



The **DIVISION** of **RADIOLOGICAL PHYSICS**

October 11, 2006

*Stanley Benedict, Ph.D.*  
*Professor and Director*

*Suresh K. Agarwal, Ph.D.*  
*Alan Aqualino, Ph.D.*  
*Gulkan Isin, MSc.*  
*Robert Mulder, Ph.D.*  
*Ke Sheng, Ph.D.*  
*Ray VanAusdal, Ph.D.*

Randy Ragland  
Nuclear Material Safety Branch  
U.S. Nuclear Regulatory Commission – Region I  
475 Allendale Road  
King of Prussia, PA 19406-1415

Br. 1

Re: License No. 45-00034-30

03030672

2006 OCT 16 PM 2:04

RECEIVED  
REGION 1

Dear Mr. Ragland;

With this letter, we request that NRC License No. 45-00034-30 be amended to list Stanley Benedict, PhD, as an authorized medical physicist for the University of Virginia Gamma Knife Unit.

Dr. Benedict's CV is attached. He is ABR certified in Therapy Physics, and has extensive experience in various forms of stereotactic radiotherapy. Dr. Benedict was licensed for HDR and radioactive material use at Virginia Commonwealth University (Richmond, Virginia) for many years before accepting his new position as the Director of Radiological Physics at the University of Virginia. He has received hands-on training in the operation, safety, and treatment planning aspects of the Gamma Knife Unit.

Also attached is a preceptor attestation that Dr. Benedict is knowledgeable in the requisite areas, and is fully capable of functioning independently as a Gamma Knife Physicist.

If you have any questions pertaining to this matter, please do not hesitate to contact us.

Respectfully submitted by

Ralph O. Allen, Ph.D.  
Radiation Safety Officer, University  
Chairman, Radiation Safety Committee  
Professor, Chemistry

Alan Aqualino, Ph.D.  
Radiation Safety Officer, Gamma Knife Unit  
Associate Professor, Radiation Oncology

**MEDICAL USE TRAINING AND EXPERIENCE  
AND PRECEPTOR ATTESTATION**APPROVED BY OMB: NO. 3150-0120  
EXPIRES: 10/31/2008**PART I -- TRAINING AND EXPERIENCE****Note:** Descriptions of training and experience must contain sufficient detail to match the training and experience criteria in the applicable regulation (10 CFR Part 35)

1. Name of Individual, Proposed Authorization (e.g., Radiation Safety Officer), and Applicable Training Requirements (e.g., 10 CFR 35.50)

STANLEY H. BENEDICT, PhD  
AUTHORIZED MEDICAL PHYSICIST  
10 CFR 35.51-a

2. For Physicians, Podiatrists, Dentists, Pharmacists -- State or Territory Where Licensed

**3. CERTIFICATION**

- a. Provide a copy of the board certification. (Stop here if applying under 10 CFR Part 35, Subpart J or 35.590(a); continue if applying under other subparts.)
- b. Provide documentation in appropriate items 4 through 10 of training or clinical case work required by 35.50(e); 35.51(c); 35.290(c)(1)(ii)(G) for AU seeking 35.200 authorization; 35.390(b)(1)(ii)(G); 35.396(d)(1) and 35.396(d)(2); 35.590(c); or 35.690(c).
- c. Provide completed Part II Preceptor Attestation, Items 11a through 11d.
- Stop here after completing items 3a, 3b, and 3c when using board certification to meet 10 CFR Part 35 training and experience requirements.

**4. INDIVIDUALS IDENTIFIED ON A LICENSE OR PERMIT AS RADIATION SAFETY OFFICERS (RSO),  
AUTHORIZED USERS (AU), AUTHORIZED MEDICAL PHYSICISTS (AMP), OR  
AUTHORIZED NUCLEAR PHARMACISTS (ANP) SEEKING ADDITIONAL AUTHORIZATIONS**

- a. Provide a copy of the license or broadscope permit listing the current authorization **and** (b) or (c)
- b. Complete items 6c (and 10 when training is provided by an RSO, AMP, ANP, or AU) and preceptor items 11b through 11d to meet requirements for: RSO in 35.50(c)(2) or 35.50(e); or AU in 35.290(c)(1)(ii)(G) or 35.390(b)(1)(ii)(G) or 35.590(c) or 35.690(c); or AMP under 35.51(c).
- c. Complete items 5, 6a, 6b, 10, and Preceptor items 11a through 11d to meet AU requirements in 35.396(a).

**5. DIDACTIC OR CLASSROOM AND LABORATORY TRAINING (optional for Medical Physicists)**

Description of Training	Location	Clock Hours	Dates of Training
Radiation Physics and Instrumentation			
Radiation Protection			
Mathematics Pertaining to the Use and Measurement of Radioactivity			
Radiation Biology			
Chemistry of Byproduct Material for Medical Use			
OTHER			

**MEDICAL USE TRAINING AND EXPERIENCE AND PRECEPTOR ATTESTATION (continued)**

**6a. WORK OR PRACTICAL EXPERIENCE WITH RADIATION**

Description of Experience	Name of Supervising Individual(s)	Location and Corresponding Materials License Number	Dates and/or Clock Hours of Experience

**6b. SUPERVISED CLINICAL CASE EXPERIENCE (describe experience elements in 6a)**

Radionuclide	Type of Use	No. of Cases Involving Personal Participation	Name of Supervising Individual	Location and Corresponding Materials License Number	Dates and/or Clock Hours of Experience

## MEDICAL USE TRAINING AND EXPERIENCE AND PRECEPTOR ATTESTATION (continued)

## 6c. TRAINING FOR SECTIONS 35.50(e), 35.51(c), 35.590(c), or 35.690(c)

Training Element	Type of Training *	Location and Dates
International Symposia on Stereotactic Radiosurgery.	Speaker, Didactic, & Vendor	N. America & Europe 1993 - PRESENT
Author / Co-author of manuscripts and task groups on stereotactic radiosurgery	Author, Didactic	AAPM, ACMP, & ASTRO 1995 - present
Gamma Knife - UVa Patient Treatment Proc.	Supervised	UVa Gamma Knife 10/10/2006
Gamma Knife - UVa QA/Emergency Proc.	Supervised	UVa Gamma Knife 10/10/2006

\* Types of training may include supervised (complete item 10 for 35.50(e), 35.51(c), and 35.690(c)), didactic, or vendor training.

## 7. FORMAL TRAINING

Physicians (for uses under 35.400 and 35.600) and Medical Physicists

Degree, Area of Study or Residency Program	Name of Program and Location with Corresponding Materials License Number	Dates	Name of Organization that Approved the Program (e.g., Accreditation Council for Graduate Medical Education) and the Applicable Regulation (e.g., 10 CFR 35.490)

## 8. RADIATION SAFETY OFFICER (RSO) -- ONE-YEAR FULL-TIME EXPERIENCE

- ☐ YES Completed 1 year of full-time radiation safety experience (in areas identified in item 6a) under supervision.
- ☐ N/A of \_\_\_\_\_ the RSO for License No. \_\_\_\_\_

## 9. MEDICAL PHYSICIST -- ONE-YEAR FULL-TIME TRAINING/WORK EXPERIENCE

- ☐ YES Completed 1 year of full-time training (for areas identified in item 6a) in therapeutic radiological physics (35.961) or medical physics (35.51) under the supervision of \_\_\_\_\_
- ☐ N/A who is a medical physicist (35.961) or meets requirements for Authorized Medical Physicists (35.51);

and

- ☐ YES Completed 1 year of full-time work experience (at location providing radiation therapy services described and for topics identified in item 6a) for (specify use or device) \_\_\_\_\_
- ☐ N/A under the supervision of \_\_\_\_\_ who is a medical physicist (35.961) or meets requirements for Authorized Medical Physicists (35.51) (specify use or device) \_\_\_\_\_

## MEDICAL USE TRAINING AND EXPERIENCE AND PRECEPTOR ATTESTATION (continued)

## 10. SUPERVISING INDIVIDUAL -- IDENTIFICATION AND QUALIFICATIONS

The training and experience indicated above was obtained under the supervision of (if more than one supervising individual is needed to meet requirements in 10 CFR Part 35, provide the following information for each) :

A. Name of Supervisor

ALAN AQUALINO

B. Supervisor is:

☐ Authorized User☒ Authorized Medical Physicist☒ Radiation Safety Officer☐ Authorized Nuclear PharmacistC. Supervisor meets requirements of Part 35, Section(s) 35.50 and 35.51

for medical uses in Part 35, Section(s) \_\_\_\_\_

D. Address

Lars Leskell Ctr For Gamma Surgery  
P.O. Box 800-742  
Charlottesville, VA 22908-0742

E. Materials License Number

45-00034-30

## PART II -- PRECEPTOR ATTESTATION

**Note:** This part must be completed by the individual's preceptor. If more than one preceptor is necessary to document experience, obtain a separate preceptor statement from each. This part is not required to meet training requirements in 35.590 or Part 35, Subpart J (except 35.980).

