The Roland VS-880 FAQ

Original FAQ compiled and edited by Paul Shields [Jan '97 - March '97]
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• The VS-880 Mailing List

All the information in this FAQ has been compiled from messages on the VS-880 Mailing List (run by Neil Goldstein until March '97, now run by Toshi Ide). Here's everything you need to know about this mailing list:

Please read the list guidelines (see below) before engaging in discussion. In addition, familiarize yourself with how the list operates, especially if you've never participated in an Internet e-mail discussion group before. It's a good idea to save this message somewhere so you know how to unsubscribe. When dealing with a listserver, there are two types of messages, namely, COMMANDS and POSTS. Unlike traditional listservers which require the use of numerous email addresses, we have simplified the process by allowing for both COMMANDS and POSTS to be sent to the same address.

WEB SITE: You can subscribe, subscribe digest, and unsubscribe through the Moonlight Cafe Web page at "http://www.mooncafe.com/lists/". You can also view digests through the page.
COMMANDS: These e-mail messages are intended to cause some action to occur, such as subscribing the FROM address to a mailing list. Commands are usually one or two word phrases which should be entered in the SUBJECT field of the message. Any other fields are ignored... it doesn't matter what you put in them. The following commands are accepted:

subscribe
*adds your e-mail address to the list of subscribers
*you will then receive all posts
*you are then allowed to post from that address

unsubscribe
*removes your e-mail address from the list of subscribers
*you will no longer receive any posts
*you are no longer allowed to post

subscribe digest
*switches you to digest mode
*you will then receive one message per day which lists all posts
*to switch back, send a "subscribe" command

digests
*returns a list of digests for the past 30 days along with
*instructions for retrieving them via e-mail

help
*this message will be returned

POSTS: Email messages which don't match any commands are distributed to everyone on the list. Every time you post a message, hundreds of other people on the list receive a copy, just as if you sent it to them personally. As a member of the list, you will receive a copy of every message anyone else sends. On this list, only members of the list can post to it.
To correspond directly with a person, write to toshii@mooncafe.com

Q: "Where can I find an archive of the VS-880 mailing list?"
A: "For anyone wanting to get up to speed about the current, and not so current, issues perplexing the collective consciousness of the VS-880 mailing list community, check out Timian Heber's VS-880 Resource Page for a searchable archive of the list. From there you can trace the history of the Great Jaz Debate, and gaze in awe at the tribulations of Cakewalkers attempting an OS upgrade." [Paul Shields - Jan '97]

-VS-880 Mailing List Links.

* VS-880 Resource Page by Timian Heber -
http://www.colargol.idb.hist.no/~timh/vs880.html

• News/In The Future

ROLAND says: "We have an ongoing project to support the unit, so you will see further things becoming available. The first of which is the V-Xpanded some of you now have." [Roland UK employee - March '97]

• The Roland VS-880 Digital Studio Workstation

-Press Release (Roland VS-880) [Jan '96].

[Ed. - Apr '97] Still looking for this one...

-Press Release (Roland VS X-panded/VS-880-S1 Upgrade) [Jan '97] .

- -- New Operating System Enhances the Revolutionary VS-880 with a Wealth of Powerful Features --

In 1996, Roland introduced a product which single-handedly revolutionized the hard disk audio recorder market, the VS-880 Digital Studio Workstation. Since its introduction, the VS-880 has garnered widespread acclaim and unrivaled sales success, giving musicians and engineers an unprecedented 64 virtual tracks of digital recording, mixing, editing and effects processing in a table-top workstation. In an effort to further enhance this revolutionary product, Roland has announced the release of an even more powerful "V-Xpanded" VS-880 for 1997, as well as a low-cost software-based upgrade which provides these enhancements for current VS-880 owners, the VS-880-S1.

The V-Xpanded VS-880 and VS-880-S1 enhance each of the workstation's main functions -- audio recording, mixing, editing and effects processing (note that all VS-880 effects processing functions are dependent upon the installation of the VS8F-1 Effects Expansion Board) - -- as well as the VS-880's disk drive performance and synchronization features.

Highlights of the new V-Xpanded VS-880 include powerful mix automation, enabling VS-880 users to record and play back the mixing data of a song in real-time without an external sequencer; 10 new effects algorithms, including an innovative microphone simulator which uses Roland's COSM technology to "model" classic German large- and small-diaphragm condenser mics as well as high-end dynamic mics, giving VS-880 users an arsenal of stunning microphone sounds; new EQ and effects insert capabilities; and expanded editing functions for faster audio edits.

Mixing

The V-Xpanded VS-880 and VS-880-S1 add to the original mixing capabilities of the VS-880 with a dynamic Auto Mixing Function, which records and plays back mixing data in real-time without the use of an external sequencer. By recording all mixer parameter movements, automated control of Mix level, Mix pan, Aux level, Aux pan, Effects 1 and 2 send, and Effects 1 and 2 pan is possible for each individual channel. In the Master section, automated control of Master level, Master balance, Aux level, Aux balance, Effects selection, Effects 1 and 2 send and return level and Effects 1 and 2 send and return balance is possible, giving VS-880 users precise control of all the major mixing functions.

Additionally, the V-Xpanded VS-880 and VS-880-S1 allow for recording with an effect inserted in the "Input -> Track" mode, giving VS-880 users the power to easily record with parametric EQ and effects. These expanded effects processing capabilities are enhanced by the newly added series connection of inserted effects on a specific channel, which provides for simultaneous Effects 1 and 2 insertion on a single channel.

Effect insertion may now also be accomplished via "insert L," "insert R" and "insert S" paths, allowing

for respective left, right and left-in/left-out, right-in/right-out effect insertion in series. A three-band peaking EQ now complements the Input Mix/Track Mix mode. And with the V-Xpanded/VS-880-S1, effects and EQ can even be inserted to the Master Out, providing for effects such as compression on the entire mix.

Rounding out these expanded mixing functions, the V-Xpanded/VS-880-S1 now allow for control of scene changes via MIDI program message and provide an anti-feedback-loop function which eliminates unexpected internal feedback loops. A peak hold display is now available in the level meter section and the VS-880 has also gained instant value response to fader position.

Effects Processing

With the V-Xpanded VS-880/VS-880-S1 comes a greatly expanded effects processing section (dependent upon the installation of a VS8F-1 Effects Expansion Board). The new VS-880 incorporates 10 additional effect algorithms -- raising the total number of VS-880 effect algorithms to 30 - -- as well as 100 additional preset effect patches. Effects changes can now be made via MIDI program changes and edited via MIDI continuous controller messages. The new effects are as follows:

* Mic Simulator - uses Roland's Composite Object Sound Modeling (COSM) to simulate various microphone types ranging from a standard dynamic mic to German condenser and pro-quality microphones. Many parameters, including distance between mic and sound source, can also be simulated.
* Voice Transformer - creates distinctive voice "characters" through independent control of vocal pitch and formant parameters. This effect can convincingly change a user's vocal "gender" without the artificial-sounding "chipmunk" effect associated with less-expensive vocal processors.
* 19-band Vocoder - produces high-quality vocoder effects with 19 bands of sonic control for creative experimentation.
* Hum Canceler - eliminates hum from noisy sound sources.
* Lo-Fi Sound Processor - cuts the sampling frequency and resolution, delivering unique "lo-fi" sounds.
* Space Chorus - simulates classic Roland SDD-320 chorus effect.
* Reverb 2 - allows for reverbs with gating and ducking.
* 4-Band Parametric EQ
* 10-Band Graphic EQ
* Vocal Canceler - cancels center-located sounds of stereo input source.

Editing

New editing features include locate point memorization of "start," "from," "end" and "to" points. After setting these points, V-Xpanded VS-880 users can easily access them from the track editing page. Another helpful new editing feature is the Shift Lock mode, which locks the shift status once the shift button is pressed, giving users one-handed access to all of the VS-880's shift functions. Rounding out these new editing features, the Remaining Time display has been enhanced to show remaining size of hard drive memory and recordable number of events.

Recording

The V-Xpanded VS-880 and VS-880-S1's recording has been enhanced through the ability to simultaneously play back six tracks of digital audio in the uncoded MASTER mode (versus four tracks of MASTER mode playback on the original model). As an additional benefit, the VS-880 now offers optional copy protection, prohibiting second-generation digital copies of audio material recorded on a VS-880 (identical to SCMS technology found in consumer DAT machines).

Other Enhancements

The V-Xpanded VS-880 and the VS-880-S1 also enhance the disk drive and synchronization functions of the original VS-880. When initializing a disk drive, a read/write test is now performed to check for errors. If an error is detected, the "defect cluster" is registered and never used. There is also a built-in disk repair system.

Synchronization enhancements include the generation of a sync track/tempo map from the marker points, making it easy to edit and sync the VS-880 to a pre-recorded song.

Roland is a world leader in the design, manufacture and distribution of electronic musical instruments, professional audio equipment, multimedia products and music accessories. For more information, contact Roland Corporation U.S., 7200 Dominion Circle, Los Angeles, CA 90040, 213.685.5141, www.rolandus.com.

-Roland Links.

* The Official Roland Corp (Japan) Web Page - `htttp://www.rolandcorp.com`
* The Official US Roland Web Page - `http://www.rolandus.com`
* The Official UK Roland Web Page - `http://www.roland.co.uk`

• Recording

-Recording Times.

[Ed. - April '97] Because the VS-880 has different 'recording modes' and sample rates, the recording time is dependent on what mode and sample rates you choose for a particular song (you can't use more than one mode or sample rate in one song). Also, because the VS-880 has the facility for 'virtual tracks' (64 of them!) - you can easily fill up a whole disk with just one three-minute song. Here's a chart (1gig, 1 track), divide the times through the amount of (virtual) tracks you're planning to use:

```
Recording Mode      48kHz        44.1kHz       32kHz

Mastering           185min.      202min.       278min.
Multitrack 1        371min.      404min.       557min.
Multitrack 2        495min.      539min.       742min.
Live                594min.      646min.       891min.
```

-Recording Modes.

[Ed. April '97] The VS-880 has four different recording modes. The first one, Mastering (MAS), is the only one which provides uncompressed 16-bit digital audio. The most important aspect of this mode is that it reduces to VS-880 to a six-track recorder (i.e. tracks 7 and 8 can't be used). The advantage of this mode is that, since it doesn't use one of the proprietary Roland file-formats, it can be used to import files (via an external SCSI disk) into a PC.
The second mode, Multritrack 1 (MT1), is probably the one that most people use. Here the compression ratio is a very 'mild' 2:1, thus doubling the recording time. The sound-quality is outstanding and most people (and this includes reviewers from magazines like Sound On Sound) can hear no difference between this and the Mastering Mode. The other two modes, Multitrack 2 (MT2) and Live (LIV) offer higher compression ratios, longer recording times and lesser sound-quality. Please refer to 'Data Compression Vs. Sound Quality' for more discussion on the data compression and sound quality of the VS-880.

-Track Limitations.

Q: "What are the track limitations with version 2? You can record up to 6 tracks of non-lossy audio, right? Can you then mix them down to the remaining 2 tracks?"
A: "Yes, 6 tracks of uncompressed audio in Master Mode. You can't mix the down to the remaining 2 tracks (because there are no two 'remaining' tracks in this mode, really)." [Daniel Baars - March '97]

Q: "About 8-track use: In MT1 and lower (lossy) modes, you can record all 8 tracks, just only four at a time max, right? When you record you can hear ALL of the previously done tracks while you record, or can you? Are there limits to this?"
A: "Yes, only four at a time. You can hear all of the previously recorded tracks as long as the track together (the recorded and playbacked) don't outnumber 8 (i.e. you cannot hear all your 64 virtual tracks of course)." [Daniel Baars - March '97]

-Click Track With Non-MIDI Sources.

Q: "Text keeps talking about using "beats and measures". How does this work with non-MIDI sources? Does the VS-880 product a click track you can record to and base the beats/measure on that? How flexible is this? How does this work? You say "make a click track at this tempo, this many bars, on track 8" and it puts it down?"
A: "Yes, the VS can produce a click-track you can record to. It sounds pretty horrible but it is usable nonetheless. I'm not sure what you mean by 'flexible'. You want tempo-changes? That's possible too. It works much like the click tracks on computer sequensers (not the ones via MIDI but the one that can come out of the computerspeakers). It doesn't need to be put down - it just 'runs along' with the recorder." [Daniel Baars - March '97]

-Internal Bouncing With Effects.

Q: "Can you internally bounce a track with a built in effect? If it turns out you don't like the wet virtual track, can you selectively undo it?"
A: "Yes. Very easy. Just keep the dry track stored in some other virtual track... " [Brian Badger - March '97]

-Aux Sends.

Q: "Does the aux sends act independent of the internal expansion board effects? In other words - can I use an outboard effect separately from the 2 internal effects?"
A: "Yes, definitely. The aux send is stereo and can be used for external effects *and* some internal routing. If you are familiar with general mixer routing possibilities, you'll find the aux send to be very flexible." [Francois de La Bruere-Terreaul - March '97]

-Compression On The Mix Buss.

Q: "Does it have compression capability across the mains buss, and does that take up one of the internal effects?"
A: "Yes, you can insert one or both processors on the mix buss, but a processor can't be used for anything else when put in insertion. You can choose any effect patch to be applied to the mix buss." [Francois de La Bruere-Terreaul - March '97]

-Parametric EQ.

Q: "Is parametric EQ available on all 8 channels on playback? Does this take up one of the internal effects?"
A: "Yes, EQ is available (1 full-parametric and 2 semi-parametric bands). These EQ's are part of the mixer. The processors are always available at the same time." [Francois de La Bruere-Terreaul - March '97]

-Recording A Digital Signal.

Q: "How do I record a digital signal via the S/PDIF inputs? "
A: "To record a digital signal it is not enough to just connect a digital source to the S/PDIF digital I/O connectors. The sample rate of the song must match the sample rate of the source. Note that the 'Vari-Speed' function should be turned off if a standard digital signal is being recorded. To record a digital signal, select 'MasterClk=' from the 'System PRM?' menu. Set it's parameter to 'DIGITAL'. The VS-880 will now try and lock with the sample rate of the digital input. When this has occurred 'Digital In Lock' will flash on the display. Now set the input channels to receive on Digital-L and Digital-R." [Paul Shields - Jan '97]

-Cable Quality for S/PDIF.

OPINIONS:
"The transmission of digital signals is an ANALOG process, so it's damn important to have the correct cables. Rule of thumb for S/PDIF:
- cable impedance 50 .. 75 Ohm
- maximum length of one loop: 6 feet (2 meter)." [Harald P. Fries - Dec '96]

"Unless you're using optical i/o, S/PDIF & AES are both transmitted just like "analog" signals -- current over a wire. This makes the signal subject to all the same problems -- voltage fluctuations, cable shorts, strange & evil influences while crossing power cords, etc. In short, get the best cables you can afford, make sure signal cables are perpendicular to power cables, and clean your contacts regularly. " [Loyd Blankenship - Dec '96]

"Well that's essentially what I'm trying to say - don't skimp on the quality of the cables. But don't believe it when someone says that a certain type of cable is going to improve the sound quality of a DIGITAL signal. Yes, the digital signal is transmitted as an analog squarewave and subject to all the traditional analog interference sources, but it's still a digital signal. The squarewave gets cleaned up on the receiving end and if the "damage" done to the squarewave is below a certain threshold you will get the EXACT same digital codes you started with, with absolutely no colorization of the signal. If the signal was corrupted so it misses some transitions, there is forward error correction (FEC) built in to take care of moderate errors of this type. Errors greater than this are uncorrectable and you will hear audible pops. But my main point is it takes a LOT to screw up a 5MHz square wave travelling over 3 feet of RCA cable. And you are likely to hear it if it does." [Fred Hamilton - Dec '96]

-Hum/Ground Loops.

Q: "I also notice a humming noise when I plug in my guitar direct which is very noticeable. This noise disappears however when I cover the RCA channel inputs with my hand. Do I need to connect a ground wire to myself when recording my acoustic/electric guitar or is there another way around the problem? It's very difficult to play one handed while covering the connectors for a clean sound!!"
A: "This is a classic ground loop. Over the years, I've made "proper" shielded guitar cables to deal with this problem. If you aren't handy with a soldering iron, these can be purchased at any good music store -- prepare to spend some $$$. A properly shielded has the shielding separate from the signal and ground lines, and grounded only on one end. Balanced mic cables are good for this. Connect the signal and ground conductors to the appropriate plug terminals. Then, connect the shielding to the ground terminal only on one end. Make sure that the shielding can't short against the casing on the other end, as this would defeat the purpose. Naturally, if you're going to go to this trouble, get good quality cable and phone jacks, so that you don't have to do it often!" [Neil Gould - Jan '97]

"All devices, in any setup, should be earthed by their AC cord (except devices which don't have a grounded connector). Not just one. A signal cable's ground conductor is usually not of a heavy enough gauge to

safely protect you from potential electric shocks. This shield's function is to absorb radio interference and other parasites that would otherwise get to the conductor(s) carrying the signal, and to direct them to the ground.

To avoid ground loops, the usual 'pro' method is indeed to modify devices so that their _input_ (and input only) connectors are "ground lifted" (pin 1 lifted, on female XLR connectors). That's why many pro audio devices have their inputs "pin 1 lifted" standard from the manufacturer. Of course, this doesn't apply to inputs intended for microphones (e.g. mic inputs on a console).

I agree, opening up your equipment and modifying them this way can seem like a burden. An easier way is to do that modification on your cables (as Rene suggested).

*** Before doing this, you should be sure that you really _understand_ clearly what I'm talking about. I wouldn't want people to come and tell me that their setup is buzzing even more after they've merrily cut a few conductors here and there... :-) Ask a qualified technician for help if you're unsure. ***

On XLR cables, this means you can cut the conductor connected to pin 1 on the male connector. On 1/4" jacks, it can be more tricky, as both ends are male. You can mark your cables with colored tape to know which end is lifted and which is not. In fact you should mark all cables you've lifted as such, including XLR's, to avoid confusion and further problems. Of course, don't lift cables that are used for microphones, especially condensers; +48v will not work without the grounding.

All of this applies to you only if you do have ground loop problems. Don't start modifying anything if your setup is already "clean"! Lifting the ground pin on an AC connector should always be a last resort option. And if you think you really _have_ to do it, use a ground lifting adaptor, instead of cutting the pin, so that you can ground the device again later." [Francois de La Bruere-Terreault - Apr '97]

-Virtual Tracks.

TIPS & TRICKS:

"I use the v-tracks to stack different takes. I rarely do track compositing (and when I do, I'm more likely to do it on the PC), but it's nice to be able to (quickly) say "Ok, try it from the top" while switching to another v-track. I don't usually go more than 3 or 4 tracks deep, though. I also use them as holding areas for test bounces or mixdowns." [Loyd Blankenship - Oct '96]

"I like to use virtual tracks for comping vocal parts (although I waste less time using auto-punch-in).
A huge plus of V-tracks is to use them as a storage space prior to premixing individual tracks. Here are some examples of how I end up needing this temporary storage: Recording a D.I. bass part along with a miked-amp or SansAmp Bass Driver track; recording a take on several tracks using various compression settings (if you have more than one channel of compression available--I'm not yet a fan of the expansion board's compression) is a BIG time-saver in finding the right settings for that part.

It's also a nice luxury to record the straight signal along with the compressed signal as a backup in case you get a glorious take only to find out you squashed the poop out of it! However, it's also kind of neat to purposely do this when recording guitars (and even vocals) and then mix the one with no poop left with the uncompressed track and put some real funky EQ settings on poopless one and mix it just below the level of the uncompressed track. Thickness is good thing.

Keeping these alternate versions until I'm ready to mix allows me to weigh them each within the context of what I want the final mix to sound like. This saves time on the tracking end by not wasting time re-recording identical parts with different compression settings--which also saves the later hassle of trying to compress them using the aux bus, and saves the unneeded extra D/A and A/D conversion. This does however mean that I have more decisions to make at mixdown--but this is one of the main reasons I bought this thing--CHOICES!" [Jeff Strickland - Jan '97]

"The TRACK MOVE and COPY functions lets you move virtual tracks around so you can do something like this. Start out with three v-tracks you want to bounce together:

```
Track   1     2     3     4     5     6     7     8
- -------------------------------------------------
V  1 |  X
i  2 |  Y
r  3 |  Z
t  4 |
u  5 |
a  6 |
l  7 |
   8 |
```

TRACK COPY them to different tracks like so: (Track COPY is not a bounce, so the quality of the new track is NOT compromised in any way)

```
Track|  1     2     3     4     5     6     7     8
- -----+------------------------------------------
V  1 |  X
i  2 |  Y
r  3 |  Z
t  4 |
u  5 |
a  6 |
l  7 |
   8 |      X2    Y2    Z2
```

Bounce them back to the original track, mixed, eq'd and effected.

```
Track|  1     2     3     4     5     6     7     8
- -----+------------------------------------------
V  1 |  X
i  2 |  Y
r  3 |  Z
t  4 |  XYZ
u  5 |
a  6 |
l  7 |
   8 |      X2    Y2    Z2
```

Track erase 2-8, 3-8 and 4-8

All done!

