TECHNICAL EXHIBIT
APPLICATION FOR CONSTRUCTION PERMIT
NEW FM TRANSLATOR STATION (FAC. ID 144993)
PRESCOTT, ARIZONA

AUGUST 14, 2003

CH 267 0.05 KW(MAX-DA) 1687 M AMSL

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Technical Narrative

This Technical Exhibit was prepared in support of the "long form" application for construction permit for a new FM translator station at Prescott, Arizona (FCC File No. BNPFT-20030317GPB). The instant application proposes a maximum directional antenna effective radiated power (ERP) of 0.05 kW with an antenna height of 1687 m AMSL.

Tower Registration

The overall height above ground of the existing tower structure is 32 m. Antenna structure registration is not required for the existing structure. There will be no change in the overall height of the existing structure.

Environmental Considerations

The proposal is categorically excluded from environmental processing, as an existing tower site is to be employed, and the proposal complies with the FCC Rules concerning human exposure to radio frequency (RF) energy.[1] The proposal will not exceed

[1] Given that the proposed ERP will be less than 100 watts, the proposal is categorically excluded from environmental processing pursuant to Section 1.1307 of the FCC Rules.

2 % of the RF exposure limit for general population/uncontrolled environments for the frequency proposed. The calculation of RF energy at 2-m above ground was made under the procedures of OET Bulletin No. 65.[2] The formula employed is as follows:

$$S = \frac{(33.4)F^2P}{R^2}$$

Where, S = power density in $\mu W/cm^2$, F = relative field factor at the angle to the calculation point, P = the total effective radiated power relative to a dipole in watts, and R = distance from the antenna radiation center to the calculation point in meters. Based on the conservative assumption of a relative field factor of 0.5 for a single dipole/reflector antenna, with a total effective radiated power of 100 watts, and an antenna radiation center height above ground of 17 m, the calculated power density will not exceed 4 $\mu W/cm^2$. Therefore, the calculated RF exposure at 2 m above ground will not exceed 2 % of the limit of 200 $\mu W/cm^2$ for general population/uncontrolled environments.

The transmitter site shall be restricted from access. In the event that personnel are required to climb the structure, the proposed FM translator transmissions shall be reduced or terminated as necessary to prevent RF exposure above the FCC recommended limits.

Predicted Coverage Contour

The predicted 60 dBu coverage contour was calculated in accordance with Section 73.313 of the FCC Rules. The average terrain elevations from 3 to 16 km from the proposed site were computed using the U.S.G.S. 3-second terrain database. The distances to the predicted 60 dBu coverage contour for the proposed booster was determined using the average elevations of radials spaced every 30-degrees of azimuth. The antenna radiation center height above average terrain and the ERP in each radial direction were used in conjunction with the propagation prediction curves of Section 73.333 to determine the

[2] Federal Communications Commission OET Bulletin No. 65, Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (Edition 97-01, August 1997).

distances to the contour. Figure 3 is a map showing the predicted 60 dBu coverage contour of the proposed translator facility.

The proposal complies with Section 74.1235(b)(2) concerning power limitations and antenna height, as shown in the table below.

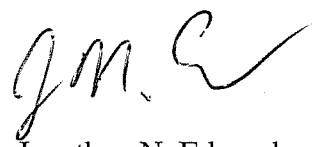
Azimuth (deg.True)	HAAT (m)	FCC 74.1235(b)(2) mERP (W)	Proposed mERP (W)
0	179	75	0.02
30	270	34	8.4
60	234	50	35
90	202	62	50
120	163	92	35
150	112	205	8.4
180	22	250	0.02
210	-21	250	0.02
240	126	170	1.9
270	205	62	3.4
300	223	50	1.9
330	193	62	0.02

Allocation Considerations

Sheet 1 of Figure 4 summarizes the allocation study for the proposed facility. As the effective radiated power is less than 100 watts, there are no minimum spacing requirements with respect to IF related facilities. The tabulation lists the results of a numerical analysis of the potential for contour overlap for all nearby co-channel and first, second, and third-adjacent channel facilities. For the purposes of the numerical study, the maximum

