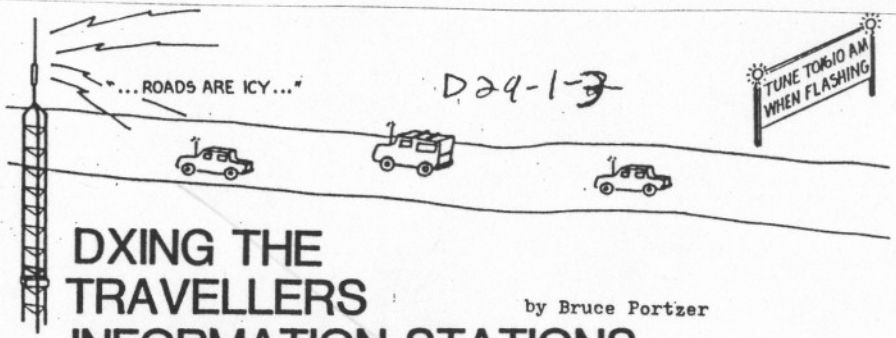



# DXING THE TRAVELLERS INFORMATION STATIONS

by Bruce Portzer

Travellers Information Stations are one of the more interesting types of stations you can hear on medium wave. TIS stations, as they are otherwise known, are low powered transmitters that generally transmit a continuous recording of interest to motorists and/or tourists. These stations operate on 530 and 1610 kHz in the US. In Canada, they have shown up on a number of other frequencies.

Most TIS stations are operated by government agencies. In fact, The FCC issues TIS licenses only to government agencies. They must adhere to a number of technical limitations, including a maximum power output of ten watts and limitations on antenna height. The stations must also adhere to other limitations to prevent interference with AM stations on 540, 550, 560, 1580, 1590, and 1600 kHz. A complete set of the FCC rules on TIS stations is included at the end of this article for those of you interested into them.

The 1610 outlet is the preferred frequency of operation for TIS stations. Many more TISs operate on 1610 than on 530. The main reason is that it is easier to "match" the transmitter output to the electrically short antenas allowed by the FCC. However, some stations must operate on 530 simply to prevent interference to or from nearby broadcast stations. That's why the TIS at the Los Angeles airport operates on 530: to prevent interference with KDAY-1580 in nearby Santa Monica. Likewise, we have six TIS stations in Seattle on 530 because of local KJET-1590.

As I mentioned earlier, only government entites are allowed to operate TIS stations. These would include the US National Park Service, the state of Illinois, the City of Gatlinburg, Cook County, and the South Succotash Sewer District. The Gatlinburg Chamber of Commerce and Disney-land aren't eligible, although Chambers of Commerce may supply material for some stations. If you've heard of such stations operated by private organizations, they're what are called "limited radiation devices", which can operate unlicensed on any clear frequency, using less than 100 milliwatts. As far as the FCC is concerned, they're in the same category as the wireless microphones you can buy at Radio Shack.

The "programming" on a TIS is usually a continuously repeating message. The content of the message obviously depends on where the station is located and why it was put there in the first place. The most common uses for the systems include:

Information about tourist sites, especially at national parks. The messages can vary from "Don't feed the bears", to a description of what you're seeing, to availability of campgrounds. Some of these stations are seasonal, operating only during the tourist season.

Information on road conditions, especially at mountain passes. The Washington Dept of Transportation has several such transmitters in operation. These, too, may be seasonal. They may operate only during the winter, when inclement weather can suddenly make roads impasible.

Airport information, such as locations of airline terminals, parking garages, baggage claim areas, etc. The airports at Toronto, Los Angeles, Cincinatti, and other cities have TIS transmitters.

Information on freeway and road construction work to advise motorists of potential delays and detours. Some of the stations are temporary. When the construction work is finished, the station is packed up and never heard from again.

Traffic reports. There is a TIS like this in Chicago, and one recently started operation in Orange County, California.

