lants, and Pyrotechnics. Displays generated by the program enable the identification of hazards, showing the relationships of propellant-storage-vessel safety buffers to inhabited facilities and public roads. Current Q-D information is calculated and maintained in graphical form for all vessels that contain propellants or other chemicals, the explosiveness of which is expressed in TNT equivalents [amounts of trinitrotoluene (TNT) having equivalent explosive effects]. The program is useful in the acquisition, siting, construction, and/or modification of storage vessels and other facilities in the development of an improved test-facility safety program.

This program was written by Keith Jester of General Dynamics for **Stennis Space Center***.*

Inquiries concerning rights for the commercial use of this invention should be addressed to the Intellectual Property Manager, Stennis Space Center, (228) 688-1929. Refer to SSC-00209.

∑ Contour Error Map Algorithm

The contour error map (CEM) algorithm and the software that implements the algorithm are means of quantifying correlations between sets of time-varying data that are binarized and registered on spatial grids. The present version of the software is intended for use in evaluating numerical weather forecasts against observational sea-breeze data. In cases in which observational data come from off-grid stations, it is necessary to preprocess the observa-

tional data to transform them into gridded data. First, the wind direction is gridded and binarized so that $D(i,j;n)$ is the input to CEM based on forecast data and $d(i,j;n)$ is the input to CEM based on gridded observational data. Here, i and j are spatial indices representing 1.25-km intervals along the west-to-east and south-to-north directions, respectively; and n is a time index representing 5-minute intervals. A binary value of D or $d = 0$ corresponds to an offshore wind, whereas a value of D or $d = 1$ corresponds to an onshore wind. CEM includes two notable subalgorithms: One identifies and verifies sea-breeze boundaries; the other, which can be invoked optionally, performs an image-erosion function for the purpose of attempting to eliminate river-breeze contributions in the wind fields.

This work was done by Francis Merceret of **Kennedy Space Center***; John Lane and Christopher Immer of Dynacs, Inc.; and Jonathan Case and John Manobianco of ENSCO, Inc. For further information, contact the Kennedy Innovative Partnerships Office at (321) 867-8130.*
KSC-12489

∑ Portfolio Analysis Tool

Portfolio Analysis Tool (PAT) is a Web-based, client/server computer program that helps managers of multiple projects funded by different customers to make decisions regarding investments in those projects. PAT facilitates analysis on a macroscopic level, without distraction by parochial concerns or tactical details of

individual projects, so that managers' decisions can reflect the broad strategy of their organization. PAT is accessible via almost any Web-browser software. Experts in specific projects can contribute to a broad database that managers can use in analyzing the costs and benefits of all projects, but do not have access for modifying criteria for analyzing projects: access for modifying criteria is limited to managers according to levels of administrative privilege. PAT affords flexibility for modifying criteria for particular "focus areas" so as to enable standardization of criteria among similar projects, thereby making it possible to improve assessments without need to rewrite computer code or to rehire experts, and thereby further reducing the cost of maintaining and upgrading computer code. Information in the PAT database and results of PAT analyses can be incorporated into a variety of ready-made or customizable tabular or graphical displays.

This program was written by Tim Barth and Edgar Zapata of **Kennedy Space Center,** *and Perakath Benjamin, Mike Graul, and Doug Jones of KBSI, Inc.*

In accordance with Public Law 96-517, the contractor has elected to retain title to this invention. Inquiries concerning rights for its commercial use should be addressed to:

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Refer to KSC-12510, volume and number of this NASA Tech Briefs *issue, and the page number.*