



เอกสารอ้างอิง

1. โพธิ์ เทพมงคล. "โรคมะเร็งสำหรับแพทย์เวชปฏิบัติทั่วไปและนักศึกษาแพทย์", ม.ป.ท.
2. Cohen M. and Martin, S.J. Atlas of Radiation Dose Distributions Vol. II
"Multiple-field Isodose Charts". Vienna : I.E.A.E., 1966.
3. Dorn, W.S. and McCracken, D.D. Numerical Methods with Fortran IV Case
Studies. John Wiley & Sons, 1972.
4. I.A.E.A. Rolè of Computer in Radiotherapy, Vienna, 1968.
5. Johns, H.E. and Cunningham, J.R. The Physics of Radiology. 3rd Ed.,
Charles C. Thomas, 1969.
6. Massey, John B. Manual of Dosimetry in Radiotherapy. Vienna : I.A.E.A.,
1970.
7. McLachlan, G. and Shegog, R.A. Computer in the Service of Medicine Vol.
II Essays on Current and Applications, Ed. London Oxford
University Press, 1969.
8. Meridith, W.J. and Massey, J.B. Fundamental Physics of Radiology.
2nd Ed., Bristol : John Wright & Sons, 1972.
9. "Program for external Beam Calculation for Radiation Therapy" (คัดสำเนา)
10. Tsien, K.C. The "Application of Automatic computing machines to
Radiation treatment planning". British Journal of Radiology
XXVIII, 1955 : 432-439.
11. Tsien, K.C., Cunningham, J.R., Wright, D.J., Jones D.E.A. and
Pfalzner. Atlas of Radiation Dose Distributions Vol. III
"Moving Field Isodose Chart" , Vienna : I.A.E.A., 1967.
12. Webster, E.W. and Tsien, K.C. Atlas of Radiation Dose Distributions
Vol. I "Single-Field Isodose Charts", Vienna : I.A.E.A., 1965.

13. Wheeler, T.K., Rubery, E.D. and Haybittle, J.L. "A computer-based Radiotherapy clinical record system using mark-sense forms". British Journal of Radiology, 49, 1976 : 863-867.
14. Wood, R.G. "The Computation of Dose Distributions in Cobalt Rotational Therapy." British Journal of Radiology, 35 : 482-484.

ภาคผนวก ก

ค่า SAR และ TAR จากตาราง

000026190005

033:LT-50 1.25 MEV GAMMA RAY SOURCE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	18	20	22
005	1000000	7001400	1000260	03320	03370	04300	04800	05400	06000	06600	07200	07800	08400	09000	09600	10200	10800	11400
010	0296500	1300250	03370	04300	05300	06500	07300	07800	08400	09000	09400	09800	10100	10400	10900	11400	11800	12000
020	0090500	02300	04500	06400	08300	10000	11000	11600	12200	12700	13300	13900	14200	14600	15200	15400	16000	16200
030	0084500	03200	06100	08400	10300	11800	13000	13700	14700	15400	16100	16600	17200	17600	18000	18700	19300	19800
040	0079200	03800	07100	09000	11200	13700	15100	16200	17000	17900	18600	19100	19700	20100	20500	21500	22200	22800
050	0074200	04100	07600	10700	13400	15200	16600	17300	18500	19800	20600	21200	21800	22400	22900	24000	24800	25500
060	0069400	04200	08000	11400	14100	16000	17500	18000	19200	20200	21100	21900	22600	23400	24100	24600	25700	26700
070	0065000	04200	08100	11500	14300	16400	18100	19600	20900	22000	22900	23900	24600	25400	26000	27300	28200	29000
080	0060900	04100	08000	11400	14200	16500	18300	19900	21400	22500	23600	24600	25400	26300	27100	28500	29400	30100
090	0057000	04000	07800	11200	14000	16400	18300	20000	21600	22800	24000	25100	26000	26900	27700	29200	30300	31200
100	0053400	03800	07500	10900	13600	16100	18100	19900	21500	22900	24200	25200	26200	27100	27900	29500	30800	31800
110	0050100	03600	07100	10400	13200	15700	17800	19700	21300	22700	24100	25200	26200	27200	28000	29600	31100	32200
120	0046900	03500	06900	10000	12800	15300	17400	19400	21000	22500	23900	25100	26100	27200	28100	29700	31200	32400
130	0044000	03400	06600	09500	12400	14900	17000	19000	20700	22300	23700	24900	26000	27000	28000	29800	31300	32500
140	0041200	03200	06300	09200	12000	14500	16600	18600	20400	22000	23500	24700	25800	26800	27900	29700	31300	32600
150	0038600	03100	06000	08900	11600	14100	16200	18200	20000	21600	23100	24400	25500	26600	27700	29500	31100	32500
160	0036100	03000	05800	08600	11200	13600	15700	17700	19500	21200	22700	24000	25200	26300	27400	29200	30800	32200
170	0033900	02900	05600	08300	10800	13200	15200	17200	19100	20700	22300	23600	24800	25900	27100	28800	30400	31800
180	0031700	02700	05400	08000	10400	12800	14800	16700	18600	20200	21800	23200	24400	25500	26600	28400	30000	31200
190	0029700	02600	05200	07700	10100	12400	14400	16200	18100	19700	21300	22600	23900	25100	26100	28000	29500	30900
200	0027800	02400	04900	07400	09700	11900	13900	15700	17600	19200	20700	22100	23400	24600	25700	27500	29100	30500
220	0024600	02200	04400	06700	08800	10900	12800	14600	16300	18000	19400	20800	22200	23300	24600	26400	28000	29500
240	0021500	02000	04000	06000	07900	09800	11600	13300	15000	16800	18200	19600	20800	22000	23500	25200	26700	28100
250	0018700	01800	03600	05400	07300	09100	10800	12500	14200	15600	17000	18400	19600	20700	21900	23600	25300	26600
280	0016400	01600	03200	04900	06700	08300	09800	11500	13200	15600	15900	17200	18400	19400	20500	22200	23800	25100
300	0014400	01500	03000	04500	06100	07500	08900	10500	12100	13400	14600	15900	17000	18100	19100	20800	21300	23600

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ภาคผนวก ข

ลักษณะคำสั่งควบคุมของผู้ใช้

คำสั่งควบคุม	พารามิเตอร์	คำอธิบาย	ค่าสูงสุด
<u>CAN</u> cer-treat-plan-package	n_1	ให้ค่าเริ่มต้นในการคำนวณ	
<u>DATE</u>	n_1, n_2, n_3	<p>n_1 = plane of calculation</p> <p>ทิศทางแกน</p> <p>n_1 = 0</p> <p>n_2 = เดือน</p> <p>n_3 = วัน</p>	99 99 99
<u>NAME</u>	a_1	ชื่อผู้ป่วยต้องไม่มีเว้นว่างหรือจุดภาคพื้น	
<u>IRR</u> radiation-no.	n_1	เลขรหัสรักษาของผู้ป่วย	999999
<u>SIN</u> gle-beam	a_1	<p>คำนวณแบบพิกัดเดียว</p> <p>a_1 = ชื่อของระบบโคออร์ดิเนตที่ใช้ $\left\{ \begin{array}{l} \text{Polar} \\ \text{Cartesian} \end{array} \right\}$</p>	
<u>MUL</u> ti-ple-beam	n_1	<p>คำนวณแบบมากกว่า 1 พิกัด</p> <p>n_1 = จำนวนพิกัดที่ใช้</p>	6
<u>ROT</u> ation	n_1, n_2, \dots, n_{36}	<p>คำนวณแบบหมุนตัวกำเนิดรังสีรอบผู้ป่วย</p> <p>n_1, n_2, \dots, n_{36} หมายถึง ตำแหน่งที่ฉายรังสี</p> <p>ถ้า $n_1 \geq 99$ จะเป็นการหมุน 360° ไม่ต้องระบุ</p> <p>ตำแหน่งต่อไป</p>	
<u>SOUR</u> ce	n_1	<p>ต้นกำเนิดรังสีที่ใช้</p> <p>n_1 = รหัสของต้นกำเนิดรังสี</p>	9
<u>POS</u> ition	n_1	ตำแหน่งของพิกัดที่ฉาย (สำหรับ SIN และ MUL เท่านั้น)	36
<u>SIZ</u> e-of-beam	n_1, n_2	<p>ขนาดของฟิลด์ที่ SAD</p> <p>n_1 = คำนว้าง</p> <p>n_2 = คำนวยาว</p>	20 20
<u>SSD</u>	n_1	SOURCE-SURFACE DISTANCE	99.9
<u>SDD</u>	n_1	SOURCE-DIAPHRAGM DISTANCE	99.9
<u>SAD</u>	n_1	SOURCE-AXIS DISTANCE	999.9
<u>SD</u>	n_1	SOURCE-DIAMETER	9.9
<u>BOD</u> y-contour	n_1, n_2, \dots, n_{36}	รหัสมีเส้นรอบรูปของร่างกายวัดจากจุดศูนย์กลางห่างกัน 10 องศา	
<u>TUM</u> our-contour	n_1, n_2, \dots, n_{36}	รหัสมีเส้นรอบรูปของก้อนมะเร็งวัดจากจุดศูนย์กลางห่างกัน 10 องศา	
<u>FILE</u> -maintenance	n_1	คำสั่งการจัดการแฟ้มข้อมูล (ไม่มีการคำนวณ)	
	$m_1, p_1, m_2, p_2, \dots, m_i, p_i, m_{i+1}$	<p>n_1 = รหัสคำสั่งการจัดการ</p> <ol style="list-style-type: none"> 1. เปลี่ยนแปลงข้อมูล 2. เพิ่มข้อมูล 3. ลบข้อมูล 4. แลคจนลข้อมูล <p>m_1, m_2, \dots, m_i เป็นตำแหน่งของเซตข้อมูล</p> <p>p_1, p_2, \dots, p_i เป็นข้อความหรือค่าในเซตข้อมูลนั้น ๆ</p> <p>m_{i+1} มีค่า ≥ 99 แสดงการสิ้นสุดคำสั่ง</p>	

คำสั่งควบคุม	พารามิเตอร์	คำอธิบาย	ค่าเริ่มต้น
<u>RECORD</u>	n_1	คำสั่งให้บันทึกข้อมูลในแฟ้ม	
	$m_1 P_1, m_2 P_2, \dots,$	ลักษณะเหมือนคำสั่ง FIL	
	$m_i P_i, m_{i+1}$		
<u>WEDGE-filter</u>	n_1, n_2, \dots, n_{20}	ระบุการใช้เวดจ์ฟิลเตอร์	
	$n_{21}, n_{22}, \dots, n_{40}$	n_1, \dots, n_{20} เป็นความหนาวัดจากจุดกึ่งกลางไปทางขวา n_{21}, \dots, n_{40} เป็นความหนาวัดจากจุดกึ่งกลางไปทางซ้าย โดยแต่ละจุดห่างกัน 0.5 เซนติเมตร	
<u>SHIELDING-block</u>	n_1, n_2	ระบุการใช้วัสดุกำบังรังสี	
		n_1 = ค่าตำแหน่งของขอบซ้าย n_2 = ค่าตำแหน่งของขอบขวา เทียบกับ 0 ที่จุดเส้นแกนกลาง	
<u>DESIGNING-of-wedge-Filter</u>	n_1, n_2	คำสั่งการออกแบบเวดจ์ฟิลเตอร์ (คำนวณความหนา)	
		n_1 = ความลึกอ้างอิงบนแกนกลาง n_2 = มุมเอียงของเส้นไอโซโทล (Wedge angle)	
<u>COEFFICIENT</u>	n_1	ค่าสัมประสิทธิ์การดูดกลืนรังสีของวัสดุที่ใช้	
<u>TRACe</u>	-	ให้พิมพ์ค่าที่คำนวณได้จากขั้นตอนต่าง ๆ ในโปรแกรม	
<u>END</u>	-	จบชุดของคำสั่ง	

หมายเหตุ n, m หมายถึง ข้อมูลที่เป็นตัวเลข
 a หมายถึง ข้อมูลที่เป็นตัวอักษร
 p หมายถึง พารามิเตอร์ที่อาจเป็นตัวเลขหรือตัวอักษรขึ้นอยู่กับว่าเป็นเขตข้อมูลใด

การใช้คำสั่งควบคุม มีหลักการดังนี้

1. การเรียงลำดับคำสั่งที่ใช้
 - 1.1 ผู้ใช้ไม่จำเป็นต้องเรียงลำดับคำสั่งจะใช้คำสั่งไหนก่อนก็ได้ แต่ต้องระวังกำสั่งที่ต่อเนื่องกัน เช่น คำสั่ง POSition จะต้องมาก่อนที่จะใช้คำสั่งกำหนดค่าพารามิเตอร์ของแต่ละฟิลต์
 - 1.2 คำสั่ง END จะต้องเป็นคำสั่งสุดท้ายเสมอ
2. แต่ละคำจะแยกกันด้วย อย่างน้อยที่สุด 1 ช่องว่างหรือจุลภาค และจะบรรจุที่คำสั่งก็ได้ในบิต 1 ไบ แต่คำสั่งเดียวกันจะต้องอยู่บนบิตไบเดียวกัน เช่น POSition จะแยกส่วนหนึ่งส่วนใดของคำสั่งนี้ไปอยู่ในอีกไบหนึ่งไม่ได้
3. คำสั่งทุกคำสั่งจะถืออักษร 3 ตัวแรกเป็นหลัก ยกเว้น SD จะมีเพียง 2 ตัวเท่านั้น
4. บิตที่ 8 * อยู่ สดมภ์ที่ 1 จะเป็นเพียงส่วนบรรยายประกอบเท่านั้นไม่มีผลกับคำสั่งใด ๆ
5. เมื่อลักษณะคำสั่งใดไม่ถูกต้องตามรูปแบบ โปรแกรมจะพิมพ์ข้อความข้อผิดพลาดออกมาและจะไม่มีการทำงานตามคำสั่งชุดนั้น
6. ถ้ามีคำสั่งใดซ้ำกันจะถือคำสั่งล่าสุดที่พบเป็นค่าจริง
7. จะพิมพ์สรุปคำสั่งและพารามิเตอร์ที่ใช้เป็นรูปของภาษาอ่านเข้าใจง่าย ก่อนทำการคำนวณผล

การสั่งโปรแกรมเข้าทำงาน โปรแกรมสำเร็จรูปนี้จะมีรูปแบบของโปรแกรม 2 อย่าง คือ

1. ในบิตเจาะรู จะใช้ภาษาควบคุมงาน (Job Control Language, JCL) ของระบบเครื่องคอมพิวเตอร์ ดังนี้


```

// JOB jobname
// OPTION LINK,LOG,ERRS,NOLIST
// EXEC FFORTRAN
.
.   โปรแกรม
.
/*
// EXEC LNKEDT
// ASSGN SYS002,X'283'
// ASSGN SYS003,X'281'
// ASSGN SYS004,X'282'
// ASSGN SYS005,X'283'
// ASSGN SYS009,X'01E'
// EXEC
.
.   ข้อมูล (คำสั่งควบคุม)
.
/*
/&

```

2. ในรูปเทปแม่เหล็ก ในกรณีตัวโปรแกรมอยู่ในเทปแม่เหล็กใช้ JCL ดังนี้

```

// JOB jobname
// OPTION LINK,LOG,ERRS,NOLIST
// EXEC FFORTRAN
// ASSGN SYSIPT,X'282'
/*
// EXEC LNKEDT

```

```
// ASSGN SYSIPT,X'00C'  
// ASSGN SYS002,X'283'  
// ASSGN SYS003,X'281'  
// ASSGN SYS004,X'282'  
// ASSGN SYS005,X'283'  
// ASSGN SYS009,X'01E'  
// EXEC
```

```
.  
. ข้อมูล (คำสั่งควบคุม)  
.
```

```
/*
```

```
/&
```

ภาคผนวก ค

ตัวอย่างการใช้จ่ายค่าสิ่งควบคุม

** CONTROL STATEMENT END ENTERED **

00000000111111112222222233333333444444445555555566666666777777778
1234567890123456789012345678901234567890123456789012345678901234567890

1150 IRRAD-NO. 252075 NAME MR. EXAMPLE-4 CANT1150
1160 REQ-OPDCONTROL-COMMAND-WITH-COMMAND-CODE 2,3 9999 CA. SAMPLE, S DANIEL-A0708, 100 CANT1160
1170 SING CART SCUR 1 POSITION 1 CANT1170
1180 SAD 80.5 SSD 80 SDD 60 SD 2 SIZE 10 10 CANT1180
1190 SDD 45 CANT1190
1200 END-SINGLE-70 CANT1200

00000000111111112222222233333333444444445555555566666666777777778
1234567890123456789012345678901234567890123456789012345678901234567890

THE CANCER TREATMENT PLANNING PACKAGE
EXTERNAL BEAM RADIOTHERAPY

IRRADIATION NO. 252075 PLANNING DATE 20/ 3/25
PATIENT'S NAME MR. EXAMPLE-4

INFORMATIONS WILL BE RECORDED IN R/T FILE
PLANE OF CALCULATION IS 0.0 CM. FROM CENTRAL AXIS
TREATMENT TECHNIQUE IS SINGLE-FIELD.

SOURCE USED: 1 CORT-60 1.25 MEV GAMMA RAY SOURCE
DEPTH OF BUILD UP (MAX. DOSE) IS 0.50 CM.
BEAM # 1 POSITION 1 (0.0 DEGREES)
SIZE 10.00 X10.00 CM. SOURCE-AXIS-DISTANCE 80.50 CM.
SOURCE-DIAMETER 2.00 CM. SOURCE-SURFACE-DISTANCE 80.00 CM.
SOURCE-DIAPHRAGM-DISTANCE 45.00 CM.

END OF CONTROL STATEMENT JOB NO. 252075

** BEGIN EXECUTION **

***** CANCER TREATMENT PLANNING PACKAGE-R215733-COMP. SCI. DIV-1981-

JOB #

** CONTROL STATEMENT ENDED **

00000000111111112222222233333333444444445555555566666666777777778
1234567890123456789012345678901234567890123456789012345678901234567890

1180 IRRADIATION NO. 252060 NAME EXAMPLE-3
1190 *****CHART FOR EXAMPLE # 75***** WEDGE 45 DEGREE TILTED
1200 SING POLAR
1210 POSITION(/-DEGREE) 1 SOURCE# 1
1220 SSD 50 SDD= 27 SAD= 55 SD 2.5 SIZE 6.5 SD 1.5
1230 WEDGE-FILTER
1240 6.5 5 4 3 1.5 .5 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1250 6.5 7 7.5 8.5 9.5 10 10.5 11.5 12 12.5 13 13 13 13 13 13 13 13 13
1260 COEFF-OF-ATTENUATION 0.627
1270 END.

00000000111111112222222233333333444444445555555566666666777777778
1234567890123456789012345678901234567890123456789012345678901234567890

THE CANCER TREATMENT PLANNING PACKAGE
EXTERNAL BEAM RADIOTHERAPY

IRRADIATION NO. 252060 PLANNING DATE 20/ 3/25
PATIENT'S NAME EXAMPLE-3

PLANE OF CALCULATION IS 0.0 CM. FROM CENTRAL AXIS
TREATMENT TECHNIQUE IS SINGLE-FIELD.

SOURCE USED: 1 COBALT-60 1.25 MEV GAMMA RAY SOURCE
DEPTH OF BUILD UP(MAX.DOSE) IS 0.50 CM.

BEAM# 1 POSITION 1(0.0 DEGREES) SOURCE-AXIS-DISTANCE 55.00 CM.
SIZE 6.00 X 6.00 CM. SOURCE-SURFACE-DISTANCE 50.00 CM.
SOURCE-DIAMETER 1.50 CM. SOURCE-DIAPHRAGM-DISTANCE 27.00 CM.

WEDGE FILTER USED:
THICKNESS IS IN MM. UNIT 0.5 CM. APART FROM EACH OTHER

Table with 11 columns representing distance intervals (6.50 to 13.00) and 2 rows for RIGHT-SIDE and LEFT-SIDE wedge filter thicknesses.

Absorption Coefficient 0.6270 PER CM.

END OF CONTROL STATEMENT JOB ID. 252060

** BEGIN EXECUTION **

***** CANCER TREATMENT PLANNING PACKAGE-3213730-COMP.SCI.COM-1981- JOB#

.....

** CONTROL STATEMENT ENCOUNTERED **

.....

0000000011111111112222222233333333344444444555555556666666667777777778
1234567890123456789012345678901234567890123456789012345678901234567890

1020	CANCER TREAT-PLAN-PACKAGE	0.0	DATE	20 03 25	CONT1020
1030	IRRADIATION-NO.	252030	NAME	EXAMPLE-1	CONT1030
1040	SINGLE	POLAR			CONT1040
1050	POS 1	SQ 1	SD 2	SIZE 19.37 19.37	CONT1050
1060	SD	70	SIZE	20 20	CONT1060
1070	SIZE	19.37	19.37		CONT1070
1080	SHIELD	-1.2375	1.2375	SHIE -1.65 1.65	END-SHI CONT1080

WARNING

A CONTROL STATEMENT TERMINATED ON COL. 93.

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THE CANCER TREATMENT PLANNING PACKAGE
EXTERNAL BEAM RADIOTHERAPY

IRRADIATN NO. 252030
PATIENT'S NAME EXAMPLE-1

PLANNING DATE 20/ 3/25

PLANE OF CALCULATION IS 0.0 CM. FROM CENTRAL AXIS

TREATMENT TECHNIQUE IS SINGLE-FIELD.

SOURCE USED: 1 COBALT-60 1.25 MEV GAMMA RAY SOURCE
DEPTH OF BUILD UP(MAX.DOSE) IS 0.50 CM.

BEAM# 1	POSITION	1(0.0 DEGREES)	SOURCE-AXIS-DISTANCE	70.00 CM.
	SIZE	19.37 X 19.37 CM.	SOURCE-SURFACE-DISTANCE	60.00 CM.
	SOURCE-DIAMETER	2.00 CM.	SOURCE-DIAPHRAGM-DISTANCE	30.00 CM.

SHIELDING BAR USED: DIMENSION IN X-DIRECTION IS
-1.65 1.65

END OF CONTROL STATEMENT

JOB NO. 252030

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** BEGIN EXECUTION **

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*** CONTROL STATEMENT ENCOUNTERED ***

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1020      CANCER TREAT-PLAN-PACKAGE 0.0      DATE 20 03 75      CANT1020
1030      IRRADIATN-NO. 252060 NAME EXAMPLE-3      CANT1030
1040      RECORDED 2      .2 252270      .4 0000      SAMPLE-TREAT      .6 DANIEL-C-APT      CANT1040
1050      999      CANT1050
1060      ROTATION 99      CANT1060
1070      SSD 50      SSD 33      SIZE 10.10      SD 2      CANT1070
1080      SAD 75      SIZE 8 8      CANT1080
1090      BODY-CONT      CANT1090
1100      10.0 10.1 10.6 11.2 12.0 12.9 13.7 14.4 14.9      CANT1100
1110      15.0 14.8 14.4 13.7 12.0 12.0 11.2 10.6 10.1      CANT1110
1120      10.0 10.1 10.6 11.2 12.0 12.9 13.7 14.4 14.9      CANT1120
1130      15.0 14.8 14.4 13.7 12.0 12.0 11.2 10.6 10.1      CANT1130
1140      END      CANT1140

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THE CANCER TREATMENT PLANNING PACKAGE
EXTERNAL - BEAM RADIOTHERAPY

IRRADIATN NO. 252060
PATIENT'S NAME EXAMPLE-3

PLANNING DATE 20/ 3/25

INFORMATION WILL BE RECORDED ON R/T FILE

PLANE OF CALCULATION IS 0.0 CM. FROM CENTRAL AXIS

TREATMENT TECHNIQUE IS ROTATION ; POSITION SELECTED ARE :-

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

SOURCE USED: 1 COBALT-60 1.25 MEV GAMMA RAY SOURCE
DEPTH OF BUILD (P/MAX. DISE) IS 0.50 CM.

BEAM# 1 POSITION ** (***** DEGREES)
SIZE 8.00 X 8.00 CM. SOURCE-AXIS-DISTANCE 75.00 CM.
SOURCE-DIAMETER 2.00 CM. SOURCE-SURFACE-DISTANCE 60.00 CM.
SOURCE-DIAPHRAGM-DISTANCE 33.00 CM.

