

GSA

Version : 2.1

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Printed on: 15/09/25

Time: 23:02:07

GSA Analysis Report

Operating Conditions

Sample name: 8H4275.Chn

Operator: Lahcen EL AMRI

ID: F1F2

Sample Geometry: Prlv_2

Type: Sold

Quantity: 500

Uncertainty: 0.06 g

Sample Description: NBS SRM 4275-24 SN:1141 MIXED CLB SOURCE)

Detector Description: P-40WA 28% 1.85KEV @1332.5 2500V BIASRCE

Offset of data: 0

Length of data: 8192

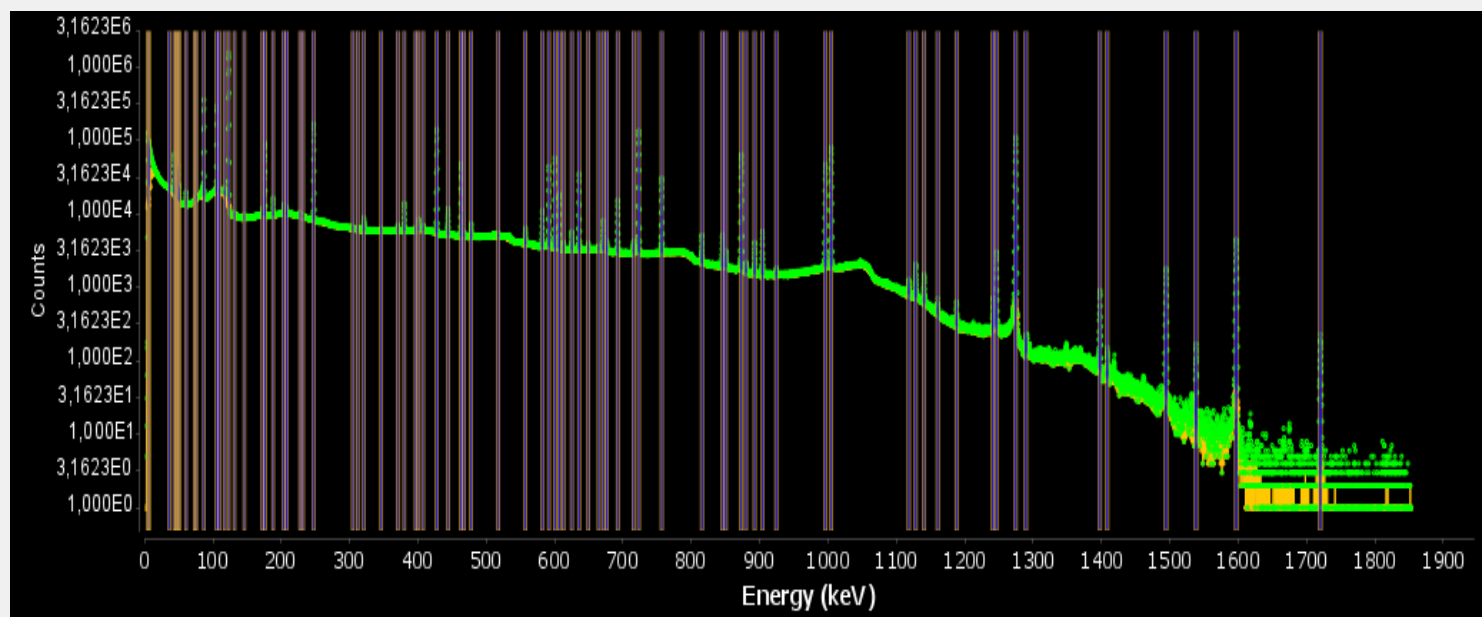
Date: 30MAY85

Time: 19:08:

Real time: 30890.98

Live time: 28800.0

Dead: 6,77 %



Calibration coefficients

Energy calibration formula:

$E = a + b.C + c.C^2$ $a=1.4848199$ $b=0.22608423$ $c=1.5479173E-11$

Efficiency calibration formula:

$\ln(\text{eff}) = a + b*\ln(E) + c*\ln(E)^2 + \dots + f*\ln(E)^n$

$n=4$ $a=-64.46263092350466$ $b=43.314046254132826$ $c=-11.343898715872186$

$d=1.2838743255031295$ $e=-0.05432193662490893$ $f=0.0$

Analysis parameters, Bckground, library and tolerance

Peak search parameter :

 Treshold = 2 m = 1 Z= 5

Background used :

 By SNIP method N= 10 W= 9

Library :

