DCD/DCB

Medical Device Division
3M Health Care

3M Center
St. Paul, Minnesota 55144-1000
612/733 1110

3M

Lic. File
22-00057-06

DKN= 30-04951

December 22, 1989

U. S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Attention: A. B. Davis, Regional Administrator

Subject: Part 10CFR21 Report

Dear Mr. Davis:

On December 19, 1989, 3M identified a defect as defined in 10CFR21 associated with the 3M Heyman source model 6550 (formerly model 6H6E) brachytherapy source. This was reported to Region III on December 19, 1989 by a phone call from F. B. Entwistle of 3M's Health Physics Services to Mr. Roy Caniano. This letter constitutes the written report required by 10CFR21.21(b)(2).

Identification of Defect

The model 6H6E, also known as a Heyman source, is manufactured under license 22-00057-06 at 3M's manufacturing facility in New Brighton, Minnesota and distributed to specifically licensed medical facilities under distribution license 22-00057-59MD. As described in the report of 3M's Heyman Review task force, attached as item #1, the identified defect is the use of a statistical sampling plan for testing the adequacy of a brazed connection between the source capsule and the wire handle of the Heyman device. This use of a sampling plan, rather than 100% testing, apparently resulted in sources with inadequate source to wire joints being distributed to customers. This, in turn, has resulted in separation of the source from the wire handle at two customer locations (Yale-New Haven Hospital in March, 1989 and Mansfield General Hospital in September, 1989). Please note that the Heyman Review task force concluded that the design of the source is adequate for its anticipated use and that the 26 pound pull test used for testing the source to wire joint exceeds expected field use stresses.

Safety Hazard Evaluation

As required by 10CFR21, an evaluation as to whether this defect could result in a substantial safety hazard has been performed by 3M's Health Physics Services. This evaluation indicates that a substantial safety hazard such as those

referenced in NUREG-0302 did not result at Yale-New Haven or Mansfield General Hospital and would not unless the facility had inadequate radiation safety procedures. The separation of the source from the handle should be promptly observed and corrected by the licensee without significant exposure to patients or staff. In one case noted above (Yale-New Haven) the separation was not observed and the source was lost from the licensees control and disposed of in regular trash. Even in this case, exposures were conservatively calculated as less than 20% of the referenced levels. 3M's calculations (attachment #2) using typical incinerator volumes indicate that incineration of the lost source would also not have exceeded referenced levels. Nevertheless, it is theoretically possible that a source of this type, <u>if lost from a licensee's control,</u> might result in a substantial safety hazard.

<u>Customer Listing</u>

Attached to this report as attachment #3 is a listing of customers to whom 3M has distributed Heyman sources starting in 1974. These sources are expected to have an approximate 10 year useful life due to radioactive decay and many may have been disposed of by this time. 3M estimates that of the 1,255 sources distributed less than 1,000 remain in use at less than 100 institutions.

<u>Corrective Action</u>

The corrective action which will be taken by 3M consists of retesting all existing sources and modifying manufacturing processes and testing specifications for all future manufactured sources. We feel this is appropriate to assure the complete safety of every source in use. This corrective action will be directed by the same Heyman Review task force which performed the review of the defect acting under the supervision of division management and review by 3M's Health Physics Services.

3M sent a letter in October of this year, notifying customers that there is the potential for the source to separate from the wire handle. An additional letter is being sent reminding customers of this situation and notifying them of the retesting program. A copy of this letter will be provided to Region III at the time of mailing. As this retesting constitutes a recall under FDA regulations, that agency is being appropriately informed.

The actual retesting will be performed during the first half of 1990. Customers will be individually contacted by phone

to schedule retesting of their sources. As these sources are presently being used by institutions for cancer therapy, the customer use schedule will have to take precedence over 3M's retesting program. We expect that customers will cooperate with us in returning the sources to us in a timely manner. 3M's capability for handling these sources should permit processing 25 customers per month. 3M estimates that, with cooperation of the customers, this program can be completed within six months. 3M will offer to dispose of any customer Heyman sources at no charge. Quarterly updates will be provided to Region III giving progress and test results. Customers will be requested to inform us if they have previously disposed of their sources.

