COLD FUSION EXPERIMENTS AND THEORY DEVELOPMENT

DOCUMENTATION OF DR. EDMUND STORMS’ LENR RESEARCH CAREER

SANTA FE, NEW MEXICO

Stage 2 (Organization) Report
Second Draft

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Summary

Dr. Edmund Storms was one of the first researchers to follow up on the cold fusion claims of Martin Fleishman and Stanley Pons in March 1989. He has continued his cold fusion (now widely referred to as low-energy nuclear reactions, LENR) research in the years since, first in his position at Los Alamos National Laboratory (LANL) and then in his home laboratory in Santa Fe, New Mexico. His work has included both laboratory experiments and development of a theory to explain the LENR phenomenon.

During his 27 years of investigations, Dr. Storms has developed one of the most extensive LENR research records in existence. Much of this work is available in the public realm through his publication of papers and presentations at conferences. There is in addition an extensive body of research results that are in Dr. Storms' private files. A project has been undertaken to compile the publicly-available documents and to capture, organize, and store the private records. The initiative, termed the "Storms LENR Research Development Project" is being performed by Dr. Storms and Dr. Thomas Grimshaw, who also has LENR interest in the area of public policy.

The Project is being accomplished in three stages – information collection, organization, and documentation. Stage 1 began in August 2015. Most of the work was performed onsite in Dr. Storms' home laboratory, with much of the recording and reporting of incremental steps taking place at the Energy Institute at The University of Texas at Austin. The accumulated records are stored in electronic form in the Cloud (Dropbox) and in hard-copy files in hanging folder tubs at Dr. Storms home lab. The records and descriptions obtained in the Project are in seven categories:

- Publications
- Unpublished Progress Reports
- Lab Notebooks (Work History)
- Electronic Data Files
- Hard Copy Records
- Research Laboratory
- LENR Library

The Electronic Data Files Component consists of subcomponents defined on the basis of their origin – Dr. Storms' current computer, ZIP discs, CDs, DVDs, VHS tapes, 3-1/2 inch floppy disks, and an external hard drive. LENR conferences in which Dr. Storms gave presentations and papers have been established as an eighth Component. Records were accumulated for the project during nine on site visits from August 2015 to April 2017. The second draft of the Stage 1 report was submitted on April 18, 2017.

In this Stage 2 report, the records collected in Stage 1 are organized in an Integrated Timeline of the Project Components. The Timeline has been sorted by year and month to prepare the records for additional analysis for the various phases of Dr. Storms' LENR research career. The results of the analysis – and associated narrative – are planned for Stage 3.
Introduction

Cold fusion was announced by Dr. Martin Fleischmann and Dr. Stanley Pons at a press conference at the University of Utah in March 1989. The potential benefits of cold fusion (now widely referred to as low energy nuclear reactions, LENR) as a new source of energy were quickly realized. Numerous attempts have been made worldwide to confirm the LENR claim. Dr. Edmund Storms, one of the earliest researchers to follow up, has continued to conduct research and develop explanations in the 28 years since the announcement. As a consequence, he has created one of the most extensive LENR research records in existence.

Dr. Storms began his career at Los Alamos National Laboratory (LANL) in the mid-1950s. His work was primarily on high temperature refractory materials. LANL was one of the preeminent research organizations where early attempts were made to replicate LENR. Investigations began soon after the 1989 announcement. Dr. Storms led one of the research teams that had success, as indicated by production of tritium and anomalous heat as the unambiguous signatures. He continued his LENR research at LANL until his retirement in August 1991.

After a break in his LENR research activities, Dr. Storms began experiments at his private laboratory in Santa Fe, New Mexico in about June 1995. This experimental work has continued up to the present day. During this timeframe, he has also made contributions to explanation of the LENR phenomenon. His preeminent LENR publications are two books, one published in 2007\(^1\) and the other in 2014\(^2\). An overview of Dr. Storms’ LENR research career appears in Section 4 below.

Storms LENR Research Documentation Project

During his many years of LENR research, Dr. Storms published many reports and has developed a large body of experimental data and unpublished reports. The data and reports currently exist in Dr. Storms' private collection of electronic and hard-copy files. A project has been undertaken

with the assistance of Dr. Thomas Grimshaw to collect and organize Dr. Storms’ research files and make them more readily accessible. The initiative is referred to as the “Storms LENR Research Documentation Project” or “Project”. It is being conducted in three stages – information collection, organization, and documentation (LENR career summary). A report is being prepared for each stage. Work began in August 2015\(^3\) when Dr. Grimshaw made his first onsite visit for information collection. The “cutoff date” for the Project is December 31, 2015.

Information has been collected from more than a dozen sources, referred to as Project Components, in Stage 1. The current draft of the Stage 1 report was submitted to Dr. Storms on April 18, 2017\(^4\). Additional information on the Project is provided in Appendix A of this report and in the Stage 1 report.

The objective of Stage 2 is to organize the LENR research information collected in Stage 1. The organization is being accomplished by developing a research career timeline. Events, milestones, and other items were identified for each Component, and individual timelines were prepared in Stage 1. After the individual timelines were completed, they were assembled in an Integrated Timeline in Stage 2. The Integrated Timeline has been sorted by year and month to provide insight into the research activities that were taking place year by year. The Timeline has been reviewed and organized for analysis and interpretation for Stage 3, in which a narrative is planned for the various phases of Dr. Storms’ LENR research career.

Section 2 of this report provides a brief summary of the findings of Stage 1. The main items of the Integrated Timeline are presented in Section 3. Section 4 contains a highlights of Dr. Storms' LENR research career, and Section 5 outlines plans for Stage 3. Appendices A, B, and C include descriptions of methods used in the project, a more detailed summary of the Stage 1 report, and an overview of Dr. Storms' research prior to his involvement with LENR. Appendices D and E contain the Integrated Timeline in two parts, which are described below.

\(^3\) The Project was actually initiated in the Spring 2015 (“Professional Biography Initiative: Next Step”. Memo to Ed Storms from Tom Grimshaw, June 10, 2015), but substantive effort began in August.

**Conclusions**

The future of humankind may well depend on achieving LENR and realizing its benefits as a clean, abundant, and inexpensive source of energy. Dr. Storms has played a key role in advancing understanding of the LENR phenomenon. Society will owe a great debt to Dr. Storms when LENR becomes a reality and is widely deployed as a source of energy.

**Acknowledgments**

The authors wish to extend their gratitude particularly to their spouses, Carol Storms and JoAnne Grimshaw. Carol participated in the pursuit of LENR with Dr. Storms in the early days of the field. For this Project, she was not only a gracious hostess for the onsite visits, but was also a valuable source of information and perspectives from her early experience in LENR research. JoAnne Grimshaw also provided support both on-site during the visits and in the Austin-based part of the Project. She also reviewed many of the Project reports.

Tom Claytor and Malcolm Fowler, both participants in preparation of proposals that preceded the Project, were also valuable resources for information about LENR development, particularly for the early efforts at LANL. Acknowledgment is also given to the managers of the Energy Institute for supporting a LENR initiative within the organization. Thanks especially go to Fred Beach, Assistant Director, for his interest in LENR and for serving as "mentor" for the Project and other activities at the Energy Institute such as energy policy toward LENR.

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5 The Project was preceded by initiatives by Dr. Storms and Dr. Grimshaw to establish a new laboratory in Santa Fe separate from Dr. Storms’ home lab. These initiatives resulted in two versions of a proposal (see next two footnotes), both in collaboration with Dr. Tom Claytor. Dr. Claytor, like Dr. Storms, is a retiree from Los Alamos National Laboratory who operates his own private LENR lab. It is located in White Rock, NM. Funding for the two initiatives has not yet been acquired.


1 Stage 1 Findings

The records collected for Dr. Storms' LENR research during Stage 1 include both publicly available publications and unpublished data and reports. As noted in Section 1, information was collected from a number of sources in his home laboratory. The sources have been organized in the following Components:

- Publications
- Unpublished Progress Reports
- Work History
- Electronic Data Files
  - Storms Computer Files (Round 1)
  - Storms Computer Files (Round 2)
  - ZIP and Round 1 CD Files
  - Round 2 CDs, DVD Files and VHS Tapes
  - External Hard Drive Files
  - 3–1/2 Inch Floppy Disk Files
- Hard Copy Records
- Research Laboratory
- LENR Library
- Conferences
- 2007 Book

Brief descriptions of these Components are summarized in this section. More detail is presented in Appendix B. Complete descriptions may be found in the Stage 1 report.

The Publications Component includes about 125 publicly available papers that were prepared from 1989 to 2015. In the Unpublished Progress Reports Component, approximately 111 items were found, many of them prepared to show results of Dr. Storms' work to sponsors. Ten laboratory notebooks were incorporated in the Project, covering the period from June 1995 to November 2015. The notebooks were carefully reviewed and annotated by Dr. Storms, resulting in a spreadsheet with more than 2750 entries. This "Work History" constitutes an a principal Component of the Project.

Electronic data files were obtained from six different sources, which are designated as Subcomponents. Two Subcomponents include files that were obtained from Dr. Storms' current computer on two different onsite visits. Legacy media were another source of electronic files,
including ZIP desks, CDs, DVDs, VHS tapes, an external hard drive, and 3-1/2 inch floppy disks. Each of these media comprises a Subcomponent of the Project.

Hard-copy records, another Component, were found in Dr. Storms' office and in storage areas of his home laboratory. These files, along with the legacy storage media, have been placed in storage tubs in Dr. Storms’ home laboratory. The LENR library, also located in Dr. Storms’ office, is another important Component; it contains many publications by him and many other LENR investigators. Component descriptions are also provided for Dr. Storms' research laboratory and for the 15 ICCF conferences he attended (of 18 held) from 1989 to 2013, and for a chapter of his 2007 book that is particularly significant for the Project.
2 \textbf{Research Timeline}

The elements of information obtained in each Component (and Subcomponent) were reviewed, and dates (month and year) were assigned to the elements where possible. Timelines were then prepared for each Component in Stage 1 using spreadsheets in which the elements were sorted by year and month.

In Stage 2 the timelines for the Components were combined into an Integrated Timeline. This Timeline was also sorted by year and month. The Timeline (excluding Work History) is in Appendix D. The Work History Timeline is in Appendix E. It was prepared separately from the other Components because of the importance of the experiment descriptions to the Project and because it has many more entries in the spreadsheet then all the other Components combined.

The Timelines in Appendices D and E have been further analyzed in this Section, and redundant entries have been consolidated. The entries are also rearranged in the following order: a) work history (lab notebook entries), b) information on experiment and results, c) publications and unpublished reports, d), other information found in the Project, and e) other relevant external (to Dr. Storms' research) items and events in the LENR field. The entries are shown below for each year. This year-by-year presentation provides the basis for defining and describing the various phases of Dr. Storms’ LENR research career in Stage 3.
2.1 1989 Activities and Events

March
46FLD  Set 1: Star C. Cold Fusion Text Archives
50HCR  Start of LENR memos by Storms while at LANL
50HCR  Start of lab-wide CF-related memos. (REV)
90BOK  First LANL Cold Fusion meeting, Electrochemical fusion, 3/27
90BOK  First LANL Cold Fusion work by Shimson Gottesfeld (MEE-11), 3-28

April
46FLD  Set 1: progress. Cold Fusion. Progress & memos & proposal
50HCR  Storms presentation: "Cold Fusion, Present Status As a Significant Phenomenon". LANL, Nuclear Materials Division.
50HCR  Hard copy materials (newspapers, etc.) (REV)
50HCR  CF memos at LANL
90BOK  Multiple programs underway at LANL and seven other National Labs, 4/19
90BOK  Energy Research Advisory Board (ERAB) Panel formed by Secretary of Energy James Watkins, 4/24
50HCR  LANL Report to the ERAB prior to on-site visit. Tub I, Set 1G
90BOK  American Chemical Society meeting in early April. Addressed by Fleishman and Pons.
90BOK  Materials Research Society meeting, 4/26

May
46FLD  Set 2: backup. Physical Study. Data Index 1990
50HCR  Data from LANL LENR tritium work by Ed Storms. Palladium analysis - micrographs, x-ray results.
46FLD  LENR work by Ed Storms: Physical Study. Set 2: back up
50HCR  LENR work by Ed Storms: Cold Fusion Micrographs. Manila envelope. From LANL Experiments. "CPM. Chemical and other analyses. Tub II, Set 6B
50HCR  Hard copy materials (newspapers, etc.) (REV)
50HCR  LENR reports by other DOE labs. Livermore, others?
90BOK  Two teams report cold fusion success at LANL, late May
50HCR  Eugene Mallove Media Advisory with attached papers
90BOK  American Physical Society Special Section on Cold Fusion, 5/1.
90BOK  Electrochemical Society Meeting, with presentation by Fleishman and Pons, 5/5 or 5/7/1989.

