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SLOT TECH MAGAZINE

Slot Machine Technology for the International Gaming Industry



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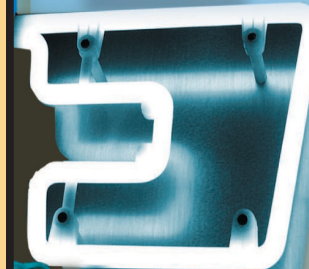
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Slot Tech Editorial

Dear Friends,

As 2007 draws to a close, I want to thank all of the folks that make Slot Tech Magazine possible. Mostly, I'm talking about the folks that contribute technical articles, the folks that read them (that's you) and the advertisers whose confidence in Slot Tech Magazine greases the wheels that allow me to print and distribute the magazine to just about every slot department in the United States and quite a few around the world. Slot Tech Magazine is now read by slot machine technicians, slot managers and engineers in Argentina, Aruba, Australia, Barbados, Bosnia & Herzegovina, Canada, Cyprus, Estonia, Germany, Gibraltar, Greece, Ireland, Italy, Korea, Malaysia, Malta, Mexico, Mozambique, New Zealand, UK, Japan, Russia, Saipan, Slovenia, South Africa, Spain, Sweden, Ukraine, Venezuela, World cruise ships and casinos across the USA. A recent poll puts our "pass-along" rate at



Sorry but I couldn't resist running this picture of me and NIGA Chairman Ernie Stevens. I used to think I was tall.

around 8.2 which means that as many as 7000 actually read the magazine. Cool.

In past articles, Vic Fortenbach has covered the BEII and all of the Acres components installed inside the slot machine. The next logical step is to look at how the Acres player tracking system is connected to each machine and the components that make it happen. That's exactly what happens this month with Vic's "Outside the Machine: Acres Revisited" beginning on page six.

Ever wonder what happens to your old slot machines after they've been removed from your gaming floor? Kevin Noble did so he looked into it and found out! Read about the Second Life of slot machines beginning on page 32.

Of course, Pat Porath is back with his popular "Quick & Simple Repairs" as well as some show reportage from G2E and some IGT press releases.

That's all for now. Happy holidays to you all. See you next year at the casino.

Randy Fromm

**Randy Fromm
December 2007**

Randy Fromm's Slot Tech Magazine

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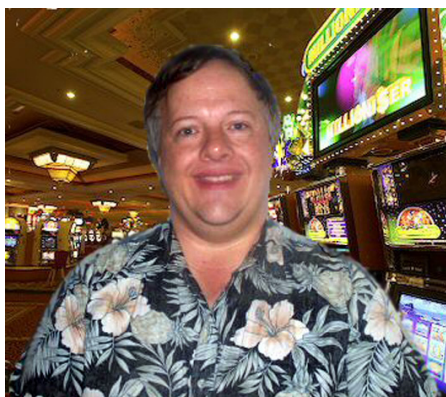
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Outside the Machine

Acres revisited

By Vic Fortenbach

In past articles, I have covered the BEII and all of the Acres components installed inside the slot machine. The next logical step is to look at how the Acres player tracking system is connected to each machine and the components that make it happen.

You already know from past articles that the BEII or Bonus Engine II is the main part of the Acres system inside the machine. But what connects all of the BEIIs inside the machines together? All of the BEIIs on a particular bank are connected together with a single four-pin cable. The OL or online cable as it is called, is run under the slot machines, in the base area. The four-pin OL cable is loosely based on the USB standard used on today's personal computer systems.

The OL cable that runs under the machines has a black sleeve to protect the four wires inside. The OL

cable has ten, red AMP snap lock connectors. These AMP connectors connect to each BEII inside each slot machine. Multiple OL cables can be connected together to form one long OL cable. Keep in mind that the maximum number of slot machines on a single OL cable is limited to 32. To be safe and not overload the data on the OL cable, use 28 machines per OL line as a practical maximum when setting up a bank. This will allow for one or two additional machines that could be added to a bank at a later date. If you have a really long bank of slot

machines, you will have to split the bank up so it's actually two or more banks of 28 machines for the Acres system.

The OL cable is a four-pin cable with two wires for power and two wires for data exchange to and from the bank controller. I will go into more depth on the bank controller later. The two power wires in the OL cable carry the 12 volts DC power required to power the opto-isolators on the BEII. Since the BEII is electrically isolated from the OL cable, line noise, power bumps and spikes on the OL line



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will not affect the BEII. Pin 1 on the four-pin OL cable is the black wire; it carries the 12 volts. Pin 2 is white and it's the ground for the 12 volts. Logically, one would think black is ground and white 12 volts but it's not with the first version of OL cables. IGT, which now owns the Acres system, has changed the color code to white for the 12vdc power and black being the ground wire for newer Acres installations. If you are not sure which configuration is installed in your system, check the OL cable with a multimeter before troubleshooting.

The longer the OL cable run, the lower the 12 volts will be, if measured at the BE II. This is due to the resistance of the wire plus a slight voltage drop in every connection the OL cable has to make. Don't be concerned if your 12 volts is actually nine or ten volts. If you remember in my BEII test fixture article, the loop back test requires the BEII opto-isolators to be powered up. I actually powered the OL cable input with 5 volts, with no problems in testing the opto-isolators on the BEII.

Enough about the 12 volts in the OL cable, what about the other two wires? The other two wires are used for data transmission in and out of the BEII. Pin 2 on the OL cable is colored red. This is the transmit wire. Pin 3 is the receive wire and it's colored green.

Near the opto-isolators on the BEII board are the receive and the transmit LEDs. These LEDs are the visual indicators for the receive and the transmit signals coming from the OL cable. I don't know if it was intentional or not but the red transmit LED matches the red wire in the OL cable, and the same for the green receive wire and green LED. The transmit and receive LEDs on the BEII board provide a quick visual check for the integrity of the OL cable and its wires. If one of the LEDs on the BEII board is not lit when the system is online, the corresponding wire color is some how broken or disconnected.

The bank controller is the magic black box (yes it's black) that connects each group of 32 machines to the rest of the Acres system.

The rest of the acres system I'm referring to is sometimes called the back of the house. Normally the slot technician does not have to work with the various parts of the Acres system after it leaves the slot floor. That is the job of the IT department.

Each bank controller has two different online channels. They are labeled OL1 and OL2 respectively. Each channel is limited to the maximum of 32 machines so each bank controller will "control" 64 machines. It's not uncommon to have ten or more bank controllers in a room. The IT department calls these equipment rooms "IDF closets." The abbreviation stands for Intermediate Distribution Facility. It may also be known as the "Secondary Wiring Closet."

While the bank controller is black and has no push buttons or other controls, it does have a series of ten red LEDs light indicators on the front. These LED indicators are the first thing to look at when some of the machines on the slot floor display NOT IN USE on the Acres VFD display. The ten





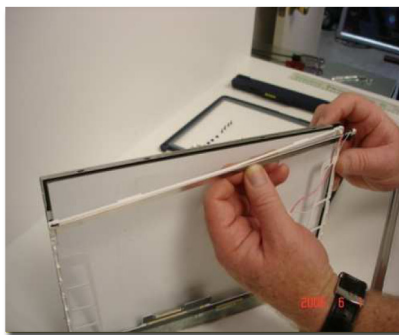
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LEDs are labeled A through J going from left to right. If your slot floor has a problem, check the proper LEDs in the order listed to make the troubleshooting task easier.

