

Lampiran 1. A : Spektrum Energi Kalibrasi dengan Detektor HPGe

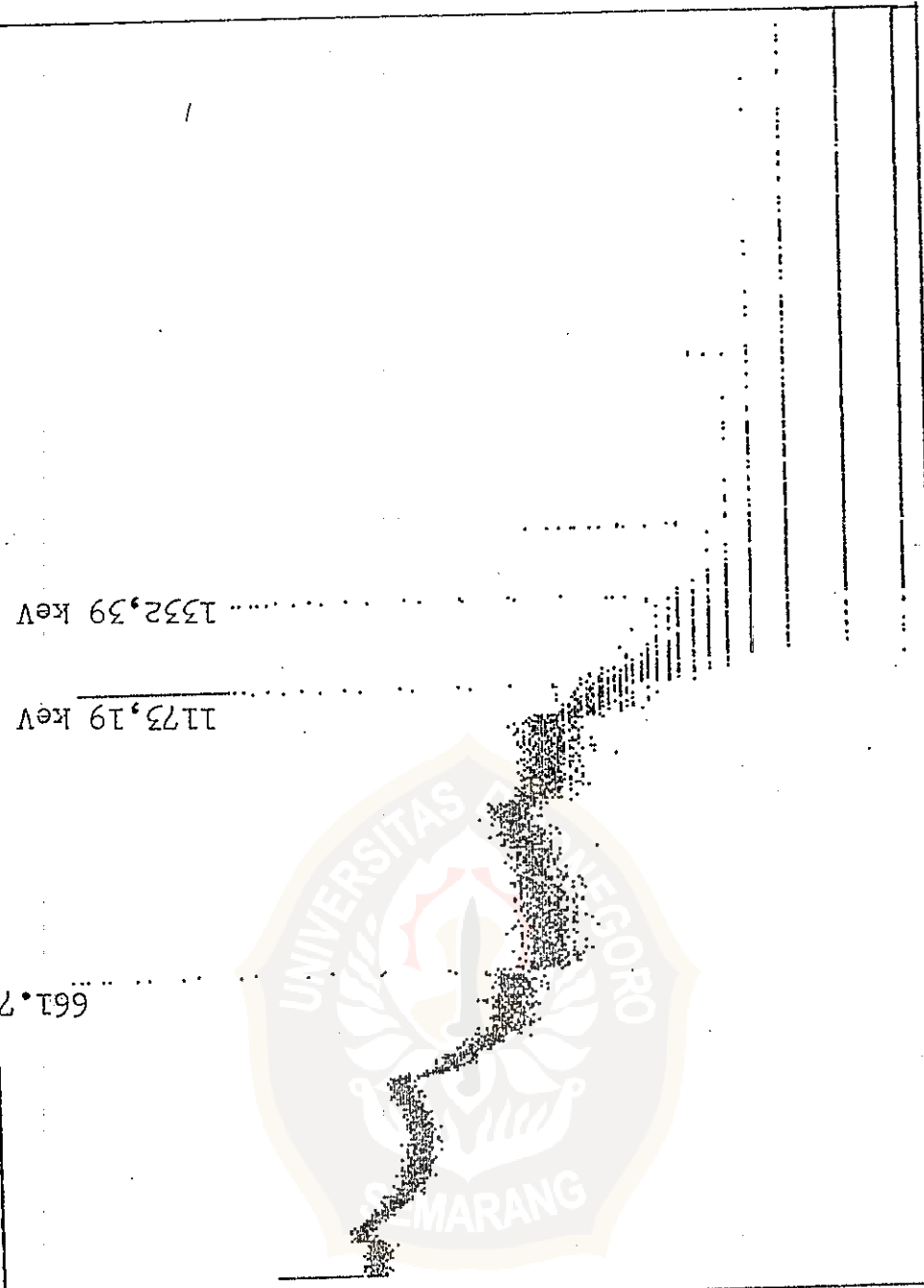
11-Jan-94 10:21:32 SP= JANG/1 OFF CFS 16384/ALOG CC 3818/1173.547

1. ACQUISITION
 Chans 8192
 LD=1 RD= 8192
 Acq Start
 07-JAN-94
 13:10:44

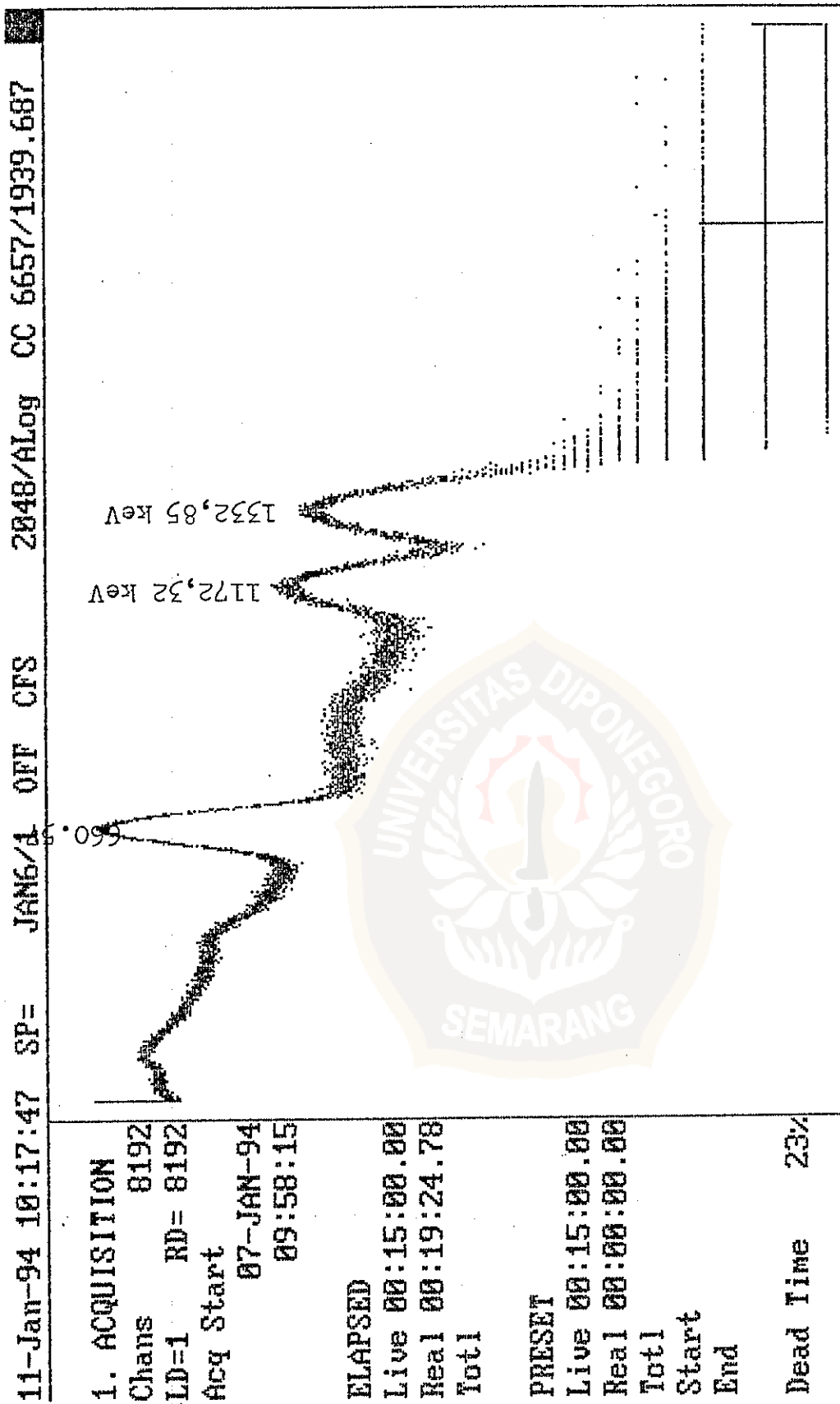
ELAPSED
 Live 00:00:00.00
 Real 00:00:19.35
 Totl

