

October 5, 2012

Daigler Engineering, P.C.  
1711 Grand Island Blvd.  
Grand Island, New York 14072-2131

Dear Mr. Daigler

This letter is a summary of my review of your report of October 2012 titled ***EVALUATION OF POTENTIAL IMPACTS ON THE MARTZ OBSERVATORY***. As an educator and professional astronomer I have been involved in a range of facilities ranging from 8-36 inch optical telescopes for education, public outreach and amateur contribution to astronomical research to the most advanced 8-10 meter class telescopes at the very best sites on the planet. Facilities such as the Martz Observatory play an important role in our society as intellectual nurseries for young minds as well as productive outlets for creative and curious citizens. Astronomy is one of the most common sciences that stimulate young people to nurture an interest in science and engineering around the world. There is a strong argument that science and engineering has been and remains the greatest health and wealth creation endeavor known to man and by implication is very important to our nation. Thus the Martz Observatory is a valued facility and should be shielded to the extent possible from degradation. In evaluating your report, it is my professional opinion that your analysis and mitigations are correct and if properly implemented will not degrade the observatory's capability.

You identified light, turbulence caused by heat convection, dust and radio interference as the four areas to investigate for mitigation and I will comment on each.

Light pollution is by far the largest threat to Martz or any observatory. You indicate properly that pollution present at the Martz site from cities both distant and relatively nearby. These will compromise the sky whenever there is high haze or cirrus. Especially on clear, and often cold nights, locations like Martz can still enjoy very good observing conditions and it is more proximate lighting that can be an issue in this case. The vertical and below horizontal shielding combined with the light being off most of the time, in my opinion, properly mitigates the effect of the proposed facility.

I also agree with the conclusion that the proposed facility will not degrade the astronomical *seeing* at the Martz Observatory. As is common for mid continental and especially low altitude sites, their image quality will be dominated by the local topography and resultant low level atmospheric turbulence as well as heat sources within the Observatory itself.

Dust is always a threat to optics as well as precision mechanisms such as the telescopes and cameras. Again, your suggested mitigations properly implemented should reduce what would already be a small increased threat to a fully negligible level especially considering the observatory has several active agricultural fields much closer.

I also agree with your assessment of the radio interference risk. I do not see the proposed facility adding to the existing radio "light pollution" so pervasive in modern society.

Please let me know if you need any of the above issues addressed in more detail.

Sincerely,



Lawrence W. Ramsey, PhD.

**ATTACHMENT 2**

**Curriculum Vitae of Peer Reviewer**

## **Brief Biographical Sketch**

Dr. Lawrence Ramsey is a Professor of Astronomy and Astrophysics at the Pennsylvania State University where he served as Department Head from 2003 through 2011. He completed his BS degree in Physics at the University of Missouri St. Louis. He worked for McDonnell-Douglas Corporation (now Boeing), as Aircraft and Spacecraft Simulator Systems Engineer from 1966-70 on Gemini spacecraft and military projects. After leaving industry, Dr. Ramsey obtained MS in Physics in 1972 from Kansas State University a PhD in Astronomy in 1976 from Indiana University. During that period he also spent a year working at the National Optical Astronomy Observatory (NOAO) in Tucson. He has been at Penn State since 1976 where he pursued research in solar like activity on stars, stellar seismology and astronomical instrumentation and more recently searches for planets around other stars. He has authored or co-authored over 100 scientific papers. A major focus since 1990 has been implementing the Hobby-Eberly telescope (HET) at McDonald Observatory in west Texas, the concept for which he and Penn State colleagues developed in 1983, and its successor, the Southern African Large Telescope (SALT). He served as project scientist for the HET from inception until 2004. Recently he served from 2003-2011 as department head of Astronomy and Astrophysics which is responsible for about 90 personnel and includes several large space astrophysics projects. He is currently engaged in a project to build an infrared instrument to search for planets using the HET. He is also working with several international observatories and serves on the Board of Directors for the Hobby Eberly telescope, the South African Large Telescope and the Large Synoptic Survey Telescope and Chairs the Board of directors for the International Gemini Observatory. Dr. Ramsey and his wife both enjoy the outdoors and spend their leisure time bird watching and on nature travel around the world.