I attest the individual named in Item 1:

11a.



has satisfactorily completed the requirements in Part 35, Section(s) and Paragraph(s) 35.51-A,  
as documented in section(s) \_\_\_\_\_ of this form.

11b. Select one

meets the requirements in ☐ 35.50(e) ☒ 35.51(c) ☐ 35.390(b)(1)(ii)(G) ☐ 35.690(c) for \_\_\_\_\_

types of use, as documented in section(s) \_\_\_\_\_ of this form.

11c.

has achieved a level of competency sufficient to independently operate a nuclear pharmacy (for 35.980); **or**

has achieved a level of competency sufficient to function independently as an authorized  
MEDICAL PHYSICIST for GAMMA KNIFE uses (or units); **or**



has achieved a level of radiation safety knowledge sufficient to function independently as a Radiation Safety  
Officer for a medical use licensee ; **or**



11d.

I am an Authorized Nuclear Pharmacist; **or** ☐ I am a Radiation Safety Officer; **or**I meet the requirements of 35.51 section(s) of 10 CFR Part 35or equivalent Agreement State requirements to be a preceptor ☐ AU or ☒ AMPfor the following byproduct material uses (or units): GAMMA KNIFE, HDR, LDR

A. Address

Lars Leskell Center for Gamma Surgery  
P.O. Box 800-742  
Charlottesville, VA 22908-0742

B. Materials License Number

45-00034-30

C. NAME OF PRECEPTOR (print clearly)

ALAN AQUALINO

D. SIGNATURE -- PRECEPTOR

Alan A

E. DATE

10/11/06

# The American Board of Radiology

*Organized through the cooperation of the  
American College of Radiology, the American Roentgen Ray Society,  
the American Radium Society, the Radiological Society of North America,  
the Section on Radiology of the American Medical Association,  
the American Society for Therapeutic Radiology and Oncology, the Association of  
University Radiologists, and American Association of Physicists in Medicine*

*Hereby certifies that*

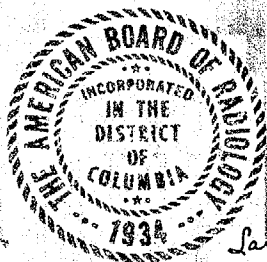
**Stanley H. Benedict, Ph.D.**

*Has pursued an accepted course of graduate study  
and clinical work, has met certain standards and qualifications and  
has passed the examinations conducted under the authority of  
The American Board of Radiology*

**On this twelfth day of June, 1996**

*Thereby demonstrating to the satisfaction of the Board  
that he is qualified to practice the specialty of*

**Therapeutic Radiologic Physics**



*James S. Amelun, M.D.*  
President

*Robert R. Horton, M.D.*  
Secretary-Treasurer

*Paul Capp, M.D.*  
Executive Director



V i r g i n i a C o m m o n w e a l t h U n i v e r s i t y

**Environmental Health  
& Safety**

Sanger Hall, B2-014  
1101 East Marshall Street  
P.O. Box 980112  
Richmond, Virginia 23298-0112

804 828-6347  
Fax: 804 828-1157  
TDD: 1-800-828-1120  
<http://www.vcu.edu/oehs>

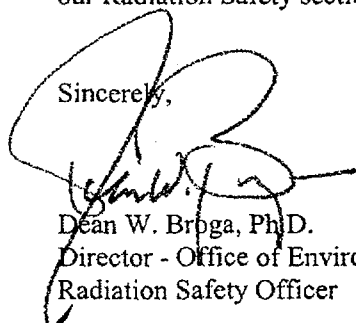
October 11, 2006

To Ralph Allen, Ph.D., Radiation Safety Officer  
University of Virginia  
Chairman, Radiation Safety Committee

This is to verify that Stanley Benedict, Ph.D. was approved by the University's Radiation Safety Committee as a medical physicist for radioactive material uses under 10 CFR 35.600 (Sr-90 IVB) and 35.1000 (Ir-192 HDR). The approval was granted on July 1, 2001. Our NRC license number is 45-00048-17 (expiration date March 31, 2010). Because VCU has a Broad Scope License, authorized users are not named on the license but are approved by the University's Radiation Safety Committee. Dr. Benedict was a member of VCU's Radiation Safety Committee from 2001 until September 2006.

Should you have any questions or need any additional information, please contact Mary Beth Taormina in our Radiation Safety section at (804) 828-7097.

Sincerely,



Dean W. Broga, Ph.D.  
Director - Office of Environmental Health & Safety  
Radiation Safety Officer

*CURRICULUM VITAE*  
**STANLEY H. BENEDICT, PH.D.**

**1. PERSONAL INFORMATION**

- 1.1 Stanley Humby Benedict, Jr.
- 1.2 Born: [REDACTED]
- 1.3 [REDACTED]
- 1.4 Social Security No: *Available upon request*
- 1.4 Marital Status: [REDACTED]
- 1.5 Home Address: [REDACTED]
- 1.6 Office Address: Department of Radiation Oncology  
Medical College of Virginia Hospitals at  
Virginia Commonwealth University  
401 College Street  
Richmond, Virginia 23298-0058  
Office Telephone: 804-828-7418

**2. LICENSURE**

- 2.1 State license: Not applicable
- 2.2 Certification: American Board of Radiology, Therapeutic Radiologic Physics, 1996
- 2.3 Commonwealth of Virginia: Private Inspector of therapeutic and diagnostic radiological facilities (Virginia Department of Health, Bureau of Radiological Health), since 1993.

**3. EDUCATION**

- 3.1 University of California at Los Angeles, 1992, Ph.D.; Biomedical Physics
- 3.2 San Diego State University, 1984, M.S.; Radiological Health Physics
- 3.3 University of California at San Diego, 1980, B.A.; Biological Sciences and Visual Arts (Double Majors)
- 3.4 Dartmouth College, Hanover, New Hampshire, Exchange Program, 1978

**4. ACADEMIC APPOINTMENTS AND OTHER SIGNIFICANT EXPERIENCE**

- 4.1 Virginia Commonwealth University / Medical College of Virginia Hospitals, Department of Radiation Oncology, Division of Medical Physics;  
Position: Associate Professor / Director of Clinical Physics: 2004-present
- 4.2 Virginia Commonwealth University / Medical College of Virginia Hospitals, Department of Radiation Oncology;  
Position: Associate Professor / Chief of Clinical Physics: 2001-2004
- 4.3 Virginia Commonwealth University / Medical College of Virginia Hospitals, Department of Radiation Oncology;  
Position: Associate Professor: 2000-present
- 4.4 Virginia Commonwealth University / Medical College of Virginia Hospitals, Department of Radiation Oncology;  
Position: Assistant Professor: 1993-2000

**PERSONAL INFORMATION WAS REMOVED  
BY NRC. NO COPY OF THIS INFORMATION  
WAS RETAINED BY THE NRC.**



- 4.5 UCLA, Department of Community Safety, Radiation Safety Office,  
Los Angeles, California;  
Position: Hospital Health Physicist/Alt. Radiation Safety Officer: 1990 to 1993
- 4.6 UCLA, Department of Community Safety, Radiation Safety Office,  
Los Angeles, California;  
Position: Radiological Health Physicist: 1986 to 1990
- 4.7 UCLA, Department of Radiological Sciences, Biomedical Physics Program,  
Los Angeles, California;  
Position: Lecturer and Teaching Assistant: 1988-1993.
- 4.8 UCLA, Department of Radiation Oncology, Los Angeles, California;  
Position: Medical Physicist/Staff Research Associate: 1985-86
- 4.9 UCSD, Department of Radiology, Division of Radiation Oncology,  
San Diego, California: Position: Medical Dosimetrist/Jr. Physicist: 1983-1985.