A typical TIS installation consists of a transmitter in a small weather-proof cabinet mounted right next to the antenna. The antenna is usually a whip or short tower. Some installations use what is known as leaky co-ax or Heliax cable, which is similar your antenna leadin, except it can radiate for short distances: this is usually buried underground and has the advantage of creating a long narrow coverage pattern.

The audio is usually fed via a phone line, or sometimes via a UHF radio link, to the transmitter. It is becoming quite common to have a dial up phone line (such as we all have in our homes and offices), as opposed to a much more expensive dedicated line (similar to the studio to tranmitter link operated by radio stations). It is now possible to install a solid state audio recorder (one with no moving parts) at the transmitter. The user then dials up the transmitter, the recorder answers the phone, the user recites his message and hits a "start" code on his touch tone phone. The recorder and transmitter then transmit the message over and over and over until someone tells them otherwise. Some of the earlier TISs had cassette recorders with continuous loop tapes, which proved to be extremely unreliable and had no end of mechanical problems due to things like temperature and humidity extremes.

The transmitters and antennas can be interesting to track down, but generally they aren't all that interesting to look at. I drive past one every day: it's just a grey box attached to a whip antenna in the grassy part of a freeway interchange. I've also seen several at Yellowstone Park, which are also small grey boxes attached to whip antennas. At Yellowstone, they're generally attached to the side of a rest room or some other utilitarian building. There are also a few solar powered units at Yellowstone, in out of the way areas without electricity.

The range of a typical TIS is about a mile or two on a typical car radio. A good TIS installation in a favorable location can be heard several miles farther during the day on a good receiver and antenna. At night, some TIS stations can be heard much farther. Under ideal circumstances, the range can be several hundred miles. I'm not sure what the record is for longest TIS reception, but several have been heard about 700 miles away under ideal circumstances.

DXing TIS stations can be a real challenge, and can require lots of patience and detective work. Due to the low power, the signals aren't very strong to begin with. You sometimes may encounter several of them fading in and out at the same time. A TIS only needs to stay within 100Hz of its assigned frequency, compared to 20Hz for broadcasters. So even if everyone is legal, a 200Hz buzz can accompany reception of two or more TIS stations. To make matters worse, the voices you hear are rarely those of professional announcers. More likely, they're whoever happened to be hanging around the office that morning. So you're subject to whatever twang, monotone, or other speaking traits the person may have. Also, the audio quality isn't the greatest, due to limitations imposed by the FCC. Usually they're about as good as a telephone.

TIS stations have one really wonderful trait that regular broadcast stations don't have. The announcements are short and they are repeated over and over and over again. If you missed something the first time, there's always a second or third or fourth chance at it, or a 150th chance if the first 149 weren't successful. You can probably keep trying until the sun comes up.

Here are a few tips which may come in handy for TIS DXing:

1. Be patient. The signal may be readable only every few minutes, or it may improve over time. If there are two or more stations fading in and out, try to concentrate on one of them, like you would do with

regular broadcasters.

2. After several sesssions on 530 or 1610. you will begin to recognize the regulars by the announcers' voices or the message contents. This will help alert you to the prsence of new ones on the channel.