HAAT and maximum ERP values were used in determining the maximum distance in any direction to the predicted coverage and interfering contours.[3]

Sheet 2 of Figure 4 is a map depicting the allocation with respect to the predicted protected contours of those stations close enough to warrant further study. This is based on the numerical analysis in Figure 2, where there is an indication of the potential for prohibited overlapping contours. As indicated on the map, the proposed facility does not involve prohibited contour overlap with the protected contours of any of the pertinent facilities considered.



Jonathan N. Edwards

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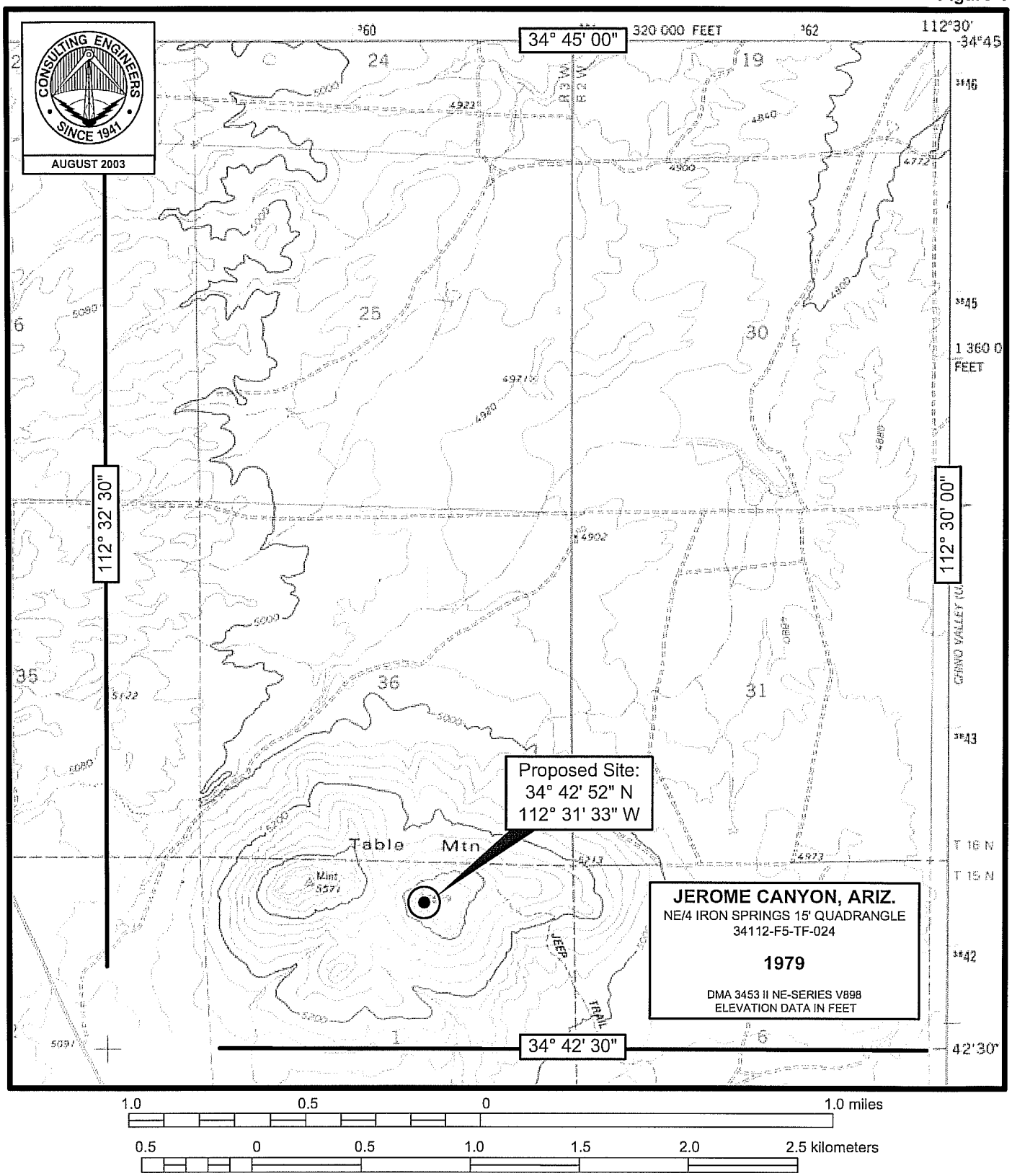
August 14, 2003

