

In Memoriam



***N. John Stevens
A Spacecraft Charging
Pioneer***

11 July 1930-11 March 2010

John: A Lifetime of “Charging”

- Education:
 - LeMoyne College, BS Physics
 - Univ. of Michigan, MS Physics
- Employment:
 - Carrier Corp. Research Center, Syracuse, N.Y.
 - General Atomics, San Diego, CA
 - NASA-Lewis Research Center, Cleveland, OH
 - TRW Space Division, Los Angeles, CA
- Over 150 technical publications
- Family:
 - Mrs. Linda Stevens (Wife)
 - Drs. Richard (Son) and Karen Stevens
 - Robert Stevens (Son)

Our Memories

John meant many things to me—first we were friends for over 30 years. We and our Son William visited them, their Sons, and Dogs, many times over the years they were in California. We worked together on a number of spacecraft charging projects and I had the distinct pleasure of editing the “infamous” NASA TP-2361, Design Guidelines for Assessing and Controlling Spacecraft Charging Effects” with him, Carolyn, and Albert. It has been the standard reference in the field for over 25 years! I can remember me talking him into buying his first Apple II computer and putting a spacecraft charging code on it in basic that Phil Leung and I developed. John took it and expanded it and several other programs into one of the first comprehensive spacecraft design tools. John was a brilliant engineer and scientist at the forefront of our field. As the following testimonials prove, he was not only respected but loved by his colleagues...

Hank Garrett, Friend and Colleague

Our Memories

John was a great boss, mentor friend and colleague. I was fortunate to arrive at NASA LeRC just as the Spacecraft Charging Program was beginning and was put on the team, led by John, working on that program. It was new, exciting and fun. One of the most enjoyable aspects of working with John was his penchant for developing an intuitive grasp of the phenomena. Whenever we had a puzzling result (which was often!), we tried to come up with what he called a "hand woven" explanation. This usually involved re-examination, sketches, backs of envelopes (and plenty of discussion) resulting in an idea, which of course had to be tested by various means. John was very creative at this and it yielded many insights. On a different note, I used to kid him that he purposely put lots of extra commas in his writing so that his reviewers had something to edit! The last time I saw John was at the AIAA Aerospace Sciences meeting in January of 1999 in Reno. We spent a couple of enjoyable hours chatting. He was enjoying his retirement in AZ, seemed very relaxed, was proud of both his sons' accomplishments - and of course had a spacecraft charging model he was working on!

Carolyn C. Purvis

Our Memories

I have many good memories of N. John, but let me share this with everyone: N. John was one of the most practical scientists I ever knew. He was particularly proud of finding simple approximations to complex physical phenomena. I remember hearing him say many times, after presenting one of his approximations that made a situation clear, "There it is, and it works!" Thank you, N. John, for making things clear to us. You "worked" for me!

Dr. Dale C. Ferguson

Our Memories

The thing I remember most about John was his boundless optimism and enthusiasm for the project. It seemed that he was always smiling and was willing to spend inordinate amounts of time encouraging me, a young physicist who just starting his career. The project resulted in NASCAP, the NASA Charging Analyzer Program, the definitive model of spacecraft charging that has been used in spacecraft design throughout the world. John thought up the name “NASCAP” and it stuck, generating sequel after sequel. NASCAP’s success helped my career immensely. For this I owe so much to John, I am deeply grateful for his help and encouragement.

Ira Katz, JPL

Our Memories

I first met John when he was managing many ESD testing research and development studies at various labs around the country. John then took those test results, put them together into a coherent package that helped illuminate the many facets of spacecraft charging. He had such an excellent way of selecting the test data and results, it was as if we were there watching the tests; his lectures were very enlightening. As others have said, he was quite a teacher. Thank you, John.

Albert Whittlesey, JPL

Our Memories

John was...committed to his work and achieving excellence in our research program. He was someone who you would enjoy talking with and was a genuinely "nice" person.

