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AMBIENT SOUND

50

By Len Feldman

A postscript to MR's product-testing philosophy or "The Great McIntosh Controversy."

LAB REPORT

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*By Norman Eisenberg
and Len Feldman*

McIntosh MA-6100 Preamp-Amplifier

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MODERN RECORDING

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- Doesn't it make good sense to deal with a company that wants to do as much for you as it possibly can?

Ambient Sound

BY LEN FELDMAN

Postscript to Our Product Testing Philosophy ...

In the very first issue of *Modern Recording*, I went into some detail regarding MR's approach to product reviews and test reports. I discussed the importance of lab measurements versus listening tests, and the format that Norman Eisenberg and I would use in trying to fairly report the merits (or demerits) of a variety of audio products. I did *not* detail how we would "sample" products for testing. A recent series of episodes took place in our labs which points up some of the problems and conflicts inherent in attempting to test electronic equipment, and I'd like to share the experience with you.

Basically, we obtain equipment in one of two ways. Either we ask a manufacturer to send us a representative sample of the unit to be tested, or we obtain one on temporary loan from a dealer. In rare cases, if we cannot obtain a sample by either of these approaches we will go out and purchase the required unit in hopes that we might sell it at a minimum loss after our tests are completed. Personally, I prefer getting a unit directly from the manufacturer, and the story I'm about to tell will show why.

As many readers may know, the McIntosh Company has, for many years, refused to "lend" equipment to publications for review purposes. That is one of the main reasons why MR, believing that the consumer should have the right to know, wanted to test a piece of Mac equipment. Mac's reasons are many - some of which I cannot argue with, others of which I feel are not justified. For one thing, the people at McIntosh feel that if a manufacturer supplies equipment directly to a magazine for review, the manufacturer has an opportunity to "tweak up" the sample (or even possibly modify it or improve it) for better results. On this point, I can only speak from experience dating back some six years, during which time I have probably tested several hundred components sent to me directly from manufacturers. I cannot remember a single instance in which a manufacturer "phoned up" a circuit so that the unit would yield better measurements. Of course, I cannot deny that many manufacturers probably "double-check" such samples before sending them to me, but, frankly, I see nothing wrong with a manufacturer making doubly sure that a unit he sends

for review performs in accordance with specs and is not the occasional "lemon" that any manufacturer of complex electronic gear is liable to turn out once in a while. In fact, I wish more manufacturers *would* double-check the units they send for evaluation. If I receive a faulty unit from a manufacturer (and, indeed, I *have* in the past received several defective pieces of equipment) that I know to be defective (not poorly designed - just defective), I don't have the same warranty privilege of having it fixed up by a local service agency. I will have wasted the better part of a day (it's usually the *last* measurement that shows up the fault - hardly ever the first; a variant of Murphy's law, you know) only to have to start all over again with a request for a second unit from the manufacturer. I see no point in printing a report *based upon a defective unit* that does not represent what the model can do!

McIntosh's other argument against supplying equipment to "reviewers" for test purposes is that they have no way of knowing whether the particular tester or reviewer has the necessary test equipment or knowledge with which to properly evaluate that equipment. I certainly can't argue with that one-though I believe that a simple bit of investigation on the part of McIntosh (or any other company that may feel the same way) could insure that samples are sent only to *qualified* reviewers possessing reasonably up-to-date test equipment.

Be all that as it may, MR decided that we wanted to do a report on a piece of McIntosh equipment for this issue. Knowing that McIntosh would not supply one, MR decided to borrow a unit from one of their authorized dealers for that purpose. We did just that, and that's how we obtained our first MA-6100 Integrated Amplifier for testing. We were all prepared for an exciting "first" at our lab. Preamp section tests went smoothly enough, with all published specs met or exceeded by far. Construction was excellent, as the famed McIntosh reputation had led us to believe. Then, we came to the power output measurements and-sure enough-we realized at once that the unit was defective. Output sinewaves were being clipped severely *on one side only* before rated power was attained. What to do? We couldn't go back to the manufacturer-they hadn't supplied the unit in the first place. We asked the dealer if this were, indeed, a unit

from a factory-sealed carton and were told, at first, that it was. (It had not been sent to us in a McIntosh carton which, at once, raised our suspicions.)