The first LED to check on the bank controller is the power LED. It's the last LED in the line labeled "J." This is the power to the bank controller. If it off, then check the UPS (all of your bank controllers ARE connected to a UPS, right?). If that LED is on, check LED letter "D." This LED will show you if the bank controller is linked to the rest of the Acres system. If it's not lit, make a call to the IT department. If those two LEDs are lit, move on to LED "E." The letter "E" LED will show you if the bank controller is "seeing" network activity from the rest of the Acres system. It will flash at approximately 2 Hz.

If every LED so far is lit then the last two LEDs are the most critical. They display the active channels: one LED for channel OL1 and one LED for channel OL2. Just like the network activity LED, the two channels' LEDs will also flash at the same rate as LED "E." If one or both channel LEDs are out, double check the rear of the bank controller for any loose connections. It's rare to have both channel LEDs out; each OL channel is completely separate from the other.

The above LED scenario is for a bank controller that has already gone through its boot or power up sequence. The boot up of the bank controller takes about 30 seconds. During the boot up process, the LEDs on the front of the bank controller take on a different meaning. If you have to power reset the bank controller, wait about 30 seconds before trying to diagnose any problem.

The back of the bank controller has several connection points worth mentioning. The most important is the Ethernet port. This is the connection that connects the bank controller to the rest of the Acres system. The Ethernet port uses a standard RJ45 connector and CAT5 cable. Another port worth mentioning is for the dongle. In case you are not familiar with the term dongle, it refers to an identification or security device that connects to provide the required functionality. Some of the old timer techs may remember dongles used on a personal computer's printer port as a security device for certain software. In the case of the bank controller, the dongle is a small black device that plugs into the back of the bank controller and serves as a network identification device. The dongle has to be attached to the bank controller in order for it to boot up properly. Each dongle used in the Acres system has to have a unique identi-

fier. The identifier is formatted with a single digit followed by a dot and two more digits. Two examples of dongle identifiers would be 1.34 or 2.21. The dongle has to be connected to the bank controller during its boot up sequence. Once the sequence is completed, the dongle can be removed. To be safe, just leave the dongle in place. It can be secured to the bank controller with two small screws.

The final connection on the back of the bank controller is the most important. It's the connection to the OL cables. This connector on the bank controller is a standard 15 pin D-sub connector. It looks like a VGA connector from the rear of a computer. Don't connect a monitor to this connector. It's reserved for the OL cables exclusively. The OL cable connection tends to be maxed out with both OL channels wiring connected to this one connector. Because of its weight (and over time) the pins will bend slightly and possibly not make good a contact. As a result, you might see "NOT IN USE" on the Acres VFD on some of your machines. To minimize this problem, make sure the OL cable connector is secured with its two screws to the bank controller. The actual OL channel run from the bank controller to the slot machines is completed with CAT5 cable from the IDF closet to the specified

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area. The CAT5 cable is then “looped” from bank to bank, connecting each slot machine to the proper OL channel.

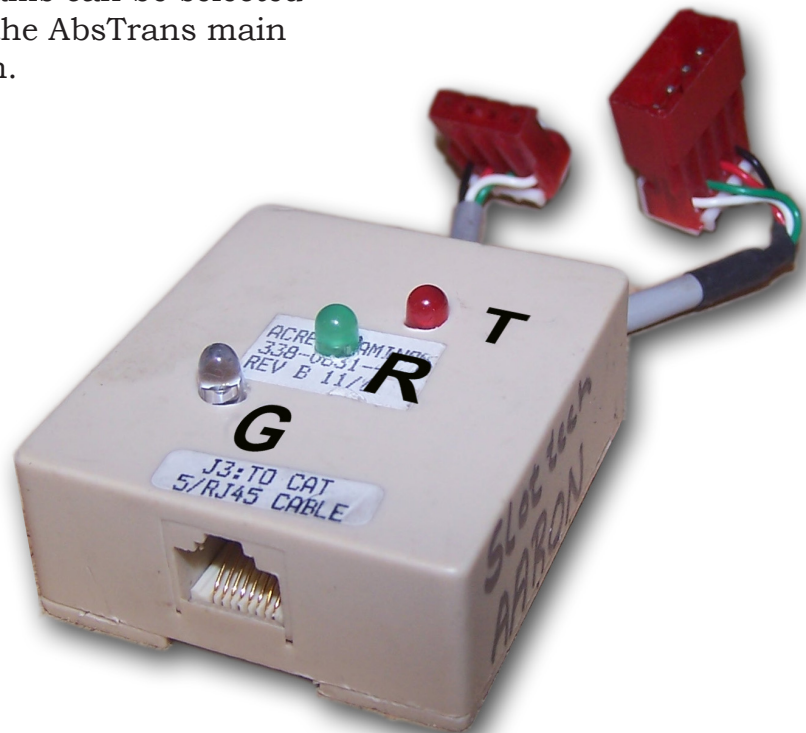
“Blinky Light” Diagnostic Tool

Acres has developed a handy diagnosis tool that you can build yourself. It can be used to check the integrity of the data lines from the bank controllers to the individual slot machine banks on the slot floor. What is the name of this fantastic tool? Never fear, the amazing “Blinky Lights” OL line tester is here (Acres coined the name “Blinky Lights” not me)! This little tester is simple to build and use. You can make it as elaborate or as basic as you please. The “Blinky Lights” tester has three indicators: one red, one green and one yellow LED. You can guess what the red and green LEDs do. They let you “see” the data activity on both of the data lines. The LEDs will blink fast and appear dim but if the LEDs are lit, your data lines are functioning. The third, yellow LED will light if your 12 volts is present on the cable. You have to have the 12 volts present on the OL cable for the Blinky Lights tester to function. The parts to build the Blinky Lights tester are all standard and most can be purchased at Radio Shack. The only parts used that you cannot get from Radio Shack are the AMP red

snap lock four-pin connectors. Since Acres uses these connectors on all of the OL cables, most casino slot repair shops already have them. The time required to assemble the tester is about one hour. See the parts list for more details.

Once your Acres installation is up and running, Acres provides an interactive online program available to the Slot Department to assist in keeping the slot floor 100% operational. The AbsTrans program that can be accessed from the slot shop’s computer and is very useful in viewing the slot floor and diagnosing potential problems before they get out of hand. The two parts of the AbsTrans program that are most useful to the slot tech are the Translator Node Summary and the BE2/DCN Summary. Both programs can be selected from the AbsTrans main screen.

The Translator Node Summary lets the slot tech see at a glance the slot machines (they’re called “nodes” on the screen) that are connected and functioning. The registered nodes display should equal the total number of slot machines on the slot floor. Remember these are the machines that are actually powered up. They may not be communicating or may be out of service (with the monitor displaying the out of service screen) but they have to be on for the program to see and count them as a registered machine. The linked column indicates the machines that are connected to the acres system, and the BEII is communicating but the link from the machine to the BEII is broken. This could include an out of service machine that will also show



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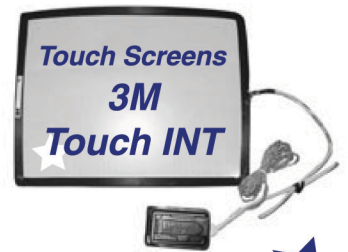
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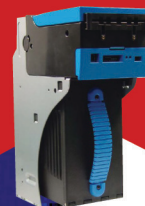
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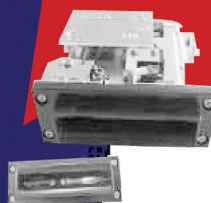
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up as EGM INIT on the Acres VFD display mounted in each machine. If your slot floor is 100% online, both the linked and registered numbers in the columns should match.

