde
ARL LENR workshop 2010	Today, 11:10 AM	--	Folde
Bev Barnhart 2009	6/2/10, 8:19 AM	--	Folde
Black Light (Brilliant) Power	Today, 11:11 AM	--	Folde
Boscoli Patent	6/2/10, 8:19 AM	--	Folde
Boss, SPAWAR	Today, 11:12 AM	--	Folde
Carl Page LENR Seminar Presentation.pdf	5/19/16, 9:31 AM	805 KB	PDF
Catania 2007	4/13/19, 3:34 PM	--	Folde
Cellani constatan	Today, 11:27 AM	--	Folde
CF Literature	4/6/18, 8:44 AM	--	Folde
Chubb_Cravens	12/22/11, 9:01 AM	--	Folde
CMNS group	Today, 11:28 AM	--	Folde
Cold Fusion Researchers	Today, 11:28 AM	--	Folde
Coalescence	9/5/12, 9:13 AM	--	Folde
CR-39 Paper	Today, 11:29 AM	--	Folde
Cravens and Letts	3/8/12, 4:32 PM	--	Folde
Cravens_Case	Today, 11:29 AM	--	Folde
Cravens_Taylor and Brown	Today, 11:29 AM	--	Folde
Current Science 2014	Today, 11:29 AM	--	Folde
Czerski enhancements.pdf	10/1/13, 9:11 AM	642 KB	PDF
D2Fusion Planktos.PPT	10/25/06, 10:47 AM	8.1 MB	Powe
Davidson, LENR, ScribD.pdf	3/18/14, 4:43 PM	474 KB	PDF
Defkallon	Today, 11:29 AM	--	Folde
DeflationFusion.pdf	9/21/07, 12:58 PM	198 KB	PDF
DoE Review	4/13/12, 9:27 AM	--	Folde
Dr. McKubre_Dist Lect_ARL_8 July 2009.pdf	7/9/09, 10:08 AM	2 MB	PDF
EndNote libraries	Today, 1:33 PM	--	Folde
ENE	Today, 11:29 AM	--	Folde
Energetic Technology Inc	Today, 11:29 AM	--	Folde
Flanagan Palladium hydrogen system.pdf	3/15/07, 1:14 PM	1.9 MB	PDF
FP-Paper-PREPRINT.pdf	4/12/06, 9:17 AM	38 KB	PDF
Fusione Proposal experimental.pdf	12/6/06, 2:44 PM	17 KB	PDF
ICCF04	Today, 11:29 AM	--	Folde
ICCF06	Today, 11:29 AM	--	Folde
ICCF07 Tanzella.pdf	10/28/11, 1:46 PM	156 KB	PDF
ICCF08	9/28/11, 9:35 AM	--	Folde
ICCF10	Today, 11:30 AM	--	Folde
ICCF11	Today, 11:30 AM	--	Folde
ICCF12	Today, 11:30 AM	--	Folde
ICCF13	Today, 11:30 AM	--	Folde
ICCF14	11/15/16, 5:57 PM	--	Folde
ICCF15	Today, 11:30 AM	--	Folde
ICCF16	Today, 11:31 AM	--	Folde
ICCF17	Today, 11:31 AM	--	Folde

Name	Date Modified	Size	Kind
ICCF18	Today, 11:32 AM	--	Folde
ICCF19	Today, 11:32 AM	--	Folde
ICCF20	5/21/18, 10:16 AM	--	Folde
ICCF21	Today, 11:33 AM	--	Folde
IE LENRSurvey Tanzella.doc	10/5/11, 2:28 PM	34 KB	Micro
Infinite Energy McKubreTanzella.pdf	12/7/10, 2:58 PM	582 KB	PDF
infinite energy andrei lipson.pdf	1/25/10, 9:40 AM	326 KB	PDF
Intl Coating Conf-abrad.seals V2.doc	5/12/05, 8:24 AM	57 KB	Micro
ISCMNS	Today, 11:33 AM	--	Folde
Iwamura USPTO Appl 2012_026309.pdf	3/25/14, 4:14 PM	1.7 MB	PDF
JCF9	Today, 11:33 AM	--	Folde
JCF10	5/30/14, 8:23 AM	--	Folde
JCMNS	Today, 11:33 AM	--	Folde
Karabut	Today, 11:33 AM	--	Folde
Katinski	10/6/15, 5:31 PM	--	Folde
Keith Owens	Today, 11:33 AM	--	Folde
Koldamasov_Yang_05.pdf	3/13/07, 4:21 PM	525 KB	PDF
Krivit.txt	11/25/09, 11:13 AM	7 KB	Plain
Les Case	Today, 11:33 AM	--	Folde
Letts	11/9/12, 2:05 PM	--	Folde
Lipson HE-D-09-01865.pdf	11/20/09, 12:56 PM	587 KB	PDF
Mark Davidson	Today, 11:33 AM	--	Folde
McKubre Feb 9 2016.pdf	5/19/16, 9:31 AM	6.2 MB	PDF
Miley	Today, 11:33 AM	--	Folde
MIT LANR Symposium 2011	Today, 11:34 AM	--	Folde
Mizuno	1/21/15, 6:03 PM	--	Folde
Nagel SANER Nuclear Energy Generation.doc	3/30/09, 11:20 AM	30 KB	Micro
NASA LENR	Today, 11:34 AM	--	Folde
Nature News Puttermann.pdf	10/27/05, 3:58 PM	488 KB	PDF
Nature News Taleyarkhan.pdf	3/9/06, 1:48 PM	2.5 MB	PDF
Neutrons cavitation	Today, 11:34 AM	--	Folde
NRL	Today, 11:34 AM	--	Folde
Olafsson Seminar	Today, 11:34 AM	--	Folde
Oriani	Today, 11:34 AM	--	Folde
Patterson Reproduction	Today, 11:34 AM	--	Folde
Peter Hagelstein	Today, 11:34 AM	--	Folde
PhysRevLett_92.186601.pdf	6/13/06, 10:52 AM	514 KB	PDF
PhysRevLett_Taleyarkhan2006.pdf	1/30/06, 1:05 PM	390 KB	PDF
Piantelli	Today, 11:34 AM	--	Folde
PJ King	9/27/12, 9:41 AM	--	Folde
Roger Stringham	Today, 11:34 AM	--	Folde
Rossi_Focardi	Today, 11:34 AM	--	Folde
Russ George APS papers.pdf	8/7/07, 8:42 AM	289 KB	PDF
SchwingerJnuclearene.pdf	5/21/14, 2:12 PM	284 KB	PDF
Shanahan rebuttal	Today, 11:34 AM	--	Folde
Shoulders Projector Project for EVOs.pdf	10/3/11, 8:55 AM	457 KB	PDF
Siena Meeting 2012	Today, 11:34 AM	--	Folde
SKINR	Today, 11:34 AM	--	Folde
Sonoluminescence	Today, 11:34 AM	--	Folde
Storms	Today, 11:34 AM	--	Folde
Swartz	Today, 11:34 AM	--	Folde
Takahashi	Today, 11:34 AM	--	Folde
Talbot and Scott Chubb Papers	Today, 11:34 AM	--	Folde
Taleyarkhan's response.pdf	5/8/06, 5:59 PM	636 KB	PDF
Tom Passell	Today, 11:34 AM	--	Folde
Widom_Larsen	Today, 11:34 AM	--	Folde
Y E Kim	Today, 11:34 AM	--	Folde
Zero Point Fusion.pdf	7/15/05, 6:15 PM	370 KB	PDF