The actual retesting to be performed on these sources will consist of: (1) visual inspection, (2) a radiograph of the source to wire joint and (3) a pull test of the entire device. These tests will be performed according to written procedures being developed by the Heyman Review task force and Medical Device Division Quality Assurance and reviewed by Health Physics Services. Customers will be informed of the results of the retesting and the sources will be recertified by 3M. Damage to the wire handle or other customer related damage will be repaired at the customer's expense upon their approval. Any repairs necessitated by the original manufacturing of the source will be performed at 3M's expense. 3M may choose, with the customer's consent, to scrap customer sources and compensate the customer in place of retesting, repair and return.

Manufacturing Process Improvement

As noted in the task force report, improved methods of manufacturing have been identified which will lead to manufactured sources with brazed joints of acceptable strength. Detailed manufacturing procedures for this process are presently being developed and validated and will be used on both new sources manufactured and any rework which is required on returned and retested sources from customers. The improved manufacturing procedures will not involve changes from the present source description in the Certificate of Registration. The testing procedure described above for returned customer sources will also apply to all new sources manufactured.

Additional Information

In the telephone enforcement conference of November 30, 1989, 3M stated that the receiving procedures for all returned radiation devices had been modified to ensure that they are included in the Medical Device Division Quality

Assurance complaint system. This is to confirm that this has indeed taken place. 3M was also requested during that teleconference to report on evaluations of previous returned Heyman sources. Attachment #4 describes the evaluations performed and the information presently available to us. A summary of this information indicates that as these sources were handled as returns for repair, the evaluation performed on them was insufficient to determine the presence of a specific defect or customer abuse. Review of the information available and the recollection of personnel involved in handling of these sources indicates a pattern consistent with source to wire separation due to manufacturing variability as identified by the present task force.

If you have any further questions, please feel free to contact me at (612)736-6565 or to contact the business unit manager, Thomas R. Engels at (612)736-0128.

Sincerely,

John W. Benson
Vice-President, Medical Device Division

JWB/FBE:ckm

Attachments

cc: Director, Office of Nuclear Material Safety & Safeguards
U. S. Nuclear Regulatory Commission

ATTACHMENT 1

3M INTERNAL CORRESPONDENCE

To: J.W. Benson - Medical Device Division - 225-5S-01

From: C.A. Stakston - New Brighton - 590-01

Subject: Heyman Review Task Force: Initial Report

Date: December 19, 1989

The Task Force has completed its investigation of the Heyman Source separations at Yale-New Haven Hospital and Mansfield General Hospital. Based on this investigation plus analysis of product inventory, the Task Force has reached the following conclusions:

[1] Source design specifications are adequate for the anticipated conditions of use.

[2] Manufacturing procedures and process specifications allowed variability in the brazing process at the source-wire joint.

- Source-wire separation may have resulted from insufficient braze.
- Source-wire separation may have resulted from too much grinding of the braze joint area.
- Manufacturing procedures and specifications can and must be changed to control variability and to assure adequacy of the product to meet the design specifications.

[3] Test procedures and specifications did not provide a means of identifying all sources which did not meet design specifications due to manufacturing process variability.

- The present pull test exceeds the field use stress on the joints and is capable of detecting joints which do not meet design specifications.
- A 10% sampling plan was insufficient to detect all braze joints which were not in compliance with design specifications.

Based on these conclusions, the Task Force makes the following recommendations:

[A] Modify the product specifications to assure adequate joint strength on 100% of the product. Product specifications include the design, manufacturing procedures, process specifications, testing methods and test specifications.

- New manufacturing procedures and process specifications should be written, validated and implemented.
- Test methods and specifications should be modified, validated, and implemented. Test specifications should require 100% testing of the product using both radiographic and pull test methods.

[B] Remove all existing sources from the field and test in accordance with the new methods developed in [A] above and return to use only if found acceptable. Sources that are not found acceptable should be reworked or replaced with sources manufactured to meet design specifications using the new manufacturing and testing procedures and specifications determined in [A] above.

[C] Treat all future returned Heyman Sources as complaints so that they are included in the Medical Device Division Quality Assurance complaint system. This would assure monitoring of the returns for trends and each product return would be analyzed thoroughly to identify defective conditions or misuse of the product.