## **5. MEMBERSHIP OF SCIENTIFIC, MEDICAL, AND PROFESSIONAL SOCIETIES**

- 5.1 American Institute of Physics (since 1985).
- 5.2 American Association of Physicists in Medicine (since 1985).
  - Member, Finance Committee (1994-1999)
  - Member, Task Group 68: Repositional accuracy of stereotactic head frames.
  - Chairman, Task Group 101: Stereotactic Body Radiotherapy
  - Member of Task Group No. 104: Kilo Voltage localization in therapy
  - Abstract Reviewer for Annual Meetings: 2000 - 2006
- 5.3 American College of Medical Physics (since 1999)
  - Member, Continuing Education Committee (2001-Present)
  - Co-Chair, 2001 Annual Meeting Program: Practical considerations for IMRT
- 5.4 Health Physics Society (Plenary member since 1986)
- 5.5 American Society for Therapeutic Radiology and Oncology (Associate, since 1993)
- 5.6 American College of Surgeons Oncology Group, Center for Clinical Trials and  
Evidenced Based Medicine (Scientist, since 2002)

## **6. COMMUNITY ORGANIZATIONS**

- 6.1 National Eagle Scout Association, (Boy Scouts of America)
- 6.2 Friends of the Virginia Museum of Fine Arts

## **7. SPECIAL AWARDS, FELLOWSHIPS, AND OTHER HONORS**

- 7.1 AAPM-IPEM Medical Physics Travel Grant; 2005
- 7.2 Norman A. Baily Student Research Award, So. California Chapter AAPM; 1992.
- 7.3 Louis B. Silverman Memorial Award, So. California Health Physics Society; 1992
- 7.4 Physics Lecture Award, Southern California Radiation Oncology Society; 1992.
- 7.5 UCLA Administrative and Professional Staff Achievement Award; 1990.
- 7.6 Physics Lecture Award, Southern California Radiation Oncology Society; 1990.
- 7.7 Norman A. Baily Student Research Award, So. California Chapter AAPM; 1989.
- 7.8 UCLA Graduate Fellowship; 1985-86.
- 7.9 UCSD Medical Center Auxiliary Education Award; 1984.

## 8.0 RESEARCH ADMINISTRATION (GRANT SUPPORT)

### 8.1 *Co-Investigator: "Image-guided adaptive radiotherapy"*

Principal Investigator: Jeffrey F., PhD

Agency: National Institutes of Health

Type: NIH Program Project Grant PO:XX (*In-Review*)

Period: TBD (Submitted)

Core A: Quality Assurance (CL:Nesrin Dogan)

Amount: 5% Salary support

### 8.2 *Mentor: Fellowship for Undergraduate Summer Study in Medical Physics*

Agency: American Association of Physicists in Medicine (AAPM)

Grant Period: Summer 2006, Amount: \$4,000

Recipient: Marcella M. Torres-Johnson, VCU Physics/Applied Mathematics Majors

### 8.3 *Co-Investigator/Administrator: Gammacell 40 Cs-137 Irradiator"*

Principal Investigator: Kristopher Valerie, PhD

Agency: National Institutes of Health, Shared Instrumentation

Grant Period: 2006

Amount: \$370,000 Instrument purchase

### 8.4 *Co-Investigator: "Genetic modulation of cellular radiation responses"*

Principal Investigator: Kristopher Valerie, PhD

(Original P.I.: R.K.A. Schmidt-Ullrich, M.D.)

Agency: National Institutes of Health

Type: NIH Program Project Grant PO2 CA72955

Period: 08/2002 – 07/2007

Core B: Animal/Tissue Culture Facility (CL: Peck-Sun Lin)

Amount: 5% Salary support

### 8.5 *Principal Investigator: "Radiobiological dosimetry of stereotactic radiosurgery"*

Principal Investigator: S.H. Benedict, Ph.D.

Agency: National Institutes of Health

Amount: \$350,000

Type: Research Grant - 1R29CA/NS76439-01A1

Period: 09/1999–09/2003

### 8.6 *Principal Investigator: "Radiobiological dosimetry of stereotactic radiosurgery"*

Agency: VCU-MCV and the American Cancer Society

Amount: \$6,000

Type: Research Grant ACS IN-105V

Period: 06/1997–05/1998

## 9.0 OTHER SCIENTIFIC SCHOLARLY, RESEARCH, ADVISORY OR ADMINISTRATIVE AND INSTITUTIONAL COMMITTEE EXPERIENCE

9.1 1994-Present: Instructor/Adjunct Faculty and Advisor for VCU, Dept. of Radiation Sciences, B.S. Program. (Instructor: Physics in Radiation Therapy - CLRS342)

9.2 1996-2001: Scientific Collaborator for Pinnacle<sup>3</sup>: ADAC Labs, (Milpitas, CA)

9.3 1999-Present: Advisory Committee BrainSCAN/BrainLAB, Heimstetten, Germany

9.4 2000-Present: Member, VCU-MCVH Radiation Safety Committee

9.5 2000-Present: Scientific Manuscript Reviewer/Referee:

- *Journal of Applied Clinical Medical Physics*
- *Medical Physics*
- *International Journal of Radiation Oncology, Biology, & Physics*

- *Radiotherapy and Oncology, Journal of the European Society For Therapeutic Radiology and Oncology*
- 9.6 2003-Present: Adjunct Faculty for VCU, Department of Physics, Medical Physics Concentration (Instructor: P567: Introduction to the Physics of Radiation Therapy)

