



**US Army Corps
of Engineers®**

ENGINEERING AND CONSTRUCTION BULLETIN

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Subject: LONWORKS[®], BACnet[®], and Building Automation Systems Planning.

Applicability: Guidance

1. Introduction: This ECB is an update/addendum to ECB 2004-11 "Utility Monitoring & Control Systems (UMCS) and Direct Digital Control (DDC) Criteria Update".

2. Background: UFGS-13801 (Utility Monitoring and Control Systems) and UFGS-15951 (Direct Digital Controls for HVAC and other Local Building Systems), based on ANSI/EIA 709.1 standard data communications protocol and LONWORKS Technology, were released in FY04 to facilitate non-proprietary procurement of building automation systems. ECB 2004-11 announced these specifications and indicated that UFCs to accompany the specifications were in development. ECB-2004-11 also announced that the Navy had begun to develop design and specification criteria based on BACnet standard data communications protocol and the Corps was actively participating in this effort.

3. Purpose: Update on the status and implementation of LonWorks and BACnet design and specification criteria.

4. LonWorks:

a. Implementation details for UFGS-13801 and UFGS-15951 including typical control drawings are available at the ERDC-CERL 'Building Energy Systems and Controls (BESC) web site. It is critical that designs based on the new Guide Specifications use this guidance and drawings since they are a fundamental requirement to obtain an open and non-proprietary system. A 'Points Schedule' drawing is particularly critical in helping to obtain an open and non-proprietary system. The BESC website URL is: <http://www.cecer.army.mil/KD/HVAC/> In the MENU (on the left), click on: "Draft UFC Drawings and Guidance". A partial listing of the website content:

- UMCS DDC System Overview
- Project Implementation Summary (Draft UFC verbiage)
- Control System Drawings Chapter (including 'Points Schedule' instructions)
- Control System Drawings (AutoCAD[®] format and A/E/C CAD Standard 2.0 compliant)
- AutoCAD Drawing User's Guide

b. When UFGS-13801 and UFGS-15951 were released, UFGS-13801A and UFGS-15951A were rescinded. As a result, the design guidance that accompanied the rescinded specifications does not apply to LonWorks designs. Specifically, the following design guidance is not applicable to and should not be used with the new UFGS-13801 and 15951:

- UFC 3-401-01FA (TI 811-12). Design: Utility Monitoring and Control Systems

ECB 2005-17

Subject: LONWORKS[®], BACnet[®], and Building Automation Systems Planning.

- UFC 3-410-02A (TI 810-11). Heating, Ventilating, and Air Conditioning (HVAC) Control Systems

Updated UFCs, to replace the above UFCs are projected for release in early FY06:

- UFC 3-401-01: Utility Monitoring & Control Systems
- UFC 3-401-02: DDC for HVAC & Other Building-Level Controls

c. There is a new UMCS testing specification, UFGS-13810A, Utility Monitoring and Control System Testing, that covers both factory tests and performance verification tests for LONWORKS[®] based systems. Final release and publication of this specification is pending until the Navy and Air Force complete their review.

5. BACnet: There is no BACnet UFGS. The Navy is developing their own BACnet specification but it does not require a non-proprietary implementation of the BACnet protocol. A preliminary BACnet-based specification has been prepared by the Navy and has been sent by the Navy to industry for review. In addition, the Navy and the Corps are working towards the creation of specifications for non-proprietary BACnet. Until this work is complete, use of UFGS-15951 and 13801 is encouraged in order to obtain open and non-proprietary systems.

6. Building automation systems planning: Planning is critical to the successful implementation of open and non-proprietary building automation systems. Installations are encouraged to develop a Utility Monitoring and Control System (UMCS) Master Plan. The plan should address the integration of interoperable building control systems. Assistance with development of a UMCS Master Plan can be obtained through the Utility Monitoring and Control Systems Mandatory Center of Expertise.

7. Technical support: Assistance with the implementation of the specifications is available from:

- The Utility Monitoring and Control Systems Mandatory Center of Expertise. Chuck Holland (CEHNC-ED-ME-T), 256-895-1749.
- The Heating, Ventilating and Air Conditioning (HVAC) Control Systems Directory of Expertise. Lucie Hughes (CESAS-EN-E), 912-652-5645.
- Engineer Research and Development Center Construction Engineering Research Laboratory (ERDC-CERL). Dave Schwenk (x7241) or Joe Bush (x4433) at 1-800-USA-CERL.

The website URL for the Centers of Expertise is:

<http://www.usace.army.mil/inet/functions/cw/cecwe/coexpert/index.htm>

The Center of Expertise is also listed on the Technical Excellence Network (TEN) site, the website URL for TEN is: <https://ten.usace.army.mil/TechExNet.aspx>

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UMCS and HVAC control system training focusing on LonWorks technology is available through the U.S. Army Corps of Engineers (USACE) Professional Development Support Center (PDSC) PROSPECT program: <http://pdsc.usace.army.mil/>

- Course 094: UMCS LonWorks
- Course 340: HVAC Control Systems: Design
- Course 382: HVAC Control Systems: Quality Verification

8. HQUSACE point of contact for this bulletin is Gary Bauer, CECW-CE-D, 202-761-0505. The ERDC-CERL Energy Branch developed this ECB with Dave Schwenk as the technical point of contact, 217-373-7241.



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