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| **Project Title** | **Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy** |
| **Oracle Project Number** | 2060119 |
| **Objectives** | To review, harmonize and upgrade quality assurance and quality control programmes in radiotherapy departments of two major regional hospitals in Croatia to avoid accidental exposure during therapeutic procedures. |
| **General Project Data** |
| **Field(s)** | (6F) Radiation Metrology and Dosimetry  |
| **APC Code(s)** | (F ) Human Health  |
| **Project Achievements** | Background:There have been six radiotherapy departments in Croatia with similar facilities and equipment. Croatian radiation protection laws insist on QA/QC programmes in all radiotherapy departments, but the programmes in them were inconsistent and had many shortcomings thus there was a low level of implementation. As the upgrade of QA/QC programmes is a long term objective, a graduated approach was chosen to introduce pilot in Department of Radiotherapy and Oncology in two hospitals. Later they can be expanded from these pilot projects to the others until the full national coverage. Agency was requested to review, harmonize and upgrade quality assurance and quality control programmes in radiotherapy departments of two major regional hospitals in Croatia University Hospitals in Osijek and Rijeka - to avoid accidental exposure during therapeutic procedures. Outputs:The aim of the first scientific visits was how to set up and implement a QA/QC program in the radiotherapy department and to compare it will lessons learned in two radiotherapy departments. Agency provided a complete set of handbooks and manuals from the setting up a radiotherapy programme including clinical, medical physics, radiation protection and safety aspects up to the QC/QA via the practical work of the radiotherapy departments up to the audits. The main aim of the scientific visit was to analyze the organization of working flow (timetable, schedules) with a special look into the questions concerning quality control of the whole working process in a radiation therapy unit (department). Visit was designed in order to improve the process at home-concerning improvement of the ordinary steps in every day work, but mainly to get the idea how to solve some obstacles and to improve the surveillance and quality control of the whole process of radiation therapy planning and performing. A specific training focused on QA/QC of the medical physics aspects of radiotherapy treatment process from treatment preparation to delivery with special emphasis on commissioning of treatment machines and their implementation in clinical practice; on equipment related QA, treatment plan verification and in vivo dosimetry in advanced clinic setting. Theory and practical lessons learned helped to upgrade and harmonization of QA/QC systems in two regional radiotherapy departmentsRadiotherapy equipment QC protocols, which insure optimal equipment conditions for safe delivering of the prescribed dose, were upgraded and harmonized at two major regional hospitals. Clinical protocols for radiation therapy procedure (patient positioning and dose verification) were also implemented at two major regional hospitals. QA/QC procedures at radiotherapy department have been included in hospital QA manual. Two major regional centres have now qualified staff trained in QA/QC procedures. Awareness of importance of QA/QC for the optimal and safe delivery of the prescribed dose to the target volume is built. National professional bodies can now review reports from the two pilot hospitals and recommend QA/QC programmes to be established in all radiotherapy departments in Croatia. Regulatory framework for the QA/QC programmes of radiotherapy has been put in placeOutcome:Harmonised QA/QC system established in radiotherapy departments of two major regional hospitals in Croatia (in Osijek and Rijeka) under the project, provided pathway for the establishment of QA/QC system in the whole country as requested by the Croatian radiation protection law. Next step is the expansion at the national level from recent pilot project to all six radiotherapy departments in Croatia, in which professional societies and regulatory body (State office for radiation protection) have their role. |
| **ACC Sector** |  | **Project Status** | Completed on 2014-06-01 |
| **Original Funding** | Core | **1st Year Of Approval** | 2009 |
| **Estimated Duration** | 3 year(s) |

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| **IAEA Personnel** |
| **Programme Management Officer** | CHUPOV, Andrey |  | Europe Section 2 |
| **Section Head** | SALMINS, Andrejs |  | Europe Section 2 |
| **Technical Officer(s)** | IZEWSKA, Joanna |  | Dosimetry and Medical Radiation Physics Section |

