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Subject: Aztec Monet Cabinets

Posted by [two.dogs](#) on Sat, 06 Mar 2021 23:50:53 GMT

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These gigantic Monets followed me home when I picked up some vintage Knight speakers for my Econowave build. The guy was moving and his trailer was full. He begged me to take them. Aztec was a local company here in Denver, and not well-known. These guys have been hanging out in the basement for a few years and I just dug them out to give them a listen. But when I removed the grill - empty.

If I rebuilt them, then I'd want to do justice to the awesome cabinetry. Interior dimensions are 11.5 x 24 x 33. I'd probably build them, keep them a little while, then sell because I don't have a room big enough. Anyone have any ideas? 4pi?

John

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#### File Attachments

1) [IMG-2271.jpg](#), downloaded 1350 times

2) [IMG-2274.jpg](#), downloaded 1323 times

3) [IMG-2275.jpg](#), downloaded 1327 times

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Subject: Re: Aztec Monet Cabinets

Posted by [Wayne Parham](#) on Sun, 07 Mar 2021 14:55:02 GMT

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I think it would be neat to restore them as-is, to keep them as close to original as possible.

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Subject: Re: Aztec Monet Cabinets

Posted by [grindstone](#) on Sun, 07 Mar 2021 18:05:28 GMT

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For more Monet specific stuff, search over on the speakers forum at audiokarma. I really like those cabinets.

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Subject: Re: Aztec Monet Cabinets

Posted by [two.dogs](#) on Sun, 07 Mar 2021 18:20:34 GMT

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I've been searching through AK threads. Consensus is that the drivers are CTS, so same as Magnavox. I have a 15" 4ohm but not sure what the Monet uses. My 8" mids seem original and are isolated in a cardboard tube (see pic). There are 3 x 4.5" tweeters!? Maybe this is some sort of impedance matching thing. The crossover is pretty simple. I see an air core inductor, a cap, and a resistor.

I see a guy on the AK forums who lives in Denver and has a pair. I'll reach out to him and see if he can provide some info on the parts I'd have to get. I found and attached a picture of how they should look.

John

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### File Attachments

- 1) [IMG\\_2276.jpg](#), downloaded 1251 times
  - 2) [IMG\\_2277.jpg](#), downloaded 1209 times
  - 3) [IMG\\_2281.jpg](#), downloaded 1222 times
  - 4) [monet.jpeg](#), downloaded 1229 times
- 

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**Subject: Re: Aztec Monet Cabinets**

Posted by [two.dogs](#) on Tue, 09 Mar 2021 04:01:35 GMT

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Here is an add that says special design woofer and advanced crossover. I pulled off some more mattress, I mean, insulation and found more components. Looks like at least 3 more each of resistors, caps, and inductors. Curious.

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### File Attachments

- 1) [crossover.jpg](#), downloaded 993 times
  - 2) [Screenshot 2021-03-08 205914.png](#), downloaded 1173 times
-

Subject: Re: Aztec Monet Cabinets  
Posted by [two.dogs](#) on Wed, 10 Mar 2021 17:03:23 GMT  
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I'm leaning against restoration

- strange design
- no good info on the design
- unknown drivers
- everything buried in goop

However the cabs are great. I thought that just the front edges were double thick for aesthetic reasons but it's all double thick with nice veneer.

Can you send 4Pi plans please?

John

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Subject: Re: Aztec Monet Cabinets  
Posted by [Wayne Parham](#) on Wed, 10 Mar 2021 17:23:59 GMT  
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You've got mail!

But I must admit that I would advise against using this cabinet for a four Pi loudspeaker build. I'm concerned about the quality of the midrange in that cabinet. Internal standing waves might cause problems.

The original design had a midrange driver in its own internal cabinet. The main cabinet was energized only with bass frequencies from the woofer.

