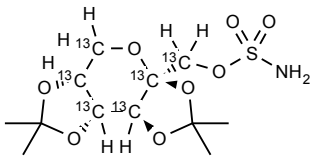
BDG SYNTHESIS

Certificate of Analysis

BDG Synthesis certifies that this reference material meets or exceeds the specifications stated herein.

Barry Dent

Barry R. Dent, PhD, Director
26 February 2012

Name:	**Topiramate-$^{13}C_6$**
CAS Number:	97240-79-4 (unlabelled)
Structure:	
Molecular Weight:	$C_6{}^{13}C_6H_{21}NO_8S$ = 345.32
Lot Number:	BDG 9147.4
Appearance:	White, crystalline solid
Corrected Purity:	99.4 % (HPLC) - 0.3 % (ethyl acetate) - 0.5 % (hexanes) = 98.6 %
Isotopic Purity:	Under 0.5% M-6
Re-test Date:	26 February 2017
Storage and Handling:	Temperature: refrigerate for prolonged storage; may be handled and shipped at ambient temperature.
	Humidity: not believed to be hygroscopic; may be handled in normal laboratory atmosphere.
	Light: protect from strong sunlight.
	Caution: only experienced laboratory personnel should handle the material.

Mailing:
BDG Synthesis Limited
PO Box 38627, Wellington Mail Centre,
Wellington 5045, New Zealand.

Shipping:
BDG Synthesis Limited
Gracefield Research Centre, Building F,
69 Gracefield Rd, Lower Hutt 5010, New Zealand.

Phone: + 64 4 569 0520
Fax: + 64 4 569 0521

info@bdg.co.nz
www.bdg.co.nz

Identity and Purity

Proton NMR Spectrum

Identity: the signals are consistent with the proposed structure and in accord with literature where available.
Isotopic Labelling: the spectrum is of little value in determining isotopic purity.
Residual Solvents: small amounts of ethyl acetate (0.3 % *w/w*) and hexanes (0.5 % *w/w*) are observed.
Impurities: no significant impurities are evident in the spectrum.

Carbon-13 NMR Spectrum

Identity: the signals are consistent with the proposed structure and in accord with literature where available.
Isotopic Labelling: the spectrum is of little value in determining isotopic purity, although the signals at the labelling sites are massively enhanced as expected.

High-resolution Mass Spectrum (ESI+)

Found *m/z* 368.1083. $C_6{}^{13}C_6H_{21}NO_8SNa$ $[M+Na]^+$ requires *m/z* 368.1087. The deviation of 1.1 ppm is within normally accepted limits for the establishment of identity by HRMS. A small signal for M-6 was seen (detection limit about 0.5 %) but the pattern of signals suggests this to be an artifact.

HPLC

A somewhat broadened, symmetrical peak is observed (99.4 %). Note: in the absence of reference materials for preparing calibration curves, it is assumed that all peaks have the same detector response. Where possible, the conditions of analysis follow a pharmacopeial or literature method, or have been adapted from same.

Elemental Analysis

	Found:	C 43.74, H 6.27, N 3.97 %
$C_6{}^{13}C_6H_{21}NO_8S$	Requires:	C 43.46, H 6.13, N 4.06 %

The elemental analyses fall within generally accepted limits for establishing the molecular formula given. The results may also be taken to imply the absence of significant quantities of water or inorganic salts (which have not been elsewhere tested for because of sample size limitations).