Track copy/move functions with virtual tracks open up a LOT of flexibility for mixdown. If you are willing to punch buttons, you can bounce down 24 or more tracks to a mix with very little real work. I always leave virtual tracks 7 and 8 open for mixdown, so I can always bounce down any combination of tracks in full stereo. I use it like a workspace." [Brian Badger - Jan '97]

-Recording With Internal Effects.

Q: "How do I record with the internal effects in Input Mix/Track Mix mode? "Recording a track with internal effects is actually much more straight forward in Input Mix/Track Mix mode than in Input->Track mode (at least for those who haven't upgraded to OS2 or above). In Input Mix/Track Mix mode the VS-880 is actually performing like a conventional mixer, with separate input and output mixer

stages, each with their own EQ, Pan, and fader settings. In an obvious attempt to reduce costs, and footprint size, these mixer controls are shared between the two stages, which gives this mode it's initially confusing split personality. This example will record a guitar in channel 1 with inserted effects routed to track 3.
1.Plug the guitar into channel 1
2.In Input=>Mix mode, select Input/BUSS for IN1 and set it to 3-4
3.set EFFECT2 = INSERT
4.select a suitable guitar effect
5.set Pan to be fully left
6.In Track=>Mix mode, select Input/BUSS for TR3 and set it to MIX
7.set STATUS of track 3 to Record
8.adjust fader levels in Input=>Mix and Track=>Mix
9.start recording
Using this method, the input signal can be sent to any of the recording busses - 1-2, 3-4, 5-6, 7-8. All that needs to be done is to adjust the Pan in Input>Mix mode (left for odd-numbered tracks, right for even-numbered tracks), and set the corresponding track's status to Record." [Paul Shields - Jan '97]

-Recording Levels & Compression.

Q: "What is the best level to record? "
A: "Anybody familiar with analog tape recording techniques will know that recording a signal above the recommended levels can actually create a pleasing effect. This is tape compression, and you can hear it's effects on any Motown recording. Digital recording, on the other hand, takes no prisoners . If you were to record a signal above 0dB, distortion will occur. Unlike in the analog world, digital distortion presents itself as a harsh clipping sound. The VS-880 has a peak indicator on each input channel to allow you to monitor and prevent overloading of the input signal. The indicators will flash red when a signal reaches -6dB before clipping level. In other words, there is still -6dB of headroom for you to play with. To achieve the best sample resolution the signal needs to be as close to 0dB as possible without going over. Therefore, don't be too afraid of recording a signal that is regularly causing the peak indicators to flash. Better still, use a Limiter to maintain the signal at about -6 to -3dB." [Paul Shields - Jan '97]

GENERAL INFORMATION:
"It's like this: on a studio ANALOG machine (i.e. Studer A880 _I'm_Swiss_), the more you drive it into red, the more you'll get the effect of the so called tape compression; a good trick to make your bass drum sound like Phil's. Analog clipping (when the signal starts to get distorted) doesn't sound too horrible to our ears (which BTW have themselves a distortion of up to 5%); and the raise of distortion goes rather slow (e.g. 0.5 % @ 0 db, 1% @ 6 dB, 2% @ 12 dB).
Whenever dealing with DIGITAL, the clipping sounds horrible to our ears; there's _exactly_ONE_ point at which clipping occurs, and this point is 1 BIT above 0dB. So whenever you drive a digital signal into the red, it starts crackling.
What to do? At most digital equipment I know (ADAT, Sony DAT, Soundforge Software), whenever the_RED_LED_ is activated, clipping doesn't yet occur; but when you drive the signal some 3 to 6 dB further, clipping starts. These 3 to 6 dB are called the headroom, a reserve for occasional peaks. (It also depends on the way the A/D converters are build, but that goes too far!)." [Harald P. Fries - Nov '96]
-Pre amps and compression. "As the subject of using preamps with the VS frequently emerges, I thought I'd drop an opinion. The following is probably old news to some of you, but a lot of list subscribers seems to be pretty new to recording, so here it goes.
It does make sense to use an external preamp with the VS, at least with low level sources like microphones, as the built in input amps are a little on the weak side. However, I'd STRONGLY recommend opting for a compressor too, or perhaps one of those combined units, like the Joe Meek VC 3 (only £299). Some might consider that unnecessary as the VS has built in compression facilities. For the following reasons that is unfortunately not enough:
When you record in the analogue domain you often push your tape and pre amps a little to get as high

overall gain as possible. In digital recordings however, you should never allow the levels to rise above 0 dB at *any* point, no matter how momentary. Digital distortion does not produce any desirable "edge" etc like it's analogue counterpart can do (not to most people anyway). In fact, if the peaks are short enough it doesn't sound like distortion at all. Instead it shows up like very short high level clicks, and that can definitely ruin a track.

Now, most acoustic material is dynamically very varied. That means that if you adjust your levels to prevent peaks above 0 dB, you could well end up with a track were 90 % of the recorded material never rises above, say, -18 dB. So can't you just take care of that inside the VS? Well, unfortunately, the lower your average input levels go, the fewer bits are actually used to store most of your track. (Somewhere I read that you could count on one bit getting "lost" per 6 dB drop below zero. If that is correct for 16 bit recordings, Roland's recommendation on not letting the input levels drop below -12 dB makes sense, as the VS uses 18 bit analogue-to-digital conversion. In that case recording at -12 dB would still leave you with a 16 bit resolution.)

What it all adds up to, is that once inside your VS, no gain raising or level averaging procedure can reclaim those bits, used mostly to store peaks. Once your track is the recorded with low average levels, the equally low dynamic resolution will be permanent. Therefore the use of an external compressor, and perhaps also a limiter (many units acts as both) is quite crucial to get the most out of your VS 880's sonic abilities.

So is the internal VS compressor of no use at all? I wouldn't say that. Compressing your tracks too much will result in a dull, flat sound, and at the time of recording, it's difficult to know how much you can compress a track without squeezing the liveliness out of it. So I'd recommend using an external compressor mainly to keep your recording levels to a decent average. Then, if in the end you'd like a tighter sound, you could use the internal compressor for "fine tuning".

Finally, just a word of caution: Don't use the cheapest compression units on the market. A crap sounding compressor can obviously do more harm than good..." [Jonas Osterlof - Jan '97]

"However, the main problem I was addressing in my letter (where I recommended the use of an external compressor when recording to the VS) was not digital distortion as such. You could always avoid overloads by turning your input sensitivity down. But if the *average* level is to low on a recording (Roland recommends -12dB as a lower limit), the *average* number of bits used to store most of the actual sounds of that recording will be reduced. When recording digitally, low average recording levels equals low average dynamic resolution. And that resolution loss can't be undone by compressing or limiting or normalizing after a recording is done. Obviously analogue recordings also suffers from low average recording levels, and that is one big reason for a vast majority of all professional recordings to take aid from compressors and limiters. The analogue problem has mostly to do with inherent tape noise though. The dynamic *range* of an analogue recording might be limited, the dynamic *resolution* is not. For a digital recorder the situation is quite the opposite. And that great dynamic range and response of my VS makes dynamic inadequacies in my recordings even more obvious. That's because inadequate dynamic response in non top-of-the-range gear often means jumpy and excessive dynamics, no matter the skill of the performer. Especially when it comes to electric basses and microphones. Compression can certainly colour your sound in unwanted ways. So if you a sonic purist, be careful with your compressor settings. On the other hand a lot of people love the sound of heavy compression, and it's become an integral part of the sound of many contemporary musical styles. Oasis first album is among the most extreme examples of heavy overall compression I've ever heard. In fact a lot of electrically processed sounds gets a fair amount of compression without coming anywhere near a dedicated compressor - and people find the resulting sounds desirable. As soon as you distort your electric guitar, it gets compressed in the process - that's why distortion gives you more sustain. And as soon as you put your guitar or bass through most popular guitar or bass amplifiers, your sound gets compressed at least twice - by your amps electrical and your speakers physical resistance to fast movements. And if you record to analogue tape, the limited dynamic range of even the best tapes in effect compresses your recording quite a lot. And when you get your stuff on record and it's played on the radio, the DJ will compress it 'til it's pushed through the eardrums of your audience.

So the bottom line is: you might like the sound of compression or you might not - but when recording,

especially in the digital format, a sensible narrowing of dynamics via a quality compressor can give you a considerable boost in sheer sound quality. It may be a compromise, but it could prove to be a profitable one." [Jonas Osterlof - Jan '97]

-Recording Electric Guitar Direct/DI-Boxes.

"I thought my Tele-patched-right-in and Rickenbacker-bass-patched-right-in recordings sounded OK until I tried it with a direct box. It was quieter and had a nicer-sounding high end. Really, any time you use a mic pre for a guitar you're looking at an impedance mismatch, since pickups have a much higher resistance than mics. That's why we have direct boxes in the first place." [Pete Dunn - Jan '97]

"Definitely use a direct box. I've tried it both ways and it makes the sound much more open and transparent, with better high end.
The thing is that the 880 inputs are looking for mic impedance, and your guitar pickups are much higher impedance. Any time you run a pickup into a mic input (on a mixer, preamp, or whatever) you need to match the impedances -- that's what a direct (DI) box does.
An inexpensive passive box will help quite a bit, and a really good one (like a Countryman) will be audibly better. If you're guitar-oriented, and your stuff is going onto permanent recordings, pop for the right one. You'll be happy every time you use it." [Pete Dunn - Feb '97]

"You simply cannot plug an electric guitar, of ANY kind, into ANY device that expects line-level OR mike-level inputs. There is a gross impedance mismatch if you do.
There is NO way around this EXCEPT a DI box specifically designed for guitar or electric bass.
There are some acoustic guitars with built in preamps and EQ, but most of these still expect their output to go into a guitar amp. Guitar amps all have proper input levels for this, and EQ, too.
Trust me, I don't mean to be harsh, but those who are trying to get good sound plugging an electric guitar or bass into a line or mic input are wasting their time and experiencing unnecessary frustration." [Doug Semon - Apr '97]

-Recording Acoustic Guitar.

TIPS & TRICKS:
"My best sounds seems to come by using two mics, one at the bridge and one at the nut side of the sound hole. I use 3:1 compression and cut -5 to -7 db around 125 and 1.4k." [Steve - Feb '97]

GENERAL INFORMATION:
"For acoustic, as I'm sure you already know, the room, instrument, player and mic placement each have a say in your recorded sound, let alone any EQ or compression we add ourselves. The record level as long as you're not overloading the inputs shouldn't have a bearing on your sound. If anything, the Fletcher Munson Curve (apparent boost in highs and lows perceived by ear) ought to kick in and make the louder signal sound BETTER than the quiet one, so this scenario sounds pretty unusual.
It never hurts to go back to zero and check out the source. I use diffuse field headphones (FLAT response) when I position mics, so any honkiness shows up right away. Standard cans are usually hyped in the low-end and gloss the reality a bit.   I also no longer track acoustics with compression, unless I'm looking for a bit of squash intentionally. Compressing really brings out any honkiness and boominess right away, and as a recovering compression addict, I'm still delighted at how little I end up needing. Granted, everything depends on the context you're dealing with.
Unless your room sounds great, go with a cardioid polar pattern and try to isolate your room sound a bit. Maybe try a single mic instead of two, unless the sound you're getting is wetting your pants, in which case sit on a towel and stick with stereo! For ultra isolation, have the player sit on a thickly carpeted floor with a futon bed behind his back and gobos at his/her sides with the mic(s) angled downward slightly. Yeah, this is a bit specific but experiment similarly and season to taste!" [Jeff Strickland - Feb

'97]

-Noisy Internal IDE Drive.

TIPS & TRICKS:
"Yes, folks! I knew it... those little foam samples from Auralex that've been hanging around my studio finally came in handy--just like I knew they would! For your information, one of the reasons I was upgrading my hard drive was because I happen to be one of those unfortunate VS-880 owners with a noisy internal IDE. So... I decide to stick (very neatly, I should say) a small piece of studio foam between the IDE and the drive bay cover, and it works! I got rid of at least 60% of the overall noise! And that horrendous whine is gone, gone forever!" [George Carden - March '97]

-Noise Generated By External SCSI Device.

Q: "How do I remove the noise generated by my external SCSI device? "
A: "A number of people have reported disk-access noise being recorded when using an external device such as an Iomega Jaz drive. The problem appears to have been caused by a ground-loop and has been successfully remedied by attaching a '3 to 2' adapter to the AC power cord, thus lifting the ground. Caution: This author cannot verify the correctness of this solution and advises anybody with similar symptoms to those described above to seek a professional opinion/solution, unless they really know what they're doing..." [Paul Shields - Jan '97]
A: "It's a simple ground loop problem. Take any equipment that is connected to the VS-880 via audio/digital/SCSI connectors and defeat the ground prong on their AC power cords. For me, I just had to do this on the JAZ drive and my problems went away. I would suggest that you start with the external drive's power cord and work around to any other external devices if the SCSI device doesn't turn out to be the culprit." [Brian Kutscher - Jan '97]

-Useful Links On Recording.

* TDK - `http://www.tdk.com`
(The TDK site has some great articles on recording, mikes, etc, etc. While tape based though, the techniques still apply. These are monthly articles, updated every month.)
* The Home Recording Web Site DIY recording -
`http://www.homerecording.loomisgroup.com/homerecording/homerec.html`
* Recording hints for the poor: `http://www.wserv.com/~dkennedy/page1.html` (has the MIDI to .vaw conversion procedure ...)
* How to use the studio - recording guitars, vocals, drums etc:
`http://www.ram.org/music/making/tips/using_studio.html`
* Various home recording tips:
`http://www.homerecording.loomisgroup.com/homerecording/homerec.html`
* Various recording & related technical topics:
`http://arts.ucsc.edu/recording/techinfo.html`

• Playback/Mixing

-Display View.

Q: "How do I view measure and beat information when not using a sync track or tempo map? "
A: "Many VS-880 owners experienced the joy of losing the Measure and Beat display when upgrading the

OS from v1.050. According to Roland, it was done to 'avoid confusion' for people who don't use a tempo map or haven't recorded a sync track. Although technically correct, many people use the measures indicator like a tape counter. To recover the measures display, choose 'System PRM?' from the [SYSTEM] menu, select 'MetroOut' and set it's parameter to MIDI or Int, rather than OFF. Another option is to choose 'Sync/Tempo ?' from the [SYSTEM] menu and set 'Gen.' to MIDI clock or Sync track." [Paul Shields - Jan '97]

-The VS-880 Mixer Modes.

Q: "What is the difference between the two mixer modes on the VS-880?"
A: "The Input->Track Mode could be described as a 'direct' mode. The tracks are routed directly back to their corresponding channels. In this mode it is possible to mixdown 8 tracks plus one stereo-signal which goes directly to the Mix Buss. The Input Mix/Track Mix Mode is where the VS-880 really starts to show its full capabilities. In this mode the inputs can be also be routed to the Mix Buss - they have their own effects sends, aux sends, EQ etc., making it possible to mixdown 8 tracks plus 6 external audio sources (MIDI modules, external FX etc.) all within the digital domain. Please note that only four of these 6 signals can be analog because input 5-6 is a digital one." [Daniel Baars - April '97]

Q: "Which of these mixermodes most resembles working with a portastudio?"
A: "In the Input->Track mode the tracks are routed directly back to their corresponding channels.... any input can access any track..... i.e.: one of the first parameters you'll see is INPUT 1 on channel 1 (and channel 5) INPUT 2 on channel 2 and (channel 6) and so on .... meaning that if unchanged anything you have plugged into input 1 on the back of the VS can be recorded on tracks 1 and 5, but they can be changed so if you have your mic plugged in to input 1 you can record on any track.
The input level is determined by the level of the incoming signal and the trim knob. The mixer is by-passed completely and the signal goes directly from the input to the track your recording on (although it is possible now with version 2.0 to also insert an effect before hitting the track). The mixer section is now used for playback of the track your recording and previously recorded tracks. This mode is actually simpler than a 4-track cassette to use as the playback is done on the mixer and not using the cue volumes to get your mix from while adding tracks.
I think the input mix track / mix mode is closer to the 4 track setup as you have to choose your bus (on the 4-track it would be the 1-2 button or the 3-4 button and then pan hard L or R to get the full signal to go to the enabled track) i.e.: if you choose the 5-6 buss on the VS and only want to record on track 5 but have the input panned hard right you wont get any signal." [Kevin Neill - April '97]

Q: "This what I would like to implement in the Input Mix/Track Mix Mode: 8 recorded tracks, two aux sends and two inputs at mixdown for submixed (on a little Mackie) effects returns and MIDI tracks.   Step by step, how would you set up the aux sends and the two input tracks via Input Mix?"
A: "I'm not entirely sure but I think the scenario you describe is somewhat different to the way I use the Input Mix/Track Mix mode. I use it to mix everything inside the VS, so my mix comes straight from the digital out. Due to a lack of inputs this is only possible if you a) don't use a lot of gear or b) submix some stuff on an external mixer before you put it into the VS-880. My situation falls under category a). I have 8 tracks on the VS, a MIDI module on inputs 1&2 and a Lexicon Alex reverb on inputs 3&4. If I needed more inputs I could put extra FX/extra MIDI sounds into inputs 5&6 by using my DAT-recorder as an A/D convertor.
If I'm correct you want to use only two inputs. Your FX and MIDI are going to be submixed on the Mackie and then put back into the VS, right? (You could of course choose to use Inputs 3&4 for as well so you can connect your Lexicon directly to the VS, for example - might sound better?)

The connections you would have to make:
-Aux A to input of outboard FX no.1 (say, your Lexicon LXP-1)
-Aux B to input of outboard FX no. 2 (say, your Stereo Chorus)
-Outputs of both the Lexicon and the Chorus to the Mackie mixer

-Outputs of your MIDI sound sources to the Mackie Mixer
-Outputs of the Mackie Mixer to Input 1&2 of the VS

The settings you would have to make on the VS:
-Put the VS-880 in the Input Mix/Track Mix mode
-(Master section) Master Mode=MIX, Aux Level=100, Aux Bal=0
-(Input Mix) Input 1&2: Bus Switch=Postfade, Buss Sel=MIX, Buss Level=well, however loud you want the Mackie to be in the mix, Buss Bal=0, EQ Switch=Off, Aux Sw=Off, Channel Link=On (so they become the stereo Input A), Effect 1=Off, Effect 2=Off
-(Track Mix) Track 1: Bus Switch=Postfade, Buss Sel=MIX, Aux Sw=PreFade or PostFade (whatever you prefer), Aux Level=whatever you want to send to the external FX, Aux Bal=L63 (for just sending to the Aux A/Lexicon), R63 (for just sending to the Aux B/Chorus), anything in between (for using them both) Tracks 2 to 8 in the same way, of course...

I don't think there is much more to it than that. If I omitted a parameter it means that you can do with it whatever pleases you. The most important things are the settings of the Buss Switches, they all have to be set to Mix or otherwise you won't hear anything." [Daniel Baars - Feb '97]

Q: "In Input Mix/Track Mix Mode I can't figure out how to assign input 3 to tracks 5 to 8. I can't record to these tracks. Can this be done?"
A: "Sure. Go to Input Mix. Set the Buss Select of Input 3 to the track-pair you want to record to (5-6 or 7-8). Use the Buss Pan to choose which one exactly (L63 for 5, R63 for 6 etc.). Go to Track Mix. Record-enable the track you want to record to by pressing [REC]+[STATUS] (or just press [STATUS] a couple of times until it turns red). Now you can hit [REC] and start rocking'." [Daniel Baars - April '97]

• Effects

-The Roland VS8F-1 Effect Expansion Board for VS-880.

OPINION:
"It is basically a Boss SE-70 plus a few added f/x with different patches. It sounds great, it's easy to use, and in fact when I mix in pro studios (not when I am home) I often use the VS-880 as a dedicated multi-F/X box. 2 mono ins, 2 stereo outs! And damn it sounds good." [Steven McLoughlin - Oct '96]

-Vocoder.