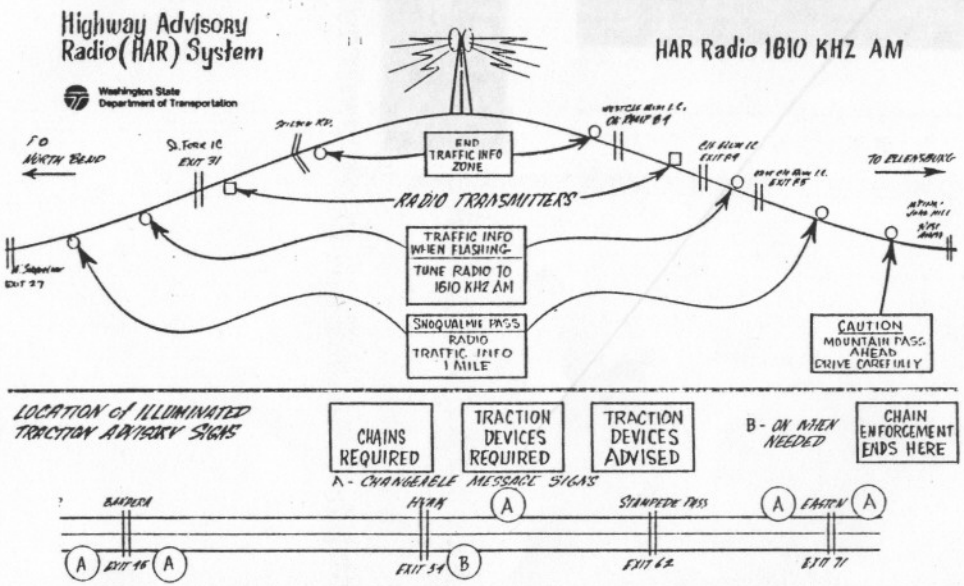
3. Try to write down the complete message being sent. As it's repeated over and over, you'll be able to focus on the "holes" in what you've copied, so you'll know which parts to concentrate on.

4. It's usually possible to narrow down the identity of a station by the contents of the message. If you keep hearing "baggage claim", it's probably an airport. If you hear "chains required" and it's wintertime, you probably have something on the highway leading to a mountain pass or ski resort. Listen carefully for highway numbers, call signs, and geographical locations. They can really pin down what you are hearing. If I hear "the road to Paradise is closed" on 1610 just after a January snowstorm, I know it's the TIS at Mount Rainier National Park because Paradise is the name of a visitor center and lodge. On the other hand it could be a profound message from a preacher on the Caribbean Beacon.... Keep a road atlas and/or maps handy; they'll be a big help.

5. The ears can sometimes fool you. Between the weak signal, the speakers' voices, and background noise, callsigns and names can come wrong. It's amazing how much KNEZ392 can sound like KNFB252 when the callsign is given.

6. Use an audio filter if you have one. Have the bandpass set to get rid of the low frequency hum and the high frequency hiss. It will help improve the clarity of what you're hearing.

There are two publications available which list Travellers Information Stations. One is IRCA's Almanac, which has a list of TIS stations and beacons in it. The other is the TIS/HAR Station Guide. This book is a real goldmine of information on TIS stations, and includes addresses, photos and descriptions of typical installations, copies of verifications, texts of messages, transmitter locations (latitude/longitude), and other facts. It's available from the IRCA Goodie Factory for $10, or from Gilfer.




This is a diagram of the TIS system used by the Washington Dept of Transportation along I-90 across Snoqualmie Pass. They added a transmitter at the top of the pass since this drawing was produced. Note how the transmitters and signs are integrated together.

D29-2-3

Once you have heard and identified a TIS station, you may want to send them a reception report, and hopefully receive a verification. As a minimum, you will need to determine who operates the station and then obtain an address for them. Most agencies will verify your report, if you can direct it to the right person. Some possible approaches include looking it up in the TIS/HAR guide or IRCAs Verifications Signers column, or by calling and asking for the person in charge of their radio system. After you've been transferred around the office, you'll hopefully have a name and address to send your report to. You may have even told them to expect your report. If all else fails, send your report to Communications Manager. Name of Government Agency. Street Address (if you have one). City, etc. If it's a state agency (Highway Dept, etc), send it to the state Capital. Your report should at least include the text of what you heard (or as much as you could decipher). Better yet, send them a cassette tape.

Along with this article, I've included a copy of the FCC rules on TIS stations, a copy of a typical verification, and a list of TIS stations which have been reported some distance away in recent years. Good luck in your quest!