## **VITA of Lawrence W. Ramsey**

### **PERSONAL**

Born 14 March, 1945 in Louisville, Kentucky; Married to Mary Ellen Gessling, 1970. No children

### **EDUCATION**

Ph.D. Astronomy, 1976, Indiana University

M.S. Physics, 1972, Kansas State University

A.B. Physics and Math, 1968, University of Missouri, St. Louis

### **POSITIONS HELD**

7/88-Present Professor, The Pennsylvania State University.

7/82-6/88 Associate Professor, The Pennsylvania State University.

9/76-6/82 Assistant Professor, The Pennsylvania State University.

5/72-9/73 Research Assistant, Kitt Peak National Observatory.

9/66-8/70 Aircraft and Spacecraft Simulator Systems Engineer, Conductron Missouri Corp. (a division of the McDonnell-Douglas Corporation, now Boeing).

### **TEMPORARY APPOINTMENTS**

7/1/2003-6/30/2011: Astronomy & Astrophysics Department Head

9/1999-7/2000: Astronomy & Astrophysics Interim Department Head

9/1994-2004: Senior Research Fellow at the University of Texas at Austin

1991-6/2003: Deputy Department Head

1/1990-10/2004: PSU/UT Hobby-Eberly Telescope (formerly SST) Project Scientist

9/1993-11/1993: Acting Astronomy & Astrophysics department head  
1/1990-9/1990: PSU/UT Spectroscopic Survey Telescope (SST) interim Project Manager  
Consultant for Nordic optical telescope instrumentation, Copenhagen Observatory, 1886-88

### **RECENT NATIONAL & INTERNATIONAL COMMITTEES**

Chair, Gemini International Observatory Board of Directors, May 2010-present  
Member, Large Synoptic Survey Telescope (LSST) Board of directors, January 2008 present  
Member, Southern African Large Telescope (SALT) Board of directors, January 2004 present  
Member, Hobby-Eberly Telescope (HET) Board of directors, June 2003 to present  
Chair, AURA NOAO Observatories Visiting Committee, 6/2008-2009  
Chair, NOAO/AURA ALTAIR committee, 5/2008 until final report delivered in Feb 2009.  
Chair, Associated Universities for Research in Astronomy (AURA) Oversight Committee for Gemini, 2002-2006  
Member, Facilities Subcommittee of the National Science Foundation (NSF) Business and Operations Advisory Committee, 2/2005- 5/2006 (Dealt with MREFC processes)  
Member, AURA Board of Directors, 2002- 2006  
Member, AURA Oversight Committee for Gemini, 2000-2002  
Member, AURA New Initiatives Office Oversight Committee October 2000- 2004  
Member, International Gemini Science Advisory Committee, 1999-2002  
Member, US Gemini Science Advisory Committee, 1996-2002

### **Memberships in professional societies:**

American Astronomical Society  
Society of Photo-Optical Instrumentation Engineers  
Astronomical Society of the Pacific  
International Astronomical Union

### **Honors and Awards**

Named Eberly College of Science Distinguished Senior Scholar in 2011  
K.R. Ramanathan visiting Professor from January 12 to January 27 at the Physical Research Laboratory in Amadebad, India  
Distinguished Alumni Award, University of Missouri, St. Louis, Sept 13, 2001  
Eberly College of Science Alumni Society 1997 Distinguished Service Award  
Finalist for 1997 Discover Magazine Award for Technological Innovation

