Detect the Difference

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To: Federal Communications Commission

Re: File Number 0072-EX-PL-2005
This is an explanation to item 6a in the application form 442.
The antenna system is located at the Detroit Metropolitan Wayne County Airport (DTW)

NOTE: The system equipment and locations are inclusive of the prior experimental license issued under call sign WC2XOZ.

Sensis Corporation is submitting FCC form 442, file number 0072-EX-PL-2005, for four (4) current transmit antenna placement locations within the property of the Detroit Wayne County Airport (DTW). The system that is in place at DTW consists of 14 fixed positioned antennas by which only four transmit (three at 1030MHz, one at 1090MHz). The remaining ten (10) antennas are receive only.

Sensis desires to continue to radiate with this system. Sensis is currently applying for a new experimental license through the FCC by the form 442 process since the prior call sign (WC2XOZ) has expired and cannot be updated by FCC procedure. The antenna system in place at DTW is a Multistatic Dependent Surveillance (MDS) System which provides identification of transponder equipped aircraft on the airport surface. The MDS system is configured with non-movement, non-rotating, stationary antennas. The data provided by this system is used only for situational awareness and will be used primarily by Northwest Airlines for operational purposes. The objective is to provide airlines increased efficiency by understanding the positioning of aircraft in relationship to gate availability, de-ice pad availability, with the goal of operational cost savings in positioning manpower and reducing fuel costs. This system is not used for safety purposes.

The following is a description of the MDS system:

The MDS (Multistatic Dependent Surveillance) System is a ground based sensor system which uses aircraft transponder data to locate and identify an aircraft position on the surface of the airport. For accuracy, at least three (3) antennas must track an aircraft to accurately locate its position.

For DTW, the MDS System installed consists of fourteen (14) antenna placements throughout the airport grounds.

Each antenna placement consists of the following components:
One (1) Antenna
One (1) Remote Unit (RU)
Power and Communications Cabling

The following is a brief overview of each component:

Note: Table A lists the placement locations, the type of antenna, and the RU type. For each antenna placement, a completed 7460-1 and NF4 form was submitted. If the unit is a RefTran or R/T, a form 6050 was also submitted for that placement.

Antennas: In the submitted 7460's, the antenna placements are described for each of the fourteen (14) placement locations. Each 7460 notes the antenna height mounted on a mast or tower.

SECTOR ANTENNA

OMNI ANTENNA

Antenna	Sector	Omni
VSWR	2.0:1 max	2.0:1 max
Gain	6-9 dBi dependent on azimuth setting	2.8 dBi
Frequency	**1030 MHz +/-5MHz, Transmit 1090 MHz +/-10 MHz, Receive**	**1030 MHz +/-5MHz, Transmit 1090 MHz +/-10 MHz, Receive**
Power	**53 dBm max transmit, 0 dBm Receive**	**53 dBm max transmit, 0 dBm Receive**
Impedance	50 ohms	50 ohms
Vertical 3dB beamwidth	45 degrees	45 degrees
Dimensions	15.25" x 19" x 5.62"	6.5" x 20"
Weight	4 lbs.	7 lbs.

Remote Unit (RU):
For each antenna placement, an RU is connected to an antenna by an RF cable. The RU is bolted to a concrete ground surface or bolted on a concrete pad on a roof near the antenna placement.

The RU enclosure is rugged and weatherproof. The basic function of this unit is to process the transponder information (ADS-B, Mode S, ATCRABS) received at the antenna and convey the information to a Central Processing System for target tracking identification. The RU's for DTW will consist of three types: Receive-Transmit (R/T, 3 placements), Receive Only (RO, 10 placements), and RefTran (1 placement). An RT includes additional electronic hardware compared to an RO, and can interrogate transponders (1030MHz) for Mode A and Mode C information. A RefTran will not be linked via communications lines to a Central Processing System but provides transmitted system synchronization (1090MHz) for the RT and RO units.

The dimensions of a RT, RO, or RefTran are identical.
Specifications: 24” x 18” x 42”, 176 lbs., 120V, 60Hz.

Remote Unit

Communications Cabling:

For each antenna placement RF communications cabling is routed from the antenna to an RU. All cabling is strapped down to comply with local code and airport commission compliance standards. For communications from the RU to a Central Processing System, a Telco service (56-Kbps Digital Data Service (DDS)) line is run.

Power Cabling:

Power to an RU is provided by using a dedicated circuit breaker from an existing electrical panel in an electrical closet nearest the RU placement. The electrical cable routing is from an electrical panel to a cut off switch near the RU. All power cabling will conform to the local code and in compliance to the airport commission standards.

Central Processing System (CPS): The CPS receives information from each RU via telco lines and target tracks are correlated to mapping software which identifies and displays target data on the surface of the airport to display monitors. The CPS for DTW consists of one (1) 24”x36”x72” rack for processing information and communications modems. The CPS rack is located in Room B12 of the DTW ATCT, Building 801.

Best Regards,

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TABLE A
Reference of Antenna Placement Locations at DTW

Site ID	Site Description	Unit Type	LAT (D/M)	LONG (D/M)	Site AMSL	Height AGL	Height AMSL	Antenna Type
X1	NWA Hanger 715	RefTran	42°13’ 31.92”N	83°21’ 33.34”W	640	100	740	Omni
RU1	MacNamara Terminal, ATCT 10th Floor; Building 801	RO	42°12’ 46.10”N	83°21’ 15.49”W	636	140	776	Sector
RU2	Mesaba Hanger, Building 425	R/T	42°12’ 32.19”N	83°20’ 16.65”W	633	60	693	Omni
RU3	L.C. Smith Terminal, County Tower, Building 603	RO	42°13’ 18.20”N	83°20’ 59.66”W	635	120	755	Omni
RU4	NWA Hanger, Building 514	R/T	42°14’ 1.36”N	83°20’ 36.15”W	636	120	756	Omni
RU5	ASR-9 Tower	RO	42°12’ 55.18”N	83°22’ 45.19”W	646	60	706	Omni
RU6	NWA Hanger, Building 715	RO	42°13’ 33.91”N	83°21’ 30.95”W	640	100	740	Omni
RU7	RTR ‘A’	R/T	42°11’ 38.92”N	83°22’ 7.18”W	638	60	698	Sector
RU8	RTR ‘J’	RO	42°11’ 46.64”N	83°20’ 43.71”W	633	60	693	Omni
RU9	MALS-R Shelter	RO	42°11’ 54.43”N	83°19’ 32.76”W	629	30	659	Omni
RU10	MacNamara Terminal, Building 830	RO	42°12’ 10.49”N	83°21’ 42.29”W	636	46	682	Omni
RU11	Westin Hotel, Building 831	RO	42°12’ 25.86”N	83°21’ 28.04”W	636	60	696	Omni
RU12	Westin Hotel, Building 831	RO	42°12’ 27.67”N	83°21’ 26.75”W	636	60	696	Omni
RU13	L.C. Smith Terminal	RO	42°13’ 9.04”N	83°20’ 51.89”W	636	58	694	Omni