Appendix A
Helium in Metals Analysis (pg. 1)

Behavior in Metals at or Near STP	**Hydrogen**	**Helium**
Permeates (Diffuses) Through Intact and Defect-Free Metal	Yes	No
Permeates (Diffuses) Through Defects and Grain Boundaries	Yes	Yes
Soluble (Dissolves) in Metal	Yes	No SBK 2010

Appendix A
Helium in Metals Analysis (pg. 2)

References:

SRI did not test helium retention hypothesis during experiment.
EPRI TR-107843-V1 pg. 357

Bockris et al. showed helium on near-surface areas on cathode can be retained if quickly immersed in liquid nitrogen.
Chien, Chun-Ching, Hodko, Dalibor, Minevski, Zoran and Bockris, John O'M. "On an Electrode Producing Massive Quantities of Tritium and Helium," Journal of Electroanalytical Chemistry, Vol. 338, p. 189–212, (April 1992)

Gozzi showed that helium does not show up in the bulk if the cathode is vaporized.
Gozzi, D., et al., "X-Ray, Heat Excess and 4He in the D:Pd System," Journal of Electroanalytical Chemistry, Vol. 452, p. 253, (1998) and Erratum, 452, 251–271, (1998)

Helium won't dissolve in metal even at high temperature.
Ramsay, W.; Travers, M.W. "An Attempt to Cause Helium or Argon to Pass through Red-Hot Palladium, Platinum, or Iron." Proceedings of the Royal Society of London (1854-1905). 61 (-1), p. 266-267. Jan. 1897, doi:10.1098/rspl.1897.0034

Defect-free metal will not allow helium to pass through.
Schultheis, D., "Permeation Barrier for Lightweight Liquid Hydrogen Tanks," Ph. D. thesis, University of Augsburg, 2007

Helium does not outgas from metals easily or quickly.
Bowman, Jr., Robert C., "NMR Studies of 3He Retention and Release in Metal Tritides -A Review," Hydrogen & Helium Isotopes in Materials Conference, Albuquerque, NM, USA, Feb. 7 2007

Helium may pass through metals above 350 kPa.
Rothenberger, Kurt S. et al., "High Pressure Hydrogen Permeance of Porous Stainless Steel Coated with a Thin Palladium Film via Electroless Plating," Journal of Membrane Science, Volume 244, Issues 1-2, 15 November 2004, Pages 55-68

Helium is known to have low solubility in metals, grain boundaries support permeation.
Xia, Ji-xing, Hu, Wang-yu, Yang, Jian-yu, Ao, Bing-yun, " Diffusion Behaviors of Helium Atoms at Two Pd Grain Boundaries," Trans. Nonferrous Met. SOC. China 16(2006) s804-s807

Appendix B
- Summary of Factual Inconsistencies With SRI 24 MeV "Cold Fusion" Claim - 1998 [1], 2000 [2] and 2004 [3] Papers Compared (Page 1)

1998: Helium sample 1 shown as 42 percent.
2000: Helium sample 1 shown as 62 percent with no published mathematical explanation for difference.

1998: Helium sample 2 shown as 147 percent.
2000: Helium sample 2 shown as 69 percent with no published mathematical explanation for difference.

1998: Helium sample 4 percentage not stated.
2000: Helium sample 4 shown as 84 percent with no published mathematical explanation.

2004: Helium sample 4 shown as 84 percent.
2004: Helium sample 4 shown as 104 percent with no published mathematical explanation for difference.

2000 Statement: "A second sample showed an increase in [4He] despite the fact that the helium content of the vessel had been diluted with D2 containing low levels of 4He, in order to make up the initial gas volume after the first gas sample." 2000 statement gives appearance of support for release of helium.
1998 Fact: Sample two shows not merely an increase but an increase of more helium than authors predicted: prima facie evidence that disproves the helium retention hypothesis.

1998 Statement: "Induce loading variation by switching the current on alternate measurement cycles between 3.1A cathodic and 0.001A anodic." 1998 report says nothing about any effort to scrub "hiding" helium.
2008 Hagelstein Statement [4]: "At SRI they made a serious effort to scrub the remaining – the hiding – helium out by running the cathode anodically and cathodically, and the total balance by the time things were over was 24 MeV – 104 percent of 24 MeV. So at the moment, this is our best evidence we have for 24 MeV."