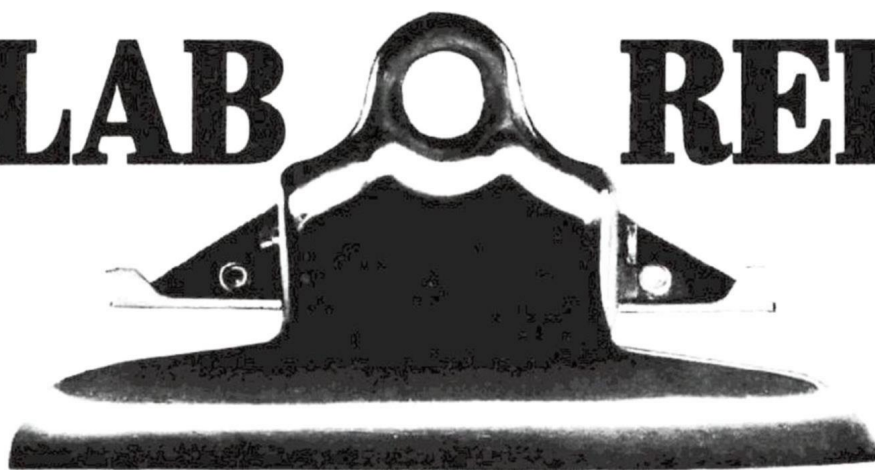
I agonized over this situation for some time, along with the editors and publisher, and I finally decided to confer with the manufacturer as to what might be the trouble. A bit of telephone diagnosis led both McIntosh and myself to the conclusion that something must have happened in one "side" of the power supply and that, indeed, the unit was not functioning correctly. The very next day, a representative of McIntosh was in my laboratory with a second unit for comparison. We did a little trouble-shooting and found that one diode of a four-diode rectifier bridge circuit was *open* and that the required negative 41 volts DC supply was therefore running at about 37.5 volts (causing the one-sided clipping). McIntosh volunteered to take the defective unit back up to their plant, repair it and ship it back to the dealer. Since I was responsible for the unit, I felt I had to call the dealer once more to tell him what we had found. It was only then that the dealer admitted that this particular unit had been sent to a local authorized McIntosh service station earlier for a power supply repair. Seems a diode had *shorted* and the service agency had replaced the diode and sent it back to the dealer. What the service outfit did *not* discover was that when the first diode had shorted, it had "opened" a second diode. No listening test in the world could have disclosed the fact that the "repaired" unit still had another open diode, for the difference between 64.5 watts and rated 70 watts is just over *one third of one dB* (0.355 dB to be exact). Nor would a user have been able to tell that the unit had not been fully repaired, for at all but maximum power output, all other specifications were met and exceeded.

I relate this story in full for several reasons. First, to illustrate the dangers of testing "sample" units whose origins are not known. How much better it would have been for all of us (readers, manufacturer and your obedient product reviewer) if we could have started

with a "known entity," produced and tested under controlled conditions. Secondly, what would it have proven to readers if we had simply "put on the blinders" and reported that the McIntosh MA-6100 doesn't make rated power output? All but that "odd-ball" or improperly repaired unit of the three we tested, *did* meet specs-and then some.

All of which brings us back to the tabulations which you will find in our test report of the McIntosh MA-6100. You will note that we ended up reporting on *two* units. The first is the unit which the people from Mac brought to my lab when the problem with the borrowed unit arose. We could have stopped there, but we felt that if we did so, without telling the full story here, we would be doing our readers (and McIntosh) an injustice. On the other hand, if we simply told what happened, and then reported that the second unit more than lived up to expectations, we would be doing exactly what McIntosh feels is improper in equipment reporting. The only solution, therefore, was to find another dealer who would supply us with yet a third unit, and that is exactly what we did. A comparison of the results obtained from the second (Mac-supplied) and third (off the dealer's shelf, this time in a sealed carton) proves, we think, what I said earlier. It is obvious that McIntosh didn't *have* to do anything special to the unit that they hastily brought down to my lab. The third unit delivered virtually the *same* power as the unit brought down by McIntosh personnel.