BODY CONTOUR IN POLAR COORDINATE ; ORIGIN AT AXIS OF ROTATION(SAD)
EACH RADIAL LINE IS IN CM. UNIT ; OF 10 DEGREE INTERVAL

10.00	10.10	10.50	11.20	12.00	12.90	13.70	14.40	14.80
15.00	14.80	14.40	13.70	12.90	12.00	11.20	10.60	10.10
10.00	10.10	10.50	11.20	12.00	12.90	13.70	14.40	14.80
15.00	14.80	14.40	13.70	12.90	12.00	11.20	10.60	10.10

END OF CONTROL STATEMENT

JOB ID. 252060

ภาคผนวก ง

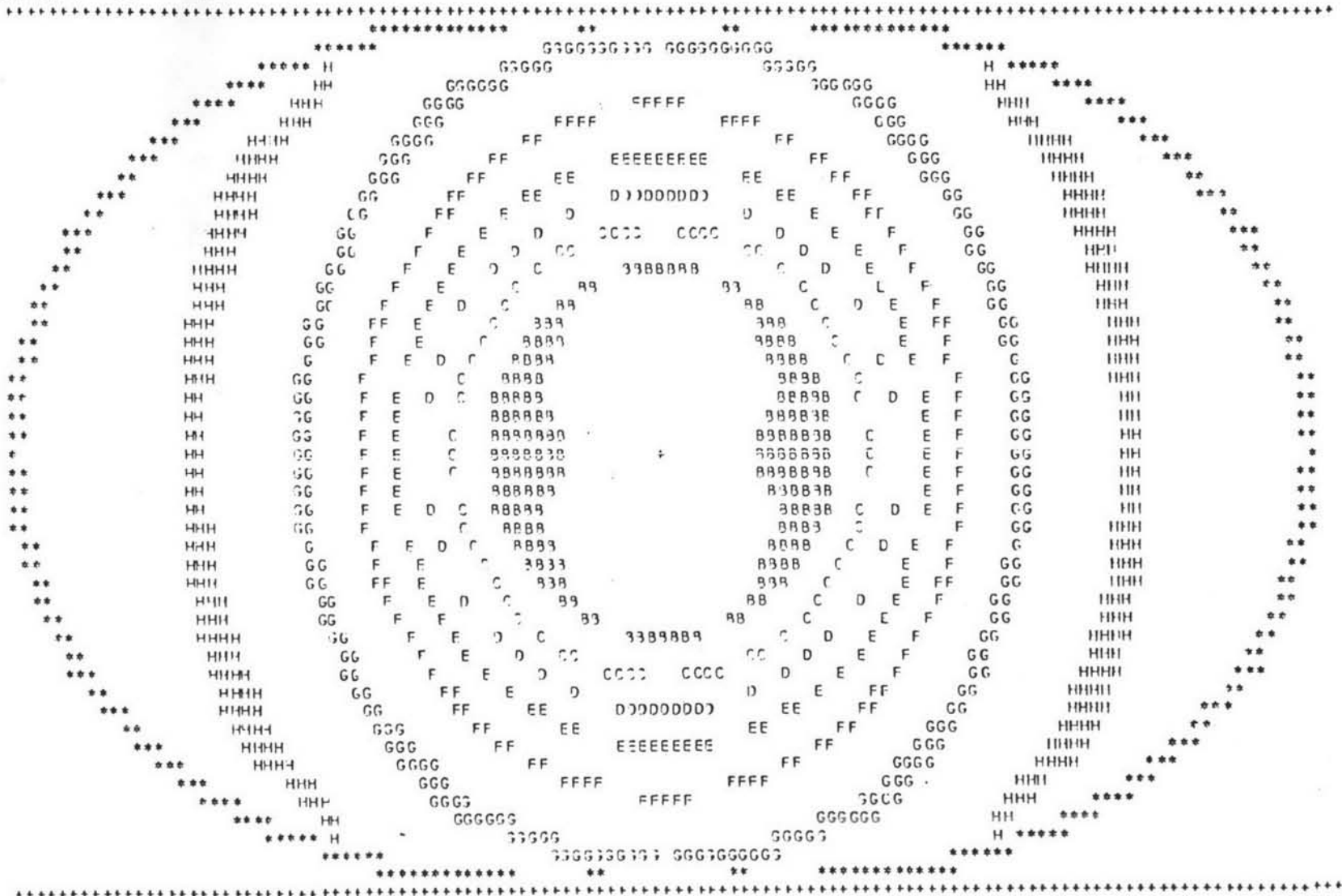
ตัวอย่างผลลัพธ์

DISE DISTRIBUTION ON OUTPUT GRID

ANGLE	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0
0.0	100.0	100.4	100.8	101.1	100.5	91.5	77.7	66.1	58.1	51.9	0.0	0.0	0.0	0.0	0.0
10.0	100.0	100.4	100.8	101.1	100.4	91.3	77.7	65.8	57.8	51.8	47.9	0.0	0.0	0.0	0.0
20.0	100.0	100.3	100.7	101.0	100.1	90.9	75.9	65.0	57.1	51.2	47.4	0.0	0.0	0.0	0.0
30.0	100.0	100.3	100.6	100.8	99.9	90.0	75.9	63.9	56.1	50.3	46.7	41.9	0.0	0.0	0.0
40.0	100.0	100.3	100.5	100.6	99.3	89.1	74.5	62.5	54.9	49.2	45.8	41.1	0.0	0.0	0.0
50.0	100.0	100.2	100.3	100.3	98.8	88.2	73.3	61.2	53.6	48.0	44.6	40.2	37.8	0.0	0.0
60.0	100.0	100.2	100.2	100.1	98.4	87.3	72.2	59.9	52.4	46.9	43.6	39.3	37.0	34.4	0.0
70.0	100.0	100.2	100.1	99.9	98.1	85.7	71.3	59.9	51.3	45.9	42.7	38.5	36.3	33.8	31.0
80.0	100.0	100.1	100.1	99.8	97.9	84.3	70.7	59.2	50.7	45.3	42.2	38.0	35.8	33.5	30.7
90.0	100.0	100.1	100.0	99.8	97.8	86.1	70.5	58.0	50.5	45.1	42.0	37.8	35.6	33.2	30.5
100.0	100.0	100.1	100.1	99.8	97.8	86.3	70.7	58.2	50.7	45.3	42.2	38.0	35.8	33.5	30.7
110.0	100.0	100.2	100.1	99.9	98.1	86.7	71.3	58.9	51.3	45.9	42.7	38.5	36.3	33.8	31.0
120.0	100.0	100.2	100.2	100.1	98.4	87.3	72.2	59.9	52.4	46.9	43.6	39.3	37.0	34.4	0.0
130.0	100.0	100.2	100.3	100.3	98.8	88.2	73.3	61.2	53.6	48.0	44.6	40.2	37.8	0.0	0.0
140.0	100.0	100.3	100.5	100.6	99.3	89.1	74.5	62.5	54.9	49.2	45.8	41.1	0.0	0.0	0.0
150.0	100.0	100.3	100.6	100.8	99.8	90.0	75.9	63.9	56.1	50.3	46.7	41.9	0.0	0.0	0.0
160.0	100.0	100.3	100.7	101.0	100.1	90.8	75.9	65.0	57.1	51.2	47.4	0.0	0.0	0.0	0.0
170.0	100.0	100.4	100.8	101.1	100.4	91.3	77.7	65.3	57.8	51.8	47.9	0.0	0.0	0.0	0.0
180.0	100.0	100.4	100.8	101.1	100.5	91.5	77.9	66.1	58.1	51.9	0.0	0.0	0.0	0.0	0.0
190.0	100.0	100.4	100.8	101.1	100.4	91.3	77.7	65.3	57.8	51.8	47.9	0.0	0.0	0.0	0.0
200.0	100.0	100.3	100.7	101.0	100.1	90.8	75.9	65.0	57.1	51.2	47.4	0.0	0.0	0.0	0.0
210.0	100.0	100.3	100.6	100.8	99.8	90.0	75.9	63.9	56.1	50.3	46.7	41.9	0.0	0.0	0.0
220.0	100.0	100.3	100.5	100.6	99.3	89.1	74.5	62.5	54.9	49.2	45.8	41.1	0.0	0.0	0.0
230.0	100.0	100.2	100.3	100.3	98.8	88.2	73.3	61.2	53.6	48.0	44.6	40.2	37.8	0.0	0.0
240.0	100.0	100.2	100.2	100.1	98.4	87.3	72.2	59.9	52.4	46.9	43.6	39.3	37.0	34.4	0.0
250.0	100.0	100.2	100.1	99.9	98.1	86.7	71.3	59.9	51.3	45.9	42.7	38.5	36.3	33.8	31.0
260.0	100.0	100.1	100.1	99.8	97.8	86.3	70.7	59.2	50.7	45.3	42.2	38.0	35.8	33.5	30.7
270.0	100.0	100.1	100.0	99.8	97.8	86.1	70.5	58.0	50.5	45.1	42.0	37.8	35.6	33.2	30.5
280.0	100.0	100.1	100.1	99.8	97.8	86.3	70.7	58.2	50.7	45.3	42.2	38.0	35.8	33.5	30.7
290.0	100.0	100.2	100.1	99.9	98.1	86.7	71.3	59.9	51.3	45.9	42.7	38.5	36.3	33.8	31.0
300.0	100.0	100.2	100.2	100.1	98.4	87.3	72.2	59.9	52.4	46.9	43.6	39.3	37.0	34.4	0.0
310.0	100.0	100.2	100.3	100.3	98.8	88.2	73.3	61.2	53.6	48.0	44.6	40.2	37.8	0.0	0.0
320.0	100.0	100.3	100.5	100.6	99.3	89.1	74.5	62.5	54.9	49.2	45.8	41.1	0.0	0.0	0.0
330.0	100.0	100.3	100.6	100.8	99.8	90.0	75.9	63.9	56.1	50.3	46.7	41.9	0.0	0.0	0.0
340.0	100.0	100.3	100.7	101.0	100.1	90.8	75.9	65.0	57.1	51.2	47.4	0.0	0.0	0.0	0.0
350.0	100.0	100.4	100.8	101.1	100.4	91.3	77.7	65.8	57.8	51.8	47.9	0.0	0.0	0.0	0.0

ISODOSE CURVE
 + IS ORIGIN
 * IS CONTOUR

** PLOTTER **

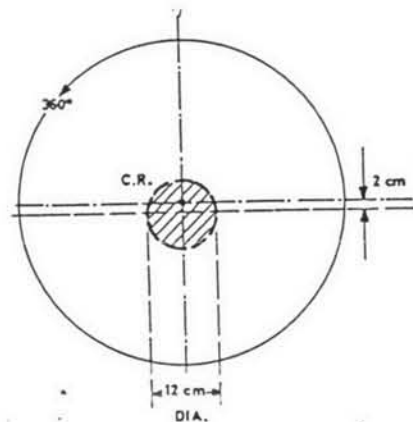


 ** CONTROL STATEMENT ENCOUNTERED **

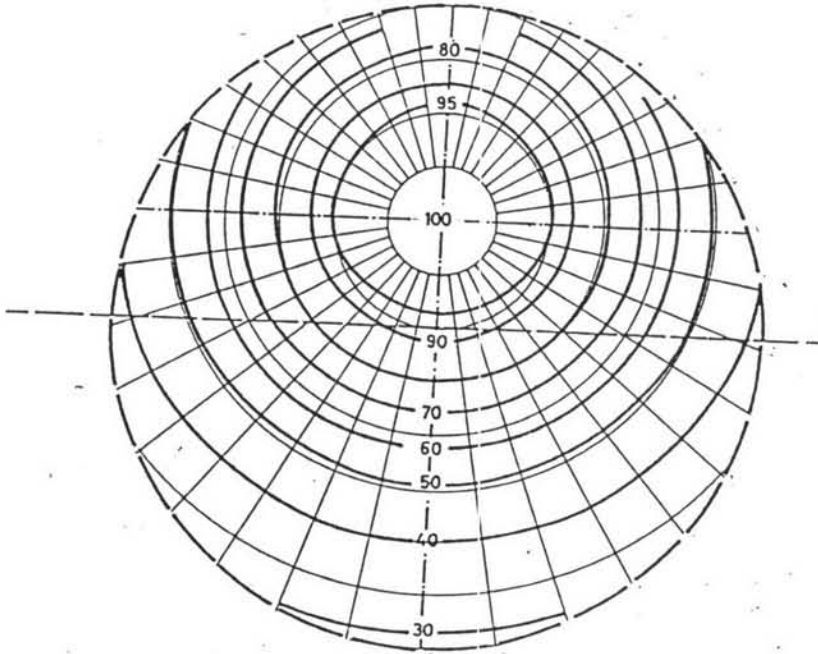
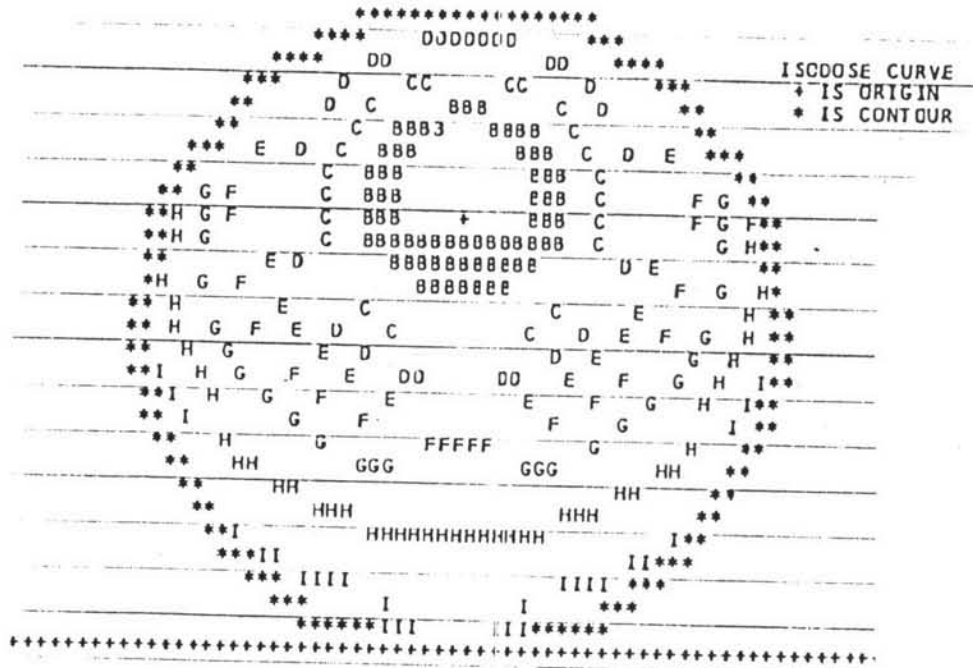
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1530	ROTATION 99	CANT1530
1540	SD 2,SSD 33 SAD 75 SIZE 6 6 SOURCE 1 SSD 67 SSO 50 SSD 60	CANT1540
1550	BODY-CONTOUR	CANT1550
1560	4 4 4.1 4.2 4.2 4.4 4.6 4.8 5.2	CANT1560
1570	5.7 5.9 6.3 6.7 7 7.3 7.6 7.9 8	CANT1570
1580	8 8 7.9 7.6 7.3 7 6.7 6.3 5.9	CANT1580
1590	5.7 5.2 4.8 4.6 4.4 4.2 4.1 4.1 4	CANT1590
1600	END	CANT1600

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* CHARACTER A	REPRESENTS DOSE FROM	110	TO	100	*
* CHARACTER B	REPRESENTS DOSE FROM	100	TO	98	*
* CHARACTER C	REPRESENTS DOSE FROM	90	TO	88	*
* CHARACTER D	REPRESENTS DOSE FROM	80	TO	78	*
* CHARACTER E	REPRESENTS DOSE FROM	70	TO	68	*
* CHARACTER F	REPRESENTS DOSE FROM	60	TO	58	*
* CHARACTER G	REPRESENTS DOSE FROM	50	TO	48	*
* CHARACTER H	REPRESENTS DOSE FROM	40	TO	38	*
* CHARACTER I	REPRESENTS DOSE FROM	30	TO	28	*
* CHARACTER J	REPRESENTS DOSE FROM	20	TO	19	*
* CHARACTER K	REPRESENTS DOSE FROM	15	TO	14	*
* CHARACTER L	REPRESENTS DOSE FROM	10	TO	9	*
* CHARACTER M	REPRESENTS DOSE FROM	5	TO	4	*



PATTERN = 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
 0
 SIZE 1 50 2 500 3 550 60 SAJ 75 SIZE 10 10
 WEDGE-FILTER
 8.5 7.5 6.5 5.5 4.5 3.5 2.5 1.5 0.5 0 0 0 0 0 0 0 0 0 0
 8.5 7 7.5 6.5 5.5 4.5 4 10.5 11.5 12 12.5 13 13 13 13 13 13 13 13 13
 COEFF-OF-ATTENUATION 0.627
 BODY-CONTOUR
 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15
 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15

REFLECT TECHNIQUE IS ROTATION ; POSITION SELECTED ARE :-

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SOURCE USED: 1 (CSALT-6) 1.25 MEV GAMMA RAY SOURCE
 DEPTH OF BUILD UP (MAX DOSE) IS 0.50
 POSITION ** (DEGREES)
 SIZE 10.00 X 10.00 CM.
 SOURCE-DIAMETER 2.00 CM.
 SOURCE-AXIS-DISTANCE 75.00 CM.
 SOURCE-SURFACE-DISTANCE 60.00 CM.
 SOURCE-DIAPHRAGM-DISTANCE 33.00 CM.

BODY CONTOUR IN POLAR COORDINATE ; ORIGIN AT AXIS OF ROTATION (OAJ)
 EACH RADIAL LINE IS 10 CM. THIS ; IF 10 DEGREE INTERVAL

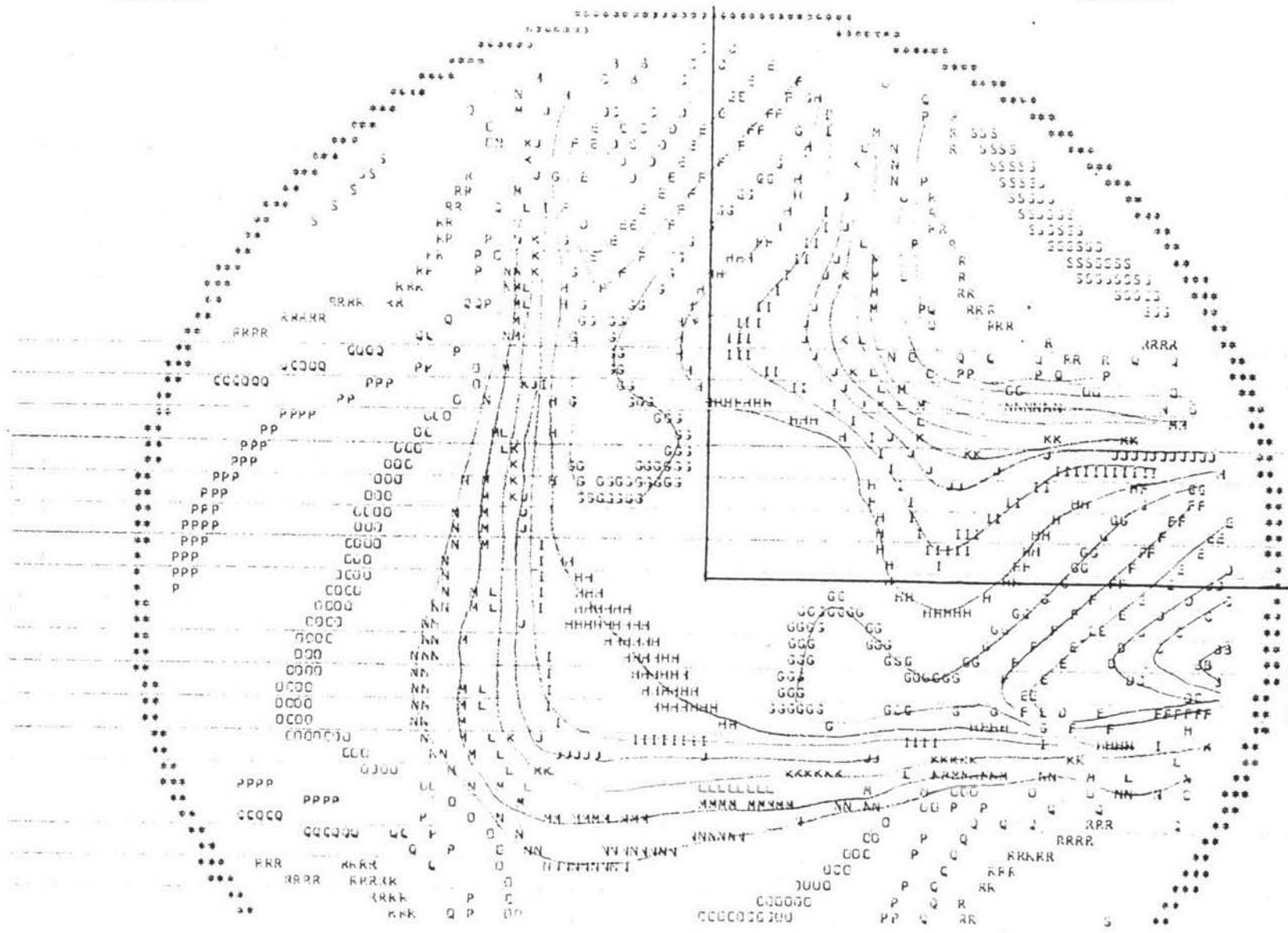
15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00

- **MAXIMUM DOSE IS 181.70
- * CHARACTER A REPRESENTS DOSE FROM 190 TO 185 *
 - * CHARACTER B REPRESENTS DOSE FROM 170 TO 165 *
 - * CHARACTER C REPRESENTS DOSE FROM 150 TO 148 *
 - * CHARACTER D REPRESENTS DOSE FROM 140 TO 138 *
 - * CHARACTER E REPRESENTS DOSE FROM 130 TO 128 *
 - * CHARACTER F REPRESENTS DOSE FROM 120 TO 118 *
 - * CHARACTER G REPRESENTS DOSE FROM 110 TO 108 *
 - * CHARACTER H REPRESENTS DOSE FROM 100 TO 98 *
 - ...
 - * CHARACTER N REPRESENTS DOSE FROM 50 TO 38 *
 - * CHARACTER O REPRESENTS DOSE FROM 30 TO 28 *
 - * CHARACTER P REPRESENTS DOSE FROM 20 TO 19 *
 - * CHARACTER Q REPRESENTS DOSE FROM 15 TO 14 *
 - * CHARACTER R REPRESENTS DOSE FROM 10 TO 9 *
 - * CHARACTER S REPRESENTS DOSE FROM 5 TO 4 *

ANGLE	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0
0.0	100.0	107.7	104.5	105.6	104.3	97.2	93.6	92.8	98.8	105.5	112.8	120.2	127.9	135.2	144.1
10.0	100.0	103.7	105.8	106.8	105.3	95.6	87.3	83.4	93.0	98.0	102.8	107.6	112.5	117.6	122.5
20.0	100.0	102.9	106.1	107.9	107.3	96.0	84.7	80.2	81.4	83.1	85.1	73.4	59.3	43.9	18.2
30.0	100.0	104.1	106.4	107.4	107.3	97.7	83.6	71.6	58.6	43.5	25.6	10.2	7.7	5.8	4.1
40.0	100.0	104.1	106.5	107.2	106.5	102.3	83.5	54.6	28.2	12.9	5.7	7.4	5.6	4.3	3.3
50.0	100.0	104.1	106.5	107.2	106.5	102.3	83.5	54.6	28.2	12.9	5.7	7.4	5.6	4.3	3.3
60.0	100.0	104.1	106.4	107.4	107.3	97.7	83.6	71.6	58.6	43.5	25.6	10.2	7.7	5.8	4.1
70.0	100.0	102.9	106.1	106.9	107.3	96.0	84.7	80.2	81.4	83.1	85.1	73.4	59.3	43.9	18.2
80.0	100.0	103.7	105.8	106.8	105.3	96.6	87.3	88.4	93.0	98.0	102.8	107.6	112.5	117.6	122.5
90.0	100.0	102.7	104.5	105.5	104.8	97.2	93.6	92.8	98.8	105.5	112.8	120.2	127.9	135.2	144.1
100.0	100.0	103.5	105.9	107.9	105.2	104.1	103.3	103.0	111.2	120.3	130.4	141.2	152.3	163.7	174.7
110.0	100.0	103.6	106.4	108.6	111.9	108.4	105.5	107.5	117.4	129.3	139.5	126.2	104.0	73.8	51.9
120.0	100.0	103.6	106.3	108.6	112.4	112.1	112.5	114.9	96.3	72.4	42.8	13.8	10.3	7.7	5.3
130.0	100.0	103.6	105.6	108.1	111.1	116.0	103.4	80.0	46.4	15.9	12.1	5.5	7.4	5.8	4.7
140.0	100.0	103.3	105.1	107.2	110.2	107.5	84.8	51.2	26.3	18.9	13.2	8.6	7.2	5.9	4.9
150.0	100.0	103.0	104.2	105.9	105.1	92.4	64.5	35.8	30.5	24.5	15.7	15.7	12.3	9.5	7.2
160.0	100.0	102.5	103.1	104.3	104.6	81.4	52.5	35.7	31.1	27.4	24.3	21.6	19.4	16.9	14.5
170.0	100.0	102.0	102.0	102.5	98.5	74.7	47.2	36.0	31.9	28.6	25.8	23.4	21.4	19.6	18.0
180.0	100.0	101.0	100.4	100.1	94.8	72.1	45.9	35.5	32.6	25.4	26.7	24.3	22.4	20.6	19.1
190.0	100.0	101.5	100.5	99.7	95.7	75.2	52.7	39.7	35.6	22.5	29.8	27.4	25.3	23.4	21.7
200.0	100.0	101.4	100.3	98.9	97.5	79.9	60.3	42.5	38.5	25.4	32.6	30.2	28.0	25.7	23.5
210.0	100.0	101.5	100.2	97.9	96.1	85.9	69.9	54.1	42.8	25.4	25.1	23.3	18.3	13.9	10.2
220.0	100.0	101.5	99.8	97.8	95.1	92.9	80.5	61.2	42.4	25.9	17.6	10.7	5.3	7.7	5.0
230.0	100.0	101.5	99.8	97.6	95.1	92.9	80.5	61.2	42.4	25.9	17.6	10.7	5.3	7.7	5.0
240.0	100.0	101.5	100.2	97.9	96.1	85.9	69.9	54.1	42.8	25.4	17.6	10.7	5.3	7.7	5.0
250.0	100.0	101.4	100.3	98.9	97.5	79.9	60.3	42.5	38.5	25.4	29.1	23.3	13.3	13.9	10.2
260.0	100.0	101.5	100.5	99.7	95.7	75.2	52.7	39.7	35.6	22.5	32.6	30.2	28.0	24.7	22.5
270.0	100.0	101.0	100.4	100.1	94.8	72.1	45.9	36.5	32.6	25.4	26.7	24.3	22.4	20.6	19.1
280.0	100.0	102.0	102.0	102.5	98.5	74.7	47.2	36.0	31.9	28.6	25.8	23.4	21.4	19.6	18.0
290.0	100.0	102.5	103.1	104.3	104.6	81.4	52.5	35.7	31.1	27.4	24.3	21.6	19.4	16.9	14.5
300.0	100.0	103.0	104.2	105.9	105.1	92.4	64.5	35.8	30.5	24.5	15.7	15.7	12.3	9.5	7.2
310.0	100.0	103.3	105.1	107.2	110.2	107.5	84.8	51.2	26.3	18.9	13.2	8.6	7.2	5.9	4.9
320.0	100.0	103.6	105.6	108.1	111.1	116.0	103.4	80.0	46.4	15.9	12.1	5.5	7.4	5.8	4.7
330.0	100.0	103.6	106.3	108.6	112.4	112.1	112.5	114.9	96.3	72.4	42.8	13.8	10.3	7.7	5.3
340.0	100.0	103.6	106.4	108.6	112.4	108.4	105.5	107.5	117.4	129.3	139.5	126.2	104.0	73.8	51.9
350.0	100.0	103.5	105.9	107.9	105.2	104.1	103.3	103.0	111.2	120.3	130.4	141.2	152.3	163.7	174.7