June
46FLD  Set 1: CF data. Cold fusion data folder. 1991 Tritium Production
Two LANL memos: 6/2/89, 6/9/89 (REV)
32 Newspaper coverage of CF (REV)

LANL proposal to DOE for funding CF studies


Cold fusion letters. Set 1.

Cold fusion text archives. Set 1.

Effect of Hydrating: Paper and data
Electrolytic Tritium: Paper and data
ERAB report released

Set 2: Cold Fusion. Cold Fusion archive data

Tritium studies with more than 250 cells by Storms and Talcott (late 1989 to 1990)
Tritium detection in cold fusion experiments by Tom Claytor (late 1989 to 1990)
LANL experiment data. "Historical data for Twitty homework". Data from earliest tritium work at LANL. "To Sample 203".
Tritium studies with more than 250 cells by Storms and Talcott, late 1989 to 1990.
Talcott, CL et al., Tritium Measurements: Methods, Pitfalls, and Results. in EPRI/NSF Workshop. 1989. Washington, DC
2.2 1990 Activities and Events

January
50HCR Reports in Italian

February
46FLD Various CF talks. Set 1. (REV)
50HCR “Cold Fusion Data”. Manila envelope, Chemical Analysis Reports. Data from earliest tritium work at LANL
90BOK Visit to LANL by Martin Fleischmann

March
43ZCD 103. TRITIUM STUDY. ZIP 4? (REV)
70LLB, 90BOK 1st Annual Conference on Cold Fusion Conference (ICCF-1), Salt Lake City, Utah (3/28-31/90)

June
50HCR Progress Report for the Period 1/90 – 6/90 (for) Work Supported by USDOE/OBES. TRITIUM PRODUCTION IN ELECTROLYTIC CELLS.

July

August
46FLD Tritium Data. Set 1: tritium study

October
90BOK Meeting at Brigham Young University hosted by Steve Jones

December

No Month (13)
50HCR Miscellaneous transparencies.
90BOK Cold Fusion Institute formed in Salt Lake City, directed by Fritz Will (1990-1991)
2.3 1991 Activities and Events

February

March
50HCR  Correspondence. Letter stopping LENR work at LANL. McKubre, Rothwell, Entenmann, Biberian, Larsen. Storms “Pile 2”. Miscellaneous materials. Tub VI. Set 19C.

June
50HCR  LANL CF memos and related material. Scanned.

July
50HCR  Micrographs and Miscellaneous. Includes LANL CF Memos. Set 7A: Photo Micrographs. Data from earliest tritium work at LANL.

December
90BOK  Storms receives funding from LANL division leader
46FLD  Set 1: calorimeter. Calorimeter drawings, calorimeter graphs
90BOK  Palladium samples from Takahashi in Japan analyzed
90BOK  "Fire from Ice" by Eugene Mallove
90BOK  "Too Hot to Handle" by Frank Close

No Month (13)
90BOK  Comprehensive review of LENR up to May 1991 by Storms
90BOK  Storms retired (as staff member) from LANL; continued as consultant, worked on cold fusion periodically
## 2.4 1992 Activities and Events

### January

**50HCR**  

### February

**50HCR**  
Correspondence: Entenmann, Leitz, Kozima, Little, Fleischmann, Shanahan, Swartz, Rothwell, Dash, Beaudette, Miley, Jones, Srinivasan, T Chubb, Letts, McConnell, McKubre, Polansky, Britz. Scanned. Storms “Pile 1”. Correspondence. Early period – 1990s. Many letters to CF early “major players”. 8 folders, in original order of pile. Tub V. Set 18E.

### March

**50HCR**  
Correspondence: Letts, etc. Scanned. Tub II. Set 4B1.

### April

**46FLD**  
Set 1: calorimeter data. Excel. Calibration. Pt Test #1-19 + Summary

### May

**46FLD**  
Set 1: Pd #24-12c. Excell data. Pd #24 to 12c. Excess volume  
**46FLD**  
Set 1: Pd charging #1-10. Excell data. Pd charging Pd #1 - #10.

### July

**46FLD**  
Set 1: 1d to now. Pd #1d to now  
**46FLD**  
Set 1: Calibration. Calibration. Test #1-22  
**50HCR**  
Correspondence. Scanned.

### October

**50HCR**  
Lagowski proposal, Swett Committee. Scanned.  
**10PUB, 80CON**  

**70LLB**  
3rd International Conference on Cold Fusion (ICCF-3). Frontiers of Cold Fusion (10/21-25/92)

### December

**43ZCD**  

### No Month (13)

**10PUB**  
### 2.5 1993 Activities and Events

**January**
- **46FLD**  Set 1: Cold fusion talk.
- **44CVD**  Archive ARTICLES Part 1 of 5. OCCDF-10 + 10 additional folders & files. Disk label: CALORIMETER STUDY.spanned.
- **46FLD**  Set 1: Cold fusion talk.
- **50HCR**  Correspondence: Bockris, Rothwell, Little, Fox, Malllove, Passell, Patterson, Collis, others. Scanned. Storms “Pile 1”. Correspondence. Early period – 1990s. Many letters to CF early “major players”. 8 folders, in original order of pile. Tub V. Set 18A.
- **50HCR**  Correspondence. Scanned. Most related to manuscripts. 2 folders. Moved to Set 18, Correspondence. Storms “Pile 2”. Miscellaneous materials. Tub VI. Set 19V.

**March**
- **46FLD**  Set 1: J#4. 2/29 – 9/5.

**April**
- **46FLD**  Set 1: J#4-2. J#4. 3/29 – . graphs & summary

**May**
- **50HCR, 70LLB, 90BOK**  Statement of Dr Edmund Storms (Los Alamos National Laboratory, ret.) before the House Committee on Science, Space, and Technology, Subcommittee on Energy, May 5, 1993. Scanned.

**July**

**August**
- **50HCR**  Papers, Presentations, Miley Experiments. Scanned. Tub VIII. Set 22B.
December

No Month (13)
46FLD  Set 2: (Not readable). How to produce P-F effect. FP Award. When to listen. ICCF-4 photocopy
90BOK  Publication of results of Takahashi analyses
90BOK  "Bad Science: the Life and Times of Cold Fusion" by Gary
90BOK  "Cold Fusion, Scientific Fiasco of the Century" by John Huizenga
90BOK  Storms final retirement from LANL
2.6 1994 Activities and Events

January

April
50HCR Correspondence: Breed, Rothwell, Srinivasan, Patterson, Fleischman, Swartz, Little, Cravens, Letts, Miley, Bockris, Beaudette, Claytor, Fox. Scanned. Storms “Pile 1”. Correspondence. Early period – 1990s. Many letters to CF early “major players”. 8 folders, in original order of pile. Tub V. Set 18G.

May
50HCR ENECO. Scanned. Tub VI. Set 20D1.

June

August

September
50HCR Correspondence: Jones, Kozima, Beaudette, Valone, T Chubb, Rothwell. Scanned. Storms “Pile 1”. Correspondence. Early period – 1990s. Many letters to CF early “major players”. 8 folders, in original order of pile. Tub V. Set 18C.

No Month (13)
90BOK Storms joined Board of Directors of ENECO by request of Charles Becker
### 2015 Activities and Events

#### March
- **46FLD**
  - Set 2: Hypercard. Backup
- **50HCR**
- **50HCR**

#### April
- **50HCR**
  - Nova Resources Scanned. Tub VIII. Set 32.
- **10PUB, 80CON**
- **70LLB**

#### May
- **46FLD**
  - Set 2: LABS PROPOSAL. ➔ Ed Storms. from Steve Jones. PROPOSAL. LABS

#### June
- **30WRK**
  - A1-B4#43, 91, 93, 44, 45, 95, 40, 30, 1, 2
- **30WRK**
  - A1-B1#1, 3, 4, 6, 5

#### July
- **30WRK**
  - A1-B4#43, 91, 93, 44, 45, 95, 40, 30, 1, 2
- **30WRK**
  - A1-B1#1, 3, 4, 6, 5
- **20UPR**

#### August
- **30WRK**
  - A1-B4#93, 91, 41, 43
- **20UPR**
  - (8/17/1995). progress report 8/17/95

#### September
- **30WRK**
  - A1-B4#91, 42
- **50HCR**

#### October
- **30WRK**
  - A1-B4#90
- **30WRK**
  - A1-B1#39, 42
- **70LLB**
| 50HCR | How to Produce the Pons-Fleischmann Effect. Scanned. (4 copies). Tub VIII. Set 22D. |
### 2.8 1996 Activities and Events

#### January
- **30WRK**  Pd#89, 67, 84, 88, 35, 87, 86, 33, 85, 81, 38, 64, 68, 69, 65, 70, 73, 37, 30
- **30WRK**  NI(Fiberex)

#### February
- **30WRK**  Pd#71, 72, 51, 53, 55, 74, 75, 76, 62, 77, 66, 59, 9, 80, 58, 38

#### March
- **30WRK**  Pd#57, 82, 56, 71, 58, 64, 62, 44, 43, 42

#### April
- **30WRK**  Pd$42
- **50HCR**  Correspondence: Entenmann, Rothwell, Britz, Park, T Chubb, Behrend, S Chubb. Scanned. Storms “Pile 1”. Correspondence. Early period – 1990s. Many letters to CF early “major players”. 8 folders, in original order of pile. Tub V. Set 18D.

#### May
- **30WRK**  Pd#79, 23, 54, 52, 27, 61, 26, 19, 78, 34, 7, 10, 13, 60, 14
- **50HCR**  Correspondence. Early period – 1990s. Many letters to CF early “major players”. 8 folders, in original order of pile. Tub V. Set 18E.

#### June
- **30WRK**  Pd#83, 20, 16, 10, 8, 27, 89

#### July
- **30WRK**  Pd#10, 27, 44, 57

#### August
- **30WRK**  Pd#57 88, 45, 24, 25

#### September
- **30WRK**  Pd#25, 12
- **30WRK**  Pd-Au#3
- **50HCR**  Miscellaneous mixed materials. Scanned. Various dates. Souther agreements, cFAR business plan, ICCF-2, ISCMNS. Tub VI. Set 20A.

#### October
- **30WRK**  Pd#12, 18
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<td>30WRK</td>
<td>Pd#39</td>
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<tr>
<td>December</td>
<td>30WRK</td>
<td>Pd#17, 15, 1, 11, 36</td>
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<td>10PUB</td>
<td>Storms, E., 1996. The Nature of the Nuclear Active Environment For LENR.</td>
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<td>10PUB</td>
<td>Storms, E., How to produce the Pons-Fleischmann effect. Fusion Technol., 1996.</td>
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<td>10PUB</td>
<td>Storms, E.K., A study of those properties of palladium that influence excess</td>
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<td>90BOK</td>
<td>New Hydrogen Energy (NHE) Laboratory created by Japanese government</td>
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## 1997 Activities and Events

### January
- **30WRK**: Pd#3, 20, 32, 43, 21, 22, 5, 36, 24, 60, 56
- **30WRK**: Plate #2

### February
- **30WRK**: Pd#13, 69, 33, 40, 7
- **30WRK**: Plate #3
- **20UPR**: INITIAL LOADING VALUES (1/3/1997). Summary of calorimeter studies

### March

### April
- **30WRK**: PdTKK0088#1

### May
- **30WRK**: PdTKK0088#2, 4, 5, 6
- **30WRK**: NEW CALORIMETER

### June
- **30WRK**: PdTKK0088#7, 8
- **30WRK**: Pd#8, 9

### July
- **30WRK**: Pd#10, 9, 42, 38, 61, 57
- **30WRK**: PDJD#11TKK

### August
- **30WRK**: Pure Ni
- **30WRK**: PD and Ag sandwich
- **30WRK**: Pd6Ra
- **50HCR**: Talk by EKS to NHE, Japan: “Some Problems with Palladium and How to Solve Them”. Scanned. Transparencies. Tub VIII. Set 22C.

### September
- **30WRK**: No samples specified
October

November
70LLB  Asti Workshop on Anomalies in Hydrogen/Deuterium Loaded Metals, Bologna, Italy (11/27-30/97).

December
30WRK  Pd-W2.2
45EHD  Pd STUDY. 1777 Files. Storms “Pile 1”. Correspondence. Early period – 1990s. Many letters to CF early “major players”. 8 folders, in original order of pile. Tub V. Set 18F.

No Month (13)
10PUB  Storms, E.K., Some problems with palladium and how to solve them. 1997: NHE Japan.
2.10 1998 Activities and Events

January
30WRK  Pd-W2.3, Pd-Al2.5, Pd-Ag#7

February
30WRK  Pd-Pt#9
30WRK  Pd#58

April

July

August
43ZCD  3. Ag on C study. ZIP1. Ron Jacobsen referenced

September
50HCR  Correspondence: E-mail prints – Richard Blue CF Debate – S Chubb, Britz, others. Scanned. Storms “Pile 1”. Correspondence. Early period – 1990s. Many letters to CF early “major players”. 8 folders, in original order of pile. Tub V. Set 18B.