## RESEARCH PUBLICATIONS

### Refereed Publications

- 1) *Telluric Lines in the Vicinity of 5256 and 6562 Å*.  
W. Livingston and L. Ramsey, *Solar Physics* **31**, 317, 1973.
- 2) *Formation of the Luminosity Sensitive O I Multiplet at 7774 Å*  
H.R. Johnson, R.W. Milkey, and L.W. Ramsey, *Ap.J.* **187**, 147, 1974.
- 3) *High Resolution Profiles of Sodium and Potassium Lines in Alpha Orionis*  
L. Goldberg, L. Ramsey, L. Testerman and D. Carbon, *Ap.J.* **199**, 427, 1975.
- 4) *On the Broadening of Solar Lines by Macroturbulence with Implications for Stellar Studies*  
J.C. Evans, L.W. Ramsey and L. Testerman, *Astron. & Astrophys.* **42**, 237, 1975.
- 5) *High Dispersion Spectroscopy of Quiescent Prominences. III Vertical Structure of the Line-of-Sight Velocity Field*.  
L.W. Ramsey, *Solar Physics*, **51**, 307, 1977.
- 6) *Spectrophotometry of Cool Angular Diameter Stars*  
R.K. Honeycutt, L.W. Ramsey, W.H. Warren and S. Ridgway, *Ap.J.* **215**, 584, 1977.
- 7) *A Semi-Empirical Atmosphere for Alpha Tauri from Neutral Iron Lines*  
L.W. Ramsey, *Ap.J.* **215**, 603, 1977.
- 8) *Observed Departures from LTE Ionization Equilibrium in Late-Type Giants*  
L.W. Ramsey, *Ap.J.* **215**, 827, 1977.
- 9) *Variable Mass Loss in the Metal Deficient Giant HDE232078*  
L.W. Ramsey, *PASP* **91**, 252, 1979.
- 10) *Limits on the Short Period Variability of H-Alpha Emission in AD Leo*  
L.W. Ramsey, *A.J.* **84**, 413, 1979.
- 11) *HR1099 and the Starspot Hypothesis for RS Canum Venaticorum Binaries*  
L.W. Ramsey and H.L. Nations, *Ap.J. Letters*, **239**, L55, 1980.
- 12) *Spectrum Variability in HR8752*  
S.C. Barden and L.W. Ramsey, *PASP* **92**, 497, 1980.
- 13) *H-Alpha Variability in HR1099 and Other RS CVn Stars*  
H.L. Nations and L.W. Ramsey, *A.J.* **85**, 1086, 1980.
- 14) *Evaluation of Some Optical Waveguides for Astronomical Instrumentation*  
S.C. Barden, L.W. Ramsey and R.J. Truax, *PASP* **93**, 154, 1981.
- 15) *On the Nature of H-Alpha Outbursts in the RS Canum Venaticorum Binary SZ Piscium*  
L.W. Ramsey and H.L. Nations, *PASP* **93**, 732, 1981.
- 16) *BVRI Photometry of the RS CVn Binary II Peg*  
H.L. Nations and L.W. Ramsey, *A.J.* **86**, 433, 1981.
- 17) *Observations of the TiO 8860 Å Band in M Giants*  
L.W. Ramsey, *A.J.* **86**, 557, 1981.
- 18) *On the Ionization Equilibrium in Late Type Supergiants*  
L.W. Ramsey, *Ap.J.* **245**, 984, 1981.
- 19) *NGC 7714: The Prototype Starburst Galactic Nucleus*  
D.W. Weedman, F.R. Feldman, V.A. Balzano, L.W. Ramsey, R.A. Sramek and C.C. Wu, *Ap.J.* **248**, 105, 1981.
- 20) *Regular Variations in the H-Alpha Profile of FK Comae*  
L.W. Ramsey, H.L. Nations, and S.C. Barden, *Ap.J. Letters* **251**, L101, 1981.
- 21) *Emission Line Widths in Galactic Nuclei*  
F.R. Feldman, D.W. Weedman, V.A. Balzano and L.W. Ramsey, *Ap.J.* **256**, 427, 1982.