PLOTTER

DISCUSS 10/17
* IS 10/17
* IS 10/17



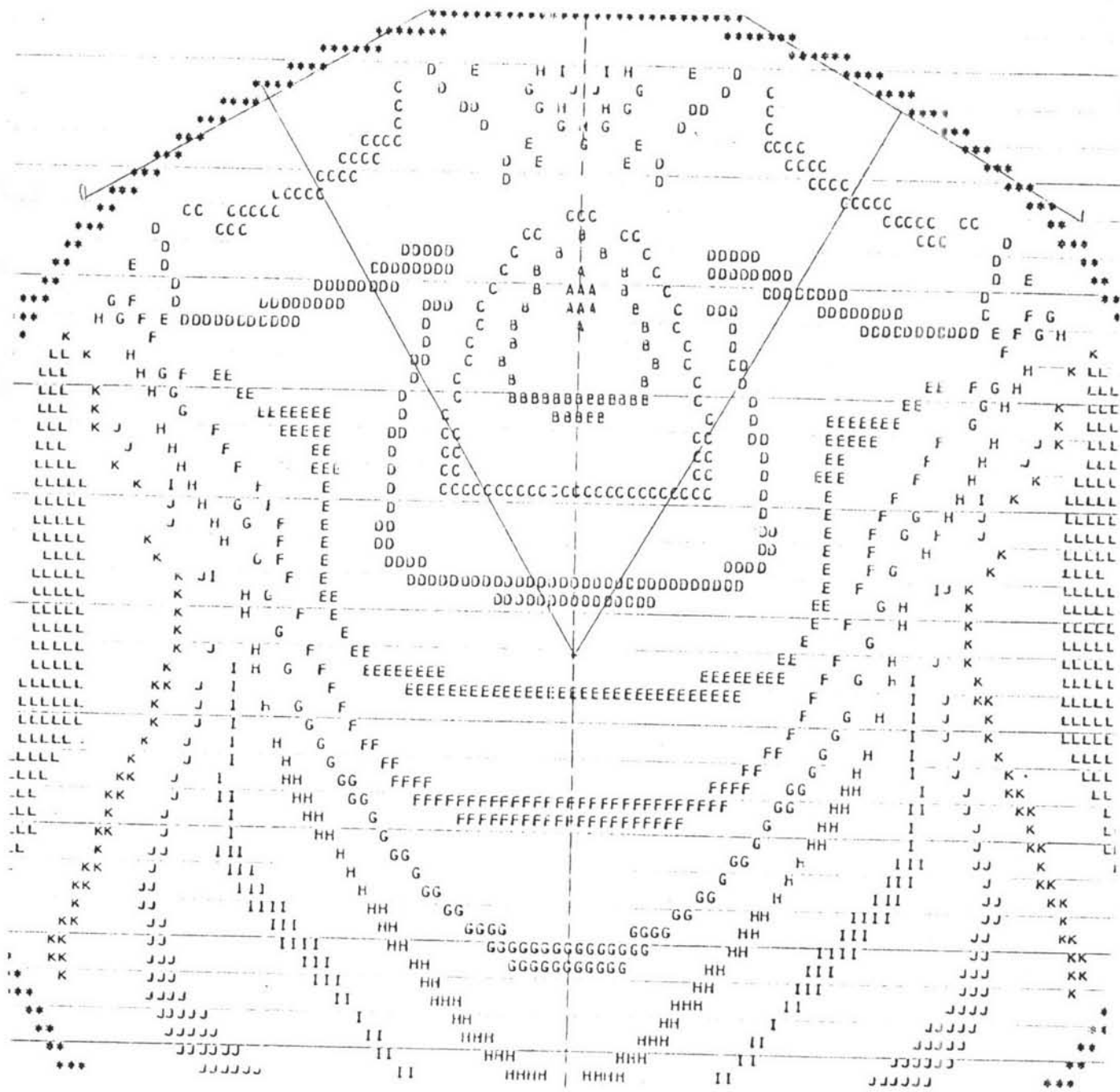
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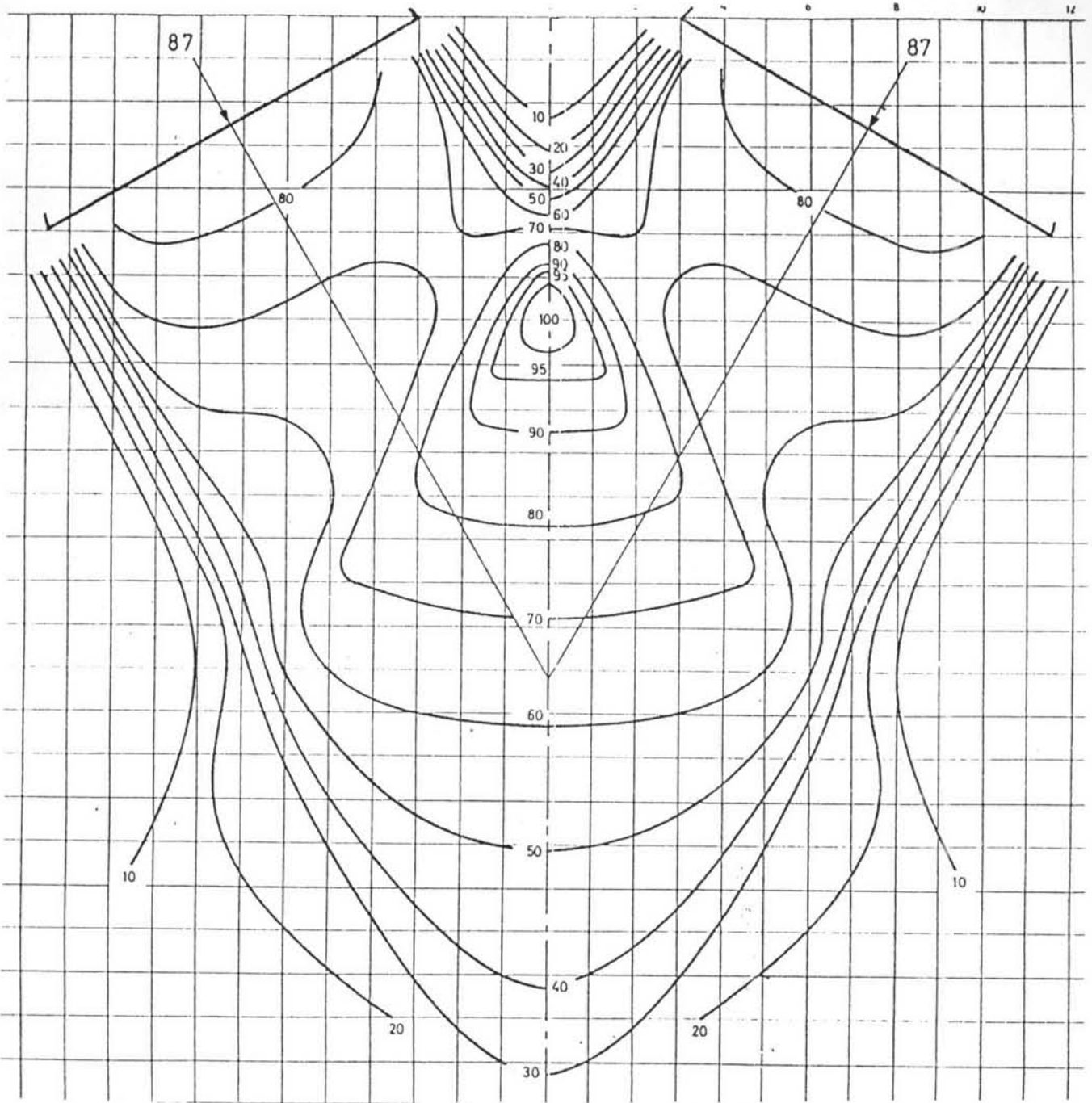
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12345678901234567890123456789012345678901234567890123456789012345678901234567890

1420	MULTIPLE:NG.-LF-FIELDS-15	2	CANT1420
1430	PCS	34	CANT1430
1440	SU 2	SOD 33 SSO 65 SAD 80 SIZE 10 10 SOUR 1	CANT1440
1450	SIZE	12.3 12.3	CANT1450
1460	POS	4	CANT1460
1470	SD 2	SOD 33 SSO 65 SAD 80 SIZE 10 10 SOUR 1	CANT1470
1480	SIZE	12.3 12.3	CANT1480
1490	BODY-CONTOUR		CANT1490
1500	15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15		CANT1500
1510	15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15		CANT1510
1520	END		CANT1520

0000000011111111112222222222333333333344444444445555555555666666666677777777778
1234567890123456789012345678901234567890123456789012345678901234567890

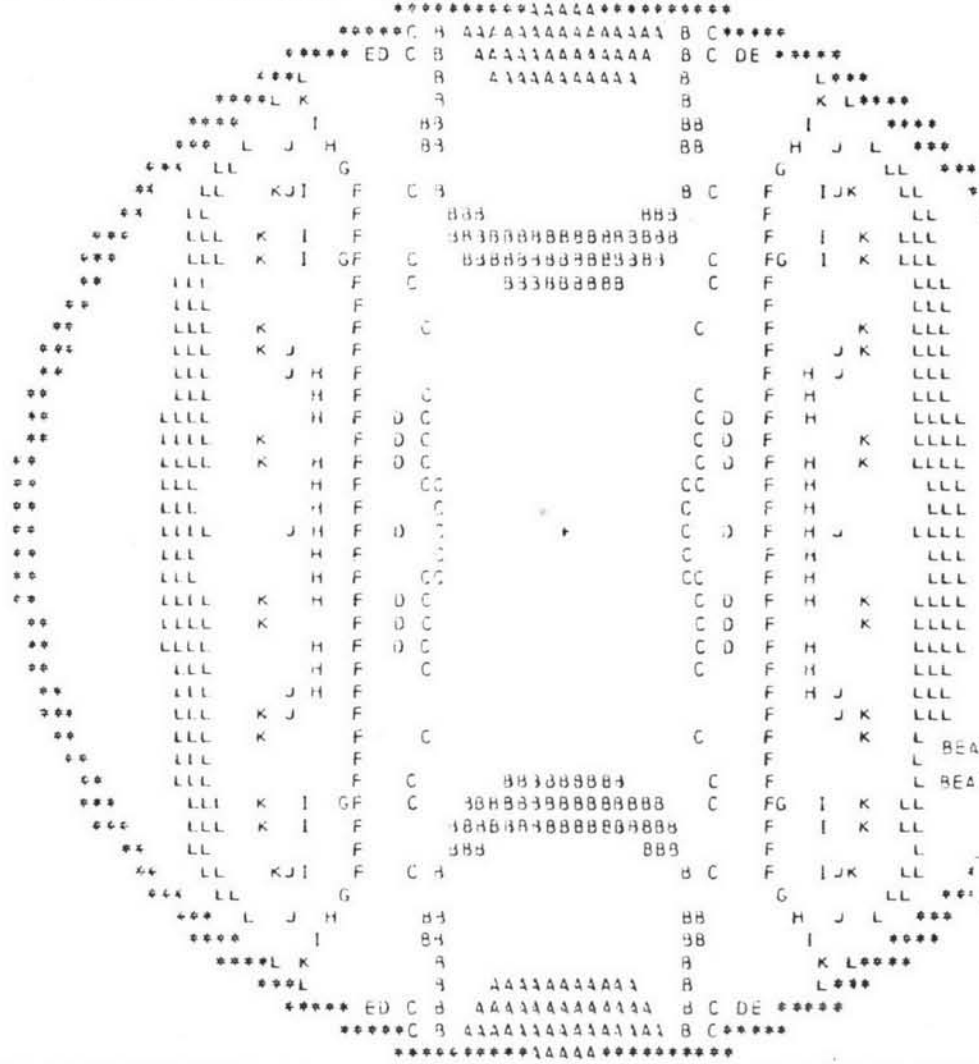
R [ANGLE]	C.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0
0.0	62.5	66.7	71.1	75.6	80.3	85.4	90.2	95.5	100.0	100.0	83.0	61.2	34.6	9.0	0.0
10.0	62.5	66.7	70.9	75.3	80.0	84.7	89.5	94.1	88.8	81.9	73.2	49.5	71.9	66.0	55.3
20.0	62.5	66.5	70.5	74.6	78.9	83.2	87.0	91.7	75.0	67.0	69.0	72.4	76.0	80.0	84.1
30.0	62.5	66.2	69.8	73.5	77.3	80.9	73.4	72.2	65.3	45.8	65.2	73.0	77.0	81.4	85.5
40.0	62.5	65.7	68.9	72.1	75.2	77.6	72.0	65.6	61.3	44.1	67.6	71.3	75.3	79.6	83.9
50.0	62.5	65.2	67.7	70.2	72.7	72.9	67.0	60.9	58.4	40.9	63.8	66.8	70.2	64.9	54.6
60.0	62.5	64.5	66.4	68.2	69.8	69.2	63.1	57.2	54.2	53.2	44.0	32.7	19.0	5.9	4.0
70.0	62.5	63.9	65.1	66.1	66.9	66.2	60.1	53.8	39.1	27.5	14.5	6.9	5.1	3.9	3.0
80.0	62.5	63.2	63.6	63.9	63.9	63.3	57.3	41.7	24.9	10.0	7.1	5.5	4.3	3.4	2.7
90.0	62.5	62.5	62.2	61.7	60.9	59.6	50.1	34.4	18.0	5.6	6.6	5.2	4.2	3.4	2.7
100.0	62.5	61.8	60.8	59.6	58.2	55.9	45.0	31.4	18.6	13.3	8.9	5.6	4.6	3.8	3.2
110.0	62.5	61.1	59.5	57.7	55.7	51.4	40.8	29.8	22.0	17.4	13.6	10.4	7.6	5.3	3.9
120.0	62.5	60.4	58.3	56.0	53.5	48.8	33.8	28.8	22.1	19.7	17.7	15.1	12.6	10.5	8.0
130.0	62.5	59.9	57.2	54.5	51.7	47.6	38.4	29.4	21.9	19.6	17.7	16.1	14.7	13.4	12.0
140.0	62.5	59.4	56.3	53.3	50.3	47.0	39.3	31.2	23.8	19.8	17.9	16.2	14.9	13.7	12.6
150.0	62.5	59.0	55.6	52.3	49.1	45.9	41.0	33.9	27.3	21.4	18.3	16.6	15.2	14.0	12.9
160.0	62.5	58.7	55.1	51.7	48.4	45.2	42.0	37.0	31.2	25.9	21.2	17.3	15.8	14.5	13.3
170.0	62.5	58.5	54.8	51.3	47.9	44.7	41.6	38.6	35.2	30.5	26.2	22.3	18.9	15.9	13.0
180.0	62.5	58.5	54.7	51.1	47.8	44.5	41.5	38.5	35.8	33.0	30.3	26.1	21.9	13.1	14.8
190.0	62.5	58.5	54.8	51.3	47.9	44.7	41.6	38.6	35.2	30.5	26.2	22.3	18.9	15.9	13.3
200.0	62.5	58.7	55.1	51.7	48.4	45.2	42.0	37.0	31.2	25.9	21.2	17.3	15.8	14.5	13.3
210.0	62.5	59.0	55.6	52.3	49.1	45.9	41.0	33.9	27.3	21.4	18.3	16.6	15.2	14.0	12.9
220.0	62.5	59.4	56.3	53.3	50.3	47.0	39.3	31.2	23.8	19.8	17.9	16.2	14.9	13.7	12.6
230.0	62.5	59.9	57.2	54.5	51.7	47.6	38.4	29.4	21.9	19.6	17.7	16.1	14.7	13.4	12.3
240.0	62.5	60.4	58.3	56.0	53.5	48.8	38.8	28.8	22.1	19.7	17.7	15.1	12.6	10.5	8.0
250.0	62.5	61.1	59.5	57.7	55.7	51.4	40.8	29.8	22.0	17.4	13.6	10.4	7.6	5.3	3.9
260.0	62.5	61.8	60.8	59.6	58.2	55.9	45.0	31.4	18.6	13.3	8.9	5.6	4.6	3.8	3.2
270.0	62.5	62.5	62.2	61.7	60.9	59.6	50.1	34.4	18.0	5.6	6.6	5.2	4.2	3.4	2.9
280.0	62.5	63.2	63.6	63.9	63.9	63.3	57.3	41.7	24.9	10.0	7.1	5.5	4.3	3.4	2.7
290.0	62.5	63.9	65.1	66.1	66.9	66.2	60.1	53.8	39.1	27.5	14.5	6.9	5.1	3.9	3.0
300.0	62.5	64.5	66.4	68.2	69.8	69.2	63.1	57.2	54.2	53.2	44.0	32.7	19.0	5.9	4.0
310.0	62.5	65.2	67.7	70.2	72.7	72.9	67.0	60.9	58.4	60.9	63.8	66.8	70.2	64.9	54.6
320.0	62.5	65.7	68.9	72.1	75.2	77.6	72.0	65.6	61.3	64.1	67.6	71.3	75.3	79.6	83.9
330.0	62.5	66.2	69.8	73.5	77.3	80.9	78.4	72.2	65.3	65.8	65.2	73.0	77.0	81.4	85.5
340.0	62.5	66.5	70.5	74.6	78.9	83.2	87.0	81.7	75.0	67.0	69.0	72.4	76.0	80.0	84.1
350.0	62.5	66.7	70.9	75.3	80.0	84.7	89.5	94.1	88.8	81.9	73.2	49.5	71.9	66.0	55.3





ISDOSE CURVE
 + IS CRIGIN
 * IS CONTO IR

PLOTTER 10.000000 -15.000000 -10.000000 15.000000 10.151999 119 47



ภาคผนวก จ

โปรแกรมคอมพิวเตอร์

โปรแกรม READC

ทำหน้าที่อ่านคำสั่งควบคุมและข้อมูลหรือพารามิเตอร์ของคำสั่งนั้น ด้วยลักษณะรูปแบบอิสระขึ้นอยู่กับค่า IPTN ถ้า IPTN มีค่าเป็นบวกโปรแกรมนี้จะเริ่มอ่านข้อมูลจากบัตรใบใหม่ โดยไม่สนใจข้อมูลที่เหลือบนบัตรใบเก่า ถ้ามีค่าเป็นลบ จะอ่านข้อมูลจากบัตรใบเดิมจนกว่าจะครบตามต้องการ และถ้าไม่มีข้อมูลเหลืออีกก็จะอ่านจากบัตรใบต่อไป คำสั่งมัวร์ (Absolute) ของ IPTN จะเป็นตัวกำหนดชนิดของข้อมูลโดย ถ้าเป็นเลข 1 จะหมายถึงข้อมูลที่เป็นตัวอักษร ถ้าเป็นเลข 2 จะเป็นตัวเลข สำหรับตัวเลขจะเป็นได้ทั้งค่า integer และ real ถ้ามีข้อผิดพลาดใด ๆ เกี่ยวกับการอ่านชนิดของข้อมูล โปรแกรมจะพิมพ์ข้อความบอกถึงความผิดนั้น ๆ

โปรแกรม FORM

เป็นโปรแกรมที่ทำหน้าที่สร้างระเบียบข้อมูลที่เปลี่ยนแปลงตามคำสั่ง โดยเขตข้อมูลที่จะเปลี่ยนแปลงหรือเพิ่มเติมจะสั่งโดยคำสั่ง FILE หรือ RECORD โดยบอกรหัสคำสั่ง (Command code) ถ้าเป็นการเปลี่ยนแปลงลบทิ้งหรือแสดงข้อมูลโปรแกรมจะอ่านข้อมูลในลักษณะอิสระโดยโปรแกรม READC ถ้าเป็นการเพิ่มเติมข้อมูลจะอ่านข้อมูลจากบัตร 2 ใบถัดไป โดยมีรูปแบบแน่นอน ยกเว้นการเพิ่มเติมข้อมูลโดยคำสั่ง RECORD จะอ่านข้อมูลเหมือนพวกแรก เขตข้อมูลที่ไม่ถูกเปลี่ยนแปลงจะมีค่าเป็น 9 ทุกหลักสำหรับข้อมูลที่เป็นตัวเลข และจะเป็น X ทุกหลักสำหรับข้อมูลที่เป็นตัวอักษร

โปรแกรม DIAG

ตรวจสอบคำสั่งที่โปรแกรม MAIN อ่านจากบัตรคำสั่งควบคุมของผู้ใช้ อ่านคำอธิบายลักษณะแหล่งกำเนิดรังสีจากแฟ้มข้อมูลตารางค่า SAR ของแหล่งกำเนิดนั้น พร้อมทั้งพิมพ์รูปคำสั่งและค่าข้อมูลหรือพารามิเตอร์ที่ใช้ในการคำนวณเป็นรูปแบบของภาษาที่อ่านเข้าใจง่าย (Plane Language)

โปรแกรม FIND

เป็นโปรแกรมค้นหาแฟ้มข้อมูล (Search) จากเทปแม่เหล็ก โดยกำหนดชื่อแฟ้มข้อมูล ถ้าค้นหาแฟ้มข้อมูลชื่อดังกล่าวไม่พบก็จะพิมพ์แสดงข้อผิดพลาดออกมา

โปรแกรม WEDDSI

เป็นโปรแกรมสำหรับคำนวณความหนาของเวดจ์ฟิลเตอร์ เมื่อกำหนดค่ามุมเอียงของเส้นไอโซโดส และความลึกบนเส้นแกนกลางที่วัดความเอียงของเส้นไอโซโดลนั้น ค่าความหนาของเวดจ์ฟิลเตอร์ที่คำนวณได้จะเป็นความหนาที่จุดห่างจากจุดกึ่งกลาง (เส้นแกนกลาง) โดยห่างกันจุดละ 0.5 เซนติเมตร ที่ระยะต่ำจากโต๊ะแฟรม 10 เซนติเมตร

โปรแกรม ROTATN

เป็นการคำนวณการกระจายของปริมาณรังสีโดยการหมุนรังสีรอบผู้ป่วย ICLCT จะเป็นตัวแปรกำหนดตำแหน่งของลำรังสีที่จะฉายไปยังร่างกาย ตามหลักการคำนวณโดยลุ่มมติว่า มีหลาย ๆ ฟิลต์ฉายไปยังผู้ป่วยแทนการหมุน การแก้ค่าต่าง ๆ ทางกายภาพ เช่น เมื่อ SSD ของฟิลต์ไม่เท่ากับระยะจากแหล่งกำเนิดรังสีถึงผิวของร่างกายจริง ๆ หรือผิวของร่างกายทำมุมเอียงกับเส้นแกนกลาง จะแก้ค่าการกระจายของรังสีโดยโปรแกรม CRRCT

โปรแกรม CRRCT

คำนวณความลึกจากระยะ SSD ของลำรังสีไปยังจุดที่ต้องการคำนวณแล้วหาค่า TAR จากความลึกนี้ (TAR_d) และคำนวณความลึกจากผิวของร่างกายไปยังจุดนั้น และโดยโปรแกรม DIFEX จะคำนวณความหนาของเนื้อเยื่อที่ขาดหายไป หรือเกินมา (จากการที่ผิวของร่างกายเอียงทำมุมกับเส้นแกนกลาง) เทียบกับความลึกบนเส้นแกนกลางทั้ง 2 กรณีจะได้ค่าความลึกจริงภายในร่างกายแล้วหาค่า TAR จากความลึกนี้ (TAR_{dc}) จะได้ค่าแก้สำหรับปริมาณรังสีที่จุดที่ต้องการคำนวณเท่ากับ

$$\frac{TAR_{dc}}{TAR_d}$$

โปรแกรม DIFEX

คำนวณความหนาของเนื้อเยื่อที่ขาดหายไปหรือเกินมา เนื่องจากการที่ผิวของร่างกายเอียงทำมุมกับเส้นแกนกลางหรือกรณีที่ผิวผู้ป่วยไม่เรียบลุ่ม่า ลุ่มอ

โปรแกรม SINGLE

เป็นโปรแกรมคำนวณการกระจายของปริมาณรังสีภายในผู้ป่วยมีลักษณะการคำนวณแต่ละจุด

2 ระบบ คือ

1. ระบบโคออร์ดิเนตแบบโพลา
2. ระบบโคออร์ดิเนตแบบคาร์ทีเซียน

โดยอาจจะมีการใส่เวดจ์ฟิลเตอร์ หรือวัตถุกำบังรังสีด้วยหรือไม่ก็ได้

โปรแกรม PRIMRY

คำนวณค่าฟังก์ชันการกระจายของรังสีปฐมภูมิที่จุดใด ๆ โดยคำนวณถึงบริเวณหัวมบราด้วย ค่าฟังก์ชันที่จุดบนเส้นแกนกลาง จะมีค่าเป็น 1 แล้วลดลงตามกฎกำลังสองผกผัน จนถึงบริเวณหัวมบรา จะลดลงอย่างรวดเร็วและมีค่าประมาณ 0.5 ที่จุดกึ่งกลางของบริเวณหัวมบรา (คือขอบฟิลต์ที่ความลึกนั่นเอง) โดยการคำนวณค่าฟังก์ชันนี้จะรวมถึงการใช้เวดจ์ฟิลเตอร์หรือวัตถุกำบังรังสีที่อาจมีด้วย

โปรแกรม SCATTR

คำนวณค่ารังสีสแกตเตอร์ภายในผู้ป่วยที่สแกตเตอร์มายังจุดใด ๆ โดยคำนวณค่า SAR จากพื้นที่สตริปเล็ก ๆ ทั้งทางซ้ายและขวาของจุดที่ต้องการคำนวณ

โปรแกรม SSTRIP

ผลิตค่า SAR จากพื้นที่สตริปเล็ก ๆ (Differential SAR) ด้วยความกว้างของสตริป เท่ากับ 1 เซนติเมตร โดยจะผลิตค่าทั้งหมด 20 สตริปห่างจากที่คำนวณค่าความลึกต่าง ๆ

โปรแกรม INTPL

สำหรับอินเทอร์โพลค่าจากตาราง โดยวิธีอินเทอร์โพลเส้นตรง (linear interpolation) จะอินเทอร์โพลค่าได้ทั้งจากตารางมิติเดียวและ 2 มิติ

