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| **Project Title** | **Developing a Quality Assurance and Quality Control Programme for the Clinical Use of Advanced Radiotherapy Techniques** | | | | |
| **Oracle Project Number** | 2061227 | | | | |
| **Objectives** | To improve radiation safety of patients by establishing mechanisms and methodologies for the implementation of QA/QC for advanced radiation therapy techniques in clinical use in Croatian radiotherapy centres. | | | | |
| **General Project Data** | | |
| **Field(s)** | | (29) Dosimetry and medical physics | | | |
| **Project Achievements** | | Background: The main objective of the project was to continue to improve the safety and quality of radiotherapy for cancer patients by establishing mechanisms and methodologies for the implementation of QA/QC for advanced radiation therapy techniques in clinical use in Croatian radiotherapy centres. CRO/6/012 is the logical follow up project to two previous projects (CRO/6/008, 2009-2011) and CRO/6/010, 2012-2013). In CRO/6/008, QA/QC programmes between two hospitals were upgraded and harmonized while the main objective of the second project (CRO/6/010, 2012-2013) was the expansion of good QA/QC practice at the national level. CRO/6/012 allowed for the further development of the QA/QC programme in radiotherapy regarding the use of advanced radiation therapy techniques. Again, by developing and harmonizing QA/QC systems in the two radiotherapy departments in University Hospitals of Osijek and Rijeka this project helped to upgrade QA/QC programme in radiotherapy at the national level, including the implementation of advance radiotherapy techniques. The experience and mechanisms from the past projects were of great importance in implementation of this project.  Outputs: CRO/6/012 supported targeted human capacity building activities, such as scientific visits. The aims of the five scientific visits were i). to learn details of the organization of the Medical Physics Department with particular emphasis on IMRT/VMAT treatment planning, dosimetry and quality assurance and ii) to learn of a mature IMRT program at an advanced radiotherapy facility. In particular, medical physics aspects of IMRT including treatment planning, dosimetry and quality assurance were covered. Two local staff attended a radiobiology & radiobiological modelling in radiotherapy course in 2015 to enhance their training in radiotherapy treatment planning. In the scope of the project, equipment was procured for Quality Control/ Quality Assurance (QA/QC), namely a dosimeter array for static IMRT QA. As well, textbooks procured under the project helped support establishment of QC practices, and finally the upgrade procured for the department’s 3D Treatment Planning System (TPS) with additional workstation in University Hospital of Rijeka assisted in the implementation of advanced radiotherapy for safe and effective treatments. At the local level, QA/QC protocols for advanced radiotherapy were developed and implemented at the University Hospitals of Osijek and Rijeka which can be adopted at the national level.  Outcome: A harmonized QA/QC system was established in the radiotherapy departments of two major regional hospitals in Croatia (in Osijek and Rijeka) under the project. The QA/QC system provided a pathway for the establishment of the necessary conditions for the clinical use of advanced radiation therapy techniques for advanced radiation therapy techniques in Croatian radiotherapy departments. | | | |
