IEng - Initial Professional Development Report

[redacted] BEng (Hons), EngTech, MIPEM

Evidence	Area of Competency
I started my career within the NHS as a Trainee Medical Technical Officer working a rotational shift pattern through the Clinical Engineering, Ultrasound and Radiotherapy departments at [redacted]. I went on to become a Medical Electronics Engineer at [redacted] Hospital where I was responsible for repairing and maintaining a vast array of medical equipment in both critical and non-critical wards. During this period I was enrolled on a part-time BEng (Hons) Electrical & Electronic Engineering course at [redacted] University. I completed the degree course in 2009 with a 1st Class Honours.	[redacted]
Following the completion of my degree course I took a job in the Radiotherapy department at [redacted]. I joined a team of engineers as a Radiotherapy Engineer responsible for the repair and maintenance of a fleet of Medical Linear Accelerators and diagnostic CT scanners. I regularly planned linear accelerator services and led teams of engineers during the work. During this time I became registered on the Register of Clinical Technologists (no. CT0[redacted]).	C1 / C3 E1
In 2010 I became a Specialist Radiotherapy Engineer where I continued to maintain our accelerators but in a senior position with supervisory responsibilities. During this period I completed several manufacturers' technical training courses along with a BSI Internal Auditor course. Since then I have regularly contributed to auditing our departmental ISO 9001:2008 quality system in order to continually improve our systems of work. This includes training new members of staff to carry out audits, performing internal and external audits and amending and creating work instructions.	A2 / C4 C3 / D1
In 2013 I became a full member of IPEM (MIPEM) and also attained EngTech status through IPEM. During the same year I was promoted to Technical Manager where I had to lead a team of specialist and non-specialist radiotherapy engineers.	E1
While carrying out this role I led a project to bring the brachytherapy maintenance services in house as a cost saving initiative. I chose a member of my team to assist me with the project and completed the necessary manufacturers' technical training courses in order to be able to service, repair and perform source changes. In order to carry out brachytherapy source changes I had to become a certified radiation worker due to the high levels of radiation from the isotope sources. Safe working practices are vital when working on these devise. I have now successfully implemented an in house brachytherapy service for which I manage and hold a devolved budget. This is the largest brachytherapy centre in the UK and has resulted in a significant annual cost saving of approximately 20k per year. In addition, through a programme of internal/external training I have	A1 / A2 B1 / B2 / B3 / C1 / C2 / C3 / C4 / D1 / D2 / E1 / E2 / E3 / E4 / E5