October
90BOK  Storms invited to Japan for a week of consultation by NHE Laboratory

November
90BOK  Storms and McKubre included among 25 persons featured in Wired Magazine: "Those Who Dare…"

December
30WRK  Pd#92, 34
30WRK  PdB0.75%(Claytor)
30WRK  PdB0.25%(Claytor)
43ZCD  105.WORK IN PROGRESS. ZIP1. Attachment F for expanded description.
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2.11 1999 Activities and Events

January
30WRK    Pd#24
30WRK    Ni#6, 7, 8

February
30WRK    Pd#33, 40, 4
30WRK    Ni#6, 7, 8, 9, 10, 11, 12, 13, 14, 15
30WRK    Pt#11, 12

March
30WRK    Pt#13
30WRK    Pd#40
44ZCD    10. CURRENT ARTICLES. ZIP2. Attachment C for expanded description.
45EHD    CURRENT ARTICLES. 215 Files

April
30WRK    Pt#1b
50HCR    Storms presentations, lab & equipment photos, experimental results. Scanned. Tub VIII. Set 22G.
50HCR    Partial Storms paper: Cold Fusion or How to be an Alchemist While Annoying Every Physicist You Know”. Scanned.. Tub VIII. Set 22H.
70LLB    Collected Information about the New Science of Chemical Nuclear Interaction. Integrity Research Institute. Beltsville, Maryland

August
30WRK    No samples specified
44CVD    ISCMNS ICCF 12. Disk label: . REFERENCES RELATED TO LENR. THE PIG HAS FLOWN. version 1.9 8/18/03. Contains 3089 references and 213 papers in full text.
50HCR    Rothwell Vortex Email Papers about glow discharge effect. Scanned. Tub VIII. Set 23O.

September
30WRK    Ag-Pd#2
30WRK    Pd-Al#1a
30WRK    Pt#17

30/143
8. CALORIMETER STUDY. ZIP1. Incl Design and Stirring Studies

October
30WRK Pd-Al#1a
70LLB 1999 Pacific Conference on Chemistry and Spectroscopy, Ontario, California.
35th ACS Western Regional Meeting 37th SAS Pacific Conference
70LLB 1999 Pacific Conference on Chemistry and Spectroscopy, Ontario, California.
Archival Video Recording Table of Contents
44CVD Not copied. Twin Cities Cable. Cold Fusion. October 1999

November
30WRK Pt#18, 19, 21
30WRK Ni#16
30WRK Ni-Pd#16

December
30WRK Pt#22, 21
30WRK TDKK0088
30WRK Ag 0-Au-Pd#2

No Month (13)
## 2.12 2000 Activities and Events

### January
- **30WRK** Ag-Au-Pd#2
- **30WRK** Pt#23, 24, 25
- **20UPR** (1/9/2000). History of flow calorimeter

### February
- **30WRK** Pt(1/1/00)
- **30WRK** Pt
- **30WRK** Pt#22
- **45EHD** Ed's stuff. 298 Files

### March
- **30WRK** Pt#28

### April

### May
- **30WRK** No samples specified
- **10PUB** Storms, E, Excess power production from platinum cathodes using the Pons-Fleischmann effect. in 8th International Conference on Cold Fusion. 2000. Lerici (La Spezia), Italy: Italian Physical Society, Bologna, Italy. p. 55-61.
- **50HCR** Infinite Energy letter Scanned. Tub VIII. Set 23W.
- **80CON** Storms, E, Excess power production from platinum cathodes using the Pons-Fleischmann effect. in 8th International Conference on Cold Fusion. 2000. Lerici (La Spezia), Italy: Italian Physical Society, Bologna, Italy. p. 55-61. PB45. ICCF8. Lerici, Italy. Participants, Proceedings
- **70LLB** 8th International Conference on Cold Fusion (ICCF 8), Lerici (La Spezia), Italy (5/21-26/00). List of Participants As of May 26, 2000
- **70LLB** 8th International Conference on Cold Fusion (ICCF 8), Lerici (La Spezia), Italy (5/21-26/00). Proceedings of the Società Italiana Di Fisica, Editrece Compositori, Bologna, Italy
- **44CVD** ICCF-8. Tapes 1 to 7

### June
- **30WRK** Pt#34
- **30WRK** Ti#1
- **70LLB** 13th International Conference on Condensed Matter Nuclear Science (ICCF-13), Dagomys, Sochi, Russia (6/25/00 – 7/1/00). Proceedings
July
30WRK  Pt#34
30WRK  Pd#36

August
43ZCD  12. Ed's Website. ZIP1. HTML files and many figures.
45EHD  Ed's Website. 287 Files

September
30WRK  MILEY STUDY STARTED
20UPR  (9/12/2000). History of composit
20UPR  (9/12/2000). Loading based on oil
20UPR  (9/12/2000). Pd history
20UPR  (9/12/2000). Pd property summary
43ZCD  36. PERSONAL BIO. ZIP1. Two files
45EHD  Archive, GENERAL. 268 Files

October
30WRK  Miley #4C .2
30WRK  Miley #4.A.2
30WRK  Pt#21

November
30WRK  Pt#21
30WRK  Mallove cell
30WRK  Pt#212
30WRK  Pt#21#8
30WRK  Pt#21#9
20UPR  (11/10/2000). History of Miley Tests

December
30WRK  Pt#22, 23, 26, 27, 31, 24, 27
30WRK  Pt#24#1, #22#11, #25#2
30WRK  Pd#68
30WRK  Ni#1

No Month (13)


Set 2: Storms. What ever happened to Cold Fusion? Edmund Storms. Mac disc. 98463 MMH001

### 2.13 2001 Activities and Events

#### January

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<td>(1/20/2001). Progress Report 1/19/01</td>
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<td>(1/21/2001). Progress Report 1/20/01</td>
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<td>(2/1/2001). Progress Report 1/31/01</td>
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<td>(2/17/2001). Progress Report 2/16/01</td>
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<td>(3/2/2001). Progress Report 3/2/01</td>
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<td>70 LLB</td>
<td>Naval Research Laboratory. MRL/MR/6320-01-8526 (3/26/01). Calorimetric Analysis of a Heavywater Electrolysis Experiment Using a pad-B ALBoy Cathode. Miles, Fleishman, Imam</td>
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#### April

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30WRK  Pt-3/8/01
45EHD  RGA application (empty). 0

June
30WRK  Pt-1-1, 2-4, 1-2, 1-3, 1-4, 1-5, 1-6, 2-4
30WRK  Pt E-6, E-7

August
30WRK  Pt-A-8
43ZCD  9. Case Study. ZIP1. Les Case Study. Incl data, pictures, costs, progress repts, etc.
45EHD  Case Study. 161 Files
45EHD  Confidentiality Agreement, Grace*
45EHD  Confidentiality Agreement.doc*

September
30WRK  Pt-E-8
30WRK  Pt 2-8, 2-4

October
30WRK  Case Study Started – system tested gas composition measured

November
30WRK  [Begin new method of designating samples and experiments\]
30WRK  Cell#1

December
30WRK  Cell #1, #2
20UPR  (12/20/2001). Progress Report 12/1/01
20UPR  PROGRESS REPORT. 9/28/01 to 12/21/01. (12/21/2001). Progress 12/21/01

No Month (13)


2.14 2002 Activities and Events

January
30WRK  Cell #2

February
30WRK  Cell #3, #2
30WRK  SB B used for Case study [Seebeck]
20UPR  Case Study, EKS Progress Report No. EKS 2-1-02 (2/1/2002). Progress 9/01-2/02 N
20UPR  [Several anomalous effects were seen.] (2/9/2002). thermal arrests
20UPR  (2/14/2002). Progress Report 2/14/01

March
30WRK  Cell #2, #3, #1
30WRK  EKS001, EKS002
20UPR  (3/13/2002). Progress Report 3/13/01

April
30WRK  Cell #4, #2, #1, #3, #5
30WRK  EKS 0045

May
30WRK  Cell #4, #3, #2, #5
30WRK  EKS005
70LLB, 80CON  9th International Conference on Cold Fusion (ICCF-9), Beijing, China (5/19-24/02). Proceedings. Did not attend conference.

June
30WRK  Cell #2, #3, #4, #5
30WRK  EKS006, EKS008, EKS003
43ZCD  97. STOCK TRADING. ZIP2. Apparently deleted file
45EHD  LENR site. 18 Files

July
30WRK  Cell #1, #2, #4, #5, #3
30WRK  EKS009, EKS010
45EHD  LENR CD Partial. 208 Files
70LLB  The 4th Meeting of Japan CF-Research Society (JCF-4), Morioka, Japan (10/17-18/02). Abstracts, Program
August
30WRK   Cell #4, #5, #1
30WRK   EKS010
20UPR   (8/30/2002). 8/30/02 progress report
43ZCD   EXECUTIVE SUMMARY OF LOW ENERGY. ZIP2. Captured for publications in case needed.
43ZCD   Proof and proposal for LENR. ?
70LLB   The Collected Works of Edmund Storms about the Science of Chemically Assisted Nuclear Reactions. Integrity Research Institute. Beltsville, Maryland

September
30WRK   Cell #5
30WRK   EKS010
44CVD   18991030_2005 won't read. Disk label: . EVs IN COLD FUSION. LEN SHOULders COPYRIGHT. SEPTEMBER 2002
44CVD   72 SEM Images for Ed Storms
45EHD   SEM scans of Case samples. 6 Files

October

November
30WRK   No notations of cells
45EHD   EndNote. 8 Files

December
30WRK   Ptdot1
30WRK   Cell #4
30WRK   EKS010
30WRK   Letts Cell
43ZCD   LETTS study. ZIP1. No apparent report?

No Month (13)
10PUB   Storms, E., Cold fusion, the next big step up the energy letter. Submitted to 21st Century Science and Technology. June 2002.
90BOK  Creation of LENR-CANR.org website by Jed Rothwell
90BOK  "Excess Heat: Why Cold Fusion Prevailed" by Charles Beaudette
## 2.15 2003 Activities and Events

### January
- **30WRK**
  - IMRA#38

### February
- **30WRK**
  - Letts cell
  - Case Cell
  - McKubre C
  - Letts cell experiments with Case cell
  - Pd#64
- **43ZCD**
  - 16. Lawsen. Lawsen means Larsen?
  - 17. Lawsen 2/25/03. Lawsen means Larsen?
- **50HCR**

### March
- **20UPR**
  - TRIP REPORT, APS MEETING, AUSTIN, TX, 3/6/03-3/8/03(3/8/2003)
- **43ZCD**
- **70LLB**
  - American Physical Society, Bulletin: Volume 48, Number 1, PART II (3/3-7/03). Storms Abstract Z33-3: Why Cold Fusion Has Been so Hard to Explain and Duplicate

### April
- **30WRK**
  - Case Cell
  - Pd#64+Au, Pd#64+Au#2, Pt64+Au#3
  - Miley Cell
  - Letts Cell
- **41SF1**
  - OLD DATA: Calorimeter studies 2004 spanned
- **43ZCD**
  - 95. Short Course. ZIP2. Valuable write-up
- **50HCR**
  - Progress Reports. Scanned. Tub VIII. Set 23G.
- **44CVVD**
  - EVS-IN-COLD_FUSI. Disk label: . APS 3/7/03. cold fusion talks
- **90BOK**
  - Storms joined Lattice Energy as Senior Scientist, invited by Lewis Larsen

### May
- **30WRK**
  - Ni screen plated with Pd
  - Pt 64+Au#4
  - Pt+Au+Pd
  - Pt#6, #5
- **45EHD**
  - PICTURES. 7 Files
Rejection history of CF, Object*


June

30WRK Pt, Cu
30WRK Ni fiberex
20UPR LENR Reaction Product “Signature”… (6/16/2003). Miley Dr George – Various chart
20UPR (6/16/2003). Miley spectrum
20UPR (6/16/2003). Miley spectrum(2)
20UPR Memorandum: Replication of the Miley claims (6/16/2003). Miley replication
43ZCD 1. ICCF-10. ZIP1. Presentation preparation. Also Short Course.
43ZCD 32. Papers for ICCF-10. ZIP1. Paper copied to folder
43ZCD 89. Random Thoughts. LENR philosophical work

41/143
43ZCD Cost vs gal for 10K, 15K*

July
30WRK Pt 64+Au#4
30WRK Pt+Pd
30WRK Pd+Au
30WRK Pt-Pd#4

43ZCD 2. ABSTRACTS FOR ICCF-10. ZIP1. At time of conference
43ZCD 30. new SB
43ZCD 33. Patent. ZIP1. A method to generate energy using the electrolytic process
43ZCD 34. Patent, part 2. CD2. A method to generate energy using the electrolytic process

43ZCD 101. Summaries corrected. ZIP2. ICCF-10
45EHD Cluster model.pdf*
45EHD Delong LVEM5.pdf*
45EHD Ken Wolf Commodities. 13 Files