The other columns that are useful to the slot tech on the Translator Node Summary include the number of total Bank Controllers used in the system and the number of BEII boards inside a slot machine. Clicking on the BE2/DCS Summary will display the slot floor as green checkboxes. Each check box represents one slot machine, if all is well with that slot machine a

check mark is placed in the green box. If something is wrong with the machine, different symbols will be displayed in place of the check mark. Refer to the screen shot of the AbsTrans screen shot to see two of the symbols used to display machine status.

- Vic Fortenbach
vfortenbach@slot-techs.com

For schematic diagrams, software, podcasts and more (much more) visit the Slot Tech Magazine FTP server.

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Translator Summary Queues Modules Error Log SP Diags BE2/DCN Summary by Section by Hard Drop Z by Soft Drop Zo by Status Bank Controller All Bonus Servers All Other Nodes All	Refresh										
	BE2/DCN										
		01	02	03	04	05	06	07	08	09	10
	3A01	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	3A02	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	3A03	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	3A04	✓	✓	✓	✓	✓	✓	✓			
	3A05	✓	✓	✓	✓	✓	✖	This machine is NOT REGISTERED			
	3A06	✓	✓	✓	✓	✓	✓	This machine is displaying EGM INIT			
	3A07	✓	✓	✓	✓	✓	✓	✓	✓	✓	✖
	3A08	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	3A09	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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IGT Video Poker Game Showing “Meter Disconnected”

A customer complained that she was unable to cashout the credits on her game. I noticed that none of the buttons on the player panel were lit up, which meant there was a chance of a loose I/O card. Because it was a video poker game with a touch screen, I simply used the screen instead of the buttons to cash out the credits and then went inside to look at the problem.

Sure enough, the inner card on the main slot door was out of its socket. The game was turned off, the card reseated and the power switch was turned back on. This time, it showed “meter disconnected” on the screen (hmm, interesting). I shut the game off again, checked the hard meter board connection and reseated the main processor board along with reseating both of the I/O cards in the door.

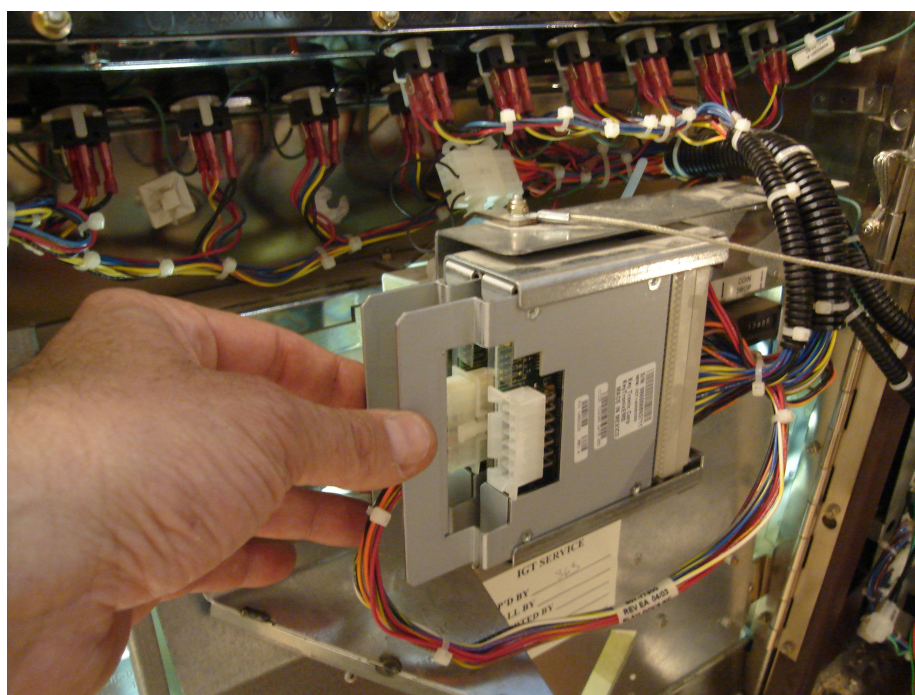
Quick Simple Repairs # 33

By Pat Porath

After the game rebooted the second time, the “meter disconnected” error was still there. At this point it looked like the card was blown. As most of us know, you CANNOT hot swap IGT I/O cards. Because the card had been loose, it may have made intermittent contact, enough to blow a chip on the card itself. It more than likely needed to be replaced.

A spare was found and after power was re-established, all errors were clear and the game was back up and

running. Once the main door was closed, the buttons lit up too. This didn’t happen with the bad card. So, as a reminder, if the buttons aren’t working on a game (for one reason or another) and the game has a touch screen, you should be able to cash out the customer’s credits without doing a hand pay. By using the screen instead of the buttons that didn’t work, some considerable time was saved. If a handpay needed to be done, a slot attendant would have to come to the game and punch in the amount in the keypad. A



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floor supervisor would have to verify the amount. Then, the attendant would have to come back to the game to pay out the cash. A few minutes, compared to a few seconds. If something is really fried in the machine and Netplex is down, the touchscreen won't work but it is definitely worth a try.

IGT S2000 Coin-In Error That Wouldn't Clear

I have never had so much trouble clearing a "coin-in jam" error on a S2000 in my life. Most of the time it doesn't take long at all and the game is back online. The problem could be a piece of lint in the coin-in optics, coin dust on the coin-in optics, a tiny piece of paper obstructing the optic, a bad main door I/O card or even a broken wire on the coin harness. With this game, darned near everything was swapped or replaced with the exception of the motherboard.

Here is the list of items that were swapped BEFORE the problem was cured: The coin-in optics, the coin comparator, the complete coin-in assembly (optics, diverter, etc.) the coin-in assembly wire harness and both door I/O cards. Oh yeah, RAM was cleared on it as well. Nothing would help. "Coin-in jam" kept staring me in the face.

Next, the main processor was replaced. After that, the hopper had errors. It

wouldn't even pass the ten-coin hopper test so a different hopper was put in. With that, the hopper problem was resolved (the bad part was the hopper control board). With all of the above replaced or swapped out, a customer wanted to play it (of course). I told him he could try it but I didn't know how long it would stay running.

It was only around five minutes. The display went totally blank and I lost voltage on the reels. Now what in the world could be its problem? Almost everything has been replaced!

Then it came to me. Power problem. Power supply. Duh. I swapped the power supply that is located behind the reels with the game next door. Guess what? Once again, it didn't last longer than five minutes and the display went blank again.