 Lib/Lib.dat Tolerance = 1 keV

Results of the Analysis

The identified peaks

Nuclide	E(keV)	E_Ref	Abu	T½	Unit
TH227	50.771	50.2	8.5	7.0E8	y
TH227	304.664	304.4	1.0	7.0E8	y
AM241	60.493	59.5	36.3	2.3E8	m
BI211	73.154	72.9	1.2	7.0E8	y
PB214	75.414	74.8	6.3	1600.1	y
CS136	86.945	86.3	6.3	13.0	d
U235	105.484	105.0	1.0	7.0E8	y
U235	109.553	109.1	1.5	7.0E8	y
TE132	117.014	116.3	1.9	78.0	h
TE132	227.569	228.2	88.0	78.0	h
MO90	123.118	122.4	64.1	5.7	h
PA234	131.483	131.3	20.0	4.5E9	y
CE141	145.953	145.4	48.4	32.0	d
SB125	176.022	176.3	6.9	2.8	y
SB125	188.004	188.4	55.1	2.8	y
SB125	379.95	380.4	1.5	2.8	y
SB125	427.428	427.4	29.3	2.8	y
SB125	462.923	463.4	10.4	2.8	y
SB125	600.382	600.6	17.8	2.8	y
SB125	606.486	606.6	5.0	2.8	y
SB125	635.651	635.9	11.3	2.8	y
SB125	671.146	671.4	1.8	2.8	y
CR51	320.716	320.1	9.8	28.0	d
XE138	396.68	396.4	6.3	14.0	m
XE138	400.75	401.4	2.2	14.0	m
EU152	444.158	444.0	3.1	14.0	y
EU152	1408.408	1408.0	20.7	14.0	y
BE74	477.844	477.6	10.4	76953.6	m
Y91m	557.2	557.6	95.1	50.0	m
W187	625.025	625.5	1.2	24.0	h

Nuclide	E(keV)	E_Ref	Abu	T½	Unit
I134	676.346	677.3	8.5	53.0	m
SB122	692.172	692.8	3.7	2.7	d
SB124	723.146	722.8	11.1	60.0	d
ZR95	756.606	756.7	55.3	64.0	d
LA140	815.388	815.8	23.5	13.0	d
LA140	1597.188	1596.5	95.5	13.0	d
Y92	845.231	844.3	1.3	3.5	h
Y92	1004.621	1005.4	4.3	3.5	h
NB96	850.431	849.9	20.7	23.0	h
KR89	904.013	904.3	7.2	3.2	m
KR89	1274.566	1273.7	1.4	3.2	m
KR88	1140.498	1141.3	1.3	2.8	h
I132	1397.782	1398.6	7.1	2.3	h
RB89	1538.406	1538.1	2.6	15.0	m

The activity and the specific activity corresponding to the identified radionuclide