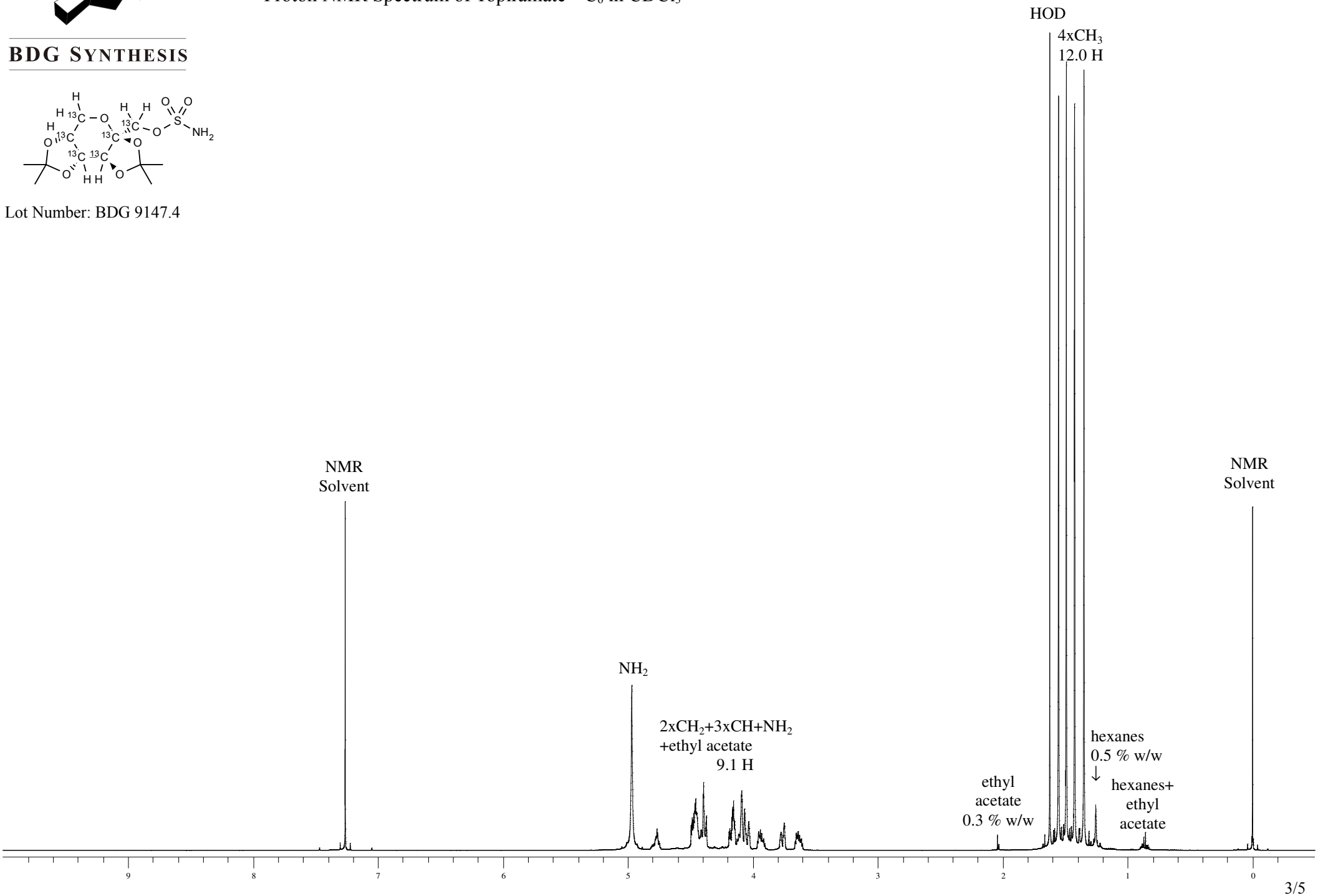
The available quantity of custom-synthesised material is always small, and this limits the extent and type of analytical data which can be obtained. This Certificate is presented in descriptive format for use by analytical chemists who are trained in the use of custom-synthesised materials. Custom materials often contain higher levels of residual solvents and/or water, and we urge you to use the corrected purity where needed rather than the raw HPLC purity. This compound is intended for use as an analytical reference material and it is not for human administration. Structures are shown with relative stereochemistry unless otherwise specified.

The re-test date is assigned from experience gained with the material in the laboratory and/or on storage. It is not possible to perform formal storage studies because of the small amount of material available.