| **ACC Sector** | |  | | **Project Status** | Completed on 2016-05-12 | |
| **Original Funding** | | Core | | **1st Year Of Approval** | 2014 | |
| **Estimated Duration** | | 2 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)** | HEALY, Brendan James | |  | 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; (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** |
| 2014 | 0.00 | 0.00 | 10,800.00 | 14,400.00 | | | 0.00 | 25,200.00 | 36,600.00 | 0.00 | 0.00 | 36,600.00 | 61,800.00 |
| 2015 | 0.00 | 10,000.00 | 0.00 | 0.00 | | | 0.00 | 10,000.00 | 35,000.00 | 0.00 | 0.00 | 35,000.00 | 45,000.00 |

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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)** |  |
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**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** | **To attend Radiobiology & radiobiological modelling in radiotherapy course 2015** | | | | | | | | **Field: 29** | |
|  | **Mission 01** JD Submitted: 2014-11-24 | | | | | | | | | |
|  | Duty Station : Wirral( UK ) | | | | | | | | | |
|  | MLINARIC, Mihaela | CRO | 2015-02-12 |  |  | 2015-03-22 | 2015-03-26 | 4 | |  | |
|  | MRCELA, Iva | CRO | 2015-02-12 |  |  | 2015-03-22 | 2015-03-26 | 4 | |  | |

**Fellowships**

| **No** | **Name** | **Nominated** | **Awarded:a Non-awarded:n Withdrawn:w** | **Host Country** | **Type** | **Proposed:p Accepted:a Rejected:r** | **Anticipated Start Date** | **Start Date** | **End Date** | **Proposed Duration** |
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**Scientific Visits**

| **No** | **Name** | | **Nominated** | **Awarded:a Non-awarded:n Withdrawn:w** | **Host Country** | **Type** | **Proposed:p Accepted:a Rejected:r** | **Anticipated Start Date** | **Start Date** | **End Date** | **Proposed Duration** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CRO14010** | **Mr. FAJ, Dario** | | **2014-12-04** | **2015-03-26 a** | **ITA** | **I** | **2015-05-27 a** | **2015-09-14** | **2015-09-14** | **2015-09-25** | **00/14** |
| TC Field: | | Radiation Medicine and Health(6A)(CRO14010) | | | | | | | | | | |
| Training: | | Details of the organization of the Medical Physics Department with particular emphasis on IMRT/VMAT treatment planning, dosimetry and quality assurance.  The training requested is related to the IAEA's TC project entitled: Developing a Quality Assurance and Quality Control Programme for the Clinical Use of Advanced Radiotherapy Techniques (Oracle Project Number:2061227)(CRO6012). | | | | | | | | | | |
| Host Institute(s): | | Fondazione Poliambulanza Istituto Ospedaliero, Brescia | | | | | | | | | | |
| **CRO14011** | **Mr. JURKOVIC, Slaven** | | **2014-12-08** | **2015-03-26 a** | **ITA** | **I** | **2015-05-27 a** | **2015-09-14** | **2015-09-14** | **2015-09-25** | **00/14** |
| TC Field: | | Radiation Medicine and Health(6A)(CRO14011) | | | | | | | | | | |
| Training: | | Details of the organization of the Medical Physics Department with particular emphasis on IMRT/VMAT treatment planning, dosimetry and quality assurance.  The training requested is related to the IAEA's TC project entitled: Developing a Quality Assurance and Quality Control Programme for the Clinical Use of Advanced Radiotherapy Techniques (Oracle Project Number:2061227)(CRO6012). | | | | | | | | | | |
| Host Institute(s): | | Fondazione Poliambulanza Istituto Ospedaliero, Brescia | | | | | | | | | | |
| **CRO15003** | **Ms. IVKOVIC, Ana** | | **2015-06-19** | **2015-07-01 a** | **ITA** | **I** | **2015-08-06 a** | **2015-10-12** | **2015-10-12** | **2015-10-16** | **00/7** |