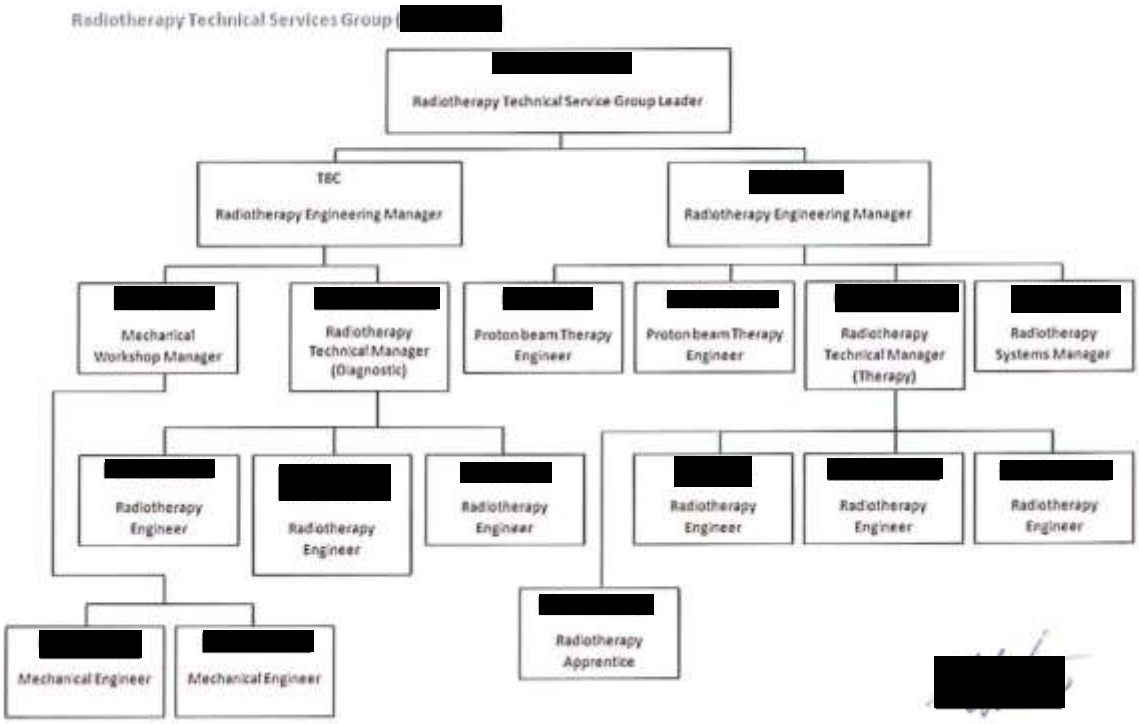
increased the size of my team two fold since originally taking over the service which has improved the resilience of the service. I led an innovation project in Brachytherapy to set up another treatment room in order to increase departmental resilience and patient numbers. I led an engineering team which involved project management, planning, costing, designing, installation and testing in order to successfully complete the project. I had to liaise with our physics team throughout the project in order to make sure the work was carried out safely in terms of radiation protection. A project like this had never been carried out before anywhere in the world and has improved and expanded our Brachytherapy ward.	[redacted]
While serving as a Technical Manager I was approached by The University of Bradford to help them with their BSc Healthcare Science course. The degree formed part of the Modernising Scientific Careers Practitioner Training Programme. Along with a colleague I designed and delivered a 20 unit course entitled Radiation Engineering which included lectures and practical tutorials. In addition I mentored a student over a 25 week placement in which the pupil had to complete a comprehensive list of practical competencies. The design of the course took many months of planning and preparation.	B2 / B3 / C1 / C2 / C3
During my time as a Technical Manager I had to lead a team of engineers one of which I had to put through a Capability Procedure as the staff member was having difficulties carrying out their role. Working closely with [redacted] for over a year I had to lead the individual through the process setting them action plans in order to assess their capabilities. In conjunction with this I had to carry out Stress Risk Assessments for Occupational Health along with adhering to Management of Absence procedures. During the Capability Procedure I had to regularly chair meetings between the individual in the presence of a union rep and [redacted]	C3 / C2 / E1 / D1 / D2 / D3
In my current and previous roles I have to lead and develop my staff. This can include dealing with sensitive and often personal issues which require tact and discretion. For example I have helped members of my team who are suffering from health issues. Help can be in the form of a simple chat and reassurance or more specific such as a referral to occupational health. I carry out annual Professional Development Reviews for all my staff members in which we discuss their progress throughout the year. I explain that this is an open 1-to-1 forum for them to express any concerns or worries they may have. I listen to their concerns and try to offer advice and support whenever possible. Positive feedback is given and also constructive criticism when appropriate. Training gaps are discussed and funding is sourced if they would like to go on a course. I always strive for the best for my staff. I try to provide them with an environment in which they can flourish and achieve their full potential.	D1 / D2 / D3 / E5 / C3
While working as a Technical Manager I was appointed as a Radiation Protection Supervisor (RPS) by the Trust as per the Ionising Radiation Regulations 1999 (IRR 99) which is a position I still hold. My main duties and responsibilities under this regulatory framework are to uphold and enforce the Radiotherapy and Brachytherapy Local Rules. Part of my role is to educate staff members and external workers on the safety aspects on Radiation Protection. This can include departmental tours and/or inductions, assigning Permits to Work and formal	E1 / E2 / E5 / D1 / D2 /

