



**Mercy Hospital**

Department Nuclear Medicine  
1235 E. Cherokee  
Springfield, MO 65804  
phone 417-820-2865  
fax 417-820-7865  
www.mercy.net

11/07/2012

Materials Licensing  
US NRC Region III  
2443 Warrenville Road Suite 210  
Lisle, IL 60532-4352

ATTN License reviewer:

This letter is a request for the following amendments to license # 24-00866-02.

I would like to add Ruben Ter-Antonyan, Ph.D. as an Authorized Medical Physicist for Iridium-192 HDR under section 12.C. of our license. Ruben was a graduate of a CAMPEP accredited physics residency in Radiation Oncology from the University of Virginia Medical Center and has been part of our full time medical physics staff since 09-12-2011.

I have included a copy of his certificate of completion of this residency program and a copy of a completed form 313A (AMP) signed by Bruce Libby to document the education, training and experience of Ruben for his 2 year residency. Due to the structure of this residency, the dates of some of the training and the dates of the work experience may run concurrently. The total time of the residency was for a 2 year period which constitutes both supervised training and supervised work experience. This form documents the required components of full time medical physics training and work experience outlined in section 3.b. and 3.c. with the exception of work experience in performing sealed source leak testing and inventories. This work experience in performing sealed source leak testing and inventories has been provided to Ruben while working here at Mercy Hospital and is documented as indicated below.

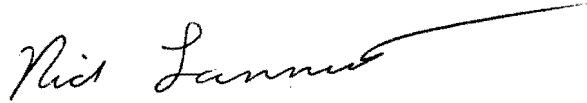
I spoke with Bryon Parker with the USNRC about the preferred documentation for the additional 1 year of full time work experience at our facility under Dennis Frieda, Ph.D. Mr. Parker felt that a letter from Dr. Frieda documenting this experience would be preferred over an additional form 313A (AMP). I have therefore provided a letter from Dr. Frieda documenting this work experience.

In addition to the 2 year residency and more than 1 year of full time work experience here at Mercy, Ruben attended a training program offered by Varian on the BrachyVision treatment planning system. The dates of training for this program were August 18-20 2010 and I have provided an attendance certificate for your review. Ruben attended additional vendor training on 8/29/2012 at our facility and also received proctoring of two clinical cases as did the rest of our HDR staff on 09/09/2012. I have provided documentation of this training as well for your review.

RECEIVED NOV 14 2012

If you have any questions regarding this request or if you require additional information please contact me at (417) 820-7704.

Sincerely,

A handwritten signature in black ink, reading "Nick Lannutti". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Nick Lannutti, MS  
Radiation Safety Officer  
Department of Nuclear Medicine  
St Johns Hospital-Springfield

Enclosure:

- NRC form 313A (AMP) for Ruben Ter-Antonyan
- Certificate of completion from University of Virginia Medical Center Physics Residency
- Letter from Dennis Frieda, Ph.D. documenting additional work experience.
- Certificate of Attendance to Varian BrachyVision training course dated Aug 18-20, 2010
- VariSource iX System Training Course Outline dated Aug 29-30, 2012
- VariSource iX clinical proctoring certificate dated Sept 10, 2012

Cc Linda Earnest, Administration  
Alan Burns, Director, Radiation Oncology  
Mike Barnes, Director, Nuclear Medicine  
Ruben Ter-Antonyan, Radiation Oncology

**AUTHORIZED MEDICAL PHYSICIST TRAINING AND EXPERIENCE  
AND PRECEPTOR ATTESTATION**  
[10 CFR 35.51]APPROVED BY OMB: NO. 3150-0120  
EXPIRES: (05/31/2015)

Name of Proposed Authorized Medical Physicist

Ruben Ter-Antonyan

**Requested Authorization(s)** (check all that apply) ☐ 35.400 Ophthalmic use of strontium-90 ☐ 35.600 Teletherapy unit(s) ☒ 35.600 Remote afterloader unit(s) ☐ 35.600 Gamma stereotactic radiosurgery unit(s)

**PART I -- TRAINING AND EXPERIENCE**

(Select one of the three methods below)

\*Training and Experience, including Board Certification, must have been obtained within the 7 years preceding the date of application or the individual must have obtained related continuing education and experience since the required training and experience was completed. Provide dates, duration, and description of continuing education and experience related to the uses checked above.

☐ **1. Board Certification**

- Provide a copy of the board certification.
- Go to the table in 3.c. and describe training provider and dates of training for each type of use for which authorization is sought.
- Skip to and complete Part II Preceptor Attestation.