Figure 3-3
Contents of "Literature" Folder on Hard Drive

4 Hardcopy Records

Dr. Tanzella's hardcopy records consist of materials in two file cabinets and photographs located elsewhere in his office.

4.1 File Cabinet Contents

Dr. Tanzella has reviewed the contents of two file cabinets in his office (Figure 4-1) for the TLRDP. He identified three items that are most relevant to the Project¹⁸:

Item 1. This is a book by Durham on solid-state nuclear track detection which we used for the Galileo project where we were using CR 39 which as a solid-state nuclear track detector.

Item 2. This folder contains some raw plots of the mass spec from our reproduction of Les Case's hydrogen and deuterium in palladium on carbon catalyst – from which came the plot that shows a correlation between excess helium in excess energy.

Item 3. This folder is a set of data and results from the reproduction of the Letts-Cravens experiment done by us for Spindletop, where we did the dual laser experiment using a thermal imaging camera and all of our normal calorimetry.

Dr. Tanzella also has hardcopy lab notebooks, which are described in Section 6.4.



Figure 4-1
Two-Drawer and Three-Drawer File Cabinets in Fran Tanzella's Office

¹⁸ Hardcopy Folders from File Cabinet. Memo to Fran Tanzella from Tom Grimshaw, February 23, 2020.

4.2 Hardcopy Photographs

Dr. Tanzella has included in the Project eight packages of hardcopy photos from his LENR-related travels in Japan¹⁹ (Figure 5-4). He has identified the packages as shown below.

- 1A 1994? Sapporo.
- 1B 1994? Hokkaido.
- 2A Sapporo 1996. SF Bay Area 1997. NHE Lab.
- 2B Hokkaido 1994.
- 3 NHE Sapporo Lab
- 4 ICCF6 Toya 1996.
- 5A Japan 2005.
- 5B ICCF12 Yokohama.

A photo of Packages 1A and 1B is shown in Figure 5-3 as an example. The photos in Packages 3²⁰ and 4²¹ have been partially scanned and have been included in the TLRDP.

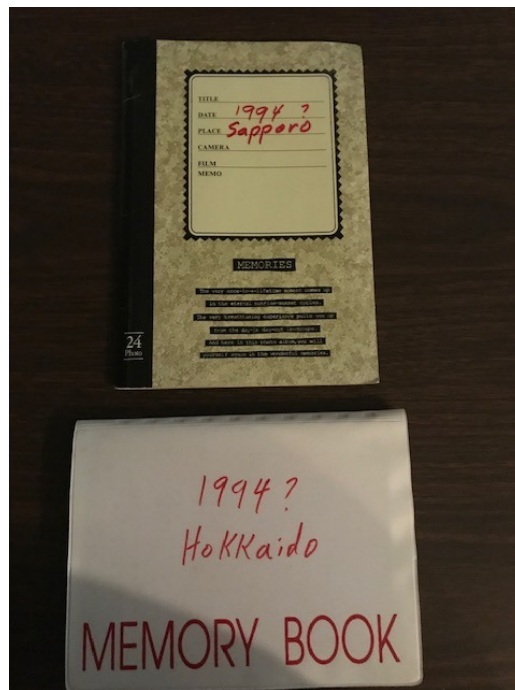


Figure 4-2
Photo Packages 1A and 1B

¹⁹ Packages of Photographs. Memo to Fran Tanzella from Tom Grimshaw, January 20, 2020.

²⁰ NHE Photos. Memo to Fran Tanzella from Tom Grimshaw, March 2, 2020.

²¹ ICCF-6 Reports and Photos. Memo to Fran Tanzella from Tom Grimshaw, March 3, 2020.

5 LENR Library

Dr. Tanzella has assembled a large collection of LENR books, reports and other materials during his years of LENR research. Most of his LENR Library is in two bookshelves in his LENR office (Figure 5–1). He also has a collection of hardcopy photos.



Figure 5-1
Two Bookshelves in Dr. Tanzella's LENR Office

5.1 ICCF Conference Materials

Dr. Tanzella has attended nearly all of the ICCF conferences going back to the first one in March 1990, just one year after the 1989 LENR announcement. He therefore has an almost complete collection of the ICCF proceedings and related materials²² (Table 5-1). Photos have been taken of

²² Conference Proceedings for the Tanzella LENR Research Documentation Project. Memo to Fran Tanzella from Tom Grimshaw, December 23, 2019.

the proceedings collection for the TLRDP. Pictures of the ICCF-1 and ICCF-2 proceedings are shown as examples in Figure 5-2.

Table 5-1
Dr. Tanzella's Collection of ICCF Conference Proceedings and Related Materials

Conference	Dates	Item(s)
ICCF-1	3/28-31/1990	Proceedings
ICCF-2	6/29 – 7/4/1991	Proceedings (The Science of Cold Fusion)
ICCF-3	10/21-25/1992	Proceedings (“Frontiers of Cold Fusion”)
ICCF-4	12/6-9/1993	Proceedings (EPRI TR-1-4188, 4 Volumes)
ICCF-5	4/9-13/1995	Abstracts
ICCF-6	10/13-18/1996	Abstracts/Program
ICCF-7	4/19-24/1998	Proceedings, Abstracts, & Program Manual
ICCF-8	5/21-26/2000	Proceedings, Abstracts, List of Participants
ICCF-9	5/12-24/2002	Proceedings, Abstracts/Program
ICCF-10	8/24-29/2003	Proceedings, Program?
ICCF-11	10/31 – 11/5/2004	Proceedings, Abstracts/Program
ICCF-12	11/27 – 12/2/2005	Proceedings, Abstracts
N/A	2006	ENEA Nuclear Fusion and Fission and Related Technologies Department, Progress Report
ICCF-13	6/25 – 7/1/2007	Proceedings
Workshop... ²³	10/13-18/2007	Proceedings, Abstracts
ICCF-14	8/10-15/2008	Proceedings: Vol 1 & 2, Abstracts
ICCF-15	10/5-9/2009	Proceedings, Abstracts, Program ²⁴
ICCF-16	2/6-11/2011	Abstracts, Program, Transmutation Paper ²⁵
ICCF-17	8/12-17/2012	Abstracts/Program
ICCF-19	4/13-17/2015	Program
ICCF-20	10/2-7/16	Abstracts, Program
ICCF-21	6/3-8/18	Abstracts/Program

²³ Workshop on Anomalies in Hydrogen/Deuterium Loaded Metals

²⁴ Beginning with ICCF-15, the ICCF Proceedings are published in the Journal of Condensed Matter Nuclear Science.