These conclusions and recommendations are supported by the findings presented in the attached Task Force report. With this report, the Task Force is concluding its initial assignment. At this point, I would recommend that the Task Force should shift its attention to the following items:

[1] Define the product specifications (manufacturing and testing specifications, procedures, etc.) as outlined in Recommendation [A].

[2] Validate these process and test method changes and implement them as standard operation procedures.

[3] Coordinate the return and testing of Heyman Sources from customers. Define procedures and documentation for this process.

[4] Maintain communications with the NRC on the status of the return and testing activities.

The Task Force will procede with working on these action items and any others as directed by Medical Device Division Management. The Task Force will also continue to report progress on a routine basis to both Division Management as well as Health Physics Service who has been monitoring all activities of this Task Force.

If you have any further questions or recommendations please contact me at the New Brighton Plant on 736-8362.

Chuck Stakston

Chuck Stakston

c: H.J. Bergman - General Counsel - 220-12E-02
P.W. Collins - Medical Device Div QA - 270-5N-01
J.D. Bush - Regulatory - 225-3N-02
S.J. Duerr - New Brighton Quality Control - 590-01
T.R. Engels - Medical Device Division - 225-5S-01
F.B. Entwistle - Health Physics Services - 220-2E-02
R.T. Fuller - New Brighton - 575-01
J.W. Johnson - New Brighton - 590-01
D.O. Kubiatowicz - Medical Device Division - 270-2A-11
J.A. Nichol - Medical Device Division - 225-5S-01
M.R. Peters - Electrical Specialties Div Regulatory - 590-1
R.T. Schweiss - New Brighton - 590-01
J.A. Voxland - New Brighton - 590-01
J.J. Warinsky - Design Engineering Services - 42-3W-04

ATTACHMENT 2

Public Exposure from Disposal of Heyman Cs-137 (25mCi) Source in Normal Trash

I. Landfill

Truck Driver
Exposure Time: 2 hours
Distance: 2 meters
Exposure Rate Constant: 3.28 R-cm^2/hr-mCi
Total Exposure: 4.1 millirem

Landfill Employees
Exposure Time: 30 min.
Distance: 1 m
Total Exposure: 4.1 millirem

Landfill Cover Shields Source to Negligible Levels.

II. Incineration

Truck Driver & Incinerator Worker as Above = 4 millirem

1) Assume source melts and Cs-137 volatilizes in incinerator

from 3M Environmental Engineering
typical incinerator volume
$1 \times 10^4 - 1 \times 10^5$ cubic feet/min.

unrestricted area MPC is 5×10^{-10} $\mu Ci/ml$

$$\frac{25mCi \times 1x10^3 \frac{\mu Ci}{mCi}}{1x10^4 \frac{ft^3}{min} \times 4.80x10^2 \frac{min}{8\ hr} \times 2.83x10^4 \frac{ml}{ft^3}} = 1.84x10^{-7}\ \mu Ci/ml$$

$$\frac{1.84x10^{-7}}{5x10^{-10}} = 367 \text{ times unrestricted MPC before dilution}$$

2) Assume source withstands incinerator and is sent with ash to landfill

Incinerator, truck driver and landfill worker exposure as above = 4 millirem

Conclusion:

Exposures to personnel in unrestricted areas are much less than 500 millirem

Concentrations are less than 500 times 10CFR20 App.B Table II

ATTACHMENT 3

KM07467
Chief Radiation Physicist
Worcester City Hospital (NM)
Dept. of Radiation Therapy
26 Queen St.
Worcester, MA 01610-2490

KM03735
Chief Radiation Physicist
Massachusetts General Hospital
Dept. of Radiation Therapy
32 Fruit St.
Boston, MA 02114-2696

KM66601
Chief Radiation Physicist
New England Deaconess Hospital
Dept. of Radiation Therapy
185 Pilgrim Ave.
Boston, MA 02215-5307

KM05823
Chief Radiation Physicist
Elliot Hospital
Dept. of Radiation Therapy
955 Auburn St.
Manchestser, NH 03103