☐ **2. Current Authorized Medical Physicist Seeking Additional Authorization for use(s) checked above**

- Go to the table in section 3.c. to document training for new device.
- Skip to and complete Part II Preceptor Attestation

☒ **3. Education, Training, and Experience for Proposed Authorized Medical Physicist**

- Education: Document master's or doctor's degree in physics, medical physics, other physical science, engineering, or applied mathematics from an accredited college or university.

Degree	Major Field
Ph.D.	Physics
College or University	
Ohio State University	

- Supervised Full-Time Medical Physics Training and Work Experience in clinical radiation facilities that provide high-energy external beam therapy (photons and electrons with energies greater than or equal to 1 million electron volts) and brachytherapy services.

- ☒ Yes. Completed 1 year of full-time training in medical physics (for areas identified below) under the supervision of Bruce Libby, Ph.D. who meets the requirements for an Authorized Medical Physicist.

**AND**

- ☒ Yes. Completed 1 year of full-time work experience in medical physics (for areas identified below) under the supervision of Bruce Libby, Ph.D. who meets the requirements for an Authorized Medical Physicist.

**AUTHORIZED MEDICAL PHYSICIST TRAINING AND EXPERIENCE AND PRECEPTOR ATTESTATION (continued)****3. Education, Training, and Experience for Proposed Authorized Medical Physicist (continued)****b. Supervised Full-Time Medical Physics Training and Work Experience (continued)**

*If more than one supervising individual is necessary to document supervised training, provide multiple copies of this page.*

Description of Training/ Experience	Location of Training/License or Permit Number of Training Facility/Medical Devices Used+	Dates of Training*	Dates of Work Experience*
Medical Physics	University of Virginia Medical Center, Charlottesville, VA	07.01.2009- 06.30.2011	07.01.2009- 06.30.2011
Performing sealed source leak tests and inventories	EHS, University of Virginia, Charlottesville, VA	08.31.2010	None
Performing decay corrections	University of Virginia Medical Center, Charlottesville, VA	07.01.2009- 06.30.2011	07.01.2009- 06.30.2011
Performing full calibration and periodic spot checks of external beam treatment unit(s)	University of Virginia Medical Center, Charlottesville, VA Varian: 2300, Trilogy, Truebeam; Tomotherapy	07.01.2009- 06.30.2011	07.01.2009- 06.30.2011
Performing full calibration and periodic spot checks of stereotactic radiosurgery unit(s)	University of Virginia Medical Center, Charlottesville, VA Elekta: GammaKnife Perfexion	11.1.2010- 11.15.2010	11.1.2010- 11.15.2010
Performing full calibration and periodic spot checks of remote afterloading unit(s)	University of Virginia Medical Center, Charlottesville, VA Varian VariSource iX	07.01.2010- 10.31.2010	07.01.2010- 10.31.2010
Conducting radiation surveys around external beam treatment unit(s), stereotactic radiosurgery unit(s), remote after loading unit(s)	University of Virginia Medical Center, Charlottesville, VA	12/09; 05/10; 12/10; 05/11; 07/10-10/10	12/09; 05/10; 12/10; 05/11; 07/10-10/10

Supervising Individual\*\*

License/Permit Number listing supervising individual as an  
authorized Medical Physicist

Bruce Libby, Ph.D.

Commonwealth of VA Dep't of Health License# 540-248-1

for the following types of use:

☒ Remote afterloader unit(s)      ☐ Teletherapy unit(s)      ☐ Gamma stereotactic radiosurgery unit(s)

+ Training and work experience must be conducted in clinical radiation facilities that provide high-energy external beam therapy (photons and electrons with energies greater than or equal to 1 million electron volts) and brachytherapy services.

\* 1 year of Full-time medical physics training and 1 year of full time work experience cannot be concurrent.

\*\* If the supervising medical physicist is not an authorized medical physicist, the licensee must submit evidence that the supervising medical physicist meets the training and experience requirements in 10 CFR 35.51 and 35.59 for the types of use for which the individual is seeking authorization.

## AUTHORIZED MEDICAL PHYSICIST TRAINING AND EXPERIENCE AND PRECEPTOR ATTESTATION (continued)

3. Education, Training, and Experience for Proposed Authorized Medical Physicist (continued)

c. Describe training provider and dates of training for each type of use for which authorization is sought.