lectures. I am also classed as an Operator under the Ionising Radiation (Medical Exposure) Regulations 2000 (IR(ME)R 2000) which means I am responsible for the practical aspects associated with a patient's treatment dose. Such a practical aspect could be a machine calibration for example.	[redacted]
In 2016 I was promoted to Deputy Radiotherapy Technical Services Manager having specific responsibilities for MR-LINAC, Brachytherapy and the Proton Beam Therapy service. In addition to these specialist roles I help manage the day-to-day running of the Radiotherapy electronics workshop which includes the man management of Technical Managers, Specialist and non-specialist Radiotherapy Engineers, the Radiotherapy Systems Manager and an apprentice (see **Appendix 1** for hierarchy).	C2 / C3
I have been heavily involved in the MR-LINAC research project at [redacted] for the past few years. [redacted] is working alongside the device manufacturers Philips and ELEKTA in an international consortium consisting of seven hospitals across the globe. The MR-LINAC is an innovative research project which hopes to combine a Philips 1.5T MR scanner with an ELEKTA linear accelerator. Part of my role in the consortium is being a member of the Quality Assurance Working Group. The group is a mix of international physicists who meet bi-weekly over webex. We discuss what QA checks will be required and what frequency these tasks should be carried out. Data from this work will be used to help CE mark the system in 2017. I carried out research for the project alongside my colleagues in physics with a paper being published recently:	
"Quantification of static magnetic field effects on radiotherapy ionization chambers" by [redacted] *Article reference: PMB-104903.R2*	A1 / A2 / B1 / B2 / C1 / C2 / C3 / C4 / D1 / D2 / D3 E1 / E2 / E4
I lead the day-to-day running of the project from an engineering perspective. I have assigned one of my engineers to work alongside the manufacturer's install team in order to gather relevant information. Throughout the build process I assisted with the design of the working environment alongside the architect and the building company. I also provided specialist consultation with regards to the radiation protection issues associated with the build in my position as a Radiation Protection Supervisor. I chair a multidisciplinary group consisting of radiographers, physicists and engineers who meet regularly in order to plan and implement the project milestones. As the device involves a high magnetic field I must assess the risk to staff, patients and visitors and design stringent protocols. In addition, I will draft documentation in order to incorporate this device into the departmental ISO 9001:2008 quality system. In order to train staff locally I have contributed to an MR-LINAC study day and delivered CPD lectures for radiographers and physicists. In order to promote the project at a national and international level I have presented at [redacted] 2016 Adaptive Study Day and the 2016 Elekta Northern User Group conference.	
I am also involved with the exciting development of our Proton Beam Therapy centre which will be the first of its kind in the UK when it opens in 2018. I am responsible for the management of the maintenance and repair of the equipment and have employed engineers to work alongside the manufacturer's staff in order to fulfil this need. One of my roles is the development of an ISO	

