

Chapter 24, Inc.  
Madison, Wisconsin

Society of Broadcast Engineers

October 1999

## TELECOM INDUSTRY NEWS

By Neal McLain

### THE UNITED STATES PUBLIC LANDS SURVEY

Last month, this series of articles went off onto a tangent about Minor Civil Subdivisions: municipalities, counties, townships, and such. In that article, I noted that most Wisconsin counties are subdivided into townships, and that most townships are (or were, when they were originally surveyed) six miles square.

So why is that? Why does Wisconsin have townships? And why are they six miles square?

To answer these questions, we have to introduce a new subject: the United States Public Lands Survey (USPLS). So this month, we'll continue along this Minor Civil Subdivisions tangent with a discussion about the USPLS.

But first, a history lesson.

### TWO FUNDAMENTAL DOCUMENTS

This story begins in the year 1785. Note that date: *seventeen eighty-five* — just four years after the end of the Revolutionary War, and three years before the United States Constitution even existed. The United States was still a loose confederation of thirteen independent states. The federal government, to the extent that it existed at all, consisted of the Second Continental Congress operating under the limited powers granted to it by *Articles of Confederation and Perpetual Union*.

But even at this early date, the westward expansion of the United States was already well under way. Since the early 1700s, pioneers had been moving up

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## TOUR THE ABC 720p HDTV SPORTS PRODUCTION TRUCK

By Vicki Kipp

Be the first one on your block to tour a high definition production truck! Join us on Sunday, October 31<sup>st</sup> (Halloween) on a field trip from Madison to Green Bay to tour the ABC 720p HDTV Sports Production Truck. We will be meeting at 7:00 AM in the parking lot of Wisconsin Public Broadcasting at 3319 W. Beltline Highway. We must leave Madison and be on the road by 7:30 AM at the latest.

From there, we will caravan to Lambeau Field in Green Bay,

Wisconsin. The drive is expected to take about 2.5 hours. Transportation arrangements are still pending, but will be discussed at the October chapter meeting. Volunteer drivers with minivans are most welcome! Chapter 24 has been assigned to begin touring at 10 AM. We will be touring in groups of five people. Each tour will take about fifteen minutes.

This opportunity is made possible by John Luff, the head of Synergistic Technologies, Inc. This company is the systems integrator that built the 720p HDTV production truck for ABC. The truck is producing high-definition

## Next Meeting:

Wednesday,  
October 20, 1999

SBE National  
Meeting and  
Broadcasters Clinic

SBE Annual  
Membership Meeting  
at 4:00 PM

SBE National  
Awards Dinner  
at 6:15 PM

Marriott - Madison West  
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coverage of NFL Monday Night Football for ABC. The HDTV truck will be in Green Bay to cover the Seattle Seahawks playing the Green Bay Packers on Monday November 1<sup>st</sup>. The truck crew will be very busy setting up for Monday's game, but they have graciously offered to give tours Sunday morning.

Currently, we have eight Chapter 24 members signed up for this field trip. If you would like to attend this field trip, and have not already signed up, please contact Vicki Kipp at 273-0889 or [vkipp@ecb.state.wi.us](mailto:vkipp@ecb.state.wi.us) by October 15<sup>th</sup>.

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## September Business Meeting Minutes

Chapter 24 of the Society of Broadcast Engineers met on Tuesday, September 21, 1999 at the studios of WKOW-TV in Madison, Wisconsin. There were twenty members and two guests present, seventeen held SBE certification.

The meeting was called to order by chair Kevin Ruppert at 7:10 PM.

The minutes of the August meeting were approved as published.

Kevin announced the contribution of \$75 to the Ennes Scholarship and \$75 to the Greenberg Scholarship from the national rebate to Chapter 24.

Fred Sperry reported that Sony and Pinnacle recently renewed their sustaining memberships with Chapter 24.

Kevin reminded attendees that the October meeting will be part of the SBE National Convention being held here in Madison.

Denise Maney announced that the November 18th meeting will be Student Night and asked that SBE members bring along recent broadcast trade magazines for the students to take home and read.

Jim Hermanson announced that certification exams would be given the week of Nov 11 to Nov 22, and that applications for November exams are due immediately.

Vicki Kipp announced that the ABC HDTV truck will be in Green Bay, Wisconsin for coverage of the NFL Monday Night Football game on November 1st. SBE members were invited to tour the HDTV remote broadcast truck on Sunday, October 31st. She also called for volunteers to staff the SBE Chapter 24 booth at the broadcaster's Clinic, and reported that the Broadcast Cookie Bake Off would again be held this year.

Tom Smith announced that, as usual, ABC has applied for local frequency coordination for their coverage of the Badgers Football game this Saturday. He also stated that Motorola and other companies have recently been obtaining experimental licenses that sometimes include frequencies in the broadcast auxiliary bands.

Leonard Charles announced the results of the 1999 national SBE elections and Fellows awards, and reminded members to RSVP to National for the SBE awards Banquet on Wednesday evening, October 20.

The business meeting was adjourned at 7:25 PM.

Denise Maney then introduced the evening's program on the Avid editing system, presented by Bob Fields and Wm. Severin Thompson.