Description of Training	Training Provider and Dates		
	Remote Afterloader	Teletherapy	Gamma Stereotactic Radiosurgery
Hands-on device operation	University of Virginia Physics Residency Program Brachytherapy rotation 07.01.2010-10.31.2010	None for Cobalt-60 units  External beam Linacs: Univ. Virginia, 7.01.10-6.30.11	University of Virginia Physics Residency Program GammaKnife rotation 11.01.2010-11.15.2010
Safety procedures for the device use	University of Virginia Physics Residency Program Brachytherapy rotation 07.01.2010-10.31.2010	None for Cobalt-60 units  External beam Linacs: Univ. Virginia, 7.01.10-6.30.11	University of Virginia Physics Residency Program GammaKnife rotation 11.01.2010-11.15.2010
Clinical use of the device	University of Virginia Physics Residency Program Brachytherapy rotation 07.01.2010-10.31.2010	None for Cobalt-60 units  External beam Linacs: Univ. Virginia, 7.01.10-6.30.11	University of Virginia Physics Residency Program GammaKnife rotation 11.01.2010-11.15.2010
Treatment planning system operation	University of Virginia 07.01.2010-10.31.2010 Varian Medical Systems 08.17.2010-08.19.2010	None for Cobalt-60 units  External beam Linacs: Univ. Virginia, 7.01.10-6.30.11	University of Virginia Physics Residency Program GammaKnife rotation 11.01.2010-11.15.2010
Supervising Individual <i>If training is provided by Supervising Medical Physicist, (If more than one supervising individual is necessary to document supervised training, provide multiple copies of this page.)</i>  Bruce Libby, Ph.D.		License/Permit Number listing supervising individual as an authorized Medical Physicist  Commonwealth of Virginia Dep't of Health License# 540-248-1	
for the following types of use:			
<input checked="" type="checkbox"/> Remote afterloader unit(s) <input type="checkbox"/> Teletherapy unit(s) <input type="checkbox"/> Gamma stereotactic radiosurgery unit(s)			

If Applicable:

Authorization Sought	Device	Training Provided By	Dates of Training
35.400 Ophthalmic Use of strontium-90			

d. Skip to and complete Part II Preceptor Attestation.

**AUTHORIZED MEDICAL PHYSICIST TRAINING AND EXPERIENCE AND PRECEPTOR ATTESTATION (continued)**

**PART II – PRECEPTOR ATTESTATION**

**Note:** This part must be completed by the individual's preceptor. The preceptor does not have to be the supervising individual as long as the preceptor provides, directs, or verifies training and experience required. If more than one preceptor is necessary to document experience, obtain a separate preceptor statement from each.

**First Section**

Check one of the following:

**1. Board Certification**

☐ I attest that \_\_\_\_\_ has satisfactorily completed the requirements in  
\_\_\_\_\_  
Name of Proposed Authorized Medical Physicist  
10 CFR 35.51(a)(1) and (a)(2).

**OR**

**2. Education, Training, and Experience**

☒ I attest that Ruben Ter-Antonyan, Ph.D. has satisfactorily completed the 1-year of full-time  
\_\_\_\_\_  
Name of Proposed Authorized Medical Physicist  
training in medical physics and an additional year of full-time work experience as required by 10 CFR 35.51(b)(1).

**AND**

**Second Section**

Complete the following:

☒ I attest that Ruben Ter-Antonyan, Ph.D. has training for the types of use for which authorization  
\_\_\_\_\_  
Name of Proposed Authorized Medical Physicist  
is sought that include hands-on device operation, safety procedures, clinical use, and the operation of a treatment planning system.

**AND**

**Third Section**

Complete the following:

☒ I attest that Ruben Ter-Antonyan, Ph.D. has achieved a level of competency sufficient to  
\_\_\_\_\_  
Name of Proposed Authorized Medical Physicist  
function independently as an Authorized Medical Physicist for the following:

☐ 35.400 Ophthalmic use of strontium-90    ☐ 35.600 Teletherapy unit(s)  
☒ 35.600 Remote afterloader unit(s)    ☐ 35.600 Gamma stereotactic radiosurgery unit(s)

**AND**

**Fourth Section**

Complete the following for preceptor attestation and signature:

☒ I meet the requirements in 10 CFR 35.51, or equivalent Agreement State requirements for Authorized Medical Physicist for the following:

☐ 35.400 Ophthalmic use of strontium-90    ☐ 35.600 Teletherapy unit(s)  
☒ 35.600 Remote afterloader unit(s)    ☐ 35.600 Gamma stereotactic radiosurgery unit(s)