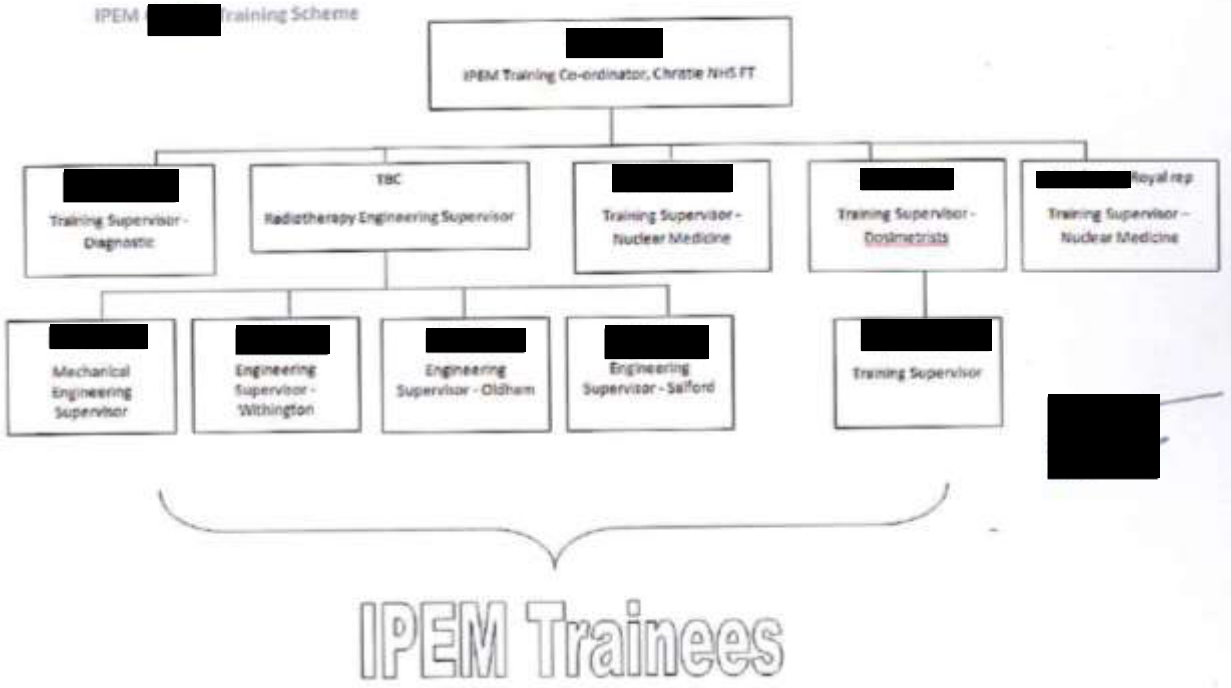
90001:2008 quality system for the Proton service. However, as the machine will not go clinical until 2018 I will need to transition across from ISO 9001:2008 to ISO 9001:2015. In order to help this process I will be attending BSI transition training. I attend various Steering Group meetings and chair one of them. I am currently project managing the implementation of IEC 80001-1 Application of Risk Management for IT-networks incorporating medical devices. As this has never been implemented into a Proton service before it is being treated as a piece of research in collaboration with NHS Digital. Although the regulation is not mandatory it is seen as best practice and will therefore improve our quality system. If successful I plan to implement the regulation throughout the whole of the Radiotherapy department. In addition to these responsibilities I am also part of the procurement team for the diagnostic equipment to be purchased for the Proton facility, namely, a CT and MR Scanner. I have helped create a specification for the potential vendors and will write the maintenance contract once a vendor has been agreed. I will form part of the team responsible for scoring individual vendors in order to inform our final decision.	A1/A2/ B1/B2 C1/C2/C3 C4/D1/D2/ E2/E4/E4/E5 [redacted]
I have served on the IPEM [redacted] Advisory Group for four years as the [redacted] and have two years remaining. Part of my duties and responsibilities are to increase the number of [redacted] egistrants. In order to promote professional registration internally at my trust I always present a talk on professional registration to new starters explaining the benefits to themselves, the trust and the patients. Externally I am currently trying to align the IPEM Clinical Technologist Training Scheme diploma with EngTech status. I have contributed to several ECUK events including EngTech assessor training and joint IHEEM/IPEM professional registration training. In the future I hope to become an IEng / CEng registrar.	D1 / D2 / E4
I served a three year term on the IPEM [redacted] Special Interest Group as their first engineering representative. My primary role was to provide a technologist's perspective to the group. I helped plan and carry out Clinical Technologist Study Days at which I presented and chaired the Radiotherapy Strand.	E4
I am aware of the limitations of my skills and knowledge and therefore keep abreast of new developments within my field of expertise by carrying out routine CPD. I keep a record of my CPD and carry out reflective practice on my experiences. In order to consolidate and improve my leadership and management skills I am currently enrolled on the Edward Jenner course through the NHS Leadership Academy. I am also enrolled onto a postgraduate Open University module entitled Managing Technological Innovation (T848) which starts in May 2017. On completion of this module I would be eligible for a Postgraduate Certificate in Technology Management (C49). I would like to continue this study in order to gain a Postgraduate Diploma and eventually an MSc in Technology Management. In order to improve my project management skills and knowledge I have also recently completed PRINCE2 Foundation and Practitioner courses.	A1 / E3 / E4
I am a keen supporter of the RCT and actively promote registration. I encourage	

my staff to complete the IPEM Clinical Technologist Diploma and help them through the process in my role as an IPEM Supervisor. I have recently become an IPEM Moderator in order to help other trusts by independently verifying their staff members. I will soon become the IPEM Training Co-ordinator for [redacted] where I will be responsible for maintaining our accreditation as a training centre. See **Appendix 2** for the structure of t[redacted]PEM accredited training scheme. In addition I will be taking my Line Manager's place on the IPEM C[redacted] soon when he steps down. I would like to join this group in order to have an input into the current and future training of clinical technologists.	E5 / C3 / C4 / D1 / D2 / D3 [redacted]

Appendix 1



Appendix 2


IPEM [redacted] Training Scheme
[redacted]
IPEM Training Co-ordinator, Christie NHS FT
[redacted]
Training Supervisor - Diagnostic
TBC
Radiotherapy Engineering Supervisor
[redacted]
Training Supervisor - Nuclear Medicine
[redacted]
Training Supervisor - Dosimetrists
[redacted] Royal rep
Training Supervisor - Nuclear Medicine
[redacted]
Mechanical Engineering Supervisor
[redacted]
Engineering Supervisor - Withington
[redacted]
Engineering Supervisor - Oldham
[redacted]
Engineering Supervisor - Salford
[redacted]
Training Supervisor
[redacted]
IPEM Trainees