Perhaps now, McIntosh-and any other companies who are reluctant to have their products reviewed by audio-involved publications-will take another look at the whole problem of test reports. Perhaps readers will be less prone to "climb on our backs" for testing products supplied by manufacturers. And perhaps, as a result of this unnerving experience (the episode ran for three days, and the phone bills are yet to be received), the lives of magazine reviewers (myself included) will be made just a little easier in the future.



NORMAN EISENBERG AND LEN FELDMAN



McIntosh MA-6100 Preamp-Amplifier

General Description: The McIntosh MA-6100 is a stereo preamp/power amp combined on one chassis, or, as custom terms such a unit, an "integrated amplifier." Its features and controls are intended not only to appeal to the serious audiophile but to the advanced hobbyist too, including the owner more than casually interested in tape-recording.

It is possible to connect, all at once, to the MA-6100 two turntables, two tape recorders, two tuners, and any auxiliary (line-level) source. In addition to the normally expected inputs for tape (line-level) there is a stereo input for connection directly from a tape head—a feature once offered on de luxe preamps but not to be found on units of recent vintage. Provision also is made for "interrupting the circuit" between the pre-amp and power amp section via stereo preamp-out and power amp-in jacks, which permits the insertion of special accessory units such as speaker equalizers or other signal-shaping devices. It also permits the use of either section by itself for special applications.

Two sets of stereo speakers (nominally designated as "main" and "remote") may be hooked up and turned off or on from the front panel, where there also is a headphone jack. The headphone signal is not affected by the speaker selector switches. An unusual and useful feature in connection with the speaker options is a switch that selects the load impedance depending on what combination of speakers is being used—the switch is found at the rear and has two positions, one

for 8 to 16 ohms and the other for 4 ohms. There are four AC convenience outlets for powering other equipment; of these one is always "hot" and three are controlled by the unit's main power switch.

Nothing seems to have been overlooked in the way of front-panel controls. Bass and treble controls are dual-concentric types that permit separate adjustment on each channel. The channel balance control shares a dual-concentric arrangement with the loudness compensation control which itself also has a "presence" position. Power off/on is combined with the master volume control.

The input selector has six positions to correspond to the input sources connected at the rear. The mode selector offers an unusually broad range of possibilities: left input to left and right outputs; right input to left and right outputs; reverse stereo; normal stereo; mono (left plus right); left plus right to left output only; left plus right to right output only. While the average home listener probably will find little or no need for such versatility, the advanced hobbyist or semi-pro will appreciate the options they represent for special purposes, not to mention their serving as a built-in trouble-shooting tool to help isolate problems to source, amp or speakers.

In addition to these knob-controls is a series of push-buttons. Two control the tape-monitor function for the two recorders that may be connected at the rear. Two more facilitate tape-copying in an easy and ingenious

way: the T1-to-T2 button connects the output jacks from tape recorder no. 1 to the input jacks of tape recorder no. 2 without affecting the program being monitored over the speakers. In this position, a copy of the program being played on tape recorder no. 1 can be made on tape recorder no. 2. To monitor this copy, you simply press the Tape 1 monitor switch.

The T2-to-T1 button does the same thing the other way round, permitting a copy of the material on tape recorder no. 2 to be made directly on tape recorder no. 1. This time, to monitor the copy, you would press the Tape 2 monitor button.

In addition, there are two more buttons for low and high frequency filters, and yet another for phase reversal—this last is another feature once found on many control panels and for some years not offered on most amplifiers or preamps. Needless to say, the phase switch not only is useful in initially setting up stereo speakers but it can provide a check on the proper phasing of stereo program material. It also comes in handy when adding a rear-channel amplifier and speakers to an existing stereo set-up to convert to quadraphonic sound. Proper phasing of all four speakers is germane to the full quadraphonic effect generally; in matrix decoding, it is especially important that all four channels remain in phase.