BDG SYNTHESIS

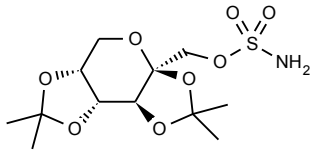
Proton NMR Spectrum of Topiramate-$^{13}C_6$ in $CDCl_3$

Lot Number: BDG 9147.4

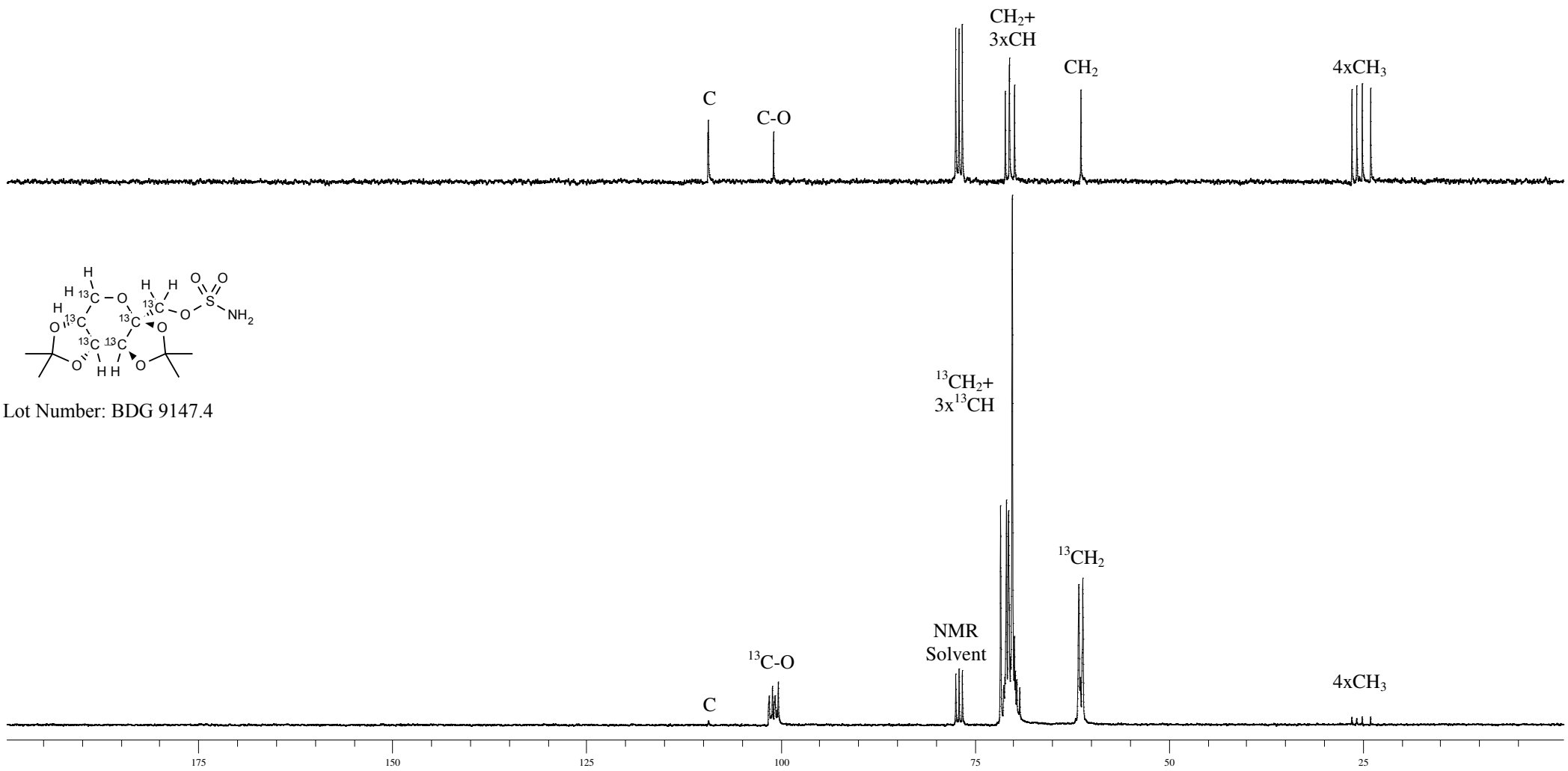


BDG SYNTHESIS

Carbon-13 NMR Spectrum of Topiramate (top) and Topiramate-$^{13}C_6$ (bottom) in $CDCl_3$



