The Rhenium-Osmium Dating Method
Versus The Osmium 188/187 Method
By Paul Nethercott
May 2014

How reliable is radiometric dating? We are repeatedly told that it proves the Earth to be billions of years old. If radiometric dating is reliable than it should not contradict the evolutionary model. According to the Big Bang theory the age of the Universe is 10 to 15 billion years.[1] Standard evolutionist publications give the age of the universe as 13.75 Billion years. [2, 3]

Standard evolutionist geology views the Earth as being 4.5 billion years old. Here are some quotes from popular text: "The age of the Earth is 4.54 ± 0.05 <u>billion</u> years." [4] "The Solar System, formed between 4.53 and 4.58 billion years ago." [1] "The age of 4.54 billion years found for the Solar System and Earth." [1] "A valid age for the Earth of 4.55 billion years." [5, 6]

If we run the isotopic ratios give in standard geology magazines through the computer program Isoplot [7] we find that the Uranium/Thorium/Lead isotopic ratios in the rocks disagree radically with the Rhenium-Osmium ages. The U/Th/Pb ratios give ages older than the evolutionist age of the Earth, Solar System, Galaxy and Universe. How can Earth rocks be dated as being older than the Big Bang?

If we use isotopic formulas given in standard geology text we can arrive at ages from the Osmium 188/187 and 187/186 ratios. Here are examples of isotopic ratios taken from several articles in major geology magazines which give absolutely absurd dates. The article contains tables with Osmium 187/186 ratios that have no dates beside them. If we put the tables into Microsoft Excel and use the formula below used in standard geology text books [8-11] we can calculate dates from the undated isotopic ratios.

(1)

$$t = \frac{1.04 - (^{187}Os/^{186}Os)}{0.050768}$$

In the above formula, t = billions of years. The same date can be calculated from the Osmium 187/188 ratios. If we use another formula [12] we can convert the Osmium 187/188 ratio to the Osmium 187/186 ratio.

(2)

$$\frac{^{187}Os}{^{186}Os} \times 0.12035 = \frac{^{187}Os}{^{188}Os}$$

(3)

$$\frac{^{187}Os}{^{186}Os} = \frac{(^{187}Os \div ^{188}Os)}{0.12035}$$

(4)

$$t = \frac{1.04 - \left(\frac{(^{187}Os \div ^{188}Os)}{0.12035}\right)}{0.050768}$$

Isotopic Compositions Of Mantle Xenoliths

These rocks from North and Central America, Europe, southern Africa, Asia, and the Pacific region were dated in 1999 by scientist from the Department of Geology, University of Maryland using the Rhenium/Osmium dating methods. [13] According to the article the true age is based on Rhenium depletion model is between 1,550 and 1,750 million years old.

[14] The article contains a table with Osmium 187/188 ratios that have no dates beside them. [15] If we put the tables into Microsoft Excel and use the formula below used in standard geology text books we can calculate dates from the undated isotopic ratios.

Table 1	SW USA	Mexico	Europe	Asia
Average	-90	-105	41	24
Maximum	1,336	431	1,168	1,130
Minimum	-754	-1,127	-1,386	-513
Difference	2,090	1,558	2,553	1,643
Model Age	1,550	1,750	1,620	1,580

The Origin Of Gold And Sulfides

These rocks from the Witwatersrand basin in South Africa were dated in 2000 by scientist from the University of Arizona and the CSIRO using the Rhenium/Osmium dating methods. [16] According to the article the true age is based on Rhenium depletion model is 3,300 million years old. "Rhenium depletion ages (TRD) range from 3.5 Ga to 2.9 Ga, with a median age of 3.3 Ga." [17] The article contains a table with Osmium 187/188 ratios that have no dates beside them. [18] If we put the tables into Microsoft Excel and use the formula below used in standard geology text books we can calculate dates from the undated isotopic ratios. There is a 12,766 million year discrepancy between the supposed true age [3,300 million years ago] and the Osmium isotope ratio age [9,466 million years future]. Column one has the Osmium isotope ratio age. Column two gives the percentage discordance between the model age [3,300] and column one. Column three gives the difference [million years] between the model age [3,300] and column one.