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| **Recipient Institutes and Counterpart(s)** |
| Croatia  | University J.J. Strossmayer; University J.J. Strossmayer; Medical Faculty; (FAJ, Dario) |
| Croatia  | University Hospital Osijek; Department of Oncology and Radiotherapy; (KASABASIC, Mladen) |
| Croatia  | Clinical Hospital Center Rijeka; Department of Radiotherapy and Oncology - Croatia; (JURKOVIC, Slaven) |

**Current Year Financial Status**

| **Fund** | **Component** | **Current Year Disbursement** | **Current Year Unliquidated Obligation** | **Previous Year Disbursement** | **Previous Year Unliquidated Obligation** | **Current Year Implementation** | **Total Implementation** | **Total Disbursement** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Grand Total** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

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| **Financial Approvals** |
| **Core Approvals** |
| **Year** | **Experts** | **Meetings/Workshops** | **Fellowships** | **Scientific Visits** | **Training Courses** | **HR Total** | **Equipment** | **Subcontracts** | **Miscellaneous** | **PR Total** | **Total Approval** |
| 2009 | 10,100.00 | 0.00 | 0.00 | 20,000.00 | 0.00 | 30,100.00 | 56,000.00 | 0.00 | 0.00 | 56,000.00 | 86,100.00 |
| 2010 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 12,870.00 | 0.00 | 0.00 | 0.00 | 50,000.00 | 62,870.00 |
| 2011 | 17,000.00 | 0.00 | 7,200.00 | 0.00 | 0.00 | 24,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 24,200.00 |

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| **Footnote Approvals** |
| **Year** | **Experts** | **Meetings/Workshops** | **Fellowships** | **Scientific Visits** | **Training Courses** | **HR Total** | **Equipment** | **Subcontracts** | **Miscellaneous** | **PR Total** | **Total Approval** |

**Experts**

| **Task** | **Task title/Participant Name** | **Nationality** | **Candidate approached** | **Submitted:s** **Accepted:a** | **Withdrawn:w** **Rejected:r** | **Start Date** | **End Date** | **Duration****(days)** |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **90**  | **Staff Travel Mission(Project Management/Review)** | **Field: 6F**  |
|  | **Mission 01** JD Submitted: 2009-06-22 |
|  | Duty Station : Zagreb( CRO ) |
|  | DEUFRAINS, Katherina Lydia |  |  |  |  | 2009-09-01 | 2009-09-03 | 2 |  |

**Meetings/Workshops**

| **Task** | **Task title/Participant Name** | **Nationality** | **Candidate approached** | **Submitted:s** **Accepted:a** | **Withdrawn:w** **Rejected:r** | **Start Date** | **End Date** | **Duration****(days)** |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **9001** | **Kick-Off Meeting for Project CRO6008** | **Field: 6F**  |
|  | **Mission 01** JD Submitted: 2009-02-03 |
|  | Duty Station : Wien( AUS ) |
|  | JURKOVIC, Slaven | CRO |  |  |  | 2009-03-02 | 2009-03-02 | 0 |  |
|  | FAJ, Dario | CRO |  |  |  | 2009-03-02 | 2009-03-02 | 0 |  |
| **9002** | **Meeting on the Project CRO6008** | **Field: 6F**  |
|  | **Mission 01** JD Submitted: 2010-03-12 |
|  | Duty Station : Vienna( AUS ) |
|  | JURKOVIC, Slaven | CRO |  |  |  | 2010-03-30 | 2010-03-30 | 0 |  |
|  | FAJ, Dario | CRO |  |  |  | 2010-03-30 | 2010-03-30 | 0 |  |

**Fellowships**

| **No** | **Name** | **Nominated** | **Awarded:aNon-awarded:nWithdrawn:w** | **Host Country** | **Type** | **Proposed:pAccepted:aRejected:r** | **Anticipated Start Date** | **Start Date** | **End Date** | **Proposed Duration** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CRO10005** | **Mr. KASABASIC, Mladen** | **2010-02-01** | **2010-07-27 a** | **GFR** | **I**  | **2010-08-09 a** | **2010-08-30** | **2010-08-30** | **2010-09-29** | **00/100** |
| TC Field: | Radiation Medicine and Health(6A)(CRO10005) |
| Training: | training in the following 3D TPSCT SimulationCorformal 3D radiotherapyMLCQAThe training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy(CRO6008). |
| Host Institute(s): | Technische Universität Dresden; Universitätsklinikum Carl Gustav Carus Dresden, Dresden |