## "C" is for Cookie BAKE OFF

*By Vicki Kipp*

Bring your best two-dozen homemade cookies to the SBE Chapter 24 Booth by 4:30 PM on Tuesday, October 19th to compete in the 4th Annual Chapter 24 Bake Off. The Bake Off will be held on Tuesday and Wednesday, October 19th and 20th in connection with the 1999 Broadcasters Clinic.

Cookies will vie for the votes of clinic attendees. High voter turnout is expected. The winning cookie baker will be awarded a prize at the SBE meeting on Wednesday evening.

### SBE Listserver Info

Chapter 24 members are invited to join the chapter listserver. To subscribe, send an e-mail message to the following address: [majordomo@broadcast.net](mailto:majordomo@broadcast.net)

In the body of e-mail message type: subscribe msnsbe. (The subject line can be left blank.) Instructions and a confirmation message will be sent to you. To post to the list, address you e-mail to: [msnsbe@broadcast.net](mailto:msnsbe@broadcast.net)

Also, join the Wisconsin SBE Chapters listserver. To subscribe, send e-mail to: [majordomo@broadcast.net](mailto:majordomo@broadcast.net) Body of e-mail message: subscribe sbe-wi To post to the list, send e-mail to: [sbe-wi@broadcast.net](mailto:sbe-wi@broadcast.net)

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The *Chapter 24 Newsletter* is published monthly. Submissions of interest to the broadcast technical community are always welcome. You can e-mail your articles to:

[MNorton@ecb.state.wi.us](mailto:MNorton@ecb.state.wi.us)  
or send them to:

SBE Chapter 24 Newsletter  
2029 Greenway Cross #11  
Madison, WI 53713-3000

## AMATEUR RADIO NEWS

*By Tom Weeden, WJ9H*

The American Radio Relay League has asked the FCC to deny an experimental license application by Los Angeles County, California, to develop a public safety video system on the 2.4 GHz band. The LA County proposal, filed August 9, seeks FCC authorization to develop an experimental system using four 10-MHz channels to transmit video images from helicopter-borne cameras to five remote receiving sites with active tracking antennas. LA County already is licensed for video operations on a single 2.4 GHz channel but says it encounters operational conflicts with broadcasters. The proposal targets the 2402-2448 MHz band, characterizing it as "underutilized" and asserting that current occupants—including Amateur Radio and industrial, scientific and medical instrumentation—would not suffer harmful interference. Amateurs have a primary domestic allocation at 2402-2417 MHz.

The FCC has relaxed rules governing the use of spread spectrum techniques by radio amateurs. The new rules, effective November 1st, will allow amateur radio stations to transmit additional spread spectrum emission types but require that stations running more than 1 W be required to incorporate automatic transmitter power control. SS emissions will be restricted to a maximum power of 100 W. Stations employing spread spectrum techniques will remain secondary to—and must accept all interference from—stations employing other authorized modes. The FCC dismissed assertions from manufacturers of Part 15 devices that the proposed changes could "upset the delicate balance" on bands where hams share spectrum with Part 15 users—especially in the 915 MHz and 2.4 GHz bands.

The National Weather Service will hold a special event on November 27 to recognize the contributions hams make to the NWS during times of threatening weather. The objective is for amateur radio operators at NWS sites to work as many other amateur stations as possible. Local NWS offices will provide a place to work the event, and hams will set up radio equipment and antennas. The Sullivan Weather Amateur Radio Association will activate the NWS office at Sullivan, WI using their club call sign, WX9MKX.

*(Excerpts from the American Radio Relay League's "The ARRL Letter" and October 1999 "QST" magazine)*

**Thanks to WISC-TV for maintaining the web server for the Chapter 24 Web page!**

**Thanks to WKOW-TV for providing copying and folding facilities for the Chapter 24 newsletter!**

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## TELECOM INDUSTRY NEWS (continued)

the river valleys of the Appalachians, establishing farms and communities along the way. Beyond the Appalachians lay the Great Valley of the Appalachians, a broad fertile valley stretching from New York to the Carolinas; by the late 1700s, much of the Great Valley had already been settled by European immigrants.

All of this expansion had taken place on lands claimed by the original thirteen states. The federal government had had little to do with it, and had not derived any revenue from the sale of lands.

But after the Revolutionary War, the Continental Congress began to assert control over future expansion. The thirteen states still claimed ownership of lands extending as far west as the Ohio and the Mississippi Rivers. But the federal government owned the lands northwest of the Ohio River in what was known as the Northwest Territory. We know this area today as the states of Illinois, Indiana, Michigan, Ohio, Wisconsin, and part of Minnesota.

The Continental Congress had many reasons for wanting to control development in the Northwest Territory: It wanted to ensure that the United States — not France, Spain, Great Britain, or some independent government — would enjoy the benefits of the westward expansion. It saw the sale of western lands as a source of revenue. And, perhaps most importantly, it wanted to ensure that the democratic form of government — for which it had just fought a long and bloody war — would be extended into new territories.

To implement its strategy, the Continental Congress enacted two ordinances that stand to this day as the

fundamental documents governing the westward expansion of the United States:

The LAND ORDINANCE OF 1785 ("An Ordinance for ascertaining the mode of disposing of Lands in the Western Territory"). This act dealt with the practical issue of how to subdivide almost 250,000 square miles of uncharted land into salable parcels. It specified the procedure for qualifying surveyors, and the point at which the surveys were to begin ("on the River Ohio, north from the western termination of a line, which has been run as the southern boundary of the State of Pennsylvania..."). Most significantly, it specified the procedure for subdividing the land: "townships of six miles square, by lines running due north and south, and others crossing these at right angles, as near as may be, unless where the boundaries of the late Indian purchases may render the same impracticable."