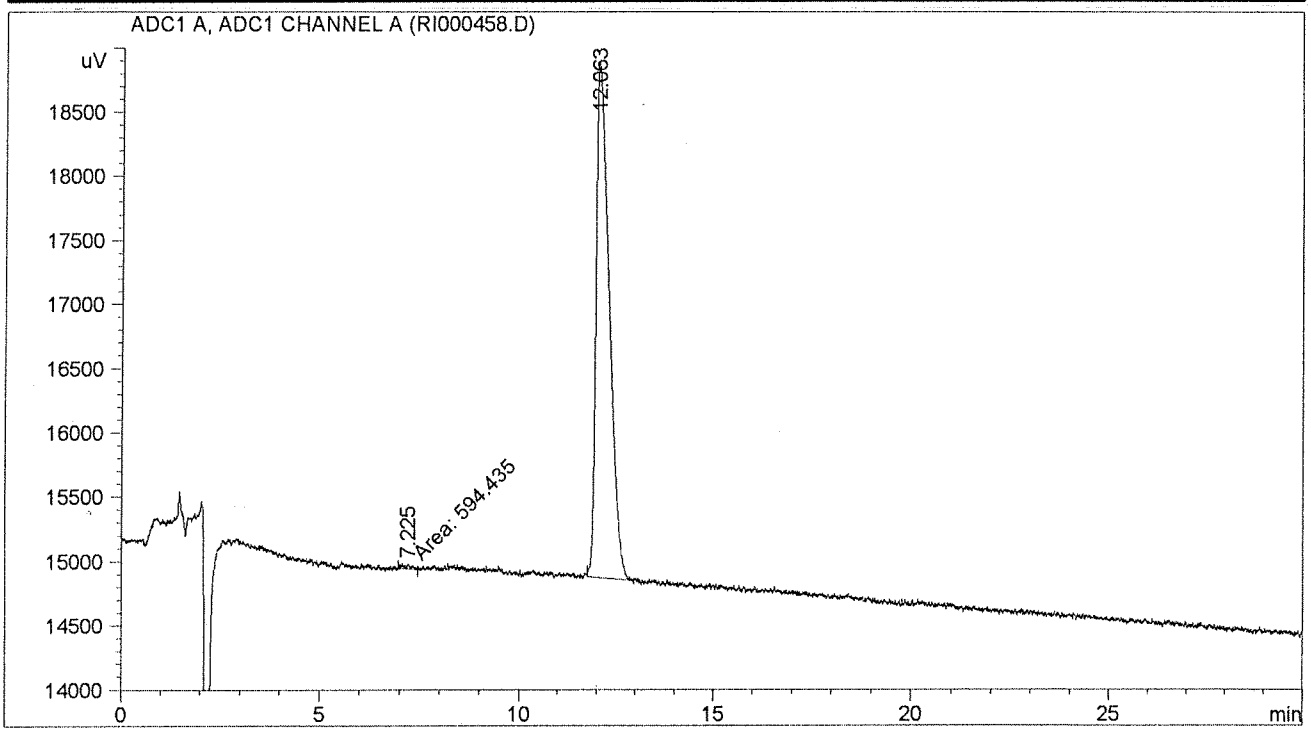
Lot Number: BDG 9147.4



BDG - Analysis of Topiramate-13C6

Column : Phenomenex Luna C18(2) 5um 250 x 4.6 mm
Guard : Phenomenex Security Guard C8 RP 4 x 3 mm
Mobile Phase : 73:27 10mM Potassium Dihydrogen Phosphate pH=2.3 : Acetonitrile
Flow Rate : 1.5 mL/min
Sample Solvent : Mobile Phase
Column Temperature : 35C
Injection Volume : 25 uL
Detection : RI

Sample Name	BDG 9147.4	Instrument	AnalyticalLC01
Acquisition	26/02/2012, 13:19:33	Method (rev.)	LC10069b (6)
Sequence	BDG_26Feb2012a - Reprocessed	Vial Position	1
Operator	solvation010\cerityadmin	Injection	1 of 1




```
================================================================================
                          Area Percent Report
================================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000


Signal 1: ADC1 A, ADC1 CHANNEL A

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [uV*s]      [uV]        %
----|-------|----|-------|----------|----------|--------|
   1   7.225 MM    0.2708  594.43524   36.58792  0.62843
   2  12.063 BB    0.3648 9.39967e4  4020.28027 99.37157

Totals :                  9.45912e4  4056.86819

 Results obtained with enhanced integrator!
================================================================================
                          *** End of Report ***
```