²⁵ Low Energy Nuclear Reactions: Transmutations by Srinivasan, Miley, and Storms

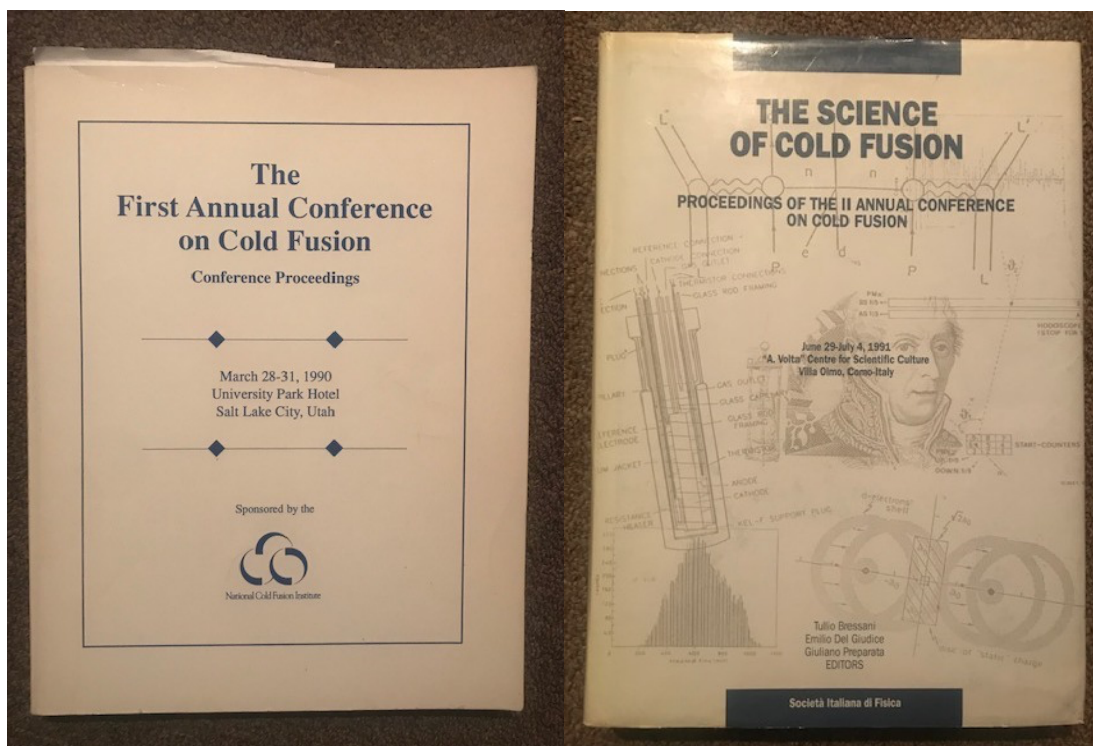


Figure 5-2
ICCF-1 and ICCF-2 Conference Proceedings

5.2 Other Library Items

Besides the conference proceedings, Dr. Tanzella has many other items on the bookshelves shown in Figure 5-1²⁶. They include hardcopy books and reports as well as a few CDs. The LENR-related items are in the bookcase on the left (Bookshelf A). The items in the upper and middle shelves (A1 and A2) are listed in Table 5-2a and 5-2b. The lower shelf (A3) contains the proceedings listed in Table 5-1. Other LENR Library items have been added to the Project in five categories as follows:

- “Reports from Bookshelf”
- “Reports from Bookshelf 2”
- “EPRI Reports”
- “Miscellaneous Bookshelf”
- “CDs Not on Bookshelf”

²⁶ Contents of Bookshelves in Laboratory Office. Memo to Fran Tanzella from Tom Grimshaw, February 1, 2020.

Some of the items are in unspecified locations in the bookshelves, and others are elsewhere in Dr. Tanzella's office. The items in each category are listed in Tables Table 5-3a to 5-3e.

Table 5-2a

Bookshelf A1 Items: LENR Books

The Rebirth of Cold Fusion	Krivit and Winocur
Excess Heat	Beaudette
Cold Fusion - The History of Research in Italy	ENEA
Lost History	Krivit
Fusion Fiasco	Krivit
Energy, Cold Fusion & Antigravity	Znidarsic
A Dialogue on Chemically Induced Nuclear Effects	Hoffman
Bad Science	Gary Taubes
Nuclear Transmutation	Mizuno
Cold Fusion Impact	Fox

Table 5-2b

Bookshelf A2 Items: LENR Reports and Presentations

BYU Conference Proceedings	In large envelope
Anomalous Nuclear Effects in Deuterium/Solid Systems – International Programs Review	Stapled report
Lattice Induced Nuclear Chemistry, LINC	Stapled report
Effect of Hydriding on the Physical Structure of Palladium.	Stapled presentation
Effective Hydriding on the Release of Contained Tritium from Palladium.	Stapled presentation
Observation of Charged Particle Bursts from Deuterium Loaded Thin Plate Titanium Foils	Stapled report
Nuclear Fusion Induced by the Controlled Out-Transport of Deuterons in Palladium	Stapled handwritten report
Tritium Production in Gas/Plasma Phase Loading – Experiments at BARC	Stapled handwritten report
Emission of Neutron Bursts from a Titanium-Deuterium Gas System in a High-Efficiency Low-Background Experimental Setup	Stapled report
Correlated Nuclear and Thermal Measurements in D/Pd and H/Pd Systems	Stapled report
Anomalous Heat Output from Pd Cathodes without Detectable Nuclear Products	Stapled presentation
Investigation of Anomalous Neutron Emissions in Solid/Deuterium Systems	Stapled report
The Precursor of “Cold Fusion” Phenomenon in Deuterium/Solid Systems	Stapled handwritten report
Electron Screening	Stapled report