**Scientific Visits**

| **No** | **Name** | **Nominated** | **Awarded:aNon-awarded:nWithdrawn:w** | **Host Country** | **Type** | **Proposed:pAccepted:aRejected:r** | **Anticipated Start Date** | **Start Date** | **End Date** | **Proposed Duration** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CRO09007** | **Ms. BEGOVIC, Nives** | **2009-04-03** | **2009-06-09 a** | **BEL** | **I**  | **2009-10-29 a** | **2010-01-11** | **2010-01-11** | **2010-01-15** | **00/7** |
| TC Field: | Radiation Medicine and Health(6A)(CRO09007) |
| Training: | Setting up and implementation of a QA/QC program in the radiotherapy department.The training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy(CRO6008). |
| Host Institute(s): | Université Catholique de Louvain; Faculté de médecine; Cliniques Universitaires St. Luc (CUSL), Bruxelles |
| **CRO09008** | **Ms. PAVLOVIC-RUZIC, Ira** | **2009-04-03** | **2009-06-09 a** | **BEL** | **I**  | **2009-10-29 a** | **2010-01-11** | **2010-01-11** | **2010-01-15** | **00/7** |
| TC Field: | Radiation Medicine and Health(6A)(CRO09008) |
| Training: | Setting up and implementation of a QA/QC program in the radiotherapy department.The training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy(CRO6008). |
| Host Institute(s): | Université Catholique de Louvain; Faculté de médecine; Cliniques Universitaires St. Luc (CUSL), Bruxelles |
| **CRO09009** | **Ms. SMILOVIC RADOJCIC, Deni** | **2009-04-08** | **2009-06-09 a** | **BEL** | **I**  | **2009-10-29 a** | **2010-01-11** | **2010-01-11** | **2010-01-15** | **00/7** |
| TC Field: | Radiation Medicine and Health(6A)(CRO09009) |
| Training: | Setting up and implementation of a QA/QC program in the radiotherapy department.The training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy(CRO6008). |
| Host Institute(s): | Université Catholique de Louvain; Faculté de médecine; Cliniques Universitaires St. Luc (CUSL), Bruxelles |
| **CRO09010** | **Mr. FAJ, Dario** | **2009-04-09** | **2009-06-16 a** | **BEL** | **I**  | **2009-10-29 a** | **2010-02-22** | **2010-02-22** | **2010-02-26** | **00/7** |
| TC Field: | Radiation Medicine and Health(6A)(CRO09010) |
| Training: | Setting up and implementation of a QA/QC program in the radiotherapy department.The training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy(CRO6008). |
| Host Institute(s): | Université Catholique de Louvain; Faculté de médecine; Cliniques Universitaires St. Luc (CUSL), Bruxelles |
| **CRO09011** | **Ms. KOTROMANOVIC, Zdenka** | **2009-04-09** | **2009-06-16 a** | **BEL** | **I**  | **2009-10-29 a** | **2010-02-22** | **2010-02-22** | **2010-02-26** | **00/7** |
| TC Field: | Radiation Medicine and Health(6A)(CRO09011) |
| Training: | Setting up and implementation of a QA/QC program in the radiotherapy department.The training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy(CRO6008). |
| Host Institute(s): | Université Catholique de Louvain; Faculté de médecine; Cliniques Universitaires St. Luc (CUSL), Bruxelles |
| **CRO09012** | **Ms. POPARIC, Andrea** | **2009-04-09** | **2009-11-17 w** | **BEL** | **I**  | **2009-10-29 a** |  |  |  | **00/7** |
| TC Field: | Radiation Medicine and Health(6A)(CRO09012) |
| Training: | Setting up and implementation of a QA/QC program in the radiotherapy department.The training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy(CRO6008). |
| Host Institute(s): | Université Catholique de Louvain; Faculté de médecine; Cliniques Universitaires St. Luc (CUSL), Bruxelles |
| **CRO10004** | **Mr. KOKIC, Ivan** | **2009-11-16** | **2009-11-20 a** | **BEL** | **I**  | **2010-01-15 a** | **2010-02-22** | **2010-02-22** | **2010-02-26** | **00/7** |
| TC Field: | Radiation Medicine and Health(6A)(CRO10004) |
| Training: | Setting up and implementation of a QA/QC program in the radiotherapy department.The training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy(CRO6008). |
| Host Institute(s): | Université Catholique de Louvain; Faculté de médecine; Cliniques Universitaires St. Luc (CUSL), Bruxelles |
| **CRO10009** | **Mr. JURKOVIC, Slaven** | **2010-06-09** | **2010-07-07 a** | **SLO** | **I**  | **2010-07-13 a** | **2010-07-26** | **2010-07-26** | **2010-07-30** | **00/7** |
| TC Field: | Radiation Metrology and Dosimetry(6F)(CRO10009) |
| Training: | The SV should cover the following:- having the opportunity to compare the existing protocols of the University Hospital Rijeka with clinically proven protocols in an established radiotherapy department- getting the tools to update and improve the existing protocols on QA/QC programme at the radiotherapy department of the University Hospital Rijeka- to learn about design and a practical implementation of QA programme in an advanced radiotherapy departmentsThe training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy(CRO6008). |
| Host Institute(s): | Institute of Oncology Ljubljana, Ljubljana |
| **CRO11008** | **Ms. SVABIC, Manda** | **2011-01-24** | **2011-05-18 a** | **ITA** | **I**  | **2011-05-23 a** | **2011-06-06** | **2011-06-06** | **2011-06-17** | **00/14** |
| TC Field: | Radiation Metrology and Dosimetry(6F)(CRO11008) |
| Training: | The training should focus on QA/QC of the medical physics aspects of radiotherapy treatment process from treatment preparation to delivery with special emphasis on commissioning of tratment machines and their implementation in clinical practice. In addition to equipment related QA, the training should involve patient specific QA, including independent MU calculation, treatment plan verification and in vivo dosimetry in advanced clinic setting.The training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy (Oracle Project Number:2060119)(CRO6008). |
| Host Institute(s): | Azienda Ospedaliera Santa Maria della Misericordia, Udine |