Charles P. Pike, Jr., AFRL

Our Memories

There has been a flurry of email traffic amongst the technical community that knew John and his years of work. All of us are saddened by his passing. We have lost one of the pioneers in our industry. I feel lucky to have known John personally. Working together day to day and car pooling, you get to know someone pretty well. I certainly enjoyed and benefited from those years, since John provided much of my training education in space environment effects. I felt a great loss when he retired. Even though my career had branched off by that time, it was comforting to know he was there if I needed him. So much like a father. And with his passing, I have lost a friend and mentor.

It is hard to explain how much of an impact John's life work had on the satellite industry. His most public accomplishment is that he was a co-author of the NASA guidelines on spacecraft charging, first issued in 1984 and which still guides satellite designers around the world 25 years later. Despite the fast pace of technology, it is a testament to him that his contributions have stood the test of time.

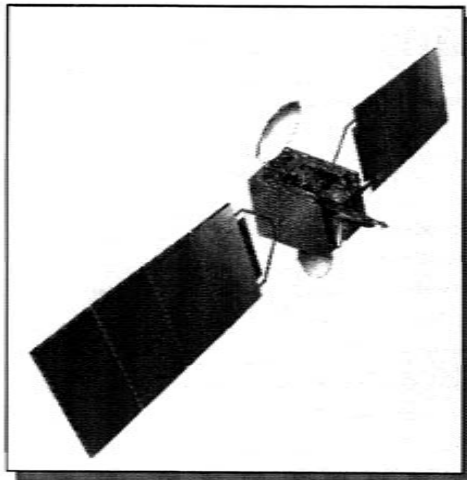
Let me give you...some perspective on how important his contributions are. Satellites are ubiquitous. It is not commonly known that there are hundreds of satellites in orbit providing a plethora of commercial and civil and defense services to the USA and the world. It wasn't always that way. In the 1970's, satellites were an emerging technology with a bright future. The sudden failure of a Defense Communications satellite put a cloud over that future. There were a lot of folks who worked months to understand the cause of the failure and to make engineering changes to the next satellites. John worked hard to develop and refine practical engineering solutions to prevent similar problems, which led to the NASA guidelines I spoke of earlier. At TRW, where I worked with him, he supported many other satellite designs and problem investigations, putting his guidelines into practice. When designers took his advice, the satellites performed well. When designers deviated from his guidelines, as often as not, problems would show up. John didn't single handedly fix all problems. But he is one of the unsung heroes that helped make satellites the successful trillion dollar industry it is today.

When a man passes, he is often judged by the character and accomplishments of his children as much as by his own accomplishments. There is now in place at least two generations of engineers that daily have to deal with the harsh conditions of space in spacecraft design work that know his name and use his contributions to the benefit of their customers. So I assure you that there is much you can and should be proud of, even if you are unfamiliar with the technology. He has left a legacy of knowledge and the engineering progeny to carry on his work.

Michael Bodeau

John's Last Talk

Spacecraft Charging Study of a GEO Communications Satellite



N. John Stevens
NJS Consulting
Prescott, Arizona

For

Presentation at the AIAA
Aerospace Sciences
Meeting, Reno NV

John's Last Talk (2008)

CONCLUDING REMARKS

■ Study Conducted of Spacecraft Charging Effects in GEO

- Generic Design Commu
- Modified Analysis Tool
 - » Combined Surface and I
 - » Environment - Current] Description
 - » NASA 10% Design Envi

CONCLUDING REMARKS RESULTS

- Combined Charging Code Generates Strong Surface Voltage Gradients
 - Relates to Ground Test Discharge Thresholds
- Shadowing Enhances Hazards at Sun-Shadow Lines
- Aging of Dielectrics (Kapton) Changes Voltage Distributions on Surfaces
- Cursory Evaluation:
 - 15 Minute Sequence with Single Maxwellian
 - Not Adequate for Design Evaluation

11th Spacecraft CHARGING

Sep 20-24, 2010 | Albuquerque, NM

Technology Conference