Nuclide	E(keV)	E_Ref	A(Bq)	Factor	A Corr(Bq)	Error(%)	A(Bq/kg)	Error(%)
TH227	50,7710	50,2000	64,2484	1,0000	64,2456	0,5156	128,4912	0,5158
TH227	304,6640	304,4000	9,6597	1,0000	9,6593	17,6811	19,3186	17,6811
AM241	60,4930	59,5000	2,8006	1,0000	2,8006	2,3757	5,6013	2,3757
BI211	73,1540	72,9000	9,6065	1,0000	9,6061	21,6546	19,2121	21,6546
PB214	75,4140	74,8000	5,2447	1,0000	5,2447	7,7971	10,4894	7,7971
CS136	86,9450	86,3000	881,4870	1,0089	889,3435	0,0925	1778,6871	0,0933
U235	105,4840	105,0000	4342,8958	1,0000	4342,7089	0,1114	8685,4178	0,1120
U235	109,5530	109,1000	34,4653	1,0000	34,4638	5,6478	68,9276	5,6478
TE132	117,0140	116,3000	75,0548	1,0360	77,7543	1,9865	155,5087	1,9865
TE132	227,5690	228,2000	0,2815	1,0360	0,2917	7,9857	0,5833	7,9857
MO90	123,1180	122,4000	385,5157	1,5641	602,9737	0,0386	1205,9474	0,0405
PA234	131,4830	131,3000	0,9530	1,0001	0,9531	10,4242	1,9062	10,4242
CE141	145,9530	145,4000	0,3099	1,0036	0,3110	12,7567	0,6221	12,7567
SB125	176,0220	176,3000	201,2631	1,0001	201,2858	0,2128	402,5716	0,2132
SB125	188,0040	188,4000	2,2081	1,0001	2,2084	1,7157	4,4167	1,7158
SB125	379,9500	380,4000	112,1157	1,0001	112,1284	1,0803	224,2568	1,0803
SB125	427,4280	427,4000	97,8452	1,0001	97,8563	0,1234	195,7125	0,1239
SB125	462,9230	463,4000	90,0805	1,0001	90,0906	0,2515	180,1813	0,2518
SB125	600,3820	600,6000	70,6367	1,0001	70,6447	0,1945	141,2894	0,1949
SB125	606,4860	606,6000	70,5653	1,0001	70,5732	0,4737	141,1465	0,4739
SB125	635,6510	635,9000	67,0259	1,0001	67,0334	0,2692	134,0669	0,2695
SB125	671,1460	671,4000	67,0525	1,0001	67,0600	1,1496	134,1201	1,1496
CR51	320,7160	320,1000	7,9124	1,0041	7,9451	2,2438	15,8902	2,2438
XE138	396,6800	396,4000	1,4253	23,7650	33,8715	18,6531	67,7430	18,6531
XE138	400,7500	401,4000	24,2030	23,7650	575,1846	3,2398	1150,3693	3,2398
EU152	444,1580	444,0000	53,9404	1,0000	53,9416	1,0301	107,8833	1,0301
EU152	1408,4080	1408,0000	0,1469	1,0000	0,1469	6,9080	0,2939	6,9081
BE74	477,8440	477,6000	5,4093	1,0022	5,4210	2,7717	10,8420	2,7717
Y91m	557,2000	557,6000	0,6181	6,6628	4,1183	2,4176	8,2365	2,4176
W187	625,0250	625,5000	49,4068	1,1200	55,3341	2,2098	110,6683	2,2099
I134	676,3460	677,3000	3,3664	6,2894	21,1727	4,3524	42,3453	4,3524

Nuclide	E(keV)	E_Ref	A(Bq)	Factor	A Corr(Bq)	Error(%)	A(Bq/kg)	Error(%)
SB122	692,1720	692,8000	81,8572	1,0434	85,4095	0,5139	170,8191	0,5140
SB124	723,1460	722,8000	294,2461	1,0019	294,8130	0,1092	589,6261	0,1099
ZR95	756,6060	756,7000	12,6313	1,0018	12,6541	0,2787	25,3082	0,2790
LA140	815,3880	815,8000	3,4010	1,0089	3,4313	1,4088	6,8626	1,4089
LA140	1597,1880	1596,5000	1,6285	1,0089	1,6430	0,4805	3,2860	0,4807
Y92	845,2310	844,3000	72,4412	1,9931	144,3816	1,2147	288,7633	1,2147
Y92	1004,6210	1005,4000	520,3278	1,9931	1037,0582	0,1323	2074,1165	0,1329
NB96	850,4310	849,9000	1,5296	1,1254	1,7214	3,2730	3,4428	3,2730
KR89	904,0130	904,3000	16,5774	103,9721	1723,5919	0,9098	3447,1838	0,9099
KR89	1274,5660	1273,7000	2502,8323	103,9721	260224,6771	0,1007	520449,3542	0,1015
KR88	1140,4980	1141,3000	21,2714	2,2975	48,8710	2,3103	97,7420	2,3103
I132	1397,7820	1398,6000	4,0195	2,6486	10,6460	1,3145	21,2920	1,3146
RB89	1538,4060	1538,1000	1,9925	22,1807	44,1955	3,0656	88,3911	3,0656