Table 2	Age (Ma)	% Discordance	Difference (Ma)
Average	-8,450	356	11,750
Maximum	-7,600	387	12,766
Minimum	-9,466	330	10,900
Difference	1,866	57	1,866

Diagram 1

-9,466	0	3,300
The Future		**The Past**

**12,766 Million Years Discrepancy**
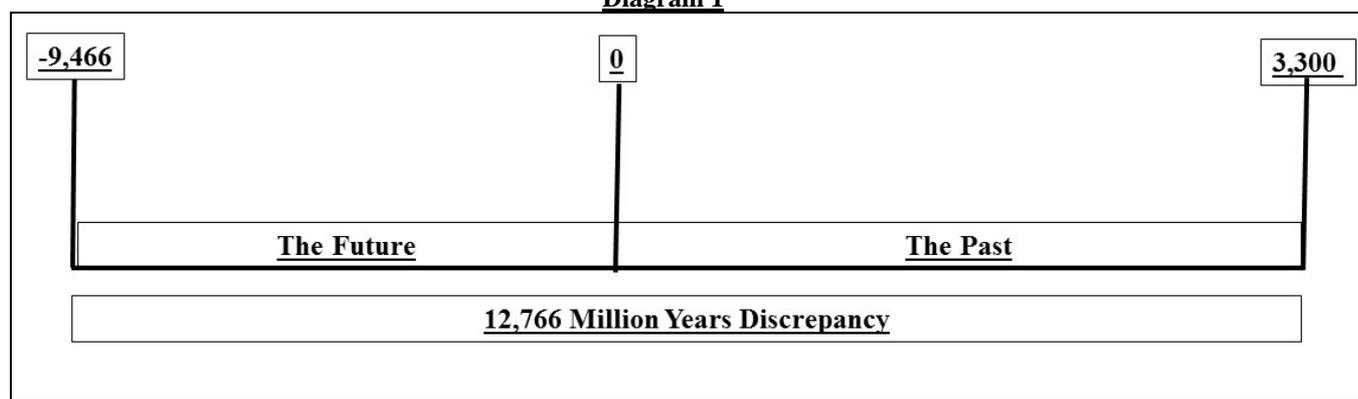
Rhenium–Osmium Systematics

These meteorites were dated in 2000 by scientist from the Department of Geology, University of Maryland using the Rhenium/Osmium dating methods. [19] According to the article the true age is based on Rhenium depletion model and 206Pb-207Pb method is 4,558 million years old. "An age of 4,558 Ma is assumed for the IIIA iron meteorites based on 53Mn-53Cr similarities between angrite meteorites and IIIA irons." [20] "The inferred IIIA age is only slightly younger than the oldest solar system objects known, Ca-Al-rich inclusions (CAIs) from the Allende meteorite, dated at 4,566 Ma, using the 206Pb-207Pb method." [20] The article contains a table with Osmium 187/188 ratios that have no dates beside

them. [21] If we put the tables into Microsoft Excel and use the formula below used in standard geology text books we can calculate dates from the undated isotopic ratios. There is a 6,610 million year discrepancy between the supposed true age [4,558 million years ago] and the Osmium isotope ratio age [2,052 million years future]. The article claims that the Rhenium/Osmium dating method is 99.8% accurate: "The 187Re-187Os decay system potentially provides a unique chronometer to obtain absolute age constraints on processes that affected highly siderophile elements (HSE) during early solar system processing. Precise Re-Os ages (0.2– 0.6%, error) obtained on various groups of iron meteorites likely reflect system closure subsequent to metal crystallization in asteroidal cores." [20]

Table 3	Age (Ma)	% Discordance	Difference (Ma)
Average	-393	21,186	4,951
Maximum	624	696,126	6,610
Minimum	-2,052	322	3,934
Difference	2,676	695,804	2,676