| TC Field: | | Radiation Metrology and Dosimetry(6F)(CRO15003) | | | | | | | | | | |
| Training: | | Scientific visit to learn of a mature IMRT program at an advanced radiotherapy facility. In particular, medical physics aspects of IMRT including treatment planning, dosimetry and quality assurance.  The training requested is related to the IAEA's TC project entitled: Developing a Quality Assurance and Quality Control Programme for the Clinical Use of Advanced Radiotherapy Techniques (Oracle Project Number:2061227)(CRO6012). | | | | | | | | | | |
| Host Institute(s): | | Istituto Europeo di Oncologia (IEO), Milano | | | | | | | | | | |
| **CRO15006** | **Ms. SVABIC KOLACIO, Manda** | | **2015-06-25** | **2015-07-09 a** | **SWE** | **I** | **2015-07-30 a** | **2015-09-28** | **2015-09-28** | **2015-10-02** | **00/7** |
| TC Field: | | Radiation Metrology and Dosimetry(6F)(CRO15006) | | | | | | | | | | |
| Training: | | Scientific visit to learn of a mature IMRT program at an advanced radiotherapy facility. In particular, medical physics aspects of IMRT including treatment planning, dosimetry and quality assurance.  The training requested is related to the IAEA's TC project entitled: Developing a Quality Assurance and Quality Control Programme for the Clinical Use of Advanced Radiotherapy Techniques (Oracle Project Number:2061227)(CRO6012). | | | | | | | | | | |
| Host Institute(s): | | Karolinska University Hospital, Stockholm | | | | | | | | | | |
| **CRO15007** | **Ms. SMILOVIC RADOJCIC, Deni** | | **2015-06-30** | **2015-10-05 a** | **SLO** | **I** | **2015-12-02 a** | **2016-01-11** | **2016-01-11** | **2016-01-15** | **00/7** |
| TC Field: | | Radiation Metrology and Dosimetry(6F)(CRO15007) | | | | | | | | | | |
| Training: | | Scientific visit to learn of a mature IMRT program at an advanced radiotherapy facility. In particular, medical physics aspects of IMRT including treatment planning, dosimetry and quality assurance.  The training requested is related to the IAEA's TC project entitled: Developing a Quality Assurance and Quality Control Programme for the Clinical Use of Advanced Radiotherapy Techniques (Oracle Project Number:2061227)(CRO6012). | | | | | | | | | | |
| Host Institute(s): | | Institute of Oncology Ljubljana, Ljubljana | | | | | | | | | | |

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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** |
|  | | | | |
|  | 201500240 | | |  | | 2015/01/23 | | APPROVED | Elekta GmbH |  | | |
| 1 | .305631578947369 | each | Upgrade to Radiotherapy Treatment Planning System. As per offer 2014-78462-ML-IAEA. Excluding C#92567 and C#92565 and Pos. 2 Option. | | | | | | | | 2015/04/25 | 2015/03/02 | | 2015/05/12 |
| 1 | .273315789473684 | each | Upgrade to Radiotherapy Treatment Planning System. As per offer 2014-78462-ML-IAEA. Excluding C#92567 and C#92565 and Pos. 2 Option. | | | | | | | | 2015/04/25 | 2015/03/02 | | 2015/05/12 |
| 1 | .421052631578947 | each | Upgrade to Radiotherapy Treatment Planning System. As per offer 2014-78462-ML-IAEA. Excluding C#92567 and C#92565 and Pos. 2 Option. | | | | | | | | 2015/04/25 | 2015/03/02 | | 2015/05/12 |
| 2 | .3 | each | Services: as per offer 2014-78462-ML-IAEA. C#94507 On-Site Installation, Service or Systems Administration and C#92569 4 Days On-Site Customized Support (customer facility). | | | | | | | | 2015/05/25 | 2016/04/22 | | 2016/04/22 |
| 2 | .7 | each | Services: as per offer 2014-78462-ML-IAEA. C#94507 On-Site Installation, Service or Systems Administration and C#92569 4 Days On-Site Customized Support (customer facility). | | | | | | | | 2015/05/25 | 2016/04/22 | | 2016/04/22 |