Name of Preceptor  
Bruce Libby

Signature



Telephone Number

434-982-6609

Date

10/16/12

License/Permit Number/Facility Name

Commonwealth of Virginia Dept of Health License 540-248-1 U. of Virginia

# University of Virginia Medical Center

Charlottesville, Virginia

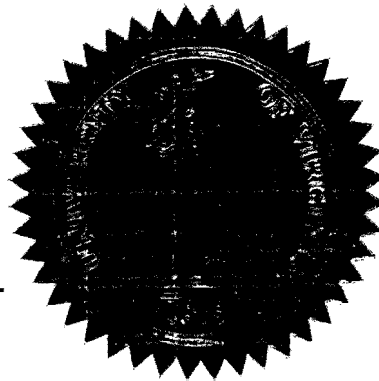
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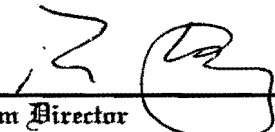
**Ruben Ter-Antonyan, Ph.D.**

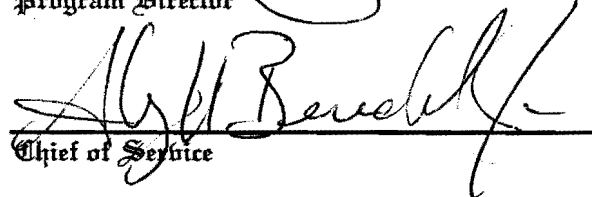
has completed a


*Physics Residency, Department of Radiation Oncology  
In a CAMPEP Accredited Program*

*July 1, 2009 – June 30, 2011*



  
Program Director

  
Chief of Service

  
President of University

  
Vice President and Chief Executive Officer



**CH Chub O'Reilly Cancer Center**

*Radiation Oncology*  
2055 S. Fremont  
Springfield, MO 65804  
phone 417-820-2468  
fax 417-820-7794  
www.mercy.net

November 1, 2012

Dear NRC,

I am writing this letter in strong support of proposed authorized medical physicist, Ruben Ter-Antonyan, Ph.D. Ruben has been a full time employee in the Department of Radiation Oncology at the C. H. "Chub" O'Reilly Cancer Center, Mercy Hospital, Springfield, MO, since 09/12/2011. He was hired after completing a 2-year CAMPEP-accredited clinical medical physics residency program at the University of Virginia. Dr. Ter-Antonyan holds a position of Associate Medical Physicist, and has been working in the department under my supervision.

I attest that Dr. Ter-Antonyan has over 1 year full-time work experience in our clinic in accordance with NRC Regulations (10 CFR 35.51) for an authorized medical physicist. His work experience here has included performing a wide range of Medical Physics tasks, including, but not limited to, performing radioactive source decay corrections, full calibration and periodic spot checks of external beam treatment units, stereotactic radiosurgery units, and remote afterloading units, performing sealed source leak tests and inventories, and conducting radiation surveys around external beam treatment units and remote afterloading units. I also attest that Ruben has had training and hands-on experience with Varian VariSource iX remote afterloader, its clinical use, safety procedures, and extensive experience with the BrachyVision treatment planning system. I attest that Dr. Ter-Antonyan has achieved a level of competency sufficient to function independently as an Authorized Medical Physicist for remote afterloader unit(s).

I meet the requirements in 10 CFR 35.51 for remote afterloader unit(s). I can be reached at:

Dennis.Frieda@mercy.net  
(417) 820-2468

License Number: 24-00866-02

Facility Name: Mercy Hospital Springfield  
1235 E. Cherokee Street  
Springfield, MO 65804

Sincerely,

Dennis Frieda, Ph.D.  
Medical Physicist





BRACHYTHERAPY

## Certificate of Attendance

Presented To:  
University of Virginia Hospital  
Charlottesville, VA

Ruben Ter-Antonyan

For Attending the Training Course on the  
BrachyVision™ Treatment Planning System

Training Course Dates: August 18-20, 2010

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Instructor: John Morrison

**Varian BrachyTherapy – The Better Solution.**





BRACHYTHERAPY

## Varisource iX System Training Course Outline

### Facility

☒ On site ☐ Classroom

Facility Name	Mercy Radiation Oncology		
Street address			
City	Springfield		
State or Province	MO	Postal Code	
Country	USA		
Phone		Fax	

Varisource iX Serial Number: ... 600558 .....

Software Version: ... 1.1.0 .....

### Instructor

Name: ... Mike Maricek .....

Signature: ... *Mike Maricek* ... Initials: ... MM .....

Date of training: ... 8/29-30/2012 .....