August
30WRK Miley sample
43ZCD 20. MILEY. CD2. Goes with #23.
43ZCD 98. Storms Introduction. ZIP2. ICCF-10 Short Course introduction
43ZCD 99. storms transcript.doc. Interview by Steve Krivit
45EHD LENR-CANR. 8 Files
45EHD reference electrodes.pdf*
50HCR ICCF-10 Short Course. Scanned. Tub VIII. Set 22A.
70LLB 10th International Conference on ColdFusion (ICCF-10), Cambridge, Massachusetts (8/24-29/03). Program and Abstracts, Program Summary, Group Photo, Proceedings

September
30WRK Miley Cell
30WRK M-1, 2, 3
30WRK Pd64+Au#3
30WRK Cu#1
43ZCD 37. Photo ion detector. CD2. Two JPGs
45EHD Photo ion detector. 3 Files
44CVD 030914_1959. Disk label: ICCF 10 PHOTOS. From Nagel
45EHD EarthChanges2001.pdf*
October
30WRK    Miley sample
30WRK    Cu#1
30WRK    Miley 11129003A, 11129005A, 11129004A
30WRK    Ni mesh
20UPR    PROGRESS REPORT. Test of samples prepared by Prof. Miley. (10/25/2003).
20UPR    PROGRESS REPORT 10
20UPR    PROGRESS REPORT. 10/25/03. Test of samples prepared by Prof. Miley. (10/25/2003)
43ZCD    64. PR#10, 10-25-03(Miley). Lattice Energy Progress Report
45EHD    MILEY DATA. 7 Files
43ZCD    96. Small SB. ZIP2. Small Seebeck
45EHD    Close spacing cell*

November
30WRK    Pt
30WRK    Miley 11129006A
30WRK    Pt(11/21/3)
30WRK    Pd(11/29/3)
20UPR    PROGRESS REPORT. Test of an electrolyte using D2SO4. (11/16/2003).
20UPR    PROGRESS REPORT 11
20UPR    PROGRESS REPORT 11/16/03. Test of an electrolyte using D2SO4. (11/16/2003. PR#11, 11-03-03(H2SO4)
43ZCD    65. PR#11, 11-03-03(H2SO4). Lattice Energy Progress Report
45EHD    Close space cell.JPG*
45EHD    SEM COST*

December
30WRK    Pt, Pd
43ZCD    27. My history with cold fusion. ZIP2. See # 28.
43ZCD    Publications.
43ZCD    68. PR#12, 12-21-03. Lattice Energy Progress Report
43ZCD    90. SB data. Seebeck?
44CVD    Documents – Part 10 of 15. Important papers.spanned. Disk label: EPRI
44CVD    Folder.spanned
45EHD    WORK IN PROGRESS. 228 Files
45EHD    ChubbSRtheoretica.pdf*

No Month (13)
90BOK    Support from Entenmann and Rothwell discontinued
Storms, E. Why cold fusion has been so hard to explain and duplicate. in American Physical Society Winter Meeting. 2003. Austin Convention Center, Austin, TX: unpublished. p.

Storms, E., A student's guide to cold fusion. 2003, LENR-CANR.org.

Storms, E.K. Cold fusion has now come out of the cold. in APS. 2003. p.

## 2.16 2004 Activities and Events

### January
- **30WRK**
  - No cells or samples specified
- **43ZCD**
  - PR#13, 1-14-04. Lattice Energy Progress Report
- **43ZCD**
  - Pt Dot 3. Lattice Energy
- **20UPR**
  - PROGRESS REPORT. HISTORY OF PT DOT 6 (1/12/2004). HISTORY of Pt Dot 6.doc
- **20UPR**
  - PROGRESS REPORT 1/14/04 (1/14/2004). PR#13, 1-14-04
- **44CVD**
  - Archive ARTICLES Part 4 of 5. CALORIMETER STUDY.spanned. Disk label: CALORIMETER STUDY.spanned
- **44CVD**
  - Documents – Part 4 of 15. Calorimeter studies 2004.spanned
- **45EHD**
  - hood*
- **45EHD**
  - Script*

### February
- **30WRK**
  - No cells or samples specified
- **20UPR**
  - A Discussion of Those Variables that Affect the Nuclear Active Environment. (2/1/2004). A Discussion of Those Variables
- **20UPR**
- **20UPR**
- **43ZCD**
  - PR Pt 2/9/04. Lattice Energy Progress Repor
- **45EHD**
  - Script2*
- **45EHD**
  - Seebeck converter#1. 14 Files
- **45EHD**
  - STOCK TRADING*

### March
- **30WRK**
  - No cells or samples specified
- **30WRK**
  - PLATING STUDIES start
- **44CVD**
- **44CVD**
- **45EHD**
  - Disclosure of interest in LENR*

### April
- **30WRK**
  - No cells or samples specified
- **44CVD**
  - LENR-CANR. Disk label:. LENR-CANR. June 23, 2006
- **45EHD**
  - Request for Storms Disclosures*
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<td>52. PR 8-19-04jpg pics.doc. Lattice Energy Progress Report</td>
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<td>63. PR#8-29-04.doc. Lattice Energy Progress Report</td>
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<td>IMRA#60</td>
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<td>43ZCD</td>
<td>82. Pt Dot 4. Lattice Energy</td>
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<td>Pt 2004. 6 Files</td>
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<td>Pt Dot 4. 8 Files</td>
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20UPR  PROGRESS REPORT. A collection of questions. (9/10/2004). PR 9/10/04


44CVD  Papers about LENR. Published papers +. Disk label.: Published Papers about Cold Fusion. 1989-2003


45EHD  ICCF-11. 10 Files

October

30WRK  PdDot2

30WRK  3NGFTP

45EHD  Pt Dot 3. 9 Files

50HCR  Unclassified Meeting on Advanced Intelligence Technologies. EKS: Cold Fusion (LENR) Real or Not. Scanned. Tub VIII. Set 22J.

70LLB  The International Society for Condensed Matter Nuclear Science, Marseille France (10/31/04). Agenda for the First Meeting of the Executive Committee

70LLB  11th International Conference on Condensed Matter Nuclear Science (ICCF-11), Marseille, France (10/31/04 – 11/5/04). Program Abstracts


November

30WRK  Ag-1, Ag#2

30WRK  PdGFTP#2

30WRK  Ag(11/18/4)

30WRK  Ptdot3


43ZCD  85. Pt study 2004 (empty). ZIP1. Empty folder

45EHD  Summary of studies*

December
30WRK Ptdot 5, 7, 6, 1
20UPR PROGRESS REPORT 12/21/03 ) (12/21/2003). PR#12, 12-21-03
43ZCD 67. PR#12-24-04.doc. Lattice Energy Progress Report
44CVD 74 SEM Pictures
44CVD Britz Collection. pdfs folder: books, etc. Disk label:. Britz Collection. as of 12/7/05
50HCR Letter from M Fleischman to Jed Rothwell on Gene Mallove death. Scanned.. Tub VIII. Set 23X.

No Month (13)
45EHD #42, excess- A, 1-7*
43ZCD 72. PROGRESS REPORT(3).doc. Lattice Energy Progress Report. PW.
43ZCD 76. Pt 2004. Lattice Energy
90BOK "The Rebirth of Cold Fusion" by Steven Krivit and Nadine Winocour
90BOK DOE persuaded to review the subject of cold fusion again
2.17 2005 Activities and Events

January
30WRK Ptdot1, Ptdot6
43ZCD 77. Pt dot 1 1/2/05(a). ZIP2. Lattice Energy
43ZCD 83. Pt dot 6. Lattice Energy
43ZCD 86. Pt vp Pd #1, 1/29/05(a). ZIP2. Lattice Energy

February
30WRK Pd on Cu
30WRK Pt #1, #3
30WRK Pd on Ag#2, Ag#4
41SF1 OLD DATA: 2005
43ZCD 41. PR 2/10/05. Lattice Energy Progress Report
43ZCD 87. Pt vp Pd #2, 2/9/05(a). ZIP2. Lattice Energy
44CVD 76 SEM Pictures 2
45EHD Recent data. 35 Files

March
30WRK Pt-S#1
30WRK Pt3/14/4, 3/6/5, 3/7/5
30WRK Ptdot3
30WRK Cu#4
30WRK Ag 6, 7, 8
30WRK Ptdot1
30WRK Pt1.2%Li
30WRK Pd-Li
43ZCD 43. PR 3/12/05. Lattice Energy Progress Report

April
30WRK Pt(3/6/5), Pt(4/2/5)
30WRK Cu#8
43ZCD 45. PR 4/4/05. Lattice Energy Progress Report

May
30WRK Cu#9, 10, 12
30WRK Pd(5/9/5)
30WRK Pd3N GFTP(5/9/5)
30WRK Pd(5/16/5), (5/17/5), (5/21/5)
30WRK IMRA #94
43ZCD 46. PR 5/15/05. Lattice Energy Progress Report
45EHD Edwards(NMR) 6/2/05*
45EHD Review of the paper, Shanahan*
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<td>July</td>
<td>Pd(6/8/5), (6/30/5), (7/5/5), (7/8/5), (7/9/5), (7/15/5), (7/15/5)</td>
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<tr>
<td>August</td>
<td>Pd-AI (8/1/5), (8/2/5), (8/1/5)</td>
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<tr>
<td>September</td>
<td>IMRA #80A, #80#2, #80B</td>
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<tr>
<td>October</td>
<td>IMRA #80 B, #77A</td>
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<tr>
<td>November</td>
<td>Pd-Ca (10/31/5)</td>
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**Report Dates:**

- **June:** PR 6/10/05, PR 6/17/05
- **July:** PR 7/05(a)
- **August:** PR 8-26-05.doc, PR 8/6/05.doc, PR 8/6/05pw.doc
- **September:** PR 9-2-05.doc, PR 9-2-05pw.doc
- **October:** PR 10/1/05
- **November:** PR 11/1/05

**Graph:** Graph #1*

---

50/143
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<td>12th International Conference on Condensed Matter Nuclear Science (ICCF 12), Yokohama, Japan (11/27/05 – 12/2/05). Abstracts, Proceedings</td>
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<td><strong>IMRA #60B, #60A, #19, #16, #16A</strong></td>
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<td>61. PR 12-1-05. Lattice Energy Progress Report</td>
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<td><strong>Storms received Giuliano Preparata Medal at ICCF-5</strong></td>
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<td>90BOK</td>
<td>Storms, E., A response to the review of cold fusion by the DoE. 2005.</td>
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<td>10PUB</td>
<td>Storms, E., How to cause nuclear reactions at low energy and why you should care. 2005.</td>
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## 2.18 2006 Activities and Events

### January
- **30WRK** IMRA #16 B, #16A, #9, #77B, #6
- **43ZCD** PR 1/1/06. Lattice Energy Progress Report
- **43ZCD** PR 3/01/06. Lattice Energy Progress Report
- **43ZCD** Progress Report 1-1-06.doc. Lattice Energy Progress Report
- **43ZCD** Progress Report 1-1-06(PW).doc. Lattice Energy Progress Report

### February
- **30WRK** Pd(200) #2, #1, #3
- **30WRK** IMRA #6
- **43ZCD** PR 2/1/06. Lattice Energy Progress Report

### March
- **30WRK** IMRA #60, #60#5 #60#3
- **50HCR** Anomalous Heat produced by Electrolysis of Palladium Using a Heavy-Water Electrolyte. Scanned. Tub VIII. Set 24G.

### April
- **30WRK** IMRA #15
- **43ZCD** PR 4/1/06. Lattice Energy Progress Report
- **90BOK** Storms left Lattice Energy

### May
- **30WRK** Pd foil #3
- **30WRK** IMRA #94, #94A
- **44CVD** Documents – Part 6 of 15. Britz Collection.spanned. Disk label: Britz collection*

### June
- **30WRK** Terminated study

### August
- **44CVD** Documents – Part 7 of 15. EndNote.spanned. Disk label: Calorimeter
- **44CVD** Movie.spanned
- **44CVD** back cover – jpg
- **50HCR** back cover – jpg

---

52/143
**September**

30WRK  
Pd+xelolite

30WRK  
Pd+CaCl2

30WRK  
Pd+CaO

30WRK  
Pd+KOH

44CVD  
Book, (9/28/06). Disk label: Book 9/28/06

44CVD  

44CVD  

44CVD  
Documents – Part 8 of 15. EndNote.spanned. Disk label: Britz*

**October**

30WRK  
Pd+SrCl2

30WRK  
Pd+Zr sheet

44CVD  

50HCR  

44CVD  

44CVD  

50HCR  

**November**

30WRK  
IMRA #60

30WRK  
Pd+W+Zr

30WRK  
Pd#2, #4

41SF1  
OLD DATA: 2006

44CVD  
Book(11-13-06). Disk 3 of 3. Disk label:. Book & endnote 8/19/06

**December**

30WRK  
Pd-B 0.75%

44CVD  

50HCR  

100.STORMS~4.PDF. PW
2.19 2007 Activities and Events

January
30WRK      PdB#2
45EHD       Important Papers. 140 Files

February
30WRK       Pd melted with Li20
30WRK       Pd BNRL #16
44CVD       APS Paper. 7/09 Backup

March
30WRK       Mel Miles sample
41SF1 OLD DATA: 2007
41SF1 OLD DATA: Pd-B
50HCR        “Glow Discharge 2007”. Not Scanned. Three volumes. From previous large black 3-ring binders. Now bound with green plastic “ties” to reduce volume and allow use of tub. Approximate date ranges: volume 1, 3/30/07 – 6/30/07; volume 2, 6/30/07 – 12/30/07 (not in order); volume 3, 1/7/08 – 3/1/08. Tub IV. Set 17.