**10.0 BIBLIOGRAPHY: Peer-reviewed manuscripts published, in-press, or submitted**

1. "Stereotactic Body Radiation Therapy of Lung Tumors: Preliminary Experience Using Normal Tissue Complication Probability-Based Dosing", D.Y. Song, S.H. Benedict, R.M. Cardinale, T.D. Chung, R.K.A. Schmidt-Ullrich, *Am Jo. Clinical Oncology*, 28(6):1-6 Dec 2005
2. Intracranial stereotactic positioning systems: Report of the American Association of Physicists in Medicine Radiation Therapy Committee Task Group No. 68", A. W. Lightstone, Stanley H. Benedict, Frank J. Bova, Timothy Solberg, and Robin L. Stern, *Medical Physics* 32 (7): 2380-2398, July 2005
3. "Stereotactic Body Radiation Therapy: Rationale, Techniques, Applications, and Optimization" Danny Y. Song, Brian D. Kavanagh, Stanley H. Benedict, and Tracey Schefter, *Oncology* 2004: 18 (11): 1419-1436, 2004
4. "How Should We Describe the Radiobiologic Effect of Extracranial Stereotactic Radiosurgery: Equivalent Uniform Dose or Tumor Control Probability?" B. D. Kavanagh, R. D. Timmerman, S. H. Benedict, Q. Wu, T. E. Schefter, K. Stuhr, S. McCourt, F. Newman, R. M. Cardinale, and L. E. Gaspar, *Medical Physics* 30(3): 321-324, 2003
5. "Pentoxifyline enhances radiosensitivity in glioma cells irradiated with continuous and intermittent stereotactic radiotherapy", K.W. Eley, S.H. Benedict, B.D. Kavanagh, T.D. Chung, W.C. Broaddus, R.K. Schmidt-Ullrich, and P.S. Lin, *Int. Jo. Radiat. Oncol. Biol. Phys* 54(2): 542-550, 2002.
6. "Technical Considerations in the Application of Intensity-Modulated Radiotherapy as a Concomitant Integrated Boost for Locally Advanced Cervix Cancer", T.E. Schefter, B.D. Kavanagh, Q. Wu, S. Tong, F. Newman, S. McCourt, M. Arnfield, S. Benedict, and R. Mohan, Invited paper, *Medical Dosimetry* 27(2): 177-84, 2002.
7. "Clinical Application of Intensity-Modulated Radiotherapy as a Concomitant Integrated Boost for Locally Advanced Cervical Cancer", B. D. Kavanagh, T.E. Schefter, Q. Wu, S. Tong, F. Newman, M. Arnfield, S.H. Benedict, S. McCourt, and R. Mohan, Presented at the 6<sup>th</sup> International Symposium for 3D Conformal Radiation Therapy and Intensity Modulated Radiation Therapy, Williamsburg, VA, June 30, 2001. Invited paper, *Seminars in Radiation Oncology* 12(3):260-71 July 2002.
8. "Cost analysis of erythropoietin versus blood transfusions for cervical cancer patients receiving chemoradiotherapy". B.D. Kavanagh, B.A. Fischer, E.M. Seegreti, J.B. Wheelock, C. Boardman, S.D. Roseff, R.M. Cardinale, S.H. Benedict, and A.L. Gorman. *Int. Jo. Radiat. Oncol. Biol. Phys* 51(2): 435-441, 2001

9. "Intensity modulated stereotactic radiosurgery using dynamic micro-multileaf collimation", S.H. Benedict, R.M. Cardinale, Q. Wu, R.D. Zwicker, W.C. Broaddus, and R. Mohan. *Int. Jo. Radiat. Oncol. Biol. Phys* 50(3): 751-758, 2001
10. "Hypofractionated stereotactic radiotherapy as an alternative to radiosurgery for the treatment of patients with brain metastases", M.A. Manning, R.M. Cardinale, S.H. Benedict, B.D. Kavanagh, R.D. Zwicker, C. Amir, and W.C. Broaddus. *Int. Jo. Radiat. Oncol. Biol. Phys*, 47(3): 603-608, 2000
11. "Determining optimal block margin for conformal stereotactic irradiation of lung and hepatic tumors", R.M. Cardinale, S.H. Benedict, E.A. Bump, Q. Wu, and R. Mohan. *Int. Jo. Radiat. Oncol. Biol. Phys*, 45(2): 515-520, 1999
12. "A comparison of three stereotactic radiotherapy techniques; Arcs vs. Fixed Fields vs Intensity Modulation", R.M. Cardinale, S.H. Benedict, Q. Wu, R.D. Zwicker, H. Gaballa, and R. Mohan. *Int. Jo. Radiat. Oncol. Biol. Phys*, 42(2): 431-436, 1998
13. "Accelerated radiotherapy regimen for malignant gliomas using stereotactic concomitant boosts for dose escalation", R.M. Cardinale, R.K. Schmidt-Ullrich, S.H. Benedict, R.D. Zwicker, D.C. Han, and W.C. Broaddus. *Radiation Oncology Investigations, Clinical and Basic Research*, 6: 175-181, 1998
14. "The Biological Effectiveness of Intermittent Irradiation as a Function of Overall Treatment Time: Development of Correction Factors for Linac-Based Stereotactic Radiotherapy", S.H. Benedict, P-S Lin, R.D. Zwicker, D.T. Huang, and R.K. Schmidt-Ullrich. *Int. Jo. Radiat. Oncol. Biol. Phys*, 37(4): 765-769 March 1997
15. "Stereotactic Radiosurgery: The Relative Biological Effect of Continuous vs. Intermittent Radiation Exposures", S.H. Benedict, P-S Lin, R.D. Zwicker, S. Khandelwal, W.G. Broaddus, and R.K. Schmidt-Ullrich. *Radiation Oncology Investigation, Clinical and Basic Research*, 2(5): 219-223, 1995.
16. "Assessment of  $^{18}\text{F}$  Gaseous Releases During the Production of  $^{18}\text{F}$ -Fluorodeoxyglucose", J.H. Kleck, S.H. Benedict, J.S. Cook, R.L. Birdsall, N. Satyamurthy. *Health Physics*, 60:657-660, May 1991.
17. "Exposure Rates in High-Level-Control Fluoroscopy for Image Enhancement", C. Cagnon, S.H. Benedict, N.J. Mankovich, J.T. Bushberg, J.A. Seibert, and J. Whiting. *Radiology*, 178:643-646, March 1991.
18. "Physician Exposure to Ionizing Radiation During Trauma Patient Resuscitation; A Prospective Clinical Study", E. Wess, C.M. Singer, S.H. Benedict, L.J. Baraff. *Annals of Emergency Medicine*, 19:134-138, February 1990.

19. "Radiation Quality Investigations Around a Neutron Therapy Beam, Using a High Pressure Ionization Chamber", G. Makrigiorgos, J.B. Smathers, L.T. Myers, and S.H. Benedict. *Medical Physics*, 17:84-86, January/February 1990.
20. "Exposure of Emergency Medicine Personnel to Ionizing Radiation During Cervical Spine Radiography", C.M. Singer, L.J. Baraff, S.H. Benedict, E. Weiss, B.D. Singer. *Annals of Emergency Medicine*, 18:822-825, August 1989.

#### **11.0 MONOGRAPHS, BOOK CHAPTERS, AND PUBLISHED PROCEEDINGS**

1. "Intensity Modulated Radiotherapy (IMRT) in the Treatment of Malignant Disease", S.H. Benedict and R.K.A. Schmidt-Ullrich. Chapter/On-Line WebPage in *UpToDate, Clinical Reference Library* [www.UpToDate.com], ISSN:1090-3496 Wellesley, MA. To be published Winter 2006
2. "High Precision & Unconventional Fractionation IMRT", S.H. Benedict, J. Purviance, D. Song, and D.E. Wazer. A Chapter in *Image-Guided IMRT*, edited by T. Bortfield, R.K.A. Schmidt-Ullrich and W. De Neve, and D.E. Wazer, Springer-Verlag GmbH & Co.KG, Heidelberg, Germany [ISBN 13978-3-540-20511-1] Chapter III.12: 439-453, 2005
3. "Intensity Modulated Radiosurgery: Emerging Technology", S.H. Benedict, R.M. Cardinale, & D. Song, Chapter 17.4 in *Intensity Modulated Radiotherapy: A Clinical Perspective*, edited by Arno J. Mundt and John C. Roeske, BC Decker Inc Publisher, Hamilton, Ontario, Canada, [ISBN 1-55009-246-4] Chapter 17.4: 257-263, 2004
4. Review of *Radiation Oncology Physics: A Handbook for Teachers and Students*, edited by Ervin B. Podgorsak, for *Journal of Applied Clinical Medical Physics*, Vol. 5(3): 91-92, Summer 2004
5. "Immobilization, Localization, and Repositioning Methods in SBRT", S.H. Benedict, Chapter 7 in *Stereotactic Body Radiation Therapy*, edited by Brian Kavanagh and Robert Timmerman, Lippincott Williams & Wilkins, Philadelphia, PA, [ISBN 0-7817-5420-8] Chapter 7: 51-56, 2004
6. "Intensity-Modulated Stereotactic Radiosurgery", R. Mohan, R.M. Cardinale, Q. Wu, and S.H. Benedict. Proceedings of the Symposium on 3-D Radiation Treatment: Technological innovations and clinical results, Munich, Germany, March 24-27, 1999 [*Front. Radiat. Ther. Oncol.*, (Published by S. Karger AG, Basel, Switzerland), 34:40-48, 2000
7. "An Assessment of High Level Control Fluoroscopy", C. Cagnon and S.H. Benedict. Proceedings of the ACR/FDA Workshop on Fluoroscopy, Strategies for improvement in performance, radiation safety and control. pp: 107-121, 1992
8. "Radiation Safety Considerations for SPECT and PET", L.S. Graham, S.H. Benedict, M.B. Cohen. Proceedings of the 22nd Annual National Conference on Radiation Control. CRCPD Publication, 90-3:295-304, August 1990