In a four Pi loudspeaker, the midwoofer energizes the cabinet with bass and midrange frequencies, but the layout - the positions of the driver and the port in relation to the internal surfaces - as well as the positions of the damping material mitigate internal standing waves in the midrange.

If you decide to give it a try anyway, please perform acoustic measurements and pay close attention to the 100-300Hz range.

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Subject: Re: Aztec Monet Cabinets  
Posted by [two.dogs](#) on Thu, 11 Mar 2021 00:30:25 GMT  
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I looked for a 3-way design with a 15" woofer that might be more plug and play with the existing

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cabinet. I was surprised to come up dry. I found subwoofer designs and 2-way PA designs with horns.

Do you have any suggestions? I don't want to corrupt your design and produce something that sounds bad. Whatever I end up with, I'll take measurements and try to address any issues.

I suppose I could also cut out the entire front baffle and start fresh with whatever 3-way design looks most suited to the cabs. I'd still appreciate a shove in the right direction.

John

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Subject: Re: Aztec Monet Cabinets

Posted by [Wayne Parham](#) on Thu, 11 Mar 2021 01:11:47 GMT

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I would look for a woofer that will work well in that size box. The vent can be changed, so that doesn't need to be seen as a constant but you might be able to find a woofer that works well with that Helmholtz frequency. So calculate the Helmholtz frequency from the box volume and vent dimensions to know what you have there too. Might not even have to change out the port.

You have a fairly large assortment of brands to choose from. I'd probably stick with Eminence or JBL since I'm most familiar with them and I think I could find something that worked in the cabinet. But there are other good brands to choose from too.

The midrange driver won't be hard to source. There are plenty of good midranges of that size. The internal midrange box volume won't matter too much - probably - but do check to make sure the driver you choose works in a sealed cabinet of whatever size that midrange box is. You don't want it to be underdamped. That's really all you need to watch out for there.

Then pick some tweeters. Might be fun to replace 'em with a line of ribbons.

Make sure all your drivers are around the same sensitivity so you don't have a lot of level matching to do in the crossover.

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Subject: Re: Aztec Monet Cabinets

Posted by [grindstone](#) on Thu, 11 Mar 2021 04:07:52 GMT

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That's too bad if they can't be refurbished as survivors but good on you for even investigating it and not directly abandoning the notion.

If it shakes-out that way, here are my ideas:

1) Beg Wayne for 3-pi thermionic design. Do quickie qtr-wave sims using ewave woofer data. If

no showstoppers, whack new baffle to put driver and port where he had them. Stick ewave guts in new baffle. Don't push a bunch of watts but just test-listen (and see how much "bigger" your ewave can sound). Worst case, put your ewave guts back where they were, out one pair of baffle's work but prepped for re-baffling.

2) Beg Wayne for ancient 4-pi thermionic design :) Obtain remaining parts and make new baffles.

3) Lots of other stuff...depending on what you want. 5+ ft3 is a nice cab to have. And it's built Well :) I really like those cabs. Heck--I'll do the sims if somebody tells me where the old designs had driver and port relative to overall cab dims (is that a dc300?).

Thanks for sharing the great stuff. Good luck and keep us posted.

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Subject: Re: Aztec Monet Cabinets  
Posted by [OutOfSpace](#) on Thu, 11 Mar 2021 21:45:03 GMT  
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Just one more thought... If you are up for replacing the baffle board for a 4-Pi replacement design, you can always fill the insides with rigid foam board to take up the excess volume, so the boxes are a bit over-sized, but the actual inside volume and maybe even dimensions would match Wayne's specs. I've done this before, and it seemed to work fine. Of course, the regular insulation would go over the foam board.

Chris

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Subject: Re: Aztec Monet Cabinets  
Posted by [two.dogs](#) on Thu, 25 Mar 2021 23:30:41 GMT  
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Looks like the pi4 is 3.14 cu ft, and my cabs are 4.72 cu ft. Mine are taller and wider than pi4 but not as deep. I'm guessing that I could block with foam to match the internal volume but still end up with standing waves.

