

The seal of the State of Arizona is faintly visible in the background. It is a circular emblem with the text 'GREAT SEAL OF THE STATE OF ARIZONA' around the perimeter. Inside the circle, there is a shield with a landscape scene, a banner at the top that reads 'DITAT DEUS', and the year '1912' at the bottom flanked by two stars.

**ARIZONA RADIATION REGULATORY AGENCY
REGULATORY GUIDE**

PARTICLE ACCELERATOR

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ARIZONA RADIATION REGULATORY AGENCY
ARRA-PA
APPLICATION FOR REGISTRATION OF SOURCES OF RADIATION
(See Instructions on Attached Sheet)

THIS APPLICATION FOR A REGISTRATION:

NEW

RENEWAL

AMENDMENT

FACILITY INFORMATION

1. BUSINESS NAME OF POSSESSOR (Individual, Partnership, Corporation, etc):

2. BUSINESS AREA CODE - TELEPHONE #

3. BUSINESS MAILING ADDRESS: NO. AND STREET

CITY AND STATE

CITY AND STATE

4. ADDRESS AND TELEPHONE NUMBER AT WHICH SOURCES WILL BE USED, IF DIFFERENT FROM ITEMS 2 AND 3.

5. THIS IS AN APPLICATION FOR (CHOOSE ONE ONLY):

Particle Accelerator Facility

OTHER

If other, explain _____

6. FACILITY SUBTYPE:

HOSPITAL

MEDICAL CLINIC

PRIVATE MEDICAL PRACTICE

EDUCATIONAL

INDUSTRIAL

VETERINARIAN

OTHER

If Other, explain: _____

7. INDIVIDUAL RESPONSIBLE FOR RADIATION PROTECTION AT THIS FACILITY

NAME

TITLE

8a. LEGAL STRUCTURE OF APPLICANT

An Individual or Sole Proprietorship * A Partnership A Limited Liability Corporation A Corporation
 An Unincorporated Association City/County/State Government A Non-Profit Corporation

* See 8b. of Instructions

A Partnership

Please provide the name and address of each individual or legal entity owning a partnership interest in the applicant.

Please state the percentage ownership of the applicant partnership held by each of the individuals or legal entities listed above.

A Limited Liability Corporation

Memberships

Ownerships

A Corporation**STOCK OF APPLICANT CORPORATION**

# AUTHORIZED SHARES	# ISSUED SHARES	# SUBSCRIBED SHARES	TOTAL STOCKHOLDERS	TOTAL SUBSCRIBERS

Is the applicant corporation directly or indirectly controlled by another corporation or other legal entity?

If "yes", please give name and address of other corporation or legal entity and describe how such control exists and the extent of control.

For all entities, please identify the State, District, or Territory under the laws of which the applicant is organized. Additionally, please include the name and address of any Arizona agent for the applicant.

SEE ATTACHED SHEET FOR LIST OF ATTACHMENTS TO BE INCLUDED WITH THIS APPLICATION

9. The applicant or any official executing this application on behalf of the applicant certifies that this application has been prepared in accordance with Arizona Administrative Code, Title 12, Chapter 1, and all information contained on this form, including any supplements and attachments, is true and correct to the best of his or her knowledge and belief.

DATE

APPLICANT (ITEM 1)

BY (SIGNATURE)

TITLE

SUBMIT COMPLETED ORIGINAL FORM(S) TO:

Arizona Radiation Regulatory Agency
 4814 South 40th Street
 Phoenix, AZ 85040
 (602) 255-4845, Fax (602) 437-0705
 www.azrra.gov

RETAIN A COPY FOR YOUR RECORDS

ARRA-PA(Attachment)

July 2011

ARIZONA RADIATION REGULATORY AGENCY INSTRUCTIONS

Items 1- 3, are self-explanatory. Be sure to include area code and all ZIP codes.

Item 4, list address(es) at which a source of radiation may be used other than the address listed in item 3. If statewide, county wide, or citywide, please so designate. Leave blank if the same as item 3.

Item 5, please classify the facility according to the usage for which this application is being filed. If more than one usage of sources of radiation occurs at this facility, then a separate application should be filed for each usage. You may make copies of this form, if necessary.

Item 6, choose a facility subtype that best describes your facility.

