

Clay's Corner for July 2023

One Broadcast Engineers Perspective since September 1986

I was fortunate to catch this view of Mt Rainier from West Tiger Mt on June 5th



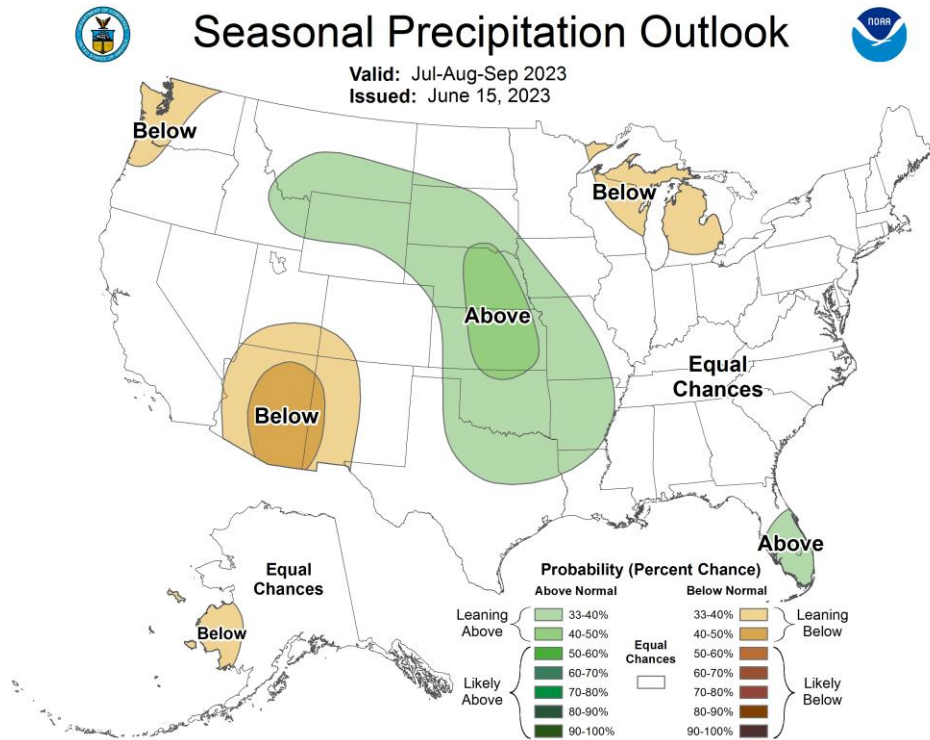
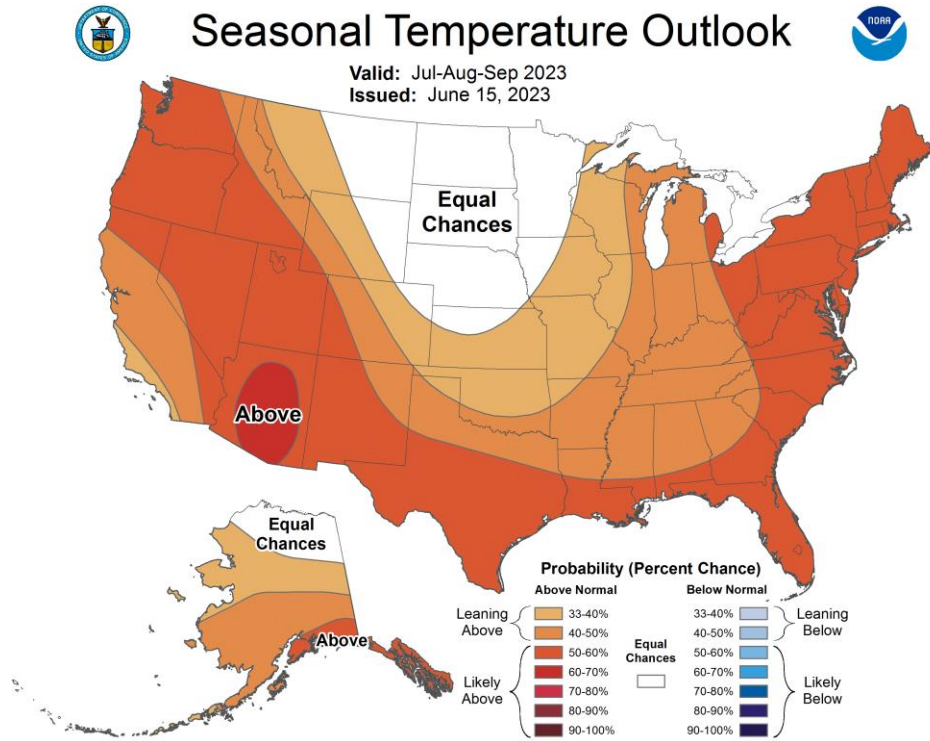
Appears we, after a one-year pause, will- have an EASNT (EAS National Test) this year. Now that the Commish has most of ARS up-and-running. They will, perhaps, have a better way of examining the results. More to come on this one.

Happy to report that, legendary Vashon Engineer, Steven Allen is on the mend after undergoing Bypass Surgery.

Around the middle of the month I heard a Pirate station on the air on 88.9. It was co-channel with NWPB's KSWs in Chehalis and KMIH, Mercer Island. From the content, it was – VERY – clear this was not a licensed station. No music, just two men using a lot of 'S' and 'F' words etc. A couple of days after, I noted a dead carrier on that frequency in the same area. A few days later, nothing ??

As we got to the 18th of the month - We wondered if summer was going to return noting they were forecasting snow in the mountains above 4,000 feet.....But it did, wonderfully!