The regions of interest (ROI) and the calculated areas

Nuclide	E(keV)	E_Ref	ROI	Gross area	Background area	Net area	Net Error %
TH227	50,7710	50,2000	48,83 - 52,71	407491,0000	250211,0000	157280,0000	0,5156
TH227	304,6640	304,4000	302,62 - 306,71	122368,0000	119586,0000	2782,0000	17,6811
AM241	60,4930	59,5000	58,55 - 62,43	256554,0000	227275,0000	29279,0000	2,3757
BI211	73,1540	72,9000	71,21 - 75,10	260093,0000	256773,0000	3320,0000	21,6546
PB214	75,4140	74,8000	73,47 - 77,36	280016,0000	270500,0000	9516,0000	7,7971
CS136	86,9450	86,3000	84,99 - 88,90	1893896,0000	294526,0000	1599370,0000	0,0925
U235	105,4840	105,0000	103,52 - 107,44	1595411,0000	344657,0000	1250754,0000	0,1114
U235	109,5530	109,1000	107,59 - 111,52	360996,0000	346107,0000	14889,0000	5,6478
TE132	117,0140	116,3000	115,05 - 118,98	353347,0000	312277,0000	41070,0000	1,9865
TE132	227,5690	228,2000	225,56 - 229,58	165892,0000	158757,0000	7135,0000	7,9857
MO90	123,1180	122,4000	121,15 - 125,09	7341582,0000	224653,0000	7116929,0000	0,0386
PA234	131,4830	131,3000	129,51 - 133,45	166443,0000	160954,0000	5489,0000	10,4242
CE141	145,9530	145,4000	143,98 - 147,93	154009,0000	149689,0000	4320,0000	12,7567
SB125	176,0220	176,3000	174,03 - 178,01	562312,0000	162362,0000	399950,0000	0,2128
SB125	188,0040	188,4000	186,01 - 190,00	198237,0000	163197,0000	35040,0000	1,7157
SB125	379,9500	380,4000	377,88 - 382,02	161095,0000	112661,0000	48434,0000	1,0803
SB125	427,4280	427,4000	425,33 - 429,52	931481,0000	105824,0000	825657,0000	0,1234
SB125	462,9230	463,4000	460,81 - 465,03	365118,0000	95309,0000	269809,0000	0,2515
SB125	600,3820	600,6000	598,22 - 602,55	429182,0000	67070,0000	362112,0000	0,1945
SB125	606,4860	606,6000	604,32 - 608,65	166655,0000	65041,0000	101614,0000	0,4737
SB125	635,6510	635,9000	633,47 - 637,83	281495,0000	63366,0000	218129,0000	0,2692
SB125	671,1460	671,4000	668,95 - 673,34	97214,0000	62454,0000	34760,0000	1,1496
CR51	320,7160	320,1000	318,67 - 322,77	136704,0000	114372,0000	22332,0000	2,2438
XE138	396,6800	396,4000	394,60 - 398,76	117633,0000	115047,0000	2586,0000	18,6531
XE138	400,7500	401,4000	398,67 - 402,83	131086,0000	115751,0000	15335,0000	3,2398
EU152	444,1580	444,0000	442,06 - 446,26	147117,0000	98959,0000	48158,0000	1,0301
EU152	1408,4080	1408,0000	1405,91 - 1410,91	2269,0000	1393,0000	876,0000	6,9080
BE74	477,8440	477,6000	475,73 - 479,96	108933,0000	92731,0000	16202,0000	2,7717
Y91m	557,2000	557,6000	555,05 - 559,35	92216,0000	75287,0000	16929,0000	2,4176
W187	625,0250	625,5000	622,85 - 627,20	79726,0000	62651,0000	17075,0000	2,2098
I134	676,3460	677,3000	674,15 - 678,54	68446,0000	60205,0000	8241,0000	4,3524
SB122	692,1720	692,8000	689,97 - 694,38	144074,0000	56847,0000	87227,0000	0,5139

Nuclide	E(keV)	E_Ref	ROI	Gross area	Background area	Net area	Net Error %
SB124	723,1460	722,8000	720,93 - 725,36	998352,0000	57706,0000	940646,0000	0,1092
ZR95	756,6060	756,7000	754,38 - 758,84	257787,0000	56616,0000	201171,0000	0,2787
LA140	815,3880	815,8000	813,13 - 817,64	64089,0000	41071,0000	23018,0000	1,4088
LA140	1597,1880	1596,5000	1594,61 - 1599,77	45554,0000	764,0000	44790,0000	0,4805
Y92	845,2310	844,3000	842,96 - 847,50	67829,0000	40707,0000	27122,0000	1,2147
Y92	1004,6210	1005,4000	1002,29 - 1006,95	685764,0000	41390,0000	644374,0000	0,1323
NB96	850,4310	849,9000	848,16 - 852,70	49099,0000	39980,0000	9119,0000	3,2730
KR89	904,0130	904,3000	901,72 - 906,31	66096,0000	31721,0000	34375,0000	0,9098
KR89	1274,5660	1273,7000	1272,12 - 1277,01	1021304,0000	12162,0000	1009142,0000	0,1007
KR88	1140,4980	1141,3000	1138,11 - 1142,89	20908,0000	12944,0000	7964,0000	2,3103
I132	1397,7820	1398,6000	1395,29 - 1400,28	9946,0000	1727,0000	8219,0000	1,3145
RB89	1538,4060	1538,1000	1535,85 - 1540,96	1792,0000	300,0000	1492,0000	3,0656