- 22) *A Spectroscopic Study of the Peculiar Giant FK Comae: I The Radial Velocity Variation and Its Implications*  
James K. McCarthy and L.W. Ramsey, Ap.J. **283**, 200, 1984.
- 23) *Hydrogen Alpha Observations of RS Canum Venaticorum Stars: I II Peg*  
H.L. Nations and L.W. Ramsey, A.J. **89**, 115, 1984.
- 24) *Hydrogen Alpha Observations of RS Canum Venaticorum Stars: III The Eclipsing Systems AR Lacertae and SZ Piscium*  
D.P. Huenemoerder and L.W. Ramsey, A.J. **89**, 549, 1984.
- 25) *Hydrogen Alpha Observations of RS Canum Venaticorum Stars: II 1981 Observations for UX Arietis, HR1099, and BD+61 1211*  
H.L. Nations and L.W. Ramsey, A.J. **92**, 1403, 1986.
- 26) *CCD Echelle Observations of the Active RS CVn System II Pegasi*  
D.P. Huenemoerder and L.W. Ramsey, Ap.J. **319**, 392, 1987.
- 27) *A Flare Event on the Long Period RS Canum Venaticorum System IM Pegasi*  
D.L. Buzasi, L.W. Ramsey and D.P. Huenemoerder, Ap.J. **322**, 353, 1987.
- 28) *Fiber Optic Echelle CCD Spectral Monitoring of UX Arietis*  
D.P. Huenemoerder, D.L. Buzasi and L.W. Ramsey, A.J. **98**, 1398, 1989.
- 29) *Coordinated Optical and Ultraviolet Observations of IM Peg*  
D.P. Huenemoerder, L.W. Ramsey and D.L. Buzasi, Ap. J. **350**, 763, 1989.
- 30) *Titanium Oxide Variations in II Pegasi*  
D.P. Huenemoerder, L.W. Ramsey and D.L. Buzasi, A.J. **98**, 2264, 1989.
- 31) *Coordinated Optical and Ultraviolet Observations of DH Leo*  
J. Newmark, S. Barden, D. Buzasi, D. Huenemoerder, L. Ramsey, A.J. **100**, 560, 1990.
- 32) *Spectroscopy of the Highly Active RS CVn System SS Boo*  
J.C. Hall, D.L. Buzasi, D.P. Huenemoerder, and L.W. Ramsey, Ap.J. **358**, 610, 1990.
- 33) *Detection of Possible P-Mode Oscillations in Procyon*  
T.M. Brown, R.L. Gilliland, R.W. Noyes, L.W. Ramsey, Ap. J. **368**, 599-609, 1991
- 34) *Short-Term Variability in the RS CVn System HR1099*  
D.L. Buzasi, D.P. Huenemoerder, and L.W. Ramsey, PASP **103**, 1077, 1991.
- 35) *BF Orionis: Evidence for an Infalling Circumstellar Envelope*  
A.D. Welty, S.C. Barden, D.P. Huenemoerder and L.W. Ramsey, A.J. **103**, 1673-1678, 1992.
- 36) *Eclipse Observations of RS CVn Binaries I: A Survey for Extended matter*  
J.C. Hall and L.W. Ramsey, A.J. **104**, 1942-1959, 1992.
- 37) *Scrambling Properties of Optical Fibers and the Performance of a Double Scrambler*  
T.R. Hunter and L.W. Ramsey, PASP **104**, 1244-1251, 1992.
- 38) *A UV and Visual Spectroscopic and Visual Photometric Study of FK Comae Berenices in 1989*  
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- 39) *Lithium Line Variations in Weak-Lines T Tauri Stars*  
Patterer, R.J., Ramsey, L.W., Huenemoerder, D.P. and Welty, A.D., 1993, Astron. J., **105**, 1519-1524.
- 40) *A Far-Ultraviolet Flare on a Pleides G Dwarf*  
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- 41) *A Long Term Study of H $\alpha$  Line Variations in FK Comae Berenices*  
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- 42) *Eclipse Observations of RS CVn Binaries II: A Parametric Model of Extended Matter*  
J.C. Hall and L.W. Ramsey, 1994, A.J. **107**, 1149.
- 43) *ROSAT Observations of FK Comae Berenices*

