

NGS Electronic Distance Measuring Instrumentation Calibration Base Line Program Procedures

August 6, 2016

Version 1.0

Revision History

Version 1.0 (TBD) first publication to NGS EDM I CBL website

Introduction

The National Geodetic Survey (NGS) conducts a cooperative program (hereafter referred to as the CBL Program) to provide the surveying and engineering community with a means to detect and quantify errors in Electronic Distance Measuring Instrumentation (EDMI) in their local area. Additionally, these high-accuracy Calibration Base Lines (CBLs) provide a locally accessible standard for measuring length. Since the CBL Program's inception in 1974, NGS has established more than 400 CBLs (now recognized as Tier 1 CBLs) throughout the United States in cooperation with various government agencies, universities, professional societies, and others. All data and products associated with this nationwide program are available at the NGS EDM I CBL webpage:

<http://www.ngs.noaa.gov/CBLINES/calibration.shtml>

This document describes how individuals or groups within the EDM I user community can partner with NGS to maintain an accurate and up-to-date national database of CBLs. After defining terms (see glossary), roles and responsibilities for both NGS and contributing partners are defined.

A companion document, the NGS Electronic Distance Measuring Instrumentation Calibration Base Line Policy, describes the purpose and scope of The CBL Program.

Background

Previously, establishment/reestablishment of a local CBL required on-site participation by NGS personnel and the use of NGS-owned instrumentation. NGS resource constraints limited administration of the CBL Program. Information for these Tier 1 CBLs was made publicly available through a NGS web site:

<http://www.ngs.noaa.gov/CBLINES/calibration.html>.

Currently, establishment/reestablishment of a local Tier 2 CBL can be achieved by the partner using their own instrumentation and NGS provided standards/specifications and software. The NGS role is reduced to technical support, quality review of data and maintenance of a national CBL database. All Tier 1 and Tier 2 CBL information will continue to be available at the NGS web site.

Glossary

EDMI	A 2 part system for measuring distances made up of 1) a light wave emitting device and return signal interpreter and 2) a remote reflector or reflective surface.
CBL	A Calibration Base Line consists of 4 or more survey marks set in a straight line, at predetermined spacing, from 1000 to 1400 meters in total length for which the distances between all combinations of marks are known very accurately and are traceable to a national standard unit of length.
Establish	Measuring a set of distances between all marks associated with a new CBL to be published at the CBL Program web page.
Reestablish	Measuring a set of distances to supersede previously published values of an existing CBL. May be used to convert an inactive CBL to Tier 2 active status.
Active	Any existing CBL in the NGS CBL database that is freely accessible to the public and for which all associated marks and their adjusted distances have not been identified as unusable or unreliable.
Inactive	Any existing CBL in the NGS CBL database that is no longer usable (obstructed line, missing marks, restrictive public access; etc.) and/or is no longer reliable (mark has moved).
Tier 1 CBL	A CBL for which the associated adjusted distances were measured by NGS, or with the direct participation of NGS, using NGS owned instrumentation.
Tier 2 CBL	A CBL for which the associated adjusted distances were measured to NGS standards/specification by NGS partners, without on-site participation by NGS, using their own instrumentation.

Rights and Responsibilities

Partner Rights and Responsibilities

- CBLs established or reestablished by NGS Partners will be classified as Tier 2 CBLs.
- To participate in the CBL Program, provide a project proposal form to the CBL Program manager. Form is available at:
http://www.ngs.noaa.gov/CORS-Proxy/project_tracking/surveyproposal
- For a TIER 2 CBL to be considered for inclusion in the CBL Program database, it must be publicly accessible and available for use without cost.
- Partners are responsible for providing their own instrumentation, equipment and supplies (including survey marks) necessary to establish or reestablish a CBL.
- To establish or reestablish a Tier 2 CBL for inclusion in the CBL Program, follow procedures detailed in NOS NGS-8 “Establishment of Calibration Base Lines” document and use NGS’s CALIBRATE software.
- For the benefit of all users, NGS strongly encourages Partners/Users to report to NGS calibration personnel known or suspected issues at active CBLs (NOS_NGS_EDMI_CBL@noaa.gov).

NGS Rights and Responsibilities

- CBLs established or reestablished by NGS will be classified as Tier 1 CBLs.
- NGS will maintain one active Tier 1 CBL in every state. NGS reserves the right to determine the location of this CBL.
- NGS will provide access to a CBL database, software, procedures and policy documents through the CBL Program website to support the establishment, reestablishment and use of CBLs.
- NGS will provide a quality review of CBL data provided by partners intended for the establishment or reestablishment of Tier 2 CBLs.
- NGS reserves the right to refuse the publication of a CBL data submission.