Looking ahead – This is what NWS is telling us – Looks like it will be warmer and dryer than normal



In the event you have not been keeping track – Our rainfall totals for the year, thus far, are running about 10 inches less than last year.

Found it interesting to read about all of 'The Sky is Falling' type reactions to having wildfire smoke on the East Coast. A lot of local media attention received for something that we have learned all too much about in this area. Thus far – Our air has been spectacular. (Keep your fingers crossed)

The FCC recently slapped a Ham, N6PJB, in California, with a hefty - \$24,000 fine for jamming other Amateur Radio communications. You know me...I wonder if the offender will, actually, pay or find a way to weasel out of it?

A New Hampshire LPTV Station has filed an application to use experimental 5G technology on Channel 28 in Boston. They will, reportedly, use technology that Rhode & Schwarz has been testing for some time.

Last month I wrote a bit about AI wondering how and where I would be used in Broadcasting. We won't have to wait long. One of Alpha Medias stations in Portland, KBFF, is going to be putting to work Futuri Media's 'RadioGPT' on the air. They've given the voice a name – 'AI Ashley.

For many years, Radio stations have replaced live DJ's with pre-recorded segments. In many cases recorded by a person residing some distance away. This may spell the end of the line for these people who could be replaced, completely, by a computer. I recall, many years ago, chatting with a DJ where I explained how, one-day, they could be replaced by a computer. Many were, but those computers simply switched between pre-recorded elements. Fasten your seat-belt...AI will certainly find many-places in this industry. One the bright side – someone is still going to have to fix the stuff when it breaks. Sure, AI, can detect a problem and automatically switch to the back up (we can do that now with far more simple solutions). Perhaps will see the day when AI replaces the bad devices, tosses it in the trash and transports it to the dumpster?

Looks like we – finally – beat out California. Perhaps not in a good way. On the 19th it was reported that Washington State now has the highest Gas Prices in the Country! In the even you have not noticed, Regular is now at \$5/Gallon and going up.



When prices get this high – Gas theft begins to be an issue. Even with locking gas-caps – Drilling holes in gas tanks becomes a way to avoid paying these prices.

Not only are Gas Prices high in this area.....So are other costs. Kudo's to the Seattle Times who recently ran a great story called ' Wages needed to afford housing in Washington' in their June 18th edition. This is something that you have seen me write about for some time.

Whereas I work for WSU based NWPB in Pullman – Here's what the story says about these costs – Comparing Whitman to King County

County/City	One Bedroom	Two Bedroom
Whitman (Pullman)	\$15.63/hr	\$20.42/hr
King (Seattle-Tacoma)	\$40/38/hr	\$47.21

A large cost difference also exists across the Columbia River from Portland in Clark and Skamania.

If I were looking for a job in our State. I would certainly want to know this information as it would have a direct effect on the amount of salary I would have to be offered to even consider it.

Does it mean that by living in this area I am making a lot of money? Not really. The advantage I have is I have not had a mortgage in many years and only have to 'Rent the Dirt' under my house from King County. That too is increasing in cost rather dramatically. For those retiring, places in our state – Away from the population centers in King and surrounding counties (and near Portland) - Can look very attractive.

I could not help but notice how SBE is starting a Webinar Series called – “Basic RF for IT” Today, an opening for a Broadcast Engineer experienced with RF may well receive not see any applications. In the past, many have migrated from Land Mobile. Today, Land Mobile is dead (Killed off by cellular) With so much of Broadcast Equipment today becoming Computer-Based – This makes a lot of sense. Face it – Us old guys are a dying breed....It’s been said that its easier to tech an IT guy RF than the other way around. Then there are those I know that can do both!

I shot this approaching Crego Hill on June 15th –

Crego is the home of several Broadcast related items – On the top of the right tower is KCKA-TV, Channel 15, licensed to Bates Technical College as well as several TV Translators for Seattle Based stations. On the FM side, there is KSWS/88.9 operated by WSU’s NWPB and KMNT/104.3 operated by BiCoastal Media (on the tower on the left) as well as K211AP/90.1 a translator for KNKX (little short tower on the right) – Plus- One or two Satellite Fed Translators. Oh yes...The site is also used for governmental radio systems associated with Centralia, Chehalis and Lewis County



Crego is SW of Chehalis and South of Adna, in Lewis County, WA. Looking up it’s elevation, on-line, you find various numbers ...1430, 1447 etc. This puts it close to being the same as Cougar Mt near Bellevue.

This got me thinking – **Why do they call Cougar a ‘Mountain’ and Crego a ‘Hill’?**

Lets look at the matter and Include a 3rd site....Squalicum Mountain whose elevation is, about the same as Crego Hill and Cougar Mt (Both just over 1500 feet)

How they describe it is interesting –

‘Squalicum Mountain is a lowly but broad wooded hill immediately to the east of the city of Bellingham’”

“Squalicum Mountain, a broad low hump, rises above Lake Whatcom’”

Apparently, we are to understand that a – lowly but broad hill, or a broad low hump – can be called a Mountain. That describes Crego Mt., which shares all the same characteristics is a ‘HILL’??

So....I looked, on-line, to find out. Here are some of answers I found –(High-lighting is mine)

By

Matt Rosenberg

Updated on February 18, 2020

Hills and mountains are both natural land formations that rise out of the landscape. There is no universally accepted standard definition for the height of a mountain or a hill, and this can make it difficult to differentiate between the two

Mr Rosenberg goes on to write –

There are characteristics that we typically associate with mountains; for example, most mountains have steep slopes and a well-defined summit while hills tend to be rounded. This, however, is not always the case...

Even leaders in geography, like the United States Geological Survey (USGS), do not have an exact definition of a mountain and a hill. Instead, the organization's Geographic Names Information System (GNIS) uses broad categories for most land features, including mountains, hills, lakes, and rivers.

