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5699 East Frost Circle Wasilla AK 99654 licensed as WE2XPQ (Ex WD2XDW)

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Research and Experimentation – including equipment and theory of operation.

Part 5 modification to WE2XPQ – addition of extra frequencies –

Question 7

- a. The original scope and experimentation continues both in the 137 and 506kHz ranges using the equipment and loop antennae described in the original submission. The use of tactical stealthy high current low loss loops in Boreal forested areas continues – signals are typically received nightly to 2500Kms out to 6000+Kms on stable low K evening.

Since that time additional part 5 experimenters have started propagation and optimization of low ERP, low speed digital and analogue signaling in the 73 and 460-480kHz regions and given the uniqueness in Latitude, Geo-mag latitude of the station in South Central Alaska gaining access to these frequencies would greatly add to the knowledge of how signals are affected by the bespoke topography and solar/Geomag affects that are seen here, especially at near Solar Max and then the coming downturn in Solar Flux.

Two and one way signaling using low speed, highly stable (GPS locked) transmit pulsed and on/off signaling methods with long FFTs would provide valuable data on the propagation across and outwith the American continent, and over the North Pole - especially given the proximity to the Chugach, Talkeetnas and Alaska range mountains.

The transmitters are built by myself using DDS/Class D and E outputs with suitable matching to the loop array – at 137kHz the loop current for 1.2Kw is some 60 Amps, but at circa 505kHz where the loop is nearly resonant its just 2.5A for 100W. The same transmitters and or commercial modified Hafler Class A amplifier would likely also be used at 74kHz.

The antenna is the same tree supported loop per the original sketch.

- b. Specific objectives are per the original submission augment by an expansion of freq range, offering different ground, and sky wave propagation experimentation and gains frequencies

shared with other part 5 experimenter's in the Lower 48 states to allow co-channel experimentation

- c. Modern narrowband low bit rate signaling methodologies have not been studied on these low frequency ranges to any great extent at low ERP with restrictive "garden" sized antennae— the development of new low bit rate highly error corrected digital modes and the use of small nested typically high current loop antennae for transmit and receive is fairly unique.