โปรแกรม FUNCT

เป็นโปรแกรมคำนวณค่าฟังก์ชันของจุดใด ๆ โดยเฉพาะบริเวณหัวมบรา โดยไม่คำนึงถึงการใช้วัตถุใด ๆ ขวางกัน

โปรแกรม PLOTER

เป็นโปรแกรมเพื่อพิมพ์ไอโซโตล จากค่าการกระจายของปริมาณรังสีและรูปร่างของร่างกายและบริเวณก้นอวัยวะ โดยจะพิมพ์เป็นตัวอักษรแทนปริมาณรังสีแต่ละจุด ถ้าจะให้ได้อิโซโตลที่ชัดเจนผู้ใช้จำเป็นต้องยึดเส้นเชื่อมต่อแต่ละจุดที่มีตัวอักษรเหมือนกัน

โปรแกรม NWFORM

เป็นโปรแกรมจัดการเปลี่ยนแปลงระเบียบข้อมูลหลักให้เป็นไปตามระเบียบข้อมูลรายการเปลี่ยนแปลง โดยรายการในเขตข้อมูลจะไม่ถูกเปลี่ยนแปลง คือ เขตข้อมูลรายการเปลี่ยนแปลงที่มีค่า

1. เลข 9 ทุกหลักสำหรับเขตข้อมูลที่เป็นตัวเลข
2. อักษร X ทุกหลักสำหรับเขตข้อมูลที่เป็นตัวอักษร

โปรแกรม READMF

แบ่งเป็นหลาย ๆ entry point ได้แก่

READMF เป็นส่วนที่อ่านระเบียบข้อมูลจากแฟ้มข้อมูลหลัก เพื่อทำการประมวลผลและตรวจสอบวันที่นัดของการติดตามผลผู้ป่วยเมื่อการรักษาเสร็จสิ้นสมบูรณ์

READTR เป็นส่วนที่อ่านระเบียบข้อมูลจากแฟ้มข้อมูลรายการเปลี่ยนแปลงเพื่อทำการประมวลผล

RITENM เป็นส่วนบันทึกระเบียบข้อมูลหลักในแฟ้มข้อมูลใหม่หลังจากแก้ไขแล้ว

RITENT เป็นส่วนบันทึกระเบียบข้อมูลรายการเปลี่ยนแปลงในแฟ้มข้อมูลใหม่เมื่อมีคำสั่ง

เพิ่มเติมระเบียบ

RITEPM เป็นส่วนพิมพ์ระเบียบข้อมูลหลักทางกระดาษพิมพ์ต่อเนื่อง

RITEPT เป็นส่วนพิมพ์ระเบียบข้อมูลรายการเปลี่ยนแปลงทางกระดาษพิมพ์ต่อเนื่อง

```

C-----MAIN-----
C=
C= THIS PROGRAM ACCEPTS USER CONTROL CARDS, WHICH ONE CONTAINS
C= KEYWORD(1) EXEC FOLLOWED BY THEIR PARAMETER(S) OR DATA
C= IF THE PROGRAM FOUND ANY ERRORS, ERROR MESSAGES WILL BE
C= PRINTED OUT
C= *END*-CONTROL CARD MUST BE THE LAST ONE TO TERMINATE A
C= GROUP OF CONTROL CARDS
C= IF NO ERRORS FOUND DISE CALCULATION WILL BE PROCESSED BY
C= PROGRAM EXEC ACCORDING TO THE GROUP OF CONTROL CARDS
C= IF ANY FATAL ERRORS FOUND THE CALCULATION NOT OCCUR
C= AND THE PROGRAM WILL ACCEPT THE NEXT GROUP OF CONTROL CARDS
C= ALL CONTROL CARDS ACCEPTED IN FREE FORMATTED FORM
C= BY PROGRAM EXEC
C= MAJOR VARIABLES
C=
C= KYWD1,KYWD2,KYWD3 - THE FIRST THREE CHARACTERS OF A
C= KEYWORD TO BE COMPARED WITH KEYWORD ENCOUNTERED
C= IERR - A COUNTER COUNTS ALL FATAL ERRORS DETECTED
C= CN - AN ARRAY INDICATES WHICH CONTROL KEYWORD SPECIFIED
C-----
C=
C= COMMON/READCT/ IERR,IJOB
C= COMMON /PSJOB / ISJOB,PLANE
C= COMMON /PEXC1/ IFLD,RMSX,RMSY,SD,SAD,SSD,SD
C= COMMON /PEXC2/ ITP,IFLD,ICDF,ICLCT,IJATE,MOSID,NAME
C= ,IPN
C= DIMENSION PAK(45), IUFF(80),KYWD1(30),KYWD2(30),KYWD3(30)
C= COMMON /CONTR / KLD,PTM
C= DIMENSION MBL(30),FIN(30)
C= DIMENSION IJATE(3),IJSND(7),NAME(80),ICLCT(36),IPCS(5),RMSX(6),
C= RMSY(6),SSD(6),SAD(6),SD(6)
C= COMMON /SWTJ / UN
C= LOGICAL ONE(30)
C= COMMON /JLTK/ LCL,THCK,DEF,ANGLE,SHX1,SHX2
C= DIMENSION THK(2,20)
C= COMMON /TODAY / DAY,MONTH,YEAR
C= INTEGER DAY,MONTH,YEAR
C= DATA KYWD1/'C','D','E','H','N','T','S','R','M','I','S','F','P','S'
C= 1,'S','S','S','S','S','S','S','S','S','S','S','S','S','S','S','S' /
C= INTEGER HCS%
C= INTEGER CCCC
C= DATA KYWD2/'A','A','L','D','A','R','I','J','U','R','J','G','I'
C= 2,'G','S','L','C','H','E','H','N','E','D','S','Z'
C= DATA KYWD3/'N','T','S','M','A','N','T','L','H','J','S'
C= 3,'D','D','I','M','L','D','I','S','E','S'
C= DATA IKY72/
C= 1003 FORMAT(22X,50(11:))
C= 3011 FORMAT(32X,99(11:))
C= *** ACCEPT TODAY'S DATE ***
C= DATE OF RUN IS YY/MM/DD
C= * * * * *
C= CALL HEADC(PAK,3,2)
C= YEAR = IFIX( PAK(1) )
C= MONTH = IFIX( PAK(2) )
C= DAY = IFIX( PAK(3) )
C= WRITE(3,3150) YEAR,MONTH,DAY
C= 3150 FORMAT(20(1),T50,' 3LDAY'S DATE IS ',I2,'/',I2,'/',I2 )
C= NJOB = 1
C= ONE(1) = .TRUE.
C= ONE(21) = .TRUE.
C= 7040 CONTINUE
C= IF( ONE(3) .OR. ONE(1) ) CALL INIT
C= WRITE(3,3155) HCSID, (NAME(I), I=1,12)
C= 3155 FORMAT('1',10(21,' '), 'CANCER TREATMENT PLANNING PACKAGE-8216739-COM'
C= *P.SCI.CO-1981-'5X,'JOB#',741,IX,1211, 8(24 '*))
C= WRITE(3,3003)
C= WRITE(3,3013)
C= WRITE(3,3003)
C= * FINDING INDICATES CUL. OF CARD IMAGE
C= WRITE(3,3603)
C= WRITE(3,3801)
C= WRITE(3,3802)
C= 3801 FORMAT(14X,8(10),12(5),6(7)9C)
C= 3802 FORMAT(14X, 10(5H---))
C= 3803 FORMAT(14X, 9(1H0),10(1H1),10(1H2),10(1H3),10(1H4),
C= 10(1H5),10(1H6),10(1H7),1H8 )

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MAIN1000
=MAIN1001
=MAIN1002
=MAIN1003
=MAIN1004
=MAIN1005
=MAIN1006
=MAIN1007
=MAIN1008
=MAIN1009
=MAIN1010
=MAIN1011
=MAIN1012
=MAIN1013
=MAIN1014
=MAIN1015
=MAIN1016
=MAIN1017
=MAIN1018
=MAIN1019
=MAIN1020
=MAIN1021
=MAIN1022
=MAIN1023
=MAIN1024
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=MAIN1032
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=MAIN1077

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C...READ CONTROL STATEMENT FROM NEXT CARD
CALL READC(PARA,IBUFF,1)
DO 5113 IN=1,30
5113 CA(IN) = .FALSE.
IERR = 0
IFCCOA = C
IF(INJCB .LT. 99) GO TO 7071
7041 CONTINUE
WRITE(3,3016) IDATE
5016 FORMAT(98X,'DATE ',2(12,' '),12)
WRITE(3,3155) HUSNL,(NAME(I),I=1,12)
WRITE(3,3405)
WRITE(3,3406)
END FILE 6

C =
CALL FMAINT
STOP
3505 FORMAT(120(1,140,23(' ')/T40,'*',T84,'*/T40,
1 '**,T50,'END PHASE ONE/CALCULATION',T84,'*', /
2T40,'*',T84,'*/T40,23(' ')/T40,132('-') )
3506 FORMAT(120(1,140,23(' ')/T40,'*',T84,'*/T40,
1 '**,T50,'PHASE TWO/FILE MAINTENANCE',T84,'*', /
2T40,'*',T84,'*/T40,23(' ')/T40,132('-') )

C =
C.
7071 IF(INJCB .NE. 0) GO TO 7044
WRITE(3,3001)
3001 FORMAT(10X,'*****' )
WRITE(3,3002)
3002 FORMAT(120(1,140,23(' ')/T40,'*',T84,'*/T40,
1 '**,T50,'END PHASE ONE/CALCULATION',T84,'*', /
2T40,'*',T84,'*/T40,23(' ')/T40,132('-') )
NJOB = 5449
GO TO 7041
7044 NJOB = 0

C.
C...
C...TRY MATCHING KEYWORD
C...
7045 DO 5050 I=1,NKY
IF(IBUFF(1) .EQ. KYWD1(I) .AND.
$ IBUFF(2) .EQ. KYWD2(I) .AND.
$ IBUFF(3) .EQ. KYWD3(I) ) GO TO 7050
5050 CONTINUE
WRITE(3,3000) IBUFF
3000 FORMAT(10X,'*****',80A1)
3300 FORMAT(18X,'UNRECOGNIZABLE KEYWORD')
WRITE(3,3200)
IERR = IERR+1
IF(IERR .GT. 200) STOP
GO TO 1001

C.
7050 CONTINUE
UNIT1 = .TRUE.
GO TO (1000,1002,1003,1004,1005,1001,1007,1008,1009,1010,1011,100
A,1013,1014,1015,1016,1017,1018,1019,1020,1021,1022,1023,1024,1025,
P 1026
1, I

C... (ANTP-PACKAGE)
1000 CALL READC(PARA,1,-2)
PLANE = PARA(1)
1001 CALL READC(PARA,IBUFF,-1)
GO TO 7045
1002 CALL READC(PARA,3,-2)
DO 5055 IGT=1,3
IDATE(IGT) = IFIX(PARA(IGT))
5055 CONTINUE
GO TO 1001

C * * * * *
1003 CONTINUE
C... REC-ORD KEYWORD FOUND ....
CALL READC(PARA,1,-2)
ICCODE = IFIX(PARA(1))
CALL FORM(1,PARA,IBUFF)
ICCODE = ICODE + 10
CALL FORM(ICCODE,PARA,IBUFF)
GO TO 1001
1004 CALL READC(PARA,IBUFF,-1)
DO 5060 I=1,7
5060 HCSAD(I) = IBUFF(I)
GO TO 1001

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MAIN1080
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=CHAIN1092
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MAIN1100
=CHAIN1101
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MAIN1111
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1005 CALL READC( PARA , Ibuff , -1 )
      LN = IFIX(PARA(1))
      LN = 60
      DC 5070 IN=1,LY
5070 NAME(IN) = Ibuff(LN)
      GO TO 1001
C...*SINGLE*
1007 ITYP = 1
      IFLO = 1
      CALL READC( PARA , Ibuff , -1 )
      ICOMP = Ibuff(1)
      GO TO 1001
C...*ROTATION*
1008 ITYP = 3
      IFLO = 1
      IFCCUN = 1
      CALL READC( PARA , 1 , -2 )
      IF(PARA(1) .LE. 1.) GO TO 7054
      DO 5078 IC=1,36
5078 ICLCT(IC) = 1
      GO TO 1001
7054 ICLCT(1) = PARA(1)
      CALL READC( PARA , 35 , -2 )
      DO 5090 IC=1,35
5090 ICLCT(IC+1) = IFIX(PARA(IC))
      GO TO 1001
C...*MULTIPLE*
1009 ITYP = 2
11005 CALL READC(PARA, 1 , -2 )
      IFLO = IFIX(PARA(1))
      GO TO 1001
C IRRADIATION NUMBER
1010 CALL READC(PARA,1,-2)
      IRN = IFIX( PARA(1) )
      GO TO 1001
C...*SURCE*
1011 CALL READC(PARA, 1 , -2 )
      ISUR = IFIX(PARA(1))
      GO TO 1001
C...*POSITION*
1013 CALL READC(PARA, 1 , -2 )
      IFCCUN = IFCCUN + 1
      IPHS(IFCCUN) = IFIX(PARA(1))
      GO TO 1001
1014 CALL READC(PARA, 2 , -2 )
      BMSX(IFCCUN) = PARA(1)
      BMSY(IFCCUN) = PARA(1)
      GO TO 1001
C...*SSD*
1015 CALL READC(PARA, 1 , -2 )
      SSD(IFCCUN) = PARA(1)
      GO TO 1001
C...*SSD*
1016 CALL READC(PARA, 1 , -2 )
      SSD(IFCCUN) = PARA(1)
      GO TO 1001
C...*SAD*
1017 CALL READC(PARA, 1 , -2 )
      SAD(IFCCUN) = PARA(1)
      GO TO 1001
C...*SD*
1018 CALL READC(PARA, 1 , -2 )
      SD(IFCCUN) = PARA(1)
      GO TO 1001
C...*BODY CONTOUR
1019 CALL READC(PARA, 36 , -2 )
      DO 5090 IM=1,36
5090 RPD(IM) = PARA(IM)
      GO TO 1001
C...*TUMOUR OUTLINE INFORMATION
1020 CALL READC(PARA, 36 , -2 )
      DC 5055 IE=1,36
5055 RTM(IM) = PARA(IM)
      GO TO 1001

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C * * * * *
C *   .CONTRGL FIL-E-MAINLNANCE FOLNO
1021 CONTINUE
      CALL READC(PARA,1,-2)
      CCODE = IFIX( PARA(1) )
      CALL FORM(CCODE,PARA,IBUFF)
      GO TO 1001
C... *WEDGE FILTER*
1022 CONTINUE
      IC = 1
      CALL READC(PARA,1,-2)
      IF(PARA(1) .GE. 10.) GO TO 1001
      THCK(1,1) = PARA(1)
      CALL READC(PARA,35,-2)
      THCK(2,1) = PARA(20)
      DO 5057 IH=1,19
          IC = IC+1
          THCK(1,IC) = PARA(19)
          THCK(2,IC) = PARA(19+20)
5057 CONTINUE
      GO TO 1001
C... *SHIELDING BAR*
1023 CONTINUE
      CALL READC(PARA,2,-2)
      SHX1 = PARA(1)
      SHX2 = PARA(2)
      GO TO 1001
1024 CONTINUE
      NJOB = NJOB + 1
      GO TO 1705C
1025 CONTINUE
C... *DESIGN-WEDGL-FILTER*
      CALL READC(PARA,2,-2)
      DREF = PARA(1)
      ANGLE = PARA(2)
      IF IC 1001
1026 CONTINUE
C... *COEFFICIENT-OF-FLUCL-FILTER*
      CALL READC(PARA,1,-2)
      CCEF = PARA(1)
      GO TO 1001
C
-----
1705C CONTINUE
      WRITE(3,3002)
      WRITE(3,3003)
      WRITE(3,3001)
      IF (.NOT. UN(21) ) GO TO 7056
          IF (IEPR .LE. 0) GO TO 7059
          GO TO 7060
7056 CONTINUE
      CALL   DIAG(KYWD1,KYWD2,KYWD3,IKY,IFCOJN)
      IF (IEPR .GT. 0) GO TO 7060
      WRITE(3,3003)
      WRITE(3,3007)
      WRITE(3,3003)
7059 CONTINUE
3007 FORMAT(31X,'** B L G I N E X E C U T I O N **')
C=
      CALL EXEC
C=
      GO TO 704C
7060 CONTINUE
      WRITE(3,3004) IFRR
3004 FORMAT(31X,'** ',13,' ERRORS FOUND.   JOB CANCELED **')
      GO TO 7040
      END

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C...READ          REACT1000
SUBROUTINE READC DATA , IARRAY , IJPT4 ) REACT1001
C-----CREACT1002
C      ** GET DATA IN FILE FORMATTED FORM ** REACT1003
C      IOPTION = 1 IS ALPHABETIC DATA REACT1004
C              2 IS NUMERIC DATA REACT1005
C      IF IOPTION IS NEGATIVE, DATA TO BE READ WILL BE REACT1006
C      IN NEXT CHARACTER, NOT BLANK/COMMA REACT1007
C      IF POSITIVE, DATA TO BE READ MUST BE IN THE NEXT CARD REACT1008
C      (AND ALSO IN FILE FORMAT) REACT1009
C-----CREACT1010
COMMON/READC/ IERR, IJOB
DIMENSION ICARD(80), IARRAY(1), IDIGIT(10), DATA(45)
INTEGER ENDS(5) REACT1011
DATA IDIGIT/'0','1','2','3','4','5','6','7','8','9'/ REACT1012
DATA IBLNK, ICOM, ILLC1/' ','.',',',':', '/', IPOS/'-','+' REACT1013
DATA NSTAR/'*'/ REACT1014
DATA ICOUN/1000/ REACT1015
DATA END/'E','N','D' REACT1016
IF(IJOB .LT. 0) RETURN REACT1017
IF(IJOB .LT. 99) GO TO 7000 REACT1018
GENERATE 'END' WHEN EOF FOUND WHILE 'END' NOT SPECIFIED REACT1019
IARRAY(1) = ENDS(1) REACT1020
IARRAY(2) = ENDS(2) REACT1021
IARRAY(3) = ENDS(3) REACT1022
DATA(1) = 0.0 REACT1023
WRITE(3,3C53) REACT1024
3053 FORMAT(1X, 'END STATEMENT GENERATED.') REACT1025
NJCB = -1 REACT1026
IERR = IERR + 1 REACT1027
ICOUN = -1000 REACT1028
RETURN REACT1029
7000 CONTINUE REACT1030
DATA(1) = 0 REACT1031
NOPTN = IABS(IJOB) REACT1032
IF(IOPTN .LT. 0) GO TO 7005 REACT1033
C...READ NEXT CARD REACT1034
7001 READ(1,3005,END=7050) ICARD REACT1035
ICOUN = ICOUN + 1 REACT1036
3005 FORMAT(80A1 ) REACT1037
ICHR = 1 REACT1038
WRITE(3,3010) IBLNK, ICARD, ICOUN REACT1039
3010 FORMAT(15X,14,5X,80A1, ' CANT',14) REACT1040
IF(ICARD(1) .NE. NSTAR) GO TO 7005 REACT1041
GO TO 7001 REACT1042
7005 CONTINUE REACT1043
C...SKIP LEADING BLANK REACT1044
I = ICHR REACT1045
DO 5005 ICHR=1,80 REACT1046
IF(ICARD(ICHR) .NE. IBLNK .AND. ICARD(ICHR) .NE. ICOM) GO TO 7010 REACT1047
5005 CONTINUE REACT1048
C...NO OTHER CHAR LEFT REACT1049
GO TO 7001 REACT1050
7010 CONTINUE REACT1051
IF(NOPTN .NL. 1) GO TO 7015 REACT1052
C...GET CHAR. UNTIL NEXT BLANK REACT1053
7010 J = 1 REACT1054
I = ICHR REACT1055
DO 5010 ICHR=1,80 REACT1056
IF(ICARD(ICHR) .EQ. IBLNK .OR. ICARD(ICHR) .EQ. ICOM) GO TO 7013 REACT1057
IARRAY(J) = ICARD(ICHR) REACT1058
DATA(1) = J REACT1059
IF(J .GE. 80) RETURN REACT1060
J = J+1 REACT1061
5010 CONTINUE REACT1062
ICARD(80) = IBLNK REACT1063
WRITE(1,3001) REACT1064
3001 FORMAT(10X, 'C**WARNING**') REACT1065
WRITE(3,3C16) REACT1066
3016 FORMAT(14X, ' CONTROL STATEMENT TERMINATED ON COL. 80.') REACT1067
C...FILL BLANKS ON THE REST OF ARRAY REACT1068
7013 DO 5015 K=J,80 REACT1069
IARRAY(K) = IBLNK REACT1070
5015 CONTINUE REACT1071
RETURN REACT1072
C...RETURN WITH ARRAY, IARRAY, CONTAINS KEYWORD REACT1073

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C
C      NUMERIC DATA
C
7015 CONTINUE
      ICH1 = ICHR
      JA = IARRAY(1)
      IF(JA .EQ. 0) RETURN
      DO 5020 J=1,JA
5020 DATA(J) = 0.
      NERR = 0
      J = 1
      SIGN = 1.
      FLAG = 1.
      L = 0
7017 I = ICHR
      DO 5025 ICHK = 1,80
      K = ICHK
      IF(ICARD(K) .EQ. 16LNK .OR. ICARD(K) .EQ. ICOM) GO TO 17040
      IFLG = 1
      IF(ICARD(K) .EQ. 1PLS) GO TO 5025
      IF(ICARD(K) .NE. 1NEG) GO TO 7020
      SIGN = -1.
      IF(L .LE. 0) GO TO 5025
      WRITE(3,3000)
      WRITE(3,3018)
3018 FORMAT(18X,'MORE THAN ONE MINUS SIGNS FOUND.')
```

GO TO 5025

```

7020 CONTINUE
      IF(ICARD(K) .NE. 1DECP) GO TO 7025
      LD = 0
      FLAG = 2.
      GO TO 5025
7025 CONTINUE
      DO 5023 N=1,10
      IF(ICARD(K) .EQ. 1LIGIT(N)) GO TO 7133
5023 CONTINUE
C...FOUND THAT THIS CHAR. HAS NOT ANY DIGIT ***ERROR***
      NERR = 1
      IERR = IERR+1
      WRITE(3,3000)
3000 FORMAT(10X,'***ERROR***')
```

WRITE(3,3024)

```

3024 FORMAT(18X,'NON-NUMERIC FOUND IN NUMERIC FIELD ')
      GO TO 5025
7030 XNUM = FLCAT(N-1)
      L = L + 1
      IF(FLAG .EQ. 2.) GO TO 7035
C...FLAG = 1
      DATA(J) = DATA(J)*10.0 + XNUM
      GO TO 5025
7035 LD = LD + 1
      DATA(J) = DATA(J) + XNUM*10.0**(-LD)
      GO TO 5025
C.....
C      A DATA WAS ACCEPTED BY SEEING BLANK OR COMMA
C.....
17040 IF(NERR .GT. 0) DATA(J) = 0
      IF(IFLG .EQ. 0) GO TO 5025
7040 DATA(J) = SIGN*DATA(J)
C...SET INITIAL FOR NEXT VALUE OF DATA
      IFLG = 0
      NERR = 0
      ICH1 = ICHR
      IF(J .GE. JA ) RETURN
      J = J + 1
      SIGN = 1.
      FLAG = 1.
      L = 0
5025 CONTINUE
      REAC(1,3005,END=7050) ICARD
      ICOUN = ICOUN + 10
      WRITE(3,3010) ICOUN,ICARD,ICLN
      ICHP = 1
      GO TO 7017
7050 IF(NJOB .GT. 0) GO TO 7055
      NJOB = 9999
      WRITE(3,3033)
3033 FORMAT(70X,'END-FILE WAS FOUND DURING PROCESSING. JOB TERMINATED')
```

*)

```

      IERR = IERR + 1
      RETURN
7055 WRITE(3,3002)
3002 FORMAT(100X,'END-OF-PLAN')
```

NJOB = 9999

```

      RETURN
      END
```

REAC1076
REAC1077
REAC1078
REAC1079
REAC1080
REAC1081
REAC1082
REAC1083
REAC1084
REAC1085
REAC1086
REAC1087
REAC1088
REAC1089
REAC1090
REAC1091
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REAC1120
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REAC1157
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REAC1159
REAC1160
REAC1161


```

7106 CONTINUE
      CALL READC(PARA,IBUFF,-1)
      DC 5105 I=1,10
5106 DOCNMT(1) = IBUFF(1)
      GO TO 7001
7107 CONTINUE
      CALL READC(PARA,3,-2)
      TYPET = IFIX( PARA(1) )
      TECHT = IFIX( PARA(2) )
      NFIELT = IFIX( PARA(3) )
      GO TO 7001
7108 CONTINUE
      CALL READC(PARA,1,-2)
      UCSTT = IFIX( PARA(1) )
      GO TO 7001
7109 CONTINUE
      CALL READC(PARA,1,-2)
      TIMET = IFIX( PARA(1) )
      GO TO 7001
7110 CONTINUE
      CALL READC(PARA,1,-2)
      FRACTT = IFIX( PARA(1) )
      GO TO 7001
7111 CONTINUE
      CALL READC(PARA,2,-2)
      SCURT = IFIX( PARA(1) )
      SDT = IFIX( PARA(2) )
      GO TO 7001
7112 CONTINUE
      CALL READC(PARA,1,-2)
      FILIT = IFIX( PARA(1) )
      GO TO 7001
7113 CONTINUE
      CALL READC(PARA,1,-2)
      SSAOT = IFIX( PARA(1) )
      GO TO 7001
7114 CONTINUE
      CALL READC(PARA,6,-2)
      DC 5214 I=1,6
      SIZET(1) = IFIX( PARA(6) )
5214 CONTINUE
      GO TO 7001
7115 CONTINUE
      CALL READC(PARA,2,-2)
      CCNCLT = IFIX( PARA(1) )
      NDATET = IFIX( PARA(2) )
      GO TO 7001
7116 CONTINUE
      CALL READC(PARA,IBUFF,-1)
      DC 5126 I=1,24
5126 NOTET(1) = IBUFF(1)
      GO TO 7001
7117 CONTINUE
      CALL READC(PARA,1,-2)
      FDATET = IFIX( PARA(1) )
      GO TO 7001
7118 CONTINUE
      CALL READC(PARA,IBUFF,-1)
      DC 5128 I=1,16
5128 FCONDT(1) = IBUFF(1)
      GO TO 7001
7033 READ(1,3102,ERR=7500,END=8500)
1      INNT,HNT,FDATET,DIAGCT,DIAGST,CLSTST,TT,NT,MT,DOCNMT,
2      TYPET,TECHT,NFIELT,UCSTT,TIMET,FRACTT,SCURT,SDT,FILIT,
3      SSAOT
      WRITE(3,3302)
1      INNT,HNT,FDATET,DIAGCT,DIAGST,CLSTST,TT,NT,MT,DOCNMT,
2      TYPET,TECHT,NFIELT,UCSTT,TIMET,FRACTT,SCURT,SDT,FILIT,
3      SSAOT
7406 READ(1,3201,ERR=7501,END=8500)
1      SCURT,SIZET,CCNCLT,NDATET,NOTET,FDATET,FCONDT
      WRITE(3,3401)
1      SCURT,SIZET,CCNCLT,NDATET,NOTET,FDATET,FCONDT
      RETURN
FORP1076
FORP1077
FORP1078
FORP1079
FORP1080
FORP1081
FORP1082
FORP1083
FORP1084
FORP1085
FORP1086
FORP1087
FORP1088
FORP1089
FORP1090
FORP1091
FORP1092
FORP1093
FORP1094
FORP1095
FORP1096
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FORP1098
FORP1099
FORP1100
FORP1101
FORP1102
FORP1103
FORP1104
FORP1105
FORP1106
FORP1107
FORP1108
FORP1109
FORP1110
FORP1111
FORP1112
FORP1113
FORP1114
FORP1115
FORP1116
FORP1117
FORP1118
FORP1119
FORP1120
FORP1121
FORP1122
FORP1123
FORP1124
FORP1125
FORP1126
FORP1127
FORP1128
FORP1129
FORP1130
FORP1131
FORP1132
FORP1133
FORP1134
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FORP1141
FORP1142
FORP1143
FORP1144
FORP1145
FORP1146
FORP1147
FORP1148
FORP1149