ANAHEIM POLICE DEPARTMENT
425 South Harbor Boulevard
P. O. Box 3369
Anaheim, California 92803-3369


February 4, 1987

Mr. Steve Mittman
2248 W. 37th Street
San Pedro, CA 90732

Dear Mr. Mittman:

Your letter of January 30, 1987, was received in which you indicate that you were able to pick up the signal from our low band AM radio on 530 KHz.

Our station is scheduled to operate 24 hours each day, although since the system is new we have experienced some operational problems that have precluded smooth continuous operation. The text you quoted in your letter is the tape which is played when there are no significant traffic congestion problems in the Disneyland commercial/recreation area.

The equipment was installed by LocRad, Inc., of Los Angeles, who also installed the system at LAX. It operates on a rated output of 10 watts using an LPB, Inc., TX 2-30 transmitter, a Dorrough Electronics Discriminate Audio Processor and a Broadcast Electronics 3100 tape player, using a Valcom VN530 antenna which has a height of 50 feet from a ground elevation of 120 feet utilizing a 40 foot hollow chemical salt filled copper grounding rod rather than a radial grounding system.

Thank you for your interest in our system. I hope I have sufficiently answered your inquiry.

Very truly yours,

JIMMIE D. KENNEDY
CHIEF OF POLICE

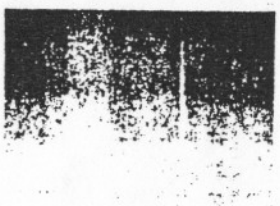
James S. Thalman

JAMES S. THALMAN, LIEUTENANT
TRAFFIC BUREAU COMMANDER

This is a list of TIS stations which have been reported to DX Monitor during the past few years. This list is by no means complete. I've included it to give you some idea of the stations that have been heard via skywave, and the distances they can reach. ome get out quite well for ten watts.

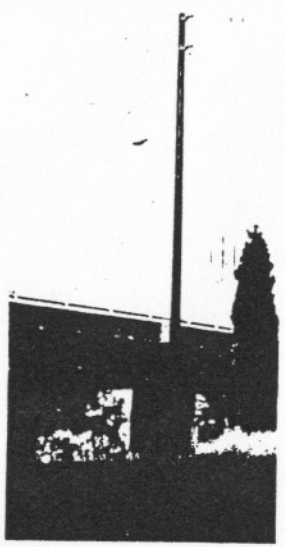
D29-3-3

| FREQ | STATION LOCATION | WHERE HEARD | COMMENTS |
|---|---|---|---|
| 530 | Tuscon,AZ | CO | Airport |
| | Coronado,CA | CA | Op'd by Police |
| | Los Angeles Airport | UT, Northern CA | |
| | Truckee, California | Pacific Northwest, Southern CA | Op'd by Caltrans |
| | Seattle (6 stations) | Alberta, OR, BC | |
| | Toronto. Ontario | Northeast US, Ontario | Located at Airport |
| 1610 | Phoenix, AZ | CA,UT,CO | Sky Harbor Airport |
| | Grand Canyon, AZ | CA,UT | |
| | Barstow CA | CA | |
| | Chicago, IL | Ontario, midwest US | Traffic Reports |
| | Mt Desert Isle (Bar Harbor) ME | NE US | |
| | Raleigh-Durham, NC | Wash DC area | Airport |
| | Cincinatti, OH | Great Lakes area | Airport |
| | Olympia, WA(several) | OR,BC,Alberta | Freeway constr |
| | Mount Rainier NP, WA | Alberta, OR | |
| | Chief Joseph Dam (near Brewster), WA | BC,OR,WA | |



Left: A TIS transmitter operated by the Washington Dept of Transportation.

Below and next page: The FCC rules on Travellers Information Stations.



**§ 90.242 Travelers' information stations.**

(a) *The frequencies 530 and 1610 kHz.* May be assigned in the Local Government Radio Service for the operation of Travelers' Information Stations subject to the following conditions and limitations:

(1) For Travelers' Information Station applications only, eligibility requirements as set forth in § 90.17(a) are extended to include park districts and authorities.