Though no one can agree on the heights of mountains and hills, there are a few generally accepted characteristics that define each.

Wow – That really clears things up 😊 He goes on with the following definitions –

What is a Hill?

In general, we think of hills as having a lower elevation than a mountain and a more rounded/mound shape than a distinct peak. Some accepted characteristics of a hill are:

- A natural mound of earth created either by faulting or erosion
- A "bump" in the landscape, rising gradually from its surroundings
- Less than 2,000 feet high²
- A rounded top with no well-defined summit
- Often unnamed
- Easy to climb

And

What is a Mountain?

Though a mountain is typically taller than a hill, there is no official height designation. An abrupt difference in local topography is often described as a mountain, and such features will often have "mount" or "mountain" in their name; examples include Mount Hood, Mount Rainier, and Mount Washington.

Some accepted characteristics of a mountain are:

- A natural mound of earth created by faulting
- A very steep rise in the landscape that is often abrupt in comparison to its surroundings
- A minimum height of just over 2,000 feet²
- A steep slope and a defined summit or peak
- Often has a name
- Depending on the slopes and elevation, mountains can be a challenge to climb

Wow ! Neither one of these is over 2000 feet and yet two of them are called Mountains

OK – Lets see what the USGS has to say on the matter –

What is the difference between "mountain", "hill", and "peak".....

“There are no official definitions for generic terms as applied to geographic features. **Any existing definitions derive from the needs and applications of organizations using those geographic features**”

And....

“The U.S. Board on Geographic Names once stated that the difference between a hill and a mountain was 1,000 feet of local relief, but this was abandoned in the early 1970s. Broad agreement on such questions is essentially impossible, which is why there are no official feature classification standards.”

After reading this I remain confused. Should Cougar and Squalicum be called Hills or should Crego Hill Mountain? Perhaps this is a question with no answer?

What do you think?

Speaking of Cougar – This the time of year for Foxglove. These beauties made it into my camera on June 21st at Cougar Mt.



The matter of AM in vehicles has expanded to a full debate as to how we should view and/or treat the ‘Senior Band’. For sure, Ford, and other automakers, have received a lot of push-back to the idea of not including AM in the vehicles. Perhaps equated to stirring up a hornets-nest?

Some pretty interesting information has been published. One that got my attention came from Nielsen concerning which markets where AM has the greatest proportion of listeners. Here is a quick, albeit abbreviated, look at the findings from 141 U.S. Markets –

Nationwide, 30.9% of radio reach comes from AM stations, representing 82,346,8000 American radio listeners aged 12+ who listen to AM every month. At the state level it ranged from a high of 52.7% in North Dakota to a low of 4.6% in the District of Columbia. In 29 states, the percent of radio reach via AM is greater than 20%.

The DMA-level analysis found that the largest proportion of AM listening tended to be in smaller, rural markets in the Midwest, but they represent a wide variety of DMA sizes and geographies.

The top DMA for AM reach was the smallest DMA in Nielsen's ratings, #210 Glendive, Mont., at 72.1%. The lowest reach was in DMA #208 Alpena, Mich., at 3.8%.

The Market with the highest percentage of AM listeners is Market #59, Buffalo-Niagara Falls, NY with 56%

Chicago, Market #3 – it's 48% or just under half.

The Seattle-Tacoma area, Market #11, the figure is 42%

One observer noted that markets with the largest portion of AM listeners tend to be from the upper Midwest as well as markets with hilly terrain where FM may have greater propagation difficulty.

One interesting stat. came from Nielsen which, based on its Fall 2022 survey, found that AM radio reaches 82.3% of Americans monthly or, about 1/3 of AM/FM Listeners. In my opinion this is a pretty compelling reason to not dismiss AM as ancient technology with no value. I do have a problem with integrating this into the local Radio ratings where AM Stations certainly don't enjoy the kind of ratings that this study indicates. We only have a couple of AM Stations that have substantial ratings – KNWN (Formally KOMO-AM) and KIRO-AM.

Do you or your pets have **ASTRAPHOBIA**?

Thunderstorms are unpredictable. They can sometimes intensify fast and produce damaging winds, cloud-to-ground lightning that comes crashing downward, tornadoes, or perhaps flooding. Some people are terrified by loud thunder and lightning, especially at night. It's the unknown that scares people ... and pets. If you fear lightning and thunder, as many children, indoor pets and some adults do, then you (and they) have ***astraphobia***.

The symptoms of astraphobia

[PsychCentral.com](https://www.psychcentral.com/psychology/what-is-astraphobia/) lists the following as symptoms of **astraphobia**. They are similar to those of any phobia:

overwhelming fear
anxiety and worry
sweating

tremors or shaking
shortness of breath
heart racing or palpitations
nausea or vomiting
diarrhea
chest pain
dizziness

Additionally, astraphobia can cause someone to want company and reassurance during a storm. They may seek shelter beyond what's necessary for a thunderstorm. Someone suffering from **astraphobia** may close the curtains and attempt to block out the sounds of the storm. Or they become obsessed with weather forecasts, wanting to be certain there are no storms near them. Astraphobia can even lead to agoraphobia, the fear of leaving your home.

The fear of storms in animals

According to the Iowa Veterinary Medical Association, thunder and lightning are some of the most common phobias experienced with dogs.

Behaviorists are not yet sure what part of the storm frightens dogs most, whether they're reacting to lightning flashes, the sound of thunder, wind blowing around the house, or the sound of rain on the roof. Some dogs even start to pace and whine half an hour or more before a storm. They may be reacting to a sudden drop in air pressure or the electrical charge of the air.

