

OIL & GAS JOURNAL

INTERNATIONAL PETROLEUM NEWS AND TECHNOLOGY



0.3 sec before impact

A top-down view of a red sphere (the impactor) moving from the top left towards the center of a dark blue and green field. A thin red line indicates its trajectory.



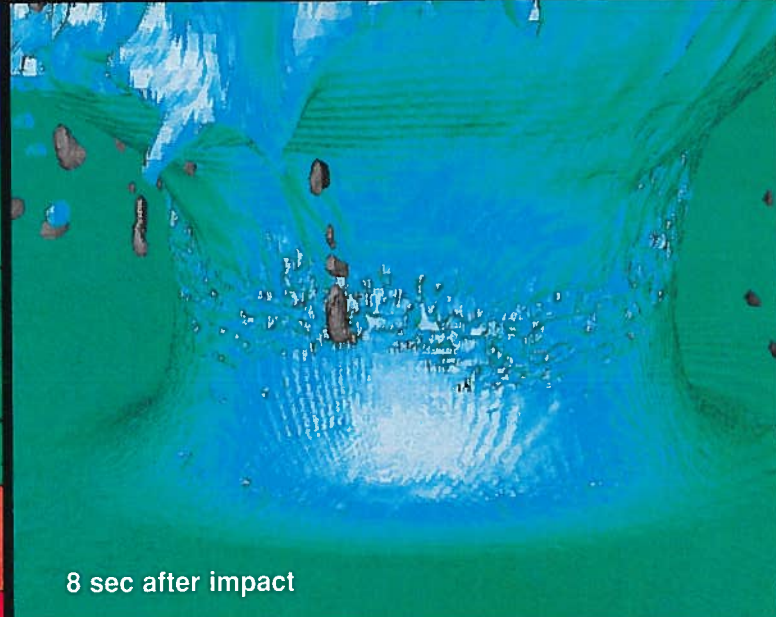
0.1 sec before impact

The red sphere is closer to the center, and a faint, elongated red and orange trail is visible behind it, indicating the beginning of its breakup.



1.3 sec after impact

The impactor has broken apart into several smaller pieces, which are now scattered in a cloud around the impact point. The impact point itself is a bright yellow and orange glow.



8 sec after impact

The impactor has completely disintegrated into a large, dense cloud of small particles and debris, spreading outwards from the impact point. The impact point is now a bright white and yellow glow.

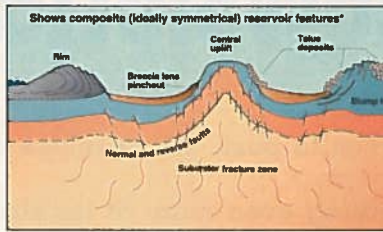
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THE COVER

A space object slams into the Atlantic Ocean in this simulation created by Sandia National Laboratories, Albuquerque. Oil and gas accumulations have been found in association with several impact features. For more information about the cover, see Journally Speaking, p. 23. North American impact-related oil and gas fields are covered in an article that starts on p. 69.

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Houston

1700 West Loop South, Suite 1000, Houston, TX 77027. Mailing address: P.O. Box 1941, Houston, TX 77251. Telephone: (713) 621-9720; Fax: (713) 963-6285. <http://www.ogjonline.com>