- Welty, A.D. and Ramsey, L.W. 1994, *Astron. J.* **108**, 299.
- 44) *The Shape of FK Coma Berenices: Evidence for a Recently Coalesced Binary*  
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- 45) *The Activity of Weak-lined T Tauri Stars: I V410 Tauri*  
Welty, A.D. and Ramsey, L.W. 1995, *A.J.* **109**, 336.
- 46) *On the Role of Mass transfer in X-Ray Emission of RS Cvn Stars*  
Welty, A.D. and Ramsey, L.W. 1995, *A.J.* **109**, 2187.
- 47) *Li I enhancement during a long-duration stellar flare*  
Montes D., Ramsey L.W., 1998, *Astronomy & Astrophysics Letters*, **340**, L5-L9
- 48) *Library of medium-resolution Fiber Optic Echelle spectra of F, G, K and M field dwarfs to giants stars*  
Montes D, Ramsey, L.W. & Welty, A.D. 1999, *ApJ Supplement* **123**, p283-294.
- 49) *The Low Resolution Spectrograph of the Hobby-Eberly Telescope II. Observations of Quasar Candidates from the Sloan Digital Sky Survey*  
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- 50) *Observations of Faint, Hard-Band X-ray Sources in the Field of CRSS J0030.5+2618 with the Chandra X-ray Observatory and the Hobby-Eberly Telescope.*  
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- 51) *The Missing Link: Early Methane ("T") Dwarfs in the Sloan Digital Sky Survey.*  
S.K. Leggett, T.R. Geballe, X. Fan, D.P. Schneider, J.E. Gunn, R.H. Lupton, G.R. Knapp, M.A. Strauss, A. McDaniel, D. Golimowski, T. Henry, E. Peng, Z.I. Tsvetanov, A. Uomoto, W. Zheng, G.J. Hill, L.W. Ramsey, S.F. Anderson, N.A. Bahcall, J. Brinkmann, B. Chen, I. Csabai, M. Fukugita, G.S. Hennessy, R.B. Hindsley, Z. Ivezic, D.Q. Lamb, J.A. Munn, J.R. Pier, J.A. Smith, C. Stoughton, A.R. Thakar, and D.G. York, 2000, *ApJL*, **536**, 35-38.
- 52) *The Chandra Deep Survey of the Hubble Deep Field North Area. II. Results from the Caltech Faint Field Galaxy Redshift Survey Area.*  
A.E. Hornschemeier, W.N. Brandt, G.P. Garmire, D.P. Schneider, A.J. Barger, P.S. Broos, L.L. Cowie, L.K. Townsley, M.W. Bautz, D.N. Burrows, G. Chartas, E.D. Feigelson, R. Griffiths, D. Lumb, J.A. Nousek, L.W. Ramsey, W.L.W. Sargent. *ApJ*, **554**, 742-777 2001
- 53) *High-Redshift Quasars Found in Sloan Digital Sky Survey Commissioning Data V: Hobby-Eberly Telescope Observations.*  
D.P. Schneider, X. Fan, M.A. Strauss, J.E. Gunn, G.T. Richards, G.J. Hill, P.J. MacQueen, L.W. Ramsey, M.T. Adams, J.A. Booth, G.M. Hill, G.R. Knapp, R.H. Lupton, D.H. Saxe, M. Shetrone, J.R. Tufts, D.E. VandenBerk, M.J. Wolf, D.G. York, J.E. Anderson, S.F. Anderson, N.A. Bahcall, J. Brinkmann, R. Brunner, I. Csabai, G.S. Hennessy, Z. Ivezic, D.Q. Lamb, J.A. Munn, A.R. Thakar, *Astronomical Journal*, 121, 1232-1240 (2001).
- 54) *The Chandra Deep Survey of the Hubble Deep Field North Area. II. Results from the Caltech Faint Field Galaxy Redshift Survey Area*  
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- 55) *L Dwarfs Found in Sloan Digital Sky Survey Commissioning Data II. Hobby-Eberly Telescope Observations*  
Donald P. Schneider, Gillian R. Knapp, Suzanne L. Hawley, Kevin R. Covey, Xiaohui Fan, Lawrence W. Ramsey, Gordon T. Richards, Michael A. Strauss, James E. Gunn, Gary J. Hill, Phillip J. MacQueen, Mark T. Adams, Grant M.