[3] Where the maximum HAAT figure was not available the radiation center height above mean sea level was employed as a worst-case estimate.

Figure 1



PROPOSED TRANSMITTER SITE

NEW FM TRANSLATOR STATION

PRESCOTT, ARIZONA

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du Treil, Lundin & Rackley, Inc. Sarasota, Florida

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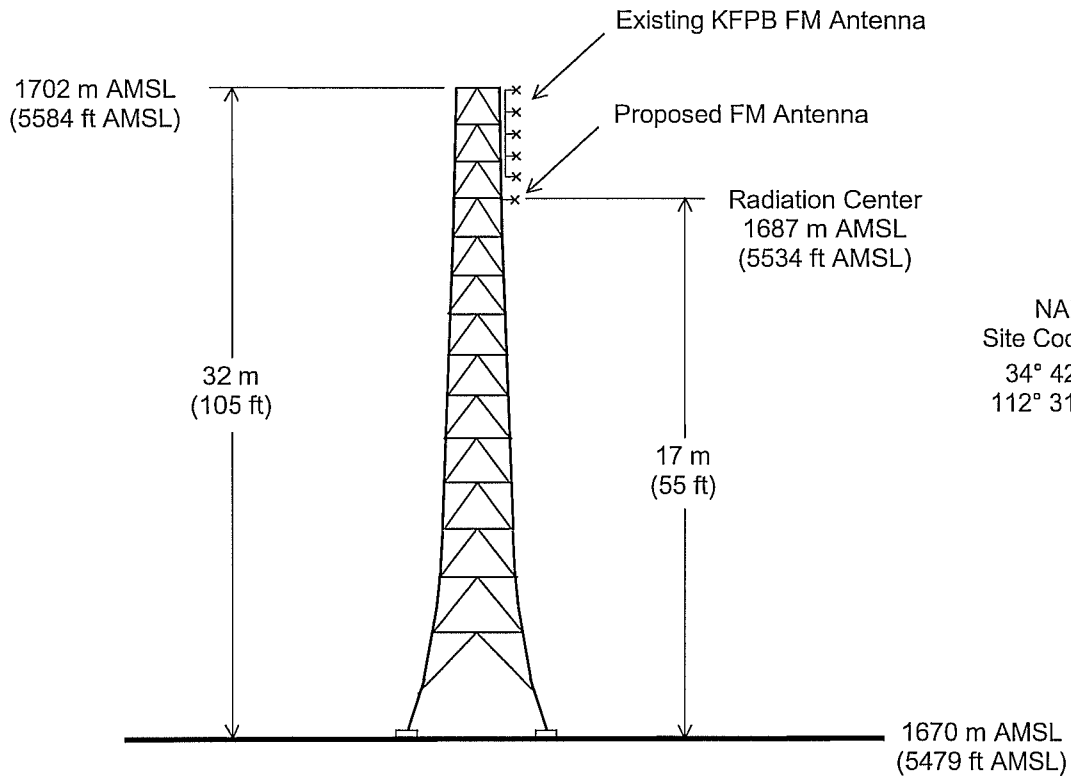
AUGUST 2003



