

**SUSPECTED EARTH IMPACT SITES.** D. Rajmon, Shell Int'l. E&P, P.O. Box 481, Houston, TX 77001-0481, USA; drajmon@yahoo.com.

**Introduction:** Growing number of identified impact structures led to a need for maintaining reliable database with basic parameters for each structure and Earth Impact Database [1] eventually established itself as the most commonly cited reference work. Similar reliable database for even greater number of proposed but not confirmed structures has not been available until recently. Basic information on these structures has been scattered among individual papers and a number of published or privately held partial databases. The most extensive public database has been maintained on-line by Jarmo Moilanen [2]. It provides references and valuable additional information for some of the structures, but for most of the structures, references are not available, which prevents an assessment of the quality and vintage of the data. For example, several structures repeat under different names, all latitude and longitude coordinates were listed with a precision to the nearest minute although many coordinates were clearly converted from data with an order of magnitude lower precision. A number of researchers felt that a new rigorous database was needed.

**Suspected Earth Impact Sites (SEIS):** The development of this database started in October 2004 for a brief reconnaissance project at Shell and was released for public development in June 2005. It started off combining information from four databases by Whitehead [1 – Earth Impact Database], Sharpton [3 – GISP], Fortes [4] and Moilanen [2] plus information that I compiled from literature. The Earth Impact Database and GISP were considered authorities for identification of confirmed impact structures. Fortes' database provided some useful references. Moilanen's extensive list of proposed impact structures together with those that I independently compiled from literature formed the basis of the new database. SEIS is thus complementary to the Earth Impact Database.

The aim for this database is to:

- Provide ever-evolving list helping to steer research on suspected impact structures.
- Provide basic data for each structure presented with a meaningful precision.
- Provide brief and specific information about data sources and quality, incl. literature references, methods used to measure the data, clarification of conflicting information from various literature sources etc.

- Sort out non-impact structures by consciously rejecting them instead of just forgetting them and allowing unreasonable proposals to keep coming back.

SEIS consists of 1) an introductory document with details on database parameters, history and current status; 2) list of references; and 3) an Excel spreadsheet with the data.

The structures are classified in four groups, inspired by the guidelines outlined by [5] for confirmed, probable and possible impact structures.

1. *Confirmed* – impact site with documented shock features and/or meteoritic material and/or observed fall but not included in the Earth Impact Database (EID) because the structure does not pass the EID size restriction or lacks a typical structure due to the nature of the particular impact event (airblast, deep water...).

2. *Probable* – structural, geological and geophysical studies established reasonable evidence, possibly with unconfirmed reports of shock features in abstracts, but the definite shock features and/or meteoritic material is not well documented yet. Includes Moilanen's "probable" structures and also some of the Moilanen's "nearly proven structures" if the evidence has not been reviewed yet. More than 50% of these structures are expected to be of impact origin.

3. *Possible* – some structural, geological and/or geophysical evidence exists but the impact origin is still highly uncertain for the lack of data. This includes also somewhat obscure proposals until someone makes an effort to disqualify their impact origin. Less than 50% of these structures are expected to be of impact origin.

4. *Rejected* – non-impact origin has been well documented

**Current status and further development:** SEIS currently contains 6 confirmed, 114 probable, 389 possible, and 49 rejected structures. Relatively few structures bear detailed notes. Most structures barely show a reference mentioning that structure. The structures printed in CAPITALS have been merely grabbed from Moilanen's database and the information has not been reviewed yet; all the notes for these structures come from Moilanen's database unless mentioned otherwise.

The database is being gradually refined. A number of published compilations, abstract volumes and special publications have been surveyed and new

structures added to the database, more information and references have been added, a number of the structures have been reclassified, several duplicated structures have been found and removed etc.

**A call for contribution:** Anyone working on a suspected impact structure is invited to share his/her work and help the database grow. For details, please visit the database at the Impact Fields Studies Group homepage at <http://web.eps.utk.edu/ifsg.htm> or contact the author.

**References:** [1] Earth Impact Database (2004). <http://www.unb.ca/passc/ImpactDatabase/CINameSort.html> [2] Moilanen J. (2004). <http://www.somerikko.net/old/geo/imp/possible.htm> [3] GISP (2004). <http://www.gi.alaska.edu/remsense/gisp/index.html> [4] Fortes A. D. (2000). <http://www.es.ucl.ac.uk/research/planet/crater.htm>

[5] Koeberl C. and Anderson R. R. (1996) in C. Koeberl and R. R. Anderson, eds., *GSA Special Paper; 302*; 1-30.