I told the customer that I was sorry but I would have to work on it some more. Luckily the guy was very patient. I wrote down the last four digits of the CDS tracking system's "coin in" meters and I wanted to give the game a good test to make sure the problem had been resolved. Once the game was back up again, I noticed the "coin-in" meters that I wrote down to restart the test decreased. How this happened, I have no idea, but they did. This indicated it may be a CDS issue with

the game.

I looked at the Sentinal and it was more or less setup to be in a S+ game, not a S2000. The power wire for the board was connected to the SMI board, not the Sentinal like it is supposed to be. Also, the interface cable was a ribbon type cable as used in S+ games, not the three pin connector that plugs into the RS232 socket on the board.

I grabbed the CORRECT interface cable and properly set up the Sentinal for the S2000. Next, it was time for the test. I wrote down the last four digits of the coin-in, only "bet one coin" per spin, and after the second meter reading, I knew the game was spun 91 times WITHOUT an error. Later on in the shift I noticed that a customer was playing it and I didn't hear any complaints, so it looked like it was FINALLY fixed.

My conclusion? A problem gone from bad to worse. For some reason it had hopper problems combined with a bad main board and the wrong interface cable for the Sentinal board. It took a little while but it was finally back online.

UBA Not Accepting Bills

I received a call to an IGT Trimline that wouldn't accept any bills. In fact it wouldn't even grab them at all. The first thing I did was to reseal the unit but that

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Touchscreen

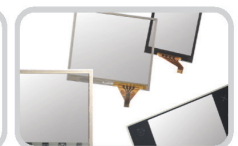
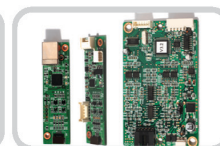
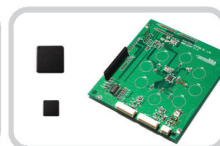
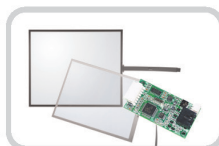
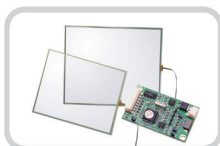
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didn't do anything. The power lights were lit up on the UBA but it didn't even cycle. I reseated it again and this time it did "cycle somewhat" but it didn't make the sound that it was supposed to.

My first thought was that it was a bad stacker box so I swapped (only temporarily of course) with the stacker box next door and still the unit didn't cycle properly. Next, I checked for any obstructions in the bill path of the unit (as I remember now, I did do a quick check of it when I first opened the game). The UBA optics, magnetic heads and such were all clear of any major dirt. I also checked the anti-pullback device in the UBA. It too was free and clear of any obstructions.

Next, why not try cleaning the unit with a soft dry cloth? The interior was cleaned with the cloth and put back in the game. This time it sounded like it was supposed to. The game was closed up and the bill acceptor bezel lit up great. A cleaning of the UBA with a soft dry cloth and it was back in business.

The DBV That Didn't Conquer Me Even Though I Was Getting Peeved

Or maybe this: "The Bill Acceptor Mission: Man vs. Machine." How about this: The Little Bill Acceptor That WILL! (It will work one way

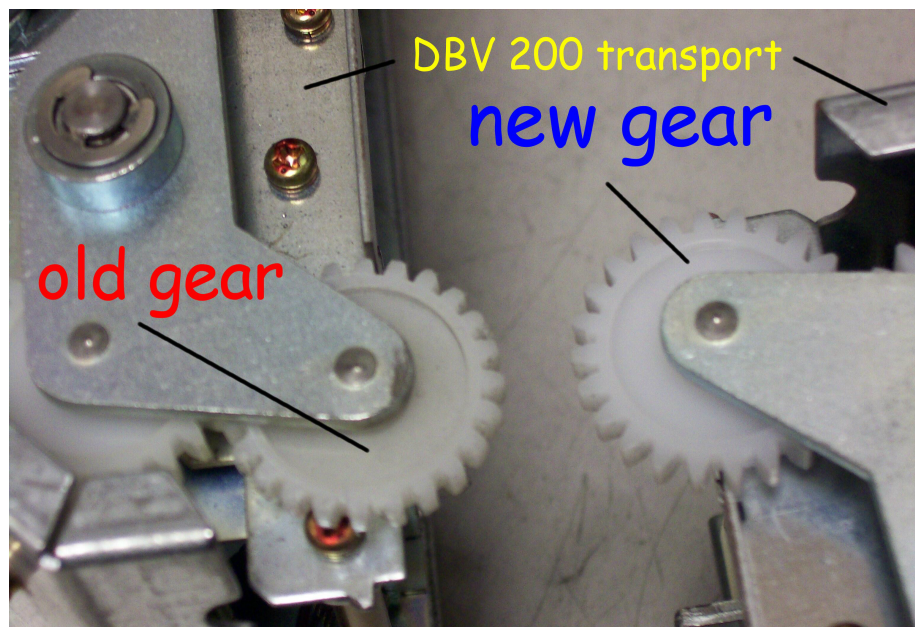
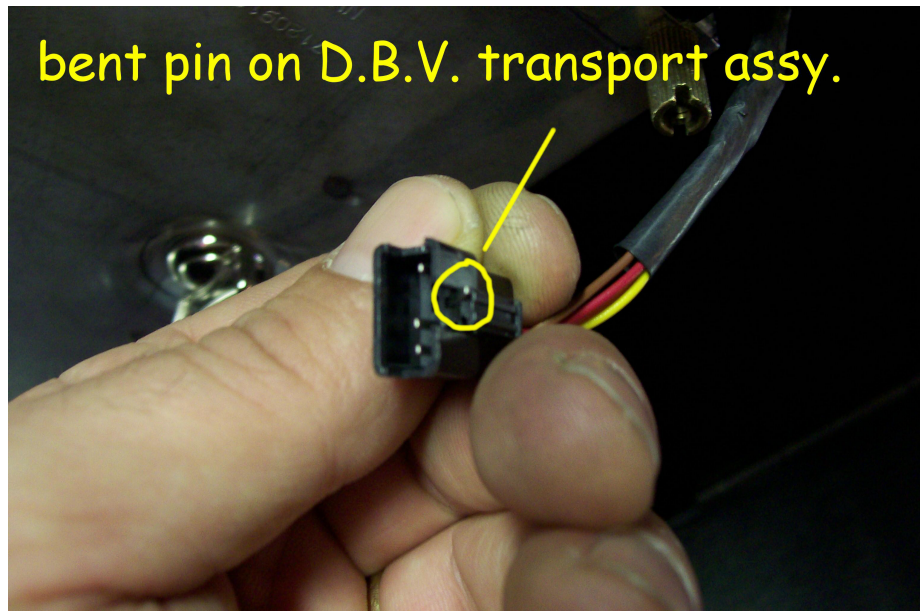
or another).

The ORIGINAL problem with the DBV 200 in this discussion was that it wouldn't "cycle" properly. It would go part of the way then stop. It was kind of acting like there was a bill jammed in the stacker box.

Some power cycles were done on the bill acceptor head and the stacker box was reseated a few times and connections were

checked too. After none of this worked, it was time to go further into the problem.

The connections were checked closer and as it shows in the picture, there was a four-pin connector in which one of the pins was totally bent. In the picture, it only shows three pins and there are supposed to be four. The pin you can't really see is badly bent inside of the connector. Logically thinking, Bingo!