The speaker selector buttons and the stereo headphone jack complete the picture at the front. The panel itself is neat enough to fit into any home decor and is "business-like" enough to fit into the more workaday environment of a studio. Somehow, "Mac" stylists have managed to design a look that may well appeal to both types of user, and this opinion dovetails with the unit's general feel as a product.

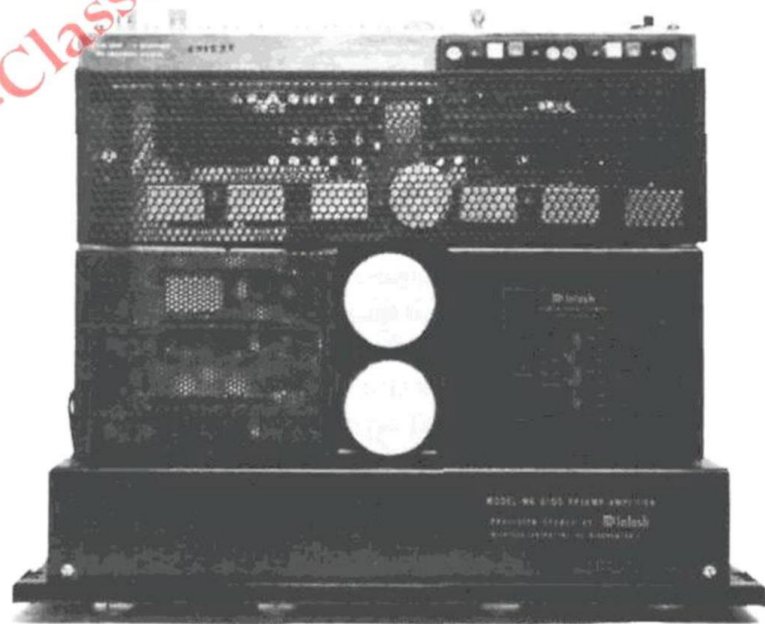
Test Results: Because of McIntosh's reputation, and because this company offers a money-back guarantee that its products will meet or exceed published performance specs, MR raised its critical eyebrow when the first sample of this amplifier, which had been obtained off a dealer's shelf, fell somewhat short of making 70 watts in one output channel. The details of this are explained elsewhere in this issue (see L.F.'s "Ambient Sound" column on p. 50), but briefly, investigation revealed that the unit we had started to test was a used model that had been less-than-expertly repaired prior to our getting it for testing. We accordingly discontinued tests of this unit and got hold of two new units, both "factory-carton fresh," and the test results reported here are based on those two units.

To state the story briefly, the second and third samples did indeed exceed published specifications, went through our test swimmingly, and most assuredly document that the MA-6100 is a superb amplifier in every respect. As for the less-than-perfect sample that

was on the dealer's shelf, we must conclude it was a freak accident (and not a serious one at that since the fraction of a decibel less output on one channel probably would never have bothered anyone just listening to the amplifier), but one which McIntosh, in any event, has been apprised of and which they presumably will guard against happening in the future.

As to the new, normally functioning samples, both produced better than 85 watts per channel (McIntosh claims 70). Power bandwidth extended from 14 Hz to 35,500 Hz in one, from 13 Hz to 35,000 Hz in the other (McIntosh claims 20 to 20,000 Hz). For McIntosh's claim of 0.2% harmonic distortion, we measured in either sample the extremely low level of 0.03% harmonic distortion.

And that's the way it went through all our tests of both the power amp section and the preamp section which, by the way, has very accurate RIAA equalization and excellent overload signal characteristics combined with a very low noise level—exactly what you look for in a preamp. Control and filter characteristics all were fine and well-suited to their intended use; signal sensitivities and output levels were well within the normal range for easy mating with other equipment of contemporary design. All controls and switches performed with professional smoothness to lend the unit a



McIntosh MA-6100: Top view.

"quality feel" which was substantiated by our lab tests and further borne out when we opened the beast and studied the extra-careful layout of quality parts that make up its innards and circuitry. All told, MR's view of the MA-6100 is that it is a superb integrated amplifier that should interest a wide range of users.