TIPS & TRICKS:
"The Vocoder effect in the VS8F-1 effects module is not quite Mr Blue Sky, but it can be quite useful as a way of adding expression to your playing. Unfortunately, the VS8F-1 manual doesn't do a good job of explaining how to get the thing to work. This example uses Input=>Track mode.
1.insert instrument into channel 1 (bright sounds like organ or trumpets work well)
2.insert microphone into channel 2
3.set CH1 Channel Link = On
4.set CH1 effect2 = INSERT
5.select Effect 2 = Vocoder
6.sing favourite ELO song." [Paul Shields - Jan '97]

"The traditional meaning of a vocoder is that the frequency characteristics of one instrument are applied to those of another. For instance, with a dry drum track you have transient lows and mids with nothing in between, if this is you 'modulator' signal and you send in as your "modulatee" signal, say, sustained vocals, then the result should be vocals that appear intermittently in the low and mid frequencies precisely

like the drums did. This can be used to great effect if you use a high female voice as the modulator, and an impassioned violin as the modulatee--then you can really make it "talk" (but make sure that the two signals being used have a lot of frequencies in common)." [Aaron - Feb '97]

-Dolby Surround.

TIPS & TRICKS:
"The Delay algorithm allows you to independently set the absolute polarity of the left and right channels of the effect. I made up this patch to allow me to send tracks to the surround channel of the Dolby Stereo stage.
Name = Dolby Surround
Algorithm = Delay
Delay = On Time = 0 ms   (Set to higher value for "surround echo" effect)
Shift = 0 ms
L-FBLvl = 0
R-FBLvl = 0
L-Level = -100 (L-Level and R-Level could be swapped, makes no difference)
R-Level = 100
DiLevel = 0
LD.G = 0
LD.F = 200 Hz
HD.G = -12 db (Optional Low Pass Filter makes the soundfield less "busy")
HD.F = 7.0 kHz
EQ = Off
To use this effect, set the channels that you want to go to the rear surround channels to the effects buss that this effect is set up on. Also (VERY IMPORTANT) set the MIX output of that track to OFF. This way, the only sound you will hear from this channel will be from the effect return. Mixing the dry signal with the wet will destroy the effect. If you absolutely HAVE to mix the signals, change the Time parameter to something greater than 10 ms.
The Dolby Stereo vector of the effect is governed by the L-Level and R-Level parameters.
Examples: L-Level = -100 & R-Level = 100 -> Full Rear L-Level = -50 & R-Level = 100 -> Right/Rear L-Level = -100 & R-Level = 50 -> Left/Rear
Please note that "Left Rear" and "Right Rear" mean that the surround channels and the left or right speaker will carry the signal simultaneously. Dolby surround has a mono surround channel. Left, Left/Center, Center, Right/Center and Right can be accomplished with the Pan pots, so you don't have to use this patch for those." [Brian Badger - Dec '96]

-COSM Guitar Amp Simulation.

OPINIONS:
"BTW, am I the only one who thinks the COSM guitar distortion is a stinker? My SE-70 kicks it in the rump!" [Erica Cassetti - Jan '97]

"I'd fiddle with it some more. "Good" fx are a matter of taste, but I've used the COSM simulators to great effect (no pun intended)." [Doug - Jan '97]

"I think it's great. I haven't been able to get a Hetfieldish sound out of it yet, but I can get some pretty warm tube sounds. Here's a magic trick I use. Run COSM patch of choice with the "speaker" setting set to OFF, run it out of the AUX to a real tube amp set loud and clean, mike the amp and bring it back into the VS. Wakes the neighbors, but it is DAMN flexible. (I insert into the effects loop for Z-matching) One reason I love the VS8F1 guitar sims is that I can just set it to any old patch and jam, recording down

the dry signal. Later, I can go and tweak the patch to just what the mix needs, (including using the above magic trick). Get it right, bounce it down, track move the bounce to a virtual track of the original dry recording... turn off the patch. This gets me lots of mix down power, and I don't have to waste time fiddling with my tone at record time." [Brian Badger - Jan '97]

"Am I the only one who thinks that the COSM amp simulation on the internal effects card is so good it makes me want to shout for joy?" [Paul Shields - Jan '97]

"I agree, the COSM amp simulation is so DARN GOOD...... Heres how I use it, Guitar>-ART tube pre>-ART levelar>-stock patch 57 matchlead. I have had GREAT results tracking hard left&right using a splitter going to two different COSM patches BIG sound." [Gary Shaw - Jan '97]

"As for the amp sims, they sound OK, but not nearly as good as a miked tube amp. Close, but no cigar. I've been playing for over fourteen years and the amp sims in the VS can kill my inspiration. I use Marshalls and play through a 50 Watt master volume, preamp / master on 8 or 10, and no amp sim in the world, including the VS, can come even remotely close to sounding as good. The only amp sim worth having, I think, is the Sans Amp. It's the best I've heard." [George Carden - Feb '97]

"Just to be the "devil's advocate".... I have been playing for 35 years on the guitar, and, the COSM amps in the VS make me sound the best I have ever sounded. I have had Boogies, Soldanos, old this, tube that.....etc. The VS makes me feel like I own a lot of very cool sounding amps! Strictly my own opinion, of course.... " [R. Francis - Feb '97]

Q: "Where can I find a list of VS8F-1 effects patches? "
A: "John Burton maintains a web page containing a list of useful effects settings for the VS8F-1 module, donated by fellow vs'ess. If you've rolled your own, pass it round at the VS-880 Fx Settings Effects Page." [Paul Shields - Jan '97]

-Dump Request Strings For FX1 & FX2.

TIPS & TRICKS:
 "I've developed some sysex dump request strings that will cause the vs880 to dump its settings via MIDI.
In the system menu set the following:
DeviceID=1
MIDIThru=out
SysEX.Rx=on
SysEx.Tx=on

For FX1 the string is: F0 41 00 7C 11 04 00 00 00 00 7F 7D F7
For FX2 the string is: F0 41 00 7C 11 04 01 00 00 00 7F 7C F7

If you send one of these strings to the vs880, it will respond by sending all of the effects settings in a sysex message to your PC." [John Cafarella - Jan '97]

-Useful Links On Effects.

* VS8F-1 Effects Settings Page by John Burton -
http://www.users.globalnet.co.uk/~johnb/vs880/vs880.htm

• Editing

-File Management.

Q: "How Does All This Work?"
A: "The method used by the VS880, and almost all hard-disk recording systems is this: 1) An event is recorded. An event consists of a start-time, a stop time, a track and a pointer to data on the disk. (And some other stuff, look in the SYSEX doc for more) 2) A copy of an event is a new event that consists of a new start-time, a new stop time, possibly a new track, and a pointer to the SAME data on disk. 3) A second table exists which maps events to data such that any segment of the data "knows" which event pointer references to it exist. 4) Changes to the first event (such as fader changes, effects, etc) are NOT reflected in the second event for this simple reason: IT IS IMPOSSIBLE TO CHANGE THE DATA FOR ANY EVENT IN ANY WAY. The only way to apply changes is through a bounce, where an event is played back and the output recorded _to a new event_ and _a new data segment_. 5) An optimize operation looks at the second table and deletes all of the data segments that have no pointer references to them. It then updates all of the events so that they no longer point to superseded data areas." [Brian Badger - Feb '97]

-The FROM Point.

Q: "I don't understand, what's the use of the FROM point?"
A: "If you've ever tried to place something like a sound effect where the time critical sound wasn't at the beginning *without* a FROM parameter, you'd love Roland for including this. I think the manual example was something like this: Imagine that you want to start your song with a rainstorm effect from a fx-record, or maybe a movie. You would probably want to sync a particularly dramatic thunder sound exactly on beat one, but it's about three seconds into the effect track. This kind of task can be VERY time consuming, especially if you're not working with a sequencer (I've tried similar things). The from parameter is a great aid in situations like these." [Jonas Osterlof - Jan '97]

-The UNDO Function.

Q: "I have a little problem. Yesterday I recorded three different takes of the vocals for a song, all on track eight. De first on V-track 1, de second on V-track 2 and by mistake the third also on V-track 2. I want to keep all the takes, but the only way I can listen to take 2 or 3 is by undoing/redoing the last recording. Is there a way the move one take to a different V-track without losing the other take?"
A: "I assume you have 'take 1' on V-track 1, and 'take 3' at V-track 2. I also assume take 2' is one undo level away from being on V-track 2. That is: Recording 'take 3' was your last action! If this is not, try to figure out how much steps you must undo... I assume one undo-level.
Then do as follows: undo 1 level. Copy the contents of V-track 2 to another track, for instance V-track 2 of track 7 (use the Track copy function for this). Now 'redo last undo' with 'shift-undo', and your 'take 3' is back on V-track 2. Now move that to V-track 3, and move V-track 2 of track 7 to V-track 2 of track 8. By now, you should have it the way you want..." [Rene Baas - March '97]

-Cut-n-Paste/Looping.

Q: "Is it easy to mark a section and loop it?"
A: "Well, you cannot 'loop' a section but you can copy it for say, a hundred times, without it taking up extra diskspace. The editing on the VS takes some getting used to but once you get the hang of it is very easy and can get you great results." [Daniel Baars - March '97]

-Strip Silence/Erase Or Cut.

Q: "If I am recording audio, and there is "silence", does it automatically NOT use memory? If not, can you go mark a section to "silence" (so it doesn't consume drive space)? Or if you "delete" a section does it move everything up together?"
A: "No, there is no automatic 'strip silence' function during recording. You can however erase a section of audio (silence or whatever you want to be erased) and this does not move everything up unless you want this to happen (there are two functions: erase and cut - with erase everything stays in the same place, with cut the data moves up)." [Daniel Baars - March '97]

-The 0.5 Second Erase/Cut/Insert 'Limitation'.

Q: "I read that there is a 0.5 second (half of a second) slop factor when erasing song data. This seems like a fairly large amount of time, especially when trying to slice up audio data and move it around. My question is: how extensive is this 0.5 second slop... Where does it come into play?"
A: "For _most_ editing tasks, the VS-880 is not 'erasing' data. Pointers, punch in/out, etc. are accurate to .001 second." [Neil Gould - Nov '96]
A: "You can't do Erases or Cuts within 0.5 seconds. The other operations like copying and moving do not have this limitation. Erasing any shorter length of time than that can be accomplished by recording silence over the section with the autopunch function. So, in other words, you aren't losing any functionality. It's just a little trickier." [Brian Badger - March '97]
A: "It happens to cross my mind, that the thing about the VS that has the (in)famous .5 second limitation, is the length of actual takes. So your autopunch of less that .5 second won't work, I guess (didn't check it). That would in fact become a take which is placed over the old take, muting the old one for a while. But a take (I believe) has to be at least .5 seconds long, so the autopunched take won't stay... I did succeed many times in just erasing an annoying pop or click with just erasing one single frame (0.04 second) out of a audio track. I think my method is only gonna be a problem, when the part of the take left at the left or right from the erased part becomes smaller than .5 seconds. I thought I've read that in the manual a long time ago..." [Rene Baas - March '97]

-The Pre-Fade Time.

Q: "I'm reading about the fading feature when copying a section of track; am I to understand that you must take the "pre-fade" time into account when selecting edit points for the source? In other words, do you have to be careful to not chop off the front end of the section of the source track when designating the locate points?"
A: "Don't worry about this pre-fade time - it works FOR you, you don't have think about it while editing. In my opinion, editing on the VS works very well indeed and this pre-fade time is one of the reason it does. I have made edits in tracks that before I didn't think were possible (editing several takes of four drum-tracks at the same time, thus compiling a 'best of' take - I didn't think it would work but it did)." [Daniel Baars - March '97]

-Time Compression/Expansion.

OPINIONS:
"The only significantly negative comments made by Recording Magazine in its August 1996 review of the VS, was the comp/exp mode. It didn't work too well for them." [Richard Dieguez - Jan '97]

"I tried to use it once to change the pitch 1/2 step without speeding up the song. Sounded completely crummy. It wasn't usable at all. I was just inside the limit of what Roland says, in the manual, to keep within. I wrote it off as useless. Perhaps it is better at compression than expansion. All the low frequency parts developed a beat." [Brian Gragg - Jan '97]

TIPS & TRICKS:
"I use the comp/exp mode only for single words that are slightly out of tune!! I also used it to process background vocals , it makes them sound quirky but cool, nothing sounds quite like it. Try it for your next dance track!! " [Gary Shaw - Jan '97]

"I was transferring some tracks from my Tascam 424 analog 4 track to my 880. When I had transferred all the tracks for a song, I shifted them so they all started at the same time. The problem was- they didn't all end at the same time. Some tracks were a few seconds longer or shorter, apparently due to some tiny speed variation in my 4 track as it recorded them and played them back.
I used the VS-880's "stretch" function (forgive me, I don't have the manual and can't recall the details) to make some tracks shorter and others longer. I can't remember exactly what the settings were, but the results sounded great - I didn't notice any artifacts at all. It did take a really long time to perform the operation, though, like 10 or 20 minutes/track! But keep in mind I was changing the length by less than 1%, maybe 1 second out of 4 minutes. More dramatic changes might have been audible. This was all instruments (electric/acoustic guitar, bass) - I don't think I tried it with vocals." [Fred Hamilton - Feb 97]

-The SCRUB Function.

OPINIONS:
"I have found it to be a very effective tool. It may sound horrible but it gets the job done. I've done some edits on the VS I didn't think were possible." [Daniel Baars - October '96]

"The VS's scrub sometimes needs some tuning of the scrub-length parameter, regarding to the material you're scrubbing, but with that, the scrub's okay with me." [Rene Baas - March '97]

"Although I didn't find it intuitive at first, now I find it invaluable for very fine stuff like deleting single duff drum notes or even inserting spaces just prior to an event." [Paul Nagle - March '97]
TIPS & TRICKS:
"I found a different use of scrub. While trying to find the center frequency for De-essing I qued up the "esssss" using the scrub. This created a very short loop 25ms and then edited the internal de-esser. Was able to play with the de-essing frequency all I wanted and had continuous feed back (not oscillation), and drove the dog crazy at the same time." [Brad Smith - March '97]

• MIDI & Synchronization

-Sequensers & The VS-880.

Q: "How do I stop the VS-880 from changing the volume of my sequencer tracks? "
A: "If you find that sequencer tracks change volume or disappear altogether while connected to the VS-880, then this is likely to be because your VS-880 is configured to generate midi Change Control (C.C.) messages. If you do not require the transmission of C.C. messages, then they can be disabled within the [SYSTEM] menu. Move to the [MIDI PRM ?] sub-menu and select CtrlType = OFF." [Paul Shields - Jan '97]

Q: "Why does the volume of my midi channel change when connected to a sequencer? "
A: "Whenever any of the faders on the VS-880 are adjusted, a Change Control message is transmitted out through the midi cable to any device set up to receive midi information. This can result in particular midi channels changing volume or disappearing. If you don't require Change Control messages, go to 1.13 How do I stop the VS-880 from changing the volume of my sequencer tracks?" [Paul Shields - Jan '97]

• Mixdown/Mastering

-Internal Mixdown.

Q: "If I have a full "song", does it allow full digital mixdown? i.e., if I have 8 tracks full, do I have to master to an external unit, or can it "master" internally to 2 new tracks somewhere else?"
A: "No, this is not possible. You have to mixdown to an external unit, like a DAT-recorder for example."
[Daniel Baars - March '97]

-MiniDisk.

Q: "I'm considering using the Sony Mini-Disc MDS-JE500 as a master for my mix downs. The new ATRAC version it uses is 'virtually' indistinguishable from CD (although I don't know how it sounds when recording MT1 or MT2 mode from the VS-880.) I don't want to put out the cash for DAT and I don't want to fool with figuring out how to record CD's. Any other input from anyone??"
A: "As a VS-880 owner, and audio MD and Data MD user, I can say that the way you can fit your MD into the picture, is to use it for your own listening to your master mixes or pre-mixes, or to backup individual tracks (though not recommended as a sole backup due to the Atrac 5:1 compression, where other methods would not cut out any amount of the recorded signal). Though MD is experiencing a true re-birth in the past year or so, it will still be awhile before many consumers have this technology, so if you want to share your work with others you will still need to record on cassette or CD media. I haven't done thorough testing in the MT-1 and Mt-2 modes, but the MD recorder will record exactly what you hear, so "what you hear is what you will get!" The controversy on MDs is increasingly decreasing due to the incredible quality of the sound in the small amount of space--now 74 minutes CD quality as of Atrac version 3.5 on a 2 1/2" disc. My MD recorder has Atrac version 3 and I have never been able to tell the original recording in an A/B test. Therefore, I have no reservations about using it for my master mixes. There's tons more information on MD technology and evolution during the past 5 years on the Mini Disk page at: http://www.hip.atr.co.jp/~eaw/minidisc.html   Check it out, it's a great MD resource! Hope this helps." [Ken Totushek - Jan '97]

OPINIONS:
"Rent a DAT when you do final mixdowns. The MD is OK for trying out mixes, but with your final one, you will need to transfer it to other media -- CDs, cassettes, whatever. And the whole world of duplication assumes that you'll have a DAT master. Even if the MD were as good sonically (I dunno if it is or isn't), it's just not compatible with the rest of the audio world. This might change in the next few years, but I think DAT will be the standard for some time." [Pete Dunn - Jan '97]

"The issue here is compatibility. DAT is a preferable medium for mastering for CD and cassette manufacturing, and cassettes are most commonplace for demo distribution. MD's aren't universal enough at this point. I haven't heard the ATRAC MD's yet, but I thought the sound of the old MD's was noticeably inferior to DAT." [T. Kochan - Jan '97]

"I digitally "master" all my songs to a minidisk, but I keep the original VS-880 version of the song backed up on MO disk so if I ever want to SERIOUSLY make a CD, the original data's there.
What the minidisc gives me is one (at least until I get more productive :-) 74 minute random-access disc that contains the latest, best version and mixes of all my songs. The sound quality is GREAT, actually, and I no longer have a bunch of cassettes lying around, each one with the best version of a different song. CD-R doesn't let you replace old tracks with new tracks. So it's worth it to me just from a librarian point of view.
When I want to make copies of some of my songs for friends or band members, I just program the

minidisc for those songs and get great sounding cassette copies. This is a lot easier than what I USED to have to do - go back and record each song to cassette from the original VS-880 source. (I suppose that if I EVER get the 2.0 update from Guitar Center the automated mixing would make this easier).
As far as sound quality goes - hear it for yourself before you make up your mind. I was very worried about the heavy compression MD uses, and never even listened to one (until 6 months ago) because of the really bad reviews the early versions got. But Sony's on their 4th generation now, and with my JE-500 MD deck I can NOT tell the difference between any CD and a digital MD copy. It sounds identical with every CD I've tried. Whenever I think I hear an artifact, I go back and listen to the CD and it's there, too.
So to the original topic of discussion - it depends on what you mean by "mastering". If you are going to make a real CD, then don't do it from a MD master - do it from the original VS-880 tracks or a DAT or a CD-R master of all your songs. But the MD can't be beat for "testing" the master before you commit to CD. Carry it with you, give copies to your friends and bandmates. Listen to how the "album" flows. Change the track order in seconds, see how it flows now. It's a great way to tweak thing right before you press your CD." [Fred Hamilton - Apr '97]

"Mastering to a minidisk (at least the more recent ones with ATRAC ver 3.0 or higher is not such a bad idea practically speaking, though not a very acceptable idea techno-professionally speaking. The idea of 5:1 data compression makes most studio pros cringe--please correct me if I'm wrong folks, but I've noticed some of the responses! However, the reality is that Sony has so developed the ATRAC compression chip and technology to the extent that they can get away with this kind of compression, and still sound at least as good as Roland's MT1 mode--imagine our VS-880s having 5:1 compression in MT1 mode! Keep in mind, I am referring to the newer units only which, when recorded on produce a copy of a CD or DAT original that few, if any listeners can tell which is which--and the technology continues to advance, supposedly better than CD quality with the latest versions.
I have had both an MZR3 Minidisk recorder and a VS-880 for some time now, and I love 'em both. I have mastered to MD on certain occasions (don't have a DAT), then recorded to CD in a pro studio, and have been very pleased with the results--the studio technician was equally impressed (and surprised)! Again, I understand this is not the "kosher" way of doing it, but it worked great for my needs at that time." [Ken Totushek - Apr '97]

-Compact Cassette.