9. "Factors and Strategies in the Occupational Monitoring of Personnel in Medical Angiography", S.H. Benedict, J.H. Kleck, J.E. McLaughlin. Oak Ridge National Laboratory, Proceedings of the 2<sup>nd</sup> Conference on Radiation Protection and Dosimetry: ORNL/TM-10971:148-156, November 1988

## 12.0 INVITED LECTURES AND SYMPOSIA CHAIRMANSHIPS

1. Therapy Symposium: Stereotactic Body Radiotherapy, Presenter, SBRT: (1) Highlights of the AAPM Task Group Report 101 on SBRT, (MO-E-224A-02), Scientific Session of the 48<sup>th</sup> Annual Meeting of the AAPM, Orlando, FL; July 30, 2006. *Medical Physics* vol. 33(6): 2176, June 2006

2. "Stereotactic, Single and Hypofractionated Treatment I", Moderator, Moderated Posters (SU-EE-A1), Scientific Session of the 48<sup>th</sup> Annual Meeting of the AAPM, Orlando, FL; July 30, 2006. *Medical Physics* vol. 33(6): 1947, June 2006

3. "Clinical Applications of ExacTrac X-Ray", Presenter and Co-Organizer for 'BRAINLAB see-IGRT Symposium', July 19, 2006, Omni Hotel, Richmond, VA

4. "Stereotactic", Co-Chair, Oral Presentations (TU-C-T-617), Scientific Session of the 47<sup>th</sup> Annual Meeting of the AAPM, Seattle, WA; July 27, 2005. *Medical Physics* vol. 32(6): 1875, June 2005

5. "Body Stereotactic Radiation Therapy", Chairman and Speaker of a symposia at the 22<sup>nd</sup> Annual Meeting of the ACMP, Orlando, FL, May 24, 2005, *Journal of Applied Clinical Medical Physics*, Vol. 6(2) Spring 2005

6. "Stereotactic Body Radioablation: An overview of clinical history, physics and dosimetry issues". Invited lecture presented to the Department of Radiation Oncology, University of Virginia, July 20, 2004.

7. "Stereotactic", Co-Chair, Oral Presentations, Scientific session of the 46<sup>th</sup> Annual Meeting of the AAPM, Pittsburgh, PA; July 27, 2004. *Medical Physics* vol. 31(6): 1698, June 2004

8. "Introduction to Extracranial Stereotactic Radiotherapy: (1) Physics and Technology, (2) Clinical Experience, (3) Radiobiological Considerations and Future Directions", Refresher course presented at the 46th Annual Meeting of the AAPM, Pittsburgh, PA; July 27, 2004. Lecture abstract: *Medical Physics* vol. 31(6): 1766, June 2004

9. "Stereotactic Body Radiotherapy: A review of Clinical History and physics and dosimetry issues, Lecture presented at the Department of Radiation Oncology, University of Chicago, February 26, 2004.

10. "Stereotactic Radiosurgery", Chair, Poster Discussion, Scientific session at the 45<sup>th</sup> Annual Meeting of the AAPM, San Diego, California, August 10, 2003, *Medical Physics* vol. 30(6): 1304-05 June 2003

11. "Introduction to Extracranial Stereotactic Radiotherapy: (1) Physics and Technology", Refresher course presented at the 45th Annual Meeting of the AAPM, San Diego, California; August 11, 2003. Lecture abstract: *Medical Physics* vol. 30(6): 1357 June 2003

12. "Normal tissue complication probability (NTCP) based dosing for extracranial stereotactic radioablation: Safety and response in lung metastases" D. Song, S.H. Benedict, R. Cardinale, *et al*, 2<sup>nd</sup> Annual Symposia on Extracranial Stereotactic Radioablation: Future Directions, Halifax, Nova Scotia, Canada, June 6-8, 2003 (Sponsored by the Indiana University School of Medicine, Department of Radiation Oncology, Travel expenses provided by Elekta/Varian).

13. "Application of a photogrammetry-based automated patient positioning and monitoring system for extracraial stereotactic radiotherapy", Symposia on Extracranial Stereotactic Radioablation: Future Directions, Sheraton on the

Falls Hotel, Niagara Falls, Ontario Canada, May 10-12, 2002. (Sponsored by the Indiana University School of Medicine, Department of Radiation Oncology, Travel expenses provided by Elekta/Varian).

14. "Stereotactic Radiosurgery", Presented at the Spring 2002 Annual Meeting and Workshop of the Missouri River Valley Chapter of the AAPM, Inn at Grand Glaize, Osage Beach, Missouri, May 4, 2002. (Travel expenses provided by BrainLab, Inc.)

15. "Patient positioning and organ motion", Co-Chairman of the Therapy workshop session, "Practical considerations for establishing and maintaining a clinical IMRT program". Presented at the 18<sup>th</sup> Annual Meeting of the ACMP, Hershey, Pennsylvania, June 2-7, 2001.

16. "Problems and approaches to extracranial stereotactic radiosurgery", Presented at the 1<sup>st</sup> International Symposium on Stereotactically Guided IMRS/IMRT, UCLA, Los Angeles, California, September 1-2, 2000

17. "Stereotactic/Gamma Knife-2", Chair, Scientific session at the World Congress on Medical Physics and Biomedical Engineering / 42<sup>nd</sup> Annual Meeting of the AAPM Chicago, Illinois, July 27, 2000, *Medical Physics* vol. 27(6): 1433 June 2000

18. "Radiobiological dose considerations in stereotactic radiosurgery" and "Upgrade of existing SRS/SRT systems with m3 for conformal therapy", Presented at the 1<sup>st</sup> Annual Congress of Advancements in Stereotactic Radiosurgery/Radiotherapy, Beth Israel Medical Center, New York, NY, June 11-12, 1999

19. "Initial clinical experience with ExacTrac patient positioning", Presented at the Workshop on New Positioning Technology for Radiotherapy, Tegernsee, Munich, Germany, March 21-22, 1999.

20. "Stereotactic radiotherapy with 3D treatment planning", Presented at the 1997 Virginia Society of Radiologic Technolgy (VSRT) -- Fall Seminar, Richmond Virginia, September 12, 1997.