April
30WRK       Pd-B
41SF1 OLD DATA: Gas Discharge

May
30WRK       BN coated with Cu
30WRK       Cu rolled with Al2O3
30WRK       Zr#1

June
41SF1       OLD DATA: Optical Spectrum

August
30WRK       Pt coated with Pd
October
50HCR  “Katania Meeting” 10/07”. Scanned. Clasp envelope. Storms “Pile 2”.
Miscellaneous materials. Tub VI. Set 19H.
Miscellaneous materials. Tub VI. Set 19R.
70LLB  8th International Workshop on Anomalies in Hydrogen/Deuterium Loaded
Metals, Cannizzaro (CT), Sicily, Italy (10/13-18/07). Book of Abstracts.
Proceedings
Russia. Proceedings

November
44CVD  Britz K3b data project. fusfiles

No Month (13)
10PUB  Storms, E.K. The science of low energy nuclear reactions. in APS, March
10PUB  Storms, E.K., The science of low energy nuclear reaction. 2007, Singapore:
World Scientific. 312.
10PUB  Storms, E.K. and B. Scanlan. Radiation produced by glow discharge in deuterium
(Part 1). in 8th International Workshop on Anomalies in Hydrogen / Deuterium
Loaded Metals. 2007. Catania, Sicily:
50HCR  Letters to 2014 book recipients. Scanned. Also, Appendix and Summary. Storms
“Pile 2”. Miscellaneous materials. Tub VI. Set 19A.
# 2.20 2008 Activities and Events

## January
- **30WRK**  Start of journal #7
- **30WRK**  Cu sputter coated with Pd
- **41SF1**  OLD DATA: 2008

## February
- **30WRK**  No cells or samples specified

## March
- **30WRK**  No cells or samples specified
- **50HCR**  Radiation Produced by Glow Discharge in Deuterium Containing Gas (Part 2). Not Scanned. 700/237. Duplicate. Tub VIII. Set 25A.

## April
- **30WRK**  No cells or samples specified
- **45EHD**  Addresses. 4 Files

## May
- **30WRK**  GAS LOADING STUDY STARTED
- **30WRK**  Sample #7-SiO2+Pd(NO3)2
- **30WRK**  Sample #8-SiO2+PdCl2
- **30WRK**  CaO+0.35 wt% Pd
- **30WRK**  G75E
- **30WRK**  SiO2#9d

## June
- **30WRK**  CeO2+TiO2#1b
- **30WRK**  SiO2+Pd(NO3)2 #7
- **30WRK**  CeO2#2, #4

## July
- **30WRK**  CeO2+Pd(NO3)2
- **30WRK**  ZrO2+Pd(NO3)2
- **30WRK**  ZrO2
- **30WRK**  Al2O3+Pd
- **30WRK**  Al2O3
- **30WRK**  CeO2
30WRK ZrO2+Al+S
30WRK ZrO2+PdCl2+Al+S
30WRK ZrO2+PdCl2
30WRK Pd black +Al+S
30WRK Pd#76515
30WRK ZrO2+Al2O3+CeO2
30WRK Al2O3+PdCl2
41SF1 OLD DATA: DAQ

August
30WRK Ag electrodeposited in SiO2
30WRK Ag electrodeposited using ZrO2
30WRK Pd-Al #3
30WRK Pd+ZrO2
30WRK Pd black +ZrO2
30WRK Li2CO3
30WRK CdO2+Pd(NO3)2
30WRK Zeolite from Grace


44CVD DVD_VIDEO_RECORDER. Disk label: . First Gate 2008. ICCF. Roger Stringham. ICCF 14 '08

September
30WRK Pd on graphite
30WRK Pd on CaCO3
30WRK Pt plated with Pd
30WRK Pd black mixed with boric acid
30WRK IMRA #61
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<td>Stirling silver plated with Au</td>
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<tr>
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<td>Pt heated red hot in air</td>
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<td>Pd#1, #2</td>
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<td>November</td>
<td>Letts 674, 675</td>
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<td>Nicrom wire</td>
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<td>Carebon paper plated with Pd</td>
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<td>Ni ribbon plated with Pd</td>
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<td>Pd-B</td>
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<td>7. Austin.ppt. ZIP1. Case Study – Cold Fusion</td>
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<td>December</td>
<td>Pd-B 0.5%</td>
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<td>Pd wire rolled flat</td>
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<td>NaOH+Pd black with Cu</td>
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<td>Pd-B 0.75%</td>
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<td>Zorlite (John Ruelesill)+Pd</td>
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# 2.21 2009 Activities and Events

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<td>Letts 675, 676</td>
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<td>PD wite coated with silicon powder</td>
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<td>PD on activated carbon</td>
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<td>30WRK</td>
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<td>Sterling silver and Pd plated with Au</td>
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August
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September
30WRK No cells or samples specified
30WRK October
30WRK Pure Pt
30WRK Cu plated with Pt
30WRK Cu-Pt
30WRK Pd-Ni alloy
30WRK Ni-Pd
45EHD PERSONAL BIO. 3 Files

October
41SF1 DATA: (10/25/09)
41SF1 DATA: Seebeck
50HCR EDX plots and SEM images. Not Scanned. Tub III. Set 12A.

November
30WRK NI-Pd#2 plated with Pd
41SF1 DATA: 10/30/09
44CVD Gas loading 260808. Disk label: Gas Loading to 7/25/10
44CVD Read. Disk label: . ISCMNS DVD. November 2009

December
30WRK Pd and Zr-Ni
30WRK Ni-Zr-Pd
30WRK Zr-Ni+Pd(NO3)2
30WRK Ni-Zr
30WRK CaO mixed with Pd(NO3)2
30WRK LiAlO2 mixed with Pd(NO3)2
30WRK SiO2 colloidal sol + Pd(NO3)2
30WRK Nd2(CO3)3 heated with Pd(NO3)2
2.22 2010 Activities and Events

January
30WRK SiO2+Pd
30WRK LANL Zeolite
30WRK Omegabond
30WRK Carbon Aerogel treated with Pd(NO3)2
30WRK NRL Zeolite
30WRK Pd(NO3)2+Ni(NO3)2
30WRK Li2CO3
30WRK SrCO3
41SF1 DATA: THEORY OF LENR
44CVD Not copied. ICCF-15 Videos. DVD 2
44CVD Not copied. ICCF-15 Videos. DVD 3
44CVD Not copied. ICCF-15 Videos. DVD 4

February
30WRK Nb2(NO3)3+Pd
30WRK CaO+FeNdB4+PdCl2
30WRK Nb2(CO3)3+Pd
30WRK BaTiO3+Pd(NO3)2

March
30WRK ZrO2colloid + PdCl2
30WRK Magnetic Fe2O3 + PdCl2
30WRK Fe2O3+PdCl2
30WRK Fe2O3++Pd(NO3)2+Nd(NO3)e+Li6
30WRK Fe2O3+Pd(NO3)2+Nd(NO3)3
30WRK Pd+Fe2O3
41SF1 DATA: Seebeck design

April
30WRK Pd+Nd3(CO3)2
30WRK Nd2(CO3)3+Pd(NO3)22
30WRK Nd2(CO3)3+PdCl2
30WRK 5% Pd on BaSO4+D2
30WRK 5% Pd on CaCO3
30WRK G75E
30WRK CaO+PdCl2
41SF1 DATA: Letts
May
30WRK  CaO+Pd+D2O
30WRK  SrTiO3+PdCl2
30WRK  BaTiO3+Pd+D2O
30WRK  Zr+Ni+Pd
41SF1  DATA: Shanahan

June
30WRK  SrTiO2
30WRK  SrTiO3 studied with D2
30WRK  SrTiO3 heated with D2O and D2
30WRK  SrTiO3 reacted with air

July
30WRK  SrTiO3 heated in D2O
30WRK  BaTiO3 heated in D2O
30WRK  CaO heated in D2O
30WRK  SrTiO3 studied
50HCR  KivaLabs Progress Reports. Scanned. Tub VIII. Set 23B.

August
30WRK  SrTiO3 studied
30WRK  SrTiO3+Pd+D2
30WRK  NRL Zeolyte+1%Pd+D2
30WRK  SrTiO3+PdCl2+D2O

September
30WRK  No cells or samples specified

October
30WRK  SrTiO3+Pd#2
30WRK  SrTiO3+Pd#3
30WRK  SrTiO3+Pd#4
45EHD  manuals. 26 Files

November
30WRK  SrTiO3+Pd#5
44CVD  (1-5-11) SrTi3#8. Disk label: Old Data. No date. May be same as "Old Data" in SF files
December
30WRK SrTiO3+Pd#6
30WRK SrTiO3+Pd#7
30WRK SrTiO3+Pd#8

No Month (13)
50HCR Krivit on Naturwissenschaften: Commentary on Storms’ “Nuclear Phenomena in Low-Energy Nuclear Reactions”. Scanned. Tub VIII. Set 23R.
### 2011 Activities and Events

#### January
- **30WRK** BATiO3+Pd#1
- **30WRK** SrTiO3+Pd#8
- **30WRK** SrTiO3+Pd#7
- **30WRK** SrTiO3+Pd#9
- **30WRK** Pd+SiO2

#### February
- **30WRK** Pd+SiO2-800°

#### March
- **30WRK** Ni+Pd(NO3)2
- **30WRK** CaO+Ni+Pd
- **30WRK** CaO+Ni
- **30WRK** *Ni

#### April
- **30WRK** *Ni+
- **30WRK** *5%Pt
- **30WRK** *Cr
- **41SF1** OLD DATA: Pd-Ni-Cu radiation

#### May
- **30WRK** No cells or samples specified
<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
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<tbody>
<tr>
<td>June</td>
<td>*CaO+ and I (and L 3) 2</td>
</tr>
<tr>
<td>30WRK</td>
<td>*CaO</td>
</tr>
<tr>
<td>30WRK</td>
<td>*Ni</td>
</tr>
<tr>
<td>30WRK</td>
<td>*CuO+</td>
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<td>30WRK</td>
<td>*Ni</td>
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<td>ORTV, Spies beneath Berlin. 22.06.11. Dup 51’ 58”. 16x9 FMA. Post Production.</td>
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<td>(without credits). CEBDS3BB3BXCZXV</td>
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<td>Set 24A.</td>
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<td>July</td>
<td>*Sr</td>
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<td>*CaO+</td>
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<tr>
<td>30WRK</td>
<td>*CaO</td>
</tr>
<tr>
<td>30WRK</td>
<td>*CaO</td>
</tr>
<tr>
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<td>*Ni+</td>
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<td>*CaO</td>
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<td>*Ni</td>
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<td>*Ba</td>
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<td>------------------------------------------</td>
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<tr>
<td>December</td>
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<td>No Month</td>
<td>The Fall and Rise of Cold Fusion. 885/N. Duplicate. Tub VIII. Set 25N.</td>
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<td>Storms, E., The fall and rise of cold fusion. 2011.</td>
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2.24 2012 Activities and Events

January
30WRK    Ni formate
30WRK    *Na
30WRK    *Ni

February
30WRK    *Ni
30WRK    *Ni
30WRK    *Ni
30WRK    *Ni
30WRK    *Ni
30WRK    *Ni
30WRK    *Ni
30WRK    *Ni
30WRK    *Ni
30WRK    *Ni
30WRK    *Ni
30WRK    *Ni
30WRK    *MWNT
30WRK    *eBay NI
30WRK    *NiO
30WRK    *Cr
30WRK    *Zr

March
30WRK    *MWNT
30WRK    *eBay
30WRK    *eBay
30WRK    *Ni
30WRK    *NiO
30WRK    *Cr
30WRK    *Zr

April
30WRK    *Pd#20
30WRK    *10-
30WRK    *Ni255

May
30WRK    *Pd
30WRK    *Ti
30WRK    *Pd
June
30WRK *Pd
30WRK *Pd
30WRK *Cu
50HCR  EDX Plots. Scanned. Storms “Pile 2”. Miscellaneous materials. Tub VI. Set 19D.
50HCR  An Explanation of Low Energy Nuclear Reactions (Cold Fusion). Not Scanned. Tub VIII. Set 25O.