John

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Subject: Re: Aztec Monet Cabinets  
Posted by [Wayne Parham](#) on Fri, 26 Mar 2021 02:02:52 GMT  
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Do you have any measurement software?

You could always try it and see how it measures.

I'd hate to cut the baffle and discover it had anomalies though. I'd prefer a restoration to original the three-way design than I would trying to make a DI-matched two-way design out of it and find it had standing wave ripples.

This isn't an indication that the original design overlooked the possibility of standing waves, by the way, When a speaker is a three-way design, the woofer doesn't run as high so the cabinet interior doesn't have midrange energies presented to it.

The sensitivity to standing waves is introduced when making a two-way speaker in a large cabinet.

Anyway, I just wanted to say that if you were OK with experimenting with the cabinet, you could try cutting the baffles. It's just I wouldn't want to ruin them if they turned out not to work well as a two-way.

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**Subject: Re: Aztec Monet Cabinets**  
Posted by [two.dogs](#) on Fri, 26 Mar 2021 02:44:25 GMT  
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Wayne, you're making me feel like a murderer! I also enjoy original audio pieces, but these are hacked and incomplete. Compare mine vs the pic I posted of how they came from the factory. Looks like someone might have tried a horn where two of the tweeters used to live, so the baffle is already cut up. My mod plan would be to cut out the baffle, leaving about an inch. I'd make the new baffle to fit inside where I cut out the old. Then I could cut 2" strips of ply and fit them inside to glue the lip to the new baffle. Should be strong like bull. I'd fill the seam and paint the baffle brown like my econowaves. That's a good vintage look IMO.

I don't have measurement software, but have considered the Dayton DATS system. Looks like there is also freeware out there but I haven't researched it. I installed VituixCAD and I'm reeling from the learning curve. Dayton speakers have SPL and impedance files that are easily imported so I was playing around with some of those.

I figured a 15" woofer DC380 would stay with the original theme. For mids, the 8" size of the Aztec seems too large - all the SPL graphs seem to start breaking up at mid freqs. The 6" RS150P is a full range design with a whizzer cone that looks smoother at mid freqs. Maybe even two of those. Then I was looking at planar tweeters, so maybe the PT2C. Maybe even two of those, as well.

## File Attachments

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- 1) [DC380 glam.png](#), downloaded 692 times
  - 2) [DC380.png](#), downloaded 703 times
  - 3) [PT2C glam.png](#), downloaded 690 times
  - 4) [PT2C.png](#), downloaded 689 times
  - 5) [RS150P glam.png](#), downloaded 675 times
  - 6) [RS150P.png](#), downloaded 694 times
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Subject: Re: Aztec Monet Cabinets

Posted by [two.dogs](#) on Fri, 26 Mar 2021 02:53:44 GMT

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It would be great to figure out how to make an 8" mid work. Then I could leave most of the baffle and just perform some surgery to install the tweeters. I get the feeling that this is a bit of an unusual project. It's kind of an old school design, but using new drivers. I haven't found the internet trove of examples that I had hoped to find.

John

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Subject: Re: Aztec Monet Cabinets

Posted by [Wayne Parham](#) on Fri, 26 Mar 2021 03:13:37 GMT

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I'll bet a three-way design with a ribbon tweeter or short array would be great!

My DI-matched two-ways are great too, but I'm just worried about the standing waves in a cabinet that hasn't been tested for that particular purpose.

And I don't want you to feel like a murderer! :lol:

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Subject: Re: Aztec Monet Cabinets

Posted by [pjanda1](#) on Sat, 08 May 2021 13:47:44 GMT

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I love the idea of repurposing cool old cabinets! No sense going to a bunch of effort to restore speakers that weren't great originally, but cool to reuse what you can. One of my first DIY speakers used old Sansui cabinets that are a dime a dozen. There was plenty of room to slap a new baffle over the top of the original.