PRESET
 Live 00:00:00.00
 Real 00:00:00.00
 Totl
 Start
 End

Dead Time 4%



Lampiran 1. B : Spektrum Kalibrasi, Detektor NaI(Tl)



Lampiran 2 . A : Data Kalibrasi Energi Dengan Detektor
HPGe , Sumber Gamma Co-60 dan Cs-137

No	E- γ (keV)	CHAN	AREA	BGND	FWHM	CPS
1.	661.73	1969.38	59867	1263	1.75	124.72
2.	1173.19	3816.71	11015	414	2.04	22.95
3.	1332.39	4391.70	9809	140	2.06	20.44

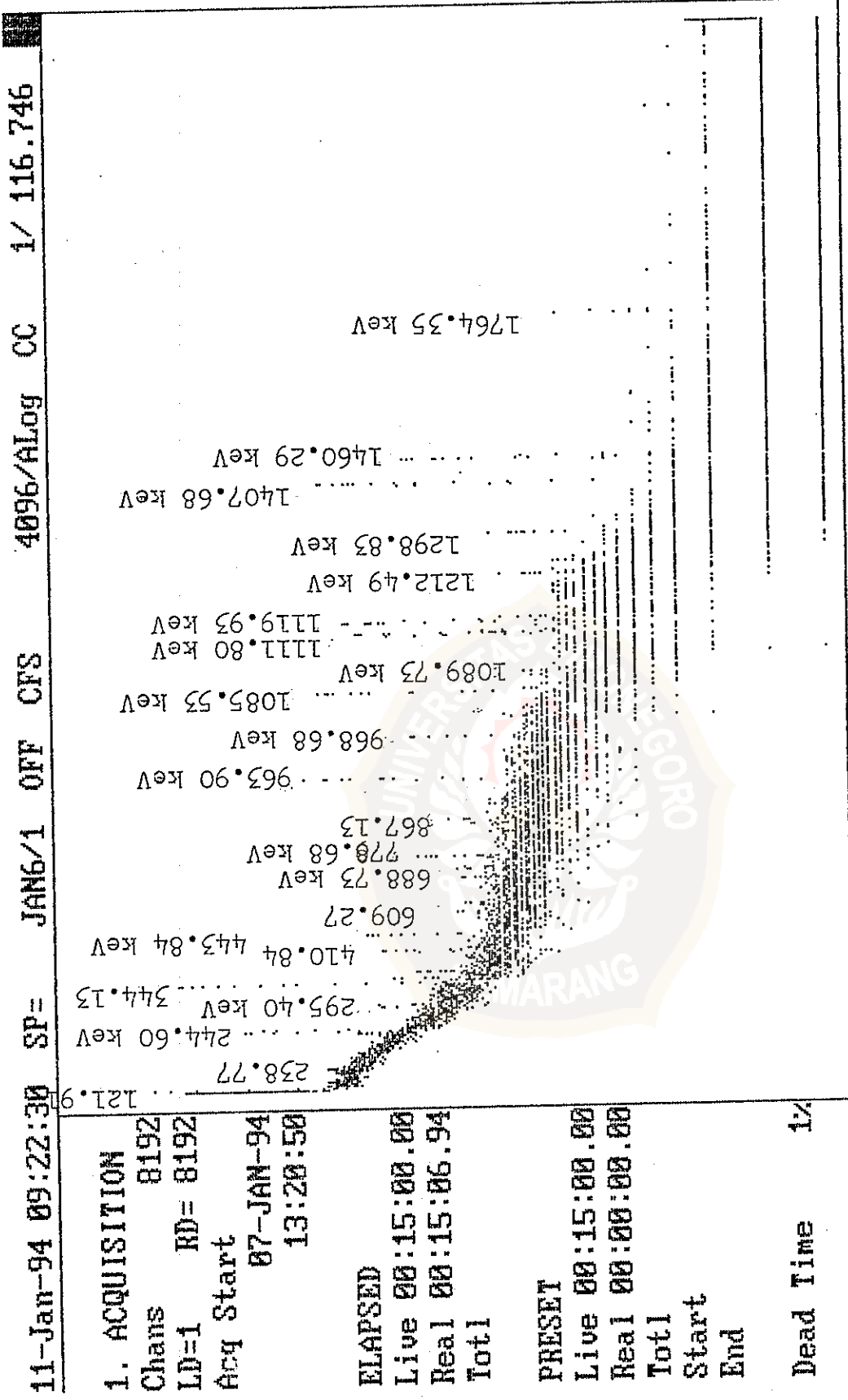


Lampiran 2 . B : Data Kalibrasi Dengan Detektor NaI(Tl),
Sumber Gamma dari Co-60 dan Cs-137.

No	E- γ (keV)	CHAN	AREA	BGND	FWHM	CPS
1.	660.57	2083.74	254412	82080	52.08	282.68
2.	1172.32	3924.54	35251	25116	68.00	39.17
3.	1332.85	4498.35	30576	16025	73.10	33.97