KM69205
Chief Radiation Physicist
University of CT Hlth Ctr.,
John Dempsey Hospital
Dept. of Radiation Therapy
Farmington Ave.
Farmington, CT 06032-2390

KM02999
Chief Radiation Physicist
New Britain General Hospital
Dept. of Radiation Therapy
100 Grand St.
New Britain, CT 06050-2019

KM62338
Chief Radiation Physicist
St. Francis Hospital
Dept. of Radiation Therapy
114 Woodland St.
Hartford, CT 06105-1299

KM67412
Chief Radiation Physicist
Hartford Hospital
Dept. of Radiation Therapy
80 Seymour St.
Hartford, CT 06115-3315

KM82365

LIST OF HOSPITALS WHICH HAVE RECEIVED 3M HEYMAN SOURCES - ARRANGED BY ZIP CODE.

KM 5 digit designation is the 3M order number

Chief Radiation Physicist
Yale New Haven Hospital
Dept. of Radiation Therpay
20 York St.
New Haven, CT 06504

KM60809
Chief Radiation Physicist
Danbury Hospital
Dept. of Radiation Therapy
24 Hospital Ave.
Danbury, CT 06810-5944

KM33162
Chief Radiation Physicist
Jersey Shore Medical Center
Dept.of Radiation Therapy
1945 Corlies Ave.
Neptune, NJ 07753-4897

MS29430
Chief Radiation Physicist
Dover General Hospital &
Medical Center
Dept. of Radiation Therapy
Jardine Street
Dover, NJ 07801-3315

KM11550
Chief Radiation Physicist
Overlook Hospital
Dept. of Radiation Therapy
99 Beauvoir Ave. at Sylvan Rd.
Summit, NJ 07901-0220

KM40709
Chief Radiation Physicist
Monmouth Medical Center
Dept. of Radiation Therapy
300 2nd Ave.
Long Branch, NJ 08008-1801

KM01452
Chief Radiation Physicist
Northern Ocean Hospital System
Dept. of Radiation Therapy
Osborne Ave. & River Front
Pt. Pleasant, NJ 08742-9996

KM39138
Chief Radiation Physicist
Westchester Square Medical Ctr.
Dept. of Radiation Therapy
2475 St. Raymond Ave.
Bronx, NY 10461-3198

KM13282
Chief Radiation Physicist

Kings County Hospital Center
Dept. of Radiation Therapy
451 Clarkson Ave.
Brooklyn, NY 11203-2097

KM22179
Chief Radiation Physicist
Erie County Medical Center
Dept. of Radiation Therapy
462 Grider St.
Buffalo, NY 14215-3098

KM62285
Chief Radiation Physicist
Monongahela Valley Hospital
Dept. of Radiation Therapy
Country Club Rd., Rt. 88
Monongahela, PA 15063-1599

KM42449
Chief Radiation Physicist
St. Francis Medical Center
Dept. of Radiation Therapy
45th St. off Penn Ave.
Pittsburgh, PA 15201

KM07536
Chief Radiation Physicist
Butler Memorial Hospital
Dept. of Radiation Therapy
911 E. Brady St.
Butler, PA 16001-4697

ND88427
Chief Radiation Physicist
St. Vincent Hospital
Dept. of Radiation Therapy
232 West 25th St., P.O. Box 740
Erie, PA 16544

KM43608
Chief Radiation Physicist
The Altoona Hospital
Dept. of Radiation Therapy
Howard Ave. - 7th St.
Altoona, PA 16603

ND60231
Chief Radiation Physicist
Mercy Hospital
Dept. of Radiation Therapy
746 Jefferson Ave.
Scranton, PA 18501-1624

ND71024
Chief Radiation Physicist
Abington Memorial Hospital
Dept. of Radiation Therapy

1200 Old York Road
Abington, PA 19001-3707

KM53276
Chief Radiation Physicist
The Bryn Mawr Hospital
Dept. of Radiation Therapy
150 A. Bryn Mawr Ave.
Bryn Mawr, PA 19010

ND00278
Chief Radiation Physicist
Thomas Jefferson University Hospital
Dept. of Radiation Therapy
111 S. 11th St.
Philadelphia, PA 19107-5099