Q: "I mix straight from my VS to a budget cassette deck using chrome tape. Though I am sure that my source recording levels are optimal, the final signal (and hence output volume) i get on the cassette is very low in comparison to a commercial tape (eg Prince etc) - I would appreciate any tips on maximizing the mix signal - do any of you use a compressor, aural exciter, gate or anything else to boost levels ?"
A: "I'm not surprised at all. Commercial recordings are almost always much louder and more 'in your face' than the mixes you get straight from your multi-track (even if it is as good as the VS-880). What you hear on CD's is not only mixed but also mastered, this doesn't just mean a bit of EQ'ing but also compression and things like 'maximizing'. For my CD I mastered the mixes made on the VS with some ProTools TDM plug-ins like L1 UltraMaximizer (I believe that was its full name) from Waves. I found it quite amazing how much gain you can eh.... gain from these things without the mix sounding 'overcompressed' or whatever other negative side-effect you can imagine. But if you want your mix to sound 'louder' compression is the first step - don't overdo it, it can really kill your music (it can sound lifeless and dull if overcompressed). Also, cassettes are FAR from ideal to mixdown to. You will never get the most out of your VS if you don't mixdown to DAT or something similar. " [Daniel Baars - March '97]
A: "After I do a mix to dat and play it thru my stereo, it sounds pretty darn close to the sound quality of a CD, but when I transfer to a cassette it loses a lot. One solution, without having it mastered (although not as good as mastering) is to run your mix thru a unit like an Aphex exciter, or a BBE (I like the BBE better myself). This will give the cassette a louder perceived volume, will be brighter, and you can enhance and tighten up the bottom end. You should be able to get a unit like this for under $300."

[Robert Lunceford - March '97]

-Digital Output Of VS To Digital Input Of Soundcard (AudioMedia etc.).

Q: "I had to set the MasterClock to digital on the 880. On the AudioMedia card (using Deck II software or Soundesigner II, I've done both) the input was set to digital. If I left the input to analog, I got a bunch of noise. Why is this?"
A: "It turns out the VS doesn't like to operate as a slave to MTC from an external sequencer while the 'SYS MasterClk' is set to 'DIGITAL' (pg.73 / VS manual). At least it doesn't like to 'output' via the 'Digital Output Connector' while in this mode." [kesacto@cinenet.net - March '97]

-Useful Links On Mastering.

* DAT-Heads Mailing List Archive Information on DAT technology -
`http://www.atd.ucar.edu/rdp/dat-heads`
* The Voodoo of CD Mastering/All you ever wanted to know about CD Mastering -
`http://www.essrl.wustl.edu/~adl/mastering/`
* Top Tips for Tascam Dat Machines/Get rid of SCMS once and for all -
`http://shire.ncsa.uiuc.edu/Mike/tascam/tascamtips.html`
* Recording hints for better masters: `http://www.saturn.net/~viscount/rectips.html`
(how to avoid mistakes when mastering to DAT)
* The Minidisk Page (which is extremely comprehensive regarding the technology) if you have further questions at: `http://www.hip.atr.co.jp/~eaw/minidisc.html`

• Storage/Back Up

-The Best Back Up Medium.

[Ed. - April 2, 1997] This is without doubt the most discussed subject on the VS-880 Mailing List. This is probably because there is no easy answer to the question 'What is the best back-up medium?'. Below I have included a lot of the discussion about this subject. For the people who don't have the time and/or patience to read it all, here are the short answers:
The cheapest back-up method? DAT.
The slowest back-up method? DAT.
The fastest back-up method? Fixed Hard Disk.
The most reliable back-up method? MO (Magneto Optical).
The least reliable back-up method? Jaz Drive.

To complicate matters further, prices differ greatly from country to country. In Australia, for example, MO is still too expensive to be considered a 'viable solution' (unless of course money doesn't matter and reliability is the only thing that counts). In the US and Europe, however, the prices for MO drives and their cartridges have come down considerably - which is why many people on the list now feel that 'MO Is The Way To Go'. To make it all a bit easier, here's a chart of the lowest prices (including taxes) that have to be paid for the back-up media the VS can work with (also included are some back-up media which can be used after transferring your files to a PC):

```
Drives:                             US       UK      Austr.   Japan

ZIP Drive          (100mb)          $120     £120    $290     15980 yen
Syquest EZ135      (135mb)          $        £140    $290     11800 yen
Syquest EZ-Flyer   (230mb)          $300     £215    $600     28800 yen
Jaz Drive          (1gig)           $440     £340    $1000    55800 yen
Syquest SyJet      (1.5gig)         $500     £330    $1000
Nomai 540          (540mb)          $300     £270    $1080
230mb MO           (230mb)          $300     £310    $600     44800 yen
640mb MO           (640mb)          $600     £435    $        74800 yen


DDS-1              (2gig)           $600     £435    $
DDS-2              (4gig)           $800     £535    $
Travan-4           (4gig)           $340     £275    $500
CD-R               (650mb)          $        £380    $600


Cartridges*:                        US       UK      Austr.   Japan

120 min.DAT tape   (660mb)          $6       £12     $40
ZIP Drive          (100mb)          $12      £11     $22      1480 yen
Syquest EZ135      (135mb)          $20      £15     $45      1980 yen
Syquest EZ-Flyer   (230mb)          $30      £18     $65      3380 yen
Jaz Drive          (1gig)           $90      £71     $180     11800 yen
Syquest SyJet      (1.5gig)         $80      £140    $180
Nomai 540          (540mb)          $50      £45     $100
230mb MO (ISO)     (230mb)          $10      £9      $45      780 yen
230mb MO (DOW)     (230mb)          $15      £       $
540mb MO** (ISO)   (540mb)          $30      £24     $170
540mb MO** (DOW)   (540mb)          $43      £       $


DDS-1              (2gig)           $8       £       $16
DDS-2              (4gig)           $18      £       $18
Travan-4           (4gig)           $32      £       $500
CD-R               (650mb)          $        £6      $15
```

```
*All prices assume you buy in quantity.
**The VS-880 does not work with the 640mb MO cartridges, therefore the
540mb MO cartridges have to be used in the 640 MO drive.
```

-Reliability.

MACFORMAT says:
"Magneto-optical (MO) drives are the ultimate in long-term reliable data storage. Because the data on the disk cannot be changed at room temperature, MO disks aren't prone to corruption by stray magnetic interference, unlike other magnetic media (Syquest, MCD, Jaz, Zip). They also last a very long time - at the moment estimates place their lifespan at around 50 years. That's ten times longer than the life expectancy of any other media." [MacFormat article - March '97]

OPINIONS:

"The problem I see with most of this disk media stuff is that's it's either too small, too expensive, or too fragile/unreliable. For example: Zip drives are OK, cartridges can take some abuse, but they lack sufficient storage capacity. $15 a disk, that's $30 a song (roughly), product is made by Iomega... (it's best we stay away from them).
The popular Winchester removable: Syquest EZ disks 135/230 ($20/$30), Jaz disk ($100 / 5 = $20), roughly 20/25 bucks a song (we're still in the $20 to $40 league of song backups), but the real problem is... the disks are too fragile... WAY TOO fragile, people! How can you consider something a backup when if you just drop the thing, it's as good as gone? Everything! Is that what we should consider a backup? Give me a break! All those countless hours recording now gone because of a simple little slip-up. If you lose your accounting records, shoot, at least you can resort to your hard copies and punch them back in, but a fine performance, impossible. It will never be the same...
OK, so many people will say, back up twice, even tree times... but now how much will a song cost? Well, if you were paying attention to what I was saying you'd know that it would be around 60 bucks? 5 songs and you're now at $300!" [George Carden - Jan '97]

"I think that in the area of "dependable, fast backup", you might want to look into MO. The data dat may hold more info, but it is no match for disk-based back-up, in terms of convenience. Any tape or magnetic disk technology will also be less reliable than MO for durability across time." [Neil Gould - Jan '97]

-Compatibility.

"Well, yes you're right and no you're wrong. Iomega's Jaz, Zip, and Syquest's EZ drives are sold and purchased everywhere, however, a Jaz cart will work only in a Jaz drive, same goes for the Zip and EZ cartridges. The media's proprietary. However, an MO cartridge will work in a Fujitsu, an Olympus, APS, Smart Storage, etc... Eventually the opticals will be the main stream. There are only two main reasons why MOs and Opticals aren't widely used: they're slow, and they're generally more expensive than the others. But that's all changing now. If you've been following my posts, you may have heard me mention the Olympus SYS 230 at $365. Specs are 4500 rmp, 17ms, 2.5 mb/s transfer rate. These are the manufactures claimed specs, but since most MO drive manufactures tend to stretch their specs, it's probably more like, 19ms, 1.7 transfer rate... but that's still good. Certainly better than the usual 30ms, 3300 rpm 1.2 mb/s." [George Carden - Jan '97]

-DAT As Back Up Medium.

Q: "How fast/slow is backing up to DAT?"
A: "From my own personal experience, an 8-track song (optimized, all tracks busy most of the time with one 'virtual track' per track) that lasts for 3:40 mins in real time takes approx. 12 minutes to backup to DAT, which is just long enough for me to make a nice cup of tea." [Paul Shields - Jan '97]
A: "6 mb/per minute" [George Carden - March '97]

OPINIONS:
"I don't think a DAT machine is a solid enough backup to be the only one you make. Roland tries to talk you out of using them in the user manual! I'd keep the Zip drive, too, or a SyQuest or whatever, because without it you're working without a net. It's just part of the price of working with hard disk audio, and when you take it in context with all the money you're saving elsewhere, it ain't that bad. At least make a deal with a friend to borrow their Zip drive periodically...." [Pete Dunn - Dec '96]

"I personally have never had any problems with DAT, but it is entirely possible due to the nature of the recording mechanism, etc. It is recommended good practice to always unpack a new tape (fast forward and then rewind), and to not record for the first minute or so of the tape. Note that some DAT recorders (including the DA-20) have an error readout display that can be accessed when pressing the right combination of buttons (for some reason these things are never documented. I reckon it's to make the

repair engineer look smart...) I would say that it is fairly robust for backup purposes. I work in IT and we regularly backup large quantities of data to DAT. In comparison HD can be unreliable as well - see Jaz problems. As to corrupt DAT backups due to bad sectors on vs internal drive, I think that may validate my previous sentence! Having said all that, if I didn't already have DAT, I would use ZIP, EZ-drive,etc, as it seems a very convenient way to store single songs. I wouldn't expect a portable DAT to be any worse than a full size one for digital transfer purposes. I would just try to follow the suggestions mentioned already. " [Paul Shields - Dec '96]

"I found backing up to DAT to be effective but tedious, plus you can't confirm that the backup worked. A 6 minute 8 track song will take about 24 minutes." [Doug - Jan '97]

TIPS & TRICKS:
"To backup to DAT, connect an RCA coaxial cable from the 'digital out' of the VS-880 to the 'digital in' of the DAT recorder. Set your DAT recorder to receive digital signals. If it requires you to set a sample rate, set it to 48 kHz. Note that this sample rate is not related to the sample rate of the song(s) you are backing up. From the [SONG] menu select the backup option, and using the Time/Value wheel select the song, or ALL songs, to backup. At the 'Tape Len=' parameter enter the length of the DAT tape. Note that if the backup time exceeds the length of one tape and you are using tapes of different lengths, enter the length of the shortest tape. At the 'Backup Wait' parameter select 'OFF', unless you are experiencing problems when using 'DAT Recover'. Selecting 'ON' will result in a slower backup time but may result in a more secure backup. The 'Measure' field on the LCD will now show the total time needed for backup (HHH mMM), and 'Sync Mode' field will display the number of tapes needed for this backup set. Continue pressing [YES] until the display reads 'Please Rec DAT'. At this point, start the DAT recorder in 'record' mode, and press [YES] again to commence backup. Tips for making a good backup.Always, if possible, use fresh branded tape

* Keep tape length within maximum length recommended by the DAT manufacturer - usually 90 minutes or less
* Unpack all new tapes. That is, fast-forward and rewind the tape a couple of times before use
* Use DDS tapes - often of a higher quality than DAT and sometimes cheaper. DDS tape is measured in meters: 1 meter = 2 minutes record time
* Don't record for the first 30 seconds of tape
* Use good quality cable. 75 ohm cable used for video connections is ideal for S/PDIF coaxial transfer
* Keep cables away from electrical interference, power cables, etc
* Allow at least 4 times the length of each song for each backup." [Paul Shields - Jan '97]

-Removable Hard Disks & Hard Disk Recording.

"Having an extensive amount of experience with large files and removable media (over 18 years in digital graphics and video), I'd like to offer a few tidbits which might help someone.
The problems that have been described are not necessarily due to any particular manufacturer's product, or to whether drives are internal, external, etc. It is mainly a problem with file management and editing.
I won't spend time going into general HD issues, such as the possibility that sectors will go bad (i.e. lose their coercivity, or have it drop below the threshold for reliable read/writes). These are also important, but not the main problem here. SCSI buss implementation has a number of features built in to assist in disk and file management, as well. These are also important, but beyond the scope of the most serious problem that results in media failure for AV. Those who are technically proficient may want to look into these areas for further insights in data protection.

In Richard's description, there are several points which are important and relevant in his usage of the Jaz drive. Since his drive is internal, it is probably the primary drive for recording tracks. One of the main problems with this is that of file/disk fragmentation.

For live multi-track audio HD recording, there are two primary requirements. The first is that the drive be able to read/write files from non-contiguous sectors fast enough to keep the buffers of the DSP full. The second is that the file system needs to be able to access the files reliably and verify the writes-to-disk. This is a lot to ask of media that was primarily intended to store lots of small files (those which might fit in a sector or two, such as word processing, graphics, databases, etc.).

Both of these requirements are taxed when you do a lot of punch-ins, edits, etc. The VS-880 has, IMHO, one of the best file management systems of any HD recorder that I've used. Yet, it can't avoid having to deal with media problems such as marginal disk sectors going bad. What happens is that SCSI will re-try reading the data at least 7 times before failing (remember those 'loops' that you can't break out of?). If you are recording at the time that you encounter a sector-gone-bad, then the file management system can get trashed -- ergo, MEDIA ERROR, time to re-format.

Removable HD cartridges have some unique characteristics which aggravate the situation. First, as has been mentioned on this list before, they are subject to dust and other environmental intrusions. Secondly, the disks are "generically" aligned, and thus not optimized for any particular drive. At best, this can result in needing more than one 'read' to access files. At worst, this can cause read errors and other problems as the disk bearings age.

SO: what I'd recommend is that you use a 'scratch disk' for recording, which gets re-formatted prior to recording each new set of songs. Back up the optimized songs to a fresh cartridge (or two) when done. Treat any cartridge that gets dropped as suspect.

Keep in mind that the optimization process does not, as far as I know, defrag a disk. I think it just deletes irrelevant data. Song Copy probably writes the data to contiguous sectors on the new drive, in effect defragging the files on the fly. So, it may be wise to periodically write the material from your back-up disk to a fresh 'scratch disk' to get a good defragged source disk. This will minimize disk head-thrashing and possible read/write errors that result from marginal timing.

The topic is really _much_ more complicated, but these hints may help to reduce the amount of material that gets lost." [Neil Gould - Jan '97]

-Iomega Zip Drive.

"I'm using a Zip drive for backup, but not necessarily because I think it is the best option. I had one lying around that wasn't working with anything else, and it works on the VS-880. There are a couple of drawbacks to the Zip drive; it is about the speed of a floppy drive, so you can only save uncompressed or MT1 files in archival mode, and it is therefore not suitable as an external drive for recording in either of these modes." [Neil Gould - Oct '96]

"Just so the ZIP is not unduly dismissed... I have recorded up to six tracks directly to the ZIP, with many edits. One fact worth mentioning, is that I am doing one minute commercial spots. I might do 4 or 5 on one ZIP. In every instance, I optimize before I save at the end of a session." [Stan Ruffo - Jan '97]

"I bought an Iomega Zip and was massively disappointed when I discovered I couldn't fit one song per zip cart (my songs were over 100mb.) I returned the Iomega Zip and bought a Syquest EZ135 (at 135mb per disk, my songs fit one per disk...that extra 35mb did it for me!) I think that should clear things up for you." [Jay Byron - Jan '97]

"I have recorded and played back 8 tracks in mt1 on a zip with no problem. I would not recommend doing this for serious recording due to space limitations (i.e.: not very much) and disk speed which could cause possible problems if doing lots of cuts, edits and v-tracks." [R. Foreman - Jan '97]

-Syquest EZ135 Drive.

"If you are just purchasing a drive for this purpose, I'd suggest looking into the SyQuest EZ Drive 135 (SCSI model). They are going for cheap since SyQuest introduced the 230. SyQuest has _much_ more experience in removable SCSI hard drives, and has addressed many of the shortcomings of both the Zip and Jaz drives. So, for less than the cost of a Zip drive, you can have a drive that can store uncompressed and MT1 files in play mode, and can also be used as an external recording drive." [Neil Gould - Oct '96]

"I use a SyQuest EZ-Drive 135 without problems. And, it is fast enough to allow copying songs in playable format, or recording directly to the drive in any mode. Since the price has dropped to about $120 for this drive, and the disks are about the same as Zip disks, this may be a good drive to consider." [Neil Gould - Jan '97]

"I bought an Iomega Zip and was massively disappointed when I discovered I couldn't fit one song per zip cart (my songs were over 100mb.) I returned the Iomega Zip and bought a Syquest EZ135 (at 135mb per disk, my songs fit one per disk...that extra 35mb did it for me!) I think that should clear things up for you." [Jay Byron - Jan '97]

-Syquest EZ-Flyer.

[Ed. - April '97] No reports about this 230mb follow-up to the EZ135 (it's backwards compatible] yet.

-Iomega Jaz Drive.

[Ed. - April '97] Among the most popular subjects on the VS-880 Mailing List 'Jaz Drive Problems' certainly ranks high. The press almost unanimously applauded the Iomega Jaz Drive when it appeared on the market in the beginning of 1996. Unfortunately, out of the testlabs and into the real world, the Jaz Drive was less successful. While reading through all of the messages of the VS-880 Mailing List I was amazed at the amount of people who had BIG trouble with the Jaz Drive and/or its cartridges. First it appeared the problems only occurred with the version of the VS-880 containing an internal Jaz Drive. Indeed, Roland discontinued this particular model last year. Later it was clear the external version of the Jaz Drive suffered equally from these problems. The Jaz Drive causing media errors, data loss, unformattable cartridges - again and again these reports were posted. To be fair: for every two (2) people who report problems with their Jaz Drive, there is one (1) message that tells us about 'no problems yet'.