21. "The Fun Facts of Physics", Presented at the American Association of Medical Dosimetrists, Region VI Meeting, Richmond, Virginia, October 28-29, 1994

### 13.0 PUBLISHED ABSTRACTS AT SCIENTIFIC MEETINGS

1. "Determination of Total Scatter Factors for Stereotactic Radiation Fields by Optimizing Fitting of Readings from a Small Ion Chamber and a Mini-Diode", W. Du, F. Lerma, N. Sakthi, R. George, M. Schaeffer, C. Bartee, and S. Benedict, An oral presentation at the 48<sup>th</sup> Annual Meeting of the AAPM, Orlando, FL; July 30, 2006. *Medical Physics* vol. 33(6): 2214 (TU-E-224A-04), June 2006

2. "Dosimetric Errors in Gated DMLC IMRT Delivery to a Moving Target with a 120-Leaf Collimator," F.A. Lerma, I.B. Mihaylov, W. Du and S.H. Benedict, Presented at the 47th Annual Meeting of the American Society for Therapeutic Radiology and Oncology, Denver, Colo. *Int. Jo. Radiat. Oncol. Biol. Phys.* 63(Sup 1): S204 (#1098) Oct 16-20, 2005

3. "Multi-Leaf-Collimator Quality Assurance Using the Electronic Portal Imaging Device", I Ali, S Benedict, W Li, F Lerma, N Dogan, J Siebers. An oral presentation at the 47th American Association of Physicists in Medicine Annual Meeting, Seattle, Washington, July 24-28, 2005. *Medical Physics* vol. 32(6): 2168, June 2005

4. "Inverse Planning Optimization of 3DCRT For Extracranial Stereotactic Radioablation", R.M. Cardinale, L. Mao, R. Smith, B. Kavanagh, B. Chon, Brian; D. Fein, S. Benedict, Presented at the 46th Annual Meeting of the American Society for Therapeutic Radiology and Oncology, Atlanta, GA. *Int. Jo. Radiat. Oncol. Biol. Phys.* 60(1): S627 (#2478) Oct 3-7, 2004

5. "Evaluation of an Independent Dose Verification Program for HDR Planning", S. Tong, S. Benedict, D. Todor, and J. Williamson, Oral Presentation at the 45th American Association of Physicists in Medicine Annual Meeting, San Diego, California, August 10-14, 2003. *Medical Physics* vol. 30(6): 1388 June 2003
6. "Analysis of Extracranial Stereotactic Radiosurgery via Equivalent Uniform Dose and Tumor Control Probability: Practical Ramifications and Translation Implications", B.D. Kavanagh, R.D. Timmerman, S.H. Benedict, L. E. Gaspar, and T.E. Schefter, Presented at the 44th Annual Scientific Meeting of the American Society for Therapeutic Radiology and Oncology, New Orleans, LA, *Int. Jo. Radiat. Oncol. Biol. Phys.*, 54(2): 2024, Oct 6-10, 2002
7. "Intensity-Modulated Radiotherapy (IMRT) for Prostate Cancer Treatment with Nodal Coverage", Q. Wu, D. Arthur, S. Benedict, S. Tong, Y. Wu, and M. Hagan. Presented at the 44th Annual Scientific Meeting of the American Society for Therapeutic Radiology and Oncology, New Orleans, LA, *Int. Jo. Radiat. Oncol. Biol. Phys.*, 54(2): 2192, Oct 6-10, 2002
8. "Potential of IMRT to escalate dose to head and neck cancers", J. Zhou, J. Kim, S. benedict, Y. Wu, and Q. Wu. Oral Presentation at the 44th American Association of Physicists in Medicine Annual Meeting and Technical Exhibition, Palais des Congrès de Montréal Convention Center in Montreal, Quebec, Canada, July 14 - 18, 2002. *Medical Physics* vol. 29(6): 1258 June, 2002
9. "Implementation of a Practical Independent Dose Verification Program for HDR Planning", S. Tong and S. Benedict, Oral Presentation at the 44th American Association of Physicists in Medicine Annual Meeting and Technical Exhibition, Palais des Congrès de Montréal Convention Center in Montreal, Quebec, Canada, July 14 - 18, 2002. *Medical Physics* vol. 29(6): 1317 June, 2002
10. "Simultaneous Integrated Boost (SIB) IMRT of Advanced Head and Neck Squamous Cell Carcinomas – Dosimetric Analysis", R. Mohan, Q. Wu, M. Morris, A. Lauve, S. Tong, S. Benedict, and R. Schmidt-Ullrich. Presented at the 43<sup>rd</sup> Annual Scientific Meeting of the American Society for Therapeutic Radiology and Oncology, San Francisco, CA, *Int. Jo. Radiat. Oncol. Biol. Phys.*, 51(3S): 1027, Nov. 4-8, 2001
11. "Pentoxifyline enhances radiosensitivity in glioma cells irradiated with continuous and intermittent stereotactic radiotherapy", S.H. Benedict, K.W. Eley, B.D. Kavanagh, T.D. Chung, W.C. Broadus, R.K. Schmidt-Ullrich, and P.S. Lin, Presented at the 43<sup>rd</sup> Annual Scientific Meeting of the American Society for Therapeutic Radiology and Oncology, San Francisco, CA, *Int. Jo. Radiat. Oncol. Biol. Phys.*, 51(3S): 1027, Nov. 4-8, 2001
12. "The effects of pentoxifyline on the survival of human glioma cells with ccsurgery irradiation", K Eley, S.H. Benedict, R.K.A. Schmidt-Ullrich, and P-S Lin, Abstract #27, Presented at the 21<sup>st</sup> Annual Seminar of Cancer Researchers in Virginia, April 7, 2001, Virginia Commonwealth University, Richmond, VA
13. "Cost analysis of erythropoietin versus blood transfusions for cervix cancer patients receiving chemoradiotherapy". B.D. Kavanagh, R.M. Cardinale, J.B. Wheelock, E.M. Seegreti, S.H. Benedict, and A. Goram. Presented at the 42<sup>nd</sup> Annual Scientific Meeting of the American Society for Therapeutic Radiology and Oncology, Boston, MA, *Int. Jo. Radiat. Oncol. Biol. Phys.*, 48(3S): 30, Oct. 2000
14. "Hypofractionated stereotactic radiotherapy as an alternative to radiosurgery for the treatment of patients with brain metastases", M. Manning, R.M. Cardinale, S.H. Benedict, B.D. Kavanagh, R.D. Zwicker, C. Amir, and R.K. Schmidt-Ullrich. Presented at the 82<sup>nd</sup> Annual Meeting of the American Radium Society, April 1-5, 2000, London, England
15. "Methodology, Accuracy, and acute toxicities of extracranial stereotactic radiotherapy", R.M. Cardinale, S.H. Benedict, B.D. Kavanagh, E.A. Bump, and R. Mohan. Presented at the 82<sup>nd</sup> Annual Meeting of the American Radium Society, April 1-5, 2000, London, England
16. "Whole pelvic intensity-modulated radiotherapy (IMRT) for cervix cancer using a "butterfly" isodose plan: in vivo dosimetric verification of reduced rectal dose and clinical feasibility evaluation", B.D. Kavanagh, Q. Wu, M.R. Arnfield, E.M. Segreti, R.J. West, S.H. Benedict, E. Rosenfeld, A.S. Fulcher, M. Manning, and R. Mohan. Presented at



the 41st Annual Scientific Meeting of the American Society for Therapeutic Radiology and Oncology, Phoenix, AZ, Oct. 31-Nov.4, 1999, *Int. Jo. Radiat. Oncol. Biol. Phys*, 45(3S): 2260, Oct. 1999

17. "Potential for Intensity Modulation in Stereotactic Radiosurgery", S.H. Benedict, R.M. Cardinale, Q. Wu, R.D. Zwicker, M.A. Arnfield, and R. Mohan. Presented at the 41st Annual Scientific Meeting of the American Society for Therapeutic Radiology and Oncology, Phoenix, AZ, Oct. 31-Nov.4, 1999, *Int. Jo. Radiat. Oncol. Biol. Phys* 45(3S): 78, Oct. 1999

18. "Automated Target Positioning for Extracranial Radiosurgery", R.M. Cardinale, S.H. Benedict, E.A. Bump, B.D. Kavanagh, and R. Mohan. Presented at the 41st Annual Scientific Meeting of the American Society for Therapeutic Radiology and Oncology, Phoenix, AZ, Oct. 31-Nov.4, 1999, *Int. Jo. Radiat. Oncol. Biol. Phys* 45(3S): 114, Oct. 1999

19. "Cost comparison of hypofractionated stereotactic radiotherapy with radiosurgery", R.O. Hes, R.M. Cardinale, M.A. Manning, S.H. Benedict, L.D. Bowery, and W.C. Broaddus. *Int. Jo. Radiat. Oncol. Biol. Phys* 45(3S): 2233, Oct. 1999

20. "Automated Repositioning for Body Stereotactic Radiosurgery", S.H. Benedict, R.M. Cardinale, E.A. Bump, R.D. Zwicker, M.A. Arnfield, R. Mohan. Presented at the 41st Annual Meeting of the American Association of Physicists in Medicine, Nashville, TN, July, 1999, *Medical Physics* vol. 26(6): 1131 June, 1999

21. "Potential for Intensity Modulated Radiation Therapy (IMRT) to Provide Optimized Concomitant Boost Plans for Brain Treatments", S.H. Benedict, R.D. Zwicker, Q. Wu, R.M. Cardinale, B.D. Kavanagh, R.K.A. Schmidt-Ullrich, and R. Mohan. Presented at the 40th Annual Scientific Meeting of the American Society for Therapeutic Radiology and Oncology, Phoenix, AZ, Oct. 25-29, 1998. *Int. Jo. Radiat. Oncol. Biol. Phys*, 42(1), Supplement: 2287, October 1998.