ND88123
Chief Radiation Physicist
American Oncologic Hospital
Dept. of Radiation Therapy
Central & Shelmire Ave.
Philadelphia, PA 19111-2498

KM26145
Chief Radiation Physicist
Wilmington Medical Center
Dept. of Radiation Therapy
Chestnut & Broom
Wilmington, DE 19805

Edward Torvik, ScD
Dept. of Radiation Therapy
Medical Center of Delaware
Christiana HOSPITAL
PO BOX 6001
NEWARK, DE 19718

KM75424
Chief Radiation Physicist
Johns Hopkins Hospital
Dept. of Radiation Therapy
600 N. Wolfe St.
Baltimore, MD 21205-2191

ND86104
Chief Radiation Physicist
The Arlington Hospital
Dept. of Radiation Therapy
1701 N. George Mason Drive
Arlington, VA 22205-3699

KM01463
Chief Radiation Physicist
Roanoke Memorial Hospitals
Dept. of Radiation Therapy
Belleview at Jefferson St.
Roanoke, VA 24033

KM15727
Chief Radiation Physicist
Lewis-Gale Hospital
Dept. of Radiation Therapy
1900 Electric Rd.
Salem, VA 24153-7498

KM07466
Chief Radiation Physicist
Camden Clark Memorial Hospital
Dept. of Radiation Therapy
800 Garfield Ave.
Parkersburg, WV 26101

09003
Chief Radiation Physicist
Cedars of Lebanon Hospital
Dept. of Radiation Therapy
1400 N.W. 12th Ave.
Miami, FL 33136-1087

KM46357
Chief Radiation Physicist
Jackson Memorial Hospital
Dept. of Radiation Therapy
1611 NW 12th Ave.
Miami, FL 33136-1096

KM35383
Chief Radiation Physicist
Baptist Hospital
Dept. of Radiation Therapy
8900 N. Kendall Rd.
Miami, FL 33176-2118

KM27953
Chief Radiation Physicist
Morton F. Plant Hospital
Dept. of Radiation Therapy
323 Jeffords St., P.O. Box 210
Clearwater, FL 33517-3892

KM61262
Chief Radiation Physicist
Humana Hospital
Dept. of Radiation Therapy
6500 38th Ave. N. , Box 13096
St. Petersburg, FL 33710

ND39057
Chief Radiation Physicist

University of Alabama Hospital
Dept. of Radiation Therapy
619 South 19th St.
Birmingham, AL 35233-1994

KM52318
Chief Radiation Physicist
Carraway Methodist Med. Ctr.
Dept. of Radiation Therapy
1600 N. 26th St.
Birmingham, AL 35234-2804

KM40918
Chief Radiation Physicist
Methodist Hospital
Dept. of Radiation Therapy
5001 Hardy St.
Hattiesburg, MS 39401

ND70426
Chief Radiation Physicist
St. Joseph Hospital
Dept. of Radiation Therapy
One St. Joseph Drive
Lexington, KY 40504-3744

KM03588
Chief Radiation Physicist
St. Elizabeth Medical Center
Dept. of Radiation Therapy
1 Medical Village Dr.
Edgewood, KY 41017-3425

KM42636
Chief Radiation Physicist
Owensboro Daviess County Hospital
Dept. of Radiation Therapy
12th & Triplett St.
Owensboro, KY 42302

KM26819
Chief Radiation Physicist
Riverside Methodist Hospital
Dept. of Radiation Therapy
3535 Olentangy River Rd.
Columbus, OH 43214-3998

KM41230
Chief Radiation Physicist
St. Joseph Hospital
Dept. of Radiation Therapy
205 W. 20th St.
Lorain, OH 44052-3794

ND73320
Chief Radiation Physicist
Euclid General Hospital
Dept. of Radiation Therapy

191 East 185th and Lake Erie
Euclid, OH 44119

KM68092
Chief Radiation Physicist
Mansfield General Hospital
Dept. of Radiation Hospital
335 Glessner Ave.
Mansfield, OH 44903-2224

KM42892
Chief Radiation Physicist
Good Samaritan Hospital
Dept. of Radiation Therapy
3217 Clifton
Cincinnati, OH 45220-2489