Fluctuations and Non-Reproducibility in Cold Fusion from Free Quark Catalysis	Stapled report
Helium-3 and Tritium Hamilton Shear Zone	Stapled presentation
Measurements in the Gran Sasso Laboratory	Stapled handwritten report
Proceedings: Fourth International Conference on Cold Fusion, Volume 3: Nuclear Measurements Reports	EPRI report
Proceedings: Fourth International Conference on Cold Fusion, Volume 2: Calorimetry and Materials Papers	EPRI report
Development of Advanced Concepts in Nuclear Processes in Deuterated Metals	EPRI report
Proceedings: Fourth International Conference on Cold Fusion, Volume 1: Plenary Session Papers	Bound report
Proceedings: Fourth International Conference on Cold Fusion, Volume 4: Theory and Special Topics Papers	Bound report
Cavitation-Induced Excess Heat in Deuterated Metals	Stapled report
Cold Fusion Times	Newsletter
Comparison: Pons-Fleischmann Setup and Low-G Capacitor Setup	Paper-clipped report
Experimental Observations of Bubble Response and Light Intensity Near the Threshold For Single Mobile Sonoluminescence in Air-Water System	Physical Review C reprint
Resource Letter CF-1: Casimir Force	Stapled paper
Sonoimplantation of Hydrogen and Deuterium From Water Into Metallic Fine Powders	Applied Physics Letters stapled reprint
Journal of High Temperature Society (Japanese?)	Bound journal
The Basic of Nuclear Fusion Reactor Using Solid Pycnodeuterium	Bound report
Cavitation Theory & Experimentation, Etc.	Bound report
Fusion Technology	Bound journal
Fusion Technology	Bound journal
21st Century Science & Technology, Fall 1991	Bound journal
21st Century Science & Technology, Winter 1993-94	Bound journal
Infinite Energy, Uncertain Volume	Bound journal “
“ Cold Fusion”, Premier Issue	Bound journal
“Cold Fusion”, Uncertain Date	Bound journal
Popular Mechanics , Uncertain Date	Bound journal
Popular Science, Uncertain Date	Bound journal

Table 5-3a
“Reports from Bookshelf” Items

Investigation on Evaluation of New Systems for New Hydrogen Energy Production	SRI International, Final Report, November 1997
The Status of NHE Research	SRI International, September 1997
Development of Advanced Concepts for Nuclear Processes in Deuterated Metals	EPRI Report
Cavitation-Induced Excess Heat in Deuterated Metals	Stapled Report
Development of Energy Production Systems from Heat Produced in Deuterated Metals	SRI International, January 1998
Hydrogen in Metals	University of Strathclyde Report, March 2001
Investigation of Hydrogen Absorption into Palladium and Nickel	University of Strathclyde, September 1994
Light Hydrogen LENR in Copper Alloys	Stapled Report, ICCF-21
Water-Free Replication of Pons-Fleischmann LENR	Stapled Report, Reprint, Journal Condensed Matter Nuclear Science, Volume 15

Table 5-3b
“Reports from Bookshelf 2” Items

Radiation Detection Aspects of an Investigation of Anomalous Effects in Due to Rating Systems	Lockheed report, May 1993
Technical Status of Cold Fusion Results	Stapled report
Toward the Establishment of Solid Fusion As a Perpetual Energy for Humankind	Bound report
Calorimetry – Fundamentals and Practice	Stapled photocopy
Hydrogen in Titanium	Stapled photocopy of book
Journal of the Less-Common Metals	Photocopy
Hydrogen in Metals II	Photocopy of book
Hydrogen in Disordered and Amorphous Solids	Photocopy a book
Perspectives in Hydrogen in Metals	Photocopy of book
Metal Hydrides	Photocopy of book

Table 5-3c
“EPRI Reports” Items

Development of Advanced Concepts for Nuclear Processes in Deuterated Metals	EPRI Report
Development of Energy Production Systems from Heat Produced in Deuterated Metals	SRI International, January 1998
The status of NHE research	SRI international, September 1997
Investigation on Evaluation of New Systems from New Hydrogen Energy Production	SRI International, Final Report, November 1997
Hydrogen in Metals	University of Strathclyde, I’m Certain Date
Investigation of Hydrogen Absorption into Palladium and Nickel	University of Strathclyde, September 19 94
Cavitation – Induced Excess Heat in Due to Rated Metals	SRI International, March 1998

Table 5-3d
“Miscellaneous Bookshelf” Items

APS 2006	CD in case
Least Action Nuclear Process LANP Model	CD in case
Cold Fusion – Fire from Water	CD in case
ICCF 20 Proceedings	CD in case
Proceedings of the 15 th International Conference on Condensed Matter Nuclear Science	Bound report
Proceedings of the 16 th International Conference on Condensed Matter Nuclear Science	Bound report
Current Science	Bound journal
Future Energy	Bound magazine
Thermal and Nuclear Aspects of the Pd/D ₂ O System – Volume 1: A Decade of Research at Navy Laboratories	Bound report
Calorimetric Analysis of a Heavy Water Electrolysis Experiment Using a Pd-B Alloy Cathode	Naval Research Laboratory Report, March 26, 2001
Naval Research Laboratory, 1994-95 Fact Book	Bound report
Fourth International Conference on Cold Fusion	Bound report

Table 5-3e
“CDs Not on Bookshelf” Items

60 Minutes – Cold Fusion	CD in envelope
LENR Workshop, August 2009, SPAWAR	CD in envelope
Cold Fusion: Understanding the Fleischman-Pons Effect	CD in case

6 Laboratories

Dr. Tanzella conducted most of his LENR research at SRI International²⁷ (Figure 6-1). After he retired in 66, he developed his private LENR lab in Belmont, California.



Figure 6-1
SRI International Front Entrance

6.1 SRI International Lab

The early (1989-91 timeframe) research team at SRI included six members²⁸ (Figure 6-2): Fran Tanzella, Michael McKubre, Mark Williams, Stuart Smedley, Romeu Rocha, Steve Crouch-Baker, and possibly Sharon Wing. Other workers in the next time frame were Alan Hauser, Ben Bush, Nada Jdvtic. After a tragic accident resulting in the death of Andy Riley on January 2, 1992, the LENR lab was moved to a new lab constructed with impact resistant clear plastic panels²⁹.

During the latter period of his SRI affiliation before he retired, Dr. Tanzella was heavily involved in a LENR research collaboration with Brillouin Energy. A photo of members of the collaboration is shown in Figure 6-3. Photos of the SRI LENR lab are in Figure 6-4³⁰.