July
30WRK *Pd
30WRK *Pd

August
30WRK  *Ni
30WRK  *Pd
30WRK  *Pd
30WRK  *Ni
30WRK  *Pd
30WRK  *Pd
30WRK  *Cu
30WRK  *Cu
30WRK  *Cu
80CON  ICCF-17. Daejeon, South Korea. Did not attend conference.

September
30WRK  *Fused Pd
30WRK  *Cu
30WRK  *Cu
30WRK  *Cu
30WRK  *Cu
30WRK  *Cu
30WRK  *Cu
30WRK  *Cu
30WRK  *Cu
30WRK  *G75E
30WRK  *Cu
30WRK  *Ni
30WRK  *Ni
30WRK  *Ni
30WRK  *Formrex
30WRK  *Ni
30WRK  *Ni

October
30WRK  *EBay
30WRK  *Pd
30WRK  *Ni
30WRK  *Ni
41SF1  OLD DATA: 10/24/1
50HCR  The Role of Voids as the Location of LENR. Not Scanned. 750/761. Duplicate. Tub VIII. Set 25P.

November
30WRK  *Pd
50HCR  A Plausible Explanation of LENR (Cold Fusion). Scanned. 888. Tub VIII. Set 24K.
50HCR  The Role of Voids as the Location of LENR. Not Scanned. 750/761. Duplicate. Tub VIII. Set Tub VIII. Set 26J.

December
30WRK  *Pd
30WRK  *Ni
30WRK  *Ni
30WRK  *Bob Huggins
30WRK  *Ni
30WRK  *Ni
41SF1    OLD DATA: 12/7/2012
41SF1    OLD DATA: 12/7/12 (original)
50HCR    Hagelstein Correspondence. Scanned. Tub VIII. Set 23T.
50HCR    Sven Thatje email. Scanned. Tub VIII. Set 23V.

No Month (13)
2.25  2013 Activities and Events

January

July
30WRK  *Various Pd samples
30WRK  *Ni sheet
70LLB  National Security Innovation Center (7/21/13). Low-Energy Nuclear Reaction Introductory Short Course

August
30WRK  *Ni
30WRK  *Dot8
41SF1  OLD DATA: Dot Ni+cu(8-29-13)

September
30WRK  *Nidot3
30WRK  *NIdot7
30WRK  *Nidot5
30WRK  *Pddot1
30WRK  *Pddot#2
30WRK  *Pddot#4
30WRK  *Pd

October
30WRK  *Pd
30WRK  *Pddot7
30WRK  *Pddot#3
30WRK  *Ni
30WRK  *Pd
44CVD  MY FIRST PROJECT. Disk label: . Washington. 10/25/06
<p>| | |</p>
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<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>November</td>
<td>*Pd</td>
</tr>
<tr>
<td>30WRK</td>
<td>*Pd</td>
</tr>
<tr>
<td>30WRK</td>
<td>*Pd</td>
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<tr>
<td>December</td>
<td>*Pd</td>
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<td>30WRK</td>
<td>*Pd</td>
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<td>30WRK</td>
<td>*Pd</td>
</tr>
<tr>
<td>30WRK</td>
<td>*Pd</td>
</tr>
</tbody>
</table>
2.26 2014 Activities and Events

January
30WRK  *Pd
30WRK  *Ni

May
30WRK  *Pd
30WRK  *Pd
30WRK  *Pd
30WRK  *NI
41SF1  SEEBECK CALORIMETER STUDY
50HCR  Prometheus Fusion Laboratory Materials. Scanned. Tub VIII. Set 26A.

June
30WRK  *No samples specified
41SF1  OLD DATA: Ni powder SEM
44CVD  MyDisc. Disk label: Edmund Storms 9883673
44CVD  My Disc. Disk label: Explanation of LENR. June 2014

July
30WRK  *Ni
30WRK  *Ni
30WRK  *Ni
30WRK  *eBay
50HCR  LENRGY Laboratory Preparation Materials. Scanned. Tub VIII. Set 26B.

August
30WRK  *Ni

September
50HCR  NASA SOW and Amendment. Scanned. Storms “Pile 2”. Miscellaneous materials. Tub VI. Set B.

October
30WRK  *No cells or samples specified
41SF1  OLD DATA: Pd on Si disc study
<table>
<thead>
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<th>Month</th>
<th>Sample</th>
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<td>30WRK</td>
<td>*Si+Pd#4</td>
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<tr>
<td></td>
<td>30WRK</td>
<td>*Si+Pd#2</td>
</tr>
<tr>
<td></td>
<td>30WRK</td>
<td>*Si+Pd#1</td>
</tr>
<tr>
<td></td>
<td>30WRK</td>
<td>*Si-Pd#3</td>
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<td>30WRK</td>
<td>*Si-Pd#6</td>
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<tr>
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<td>41SF1</td>
<td>OLD DATA: sputtering discharge</td>
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<td>30WRK</td>
<td>*Powder B on Pd tube</td>
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<tr>
<td></td>
<td>30WRK</td>
<td>*Li</td>
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<td></td>
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<td>*Li</td>
</tr>
<tr>
<td></td>
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<td>*Cu</td>
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<tr>
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<td>30WRK</td>
<td>*Cu</td>
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</table>
### 2015 Activities and Events

**January**
- 30WRK *Pd
- 30WRK *Cu
- 30WRK *Pd
- 30WRK *Ni
- 30WRK *Cu

**February**
- 30WRK *Ni
- 30WRK *Ni
- 30WRK *Ni
- 30WRK *Dual laser study started
- 30WRK *Pd
- 41SF1 OLD DATA: Ni-Pd-Al-Li

**March**
- 30WRK *Pd
- 30WRK *Pd
- 30WRK *Pd
- 30WRK *Pd

**April**
- 30WRK *Pd#29
- 30WRK *Pd#58
- 30WRK *Pd#22
- 30WRK *Pd#58
- 30WRK *Pd#28
- 30WRK *Pd#36
- 30WRK *Pd#22
- 80CON ICCF-19. Padua, Italy. Did not attend conference.

**May**
- 30WRK *Pd
- 30WRK *Pd
- 30WRK *Pd
<table>
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<th>Month</th>
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<tbody>
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<td>July</td>
<td>41SF1</td>
<td>Study using new calorimeter</td>
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<td>August</td>
<td>30WRK *Pd</td>
<td></td>
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<td></td>
<td>30WRK *Pd</td>
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<td>30WRK *#1.1, #1.2, #1.3</td>
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<td>30WRK *#3.1, #3.2</td>
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</table>
November
30WRK *Pd
30WRK *Pd
30WRK *Pd
30WRK *Pd
3 LENR Career Highlights

The objectives of the Project – to assemble, organize, and report on Dr. Storms' LENR research – are best achieved by establishing an overall context of his career. This context includes both his research at LANL for 30+ years before the 1989 LENR announcement and his LENR research during the following 28 years up to the present. A photo of Dr. Storms that was taken in about 2000, possibly in conjunction with an interview by Eugene Mallove\textsuperscript{8}, appears in Figure 4-1.

\begin{figure}[h]
\centering
\includegraphics[width=0.4\textwidth]{image}
\caption{Dr. Storms in about 2000}
\end{figure}

3.1 Pre-LENR Career at Los Alamos National Laboratory

Dr. Storms' roots are in Pennsylvania, where he received his undergraduate degree. He then went to graduate school at Washington University in St. Louis and received his PhD in radiochemistry\textsuperscript{9}. He was employed part-time at LANL during his graduate work, and he became a permanent employee in about 1956 after completing his studies. His main research area at LANL was high-temperature materials, such as the carbides and nitrides. Two of the main efforts that he contributed to were the nuclear rocket (Rover) and nuclear reactors in space (SP-100)

programs\textsuperscript{10}. One of his major publications during this period was a book on the refractory carbides\textsuperscript{11}. Dr. Storms retired from LANL in 1991, but continued as a consultant until 1993. Additional information on Dr. Storms’ pre-LENR research at LANL is provided in Appendix C.

3.2 LENR Research at LANL

LANL was one of the earliest preeminent research organizations to attempt to replicate LENR after the 1989 announcement. No fewer than eight research teams conducted different types of experiments for replication. Dr. Storms took an immediate interest in the phenomenon and began research within a few weeks. He focused initially on tritium production as a signature. With the assistance of Carol Talcott, an expert in palladium hydride chemistry (and later Dr. Storms’ wife), more than 250 electrolytic cells were explored\textsuperscript{12}. Anomalous levels of tritium was observed in 13 of the 250 cells. Later at LANL, Dr. Storms conducted additional research with electrolytic cells and a calorimeter, measuring production of excess heat as the LENR signature. Figure 3-2 shows a calorimeter that was used during this research.

Dr. Storms led one of two LANL teams that had success in replicating LENR. During this time he authored or co-authored a number of papers and publications, and he gave testimony on LENR to the U.S. Congress in 1993\textsuperscript{13}.

3.3 Research in Private Laboratory

After a break to build his home in Santa Fe, Dr. Storms began LENR experimental work in June 1995. This research in his home laboratory has continued up to the present day. During this timeframe, he has also made substantial contributions to explanation of the LENR phenomenon.

\textsuperscript{10}“Research at Los Alamos National Laboratory Prior to LENR Involvement”. Memo to Edmund Storms from Tom Grimshaw, September 26, 2015.
Figure 4-2.
Calorimeter Used by Dr. Storms at LANL for Early LENR Studies.
Note the Electrolytic Cell Inside the Calorimeter Near the Bottom. Photo taken April 2016.

Dr. Storms’ laboratory was initially set up in the main building of his home, but was subsequently moved to the annex building, where it is currently located. Among the assets of his laboratory are a scanning electron microscope (SEM) with energy-dispersive x-ray (EDX) spectroscopy capability, mass spectrometers, and an optical microscope, as well as a complete shop for constructing experimental apparatus, including metal machining and glass working. The SEM occupies a large room in the main building.

Dr. Storms has conducted many types of LENR experiments, utilizing most of the methods for achieving the effect, including the Fleishman-Pons approach (electrolytic cells) and the gas discharge and gas loading methods. He has also designed and constructed many kinds of calorimeters for measuring excess heat. Although he has collaborated with many individuals and organizations, for the most part he has conducted his private research on an individual basis. Dr. Storms has enjoyed the support of a number of different sponsors during the years of his LENR research.
3.4 Publications and Conferences

Dr. Storms’ most prominent publications are two books published in 2007\textsuperscript{14} and 2014\textsuperscript{15}. (Figure 3-3). He has also documented the results of his research in other publicly-available publications and unpublished progress reports. A principal venue has been the conferences dedicated to LENR, the International Conferences on Cold Fusion (ICCFs), of which Dr. Storms attended all but three of the 18 conferences from 1990 to 2015.

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{storm_books.png}
\caption{Storms’ 2007 and 2014 LENR Books.}
\end{figure}

3.5 LENR Library

Dr. Storms has accumulated one of the best libraries of LENR publications, books, and related materials in the world. The library contains more than 5000 electronic files and at least 1700 hard-copy papers (some of which are also in the electronic file collection). The electronic files are maintained in Endnote by Dr. Storms, and copies have been incorporated in the Project folder on Dropbox. The paper copies are on bookshelves (about 30 feet of shelf space) in Dr. Storms'

\footnotesize
\begin{enumerate}
\end{enumerate}
office in Santa Fe. Dr. Storms' publication collection also formed the "kernel" of an online library, LENR-CANR.org, which was started in about 2002 by Jed Rothwell and Dr. Storms\textsuperscript{16.}

### 3.6 Professional Awards

Dr. Storms was honored (along with Michael McKubre) by Wired Magazine in 1998 as one of the 25 people in the US making a significant contribution to new ideas. As noted above, with few exceptions Dr. Storms has participated in the ICCF conferences. In the 2005 conference he was awarded the Preparata Medal, the most prestigious award of the LENR field, by the International Society of Condensed Matter Nuclear Science (Figure 3-4). In 2013 he received a Distinguished Scientist Award from the University of Missouri for his contributions to the LENR field.

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{image1.png}
\caption{Dr. Storms’ Preparata Metal, Which He Received in 2005. Photo Taken April 2016.}
\end{figure}

4 Stage 3 Plan

As noted in previous sections, in Stage 3 the items of information for the years of Dr. Storms' LENR research presented in Section 3 will be further interpreted. The objective is to define and describe the phases of his work based on objectives, type of research, sponsors, and other factors.
Appendix A. Project Methods

The Storms LENR Research Documentation Project (Project) began in August 2015\(^{17}\) when Dr. Grimshaw made his first visit for information collection. The overall objective is to collect and organize Dr. Storms’ research files and make them more readily accessible. The Project covers the period from March 1989 through December 2015.

