Engineering Statement in support of
FCC FORM 349 APPLICATION
FOR
FM TRANSLATOR STATION CONSTRUCTION PERMIT
(FOR A NEW FM TRANSLATOR STATION)

FM CHANNEL 284 (104.7 mHz)
Serving Twisp and Winthrop, Washington

Introduction and Summary:

This is an application by Dr. Mike Isenhart (the Applicant) for a new FM translator station serving the communities of Twisp and Winthrop, Washington.

The new FM translator station is proposed for operation on FM Channel 284 (104.7mHz) with 0.250kW Effective Radiated Power (Horizontal & Vertical Polarization) at -96 meters HAAT using a Scala CL-FMVH (FCC pattern number 16156) directional antenna oriented 130-degrees true.

The antenna location is proposed at north latitude 48-28-41 and west longitude 120-15-19 (NAD-27). The antenna radiation center will be 15-meters above ground level. The antenna will be mounted on a new antenna support structure. The new structure will be 17-meters AGL including all appurtenances. The structure will not require registration.

Public Notice of this application will be published in the Methow Valley News, 101 N Glover Street, Twisp, Washington, on or about August 27th, 2003.

The Public Inspection File for this application will be available for review at KLVR Radio, 109 South Glover, Twisp, Washington, during normal business hours.

The new FM translator station proposes to rebroadcast the signal of KEYG-FM, a class C radio station, operating on channel 253(98.5 mHz), serving Grand Coulee, Washington.

The proposed FM translator station will increase human exposure to radiofrequency electromagnetic fields by no more than 49.4% of the maximum permissible general population/uncontrolled exposure at the closest possible ground approach to the antenna structure.

The elevation data pertinent to this application (rounded to the nearest meter) is as follows:

Overall Structure Height Above Ground	17-meters
Elevation of Site Above Mean Sea Level	877-meters
Height of Antenna Radiation Center AMSL	892-meters
Height of Antenna Radiation Center AGL	15-meters
Antenna HAAT	-96-meters

Site elevation was obtained by examination of a USGS 7-1/2 minute series topographic map.

Computer generated elevations are based on an NGDC 30 arc-second digital elevation model.

This is a long-form application of CDBS short-form File Number BNPFT-20030317ABF for Facility ID 149014.

Contours were generated using rfInvestigator-FM, a commercially available radio-propagation analysis tool developed and sold by rfSoftware, Inc., Gainesville, Florida. The FCC has previously accepted submissions prepared with this software tool.

Summary of Exhibits:

Exhibit **1-1** is a Contour Study of the Original and Proposed 60dBu F(50:50) contours.

Exhibit **11-1** is a list of possible affected stations (co-channel, 1st 2nd and 3rd adjacent and IF) within 350km of the proposed FM translator station.

Exhibit **11-2** is a tabulation of Radial Terrain Elevation Data used to establish the Height of Average Terrain.

Exhibit **11-3** is a tabulation and polar plot of the relative gain of the proposed antenna.

Exhibit **12-1** is a Contour Interference Study of the proposed FM translator station and the closest affected stations.

Exhibit **12-2** is a tabulation of distances to the predicted 60dBu F(50:50) primary service contour of the proposed FM translator station.

Exhibit **12-3** is a tabulation of distances to the predicted 40dBu F(50:10) interfering contour of the proposed FM translator station.

Exhibit **12-4** is a tabulation of distances to the predicted 54dBu F(50:10) interfering contour of the proposed FM translator station.

Exhibit **12-5** is a tabulation of distances to the predicted 100dBu F(50:10) interfering contour of the proposed FM translator station.

Exhibit **12-6** is a Contour Study demonstrating that no part of the 34dBu F(50:10) contour extends over the Canadian border.

Exhibit **12-7** is a tabulation of distances to the predicted 34dBu F(50:10) contour of the proposed FM translator station.

Exhibit **16-1** is an rf exposure study demonstrating that the proposed FM translator station will increase the general population/uncontrolled exposure limits by no more than 49.4%.

Exhibit **16-2** is a TOWAIR determination that states the structure does not require registration.

Contour Interference Study:

Exhibit **12-1** is a Contour Interference Study showing the separations between contours of the proposed translator station and the pertinent affected FM stations.

The label “Proposed” identifies the proposed FM translator station. Four color-coded rings surround Proposed.

- The outermost, dark-blue, ring is the 40dBu F(50:10) interfering co-channel contour.
- The next, light-blue, ring is the 54dBu F(50:10) interfering 1st adjacent contour.
- The red ring is the 60dBu F(50:50) protected contour.
- Finally, the innermost purple ring is the 100dBu F(50:10) interfering 2nd and 3rd adjacent contour.

Each possibly affected station is identified with its call sign. One or two color-coded rings surround each affected station.