Living near the Muckleshoot Reservations nightly fireworks activity I can tell you that this is also a source of fear for my dogs. This kind of fear of sudden and loud noises has a different name.

Pyrotechnophobia is the fear of fireworks. For many individual who are suffering from fireworks – **Pyrotechnophobia**. Don't always feel the need of treatment because they can just avoid the object of their fear. This gives people suffering from **Pyrotechnophobia** a feeling of control on the problem, unfortunately, Animals don't factor these sounds like humans.

One more –

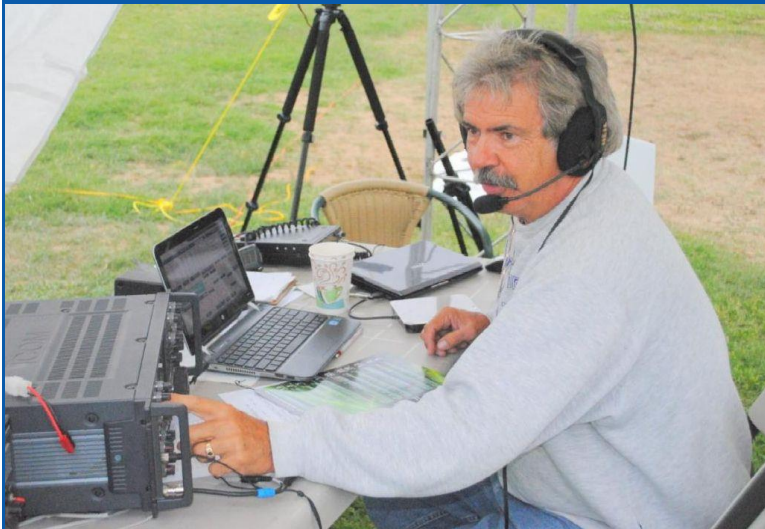
Phonophobia, also called ligyrophobia or sonophobia, is a fear of or aversion to loud sounds (for example firecrackers)—a type of specific phobia.

Over the years writing this column I've made note of the passing of a broadcaster or broadcast engineer. This month will be an exception. I wanted to include the passing of, not a broadcaster, but a friend of 50 years. Chip Margelli, K7JA. I've included what was written in CQ Magazine below.

A couple of personal comments –

- Chip and I set in my living room back in the 70's and picked out our 'One-by-Two' call letters – Him, K7JA, Me, K7CR
- One of my early lessons about "Phone Contesting" was learned from Chip when we were both on the Radio Club of Tacoma's '15-Phone' team at Field Day
- His wife, Janet, worked at KLAY-FM in Tacoma where I was the Engineer, this before she and Chip became an 'Item'.
- Janet and I, way back then, had sequential call letters, her – WMB and me WMC.
- So many memories...RIP my old friend!

Charles "Chip" Margelli, K7JA, SK



One of the best-known amateurs of the past 40 years has become a Silent Key. CQ joins the contesting and DXing communities in mourning the loss of Charles "Chip" Margelli, K7JA, to cancer on May 25.

We first received the news from his close friend and CQ Contributing Editor Gordon West, WB6NOA, pictured here with his wife Suzy, N6GLF and Chip:



"Chip left us yesterday at 4pm, after spending weeks putting together Field Day station antennas and gear. That is all he would talk about - a great station on the air! He was ready for Field Day!"



He and Janet (KL7MF, Chip's wife of 45 years) fought this fast-spreading cancer for months, with never a word to most anyone about his heroic fight. He passed away peacefully, with dignity, at his home, with Janet and his cat at his side. He gracefully closed his eyes, with piles of Field Day equipment and cables he prepared, ready for deployment,

right next to his chair."

Chip never complained, never let on to his fight, and always had a smile for the upcoming Field Day event. So professional. He was always total positive in all that he could do for ham radio operators.

What a gentleman - a true fighter to the end. We are all heartbroken."

Chip was a ham's ham, a contester (and frequent winner), DXer, DXpeditioner (he was part of the ZA1A team that reintroduced ham radio to Albania in 1991 and a member of the 2003 COoUS joint US/Cuban Field Day operation), moonbouncer, weak-signal VHFer, satellite operator and more. Chip spent three decades as the "face" of Yaesu in the United States, attending hamfests, visiting dealers and introducing new gear. After leaving Yaesu, Chip worked for Heil Sound

and as CQ Advertising Manager before leaving the hamfest circuit and working behind the scenes at Ham Radio Outlet. He couldn't totally stay home, though, as he continued to be in high demand as a banquet speaker at conventions and hamfests.

Chip is perhaps best known among the general ham public for his 2005 appearance on "The Tonight Show with Jay Leno," in which he and partner Ken Miller, K6CTW, proved they could send a message faster in Morse code than by texting. Chip was inducted into the CQ Amateur Radio Hall of Fame in 2008 and awarded Russia's E.T. Krenkel medal in 2021.



"In a hobby full of really nice and really knowledgeable people," recalled CQ Editor Rich Moseson, W2VU, "Chip was without question one of the nicest and most knowledgeable. He was experienced in nearly every aspect of amateur radio and was always happy to share that knowledge as well as his many ham radio adventures. While Chip was on the CQ staff for only a short period of time, he and Janet have been part of the extended CQ family for many years. More than that, he was always just a good friend. We will miss him greatly."

"OMG!" responded CQ Publisher Dick Ross, K2MGA, when he heard the news. "Chip was the picture of good health! He used to go out running at shows. He and Arnie (Sposato, longtime CQ ad manager, also SK) would be out early on a Sunday to do a few miles together. And he had just retired from HRO after a lifetime at Yaesu. Another old friend gone ... Certainly, we all know of those who were very sick and who we expected to leave us, but too often (others have) left us with no warning and no time to prepare our minds for the inevitable."

