



US Army Corps
of Engineers®

ENGINEERING AND CONSTRUCTION BULLETIN

No. 2007-8

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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” and ECB 2005-17 “LONWORKS®, BACnet®, and Building Automation Systems Planning”.

2. Background: In FY04 two guide specifications, UFGS 13801 (Utility Monitoring and Control Systems – since renumbered to UFGS 25 10 10) and UFGS 15951 (Direct Digital Controls for HVAC and other Local Building Systems – since renumbered 23 09 23), based on ANSI/EIA 709.1 standard data communications protocol and LONWORKS Technology were released to facilitate non-proprietary procurement of building automation systems. Since then two ECBs pertaining to these specifications have been released:

- a. ECB 2004-11 announced these specifications and indicated that UFCs to accompany the specifications were in development and announced that the Navy had begun to develop design and specification criteria based on BACnet standard data communications protocol and that the Corps was actively participating in this effort.
- b. ECB 2005-17 clarified the applicability of older criteria to these specifications, provided a web address where UFC content could be obtained and provided an update on the status of the BACnet specifications – specifically that the Corps was continuing to work towards a unified BACnet specification and that until such a specification was completed the use of the released LONWORKS-based specifications was encouraged.

3. Purpose: Update on the status and implementation of LONWORKS and BACnet design and specification criteria and clarification on the Navy-only BACnet specification.

4. LONWORKS:

- a. UFGS 25 10 10 and 23 09 23 are being updated to include minor revisions. The updates will be complete and posted September 07.
- b. UFGS 25 08 10 (formerly UFGS-13810) ‘UMCS Testing’ is being updated to include minor revisions. The update will be complete and posted September 07.

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- c. Unified Facilities Criteria (UFC) for UFGS 25 10 10 and 23 09 23 including typical control drawings are not yet published but remain available at the ERDC-CERL 'Building Energy Systems and Controls (BESC) web site. These documents will be published September 07. Since the release of ECB 2005-17 the BESC website has moved; the new URL is: <https://kd.erd.c.usace.army.mil/projects/besc/ufc/>
- d. Model RFP FOR MILCON TRANSFORMATION contains LONWORKS-based guidance. While this guidance is not as detailed as that in UFGS 25 10 10 and UFGS 23 09 23 it provides the basic performance requirements needed to obtain an Open system.

5. BACnet:

- a. The Navy released a Navy-only guide specification 23 09 23.13 20 based on the BACnet (ANSI/ASHRAE 135-2004) communications protocol. The "20" at the end of the specification number indicates that this is a Navy-only specification.
- b. Use of the Navy-only guide specification 23 09 23.13 20 is strongly discouraged, but not prohibited. While 23 09 23.13 20 defines requirements for the use of BACnet, it does not meet the open system goals defined in Engineer Research Development Center Construction Engineering Research Laboratory (ERDC/CERL) Technical Report 07-03. This report is available at:

http://www.cecer.army.mil/techreports/ERDC-CERL_TR-07-3/ERDC-CERL_TR-07-3.pdf

Use of 23 09 23.13 20 should take into account the risks and shortcomings as described in the ERDC/CERL TR 07-03.

- c. BACnet guidance for inclusion in the MILCON Model RFP is expected to be complete in the 4th quarter of FY07. Coordination with the Navy is ongoing, but substantial additional development of unified criteria based on BACnet is being deferred at least until next FY in lieu of ongoing support for LONWORKS criteria and completion of the related UFCs.

6. Building automation systems planning: In coordination with HQUSACE, IMCOM is sponsoring the development of a building automation systems implementation strategy for Army installations. This includes critical planning elements for LONWORKS building automation systems (BAS) where a BAS consists of a Utility Monitoring Control System (UMCS) based on UFGS 25 10 10 along with building-level direct digital control (DDC) systems based on UFGS 23 09 23 installed by multiple-vendors. A draft report documenting the strategy is available from the Technical Support POCs listed below. An interim and final report will be published in May and September 2007, respectively.

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

- Engineer Research and Development Center Construction Engineering Research Laboratory (ERDC-CERL). Dave Schwenk (x7241) or Joe Bush (x4433) at 1-800-USA-CERL.

- The Utility Monitoring and Control Systems Mandatory Center of Expertise. Chuck Holland (CEHNC-ED-ME-T), 256-895-1749 or 256 656-7583 cell.

<http://www.hnd.usace.army.mil/umcs/index.aspx>

- The Heating, Ventilating and Air Conditioning (HVAC) Control Systems Directory of Expertise. Lucie Hughes (CESAS-EN-E), 912-652-5645.

<http://www.hnd.usace.army.mil/umcs/index.aspx>

-Centers of Expertise are also listed on the Technical Excellence Network (TEN) site:

<https://ten.usace.army.mil/TechExNet.aspx>

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

- Course 340: HVAC Control Systems: Design and Quality Verification

8. HQUSACE Point of contact for this bulletin is Mr. Gary Bauer, CECW-CE, 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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MOODY K. MILES III, P.E., L.S.
Acting Chief, Engineering and Construction
Directorate of Civil Works