²⁷ Photos Added During February 17, 2020 Visit. Memo to Fran Tanzella from Tom Grimshaw, February 19, 2020.

²⁸ Cold Fusion Research Team at SRI. Memo to Fran Tanzella from Tom Grimshaw, January 19, 2020.

²⁹ Other workers in the next timeframe were Alan Hauser, Ben Bush and Nada Jdvtic.

³⁰ Photos of SRI LENR Lab. Memo to Fran Tanzella from Tom Grimshaw, March 25, 2020.



Figure 6-2

SRI LENR Research Team, 1989-91 Timeframe

*Back Row, Left to Right: Fran Tanzella, Michael McKubre, Mark Williams
Front Row, Left to Right: Stuart Smedley, Romeu Rocha, Steve Crouch-Baker*



Figure 6-3

SRI and Brillouin LENR Researchers

*Left to Right: Tom Driscoll, Fran Tanzella, Dave Correia, Michael McKubre, Robert Godes,
Robert George*



Figure 6-4
Interior of the SRI LENR Research Lab: “2 Empty Cubicles”

6.2 NHE Laboratory, Sapporo, Japan

While at SRI, Dr. Tanzella conducted LENR research for several months at the NHE laboratory in Sapporo, Hokkaido, Japan. Figure 6-5 shows the NHE research group³¹, which was led by Dr. N. Asami (shown fourth from the left in the photo). Dr. Tanzella can be seen near the rear of the picture. Figure 6-6 shows the gas manifold that was used to evacuate and fill electrolytic cells from SRI with hydrogen. The manifold was also used to monitor the pressure in the cells and to remove the hydrogen at the end of each experiment. The cells were backfilled with nitrogen for safety reasons when the hydrogen was removed.

³¹ NHE Photos. Memo to Fran Tanzella from Tom Grimshaw, March 2, 2020.



Figure 6-5
NHE LENR Research Group

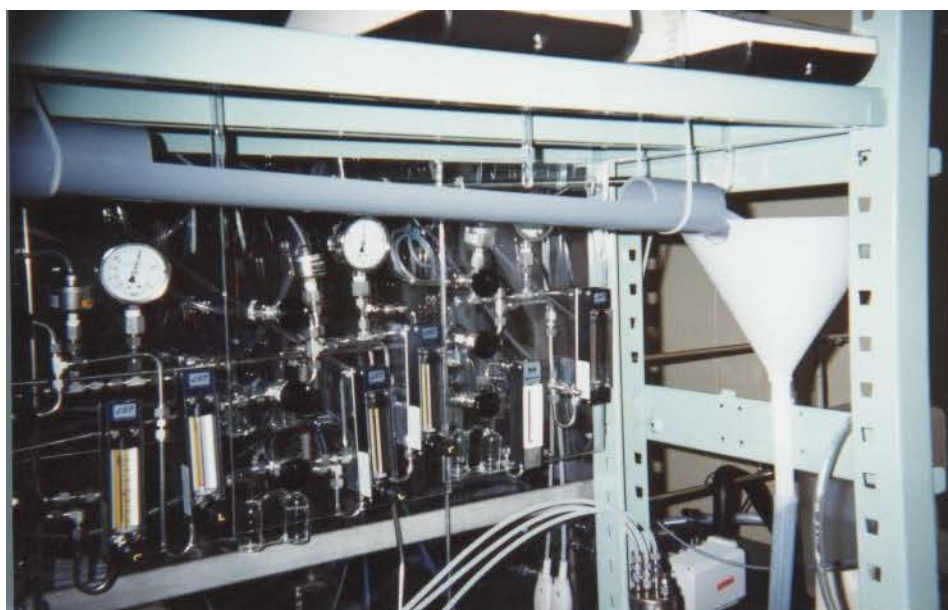


Figure 6-6
Gas Manifold System for Addition and Evacuation of Gas in the Electrolytic Cells

6.3 Energy Research Center Lab

After he retired from SRI in 2018, Dr. Tanzella developed his own private LENR lab in Belmont, California. His lab, the Energy Research Center, is shown in Figure 6-7³². The lab has an interior office on one end. Interior views of the lab are in Figure 6-8. A photo of Dr. Tanzella in his lab is in Figure 1-1. The lab is being prepared for LENR experiments.



Figure 6-7
Westward Exterior View of Energy Research Center Laboratory and Office

³² Exterior and Interior Lab Photos and Office Photos at “Energy Research Center”. Memo to Fran Tanzella from Tom Grimshaw, January 8, 2020.



Figure 6-8a
Interior View of Dr. Tanzella's Laboratory and Office: View Toward Overhead Door



Figure 6-8b
Interior Views of Dr. Tanzella's Laboratory and Office: View Toward Office

6.4 Lab Notebooks

Three lab notebooks have been documented for the TLRDP. The earliest notebook, shown in Figure 6–8, is a ring binder³³ with a label on the spine as follows:

Tanzella Raw Data for Post Experiment Analyses, Early Cells, 1989-90.
Single Cathode (P12).

The report title and opening paragraph on the first page of the binder are shown below.

EM and SALI analytical results for P12 and P12B

Introduction

Following calorimetric experiments, the rod from P12 was divided into two equal lengths. SEM and SALI analyses were carried out over the period 11/21/9 – 12/9/90. Similar analyses were carried out on a blank rod, P12B, which different from P12 only in that it had not been used in an electrochemical cell. Both rods had been subjected to helium implantation before use, receiving a dose of 12.8 mC. It had been estimated that the HE 4 access would penetrate to a depth of approximately 1 μ .