General Info: Front panel is 16 inches by $5\frac{7}{16}$ inches. The chassis itself is 15 inches wide and 13 inches deep (including Panloc buttons for optional panel mounting) and connectors at the rear apron. Front-panel knobs require clearance of $1\frac{1}{2}$ inches in front of mounting panel. Unit weighs 34 pounds net (46 pounds in shipping carton). Owner's manual is excellent, with detailed explanations and good illustrations. Price: \$699.

Individual Comment by L.F.: The full story of my adventure with the MA-6100 preamp-amplifier will be found in my "Ambient Sound" column on page 50. In terms of panel controls, the Mac unit gives a user the kind of input and output flexibility which has long since been abandoned by other manufacturers. Consider, for example, the flexible mode switch which lets you feed just about any mono or stereo combination of channels to the pair of outputs. Or the cleverly incorporated compensation control (tandemly mounted to the balance control to maintain an uncluttered look) which incorporates *both* a loudness compensation switch and a fixed mid-frequency presence emphasis that is neither too exaggerated nor insufficiently effective. It's been a long while since we saw a "tape head" input on an integrated amplifier (or on a preamplifier, for that matter) and we doubt whether even a small percentage of purchasers would ever have a need for this low-level input, but the flexible tape copy arrangement and the dual tape monitor circuits will find favor with serious tape recordists.

Action of the bass, treble and loudness controls, shown in the accompanying 'scope photos recorded directly using a slow-sweeping audio generator and a spectrum analyzer are just what you would expect and correspond almost exactly with McIntosh's own published curves, as they appear in the owner's manual. High and low cut filters have 12 dB per octave slopes, and the "presence boost" at midrange frequencies peaks center frequencies by just under 5 dB when this feature is switched in.

Readers may be curious to know why the MA-6100 is rated at 60 watts per channel under 4-ohm load conditions and at 70 watts per channel when operating into 8-ohm loads. Normally, one would expect higher power output into 4-ohm loads. In the case of this unit, a special rear panel switch has been added, which limits output when placed in the 4-ohm position in order to meet early interpretations of the FTC Audio Amplifier Power rule. That interpretation required that the amplifier be able to sustain one hour's operation at one-third of full power output without overheating or cycling of thermal protection circuits. Since this change was made, the FTC has re-interpreted the rule to permit repeated thermal cycling while making this test, so long as a full hour of "on" time was accumulated. Of course, under musical listening conditions the test is academic and, in fact, with the switch set to the "8- or 16-ohm" position, the amplifier would deliver

much more than its rated power when loaded with 4-ohm loads.

In addition to listening tests conducted at levels which produced peaks at or near full power output, we had occasion to run the amplifier at *full* power output under steady signal conditions for extended periods of time. This test puts a severe strain on the power transformer, and few consumer-type amplifiers could take such a beating for a very long period. The McIntosh MA-6100 stood up to this test nobly, with transformer temperatures such that we could comfortably rest our fingers on the surface of the transformer.

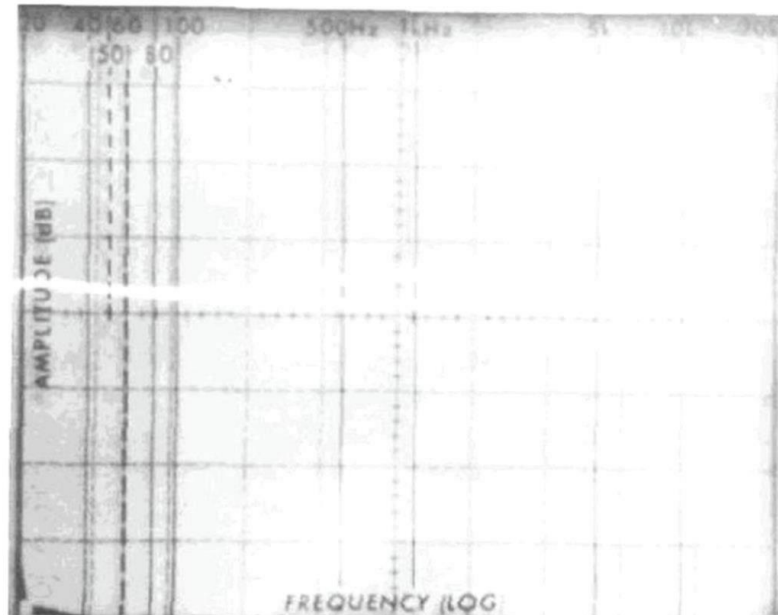
As for the listening tests themselves, we used three different types of loudspeakers for musical listening, including a pair that normally require an input of about 60 watts to produce reasonably loud sound levels. The amplifier contributed no audible distortion during these tests. Sound quality was strictly a function of the speakers used—as it should be.