1998: Report shows and describes a rapid period of electrolytic heating ("mini boil-off") temporally correlated with a rapid rise in loading.
2000/2004: Omits report of heat burst.

Appendix B
- Summary of Factual Inconsistencies With SRI 24 MeV "Cold Fusion" Claim - 1998 [1], 2000 [2] and 2004 [3] Papers Compared (Page 2)

1998: Authors considered possibility that helium was produced from heat burst in period just before helium sample 4 taken.
2000: Authors assumed that helium was not produced from that heat burst. They assumed that helium was "evidence of sequestered 4He."

2000: Reported that the metal cell was leak-tested and implied that helium could not leak through metal.
2000: Reported that the helium not only could find a way into the cathode bulk but that it would somehow stay there until coaxed to release. Reported that the helium could be and was released at STP with 3 amps of current.

1998 Statement: "The possibility of 4He hideout and slow emergence into the gas phase must be tested by experiment" (EPRI TR-107843-V1 pg. 357). Apparently, no evidence for such tests exists.
2004 Statement: "Several important conclusions can be drawn from [experiment M4] ... [H]elium is partially retained, and dissolved helium is released only slowly to the gas phase for analysis."

1998 Paper: No mention, even remotely, of any "compositional and temperature cycling."
2000 Statement: "The cathode was subjected to an extended period (~200 hours) of compositional and temperature cycling … after exercising the cathode to release trapped gases …"

References:

1. Development of Energy Production Systems from Heat Produced in Deuterated Metals - Energy Production Processes in Deuterated Metals, Volume 1, TR-107843-V1, Thomas Passell (Project Manager,) Michael McKubre, Steven Crouch-Baker, A. Huaser, N. Jevtic, S.I. Smedley, Francis Tanzella, M. Williams, S. Wing (Principal Investigators,) B. Bush, F. McMohon, M. Srinivasan, A. Wark, D. Warren (Non-SRI Contributors,) June 1998

2. Michael McKubre, Francis Tanzella, Paolo Tripodi and Peter Hagelstein, "The Emergence of a Coherent Explanation for Anomalies Observed in D/Pd and H/Pd Systems; Evidence for 4He and 3He Production" 8th International Conference on Cold Fusion. 2000. Lerici (La Spezia), Italy: Italian Physical Society, Bologna, Italy.

3. Peter Hagelstein, Michael McKubre, David Nagel, Talbot Chubb, Randy Hekman, "New Physical Effects In Metal Deuterides," Submitted to the 2004 U.S. Department of Energy LENR Review

4. Peter Hagelstein, Michael Melich and Rodney Johnson, "Physical Mechanisms in Theories of Condensed Matter Nuclear Science," ICCF-14

Appendix B
Facts Regarding New Energy Times SRI M4 Investigation

Francis Tanzella
New Energy Times sent Francis Tanzella, and copied two SRI International media relations officers, a news inquiry on Jan. 21. Tanzella replied the next day: “I can't speak on the record about a report that was primarily written by Mike [McKubre].”

Paolo Tripodi
New Energy Times sent Paolo Tripodi, and copied a company officer, a news inquiry on Jan. 21. Tripodi replied the same day and asked about the response deadline.

Michael McKubre
New Energy Times sent Michael McKubre, and copied two SRI International media relations officers, a news inquiry on Jan. 22. McKubre has not responded.

Peter Hagelstein
New Energy Times sent Peter Hagelstein, and copied an MIT media relations officer, a news inquiry on Jan. 24. Hagelstein has not responded.

Pamela Mosier-Boss
Pamela Mosier-Boss was not involved in the M4 research. The investigation was triggered in December 2009 by a paper she wrote about LENR nuclear products. She submitted the paper for publication.

New Energy Times Publication
New Energy Times published the SRI M4 Investigation in Issue 34 on Jan. 29, 2010.

Post-Publication Response From Key Identified Parties
New Energy Times received no responses from Tanzella, Tripodi, McKubre or Hagelstein after the publication of issue 34.