Problem solved. The bent pin is why it didn't cycle properly. Straighten the pin, reconnect it and it should accept bills, right?

Not in this case. Still the unit would only cycle part of the way. There may be a bill jammed in the stacker box so why not temporarily swap boxes for trouble-shooting reasons? Boxes were swapped and the same problem was there.

Maybe something happened with the DBV 200 transport assembly? When I pulled it out of the game, I noticed that the gear was very worn down. That was definitely one of the problems. Notice in the picture how the gear on the right has pointed teeth and the one on the left has rounded teeth? The rounded one needed to be replaced because of wear. We should have spare transport units because it wasn't all that long ago when I repaired a few of them.

So off to the shop, and sure enough, there were three on the shelf. Now this more than likely SHOULD take care of the problem. Well, no luck there either. Same problem. I tried a different bill acceptor head and that didn't do the trick either!

Off to the shop this time for two more transport assemblies. When I got back to the game (kind of giving the BV assembly an evil stare) I

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noticed something, a broken wire on the transport. Luckily, I could grab a cable off of another transport which I had handy. FINALLY with a repaired pin on the four-pin connector, a different transport, a good looking transport cable that connects to the bill acceptor head and a the stacker box that was tested in the game next door, it was time for the test! The bill acceptor was powered up and thankfully, it worked. This ordeal was after spending around three hours on a progressive bank to get a machine to clear a progressive error but that's another article.

GEN 2 Ticket Printer That Had a Paper Jam Problem

While working on ticket printers on the printer bench, doing the usual things such as swapping boards, blowing the units out with air, cleaning the units, etc., I came across this GEN 2 printer that had a note attached to it that said "ticket jam problem."

No big thing. The problem may be an obstructed printer optic or a small piece of paper that is jammed near the roller but not in this case. Once the printer head was opened up and the "paper release lever" disengaged, a tiny broken small piece of plastic fell out into the bottom part of the printer chassis. Obviously this was the problem with a paper jam.

There was a broken piece of plastic right in the way so the ticket didn't have a choice but to jam up. Notice in the picture, how small the piece of plastic is compared to a quarter? It is pretty darned small. Even so, it was large enough to cause problems. Unfortunately, I was unable to identify exactly what the piece of plastic was and with it removed, the printer tested fine.

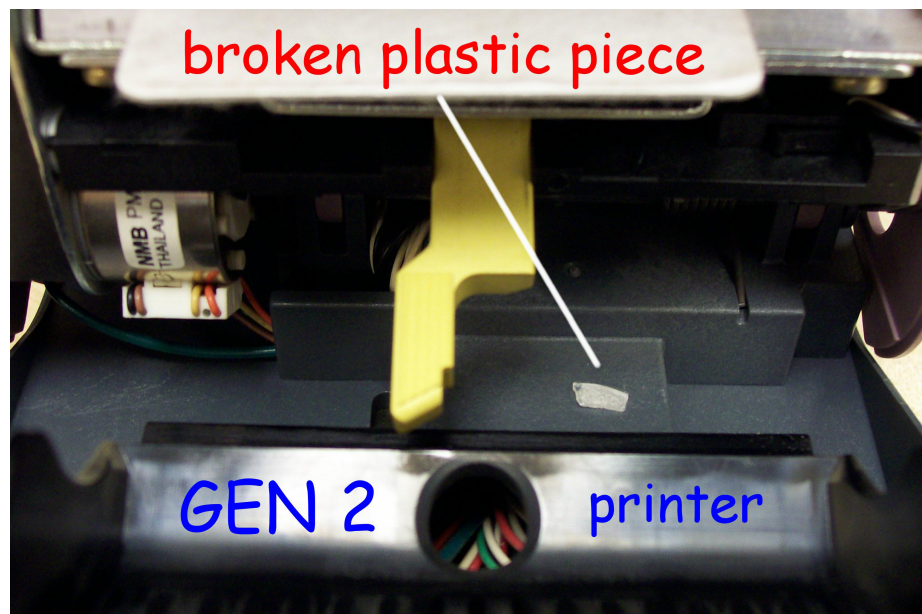
Of course when a printer is in the shop that has a problem it is always a good idea to thoroughly clean the printer components such as the roller (or rollers), the optics (which include the "paper low" optic, located near the paper tray) and the actual "thermal area" of the print head. It is also a good idea to use compressed air on the unit. This gets rid of the paper dust located around optic areas. Again, I'm not sure where the little piece of broken plastic came from but with it out of

the way of the tickets and a good ol' cleaning, the printer tested just fine.

Yet Another Printer Problem

This time it was a GEN 1. At the casino where I work, we refer to these printers as a "Seiko" type. They are also known around here as a "FutureLogic GEN 1."

With this printer, I started by cleaning it as usual. Then I printed a "test ticket" on the bench. To do this at the test bench like I do, first power up the printer. Then, feed paper into the print head (like you would at a game). Then, remove the fed ticket (if it has older version software, new version software will kick out most of a ticket then retrieve it so a ticket isn't wasted). Next, power down the printer. After that, press and hold the "feed button" while applying power. This should print out a "self test ticket" providing that the unit itself is



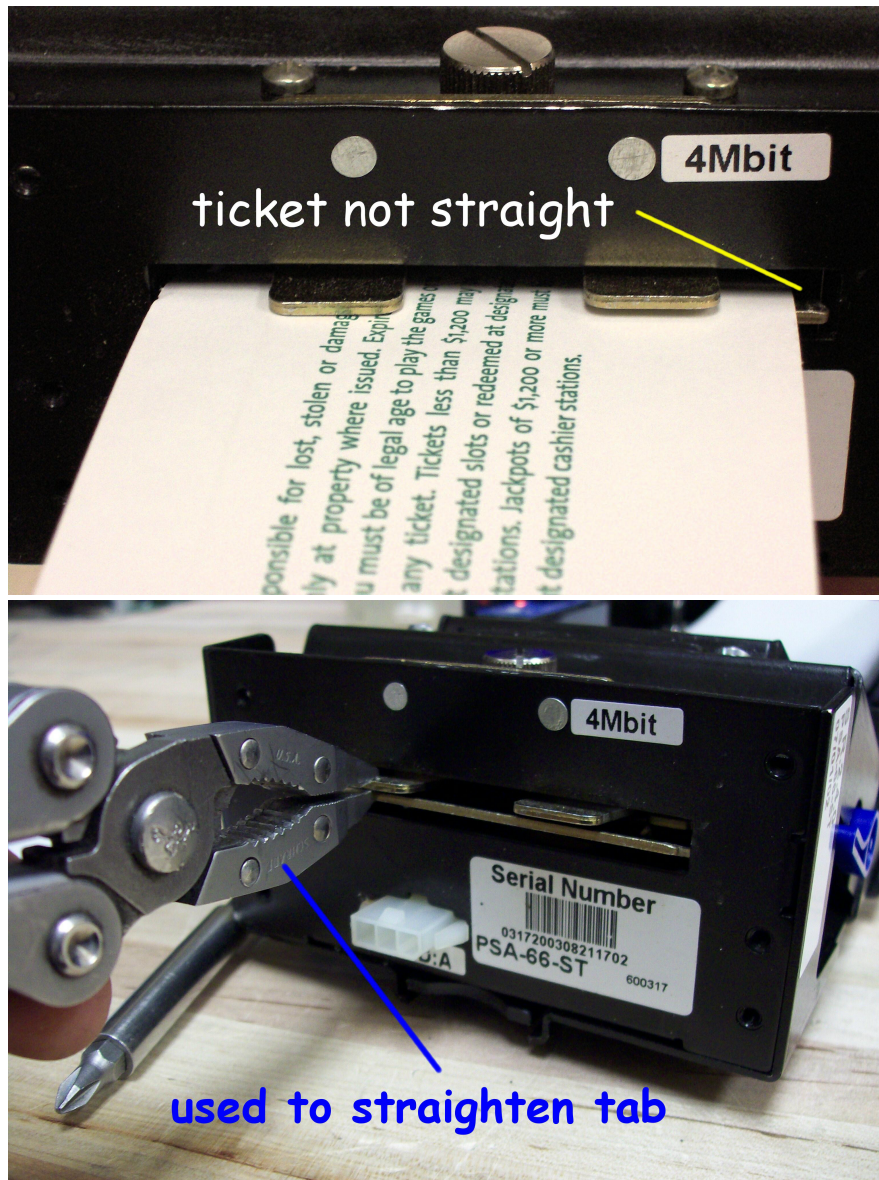
functioning ok.