(2) Each application for a station or system shall be accompanied by:

(i) A statement certifying that the transmitting site of the Travelers Information Station will be located at least 15.0 km, (9.3 miles) measured orthogonally, outside the measured 0.5 mV/meter daytime contour of any AM broadcast station operating on a first adjacent channel (540 kHz or 1600 kHz). If the measured contour is not available, then the calculated 0.5 mV/m field strength contour shall be acceptable. These contours are available for inspection at the concerned AM broadcast station and FCC offices in Washington, D.C.

(ii) In consideration of possible cross-modulation and inter-modulation interference effects which may result from the operation of a Travelers Information Station in the vicinity of an AM broadcast station on the second or third adjacent channel, the applicant shall certify that he has considered these possible interference effects and, to the best of his knowledge, does not foresee harmful interference occurring to broadcast stations operating on 550 kHz, 560 kHz, 1580 kHz, or 1590 kHz.

(iii) A map showing the geographical location of each transmitter site and an estimate of the signal strength at the contour of the desired coverage area. For a cable system, the contour to be shown is the estimated field strength at 60 meters (197 feet) from any point on the cable. For a conventional radiating antenna, the estimated field strength contour at 1.5 km (0.93 mile) shall be shown. A contour map comprised of actual on-the-air measurements shall be submitted to the Commission within 60 days after station authorization or completion of station construction, whichever occurs later. A sufficient number of points shall be chosen at the specified distances (extrapolated measurements are acceptable) to adequately show compliance with the field strength limits.

(iv) For each transmitter site, the transmitter's output power, the type of antenna utilized, its length (for a cable system), its height above ground, distance from transmitter to the antenna, and the elevation above sea level at the transmitting site.

(3) Travelers Information Stations will be authorized on a secondary basis to stations authorized on a primary basis in the bands 510-535 and 1605-1715 kHz.

(4) A Travelers Information Station authorization may be suspended, modified, or withdrawn by the Commission without prior notice of right to hearing if necessary to resolve interference conflicts, to implement agreements with foreign governments, or in other circumstances warranting such action.

(5) The transmitting site of each Travelers' Information Station shall be restricted to the immediate vicinity of the following specified areas: Air, train, and bus transportation terminals, public parks and historical sites, bridges, tunnels, and any intersection of a Federal Interstate Highway with any other Interstate, Federal, State, or local highway.

(6) A Travelers Information Station shall normally be authorized to use a single transmitter. However, a system of stations, with each station in the system employing a separate transmitter, may be authorized for a specified area provided sufficient need is demonstrated by the applicant.

(7) Travelers Information Stations shall transmit only noncommercial voice information pertaining to traffic and road conditions, traffic hazard and travel advisories, directions, availability of lodging, rest stops and service stations, and descriptions of local points of interest. It is not permissible to identify the commercial name of any business establishment whose service may be available within or outside the coverage area of a Travelers Information Station. However, to facilitate announcements concerning departures/arrivals and parking areas at air, train, and bus terminals, the trade name identification of carriers is permitted.

(b) *Technical standards.* (1) The use of 6K00A3E emission will be authorized, however N0N emission may be used for purposes of receiver quieting, but only for a system of stations employing "leaky" cable antennas.

(2) A frequency tolerance of 100 Hz shall be maintained.

(3) For a station employing a cable antenna, the following restrictions apply:

(i) The length of the cable antenna shall not exceed 3.0 km (1.9 miles).

(ii) Transmitter RF output power shall not exceed 50 watts and shall be adjustable downward to enable the user to comply with the specified field strength limit.

(iii) The field strength of the emission on the operating frequency shall not exceed 2 mV/m when measured with a standard field strength meter at a distance of 60 meters (197 feet) from any part of the station.

(4) For a station employing a conventional radiating antenna(s) (ex. vertical monopole, directional array) the following restrictions apply:

(i) The antenna height above ground level shall not exceed 15.0 meters (49.2 feet).

(ii) Only vertical polarization of antennas shall be permitted.

