

ARRL DXCC NEWS

The ARRL DXAC and the ARRL Awards Committee jointly announced on March 4 that Western Sahara, SØ, will be a reactivation of the deleted Rio de Oro, Spanish Sahara, listing. Thus, Rio de Oro is removed from the list of deleted countries and returns to the ARRL DXCC countries list under the name Western Sahara. Please hold SØRASD cards for submission beginning June 1. (Editors note: Sort of a resurrection/sex-change ruling...)

See the April issue of QST for details of the new endorsable single-band DXCC awards for the 8Ø, 4Ø, and 1Ø meter bands. This program is being phased in during 1988, but it's not too early to upgrade your record-keeping to track these new awards, if interested.

RECOMMENDED CORRECTION TO FCC EXAMS (Thanks to the South Florida DX Association "DX-Extra"..by W5OG)

It is recommended that a new question be added to all FCC amateur examinations. The new question should be "When operating international Morse Code or CW, what do the letters 'UP' stand for?" Multiple choice answers might be:

- a: Look at the ceiling
- b: A greeting often followed by the word "yours".
- c: You are listening to a United Press bulletin.
- d: Call me on a higher frequency.

Failure to answer this question properly will result in either failure of the examination, or a special license permitting operation in the radiotelephone portions of the amateur bands only.

PACKET CLUSTER NEWS

Tests continue on the CDXA packet cluster system on 145.75. We have a few stations (5 or so) checking in each day, and are already getting the benefits of sharing DX (both real-time and history). The

club digipeater has been installed on Mount Toxaway, and experiments are now underway in connecting with the packet cluster at Atlanta. Hopefully there will be more to report at the Charlotte hamfest. K4MQG, KK4L, and KD4IL have spent a lot of time on this, and deserve our thanks for their efforts.

CHARLOTTE HAMFEST

NOTICE - The Saturday night CDXA gathering will **NOT** be held at the Royal Palace as reported in last months newsletter. Arrangements are now being made for a suite at a downtown hotel. Check the net on Wednesday for details, and/or stop by the CDXA booth at the hamfest. Hope to see every member attend!

PROPAGATION NOTES by K2JF

(From a series of articles by K2JF which originally appeared in the Frankford Radio Club Newsletter - I have selected parts which I feel will help us review and understand the subject.....K2JF did an excellent job with this series, and if space permitted I would print the entire series.....K2SD).

REGULAR VARIATIONS OF THE IONOSPHERE

GENERAL-- Since the existence of the ionosphere is dependent on radiations from the sun, it is obvious that the movements of the earth about the sun, or changes in the sun's state of activity which might serve to cause an increase or decrease in the amount of its radiation, will result in variations in the conformation of the ionosphere. These variations include those which are more or less regular in their nature and, therefore, can be predicted in advance, and the irregular variations resulting from the abnormal behavior of the sun. For purposes of discussion, the regular variations may be divided into four classes, the Diurnal or daily variation, the Seasonal, the 11-Year, and the 27-Day.

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DIURNAL (variation with hour of day - K index): F Layer - height and density decrease at night..E layer height approximately constant, density follows vertical angle of sun - Practically nonexistent at night..D layer - appears after dawn. Density follows vertical angle of sun, disappears at night.

SEASONAL: F2 Layer - Virtual heights increase greatly in summer, decrease in winter. Minimum predawn density reaches lower value in winter.

11-YEAR Sunspot Cycle: Layer density increases and decreases in accord with sunspot activity. Unsettled to active conditions will exist during rise.

27-DAY (SUNSPOT) - Recurrence of SID's (Sudden Ionosphere Disturbances) and ionospheric storms at 27-day intervals. Disturbed conditions frequently may be identified with particularly active sunspots whose radiations are directed toward the earth every 27 days as the sun rotates.

DIURNAL -- For the most part, the diurnal variations and their effects upon the ionosphere layers tell us that to compensate for the resulting variation in the skip distance, it is suggested that higher medium frequencies be used during the daytime, and lower medium frequencies at night. The reason for this appears in the fact that the ion density of the F₂ layer is greater during the daytime, and will reflect radio waves of higher frequency than the F layer will reflect during the night. The higher frequency waves suffer less absorption in passing through the D region, whereas at night the disappearance of the D region permits the use of lower frequencies.

SEASONAL -- As the apparent position of the sun moves from one hemisphere to the other with corresponding changes in season, the maximum ion density in the D, E, and F₁ layers shift accordingly, each

being relatively greater during the summer. The F₂ layer, however, does not follow the pattern in seasonal shift. In most localities, the F₂ ion density is greatest in winter and least in summer, which is quite the reverse of what might be expected from simple theory (I will not venture into this now).

ELEVEN-YEAR -- That sunspot activity varies according to an 11-year cycle has been known since 1851. Shortly after the discovery of this phenomenon, a method was devised for measuring the relative intensity of sunspot activity, and, by means of this method, the alternations from maximum to minimum have been followed closely through the years. Briefly, the method entails the use of the so-called WOLF sunspot number, a number obtained for each day by multiplying by 10 the number of distinct visible sunspot groups and adding thereto the number of individual spots observable in the groups. The increased activity at times of sunspot maxima is reflected in an increase in ion density of all the ionosphere layers, resulting in higher critical frequencies for the E, F₁, and F₂ layers, and higher absorption in the D region. This permits the use of higher frequencies for communications over long distances at times of sunspot maxima than would be usable at times of sunspot minima (Watch 15, 12, 10, and 6 meters open up as we get further into this cycle).

TWENTY-SEVEN DAY -- Another cycle is the 27-day variation resulting from the rotation of the sun on its axis. As the number of sunspots changes from day to day with solar rotation or the formation of new spots or the disappearance of old ones on the visible part of the sun, absorption of the D region also changes. Similar changes are observed in the E layer critical frequency. These variations exhibit wide geographical range; they are not effects that are observed at one station and not observed at others. Because of the
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variability of the F2 layer, precise predictions of its critical frequencies cannot be made for individual days, although seasonal and long-term trends and geographic distribution may be outlined accurately in advance. It is necessary in selecting frequencies for long distance communications (DX) to allow for these fluctuations.

(Editors note: Next month we will continue with K2JF's discussion of the Irregular Variations of the ionosphere)

PACKET CLUSTER UPDATE

Early users of the packet cluster got their first taste of the true potential of the system on the evening of March 9, when we stayed connected to the Atlanta group's packet cluster node for most of the evening. Whenever a DXer entered a DX activity report in the Atlanta area, it popped up on our screens (usually with a BEEP to wake us up) within a minute or two of the data being entered in Atlanta!

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As a service to those not on packet, we will attempt to call the DX out on the 18 and 36 repeaters whenever something good pops up.

A few of us were also successful in chatting with old friends in the Atlanta area via the packet cluster. We look forward to signing up more and more users in the Charlotte area as soon as possible.

ETC.

- Don't forget to get a color slide of your shack, your antennas, or any other DX-related activity, to WA4UUP before the Hamfest. You will be included in the slide show at the CDXA booth - imagine the looks on the faces of those passing by our booth when they see your shack.....
- No one offered to buy my HT yet! Still for sale - TR 2600 with all kinds of neat accessories (desk charger, extra battery pack, Auto DC adapter, case).....\$275.00. Contact K2SD today!



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