"What did you hear about Jaz drives!? I use a Jaz drive as my recording drive and I haven't had any problems so far (fingers crossed)." [Sherif - Oct '96]

"A while back i said I'd had no problems with my Jaz drive. And now I'm pissed off. My external Jaz drive just crashed on me - the disk is stuck inside the unit and won't eject out, it seems as if the drive is in a perpetual spin. I have 2 songs on it....yeah...." [Sherif - Nov '96]

"I noticed that after about 6 months of INTENSIVE use on my Mac, all my Jaz carts die the same way..... gets stuck, refuses to read, destroys files, corrupts the desktop etc. The only way to fix it was making a safety onto a new cart. Even re-formatting didn't fix the problems! Remember.... Iomega has a WARENTE stating that the carts are good for a period of time.... make them live up to it!" [Steven McLoughlin - Nov '96]

"I'm just one guy, but I have a Jaz drive that was built in August '96, three carts from the same era, I use them HARD, in real time, and I've had ZERO problems, period. My 880 came with the internal 540. I intended to use this for R/P and simply archive to the Jaz, and I did this for a while, but one day I wanted to start a new song quickly, didn't have room on the internal, and didn't want to take the time to move something off the 540, so I just started the project on the external Jaz. Worked great! I almost always use 44.1 khz sample rate, MT1 mode, use all eight tracks, with several of these having V-tracks, and I've never had even a little hiccup. I have heard rumors that early Jaz drives were flaky, that some carts are

bogus, and that cheap SCSI cables are often unreliable, but I've seen no evidence of this. BTW, my 880 is Rev 1.05 OS, and I move the Jaz from the 880 to two PC's with Adaptec SCSI (2940) cards for backups once per week. Of course, I use different carts for this purpose, but I've never had a problem with using the Jaz for PC backups either." [Doug Semon - Nov '96]

"I use my Jaz drive with both the VS-880 and a Macintosh. After months of thinking 'isn't this Jaz thing great?' things began to go horribly wrong. Both on the discs I used for the VS and the Mac. The Mac cartridges I only used for back-ups, the ones for the VS mainly too but I have done some recording on them too (but not a lot because they're so noisy). The problems started with the Jaz drive taking an awful lot of time to find a certain file, making all sorts of not-so-funny noises. Later I got several media failures and now I have about three cartridges I can't even format anymore. Unfortunately my story is pretty normal. I have read several accounts (on this list and the Logic list) on how the Jaz drive and its cartridges worked beautifully in the beginning and then suddenly began to develop severe problems. This is very deceiving as they're also people who love their Jaz drive (I did before I got these problems!) and, of course, write about it. There's even a positive review of the Jaz drive in the new Sound On Sound! It makes no mention of potential unreliability at all. Which I think is not an example of 'informed journalism'. People will go out and buy it because they've read this review in the SOS. In short: people who have had no problems with the Jaz drive are lucky - it is VERY unreliable most of the times. Iomega should get their act together and do something about it, a lot of people have spend a lot of money on a product they cannot trust (which is very worrying for a BACK-UP medium)." [Daniel Baars - Jan '97]

"I use an external Iomega Jaz, and haven't had any problems in the 6 or 7 months I've owned it. Expensive but fast, confirmable, even portable." [Doug - Jan '97]

"I had precisely the same problem with my unit, besides other Jaz problems. Not at first mind you, about a hundred hours into it. I talked to higher ups at Roland and they took my Jaz unit back - acknowledging unfixable problems with the Jaz platform - and replaced it with an internal hard drive. The Jaz is a very handy platform but to all of you who have had no problem so far with it, count your blessings and be sure you do triple back-ups. Fair warning." [R.C. - Jan '97]

"I've been using my Jaz for some six months now with my PC as a second harddisk. I have some 12 disks for different projects etc. One of the disks, I use daily. I run programs from it, not just storing data on it. No media errors or any other (yet)." [Matz Bjurstroem - Jan '97]

"All of us Jaz and Jaz-ex owners have been at this point at some time or another, right? There it is, the drive is new, it's spinning, we're recording, it feels cool to handle this big 1 giga monster, we think of all the possibilities, we have a boner, we're jazzed! We hear the "rumors"... and we think, nah! They're just rumors... my Jaz will never fail because I have a special bond with it! So we keep on going... in our own little Iomega fantasy world (and while we're at it, we consider writing them mushy love letters and wish lists)... then suddenly, everything turns into the Twilight Zone" [George Carden - Jan '97]

-VS-880 With Internal Jaz Drive (VS-880-J) Retrofit.

"I had good luck with my Jaz as well, but after learning of the discontinuation on the part of Roland as well as ongoing Jaz problem reports, I decided to see what I could do. After Roland and hearing of there new retrofit policy (there previous stance to dealers was that a Jaz could not be retrofitted with a HD), I went for it. Here's the deal: They'll replace your Jaz with a 1.3 Gig HD, Make your machine V expanded and give you a free Zip with a Gig pack of cartridges. Go for it. It's a very good example of customer report and a great way to get a virtually new v expanded system and Zip. And it's a lot more quiet. Call roland for a ship # and expect a to be without your VS for a week (counting the weekend if you ship it overnight on a monday." [Jim - March '97]

"I also got my JAZ retrofit done...I got the 1.2 gig and an external JAZ in the swap for the internal JAZ....I'm happy .... I seem to be able to copy nicely between the JAZ and the internal.... My buddy says he still has the odd lock up when he tries to work directly from the external JAZ but hasn't had any problems just backing up to it. So I will just do all my work on the internal IDE...." [Kevin Neill - April '97]

-Syquest SyJet.

[Ed. - April '97] No reports about this 1.5gig competitor to the Iomega Jaz Drive yet.

-Nomai 540.

[Ed. - April '97] No reports about this drive yet.

-Olympus SYS 230 MO.

"To date, the new Olympus is supposed to be the fastest cheapest MO out there. I will most likely buy one myself. It's faster than the Zip... almost as fast as the Syquest EZ-135 and EZ-Flyer 230. This is based on information that I've read from the PC mags. Also, don't forget, MOs are gonna be more reliable than the Winchester removables like the Jaz or Syquest 135/230, and should also be more reliable than the Zip." [George Carden - Jan '97]

"Olympus SYS.230 Magneto Optical Drive using Olympus 230 Mb disk.
MT1 @ 44.1 kHz

Playback 4 / Record 2 - PASSED
Playback 6 / Record 1 - PASSED
Playback 6 / Record 2 - PASSED
Playback 5 / Record 3 - PASSED
Playback 0 / Record 4 - PASSED
Playback 4 / Record 4 - "Disk too slow"

Transferring a 134Mb file in "playable" mode from the VS880 to the SYS.230 took
6 minutes 27 seconds." [Robert Lunceford - Feb '97]

-Fujitsu 230 MO.

"I've been using a Fujitsu 230 MO drive with my VS-880 for a year now, both for backup and for recording and it works quite well, with a few limitations like being able to only record or playback 2 tracks in Master mode for example. I only lost data once, when, being in a hurry, I didn't format a new MO with the VS, just initializes it." [Steve Veltema - Feb '97]

-Matsushita 230 MO.

"I use a 2 year old Matsushita 230MO to back up my sound files with out any problems. I can't say that I've put it through extensive testing, but then again I don't plan to use it for recording, just making playable copies for my archives." [Philippe Bogdan - Feb '97]

-Fujitsu Dynamo 640 MO.

"The Fujitsu Dynamo 640 is read/write compatible with 128, 230, and 540/640 3.5 optical media. Note:

some dealers quote the 640 as being only read compatible with the 128 media, but Fujitsu assures me this isn't the case with the Dynamo 640. It was, but isn't anymore." [George Carden - Jan '97]

"Here's some of my results for the Fujitsu 640/230 MO:
Drive...........: Fujitsu DynaMO 640
Model.........: M2513S2A - External, 2 MB cache
Media.........: Olympus 230 ISO
Write Cache: Enabled (default on some - not on all)

 Write Verify: Enabled (default)
- ---
 Record Test
    4 Tracks = SUCCESS

 Playback Test
    8 Tracks = SUCCESS

 Record/Playback Test
    Record 1 Tracks / Playback 5 = SUCCESS
    Record 1 Tracks / Playback 6 = FAIL
    Record 2 Tracks / Playback 3 = SUCCESS
    Record 2 Tracks / Playback 4 = FAIL
    Record 3 Tracks / Playback 2 = SUCCESS
    Record 3 Tracks / Playback 3 = FAIL

 Roland Demo Song Copy Test - Playable
    97 MB to 230 MO Media = approx 5.5 minutes

 Write Verify: Disabled
- --
 Record Test
    4 Tracks = SUCCESS

 Playback Test
    8 Tracks = SUCCESS

 Record/Playback Test
    Record 1 Tracks / Playback 6 = SUCCESS (write verify fails)
    Record 1 Tracks / Playback 7 = FAIL
    Record 2 Tracks / Playback 4 = SUCCESS (write verify fails)
    Record 2 Tracks / Playback 5 = FAIL
    Record 3 Tracks / Playback 3 = SUCCESS (write verify fails)
    Record 3 Tracks / Playback 4 = FAIL

 Roland Demo Song Copy Test - Playable
    97 MB to 230 MO Media = approx 4.5 minutes

So why are Roland's results different from mine? I spoke with Vince at Roland (the guy who tested the drive) and he said the drive passed a record 4 / playback 4 test. He also stated he was using 540 ISO media. This may be the reason why the tests differ. The Fujitsu manual states 540/640 media is faster than 230 media. The difference between the two is 2.3 mb/s (write), 3.9 mb/s (read) for the 540/640 vs 1.3 mb/s and 2.1 mb/s for the 230 media. This sounds logical to me, since the DynaMO is probably optimized for 640 media. Though in actual testing, on my Laptop the 640 media was only marginally

faster than the 230; but this could be due to my slower PCMCIA bus. I don't actually have 540 media, which is what is required by the VS (512 bytes/sector, standard DOS disk). I plan on purchasing the newer DOW (Direct-Overwrite) media and not the ISO type. DOW is faster because it doesn't require an erase pass before it can write like the standard ISO media does. The only problem is, DOW is not readily available in small quantities... at least for the time being.

I think it's interesting to point out, if the 540 media is indeed faster than the 230 media, and DOW eliminates the need for a separate erase pass (and we already know that 'write verify off' allows us to record 3 and playback 3 tracks on a standard 230 ISO disk), it may very well be possible to record 4 and playback 4 tracks on a 540 MO disk, thus giving us the same capabilities of the internal HD." [George Carden - Feb '97]

-MO Media (Standard ISO or DOW).

"I finally got my 540 MO media. It's the Direct-Overwrite (DOW) type, not the standard ISO type. I'm pretty amazed. They look cool and they're much faster than my 230 ISO disks. Here's the test results:

97 MB Song Demo copy to MO 540 DOW disk = 2.5 minutes (38.8 MB/Minute)

Copying from the 540 media to the VS is about the same. Using 230 media, the fastest write throughput I was able to achieve on my Fujitsu was around 18 MB/Minute. The Olympus is faster using 230 media, but only while coping, not recording: over 21 MB/Minute (If I'm not mistaken). The reason 540 disks are faster is because the data is more condensed, therefore the laser/heads don't have to work as hard. Furthermore, DOW is 30% faster at writing than ISO because it eliminates an erase-before-write pass. But they're more expensive: $43 apiece.

Playback 4 tracks / Record 4 = SUCCESS ... AND WITH FLYING COLORS!

Here, my 230 media failed miserably. In fact, it couldn't even handle Playback 4 / Record 3. Although 540 DOW media can successfully record and playback 4 tracks at a time, I suspect that with a lot of fragmentation, they may not perform as well. Nonetheless, if I experience any 'Drive to slow' errors in the future, I'll post them. Keep in mind, my tests were done using actual full length 2.5 to 4.5 minute songs. I noticed that the more v-tracks I had, and the longer the song was, the slower the drive would perform." [George Carden - March '97]

"On my Fujitsu 640, you can play back all tracks--no problem. As for recording, as long as you don't over stress the drive a lot by rewinding, stopping, playing, etc... you can record up to 4 tracks while playing 4. You have to be a little more patient with the MO. You probably won't notice anything unusual when you begin to lay down tracks; but afterwards, once you have a lot more of them, the drive can begin to saturate. If this happens, you may have to stop for a few seconds, then start back up again. Note: I'm using DOW (Direct-Overwrite) MO disks; they're 30% faster at writing than the standard (ISO) MO disks." [George Carden - March '97]

"DOW disks are 30% faster, but only at writing. MOs require 3 spindle rotations to write data:

1. Erase pass
2. Write pass
3. Verify pass

LIMDOW (Light Intensity Modulation Direct Overwrite) eliminates the erase pass, providing a 30% write performance increase.

Some people turn write verify off if their drive is capable of it; that

yields another 30% speed improvement. I don't have mine setup this way, I
feel safer with verify on. I think the main reason MOs write verify is
because with in time, the drive will start to get dirty, in this case, you'd
have to clean it with a cleaning cartridge, and you may have to clean the
media as well. It's not cheap, a complete cleaning kit from Fujitsu sells for
around $70, but it comes with some kind of disk cleaning "thing"." [George Carden - April '97]

-540mb Or 640mb?

"The VS doesn't work with 2048 bytes/sector media, which are the 640 MB disks. The 540 disks are 512
bytes/sector; They will work. Based on my knowledge, all DOS compatible drives must be 512 bytes per
sector unless you have a special device driver or some kind of BIOS enhancement. On a PC, it's a matter
of loading a driver into memory; but since we can't do this on the VS, we have to use 540 media."
[George Carden - Feb '97]

-Syquest 270.

"I have a Syquest 270MB removable, and the VS-880 can't format it (I don't know why, exactly), but it
can initialize it and record/play from it normally." [Fred Hamilton - Feb '97]

"I think what's being said is that you can connect your Syquest to the vs and just use the 'initialize'
option. The vs should then readily accept it. If you format it using a PC, then be wary of using ms-dos 7
or above (i.e. win95) as it turns it into a 'super-floppy' format and alters the boot sector, thus making it
unknown to the vs (see Timian Heber's page for more info. Address is in the faq). The general consensus
appears to be that you don't need to perform a format on these cartridges." [Paul Shields - March '97]

-Initialization, Formatting, File Fragmentation & Bad Sectors.

Q: "I left a post about the Nomai 540Mb drive possibly not working because it's supposed to R/W a
Syquest 270Mb with the VS-880 won't format. They said there is a new preferred HD list which includes
the Nomai 540Mb. The catch is that it won't format it either. So, I say, huh!! How do you use it if
you can't format it? He says, you initialize it, only! When fragmentation makes it unusable, you use it
for something else or re-format it! I say, with what? I'm not sure about this working but he said that
you can format under PC DOS."
A: "I know you have a Syquest 270 and I do remember the problems you were having formatting the
cartridges. Obviously, the Nomai would be a wise choice for you since it is backward compatible with the
270 Syquest media. If you are seriously considering the Nomai, I wouldn't hesitate to buy it as long as
you can get a 30 day money back on it. Here's why...
First of all, there seems to be a misconception regarding file fragmentation and formatting. You don't
need to format a disk in order to defragment it. The reason for this is, there is no such thing as a
fragmented disk. Files can be fragmented, but not disks. So how do you defragment a file on the VS?
Very easily, you simply delete (initialize) it and restore from your backups. That is the primitive way of
defragmenting, and unfortunately, on the VS, it's the only way... for now.
Secondly, there should be no reason why anyone should have to format a VS disk unless it's in a format
other than the VS's (not the case with the Nomai). Or, unless you feel your disk has bad sectors (not the
case with new disks) and want to mark them as bad to prevent the VS from using them (that would be the
physical format option). If you suspect you have bad sectors, the way to find out is a) use a friends DOS
machine to check for them, b) use your Atari to check for them(?), or c) send the cartridge back to Nomai
and tell them (you think) your disk is bad... which they will in turn, a) confirm the cartridge is bad and
send you a new one (5 yr warranty), or b) confirm there are no bad sectors and send back your old one.
Lastly, bad sectors are not something you should be too concerned with because a) if there are indeed bad

sectors, the VS is certainly not going to tell you this, which means you'll have to check for them under a different system, and b) if you do end up having bad sectors, you don't want to use the disk anyway, so why bother trying to mark them as bad? The reason I say this is because, when my Jaz failed on me, I tried a physical format, assuming there were bad sectors, and that physical format would mark them as bad allowing me to use the disk again. After I formatted, guess what? Media errors again!! Good bye, Jaz disk.... Fact is, I should have known better. 99% of the time that I've had bad sectors on any hard drive, even after formatting and marking bad sectors, I'd always get more afterwards... so, I would just stop using the disks. Soooo, the moral of the story is, if you encounter media errors, chuck the disk and use a new one. Physical format can be useful, but not as useful as most people think it is." [George Carden - Jan '97]

-Archive or Playable?

Q: "I'm unclear about something. I know that the VS880 will initialize a Zip cart when backing up in Archive mode. Will it do the same in Playable mode? I have a cart with the tail end of an Archive mode tune already on it and a very short song on my hard drive. I'd like to back it up onto the same cart if I can but am fearful of losing the existing data." [Michael Giammatteo - Jan '97] "
A: "You can't put anything else on a zip cart once it's been initialized and received archived data from the vs. If you copy a song in playable mode to a zip cart, and there is enough room to put something else on it, you can, without losing data. The vs will prompt you if there isn't enough room." [Jay Byron - Jan '97]
A: "Playable is the way to go since one little glitch won't ruin the entire project ." [George Carden - Jan '97]
A: "The only difference is whether you want to be able to play the song from the medium backed it up to. "Playability" requires that the entire song fit on one (1) disk. Longer songs or smaller backup media requires archiving." [Brian Badger - March '97]
A: "Hard disk digital recording results in large amounts of storage being used for even a short 3-minute song. Normally, the simplest method of backup is to copy the data to the Zip (or Zip-like) drive in 'Playable' format. If you try to copy a song larger than the capacity of the Zip you will obviously be unable to continue. In this case, the only alternatives are to use the 'Archive' method, or invest in a drive with a larger capacity. The archive backup method initialises the disk before it begins the backup. Therefore, you must be sure that any data already on the disk is not required. As this method can span two or more disks, it is good practice to label the disks in the sequence used. When you attempt to restore archive data you will be asked whether you want to initialise the current drive - i.e. your primary recording drive. DO NOT answer yes unless you want to remove all songs currently on the drive before the restore process begins." [Paul Shields - Jan '97]

Q: "Wouldn't it be nice to be able to backup single songs and restore them at any time without hazarding whatever else is on the hard drive at that time?"
A: "It depends on the type of 'backup' you are doing. I presume that DAT backups are "archive mode" only? If so, then you will be essentially re-initializing the drive each time you restore. If using SONG COPY / PLAYABLE to a disk-based backup, then you can add songs to the drive at will, space permitting. Note: if you want to use this mode, I'd suggest an HD (or removable HD cart) instead of a ZIP." [Neil Gould - Jan '97]

-VS-880 Compatible Drives.

"The VS is programmed to talk to standard DOS disks--only. It won't support tape drives or DDSs, though I think it should. Furthermore, I think it should also support non-standard 1024K and 2048K sector disks, but it doesn't. It's a shame because many of the new storage devices that are coming out, like the new phase writers (2048K sector) won't work on the VS." [George Carden - Feb '97]

-Backing Up To DAT/DDS Via SCSI.

Q: :Why doesn't backup to DAT/DDS via SCSI work? "

A: "Roland have defined two backup strategies for the VS-880 - Audio DAT backup via the coaxial S/PDIF interface, and connection to a supported removable fixed drive via the SCSI interface. Unfortunately, neither of these options are equal to DDS as an economical method of reliable backup. S/PDIF is an interface standard for Audio DAT and is not designed, or in the required format, for DDS (Data) DAT backup systems. Because the output from the S/PDIF interface is in an Audio DAT format, it is not possible to transmit the backup data to a DDS device. There are devices available that will read an S/PDIF signal and convert it to DDS format before writing it to a DDS device - Gallery Software - , but this author is unaware of anybody using this backup method with the VS-880. Another option known to work is to archive via the SCSI device to a removable drive (eg Iomega Jaz) and then attach this to a PC. The drive can then be backed up to a DDS device also attached to the PC." [Paul Shields - Jan '97]

-Backing Up Via PC/SCSI.

"Transferring VS-880 files via a standard SCSI hard drive works fine - thanks to Timian Heber's info on the vol track registry entry that is! So it's cool - you can then backup to any media connected to your PC. What you first must do is edit the Win 95 registry (if you're using Win 95 that is!) so that the OS does not render your SCSI drive (zip, syq, hard drive or whatever) unreadable for the VS. Editing the registry means putting your OS settings at risk, so I definitely recommend that you make a backup of that first. Restart your computer into DOS/Command prompt mode and then just put a COPY of the files User.dat and System.dat (found in your windows directory) in a folder of your choice and change their file suffix to some none existent filetype (like .old). You should do all this in true Dos/command mode (not via the command prompt option inside Win 95) as some recent changes aren't written into your registry until you end your current Win 95 session.

Anyway this is what I did:

1. Downloaded Timian Heber's Windows 95 registry update from http://www.colargol.idb.hist.no/~timh/connect.html#Win95 and updated my registry. (Any paranoids/cynics out there will be happy to learn that this update in no way affects Win 95 except when accessing VS 880 initialized drives.)

2. Got myself an external cabinet for my SCSI 2 hard drive (a not too thrilling 1 GB Seagate) and mounted the drive in it.

2. Connected the above to the VS. (Follow the Roland recommendations on setup/power up/down sequence folks!)

3. Initialized and partitioned the drive in the VS. If you use a drive that's not new you should also physically format it.

4. Copied the contents of my internal IDE drive to the SCSI drive (playable mode, though that probably doesn't matter if you don't want to access the songs/files individually).

5. Moved the SCSI drive to my PC. Remember the powerup/down/setup sequence! It applies to PC's as well as VS 880's.

6. Accessed the files freely in Win 95.

7. Here's the great one: Backed up the contents of the drive to my tape storage medium (a SCSI 2 WangDat 1300 data-DAT, but any medium will do).

8. An even greater one: Reversed the process and in the end successfully copied back the files to my VS 880. NO data loss! 2 GB audio backed up for c:a 10 US dollars/6 pounds sterling.

It's worth noting that this process allows you to do anything you'd normally do when it comes to file handling, no matter what record mode you've used for a particular song. So theres really no big need to write any nifty programs for these tasks ;-). Use the Explorer, Norton Commander or whatever. The song

folders are numbered, not named though, but if you read Timian's info on the VS file system you'll learn were to find the song names (admittedly, this could be a job for a nifty little program...).
Talking about nifty little programs; Timian Heber wrote one that allows you to convert MAS recorded files to standard WAV-files, which also works great! You will find it at
http://www.colargol.idb.hist.no/~timh/connect.html" [Jonas Osterlof - Jan '97]

-Backing Up To CD-R.