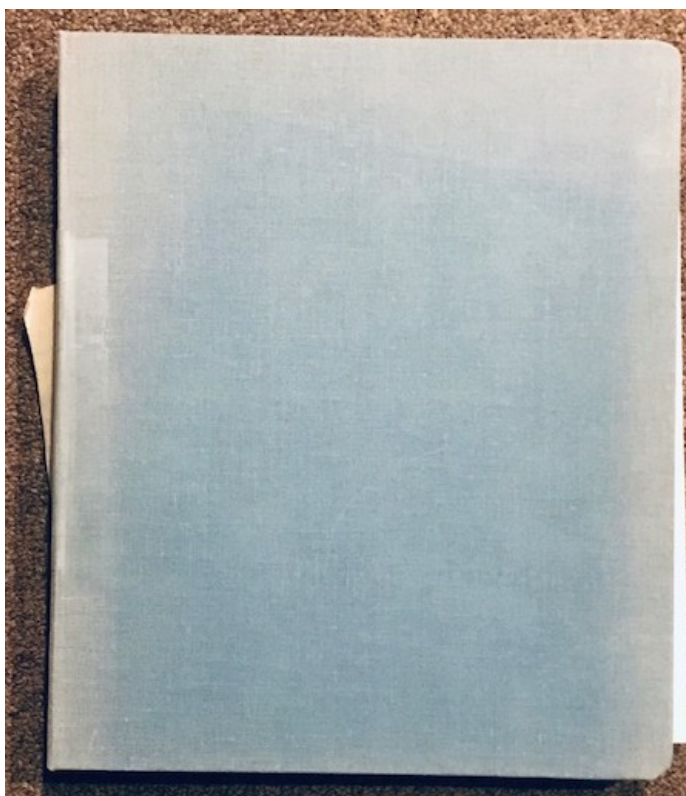


Figure 6-9
Ring Binder for Cathode P12

³³ Ring Binder Cathode P12. Memo to Fran Tanzella from Tom Grimshaw, December 20, 2019.

Two notebooks included in the Project (Figure 6-10) were dedicated to specific topics or experiments that were conducted while Dr. Tanzella was at SRI³⁴ They are labeled as follows:

1. P21785. MIT. X-rays. RF Stimulation of Hg on Cu for Nuclear X-Rays
2. “PdCls, Experiment”. “Ben Earle CoDposition (Spazk, Boss). CR-39. Gallileo Project.”

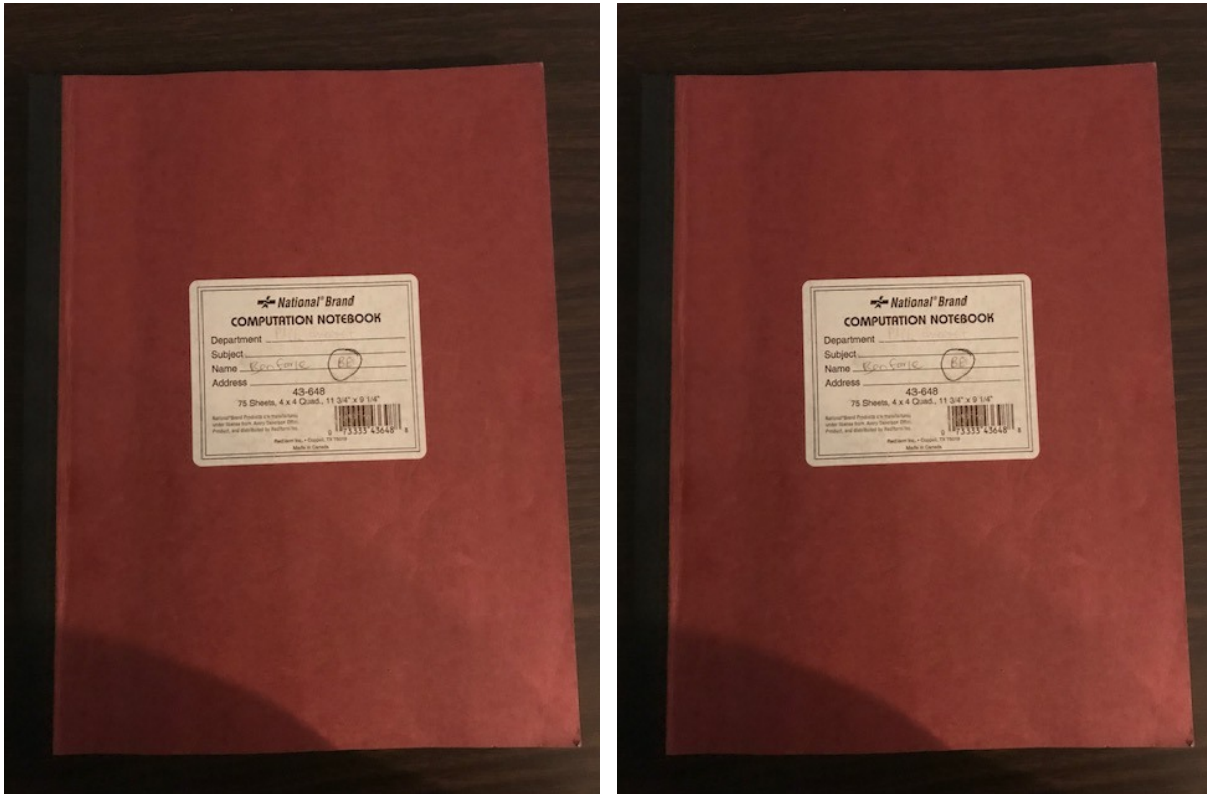


Figure 6-10
Two of Dr. Tanzella’s Lab Notebooks

Dr. Tanzella has indicated that other lab notebooks for SRI LENR experiments are on file at the organization. Table 6-1 shows a list of notebooks that may that may be available to the Project in the future³⁵. Other notebooks besides the ones listed may also be available.

³⁴ Two Lab Notebooks for the Tanzella LENR Research Documentation Project. Memo to Fran Tanzella from Tom Grimshaw, December 22, 2019.

³⁵ Record of Notebooks Issued by SRI International. Memo to Fran Tanzella from Tom Grimshaw, February 8, 2020.