Diagram 2

| -2,052 | 0 | 624 | 4,558 |

| The Future | The Past |

6,610 Million Years Discrepancy
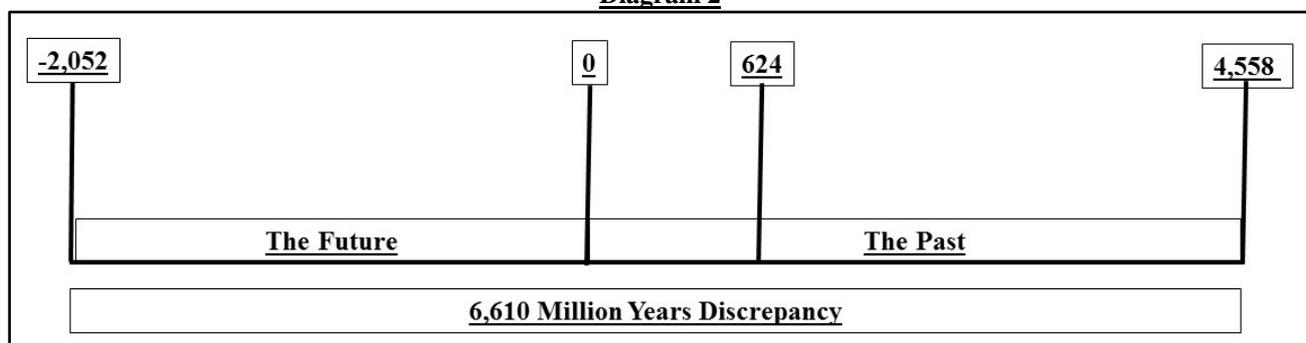
190Pt–186Os and 187Re–187Os Systematics

These sulphide ores from the Sudbury Igneous Complex, Ontario were dated in 2000 by scientist from the Colorado State University using the Rhenium/Osmium dating methods. [22] According to the article the true age is 1,850 million years old. "At McCreedy West and Falconbridge, the isochron Re–Os ages are 1835 Ma and 1827 Ma, and the initial 187Os/188Os ratios 0.514 and 0.550, respectively. The ages agree with the canonical value of 1850 Ma for the Sudbury Igneous Complex (SIC). For Hangingwall and Deep Zone ores at Strathcona, the age of 1780 Ma may reflect resetting by dyke activity." [22] The article contains a table with Osmium 188/187 ratios that have no dates beside them. [23] If we put the tables into Microsoft Excel and use the formula in standard geology text books we can calculate dates from the undated isotopic ratios. There is a 2.2 trillion year discrepancy between the supposed true age [1,850 million years ago] and the Osmium isotope ratio age [2,257 million years future]. The article claims that the 1850 Ma date method is at most one million years in error [21] [99.95% accurate] but the error level obtained from the undated ratios gives an error level of 122,007,880% ! This means that their calculation of the maximum error level is 1,220,689 times too small.

Table 4	Age (Ma)	% Discordance	Difference (Ma)
Average	-632,140	34,270	633,990
Maximum	-128,289	129,042	2,387,285
Minimum	-2,385,435	7,035	130,139
Difference	-2,257,146	122,008	2,257,146

Behaviour of Re and Os

These soil samples from the Himalayas were dated in 2001 by scientist from the Centre for Geochemical Research in Notre-Dame, France using the Rhenium/Osmium dating methods. [24] According to the article the true age is based on the Rhenium/Osmium method is 840 million years old. [25] The author admits that many dates are impossible and the true age is just a guess:

"This apparent Re loss is confirmed by the impossibly high Re/Os model ages of nearly all of the soils, most of which exceed the age of the earth." [25]

"The median model age of the soils (10 Ga) is much higher than those of typical HHC and LH rocks, indicating that the soils have in general suffered much more extensive recent Re loss." [25]

"These soils display very radiogenic Os isotopic ratios that cannot be explained by their 187Re/188Os ratios, which imply impossible model ages (11–13.5 Ga for MO 601; 16–23 Ga for MO 602, and 6.1 Ga for saprolite MO 600). [25]

The article contains a table with Osmium 188/187 ratios that have no dates beside them. [26] If we put the tables into Microsoft Excel and use the formula below used in standard geology text books we can calculate dates from the undated isotopic ratios. There is a 1.86 trillion year discrepancy between the oldest model age [331,800 million years ago] and the Osmium isotope ratio age [1,528,332 million years future].