The NORTHWEST ORDINANCE OF 1787 ("An ordinance for the government of the Territory of the United States northwest of the River Ohio"). This act dealt with political issues: it specified how new territories were to be created and governed, and it guaranteed that new territories would be admitted as states on an equal footing with the original thirteen states. It also established guarantees designed to encourage settlement in the new territories: assured civil liberties, secure land titles, religious freedom, local self-governance, and the prohibition of slavery. (The Northwest Ordinance was authored by Nathan Dane, for whom Dane County is named.)

So there you have it, right there in the Land Ordinance of 1785: the Northwest Territory was to be subdivided into "townships of six miles

square, by lines running due north and south, and others crossing these at right angles."

### CONGRESSIONAL TOWNSHIPS

But these so-called "townships" weren't civil townships as we know them today; they were simply lines drawn on a map. They were called *Congressional townships*, a term derived from the fact that they were created by an act of the Continental Congress.

And, soon enough, they came to be known as "towns." So now the word "town" has three meanings: depending on the context, a town can be an incorporated municipality, a civil township, or a Congressional township.

Why did the Continental Congress create Congressional townships? Unlike our present-day Congress, the Continental Congress didn't publish "legislative histories," so there's no way to know for certain. But the reason seems obvious: it wanted to create a structure in which local residents could create a local government.

Of course, it had no way of ensuring that the local residents would actually do so. It's a long way from a Congressional township to a civil township. For a civil township to exist, the local residents have to organize one: they have to get together, decide to form a township government, petition the state (or territorial) government for a charter, hold elections, enact ordinances, and become a functioning entity.

Nevertheless, the vision of the Continental Congress seems clear. If it couldn't control westward expansion, it did the best it could: in the process of  
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## TELECOM INDUSTRY NEWS (continued)

creating a structure for surveying the western lands into salable parcels, it also created a structure that would encourage local residents to form local governments.

### A BLUEPRINT FOR CONTINUED EXPANSION

The plan that the Continental Congress adopted for the Northwest Territory came to be known as the *United States Public Lands Survey*, and formed the blueprint for further westward expansion. Subsequent Congresses adopted the same plan for the subdivision of the Louisiana Purchase, and for new territories acquired thereafter. With several exceptions, Congressional townships now cover most of the country.

The principal exceptions are:

- The original thirteen states (Connecticut, Delaware, Georgia, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island, South Carolina, and Virginia) which were, of course, settled long before the Continental Congress existed.
- The states of Maine and Vermont, also settled before the Continental Congress existed.
- The states of West Virginia (originally part of Virginia), Kentucky (originally part of Virginia) and Tennessee (originally part of North Carolina).
- Several parcels in Ohio originally claimed by Connecticut or Virginia. Connecticut claimed the northeast part of Ohio as its "western reserve," a name that lives on today in the name of Case Western Reserve University.

• Texas, originally surveyed when it was a Spanish colony. Texas still attempts to recognize the old Spanish land grants, although many of them overlap. I've been told that if all of the land granted by the Spanish crown actually existed, Texas would be three times its size.

- Hawaii, which had its own system of land subdivision before it became a United States territory.
- Most of Alaska. Some surveys continue in Alaska to this day, but much of the state has been set aside as wilderness reserve and may never be surveyed.
- Innumerable smaller parcels in all states that had been surveyed before the USPLS surveys began.

### THE SURVEYS

The actual surveys were made by contract surveyors operating under the supervision of various Government bureaucracies, the most famous of which was the Government Land Office, immortalized in the phrase "Land Office business."

From all accounts, the survey teams had a difficult time of it: since the very purpose of the USPLS was to survey the land for potential sale, the surveys were conducted before the land was cleared. The tools were primitive: measurements were made with a 66-foot steel chain. One can imagine the difficulty of running a steel chain along the ground in dense underbrush. Service vehicles were horses or burros, housing was an impromptu campsite, the food supply was live-off-the-land. Hostile Indians, disease, dangerous animals, and bad weather undoubtedly made things even worse.

Yet in spite of it all, the surveys were completed, and the maps were duly filed with the Land Office. Most arable farmland eventually passed into private ownership, either through sale, or later, under the Homestead Act of 1862, by outright grant to any party willing to occupy the land "for the purpose of actual settlement and cultivation." Non-arable land remained in the public domain, where much of it remains to this day.

### THE GROWTH OF CIVIL TOWNSHIPS

As Congressional townships were settled, the local landowners began to organize local governments: counties and civil townships. Counties (or county-equivalents) were organized in just about every settled area. But civil townships were organized only in northern territories. In most southern territories, civil townships were never organized; in these territories, the county government remained the local government by default.