Unidentified peaks: ROI and the calculated areas

Nuclide	E(keV)	ROI	Gross area	Background area	Net area	Net Error %
Not Found	4,8760	2,96 - 6,79	1117735,0000	202754,0000	914981,0000	0,1256
Not Found	6,4590	4,54 - 8,38	1582690,0000	345421,0000	1237269,0000	0,1122
Not Found	36,3020	34,37 - 38,23	390825,0000	379288,0000	11537,0000	7,6065
Not Found	43,5360	41,60 - 45,47	588727,0000	316502,0000	272225,0000	0,3495
Not Found	46,0230	44,09 - 47,96	307332,0000	291350,0000	15982,0000	4,8414
Not Found	49,1890	47,25 - 51,13	441661,0000	264430,0000	177231,0000	0,4741
Not Found	172,4050	170,42 - 174,39	175930,0000	163078,0000	12852,0000	4,5304
Not Found	203,8300	201,83 - 205,83	190149,0000	170381,0000	19768,0000	3,0374
Not Found	207,6740	205,67 - 209,68	184746,0000	170163,0000	14583,0000	4,0852
Not Found	231,8650	229,85 - 233,88	157881,0000	154589,0000	3292,0000	16,9803
Not Found	247,4640	245,44 - 249,48	984544,0000	141307,0000	843237,0000	0,1258
Not Found	311,6720	309,63 - 313,72	119156,0000	116500,0000	2656,0000	18,2773
Not Found	346,2630	344,20 - 348,32	114752,0000	111477,0000	3275,0000	14,5232
Not Found	370,4540	368,38 - 372,52	120027,0000	111626,0000	8401,0000	5,7291
Not Found	407,5320	405,45 - 409,62	122029,0000	115216,0000	6813,0000	7,1492
Not Found	467,4440	465,33 - 469,55	98170,0000	93915,0000	4255,0000	10,3002
Not Found	517,6350	515,50 - 519,77	98309,0000	94257,0000	4052,0000	10,8298
Not Found	581,6170	579,46 - 583,78	118896,0000	68668,0000	50228,0000	0,8622
Not Found	591,5650	589,40 - 593,73	341881,0000	68320,0000	273561,0000	0,2341
Not Found	613,0430	610,87 - 615,21	68563,0000	62903,0000	5660,0000	6,4060
Not Found	649,2160	647,03 - 651,40	67669,0000	62494,0000	5175,0000	6,9716
Not Found	664,3640	662,17 - 666,56	65489,0000	62960,0000	2529,0000	14,1715
Not Found	715,4590	713,25 - 717,67	67285,0000	56807,0000	10478,0000	3,3620
Not Found	873,0400	870,76 - 875,32	519291,0000	37447,0000	481844,0000	0,1549
Not Found	879,8220	877,54 - 882,10	39366,0000	34265,0000	5101,0000	5,3196
Not Found	892,4830	890,20 - 894,77	52491,0000	32273,0000	20218,0000	1,4400
Not Found	924,1350	921,83 - 926,44	34189,0000	30952,0000	3237,0000	7,8847
Not Found	996,0300	993,70 - 998,36	417132,0000	40288,0000	376844,0000	0,1795
Not Found	1118,1150	1115,73 - 1120,50	21361,0000	17114,0000	4247,0000	4,6186
Not Found	1128,2890	1125,90 - 1130,67	29028,0000	15687,0000	13341,0000	1,5850
Not Found	1160,3930	1157,99 - 1162,79	10925,0000	9034,0000	1891,0000	7,4710
Not Found	1187,9750	1185,57 - 1190,38	9373,0000	6342,0000	3031,0000	4,1359
Not Found	1241,1050	1238,67 - 1243,54	9369,0000	5877,0000	3492,0000	3,5359

Nuclide	E(keV)	ROI	Gross area	Background area	Net area	Net Error %
Not Found	1246,0790	1243,65 - 1248,51	31104,0000	6011,0000	25093,0000	0,7678
Not Found	1289,4870	1287,03 - 1291,94	3873,0000	2729,0000	1144,0000	7,1025
Not Found	1494,5460	1492,01 - 1497,08	18413,0000	752,0000	17661,0000	0,7839
Not Found	1720,1780	1717,55 - 1722,81	2160,0000	72,0000	2088,0000	2,2626

Validation

Operator :

Validated by:

Signature :

Signature :