KM21243
Chief Radiation Physicist
Our Lady of Mercy Hospital
Dept. of Radiation Therapy
Rowan Hills Drive
Cincinnati, OH 45227-3398

KM49372
Chief Radiation Physicist
Providence Hospital
Dept. of Radiation Therapy
2446 Kipling Ave.
Cincinnati, OH 45239-6695

KM06553
Chief Radiation Physicist
Holzer Medical Center
Dept. of Radiation Therapy
385 Jackson Pike
Gallipolis, OH 45631-1349

KM06213
Chief Radiation Physicist
Methodist Hospital of Ind. Inc.
Dept. of Radiation Therapy
1604 N. Capitol Ave., Box 1367
Indianapolis, IN 46202-1367

KM65486
Chief Radiation Physicist
St. Catherine Hospital
Dept. of Radiation Therapy
4321 Fir St.
E. Chicago, IN 46312-3097

KM21360
Chief Radiation Physicist
Ball Memorial Hospital
Dept. of Radiation Therapy
2401 University Ave.
Muncie, IN 47303-3499

KM28114
Chief Radiation Physicist
Welborn Memorial Baptist Hospital
Dept. of Radiation Therapy
401 S.E. 6th St.
Evansville, IN 47713-1299

KM04162
Chief Radiation Physicist
Deaconess Hospital, Inc.
Dept. of Radiation Therapy
600 Mary Hospital
Evansville, IN 47747-0001

KM03251
Chief Radiation Physicist
St. Mary's Med. Ctr. of Evansville
Dept. of Radiation Therapy
3700 Washington Ave.
Evansville, IN 47750-0001

KM35667
Chief Radiation Physicist
Pontiac General Hospital
Dept. of Radiation Therapy
Seminole at W. Huron St.
Pontiac, MI 48053-1693

ND39997
Chief Radiation Physicist
Mercy Hospital
Dept. of Radiation Therapy
2601 Electric Ave.
Port Huron, MI 48061-6518

KM33916
Chief Radiation Physicist
St. Joseph Mercy Hospital
Dept. of Radiation Therapy
5301 E. Huron River Dr.
Ann Arbor, MI 48106

KM05992
Chief Radiation Physicist
University of Michigan Hospitals
Dept. of Radiation Therapy
1500 E. Medical Center Dr.
Ann Arbor, MI 48109-0099

ND97924
Chief Radiation Physicist
Henry Ford Hospital
Dept. of Radiation Therapy
2799 W. Grand Blvd.
Detroit, MI 48202-2689

KM36797
Chief Radiation Physicist

St. Mary's Hospital
Dept. of Radiation Therapy
830 S. Jefferson
Saginaw, MI 48601-2594

KM21287
Chief Radiation Physicist
Bronson Methodist Hospital
Dept. of Radiation Therapy
252 E. Lovell St.
Kalamazoo, MI 49007-5364

KM38769
Chief Radiation Physicist
Marquette General Hospital
Dept. of Radiation Therapy
420 W. Magnetic St.
Marquette, MI 49855-2711

ND49289
Chief Radiation Physicist
Mercy Hospital
Dept. of Radiation Therapy
500 Market St.
Iowa City, IA 52240-5409

ND45712
Chief Radiation Physicist
St. Marys Hospital
Dept. of Radiation Therapy
2323 No. Lake Drive, Box 503
Milwaukee, WI 53201-0503

KM77176
Chief Radiation Physicist
St. Lukes Hospital
Dept. of Radiation Therapy
2900 W. Oklahoma Ave.
Milwaukee, WI 53215-4330

KM05490
Chief Radiation Physicist
St. Paul Ramsey Med. Ctr.
Dept. of Radiation Therapy
640 Jackson St.
St. Paul, MN 55101-2502

KM81602
Chief Radiation Physicist
Columbus Hospital
Dept. of Radiation Therapy
Radiation Oncology Dept.
500 15th Ave. South
Great Falls, MT 59403-4389