Q: "Is it possible to backup to CDR? Surely this would be the most reliable form of storage?"
A: "You can't write directly to a CDR from the VS. Even if you could, it still wouldn't work because of a 512K byte/sector limitation imposed by the VS. CDs are 2048K bytes per sector. CDs are not necessarily the most reliable type media. MO and Phase Change optical media is also very reliable. One major disadvantages to backing up to CDR is: unless you have the fastest CDR available, they're very slow. Also, 640 re-writable CDs sell for around $25. MO 640 media sells for as low as $30. So you're really not going to save much with CDR." [George Carden - March '97]

-Upgrading The Internal IDE Drive.

Q: "Why does Roland use a 2.5" IDE drive in the VS-880 instead of the cheaper 3.5" one?"
A: ROLAND says: "The reasons for a 2.5" drive are: 1. size was important, 2. 2.5" drives are proven in laptops as transportable, 3. the power terminal and connector are in one, 4. the heat loss dissipation as in the laptops is important, a 3.5" drive generates more, in an enclosed casing this could possibly have caused overheating and 5. the power consumption." [Roland employee - Apr '96]

INFO:
"The maximum internal drive for a vs880 is 4GB. As the vs880 can only(!) recognize 1GB partitions, you will have to split a 4GB drive into 4 or more partitions. I don't know if bridging partitions is really a problem - in Multitrack 1 mode at 44.1kHz (the recording mode that I use most), 4GB would give me approx. 1600 minutes recording time (about 3 hours for all 8 tracks). If you think a song will extend over a partition, then select another partition to use - if you have run out of partitions and want more recording capacity then attach drives on the scsi chain - this will give you another 28 1GB partitions (44,800 minutes recording time - 93 hours for all 8 tracks)." [Paul Shields - Nov '96]

WARNING:
"Watch out folks! Not all 2.5" IDE laptop drives are created equal! This I learned after attempting to upgrade to a Toshiba 810 drive. I have three, and they're all the same (at least with this particular model). Although the VS-880 recognizes and initializes the drive, playback is another story: every time you press stop, without even being in play mode, there is an approximate 1 second delay before the drive activity stops; and furthermore, when you are in play mode, the song position advances a few seconds after you stop the playback. No thanks! That's as far as I went with the 810. I'm now back to using the 540. I suspect this sort of behavior may have to do with some type of incompatibility with the way the VS interacts with this particular hard drive. Or it may have to do with inefficient data buffers on the Toshiba's part. Whatever instructions the VS sends to the HD after you press stop, it definitely brings out the ugliness in the Toshiba. Overall, the IBM 540 is a little faster, by about a millisecond; but the Toshiba 810 is no turtle; certainly not enough to cause this problem." [George Carden - March '97]

-Internal SCSI Connector.

"I took my 880 apart a couple of months ago, because I was thinking about installing my Syquest 270 in the drive bay. You're right, it does come with a 2.5" IDE drive, but there is a 50 pin ribbon cable internal SCSI connector in there also and the bay is wide enough (I'm 99% sure, but I decided not to install the Syquest so I don't know for sure) for a 3.5" drive." [Fred Hamilton - Nov '96]

-Start Up Procedure.

Q: "What is the correct start up procedure for a VS-880 connected to an external SCSI device? "
A: "Although the manual issues a warning not to connect a device to the SCSI input while the VS-880 is powered-up, it is worth repeating that there is the possibility of damaging your VS-880 or SCSI device if you were to connect a SCSI device to the VS-880 while both are powered up. More than one VS-880 owner has damaged his machine by 'hot swapping' the SCSI device while the VS-880 is switched on. The correct sequence to power-on is as follows:

* disk drive to which the SCSI terminator is attached
* (If using a removable drive, make sure that it is inserted and up to speed before next step)
* disk drives which are not terminated (if any)
* VS-880
* devices connected to input jacks and midi connectors
* devices connected to the output jacks

Make sure that all connections are made before any of the devices are powered up." [Paul Shields - Jan '97]

-VS-880 And PC Sharing The SCSI Bus.

WARNING:
"There is a lot of enthusiasm about the idea of direct SCSI hookup. However, at this stage, only "explorers" and "technicians" should attempt such a thing. There is much to be known about the VS' operating system that might be relevant to the stability of the resulting system.
So, while the prospect of direct hookup is exciting, only those who can afford to lose all their songs once in a while should be pursuing this without full cooperation from Roland on the details of the VS. If we give people the general notion that direct SCSI hookup is tried, true, and reliable, it will most likely lead to problems." [Neil Gould - April '97]

"The following info is provided as a guide only. I make NO GUARANTEE that it will work the same on YOUR MACHINE. I advise you proceed slowly and double check everything you do. Writing down each step is a good way to back-track and find were you've gone wrong!

To date I have encountered no major problems. There is however potential for total data loss if you stray outside the guidelines listed below, otherwise it is fairly straight-forward, and it works (for me :-).

My VS<==>PC SCSI hookup allows me / allows you to :-
* copy VS songs to/from the PC's SCSI HD
* exchange VS songs between the VS-880 / Zip / SCSI HD
* record to / playback from the PC's SCSI HD
* copy VS songs to PC SCSI HD then backup SCSI HD to tape (when I add a tape drive)
* copy VS songs to PC SCSI HD then backup SCSI HD to CD-R (1 go or multi-session - when I add a CD-R - Good for Mastering your own CD's of your material created with the VS).
* convert VS MAS files to WAV files using Timmian Herbers VS2WAV / Cool Edit / or any other sound manipulation tool you might have on your PC.
* Use it just like the VS's internal IDE drive. Edit / Copy / Cut / Paste, etc,etc...
* add your own uses........

My SCSI chain looks like this :-
VS-880<==>ZIP DRIVE<==>ADAPTEC 1505<==>FUJITSU 180MB HD

The Adaptec 1505 is a "dumb" SCSI controller - i.e. - it has no onboard BIOS, and doesn't support Floppy drives. My PC's hard drive is IDE.

You could however just hook it up as :-
VS-880<==>SCSI Controller in PC<==>SCSI Hard drive

Ensure that each end of the chain is terminated, and that each SCSI device has a unique ID No. The VS is defaulted to 7, but you can change this if need be.

My machine is a 586/100 with 24MB RAM / 1.6Gig HD running Win95.

Powering up seems to be OK in any order, but make sure all devices in the SCSI chain between the VS & PC are powered up first, (i.e. - my Zip drive) or the VS / PC won't recognize them. I can run my SCSI chain with the VS turned off, and the PC can still access the Zip drive. The VS will also still access the Zip if the PC is turned off. You do not have to power down the VS or PC at any stage to allow "shared" drive access.

I can COPY a song to the Zip. Switch VS to the Zip as the active drive. While the Zip is the VS's active drive, copy files from Zip to SCSI HD using Explorer / File Manager under Win95 and vice-versa.

The real issue, I believe, is this :- The VS & the PC both run separate FAT's - The VS doesn't know what Win95 has put on the "shared" SCSI HD. What ever you put on the SCSI HD with the PC "WILL" be over-written by the VS. The PC will not however overwrite any VS files on the SCSI HD. The PC / Win95 reads the VS files placed on the SCSI HD OK, but the directory & files displayed by Win95 are those as read at Win95 start-up. New changes / additions / deletions are not shown by Win95 until you re-start Win95.

DO NOT attempt to WRITE to the "shared" SCSI drive using the PC & the VS at the same time - YOU WILL GET DATA LOSS - Use the one machine access at a time - Both machines seem happy though READING the SCSI HD at the same time.

You can't partition your PC SCSI drive and keep one partition for the VS, one for the PC. (I don't think you can anyway). The VS will see the drive and want to "manage" it itself. It will create 500MB or 1000MB partitions. You can format the SCSI HD using the PC, but you must "INITIALIZE" it using the VS (physical format off), before the VS can access it.

The long and the short of it?

* DON'T store any of your PC files on the "shared" SCSI drive that you can't afford to loose ! (You should have them backed-up elsewhere anyway). I'm using the 180MB SCSI drive as a "temp" drive for the PC. When I do VS work, whatever's already on the drive is not needed anyway. When I do PC work, I first check to make sure I've copied any VS files I can't afford to loose to another location (PC's IDE drive / Zip drive / back to VS - OR - tape / CD-R, etc,etc....).

* Access the "shared" SCSI drive one machine at a time.

* BACKUP ANY CRITICAL DATA / FILES ! - You should be doing this anyway. Right ?

* Try using a smaller SCSI HD dedicated to PC / VS work. It can't be the only HD in your machine. The VS will scrub all the files otherwise.

Good luck & happy VSing.. Above all - PROCEED WITH CAUTION - This may not work for you as it

has worked for me." [Kevin Wright - April '97]

-The VS-880 Drive Format.

"1gig partitions are inefficient in DOS because of a requirement that the FAT (File Allocation Table) must reside in a single memory segment which is 64k in size. An entry in the FAT is 16bit (two bytes) long and describes a cluster on disk. A cluster is the smallest unit of allocation available on a drive. The size of the cluster is variable and based on what DOS has to do to ensure that the partition can be described by 32768 (64k size limit = 65536 / 2 bytes per entry) entries.
If I define a 1gig DOS partition, and given that each cluster is represented by a single entry in the FAT and that a FAT entry is two bytes long, and that the whole FAT must reside in a single 64k segment... That means that the cluster on a 1gig drive must be 32768 bytes in size. And yes, that's inefficient for all uses short of nothing but large database files.
So... What's my point? Basically, that the drive could still be formatted for use with DOS. There are tricks that you can play with DOS in order to run the cluster size DOWN and still maintain a large partition size. As well, considering all the other things that Roland has thought to put in the VS-880, I wouldn't put it past them to actually write a fake DOS partition table that would let you get to the drive from DOS (seeing it with 32k clusters) but ignored by the -880 OS which is treating the drive as some other format." [Mark Pulver - Nov '96]

"If the 880 is truly interpreting DOS file structures, then it would be a mess to try to move a chunk of data less than 32k in size." [Mark Pulver - Nov '96]
"Which would be about 1/2 second of mono audio @ 44.1kHz. Do much of that kind of thing, do you?" [Neil Gould - Nov '96]
"Eureka!!! Betcha this is why the manual says that you can't do an Erase Track cut to within 1/2 a second of what you want to keep!" [Brian Badger - Nov '96]
"Wow. Really?. This is implying that the 880 really is using a DOS file structure. Very weird." [Mark Pulver - Nov '96]

-The VS-880 Files & The PC.

"It is possible to view the file structure of a VS-880 drive on a PC. However, if the drive is viewed under Windows 95 it is modified by the operating system in such a way as to make it unreadable when accessed by the VS-880. A solution to this problem, as well as more information regarding the VS-880 file system, can be found at Timian Heber's VS-880 Resource Page." [Paul Shields - Jan '97]

"The VS-880 uses a proprietary file format for all modes except MAS, which is compatible with the RAW audio file format. That means that, short of some conversion program, MT1, 2, etc. will not be editable by other programs." [Neil Gould - Jan '97]

-The VS-880 Files & The Macintosh.

"Does anybody know if it is possible to get VS-880 soundfiles into the Macintosh in order to do some additional editing there? I have a Jaz drive and could connect the Jaz to the VS, copy the song data to it, then reconnect the Jaz to the Computer and load the files. However, the computer rejects the cartridge: it ejects it immediately after I have inserted it. I read somewhere that it should be possible to transfer files to a PC in this fashion but obviously it doesn't work so easily on a Mac, even with PC Exchange." [Timo Aspelmeier - Jan '97]

"I need the following information in order to perfect the file exchange between the vs880 and (believe it or not) the Macintosh ... in order to properly configure the Control Panel called PC/Mac exchange (see my next message). So, Is vs880 drive format IDENTICAL to the MS-DOS or any other standard PC format?"

[Davor Pavuna - March '97]
"On a removable disk, yes... but I'm not so sure about the internal IDE. I could have sworn the first time I looked at the IDE the file format was DOS; but, the last time I checked, the file structure I saw was definitely not DOS." [George Carden - March '97]

"Couldn't the VS-880 format be 100% DOS compatible but at the same not completely IDENTICAL? Does the VS recognize a harddisk/cartridge that is formatted/initialized on a DOS/Windows machine, for example? The reason I ask this is because I'm trying to mount a VS-formatted Jaz-cartridge on my Mac. The documentation says this should work with a DOS-cartridge if I have PC Exchange (2.00 or better) and Iomega Driver 4.3 installed. Indeed, via the Logic list, I have had response from people who do this regularly. However, the VS-880 Jaz-cartridge is ejected almost immediately after it 'spins up'. I can't verify if this would work with a 'true' DOS-formatted cartridge as I don't have one." [Daniel Baars - March '97]

-Useful Links On Storage & Backup Media.

* CNET reviews -
`http://www.cnet.com/Content/Reviews/Compare/Remstorage/ss02.html`
(CNET reviews - comparative reviews - removable, rewritable storage for the masses)
* Maxell - `http://www.maxell.com`
* Sony - `http://www.sony.com`
* TDK - `http://www.tdk.com`
(The TDK site has some great articles on recording, mikes, etc, etc. While tape based though, the techniques still apply. These are monthly articles, updated every month.)
* Here are two places on the net to get some useful information about IDE, EIDE, AT-2 etc drives:
1/ `http://thef-nym.sci.kun.nl/~pieterh/storage.html` (this one has the "Enhanced IDE FAQ" -- with all the info you could ever want about: PIO mode 3 and mode 4 and the levels of performance they offer and the various interfaces (ATA-2, ATA-3, Fast ATA, Ultra ATA)
2/ `http://huizen.dds.nl/~checkhd/` (this one is a drive benchmarking utility called Check Harddisk (Check Harddisk v0.99 =A91996 Marnix Timmermans) This link also offers a pretty extensive list of recent EIDE and SCSI drives and the results they obtain on Checkhd -- such as data throughput in MB/sec.)

• Software Support For The VS-880.

-Logic [Emagic]:

* VS-880 ENVIRONMENT.
"These 2 Logic templates will not give you access to remote editing of recorded material on the VS-880. These templates will send and record MIDI- controller data for controlling the VS-880's mixer parameters and maybe remotely access record-enable and transport functions via MMC. Roland has (not yet) provided support for software manufacturers to manipulate the audio data via SCSI (and much less via MIDI!). Note that you might find these templates very useful anyway."

-Logic Audio [Emagic]:

"We did not announce or promise VS-880 support. We would like to and we checked that. It seems that the VS880 in the current version does not provide access to all data needed for a perfect integration. We are in contact with Roland to find out what Roland or we can do." [Gerhard Lengeling/Emagic - September '96]

"Emagic has received the promised informations from Roland needed to support the VS-880 in Logic. However this info has arrived *long* after the date promised by Roland. Currently almost all our resources are allocated to shipping AW8 and software needed in March. Once that is done we will investigate whether and how to support the VS-880 in Logic." [Gerhard Lengeling/Emagic - March '97]

-Cubase [Steinberg]:

* VS-880 MIXERMAP.

-Cubase Audio [Steinberg]:

"We are not planning any Cubase Audio support for this device. The only way is a MMC synchronization." [Joerg Hoinkis/Steinberg Service - March '97]

-Cakewalk Pro Audio [Cakewalk Music Software]:

* VS-880 STUDIOWARE PANEL.
"In 6.0 we will be providing a photorealistic StudioWare panel that will allow to control the VS-880 via MIDI SysX. You will see an image that looks like the VS-880, and you'll be able to click buttons, turn knobs, etc." [Ron Kuper/Cakewalk Music Software - March '97]

"Cakewalk Music Software, the leading provider of music creation software for PCs, continues its push for total studio integration with software support for the Roland VS-880 Digital Studio Workstation in Cakewalk Pro Audio 6.0. The Roland VS-880 is a dedicated non-linear, multi-track digital studio workstation that will interface directly with Cakewalk Pro Audio for Windows. Shipping in Spring 1997, Cakewalk Pro Audio 6.0 will control and record Roland VS-880 editing functions from the desktop, including Play, Rewind, Fast Forward, Stop, Record, Shuttle/Jog, Pause, Arm/Disarm Tracks, Auto Punch, Set Locate Points, Pan, EQ, and other operations. Cakewalk StudioWare(TM): Raising the Windows 95 audio workstation to a new level, Cakewalk Pro Audio 6.0 lets users create their own control interfaces for their favorite studio gear, such as hard disk recorders, mixing consoles, effects processors, or any other device that can respond to MIDI and System Exclusive (SYSX) data. Cakewalk StudioWare provides on-screen emulation of the hardware's front panel, greatly simplifying work flow. "The best results always come from the best combinations. I'm sure customers will appreciate the synergistic effect of Cakewalk Pro Audio 6.0 and the Roland VS-880," commented Ikutaro Kakehashi, chairman and CEO of Roland Corp. "StudioWare makes executing complex operations as easy as clicking a mouse. It's a milestone in full-studio integration, " said Tom Cook, president of Cakewalk Music Software. " "Given the popularity of the Roland VS-880, we knew that our customers would want Cakewalk Pro Audio to support it right out of the box. " [Cakewalk Press Release - Jan '97]

"If I'm reading this right I get the impression that it isn't going to be much good. If it is truly photorealistic and the controls work identically, where is the benefit? The beauty of computer control is that it gets rid of the face plate and allows access to layers buried beneath menus or multiple button pushes with a single click. I don't want to see a VS880 on my computer screen, I want to see 8 channel strips with all the bands of EQ present, with bus assignment switches (input/mix mode), and aux sends (internal and external). I would basically want it to look like a true professional console. Throw in the play/stop/rec and other transport functions all on one screen and I think you would have 80% or more of what you use on the screen all the time. Then have a button for each effect that would open another window/screen and show all parameters of that effect on one screen. Computer control shouldn't mimic the physical VS880, it should make control easier to see, use, and monitor. I love Cakewalk and I use 5.0 right now, I was going to buy 6.0 for it's control of the VS880, but I'm going to take a look at it first, if it isn't really a better means of controlling the VS, I'll look elsewhere." [Chuck Hirstius - March '97]

"The Roland SCSI interface is still under development, and we are definitely involved in it. I can say with a fair degree of confidence that when the SCSI interface hits the streets we'll be among the first to support it." [Ron Kuper/Cakewalk Music Software - April '97]

-Studio Vision [Opcode]:

"Apparently Roland has not finished the specs to the API (Application Programming Interface). I'm told that when this becomes available we will be able to take a look at it." [J. Gilham/Opcode - March '97]

-Digital Performer [Mark Of The Unicorn]:

[Ed. - April '97] No news from Mark Of The Unicorn of support for the VS-880 in Digital Performer yet.

-Useful Links On MIDI/Audio Software.

* Emagic - `http://www.emagic.de`
* Steinberg -
* Cakewalk Music Software -
* Opcode - `http://www.opcode.com`
* Mark Of The Unicorn -
* For SoundEdit 16 and Deck users:
`http://www.macromedia.com/support/deck/ts/documents/`
`http://www.sitenoise.com/deckusers`

• The Pros & Cons Of The Roland VS-880

-Reviews Of The VS-880.

* AUSTRALIAN DIGITAL (February '96) -
`http://www.bib.nl/webenough/vs880faq/ausdigvs.txt`

* FUTURE MUSIC (April '96) -
`http://www.bib.nl/webenough/vs880faq/fmvs880.txt`

-Data Compression Vs. Sound Quality.