The division between northern and southern territories reflected the divisions within the original thirteen states:

- Seven northern states (Connecticut, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, and Rhode Island) were subdivided into counties and independent townships commonly called *towns*. These towns definitely weren't square: they, like the counties and the states themselves, had grown haphazardly, and they were randomly shaped. (Delaware had a similar system of subdivisions, but that's a different story.)
- Five southern states (Georgia,

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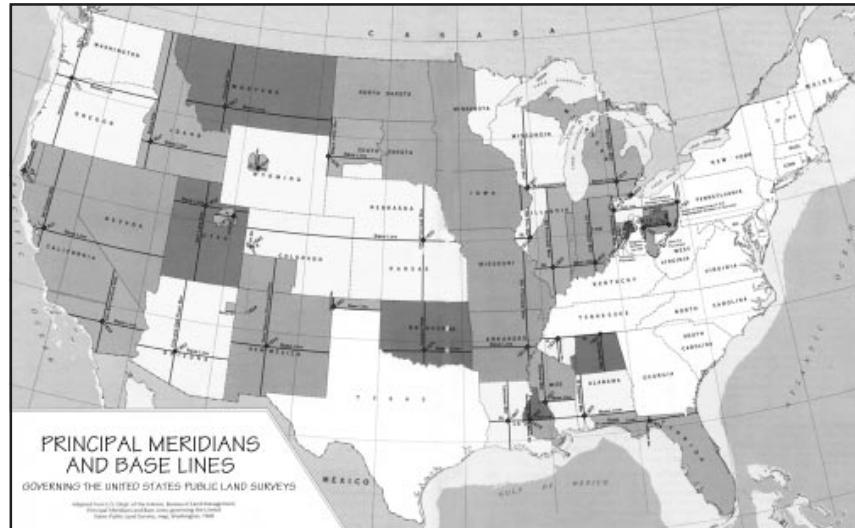
Maryland, the Carolinas, and Virginia) were subdivided into counties, but there was no township-level government. Subdivisions within counties were administrative subdivisions of county government, not separate levels of governments. These administrative units, like the counties and the states themselves, were randomly shaped.

Geographically, the division between northern and southern states was well established: it was the Mason and Dixon Line. This line had been surveyed in the mid-1700s to settle a boundary dispute between the descendants of William Penn (who claimed to own Pennsylvania under an old British land grant) and the descendants of Lord Baltimore (who claimed to own Maryland under an even older British land grant). After the Revolutionary War, Pennsylvania and Maryland became states, and the Mason and Dixon line became the state boundary line.

But the Mason and Dixon line had a significance far greater than that: it was the line that separated "the north" from "the south." It was the line that separated free states from slave states.

The issue of slavery had divided the north from the south since early colonial days, and it very nearly prevented the organization of the United States Government in the first place. Indeed, had it not been for their common enemy, the British government, the thirteen colonies might never have formed a federal government.

As the western expansion proceeded, slavery continued to be a source of dispute: the southern states tried to extend it into new territories, and the northern states tried to prevent it. Both sides met with some success:



**Figure 1.** Base Lines and Principal Meridians in the United States. Reprinted from *Maps for America*, Third Edition, by Morris M. Thompson (Washington: United States Department of the Interior, 1988, pp. 82-82; uncopyrighted).

Alabama, Kentucky, Mississippi, and Tennessee all became slave states, but the states of the Northwest Territory remained free.

The organization of local governments followed the same pattern: the new southern territories, even those which had been surveyed into Congressional townships (Alabama and Mississippi), never formed civil townships. But in the new northern territories, civil townships became widespread.

In due time, the new territories, both north and south, became states, and the issue of slavery was finally resolved a century later during the Civil War.

But the legacy of this history lives on to this day:

- Some states were surveyed into Congressional townships and some were not.
- Some states were organized into

civil townships, and some were not.

- There's no correlation between Congressional townships and civil townships: some states have both, some have neither, some have one but not the other.
- Wisconsin has both. In states that have both, many civil townships follow the boundaries of the original Congressional townships. But many don't: many civil township boundaries were dictated by topographic, ethnic, political, or economic considerations.

End of history lesson. We now turn our attention to the USPLS surveying system itself.

### **CONGRESSIONAL TOWNSHIP NUMBERING SYSTEM**

A Congressional township is a square parcel of land measuring six miles (more or less) on each side.

Congressional townships are identified by a numbering system referenced to two lines: a *base line* and a *principal meridian*. The intersection of the base line and the principal meridian is called the *point of beginning*, or POB. There are many base lines and principal meridians in the United States (Figure 1).

(continued on next page)



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**Steve Paugh is the editor for the Electronic Version of this Newsletter, uploaded monthly onto SBE Chapter 24's web page.**

## TELECOM INDUSTRY NEWS (continued)

Each survey was begun by establishing the base line and the principal meridian. Some sort of monument (a wood stake, a pit, a pile of rocks) was placed at the point of beginning, and all surveys were referenced to that point. Cardinal directions were established using conventional nautical instruments such as the compass and the sextant. Distances were measured with a *Gunter's Chain*, a steel chain 66 feet long consisting of 100 links, each 7.92 inches long. To measure a mile, the survey team would lay out a distance of 80 chains.

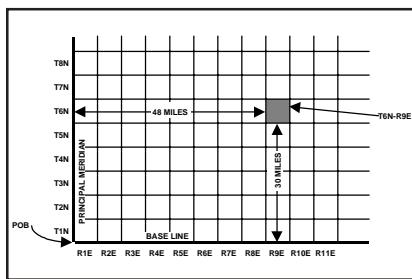


Figure 2. USPLS Congressional township numbering system.

Each township is identified by two numbers: a *town number* north or south of the base line, and a *range number* east or west of the principal meridian.