I've been half-heartedly trawling for some old cabs that are as cool looking as those Aztecs but a bit smaller for the right mid-century look for my office.

If you find yourself in need of 2226hs in Denver, let me know. I want to hang on to my extra pair for a few more days just in case the 2226s in the 4pis that are on their way to me get damaged. But after that, they need a home. Somebody also just posted a used JBL pro sub on CL that would have two, but they might be tired.

Paul

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**Subject: Re: Aztec Monet Cabinets**

Posted by [two.dogs](#) on Sun, 07 Nov 2021 14:26:54 GMT

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My Monet cabinets are still in my bedroom staring at me. I've done some studying but don't think I'll turn into a speaker designer overnight. Did some web searching to look at other large speakers from back in the day. Aztec Valencia caught my eye. But waveguide tech is better now and that brings me back to Pi. Maybe I'm at the point where perspiration is better than inspiration.

Wayne, the Helmholtz freq of the Monet cabs is 23.6.

Maybe I should make a cheap front baffle out of OSB and just clamp it to the front, using a gasket to seal it. Then I could check for standing waves, and experiment with damping material. I could change the internal dimension with closed cell foam or perhaps make a plywood internal divider. If I needed to change the position of drivers, I'd just have to cut a new test baffle.

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### File Attachments

- 1) [helmholtz.jpg](#), downloaded 422 times
  - 2) [valencia.jpg](#), downloaded 564 times
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**Subject: Re: Aztec Monet Cabinets**

Posted by [Wayne Parham](#) on Sun, 07 Nov 2021 14:44:40 GMT

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Honestly, I think those are too cool to hack up. I'd update the capacitors - replacing any electrolytics with polypropylene - and maybe replace any iron core coils with air core coils. If the HF extension lacked sparkle, I might even swap the compression driver with a modern unit, but I'd definitely keep the old ones if they still worked, just in case I needed to take it back to original. And refinish or restore the cabinet, if needed. They really look good so I can't imagine it would take much, if anything.

Build some Pi speakers from scratch. Don't hack up those groovy old speakers. They're just too cool as they are.

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Subject: Re: Aztec Monet Cabinets  
Posted by [grindstone](#) on Sun, 07 Nov 2021 20:26:56 GMT  
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Alternatives (aka poking with a stick and a smile):

- Those cabinets have never been any smaller and you wouldn't be creating the first standing waves inside them. Ever ride in a very old restored car (but it's Restored!)?  
<https://www.merriam-webster.com/thesaurus/charm>
- Just run the 15's LF to maybe 100Hz and put them under your ewaves again--presto--3-way that's within 1/4 wavelength at cross
- Cover all the holes but the 8 and put a Betsy in there (which Paul was too classy to mention) and absorb coherence for a while during pondering and learning Vituix.
- Blow-out the baffle, stick the woofer 1/3 from one end and the port 1/5 from the other end and do whatever you want that fits. It won't be optimal, but you won't get into trouble if you stick one diagonal R-19 batt in there pasted down.
- List them for a good speaker-holic home on AK or somewhere & get subs to run w/your ewaves

OK -- now quickly notice your own reactions to those options -- there is your answer :)

PS IMO, Valencia's "ain't all that" but they do sound "big"...and still don't have low-bass...or highs IMO :) Was this too many IMO's?

PPS Seriously, any of us with a conscience about stewardship have felt your pain. This is why they stare at you. Robert Pirsig wrote of this in a book that wasn't about motorcycles:

"The test of the machine is the satisfaction it gives you. There isn't any other test. If the machine produces tranquility it's right. If it disturbs you it's wrong until either the machine or your mind is changed."

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Subject: Re: Aztec Monet Cabinets  
Posted by [tomlang](#) on Sat, 13 Nov 2021 12:26:38 GMT  
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How about thinking "inside the box"?