Table 5	Age (Ma)	% Discordance	Difference (Ma)
Average	-760,654	11,810	768,700
Maximum	-154,967	35,287	1,696,333
Minimum	-1,683,299	1,664	156,367
Difference	-1,528,332	33,623	1,539,967

Table 6			
Model Age (Ma)	Model Age (Ma)	Model Age (Ma)	Model Age (Ma)
331,800	19,800	17,600	12,900
68,200	19,500	15,600	11,500
22,200	19,100	13,400	10,600

187Os Isotopic Constraints

These Lava flows from Belingwe, Zimbabwe were dated in 2001 by scientist from the University of Maryland and the University of London using the Rhenium/Osmium dating methods. [28] According to the article the true age is based on the Lead 207/206 and Neodymium/Samarium dating methods is 2,720 million years old. "Regression of the data for the mineral concentrates yields an age of 2.721 +- 21 Ga, which is consistent with Pb-Pb and Sm-Nd ages that have been previously reported for the komatiites, and an initial 187Os/188Os ratio of 0.11140" [28] The article contains a table with Osmium 188/187 ratios that have no dates beside them. [29] If we put the tables into Microsoft Excel and use the formula in standard geology text books we can calculate dates from the undated isotopic ratios. There is a 456,586 million year discrepancy between the supposed true age [2,720 million years ago] and the Osmium isotope ratio age [-456,934 million years future]. The article claims that the 2,721 Ma date is only has an error margin of 21 million years [99.559% accurate]. [28] Since there is a 456,586 million year discrepancy between dates the error margin is 21,742 times too small.

Table 7	Age (Ma)	% Discordance	Difference (Ma)
Average	-62,776	2,425	65,476
Maximum	2,372	17,023	459,634
Minimum	-456,934	12	328
Difference	459,306	17,011	459,306

Comparative 187Re-187Os Systematics Of Chondrites

These meteorites were dated in 2002 by scientist from the University of California using the 187Re/187Os dating methods. [30] According to the article the true age is based on 187Re/187Os method is 4,500 million years old. "Chondrites are among the most primitive of solar system materials. Assuming derivation from a reservoir with a uniform initial 187Os/188Os ratio, it would be expected that bulk chondrites should plot very close to the Re-Os isochron defined by the IIIAB irons, which are assumed to have crystallized within 10 to 20 Ma of the inception of the solar system." [31] The

article contains a table [32] with Osmium 188/187 ratios that have no dates beside them. If we put the tables into Microsoft Excel and use the formula in standard geology text books we can calculate dates from the undated isotopic ratios. There is a 46,318 million year discrepancy between the supposed true age [4,500 million years ago] and the Osmium isotope ratio age [50,818 million years future].

Table 8	Age (Ma)	% Discordance	Difference (Ma)
Average	-1,422	3,207	5,980
Maximum	878	81,909	55,376
Minimum	-50,818	109	3,680
Difference	51,696	81,800	51,696

Pt-Re-Os Systematics

These Iron meteorites were dated in 2003 by scientist from the University of California using the Rhenium/Osmium dating methods. [33] According to the article the true age is based on Re/Os method is 0000 million years old. "The Re-Os isochron ages for the complete suites of IIAB and IIIAB irons are 4,530 +/- 50 Ma and 4,517 +/- 32 Ma, respectively, and are similar to previously reported Re-Os ages for the lower-Ni end members of these two groups. Both isochrons are consistent with, but do not require crystallization of the entire groups within 10-30 Ma of the initiation of crystallization." [33] The article contains a table with Osmium 188/187 ratios that have no dates beside them. [34] If we put the tables into Microsoft Excel and use the formula in standard geology text books we can calculate dates from the undated isotopic ratios. There is a 14,763 million year discrepancy between the supposed true age [4,530 million years ago] and the Osmium isotope ratio age [-10,233 million years future]. The article claims that the Rhenium/Osmium dating method is accurate within 50 million years [98.9 %]. [33]

Table 9	Age (Ma)	% Discordance	Difference (Ma)
Average	-3,219	3,485	7,777
Maximum	296	132,615	14,791
Minimum	-10,233	145	4,262
Difference	10,529	132,470	10,529

Re-Os, and Mo Isotope Systematics

These black shales from the Barberton Greenstone Belt, South Africa were dated in 2004 by scientist from the University Of Berne, Switzerland using the Rhenium/Osmium dating methods. [35] According to the article the true age is based on Rhenium/Osmium method is 3,250 million years old. "Re-Os data and PGE concentrations as well as Mo concentrations and isotope data are reported for suites of fine clastic sediments and black shales from the Barberton Greenstone Belt, South Africa (Fig Tree and Moodies Groups, 3.25–3.15 Ga), the Belingwe Greenstone Belt, Zimbabwe (Manjeri Formation, ca. 2.7 Ga) and shales from the Witwatersrand, Ventersdorp and Transvaal Supergroups, South Africa ranging from 2.95 to 2.2 Ga." [35] The article contains a table with Osmium 188/187 ratios that have no dates beside them. [36] If we put the tables into Microsoft Excel and use the formula in standard geology text books we can calculate dates from the undated isotopic ratios. There is a 2,413,235 million year [2.4 trillion year] discrepancy between the supposed true age [3,250 million years ago] and the Osmium isotope ratio age [2,409,985 million years future].