```



```

3302 FORMAT(14X,16,16,16,16,20A1,4I1,16A1,2I1,13,3I2,11,2I2,14 )
3401 FORMAT(14X,13,6I4,11,16,24A1,16,16A1 )
3201 FORMAT(13,5I4,11,16,24A1,16,16A1)
3102 FORMAT( 16,13,16,24A1,4I1,16A1 ,2I1,13,3I2,11,2I2,14)
7500 WRITE(3,3205)
3205 FORMAT(10X, ' REAL ERROR ON DATA CARD #/ )
      IERR = IERR+1
      GO TO 7406
7501 WRITE(3,3205)
      IERR = IERR + 1
      RETURN
8500 CONTINUE
      NJDP = 9999
      IERR = IERR + 1
      RETURN
C=
C=
      ENTRY INTL
C.
C.      INITIALIZE VARIABLES OF TRANSACTION RECORD CONTENT
C=
      DATA INITE/'INIT'/
      CALL FIND(INITE)
3301 FORMAT( 16,16,16,20A1,4I1,16A1,2I1,13,3I2,11,2I2,14/
* 13,5I4,11,16,24A1,16,16A1 )
3302 FORMAT( 11,16,16,16,20A1,4I1,16A1,2I1,13,3I2,11,2I2,14,
* 13,5I4,11,16,24A1,16,16A1 )
3303 FORMAT(//25X,11,16,16,16,20A1,4I1,16A1,2I1,13,3I2,11,2I2,14/
* 26X,13,5I4,11,16,24A1,16,16A1 )
      READ(TAPE,3301) IRNT,HNT,PDATET,DIAGCT,JIAGCT,CLSTGT,TT,NT,MT,
1      DUCNMT,1YPET,TECHT,NFIELT,JUSTT,TIMEET,FRACTT,
2      SOURT,SOT,FILTT,SSADT,SDCT,SIZEET,CONCLT,NDATET
3      ,NOTLT,FDATEET,FCONLT
      RETURN
C=
C=
      ENTRY RITETE( IAN , PRT )
C.
C.      WRITE TRANSACTION RECORD TO TRANSACTION FILE
C=
      WRITE(TRN,3302) CCLE,IRNT,HNT,PDATET,DIAGCT,JIAGCT,CLSTGT,
1      TT,NT,MT,DUCNMT,1YPET,TECHT,NFIELT,JUSTT,TIMEET,FRACTT,
2      SOURT,SOT,FILTT,SSADT,SDCT,SIZEET,CONCLT,NDATET,
3      NOTLT,FDATEET,FCONLT
C.
C.      PRINT RECORD JUST WRITTEN IN TRANSACTION FILE
C=
      WRITE(PRT,3303) CCLE,IRNT,HNT,PDATET,DIAGCT,JIAGCT,CLSTGT,
1      TT,NT,MT,DUCNMT,1YPET,TECHT,NFIELT,JUSTT,TIMEET,FRACTT,
2      SOURT,SOT,FILTT,SSADT,SDCT,SIZEET,CONCLT,NDATET,
3      NOTLT,FDATEET,FCONLT
      RETURN
      END
FORM1150
FORM1151
FORM1152
FORM1153
FORM1154
FORM1155
FORM1156
FORM1157
FORM1158
FORM1159
FORM1160
FORM1161
FORM1162
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FORM1177
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FORM1180
FORM1181
FORM1182
FORM1183
FORM1184
FORM1185
FORM1186
FORM1187
FORM1188
FORM1189
FORM1190
FORM1191
FORM1192
FORM1193
FORM1194
FORM1195
FORM1196
FORM1197
FORM1198
FORM1199
FORM1200
FORM1201
FORM1202
FORM1203

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C11DIAG
SUMMARY DIAG(KYWD1,KYWD2,KYWD3,IKY,IFCOJN)
-----CDIAG1002
C   DIAGNOSIS OF CONTROL STATEMENT ACCEPTED
C   AND PRINT SUMMARY OF CONTROL AND DATA / PARAMETER
C   USED IN CALCULATION / PROCESSING
-----CDIAG1006
C=
COMMON /PSOUR / ISOUR,PLANE
COMMON /FILTER/ LGEP,THCK,DREF,ANGLE,SIX1,SIX2
DIMENSION THCK(2,20)
COMMON /SCUDS/ DESCH(17),OPMAX
INTEGER DESCH
INTEGER HOSNO
COMMON /PEXLC2/ ITP,IFLD,ICUR,ICLCT,IJATE,HOSNO,NAME
* IERN
COMMON /REACT/ IERR
COMMON /PEXLC1/ IPUS,BMSX,BMSY,SQJ,SAD,SD,SD
DIMENSION IJATE(3),HOSNO(7),NAME(30),ICLCT(36),IPCS(6),BMSX(6),
*BMSY(6),SSD(6),SQJ(6),SAD(6),SD(6)
COMMON /SWTCH / UN
LOGICAL GN(30)
COMMON /CONTR / RED,FTM
DIMENSION Red(36),FTM(36)
DIMENSION KYWD1(30),KYWD2(30),KYWD3(30)
DATA FILE1,FILL2,FILL3,FILE4/'C06','S'/'2','SQJ3','SQ4'/
ISOUR = 1
DELTH = 10.
IF(ON(25)) ITP = 4
WRITE(3,3155) HOSNO,(NAME(I),I=1,12)
3155 FORMAT('1',10(2H ),'CANCER TREATMENT PLANNING PACKAGE-B216739-COM
*P.SCI.CN-1981-',5X,'JOB#',7A1.1X,12A1, B(2H *)/)
WRITE(3,3003)
WRITE(3,3011)
WRITE(3,3003)
3011 FORMAT(32X,'CONTROL STATEMENT ERROR DIAGNOSTICS' )
DO 54C1 I=1,IKY
IF(ON(I)) GO TO 5401
WRITE(3,3601) KYWD1(I),KYWD2(I),KYWD3(I)
3401 FORMAT(15X,'*** CONTROL **',I1,' ** NOT SPECIFIED ***')
54C1 CONTINUE
CALL FIND('LCU1')
GO TO (74C1,74C2,74C3,74C4,74C5),ISOUR
74C1 CALL FIND(FILL1)
GO TO 741C
74C2 CALL FIND(FILE2)
GO TO 741C
74C3 CALL FIND(FILE3)
GO TO 741C
74C4 CALL FIND(FILL4)
GO TO 741C
74C5 CALL FIND(FILE5)
7410 CONTINUE
IF(IFCOJN.EQ. IFLD) GO TO 7408
WRITE(3,13404)
13404 FORMAT(5X,'*** NO. OF FIELDS SPECIFIED NOT = NO. OF FIELD ENCOUNTERED
*REQUIRE LATER BE USED.')
IFLD = IFCOJN
IF(ON(8)) GOTO 7408
IF(IFCOJN.GT. 0) GO TO 7408
WRITE(3,2430)
2430 FORMAT(5X,'*** YOU DIDN'T ASSIGN THE SPECIFICATION OF THE RADIATION
*ON BEAM. ***')
IERR = IERR + 1
74C8 CONTINUE
-----CDIAG1065
C-----CDIAG1066
WRITE(3,3006)
3006 FORMAT('1',47X,'THE CANCER TREATMENT PLANNING PACKAGE'/
*42X,'EXTERNAL BEAM RADIOTHERAPY'//)
WRITE(3,3008) IKN,IJATE, NAME
3008 FORMAT(21X,'IRRADIATION NO. ',16,44X,'PLANNING DATE ',2(12,'/'),
*12/21X,'PATIENT'S NAME ',8A1/ )
DIAG1000
DIAG1001
DIAG1002
DIAG1003
DIAG1004
DIAG1005
DIAG1006
DIAG1007
DIAG1008
DIAG1009
DIAG1010
DIAG1011
DIAG1012
DIAG1013
DIAG1014
DIAG1015
DIAG1016
DIAG1017
DIAG1018
DIAG1019
DIAG1020
DIAG1021
DIAG1022
DIAG1023
DIAG1024
DIAG1025
DIAG1026
DIAG1027
DIAG1028
DIAG1029
DIAG1030
DIAG1031
DIAG1032
DIAG1033
DIAG1034
DIAG1035
DIAG1036
DIAG1037
DIAG1038
DIAG1039
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DIAG1062
DIAG1063
DIAG1064
DIAG1065
DIAG1066
DIAG1067
DIAG1068
DIAG1069
DIAG1070
DIAG1071
DIAG1072

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      IF (.NOT. DN(3)) GO TO 7508
      .CONTROL REC-OFD-TC-R/T-FILE SPECIFIED
      WRITE(3,350d)
3508 FORMAT(/21X,'INFORMATIONS WILL BE RECORDED ON R/T FILE' )
7508 CONTINUE
      WRITE(3,3005) PLANL
3009 FORMAT(/21X,'PLANL OF CALCULATION IS ',F4.1,' CM. FROM CENTRAL
      *XIS'/)
      IF (ITYP .GT. 3) GO TO 7414
      GO TO (7411,7412,7413),ITYP
7411 WRITE(3,3404)
      GO TO 7405
7412 WRITE(3,3405) IFCWN
      GO TO 7405
7413 WRITE(3,3406)
      WRITE(3,3407) (I,I=1,18),(ICLCT(J),J=1,13)
3407 FORMAT(/ 2(19X,1815//)
      WRITE(3,3407) (I,I=15,36),(ICLCT(J),J=19,36)
3404 FORMAT(21X,'TREATMENT TECHNIQUE IS SINGLE-FIELD.')
3405 FORMAT(21X,'TREATMENT TECHNIQUE IS MULTIPLE-FIELD;',I2,
      * ' FIELDS USED.')
3406 FORMAT(21X,'TREATMENT TECHNIQUE IS ROTATION ; POSITION SELECTED
      *ARE :-')
      GO TO 7405
7414 WRITE(3,3414) COEF,ANGLE,DREF
3414 FORMAT(/21X,'DESIGNING OF WEDGE FILTER: ABSORPTION COEFFICIENT
      *S ',F7.4,' PLK (CM.'/2X,'TILTED ANGLE IS ',F5.2,' DEGREE DEPTH
      * OF REFERENCE POINT LN CENTRAL AXIS IS ',F5.2,' CM.'//)
7409 CONTINUE
      WRITE(3,3408) ISOUR,LESCR,OPMAX
3408 FORMAT(/ 21X,'SOURCE USED: ',I2,5X,17A4/
      *3X,'DEPTH OF BUILT UP(MAX.GUSE) IS ',F5.2,' CM.' /)
      DO 5C59 IFD=1,IFLU
      DEGR = (IPDS(IFD)-1)*DELTH
      WRITE(3,3C14) IFD,IPDS(IFD),DEGR,BMSX(IFD),BMSY(IFD),SAD(IFD),
      * SD(IFD),SSD(IFD),SDD(IFD)
3014 FORMAT(21X,'BLANK',I2,' POSITION ',I2,'( ',F5.1,' DEGREES)//
      1 31X,'SIZE ',F5.2,' X',F5.2,' CM.',10X,' SOURCE-AXIS-DISTANCE
      2 ',F6.2,' CM.',/31X,'SOURCE-DIAMETER ',F5.2,' CM.',10X,
      3 'SOURCE-SURFACE-DISTANCE',F6.2,' CM.',/
      4 64X,'SOURCE-DISPERSION-DISTANCE',F6.2,' CM.'//)
5059 CONTINUE
      IF (.NOT. CN(19)) GO TO 7416
      WRITE(3,3020)
3020 FORMAT(21X,'BODY CONTOUR IN POLAR COORDINATE ; ORIGIN AT AXIS OF ROTATION(SAD)
      /21X,'EACH RADIAL LINE IS IN CM. UNIT ; OF 10 DEGREE
      2F INTERVAL//)
      WRITE(3,3C18) RND
      IF (.NOT. DN(20)) GO TO 7416
      WRITE(3,3119)
3319 FORMAT(21X,'TUMOUR CONTOUR :')
      WRITE(3,3C18) RTM
3019 FORMAT(21X,'/10.2)
3003 FORMAT(/25X,50(1F.2))
7416 CONTINUE
      IF (.NOT. DN(22)) GO TO 7418
      WRITE(3,3022)
      WRITE(3,3024) (THK(1,I),I=1,20)
      WRITE(3,3025) (THK(2,I),I=1,20)
      WRITE(3,3126) COEF
3126 FORMAT(/21X,'ABSORPTION COEFFICIENT ',F7.4,' PER CM.' /)
3022 FORMAT(21X,'WEDGE FILTER USED;',/21X,'THICKNESS IS IN MM. UNIT
      * CM. APART FROM EACH OTHER , AT SDD.')
3024 FORMAT(/25X,'RIGHT-SIDE',10F7.2/35X,10F7.2)
3025 FORMAT(/25X,'LEFT-SIDE',10F7.2/35X,10F7.2)
7418 CONTINUE
      IF (.NOT. DN(23)) GO TO 7420
      WRITE(3,3C26) SHX1,SHX2
3026 FORMAT(21X,'SHIELDING BAR USED: DIMENSION IN X-DIRECTION IS//
      *50X,2F7.2//)
7420 CONTINUE
      WRITE(3,3C39) IKN
      WRITE(3,3C03)
3039 FORMAT(/21X,'END OF CONTROL STATEMENT',T56,'JOB ID. ',I6 ///)
      COEF = COEF/10.
      RETURN
      END
DIAG1073
DIAG1074
DIAG1075
DIAG1076
DIAG1077
DIAG1078
ADIAAG1075
DIAG1080
DIAG1081
DIAG1082
DIAG1083
DIAG1084
DIAG1085
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DIAG1148
DIAG1149

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C$$$EXEC
      SUBROUTINE EXEC
      CALC. DISTS ON L&LE ACCORDING TO THE GROUP OF CONTRL STMT
      (CARD) ENDOJNTRLL
      COMMON /PEINIC/ API
      COMMON /EQUJ / EQU(20),ECY(40)
      COMMON /PEXIC1/ IPQS,BMSX,BMSY,SDJ,SAD,SSD,SD
      COMMON /PEXIC2/ ITH,IFLD,ICOR,ICLCT,IDATE,HOSID,NAME
      * .IPN
      COMMON /PSOIR / ISOUF,PLANE
      COMMON /SWTCH / UN
      LOGICAL ON(30)
      DIMENSION IDATE(3),HLSN(17),NAME(30),ICLCT(36),IPQS(6),BMSX(6),
      *BMSY(6),SSD(6),SAD(6),SD(6)
      COMMON /DESVAL/ DLSL,DOSACC
      DIMENSION DUSE(20,40),DOSACC(20,40)
      COMMON /CONTR / R(36),RTM(36)
      COMMON /FIPARA/ KLS(LC),DEPTH(40),NRDS,NREC
      COMMON /PARA2 / Nth,PRD
      DIMENSION XPT(20)
      LOGICAL WEDGE,SHILL
      COMMON /T/ IKN1,HNT,PDATE,DIAGCT(4),DIAGDT(16),
      1 CUSTGT,II,NT,MT,DCNMT(16),
      2 TYPE1,TECH,T,NFIELT,DCSTT,TINCT,FRACTT,SQURT,SDT,FILTT,
      3 SSAJT,SDT,SIZE(16),CONCLT,NDATE,NJTE(124),FDATE,
      4 FCOORD(16)
      INTEGER TRNSAC
      DIMENSION IXX(6),IYY(6)
      INTEGER PCATLT,TYPE1,TECH,SSAJT,SIZE,SQURT,SDT,SDOT
      DATA IPCLC,ICAR /'P', 'C'/
      DELTH = 10.
      WRITE(3,3150) HOSNO,(NAME(I),I=1,12)
3150 FORMAT('1',10(2H * ),'CANCER TREATMENT PLANNING PACKAGE-0216739-COMEXLC1032
      *P.SCI.CH-1781-' ,5X,'JOB#',7A1,1X,12A1, 8(2H *)/)
      EXLC1033
      C.
      C. IF FILE CONTROL SPECIFIED,INHIBIT CALCULATION
      C. AND CALL FOR WRITE ROUTINE TO RECORD THE SFIELDS SPECIFIED
      EXLC1034
      EXLC1035
      EXLC1036
      C.
      C.
      EXLC1037
      EXLC1038
      EXLC1039
      C.
      C.
      EXLC1040
      C.
      C.
      EXLC1041
      C.
      C.
      EXLC1042
      C.
      C.
      EXLC1043
      EXLC1044
      EXLC1045
      EXLC1046
      EXLC1047
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      EXLC1058
      EXLC1059
      EXLC1060
      EXLC1061
      EXLC1062
      EXLC1063
      EXLC1064
      EXLC1065
      EXLC1066
      EXLC1067
      EXLC1068
      EXLC1069
      EXLC1070
      EXLC1071
      EXLC1072

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7004 DO 5004 J=1,I1                                EXEC1073
5004 R(J) = 25.0                                    EXEC1074
7005 IF (ICCR .EQ. 1POLA) GO TO 2                    EXEC1075
CCCRD = 1.                                          EXEC1076
CALL SINGLE(SSD(I),SAD(I),SDD(I),SJI(I),BMSX(I),BMSY(I)) EXEC1077
* ,CCCRD,WEDGE,SHIEL)                               EXEC1078
CALL MAXIM(DOSE ,RANGMAX,RADMAX,DMAX)              EXEC1075
DC 5145 I=1,NTH                                     EXEC1080
DO 5145 J=1,NKD                                     EXEC1081
DUSE(J,I) = DOSE(J,I) / DMAX * 100.                EXEC1082
5145 CONTINUE                                       EXEC1083
NCOL = NRC                                          EXEC1084
NLINE = NREC                                        EXEC1085
I2 = 0                                              EXEC1086
7615 I1 = I2+1                                       EXEC1087
I2 = NCOL                                           EXEC1088
IF (NCOL .GT. 10 .AND. I1 .EQ. 1) I2 = 10         EXEC1089
WRITE(3,3601)                                       EXEC1090
WRITE(3,3602) (XPT(I),I=11,I2)                     EXEC1091
WRITE(3,3603)                                       EXEC1092
WRITE(3,3604)                                       EXEC1093
DO 5606 J=1,NLINE                                    EXEC1094
WRITE(3,3604) (DEPTH(J),I=11,I2)                   EXEC1095
5606 CONTINUE                                       EXEC1096
WRITE(3,3601)                                       EXEC1097
IF (NCOL .GT. 12) GO TO 7615                         EXEC1098
3601 FORMAT(2X,107(1H-))                             EXEC1099
3602 FORMAT(2X,'| x|',10(F7.1,3X),'|')              EXEC1100
3603 FORMAT(2X,'|DEPTH|',10X,'|')                   EXEC1101
3604 FORMAT(2X,'|',F5.1,'|',10(F7.1,' |')           EXEC1102
3605 FORMAT(2X,'| |',100X,'|')                       EXEC1103
RETURN                                              EXEC1104
2 CONTINUE                                          EXEC1105
C .MULTIPLE FIELDS TECHNIQUE.                       EXEC1106
IF (ICCR .EQ. 1POLA) GO TO 7006                     EXEC1107
WRITE(3,3301)                                       EXEC1108
ICCRD = 2                                           EXEC1109
7006 CONTINUE                                       EXEC1110
DO 5050 IFJ=1,IFLD                                  EXEC1111
CALL SINGLE(SSD(IFJ),SAD(IFJ),SDD(IFJ),SJI(IFJ),BMSX(IFJ),BMSY(IFJ)) EXEC1112
* ,CCCRD,WEDGE,SHIEL)                               EXEC1113
DO 5041 I=1,NTH                                     EXEC1114
IIP = I-IP0S(IFJ)+1                                 EXEC1115
IF (IIP .LE. 0) IIP = 36+IIP                       EXEC1116
IP = 36 - IIP                                       EXEC1117
IF (IP .GT. 36) IP = IP - 36                       EXEC1118
C. ALL EVEN FIELDS ARE APPLIED INVERSE(MIRROR IMAGE FASHION) EXEC1119
C. WITH ODD FIELDS;JUST BECAUSE OF THE CONFIGURATIONS OF EXEC1120
C. WEDGE FILTERS                                    EXEC1121
ITEST = (IFJ/2)*2                                  EXEC1122
IF (IFJ .NE. ITEST) GO TO 7088                      EXEC1123
IF (.NOT. WEDGE) GO TO 7088                         EXEC1124
IP = IIP                                             EXEC1125
GO TO 7089                                          EXEC1126
7028 CONTINUE                                       EXEC1127
IP = 36 - IIP                                       EXEC1128
IF (IP .GT. 36) IP = IP-36                         EXEC1129
7089 CONTINUE                                       EXEC1130
DO 5031 J=1,NKD                                     EXEC1131
RD = J-1                                            EXEC1132
IF (RD .GT. R(I)) GO TO 5041                       EXEC1133
DSACC(J,I) = DSACC(J,I) + DUSE(J,I)                EXEC1134
5031 CONTINUE                                       EXEC1135
5041 CONTINUE                                       EXEC1136
5050 CONTINUE                                       EXEC1137
C. SHIELDED SINGLE/ (R MULTIPLE: NORMALIZED AT MAXIMUM DOSE EXEC1138
C. SINGLE: NORMALIZED AT DOSE OF SAD)                EXEC1139
IF (SHIEL .OR. DR(9)) GO TO 7018                   EXEC1140
DSAD = DSACC(1,1)                                  EXEC1141
GO TO 7019                                          EXEC1142
7018 CONTINUE                                       EXEC1143
CALL MAXIM(DSACC,RANGMAX,RADMAX,DMAX)              EXEC1144
DSAD = DMAX                                         EXEC1145
7019 CONTINUE                                       EXEC1146

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DC 5044 I=1,NRI
DC 5044 J=1,NRJ
DCSACC(J, I) = DCSCC(J, I)/DSAC*10.
5044 CONTINUE
IF (SHLL .OR. UN(S)) GO TO 7022
CALL MAXIM(DUSACC, ANGMX, RADMAX, JMAX)
GO TO 7095
7022 CONTINUE
UMAX = 100
GO TO 7095
3 CONTINUE
IFD = 1
IF (ICOR .EQ. 1) GO TO 7007
WRITE(3,3701)
3301 FORMAT(10X, '***WARNING*** FOR POTENTIAL MULTIPLE-BEAM CALCULATION, CCEXEC(1161
*ORDINATE MUST BE PLAR; PLAR COORDINATE GENERATED')
7007 CONTINUE
CALL SINGLE(SSD(IFD), SAD(IFD), SOD(IFD), SOJ(IFD), BMSX(IFD), BMSY(IFD))
* ,CCORD, WJUGL, SHLL)
CALL ROTAIN(DUSACC, LLSACC, ANGMX, RADMAX)
7095 CONTINUE
WRITE(3,3707)
3707 FORMAT('1', 20X, 'DUSEL DISTRIBUTION ON OUTPUT GRID' /// ///)
NLINE = NTH
WRITE(3,3701)
WRITE(3,3702) (EQX(I), I=1, 15)
WRITE(3,3703)
WRITE(3,3701)
DO 5709 J=1, NLINE
DEGR = (J-1)*10
WRITE(3,3704) DEGR, (DUSACC(I, J), I=1, NRJ)
5709 CONTINUE
WRITE(3,3705)
WRITE(3,3701)
3701 FORMAT(2X, '1', 127(1H-))
3702 FORMAT(2X, '1', R1', 15(F7.1, 1X), '1')
3703 FORMAT(2X, '1', ANGLE]', 120X, '1')
3704 FORMAT(2X, '1', F5.1, '1', 15(F7.1, '1')
3705 FORMAT(2X, '1', 120X, '1')
WRITE(3,3155) HOSNO, (NAME(I), I=1, 12)
CALL PLOTTER (K, ANGMX, RTX, RADMAX, DUSACC, UMAX)
* WRITE A RECORD TO TAPE IF IT IS FIL-E-MAINTENANCE CONTRGL
C * IF (ON(21)) GO TO 7100
* RETURN IF NO RECORDINGS
IF (.NOT. UN(S)) RETURN
7100 CONTINUE
-----
IRNT = IRN
TYPET = 1
TECFT = ITYP
SOIPT = 15000
SDT = SDE(1) * 10
SDOT = SDE(1) * 10
PCATET = IDATE(1)*10000 + IDATE(2)*100 + IDATE(3)
IF (ITYP=2) 7303, 7308, 7309
7307 CONTINUE
7308 CONTINUE
DO 5808 I=1, IFLD
IBX(I) = BMSX(I)*(SSD(I)+0.5)/SAD(I)
IBY(I) = BMSY(I)*(SSD(I)+0.5)/SAD(I)
SIZET(I) = (IBX(I)*100 + IBY(I))
SSACT = SSD(I) * 10
5808 CONTINUE
GO TO 7310
7309 CONTINUE
IPX(I) = BMSX(I)
IPY(I) = BMSY(I)
SIZET(I) = IPX(I)*100 + IPY(I)
SSACT = SSO(I) * 10
7310 CONTINUE
WRITE(3,3205)
3205 FORMAT(125X, 'RECORD WRITTEN IN FILE' )
C *** WRITE RECORD TO TRANSACTION FILE ***
C *** PRINT RECORD JUST WRITTEN TO FILE ***
CALL PRINTET(I, J)
RETURN
END
EXEC1147
EXEC1148
EXEC1149
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EXEC1215
EXEC1216
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EXEC1218
EXEC1219
EXEC1220
EXEC1221
EXEC1222
EXEC1223

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C *****
SUBROUTINE WEDGE (SSD1,SAD1,SDC1,SDI,SMX1,SMY1)
C *** WEDGE DESIGN PROGRAM FOR DESIGNING THICKNESS PROFILE ***
C OF WEDGE FILTER
C-----C
COMMON /FIPARA/ KLS(20),DEPTH(40),NRDS,NREC
COMMON /FILTER/ GDEF,THCK,DREF,ANGLE,SHX1,SHX2
DIMENSION THCK(2,20),X(2,20),Y(2,20),DJSE(2,20)
COMMON /THICK/ TAK
DIMENSION TAK(2,40)
COMMON /PARA1/ SSD,SAD,BMSX,BMSY,SD,SDI
SSD = SSD1
SAD = SAD1
SDI = SDI1
SD = SD1
SC = SDI
BMSX = BMSX1
BMSY = BMSY1
SDI1 = SDI + 10
NPOIN = BMSX*(SDI+10.)/SAD
IF(DREF .GT. 0.) GO TO 7203
DREF = BMSX/3.*2.
GO TO 7203
7202 CONTINUE
NPOIN = NPOIN - 1
7203 CONTINUE
C.
C. CALCULATE POINTS (IF INTEREST TO FIND JOSES ON THE TILTED LINE)
DETX = 0.5
TH = ANGLE*0.017454
SIGN = +1.
7205 DO 5206 N=1,2
DO 5204 I=1,NPOIN
XI = SIGN*DETX*(I-1)
YI = (DREF*SDI - XI*SSD*TAN(TH)) / (XI*TAN(TH)+SDI)
IF(YI .GT. 1.) GO TO 7207
DREF = DREF+1.*YI
GO TO 7205
7207 X(N,I) = (DREF-YI)/TAN(TH)
Y(N,I) = YI
THCK(N,I) = 0.
5204 CONTINUE
7208 CONTINUE
SIGN = -1.
5206 CONTINUE
PEAKR = (SSD*YI-SDI)*SD/SDI
RATIO = (SSD*YI)/SAD
PMX = BMSX * RATIO
C.
C. FIND A POINT JUST NEAR BEAM EDGE
C.
IF(X(2,NPLIN) .GT. BMSX) GO TO 7202
C-----C
C. SET MAX. NUMBER OF ITERATION OF THE CALCULATION = 10
C. CALCULATION OF THE 1-ST ITERATION IS TAKEN WITHOUT
C. THE THICKNESS OF WEDGE FILTER
C. THE NEXT ITERATION WEDGE FILTER THICKNESS JUST COMPUTED
C. IS TAKEN IN ACCOUNT
C.
ITMAX = 10
ITER = 0
7209 ITER = ITER+1
ICHECK = 0
ITMAX = 0.

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```

DO 5216 N=1,2
DO 5216 I=1,NPCIN
PENMB = (SSD+Y(N,I))-SDD)*SC/SDU
RATIO = (SSD+Y(N,I))/SAD
BMX = BMX*RATIO
CALL PRIMRY(X(N,I),FNP,Y(N,I),PENMB,BMX, .TRUE., .FALSE.)
CALL SCATTR(X(N,I),SUMS,Y(N,I),.TRUE.,.FALSE.)
VSCR = SSD*SAJ/(SSD+Y(N,I))*Z
DAIR = 100.*VSCR
CALL INTPL(1,0,0,Y(N,I),TAR,TO,2,40,RDS,DEPTH,2,NREC)
DOSE(N,I) = DAIR*(SUMS*TO*FNP)
5216 CONTINUE
C.
C.      FIND THICKNESS OF THE WEDGE FILTER
C.
DO 5218 N=1,2
DO 5218 I=1,NPCIN
TCK1 = THCK(N,I)
THCK(N,I) = THCK(I,I)*ALOG(DOSE(N,I)/DOSE(2,NPCIN))/COEF
DELTA = THCK(N,I) - TCK1
IF(DELTA.GT. DTMAX) DTMAX = DELTA
IF(THCK(N,I)-TCK1.GT. 0.001) ICHCK = 1
5218 CONTINUE
IF(ICHCK.EQ. 0) GO TO 7211
IF(ITER.LT. ITMAX) GO TO 7209
WRITE(3,3209) ITER,DTMAX
3209 FORMAT(//21X,'AFTER ',I2,' ITERATIONS DELTA THICKNESS=',F7.4//)
7211 CONTINUE
NP = NPCIN + 1
DO 5271 I=NP,20
THCK(1,I) = THCK(1,NPCIN)
THCK(2,I) = THCK(2,NPCIN)
5271 CONTINUE
WRITE(3,3635)
3635 FORMAT('1',20X,'THICKNESS PROFILE OF WEDGE FILTER(MM.)' //)
DO 5600 N=1,2
NCOL = NPCIN
I2 = 0
7615 I1 = I2+1
I2 = NCOL
IF(NCOL.GT. 10 .AND. I1.EQ. 1) I2 = 10
WRITE(3,3601)
WRITE(3,3602) ( X(N,I),I=I1,I2)
WRITE(3,3601)
WRITE(3,3612) ( Y(N,I),I=I1,I2)
WRITE(3,3601)
WRITE(3,3632) ( THCK(N,I),I=I1,I2)
WRITE(3,3601)
IF(NCOL.GT. 12) GO TO 7615
5600 CONTINUE
3601 FORMAT(2X,107(1H-))
3602 FORMAT(2X,' | X|',10(F7.1,' |'))
3612 FORMAT(2X,' | Y|',10(F7.1,' |'))
3622 FORMAT(2X,' | DOSE|',10(F7.1,' |'))
3632 FORMAT(2X,' | THICK|',10(F7.1,' |'))
RETURN
END

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WDS11065
WDS11066
WDS11067
WDS11068
WDS11069
WDS11070
WDS11071
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WDS11117
WDS11118
WDS11119
WDS11120
WDS11121

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C1115NGL
SUBROUTINE SINGLE(SSD,SAD,SDO,SDI,BMSX,BMSY,COORD,WEDGE,SHIEL)
-----
C.....PROGRAM SINGLE.....
C...POLAR COORDINATE OR CARTESIAN COORDINATE SYSTEM...
-----
C= THE PROGRAM CALCULATES DOSES AT POINTS OF OUTPUT GRID
C* IN POLAR COORDINATE OR CARTESIAN COORDINATE SYSTEM,
C* WITH OR WITHOUT A WEDGE FILTER/SHIELDING BLOCK
C=
COMMON /POINTC/ XPT
LOGICAL WEDGE
LOGICAL SHIEL
COMMON /PSOUR / ISOUR,YO
COMMON /PARA2 / NKEL1,NXIN2
COMMON /DOSVAL/ DOSL,DOSACC
DIMENSION DOSE(20,40)
DIMENSION DOSACC(20,40)
COMMON /SDOLES/ DESL(17),DPMAX
INTEGER DESL
DIMENSION XPT(20)
COMMON /FIPARA/ RLS(20),DEPTH(40),NRDS,NREC,TAPE
INTEGER TAPE
COMMON /TABTAR/ TARK(40)
COMMON /SGIF / DSTF(20,40)
COMMON /PARAL / SSDI,SADI,BMSXI,BMSYI,SDI,SDDI
DATA COORDI,ISHL,IWGD,YOI,ISOUR,IWGD/9.,9.,99.,9.,9.,0/
C. CHECK IF THE SAME CONDITION AS PREVIOUS CALCULATION,USE THE SA
C. SAME VALUE OF DOSE DISTRIBUTION WITHOUT RECALCULATION
IFLAG = 0
IFI SSD .NE. SSDI ) IFLAG = 1
IFI SAD .NE. SADI ) IFLAG = 1
IFIS DO .NE. SDDI ) IFLAG = 1
IFI SD .NE. SDI ) IFLAG = 1
IFI(BMSX .NE. BMSXI) IFLAG = 1
IFI(BMSY .NE. BMSYI) IFLAG = 1
IFI IFLAG .EQ. 1) GO TO 7030
IF(COORD .NE. COORDI) GO TO 7030
IF(YO .NE. YOI ) GO TO 7030
IF( ISOUR .NE. ISOURI) GO TO 7030
IF( WEDGE ) IWGD = 1
IF( IWGD .NE. IWGDI ) GO TO 7030
IF( SHIEL ) IWGD = 1
IF( IWGD .NE. IWGDI ) GO TO 7030
RETURN
7030 CONTINUE
IWGDI = IWGD
ISOURI = ISOUR
YOI = YO
COORDI = COORD
SSDI = SSD
BMSXI = BMSX
SADI = SAC
BMSYI = BMSY
SDDI = SDD
SDI = SD
CALL SSTR(PIYU)
DELTA = 10.
DOS = 100.
DELP = 1.
C...CARTESIAN-COORDINATE-SYSTEM IS INITIALIZED
C...POLAR-COORDINATE-SYSTEM IS INITIALIZED
IF (COORD=2.) 80,70,70
70 NRECCT = 35
NXIN2 = 15
XS = 0.
GO TO 90
80 NRECCT = NKEL
XS = -BMSX/2. - Z.
XS = IFIX(XS)
XT = BMSX/2. + Z.
7075 NXIN2 = XT - XS + 1
IF(NXIN2 .LE. 20) GO TO 90
XT = XT - 1.
XS = XS + 1.
GO TO 7075
90 CONTINUE