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| **Training Courses** |

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| **Equipment** |
| **WP** | **PO Num** | **Total Value** | **Order Date** | **Status** | **Vendor Name** | **Vendor Location** |
| **Item** | **Quantity** | **Unit** | **Item Description** | **Planed Shipping Date** | **Actual Shipping Date** | **Delivery Date** |
|  |
|  | 201206644 |  | 2012/12/18 | APPROVED | IBA DOSIMETRY GmbH |  |
| 1 | .563804173354735 | lot | 1 x BS21-000 OmniPro I'mRT advanced acquisition and analysis software for plan verification EUR8,274.00 | 2013/02/19 |  |  |
| 1 | .436195826645265 | lot | 1 x BS21-000 OmniPro I'mRT advanced acquisition and analysis software for plan verification EUR8,274.00 | 2013/02/19 |  |  |
|  |
|  | 201206034 |  | 2012/11/27 | APPROVED | IBA DOSIMETRY GmbH |  |
| 1 | 1 | each | - 1 x BS61-000 I'mRT MatriXX incl. OmniPro I'mRT software latest version (film option panel included) EUR24,632.00 | 2013/02/20 | 2013/03/11 | 2013/04/23 |
| 2 | 1 | lot | Installation and application training of operating staff on site for max. 2 working days EUR2,000.00 | 2013/02/20 | 2013/04/23 | 2013/04/23 |
|  |
|  | 201200182 |  | 2012/01/20 | APPROVED | CIRS Inc. |  |
| 1 | .9667164 | lot | CIRS Phantom and accessoties as per enclosed offer 5944-2 | 2012/11/17 | 2012/10/29 | 2013/10/03 |
| 1 | .0332836 | lot | CIRS Phantom and accessoties as per enclosed offer 5944-2 | 2012/11/17 | 2012/10/29 | 2013/10/03 |
|  |
|  | 201206729 |  | 2012/12/19 | APPROVED | ELIMPEX Medizintechnik Ges.m.b.H. |  |
| 1 | .563804173354735 | each | - 1 x E111900 Gafchromic EBT Suite including: | 2013/02/19 | 2013/04/29 | 2014/01/13 |
| 1 | .436195826645265 | each | - 1 x E111900 Gafchromic EBT Suite including: | 2013/02/19 | 2013/04/29 | 2014/01/13 |
| **Sub-contracts** |
| **WP** | **PO Num** | **Total Value** | **Order Date** | **Status** | **Vendor Name** | **Vendor Location** |
| **Item** | **Quantity** | **Unit** | **Item Description** | **Planed Shipping Date** | **Actual Shipping Date** | **Delivery Date** |
| **Training Courses** |
| **WP** | **PO Num** | **Total Value** | **Order Date** | **Status** | **Vendor Name** | **Vendor Location** |
| **Item** | **Quantity** | **Unit** | **Item Description** | **Planed Shipping Date** | **Actual Shipping Date** | **Delivery Date** |