HPGe



11-Jan-94 09:22:30 SP= JAN6/1 OFF CFS 4096/Alog CC 1/ 116.746

1. ACQUISITION
 Chans 8192
 LD=1 RD= 8192
 Acq Start
 07-JAN-94
 13:20:50

ELAPSED
 Live 00:15:00.00
 Real 00:15:06.94
 Totl

PRESET
 Live 00:15:00.00
 Real 00:00:00.00
 Totl

Start
 End

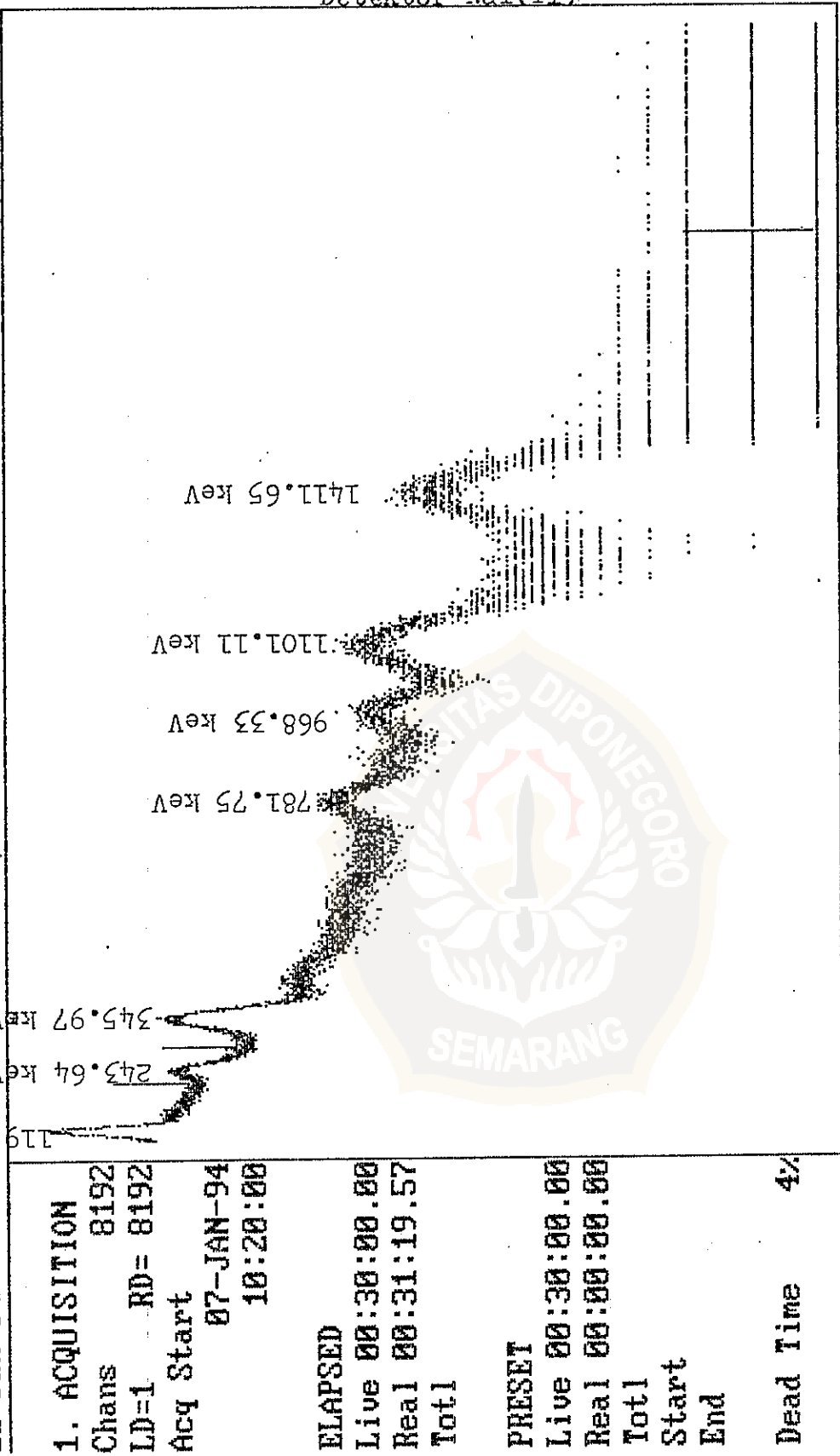
Dead Time 1%

LAMPIRAN 4 : Energi Puncak Spektrum Gamma Radioisotop
Eu-152 Detektor HPGe , dihitung secara
Langsung dari alat.

No	E- γ (keV)	CHAN	FWHM (keV)	AREA	BGND	CPS	Ralat (%)
1.	121.91	20.68	1.41	13755	3697	15.28	0.58
2.	238.77	442.72	1.23	318	1034	0.35	0.26
3.	244.60	463.77	1.44	2550	1467	2.83	0.30
4.	295.40	647.24	1.20	352	688	0.39	0.20
5.	344.13	823.22	1.52	6866	744	7.63	0.22
6.	351.71	850.60	1.50	302	439	0.34	0.21
7.	367.26	906.75	1.56	255	513	0.28	0.21
8.	410.84	1064.15	1.85	583	437	0.65	0.23
9.	443.84	1183.34	1.68	565	514	0.63	0.19
10.	609.27	1780.79	1.28	250	492	0.28	0.11
11.	688.73	2067.76	1.21	165	250	0.18	0.09
12.	778.68	2392.60	1.55	1608	270	1.79	0.10
13.	867.13	2712.03	1.98	510	318	0.57	0.11
14.	963.90	3061.50	2.02	1453	231	1.62	0.11
15.	968.68	3078.75	1.42	63	83	0.07	0.07
16.	1085.53	3500.77	1.68	850	213	0.94	0.08
17.	1089.73	3515.93	1.79	120	130	0.13	0.08
18.	1111.80	3595.64	2.20	1230	220	1.37	0.10
19.	1119.93	3624.99	1.46	125	102	0.14	0.07
20.	1212.49	3959.29	1.45	119	119	0.13	0.06
21.	1298.83	4271.10	1.83	143	77	0.16	0.07
22.	1407.68	4664.20	1.85	1578	36	1.75	0.07
23.	1460.29	4854.22	2.03	592	39	0.66	0.07
24.	1764.35	5952.29	1.50	59	13	0.07	0.04

Detektor NaI(Tl)

