

# CALCULATED FIELD DISTRIBUTIONS FOR THE 32-MM-BORE 35T MAGNET

VRS# 32-20-R-4C-6.06

z [mm]	r = 0.0 [mm]			r = 32 / 4 = 8.0 [mm]			r = 32 / 2 = 16.0 [mm]		
	Bz/Bo [1]	dBz/(dzBo) [1/mm]	Bz*dBz/(dzBo^2) [1/mm]	Bz/Bo [1]	dBz/(dzBo) [1/mm]	Bz*dBz/(dzBo^2) [1/mm]	Bz/Bo [1]	dBz/(dzBo) [1/mm]	Bz*dBz/(dzBo^2) [1/mm]
0	1.000000E+00	0.000000E+00	0.000000E+00	1.000956E+00	-4.594869E-15	-4.599260E-15	1.003792E+00	9.988846E-16	1.002672E-15
1	9.999701E-01	5.989947E-05	5.989767E-05	1.000926E+00	5.925184E-05	5.930671E-05	1.003763E+00	5.732259E-05	5.753829E-05
2	9.998802E-01	1.198395E-04	1.198251E-04	1.000837E+00	1.185440E-04	1.186432E-04	1.003677E+00	1.146845E-04	1.151062E-04
3	9.997304E-01	1.798606E-04	1.798121E-04	1.000689E+00	1.779166E-04	1.780392E-04	1.003534E+00	1.721253E-04	1.727335E-04
4	9.995204E-01	2.400034E-04	2.398883E-04	1.000481E+00	2.374102E-04	2.375244E-04	1.003333E+00	2.296842E-04	2.304497E-04
5	9.992503E-01	3.003086E-04	3.000835E-04	1.000214E+00	2.970650E-04	2.971286E-04	1.003074E+00	2.874009E-04	2.882844E-04
6	9.989198E-01	3.608169E-04	3.604271E-04	9.998871E-01	3.569215E-04	3.568812E-04	1.002758E+00	3.453149E-04	3.462672E-04
7	9.985286E-01	4.215690E-04	4.209487E-04	9.995002E-01	4.170203E-04	4.168118E-04	1.002383E+00	4.034659E-04	4.044275E-04
8	9.980766E-01	4.826059E-04	4.816777E-04	9.990530E-01	4.774020E-04	4.769499E-04	1.001951E+00	4.618938E-04	4.627948E-04
9	9.975633E-01	5.439686E-04	5.426431E-04	9.985453E-01	5.381073E-04	5.373245E-04	1.001460E+00	5.206385E-04	5.213985E-04
10	9.969885E-01	6.056982E-04	6.038742E-04	9.979767E-01	5.991772E-04	5.979649E-04	1.000909E+00	5.797404E-04	5.802676E-04
20	9.877500E-01	1.252350E-03	1.237009E-03	9.888370E-01	1.239054E-03	1.225222E-03	9.920644E-01	1.199389E-03	1.189871E-03
30	9.716643E-01	1.982486E-03	1.926311E-03	9.729200E-01	1.961908E-03	1.908779E-03	9.766506E-01	1.900660E-03	1.856280E-03
40	9.476705E-01	2.842166E-03	2.693436E-03	9.491729E-01	2.813053E-03	2.670074E-03	9.536343E-01	2.727321E-03	2.600867E-03
50	9.142100E-01	3.886238E-03	3.552838E-03	9.160587E-01	3.845489E-03	3.522694E-03	9.215378E-01	3.724673E-03	3.432427E-03
60	8.691045E-01	5.181983E-03	4.503685E-03	8.714110E-01	5.135376E-03	4.475023E-03	8.783578E-01	4.962361E-03	4.358728E-03
70	8.097730E-01	6.697170E-03	5.423187E-03	8.122428E-01	6.743135E-03	5.477063E-03	8.206644E-01	6.718563E-03	5.513685E-03
80	7.363675E-01	7.832938E-03	5.767921E-03	7.373509E-01	8.045797E-03	5.932576E-03	7.398963E-01	9.032481E-03	6.683099E-03