Standard project management practices were used for the Project insofar as possible. An incremental approach was used since the full scope of the research materials was not known in advance. The Project is being conducted in three stages - information collection, organization, and documentation (LENR career summary). A report is being prepared for each stage. Much of the work was done at Dr. Storms' home laboratory in Santa Fe, New Mexico. In addition to the work accomplished onsite at Dr. Storms' home lab, tasks were also performed at the Energy Institute, such as scanning of hard-copy materials and preparing Project reports. Trips were made from Austin to Santa Fe for 3 to 7 days at a time to interview Dr. Storms and collect information:

<table>
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<th>Date</th>
<th>Trip</th>
<th>Date</th>
</tr>
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<td>1</td>
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<tr>
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<td>September 2015</td>
<td>7</td>
<td>April 2016</td>
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<tr>
<td>3</td>
<td>October 2015</td>
<td>8</td>
<td>August 2016</td>
</tr>
<tr>
<td>4</td>
<td>December 2015</td>
<td>9</td>
<td>March 2017</td>
</tr>
<tr>
<td>5</td>
<td>January 2016</td>
<td>10</td>
<td>Planned</td>
</tr>
</tbody>
</table>

During each visit to his home lab, interviews with Dr. Storms took place, and he provided electronic files from several kinds of media, including the hard disk of his current computer, floppy disks, ZIP disks, CDs, and DVDs. He also made available hard-copy files, including LENR publications by himself and other researchers, correspondence files, laboratory notebooks, printed results of experiments, and access to his LENR Library. The hard-copy files are from his office (which includes his LENR Library), his current laboratory, and a basement under his home.

\(^{17}\) The Project was actually initiated in the Spring 2015 (“Professional Biography Initiative: Next Step”. Memo to Ed Storms from Tom Grimshaw, June 10, 2015), but substantive effort began in August.
Parts of the Stage 1 information collection are described in Rounds 1 and 2 (before or after Onsite Visit #8, August, 2016).

**Organization**

The Project has been organized into the Components shown below based primarily on the source of information. LENR-related conferences attended by Dr. Storms are also included, and a Component has been established for information from Dr. Storms 2007 book\(^\text{18}\).

Abbreviations been adopted for the Components in Column 1 of the individual timelines to allow ready recognition of the items (rows) in the Integrated Timeline as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Publications</td>
<td>10PUB</td>
</tr>
<tr>
<td>Unpublished Progress Reports</td>
<td>20UPR</td>
</tr>
<tr>
<td>Work History</td>
<td>30WRK</td>
</tr>
<tr>
<td>Electronic Data Files</td>
<td>40EDF</td>
</tr>
<tr>
<td>Storms Computer Files (Round 1)</td>
<td>41SF1</td>
</tr>
<tr>
<td>Storms Computer Files (Round 2)</td>
<td>42SF2</td>
</tr>
<tr>
<td>ZIP and Round 1 CD Electronic Files</td>
<td>43ZCD</td>
</tr>
<tr>
<td>Round 2 CDs, DVD Files and VHS Tapes</td>
<td>44CVD</td>
</tr>
<tr>
<td>External Hard Drive Files</td>
<td>45EHD</td>
</tr>
<tr>
<td>3–1/2 Inch Floppy Files</td>
<td>46FLD</td>
</tr>
<tr>
<td>Hard Copy Records</td>
<td>50HCR</td>
</tr>
<tr>
<td>Research Laboratory</td>
<td>60RSH</td>
</tr>
<tr>
<td>LENR Library</td>
<td>70LLB</td>
</tr>
<tr>
<td>Conferences</td>
<td>80CON</td>
</tr>
<tr>
<td>2007 Book</td>
<td>90BOK</td>
</tr>
</tbody>
</table>

**File Management and Storage**

The electronic files have been organized and copied into a Dropbox folder set up for the Project. The hard-copy files and related materials are in a set of storage tubs in Dr. Storms' home.

The sources of the electronic files are from Dr. Storms' current computer footnote and legacy media. Electronic information has been copied into a Dropbox folder set up for the Project. The

organization of the folder follows the Project Stages and Components as shown below. The floppy disks, CDs, and other legacy media have been placed in the storage tubs as described below.

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Stage 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Stage 1 Report</td>
<td>5 Stage 2 Report</td>
</tr>
<tr>
<td>10 Publications</td>
<td>10 Publications</td>
</tr>
<tr>
<td>20 Progress Reports</td>
<td>20 Progress Reports</td>
</tr>
<tr>
<td>30 Work History</td>
<td>40 Electronic Files</td>
</tr>
<tr>
<td>40 Data Files from Storms’ Computer</td>
<td>50 Hard Copy Files</td>
</tr>
<tr>
<td>45 Data Files from CDs &amp; ZIP Disks</td>
<td>60 Research Laboratory</td>
</tr>
<tr>
<td>50 Hard Copy Records</td>
<td>80 Conferences</td>
</tr>
<tr>
<td>60 Research Laboratory</td>
<td>90 Project Management</td>
</tr>
<tr>
<td>70 LENR Library</td>
<td>Stage 3</td>
</tr>
<tr>
<td>90 Project Management</td>
<td>5 Stage 3 Report</td>
</tr>
<tr>
<td></td>
<td>90 Project Management</td>
</tr>
</tbody>
</table>

The hard-copy files, as well as materials for other Project Components, have been placed in hanging folders in storage tubs that are kept at Dr. Storms' home laboratory in Santa Fe. The tub contents are summarized below:

<table>
<thead>
<tr>
<th>Tub</th>
<th>Description</th>
<th>Sets</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Files from Basement</td>
<td>1-3</td>
</tr>
<tr>
<td>II</td>
<td>Files from Basement</td>
<td>4-8</td>
</tr>
<tr>
<td>III</td>
<td>Files from Basement</td>
<td>9-16</td>
</tr>
<tr>
<td>IV</td>
<td>Files from Basement</td>
<td>17</td>
</tr>
<tr>
<td>V</td>
<td>Files from Office</td>
<td>18</td>
</tr>
<tr>
<td>VI</td>
<td>Files from Office</td>
<td>19-21</td>
</tr>
<tr>
<td>VII</td>
<td>Retired</td>
<td>Sets Moved to Other Tubs</td>
</tr>
<tr>
<td>VIII</td>
<td>Files Added or Reorganized</td>
<td>22-32</td>
</tr>
<tr>
<td>IX</td>
<td>Lab Notebooks and 2014 Book (Preprints)</td>
<td>--</td>
</tr>
<tr>
<td>X</td>
<td>Extra Copies of LENR Magazines</td>
<td>--</td>
</tr>
<tr>
<td>XI</td>
<td>ZIP Disks, CDs, DVDs, Floppy Disks</td>
<td>--</td>
</tr>
<tr>
<td>XII</td>
<td>Filing Supplies</td>
<td>--</td>
</tr>
</tbody>
</table>

Tubs I to VIII contain the Sets of hard-copy files described for Component 50HCR.

**Reporting**

The two primary means of reporting were memos prepared to record progress and the reports for Stages 1, 2, and 3. The Stage 1 report was prepared as a Preliminary Draft on March 19, 2016, as

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a Draft on June 16, 2016, and as a Second Draft on April 18, 2017. A Preliminary Draft of this Stage 2 report was submitted on July 29, 2016. The Stage 3 report is in preparation.

Approximately 50 memos were prepared to document progress during Round 1 (June 2015 to June 2016) and about ___ memos for Round 2 (July to__). A printed compilation of the memos has been placed in ring binders. The contents of both compilations have been scanned and placed in the Project Dropbox folder.
Appendix B. Stage 1 Summary

The records collected for Dr. Storms' LENR research during Stage 1 included both publicly-available publications and unpublished information such as laboratory notebooks, electronic data files, hard-copy files, and other materials. Information was also collected in each of the Project Components, which are described in Appendix A and in the Stage 1 report, which also includes timelines for each Component. Summaries of the Stage 1 descriptions of the Components are provided below.

B.1 Publications

Dr. Storms’ principal publications are his two books, one published in 2007\textsuperscript{20} and the other in 2014\textsuperscript{21}. He also contributed to the LENR field by reporting the results of his research in publicly-available publications. About 125 papers were prepared from 1989 to 2015. PDF copies of the publications (Component 10PUB) have been placed in the Project Dropbox folder. The publications have also been assembled into "Collected Works" (three volumes) in both electronic and hard-copy form\textsuperscript{22}. The PDFs of the Collected Works are also in the Dropbox folder.

B.2 Unpublished Progress Reports

During the same timeframe that he was authoring publicly-available publications, Dr. Storms was also documenting his LENR research results in unpublished internal reports. These reports were often prepared to demonstrate progress and show results to sponsors of his work. Approximately 111 documents have been found for the Project (Component 20UPR). They span a range from 1995 to 2015. A "Collected Progress Reports" (two volumes)\textsuperscript{23} has also been prepared in electronic and hard-copy form in a similar manner to the Collected Works for the Dr.

\begin{itemize}
  \item \textsuperscript{22} Edmund Storms LENR Research Papers, Collected Works, 3 Volumes. April 2016.
  \item \textsuperscript{23} Edmund Storms LENR Research Papers, Collected Progress Reports, 2 Volumes. May 2016.
\end{itemize}
Storms’ publications. The individual reports and the scans of the Collected Progress Reports are available on Dropbox.

**B.3 Lab Notebooks (Work History)**

As Dr. Storms performed his LENR experiments, he kept careful records in laboratory notebooks. Ten notebooks covering the period June 1995 to November 2015\(^{24}\) have been prepared. They are listed below.

<table>
<thead>
<tr>
<th>No.</th>
<th>Period Covered</th>
<th>Topic</th>
<th>Notebook Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>JUN95 – DEC96</td>
<td>Electrolytic Cells</td>
<td>Black w/ maroon trim. “Shaw’s”.</td>
</tr>
<tr>
<td>2</td>
<td>JAN97 – MAR98</td>
<td>Electrolytic Cells</td>
<td>Reddish, plain. “Blueline”.</td>
</tr>
<tr>
<td>3</td>
<td>DEC98 – SEP01</td>
<td>Electrolytic Cells</td>
<td>Maroon, mottled. No Brand.</td>
</tr>
<tr>
<td>4</td>
<td>SEP01 – JAN04</td>
<td>Electrolytic Cells</td>
<td>(Case Effect). Black &amp; white mottled. “Mead”.</td>
</tr>
<tr>
<td>5</td>
<td>FEB04 – SEP05</td>
<td>Electrolytic Cells</td>
<td>Black. “Cambridge Executive”.</td>
</tr>
<tr>
<td>6</td>
<td>AUG04 – JUN08</td>
<td>Gas Discharge</td>
<td>Black. “Cambridge Executive”.</td>
</tr>
<tr>
<td>7</td>
<td>FEB08 – JUL09</td>
<td>Gas Loading</td>
<td>Blue w/ black trim. “Office Depot”. “Records”.</td>
</tr>
<tr>
<td>8</td>
<td>AUG09 – FEB14</td>
<td>Gas Loading</td>
<td>Blue-green w/ black trim. Tall vertical. “Office Depot”.</td>
</tr>
<tr>
<td>10</td>
<td>1AUG15 – 15NOV15</td>
<td>New Calorimeter</td>
<td>Black with white stripe. “Foray”.</td>
</tr>
</tbody>
</table>

The “overlap” of notebooks 5 and 6 from August 2004 to September 2005 occurred because two different types of experiments (electrolytic cells and gas discharge) were taking place during the same timeframe.

The notebooks, also referred to as “Work History”, were carefully reviewed by Dr. Storms from August 2015 to January 2016. During this review, he summarized the lab activities as one-line entries in a spreadsheet. The resulting file has more than 2750 lines in the file. The spreadsheet (Component 30WRK) has been placed in the Project Dropbox folder. The lab notebooks are in the storage tubs.

**B.4 Electronic Data Files**

As Dr. Storms performed LENR experiments and made entries in the lab notebooks, the data generated were recorded in electronic files. These files were obtained from Dr. Storms' computer and from legacy media located in his office (Component 40EDF). In addition to experimental

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\(^{24}\) Dr. Storms has continued to perform experiments and record the results in lab notebooks since November 2015, but the cutoff date for this part of the Project has been set at that time.
data, these files include published papers, progress reports, copies of emails, photos of lab equipment and experimental setups, and other files related to LENR research. The electronic files have been copied into the Project Dropbox folder. The files obtained from Dr. Storms’ computer and various legacy media are described in six subcomponents below.

**B.4.1 Storms Computer, Round 1 (41SF1)**

Dr. Storms provided files from his current computer during both Round 1 and Round 2 of Stage 1. The files obtained in Round 1 are in five folders:

- OLD DATA
- DATA
- Letts Data
- SEEBECK CALORIMETER STUDY
- Study using new calorimeter

**B.4.2 Storms Computer, Round 2 (42FS2)**

The files added to the Project by Dr. Storms from his computer in Round 2 include the following folders:

- (4/17, 29-16)
- 9/7/15 A
- Current Science_files
- ICCF-19
- Reports (gas discharge)
- SEEBECK CALORIMETER STUDY
- Study using new calorimeter

The folders “SEEBECK CALORIMETER STUDY” and “Study using new calorimeter” appear to be the same as the folder in 41SF1.