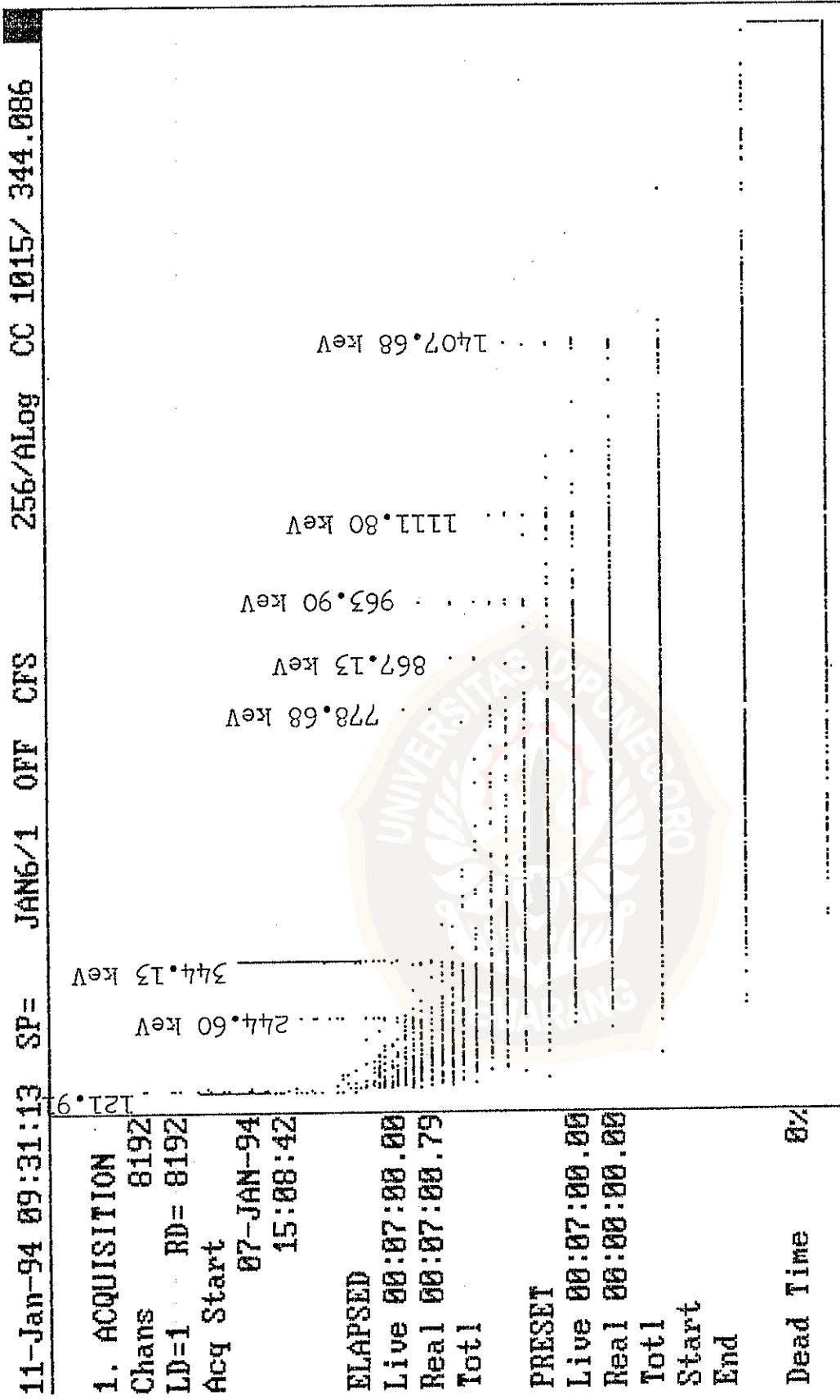
11-Jan-94 10:15:03 SP= JAN6/1 OFF CFS 2048/Alog CC 6657/1939.687



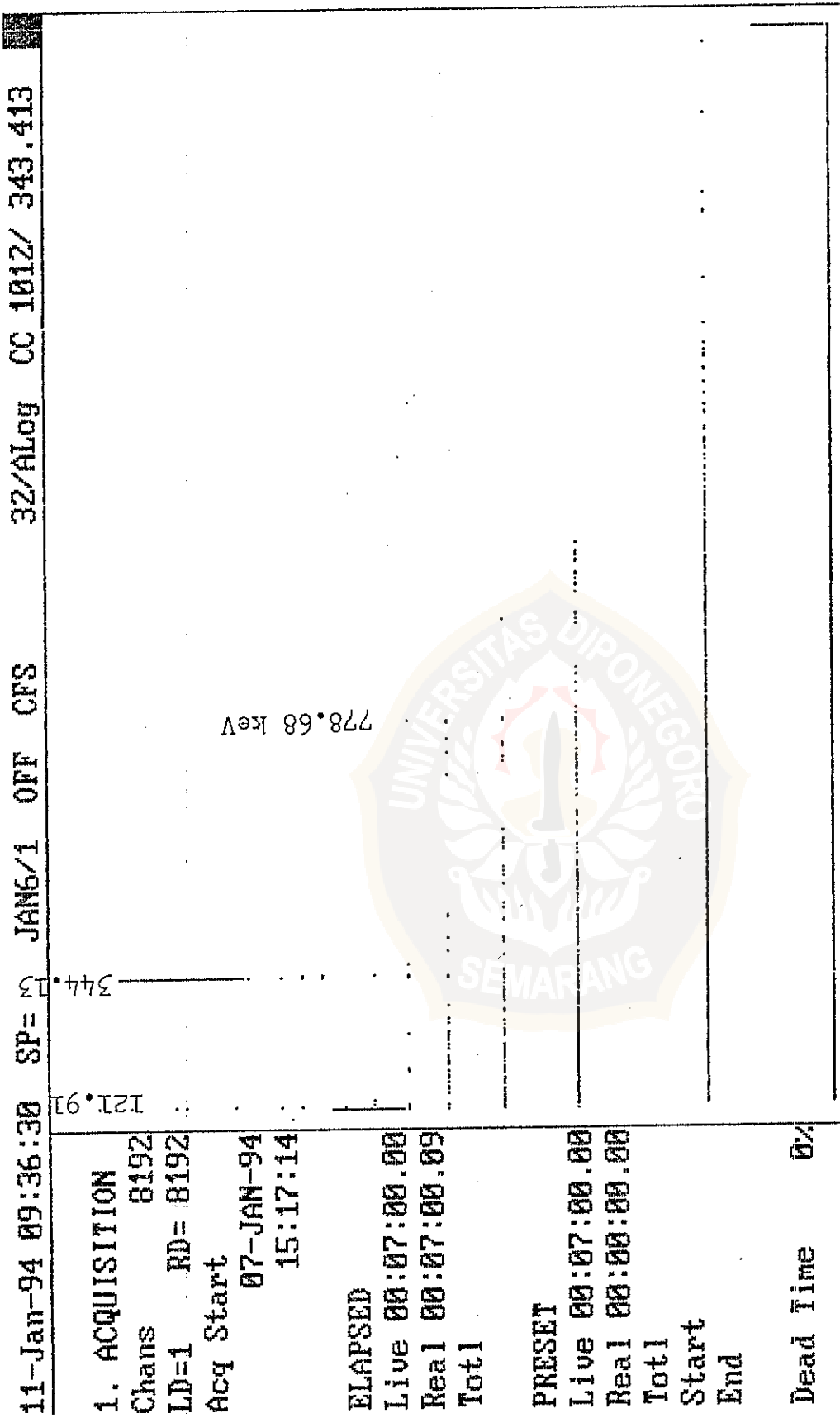
LAMPIRAN - 6 : Energi Puncak Spektrum Gamma Radioisotop Eu-152 dari Detektor NaI(Tl) , dihitung Secara Langsung dari Alat.

No	E- γ (keV)	CHAN	FWHM(keV)	AREA	BGND	CPS
1.	119.69	85.70	14.54	59100	71574	32.83
2.	243.64	536.41	27.37	14775	56734	8.21
3.	345.97	908.47	31.48	35041	50831	19.47
4.	781.75	2493.04	58.65	7794	17435	4.33
5.	968.33	3171.47	59.75	4293	13267	2.39
6.	1101.11	3654.27	68.06	9023	11885	5.01
7.	1411.65	4783.43	100.43	8656	3974	4.81





