

Appendix A

Integration Plan

INTEGRATION PLAN

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1. UV SYSTEM INTEGRATION

1.1 Integration Approach

The new UV System will be integrated into the plant control system in multiple stages. The integration will start after the UV system is constructed and all communication cables are installed. The system should be first tested and running in Local mode, then interface signals will be mapped and integrated into the plant DCS system.

When all the prerequisites have been met (for integrating the UV system), the Contractor will coordinate with City of Winnipeg to provide monitoring and alarm signals to NEWPCC DCS system. The existing UV status signals and alarms will be remapped to provide operation visibility to the new UV system through existing DCS HMI screen. The new UV SCC (System Control Centre) will be terminated to the PCS control network in the existing network panel located in UV control room. The Contractor will coordinate, verify and test the communication between new UV system and the existing DCS.

1.2 Integration Stages

The integration of the new UV system will follow the construction of UV and electrical equipment upgrade, the Contractor will provide a schedule outlining stages based on construction progress, and to coordinate with the City to integrate the UV in the plant DCS.

.1 UV System Construction and Installation:

The Contractor will complete the installation of the UV PDCs (Power Distribution Centres), HSC (Hydraulic System Centre) and SCC by terminating all power, control and communication cabling to energize UV equipment. The new UV system will be commissioned by running the system in Local/Manual mode, all controls and setpoint will be configured through the SCC. The Contractor will coordinate with the UV vendor to commission new installed UVs as an independent system for each UV channels become available. Refer to contract documents for commissioning plan requirements.

.2 Communication with the Plant Network:

The SCC will be connected to the plant PCS control network to NSW-U9110 and NSW-U9210 with two CAT 6 redundant cables, control network switches NSW-U9110 and NSW-U9210 are located in network panel NP-U9000, the Contractor will install communication cables between the SCC and network panel. An additional hardwired total flow signal will be wired from existing UV DCS panel to the SCC, the analog flow signal will be required to control UV system. Refer to design drawings for communication and control cable installation details. Contractor will coordinate with the City to obtain IP addresses and flow analog signal range to configure UV SCC controller.

.3 Commissioning and Testing:

The Contractor will coordinate with the Contract Administrator and the City to integrate status signals and alarms of the new system to existing DCS HMI. Prespecified signals will be mapped and programmed through the PCS control network to the existing DCS system utilizing the available UV HMI screen, to monitor the new UV signal. The Contractor will map the prespecified signals in the SCC controller to be read and communicated to the existing

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DCS system. All interface and programming between DCS and PCS networks will be done by the City, contractor will only map registers in the SCC controller to read on DCS.

The system will be tested and commissioned to include all prespecified signal to DCS UV HMI screens.

2. HVAC AND AUXILIARY SYSTEMS INTERGRATION

2.1 Integration Approach

The UV Upgrade project includes HVAC and other auxiliary devices, which will be connected to the NEWPCC existing DCS and/or PCS systems. All hardwired HVAC and auxiliary system instrumentation will be wired to the existing DCS panel in the UV control room, where the Contractor will provide sufficient cable slack for the future alteration of the newly installed instrumentation during the upcoming DCS migration project. The HVAC and auxiliary systems will not be integrated to the DCS system, nor will they provide any alarms. The Contractor's scope is to provide a connection between field instruments and DCS panel as shown in the design drawings.

All communication cables from the MCC power meters, VFD drives and ground fault protection monitoring systems will be wired to network panel NP-U9000, the Contractor will install a new network switch NSW-U8002 to terminate the communication cables. The Contractor will also provide sufficient slack for the communication cables to move network switch NSW-U8002 (inclusive of all cables from network panel NP-U9000) to the new PLC panel, which will be installed in the future within the control room during the DCS migration project.

2.2 Integration Stages

Once the construction is complete, the Contractor will inform the City to start the integration work of the MCC power meters, VFD drives and ground fault protection monitoring systems into new PCS. The Contractor will also coordinate with the Contract Administrator and the City to integrate the new HMI screens for all devices that are tied to network switch NSW-U8002 (in panel NP-U9000) and to the new PCS. The Contractor to prepare new HMI screens and perform pretest prior to the integration.

.1 SIFT:

System Integration Functional Tests (SIFTs) shall be performed on new HMI screens to verify and conform all mapping addresses and alarms before integrating the systems into the plant PCS. Perform the SIFT as specified.

.2 Contract Administrator Review:

The HMI graphics will be submitted by the Contractor to the Contract Administrator for review. The HMI graphics should be based around the standardized blocks and graphics. Integration of HMI graphics to PCS will not be allowed until the screens have been reviewed with no comment or reviewed as noted.

If the Contractor determines additional standardized blocks or graphics are required while developing the of HMI screens for the systems, the contractor will inform the Contract Administrator of the additional blocks and submit the new standardized components for review.

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.3 Network:

The new network connections and equipment shall be fully set up, configured, and commissioned by the Contractor.

.4 Draft O&M Manual:

The draft copy of the O&M Manuals for the area will be submitted by the Contractor for review and approval. The O&M Manual will be completed with all required information as specified in 01 78 23 and as required throughout the specifications. This version of the O&M Manual will carry a designation of "Draft," as the system has not been integrated and will require to include all changes to be made during the integration.

.5 Commissioning and Testing:

The Contractor will coordinate with the City to upload new HMI screens into the PCS, to establish communication with Area U MCC power meters, VFD drives and ground fault protection monitoring systems. The Contractor will work through the commissioning plan to test status signals and alarms. A commissioning test report will be submitted to the Contract Administrator for review. The Contractor will address all deficiencies prior to handover the HMI screens to the City.

3. HANDOVER

Once the commissioning has successfully been completed and the SCADA controls have been verified to be in working condition, the Contractor will hand over Area U HMI screen to the City.