Example:

Town 6 North Range 9 East

identifies a township six townships north, and nine townships east, of the POB (Figure 2).

Theoretically, this numbering system produces a regular grid of townships extending across an entire state or territory. In fact, there are many discontinuities in the grid. Two factors account for this:

- The earth is a sphere; consequently, meridians get closer together as one moves north.
- The original surveys contained numerous errors resulting from such factors as primitive equipment, difficult working conditions, poorly-trained

personnel, and shifts in local magnetic declination.

In an attempt to correct for these errors, the original surveyors reestablished new reference lines at intervals of about four townships. These new reference lines stand out clearly on modern maps as abrupt shifts in the regular grid pattern.

In Wisconsin (Figure 3):

- The base line is the Illinois State Line.
- The principal meridian is the Fourth Principal Meridian, running north and south through the center of the state. It forms the county line between Grant and Lafayette Counties.
- The Point of Beginning is marked by a small concrete monument about two miles south of Hazel Green.

In Dane County, there are about 34 1/2 Congressional townships

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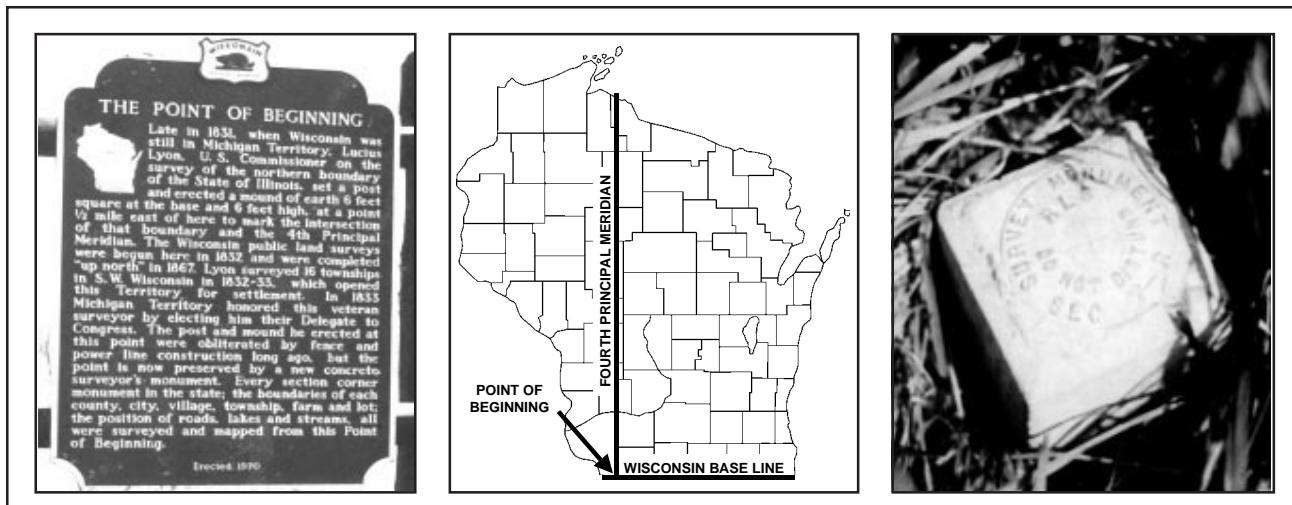
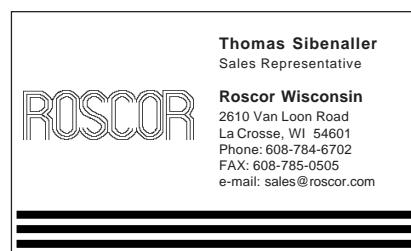


Figure 3. The Wisconsin Point of Beginning, first set in 1831. Every land survey in the State of Wisconsin is referenced to this point. Today, the POB is marked by a small concrete monument located about 1/2 mile east of State Highway 80. It's easily accessible on foot, but difficult to reach by car.



## TELECOM INDUSTRY NEWS (continued)

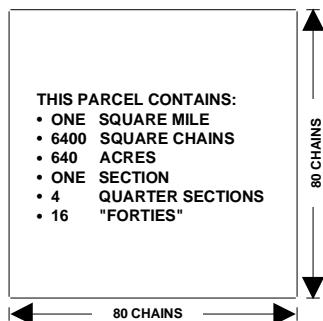
(Figure 4). With remarkably few exceptions, the boundaries of today's civil townships follow the boundaries of the original Congressional townships.

### SUBDIVISIONS WITHIN CONGRESSIONAL TOWNSHIPS

Each Congressional township contains 36 parcels called sections. Sections are numbered as follows:

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Each section contains one square mile, or 640 acres:

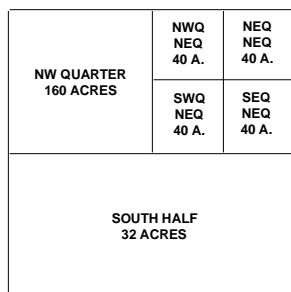


Each section can be subdivided into four 160-acre quarter sections by quarter section lines:

NW QUARTER 160 ACRES	NE QUARTER 160 ACRES
SW QUARTER 160 ACRES	SE QUARTER 160 ACRES

Each quarter section can be further subdivided into four 40-acre quarter-quarter sections by quarter-quarter

section lines, also known as forty lines:



When the United States Government began selling land, it sold it in 40-acre parcels. Farm land has been bought and sold in 40-acre parcels ever since, and the word "forty," used as a noun (as in "the back forty"), has long been part of the vernacular language of rural America.