Words cannot even begin to express our sorrow. All of us at CQ extend our deepest sympathy and condolences to Janet and their entire family.



Coming up with names for things that are unique is a very difficult task...For example –

BSW – Those of us in Broadcasting know this is Broadcast Supply Worldwide (Formally Broadcast Supply West)

Google it and you find it can mean a number of other things –
Like Bachelor of Social Work or other things.

Therefore – BSW became BSWusa.

INVOVONICS – Had similar issues – They are now known as Inovonics Broadcast.

I recently ran across these –
SCALA, long a name of Antennas from Medford, Oregon is used by others for entirely different things –



LEARN

The Scala Programming Language

Scala combines object-oriented and functional programming in one concise, high-level language. Scala's static types help avoid bugs in complex applications, and its JVM and JavaScript runtimes let you build high-performance systems with easy access to huge ecosystems of libraries.

To a Broadcast Engineer – It has historically meant something like these



So we now have – **Kathrein USA / SCALA Products**

Many years ago, before the Fidelipac Tape Cartridge came along



There was something else. The Mackenzie Program Repeater. Recently I became the stop-over for one of these, complete with manual. This will end up on Vashon Island in the collection of Steven Allen. The first one of these I saw in action was at KVI....Way back when. Radio stations soon learned that these were perfect for playing jingles and other sounders. To start with – Lets look at the manual.



MACKENZIE
PROGRAM REPEATERS

FOR THE FIRST TIME A FULL-FIDELITY... CARTRIDGE LOADED PROGRAM REPEATER

Proven in millions of hours use, the MACKENZIE PROGRAM REPEATER offers the industrial and commercial user a FULL-FIDELITY, automatic tape player capable of giving continuous performance under the most demanding conditions. Advanced electronics and a rugged, heavy-duty mechanism give live-quality reproduction of voice and music. MACKENZIE'S clean, functional design, careful workmanship and quality components meet the requirements for long-term dependability.

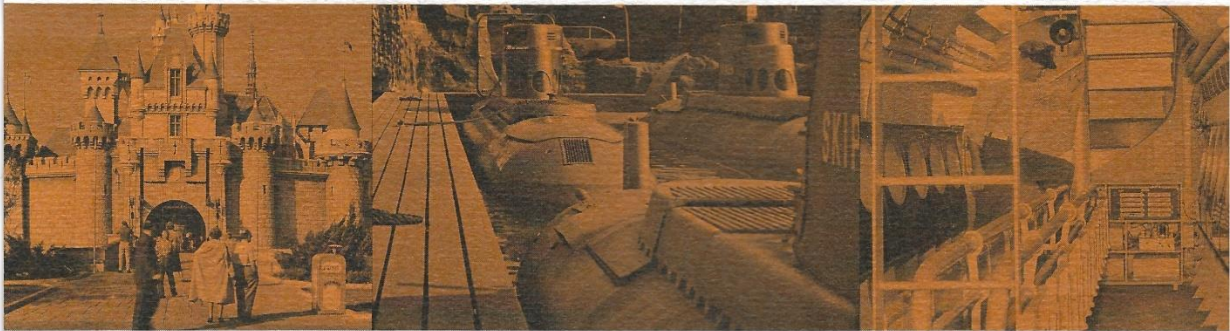
THE MACKENZIE TAPE MAGAZINE MAKES THE DIFFERENCE

Patented, proven magazine design assures continuous, smooth tape motion. The tape runs freely, adjusts its own slack automatically and will not bind because the magazine turntable is *POWERED*. Tape stretch is eliminated and friction is reduced. This means extra-long tape life. Magazines are of metal construction and are operable indefinitely. Program material may be as short as one second or as long as 14 minutes.

FIVE SEPARATE and DISTINCT PLAY-BACK UNITS IN ONE COMPACT PACKAGE

MACKENZIE PROGRAM REPEATERS combine as many as five individual message players in a single package on seven inches high. Messages may be played individually, all at one time or in any combination with one another to provide complete flexibility.

ADVANCED DESIGN, solid-state, all silicon electronics minimize down time and increase dependability. A plug-in electronics module with volume control is furnished for each tape magazine section. Replacements are installed in less than one minute. High-speed solenoid actuation provides INSTANT SOUND.



TECHNICALLY SPEAKING...

MACKENZIE uses a unique tape transport with a common capstan drive powered by a single, heavy-duty motor. Depending upon the model, up to five tape magazines can be accommodated in a single machine. Multiple unit installations provide capacity for an unlimited number of channels. Stereo 2-track and 4-track models are available. Each magazine section has its own electronics and may be operated as an individual and independent tape repeater unit. To provide instant audio, each magazine is solenoid actuated and pulled in against the rotating drive capstan. Starting delay is less than 1/10 of a second. At the program's end, the solenoid is released, automatically stopping the tape. The stop signal is a small piece of reflective foil applied to the tape which triggers a photo-sensitive con-

trol circuit. The stopping process is inaudible and completely free from clicks and pops. MACKENZIE'S rapid start-stop capability permits closely cued programming for tightly timed material such as sound effects and spot announcements. In addition, since the tape is not pinched between the drive capstan and the rubber pressure roller, EXCEPT WHEN PLAYING, tape sticking and "flats" on the rubber roller are completely eliminated.

Audio quality is comparable to the FINEST PROFESSIONAL MUSIC EQUIPMENT. All circuits are of solid-state, all-silicon design. The equipment will operate in temperatures up to 120 degrees F. without loss in performance specifications. Frequency response is from 50 to 15,000 flat and wow and flutter is less than .15% RMS.