Digate dengan Tenaga 243,64 keV



Digate dengan tenaga 345,97 keV

11-Jan-94 09:42:17 SP= JAN6/1 OFF CFS 32/ALog CC 1012/ 343.413

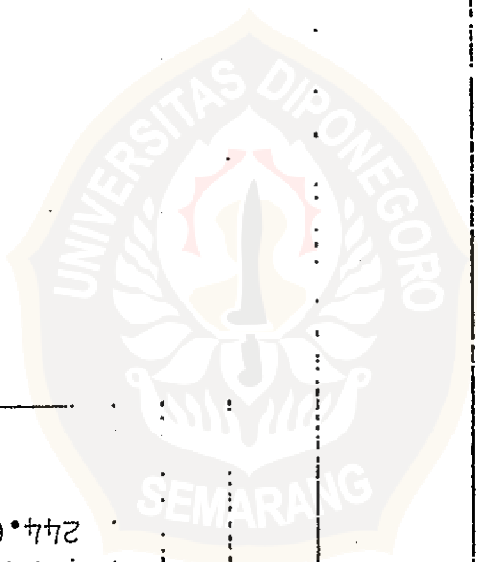
121.9
 244.60 keV
 344.13 keV

1. ACQUISITION
 Chans 8192
 LD=1 RD= 8192
 Acq Start
 07-JAN-94
 15:25:19

ELAPSED
 Live 00:05:00.00
 Real 00:05:00.03
 Totl

PRESET
 Live 00:05:00.00
 Real 00:00:00.00
 Totl
 Start
 End

Dead Time 0%



Digate dengan Tenaga 781,75 keV

11-Jan-94 09:45:31 SP= JAN6/1 OFF CFS 16/ALog CC 1012/ 343.413

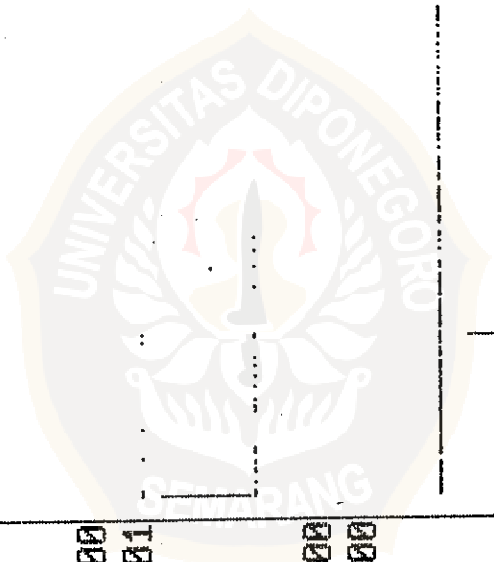
121.91

1. ACQUISITION
 Chans 8192
 LD=1 RD= 8192
 Acq Start
 07-JAN-94
 15:31:48

ELAPSED
 Live 00:05:00.00
 Real 00:05:00.01
 Totl

PRESET
 Live 00:05:00.00
 Real 00:00:00.00
 Totl
 Start
 End

Dead Time 0%



Digate dengan Tenaga 968,33 keV

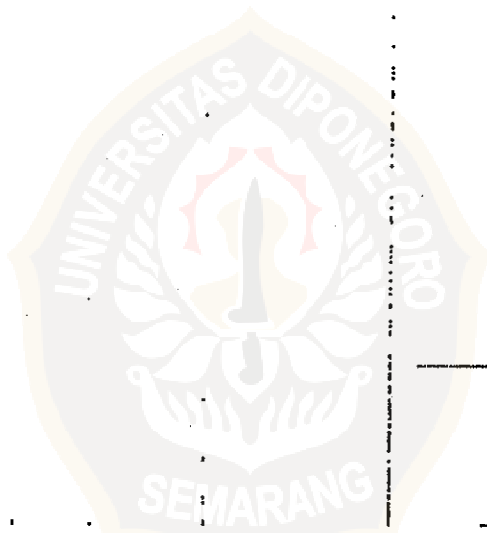
11-Jan-94 09:50:53 SP= JAN6/1 OFF CFS 16/ALog CC 1012/ 343.413

1. ACQUISITION
 Chans 8192
 LD=1 RD= 8192
 Acq Start
 07-JAN-94
 15:40:33

ELAPSED
 Live 00:05:00.00
 Real 00:05:00.00
 Totl

PRESET
 Live 00:05:00.00
 Real 00:00:00.00
 Totl
 Start
 End

Dead Time 0%



Digate dengan Tenaga 1101,11 keV

19-Jan-94 14:06:00 SP= SUCIT01 PADC OPS 32/Al09 CC 199/ 345.65

3. MAINS/NO1
 Counts 6192
 ID=1 M= 6192
 IM=1175 RM= 1.00

CURSOR
 Chan 1190
 Cnts 1

TOTALS
 Tot1 66
 Net 42
 Back 24
 Chan 1175
 Cnts 6
 Counts per Sec
 Total 6
 Net 6