### USPLS LAND DESCRIPTIONS

Every 40-acre parcel can be uniquely described by five parameters: quarter-quarter section, quarter section, section number, town number, and range number. Example: the northeast quarter of the northwest quarter of Section 27 would be written:

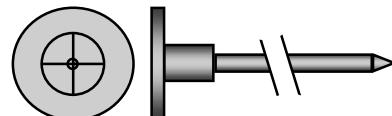
• NE 1/4 NW 1/  
4 Section 27 Town  
6 North, Range 8  
East

Typical abbreviations:

NE 1/4 NW 1/  
4 Sec 27 T6N R8E  
NEQ NWQ 27  
T6N R8E  
NE-NW-27-  
6N-8E

The original surveyors marked every section corner with some sort of marker, and recorded its position in a set of field notes. Most of the original

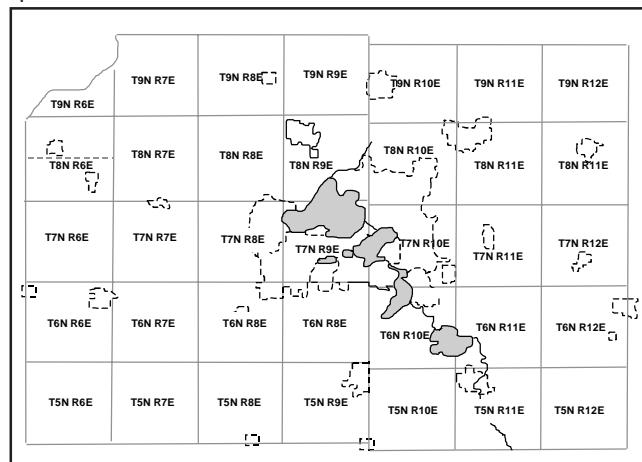
markers have long since disappeared, and much effort has been expended recovering lost corners. Once recovered, lost corners have been marked with permanent monuments, either steel stakes or steel monuments designed for the purpose:



The physical location of a monumented corner is inviolate. Although the latitude and longitude of a corner may change with every advance in technology, the actual physical location of a corner never moves unless the land itself moves because of an earthquake or the motion of the underlying tectonic plate.

USPLS land descriptions stand today as the underlying reference grid for all other land descriptions. Every recorded plat and every certified survey must be tied to a monumented USPLS corner.

(continued on next page)



**Figure 4.** Congressional townships in Dane County. Solid lines indicate Congressional township boundaries; dotted lines indicate the boundaries of today's incorporated municipalities and civil townships. Note the abrupt shift in the grid between Range 9 and Range 10, where a new reference meridian was established. Most of the boundaries of today's civil townships follow the boundaries of the original Congressional townships; however there are a few exceptions. The portion of T9N-R6E northwest of the Wisconsin River is now the Town of Prairie du Sac in Sauk County. The north half of T8N-R6E became part of the Town of Mazomanie, rather than the Town of Black Earth; consequently, the Town of Black Earth has only 18 sections. The piece of T7N-R9E north of Lake Mendota, once part of the Town of Madison, is now part of the Town of Westport.

## TELECOM INDUSTRY NEWS (conclusion)

### THE LEGACY OF THE USPLS

The legacy of the United States Public Lands Survey is clearly evident today. From the air, the regular grid pattern of road and fences contrasts dramatically with the random pattern of the original 13 states.

In many cities, the pattern of the streets reflects the underlying USPLS grid: major streets follow section lines and side streets fall at regular intervals in between:

- In the Chicago area, numbered streets fall every 1/8th mile, and main thoroughfares fall at one-mile intervals: 47th Street, 55th Street, 63rd Street, 71st Street, 79th street, 87th Street, 95th Street, 103rd Street.

- In the Detroit area, named streets fall at 1/8th mile intervals, and "mile roads" fall at one-mile intervals: 6 Mile Road, 7 Mile Road, 8 Mile Road, 9 Mile Road.

- In the Miami area, numbered avenues fall at 1/10-mile intervals, and main thoroughfares fall at one-mile

intervals: NW 37th Avenue, NW 47th Avenue, NW 57th Avenue, NW 67th Avenue.

Even the Gunter's chain has left its mark. Although it's no longer used today (modern surveyors use steel tapes or electronic measuring devices), the word *chain* still means 66 feet.

The chain (as a unit of measure) pops up repeatedly in land surveys. Since the days of the earliest settlers, the standard roadway right-of-way has been one chain. One can imagine the scenario: two adjacent land owners each donate a 33-foot strip of land to form the right-of-way for a public road. Initially a farm lane, it would have evolved into a gravel township road, then into a paved road. Even today, many state and federal highways still occupy 66-foot rights-of-way.

The chain was also used extensively in early residential surveys. Many older villages were originally platted with 66-foot lots arranged along 66-foot streets.

In the original plat of the Village of Madison:

- Most streets were one chain wide. But four streets were two chains wide: the streets we know today as East Washington Avenue, West Washington Avenue, Wisconsin Avenue, and Martin Luther King, Jr. Blvd.

- Most residential lots were one chain wide. But the surveyors must have used a worn Gunter's chain when they laid out the lots along Landgon Street: they're all about 66 feet 3 inches wide.