Item 7, List the name and telephone number of the individual who is delegated responsibility for radiation control for the facility. If a Radiation Safety Committee (RSC) has this responsibility, list the chairman and attach a list of the committee membership. In any case, an individual usually designated as the Radiation Safety Officer (RSO) will have the day to day responsibility for the administration of the Radiation Safety Program of the facility. Changes to the RSC membership or a change in RSO may be sent to the Agency by letter or FAX.

Item 8a., please indicate the legal structure of the applicant. NOTE: for all cases indicate the State, etc, under which the entity is organized and any Arizona Agent representing the entity.

Item 8b., Applicants in this classification (individual or sole proprietorship) are required to submit a legible copy of their driver's license and social security card for verification of US Citizenship. (ARS § 1-501)

Item 9, please sign and date the application. Send application and appropriate fee to: ARRA; 4814 South 40th Street; Phoenix, AZ 85040.

If you have any questions, please write to the above address or call 602-255-4845 or FAX 602-437-0705.

Please Note: No registration is complete unless all appropriate forms are completed.

ARRA-PA(Attachment)

July 2011

ARIZONA RADIATION REGULATORY AGENCY

FACILITY NAME	REGISTRATION # (if available)
	DATE

CLASSIFICATION OF PROFESSIONAL IN CHARGE OF MACHINE

Authorized User

Medical Physicist

Other

PARTICLE ACCELERATOR INFORMATION

Betatron

Cyclotron

Van de Graff

Other Medical therapy

EQUIPMENT

MANUFACTURER / MODEL NO.

SERIAL NO.

MAX. Mev

MAX. MA.

PHYSICAL LOCATION

Photons

Electrons

Neutrons

SHIELDING INFORMATION

(Use additional pages if necessary)

INSTRUCTIONS

ARRA-PA(Attachment)

July 2011

ARIZONA RADIATION REGULATORY AGENCY

1. Please provide a scale drawing of the facility, including construction material, and your calculations of the shielding needed to assure compliance with R12-1-408 and R12-1-416 of A.A.C. The calculations shall meet the requirements specified in R12-1-603.C.2. For your assistance Regulatory Guide 11.5 is available to guide you in supplying these items. You may wish to submit the consultant design report for the facility instead.
2. As in the PA guide, please provide the specific instructions including any restrictions provided to the equipment operators.
3. Please note that Article 9 requires each registrant to maintain for each particle accelerator:
 - a. Prior to initiating treatment, a radiation protection survey of the facility is made and the record retained. A copy must be provided to the Agency;
 - b. A record of the calibrations of the Unit;
 - c. A record of the monthly spot checks must be maintained.

RETAIN A COPY FOR YOUR RECORDS

APPLICATION GUIDE FOR PARTICLE ACCELERATOR REGISTRATION

The Agency has recently completed a review of the particle accelerator application procedures and updated them to meet current radiation safety standards for the operation of a particle accelerator facility. The following is a listing of topics that should be addressed in attachments to the application forms. A particle accelerator (PA) registration is current for 10 years, however, the registrant will be expected to pay a registration fee each year.

Rules governing the application process are found in Article 2. Other more detailed application requirements are located in Article 9. Review, at least, the following rules before applying: R12-1-202, R12-1-903, R12-1-904, R12-1-905, R12-1-914, and Appendix A. Note: that the Agency is using §30-654(B)(13) to ensure applicants meet the training and experience requirements established for radiation safety officer, radiation oncologist, and medical physicist by the NRC. To document the new training requirements please use the following forms available from the Agency and on the Agency website: ARRA-2(313A-RSO), ARRA-2(313A-AMP), and ARRA-2(313A-AUS). **Obviously, these forms do not address all required topics associated with a PA program. The topics specific to particle accelerators are addressed in Article 9 and should be addressed when adding names of individuals to the registration. Of special note is the need to submit with an application or amendment, a copy of a driver's license and social security number for all individuals that will be listed on the registration. This new requirement is in §1-501.**

New facility applicants must provide the correct fee with the application. The current fees are:

NOTE: Existing registrants adding a new PA or replacing an existing PA will not pay at this time. The fee will be charged with the annual fee notice for the next year. Normally, fee notices are sent out in December for the following year.