```

SNGL1000
 SNGL1001
 CSNGL1002
 SNGL1003
 SNGL1004
 CSNGL1005
 CSNGL1006
 CSNGL1007
 CSNGL1008
 CSNGL1009
 SNGL1010
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 SNGL1012
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 SNGL1075
 SNGL1076

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      DO 5070 I=1,NKECCT
      DO 5070 J=1,NXINZ
5070 UCSE(I,J) = 0.
C...FIND DOSE AT POINTS OF OUTPUT GRID
      DO 5050 IX1=1,NKECCT
      IF (COORD = NL = 1.) GO TO 7200
      DPTH = DEPTH(I,IX1)
      RATIO = (SSD+DPTH)/SAD
      PNMB = (SSD+DPTH-SDC)*SD/SCD
      TO = TAR(I,IX1)
      XO = XS
      GO TO 7201
7200 CONTINUE
      RO = XS
7201 CONTINUE
      DO 5080 IX2=1,NXINZ
      IF (COORD = 2.) GO TO 7070,7070,7030
7070 CONTINUE
C. TRANSFORM COORDINATE FROM POLAR TO CARTESIAN.
      THETA = LCLTH*FLOAT(IX1-1)*3.1415926/180.
      DPTH = (SAD-SSD)-RO*COS(THETA)
      XC = -RO*SIN(THETA)
      RATIO = (SSD+DPTH)/SAD
      PNMB = (SSD+DPTH-SDC)*SD/SCD
      CALL INTPL(2,0,C,DPTH,TAR,TC,2,40,RDS,DEPTH,2,40)
      GO TO 7090
7090 CONTINUE
      XPT(IX2) = XC
      CONTINUE
      IF (DPTH < LT - DPTAX-0.05) GO TO 7500
      BMX = BMSX*FATHL
      BMY = BMSY*FATHL
      VSCR = SAD**2/(SSD+DPTH)**2
      DAIR = DUS*VSCR
C. CALC. FUNCTION OF PRIMARY RADIATION ON X-DIRECTION (BEAM WIDTH)
C. F(X,0)
      CALL PRIMKY(XO,FNPX,DPTH,PNMB,BMX,WEDGE,SHIEL)
C. CALC. ON Y-DIRECTION (AT PLANE OF CALC.) F(0,Y) WITHOUT FILTERS
      CALL PRIMKY(YO,FNPY,DPTH,PNMB,BMY,.FALSE.,.FALSE.)
      CALL SCATTK(XO,SUMS,DPTH,WEDGE,SHIEL)
      FNP = FNPX+FNPY
      DPRIM = DAIR*FNP*TO
      DSCAT = SUMS*DAIR
      DOSE(IX2,IX1) = DSCAT + DPRIM
7500 CONTINUE
      RO = RC+DLLP
      XO = XC+DLLP
5080 CONTINUE
      I = IX1
      WRITE(3,3502) (DOSE(I,J),J=1,NXINZ)
3502 FORMAT(' *DISE*',20F6.1)
5050 CONTINUE
C. PRODUCE TAB FOR THE FIELD FOR BEING USED IN THE
C. SUCCESSIVE RETAILIN TECHNIQUE
      XC = C.0
      DO 5055 ITR=1,NKEC
      CALL SCATTK(XO,SUMS,DEPTH(ITR),.FALSE.,.FALSE.)
      TO = TAR(I,ITR)
      TAR(2,ITR) = SUMS + TO
5055 CONTINUE
      DPSAD = SAD-SSD
      CALL INTPL(2,0,C,LPS,D,TAR,TARN,2,40,RDS,DEPTH,2,40)
      PNMB = (SAD-SSD)*SD/SCD
      WRITE(3,3505) TARN,DI,SAD,PNMB
3505 FORMAT(/2IX,' TISSUE-IR-RATIO, TAR AT SAD IS ',F6.3,
* AT DEPTH ',F6.2,' CM. //2EX,' PENUMBRA-REGION WIDTH IS ',
*F6.3,' CM. //)
      RETURN
      END

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SNGL1077
 SNGL1076
 SNGL1075
 SNGL1080
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 SNGL1109
 SNGL1110
 SNGL1111
 SNGL1112
 SNGL1113
 SNGL1114
 SNGL1115
 SNGL1116
 SNGL1117
 SNGL1118
 SNGL1119
 SNGL1120
 SNGL1121
 SNGL1122
 SNGL1123
 SNGL1124
 SNGL1125
 SNGL1126
 SNGL1127
 SNGL1128
 SNGL1129
 SNGL1130
 SNGL1131
 SNGL1132
 SNGL1133
 SNGL1134
 SNGL1135
 SNGL1136
 SNGL1137
 SNGL1138
 SNGL1139
 SNGL1140
 SNGL1141
 SNGL1142
 SNGL1143
 SNGL1144
 SNGL1145

```

C151STRP
SUBROUTINE SSTRIP(YO)
C      PRODUCE DIFFERENTIAL SCATTER-AIR RATIO, SAR FROM STRIPS OF AREA
C      AT ANY DEPTH
COMMON /PSOUR / ISOU
COMMON /PARAL / SSB,SAU,BMSX,PMSY,SJ,SJD
COMMON /FIPARA/ KLS(10),DEPTH(40),NRJS,NDEP,TAPE
INTEGER TAPE
COMMON /TABTAK/ TAK(2,40)
COMMON /DISVAL/ VALSAR
DIMENSION VALSAR(20,40)
COMMON /SDIF / DSTP
DIMENSION DSTP(20,40)
COMMON /SWTCH/ ON(30)
LOGICAL ON
DATA FILE1/'CU60'/
NPEC = NDEP
ISOU1 = ISOU
GO TO (7001,7002,7003,7004,7005),ISOUR
7001 CALL FIND(FILE1)
GO TO 7520
7002 CALL FIND(FILE2)
GO TO 7520
7003 CALL FIND(FILE3)
GO TO 7520
7004 CALL FIND(FILE4)
GO TO 7520
7005 CALL FIND(FILE5)
7520 CONTINUE
READ(TAPE,3020) (KUS(I),I=1,NPOS)
3020 FORMAT(3X,15F4.1)
DO 5054 J=1,NKLC
  READ(TAPE,3030) DEPTH(J),TAK(I,J),[VALSAR(I,J),I=2,NRJS]
3030 FORMAT(F3.1,19F4.3)
  VALSAR(1,J) = 0.0
  DO 5054 I=2,NRJS
    VALSAR(I,J) = VALSAR(I,J)/PCS(I)
5054 CONTINUE
GO TO 7530
7510 CONTINUE
7530 CONTINUE
Y1 = YO
NSTRIP = 20
DELTH = 10.
NLOOP = 2
IF (YO .EQ. 0.) NLOOP = 1
NR = 90./DELTH
FRACT = DELTH/180./PI*OAT(NLOOP)
DELTH = DELTH*J.017454
IF (.NOT. ON(6)) GO TO 67
NLINE = NDEP
NCOL = NRJS
I2 = C
7615 I1 = I2+1
I2 = NCOL
IF(NCOL .GT. 10 .AND. I1 .EQ. 1) I2 = 10
WRITE(3,3601)
WRITE(3,3612) (FUS(I),I=11,I2)
WRITE(3,3603)
WRITE(3,3601)
DO 5606 J=1,NLINE
  WRITE(3,3614) DEPTH(J),[VALSAR(I,J),I=11,I2]
5606 CONTINUE
WRITE(3,3601)
IF(NCOL .GT. 12) GO TO 7615
67 CONTINUE
STRP1000
STRP1001
STRP1002
STRP1003
STRP1004
STRP1005
STRP1006
STRP1007
STRP1008
STRP1009
STRP1010
STRP1011
STRP1012
STRP1013
STRP1014
STRP1015
STRP1016
STRP1017
STRP1018
STRP1019
STRP1020
STRP1021
STRP1022
STRP1023
STRP1024
STRP1025
STRP1026
STRP1027
STRP1028
STRP1029
STRP1030
STRP1031
STRP1032
STRP1033
STRP1034
STRP1035
STRP1036
STRP1037
STRP1038
STRP1039
STRP1040
STRP1041
STRP1042
STRP1043
STRP1044
STRP1045
STRP1046
STRP1047
STRP1048
STRP1049
STRP1050
STRP1051
STRP1052
STRP1053
STRP1054
STRP1055
STRP1056
STRP1057
STRP1058
STRP1059
STRP1060
STRP1061
STRP1062
STRP1063
STRP1064
STRP1065

```

```

C ... START LOOP FOR ALL DEPTHS
DO 5060 ND = 1, NDEP
  RATIO = (SSJ*DEP)/(ND))/SAD
  DPTH = DEPTH(ND)
  BMY = BMSY*KATIL
  YO = ABS(YO)
  STRP = 0.
C ... START LOOP FOR ALL STRIPS
DO 5050 NSTP = 1, NSTRI
  X = NSTP
  STP = 0.
C ... START LOOP FOR ALL NLOOP
DO 5040 NLOOP = 1, NLOOP
C ... LOOP FOR ALL K, DISTANCE FROM IO ** R-GEN **
DO 5030 IK = 1, NR
  Y = BMY/2. - YO
  ABSY = ABS(Y)
  SIGN = Y/ABSY
  THETA = LETH*(IR-C.5)
  IF (TAN(THETA) .LT. X/ABSY) R = ABSY/COS(THETA)
  IF (TAN(THETA) .GE. X/ABSY) R = X/SIN(THETA)
I ...
C ... INTERPOLATE VALUE OF SAR, FROM SAR_FILE, AT DEPTH=DPTH; RADIUS=R
CALL INTPL(L,K,DPTH,VALSAR,S,20,40,RDS,DEPTH,NRDS,NREC)
S = S*K
STP = STP + S*SIGN
5030 CONTINUE
YO = -YO
5040 CONTINUE
DSTP(N,STP,NJ) = (STP-STRP)*FRACT
STRP = STP
5050 CONTINUE
5060 CONTINUE
NCOI = NSTRI
IF (.NOT. ON(1)) KRETURN
I2 = C
7715 I1 = I2*1
I2 = NCOI
IF(NCCL .GT. 10 .AND. I1 .EQ. 1) I2 = 10
WRITE(3,3504)
3504 FORMAT('1',40X,'DIFFERENTIAL SCATTER-AIR RATIO'/
* 25X,'FROM 1-ST STRIP TO 20-TH STRIP AT ANY DEPTH'//)
WRITE(3,3601)
WRITE(3,3622) (I,I=11,I2)
WRITE(3,3603)
WRITE(3,3601)
DO 5706 J=1,NLINE
WRITE(3,3614) DLP7(I,J), ( DSTP(I,J), I=11,I2)
5706 CONTINUE
WRITE(3,3601)
IF(NCCL .GT. 12) GO TO 7715
3601 FORMAT(2X,107(1H-))
3603 FORMAT(2X,'|DEPTH|',100X,'|')
3605 FORMAT(2X,'| |',100X,'|')
3612 FORMAT(2X,'| A|',10(F7.1,3X),'|')
3614 FORMAT(2X,'|',F5.1,'|',10(F7.3,' |')
3622 FORMAT(2X,'| |',10(16.4X),'|')
RETURN
END

```

```

STAR1067
STRP1068
STAR1069
STRP1070
STAR1071
STRP1072
STRP1073
STRP1074
STRP1075
STRP1076
STRP1077
STRP1078
STRP1079
STRP1080
STRP1081
STRP1082
STRP1083
STRP1084
STRP1085
STRP1086
STRP1087
STRP1088
STRP1089
STRP1090
STRP1091
STRP1092
STRP1093
STRP1094
STRP1095
STRP1096
STRP1097
STRP1098
STRP1099
STRP1100
STRP1101
STRP1102
STRP1103
STRP1104
STRP1105
STRP1106
STRP1107
STRP1108
STRP1109
STRP1110
STRP1111
STRP1112
STRP1113
STRP1114
STRP1115
STRP1116
STRP1117
STRP1118
STRP1119
STRP1120
STRP1121
STRP1122
STRP1123
STRP1124

```

```

C 111PRIM
SUBROUTINE PRIM4(Y1,Z0,FNP,DPH,PNMB,DMX,WEDGE,SHIEL)
PROGRAM CALCULATE FUNCTION OF PRIMARY RADIATION OF A POINT
WITH THE EFFECT OF WEDGE FILTER OR SHIELDING BLOCK OR NONE.
COMMON /FILTER/ MU,THCK,DREF,ANGLE,SHX1,SHX2
REAL M1
DIMENSION THK(2,20)
LOGICAL WEDGE
LOGICAL SHILL
COMMON /PARA1 / SSO,LDAD,BMSX,FMSY,SO,SJD
COMMON /EQ1 / EQX(20),EQY(40)
X = ABS(X0)
ABSOP = 1.
SDD1 = SOC + 10
RATIO = (SSO*DPH)/SDD1
PNMPI = (SSO*DPH-SDD1)*SO/SDD1
IF (.NOT. WEDGE) GO TO 7021
XWEDG = X/RATIO + 2.0
L = 1
IF(XO .LT. 0) L = 2
CALL INTPL(L,0.0,ANLGL,THCK,DWJG,2,20,EQX,EQY,2,20)
ABSOP = EXP(-M1*DWJG)
7021 CONTINUE
FNPS = 1.
IF (.NOT. SHILL) GO TO 7025
WSH = (SHX2-SHX1)*FATIG
HWSH = WSH/2.
HCOCR = HWSH+SHX1 * RATIO
XSH = XC-HCOCR
CALL FUNCT1(-XSH,-WSH,PNMB1,FNP1)
CALL FUNCT1 XSH,-WSH,PNMB1,FNP2)
FNPS = FNP1+FNP2
7025 CONTINUE
DIF = SQRT((SSO*DPH)**2 + X**2)
FCFAX = (SSO + DPH)**2 / DIF**2
CALL FUNCT ( X ,DMX ,PNMB ,FNP
FNP = FNP*FNPS*FCFAX*ABSOP
RETURN
END
    
```

```

C 111FIND
SUBROUTINE FIND(FILL)
COMMON /FIPARA/ KLS(20),DEPTH(40),NRDS,NREC,TAPE
COMMON /READCT/ IEKR
COMMON /EQ1 / EQX(20),EQY(40)
COMMON /SCUDES/ ULS(1),DPMAX
INTEGER DESCK(17),TAPE
DATA EQ/'EQ1'/
TAPE = 5
REWIND TAPE
IF(FILE .NE. LJ) GO TO 7050
DO 5201 I=1,20
5201 EQX(I) = I-1
DO 5202 I=1,40
5202 EQY(I) = I-1
RETURN
7050 CONTINUE
READ(TAPE,3010,END=7170) FINAM,NREC,NRDS,DPMAX,DESCR
3010 FORMAT(A4,2I2,F4.1,I4)
IF (FINAM.NE.FILE) GO TO 7100
RETURN
7100 CONTINUE
NPEC1 = NREC + 1
DO 5020 I=1,NPEC1
READ(TAPE,3040,END=7170)
3040 FORMAT(1X)
5020 CONTINUE
GO TO 7050
7170 WRITE(3,3045) FILE
3045 FORMAT(' ***EKKKK*** FILE ***A4*** NOT FOUND')
IEKR = IEKR+1
RETURN
END
    
```

```

C$$$PCT
SUBROUTINE CRCT(ICLR, KK, RD, I )
COMMON /PARA1/ SSD,SD, RMSX, BMSY, SD, SDJ
COMMON /CJTR/ I(36)
COMMON /CESSIN/ LUSA(36), SINA(36)
COMMON /FPAKA/ RDS(40), DEPTH(40), NRDS, NREC
COMMON /TARTAK/ TARI(40)
K = KK
IF(K .GT. 19) K = 38-K
STD = SA0-SSD
JPS = STD-RD*0.5*(K)
CALL INTPL(2,0,0,UPJ, TAR, TARS, 2,40, RDS, DEPTH, 2, NREC)
K11 = KK + I - 1
IF ( K11 .GT. 36 ) K11 = K11-36
DPC = R(K11) - R0*CUA(K)
IF (RC .EQ. 0.) GO TO 7050
IF(K .EQ. 1 .OR. K .EQ. 19) GO TO 7030
CALL DIFEX( DPL, K, RD, I, KK, I )
7050 CALL INTPL(2,0,0,UPJ, TAR, TARS, 2,40, RDS, DEPTH, 2, NREC)
FCOR = TARC/TARS
RETURN
END