Next month, we'll get back to the original topic that precipitated this tangent: the history of cable television systems in Dane County.

Sources: Morris M. Thompson, *Maps for America*, third edition (Washington: United States Department of the Interior, 1988). Russell C. Brinker et al, *Elementary Surveying*, sixth edition (New York: Harper & Row, Publishers, 1977). Matt Rosenberg, *The Mason-Dixon Line* (About.com, 1999).

## SBE's Short Circuits — October 1999

**By John L. Poray, CAE**  
**SBE Executive Director**

### BUTLER ELECTED SBE PRESIDENT

James "Andy" Butler, CPBE has been elected President of the Society of Broadcast Engineers. Ballots were counted September 2 in Indianapolis by a Board of Tellers from Chapter 25. Butler is Director of Engineering at PBS in Alexandria, Virginia. He currently serves the Society as Treasurer. Butler, who will be the Society's 21st President, will take

office October 20 during the SBE Annual Membership Meeting. This year, the Annual meeting takes place in Madison, Wisconsin as a part of the SBE National Meeting and Broadcasters Clinic.

Elected to serve as Vice President is Richard L. Edwards, CPBE, President of Tower America Corporation in Coral Springs, Florida. Barry Thomas, CSRE, Director of Engineering at Chancellor Media of Los Angeles, was elected Secretary. John Batson, CPBE, Southeast Engineering Manager, Sinclair Broadcast Group in

Birmingham, Alabama, was elected Treasurer. Officers serve one-year terms.

Elected to serve two year terms on the Board of Directors were Dane Erickson, P.E., CSRTE, San Francisco; Clay Freinwald, CPBE, Auburn, Washington; Ralph Hogan, CPBE, Pullman, Washington; Keith Kintner, CPBE, Los Angeles; Christopher Scherer, CSRE, Overland Park, Kansas and Thomas P. Weber, CPBE, Indianapolis.

(continued on page 10)



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## 1999 Broadcasters Clinic Schedule of Events

The 1999 Broadcasters Clinic will be held October 19th through the 21st, at the Marriott-West, Madison, Wisconsin. The cost is \$155 for any two days, and \$180 for all three days. Continuing Education Units (CEU's) are provided by University of Wisconsin, Engineering Professional Development.

For further conference information, contact Don Borchert, 1955 Oakland Avenue, Sun Prairie, Wisconsin, 53590, or call 608-837-3462.

To register by phone, please call 608-255-2600.

### Tuesday, October 19

- 9:15 a.m. ISDN: Survival For Broadcast Engineers - *Bob Raasch, Soliton Inc.*  
 10:00 a.m. Evaluation of the IBOC System - *Andy Laird, Journal Broadcasting Group*  
 11:00 a.m. Interference: The Impact of FCC Proposals to Reduce Protections to Third Adjacents - *Doug Vernier, Telecommunication Consultants*  
 Noon Lunch - *Chris Imlay, SBE General Counsel*  
 2:00 p.m. The Digital Router: Heart of the Digital Audio Facility - *Paul Anderson, Logitek*

### SBE Short Circuits (continued)

#### NATIONAL MEETING IN MADISON OCTOBER 19-20

SBE's National Meeting will be held in conjunction with the Broadcasters Clinic, an annual technical paper and equipment exhibit event held in Madison, Wisconsin at the Madison Marriott West Hotel.

The National Meeting includes the fall Board of Directors Meeting on the evening of the 19th. On the 20th, a special breakfast for SBE Fellows will begin the day. The Annual Membership Meeting will be held at 4:00 pm, followed by the National Awards Reception at 5:30 pm sponsored by TRON-Tek, and Dinner at 6:15 pm, sponsored by Leitch.

2:45 p.m. MP-3 and Linux for Audio Storage and Automation - *Jim Hammond, Scott Studios*

3:45 p.m. A New Solid State 10KW FM Transmitter - *Walt Rice, Broadcast Electronics*

4:30 p.m. Equipment Exhibits Open (Everybody is welcome)

6:00 p.m. SBE Board of Directors' Meeting (Open to SBE Members)

7:30 p.m. Evening Session...Off the Record with Don Markley

4:00 p.m. SBE Annual Membership Meeting

5:30 p.m. Awards Dinner Reception

6:15 p.m. SBE National Awards Dinner

### Thursday, October 21

8:30 a.m. A Report On DTV Field Testing Results and Methodology - *Gary Sgrignoli, Zenith Corporation*

9:15 a.m. Video Transport Considerations Outside the Digital Studio - *Mark Podesla, ADC Broadcast Communications*

10:15 a.m. Post RF Depression - Transition to DTV - *Glen Sakata, Faroudja Picture Plus*

11:00 a.m. DVC Pro Operating in Multiple Signal Formats - *Phil Livingston, Panasonic Broadcast*

Noon Luncheon

1:15 p.m. Interconnection in the MPEG World SDTI Content Package - *Craig Beardsley, Sony Electronics*

2:00 p.m. HDTV STL Systems Update - *David O. Thomas, Nucomm Microwave*

2:45 p.m. Test Results of COFDM In The ENG Environment - *David W. Ayotte, Broadcast Microwave Services*

4:00 p.m. Adjournment

### Wednesday, October 20

8:30 a.m. N-1 UHF Interference - *Donald L. Markley, DL Markley & Associates*

9:15 a.m. Procession For Clean AM-FM and Television Audio - *Frank Foti, Cutting Edge Technologies*

10:00 a.m. Equipment Exhibits Open (Everybody is welcome)

1:30 p.m. Enhanced Performance Cabling Solutions - *Steve Lampen, Belden Wire & Cable Co.*

2:15 p.m. Impedance Matching Using Coax Connectors - *Mark Borton, Trompeter Electronics*

3:15 p.m. Implementation of Real Time Adaptive Equalization in DTV Exciters - *Robert Plonka, Harris Broadcast Systems*

Members and guests may attend the Board Meeting, Reception and Dinner. The Fellows Breakfast, sponsored by Scala Electronic Corp., is by invitation only.