KM33096
Chief Radiation Physicist
St. Joseph Hospital

Dept. of Radiation Therapy
77 N. Airlite St.
Elgin, IL 60120-4912

KM21380
Chief Radiation Physicist
Elmhurst Memorial Hospital
Dept. of Radiation Therapy
200 Berteau Ave.
Elmhurst, IL 60126-2989

KM01602
Chief Radiation Physicist
St. Joseph Medical Center
Dept. of Radiation Therapy
333 North Madison
Joliet, IL 60435

KM06471
Chief Radiation Physicist
Hinsdale Hospital
Dept. of Radiation Therapy
120 North Oak St.
Hinsdale, IL 60521-3829

KM07291
Chief Radiation Physicist
La Grange Memorial Hospital
Dept. of Radiation Therapy
5101 So. Willow Springs Rd.
La Grange, IL 60525-2658

KM14436
Chief Radiation Physicist
Northwestern Memorial Hospital
Dept. of Radiation Therapy
250 E. Superior St.
Chicago, IL 60611-2950

ND64103
Chief Radiation Physicist
St. Mary of Nazareth Hospital
Dept. of Radiation Therapy
2233 W. Division St.
Chicago, IL 60622-3086

KM05859
Chief Radiation Physicist
Illinois Masonic Hospital
Dept. of Radiation Therapy
836 W. Wellington
Chicago, IL 60657-5193

KM79297
Chief Radiation Physicist
Rockford Memorial Hospital
Dept. of Radiation Therapy
2400 North Rockton

Rockford, IL 61103-3681

KM07958
Chief Radiation Physicist
St. Marys Hospital
Dept. of Radiation Therapy
111 E. Spring St.
Streator, IL 61364-3399

ND57364
Chief Radiation Physicist
St. Elizabeths Hospital
Dept. of Radiation Therapy
211 South Third St.
Belleville, IL 62222-1915

MS27878
Chief Radiation Physicist
Memorial Hospital
Dept. of Radiation Therapy
4501 N. Park Drive
Belleville, IL 62223-5399

KM41126
Chief Radiation Physicist
Decatur Memorial Hospital
Dept. of Radiation Therapy
2300 N. Edward St.
Decatur, IL 62526-4193

KM75782
Chief Radiation Physicist
Memorial Medical Center
Dept. of Radiation Therapy
800 N. Rutledge St.
Springfield, IL 62781-0001

KM01214
Chief Radiation Physicist
St. Luke's Hospital
Dept. of Radiation Therapy
232 Woods Mill Road So.
St. Louis County
Chesterfield, MO 63017-3417

KM53642
Chief Radiation Physicist
Christian Hospital N.W.
Dept. of Radiation Therapy
1225 Graham Rd.
Florissant, MO 63031

ND97923
Chief Radiation Physicist
Barnes Hospital
Dept. of Radiation Therapy
Barnes Hospital Plaza
St. Louis, MO 63110-1013

KM74016
Chief Radiation Physicist
St. Joseph Hospital
Dept. of Radiation Therapy
525 Couch Ave.
Kirkwood, MO 63122-5536

KM73421
Chief Radiation Physicist
St. Anthony Medical Center
Dept. of Radiation Therapy
10010 Kennerly Rd.
St. Louis, MO 63128-2106

ND49864
Chief Radiation Physicist
St. John's Mercy Hospital Center
Dept. of Radiation Therapy
615 So. New Ballas Road
St. Louis, MO 63141-8221

ND44099
Chief Radiation Physicist
Southeast Missouri Hospital
Dept. of Radiation Therapy
1701 Lacey St.
Cape Girardeau, MO 63701-5230

KM54597
Chief Radiation Physicist
St. Marys Hospital
Dept. of Radiation Therapy
2800 Main St.
Kansas City, MO 64108-3393

KM37047
Chief Radiation Physicist
Menorah Medical Center
Dept. of Radiation Center
4949 Rock Hill Rd.
Kansas City, MO 64110-2298

KM82373
Chief Radiation Physicist
Phelps County Regional Med. Ctr.
Dept. of Radiation Therapy
1000 W. 10th St.
Rolla, MO 65401-2905

KM18581
Chief Radiation Physicist
Louisiana Medical Center
Dept.of Radiation Therapy
1541 Kings Highway, Box 33932
Shreveport, LA 71130-4228