ROLAND says:
"I read recently that Sony think that MD now sounds like DAT, hmmm! Fostex and their advertising claim true 8 track uncompressed sound, don't mention analogue mixer, 2 track at a time record , no SCSI etc. We have had a DTM8vl, believe me it does not sound as good, and after a few bounces it sounds like a cassette based 8 track.
The bottom line is that the VS-880 is a great sounding machine in any mode. It uses some of the best AD/DA convertors in the business, (compare them to AKAI !), it's completely digital. So forget the compression !!!" [Roland UK employee - March '97]

OPINIONS:
"Well, there's theory, and there's reality. A lot depends on what you consider important. In theory, the compression at MT1 (the least amount of compression which also allows the VS-880 to record 8 tracks)

will result in less than CD quality audio. In reality, the studios that can achieve the dynamic range and audio quality of MT1 wouldn't want a VS-880, anyway. In short, the recording quality of a VS-880 won't be the weak link in most people's studio. Take into consideration what you'll be using as signal sources. Look at the dynamic range of your synths, the sensitivity of your mics, the quality of your A/D converters, how quiet your studio is, etc., and decide whether your facility warrants a better recorder. If not, the VS-880 is hard to beat! Regarding "CD releasable music", the VS-880 is _definitely_ capable of that. Will it be the best possible? No. But, it will not be the limiting factor in most studios.
Let me get a little more specific. The compression levels of the VS-880 result in theoretically limited dynamic range. I say theoretically, because it is unlikely that the VS-880 will be the actual limitation in achieving full 16-bit dynamic range in most studios. Of course, your engineering skills will have to be up to snuff to get the most out of _any_ system. If you have Schoeps mics (or something comparable in terms of sensitivity and linearity), Apogee D/A converters, a Yamaha ProMix 02 or better, etc., _and_ your room is quiet to -92db, then you may warrant a better recorder. The next step up is significant, though: consider the Akai DR-8/16.
If your room, support hardware, or skills fall short of these, then I'd dare say that you won't be able to tax the VS-880, except for its mic preamps. Get a good set of pre's, and you'll have a good quality set-up that can hold its own against most systems.
If you have good mics, preamps, and a good outboard A/D converter, then the next thing to be 'exposed' is the quality of your room. I've been in a few studios that could actually achieve -80db of isolation from the environment. They weren't in people's houses, or even in the city." [Neil Gould - Oct '96]

"All I know is that I use MT1 all of the time, and I can't tell the difference between it and uncompressed 16bit." [Brian Badger - Oct '96]

"ANY track bouncing on ANY DAW will cause sound quality to degrade. Its just a matter of mathematics. Integers do not average well. The MT1 compression will exacerbate this to a small degree, although I personally haven't experienced any degradation that I could attribute to the compression. The manual warns about track bouncing in its "normal" mode, _MT2_, which I never use. Remember, MT1's 2:1 compression ratio is VERY conservative, you shouldn't be noticing its effects at all. Especially in comparison to MD's 5:1 ratio." [Brian Badger - Dec '96]

"I've not heard the Minidisk units personally, but reviews (? Recording Magazine) say that the lossy compression on the units is definitely audible, but quite tolerable and can be "fixed in the mix". VS-880 MT1 compression is essentially inaudible." [Robert Rosen - Nov '96]

"I have done a fair amount of track bouncing on my VS-880 and have not noticed any problems with sound quality. In fact, in my opinion, bouncing a track the first time has a positive effect on it because if you bounce from the mix you can make the signal hotter, plus you can add any effects you might want to. " [Michael Alberts - Dec '96]

"The VS-880 really is an 8-track recorder. Yes, you can only get all those 8 tracks in one of the 'compression'-modes but the compression in the first mode (MT1) is so 'mild' I have never ever heard anyone complain about the soundquality. Indeed, most people (and this includes reviewers from magazines like Sound On Sound) admit they cannot hear a difference between Master and MT1. Don't just look at the specs but listen to the machine. Everything in the VS stays within the digital domain, unlike the Fostex machines. The Fostex might have no compression but this 'advantage' is lost in all the transfers between the digital (the recorder) and analog (the mixer) components. Believe the hype: the compression on the VS is NO problem - in terms of disk space you can even call it a 'feature'. " [Daniel Baars - March '97]

"I used to have a Tascam DA-88 with a Mackie 1604 board....Lexicon reverbs and an Ensoniq DP/4 all kinds of patch bays etc etc...well I took a deep breath and sold the DA-88 and got enough for it to buy the VS and never looked back (and I had no idea that there would ever be upgrades) I'm probably one of the

first to get one as I've had mine almost a year now and from day one I've been impressed .... I no longer look in the mags and drool over effects units, mixing boards, I still drool over mics tho ... point is I sold off just about all my outboard gear ....I kept my Rolls Tube mic pre and my dbx compressor and that's it ... I kept the stuff for awhile and just wasn't using it I just condensed my studio right down and I'm getting better results than ever ....even on MT2 I was getting better results than on the uncompressed DA-88 ...not because of the recorder itself but probably from the noise that comes in from all the extra patching of cables to the board and the effects etc...." [Kevin Neill - March '97]

"I have heard similar statements about the VS880 in comparison to the ADATs and the AKAI hdr (which uses no compression): apparently the digital mixer and fairly high quality A/Ds of the VS880 have more effect on overall sound than the compression algorithm." [Brian Badger - March '97]

"Folks, I also own an AKAI Dr4d, and I think you're getting carried away here. They sound FANTASTIC. And MT2 is definitely, definitely noticeable to me. It's not horrible, but it is NOTICEABLE. I never use it." [Doug Robinson - March '97]

"Agree with you. I did my first recording with MT2 because it was the default setup mode when creating a new song and I realized pretty soon that the sound wasn't as transparent as it should have been. But he music still ended on CD. Now I only record on MT1.
Actually, KEYBOARD, when they review the VS-880 (08/96 issue) found out much higher distortion figures for MT2 mode

MT1 mode at 1Khz 0,0395% unweighted - 0,0371% A-weighted
MT1 mode at 10Khz 0,1043% unweighted - 0,0182% A-weighted
MT2 mode at 1Khz 0,1026% unweighted - 0,0829% A-weighted
MT2 mode at 10Khz 2,5586% unweighted - 2,2049% A-weighted" [Philippe Bogdan - March '97]

-Pros:

REVIEW - Australian Digital (Feb '96):
"Excellent sound quality. Far more flexible than any tape based equivalent. Good chance of long term reliability."

"Compact, portable, grey (not black! :-), digital, 8 tracks (64!!!), effects built in, quiet - no tape hiss!, intuitive to use, FAST, good connectivity with outboard gear, AFFORDABLE, editing features, ALL IN ONE NEAT LITTLE BOX !" [Kevin Wright - April '97]

"I bought the damn thing because I've always wanted (dreamed of) a self contained, compact, little or no compromise, cost effective recorder. The VS has all that--nothing else comes close." [George Carden - April '97]

"Here are some of the reasons why I bought the VS and not something else.The lack of maintenance needed for smooth operation i.e.no more demagnetizing,head cleaning,calibration etc.,the fact that it could have built in effects,speed of operation(instant rewind,fast forward),good sound quality,excellent editing features,auto punch etc.,midi compatibility,digital out for linking up with other digital gear,SCSI,various backup options (DAT,MO,Zip etc.) exceptional value for money and all this in one compact self contained unit." [Daibhidh Caimbeul - April '97]

* RELIABILITY.

"That's the thing I maybe like most about the VS. I've been using mine for almost a year now (bought it

the day it was released in Holland) and it has been so 'stable' I almost can't believe it (KNOCK ON WOOD). The only problems I had was with 'medium errors' due to the use of an external Jaz drive but this was not the VS' fault. Especially when compared to computers running digital audio sequensers (Logic Audio or, much worse, Cubase VST for example) the VS is a dream - crashes are pretty much a 'standard' part of a normal day's work. No such thing with the VS. And I haven't even been 'nice' or extra extra careful to mine, it didn't just stay put in my bedroom or something - I took it everywhere (wherever the musicians were, I would go). Use it with an internal drive and it's one of the most reliable systems around (in this price-range, don't know about the more expensive ones)." [Daniel Baars - March '97]

-Cons:

* SMALL LCD DISPLAY WITHOUT BACKLIGHTING.

"Definitely the VS-880's worst shortcoming. I get by with a small desk lamp that front illuminates the display to make it a bit less of a hassle. For editing, it is still a pain." [Neil Gould - Oct '96]

"The non-backlit display is BY FAR the complaint we see the most on this list. Many see it as the only real shortcoming of the VS. However, the 'workaround' (getting a lamp) works very well. In the meanwhile, we all live in hope that Roland will offer a backlit display upgrade kit in the future..." [Daniel Baars - March '97]

Q: "How do I get a better view of the LCD?"
A: "The smallness and lack of brightness of the LCD appears to be one the main causes of complaint amongst the VS-880 community - this may well reflect on the overall wonderfulness of the machine. One simple solution is to use an angle-poise type lamp, preferably with a 'natural light' halogen bulb, and shine it directly over the LCD. Be careful that any mains transformers in the lamp don't introduce noise to the recording process. Another 'solution' is to hope that the next hardware version includes a back-lit display." [Paul Shields - Jan '97]

* NO XLR CONNECTORS OR PHANTOM POWER.

* QUALITY OF THE MIC PREAMPS.

"The VS-880 mic preamps are, well, average to poor. However, coupled with a Mackie mixer, these problems are eliminated. IMHO, the VS-880's inputs suffer from two problems: they are unbalanced, and they have quite a bit of noise at full gain. As they approach line level, things are much better. Therefore, the solution is to get a good set of pre-amps." [Neil Gould - Oct '96]

"While I don't think the mic pres in the VS are the world's best, I do think the preponderance of external mic pres has as much to do with fashion and fads as sound quality except for professional applications. I don't have any mic cables with 1/4" plugs, so I've always used an external mixer's pres (Mackie). Then everyone started screaming about how tube pres were the greatest and I tried the little ART ($120). It sounds neat, so I use it now. There are some amazing mic preamps out there, and some day I'll be able to justify using them...but what I have now sounds great to me." [jazzooo@aol.com - Feb '97]

"The 880's mic pres aren't the world's worst, but they're pretty noisy and not real transparent. The ones in a Mackie or other inexpensive mixer are a definite step up. Keep in mind that your recording will only be as good as the signal from your pre, and if you give the 880 a hissy signal, it will be preserved in all its glory. This is especially an issue if you're using mics that don't put out a particularly hot signal -- less expensive dynamic mics are in this category. You have to crank the preamp gain, and this is whertewhere the 880 shows it as limitations. As far as "fashion and fads" -- *tube* preamps definitely

fall into this category. But external mic pres have been in studios forever, simply because it's a tough job to properly boost a mic signal. And keep in mind that the 880 is as good a recorder as any "professional" unit made before, say, 1986. Every project you do might not need a good pre, but anything that's going to be released to the public probably does." [Pete Dunn - Feb '97]

"Mike preamps are _important_. You need to bring your mic-level signals up to line-level without introducing noise. The VS-880 inputs have OK preamps, but for acoustic recording or vocals, you will want to do better." [Brian Badger - March '97]

* NO INDIVIDUAL TRACK OUTPUTS.

"Hmm. The beauty of the VS-880, IMHO, is that once you've recorded your track, everything else is done in the digital domain. There is a send buss out if you need to attach external analog devices..." [Neil Gould - Oct '96]

* NOT-SO-GOOD/PRETTY LAME MANUAL.

"Not as lame as it used to be, and the additional available info is pretty good." [Neil Gould - Oct '96]

* ONLY 4 TRACKS CAN BE RECORDED SIMULTANEOUSLY.

"In my opinion Roland is missing out on quite a few customers by making the VS-880 only capable of recording 4 tracks at the same time. Granted, competing products like the Fostex DMT-8 can't do more either (the VL-version only does two track at the same time!) but for people who have a 'live' approach to recording this IS vital. If the VS would be capable of recording 8 tracks at the same time (and of course had enough inputs to make this possible in the first place) it would be an IDEAL machine for bands wanting to record their demos (and this must be an interesting consumergroup to Roland). The VS is incredibly portable so taking it with you to a rehearsal space would be no problem whatsoever. I have recorded drums on the VS using 4 tracks at the same time (two overheads, bass & snare) - if only I had been able, for example, to record the bass & guitar at the same time too. " [Daniel Baars - March '97]

"Considering the price the VS880 and the fact that you can link several of them together you can chain them together and get more then 4 inputs. I have 3 of them and I have 12 simultaneous inputs. This is done for a lot less money then it would have cost to have a 12 input machine. Not to mention 6 sound effect generators and since im going digital to link sound, 20 output tracks. All for less then 6000$, and you don't have to get it all at one time. Its the best money I ever spent." [Walter Walterripps - March '97]

"No way was I implying that the VS-880 is not good value for money. In fact, I consider it to be the best buy of my life. However, I don't agree with the point of view 'if you need more inputs and more tracks to be recorded at the same time, buy another VS'. Not because I don't want to spend the money but because I don't like the idea of working with two recorders. They may sync to eachother perfectly but you still have to look at two screens, you still have two songs on two different harddisks etc. etc. - in other words: it's not ONE system anymore. I always hoped Roland would release an add-on module to the VS providing more inputs, more tracks, more fx etc. But with one OS controlling both the VS and the 'module'." [Daniel Baars - March '97]

• The VS-880 Wishlist

* A BACKLIT LCD DISPLAY REPLACEMENT.

* CHOICE/MAPPING OF WHAT CONTROLLER DATA TO USE FOR COMPU MIX.

"The way an external sequencer can automate the mix on the VS-880 is very logical (Controller 7 = Volume, Controller 10 = Pan etc.) but can also be extremely inconvenient for people with a modest midi-setup. If the VS is not connected to a separate midi-interface, this controller data will also be sent to the midi sound source that is used. This means that midi channels 1-15 can't be used! A simple choice of what controller to use would remedy this problem (controller 17 for volume, controller 20 for panning etc. for example)." [Daniel Baars - Jan '97]

* MORE 'DESTRUCTIVE' DSP FEATURES.

"In addition to Time Comp/Exp, I wish the VS could do some of the 'simple' (destructive) things software like Logic Audio can do:
1. CHANGE GAIN (the most essential one)
2. NORMALIZE
3. REVERSE." [Daniel Baars - Jan '97]

* EXCHANGING TRACKS BETWEEN DIFFERENT SONGS.

"Personally I think it's rather strange this wasn't possible in the first place. Especially if Roland wants to make the VS-880 a 'standard'. Right now, it's not possible for two people to work on one song at the same time - it wouldn't be possible to combine their two versions." [Daniel Baars - Jan '97]

* DISPLAY OF MORE THAN JUST QUARTERS.

"Sometimes it would be nice to not have to work in frames and sub-frames but just in eights, sixteenths, triplets etc.. If only we had a choice whether we wanted to counter to display the quarters of a bar, or eights of the bar, or sixtee...(okay, you get the point)." [Daniel Baars - Jan '97]

* LESS AWKWARD DISK INTERFACE.

"Is there a good reason the VS-880 can't 'see' all the disks at the same time (like a computer can)? Why do we have to 'select' a drive before we can copy from it (or see its contents)?" [Daniel Baars - Jan '97]

* VS-880-2 DOCKABLE EXTENSION.

"Maybe the next "upgrade" of the VS-880 should be a stripped down second VS-880:
+ 4 more analog inputs and
+ 8 more playback tracks through
+ Digital output only (to feed to the master VS880),
+ Internal hard-drive,
+ SCSI connection to the master VS with a
+ Trimmed down OS that only obeys commands from the Master VS880 with NO - transport, - jog wheel, or - MIDI

Then modify the VS-880 OS so that track copy/move/erase/cut can be performed from the master VS for track transfers between the two boxes and so that song creation on the master automatically performs the necessary operations on the slave, etc." [Brian Badger - March '97]

"This has my vote for 'VS-880 Idea Of The Year'. However, wouldn't it be better if only the 'master' VS had a harddisk and everything was recorded on that? Or do you think our poor little IDE drives have reached their limit already? I have no idea how fast they are but I know that reasonably fast SCSI drives

can do at least 16 tracks of uncompressed audio, providing the computer has enough RAM. So maybe this add-on module should have more RAM than the original??" [Daniel Baars - March '97]

"That's happening, but I was thinking of something a little less. How about a Docking Bay that allows 4 more inputs, and another effects card. This would solve most of my problems, as another wish list, I'd like maybe some effects send/returns." [Forrest Chang - March '97]

"However much I like this idea, I thought it might be more realistic if Roland would produce a more modest and thus low-cost addition to the VS-880 that offered: -More inputs (4/6/8, who knows) -More outputs (aux sends etc.) -Another FX board So basically a module that would not make the VS into VS-1660 or something but would 'just' add vital extra functionality to the VS like 8 tracks recordable at the same time, 4 (or more?) fx, and more external sources (MIDI modules/external fx) being able to be routed through the VS' mixer." [Daniel Baars - March '97]

* INCREMENTAL/DIFFERENTIAL BACKUPS.

"Wouldn't it be great if the VS could make incremental or differential backups, OR if it would have the ability to backup in a more efficient manner, whereby outdated files on your removable media would be replaced only by updated files, and newer one's would be backed up as well? I'm not familiar with a technical term for this, but you can think of it as "Sync Backup", or something like that.... Think of all the time you could save backing up. How many of you have the tendency to tweak a mix a million times every day after the tracks have already been finished? Or am I the only one? The only thing that changes at this point is probably just a few tiny files, so there's no reason to backup the entire song again." [George Carden - March '97]

* SWITCHING VIRTUAL TRACKS ON THE FLY.

"OK, here's something I'd like in version 3 - switching virtual tracks on the fly, using (if required) automated mixdown to switch v-tracks as you need them. I think this would mean you don't have to worry about where to copy something to do A/B comparisons, and also during mixdowns just to choose segments from tracks, without having to go thru painful copy/paste of different v-tracks into 1 track." [Sherif - March '97]

* AUDIBLE CUEING.

"You what I'd like for a future upgrade/version? Audible cueing, and not that kind that you get in the scrub mode. On my Akai Dr4d, if you're in play and you hold down fast forward, you can easily locate different points of your material. Very convenient, and professional too." [Doug - March '97]

* OPTION FOR TRANSMITTING OF MIDI-CONTROLLERS DURING AUTO-MIX.

"I know the Auto Mix feature is probably primarily aimed at people who don't like to use computer sequensers. However, as someone who does use a computer sequencer, I was surprised to see that there is no option to transmit the relevant controllers during playback of the Auto Mix. This would make it possible to use a mix made on the VS and 'fine-tune' it in the sequencer. Auto Mix is implemented very well on the VS, in my opinion, very user-friendly (I especially like the 'gradation' feature) - it would be a shame if it would not be possible to combine Compu Mix & Auto Mix in this way." [Daniel Baars - March '97]

* POSSIBILITY OF STARTING BEFORE BAR 1.

"If you use the VS in conjunction with a software sequencer it would be very nice if you could start the 'tempo map' of the VS at bar -4/-3 etc. so the sequencer has a couple of bars to 'catch up' and maybe even

send out some controller data (sequensers like Logic for example allow the song to start before bar 1). Right now, an obvious workaround is to start the song at bar 5 (both in the sequencer and the VS) but this is of course not a very elegant solution." [Daniel Baars - March '97]

* DEFAULT SONG SETTINGS.

"The only way to accomplish a kind of 'default settings' now is to have an empty song with all the right settings and then copy that every time you start a new one. It would be better if you could just tell the VS that these are the default settings from now on (in the same way 'preferences' work in most computer software)." [Daniel Baars - March '97]

* EDITING FROM VIRTUAL TRACKS WITHOUT SELECTING THEM FOR PLAYBACK FIRST.

"The VS only allows copying/moving/erasing tracks that are selected for playback. This is not always necessary and can be very time-consuming. I found it particularly annoying in compiling composite vocal-tracks from several v-tracks (copying parts from V-1, V-2, V-3, V-4 to V-8 for example)." [Daniel Baars - March '97]

• System Software

-Upgrading The VS-880 System Software.

Q: "How do I upgrade the OS? "
A: "The operating system of the VS-880 can be upgraded via the use of a sequencer capable of playing Standard Midi File (SMF). These files may be obtained from your Roland representative, and can also be downloaded from the Roland Web Site. The procedure for upgrading is explained in the readme that accompanies the midi files. Note that not all sequencers are able to successfully process these SMF's. In particular, it has been reported that the Cakewalk sequencer is unable to cope with the long sys-ex messages contained within these files. A list of compatible sequencers can be found at the VS-880 update help page." [Paul Shields - Jan '97]

Q: "Where can I find the latest version of the OS? "
"Roland posts the current version of the VS-880 Operating System at the following site Roland VS-880 OS Upgrade Many people have reported that contacting Roland directly will result in them mailing it to you." [Paul Shields - Jan '97]

Q: "Why doesn't my sequencer allow me to upgrade the OS? "
"There is at least one sequencer, Cakewalk, that has difficulty with the Standard Midi File (SMF) structure used by Roland to distribute Operating System upgrades. The cause of the problem is that Cakewalk is unable to transmit the large number of System Exclusive packets found in these SMF's. The OS upgrade has been known to work with Cubase (demos available all over the net), Microsoft Media Player (found in most Windows installations that have multimedia extensions), and via built-in sequencers found on most synth workstations, where.g. Roland XP-50, JV-1080, etc. A list of other sequencers known to work and upgrade tips can be found at VS-880 OS Update Help Page." [Paul Shields - Jan '97]

-Useful Links On The System Software Of The VS-880.