Once the ticket printed (or I should say "tried to print") it got jammed up and came out very crooked. I printed another test ticket and the same error occurred.

Something was definitely wrong here. Why was the ticket coming out of the printer assembly crooked? I looked closer at the printer head, roller, optics, and the exterior of the unit. What I happened to find was a very easy fix. The only problem

was that one of the paper guides was bent out of place enough to cause a jam, preventing the ticket from coming out freely; the paper guide was bent and didn't let the paper feed out properly.

When you look at the front part of the GEN 1, you can see the two paper guides. One is located on the left side and one on the right. In the picture you can see where the guide on the left is slightly bent downward,



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just enough to cause problems. You can also see in the picture that I used my pliers to carefully bend the tab up so it looked like the one on the right side. These also assist the paper that comes out of the printer and through the printer bezel so the customer receives his or her ticket properly. After the paper guide on the left side was straightened out and looked like the one on the right, the test tickets came out perfectly.

The S2000 That Had a VFD Display Problem

I was thinking that something from the "NETPLEX" area was taking down the VFD but that wasn't the case. I disconnected the ticket printer, the bill acceptor and the "denomination touch pad" on the game (Of course power was turned off to the game while the devices were disconnected). Once power was turned back on, there wasn't a change in the error. The I/O cards were reseated; connections were checked on the main door but still nothing.

Finally connections were checked on the motherboard and power was applied once again. The game booted up normally. It happened to be a loose connection on the motherboard. When I was looking at it, I made sure all of the connections were snug, and seated properly.

It was simple case of a loose connection and didn't have anything to do with the NETPLEX at all. I did run into one situation where a bad bill acceptor gave a display error. When the bill acceptor was removed, the game booted right up, the unit was replaced with a spare and the game worked great.

Konami Upright Video - Sound Data Error Code 937

First of all what is a "sound data error?" Luckily in this upright video Konami game, there was an error code sheet located in the game. I looked at it and found that the CD needed to be cleaned or there was a problem with the CD drive. No problem at all. We have a CD cleaning machine and a CD drive lens cleaning disk on hand just for the job. I thought, well before getting into all of that, maybe something only needs to be reseated in the game, such as the main processor board which has the CD drive attached to it. Or maybe the game only needed to be rebooted. The game was shut down after the CD was removed from the drive for inspection. The disk looked very clean, no large major scratches and it wasn't very dirty. Someone must have cleaned it recently. The disk was put back in the game and power was applied. One problem though, during the bootup process, the machine had the sound data error again.

Konami games (along with other manufacturers) perform a self test during power up. On the screen, it shows various items such as "RAM OK," "CD loaded ok," "sound files loading," etc. So it was time to try another plan of attack. What about reseating all of the boards in the game (all the boards located in the "logic box area")? Each of the four boards were pulled out, inspected and reseated. One board is the processor (the one that has the CD drive on it), one is the communication board and the other two are input/output boards. On the upright Konami video game, they are located behind the machines' top glass area in the topbox. On a slant top Konami video, they are located on the bottom left hand side almost sitting on the floor.

With all four of the boards reseated in the logic box area, it was time to apply power. This time, the CD test and sound test passed and the game booted up perfectly. For some odd reason, by reseating the disk and the boards, the game came up and it was back online.

Editor's Note: This is commonly known as an "FM" repair: "Freakin' Magic."

- Pat Porath
pporath@slot-techs.com

New machine cabinets provide the Right Vision for IGT's AVP® TrimLine

Based on suggestions supplied by its casino customers, IGT has created several new machine cabinet designs which were unveiled at Global Gaming Expo 2007. The new cabinets build upon the existing technology of IGT's AVP® TrimLine machines.

AVP® Widescreen Video Machine

- Features a 20-inch LCD monitor in the base game that offers rich, sharp color
- Sits in the same footprint as existing TrimLine machines, despite the larger monitor
- Includes a second 20-inch LCD in the top box
- Can also support multi-layer technology

AVP® Spinning Reel Machine

- Available in 3-, 4- and 5-reel models
- New lighting and color contrast is easier on the eyes, yet still provides crystal-clear contrast on the glass and reel strips, increasing player comfort

AVP® Spinning Reel with Multi-Layer Technology

- Uses an innovative two-LCD display made by PureDepth Inc.
- The new multi-layer display provides a crisp, stunning display of both the reel glass and reels, along with a 3-D representation of the reels themselves
- Makes possible game play that appeals to video and spinning reel players

AVP® Widescreen Slant-top Video Machine

- Features a 20-inch monitor in the base game

- Sits in the same footprint as existing slant-top video games

AVP® Bar-top Video Machine

- Features a 20-inch LCD monitor that offers rich, sharp color
- Uses the identical footprint as existing bar-top games, despite the larger monitor

These machines and platforms are ready for IGT sb™ Products, which will make use of the open network. Ergonomic testing was performed on the combination of machine, stand and seat to ensure players' comfort. All cabinets have been designed for convenient technician access, and all

components are modular, so machine service and troubleshooting are simplified. Electronics have also been standardized for easier service.



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IGT Global Technology & Interoperability Center will provide the Right Vision for industry-wide collaboration

To back up its commitment to bring the power of an open network to the gaming industry, IGT is announcing the establishment of the IGT Global Technology & Interoperability Center. It will house the industry's first interoperability lab for use by other gaming manufacturers, customers, and manufacturers of third-party products to test the compatibility,

load, stress, performance and third-party interface integration of products in a true-to-life environment.

The \$10 million, 6,500-square-foot facility – which has the ability to expand to 10,000 square feet in later phases — will be located near IGT's Reno, Nevada campus and is scheduled to open in January 2008. The IGT Global Technology & Interoperability Center will be available to leading original equipment manufacturers (OEM), strategic partners and systems integrators who can test the compatibility of their GSA protocol-based products with products from other manufacturers in a secure, private setting. The purpose of the center is to increase customer satisfaction by facilitating cooperation between manufacturers to produce products that evolve with emerging technology.