```

COMMON /PARA2/ I1, I2, IFLD, ICRP, ICLCT(36)
DIMENSION DDIS(20,40), DDISACC(20,40)
COMMON /FPAKA/ RDS(40), DEPTH(40), NRDS, NREC, TAPE
COMMON /PARA1/ SSD,SD, RMSX, BMSY, SD, SDJ
COMMON /PARA2/ NTH, IRO
COMMON /CESSIN/ LUSA(36), SINA(36)
COMMON /CENTR/ I(36)
DMAX = 0.0
DELTH = 1.0
TH = 5050 I(1,36)
TH = (I(1,36)-1)*DELTH*0.017454
COS(TH) = COS(TH)
SIN(TH) = SIN(TH)
5050 CONTINUE
C I, J - RADIAL LINE, POINT ON THE LINE, RESP., OF OUTPUT GRID
C K - POSITION OF FIELD APPLIED
C K IS RELATIVE TO I
DO 5090 I=1, NTH
DO 5090 J=1, NRDS
RI = J-1
IF(RD .GE. K11) GO TO 5080
DO 5070 K=1, NTH
IK = I+K-1
IF(IK .GT. 36) IK = IK-36
WGHT = 1.0
IF(ICLCT(IK) .EQ. 0) GO TO 5070
IF(ICLCT(IK) .GE. 0) GO TO 7505
KP = 38-K
IF(KP .GT. 36) KP=KP-36
GO TO 7508
7505 CONTINUE
KP = K
IF(ICLCT(IK) .EQ. 5) WGHT = 0.5
7508 CONTINUE
KK = K
CALL CRCT(ICLR, KK, RD, I)
DDISACC(J,1) = DDISACC(J,1) + DDISP(J, KP) * FCOR * WGHT
5070 CONTINUE
5090 CONTINUE
WRITE(3,3030) I, J, (DDISACC(J,1), J=1, NRDS)
3030 FORMAT(2 I6, 10F10.3)
5090 CONTINUE
DSCR = DDISACC(1,1)
DO 5055 I=1, NTH
DO 5055 J=1, NRDS
DISACC(J,1) = DISACC(J,1) / DSCR * 100.
IF (DMAX .GE. DISACC(J,1)) GO TO 5095
DMAX = DISACC(J,1)
ANC = I
RAC = J
5055 CONTINUE
RETURN
END

ROTA1000
ROTA1001
ROTA1002
ROTA1003
ROTA1004
ROTA1005
ROTA1006
ROTA1007
ROTA1008
ROTA1009
ROTA1010
ROTA1011
ROTA1012
ROTA1013
ROTA1014
ROTA1015
ROTA1016
ROTA1017
ROTA1018
ROTA1019
ROTA1020
ROTA1021

ROTA1002
ROTA1003
ROTA1004
ROTA1005
ROTA1006
ROTA1007
ROTA1008
ROTA1009
ROTA1010
ROTA1011
ROTA1012
ROTA1013
ROTA1014
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ROTA1016
ROTA1017
ROTA1018
ROTA1019
ROTA1020
ROTA1021
ROTA1022
ROTA1023
ROTA1024
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ROTA1027
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ROTA1031
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ROTA1035
ROTA1036
ROTA1037
ROTA1038
ROTA1039
ROTA1040
ROTA1041
ROTA1042
ROTA1043
ROTA1044
ROTA1045
ROTA1046
ROTA1047
ROTA1048
ROTA1049
ROTA1050
ROTA1051
ROTA1052
ROTA1053
ROTA1054


```

SUBROUTINE FNCT (AX ,BMS ,PNM ,FN )
C. FIND A VALUE OF THE FUNCTION OF PRIMARY RADIATION AT A POINT
C. THE VALUE IS 1 IF INSIDE THE BEAM, 0 IF OUTSIDE THE BEAM
C. AND DECREASE LINEARLY IN PENUMBRAL REGION
BMS = BMS/2. - PNM/2.
OUTPNM = BMS + PNM
IF (AX .LT. OUTPNM) GO TO 7010
FN = 0.
RETURN
7010 IF (AX .GT. BMS) GO TO 7020
FN = 1.
RETURN
7020 FN = 1. - (AX - BMS)/(OUTPNM - BMS)
RETURN
END
    
```

FUNC1000
 FUNC1001
 FUNC1002
 FUNC1003
 FUNC1004
 FUNC1005
 FUNC1006
 FUNC1007
 FUNC1008
 FUNC1009
 FUNC1010
 FUNC1011
 FUNC1012
 FUNC1013
 FUNC1014
 FUNC1015

```

C$$$MAXM
SUBROUTINE MAXM(DCS,CC,ANGMAX,RADMAX,DMAX)
DIMENSION DUSAC(10,40)
COMMON /PARA2/ NTH,NFD
DMAX = 0.
DO 5043 I=1,NTH
DC 5043 J=1,NFD
IF(DMAX .GE. DUSAC(J,I)) GO TO 5043
DMAX = DUSAC(J,I)
ANGMAX = I
RADMAX = J
5043 CONTINUE
RETURN
END
    
```

MAXP1000
 MAXP1001
 MAXP1002
 MAXP1003
 MAXP1004
 MAXP1005
 MAXP1006
 MAXP1007
 MAXP1008
 MAXP1009
 MAXP1010
 MAXP1011
 MAXP1012
 MAXP1013

```

C$$$DIFFX
SUBROUTINE DIFFX( LPC ,K,RO,I ,KK )
C. CALC. DIFFICULT OR EXCESS TISSUE T) FIND CORRECTED DEPTH
COMMON /PARAL/ SSC,SAD,BMSX,BMSY,SO,SD)
COMMON /CONTR/ KCTR(36)
COMMON /COS SIN/ COSA(36),SINA(36)
RDC = RO * COSA(K)
RDS = RO * SINA(K)
-----
N = KK
7050 IN = I + N - 1
IF(IN .GT. 36) IN = IN-36
NK = IABS(KK-N) + 1
R = PTR(IN)
RC = R * COSA(NK)
RS = R * SINA(NK)
RDSC = RDS * (SAD-KC) / (SAD-RDC)
IF(IRS .GT. RDSC) GO TO 7010
IF(KK .LT. 19) N = N-1
IF(KK .GT. 19) N = N+1
R1 = R
R1C = RC
R1S = RS
R1DC = RDC
R1SC = RDSC
GO TO 7050
7010 R1SC = R1S * (SAD-KC) / (SAD-R1C)
C...FIND DISTANCE R --> RL
AS = SQRT((SAD-KC)**2 + R1S * RDS)
RRC = AS - AS * RDC / RDS
C...FIND DISTANCE R1 --> R
XS = SQRT((SAD-KC)**2 + R1SC * R1SC)
IF(R1SC .NE. 0.) GO TO 7015
R1R = R1C - RL
GO TO 7205
7015 R1R = XS - AS * R1S / R1SC
7205 CONTINUE
DDPC = R1R * (RS - RDC) / (RS - R1SC)
C...CORRECTED DEPTH...
DPC = RRC + DDPC
RETURN
END
    
```

DIFX1000
 DIFX1001
 DIFX1002
 DIFX1003
 DIFX1004
 DIFX1005
 DIFX1006
 DIFX1007
 DIFX1008
 DIFX1009
 DIFX1010
 DIFX1011
 DIFX1012
 DIFX1013
 DIFX1014
 DIFX1015
 DIFX1016
 DIFX1017
 DIFX1018
 DIFX1019
 DIFX1020
 DIFX1021
 DIFX1022
 DIFX1023
 DIFX1024
 DIFX1025
 DIFX1026
 DIFX1027
 DIFX1028
 DIFX1029
 DIFX1030
 DIFX1031
 DIFX1032
 DIFX1033
 DIFX1034
 DIFX1035
 DIFX1036
 DIFX1037
 DIFX1038
 DIFX1039
 DIFX1040

```

C111SCAT
SURROUTINE SCATTR(XL,SUMS,DPTH,WEDGE,SHIEL)
C. CALC. SCATTERED RADIATION OF A POINT FROM ANOTHER AREA
LOGICAL WEDGE,SHIEL
COMMON /PARAL / SSD,SAD,BMSX,BMSY,SD,SJD
COMMON /FIPARA/ RLS(20),DEPTH(40),NRDS,NREC
COMMON /SCIF / JSTP(20,40)
SUMS = 0.
RATIO = (SSD+LPT1)/SAD
BMX = BMSX*RATIO
PAMP = (SS)*UPTH-SCL)*SD/SDD
C ...
C ... SLMT IS LIMIT OF SCATTERING MEDIUM IN X-DIRECTION,5 CM. OUTSIDE F
C ...
C ... CALC. SCATTERED RADIATION FROM RIGHT_LEFT_SIDE OF X0,(POINT OF C
C ... LOOP 1 CALC. RIGHT_SIDE ; LOOP 2 CALC. LEFT_SIDE ...
SLMT = BMX + 5.0 - XL
J = 1
DO 5055 L = 1,2
DO 5090 I = 1,20
X = X0+I*J
XAB = ABS(X)
C..... SCATTERED FROM OUTSIDE THE LIMIT/JR FROM MORE THAN 20 STRIPS
C ..... IS NEW LABEL ...
IF(XAB .GT. SLMT) GO TO 7040
CALL PKIMRY(X,I,X,DPTH,PAMP,BMX,WEDGE,SHIEL)
CALL INTPL(I,U,U,DPTH,CSTP,DIFS,2J,40,RDS,DEPTH,20,NREC)
SUMS = SUMS + LIFS*FNX
5050 CONTINUE
7040 CONTINUE
SLMT = BMX+5.0+XL
J = -1
5055 CONTINUE
RETURN
END
SCAT1000
SCAT1001
SCAT1002
SCAT1003
SCAT1004
SCAT1005
SCAT1006
SCAT1007
SCAT1008
SCAT1009
SCAT1010
SCAT1011
SCAT1012
SCAT1013
SCAT1014
SCAT1015
SCAT1016
SCAT1017
SCAT1018
SCAT1019
SCAT1020
SCAT1021
SCAT1022
SCAT1023
SCAT1024
SCAT1025
SCAT1026
SCAT1027
SCAT1028
SCAT1029
SCAT1030
SCAT1031
SCAT1032
SCAT1033
SCAT1034

```

```

C 111PLOT
SUBROUTINE PLOTTER(R,ANG,RTH,RAD,DJSE,DMAX)
C.
C.   PROGRAM PLOTTER. PLOTS ISODOSE CURVES OF DOSE DISTRIBUTION.
C.   CHARACTERS DESCRIBE THE DOSE VALUE IF ANY POINTS ARE PRINTED
C.   OUT. THE ISODOSE (PART IS PRINTED LINE BY LINE.
C.
C.....
COMMON /PAR42 / NTH,NRD
COMMON /EQUI / ELX(20),EQY(40)
DIMENSION R(37),RTH(37)
DIMENSION DJSE(20,40)
DIMENSION LIPKT(121)
INTEGER CHAR(20)
DATA CHAR/'A','E','L','D','E','F','G','H','I','J',
* 'K','L','M','N','O','P','Q','R','S','T'/
DATA ICROS,IBLANK,ISIR/'+',',','*'/
3006 FORMAT(/,IX,'**MAXIMUM DOSE IS',F7.2,' AT ANGLE ',F6.1,
* ' DEGREE ;',F4.1,' CM. FROM AXIS**/')
3010 FORMAT(/,IX,' * CHARACTER ',A1,' REPRESENTS DOSE FROM ',
* '16,' TO ',16,' *')
R(37) = R(1)
RTH(37) = RTH(1)
WRITE(3,3900) R
3900 FORMAT( 5X,1JF10.3 )
ANG = (ANG-1)*10.
RAD = RAD-1.
NCHK = 20
NTH1 = NTH+1
DO 5016 I=1,NRD
DOSE(I,NTH1) = DJSL(I,1)
5016 CONTINUE
C.
WRITE(3,3000) DMAX,ANG,RAD
DMAX = IF(XI DMAX/10. +0.5)*10
DMX = DMAX
DMX1 = DMAX
DO 5040 I=1,NCHK
SPACE = 10.
IF(DMX1 .GT. 150) SPACE = 20.
IF(DMX1 .LT. 30) SPACE = 5.
DMX1 = DMX - SPACE
IF(DMX1 .LT. 0.) GO TO 7010
IDMX = DMX*0.9
IDMX1 = DMX1+SPACE*2/4*0.5
WRITE(3,3010) CHAR(I),IDMX,IDMX1
DMX = DMX1
5040 CONTINUE
7010 CONTINUE
WRITE(3,3800)
3800 FORMAT('1',1100,'ISODOSE CURVE'/T101,'* IS ORIGIN'
* /T101,'* IS CENTER')
C.
C.
X1 = -15.0
X2 = 15.0
Y1 = R(1)
Y2 = -R(15)
NRDS = 10
7105 NX = (X2-X1)/0.254 + 1
IF(NX .LE. 121) GO TO 7107
X1 = X1 + 0.5
X2 = X2 - 0.5
GO TO 7105
7107 NY = (Y1-Y2)/0.423
IF(NY .GT. 70) NY = 70
Y = FLOAT(IFIX(Y1/0.423) + 1)*0.423