Linda at [lgodby@sbe.org](mailto:lgodby@sbe.org) or (317) 253-1640. Checks or credit cards are accepted.

### MONTHLY HAMnet BRINGS SBE TO REMOTE AREAS

At 8:00 pm EST, 0000 GMT, on the second Sunday of each month, SBE Chapter 73 takes the air. Hal Hostetler, WA7BGX, of Tucson, Arizona, is the control station for the "meeting." Updates on SBE activities are given each month and participants can discuss technical issues and visit. HAMnet was originally begun to help serve members who lived too far to attend meetings of any regular chapter, but any amateur operator is welcome and encouraged to participate. Look for HAMnet on 14.205 MHz.

If you would like to attend the Awards Reception and Dinner, contact Linda Godby-Emerick at the SBE National Office to reserve your tickets. Tickets are just \$10 and are available on a first come, first served basis. Call or E-mail



## FCC Rulemakings

*Compiled By Tom Smith*

### PROPOSED RULES

#### MM Docket No. 91-321, 87-8; FCC 99-240

##### Comment Sought on Processing Order for Applications Filed Pursuant to the Commission's New Local Broadcast Ownership Rules

With the recent TV ownership rule changes that allow the ownership of two TV stations in one market, the FCC finds itself with a problem in processing multiple applications for changes in TV ownership that result in ownership of two TV stations. Because the FCC requires that a certain number of independent voices exist in each market, the number of entities having ownership of two TV stations in a market are limited. The FCC has ruled that ownership of two TV stations in a market will be granted on a first come, first served basis. The FCC has a problem when two applications are filed on the same day.

The FCC normally considers applications filed anytime during the day as arriving at the same time. If there are more applicants than the limit of one or two duopolies that can be allowed in a market and they file on the same day, the FCC will have to select which owners are able to proceed with the purchase of an additional station. The method the FCC is proposing to solve the conflict is the use of a lotteries by the random selection of numbered Ping-Pong balls. The order your number comes up determines the order your application gets processed.

The FCC asks if they should use lotteries or alternatives such as auctions or some other first come, first served basis.

This notice was adopted on September 8, 1999 and released on September 9, 1999. Comments are due on October 4, 1999 and reply comments are due on October 12, 1999. This notice was published in the FEDERAL REGISTER on September 30, 1999 on pages 52,756-52,757.

#### MM Docket No. 99-25; RM-9208; RM-9242

##### Creation of Low Power Radio Service

The FCC has granted a request by Greater Media Inc. to delay the due date for reply comments in the Low Power FM rulemaking. Greater Media requested an opportunity to reply in this proceeding after the FCC issued its Notice of Rulemaking in the matter of digital audio broadcasting.

The FCC plans to take up the matter of digital audio broadcasting during its October 21st Meeting, so they extended the LPFM reply period to end 14 days after that meeting which is November 5th.

This is the fourth extension of the reply period with the comment period having been extended three times. The notice was adopted and released on September 17, 1999, which was the last deadline, the FCC had set for reply comments.

*Compiled from FCC notices ([www.fcc.gov](http://www.fcc.gov)) and the FEDERAL REGISTER ([www.access.gpo.gov](http://www.access.gpo.gov))*



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## CHAPTER 24 SUSTAINING MEMBERS

### RECENT RENEWALS:

Pinnacle Systems (formerly Hewlett-Packard)  
Norlight Telecommunications  
Sony Broadcast  
WMSN-TV 47

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**FIRST CLASS MAIL**

Newsletter edited on Pagemaker 5.0 by: Mike Norton

Contributors this month: Lloyd Berg, Vicki Kipp, Neal McLain, Tom Smith, and Tom Weeden.

Thanks to Leonard Charles for his work on the Chapter 24 WWW page.

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# OCTOBER MEETING and PROGRAM



Society of Broadcast Engineers  
CHAPTER 24 MADISON, WISCONSIN  
Wednesday, October 20, 1999

## Broadcasters Clinic and Upper Midwest Regional SBE Meeting

This month's meeting will take place during the Broadcast Clinic.

SBE Annual Membership Meeting  
at 4:00 p.m.

SBE National Awards Dinner  
at 6:15 p.m.

(contact Linda Godby-Emerick at the National SBE office at (317)253-1640,  
for tickets to the Awards Dinner)

Marriott - Madison West  
1313 John Q. Hammonds Drive

Visitors and guests are welcome at all of our SBE meetings!

### 1999 UPCOMING MEETING/PROGRAM DATES:

Day	Date	Program
Sunday	October 31	HDTV Truck Tour (Special Event)
Thursday	November 18	Youth Night