

Rino Giordano (1955–2018)



On March 11th, 2018, the *Chandra* Flight Operations Team (FOT) lost one of its long-time members, a valued colleague, and friend. Rino Giordano passed away after a short but brave battle with cancer.

Rino joined the FOT in 1997, following distinguished service in the U.S. Air Force and over a decade supporting the TDRSS mission. He initially trained as a Thermal Subsystem Engineer for *Chandra*, but also made significant contributions towards the development and execution of training simulations to help prepare the team for *Chandra*'s launch. Not long after launch, Rino expanded his responsibilities and level of contributions by becoming the lead Electrical Power Subsystem (EPS) Engineer. During this time, he also continued in the role of "Sim Sup" for team-level training events, cleverly (some would say deviously) coming up with new ways to manipulate the spacecraft simulator (ASVT) and challenge the team to respond to a wide range of potential on-board faults. In 2008, Rino took on the role of lead engineer for the *Chandra* Communications, Command and Data Management (CCDM) subsystem. Over the years, Rino was also responsible for, and contributed to, a number of critical system-level special projects that crossed subsystem and space-ground system boundaries.

Throughout his time on the *Chandra* program, Rino embodied a unique set of technical strengths and personal traits that allowed him to succeed, tremendously improving *Chandra* operations processes and products while also setting standards for others to follow. His inquisitiveness, diligence, "out-of-the-box" thinking skills, and self-motivation and learning contributed greatly to his achievements. Early in the mission, he strove to vastly improve how eclipse events were handled with the spacecraft, simplifying the preparation work considerably and reducing the overall risk of such events. When the on-board Command & Telemetry Unit (CTU) and Interface Unit (IU) began to experience unexpected resets, he dug deeply into schematics, unit specs, command/telemetry bit definitions and processing routines, and any/all other available documentation from the factory and the equipment vendor to truly understand the spacecraft performance issues and share that gained knowledge with the rest of the team. As the spacecraft continued to age and the need for more diagnostic data grew, Rino again demonstrated his skills to think outside the box and implemented a robust and comprehensive diagnostic capability in the on-orbit CTU. From scouring the CTU schematics, to the EEPROM update process and tool changes, to coordinating ground system updates, to executing detailed test scenarios Rino made sure all the pieces were in place to deploy and productively use this new diagnostic capability. Over the years, Rino demonstrated a tremendous skill for effectively updating the Standard Operating Procedures (SOPs) used to interact with and control the *Chandra* observatory. He had the ability to take a complex process, focus in on the essential elements, and produce improved procedure documents and commanding scripts to effectively and safely accomplish required spacecraft commanding and telemetry monitoring activities. This skill was most recently demonstrated in the major reworking of the material used to respond to nominal and off-nominal Safe Mode transitions. From laying out the concepts for improving the approach to both nominal and off-nominal Safe Mode transitions, to the detailed work developing and checking the improved products, to setting up and executing detailed scenarios for training team members using the satellite simulator, he made sure all the bases were covered. As demonstrated in the several Safe Modes encountered since Rino completed this work, the team is in a much better position for dealing with future anomalies as the spacecraft ages. These are just a few examples of how Rino was a highly creative and reliable problem solver, who repeatedly went the extra mile to insure product excellence and mission success.

To many on the team, Rino was truly a trusted friend and colleague. He inspired others by setting a good example of hard work and a willingness to extend himself and per-

sonally take on difficult tasks to meet program objectives. He had strong and positive work relationships with others at various levels of the organization and could communicate technical knowledge in an understandable way. He gave freely of his time and talents, and at times served as a thoughtful work/life mentor for more junior team members. Outside of work, he also frequently made time to support and help others, whether it be for family and co-worker home projects, or looking forward to the marathon of helping to cook more than 140 turkeys at his local fish & game club to help feed families in need at Thanksgiving. He was also adept at keeping the mood light during what could be intense mission moments, with a ready joke or light-hearted anecdote, and with his hearty exuberant laugh regularly echoing down the halls. Many a time, stories of his escapades with his Mach 1 Mustang in his youth, or the latest challenges with his self-designed and built solar water heating system (which, with all the valves, lines, and manifolds, could put an ocean liner's engine room to shame) would lead to laughing so hard the tears would flow.

The *Chandra* program and the FOT have benefited greatly by Rino's dedicated efforts over the years. While he may now be gone from us, his legacy of accomplishments, personal inspiration, and camaraderie will endure.

Prepared by Paul Viens