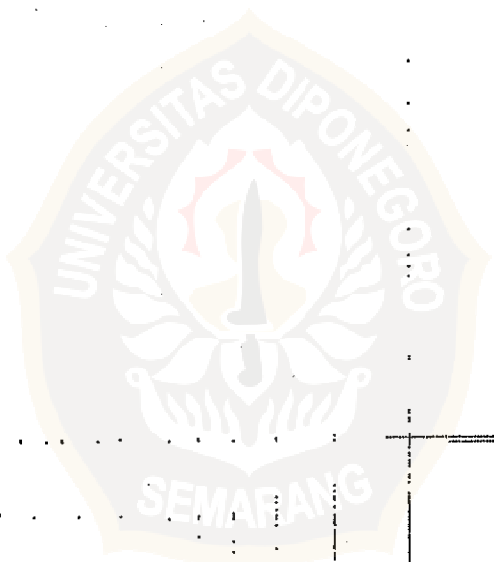
POIs Def Inds 2

344.13 keV



Digate dengan Tenaga 1411,65 keV

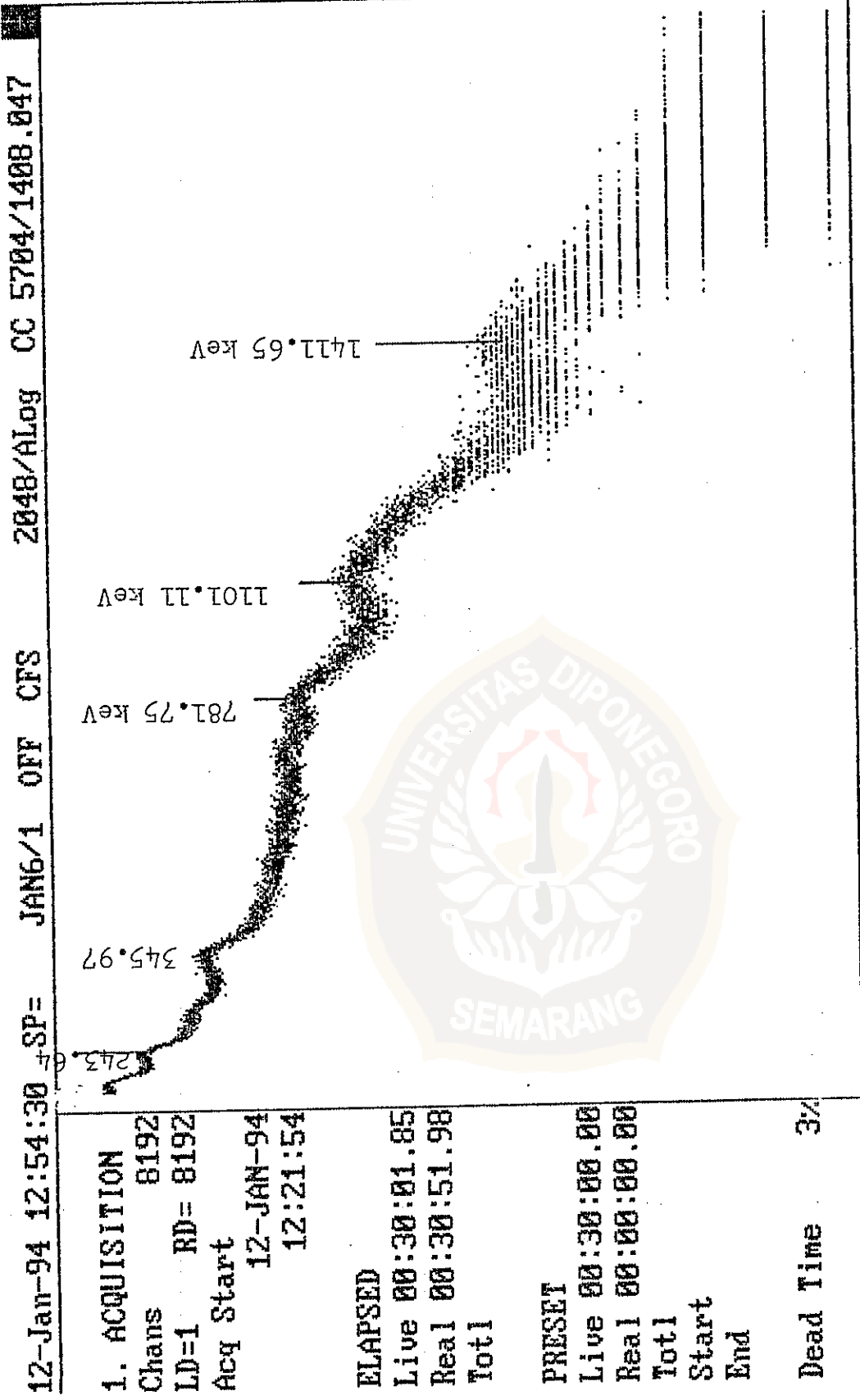
19-Jan-94 10:35:37	SP=	SURIT01	IMC	CIS	64Klog	00	189/	345.449
1. ACQUISITION								
Chan		0192						
ID=		0192						
Acq Start		24-DEC-93						
		15:34:30						
ELAPSED								
Live	00:02:42.55							
Real	00:02:42.61							
Total	0							
PREFET								
Live	00:00:00.00							
Real	00:00:00.00							
Total	0							
Start	0							
End	0							
Dead Time								
	0%							



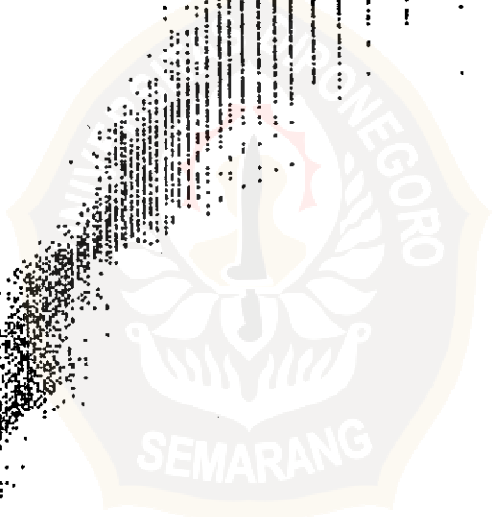
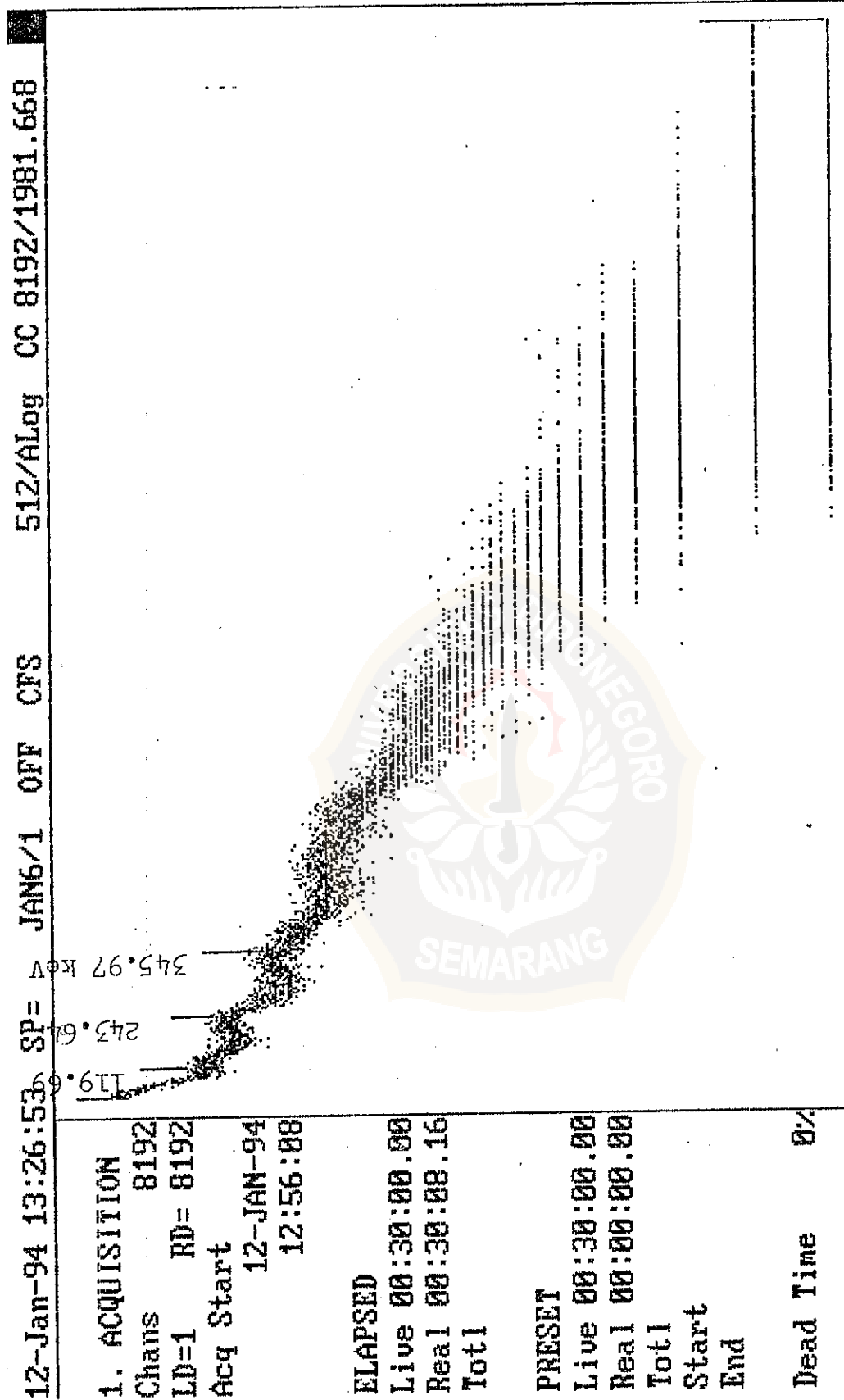
19-Jan-94 10:35:37 SP= SURIT01 IMC CIS 64Klog 00 189/ 345.449