Not to Scale

PROPOSED ANTENNA AND SUPPORTING STRUCTURE

NEW FM TRANSLATOR STATION

PRESCOTT, ARIZONA

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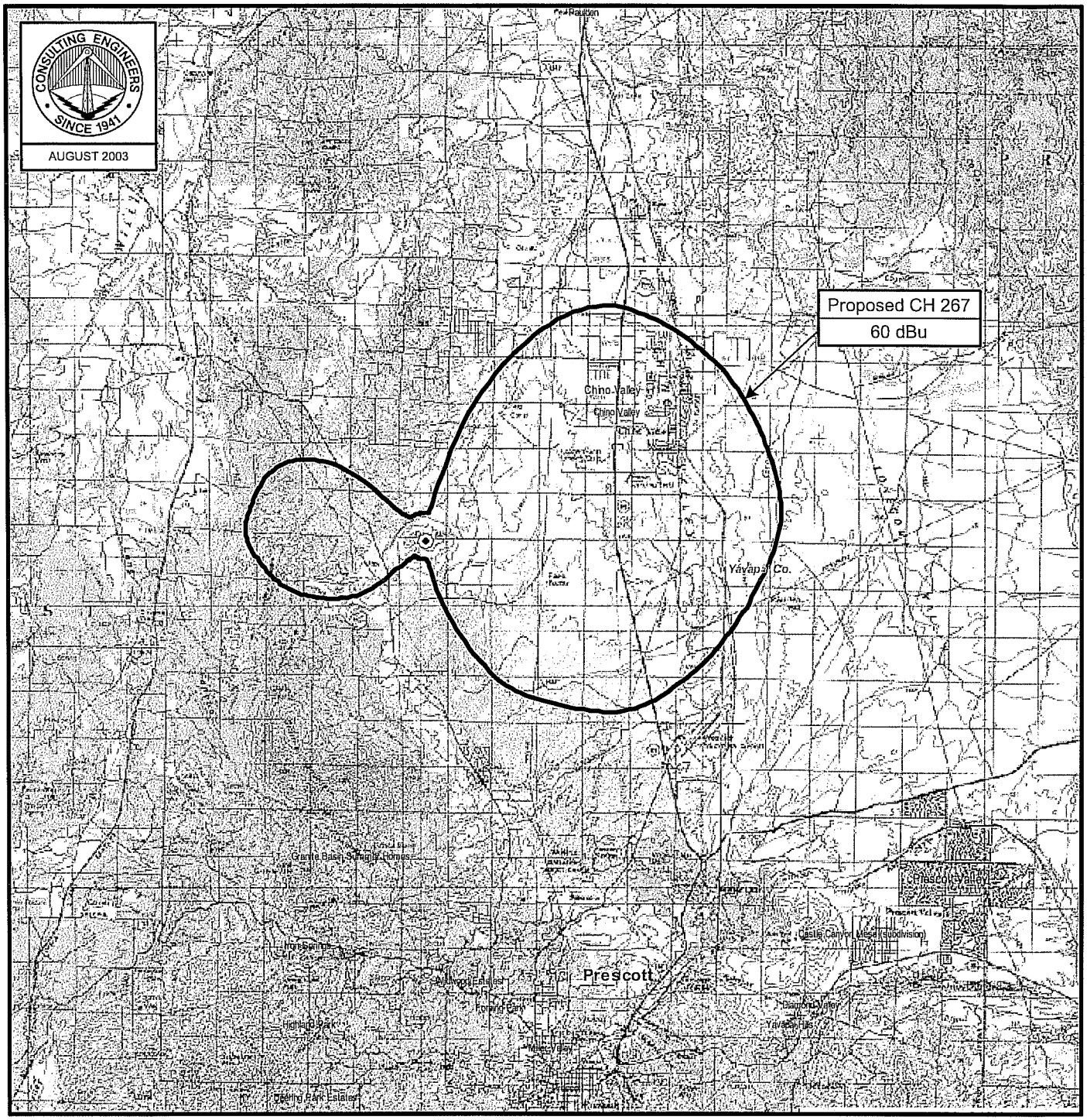