Dead shorts maintained across the output terminals while operating the amplifier at high power output levels triggered the protection circuits (which McIntosh calls a Sentry Monitoring Circuit) almost instantaneously, and return to normal operation of the system took place equally rapidly when the offending short was removed.

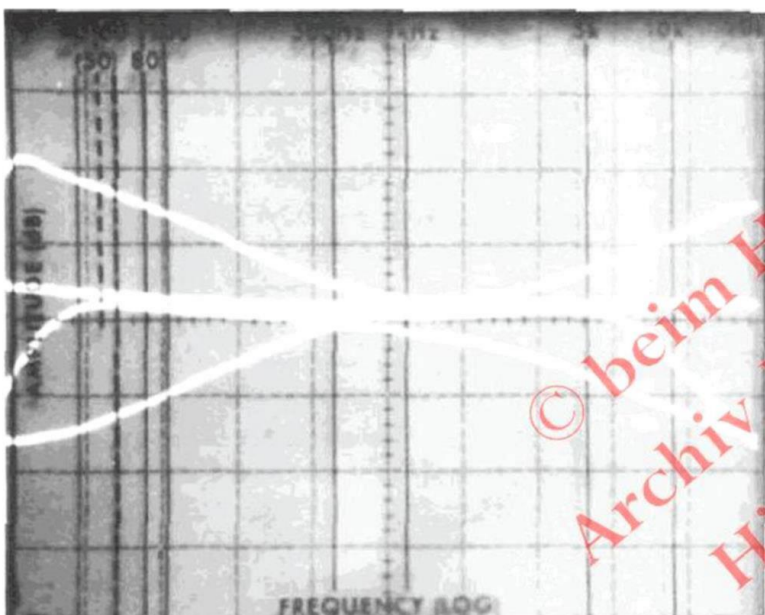
One gets the feeling that the McIntosh MA-6100 was built to last a very long time. During the course of our investigations, we had occasion to examine the insides of the amplifier and were impressed with the company's conservatism in choice of components, many of which are of much more than necessary quality. It is difficult to equate power output with respect to selling price for this unit, for certainly there are integrated amplifiers around which produce as much power for less cost. McIntosh stresses long-term reliability for all of their products, along with a dedication to service and customer satisfaction that cannot be adequately judged in the short time we had to live with these units. The large and devoted group of audiophiles who own Mac equipment suggests that many people are willing to pay a premium for this reliability and service.

Individual Comment by N.E.: This was a more-than-usually interesting test project for me since it resulted in two things, both of which I deem positive and constructive: (1) it proved out a piece of equipment from a company about which there has been considerable speculation, and (2) it resulted in the first published test report in years on a piece of McIntosh equipment in any magazine in this field that accepts advertising. It is well known that for years McIntosh has maintained an aloofness regarding editorial coverage of its products which not only precluded their making test samples available but which also extended to their not sending information, even when requested by editors.