244.60 keV
344.13

Digate dengan Tenaga 119,69 keV



Digate dengan Tenaga 243,64 keV



Digate dengan Tenaga 345,97 keV

12-Jan-94 12:02:31 SP= 243.645
 JAN6/1 OFF CFS 512/ALoy CC 8192/1981.668

781.75 keV
 345.97 keV

1. ACQUISITION
 Chans 8192
 LD=1 RD= 8192
 Acq Start
 12-JAN-94
 11:26:35

ELAPSED
 Live 00:35:00.00
 Real 00:35:09.92
 Totl

PRESET
 Live 00:35:00.00
 Real 00:00:00.00
 Totl
 Start
 End

Dead Time 0%



Digate dengan Tenaga 781,75 keV

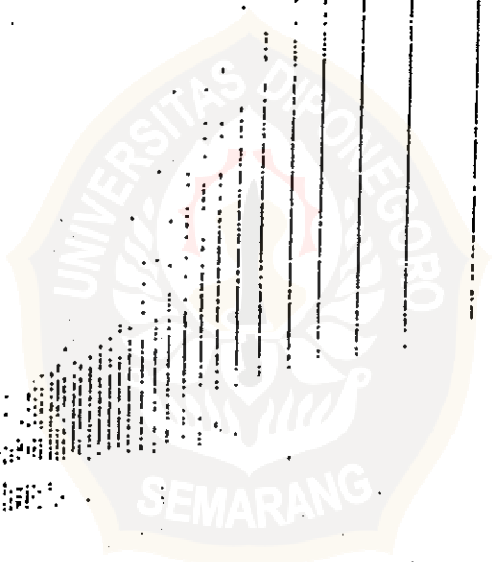
12-Jan-94 11:24:56 SP= JAN6/1 OFF CFS 128/ALoy CC 8063/1951.926

1. ACQUISITION
 Chans 8192
 LD=1 RD= 8192
 Acq Start
 12-JAN-94
 10:54:13

ELAPSED
 Live 00:30:00.00
 Real 00:30:02.18
 Totl

PRESET
 Live 00:30:00.00
 Real 00:00:00.00
 Totl
 Start
 End

Dead Time 0%



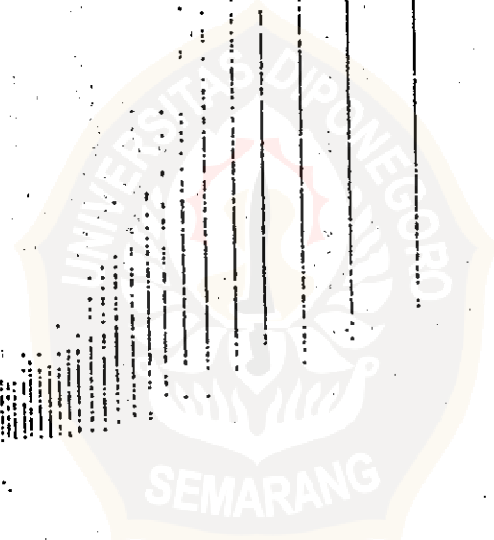
12-Jan-94 09:41:11 SP= JAN6/1 OFF CFS 128/ALog CC 123/ 121.318

1. ACQUISITION
 Chans 8192
 LD=1 RD= 8192
 Acq Start
 12-JAN-94
 09:08:47

ELAPSED
 Live 00:30:00.00
 Real 00:30:02.36
 Totl

PRESET
 Live 00:30:00.00
 Real 00:00:00.00
 Totl
 Start
 End

Dead Time 0%



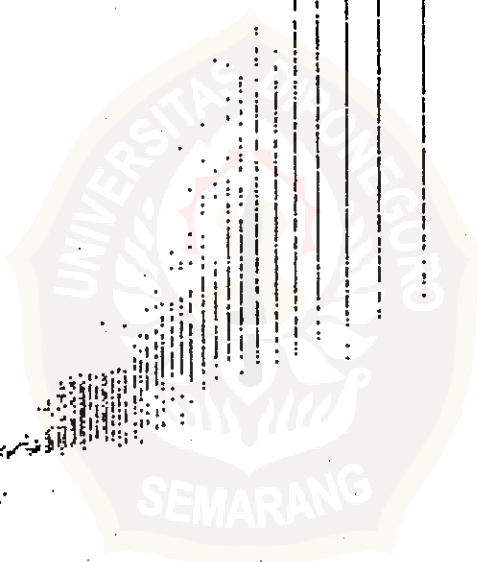
12-Jan-94 10:14:03 SP= JAN6/1 OFF CFS 256/ALog CC 8036/1945.701

1. ACQUISITION
 Chans 8192
 LD=1 RD= 8192
 Acq Start
 12-JAN-94
 09:42:54

ELAPSED
 Live 00:30:00.00
 Real 00:30:03.75
 Totl

PRESET
 Live 00:30:00.00
 Real 00:00:00.00
 Totl
 Start
 End

Dead Time 0%



Digate dengan Tenaga 1411,65 keV

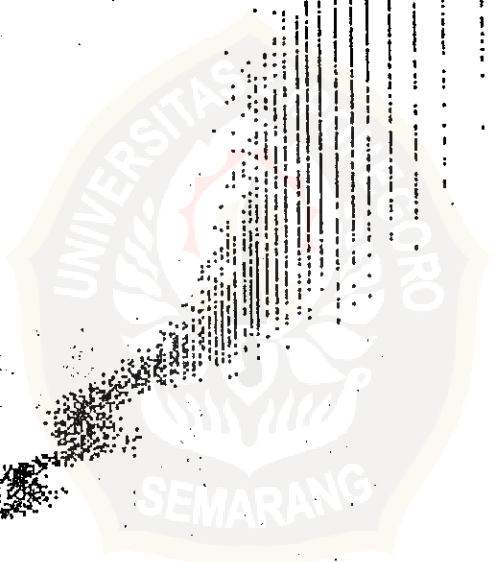
12-Jan-94 10:52:25 SP= JAN6/1 OFF CFS 512/ALog CC 8130/1967.374