- Each affected station will have a protected contour. The color of the protected contour will match the proposed station's interfering contour. That is to say, co-channel will be dark-blue, 1st adjacent will be light-blue and 2nd or 3rd adjacent will be purple.
- Some affected stations, if appropriate to the analysis, will have an interfering contour. The color of that contour will match the proposed station's red protected contour.

If like-colored contours do not overlap then there is no prohibited overlap.

Exhibit **12-1** demonstrates that construction of the proposed FM translator station would not result in any prohibited overlap of contours with any current existing station, construction permit, application, reserved channel, or vacancy since no like-colored contours overlap. For the purpose of this Interference Study prohibited overlap is defined by 74.1204 of the FCC Rules.

Note that in Exhibit **12-1** the 100dBu interfering contour of the proposed FM translator is nearly obscured by the station location marker.

All computations were performed IAW the pertinent FCC rules. All interfering contours were computed using F(50:10) curves or free-space calculations as appropriate. All protected contours were computed using F(50:50), F(50:10) curves or free-space calculations as appropriate.

The proposed FM translator station complies with Section 73.207 of the Commission's Rules concerning FM stations operating 53 or 54 FM channels removed from a facility.

Request for Waiver to the Rules:

The applicant understands that negotiations between the United States and Canada have revised the requirements for FM translator stations near the US/Canadian border. Specifically, 74.1235(d)(3) which limits the 34dBu contour to 60 km no longer applies if the 34dBu contour does not extend over Canadian territory.

Exhibits **12-6** and **12-7** demonstrates that no part of the proposed FM translator stations 34dBu F(50:10) contour extends over the Canadian border. Therefore, the applicant respectfully requests a waiver of rule 74.1235(d)(3).

Minor Changes to the Original Application:

Pursuant to procedures adopted in the *Broadcast Auction First Report and Order* minor changes to the original technical proposal of a short-form filing are allowed if no new mutual exclusivities are created.

The Applicant requests the following minor changes be made to the original application:

- The coordinates of the proposed facility have been changed to relocate to an alternate site.
- The Applicant proposes to change the antenna from a Scala model FMO to a Scala model CL-FMVH oriented 130-degrees true.
- The Applicant proposes to increase the ERP of the proposed facility from 0.060kW to 0.250kW.
- The Applicant proposes to change frequency from FM channel 282 (104.3 mHz) to channel 284 (104.7 mHz).

Exhibit **1-1** demonstrates that, with the change in location, antenna and power, the 60dBu contours of the proposed and original applications overlap.

According to the note in Form 349 General Instructions, Section I, Paragraph E the proposed amendments should be considered minor changes.

FAA Notification:

The proposed FM translator antenna will be mounted on a new 15-meter structure with the radiation center at 15-meters AGL. The overall height of the support structure will be 17-meters AGL. Exhibit **16-2** indicates that notification of the FAA need not be made.

Environmental Statement:

The proposed FM translator station will be located a new antenna support structure. The antenna radiation center will be at 15-meters AGL. The total height of the new antenna support structure will be 17-meters AGL.

To the best knowledge of the Applicant:

- The new structure will not be located in an officially designated wilderness area or wildlife preserve, nor does it threaten the existence or habitat of endangered species.
- The facility will not affect districts, sites, buildings, structures or objects significant in American history, architecture, engineering or culture that are listed in the National Register of Historic Places, or eligible for listing, nor does it affect Indian religious sites.
- The site is not located in a flood plain and will not require significant changes in surface features such as wetland fill, deforestation or water diversion.
- The structure will not be illuminated.

The Applicant will cooperate with all site users, managers and owners with regard to the cessation of operation or the reduction of operating power, whenever it is necessary to comply with the FCC Regulations and Guidelines on Human Exposure to Non-Ionizing RF Radiation.

Exhibit **16-1** shows that construction of the proposed FM translator station will not cause a violation of maximum permissible exposure limits at ground level plus two meters in both the controlled and uncontrolled regions surrounding the existing antenna support structure.

Based on this information it is determined that an Environmental Assessment is not required.

Request for Grant of Application:

The Applicant, Dr. Mike Isenhart, requests the Commission consider this application for the facility proposed herein and respectfully requests the Commission GRANT this application for the facility as proposed.

Respectfully submitted,

Dr. Mike Isenhart
August 22, 2003

Engineers Certification:

The engineering portion of this application was prepared by Joseph M. DiPietro, P.E. (the Engineer) in support of an application filed by the Applicant for a new FM translator station serving the Communities of Twisp and Winthop, Washington.

The Engineer performed all computations used in the preparation of this application. All specialized software programs used to calculate contours, power levels and heights, as well as the various database search tools used to gather information on affected radio stations were developed and written by the Engineer or were developed and written under his direct supervision and control.

The Engineer DOES NOT have a significant business interest in the Applicant.

Joseph M. DiPietro, Professional Engineer.
State of Florida Certificate Number 53242
August 22, 2003