## Notes

- This schedule is a guide and may be modified. Those for whom the training is intended should feel free to alter the schedule in line with staff availability, or learning requirements. These changes can be made at any time prior to the course in discussion with the trainer.
- This training schedule incorporates a checklist covering all essential aspects of the course. The instructor should complete the checklist as each aspect is covered and a record made of each person attending each session. Each person attending should sign and initial each attended session. Sessions not covered should be crossed out and initialled.
- In order to optimise the applications training, it is recommended that a complete patient procedure is carried out on the last day of the course. This allows all aspects of the training to be practised and any unforeseen practical problems resolved.
- For those customers with no previous VariSource training, scheduling a patient on the first day of this course should be avoided.
- If no patient is scheduled, a simulated treatment should be substituted to meet the goal of performing an entire procedure while the instructor is available on-site.
- The staff group for whom a session is primarily intended is indicated for each session described below. Please note that the staff listed in these groups is based upon a typical Radiation Oncology center. There is variation in the division of labor from one department to the next, and it is left to site discretion to decide which staff fall into each group, and therefore which should attend each session.
- The intended duration of each session shown below is approximately half a day. However, this is intended as a guide and some sessions may be of a longer or shorter duration depending on customer requirements.
- Varian is happy to provide detailed training on HDR accessories sold by Varian or approved vendors, ordered at the time of the training. In some cases pre-sterilized and/or single use items may be in packaging that limits the extent to which this can be done. It is Varian Medical Systems policy not to open any pre-sterilized and/or single use item for training purposes without permission from you. Any items that are opened under these circumstances will not be accepted for return.

The staff groups referred to in the schedule below are defined as follows:

### *Brachytherapy Team*

All staff involved in delivery of a brachytherapy treatment, e.g., Radiation Oncologist, Radiation Technologist, Radiation Physicists, Dosimetrists, Oncology Nurses, etc.

### *Operators*

All staff who intend to operate the VariSource Afterloader (for clinical or non-clinical purposes) e.g., Radiation Oncologist, Radiation Technologist, Radiation Physicists, etc.

### *Physicists*

All staff who will be involved in quality assurance procedures, dosimetry measurements and treatment planning, e.g., Radiation Physicists and Dosimetrists.

# SmartSeed Training Course Outline

## Attendee List

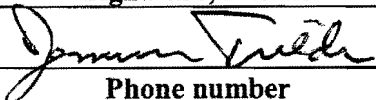
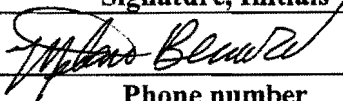
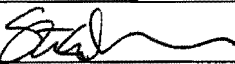

For the purposes of the training records list below all those receiving VariSource iX Applications Training (to any level) along with job function (e.g. Oncologist, Physicist etc.), signature and initials.

Name	Function	Signature, Initials
Christy Drennan	Dosimetrist	Christy Drennan
E-mail address		Phone number
Christine.Drennan@mercy.net		4178209369
Name	Function	Signature, Initials
RUBEN TER-ANTONYAN	Physicist	R. Ter-Antonyan, RT
E-mail address		Phone number
ruben.terantonyan@mercy.net		417-820-2468
Name	Function	Signature, Initials
Leslie Behm	Physicist	Leslie Behm, LS
E-mail address		Phone number
Leslie.Behm@mercy.net		417-820-2468
Name	Function	Signature, Initials
Kim Howard	Radiation Therapist	Kim Howard, KMH
E-mail address		Phone number
kimberly.howard@mercy.net		417-820-2468
Name	Function	Signature, Initials
Teresa Turner	Rad therapist	Teresa Turner, TT
E-mail address		Phone number
Teresa.Turner@mercy.net		820-2468
Name	Function	Signature, Initials
Lisa Snodgrass	Radiation therapist	Lisa Snodgrass, LS
E-mail address		Phone number
Lisa.snodgrass@mercy.net		820-2468

# SmartSeed Training Course Outline

## Attendee List

For the purposes of the training records list below all those receiving VariSource iX Applications Training (to any level) along with job function (e.g. Oncologist, Physicist etc.), signature and initials.

Name	Function	Signature, Initials
Dennis Frieda	Physicist	
E-mail address		Phone number
Dennis.Frieda@mercy.com		417-820-2468
Name	Function	Signature, Initials
Melanie Beumer	RN	
E-mail address		Phone number
Melanie.Beumer@mercy.net		417-820-2468
Name	Function	Signature, Initials
Steve Braun	MD	
E-mail address		Phone number
steven.braun@mercy.net		(820)2468
Name	Function	Signature, Initials
Kimberly Creach	MD	
E-mail address		Phone number
kimberly.creach@mercy.net		820-2468
Name	Function	Signature, Initials
E-mail address		Phone number
Name	Function	Signature, Initials
E-mail address		Phone number

## VariSource iX Training Outline

### Preparation - System inventory (if not already performed by Installation Engineer)

The Applications Specialist and one member of staff check off all system components, applicators and accessories against a copy of the original order. ☒

Ensure that a copy of each of the Afterloader and planning system manuals, as appropriate is available. ☒

Ensure that the system has been adequately and neatly installed ☒

Customer is aware that sterile / single use applicators opened during training cannot be returned to Varian for exchange or credit ☒

Instructors Initials: *MM*.....