Be sure to provide:

- A listing of the correct address for the proposed location of the particle accelerator;
- A scale drawing of the facility; and
- A copy of the facility shielding calculations with a listing all assumptions and proposed shielding thicknesses. If neutrons are of a concern, describe the neutron shielding added to the door.
- The results of the shielding verification survey. The photon survey should be performed with an appropriate, calibrated survey instrument and neutrons evaluated if the units energy exceeds 20 mV;

APPLICATION GUIDE FOR PARTICLE ACCELERATOR REGISTRATION

- Description as to how access to the area above the PA vault (This area may be the roof or work area accessible to personnel) will be controlled;
- The operating and emergency procedures for the particle accelerator; and
- A description of the Quality Management (QM) Program. Appendix A, Quality Control Program may be used as a framework for a QM program.
- Names of the physicians, and physicists (Qualified expert), and their preceptor forms, that will be listed on the PA registration;
- Describe the staff-to-patient ratios in accordance with R12-1-904. A copy of the referenced document is available upon request.
- A description of how the registrant will use the services of a third party qualified expert or third party TLD system to verify the accelerator's radiation output every 2 years. (See Appendix A, Article 9);
- A description of the procedure used to ensure that the therapy dose is correct, and as prescribed by the therapy physician:
 1. How soon after initiation of the therapy plan will the plan and treatment be compared?
 2. What method will be used for the check?
 3. By whom? What are the individual's qualifications?

A review of the application will take place upon receipt of all materials. A registration authorizing therapeutic use will be issued when the Agency has inspected your facility. Patient therapies cannot begin until the Agency inspection is completed. Be sure to schedule this inspection as soon as possible.

If this application involves a replacement PA, address the following:

1. If there is an increase in energy for the new unit, what changes have been made in the shielding? (Facility changes)
2. Provide the name and address of the person receiving the old PA system as required in R12-1-206(B) and any change in the registration, in accordance with R12-1-209(A) and R12-1-209(B).

Appendix A Quality Control Program

A. Mechanical Tests

1. Patient support assembly motions
2. Gantry angle indicators
3. Optical distance indicators
4. Alignment lights
5. Congruence of radiation beam and light field
6. Accuracy of field size indicators
7. Mechanical isocenter - gantry and collimator
8. Mechanical interlocks

B. Radiation Beam Tests

1. Machine operating parameters
2. Dose per monitor unit for x-ray and electron beams
3. Dose per degree for moving beam therapy
4. Radiation isocenter
5. Flatness and symmetry
6. Wedge transmission factors
7. Shadow tray transmission factors
8. Energy check on central axis
9. Radiation output versus field size

C. Control Panel Checks

- | | |
|------------------------------------|--------------------|
| 1. Radiation "ON" condition | 5. Digital display |
| 2. Indicator lamp check | 6. Analog display |
| 3. Computer control of accelerator | 7. Status display |
| 4. Interlock display | 8. Reset display |

D. Facility Checks

1. Patient audio-visual communication
2. Entrance door interlock
3. Warning lights
4. Emergency off button

E. Dose Output Check

1. Each registrant shall use the services of a third party qualified expert or third party TLD system to verify the accelerator's radiation output every 2 years.
2. If the output check is not within +/- 5% of the calibrated output, the accelerator shall be recalibrated and the discrepancy investigated.
3. Records of output checks shall be maintained for 3 years.

F. Patient Dosimetry Calculation Checks

1. Calculation of patient treatment times
2. Computer calculation of patient treatment times

Listing of forms needed for the application process:

- General application
- Users: ARRA-2(313A-RSO), ARRA-2(313A-AMP), ARRA-2(313A-AUS)
- Fees as previously described, also, there is a listing in Article 13

Helpful reference material:

- The specialty boards recognized by the NRC and Agreement States are listed on the Agency webpage and located on the NRC Medical Toolbox Webpage.