Build the 4pi per plans, cut out (but save) the front baffle to the Monet's and literally put the smaller (if it fits) 4 pi box inside the Monet box just behind the grille.

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Subject: Re: Aztec Monet Cabinets  
Posted by [two.dogs](#) on Wed, 17 Nov 2021 00:08:06 GMT  
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I've looked at a lot of designs and had a long hard talk with these cabinets. They told me that they really want to be 4pi. The plan would be to remove the baffles and install an airtight horizontal divider. The woofer would live in it's own enclosure of whatever volume we decide. The picture shows it at 23" from the bottom which gives 3.5 ft<sup>3</sup>. I've also drawn 2 ports of 3" diameter. I would

take frequency response measurements and post them here. I'd make any suggested changes and ask Wayne for his approval before affixing the pi logo.

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## File Attachments

1) [monetpi.png](#), downloaded 516 times

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Subject: Re: Aztec Monet Cabinets

Posted by [Wayne Parham](#) on Wed, 17 Nov 2021 14:03:21 GMT

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Just watch for lower midrange ripple resulting from internal standing waves. That's always the risk with large two-way loudspeaker designs. The positions of the midwoofer, port(s) and damping material all are very important.

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Subject: Re: Aztec Monet Cabinets

Posted by [two.dogs](#) on Wed, 17 Nov 2021 14:51:05 GMT

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The Omega driver's recommended vented enclosure is 3.28 ft<sup>3</sup> with an Fb of 48hz. I think the 4pi is 3.14 ft<sup>3</sup> tuned to 42hz. I could keep the woofer centered in its enclosure or move it up closer to the horn. Perhaps I should make the woofer enclosure slightly larger and use closed cell foam to decrease it to desired volume. That way I could move the foam if I needed to change the geometry.

I will test for standing waves, but any tips on box size, tuning frq, and driver location would be appreciated.

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Subject: Re: Aztec Monet Cabinets

Posted by [Wayne Parham](#) on Wed, 17 Nov 2021 15:38:52 GMT

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The midwoofers used in the four Pi models work well in 2ft<sup>3</sup> to 5ft<sup>3</sup> cabinets with Helmholtz frequency between 35Hz and 40Hz. So that part is pretty easy.

It's dealing with the internal standing waves that's tricky.

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Subject: Re: Aztec Monet Cabinets

Posted by [two.dogs](#) on Thu, 18 Nov 2021 13:45:34 GMT

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I found free online software called Boxnotes that calculates internal sound reflections to minimize standing waves. The Monets should be about an inch less tall, and a few inches narrower with the woofer offset just slightly. That ensures none of the internal reflections stack up on one another. I'll change the volume with closed cell foam which is easier, lighter, and less reflective than mdf.

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### File Attachments

1) [boxnotes5.jpg](#), downloaded 383 times

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Subject: Re: Aztec Monet Cabinets

Posted by [Wayne Parham](#) on Thu, 18 Nov 2021 15:07:45 GMT

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That sounds reasonable. Be sure to measure and pay close attention to the response between 200Hz and 400Hz. The standing wave nodes above that are damped very effectively by the fiberglass insulation. It's the lower frequency nodes - the ones in the midrange - that the insulation can't damp very well. Actually it's the anti-nodes - the highest-pressure points - that cause the problems but semantics aside, we're just worried about response anomalies under 500Hz caused by internal standing waves.

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Subject: Re: Aztec Monet Cabinets

Posted by [two.dogs](#) on Thu, 16 Feb 2023 06:18:26 GMT

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Youtube channel Dave's Garage mentions a Wayne Parham just after time 3:30. Have you been moonlighting on computers?

<https://www.youtube.com/watch?v=xTZsXe4ahBg>

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Subject: Re: Aztec Monet Cabinets

Posted by [Wayne Parham](#) on Thu, 16 Feb 2023 14:10:37 GMT

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Yeah, he's talking 'bout me. See the link below:

Microcomputer History

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