Attendees Initials: *LB RT*.....

### Session 1 - Team

#### General discussion

Discuss the intended uses of the Afterloader, how the work will be divided between staff disciplines, how the training will be scheduled. ☒

#### Afterloader component identification and terminology

*Physically identify each component of the Afterloader and provide a brief description of its function.*

Console PC / Printer ☒

VariSource iX Console software console (making specific reference to its role as a status / error indicator) ☒

Door box (making specific reference to its role as a status / error indicator) ☒

Splitter box

Afterloader (display panel and key switch) ☒

UPS (including instruction on not powering off the system, i.e., switch off monitor only). ☒

Location of emergency stop and reset buttons ☒

Display test procedure ☒

Instructors Initials: *MM*.....

Attendees Initials: *KMH LB RT*.....

## SmartSeed Training Course Outline

### Afterloader System Operation Overview

*Open the covers of the Afterloader and describe the basic operation of each component with particular emphasis on safety features and wire tracking concepts and emergency situations.*

Source wire construction and cycle limitation (emphasising source wire replacement policy if necessary). ☒

Dummy / Active wire concept ☒

Wire position within machine ☒

Wire tracking (park switch, home switch, overextend switch and optical encoder) ☒

Wire drive assembly including "Intelligent Drive" concept. ☒

Emergency back-up systems (UPS, on-board battery, GM tube). ☒

Instructors Initials: ..... *MM* .....

Attendees Initials: ..... *LB, RT* .....

### Afterloader Emergency Handcrank Operation

*Describe the operation of the Emergency Handcrank, pointing out the implications of using it while the active wire is parked in the safe.*

Emergency retract assembly operation ☒

Emergency retract used while active wire is parked in the safe ☒

Instructors Initials: ..... *MM* .....

Attendees Initials: ..... *LMH, V, LB, RT, TT* .....

## SmartSeed Training Course Outline

### Emergency Procedures

*Describe and discuss in depth, correct emergency procedures in the full range of possible failure situations.*

Emphasize the importance of having locally written emergency procedures based on the type of treatments practiced. ☒

Emphasize the importance of regularly rehearsing the emergency procedures. ☒

Describe the emergency equipment to be kept available during the procedure. ☒

Discuss the requirement to have both a Physicist and Physician physically present during a procedure each having clearly defined responsibilities. Also discuss the idea of having a person responsible for note taking and time keeping during an emergency. ☒

Importance of position of Afterloader relative to room entrance, (i.e., allow easy access to the rear of the machine). ☒

Importance of position of emergency recovery equipment within room, (i.e., ensure easy access when ever a treatment is in progress). ☒

System safety checks and emergency recovery processes as described in the flow diagram contained within the emergency procedures section of the Users Manual (include reference to the status of the system alarms for each failure mode and possible recovery methods, i.e., manual retract handle or manual recovery). ☒

Describe recovery procedure if manual retract handle recovery is indicated. ☒

Describe recovery procedure if manual retract handle is not indicated. Include the options of cutting the catheter, removing the applicator from the patient or disconnecting the Quick Connect from the Afterloader. For each option describe the advantages and disadvantages and situations where each may be used. (See Training Notes 1 for full details). ☒

Instructors Initials: ..... *MM* .....

Attendees Initials: ..... *KMH, LB, RT, TT* .....



## SmartSeed Training Course Outline

### Applicators

*Demonstrate the use and special features of all applicators held on-site.*

- Demonstrate the correct assembly of all applicators held by customer. ☒
- Discuss the sterilisation of these applicators and the possibility of re-use (including coupling catheters). ☒
- Demonstrate the correct use of the measurement wire and emphasise the importance of its regular use to check the length of applicator / catheter assemblies. ☒
- Show how the marker clip must be tightly locked in place and checked prior to removal of the wire from the applicator. ☒
- For FSD Applicator show how increased resistance is met at the bend in the Colpostat prior to reaching the tip. ☒
- For FSD applicator emphasise the importance of not over-tightening the set screws on the colpostats. ☒
- Show how channel numbers are identified on each applicator. ☒
- Discuss the use of a dead space at the tip of applicators to prevent the source colliding with the applicator. ☒