Table 6-1
Lab Notebooks Issued by SRI International, as of October 26, 2015

No	Lab Book No.	CO Current Owner ID	Proj No.	Issued	Archived	BoxNo
1	09418H	Tanzella	20552 8735	02/22/1990	06/14/2013	09936
2	09449H	Francis				
3	09462H	Tanzella	20552 8735	03/14/1990	06/14/2013	09936
4	09483H	Francis				
5	09462H	Tanzella	20552 8735	03/21/1990		
6	09483H	Francis				
7	09483H	Tanzella	20552 8735	04/04/1990	06/17/2013	09936
8	09516H	Francis				
9	09516H	Tanzella	20552 8735	04/25/1990	06/17/2013	09936
10	09517H	Francis				
11	09517H	Tanzella	20552 8735	04/25/1990	06/17/2013	09936
12	09522H	Francis				
13	09522H	Wing	14397 8735	05/03/1990	06/17/2013	09936
14	09578H	Sharon				
15	09578H	Tanzella	20552 8735	06/28/1990		
16	09593H	Fran				
17	09593H	Tanzella	20552 8735	07/13/1990		
18	09643H	Fran				
19	09643H	Tanzella	20552 8735	08/21/1990	06/17/2013	09936
20	09666H	Francis				
21	09666H	Tanzella	20552 8735	09/04/1990		
22	09741H	Fran				
23	09741H	Tanzella	20552 8735	11/13/1990		
24	09763H	Fran				
25	09763H	Wing	14397 8735	12/04/1990	06/17/2013	09936
26	09804H	Sharon				
27	09804H	Tanzella	20552 8735	01/16/1991	06/17/2013	09936
28	09857H	Francis				
29	09857H	Williams	20567 8735	02/19/1991	06/17/2013	09936
30	09926H	Mark				
31	09926H	Tanzella	20552 8735	05/01/1991	06/17/2013	09936
32	10044H	Francis				
33	10044H	Wing	14397 8735	07/22/1991	09/12/2013	09937
34	10045H	Sharon S				
35	10045H	Wing	14397 8735	07/22/1991	09/12/2013	09937
36	10197H	Sharon S				
37	10197H	Williams	20567 8735	11/21/1991	09/12/2013	09937
38	10392H	Mark S				
39	10392H	Wing	14397 8735	04/27/1992	09/12/2013	09937
40	10596H	Sharon S				
41	10596H	Tanzella	20552 8735	09/09/1992		
42	10670H	Fran				
43	10670H	Wong	21645 8735	11/06/1992	09/26/1997	05450
44	10826H	Victor				
45	10826H	Tanzella	20552 4035	04/05/1993		
46		Fran				

24	10856H	Wing Sharon S	14397 4035	04/26/1993	09/12/2013	
25	10896H	Hauser Alan K	22873 4035	05/18/1993	09/12/2013	
26	10900H	Hauser Alan K	22873 4035	05/24/1993	09/12/2013	
27	10952H	Wing Sharon S	14397 4035	07/15/1993	09/12/2013	
28	10965H	Bush Ben	99925 4035-93	08/02/1993	03/31/1994	03594
29	11034H	Tanzella Fran	20552 4035-93	09/27/1993	09/12/2013	
30	11081H	Sharon S	14397 4035-93	10/21/1993	09/12/2013	
31	11115H	Tanzella Fran	20552 4035-93	11/16/1993		
32	11116H	Williams Mark S	20567 4035-93	11/17/1993	09/12/2013	
33	11170H	Srinivasan Mahadeva	99950 4035	01/17/1994	09/12/2013	
34	11191H	Tanzella Francis	20552 4035-194	02/02/1994		
35	11221H	Srinivasan Mahadera	99950 4035	02/22/1994	09/12/2013	
36	11248H	Tanzella Francis	20552 4035-94	03/04/1994		
37	11308H	Williams Mark S	20567 4035-94	04/27/1994	09/12/2013	
38	11453H	Tanzella Fran	20552 4035-94	09/01/1994		
39	11454H	Hauser Alan	22873 4035-94	09/01/1994		

7 Interviews

Two sets of interviews with Dr. Tanzella have been conducted regarding his long LENR research career. The first interview was recorded on November 19 and 20, 2019³⁶, and the second took place in two parts on April 21 and May 8, 2020³⁷. Transcripts of these recorded interviews may become available for public release in the future.

³⁶ Interview for the Tanzella LENR Research Documentation Project. Memo to Fran Tanzella from Tom Grimshaw, November 27, 2019.

³⁷ Second Round of Interviews for the Tanzella LENR Research Documentation Project. Memo to Fran Tanzella from Tom Grimshaw, May 12, 2020.

8 *LENR Research Timeline*

In support of the second set of interviews, Dr. Tanzella prepared a timeline of his LENR research at SRI. It is shown in Table 8-1. Additional detail may be added to the timeline in the future after review and annotation of the interview transcripts.

*Table 6-1
Dr. Tanzella's LENR Research Timeline*

3/1989 - 1/1992	Small FPE effort funded by EPRI, Mass flow calorimeter development, P1 – P18, P2 autoradiograph, P14 vs P15
1992	Fatal accident investigation - Reported at ICCF3; Preparation for next EPRI phase
1993 - 1995	Larger FPE effort funded by EPRI. Additives study, Pd annealing temperature study, Surface preparation study.
1995 - 1997	FPE studies funded by NHE group in Sapporo. Loading Studies and IMRA Engelhard Lot 1 Pd analysis and reproduction
1997 - 1998	Case reproduction with He measurements; Stringham cavitation experiments. Case first reported at ICCF7 (1998). Charge emission project (fA) with P. Hagelstein.
1998 - 1999	Arata double-structured cathode experiment reproduction. Arata first reported at ICCF5 (1995). Small Case cells.
2000(?)	ONR funded FPE effort. Violante calorimetric analysis of small case cells – He-4 vs Pxs.
2001 - 2004	DARPA-funded efforts on various reproduction efforts. Laser triggering; ENEA collaboration.
2004	Project Cobalt (outside of SRI, Letts dual-laser experiment)
2005	Spindletop - ultrasonic stimulation of PdDx with thermal camera analysis
2005 - 2006	CR-39 work (SRI funded Galileo project)
2006	ONR (through MIT) - EM stimulated LENR
2007 - 2008	DARPA-funded Energetics Technologies Superwave® reproduction (phase 1)
2009	DARPA-funded Energetics Technologies Superwave® reproduction (phase 2, low temperature).
2009 - 2013	DTRA-funded Exploding metal hydride wire experiments with cryogenic calorimetry Continued CR-39 work with Lipson, Russetski, Boss, and Forsley
2013	DARPA (through MIT)-funded Coherent X-ray generation
2014 - 2015	NRL-funded FPE and H(D) in zeolite experiments
2013 - 2018	Brillouin reproduction and independent verification experiments. Published CR-39 work in IJHE.
2018 - Present	Supporting Brillouin work via the Energy Research Center LLC Supporting at least 2 other LENR research groups that will remain anonymous.

9 *Future Opportunities*

There are opportunities for future progress on the TLRDP. Possible additions and expansions are listed below.

- Review and annotate interview transcripts
- Review and consolidate the lists of publications in Section 2
- Add the files of LENR experimental data that are not yet included in the Project

When the TLRDP is completed, a summary may be prepared for sharing with other members of the LENR research community – and beyond.

10 Project Methods

The methods used in the TLRDP are based on general LRDI procedures that are modified to meet the specific requirements of individual LENR investigators³⁸. The project is being performed according to accepted project management practices³⁹. As noted above, the overall LRDI procedure is set forth in a recent article in Infinite Energy⁴⁰.

The TLRDP was initiated after discussions with Dr. Tanzella during the CF/LANR Colloquium on March 23-24, 2019 at MIT. The initial conversations took place after a presentation on the LRDI⁴¹. An early step was identification of Dr. Tanzella's publications on LENR-CANR.org. Visits to his lab in Belmont, California took place on the following dates.