Table 10	Age (Ma)	% Discordance	Difference (Ma)
Average	-236,564	8,674	239,572
Maximum	-23,132	89,359	2,412,685
Minimum	-2,409,985	812	26,382
Difference	2,386,853	88,547	2,386,303

Evolution of the South China block

These mineral samples from Taiwan were dated in 2008 by scientist from the Macquarie University, Sydney using the Rhenium/Osmium dating methods. [37] According to the article the true age is based on several dating methods is 1,000

million years old. "Such sulphides yield *T*RD age peaks of 1.9, 1.7–1.6, 1.4–1.3 and 0.9–0.8 Ga, which may record the timing of melt extraction and/or metasomatic events in the mantle. These periods are contemporaneous with the major crustal events recorded by U–Pb dates and Nd and Hf model ages in the overlying crust." [37] The article contains two tables with Osmium 188/187 ratios that have no 188/187 dates beside them. [38] If we put the tables into Microsoft Excel and use the formula in standard geology text books we can calculate dates [Table 11] from the undated isotopic ratios. There is a 54,000 million year discrepancy between the supposed true age [1,000 million years ago] and the Osmium isotope ratio age [53,129 million years future]. The second table contains Rhenium depletion ages. These dates are summarized in table 12. There is a 116 billion year difference between the youngest [-90 billion] and the oldest [25.9 billion] dates. The author's choice of true age is just a random guess.

Table 11	Series A	Series B
Average	5,317	731
Maximum	20,476	3,120
Minimum	-53,129	-3,754
Difference	73,605	6,874

Table 12	Million Years	Million Years	Million Years	Million Years
Average	1,023	395	957	-249
Maximum	3,100	25,900	3,100	10,700
Minimum	-2,900	-59,500	-3,200	-90,000
Difference	6,000	85,400	6,300	100,700

Conclusion

Evolutionists Schmitz and Bowring claim that Uranium/Lead dating is 99% accurate. [39] Looking at some of the dating it is obvious that precision is much lacking. The Bible believer who accepts the creation account literally has no problem with such unreliable dating methods. Much of the data used in this dating method is selectively taken to suit and ignores data to the contrary.

Yuri Amelin states in the journal Elements that radiometric dating is extremely accurate: "However, four 238U/235U-corrected CAI dates reported recently (Amelin et al. 2010; Connelly et al. 2012) show excellent agreement, with a total range for the ages of only 0.2 million years – from 4567.18 ± 0.50 Ma to 4567.38 ± 0.31 Ma." [40-42] To come within 0.2 million years out of 4,567.18 million years means an accuracy of 99.99562%. Looking at some of the dating it is obvious that precision is much lacking. The Bible believer who accepts the creation account literally has no problem with such unreliable dating methods. Much of the data in radiometric dating is selectively taken to suit and ignores data to the contrary.

Prominent evolutionist Brent Dalrymple states: "Several events in the formation of the Solar System can be dated with considerable precision." [43] Looking at some of the dating it is obvious that precision is much lacking. He then goes on: "Biblical chronologies are historically important, but their credibility began to erode in the eighteenth and nineteenth centuries when it became apparent to some that it would be more profitable to seek a realistic age for the Earth through observation of nature than through a literal interpretation of parables." [44] The Bible believer who accepts the creation account literally has no problem with such unreliable dating methods. Much of the data in Dalrymple's book is selectively taken to suit and ignores data to the contrary.

References

1   **http://web.archive.org/web/20051223072700/http://pubs.usgs.gov/gip/geotime/age.html**
      The age of 10 to 15 billion years for the age of the Universe.