22. "Potential Benefit of Intensity Modulated Stereotactic Radiosurgery Using Micro-Multileaf Collimation of Static Non-coplanar Beams", R.M. Cardinale, Q. Wu, S.H. Benedict, R.D. Zwicker, and R. Mohan. Presented at the 40th Annual Scientific Meeting of the American Society for Therapeutic Radiology and Oncology, Phoenix, AZ, Oct. 25-29, 1998. *Int. Jo. Radiat. Oncol. Biol. Phys*: 42(1), Supplement: 2264, October 1998

23. "Optimized Dose Conformation and Normal Tissue Sparing for Localized Esophageal Cancer: A Comparison of 3-Dimensional Conformal (3DCRT) and Intensity Modulated Radiotherapy (IMRT)", L.A. Kachnic, M.A. Manning, S.H. Benedict, Q. Wu, R.D. Zwicker, and R. Mohan. Presented at the 40th Annual Scientific Meeting of the American Society for Therapeutic Radiology and Oncology, Phoenix, AZ, Oct. 25-29, 1998. *Int. Jo. Radiat. Oncol. Biol. Phys*: 42(1), Supplement: 2285, October 1998.

24. "The Feasibility and Potential Efficacy of Hypofractionated Stereotactic Radiotherapy in the Treatment of Patients with Brain Metastases", M.M. Manning, R.M. Cardinale, S.H. Benedict, W.C. Broaddus, C. Amir. Presented at the 40th Annual Scientific Meeting of the American Society for Therapeutic Radiology and Oncology, Phoenix, AZ, Oct. 25-29, 1998. *Int. Jo. Radiat. Oncol. Biol. Phys*: 42(1), Supplement: 2069, October 1998

25. "A pilot study using concomitant weekly stereotactic radiotherapy boosts for dose escalation of malignant glioma", D.C. Han, R.M. Cardinale, R.K.A. Schmidt-Ullrich, S.H. Benedict, R.D. Zwicker, W.C. Broaddus. Presented at the 40th Annual Scientific Meeting of the American Society for Therapeutic Radiology and Oncology, Phoenix, AZ, Oct. 25-29, 1998. *Int. Jo. Radiat. Oncol. Biol. Phys*: 42(1), Supplement: 2073, October 1998

26. "Adenoviral p53 Increases Radiosensitivity of Glioblastoma Cells", Y. Liu, H. Fillmore, L. Steele, P. Lin, S. Benedict, R. Schmidt-Ullrich, and W.C. Broaddus. Presented at the 12th International Conference on Brain Tumor Research and Therapy, Keble College, Oxford, UK, Sept. 20-23, 1997, *Journal of Neuro-Oncology*: 35, Sup. 1, S27, 1997

27. "The Use of Complication Probabilities to Aid in Selecting Block Margins and To Compare 3D Conformal Stereotactic Radiotherapy Plans and Techniques", R.M. Cardinale, S.H. Benedict, W.C. Broaddus, R.D. Zwicker, R.M. Mohan. Presented at the 39th Annual Scientific Meeting of the American Society for Therapeutic Radiology and Oncology, Orlando, Fla., Oct. 19-23, 1997, *Int. Jo. Radiat. Oncol. Biol. Phys*: 39(2), Supplement: 1015, October 1997

28. "Adenoviral Mediated Transfection of Wild-Type P53 Gene Increases the Radiosensitivity of Rat Glioblastoma Tumors Treated with Radiosurgery", W.C. Broaddus, S.H. Benedict, Y. Liu, H.L. Fillmore, L.L. Steele, P.S. Lin, R.K. Schmidt-Ullrich, and R.M. Cardinale. Presented at the 39th Annual Scientific Meeting of the American Society for Therapeutic Radiology and Oncology, Orlando, Fla., Oct. 19-23, 1997, *Int. Jo. Radiat. Oncol. Biol. Phys.*: 39(2), Supplement: 2009, October 1997
29. "Radiobiological Dosimetry of Continuous and Intermittent Stereotactic Radiosurgery Doses Using Malignant Glioma Cell Lines of Varying  $\alpha/\beta$  Ratios", S.H. Benedict, P-S Lin, R.D. Zwicker, D.T. Huang, and R.K. Schmidt-Ullrich. Presented at the 39th Annual Meeting of the American Association of Physicists in Medicine, Milwaukee, WI, July 27-31, 1997, *Medical Physics*: 24(6): 1070-71 June, 1997
30. "The Use of Complication Probabilities to Optimize and Compare Treatment Techniques for Fixed Field Stereotactic Conformal Radiotherapy of Brain Tumors and AVMs", R.M. Cardinale, S.H. Benedict, R.D. Zwicker, W.C. Broaddus, and R.M. Mohan. The 3rd Congress of the International Stereotactic Radiosurgery Society, Madrid, Spain, June 25-28, 1997.
31. "Radiobiological Evaluation of Intermittent vs. Continuous Stereotactic Radiosurgery Delivery Schemes on Human Malignant Glioma Cell Lines" S.H. Benedict, P-S Lin, R.D. Zwicker, Q.T. Truong, R.K. Schmidt-Ullrich, and R.M. Cardinale. Presented at the 3rd Congress of the International Stereotactic Radiosurgery Society, Madrid, Spain, June 25-28, 1997.
32. "The Biological Effectiveness of Intermittent Irradiation as a Function of Overall Treatment Time: Development of Correction Factors for Linac-Based Stereotactic Radiotherapy", S.H. Benedict, P-S Lin, R.D. Zwicker, D.T. Huang, and R.K. Schmidt-Ullrich. Presented at the Radiation Research Society, 44th Annual Meeting, Providence, R.I., Poster PO9-188, May 3-7, 1997
33. "A Linear Optimization Algorithm for the Construction of 3-D Conformal Treatment Plans", H.E. Gaballa, O.F. Tercilla, D.T. Huang, R.D. Zwicker, M.R. Arnfield, and S.H. Benedict. Presented at the 38th Annual Scientific Meeting of the American Society for Therapeutic Radiology and Oncology, Los Angeles, California, Oct. 27-Nov. 1, 1996, *Int. Jo. Radiat. Oncol. Biol. Phys.*: 36(1), Supplement: 389 October 1996
34. "A Comparison of Stereotactic Radiotherapy Techniques; Non-Coplanar Arcs, Vs. 3D Fixed Beam Conformal Beams Vs. Beam Modulation", R.M. Cardinale, S.H. Benedict, and H. Gaballa. Presented at the 38th Annual Scientific Meeting of the American Society for Therapeutic Radiology and Oncology, Los Angeles, California, Oct. 27-Nov. 1, 1996, *Int. Jo. Radiat. Oncol. Biol. Phys.*: 36(1), Supplement: 189 October 1996
35. "An Optimization Approach to the Construction of 3-D Conformal Treatment Plans", H. Gaballa, O. Tercilla, D. Huang, R. Zwicker, M. Arnfield, S. Benedict. Presented at the 38th Annual Meeting of the American Association of Physicists in Medicine, Philadelphia, PA, July 21-25, 1996, *Medical Physics*: 23(6): 1112 June, 1996
36. "Construction of Conformal Isodose Surfaces with an Iterative Approach and a Semi-Empirical Treatment Planning Model", H.E. Gaballa, R.D. Zwicker, M.R. Arnfield, S.H. Benedict, O.F. Tercilla, and D.T. Huang. Presented at the 81st Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, Illinois, Nov. 26 - Dec. 1, 1995 *Radiology*: 197(P) Supplement: 152 Nov. 1995
37. "Predicting Biological Iso-Effectiveness for Continuous Versus Intermittent Stereotactic Radiosurgery", S.H. Benedict, P.S. Lin, D.T. Huang, R.D. Zwicker, and R.K.A. Schmidt-Ullrich. Presented at the 37th Annual Scientific Meeting of the American Society for Therapeutic Radiology and Oncology, Miami Beach, FL, October 8-11, 1995. *Int. Jo. Radiat. Oncol. Biol. Phys.*: 32, Sup. 1: 237, October 1995
38. "Construction of Isodose Conformal Convex Surfaces Using Dynamic Collimation on the Linear Accelerator", H. Gaballa, R.D. Zwicker, M. Arnfield, S.H. Benedict, R. Howells, O. Tercilla, and D.T. Huang. Presented at the 37th Annual Meeting of the American Association of Physicists in Medicine, Boston, MA, July 23-27, 1995, *Medical Physics* 22(6): 907 June, 1995