Editor

John L. Kennedy, johnk@ogjonline.com

Managing Editor-Technology

Leo R. Aalund, leoa@ogjonline.com

Managing Editor-Economics and Exploration

Bob Tippee, bobt@ogjonline.com

Managing Editor-News

Bob Williams, bobw@ogjonline.com

Associate Managing Editor-Economics

Robert J. Beck, bobb@ogjonline.com

Associate Managing Editor-News

Anne K. Rhodes, anner@ogjonline.com

Exploration Editor

G. Alan Petzet, alanp@ogjonline.com

Production Editor

Guntis Moritis, guntism@ogjonline.com

Pipeline/Gas Processing Editor

Warren R. True, warrent@ogjonline.com

Drilling Editor

Dean E. Gaddy, deang@ogjonline.com

Refining/Petrochemical Editor

Thi Chang, thic@ogjonline.com

Staff Writer

Bill Brocato, billb@ogjonline.com

Survey Editor

Marilyn Radler, marilyn@ogjonline.com

Editorial Assistants

Zamora Jenkins, zamora@ogjonline.com

Rachel Schwartz, rachels@ogjonline.com

Tulsa

1421 S. Sheridan Rd., Tulsa, OK 74112; P.O. Box 1260, Tulsa, OK 74101. Telephone: (918) 835-3161; Fax: (918) 832-9290.

Assistant Technology Editor

Robert G. Lawson, bobla@ogjonline.com

Presentation Editor

Robert G. Lair

Associate Presentation Editor/Equipment Editor

Jim Stilwell

Webmaster

Alison Fowler

Statistics Editor

Laura Bell, laurab@ogjonline.com

OGJ Energy Database Manager

Sandra Meyer, sandram@ogjonline.com

Art Director

Jo Jeanne London

Staff Artists

Kay Wayne, Sandy Berenson

Editorial Assistant

Donna Barnett, donnab@ogjonline.com

Washington

943 National Press Bldg., 20045; Telephone: (202) 662-7040; Fax: (202) 662-7049.

Energy Policies Editor

Patrick Crow, patc@ogjonline.com

London

Regal House, 4th Floor, 70 London Road, Twickenham, Middlesex TW1 3QS, U.K.; Telephone: 44 181 607 9533; Fax: 44 181 744 9449.

Senior Editor

David J. Knott, davidk@ogjonline.com

Subscriber Service

P.O. Box 2002, Tulsa OK 74101, Tel.: 1-800-633-1656; (918) 832-9255. Fax: (918) 832-9295.

E-mail: ogjsub@pennwell.com. In Europe: PennWell European Journal Service, P.O. Box 4456, London, SW12 8AX. Contact: Harry Robinson/Sylvia Squire.

Tel: (44) 181-675-9775; Tel: (44) 181-675-7464; Fax: (44) 181-675-0301; E-mail: HRA@pennwell.com

Circulation Management

Mark D. Rathe, markd@pennwell.com

P.C. Lauinger, 1900-1988

Publisher/Senior Vice President

Tom T. Terrell, tomt@ogjonline.com

Business Manager

Cy J. Azevedo

Corporate headquarters

PennWell Publishing Co.

1421 S. Sheridan Rd., Tulsa, OK 74112

Chairman Frank T. Lauinger

President/Chief Executive Officer Joseph A. Wolking

Vice President/Finance John Maney

Production Director Larry Spiker

Classified Advertising Manager LaVerne Caffey

Member



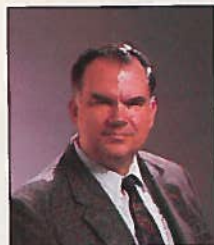
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JOURNALLY SPEAKING

Beware of falling rocks



Are space-faring rocks that could collide with Earth the ultimate oil and gas reservoir-creating phenomena?

That is the question that exploration

author Richard R. Donofrio posed when he suggested that OGJ publish the images on this week's cover.

Public interest relating to meteorite and asteroid impacts generally peaks with relation to press reports of possible future collisions, such as one that made news in March 1998. News organizations reported that an asteroid appeared to be on course for a close Earth encounter in October 2028.

At the risk of sounding mundane and aloof, we must point out that some oil and gas people are focused on impact craters created in Earth's past because a number of them produce commercial quantities of oil and gas.

About the cover

OGJ's cover shows snapshots of a simulation that involves a hypothetical 1-km diameter space object, weighing about 1 billion tons and traveling 60 km/sec, encountering the atmosphere at a 45° angle (top left) and plunging into an ocean.

Scientist David Crawford describes the sequence that follows.

The object produces a strong luminous bow shock in the atmosphere (top right) as it deforms and prepares to hit the water. The great energy of the impact (300 gigatons of TNT equivalent) deforms the ocean floor,

vaporizes the object and large quantities of ocean water (bottom left), and ejects them onto suborbital ballistic trajectories that reenter worldwide (bottom right).

Sandia National Laboratories, Albuquerque, Crawford's employer, created the sequence for use in global climate simulations, but it could be used to model the effects humans and animals face from such impacts.

Back to oil and gas

OGJ author Donofrio is an Oklahoma City consulting geologist, now also connected with the University of Oklahoma, who has been studying oil and gas in impact craters for more than 20 years.

His article, reprinted from an OU 1995 symposium proceedings just published, points out that 17 confirmed impact structures occur in North American basins. Nine in the U.S., Canada, and Mexico are being exploited for commercial oil and/or gas. All producing astrobleme discoveries to date have been by accident, Donofrio notes.

Space debris hurtling at the Earth is of great concern to humans, considering the hypothesis that such an impact during the Cretaceous period caused the extinction of much life here. But at least finding oil and gas in or near some of these craters will help us run our cars and heat our homes until the next such calamity occurs.

Alan Petzet
Exploration Editor

Respond to the writer in OGJ Online's JOURNALLY Speaking Forum at <http://www.ogjonline.com>