```

```

PLGT1000
PLCT1001
PLCT1002
PLCT1003
PLCT1004
PLCT1005
PLCT1006
PLCT1007
PLCT1008
PLCT1009
PLCT1010
PLCT1011
PLCT1012
PLCT1013
PLCT1014
PLCT1015
PLCT1016
PLCT1017
PLCT1018
PLCT1019
PLCT1020
PLCT1021
PLCT1022
PLCT1023
PLCT1024
PLCT1025
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PLCT1038
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PLCT1060
PLCT1061
PLCT1062
PLCT1063
PLCT1064
PLCT1065
PLCT1066

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WRITE(3,3110)
DC 5029 N=1,NY
Y = Y - C.423
X = FLOOR((IX(X/0.254)-1)*C.254)
C.
DO 5027 M=1,NX
  LIPRT(M) = 1BLNK
  X = X + C.254
  RHO = SQRT(4*X + Y*Y)
  IF(Y .EQ. 0.0) GO TO 7209
  THETA = ATAN(X/Y) / 0.174533
7209  CONTINUE
  THETA = 9.0
7212  CONTINUE
  IF(RHO .GT. 0.25) GO TO 7111
  LIPRT(M) = 1CR05
  GO TO 5027
7111  CONTINUE
  IF(Y .GT. 0) GO TO 7113
  THETA = THETA + 18
  GO TO 7112
7113  IF(X .GE. 0) GO TO 7117
  THETA = THETA + 36
7117  CONTINUE
  CALL INTPL(1,0.0,THETA,R,RBDD,1,37,EQX,EQY,1,37 )
  IF(RHO .GT. RBDD*0.25) GO TO 5027
  IF(RHO .LE. RBDD*0.25) GO TO 7123
  LIPRT(M) = 1STAK
  GO TO 5027
7123  CONTINUE
  IF(RHO .GT. NRD-1.25) GO TO 5027
  LRD = RBDD
  IF(LRD .GT. NRD) LRD = NRD
  CALL INTPL(0,RHO,THETA,DCSE,DPDIN,20.40,EQX,EQY,LRD,NTH1)
  DCSP = DMAX
  DO 5070K=1,NCHR
    SPACE = 10.
    IF(DCSP .GT. 150) SPACE = 20.
    IF(DCSP .LT. 30) SPACE = 5.
    DOSP = DCSP - SPACE
    IF(DPDIN .GT. DOSP) GO TO 5070
    IF(DPDIN .LT. DOSP+SPACE*3/4) GO TO 5050
    LIPRT(M) = CHAR(K)
    GO TO 5050
5070  CONTINUE
5050  CONTINUE
5027  CONTINUE
  WRITE(3,3109) (LIPRT(I),I=1,NX)
3109  FORMAT(5X,121A1 )
5029  CONTINUE
  WRITE(3,3110)
3110  FORMAT(5X, 121(1H*))
  RETURN
  END
PLCT1069
PLCT1070
PLCT1071
PLCT1072
PLCT1073
PLCT1074
PLCT1075
PLCT1076
PLCT1077
PLCT1078
PLCT1079
PLCT1080
PLCT1081
PLCT1082
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PLCT1097
PLCT1098
PLCT1099
PLCT1100
PLCT1101
PLCT1102
PLCT1103
PLCT1104
PLCT1105
PLCT1106
PLCT1107
PLCT1108
PLCT1109
PLCT1110
PLCT1111
PLCT1112
PLCT1113
PLCT1114
PLCT1115
PLCT1116
PLCT1117
PLCT1118
PLCT1119
PLCT1120
PLCT1121
PLCT1122
PLCT1123

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C$$$INTPL
SUBROUTINE INTPL(JJ, XBAR, YBAR, F, RETN, M, N, X, Y, MM, NN)
C THE LINEAR INTERPOLATION OF 1-OR 2-DIMENSION ARRAY
DIMENSION F(M,N), X(N), Y(N)
IF ( JJ .EQ. 0 ) GO TO 7005
J = JJ
GO TO 7008
7005 CONTINUE
IF (XBAR .GT. X(1) ) GO TO 7006
J = 2
GO TO 7008
7006 CONTINUE
DO 5007 J=2,MM
IF (XBAR .LE. X(J) ) GO TO 7008
*007 CONTINUE
J = MM
7008 CONTINUE
IF (YBAR .GT. Y(1) ) GO TO 7009
I = 2
GO TO 7011
7009 DO 5010 I=2,NN
IF ( YBAR .LE. Y(I) ) GO TO 7011
5010 CONTINUE
I = NN
C INTERPOLATE ON X (COLUMNS) USING ROWS I-1 AND I
7011 CONTINUE
FACTOR = (YBAR-Y(I-1))/(Y(I) - Y(I-1))
XJ = F(I, I-1) + FACTOR*(F(I, I) - F(I, I-1))
IF(IJ .EQ. 0) GO TO 7013
RETN = XJ
RETURN
7013 CONTINUE
XJ1 = F(I-1, I-1) + FACTOR*(F(I-1, I) - F(I-1, I-1))
C INTERPOLATE ON Y (ROWS) USING ROW ENTRIES JUST COMPUTED
RETN = XJ1 + ((XBAR - X(I-1))/(X(I) - X(I-1)))*(XJ - XJ1)
RETURN
END

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NTPL1000
NTPL1001
NTPL1002
NTPL1003
NTPL1004
NTPL1005
NTPL1006
NTPL1007
NTPL1008
NTPL1009
NTPL1010
NTPL1011
NTPL1012
NTPL1013
NTPL1014
NTPL1015
NTPL1016
NTPL1017
NTPL1018
NTPL1019
NTPL1020
NTPL1021
NTPL1022
NTPL1023
NTPL1024
NTPL1025
NTPL1026
NTPL1027
NTPL1028
NTPL1029
NTPL1030
NTPL1031
NTPL1032
NTPL1033
NTPL1034
NTPL1035
NTPL1036

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C114FMNT
SURROUTINE FMAINT
C***** PROGRAM MAINTNANCE FILE R/T FILE *****
C-----
C.
C.    ***PHASE II***
C.    PROGRAM FMAINT
C.
C.    THIS PROGRAM MAINTAINS R/T FILE;ALTER,ADD AND DELETE
C.    OR DISPLAY RECORDS .
C.    FILE IS UPDATED BY SEQUENTIAL METHOD)
C.    - MASTER FILE WAS STORED IN MAGNETIC TAPE WITH
C.    DATA SET REFERENCE NUMBER 7
C.    - TRANSACTION FILE,WRITTEN FROM PHASE I/CALCULATION,
C.    WAS IN DATA SET REF. NO. 6
C.    - NEW MASTER FILE AFTER UPDATED WAS IN NO. 8
C.    - PRINTER IS NO. 3
C.    - CARD READER IS NO. 1
C.    THE DATA SET REFERENCE NO. ARE DEPEND ON
C.    // ASSGN STATEMENT OF JCL.
C.
C.    SUBPRGRAM CALLED:
C.    -----
C.    READMF- READ A MASTER RECORD FROM MASTER FILE AND CHECK
C.    FOLLOW UP DATE,IF THE RECRD IS TO BE FOLLOW UP
C.    BEFORE THE NEXT PERIOD OF RUN IT MUST BE PRINTED
C.    IN FOLLOW UP MODE
C.    READTR- READ A TRANSACTION REC. FROM TRANSACTION FILE
C.    RITEPM- PRINT A MASTER RECORD
C.    BREAK INTO TWO BC-CHAR.-LINES
C.    - IN PL/IN LANGUAGE / REPORT FORM
C.    RITEPT-PRINT TRANSACTION RECORD JJST READ IN.
C.    RITENM- WRITE MASTER RECORD INTO NEW MASTER FILE
C.    RITENT- WRITE TRANSACTION RECORD INTO NEW MASTER FILE
C.    IN CASE OF ADDITION.
C.
C.    RECORD KEY JSEL-
C. MM      IRNT : IRRADIATION NO. OF PATIENT(TRANSACTION)
C. MM      IRNM : IRRADIATION NO. OF PATIENT(MASTER)
C.
C-----
C.
C.    IMPLICIT INTEGER (A-Y)
C.    COMMON /T/ (LJCL,IRNT,HNT,PDATET,DIAGCT,DIAGDT(4),
1          LUSTG,IT,NT,MT,DOCNMT(4),
2          TYPET,TLT1,NFIELT,DCST,TIMEY,FRACTI,SOURT,SDT,FILTT,
3          SSAUT,SQL,SIZEZ(6),CONCLT,NDATET,NTTET(6),FDATET,
4          FCUNDT(4)
C.    COMMON /M/      IRNP,HNM,PDATEM,DIAGDM,DIAGDM(4),
1          CUSTM,TM,NM,MM,DOCNMM(4),
2          TYPETM,TELM,NFIELM,DCSTM,TIMEY,FRACTM,SOURM,SDM,FILTM,
3          SSAOM,SQL,SIZEZ(6),CONCLM,NDATEM,NOTEM(6),FDATEM,
4          FCUNDM(4)
C.    EQUIVALENCE (IRNT,IRNP) , (IRNM,IRNM)
C.    TPNSAC = 6
C.    MASTER = 7
C.    NEWMAS = 8
C.    PRT = 3
C.    RDR = 1
C.    PKT2 = 12
C.    PAUSE ****PLEASE CHANGE TAPE AT UNITS DESCRIBED IN RUN SHEET****
C.    REWIND NEWMAS
C.    REWIND TRNSAC
C.    REWIND MASTLK
C=VVVVVV
C-----
C= .INITIALIZATION OF CCUNTERS. =
C-----
DPSUM = 0
TRSUM = 0
MASSUM = 0
ALTSUM = 0
ACDSUM = 0
DELSUM = 0
ERRSUM = 0

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C
C=====
C= .READ NEXT TRANSACTION RECORD FROM TRANSACTION FILE.
C= .INTO TRANSACTION VARIABLE LIST.
C=====
7020 CALL READTR(TRANSUM,L7L70,TRANSAC)
      WRITE(PRT,3106)
      CALL RITEPT(PRT)
C=====
C= .READ RECORO FROM FILE BEING UPDATED(MASTER FILE).
C= .INTO MASTER VARIABLE LIST.
C=====
7030 CALL READMP(MASSUM,L7090,MASTER)
C= .COMPARE MASTER KEY AND TRANSACTION KEY.
7040 IF(IRM .GE. KNT) GO TO 7050
      .MASTER KEY < TRANSACTION KEY
C      .TRANSFER OLD RECORD TO NEW MASTER FILE
      CALL RITL(MINEWMA)
      GO TO 7030
7050 IF(IRM .NE. KNT) GO TO 7060
      .MASTER KEY = TRANSACTION KEY, UPDATE/DELETE A RECORD
      IF(CCODE .NE. 1) GO TO 7055
C      .COMMAND CODE = 1 IS TO ALTER A RECORD
C      .REARRANGE A NEW MASTER RECORD WITH SOME FIELDS ALTERED
C      .BY A TRANSACTION RECORD
      WRITE(PRT,3204)
3204 FORMAT(/' MASTER RECORD TO BE ALTERED :')
      CALL RITEPT(PRT)
      CALL NEWFORM
      CALL RITLNM(NEWMA)
      ALTSUM = ALTSUM + 1
      WRITE(PRT,3205)
3205 FORMAT(/' NEW MASTER RECORD AFTER ALTERATION :')
      CALL RITEPT(PRT)
      WRITE(PRT,3210) KNM
3216 FORMAT(/'OK, ALTERATION OF PATIENT RECORD NO. ',I6,' IS OK.' )
      GO TO 7020
7055 IF(CCODE .EQ. 3) GO TO 7058
      CALL RITLNM(NEWMA)
      IF(CCODE .EQ. 4) GO TO 7059
C      .COMMAND CODE NOT = 3 => ERROR
      ERKSUM = ERKSUM + 1
      WRITE(PRT,3208) KNT
3208 FORMAT(/'X,***LRLRL*** PATIENT RECORD NO. ',I6,' ALREADY IN FILE,
*) ADDITION' )
      GO TO 7020
C      .COMMAND CODE = 3, A RECORD IS DELETED
7058 DELSUM = DELSUM + 1
      WRITE(PRT,3220)
3226 FORMAT(/' MASTER RECORD TO BE DELETED :')
      CALL RITEPT(PRT)
      WRITE(PRT,3210) KNM
3210 FORMAT(/'OK, DELETION OF PATIENT RECORD NO. ',I6,' IS OK.' )
      GO TO 7020
7059 CONTINUE
      WRITE(PRT,3304)
3304 FORMAT('1'////' **DISPLAY COMMAND**'/// )
      CALL RITEPT(PRT2)
      WRITE(PRT,3305)
      WRITE(3,3305)
3305 FORMAT('0*****'/'1' )
      DSPSUM = DSPSUM + 1
      GO TO 7020
C      .MASTER KEY > TRANSACTION KEY
7060 CONTINUE
      IF(CCODE .EQ. 2) GO TO 7068
      IF(CCODE .EQ. 4) GO TO 7065
      WRITE(PRT,3212) KNT
3212 FORMAT(/'X,***LRLRL*** PATIENT RECORD NO. ',I6,' DOES NOT EXIST,
*) DELETION/ALTERATION' )
      GO TO 7056

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FMNT1074
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FMNT1144

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7065 CONTINUE                                FMNT1145
      WRITE(PRT2,3304)                        FMNT1146
      WRITE(PRT2,3312) KNT                    FMNT1147
3312 FORMAT(13X,'***ERROR*** PATIENT RECORD NO. ',I6,' DOES NOT EXIST' FMNT1148
      * )
7066 CONTINUE                                FMNT1149
      ERRSUM = ERRSUM + 1                     FMNT1150
7067 CONTINUE                                FMNT1151
      CALL READTR(TKSUM,67070,TRNSAC)         FMNT1152
      WRITE(PRT,3106)                          FMNT1153
      CALL RITEPT(PKJ)                          FMNT1154
      GO TO 7040                                FMNT1155
C      .AN ADDITION TAKEN PLACE                FMNT1156
7068 CONTINUE                                FMNT1157
      CALL RITENT(NEWMAS)                      FMNT1158
      WRITE(PRT,3214) KNT                      FMNT1159
3214 FORMAT(10X,' ADDITION PATIENT RECORD NO. ',I6,' IS OK.' ) FMNT1160
      ADDSUM = ADDSUM + 1                     FMNT1161
      GO TO 7067                                FMNT1162
C .....CFMNT1164
C= .END OF TRANSACTION FILE ,WRITE THE REST OF A MASTER FILE INTO =FMNT1165
C= .A NEW ONE                                =FMNT1166
7070 CONTINUE                                FMNT1167
      CALL RITENT(NEWMAS)                      FMNT1168
      CALL READMF(MASSUM,67080,MASTER)        FMNT1169
      GO TO 7070                                FMNT1170
C .....CFMNT1171
C= .END PROCESS,PRINT SUMMARY                FMNT1172
7070 CONTINUE                                FMNT1173
C      .END OF MASTER FILE PUT TRANSACTION FILE REMAINING FMNT1174
      WRITE(PRT,3400)                          FMNT1175
      WRITE(PRT,3402) MASSUM                   FMNT1176
      WRITE(PRT,3412) TKSUM                    FMNT1177
      WRITE(PRT,3414) USFSUM                  FMNT1178
      WRITE(PRT,3404) ADDSUM                   FMNT1179
      WRITE(PRT,3406) ALLSUM                   FMNT1180
      WRITE(PRT,3408) UELSUM                   FMNT1181
      WRITE(PRT,3410) ERKSUM                   FMNT1182
      WRITE(PRT,3401)                          FMNT1183
3400 FORMAT(17/25X,'SUMMARIZATION OF MAINTENANCE FILE PROCESSED' ) FMNT1184
3401 FORMAT(16X,'JOB COMPLETED' )            FMNT1185
3402 FORMAT(29X,'MASTER FILE PROCESSED ',I4,' RECORDS' ) FMNT1186
3404 FORMAT(40X,' ADDITION ',I4,' RECORDS' ) FMNT1187
3406 FORMAT(40X,' ALTPATILN ',I4,' RECORDS' ) FMNT1188
3408 FORMAT(40X,' DELETION ',I4,' RECORDS' ) FMNT1189
3410 FORMAT(33X,'ERRCR TRANSACTION ',I4,' RECORDS' ) FMNT1190
3412 FORMAT(39X,'TRANSACTION ',I4,' RECORDS' ) FMNT1191
3414 FORMAT(39X,' DISPLAY ',I4,' RECORDS' ) FMNT1192
      ENDFILE NEWMAS                           FMNT1193
      RETURN                                    FMNT1194
C .....CFMNT1195
7090 CONTINUE                                FMNT1196
      IF(CCODE .EQ. 2) GO TO 7095              FMNT1197
      WRITE(PRT,3212) KNT                      FMNT1198
      ERRSUM = ERRSUM + 1                     FMNT1199
7092 CONTINUE                                FMNT1200
      CALL READTR(TKSUM,67080,TRNSAC)         FMNT1201
      WRITE(PRT,3106)                          FMNT1202
3106 FORMAT(1' TRANSACTION RECCRD :')        FMNT1203
      CALL RITEPT(PRT)                          FMNT1204
      GO TO 7090                                FMNT1205
C      .ADD TRANSACTION RECCRD TO NEW MASTER FILE FMNT1206
7095 CONTINUE                                FMNT1207
      CALL RITENT(NEWMAS)                      FMNT1208
      WRITE(PRT,3214) KNT                      FMNT1209
      ADDSUM = ADDSUM + 1                     FMNT1210
      GO TO 7092                                FMNT1211
      END                                       FMNT1212

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C. 111RDMF
SUBROUTINE READMFI(MASSUM,*,IUNIT)
.....
C. THESE ARE READ/WRITE PROGRAMS
C. READ FROM -MASTER FILE
C. -TRANSACTION FILE
C. WRITE TO -NEW MASTER FILE -TRANSFER OLD RECORD
C. -REWRITE UPDATED RECORD
C. -ADD TRANSACTION RECORD
C. PRINT MESSAGES IN CONTINUOUS FORM
.....
C. IMPLICIT INTEGER (A-Y)
COMMON /TCJAY / DAY,MONTH,YEAR
COMMON /T/ CCODE,IKNT,HNT,PDATET,DIAGCT,DIAGDT(4),
1 CLSTGT,TT,NT,MT,DOCNMT(4),
2 TYPET,TELT,NFIELT,DOSTM,TIMET,FRACTT,SOURT,SDT,FILTT,
3 SSAJT,SUL1,SIZE1(6),CONCLT,NDATET,NOTET(6),FDATET,
4 FCONDT(4)
COMMON /M/ IRNM,HNM,PDATEM,DIAGCM,DIAGDM(4),
1 CLSTCM,TM,NM,MM,DOCNMM(4),
2 TYPEN,TELM,NFIELM,DOSTM,TIMEM,FRACTM,SOURM,SDM,FILTM,
3 SSAJM,SULM,SIZEM(6),CONCLM,NDATEM,NOTEM(6),FDATEM,
4 FCONDM(4)
3101 FORMAT( 10,18,16,44,4A4,411,4A4,211,13,312,11,212,14,
* 13,614,11,16,4A4,16,4A4 )
3102 FORMAT(11,16,18,16,44,4A4,411,4A4,211,13,312,11,212,14,
* 13,614,11,16,4A4,16,4A4 )
3104 FORMAT(5X,11,16,18,16,44,4A4,411,4A4,211,13,312,11,212,14,
* /6X,13,614,11,16,4A4,16,4A4 )
READ(IUNIT,3101,END=7090)
1 IRNM,HNM,PDATEM,DIAGCM,DIAGDM,CLSTGM,TM,NM,MM,DOCNMM,
2 TYPEN,TELM,NFIELM,DOSTM,TIMEM,FRACTM,SOURM,SDM,FILTM,
3 SSAJM,SULM,SIZEM,CONCLM,NDATEM,NOTEM,FDATEM,FCONDM
MASSUM = MASSUM + 1
C. CHECK IF THE PATIENT HAS TO BE FOLLOWED UP.
FYR = FDATEM/10000
FMCN = (FDATEM-FYR*10000)/100
FDAY = FDATEM-FYR*10000-FMCN*100
DIFDAY = FDAY - DAY
DIFMCN = FMCN - MCNTH
DIFYR = FYR - YLAK
DFOLLOW = DIFYR*360 + DIFMCN*30 + DIFDAY
IF(DIFOLLOW .GT. 14) RETURN
MODE = 0
UNIT = IUNIT
ICUNIT = 3
GO TO 7701
7050 RETURN 1
ENTRY RITENM(IUNIT)
WRITE(IUNIT,3101)
1 IRNM,HNM,PDATEM,DIAGCM,DIAGDM,CLSTGM,TM,NM,MM,DOCNMM,
2 TYPEN,TELM,NFIELM,DOSTM,TIMEM,FRACTM,SOURM,SDM,FILTM,
3 SSAJM,SULM,SIZEM,CONCLM,NDATEM,NOTEM,FDATEM,FCONDM
RETURN
ENTRY RITENT(IUNIT)
WRITE(IUNIT,3101)
1 IKNT,HNT,PDATET,DIAGCT,DIAGDT,CLSTGT,TT,NT,MT,DOCNMT,
2 TYPET,TELT,NFIELT,DOSTM,TIMET,FRACTT,SOURT,SDT,FILTT,
3 SSAJT,SUL1,SIZE1,CONCLT,NDATET,NOTET,FDATET,FCONDT
RETURN
ENTRY RITEPM(IUNIT)
WRITE(IUNIT,3104) IFNM,
1 IRNM,HNM,PDATEM,DIAGCM,DIAGDM,CLSTGM,TM,NM,MM,DOCNMM,
2 TYPEN,TELM,NFIELM,DOSTM,TIMEM,FRACTM,SOURM,SDM,FILTM,
3 SSAJM,SULM,SIZEM,CONCLM,NDATEM,NOTEM,FDATEM,FCONDM
MODE = 1
UNIT = IUNIT
7701 CONTINUE
C. -HEADING THE REPORT
C. .THE REPORT MAY BE IN DISPLAY OR FOLLOW UP MODE
C. .PRINT TODAY'S DATE , DATE REPORTED
WRITE(IUNIT,3701)
WRITE(IUNIT,3702)
WRITE(IUNIT,3704)
RDMF1000
RDMF1001
CRDMF1002
RDMF1003
RDMF1004
RDMF1005
RDMF1006
RDMF1007
RDMF1008
RDMF1009
CRDMF1010
RDMF1011
RDMF1012
RDMF1013
RDMF1014
RDMF1015
RDMF1016
RDMF1017
RDMF1018
RDMF1019
RDMF1020
RDMF1021
RDMF1022
RDMF1023
RDMF1024
RDMF1025
RDMF1026
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RDMF1066
RDMF1067
RDMF1068
RDMF1069
RDMF1070
RDMF1071
RDMF1072
RDMF1073

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IF(MODE .EQ. 1) GO TO 7704
WRITE(IUNIT,3706)
GC TO 7706
7704 WRITE(IUNIT,3708)
17706 CONTINUE
WRITE(IUNIT,3710) YEAR,MONTH,DAY
PYEAR = PDATM/10000
PMONTH = (PDATM-PYLR*10000)/100
PDAY = (PCATM-PYLR*10000-PMONTH*100)
C. ***** PATIENTS *****
C. .PLANNING JATE
WRITE(IUNIT,3701)
WRITE(IUNIT,3712) IRNM,IRNM,PYEAR,PMONTH,PDAY,IRNM
WRITE(IUNIT,3700)
C. ***** DIAGNOSYS *****
WRITE(IUNIT,3714) LIACM,DIAGDM,CLSTGM,TH,MM,MM,DOCNMM
WRITE(IUNIT,3700)
C. ***** TRLATMLNT *****
WRITE(IUNIT,3716) TPEM , TECHM
GO TO (7706) , TPEM
WRITE(IUNIT,3718)
GC TO 7720
7706 WRITE(IUNIT,3720)
7720 CONTINUE
GO TO (7722,7724,7726) , TECHM
WRITE(IUNIT,3722)
GC TO 7730
7722 WRITE(IUNIT,3724)
GC TO 7730
7724 WRITE(IUNIT,3726)
GC TO 7730
7726 WRITE(IUNIT,3728)
7730 CONTINUE
IF(TECHM .EQ. 3) GO TO 7732
WRITE(IUNIT,3730) NFIELM
NF = NFIELM
GC TO 7734
7722 WRITE(IUNIT,3732) NFIELM
NF = 1
7734 CONTINUE
WRITE(IUNIT,3734) LGSTM,TIMEM,FRACSTM
C. .SPECIFICATION OF BEAMS
ZSD = SDM/10
ZSDU = SDDM/10
WRITE(IUNIT,3700)
WRITE(IUNIT,3736) SOURM,ZSD,ZSDU
IF(FILTM .GE. 10) GO TO 7735
IF(FILTM .NE. 0) GO TO 7735
WRITE(3,3737)
3737 FORMAT(' ',T40,' ')
GC TO 7740
7735 CONTINUE
WRITE(IUNIT,3738) FILTM
GC TO 7740
7736 WRITE(IUNIT,3740)
7740 CONTINUE
ZSSAD = SSADM/10
WRITE(IUNIT,3700)
WRITE(IUNIT,3742) ZSSAD
3742 FORMAT(09X,' ',T91,' ',T56,F5.1,' CM.' )
IF(TECHM .EQ. 3) GO TO 7744
WRITE(IUNIT,3744)
GC TO 7746
7744 WRITE(IUNIT,3746)
7746 CONTINUE
WRITE(IUNIT,3748)
3748 FORMAT(09X,' ',T91,' ',T45,' SIZE OF BEAM'/09X,' ',T91,' ',
* T47,' (SQ.LA.)' )
DO 5750 I=1,6
IF(I .GT. NF) GO TO 7747
SIZE = SIZEM(I) / 100
SIZEM(I) = SIZEM(I) - SIZE*100
WRITE(IUNIT,3750) SIZE , SIZEM(I)
3750 FORMAT(09X,' ',T91,' ',T47,I2,' X ',I2 )
5750 CONTINUE
7747 CONTINUE

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RDMF1074
RDMF1075
RDMF1076
RDMF1077
RDMF1078
RDMF1079
RDMF1080
RDMF1081
RDMF1082
RDMF1083
RDMF1084
RDMF1085
RDMF1086
RDMF1087
RDMF1088
RDMF1089
RDMF1090
RDMF1091
RDMF1092
RDMF1093
RDMF1094
RDMF1095
RDMF1096
RDMF1097
RDMF1098
RDMF1099
RDMF1100
RDMF1101
RDMF1102
RDMF1103
RDMF1104
RDMF1105
RDMF1106
RDMF1107
RDMF1108
RDMF1109
RDMF1110
RDMF1111
RDMF1112
RDMF1113
RDMF1114
RDMF1115
RDMF1116
RDMF1117
RDMF1118
RDMF1119
RDMF1120
RDMF1121
RDMF1122
RDMF1123
RDMF1124
RDMF1125
RDMF1126
RDMF1127
RDMF1128
RDMF1129
RDMF1130
RDMF1131
RDMF1132
RDMF1133
RDMF1134
RDMF1135
RDMF1136
RDMF1137
RDMF1138
RDMF1139
RDMF1140
RDMF1141
RDMF1142
RDMF1143
RDMF1144
RDMF1145
RDMF1146
RDMF1147
RDMF1148
RDMF1149

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NYR = NDATEM/10000
NMON = (NDATEM-NYR*10000)/100
NDAY = NDATEM-NYR*10000-NMON*100
WRITE (IUNIT,3700)
WRITE (IUNIT,3752) (CNCLM,NYR,NMON,NDAY)
CCN1 = CCNCLM*1
GO TO (7754,7755,7756,7757) , CCN1
WRITE (IUNIT,3754)
GO TO 7760
7754 WRITE (IUNIT,3750)
GO TO 7760
7755 WRITE (IUNIT,3757)
GO TO 7760
7756 WRITE (IUNIT,3758)
GO TO 7760
7757 WRITE (IUNIT,3759)
7760 CONTINUE
WRITE (IUNIT,3700)
WRITE (IUNIT,3760) NCTEM
***** FOLLOW UP *****
WRITE (IUNIT,3700)
WRITE (IUNIT,3764) NYR,FMON,FCAY,FCNDM
WRITE (IUNIT,3700)
3764 FORMAT(09X,' ',191,' ',/09X,' ',T31,' ',T14,' FOLLOW UP DATE: ',
* 12,'/',12,'/',12,' ' LAST CONDITION: ', 4A4 )
WRITE (IUNIT,3701)
3760 FORMAT(09X,' ',191,' ')
3761 FORMAT( 09X,82(1H) )
3762 FORMAT(9X,' ',18(' '),T71,20(' '),**/9X,' ',T23,' ',T71,' ',190,
* ' ')
3764 FORMAT(9X,' ',T26,' |      RADIOTHERAPY TREATMENT PLANNING      |',
* 190,' ')
3766 FORMAT(' ',175,' FOLLOW UP MODE' )
3768 FORMAT(' ',T14,' DISPLAY MODE' )
3770 FORMAT(9X,' ',T26,' ',T71,' ',T90,' **/9X,' ',18(' '),T38,
1 ' DATE REPORTED ',12,'/',12,'/',12,T71,20(' '),**/
2 09X,' ',141,18(' '),T91,' ')
3772 FORMAT(9X,' ' IRRADIATION NO. ',16,' ',T31,16,
* T64,' PLANNING DATA ',12,'/',12,'/',12,T91,' **/
* 5X,' ' HOSPITAL NO. ',1E,T91,' ')
3774 FORMAT(9X,' ' DIAGNOSIS: ',A4,2X,4A4,' CLINICAL STAGE: ',11,
1 T72,' T: ',11,' N: ',11,' M: ',11,T91,' **/
2 9X,' ' DOCTOR/R/T CONSULTANT: DR. ',4A4,T71,' ')
3776 FORMAT(9X,' ' TYPE OF TREATMENT: ',11,T49,' TECHNIQUE: ',11,
* T91,' ')
3778 FORMAT(' ',T36,' INVALID' )
3780 FORMAT(' ',T36,' EX-BEAM' )
3784 FORMAT(9X,' ' TOTAL DOSE REQUIRED: ',12,'00 RADS OVERALL TIME:
* ',12,' DAYS FRACTIONATIONS: ',12,' ')
3786 FORMAT(9X,' ',T28,' SOURCE: ',11,' DIAMETER ',F3.1,' CM. SDC: ',
* F4.1,' CM. ',T91,' **/9X,' ',T23,' FILTER: ',T91,' ')
3788 FORMAT(' ',T63,' INVALID' )
3784 FORMAT(' ',T63,' SINGLE FIELD' )
3786 FORMAT(' ',T63,' MULTI-FIELD' )
3788 FORMAT(' ',T63,' KLTATION' )
3790 FORMAT(9X,' ' NO. OF FIELDS: ',13,T91,' ')
3792 FORMAT(9X,' ' ANGLE OF ROTATION: ',13,T91,' ')
3794 FORMAT(' ',T36,' SHIELDING BLOCK WIDTH = ',12,' CM. ')
3796 FORMAT(' ',T36,' TILTLED ANGLE OF WEDGE = ',12,' DEGREE' )
3798 FORMAT(' ',T32,' SOURCE SURFACE DISTANCE ' )
3796 FORMAT(' ',T35,' SOURCE AXIS DISTANCE ' )
3798 FORMAT(9X,' ',T51,' ',T14,' CONCLUSION: (',11,') TREATMENT ',T62,
* ' DATE COMPLETED: ',12,'/',12,'/',12)
3794 FORMAT(' ',T40,' NO CONCLUSION' )
3796 FORMAT(' ',T40,' BEING CONTINUED' )
3798 FORMAT(' ',T40,' COMPLETE AS PLANNED' )
3796 FORMAT(' ',T40,' INCOMPLETE ' )
3798 FORMAT(' ',T40,' ? ' )
3796 FORMAT( 9X,' ',T91,' ',T14,' ADDITION NOTE: ',6A4)
(IUNIT = LN1)
RETURN

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RDMF1150
RDMF1151
RDMF1152
RDMF1153
RDMF1154
RDMF1155
RDMF1156
RDMF1157
RDMF1158
RDMF1159
RDMF1160
RDMF1161
RDMF1162
RDMF1163
RDMF1164
RDMF1165
RDMF1166
RDMF1167
RDMF1168
RDMF1169
RDMF1170
RDMF1171
RDMF1172
RDMF1173
RDMF1174
RDMF1175
RDMF1176
RDMF1177
RDMF1178
RDMF1179
RDMF1180
RDMF1181
RDMF1182
RDMF1183
RDMF1184
RDMF1185
RDMF1186
RDMF1187
RDMF1188
RDMF1189
RDMF1190
RDMF1191
RDMF1192
RDMF1193
RDMF1194
RDMF1195
RDMF1196
RDMF1197
RDMF1198
RDMF1199
RDMF1200
RDMF1201
RDMF1202
RDMF1203
RDMF1204
RDMF1205
RDMF1206
RDMF1207
RDMF1208
RDMF1209
RDMF1210
RDMF1211
RDMF1212
RDMF1213
RDMF1214
RDMF1215
RDMF1216
RDMF1217
RDMF1218
RDMF1219
RDMF1220


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CESINIERM
SHRFRONTLINE NFFJEM
-----
C= FORM A NEW MESSLR RECORD
C= ALTER SOME OR ALL FIELDS ACCORDING TO A TRANSACTION
C= FROM FILE CONTROL COMMAND
C= FIELDS NOT TO BE ALTERED IS FILLED WITH:
C= - X IF ALPHABETIC FIELDS
C= - Y IF NUMERIC FIELDS
-----
* IMPLICIT INTEGER (A-Y)
COMMON /I/ CLDCL, IRN1, HNT, PDATE, DIAGCT, DIAGDT(4),
1 CLSTGT, TI, NT, MT, DOCNMT(4),
2 TYPET, TLCT, NFIELT, DOSTT, TIMET, FRACTM, SQURT, SDT, FILTT,
3 SSAOT, SODT, SIZET(6), CONCLT, NDATE, NOTET(6), FDATE,
4 FCONDT(4)
COMMON /M/ IRN, HNM, PDATEM, DIAGCM, DIAGDM(4),
1 CLSTGM, TM, NM, MM, DOCNMM(4),
2 TYPLM, TLCTM, NFIELM, DOSTM, TIMEM, FRACTM, SQURM, SDM, FILTM,
3 SSAOM, SODM, SIZEM(6), CONCLM, NDATEM, NOTEM(6), FDATEM,
4 FCONDM(4)
DATA XXXX/ 'XXXX' /
IF(IRN1 .EQ. 999999) GO TO 4
IRN = IRN1
4 IF(HNT .EQ. 99999999) GO TO 6
HNM = HNT
6 IF(PDATE .EQ. 999999) GO TO 8
PDATEM = PDATE
8 IF(DIAGCT .EQ. XXXX) GO TO 16
DIAGCM = DIAGCT
DO 5010 I=1,4
16 IF(CLSTGT .EQ. 9) GO TO 20
CLSTGM = CLSTGT
TM = TI
NM = NT
MM = MT
20 IF(DOCNMT(1) .EQ. XXXX) GO TO 24
DO 5020 I=1,4
5020 DOCNMM(I) = DOCNMT(I)
24 IF(TYPET .EQ. 9) GO TO 28
TYPEM = TYPET
TECHM = TLCT
NFIELM = NFIELT
28 IF(DOSTT .EQ. 99) GO TO 32
DOSTM = DOSTT
32 IF(TIMET .EQ. 99) GO TO 36
TIMEM = TIMET
36 IF(FRACTM .EQ. 99) GO TO 40
FRACTM = FRACTM
40 IF(SQURT .EQ. 9) GO TO 44
SQURM = SQURT
SDM = SDT
44 IF(FILTT .EQ. 99) GO TO 48
FILTM = FILTT
48 IF(SSAOT .EQ. 99999) GO TO 52
SSAOM = SSAOT
SODM = SODT
52 IF(SIZET(1) .EQ. 99999) GO TO 56
DO 5052 I=1,6
5052 SIZEM(I) = SIZET(I)
56 IF(CONCLT .EQ. 9) GO TO 60
CONCLM = CONCLT
NDATEM = NDATE
60 IF(NOTET(1) .EQ. XXXX) GO TO 64
DO 5060 I=1,6
5060 NOTEM(I) = NOTET(I)
64 IF(FDATE .EQ. 9999999) GO TO 70
FDATEM = FDATE
70 IF(FCONDT(1) .EQ. XXXX) GO TO 80
DO 5070 I=1,4
5070 FCONDM(I) = FCONDT(I)
80 CONTINUE
RETURN
END
NFRP1000
NFRP1001
CNFRM1002
CNFRM1003
CNFRM1004
CNFRM1005
CNFRM1006
CNFRM1007
CNFRM1008
CNFRM1009
NFRM1010
NFRM1011
NFRM1012
NFRM1013
NFRM1014
NFRM1015
NFRM1016
NFRM1017
NFRM1018
NFRM1019
NFRM1020
NFRM1021
NFRM1022
NFRM1023
NFRM1024
NFRM1025
NFRM1026
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NFRM1038
NFRM1039
NFRM1040
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NFRM1067
NFRM1068
NFRM1069
NFRM1070
NFRM1071
NFRM1072
NFRM1073
NFRM1074

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ภาคผนวก ฉ

ขนาดหน่วยความจำที่ใช้

ชื่อโปรแกรม	เนื้อที่ความจำ (ไบต์)
โปรแกรมหลัก	5946
READC	3184
• FMAINT	3238
FORM	5216
DIAG	4348
EXEC	5210
FIND	844
WEDDSI	3538
SINGLE	3004
ROTATN	1512
PLOTER	3520
CRRCT	856
INTPL	1332
DIFEX	1424
PRIMRY	1106
SCATTR	828
SSTRIP	2742
FUNCT	506
READMF	6752
NWFORM	<u>1354</u>
รวม	<u><u>56460</u></u>



ประวัติผู้เขียน

นายจักรภพ วงศ์ละคร เกิดวันที่ 4 ตุลาคม 2500 ที่ตำบลน้ำปลัก จังหวัดอุบลราชธานี
สำเร็จการศึกษาระดับปริญญาตรี (ศิลปศาสตรบัณฑิต) จากคณะศึกษาศาสตร์และพัฒนศาสตร์ มหาวิทยาลัย
เกษตรศาสตร์ พ.ศ. 2522 เข้าศึกษาในระดับปริญญาโท (ศิลปศาสตรมหาบัณฑิต) สาขาคอมพิวเตอร์ศึกษา
ที่วิทยาลัยเทคโนโลยีและพัฒนาระบบคอมพิวเตอร์ มหาวิทยาลัยเทคโนโลยีพระจอมเกล้าธนบุรี กรุงเทพมหานคร ในปีเดียวกัน