This collaborative approach will ensure that the center's rigorous testing is conducted in an environment that emulates a customer site so there are no surprises when products are brought to market. Customers will be able to ask suppliers if their products have been thoroughly tested for interoperability at the lab and can request demonstrations for each product, assuring its compatibility.

By "manufacturers," IGT means more than standard gaming companies. The lab will be available to any vendor with a product that operates within a casino's open network, such as a hotel or point-of-sale system. IGT will report on the results of its own testing and will publish an "IGT Certified" list of non-IGT products tested for interoperability alongside anything from the IGT product line.

The IGT Global Technology & Interoperability Center will be directed by Mohammad Entezari from IGT's Software Product Assurance department.

"Industry-wide efforts toward interoperability will benefit all gaming manufacturers and, ultimately, our casino operator customers and their patrons by helping to ensure all systems and games work together seamlessly," said Entezari.

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Slot Tech Show Report - Global Gaming Expo 2007



Adria Swain (operations manager) and Pat Powell (project manager) of Casinotech. Casinotech specializes in the repair of both CRT and LCD monitors.



MCM Electronics Bryan Blake, Matt Smith, Gina Bohman, and Tom Duff.



My friends at Ceronix, Don Whitaker and his daughters Sheri (l) and Sandi.



Betson Imperial is a parts house based in New Jersey



My vote for best marketing campaign of the show goes to CI Innovations. They had these electric billboards at distributors' booths all over the show!



Brian Stedeford, casino manager at the Stellaris Casino in Aruba. Brain hired me for the most awesome gig I have ever had - One month in Aruba training his slot techs.



Uber Tech Pete Bachran



Eric Meyerhofer, President of FutureLogic (ticket printers).
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My longtime buddy Jim Roberts (r), industry representative for Innocore, longtime supplier of motherboards to the gaming industry. That's Edward Price, Managing Director with him.

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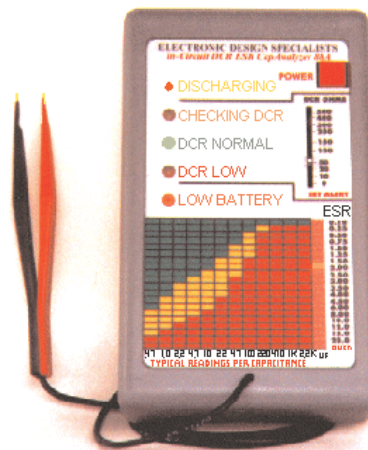
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Chris Haan and Cris Challenger of Slot Machine University



Yongman Kim, Manager and Tommy Lee, CEO and President of Digitech Systems, a touchscreen manufacturer and new advertiser!



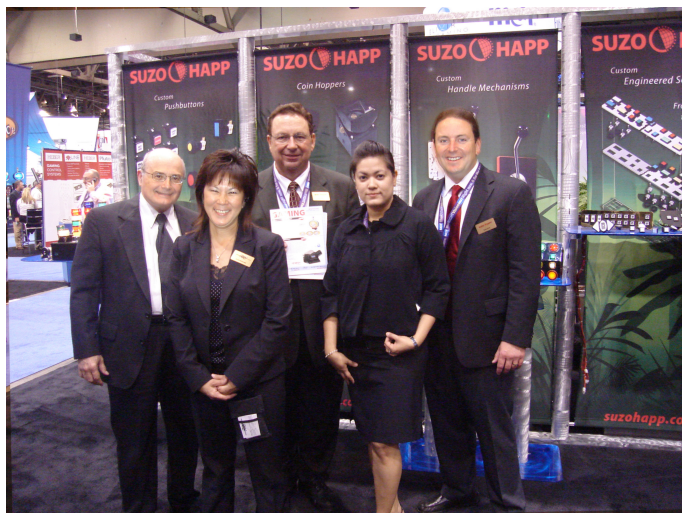
JCM American's Jack Geller - IN A NECKTIE!



Above: Nanoptix printers' Jean-Louis Drapeau, Sylvio LeBlanc, Amelie Bergeron and Michel Vienneau.



Left: And speaking of JCM American, I am so pleased to see that my good friend Lou Rudolph is now working for JCM. You will never meet anyone in sales that is more professional than Lou. He really knows his products and can advise you about your requirements without the slightest hint of blue suede. He works out of Pennsylvania. tel.215.493.3798



Above: Spare Parts maven and Patron Saint of Slot Tech Magazine, Frank Happ (center) without whom this magazine would not exist.

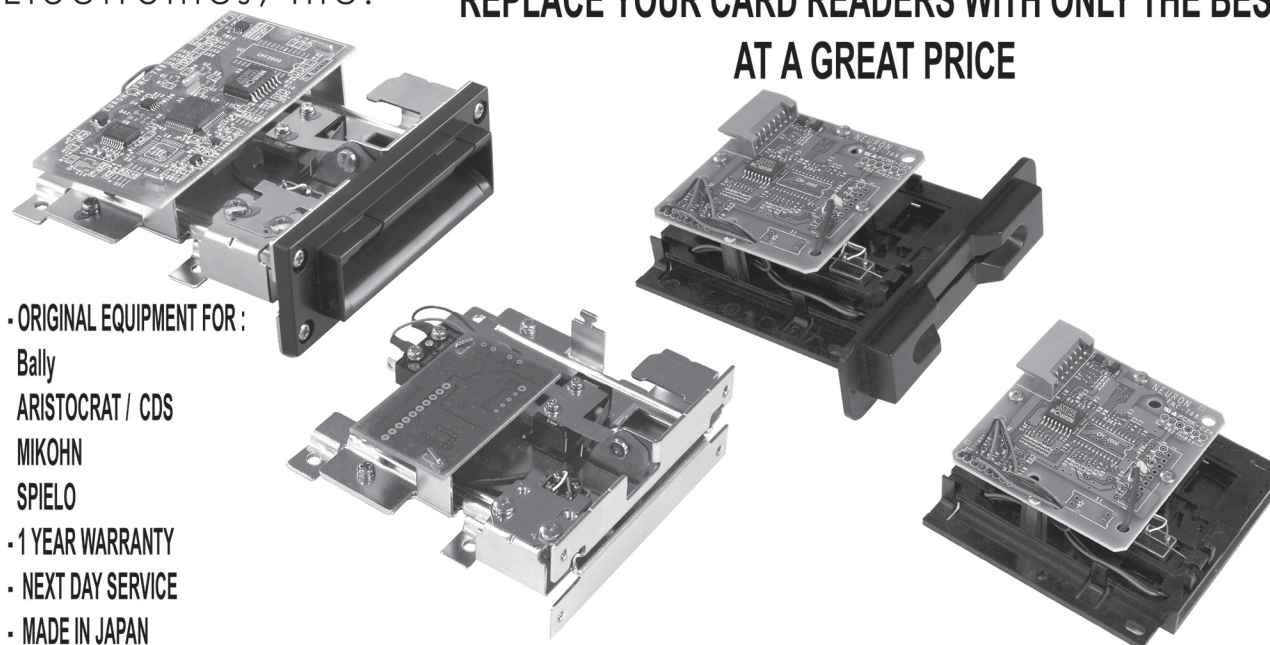
Right: George Hoehne, Senior product manager for Coin Mechanisms, Inc (yes, they make more than just coin mechs) with Applications Engineer Marty Peek. The company was showing their control panel solution for server-based gaming with OLED buttons that have programmable legends.