PREDICTED COVERAGE CONTOUR MAP

NEW FM TRANSLATOR STATION

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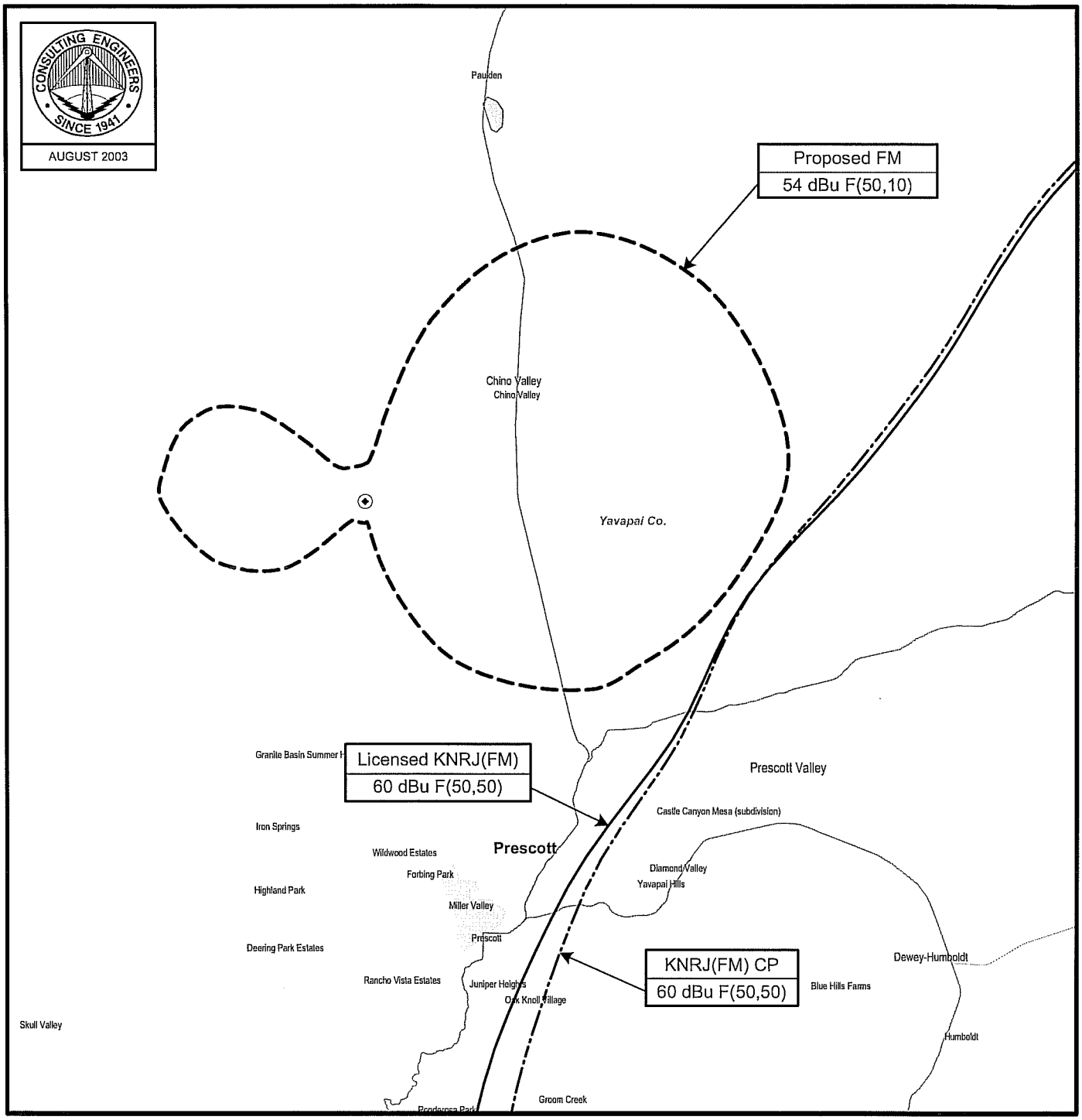
Summary of Allocation Analysis