KM80678
Chief Radiation Physicist

Medical Center Hospital
Dept. of Radiation Therapy
500 Medical Center Blvd.
Conroe, TX 73301

KM42169
Chief Radiation Physicist
Bass Memorial Baptist Hospital
Dept. of Radiation Therapy
600 S. Monroe
Enid, OK 73701

ND48615
Chief Radiation Physicist
Wadley Regional Med. Ctr.
Dept. of Radiation Therapy
1000 Pine St.
Texarkana, TX 75501-5170

ND43931
Chief Radiation Physicist
Rosewood General Hospital
Dept. of Radiation Therapy
9200 Westheimer Road
Houston, TX 77063-3599

ND09761
Chief Radiation Physicist
Metropolitan General Hospital
Dept. of Radiation Therapy
1310 McCollough Ave.
San Antonio, TX 78212

ND80599
Chief Radiation Physicist
Baptist Medical Center
Dept. of Radiation Therapy
111 Dallas St.
San Antonio, TX 78286-0499

KM27948
Chief Radiation Physicist
William Beaumont Army Med. Ctr.
Dept. of Radiation Therapy
Property Mgmt. Br., Bldg. 7777/Rm 123
El Paso, TX 79920

ND40677
Chief Radiation Physicist
St. Francis Hospital Systems
Dept. of Radiation Therapy
825 E. Pikes Peak Ave.
Colorado Springs, CO 80903-3693

ND66777
Chief Radiation Physicist
Maryvale Samaritan Hospital
Dept. of Radiation Therapy

5102 West Campbell Ave.
Phoenix, AZ 85031-1799

KM24878
Chief Radiation Physicist
Lea Regional Hospital
Dept. of Radiation Therapy
Lovington Hwy., P.O. Box 3000
Hobbs, NM 88241-3000

KM28218
Chief Radiation Physicist
AMI South Bay Hospital
Dept. of Radiation Therapy
514 N. Prospect Ave.
Redondo Beach, CA 90277-3081

KM00648
Chief Radiation Physicist
Torrance Memorial Hospital Med. Ctr.
Dept. of Radiation Therapy
3330 Lomito Blvd.
Torrance, CA 90505-5097

KM23959
Chief Radiation Physicist
Stanford University Hospital
Dept. of Radiation Therapy
300 Pasteur Rd.
Stanford, CA 94305-2114

KM10254
Chief Radiation Physicist
N.T. Enloe Memorial Hospital
Dept. of Radiation Therapy
5th Ave. & The Esplanade
Chico, CA 95926

KM80666
Chief Radiation Physicist
Tacoma General Hospital
Dept. of Radiation Therapy
315 South K St.
Tacoma, WA 98405

Internal Correspondence

ATTACHMENT 4

cc: F.B. Entwistle - Health Physics Services - 220-2E-02
J.W. Johnson - New Brighton - 590-1
M.R. Peters - New Brighton - 590-1
C.A. Stakston - New Brighton - 590-1

To J. W. BENSON - MEDICAL DEVICE DIVISION - 225-5S-01

From S. J. DUERR (736-8366) - NEW BRIGHTON, MN - 590-1

Subject REVIEW OF PREVIOUS HEYMAN RETURNED SOURCES

Date December 21, 1989

3M

The New Brighton Plant Quality Control has reviewed the Returned Goods Memo file for references to Heyman sources. With one exception, all sources were received from the customer as "return for repair". As such, they were directed to production for repair rather than to the plant Quality Control Group for evaluation as a customer complaint. The routine evaluation by production involved a source wipe test and visual inspection followed by repair and nickel plating.

One source (serial number 806) was found to be leaking when wipe tested. Detailed examination revealed a damaged area on the source which was documented by photograph. This return was then logged into the divisional complaint system, the customer notified, and the source scrapped and replaced.

The one exception to sources being returned for repair was the Mansfield General Hospital source returned in December 1989. In this case, the customer returned all 10 Heyman sources in their possession for evaluation.

A list of the sources returned and other pertinent information is contained in R.G. Wissink's letter of October 17, 1989 to the USNRC Region III.

S. J. Duerr

SJD:prr by - John W Johnson