| 3 | 1 | each | Services: Customized training 2 x 5 days of on-site support. As per offer 2014-78462A-ML-IAEA On-Site training | | | | | | | | 2015/05/30 | 2016/04/22 | | 2016/04/22 |
|  | | | | |
|  | 201502998 | | |  | | 2015/07/20 | | APPROVED | International Electrotechnical Commission (IEC) |  | | |
| 1 | 1 | each | IEC 60731:2011 Book: Medical electrical equipment - Dosimeter with ionization chambers as used in radiotherapy | | | | | | | | 2015/07/20 | 2016/02/26 | | 2016/02/26 |
| 2 | 1 | each | IEC 60601-2-1:2009+AMD1:2014 CSV Book: Medical electric equipment - Part 2-1 Particular reqs for the basic safety and essential performance of electron accelerators | | | | | | | | 2015/07/20 | 2016/02/26 | | 2016/02/26 |
|  | | | | |
|  | 201503016 | | |  | | 2015/07/20 | | APPROVED | International Electrotechnical Commission (IEC) |  | | |
| 1 | 1 | each | IEC 60731:2011 Book: Medical electrical equipment - Dosimeter with ionization chambers as used in radiotherapy | | | | | | | | 2015/07/20 | 2016/02/26 | | 2016/02/26 |
| 2 | 1 | each | IEC 60601-2-1:2009+AMD1:2014 CSV Book: Medical electric equipment - Part 2-1 Particular reqs for the basic safety and essential performance of electron accelerators | | | | | | | | 2015/07/20 | 2016/02/26 | | 2016/02/26 |
|  | | | | |
|  | 201403708 | | |  | | 2014/08/07 | | APPROVED | IBA DOSIMETRY GmbH |  | | |
| 1 | 1 | each | Dosimeter Array for static IMRT ETC, CONSISTING:- | | | | | | | | 2014/10/06 | 2014/10/01 | | 2014/10/24 |
| **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** |
|  | | | | |
|  | EMS-48317 | | |  | | 2015/02/17 | | APPROVED | MRCELA, Ms Iva |  | | |
| 1 | 972.64 | each | SupplierNumber:35985|MRCELA, Ms. Iva |Non Staff | | | | | | | |  |  | |  |
|  | | | | |
|  | EMS-48410 | | |  | | 2015/02/18 | | APPROVED | MRCELA, Ms Iva |  | | |
| 1 | 1153.36 | each | SupplierNumber:35985|MRCELA, Ms. Iva |Non Staff | | | | | | | |  |  | |  |
|  | | | | |
|  | FTS-64649 | | |  | | 2015/11/30 | | APPROVED | Abdus Salam International Centre for Theoretical Physics (ICTP) |  | | |
| 1 | 600 | each | SupplierNumber:31485|FAJ, Mr. Dario |Non Staff | | | | | | | |  |  | |  |
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|  | FTS-65142 | | |  | | 2015/12/14 | | APPROVED | SMILOVIC RADOJCIC, Ms Deni |  | | |
| 1 | 1609 | each | SupplierNumber:37828|SMILOVIC RADOJCIC, Ms. Deni |Non Staff | | | | | | | |  |  | |  |
| 2 | 60 | each | SupplierNumber:37828|SMILOVIC RADOJCIC, Ms. Deni |Non Staff | | | | | | | |  |  | |  |
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|  | FTS-65217 | | |  | | 2015/12/16 | | APPROVED | JURKOVIC, Mr Slaven |  | | |
| 1 | 60 | each | SupplierNumber:17636|JURKOVIC, Mr. Slaven |Non Staff | | | | | | | |  |  | |  |
|  | | | | |
|  | EMS-48315 | | |  | | 2015/02/17 | | APPROVED | Clatterbridge Cancer Centre |  | | |
| 1 | 1000 | each | PartyNumber:614805|Clatterbridge Cancer Centre|Non Staff | | | | | | | |  |  | |  |
|  | | | | |
|  | FTS-53042 | | |  | | 2015/08/06 | | APPROVED | Fondazione Poliambulanza Istituto Ospedaliero |  | | |
| 1 | 450 | each | SupplierNumber:17636|JURKOVIC, Mr. Slaven |Non Staff | | | | | | | |  |  | |  |
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|  | FTS-65143 | | |  | | 2015/12/14 | | APPROVED | Institute of Oncology Ljubljana |  | | |
| 1 | 400 | each | SupplierNumber:37828|SMILOVIC RADOJCIC, Ms. Deni |Non Staff | | | | | | | |  |  | |  |
|  | | | | |