34° 42' 52" North Latitude
112° 31' 33" West Longitude
Channel: 267 / 0.05 kW/ 280 meter HAAT

Call Id	City St Status	File Num	Channel Freq	ERP MaxHAAT	DA Id	Latitude Longitude	73 215	Bear	Dist. (km)	Req. km)
NEW	COTTONWOOD	BNPFT	213 D	0.010	N	34-42-04	N	92.2	37.41	0.0
122666	AZ APP C	20000202AB	90.5	1247 31583		112-07-04			37.41	Clear
K265BU	COTTONWOOD	BLFT	265 D	0.087	N	34-41-13	N	94.6	37.64	36.9
38484	AZ LIC C	19850422TD	100.9	1248		112-06-59			0.70	Close
K265BU	60.0 dBu	Desired = 36.4 km ;		Proposed		100. dbu;	Undesired = .5			
NEW	SELIGMAN	BNPFT	265 D	0.250	N	35-21-27	N	331.9	81.03	50.3
145997	AZ APP C	20030317GR	100.9	2269 54858		112-56-49			30.76	Clear
NEW	60.0 dBu	Desired = 49.8 km ;		Proposed		100. dbu;	Undesired = .5			
KNRJ	PAYSON	BPH	266 C1	57.000	N	34-25-48	N	108.4	98.89	152.0
55425	AZ CP C	20000314AB	101.1	816		111-30-16			-53.09	**Short**
KNRJ	60.0 dBu	Desired = 93.8 km ;		Proposed		54.0 dbu;	Undesired = 21.7			
(No contour overlap - See Figure 4)										
KNRJ	PAYSON	BLH	266 C1	82.000	N	34-25-48	N	108.4	98.89	155.5
55425	AZ LIC C	19981230KA	101.1	762		111-30-16			-56.62	**Short**
KNRJ	60.0 dBu	Desired = 95.9 km ;		Proposed		54.0 dbu;	Undesired = 21.7			
(No contour overlap - See Figure 4)										
KRRK	LAKE HAVASU	BLH	266 C0	20.000	Y	34-33-06	Y	263.7	153.99	142.4
38314	AZ LIC C	20021101AA	101.1	1042 42122		114-11-37			11.55	Close
KRRK	60.0 dBu	Desired = 87.9 km ;		Proposed		54.0 dbu;	Undesired = 21.7			
NEW	*PRESCOTT*	*BNPFT*	*267 D*	*0.050*	*N*	*34-42-50*	*N*	*239.5*	*0.10*	
144993	*AZ APP C*	*20030317GP*	*101.3*	*1925 54806*		*112-31-36*				
(Applicant's Facility)										
KZON	PHOENIX	BLH	268 C	100.000	N	33-19-52	N	164.4	159.29	149.0
63913	AZ LIC C	6108	101.5	561		112-03-46			10.27	Close
KZON	60.0 dBu	Desired = 90.2 km ;		Proposed		54.0 dbu;	Undesired = 21.7			
K269EE	PRESCOTT	BLFT	269 D	0.084	Y	34-32-27	N	155.0	21.25	19.7
61511	AZ LIC C	19920403TD	101.7	376 14233		112-25-40			1.53	Close
K269EE	60.0 dBu	Desired = 19.2 km ;		Proposed		100. dbu;	Undesired = .5			
NEW	KINGMAN	BNPFT	270 D	0.250	N	35-11-30	N	302.6	99.36	50.3
152227	AZ APP C	20030317HJ	101.9	1766 55328		113-26-47			49.08	Clear
NEW	60.0 dBu	Desired = 49.8 km ;		Proposed		100. dbu;	Undesired = .5			



PREDICTED CONTOUR PROTECTION MAP

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