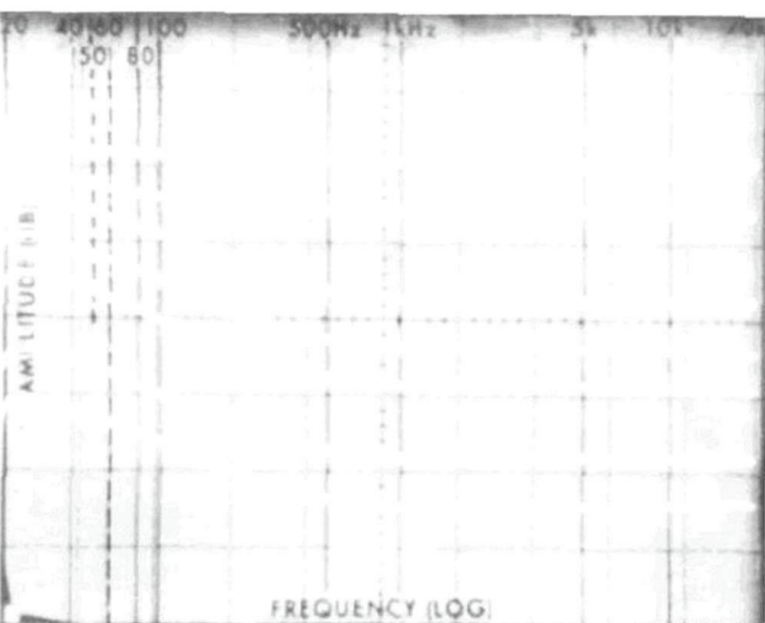
I am sure that the idea of simply going to a dealer and getting a McIntosh unit has occurred to more



McIntosh MA-6100: Response when set to "flat" (lower curve) and "pres" (upper curve) positions.



McIntosh MA-6100: Tone control range and low and high filter response.



McIntosh MA-6100: Loudness control characteristic at various volume control settings.

than one editor, but apparently this idea never has been translated into action. We, at *Modern Recording*, can thus take credit for an editorial first and for something of a scoop.

That in itself might be enough to be happy about. But what our little adventure also produced was some information that should be of value both to the reader/consumer and to the manufacturer-and that is the fact that it is entirely possible for a unit to have been serviced in a less-than-perfectly competent way and then returned to the dealer who sent it out for repair, presumably for sale to a customer. To be sure, the dealer had no way of knowing about the faulty repair job and it is certainly true that the nature of the flaw was such that in normal use of the amplifier it probably would never show up. But it was the kind of flaw that would show up in careful lab tests such as ours. And I suppose it could be argued that even a minor discrepancy would be objectionable to the kind of buyer who is willing to pay a premium price for equipment that is reputed to be built with more than average care and precision.

To guard against this sort of thing happening in the future, it would seem that McIntosh might more rigorously monitor its in-field servicing set-up. And a word to whomever it was who replaced that shorted diode and sent it back to the dealer: whenever you find a bum circuit part, especially in high-grade equipment, you always suspect and check out neighboring circuit parts which may have caused the defect or which may have been damaged as a side effect of the defect.

End of sermon. Now everyone can be happy and enjoy Mac equipment.

McINTOSH MA-6100 INTEGRATED AMPLIFIER: Vital Statistics

PERFORMANCE CHARACTERISTICS	LAB MEASUREMENT	
	Sample A	Sample B
Power output per channel, 8 ohms, 1 kHz	85.7 watts	85.9 watts
	20 Hz	76 watts
	20 kHz	80.7 watts
Power output per channel, 4 ohms, 1 kHz	80 watts	81.3 watts
	20 Hz	66 watts
	20 kHz	72 watts
Power band for rated 70-watts output	14 Hz to 35.5 kHz	13 Hz to 35 kHz
Harmonic distortion for rated output, 1 kHz	0.03%	0.03%
IM distortion for rated output	0.12%	0.10%
Harmonic distortion at 1-watt output, 1 kHz	0.05%	0.04%
IM distortion at 1-watt output	0.05%	0.04%
Damping factor, 8 ohms	58	56
Frequency response, 20 Hz-20 kHz, high-level input	±0.3 dB	±0.25 dB
Signal-to-noise, ret. full output	92 dB	92 dB
Frequency response, RIAA equalization	±1 dB	MR
Max. input before overload, preamp	135 mV	137 mV
Signal-to-noise ratio, preamp, ref. full output	at 10 mV input	79 dB
	at 2 mV input	65 dB
Input sensitivity, phono 1	2 mV	2.1 mV
	phono 2	2 mV
	high-level inputs	280 mV
	tape inputs	290 mV
Output level, tape	280 mV	290 mV
	0.84V, 8 ohms	0.8V, 8 ohms