TIGER PRELIMINARY DESIGN AND STRUCTURE OVERVIEW:
The Core of the Geographic Support System for 1990

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The U.S. Bureau of the Census has embarked upon an effort to automate the geographic support process in time to meet the needs of the 1990 Decennial Census. The effort will result in an integrated system capable of performing the following three major geographical functions.

1. Assignment of residential and business addresses to a geographic location for data collection.

2. Provision of the geographic structure for tabulation and publication of the collected data.

3. Production of cartographic products to support data collection and publication operations.

The system will utilize the power of the computer to assure coordination of the geographic content between the various control lists and maps. At the core of this system will be the Topologically Integrated Geographic Encoding and Referencing (TIGER) System.

The theoretical foundation of the TIGER file structure is drawn fro principles of topology and associated mathematics. The implementation of ᴄ TIGER System uses some of the latest concepts in computer science.

The term TIGER file refers to the computer file that contains all the data representing the position of roads, rivers, railroads, political and statistical boundaries, and other census-required features along with their attributes. The TIGER file, plus the specifications, procedures, computer programs, and related materials required to build and use the file, constitute the TIGER System. The Geographic Support System consists of the TIGER System and all other activities undertaken by the Geography Division to support the census and survey missions of the Bureau.

The TIGER file structure is a series of interlocked files and programs accessible through a master control program. The system is made up of a number of subsystems which handle the major functions. The TIGER file currently resides on a Sperry Univac mainframe computer. However, because future computer equipment cannot be determined, every effort has been made to produce software independent of the hardware. This included the mandate that all programming be done in Fortran-77. The mandate even extends to all programming for the microcomputer-based peripherals used during data capture.

The spatial framework for the TIGER file is being provided through a cooperative program between the U.S. Geological Survey (USGS) and the Bureau of the Census. Each USGS 1:100,000-scale map is being raster-scanned and vectorized by USGS to produce four logical computer files: a roads file, a hydrography file, a railroads file, and an "other transportation" file containing among other things, pipelines and powerlines. The Census Bureau is tagging the roads file with the seven-character USGS attribute codes. USGS is tagging the other files with similar codes. Then the files are combined at USGS to form their National Digital Cartographic Data Base. From this combined, tagged data base, files of all transportation and hydrography are provided to the Bureau for use as the TIGER spatial framework, an extremely complex data and file structure whose projected final size will make it one of the largest geographic data bases in the nation.