* VS-880 OS Upgrade Help Page by Fred Hamilton -
`http://www.yonkitime.com/vs880.html`
* VS-880 Diagnostics Page by Paul Shields -
`http://www.personal.u-net.com/~pj/vsdiag.htm`

• Related Equipment

-External Microphone Pre-amps.

OPINIONS:
"I use a Mackie 1202vlz in conjunction with the VS-880, and am quite satisfied with the combination. I've owned more sophisticated mixers, and pro recorders, such as Ampex decks, and won't say that the Mackie is better than some of these, but it is more than adequate, and quite compact." [Neil Gould - Nov '96]

"a) ART pocket mic pre (about $120). Monophonic. To my ears, slightly warmer than a Mackie pre, not as good as some of the more expensive models of pre. To its credit, it is tiny & very portable.
b) Mackie 1202-VLZ (around $300) or 1604-VLZ (around $1,000). These are incredibly clean for a board in this price range, and you get a great mixer as well. My 1202 has 4 mic pres on it; I don't remember how many the new 1202 VLZ has. The 1604VLZ has 16 of them.
I'm currently using my 1202 as a pre into my VS880. When everything is set at unity gain, I don't generally get a hot enough signal into the 880. I usually end up running the VS880 trims at three o'clock when micing my acoustic guitar, which is right below where it starts to get hissy.
c) As many of the lower-cost dedicated pres you can get your hand on. Bellari makes a stereo unit for around $500-600 (as I recall) that I think sounds great; Aphex, Digitech & many others have comparable products in this price range.
d) I'm saving my pennies for the new Focusrite green range. I don't recall the price of the stereo pre -- the monophonic voice box has a mic pre, de-esser, eq, etc. for around $1300 list. " [Loyd Blankenship - Nov '96]

"I use a Symetrix SX202 preamp (see blurb at bottom of this mail) with a bunch of different condenser mics and I'm very pleased with the results. I never run the VS880's mic pre's above "nine o'clock" position." [John Nayar - Nov '96]

"I have both an MP-1 and a Mackie 1202. The MP-1 is absolutely worth the $125. Coloration ranges from mild to heavy, depending on how you set the gain structure. More to the point, even the mildest coloration is better-sounding than either the 1202 or going straight into the 880's 1/4-inch jacks. I've tested both with an electric ('83 American Strat) and acoustic (Taylor 420-K w/ Seymour Duncan Woody pickup), and give the nod to the MP-1 in both cases. It also sounds wonderful on vocals. I *want* a Focusrite Green Voicebox -- but this will do until I have a spare grand. :-)" [Loyd Blankenship - Nov '96]

"I have a Mackie 1202 and 3 days ago got an MP-1and am liking what I've been hearing using it as a direct box for my strat. The Mackie is a great, super-clean board for many things but as far as recording electric guitars and bass direct the MP-1 offers a little fatter, warmer sound than a standard direct box and for around 100 bucks is a super bargain that few would regret." [Jeff Strickland - Jan '97]

"I use the ART Tube MP for quite a few things. It works well as a direct box and is even designed for this purpose in addition to its mic pre function. It definitely has a color to it compared with a conventional DI box, though. Nice and warm in both vocal mic and DI applications (I've used it with bass, Les Paul and Strat). A great addition to the COSM guitar stuff--adds an extra touch of tube authenticity that is lacking with a standard DI.
For lead vocals I think it will give you the "warmth" you're looking for, especially with a large diaphragm condenser mic. But even an SM58 (which I've tried for backup vocals) sounds pretty tasty too, so maybe it can do a little magic on any decent mic.

As I said though, it does have it's own color and I'm not wild about it for miking acoustic guitar. The dip in upper mids takes away some of that nice, transparent quality that new steel strings have on a guitar. Mackie mic pres seem to capture this quality really well, at least to my ears. The combination of the different textures is a good thing though, and since you probably already have a mixer, the Tube MP is a great deal--especially at around 100 bucks!" [Jeff Strickland - Feb '97]

"I run the rack version of the DIY tube preamp from PAiA, the TubeHead, and love it. It's generally in the loop after some of my other digital effects, and *definitely* in the loop with a couple of my digital synths. Cranked to the max, it makes my Voce DMI-64 II sound just *wonderful*. If you have kit building experience, then the assembly will be no sweat. If you aren't comfortable with holding a soldering iron, then you can probably find a local tech to assemble it for you..." [Mark Pulver - Jan '97]

"I tried the Digitech VTP-1, didn't like it. The A/D convertors didn't seem as good as the ones in the VS880. Also got a strange hissing noise when I had it hooked to my AKG 1000 - worked fine with my Rode NT2. I had better success using the analog outs on the VTP-1, but I had yet better success with the preamps in my Yamaha MC1202 live console." [RAL - Jan '97]

"Aphex 107 Pre-Amp. I just brought this little baby home from the music store for a tryout and I am blown away. Up until now, I have been using my Behringer Eurorack MX 2624 for a mic pre-amp. I have been pretty happy with the acoustic guitar but my vocals seemed very thin. Well, I just did an A/B comparison and I was amazed on how rich and fat my vocal sounded. I haven't tried the guitar yet, but I have a session in about 30 minutes so I get some more experience then." [Steve - Feb '97]

• Miscellaneous

-Manual Errata.

"On page 35 of the Xpanded manual under "Recording While An Effect Is Inserted" number 8 states "The Display Will Indicate "CH1 REC Sel="". This is incorrect per Roland U.S. it should read "EQ/EffPreIns (Equalizer/effect pre-insert switch)"" [Byron Santo - March '97]

"Page 62. Under the header 'Mastering (MAS)':
It says -> It should say
4-track -> 6-track
(tracks 1-4) -> (tracks 1-6)
Tracks 5-8 -> Tracks 7 & 8" [Rene Baas - Apr '97]

-Supplemental Notes On The VS-880.

Q: "Where can I find the Roland supplemental notes? "
A: "Although the user manuals that come with the VS-880 make an attempt to describe a complex piece of equipment in a concise and clear manner, Roland have since released Supplemental Notes covering the main areas of multitrack recording. These notes provide a hand-holding tour through the basic recording procedures, and are a must for anyone new to multitrack recording or unfamiliar with Roland's usual terse document style. Other notes explain how to link more VS-880's together, and a compatible media guide." [Paul Shields - Jan '97]

* VS-880 Supplemental Notes - `http://www.rolandus.com/`

-Known Bugs/Problems.

[Ed. - Apr '97] No reports about bugs yet.

-The VS-880 Data Compression (RDAC): How Does It Work?

ROLAND says:
"The problem with divulging info is that I am sworn to secrecy by Roland until the patent is filed. But it is one of the simplest and cleverest systems, and when the info can be 'told' you will be amazed.
It is interesting that the data is retained at it's sample rate, no matter what, and that it is compression NOT data removal as on MD and DCC.
There has been some questions on the net about does the VS-880 decompress the information on the drive and re compress during track bounce and editing. The answer is that the unit does not, it cuts, pastes and bounces in a compressed state, this prevents too many do's undo's. Also interesting is that the ADC DAC is 18 bit as stated, but there seems a discussion about "losing' bits, and storing in 16 bit. The VS-880 has 18 bit processing and the data compression is stored as 18 bit. This gives higher comparative sound quality than any sixteen bit system, so from the time you record to the time it leaves to your speakers it exceeds 16 bit.
So if you think that there is a compression system that we have developed that retains the bit rate at 18 bit, removes no data, and allows editing real time, I think you must agree we have done a pretty good job. There has been questions about track bouncing regarding sound quality. We have tested the unit and an interesting thing appeared. We thought we could hear an accumulation of noise as we bounced more. We did ! But the noise after 20 bounces was actually the noise of the source material being exaggerated on every bounce. So if you have noise on a mic, if you bounce the same thing 20 times the noise increases every bounce." [Roland UK employee - March '97]

"1) ADPCM and AU audio compression formats attempt to compress the "deltas" over time. ADPCM is a lossy algorithm which sports 4:1 compression: it keeps an adaptive table of "probable deltas" which describe the expected change of the signal from one sample to the next. AU, on the other hand, is a lossless compression algorithm that encodes the deltas of the signal in a Huffman code (that is, using a Huffman tree: look it up in a algorithm book; trust me, its pretty cool)
2) Higher levels of compression are achieved through extremely complex psychoacoustic analysis of the signal. That is to say, the algorithms try to figure out what humans can or cannot hear in an audio signal. Then they remove as much signal as is necessary to "make their quota" in terms of compression.

The real issue with the VS880 is the difference between lossy and lossless. The AU format described above does not produce reliable compression of any "ratio", and the "typical" compression it exhibits is about 20%. I.E. 5:4.
There is no doubt that the compression algorithm in use by Roland is a lossy one. The question is, WHAT KIND? I have implemented my own 2:1 compression algorithm (for the good of my soul), and I can tell you that even a dolt like me can get good performance when the goal is only 2:1 compression. 2:1 compression is NOTHING. It's trivial. My algorithm exhibits an decrease of signal to noise of less than a 4db (typical, RMS) and it "retains the sample rate". In addition, the decoded signal is "conditioned" so that another compression/decompression cycle does not decrease the signal quality further.

So, now that I have said that, here is my problem:
1) No lossless algorithm can claim a consistent "ratio" of performance.
2) Even when they come close to being consistent, that ratio is ALWAYS CLOSE TO 1:1.
3) The VS-880 claims consistent "compression ratios" of 2:1, 2.7:1, and 3.2:1
THEREFOR: The VS-880 implements a lossy compression algorithm.

4) The claim made by a Roland employee (not Roland) stated that the algorithm was "simple" and

"ingenious" and that it "retains the sample-rate" and that "there is NO data removal."
5) "There is NO data removal" is equivalent to "the algorithm is LOSSLESS".
THEREFOR: The VS-880 implements a lossless compression algorithm OR -- This particular Roland employee is wrong. (I do not call him/her a liar. DSP is very complex, it is easy to be wrong. In my DSP class back in school, getting half the answers right was passing.)
I only wish that a Roland employee, as well equipped to understand DSP issues as I am, would be here to contribute. I have much to ask him/her." [Brian Badger - March '97]

-Data Compression.

"Redundancy encoding: RLE, ZIP, etc.. looks for repeating patterns in data, or for "reduced alphabets" so that all of the "unused" space in a file can be removed. You are right: these algorithms reverse to the EXACT data that was input into them.
Lossy Compression: JPEG, MPEG, MT1, etc.. looks not for repeating patterns, but for patterns that are complex and can be simplified. For instance, JPEG compresses pictures by "approximating" color spaces in a picture to a form that takes less data to describe. These algorithms CAN'T reverse to the exact data, as the exact data was approximated away.
The VS880's compression algorithms uses a lossy compression algorithm to approximately describe the waveform stored on it, and in a format that uses less (for MT2 and LIV SIGNIFICANTLY less) data.
Now, finally, the WHY.
"Live Data" does not have redundancy in it. A digital image is filled with millions of picture elements, and every element's appearance is _somewhat_ stochastic in nature. A digital waveform is similarly filled with millions of samples, each with a certain level of randomness. This chaotic data does not form patterns which can be reduced with a redundancy encoding algorithm, so a lossy compression algorithm must be used." [Brian Badger - Oct '96]

"When dealing with digital signals (i.where. signals that are sampled at a given sampling frequency), the "Nyquist" theory states that this sampling frequency must be at least twice the highest frequency found in the signal to be digitalized. This is the necessary condition to be able to get back the original signal from its digital samples. For audio, as the highest frequency is 20kHz, the sampling frequency must be > 40kHz (where.g. 44.1 kHz for the CD).
In other words, a 40kHz sampling frequency ensures that all samples from the bit stream are independent from each other. *There is no redundancy* So on a theoretical point of view, lossless compression is not possible. (if you choose a sampling rate higher than 40kHz, there will be some redundancy... allowing to further compress the signal - below 40kHz, you will introduce a particular kind of distortion called "aliasing" in case you do not reduce signal bandwidth below 20kHz)
In fact, in order to reduce the price of the D/A converter and improve their quality, we always work with a frequency higher than the Nyquist frequency. Therefore, 44.1 kHz was chosen instead of 40kHz (there are some other reasons as well).
In conclusion : if you record an audio signal [20-20000Hz] with a 44.1kHz, you will not find any redundancy in the bitstream. The only way to compress the signal is to limit the dynamic range : e.g use 8 bits instead of 16 bits (but then you reduce the Sound-to-Noise ratio).
To be complete : as an audio signal doesn't cover the whole [20-20000Hz] range
all the time, sometimes you can find some redundancy in the signal. You then can compress the signal without any loss : e.g. a simple delta coding like described below :
instead of

10234 10134 10140 9000 ...

you transmit the first sample, then only differences :

10234 -100 +6 -1140 ...

As you see, numbers in the second sequence are smaller and can be encoded with fewer bits.
But this only works if there is redundancy : if not, the differences are as big as the original data and must be coded using the same number of bits.
The drawback of such system : you do not have random access to the data because you always must start with an absolute code before being able to work with differences. That may be a reason Roland did not use such method." [Stephane Pigeon - Oct '96]

-Creating A Sample Loop.

Q: "How do I create a sample loop? "
A: "In some respects the VS-880 can act just like a sequencer. It is possible to record a single bar of music and then have that bar repeat n number of times. As well as being a great time-saver, it is also a space-saver - the VS-880 uses the same amount of space to store one bar or 10 copies of the bar.
This example records one bar lasting two seconds and then copies that bar 100 times.
Set the tempo to the appropriate value. If the sample is 2 seconds long and is meant to be one bar, then the tempo, in 4/4 time will be 120 bpm (i.e. 1 minute = 30 bars : 30 x 4 = 120 beats).
Record the sample. In this example the sample is recorded on bar 2.
Do a Track Copy. Set the 'TRK St' time to the beginning of bar 2. You can do this by pressing the 'NO' cursor button until the Measure number flashes on and off and then turning the Time/Value dial so that the measure number is set to 2. You'll notice that the beat number will be set to 1 indicating the start of the bar.
Press 'PARAMETER' and set the 'TRK Frm' time to the same value as the start time.
Press 'PARAMETER' and set the 'TRK End' time to the end of bar 2 (i.e. 1 subframe less than the beginning of bar 3). You can do this by setting the measure number to 3 (while it's flashing), pressing the 'YES' cursor button until the time shows minutes/seconds/frames/subframes, (the first character in the time display will be the left arrow), hold down the 'SHIFT' button and turn the TIME/VALUE dial left one notch. This will decrement the subframe value. So now you've selected all of bar 2.
Press 'PARAMETER' and set the 'TRK To' time to the beginning of bar 3 using the same technique as for setting the 'TRK St' time.
Press 'PARAMETER' and set the 'TRK Copy Time' to 99, (the maximum).
Press 'PARAMETER' and confirm the track copy.
You will now have 100 bars of the sample. The physical storage requirement will only be for the original sample as the copies are only 'pointers' to the original sample.
This will work for replicating multiple bars as well and you don't have to worry about calculating any times. Adjusting the time using the measure number, (and you can also use the beat number), certainly makes looping a sample fairly easy. " [Glen Williams - Jan '97]

-The VS-880 Case.

"I have one, and it is great. The unit is suspended in the cushioned case locking SKB-like case. There is space underneath for cables, headphones, manuals, etc. I paid about $100 from Gelb Music in Redwood City, CA. Well worth it." [John Taylor - Oct '96]

-Big Brother: The Roland DM-800.

"Didn't Roland begin with a better product - the DM-800? I've seen it going for $5000, so I would hope it's a "better product" then the VS880 - though I can't imagine it's so much better as to justify the extra cost. It does have the advantage of being able to record on all 8 tracks at the same time. I also believe it has direct outs on all 8 channels. Also has 100 virtual tracks per channel - 800 tracks total - better have a good sized hard drive!" [Robert Lunceford - Feb '97]

"Yeah, the DM800 is more of a "pro" product, with a more substantial case and a number of handy

features (including the much-lusted-after ability to output to a computer display!). But it has a whole mess of limitations, too -- like the need to use a dual SCSI bus, with recordings divided between two drives." [Pete Dunn - Feb '97]

"The VS started out as one half of the DM-800, using data compression to achieve the other four recording tracks. The 800 has more pro features like synch to SMPTE, backup to data DAT (more reliable than audio DAT), interface to ADAT's, direct video control, built in automation (unlike the VS pre-2.0), 8 outputs, 300 virtual tracks, display video out, balanced ins/outs, etc. With 2.0 software for the VS, there is less difference in the two machines making the VS an even better deal than it was before." [Tom Kochan - Feb '97]

-The VS-880 A/D converters.

"Philips SAA7366:
-88 dB typical THD+N
SAA7366 Bitstream ADC Features:
Economy ADC based on SAA7360
Fully differential ADC using 3rd order Sigma-Delta modulation
Single-ended stereo inputs
Integrated buffers for simple interfacing to analog inputs
4 flexible serial interface modes
Uncommitted input buffer for filtering and pre-scaling
Four stage digital decimation filters
Up to _128_ times oversampling
Switchable high-pass filter to remove DC offsets
Overload detection of digital signal   -1 dB amplitude
Sampling rates between 18 and 53 kHz
Master or slave operation
Standby mode" [Brian Badger - March '97]

-Position/Orientation Of The VS-880.

"Also, the Roland manual cautions against positioning the VS in a "tilted severely" position (p. 8), saying this might damage the hard drive. I have always positioned various HDs in all manner of weird positions, and never had a problem. Is this advice really sound?" [Brad Daigle - Dec '96]

"They use a PC notebook IDE disk. No problem on any reasonable orientation. I do have the 880 set up on my computer desk on its "nose." I use two wire frame cook-book stands to set it up. The display is *much* more readable and the control surface is much more usable. I have it set up inside an open frame table top mini rack. The rack has a patchbay mounted on it at the top to patch in and out of the analog and digital 880 I/Os. Works for me and uses less table top space than the 880 laying down." [John Watkins - Dec '96]

"The reality is that the harddrives shipped with the VS880 are 2.5 inch _laptop_ drives. Laptop drives are VERY tough. I use my laptop (which has the same 800 meg hd that the UK VS880s got shipped with) in very adverse conditions. Tilted, upside-down, on my lap in a 4X4 driving through an unpaved road in the Sierra Nevadas... never leaked a single bit. (Although, most of the 1's, being heavier than the 0's, did sort of sift down into the bottom sectors... ;-)
The VS880 manual is being slightly more general: the VS880 does not HAVE to have a laptop drive mounted inside. Heck, you can put whatever you want in there. So the manual "errs" on the side of safety. I DON'T recommend that you tilt your VS880 either -- but only because I don't want you to blame me if the worst does happen. But, on the other hand, I do tilt _my_ VS880, and I don't worry

about it a bit. " [Brian Badger - Feb '97]

-Abbreviations.

DAW = Digital Audio Workstation
DDS=
MO = Magneto Optical
S/PDIF = Sony/Philips Digital InterFace
SCSI =

-Books On Related Topics.

* Hot Tips for the Home Recording Studio by Hank Linderman (Writer's Digest Books, ISBN0-89879-651-2)
* The Musician's Home Recording Handbook by Ted Greenwald (GPI Books, ISBN 0-87930-237-2)
* Hard Disk Recording for Musicians by David Miles Huber (Amsco Publications, ISBN 0-82561-433-3)
* Sound Advice: The Musician's Guide to the Recording Studio & Sound Advice: Compact Disc" (2 CD set that demonstrates the recording process and the mixdown) both by Wayne Wadhams available from Mix Bookshelf 800-23-9604 as a set for $59.90, or direct form Simon & Schuster 800-223-2348.
* Mix Bookshelf has a great selection of books - one can order their free catalog from:
`http://www.mixbookshelf.com/toc.htm`

-Magazines On Related Topics.

[Davor Pavuna - Apr '97:]
* Mix (it's mainly for professionals but there's definitely useful stuff for the home recordist as well)
* EQ (mostly recording/production - lot's of reviews and gear etc)
* Electronic Musician (mostly synth/MIDI with some recording/production)
* Keyboard (tends to be more synth/MIDI based but there's useful recording/production stuff from time to time)
* Recording (used to be Home and Studio recording)
* Guitar Shop (tends to be guitar gear oriented but some recording tips appear)
* Sound on Sound (British - one of my fav's - may be hard to get depending on where you are)
* Future Music (British - they claim to be the most popular in Europe? well, they are good but tastes differ)