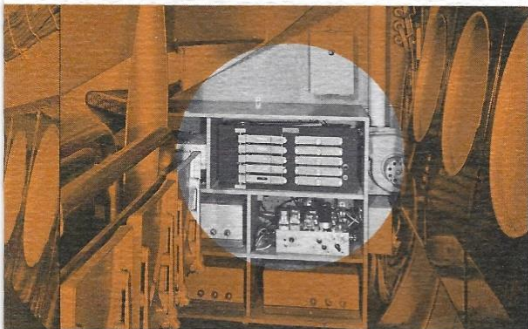
MACKENZIE "AUDIO-MATION"

More and more, today's sophisticated audio-visual systems call for the *accurate and dependable synchronization* of external devices with the audio program. MACKENZIE "Audio-Mation" is a new tool which gives the designer, producer or engineer creative freedom to conceive dramatic, realistic and unusual effects without sacrificing practical reliability.

Designed with integrity and built to the same exacting standards as MACKENZIE Program Repeaters, "Audio-Mation" accessories control slide-projectors, dimmers, faders, flashers, steppers, spot-lights, programmers, stage sets, curtains, animation mechanisms and other equipment which can be synch'd with sound.

B-TRACK SENSING

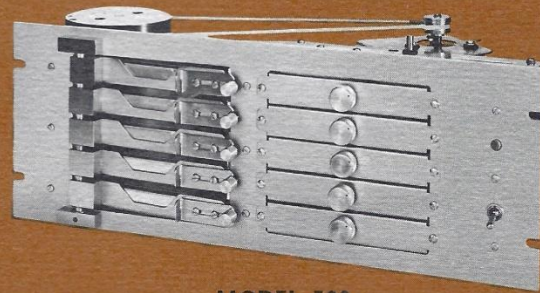
Any or all channels of a Program Repeater can be supplied with B-Track sensing ability. The BTS modification includes a 2-track head, a special electronics module and a relay with dry contacts (either make or break). When a 1000 cycle pulse, recorded on the B track of the tape, passes the playback head, the sensor circuit "reads" it and operates the relay momentarily which, in turn, actuates an external device (up to 1 amp. non-inductive load). Provision is made in the BTS control system for the *automatic re-synchronization* of projectors and switches etc., a highly desirable feature for unattended exhibits, shows and display complexes. Special sensors, which utilize sub-sonic or multi-frequency control tones recorded on separate control tracks or along with and under the program content, are also available.



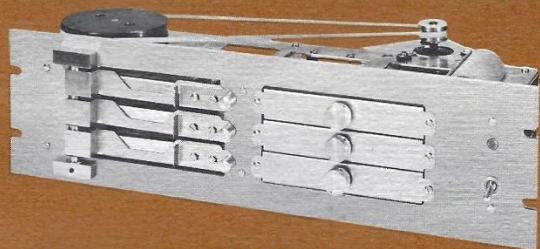
Sequence Controllers are another MACKENZIE "Audio-Mation" Accessory. They are used to program external equipment to operate in sequence as actuated by pulses received from the B-track sensing systems described above. Models are available which will handle up to 103 different events.

STEREO RECORDER MODEL 100/RP/ST

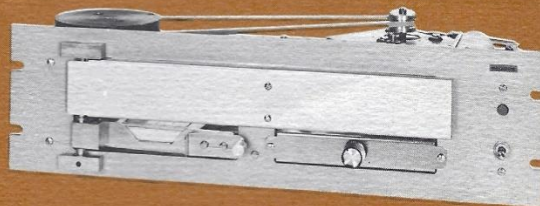
For instant tape production in the field, MACKENZIE record-play units offer the same high quality and reliability available in its Program Repeaters. Play-Record units are furnished in either two-track stereo or monaural half-track models. All units have built-in VU meters for each track for accurate control of recording levels. Record-Play electronics are solid-state, all silicon design. Tape speed may be either 7.5 IPS or 3³/₄ IPS.



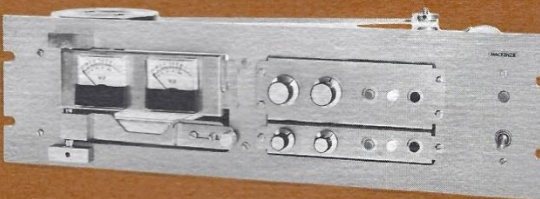
MODEL 500



MODEL 300



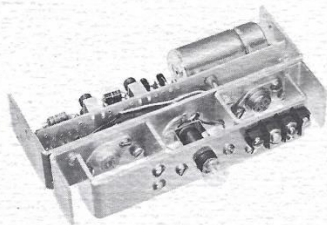
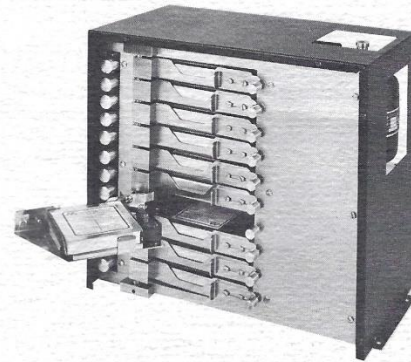
MODEL 100



MODEL 100/RP/ST

RANDOM ACCESS MULTI-PROGRAM REPEATER MODEL APR-20

This new MACKENZIE unit is designed for use in applications requiring the selection of multiple stored programs where playback of *only one program at a time is required*. It accommodates up to 10 solenoid-actuated MACKENZIE Tape Magazines. Magazines are recorded two-track which makes available 20 messages in one compact package, 12 inches high. Full interlock circuitry is provided to prevent more than one program from playing at a time. Volume control of each program is *individually* adjustable and a master volume control and master tone control is provided to compensate for loudspeaker characteristics and acoustical environment. More than one APR-20 may be connected together to increase the number of available programs and give an unlimited capacity. The cueing system is unique in that it responds to the absence of a sub-sonic tone recorded with and under the program content. The creation of a fraction of a second pause in the sub-tone causes the solenoid to drop out and stop the tape. The instant start-stop capabilities of the APR-20 make it ideal for use in "talking elevator" installations, the synthesis of automatic announcements and as the "audio readout" of computer controlled programs. In telephone systems, it permits dial access to stored audio information. Since the APR-20 is able to give rapid random access to its programs it may be used with random access slide projectors in audio-visual presentations. Messages may be as short as one second and as long as 14 minutes.



