

David L. Crawford

To Whom it may concern,

2/25/15

I am the Founder and retired CEO of the International Dark Sky Association. The IDA was created to protect the night time environment against light pollution. Tonight's battle is different in that lighting has converted to LED, and we are combatting color temperature, meaningless lumen outputs, and poorly designed outdoor lighting products.

This letter is intended to be a review of the VUE Series LED fixture by NLS Lighting. From a dark sky and light trespass standpoint, the "VUE" is an excellent choice for most any outdoor application. To begin with, the "VUE" is one of the only if not the only LED fixture I have seen which has the light source recessed two to three inches above the bottom plane of the housing. Additionally NLS has designed multiple optical choices to fit the application of almost any lighting design. The "VUE" hides its light source and reflects light where it is required without waste. The "VUE" is an excellent choice particularly considering that many fixtures are evaluated by total lumens regardless of whether or not they are targeted correctly. Also most other companies I have observed either use lensed optics located at or just below the bottom plane of the fixture and so are impossible to shield from long distances from any vantage point below the bottom plane of the fixture.

The President of NLS Lighting, Bill Hein, has been a devoted advocate to dark sky and full cutoff lighting fixtures. Mr. Hein was instrumental in the development of outdoor luminaires with flat lenses that outperformed convex lensed luminaires that were being used throughout the country. I am happy to see that Mr. Hein has designed a new patent pending optical system once again (The "Star Power Optical System") that has high application efficiency performance while hiding the light source deep within the fixture housing.

If you have any questions whatsoever regarding this letter please do not hesitate to write or to call myself.

Sincerely,

Dave Crawford

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David L. Crawford

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Wife, Mary, for 50 years, died in Nov 2012. Was very active in most activities below. A soulmate.

Ph.D. (Astronomy): University of Chicago, 1958.

Honorary Doctor of Humane Letters, New England College of Optometry, 2004.

Based on research and education about night vision and related issues.

Positions Held:

Assistant Professor, Physics and Astronomy, Vanderbilt University, 1958-1959.

Staff Astronomer at Kitt Peak National Observatory (NOAO), 1960-1995. Tenured in 1966.

Led staff in citations to research papers most of those years. Published extensively.

Active also in widespread lighting pollution control efforts in the years from 1970 to retirement.

Project Manager for NOAO's two-4-m telescopes (KPNO & CTIO), 1963-1973.

Build on time and in budget; supervised over 150 engineering staff on this \$20 M (in 1960 \$'s) project.

Illuminating Engineering Society of North America (IESNA):

Fellow, 1997. Special Presidential Award, 2001.

Member of the Roadway Lighting Committee, chaired its Light Trespass Subcommittee.

Past Chairman of the Outdoor Environmental Lighting Committee.

Member of the Sports Lighting Committee, the Security Lighting Committee, Aging Eye, and others.

CIE. Commission International de l'Eclairage (International Commission on Illumination).

Member of the many committees, especially in Div 4 & Div 5 dealing with outdoor lighting.

In both IESNA and CIE (etc), wife Mary was very active and a team member until she dies in 2012.

Institute for Lighting Engineers (UK), member and received their (first ever) Companion Award, 1996.

American Astronomical Society:

Member of the Council of the AAS, 1972-1975. Received the AAS's Van Biesbroeck Award, 1996.

Past Chairman of the AAS's Committee on the Light Pollution, Radio Interference, and Space Debris.

Astronomical Society of the Pacific: Member of the Board of Directors, 1970-1976 and 2005-2007.

Royal Astronomical Society of Canada, Honorary Member, 1997.

Astronomical Society of Malta, Honorary Member, 2001.

International Astronomical Union: Member of and active in many IAU Commissions:

Astronomical League: Outstanding Service Award, 1992. Honorary Member, 2001.

Western Amateur Astronomers' Blair Gold Medal Award, 2005

American Association for the Advancement of Science:

Fellow. Member of the Council, 1986-1989. Member of the Committee on Council Affairs, 1986-1988.

Other Honors:

Asteroid named for David Crawford: #7327 Crawford.

Other: Past member of the committees, local and national, in astronomy and lighting communities.

Presented many scientific papers and talks and public talks to above and below organizations.

Attended many educational seminars and workshops on management, technology, and lighting.

Member and Past Chairman of the Tucson/Pima County Outdoor Lighting Code Committee.

Advisor for numerous outdoor lighting code enactments, local national and international.

Extensive national and international travel, including two sabbatical leaves in Europe.

International Dark-Sky Association (IDA):

Co-Founder and Executive Director (1988-2008) of this tax-exempt non-profit organization whose

goals are to build awareness of the problems of light pollution as it affects astronomy and the public.

Research and other professional interests, past and present:

Leadership in support of preserving dark nighttime skies for astronomy and the public and in

prompting the use of quality outdoor nighttime lighting, for enhancing the value of the night and of energy savings.

Astronomical Photometry. Open Clusters. Galactic Structure, Observational techniques.

Public relations in support of astronomy, science education, and quality outdoor lighting. Shapley

Lecture tours, Elderhostels, Open University and University of Arizona Continuing Ed programs, and classes on financial math and analysis, business law, investment concepts, commercial and residential real estate.

Many talks and seminars, local national, and international to the public, businesses, governments, and others about the advantages of quality outdoor lighting. Published many articles on these topics.

Personal Interests. Many, including travel, good food and wine, reading, writing, photography. In all

these with wife Mary until she unfortunately died in 2012 after a long illness. Three daughters,

Christine, Deborah, and Lisa, and seven grandchildren, are a strong personal interest as well.