(iii) Transmitter RF output power shall not exceed 10 watts to enable the user to comply with the specified field strength limit.

(iv) The field strength of the emission on the operating frequency shall not exceed 2 mV/m when measured with a standard field strength meter at a distance of 1.50 km (0.93 miles) from the transmitting antenna system.

(5) For co-channel stations operating under different licenses, the following minimum separation distances shall apply:

(i) 0.50 km (0.31 miles) for the case when both stations are using cable antennas.

(ii) 7.50 km (4.66 miles) for the case when one station is using a conventional antenna and the other is using a cable antenna.

(iii) 15.0 km (9.3 miles) for the case when both stations are using conventional antennas.

(6) For a system of co-channel transmitters operating under a single authorization utilizing either cable or conventional antennas, or both, no minimum separation distance is required.

(7) An applicant desiring to locate a station that does not comply with the separation requirements of this section shall coordinate with the affected station.

(8) Each transmitter in a Travelers Information Station shall be equipped with an audio low-pass filter. Such filter shall be installed between the modulation limiter and the modulated stage. At audio frequencies between 3 kHz and 20 kHz this filter shall have an attenuation greater than the attenuation at 1 kHz by at least:

$60 \log_{10} (f/3)$ decibels.

where "f" is the audio frequency in kHz. At audio frequencies above 20 kHz, the attenuation shall be at least 50 decibels greater than the attenuation at 1 kHz.

[43 FR 54791, Nov. 22, 1978; 44 FR 67118, Nov. 23, 1979; 49 FR 48712, Dec. 14, 1984]

# Soothing AM radio voices sought to report Orange County traffic jams

LOS ANGELES (AP) — Wanted: People with pleasant voices willing to take part in a pioneering radio program to tell antsy motorists how long they can expect to be stuck in traffic caused by road construction. Apply to Caltrans.

Actually, transportation officials haven't had to run such recruiting ads for their new highway reports program because they've had plenty of volunteers from the staff at Caltrans' Orange County office, agency spokesman Albert Miranda said in a telephone interview from his Orange office Tuesday.

And with Miranda still checking Caltrans staffers' audition tapes, the agency is planning to take to Orange County's AM airwaves within two weeks to begin letting motorists know what to expect as they make their way to and from work on one of the most rapidly expanding freeway systems in the country.

> "Because of the amount of work we're doing out there and the conditions it is going to create for motorists, we decided to utilize the 530 frequency channel."
>
> *— Albert Miranda, Caltrans' Orange County office*

"Because of the amount of work we're doing out there and the conditions it is going to create for motorists, we decided to utilize the 530 frequency channel," Miranda said.

He said the channel is reserved by the Federal Communications Commission for emergency and road condition broadcasts. It's often tuned in by those approaching such congested areas as Disneyland and the Los Angeles and Orange County airports to learn of local traffic conditions. Winter travelers to the mountains also can tune it in in many areas to learn of road conditions.

However, Miranda said Caltrans officials believe this is the first time the 530-AM frequency has been used in California to pass out information about an ongoing road construction project.

If the broadcasts catch on, Miranda said Caltrans might expand them to other areas.

"We have looked into doing the same type of thing on the Ventura Freeway in L.A. County," he said.

The first Orange County project Caltrans broadcasters will be telling motorists about will be the massive reconstruction of the Interstate 5-Costa Mesa Freeway interchange.

The broadcasts will not only tell of road conditions caused by that project but also will let drivers know the cost and how long the work will take to complete. Reports also will cover future projects Caltrans has planned.

"It's hopefully to help people plan their commute, especially if they are daily commuters," Miranda said. "If a ramp is going to be closed or a section narrowed by a lane or two, we can let them know ahead of time."

The broadcasts' range will be limited to two or three miles, Miranda said. He added that should notify drivers far enough down the road that they can think of taking alternate routes when they learn of traffic jams ahead.

2-25-11

Above: LA Times via Steve Mittman