- Hill, Zeljko Ivezic, Robert H. Lupton, Jeffrey R. Pier, David H. Saxe, Matthew Shetrone, Joseph R. Tufts, Marsha J. Wolf, J. Brinkmann, Istvan Csabai, G.S. Hennessy, Donald G. York, *Astronomical Journal*, 123, 458-465 (2002)
- 56) *Rotational modulation of the photospheric and chromospheric activity in the young, single K2-dwarf PW And*  
J. Lopez-Santiago, D. Montes, M.J. Fernandez-Figueroa, L.W. Ramsey, *Astronomy and Astrophysics*, v.411, p.489-502 (2003).
- 57) *SparsePak: A Formatted Fiber Field Unit for the WIYN Telescope Bench Spectrograph. I. Design, Construction, and Calibration*  
Bershady, Matthew A.; Andersen, David R.; Harker, Justin; Ramsey, Larry W.; Verheijen, Marc A. W., *The Publications of the Astronomical Society of the Pacific*, Volume 116, Issue 820, pp. 565-590.
- 58) *The First Extrasolar Planet Discovered with a New Generation High Throughput Doppler Instrument*  
Jian Ge, Julian van Eyken, Suvrath Mahadevan, Curtis DeWitt, Stephen R. Kane, Roger Cohen, Andrew Vanden Heuvel, Scott W. Fleming, Pengcheng Guo, Gregory W. Henry, Donald P. Schneider, Lawrence W. Ramsey, Robert A. Wittenmyer, Michael Endl, William D. Cochran, Eric B. Ford, Eduardo L. Martin, Garik Israelian, Jeff Valenti, David Montes, *Astrophysical Journal* 648, 648-683 (2006).
- 59) *A Planetary-Mass Companion to the K0 Giant HD 17092*  
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- 60) *A pathfinder Instrument for precision radial velocities in the near-infrared*  
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- 61) *A Rotational Velocities for M Dwarfs*  
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- 62) *The Infrared Spectrum of Uranium Hollow Cathode Lamps from 850 nm to 4000 nm: Wavenumbers and Line Identifications from Fourier Transform Spectra*  
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## Conference proceedings or parts of books

- 1) *Spectroscopic Evidence for Starspots on HR1099*  
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- 2) *A Flare Event in the Peculiar Giant FK Comae*  
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- 3) *The Penn State Spectroscopic Survey Telescope*  
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- 4) *A Versatile Fiber Coupled CCD/Echelle Spectrograph System*  
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- 5) *The Light Curve, H-Alpha Modulation, and Possible Prominences of the Short Period Binary DH Leo*  
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- 6) *A CCD/Echelle Spectroscopy System for Study of Active Cool Stars*  
L.W. Ramsey and D.P. Huenemoerder in *Cool Stars, Stellar Systems, and the Sun*, Proceedings of the Fourth Cambridge Workshop (ed. M. Zeilik and D. Gibson, Springer-Verlag, Heidelberg), p241, 1985
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- 8) *The Penn State Fiber Coupled CCD/Echelle Spectrograph*  
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