**Instructors Initials:** ..... *MM* .....

**Attendees Initials:** ..... *KMH, LB, RT, TT* .....

### Connection of Catheters / Applicators to the Afterloader

*Show how to prepare the machine for use.*

- Demonstrate correct use of the Quick Connect and its connection into the turret, showing also ways in which incorrect connection can occur. ☒
- Discuss the importance of correct placement of catheters relative to patient (i.e., keep catheters off of the skin). ☒
- Demonstrate the Last Man Out sequence and error condition generated if accidentally activated. ☒

**Instructors Initials:** ..... *MM* .....

**Attendees Initials:** ..... *KMH, LB, RT, TT* .....

## **Session 2 - VariSource iX Console software Console Application**

### **Summary Overview**

*Describe the intent and uses of the VariSource iX Console software application.*

- Automatic startup, full screen operation, no user access to the PC operating system (Windows XP.) ☒
- System Status Strip: Includes source and wire information, error conditions etc. Wire positioning display in the user interface. ☒
- Patient treatment workflow options: Import options from BrachyVision (import via plan export, DICOM export, and ARIA query). Treatment with library or manually created plans. ☒
- Standard and service assisted system access (5 digit one time service password.) ☒
- Hardware configuration: All connection cabling. The printer is plugged into the console box (not the CPU). ☒

### **System Configuration**

*Describe the function of all items in every tab*

- Group Tab: Configure Groups and group privileges to meet clinical needs ☒
- Users Tab: Adding and deleting users, including system access and user rights. ☒
- Location and Owner information ☒
- Folder setup tab: ☒
  - 1. Patient treatment plans
  - 2. Error Log export
  - 3. System Backup
  - 4. Treatment plan export
  - 5. Report file export
  - 6. Diagnostic file export
  - 7. Network folders if applicable
- QA protocols tab: Creating QA protocols. ☒
- Applicators tab: Create or edit standard applicators. ☒
- Standard plans tab: Creation and edit of standard plans ☒
- Annotate Messages tab: Add additional instructions included with error messages or emergency conditions. ☒

## SmartSeed Training Course Outline

### Backup and Restore tab:



1. Setup automatic backup or manually backup the system files.
2. Restore system files.
3. Export diagnostic files. The resulting files can be emailed to Varian, for assistance with problem diagnosis.

### System Settings tab: Configure all applicable system settings



Worklist and Database buttons can be used to test for proper connectivity to ARIA server.

### Test Plan tab:



1. Create a new Test Plan (QA process for example)
2. Create test plans from patient plans.



*Instructors Initials:* ..... MM

*Attendees Initials:* ..... LB, RT, DJ

### Session 3- Physics

#### **Source Exchange functions**

*Describe all features Source Exchange area.*

Chamber / Electrometer data entry into VariSource iX Console software and importance of regular instrument calibration and QA checks. ☐

Electrometer / chamber set and acclimatisation. Electrometer operation and zeroing procedure ☐

Measurement of temperature and pressure. ☐

Calculating offset to the chamber "Sweet Spot" and the use a calibration plan to achieve this position experimentally. ☐

Explain the expected discrepancy between manufacturers' and site measured source strength, i.e., specification =  $\pm 5\%$ , although expected results are approximately  $\pm 1.5\%$  ☐

Source calibration tab: ☐

1. Review the calibration parameter worksheet
2. Connecting the catheter to the chamber insert and the importance of using a plastic tipped catheter vs. a metal tip.
3. Run a calibration plan
4. Compare the measured source strength to the calibration certificate value.
5. Calibration report printing.

Source Strength tab: Entry and confirmation of source strength. *Note: Source strength is measured in units of Air Kerma (U), and source activity is measured in Curies. The conversion factor for Varisource is 4.03 U per mCi.* ☐

Source Decay: The calibration strength should be determined from the time from midnight on the calibration date minus the current date and time. Alternatively, use the source strength at installation value from the Source Exchange tab as the original source strength. When using once-per-day decay, the decay occurs at midnight, but uses the activity of the source at noon on that day. ☐

Source Exchange Quality Assurance ☐

Instructors Initials: .....

Attendees Initials: .....

## SmartSeed Training Course Outline

### QA forms and checks

*Describe the various QA checks that should be performed by the user and how the QA forms can be used to keep a record of these.*

Describe each test listed on the QA forms and make suggestions as to the frequency of these tests.



With the customer, set up the forms for Periodic, Treatment and Source Exchange days.



Demonstrate how each test may be performed.



Demonstrate the Source Decay table and how this may be used to check source calibration prior to treatment. Also, describe other ways in which this test may be performed through the use of spreadsheets.