Specialty Board(s) Certification Recognized by NRC Under 10 CFR Part 35

§35.50	<p>Training for Radiation Safety Officer</p> <p>American Board of Health Physics from January 1, 2005 to present.</p> <p>American Board of Science in Nuclear Medicine from June 2006 forward for the Nuclear Medicine Physics and Instrumentation Specialty and the Radiation Protection Specialty.</p> <p>American Board of Radiology (ABR) certification process from June 2007 forward for the Radiologic Physics - Medical Nuclear Physics and the Radiologic Physics - Diagnostic Radiologic Physics specialties for diplomats' who have been issued certificates before and after that date with the words "RSO Eligible" appearing above the ABR seal."</p>
§35.51	<p>Training for an authorized medical physicist</p> <p>American Board of Radiology (ABR) certification process from June, 2007 forward for the Radiologic Physics - Therapeutic Radiologic Physics specialty for diplomates who have been issued certificates before and after that date with the words "AMP Eligible" appearing above the ABR seal. ***</p> <p>**Diplomates from June 2007 forward certified under 10 CFR 35.51 for the Therapeutic Radiologic Physics subspecialty of the ABR-Radiologic Physics specialty also satisfy the certification portion of the regulatory requirements in 10 CFR 35.50(c)(1) for Radiation Safety Officer authorization.</p>
§35.55	<p>Training for an authorized nuclear pharmacist</p> <p>Board of Pharmaceutical Specialties certification process for Board Certified Nuclear Pharmacist (BCNP) from March 6, 1996 to present.</p>
§35.190	<p>Training for uptake, dilution, and excretion studies</p> <p>American Board of Nuclear Medicine certification process from October 20, 2005 to present for all physicians before and after that date issued an ABNM certification with the word "United States" appearing under the certification number.</p>
§35.290	<p>Training for imaging and localization studies</p> <p>Certification Board of Nuclear Cardiology certification process from October 29, 2000 through October, 2005 for all physicians issued certificates with the wording "for physicians residing in the United States" and from October, 2006 to present for all physicians issued certificates with the wording "for physicians trained in the United States."</p> <p>American Board of Nuclear Medicine certification process from October 20, 2005 to present for all physicians issued an ABNM certifications before and after that date with the word "United States" appearing under the certification number.</p> <p>American Osteopathic Board of Radiology (AOBR) certification process from July 1, 2000 forward for the Diagnostic Radiology specialty.</p> <p>American Osteopathic Board of Nuclear Medicine (AOBNM) certification process from May 18, 2006 forward for the Nuclear Medicine specialty.</p> <p>American Board of Radiology (ABR) certification process from June 2006 forward for the Diagnostic Radiology certificates issued before and after that date with the words "AU eligible" appearing above the ABR seal.</p>

Specialty Board(s) Certification Recognized by NRC Under 10 CFR Part 35

§35.390	<p>Training for use of unsealed byproduct material for which a written directive is required</p> <p>American Board of Nuclear Medicine certification process from October 20, 2005 to present for all physicians before and after that date issued an ABNM certification with the word "United States" appearing under the certification number. *</p> <p>American Board of Radiology (ABR) certification process from June, 2007 forward for the Radiation Oncology specialty with the words "AU eligible" appearing above the ABR seal. *</p> <p>American Osteopathic Board of Radiology (AOBR) certification process from May 1, 2007 forward for the Radiation Oncology specialty. *</p> <p>*Diplomates of this specialty board also satisfy the training and experience requirements in 10 CFR 35.392 and 35.394.</p>
§35.392	<p>Training for the oral administration of sodium iodide I-131 requiring a written directive in quantities less than or equal to 1.22 gigabecquerels (33 millicuries)</p> <p>American Osteopathic Board of Radiology (AOBR) certification process from July 1, 2000 forward for the Diagnostic Radiology specialty.</p> <p>American Board of Radiology (ABR) certification process from June 2006 forward for the Diagnostic Radiology certificates issued before and after that date with the words "AU eligible" appearing above the ABR seal.</p>
§35.394	<p>Training for the oral administration of sodium iodide I-131 requiring a written directive in quantities greater than 1.22 gigabecquerels (33 millicuries)</p> <p>None</p>
§35.490	<p>Training for use of manual brachytherapy sources</p> <p>American Board of Radiology (ABR) certification process from June, 2007 forward for the Radiation Oncology specialty with the words "AU eligible" appearing above the ABR seal.</p> <p>American Osteopathic Board of Radiology (AOBR) certification process from May 1, 2007 forward for the Radiation Oncology specialty.</p>
§35.590	<p>Training for use of sealed sources for diagnosis</p> <p>None</p>
§35.690	<p>Training for use of remote afterloader units, teletherapy units, and gamma stereotactic radiosurgery units</p> <p>American Board of Radiology (ABR) certification process from June, 2007 forward for the Radiation Oncology specialty with the words "AU eligible" appearing above the ABR seal.</p> <p>American Osteopathic Board of Radiology (AOBR) certification process from May 1, 2007 forward for the Radiation Oncology specialty.</p>