

Summary Statement of Competencies Claimed		
Competency element	How and where demonstrated	Paragraph reference in Career Episode
PE1.1	To make the design of the signal system “DBO”, I started by understanding the basic principles of functioning and the requirements demanded by the Operation Department of The Metro about this new device. To start the design, first I identified the input and output signals that give the logic to the system.	CE1.3/4
PE1.2	In the design of the “DBO System”, after understanding the requirements of the client, it was necessary to select the appropriate controller device to manage the logic of the DBO. In the Network Failure I had to make a research to identify the nature of the problem and the reason why the network switch was not working properly anymore. This research let me base in theory my proposal of the solution showed to the Equipment Department.	CE1.5, CE2.8
PE1.3	After making the design of the DBO system and before starting the installation phase, I did several tests of the DBO. To do that I built a test platform in a laboratory to simulate each signal and to verify that the functioning of the DBO was as expected. In the commissioning and test of the Auxiliary System, when developing the Data Base and the images of the MMI of each subsystem I have to manipulate codes and to use computer tools such as “Animator” or “Oracle”; and later I test the software developed in a simulation platform in an UNIX server.	CE1.7, CE3.4/7
PE1.4	As engineer and with my work experience I have gotten a global view about how important is to plan the activities without disturbing the Metro system. Any disturbance or just a little mistake can affect this transport system which moves thousands of people everyday. All the experienced acquired by the time taught me that engineers not only has to take care about specific technical issues, but also they have to be aware of how failures in the equipments can affect people and the dynamic in the city.	CE1.11
PE2.1	In the Network Failure I had to make some assumptions in order to identify the origin of the problem. In first place I assumed that the problem radicated in the common device that share all the SCADA equipments; and after making some test I could achieve the solution by changing the network switch by another one more powerful. In the commissioning of the Auxiliary System it was necessary to investigate the behavior of some Auxiliary devices that were generating alarms. This behavior was causing that the Data Base was filling up very quickly with events that are not so relevant for the Metro.	CE2.5, CE3.4

<p>PE2.2</p>	<p>In the design and installation work of the “DBO System” I had to interact with people of other disciplines, such as the Inspectors of the Operation Department in order to understand their requirements, The Technical Personnel of Installation to organize the installation activities, The Personnel of Central Management to make the connection between the new system and the Chronometry. In the Network Failure, I could really realize the big importance of the continuous operability of the SCADA because of the role of The Metro in the city. Also, to solve this failure there was necessary to make a work team from different areas to guarantee experience in Telecommunication and in Central Management at the same time. In the Commissioning and Test of the Auxiliary system I always had to interact with people from three different areas (the specialist in the auxiliary system and the inspector of Metro).</p>	<p>CE1.3/4/9/10/11, CE2.3/6, CE3.3/5/6</p>
<p>PE2.3</p>	<p>After a while of having some Auxiliary Systems in operational performance, I identified certain behavior that let me make corrections in the Data Base in order to improve the SCADA. With these equipments in real service I could see that a lot of non important variables or not priority alarms were generating continuously and the Data Base was filling up very quickly; this behavior was not detected in the test process but later as I received the feedback from real service I could make the cleaning of the Data Base.</p>	<p>CE3.8</p>
<p>PE2.4</p>	<p>I used technical considerations to design the DBO system using the proper PLC as the controller device and I left the possibility for further improvements if Metro decides to substitute the old Chronometry system to be managed by the same PLC of the DBO. In the Network Failure, whit the solution achieved and with the network switch chosen there is the guarantee that the network functionality has been improved. With the Point to Point tests made to the Auxiliary system I prepared documents to verify the performance of the systems and with the notes made by the Inspector of Metro I took corrective actions.</p>	<p>CE1.6/13, CE2.7, CE3.6</p>
<p>PE2.5</p>	<p>For the DBO installation activities and to prepare the tests of the SCADA network I organized the work teams. My responsibilities basically were: to organize the activities made by each member of the team, to verify that the activities are done according to a plan or schedule and to test and document the final outcome.</p>	<p>CE1.9, CE2.6</p>
<p>PE2.6</p>	<p>When I had to make a proposal of the new switch to solve the Network Failure and when I had to select the PLC as the controller device of the DBO, I took under consideration several aspects such as costs, budgets and how technical decisions can affect the financial of a project.</p>	<p>CE1.5, CE2.9</p>

PE3.1	After making a research about the nature of the Network Failure, I made a technical proposal that I presented later to a technical audience formed by the inspectors of the Equipment Department of the Metro in order to show them several actions that would be part of the solution of the Network Failure and its future maintenance.	CE2.9
PE3.2	To test the Auxiliary System I made documents using computer-based word-processing packages in order to follow the tests with order. After that, I made a report of the failures founded in an administration software called "ClearQuest" to take correctives actions and to update the current state of each failure.	CE3.5/7
PE3.3	Developing the interfaces to control and supervise the Auxiliary System, I had to discuss with engineers and professionals of other fields who explained to me how their equipments work. When understanding the Network Failure, I had to discuss with telecommunication engineers to better understand the network dynamic and how a switch works.	CE3.3, CE2.6
PE3.4	In the design of the DBO system I used The International Standard of Automation Programming Language IEC-61131 to program the PLC under the language "Function Block Diagram - FBD" and "Instruction List - IL". Also, I used INPSASEL norms to establish the safety aspects in the installation activities of the DBO in the Stations of the Metro.	CE1.5/6/11
PE3.5	I have to communicate frequently with people from other departments such as the Operation Department to test the different systems that manage the SCADA. When the DBO system was installed I had to meet and communicate with the inspectors of Metro to test and validate the system.	CE1.9/12
PE3.6	In the Network Failure I had to seek advice and to research by my own to enlarge my knowledge in the network area in order to find out a proper solution. At the end of the experienced of making the different tests of the Auxiliary systems I realized that there were so much to learn about SCADA, and that's the reason I decided to take a Post grade about this subject.	CE2.10, CE3.9
PE3.7	When I made the tests with the Inspector of Metro I always have to prepare myself previously in a responsible way in order to take care of my professional image and the company's image also. In the case of the Network Failure when I had to present my technical proposal to the Equipment Department of Metro I prepared myself to show a professional image to our client.	CE2.9, CE3.7