90	6.569106E-01	7.882695E-03	5.178226E-03	6.561878E-01	7.999259E-03	5.249016E-03	6.533989E-01	8.452203E-03	5.522659E-03
100	5.812071E-01	7.174135E-03	4.169658E-03	5.797077E-01	7.240113E-03	4.197150E-03	5.756032E-01	7.418029E-03	4.269841E-03
200	2.281004E-01	1.878157E-03	4.284084E-04	2.278411E-01	1.876021E-03	4.274346E-04	2.270648E-01	1.869746E-03	4.245535E-04
300	1.031507E-01	7.763178E-04	8.007769E-05	1.030411E-01	7.752975E-04	7.988753E-05	1.027130E-01	7.722392E-04	7.931899E-05
400	5.115414E-02	3.321560E-04	1.699115E-05	5.111124E-02	3.317596E-04	1.695664E-05	5.098273E-02	3.305722E-04	1.685347E-05
500	2.806520E-02	1.554961E-04	4.364028E-06	2.804754E-02	1.553468E-04	4.357094E-06	2.799461E-02	1.548997E-04	4.336355E-06
600	1.678836E-02	8.001751E-05	1.343363E-06	1.678041E-02	7.995765E-05	1.341722E-06	1.675660E-02	7.977831E-05	1.336813E-06
700	1.075994E-02	4.470860E-05	4.810618E-07	1.075603E-02	4.468246E-05	4.806061E-07	1.074433E-02	4.460410E-05	4.792413E-07
800	7.282217E-03	2.673384E-05	1.946816E-07	7.280144E-03	2.672144E-05	1.945359E-07	7.273930E-03	2.668426E-05	1.940994E-07
900	5.147113E-03	1.689576E-05	8.696437E-08	5.145938E-03	1.688943E-05	8.691194E-08	5.142415E-03	1.687045E-05	8.675486E-08
1000	3.767997E-03	1.117438E-05	4.210503E-08	3.767294E-03	1.117094E-05	4.208422E-08	3.765184E-03	1.116063E-05	4.202184E-08
2000	4.762957E-04	7.129584E-07	3.395790E-10	4.762729E-04	7.129017E-07	3.395358E-10	4.762047E-04	7.127317E-07	3.394062E-10
3000	1.413599E-04	1.412394E-07	1.996559E-11	1.413569E-04	1.412344E-07	1.996446E-11	1.413478E-04	1.412194E-07	1.996106E-11
4000	5.966905E-05	4.473099E-08	2.669055E-12	5.966833E-05	4.473009E-08	2.668970E-12	5.966619E-05	4.472741E-08	2.668714E-12
5000	3.055817E-05	1.832953E-08	5.601167E-13	3.055793E-05	1.832929E-08	5.601052E-13	3.055723E-05	1.832859E-08	5.600708E-13
6000	1.768649E-05	8.841460E-09	1.563744E-13	1.768640E-05	8.841381E-09	1.563722E-13	1.768611E-05	8.841146E-09	1.563655E-13
7000	1.113874E-05	4.773042E-09	5.316568E-14	1.113870E-05	4.773010E-09	5.316512E-14	1.113857E-05	4.772917E-09	5.316346E-14
8000	7.462473E-06	2.798112E-09	2.088084E-14	7.462451E-06	2.798098E-09	2.088067E-14	7.462384E-06	2.798056E-09	2.088017E-14
9000	5.241319E-06	1.746951E-09	9.156329E-15	5.241307E-06	1.746944E-09	9.156271E-15	5.241270E-06	1.746924E-09	9.156098E-15
10000	3.821018E-06	1.146223E-09	4.379740E-15	3.821011E-06	1.146220E-09	4.379717E-15	3.820989E-06	1.146209E-09	4.379650E-15