MACKENZIE Power Amplifiers are specifically designed to fit into the "stacked" concept of MACKENZIE Program Repeaters. They can be mounted on the rear of a Program Repeater on a per channel basis. An individual power amplifier can be used for each channel or the pre-amplifier outputs can be combined (mixed) into a single power amplifier. Its small size (1" high x 6" wide x 3³/₄" deep) makes it desirable in any audio system where space is limited and high unit density is required. Of solid-state, all silicon design, the unit includes in its circuitry a unique safety provision which protects it from damage even with a full short-circuit overload across the output. *The performance of MACKENZIE Power Amplifiers may be compared to the finest amplifiers available today.* Frequency response is from 20 to 50,000 cps flat. The Model A-15 offers a 15 watt power output. Other models are available to 75 watts. When used with MACKENZIE machines, the amplifiers operate from the machine's power supply. For other applications, amplifiers are available with or without power supply.

GENERAL SPECIFICATIONS

Tape speed
Frequency response
Wow and flutter
Signal to noise ratio
Distortion
Playing time

Program Repeaters are designed with sufficient output power to handle a group of telephone type handsets, and to provide "zero-level" output to power amplifiers such as the MACKENZIE Model A-15. With the exception of the APR-20, they will not operate loudspeakers.

The APR-20 is furnished complete with dust cover. Other MACKENZIE models have standard 19 inch relay rack panels. Cabinets or dust covers are available on special order.

MACKENZIE PROGRAM REPEATERS

<i>either 7.5 ips or 3.75 ips, on order</i>	
At 7.5 ips	At 3.75 ips
50-15,000 cps, flat	50-7500 cps, flat
less than .15% rms	less than .25% rms
better than 55 db	better than 50 db
less than 1% at	less than 1% at
0 dbm output	0 dbm output
up to 7 minutes	up to 14 minutes

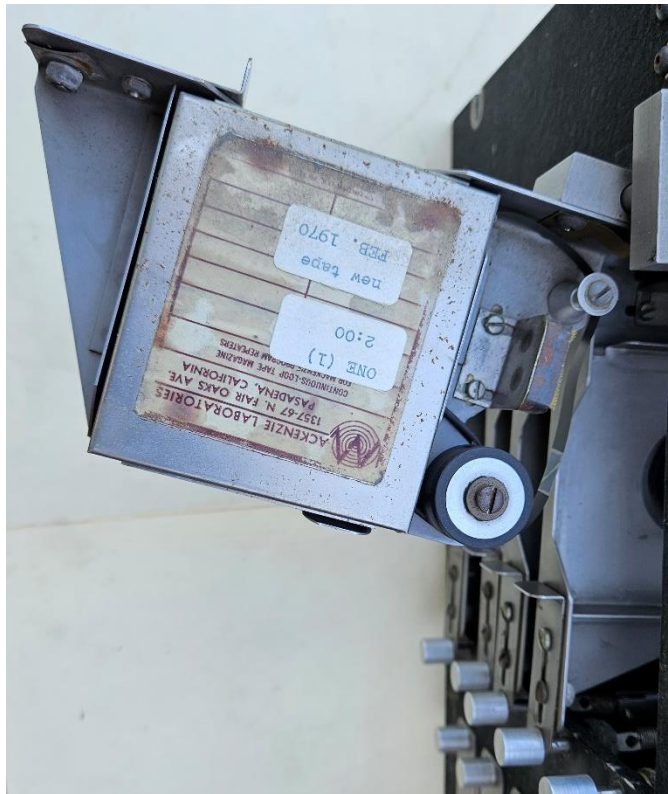
WARRANTY

MACKENZIE LABORATORIES unconditionally warrants its machines to be free of defects in materials and workmanship for a period of one year.

MACKENZIE LABORATORIES

1367 North Fair Oaks Avenue
Pasadena, California 91103
(213) 798-6220 or 684-0473

Here's a picture of the front panel of the machine I have – A little rough around the edges.



Each one of the 5 tape holders swung out on the hinge on the left side. The slots to the right contained the electronics, one for each 'deck'