October 29, 2019

November 29, 2019⁴²

February 17, 2020⁴³

During the visits, Dr. Tanzella provided copies of his professional resume, electronic files were obtained, hardcopy records were inventoried, and the contents of his LENR library were recorded. The procedure included scanning selected materials and taking photos of Dr. Tanzella, his LENR records and his combined office and laboratory. The interview that took place in November was recorded by phone.

³⁸ Grimshaw, T.W., 2019. Collection, Organization, and Documentation of LENR Research Results: Guideline. January.

³⁹ Project Management Institute, 2017. A Guide to the Project Management Body of Knowledge (PMBOK® Guide) — Sixth Edition and Agile Practice Guide (ENGLISH). Project Management Institute. Newtown Square, PA.

⁴⁰ Grimshaw, T., 2020. Documenting Cold Fusion Research: Preserving a Vital Asset for Humankind. Infinite Energy, Issue 150, March/April 2020, p. 9-13.

⁴¹ Grimshaw, T., 2019. LENR Research Documentation Initiative: Objectives, Procedure, Participants, Future Opportunities. Presentation and Poster at MIT CF/LANR Colloquium. March.

⁴² Summary of Visit for Tanzella LENR Research Documentation Project, November 24, 2019. Memo to Fran Tanzella from Tom Grimshaw, November 27, 2019.

⁴³ Summary of Visit on February 17, 2020. Memo to Fran Tanzella from Tom Grimshaw, February 18, 2020.

About 29 memos have been prepared⁴⁴ (Table 10-1). A Dropbox folder is being used to store the electronic files found and the memos and reports prepared for the Project⁴⁵ (Figure 10-1). The Dropbox folders were in general numbered sequentially as materials were located and progress was made. For records requiring a large amount of storage space, a supplemental external hard drive is being used. This hard drive is also utilized for periodic backup of the MLRDP and other LRDI project files.

⁴⁴ List of Memos for the Tanzella LENR Documentation Project. Memo to Fran Tanzella from Tom Grimshaw. February 7, 2020.

⁴⁵ Tanzella Files on Dropbox. Memo to Fran Tanzella from Tom Grimshaw. March 4, 2020.

Table 10-1
List of Memos for the Tanzella LENR Research Documentation Project

Date	Memo	DBF*
5/4/2019	Tanzella in “All Authors” on LENR-CANR.org: Update	20
11/24/2019	Interview for Tanzella LENR Research Documentation Project	40
11/27/2019	Summary of Visit for Tanzella LENR Research Documentation Project, November 24, 2019	45
12/6/2019	Hard Drive Contents for Tanzella LENR Research Documentation Project	60
12/20/2019	Ring Binder Cathode P12	80
12/22/2019	Two Lab Notebooks for the Tanzella LENR Research Documentation Project	70
12/23/2019	Conference Proceedings for the Tanzella LENR Research Documentation Project	90
1/8/2020	Exterior and Interior Lab Photos and Office Photos at “Energy Research Center”	100
1/19/2020	Cold Fusion Research Team at SRI	120
1/20/2020	Packages of Photographs	110
2/1/2020	Contents of Bookshelves in Laboratory Office	140
2/3/2020	Professional Biographies for the Tanzella LENR Research Documentation Project	160
2/4/2020	SRI International Report for the Tanzella LENR Research Documentation Project	130
2/5/2020	Publications List on Sci Finder for the Tanzella LENR Research Documentation Project	25
2/6/2020	SRI International Report for EPRI	135
2/7/2020	List of Memos for the Tanzella LENR Documentation Project	200
2/8/2020	Record of Notebooks Issued by SRI International	190
2/18/2020	Summary of Visit on February 17, 2020	210
2/19/2020	Photos Added During February 17, 2020 Visit	240
2/20/2020	PowerPoint Presentations Dated 2009 and 2019	170
2/21/2020	Selected SRI and Related Reports	230
2/22/2020	References in Endnote and SciFinder	220
2/23/2020	Hardcopy Folders from File Cabinet	250
3/1/2020	SRI Reports for New Hydrogen Energy (NHE)	260
3/2/2020	NHE Photos	270
3/3/2020	ICCF-6 Reports and Photos	280
3/4/2020	Tanzella Files on Dropbox	290
3/25/2020	Photos of SRI LENR Lab	300
3/31/2020	ICCF-1 Paper: Calorimetry and Electrochemistry in the D/Pd System	180

*DBF = Dropbox Folder Designation

▼	Tanzella - LENR at SRI 190330	✓
▶	0 Tanzella Edits and Additions	✓
▶	10 Tanzella Reports 191107	✓
▶	20 Tanzella on LENR_CANR 190403	✓
▶	25 Tanzella Pubs on Sci Finder 200203	✓
▶	30 Tanzella Pix 191029	✓
▶	40 Interviews 191120	✓
▶	45 Second Trip 191206	✓
▶	50 Tanzella Pix 2nd Trip 191125	✓
▶	60 Tanzella Hard Drive 191124	✓
▶	70 Ring Binder Cathode P12 191127	✓
▶	80 Two Lab Notebooks 191220	✓
▶	90 Conference Proceedings 191127	✓
▶	100 Exterior & Interior Photos 200108	✓
▶	110 Tanzella CF Photo Collections 190109	✓
▶	120 SRI CF Group 190109	✓
▶	130 SRI Rept November 1997 200109	✓
▶	135 SRI EPRI Report 1998 200204	✓
▶	140 Bookshelf Contents 200125	✓
▶	150 Hagelstein Photo 191127	✓
▶	160 Tanzella CV 200203	✓
▶	170 Tanzella PowerPoints 200204	✓
▶	180 McKubre Paper ICCF-1 200204	✓
▶	190 SRI Lab Notebooks 200207	✓
▶	200 Memo of Memos 200203	✓
▶	210 Site Visit Feb 17 2020 200218	✓
▶	220 EndNote SciFinder Library 200217	✓
▶	230 Tanzella Selected Reports	✓
▶	240 Photos from Feb 17 Visit 200219	✓
▶	250 Hard Copy Folders 200222	✓
▶	260 NHE Reports for Scanning 200229	✓
▶	270 NHE Photos 200301	✓
▶	280 ICCF 6 Photos 200301	✓
▶	290 Tanzella on Dropbox 200303	✓
▶	300 Lab Photos 200325	✓

Figure 10-1
Screenshot of “Tanzella – LENR at SRI 190330” Folder on Dropbox