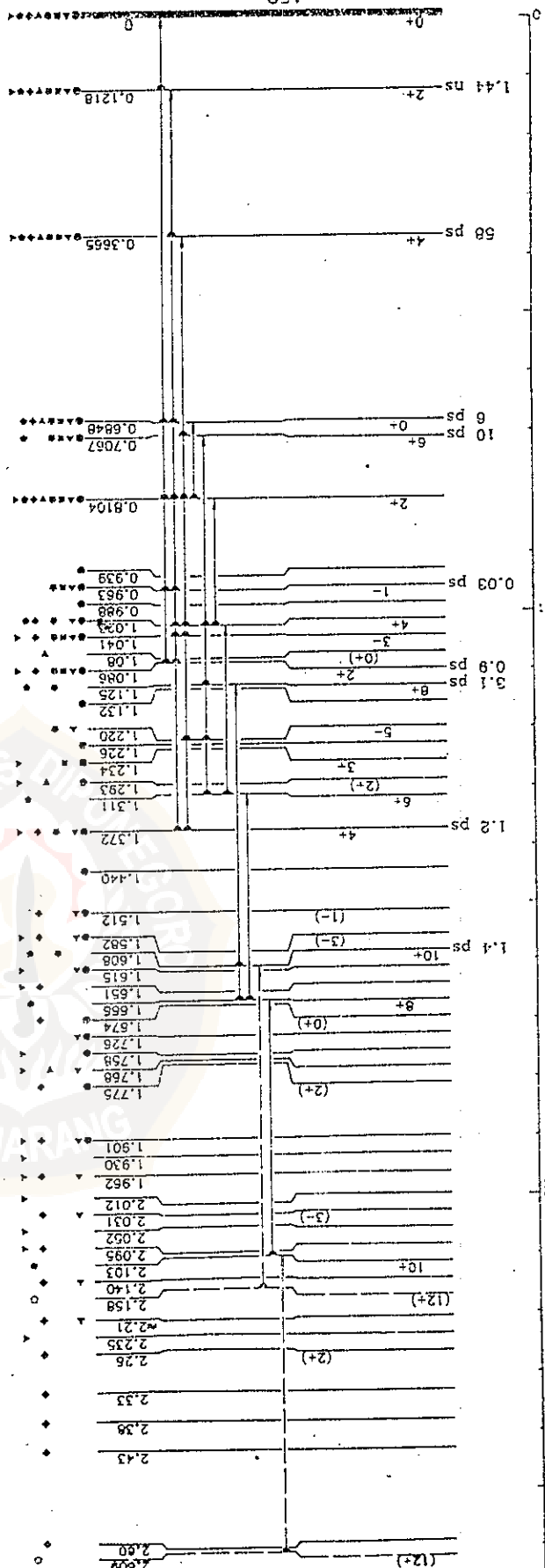
1. ACQUISITION
 Chans 8192
 LD=1 RD= 8192
 Acq Start
 12-JAN-94
 10:15:47

ELAPSED
 Live 00:35:00.00
 Real 00:35:07.16
 Totl

PRESET
 Live 00:35:00.00
 Real 00:00:00.00
 Totl
 Start
 End

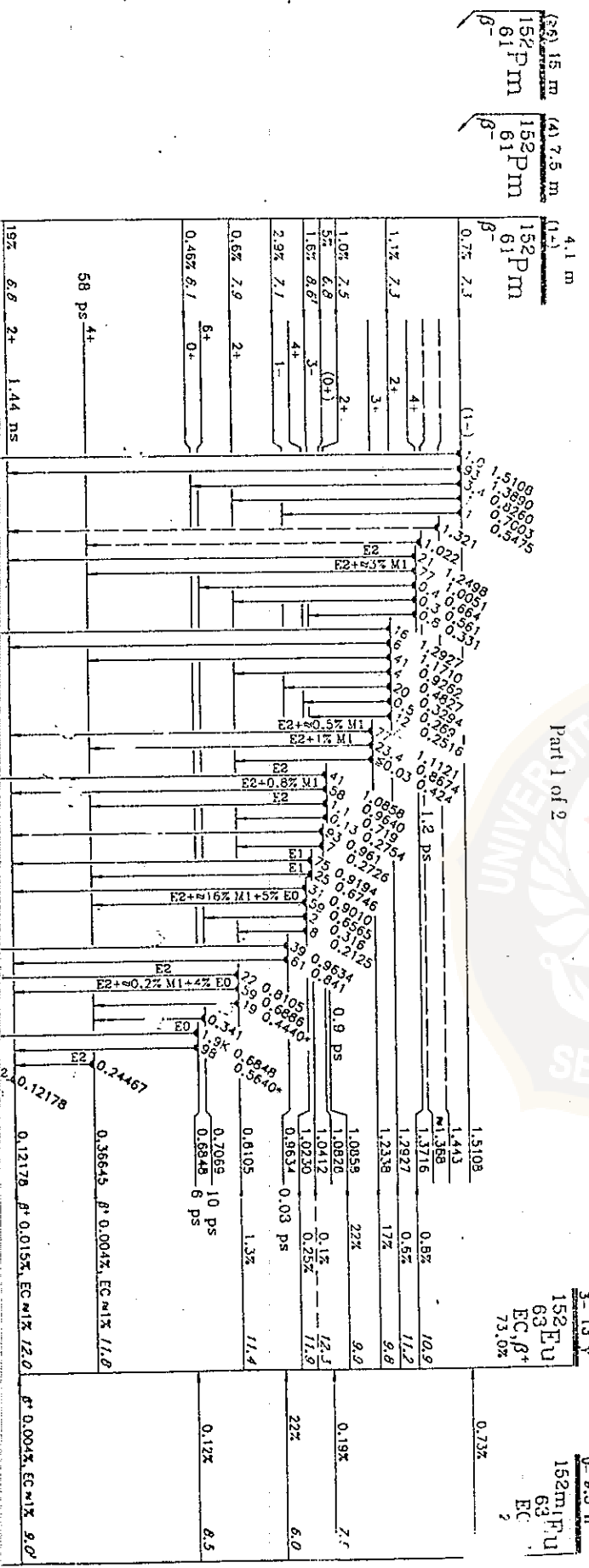
Dead Time 0%





- $^{152}\text{Sm}(p,p)$
- ▲ $^{152}\text{Sm}(d,d)$
- ◆ $^{152}\text{Sm}(p,d)$
- ◊ $^{152}\text{Nd}(\alpha,\gamma)$
- ◐ $^{152}\text{Sm}(\alpha,\alpha')$
- ◑ $^{152}\text{Sm}(n,\gamma)$
- Coil. ex.

Part 1 of 2



3-13 y
 ^{152}Pm
 EC, β^+
 73.0%

0-9.3 h
 ^{152}mPm
 EC
 2

0.73%

1.5108
 1.443
 1.388
 1.3716
 1.2927
 1.2338

1.0858 22%
 1.0826 0.1%
 1.0412 12.1
 1.0230 0.25%
 0.9633 0.03 ps
 0.8105 1.3%
 0.7065 10 ps
 0.6848 6 ps

0.12%
 0.5

0.19%
 7.1

22%
 6.0

0.004% EC M1X 12.0
 0.004% EC M1X 9.0

0.24467
 0.36645 β^+ 0.004% EC M1X 11.0
 0.5640
 0.6848
 0.12178 β^+ 0.015% EC M1X 12.0

(20) 15 m
152Pm
61Pm
β⁻

(4) 7.5 m
152Pm
61Pm
β⁻

4.1 m
(1+)
152Pm
61Pm
β⁻