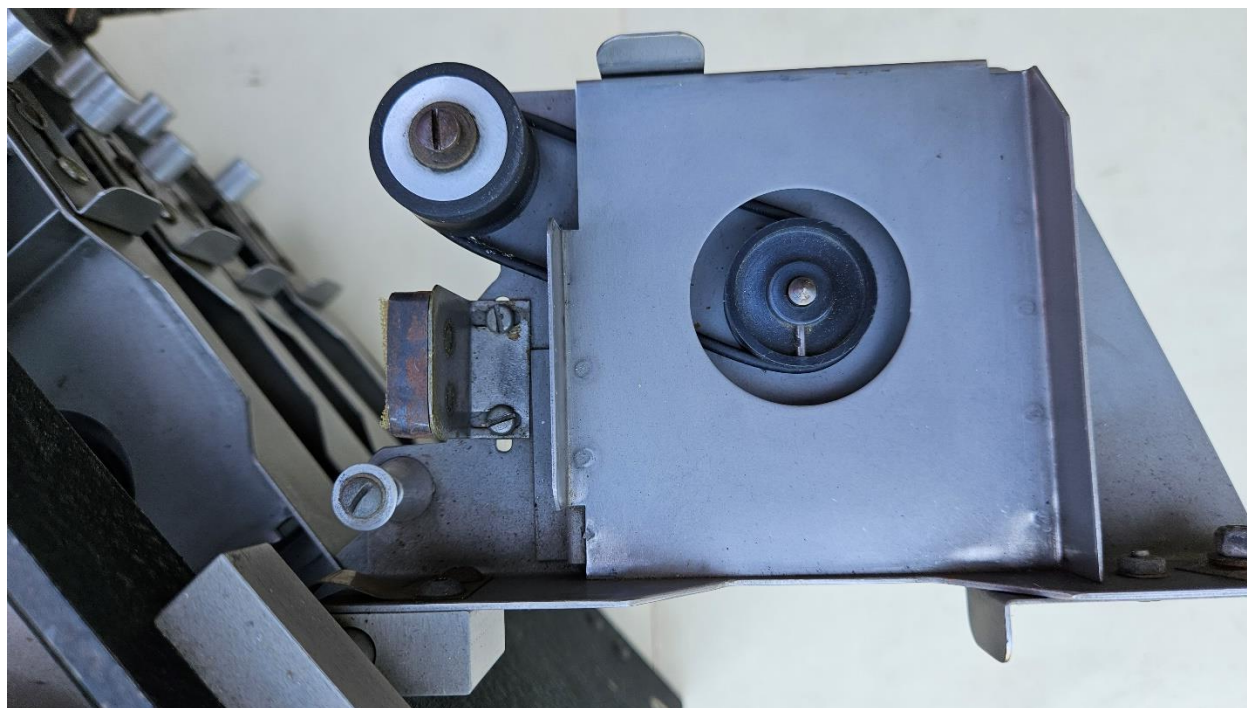
Unlike the Fidelipac, you had to 'drop-in' the little metal box carefully threading the tape around the pinch roller.

When commanded to play, a solenoid would pull the deck inward to a common capstan which would start the tape in motion.

Going back a few years, this 'Continuous-Loop Tape Magazine' was loaded with fresh tape in February of 1970. Note also the firm was in Pasadena, California



Something also unique about their approach. Note how the Pressure Roller is linked, via rubber belt, to the turntable the tape loop sat on. The Fidelipac's did not do this, they simply 'pulled' the tape out of the center of the reel. Notice the foam-pad (Just below the pressure roller in this picture)..This was to assure the tape was pressed against the playback head.



On the topic of older things – How many of you recall these?

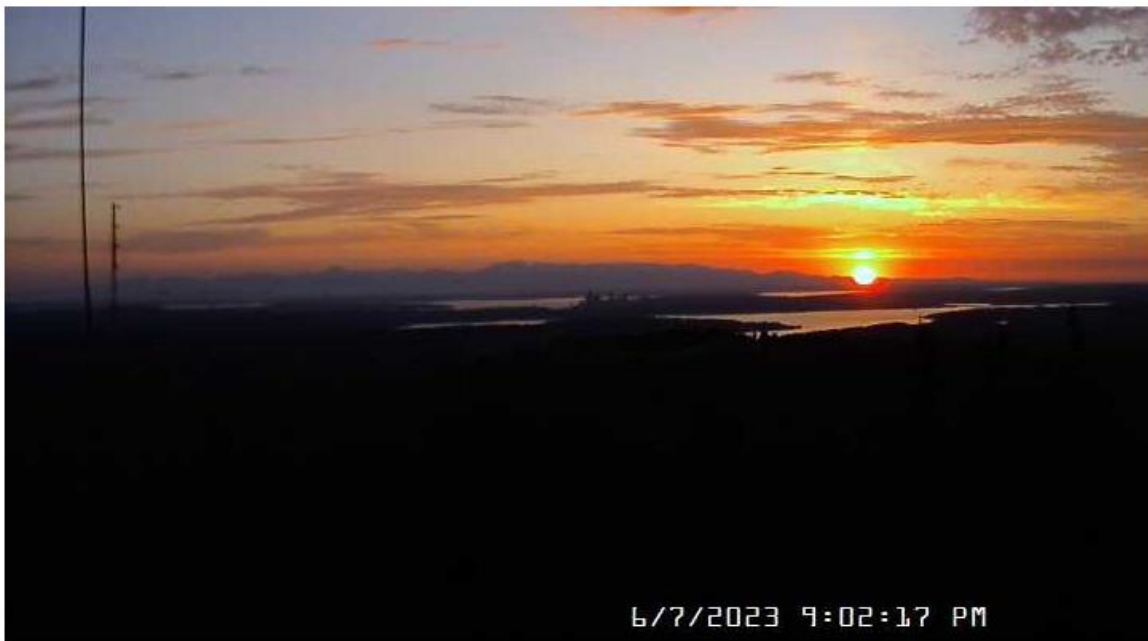


More Pictures –

I was awakened at 220AM the morning on June 4th by an extremely bright full moon. I grabbed my cellphone and shot this picture. The moon here is just behind the big fir. Amazing how the moonlight lit up the clouds. That's the lights of Auburn below.



This one from the AccelNet Camera on Cougar Mt, as you can see, on June 7th



As usual, Dwight Small sent some pictures ...

The first one he titled "Boat Dog". As can tell -Scout enjoys it!



In the distance - Whitehorse, Mt. Bullen and Three Fingers.



That's it for this month.

Lord willing, I'll see you here next month.

Clay, K7CR, CPBE

SBE Member # 714

Since March 1968 / 55 years.