**B.4.3 ZIP Disks and CDs (Round 1) (43ZCD)**

The ZIP disks and first set of CDs were obtained for the Project in Round 1. The files are in two sets of media (4 ZIP disks and 6 CDs). The files have been grouped by the source ZIP disk or CD as shown below.

- ZIP Disk Z1 PD Study
- ZIP Disk Z2 Work in Progress
- ZIP Disk Z3 ZIP 100
ZIP Disk Z4 Carol
Round 1 CD1 (No Name)
Round 1 CD2 Documents 1/3/04
Round 1 CD3 Documents – Part 12 of 15
Round 1 CD4 SEM Data
Round 1 CD5 My Disk
Round 1 CD6 My Disk

**B.4.4 CDs (Round 2), DVDs, and VHS Tapes (44CVD)**

The LENR-related CDs, DVDs, and VHS tapes in this subcomponent are in eight sets:

- CV1 Storms Generated LENR Research Files (18 CDs)
- CV2 Storms 2007 Book, Cold Fusion References, Etc. (29 CDs)
- CV3 ICCF Conferences, Cold Fusion Movies, Etc. (18 CDs)
- CV4 Miscellaneous Cold Fusion Related Topics (4 CDs)
- CV5 Application Software Discs (6 CDs)
- CV6 DVDs from LENR Library (13 DVDs)
- CV7 CDs Containing SEM Images (3 CDs)
- CV8 VHS Tapes (6)

**B.4.5 External Hard Drive (45EHD)**

This subcomponent includes files from a LaCie 8900 external hard drive. The folders are shown below.

- Addresses – manuals
- Archive ARTICLES – MILEY DATA
- Archive, GENERAL – Pd STUDY
- CAROL (Selected) – PERSONAL BIO
- Case Study – Photo ion detector
- CURRENT ARTICLES – PICTURES
- Ed's stuff – Pt 2004
- Ed's Website – Pt Dot 3
- EndNote – Pt Dot 4
- High Temp Data set – Pt-Pd(10-16-05)
- ICCF-11 – Recent data
- Important Papers – RGA application
- Ken Wolf Commodities – Seebeck converter#1
- LENR CD Partial – SEM scans of Case samples
- LENR site – WORK IN PROGRESS
- Lenr-cann
B.4.6 Floppy Disks (46 FLD)

Another subcomponent of electronic files is from two sets of 3 1/2-inch floppy disks, one from various locations in Dr. Storms' office and the other from a carousel designed for discs of this size. The labels and files of the disks from the carousel are shown below.

- FLD1 1d to now Pd #1d to now
- FLD2 Calibration Calibration Test #1-22
- FLD3 calorimeter Calorimeter drawings, calorimeter graphs
- FLD4 calorimeter data excell, calibration, Pt Test #1-19 + Summary
- FLD5 CF data cold fusion data folder, 1991 Tritium Production
- FLD6 CF text archives Cold Fusion Text archives, 10
- FLD7 Cold Fusion Letters 1989 - 1993
- FLD8 Cold fusion talk Cold Fusion talk
- FLD9 J#4 2/29 – 9/5
- FLD10 J#4-2 J#4, 3/29 – graphs & summary
- FLD13 Pd #24-12c Excell data, Pd #24 to 12c, Excess volume
- FLD14 Pd charging #1-10 Excell data, Pd charging Pd #1 - #10
- FLD15 Progress Cold Fusion, Progress & emos & proposal
- FLD16 Star C Star C*Cold Fusion Text Archives
- FLD17 Talks Various CF Talks
- FLD18 tritium study Tritium Data

The contents of the disks from the office are shown below.

- FLD19 Cold Fusion Cold Fusion, archives data
- FLD20 backup Physical Study, Data Index 1990
- FLD21 Hypervard Backup
- FLD22 Letters Cold Fusion Letters, 1984-patterson data
- FLD23 21 Century Cold Fusion, An Outcast of Science, E. Storms 9/97, 97401 DC _ 001, Mac disc, FullWrite, Text only, MacWrite 5.0. II
- FLD24 LABS PROPOSAL ➔Ed Storms, from Steve Jones PROPOSAL, LABS
- FLD25 storms What ever happened to Cold Fusion? Edmund Storms, Mac disc, 98463 MMH001
- FLD26 (Not readable) How to produce P-F effect, FP Award, When to listen, ICCF-4 photocopy

B.5 Hard Copy Records

The hard-copy files are from Dr. Storms' office and a storage area in his basement. The files, which include materials from his early LENR research at LANL, have been organized into 32
Sets and have been placed in storage tubs with hanging folders. The Sets and their sources as well as their locations in the storage tubs are listed below.

<table>
<thead>
<tr>
<th>Set</th>
<th>Source</th>
<th>Tub</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 3</td>
<td>Basement</td>
<td>I</td>
</tr>
<tr>
<td>4 – 8</td>
<td>Basement</td>
<td>II</td>
</tr>
<tr>
<td>9 – 16</td>
<td>Basement</td>
<td>III</td>
</tr>
<tr>
<td>17</td>
<td>Basement</td>
<td>IV</td>
</tr>
<tr>
<td>18</td>
<td>Storms’ Office</td>
<td>V</td>
</tr>
<tr>
<td>19 – 21</td>
<td>Storms’ Office</td>
<td>VI</td>
</tr>
<tr>
<td>None</td>
<td>Retired; Files Moved to Other Sets</td>
<td>VII</td>
</tr>
<tr>
<td>22 – 32</td>
<td>Files Added or Reorganized</td>
<td>VIII</td>
</tr>
</tbody>
</table>

An inventory of the files indicates that there are approximately 100 items in the 32 Sets. However, many of the items include a number of individual components. A principal objective of the Project is to make the research records as accessible as possible. An effort has therefore been initiated to scan the hard copy files into electronic (PDF) form. Because of the large volume of the files, they are being scanned on a prioritized basis. The PDF files have been copied into the Project Dropbox folder.

**B.6 Research Laboratory**

Dr. Storms has developed a sophisticated operation for LENR experiments in his home laboratory in Santa Fe. He has conducted experiments using almost all methods for achieving the LENR effect, including the electrolytic, gas loading, gas discharge, and other methods. The lab consists of a flexible apparatus for preparing samples and performing experiments as well as a sophisticated scanning electron microscope (SEM).

**B.7 LENR Library**

During his long research career, Dr. Storms accumulated one of the best libraries of LENR publications, books, and related materials in the world. The library is located in Dr. Storms’ office. The library consists of electronic files (5000 LENR papers and similar items), hard-copy papers (at least 1700 papers, some of which are also in the electronic file collection), and over 120 books and similar items. The electronic files are maintained in Endnote by Dr. Storms. The hard-copy papers are on the bookshelves (about 30 feet of shelf space).
The books, which are on four bookshelves adjacent to the hard-copy papers, include conference proceedings, books on LENR, journals (Infinite Energy, 21st Century Science & Technology, Journal of Fusion Technology), and other paper copies of LENR materials. Particularly noteworthy in this collection is an almost complete set of materials obtained by Dr. Storms during his attendance at most of the International Conferences on Cold Fusion (ICCFs). This is one of the most complete collections of these materials available, as they are not routinely obtained and stored by mainstream libraries. These materials are described in the next section.

**B.8 Conferences**

Dr. Storms attended all but three of the ICCF from 1990 to 2013 as shown below. He gave presentations and prepared papers at most of the conferences, and he collected the abstracts, proceedings, and related materials has placed them in his LENR Library as noted above.

<table>
<thead>
<tr>
<th>ICCF#</th>
<th>Year</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1990</td>
<td>Salt Lake City, Utah</td>
</tr>
<tr>
<td>2</td>
<td>1991</td>
<td>Como, Italy (Storms did not attend)</td>
</tr>
<tr>
<td>3</td>
<td>1992</td>
<td>Nagoya, Japan</td>
</tr>
<tr>
<td>4</td>
<td>1993</td>
<td>Lahaina, Hawaii</td>
</tr>
<tr>
<td>5</td>
<td>1995</td>
<td>Monte Carlo, Monaco</td>
</tr>
<tr>
<td>6</td>
<td>1996</td>
<td>Hokkaido, Japan</td>
</tr>
<tr>
<td>7</td>
<td>1998</td>
<td>Vancouver, British Columbia</td>
</tr>
<tr>
<td>8</td>
<td>2000</td>
<td>Lerici, Italy</td>
</tr>
<tr>
<td>9</td>
<td>2002</td>
<td>Beijing, China (Storms did not attend)</td>
</tr>
<tr>
<td>10</td>
<td>2003</td>
<td>Cambridge, Massachusetts</td>
</tr>
<tr>
<td>11</td>
<td>2004</td>
<td>Marseilles, France</td>
</tr>
<tr>
<td>12</td>
<td>2005</td>
<td>Yokohama, Japan</td>
</tr>
<tr>
<td>13</td>
<td>2007</td>
<td>Dagomys, Sochi, Russia</td>
</tr>
<tr>
<td>14</td>
<td>2008</td>
<td>Washington, DC</td>
</tr>
<tr>
<td>15</td>
<td>2000</td>
<td>Rome, Italy</td>
</tr>
<tr>
<td>16</td>
<td>2011</td>
<td>Chennai, India</td>
</tr>
<tr>
<td>17</td>
<td>2012</td>
<td>Daejeon, South Korea (Storms did not attend)</td>
</tr>
<tr>
<td>18</td>
<td>2013</td>
<td>Columbia, Missouri</td>
</tr>
</tbody>
</table>

**B.9 Timelines of Project Components**

Timelines were developed in Stage 1 for the Project Components and Subcomponents. They were prepared with a consistent format of six columns as shown below:
This uniform format was established so that the timelines could readily combined and sorted for the Integrated Timeline in Stage 2. To provide additional context, a timeline was added that is derived from Dr. Storms 2007 book.\textsuperscript{25}

\begin{footnotesize}
\begin{itemize}
\item Component (Comp)
\item Number (No)
\item Year
\item Month (Mon)
\item Item or Event
\item Notes
\end{itemize}
\end{footnotesize}

Appendix C. Pre-LENR Research at Los Alamos National Laboratory

Dr. Storms' research at LANL was primarily in high temperature materials, such as the carbides and nitrides. He authored or contributed to many LANL reports as well as U.S. patents (Table C-1). One of his major publications was a book on the refractory carbides\textsuperscript{26}.

Table C-1. Storms Publications and Contributions at LANL

| Sandenaw, T.A., 1965. Heat capacities of NbC\textsubscript{0.702}, NbC\textsubscript{0.825}, NbC\textsubscript{0.980} and Nb\textsubscript{2}C below 320°. Contributions by E.K. Storms. LANL Report LA-DC-3331 |
| Storms, E.K., 1982. An analytical representation of the thermal conductivity and electrical resistivity of of UC\textsubscript{1-x}, PuCl\textsubscript{x}, and (U\textsubscript{y}Pu\textsubscript{1-y})C\textsubscript{1-x}. LANL Report LA-9524 |
| Storms, E.K., 1992. Behavior of ZrC\textsubscript{1-x} and U\textsubscript{y}Zr\textsubscript{1-y}C\textsubscript{1-x} in flowing hydrogen at very high tem. LANL Report LA-12043-MS |

Dr. Storms contributed to high-temperature materials aspects of the Rover program, whose objective was to develop a nuclear thermal rocket. The program ran at LANL from 1955 to 1972 and had three phases – Kiwi, Phoebus, and Pewee\textsuperscript{27} (Figure C-1). It involved NASA and the

Atomic Energy Commission and was managed by the Space Nuclear Propulsion Office of the Executive Branch.

Figure C-1.

*Nuclear Rocket Test Equipment from LANL's Rover Program.*

The equipment from the first phase (Kiwi) is on the left. Equipment from the second phase (Phoebus) is on the right.

Subsequently, Dr. Storms participated in LANL's efforts to develop nuclear reactors for use in space, the SP-100 (for Space Power 100 kWE) program\(^{28}\) (Figure C-2). The program originated in the 1980s as a space-based power supply for Star Wars weapons. Later it evolved into a flexible design capable of space-based, lunar-based, and Mars-based power applications. It continued until the early 1990s.

The advanced research in refractory materials is evident in the two programs. The Rover design, for example, utilized nuclear reactors that had a solid cores. The high temperatures of operation (over 4300°F) of the solid core reactors required the use of refractory materials with very high

melting points. The refractory materials were used to protect the reactors from corrosion caused by very high temperature hydrogen that was used for propulsion.

Figure C-2.
Cross-Section Diagram and Test Unit Photo of the SP-100 Nuclear Reactor Device