39. "Predicting Biological Correction Factors for Continuous Versus Intermittent Stereotactic Radiosurgery Treatment Delivery", S.H. Benedict, P.S. Lin, D.T. Huang, R.D. Zwicker, and R.K.A. Schmidt-Ullrich. Presented at the 37th Annual Meeting of the American Association of Physicists in Medicine, Boston, MA, July, 1995, *Medical Physics* 22(6): 967-968 June 1995
40. "The Relative Biological Effect of Continuous vs. Intermittent Radiation Exposures with Stereotactic Radiosurgery Treatment Delivery", S.H. Benedict, P.S. Lin, R.D. Zwicker, S.R. Khandelwal, W.C. Broaddus, R.K.A. Schmidt-Ullrich, Poster no. 127. Presented at the 2nd Congress of the International Stereotactic Radiosurgery Society, Jointly Co-Sponsored by the American Association of Neurological Surgeons and the American College of Radiology, Boston, MA June 14-17, 1995, Scientific Program, Poster 127.
41. "CT Assessment of Repositioning Accuracy of a Relocatable Stereotactic Head Frame for Fractionated Radiotherapy with a Medical Linear Accelerator." A.J. Kuta, S.H. Benedict, R.D. Zwicker, W.C. Broaddus, M.M. Ali, G.M. Hundley, E.F. Schutz. Presented at the 95th Annual Meeting of the American Roentgen Ray Society, Washington, D.C., April 30-May 5, 1995.
42. "CT Assessment of Repositioning Accuracy of a Relocatable Stereotactic Head Frame for Fractionated Radiotherapy with a Medical Linear Accelerator.", A.J. Kuta, S.H. Benedict, R.D. Zwicker, W.C. Broaddus, M.M. Ali, G.M. Hundley, E.F. Schutz. Presented at the 80th Scientific Assembly and Annual Meeting of the Radiological Society of North American, Chicago, Illinois, November 27-December 2, 1994, *Radiology*: 193(P) Supplement: 403, Nov. 1994.
43. "Accuracy Assessment of a Relocatable Stereotactic Head Frame.", W.C. Broaddus, S.H. Benedict, A.J. Kuta, R.D. Zwicker, M.M. Ali, G.M. Hundley, and E.F. Schutz. Presented at the 44th Annual Meeting of the Congress of Neurological Surgeons, Chicago Illinois, October 1-6, 1994. Poster Program No. 139, pp. 251-252. 1994.
44. "Evaluating Radiobiological Effects with Increasing Stereotactic Treatment Delivery Times.", S.H. Benedict, P.S. Lin, and R.D. Zwicker. Presented at the 36th Annual Meeting of the AAPM, Anaheim, California, July, 1994, *Medical Physics* vol 21(6): 879, 1994.
45. "CT Assessment of Repositioning Accuracy of a Relocatable Stereotactic Head Frame for Fractionated Radiotherapy with a Medical Linear Accelerator", A.J. Kuta, S.H. Benedict, R.D. Zwicker, W.C. Broaddus, M.M. Ali, G.M. Hundley, and E.F. Schutz. Proceedings of the 32nd Annual Meeting of the American Society of Neuroradiology, Nashville, TN, May 3-7, 1994 - Scientific Exhibits (SE 100).
46. "An Assessment of High Level Control Strategies for Improvement in Performance, Radiation Safety and Control", C. Cagnon and S.H. Benedict. Proceedings of the ACR/FDA Workshop on Fluoroscopy, Strategies for Improvement in Performance, Radiation Safety and Controls. Sponsored by the American College of Radiology and the Food and Drug Administration, Center for Devices in Radiologic Health, Washington, D.C., Oct. 16-17, 1992.
47. "An Image Quality Comparison of Conventional Limit and High Level Control Fluoroscopy", C. Cagnon, S.H. Benedict, and R. Taira. Presented at the 77th Annual Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, Illinois, December, 1991. *Radiology* 181-P:191, 1991.
48. "Activation of Cerrobend-158 from High Energy Medical Linear Accelerators," T.D. Solberg, S.H. Benedict, J.H. Kleck, J.B. Smathers, R.E. Wallace, F.E. Holly, and R.C. Crott. Presented at the 33rd Annual Meeting of the AAPM, San Francisco, California July, 1991. *Medical Physics*, 18(3):655, 1991.
49. "Response of Low Pressure Proportional Counters to Moderate Temperature Change", S.H. Benedict, J.B. Smathers, L.T. Myers, and R.E. Wallace. Presented at the 32nd Annual Meeting of the AAPM, St. Louis, Missouri, July, 1990. *Medical Physics* 17(3):543, 1990.

50. "Radiation Safety Considerations for SPECT and PET", L.S. Graham, S.H. Benedict, M.B. Cohen. Presented at the 22nd Annual National Conference on Radiation Control, Salt Lake City, Utah on May 8, 1990. Conference of Radiation Control Program Directors. *CRCPD Publication* 90-3: 295-304, 1990.
51. "Investigation of Exposure Rates in High-Level Fluoroscopy for Image Enhancement." C. Cagnon, S.H. Benedict, N. Mankovich. Presented at the 75th Anniversary Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, Illinois, November, 1989. *Radiology* 173(P):92, 1989.
52. "Interface Measurements of Inhomogeneous Tissues in Megavoltage Photon and Neutron Beams Using Alanine as a Dosimeter." S.H. Benedict, J.B. Smathers, J.J.A. Roe, and L.T. Myers. Presented at the 31st Annual Meeting of the AAPM, Memphis, Tennessee, July, 1989. *Medical Physics* 16(3):481, 1989.
53. "Radiotherapy Portal Imaging Using Computed Radiography: A Quantitative and Clinical Assessment" S.H. Benedict, J.B. Smathers, H.K. Huang, R.E. Wallace, and F.E. Holly. Presented at the 31st Annual Meeting of the AAPM, Memphis, Tennessee, July 1989. *Medical Physics* 16(3):488, 1989.
54. "Radiation Survey of Decorative Uranium Glazed Tiles Found in Los Angeles Area Residence", J.H. Kleck, S.H. Benedict, D.J. Krueger. Presented at the 34th Annual Meeting of the Health Physics Society, Albuquerque, New Mexico, June 1989. *Health Physics* 56:S58, 1989.
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This is to acknowledge the receipt of your letter/application dated

10/11/2006, and to inform you that the initial processing which includes an administrative review has been performed.

☒ Amendment 45-60034-30 There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

☐ Please provide to this office within 30 days of your receipt of this card

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