### Position Verification Tests

*Demonstrate the use of the CamScale.*

Demonstrate connection of the CamScale emphasising the importance of taking care of the CamScale catheter.



Discuss the PVT tab, and the frequency of tests and show how these may be set up for Periodic, Treatment and Source Exchange days. Tests may be configured using the active or inactive wire.



Discuss the expected accuracy of the wire positional calibration and the importance of Service intervention in the case of this exceeding the machine specification.



Emphasise that source position data entry during a PVT test does not affect source positional calibration and is merely used on the printed output.



Instructors Initials: ..... *MM* .....

Attendees Initials: ..... *LB, RT, DV* .....

### Session 4 - Patient Treatment

*Patient selection, editing and treatment delivery*

Patient selection:



1. Editing Demographic data
2. Treatment history report
3. Data disclosure report

## SmartSeed Training Course Outline

Patient plan import (via plan export from BrachyVision, DICOM export, or querying the ARIA/BV database) or manual creation ☒

1. Creating a new course of treatment
2. Appending to an existing course
3. Creating a new patient manually using the patient creation page
4. Creating a new fraction manually with the fraction creation page
5. Standard plan selection
6. Applicator selection

Treatment channels: Manually created or imported from BrachyVision

1. Selecting Channels to edit
2. Dwell position and time editing
3. Updating the distal offset of all dwell positions from the tip of the catheter
4. The console will analyze the imported plan to see if step sizes are multiples of 5mm. If so, a 5mm step size is stated. Otherwise, STEP SIZE in Edit Channel may be stated as 1mm. The .dwl file does not contain step size; it contains specific dwell position values of the BV plan.

Fractions: ☒

1. Display of data and editing
2. Adding and deleting fractions
3. Partial fraction delivery: Explain the options available in detail including: Abort fraction, and distribute untreated dwell times included in the remaining fractions. The radiobiological consequences of this action must be discussed with the physician prior to proceeding.

Treatment delivery: ☒

1. Channel display
2. Treatment initiation
3. Pre-treatment delivery report, treatment pass code. Comparing the pre-treatment delivery report with the BrachyVision plan report.
4. Safety interlocks
5. Treatment monitoring
6. Treatment delivery report
7. Errors and interrupts
8. Partial treatment options
9. Power failure recovery

Instructors Initials: ..... *MM* .....

## SmartSeed Training Course Outline

*Attendees Initials:* ..... CB RT

### **Session 5 - Create New Patient File**

#### **Creating plans from Standard Plans**

*Describe the use of Standard Plans.*

Create New Patient File is controlled by Edit Treatment Plan privilege in System Configuration. Only individuals with understanding of Standard Plans should have Edit Treatment Plan privilege.



*Instructors Initials:* ..... MM

*Attendees Initials:* ..... CB, RT

## SmartSeed Training Course Outline

### Training notes:

1 suggestion: full operator's name

2 read of guide tube & flexible probe

3 SGT (4) & cutting gauge for CMP?



# Varisource iX Brachytherapy HDR Course

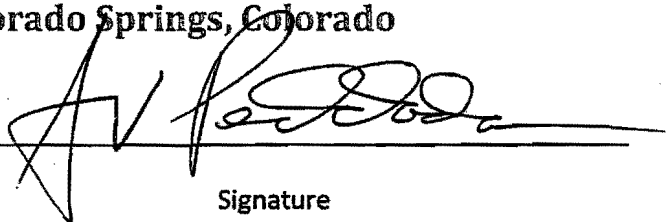
September 9, 2012, 9:00 AM – 5:00 PM  
Proctoring of first two cases, APBI and  
GYN Cylinder, on September 10, 2012

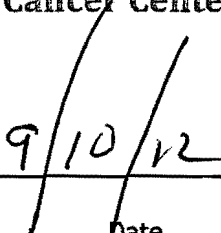
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*Mercy Hospital-SGF, Radiation Oncology, Springfield, MO*

Presented by:


Anuj Peddada, MD, Radiation Oncologist, Penrose Cancer Center,  
Colorado Springs, Colorado

  
Signature

  
Date

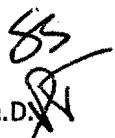
Gerald White, M.S., Medical Physicist, Penrose Cancer Center, Colorado  
Springs, Colorado

  
Signature

  
Date

Attendees:

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Kimberly Creach, MD



Dennis Frieda, Ph.D.



Leslie Behm, M.S.



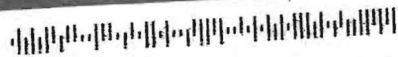
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