

## Northrop Grumman Scientist Marshall Greenspan to be Honored by IEEE for Lifetime Achievements in Radar Technologies

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BALTIMORE, May 27, 2015 /PRNewswire/ -- Marshall Greenspan, a distinguished scientist who recently retired from Northrop Grumman Corporation (NYSE: NOC), has been selected by IEEE, the world's largest professional organization advancing technology for humanity, as the 2015 recipient of the Dennis J. Picard Medal for Radar Technologies and Applications.



A photo accompanying this release is available at: http://media.globenewswire.com/noc/mediagallery.html?pkgid=33289.

Greenspan, an IEEE Fellow, will receive the honor at the IEEE Honors Ceremony Gala, to be held June 20 at the Waldorf Astoria Hotel in New York. He was chosen by IEEE "for contributions to the development of multiple phase-center airborne surface surveillance and targeting radars."

Greenspan began his 50-year career developing modes for the radars on the Navy's A6-E aircraft. Originally designed for navigation, targeting and terrain avoidance, the A-6E radar was upgraded to become the Radar Guided Weapon System (RGWS), a groundbreaking system that generated high resolution images of the beam area and pinpointed the location of moving targets. The Defense Advanced Research Projects Agency (DARPA) adopted the RGWS technology into the Pave Mover program, which put side-looking radar into the EF-111 aircraft to detect and track armored surface vehicles at long range while simultaneously guiding precision munitions to a target.

This technology was further developed for additional applications, including the Multi-Mode Radar System, the next generation of the A6, and finally the Army/Air Force Joint Surveillance Target Attack Radar System (Joint STARS). Operating onboard the E-8 surveillance aircraft, the groundbreaking Joint STARS was successfully deployed in the first Gulf War in 1991 and was instrumental in subsequent conflicts in that region.

Afterward, Greenspan worked on developing additional sophisticated airborne radar concepts that use knowledge of the radio frequency (RF) environment to optimally adapt its temporal, spectral, and spatial RF transmission and reception properties. These allow the radar to achieve its objectives with minimum susceptibility to, and interference with, the dynamically-changing ambient RF environment. His Joint STARS work has been instrumental in demonstrating the feasibility of space-time-adaptive processing (STAP) techniques, used in modern air-to-surface moving-target radars.

Greenspan was previously honored with the George J. Mead Medal for Engineering Achievement, IEEE's AESS Warren D. White Award for Excellence in Radar Engineering and Northrop Grumman Electronic Systems' Lifetime Achievement Award for "excellence in radar technology for the development of multiple phase-center interferometric radar signal processing for air- and space-borne surveillance and tactical radars."

Greenspan graduated from the Massachusetts Institute of Technology in 1962 with both bachelor's and master's degrees in electrical engineering. He received his Ph.D. in electrical engineering from the University of Connecticut in 1969.

The Dennis J. Picard Medal for Radar Technologies and Applications, sponsored by the Raytheon Company, is given for outstanding accomplishments in advancing the fields of radar technologies and their applications.

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