Date form last updated: Apr 06, 2016 (please feel free to submit as sections are updated)

Completed by: Antoun Bou Laouz__

1. Cyclotron Facility – Contact info

Institute (name/address):	Nova Scotia Health Authority
Institution URL:	Diagnostic imaging department-cyclotron unit
Person in charge (name/ph#/email):	Antoun Bou Laouz/902-412-7070 email/ antoun.boulaouz@nshealth.ca
Position/title:	Team leader
Cyclotron manager/engineer (name/ph#/email)	Brian Martell /902-473-2928
QA manager (name/ph#/email)	Wajih Ben Tahar/ 902-229-1630
QC manager	
Other senior staff (titles/name/ph#/email):	

2. Cyclotron characteristics

Cyclotron manufacturer/model	GE PET trace
Cyclotron installation date (Year):	2009
Dual beam?	X No ☐Yes
Any upgrades?	X No ☐Yes, Describe:
Particles:	X ^{1}H ☐^{2}H ☐^{3}He ☐^{4}He
Particle energy, or range (MeV):	__16__^{1}H _____^{2}H _____^{3}He _____^{4}He
Max particle current (uA):	_40___^{1}H _____^{2}H _____^{3}He _____^{4}He
Typical particle current (uA):	__40__^{1}H _____^{2}H _____^{3}He _____^{4}He

3. Cyclotron Operation ☐ Prefer not to answer

Planned operating days per week:	☐1 ☐2 ☐3 X 4 ☐5 ☐6 ☐7
Number of planned maintenance days/month:	One day/ month and full PM every 6 month
Number of planned shutdown weeks per year:	2 weeks per year
Total operating hours (h)/week:	10h
h/week for radionuclide production:	5h
h/week for research:	30min
h/week for maintenance:	2h
h/week for applications:	1h

4. Is the cyclotron used to produce ☐ Prefer not to answer

Calibration sources? (specify which & quantity)	X No ☐Yes
Mossbauer sources? (specify which & quantity)	X No ☐Yes
X-ray sources? (specify which & quantity)	X No ☐Yes
Intense neutron beam? (specify average E_n = ?)	X No ☐Yes

5. Application questions ☐ Prefer not to answer

Are pre-clinical studies using cyclotron radiopharmaceuticals carried out on-site?	X No ☐Yes (if available, types of radiotracers and name(s) and email(s) of PIs):
Are clinical studies using cyclotron radiopharmaceuticals carried out on-site?	X No ☐Yes (if available, types of radiotracers and name(s) and email(s) of PIs): future project
Are cyclotron radionuclides/labelled compounds used or planned to be used for agricultural applications such as plant biochemistry/research?	X No ☐Yes (if available, types of radiotracers and name(s) and email(s) of PIs):
Is the cyclotron used for nuclear reaction cross-section measurements?	X No ☐Yes (if available, name(s) and email(s) of PIs):
Is the cyclotron used for targetry development?	X No ☐Yes (if available, types of isotopes, and name(s) and email(s) of PIs): future project
Is the cyclotron used for materials science?	X No ☐Yes (if available, name(s) and email(s) of PIs):
Is the cyclotron used for radiography?	X No ☐Yes (if available, name(s) and email(s) of PIs):
Is the cyclotron used for radiobiology?	X No ☐Yes (if available, name(s) and email(s) of PIs):
Is the cyclotron used for physics research?	X No ☐Yes (if available, name(s) and email(s) of PIs):
Is the cyclotron used for activation analysis?	X No ☐Yes (if available, name(s) and email(s) of PIs):
Is the cyclotron used for proton therapy?	X No ☐Yes (if available, name(s) and email(s) of PIs):

Is the cyclotron used for neutron therapy?	X No ☐Yes (if available, name(s) and email(s) of PIs):
Other (specify)	X No ☐Yes (if available, name(s) and email(s) of PIs):

6. Types of imaging equipment ☐ N/A, X Prefer not to answer

Single photon (specify if gamma camera, SPECT, or SPECT-CT):	
Number of clinical scanners:	
Number of pre-clinical scanners:	
Number of plant biochemistry scanners:	
PET (specify if PET, PET/CT, or PET/MR):	
Number of clinical scanners:	
Number of pre-clinical scanners:	
Number of plant biochemistry scanners:	

7. Do you supply radionuclide(s), radiotracer(s), or radiopharmaceutical(s) to other institutions? (X No/☐Yes/☐ Prefer not to answer). If yes, and if available, please provide the name of product, institution, and supply frequency: At least not for now

Product	Institution	Frequency

8. Cyclotron/radionuclide/radiochemistry/radiopharmacy training

Is the cyclotron used for education and training in nuclear sciences, health physics, etc?	☐No X Yes (if available, name(s) and email(s) of PIs): Continuous education tour for residences and students
Does your institute participate in trainee exchange (for production):	X No ☐Yes (if available, name(s) and email(s) of PIs):
Does your institute participate in trainee exchange (for research):	☐No X Yes (if available, name(s) and email(s) of PIs): With researcher from Dalhousie university
Does your institute accept IAEA research fellows for training/experience:	☐No ☐Yes (if available, name(s) and email(s) of PIs): Not applicable
Other training opportunities (specify):	☐No ☐Yes (if available, name(s) and email(s) of PIs): Students Engineers and Nuclear Medicine students