2   **http://en.wikipedia.org/wiki/Age_of_the_universe**

3   **http://arxiv.org/pdf/1001.4744v1.pdf**

Microwave Anisotropy Probe Observations, Page 39, By N. Jarosik

4   http://en.wikipedia.org/wiki/Age_of_the_Earth

5   http://sp.lyellcollection.org/content/190/1/205
        The age of the Earth, G. Brent Dalrymple
        Geological Society, London, Special Publications, January 1, 2001, Volume 190, Pages 205-221

6   The age of the earth, Gérard Manhes
        Earth and Planetary Science Letters, Volume 47, Issue 3, May 1980, Pages 370–382

7   http://www.bgc.org/isoplot_etc/isoplot.html

8   Principles of Isotope Geology, Second Edition, By Gunter Faure,
        Published By John Wiley And Sons, New York, 1986. Pages 269.

9   Isotopes in the Earth Sciences, By H.G. Attendorn, R. Bowen
        Chapman And Hall Publishers, London, 1994. Page 289
        http://books.google.com.au/books?id=k90iAnFereYC&printsec=frontcover

10   Introduction to Geochemistry: Principles and Applications, Page 241
        By Kula C. Misra, Wiley-Blackwell Publishers, 2012
        http://books.google.com.au/books?id=ukOpssF7zrIC&printsec=frontcover

11   Radioactive and Stable Isotope Geology, Issue 3
        By H. G. Attendorn, Robert Bowen, Page 298
        Chapman and Hall Publishers, London, 1997
        http://books.google.com.au/books?id=-bzb_XU7OdAC&printsec=frontcover

12   http://www.geo.cornell.edu/geology/classes/Geo656/656notes03/656%2003Lecture11.pdf

13   Geochimica et Cosmochimica Acta, Volume 65, Number 8, Pages 1311–1323, 2001
        Isotopic compositions of mantle xenoliths

14   Reference 13, page 1318

15   Reference 13, page 1312

16   Geochimica et Cosmochimica Acta, Volume 65, Number 13, Pages 2149–2159, 2001
        The origin of gold and sulfides

17   Reference 16, page 2149

18   Reference 16, page 2153

19   Geochimica et Cosmochimica Acta, Volume 65, Number 19, Pages 3379–3390, 2001
        Rhenium–osmium systematics

20   Reference 19, page 3379

21   Reference 19, page 3382

22   Geochimica et Cosmochimica Acta, Volume 66, Number 2, Pages 273–290, 2002
        190Pt–186Os and 187Re–187Os systematics

23   Reference 22, page 278, 279

24   Geochimica et Cosmochimica Acta, 2002, Volume 66, Number 9, Pages 1539,
        Behavior of Re and Os

25 **Reference 24, page 1545**

26 **Reference 24, page 1542**

27 **Reference 24, page 1542, 1545**

28 **Geochimica et Cosmochimica Acta, 2002, Volume 66, Number 18, Pages 3317,
187Os isotopic constraints**

29 **Reference 28, page 3318**

30 **Geochimica et Cosmochimica Acta, 2002, Volume 66, Number 23, Pages 4187,
Comparative 187Re-187Os systematics of chondrites**

31 **Reference 30, page 4192**

32 **Reference 30, page 4190, 4191**

33 **Geochimica et Cosmochimica Acta, 2004, Volume 68, Number 6, Pages 1413,
Pt-Re-Os systematics**

34 **Reference 33, page 1416**

35 **Geochimica et Cosmochimica Acta, 2005, Volume 69, Number 7, Pages 1787,
Re-Os, and Mo isotope systematics**

36 **Reference 35, page 1792**

37 **Geochimica et Cosmochimica Acta, 2009, Volume 73, Pages 4531,
Evolution of the South China block**

38 **Reference 37, page 4537-4539**

39 **Schmitz MD, Bowring SA. An assessment of high-precision U-Pb geochronology.
Geochimica et Cosmochimica Acta, 2001, Volume 65, Pages 2571-2587**

40 **Dating the Oldest Rocks in the Solar System, Elements, 2013, Volume 9, Pages 39-44**

41 **Amelin, Earth and Planetary Science Letters, 2010, Volume 300, Pages 343-350**

42 **Connelly, Science, 2012, Volume 338, Pages 651-655**

43 **The Age Of The Earth, By G. Brent Dalrymple, 1991, Stanford University Press,
Stanford, California, Page 10.**

44 **Reference 80, Page 23**

www.creation.com