|  | EMS-48316 | | |  | | 2015/02/17 | | APPROVED | MLINARIC, Ms Mihaela |  | | |
| 1 | 2126 | each | SupplierNumber:54197|MLINARIC, Ms. Mihaela |Non Staff | | | | | | | |  |  | |  |
|  | | | | |
|  | FTS-53041 | | |  | | 2015/08/06 | | APPROVED | JURKOVIC, Mr Slaven |  | | |
| 1 | 2086 | each | SupplierNumber:17636|JURKOVIC, Mr. Slaven |Non Staff | | | | | | | |  |  | |  |
|  | | | | |
|  | A1510959-1525EUR | | |  | | 2015/08/28 | | APPROVED | American Express Services Europe Limited, Niederlassung Wien |  | | |
| 1 | 925.76 | each | 15ST10959|974225|SVABIC KOLACIO, MS MANDA|Rijeka/Zagreb (CRO) - Stockholm (SWE) | | | | | | | |  |  | |  |
|  | | | | |
|  | FTS-53650 | | |  | | 2015/08/28 | | APPROVED | Karolinska University Hospital |  | | |
| 1 | 1000 | each | SupplierNumber:86299|SVABIC KOLACIO, Ms. Manda |Non Staff | | | | | | | |  |  | |  |
|  | | | | |
|  | FTS-57172 | | |  | | 2015/09/15 | | APPROVED | Abdus Salam International Centre for Theoretical Physics (ICTP) |  | | |
| 1 | 600 | each | SupplierNumber:47651|IVKOVIC, Ms. Ana |Non Staff | | | | | | | |  |  | |  |
|  | | | | |
|  | FTS-60006 | | |  | | 2015/10/23 | | APPROVED | Abdus Salam International Centre for Theoretical Physics (ICTP) |  | | |
| 1 | 600 | each | SupplierNumber:17636|JURKOVIC, Mr. Slaven |Non Staff | | | | | | | |  |  | |  |
|  | | | | |
|  | FTS-65545 | | |  | | 2016/01/19 | | APPROVED | Abdus Salam International Centre for Theoretical Physics (ICTP) |  | | |
| 1 | 450 | each | SupplierNumber:31485|FAJ, Mr. Dario |Non Staff | | | | | | | |  |  | |  |
|  | | | | |
|  | A1513727-1525EUR | | |  | | 2015/09/15 | | APPROVED | American Express Services Europe Limited, Niederlassung Wien |  | | |
| 1 | 681.55 | each | 15ST13727|576135|IVKOVIC, MS ANA|Zagreb (CRO) - Milano (ITA) - Zagreb ( | | | | | | | |  |  | |  |
|  | | | | |
|  | FTS-53649 | | |  | | 2015/08/28 | | APPROVED | SVABIC KOLACIO, Ms Manda |  | | |
| 1 | 2207 | each | SupplierNumber:86299|SVABIC KOLACIO, Ms. Manda |Non Staff | | | | | | | |  |  | |  |
| 2 | 100 | each | SupplierNumber:86299|SVABIC KOLACIO, Ms. Manda |Non Staff | | | | | | | |  |  | |  |
|  | | | | |
|  | FTS-57171 | | |  | | 2015/09/15 | | APPROVED | IVKOVIC, Ms Ana |  | | |
| 1 | 284 | each | SupplierNumber:47651|IVKOVIC, Ms. Ana |Non Staff | | | | | | | |  |  | |  |
| 2 | 1134 | each | SupplierNumber:47651|IVKOVIC, Ms. Ana |Non Staff | | | | | | | |  |  | |  |
| 3 | 384 | each | SupplierNumber:47651|IVKOVIC, Ms. Ana |Non Staff | | | | | | | |  |  | |  |
|  | | | | |
|  | 201505148 | | |  | | 2015/11/04 | | APPROVED | DHL Express (Austria) GmbH |  | | |
| 1 | 1 | lot | Shipment of books under TC Project Croatia 6012 | | | | | | | | 2015/11/24 | 2015/11/05 | | 2015/11/05 |
|  | | | | |
|  | FTS-52127 | | |  | | 2015/06/25 | | APPROVED | FAJ, Mr Dario |  | | |
| 1 | 2086 | each | SupplierNumber:31485|FAJ, Mr. Dario |Non Staff | | | | | | | |  |  | |  |
|  | | | | |
|  | FTS-53032 | | |  | | 2015/08/06 | | APPROVED | Fondazione Poliambulanza Istituto Ospedaliero |  | | |
| 1 | 450 | each | SupplierNumber:31485|FAJ, Mr. Dario |Non Staff | | | | | | | |  |  | |  |
|  | | | | |
|  | FTS-60005 | | |  | | 2015/10/23 | | APPROVED | Fondazione Poliambulanza Istituto Ospedaliero |  | | |
| 1 | 600 | each | SupplierNumber:31485|FAJ, Mr. Dario |Non Staff | | | | | | | |  |  | |  |
|  | | | | |
|  | FTS-65546 | | |  | | 2016/01/19 | | APPROVED | Abdus Salam International Centre for Theoretical Physics (ICTP) |  | | |
| 1 | 450 | each | SupplierNumber:17636|JURKOVIC, Mr. Slaven |Non Staff | | | | | | | |  |  | |  |