9. Radionuclide production – $^{18}F(F^-)$ ☐ N/A, ☐ Prefer not to answer

Reaction	X $^{18}O(p,n)^{18}F$; ☐ $^{16}O(^{3}He,p)^{18}F$; ☐ $^{20}Ne(d,\gamma)^{18}F$; ☐ $^{16}O(\alpha,d)^{18}F$
Typical current (μA):	40
Typical energy (MeV):	16
Typical yield (GBq):	55%
Typical target pressure (psi):	429
Is target He cooled?	☐No X Yes
Typical beam time (min):	60
Typical Y_{sat} if known (GBq/μA)	
% Isotopic enrichment ^{18}O	97%
^{18}O supplier(s)	Cambridge (ABX)
Target volume $[^{18}O]H_2O$ (mL)	2.5ml
Usage per year $[^{18}O]H_2O$ (mL)	
Do you recycle $[^{18}O]H_2O$?	☐No X Yes (if "yes", ☐in-house ☐return to supplier)

10. Radionuclide production – ^{11}C ($[^{11}C]CH_4$) X N/A, ☐ Prefer not to answer

Typical current (μA):	
Typical energy (MeV):	
Typical yield (GBq):	
Typical target pressure (psi):	
Typical beam time (min):	
Typical Y_{sat} if known (GBq/μA):	
Gas mixture:	
Target volume:	
$[^{11}C]CH_3I$ production ASU model:	
Typical yield (GBq):	
Typical yield (%, d.c.):	

11. Radionuclide production – ^{11}C ($[^{11}C]CO_2$) X N/A, ☐ Prefer not to answer

Typical current (μA):	
Typical energy (MeV):	
Typical yield (GBq):	
Typical target pressure (psi):	
Typical beam time (min):	
Typical Y_{sat} if known (GBq/μA):	
Gas mixture:	
Target volume:	
$[^{11}C]CH_3I$ production ASU model:	
Typical yield (GBq):	
Typical yield (%, d.c.):	

12. Other radionuclides produced X N/A, ☐ Prefer not to answer

Product	Yield on	Irradiation	Typical target	Extraction	Used on site?	Distribution/

	batch (GBq)	parameters (MeV/μA/min)	mass/material	method		sales?
^{13}N					☐No ☐Yes	☐No ☐Yes
^{15}O					☐No ☐Yes	☐No ☐Yes
$^{18}F\text{-}F_2$					☐No ☐Yes	☐No ☐Yes
^{44}Sc					☐No ☐Yes	☐No ☐Yes
^{64}Cu					☐No ☐Yes	☐No ☐Yes
^{67}Ga					☐No ☐Yes	☐No ☐Yes
^{86}Y					☐No ☐Yes	☐No ☐Yes
^{89}Zr					☐No ☐Yes	☐No ☐Yes
^{94m}Tc					☐No ☐Yes	☐No ☐Yes
^{99m}Tc					☐No ☐Yes	☐No ☐Yes
^{103}Pd					☐No ☐Yes	☐No ☐Yes
^{111}In					☐No ☐Yes	☐No ☐Yes
^{123}I					☐No ☐Yes	☐No ☐Yes
^{124}I					☐No ☐Yes	☐No ☐Yes
^{201}Tl					☐No ☐Yes	☐No ☐Yes
^{211}At					☐No ☐Yes	☐No ☐Yes
Other:					☐No ☐Yes	☐No ☐Yes
					☐No ☐Yes	☐No ☐Yes
					☐No ☐Yes	☐No ☐Yes
					☐No ☐Yes	☐No ☐Yes
					☐No ☐Yes	☐No ☐Yes

13. Radiopharmaceutical production – ^{18}F(FDG) ☐ N/A, ☐ Prefer not to answer

Production frequency (batches/week)	4
Used on site	☐No X Yes
Distribution/sales	☐No ☐Yes Not for now
ASU model	Tracerlab Mx
Typical yield (GBq):	55%
Typical yield (%, decay corrected):	__60%_____ ☐pre/post dose-cal; or ☐indirectly via ASU
ASU model	☐ N/A
Typical yield (GBq):	
Typical yield (%, decay corrected):	_____ ☐pre/post dose-cal; or ☐indirectly via ASU
ASU model	☐ N/A
Typical yield (GBq):	
Typical yield (%, decay corrected):	_____ ☐pre/post dose-cal; or ☐indirectly via ASU

14. Radiopharmaceutical production – Other Products (please copy table for as many products as desired)
☐ N/A, ☐ Prefer not to answer

Product:	
Production frequency (batches/week)	
Stage:	☐R&D ☐Pre-clinical ☐Clinical
Used on site	☐No ☐Yes
Distribution/sales	☐No ☐Yes
ASU model	
Typical yield (GBq):	
Typical yield (%, decay corrected):	_____ ☐pre/post dose-cal; or ☐indirectly via ASU
ASU model	☐ N/A
Typical yield (GBq):	
Typical yield (%, decay corrected):	_____ ☐pre/post dose-cal; or ☐indirectly via ASU

15. Radionuclides and radiopharmaceuticals planned to be produced in the next 1-3 years (specify)
    ☐ N/A, ☐ Prefer not to answer

Product:	Application:
18 NaF	Clinical trial application for bone scan

16. Additional comments: ☐ N/A