r [mm]	z = 0.0 [mm]			z = 100.0 [mm]			z = 1000.0 [mm]		
	Bz/Bo [1]	dBz/(drBo) [1/mm]	Bz*dBz/(drBo^2) [1/mm]	Bz/Bo [1]	dBz/(drBo) [1/mm]	Bz*dBz/(drBo^2) [1/mm]	Bt/Bo [1]	dBt/(drBo) [1/mm]	Bt*dBt/(drBo^2) [1/mm]
0	1.000000E+00	0.000000E+00	0.000000E+00	5.812071E-01	9.988846E-17	5.805589E-17	3.767997E-03	-3.901893E-18	-1.470232E-20
1	1.000015E+00	-2.994234E-05	-2.994279E-05	5.811837E-01	4.691094E-05	2.726387E-05	3.767990E-03	1.369899E-08	5.161767E-11
2	1.000060E+00	-5.986949E-05	-5.987307E-05	5.811133E-01	9.383425E-05	5.452833E-05	3.767970E-03	2.739776E-08	1.032339E-10
3	1.000135E+00	-8.976623E-05	-8.977832E-05	5.809960E-01	1.407716E-04	8.178773E-05	3.767935E-03	4.109607E-08	1.548473E-10
4	1.000239E+00	-1.196174E-04	-1.196460E-04	5.808318E-01	1.877019E-04	1.090232E-04	3.767888E-03	5.479370E-08	2.064565E-10
5	1.000374E+00	-1.494078E-04	-1.494637E-04	5.806206E-01	2.345668E-04	1.361943E-04	3.767826E-03	6.849043E-08	2.580600E-10
6	1.000538E+00	-1.791223E-04	-1.792187E-04	5.803627E-01	2.812511E-04	1.632276E-04	3.767751E-03	8.218602E-08	3.096564E-10
7	1.000732E+00	-2.087458E-04	-2.088986E-04	5.800582E-01	3.275565E-04	1.900018E-04	3.767662E-03	9.588025E-08	3.612443E-10
8	1.000956E+00	-2.382632E-04	-2.384909E-04	5.797077E-01	3.731637E-04	2.163259E-04	3.767559E-03	1.095729E-07	4.128223E-10
9	1.001209E+00	-2.676594E-04	-2.679829E-04	5.793122E-01	4.175775E-04	2.419077E-04	3.767442E-03	1.232637E-07	4.643890E-10
10	1.001491E+00	-2.969194E-04	-2.973621E-04	5.788731E-01	4.600468E-04	2.663087E-04	3.767312E-03	1.369525E-07	5.159429E-10
11	1.001802E+00	-3.262084E-04	-3.266160E-04	5.783928E-01	4.994454E-04	2.888756E-04	3.767168E-03	1.506391E-07	5.674827E-10
12	1.002143E+00	-3.549713E-04	-3.557320E-04	5.778753E-01	5.340970E-04	3.086415E-04	3.767011E-03	1.643231E-07	6.190069E-10
13	1.002512E+00	-3.837334E-04	-3.846974E-04	5.773264E-01	5.615229E-04	3.241820E-04	3.766840E-03	1.780044E-07	6.705141E-10
14	1.002910E+00	-4.122998E-04	-4.134998E-04	5.767550E-01	5.781040E-04	3.334244E-04	3.766655E-03	1.916828E-07	7.220029E-10
15	1.003337E+00	-4.406560E-04	-4.421264E-04	5.761742E-01	5.787276E-04	3.334479E-04	3.766456E-03	2.053580E-07	7.734719E-10
16	1.003792E+00	-4.687872E-04	-4.705647E-04	5.756032E-01	5.567810E-04	3.204849E-04	3.766244E-03	2.190298E-07	8.249197E-10
1000	-1.921470E-03	-5.776161E-06	-1.109872E-08	-1.836500E-03	-5.355667E-06	-9.835684E-09	1.068479E-03	1.918650E-06	2.050036E-09
2000	-2.392846E-04	-3.593377E-07	8.598400E-11	-2.365989E-04	-3.526267E-07	8.343108E-11	2.164069E-04	2.922380E-07	6.324231E-11
3000	-7.082835E-05	-7.086780E-08	5.019450E-12	-7.047452E-05	-7.027811E-08	4.952816E-12	6.893869E-05	6.684009E-08	4.607868E-12
4000	-2.986963E-05	-2.240945E-08	6.693620E-13	-2.978566E-05	-2.230449E-08	6.643539E-13	2.958016E-05	2.192953E-08	6.486789E-13
5000	-1.529057E-05	-9.176261E-09	1.403103E-13	-1.526305E-05	-9.148746E-09	1.396378E-13	1.522562E-05	9.088514E-09	1.383783E-13
6000	-8.847857E-06	-4.424576E-09	3.914802E-14	-8.836800E-06	-4.415361E-09	3.901766E-14	8.829031E-06	4.403159E-09	3.887563E-14
7000	-5.571503E-06	-2.388045E-09	1.330500E-14	-5.566387E-06	-2.384391E-09	1.327244E-14	5.564954E-06	2.381617E-09	1.325359E-14
8000	-3.732330E-06	-1.399740E-09	5.224291E-15	-3.729706E-06	-1.398100E-09	5.214501E-15	3.729719E-06	1.397487E-09	5.212235E-15
9000	-2.621266E-06	-8.738128E-10	2.290496E-15	-2.619810E-06	-8.730038E-10	2.287104E-15	2.620109E-06	8.729229E-10	2.287153E-15
10000	-1.910867E-06	-5.732907E-10	1.095483E-15	-1.910008E-06	-5.728608E-10	1.094168E-15	1.910310E-06	5.729039E-10	1.094424E-15

r [mm]	z = 0 [mm]
1895	B(total) = 100 G
4080	B(total) = 10 G

Bz: vertical field component  
 dBz/dz: vertical gradient of the vertical field component  
 Bt: total field  
 dBz/dr: horizontal gradient of the vertical field component  
 Bo: peak field ( measured = 35.1 T @ I = 38.8 kA )