| **Others** |
| **WP** | **PO Num** | **Total Value** | **Order Date** | **Status** | **Vendor Name** | **Vendor Location** |
| **Item** | **Quantity** | **Unit** | **Item Description** | **Planed Shipping Date** | **Actual Shipping Date** | **Delivery Date** |
|  |
|  | 200994200 |  | 2011/01/26 | APPROVED | Cliniques Universitaires St. Luc (CUSL) |  |
| 1 | 500 | each | Training Fee | 2010/12/31 |  |  |
|  |
|  | 200994207 |  | 2011/01/26 | APPROVED | Cliniques Universitaires St. Luc (CUSL) |  |
| 1 | 500 | each | Training Fee | 2010/12/31 |  |  |
|  |
|  | 201080651 |  | 2011/01/26 | APPROVED | Cliniques Universitaires St. Luc (CUSL) |  |
| 1 | 500 | each | Training Fee | 2010/12/31 |  |  |
|  |
|  | 201080654 |  | 2011/01/26 | APPROVED | Cliniques Universitaires St. Luc (CUSL) |  |
| 1 | 500 | each | Training Fee | 2010/12/31 |  |  |
|  |
|  | FTS-4155 |  | 2011/05/31 | APPROVED | SVABIC, Ms Manda |  |
| 1 | 1816 | each | 429216|SVABIC, Ms. Manda|Staff|DSA: ITA(Udine), 5 -18 June 2011, 13 nights @ $196=$2548=EUR 1781, Exch Rate: 0.699000000953674 Contingency, 1 country, $50 |  |  |  |
| 2 | 42 | each | 429216|SVABIC, Ms. Manda|Staff|Other (Mileage: 150km x 2 x .02c) |  |  |  |
|  |
|  | 201080657 |  | 2011/01/26 | APPROVED | Cliniques Universitaires St. Luc (CUSL) |  |
| 1 | 500 | each | Training Fee | 2010/12/31 |  |  |
|  |
|  | FTS-4156 |  | 2011/05/31 | APPROVED | Abdus Salam International Centre for Theoretical Physics (ICTP) |  |
| 1 | 600 | each | 429216|SVABIC, Ms. Manda|Staff|SVABIC, Ma (Training Non Staff Management and Placement Fee) |  |  |  |
| 2 | 500 | each | 429216|SVABIC, Ms. Manda|Staff|SVABIC, Ma (Training Non Staff Tuition) |  |  |  |
|  |
|  | FTS-35626 |  | 2014/01/30 | APPROVED | Cliniques Universitaires St. Luc; Service de radiothérapie oncologique |  |
| 1 | 500 | each | PartyNumber:206860|KOKIC, MR.. Ivan |Non Staff |  |  |  |
|  |
|  | 200994227 |  | 2011/01/26 | APPROVED | Cliniques Universitaires St. Luc (CUSL) |  |
| 1 | 500 | each | Training Fee | 2010/12/31 |  |  |
|  |
|  | FTS-35634 |  | 2014/01/30 | APPROVED | Cliniques Universitaires St. Luc; Service de radiothérapie oncologique |  |
| 1 | 2500 | each | PartyNumber:206860|KOKIC, MR.. Ivan |Non Staff |  |  |  |