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The Second Life of a Slot Machine

By Kevin Noble



What do the S+, the Legacy, and the 5500 all have in common? They are a generation that is being replaced with new and advanced technology through the stages of successive improvements in the development of the software, cabinetry, and equipment that is assembled in the slot machine. In my short career as a Slot Technician I have witnessed the evolution of games from no bill acceptors to the Universal Bill Acceptors, single progressive to multi-level link progressives, and from the use of coins and tokens to Ticket In - Ticket out (TITO).

I have also been involved in numerous machine moves, watching the process of a gradual but continuous change on our gaming floor. We now have Bluebirds, S2000s and Alphas. Gone are the Universals and Sigmas that are now being

replaced by Konami, Aristocrat and Atronic with creative themes, cabinets and graphics. Theme conversions and software upgrades have also been part of the process to make sure all games are TITO compatible.

I hadn't given it any thought at the time but what ever happened to the older slot machines after they were loaded on the truck and shipped back to our central warehouse? This is where they deal with the sale, distribution and/or destruction of the older machines. Then one day I ran into Vince Perri. At the time, he was opening a small Casino in the Dominican Republic and he needed assistance in setting up some machines on his gaming floor. That is where I was reintroduced to the older Bally 5500 and CDS. My curiosity was aroused as to how they got there. I started making inquiries. Here then are some of the distributors that allowed me into their world. It is here that I began to understand another part of the gaming industry.

Ohio Gaming LLC
(www.ohiogaming.com)

Located in Wilmington,
wedged between Columbus

and Cincinnati Ohio and just minutes away from both locations, Ohio Gaming LLC is a licensed business with Clinton County Ohio, the State of Ohio and registered with the United States Department of Justice under the Gambling Devices Act of 1962.

I introduced myself to Ken Chitwood and explained my curiosity. He agreed to shed some light on his family owned business which specializes in the sale of reconditioned and used slot machines. Ken explained to me that when casinos replace older machines, they will then auction them off at that time. Ken will then purchase slot machines from a broker who won them at an auction from a casino. There are several brokers across the United States from whom he can purchase slot machines. Ken will usually purchase anywhere from 60 to 100 machines at a time to receive a lower cost.

A big concern he has when purchasing machines is the condition of the exterior cabinet. He has learned from experience that different brokers have different definitions of the condition of a machine.

Finding a broker who will be up front was a big hurdle to overcome. Ken prefers to buy machines that are parts complete, along with smaller coin denomination sizes because most of his customers play with a quarter sized token. Changing over from a larger token to a smaller token is generally not cost effective.

Since they are a family owned and operated business, they do not have the facilities to unload a larger truck. Thankfully, a neighboring business will unload the machines for them. They receive an inventory list outlining the serial numbers of the slot machines and when unloading, Ken will verify the machines to the invoice. Upon receiving the games, Ken and his staff will do an inspection of the machine, along with making sure each machine is parts complete. Ken then will bring the machine into the shop and tear it down, clean and reinstall parts. Any worn or bad parts are replaced. The new refurbished machines are now placed in the showroom where it goes through operational testing until sold. Ohio Gaming sells their machines mainly to individuals and a couple of retailers in Ohio and Kentucky. They currently do not ship outside of the country.

Once a machine is sold, it is created and shipped. If the customer encounters any problems, they can help them by troubleshooting over the phone.

The Gambler II, Inc (www.gambler2.com)

Located in Blaine, Minnesota, it is one of the Midwest's largest licensed distributors and retailers of used/refurbished slot machines. They have more than 25 years experience in the sales and service of gaming equipment to casinos, distributors and home-use customers.

I met Wally Bondy a few years back when I was helping Vince locate new slot machines for his second Casino being built in the Dominican Republic. We became great friends throughout the years by helping each other out when we ran into slot machine problems and repairs. Wally informs me that they are a licensed broker

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dealing with the casinos first hand. They are placed on a list for casinos to get in contact with when they are ready to sell machines coming off the gaming floor. They must also submit a bid on the games and provide the proper paperwork before they can truck the machines off to their warehouse.

The Gambler II has experience in selling their refurbished games to South and Central America where they reconfigure the machines for currency and local laws (coins and bills). Wally did not want me to forget the wholesalers and retail stores throughout the United States that are so vital to the success of their business. The retail sales also include the sale of machines to the public for private home use. The games that do not sell or are missing a lot of parts are then stripped completely. The parts are sold or used to restock their inventory. The cabinets are scrapped.

LA Slots (www.laslots.com)

Located near the Port of Long Beach California and just minutes from Los Angeles International Airport, L.A. Slot Machine Co., Inc. has been providing slot machines to casinos across the world for almost three decades. Established in 1980 by Larry Zeidman, L.A. Slots is one of the oldest and largest gaming machine distributors in the world, buying and selling over 10,000 machines

annually. LA Slots is registered with the United States Department of Justice and the California Gambling Control Commission.

L.A. Slots' inventory of machines is unsurpassed in the industry. Indeed, due to their massive inventory, L.A. Slots is in the process of moving to a new corporate headquarters in beautiful Redondo Beach, California with over 150,000 square feet of space. In addition to having the largest inventory of machines manufactured by the likes of IGT, WMS Gaming, Bally, Atronic, Aristocrat, CDS, Sigma, Sega and others, L.A. Slots has the biggest parts inventory of all distributors. In fact, L.A. Slots recently bought the entire parts inventory from Sigma, giving L.A. Slots access to parts not available anywhere else.

Service at L.A. Slots starts with their machine and parts inventory but clients can rely on twenty trained technicians fluent in English, Spanish, Japanese, Tagalog and certain African dialects, allowing them to communicate directly with their foreign customers. They provide technical support via telephone, fax and email. As an added bonus, LA Slots informs me that arrangements can be made to train your technicians at the corporate headquarters or at your facility. L.A. Slots' trained technicians can build and rebuild gaming devices to

modify the bill validator to take any country's currency, change the percentage, game theme, add custom features, change the cabinet, door type or to your desired color. While L.A. Slots concentrates on International casinos, it also has a division (Californiaslots.com) dedicated entirely to the home user.

L.A. Slots is also Hollywood's choice for slot machine and gaming related items. If you've seen any gambling item on television or on the silver screen, the odds are that it came from L.A. Slots. Hit movies like Ocean's 11 and Rush Hour 2, as well as popular television programs such as Las Vegas and Friends turned to L.A. Slots to build their casinos. To date, L.A. Slots has been involved in well over 100 programs, motion pictures and commercials (For a partial list of the shows utilizing L.A. Slots, click on the "LA Slots in the movies" tab).

Worldwide Gaming, Inc. (www.worldwide-gaming.com)

"One thing is for sure: There's a lot of travel in this industry!" Said Worldwide Gaming's E. Karsten Smelser.

Located in Hamel, Minnesota, Karsten met the owner of Worldwide Gaming, Inc. in the middle of the Nevada's Black Rock Desert in 2004 while participating in the first Amateur rocket in space

(CSXT) launch. Since then he has been working non-stop with slot machines and gaming technology and has traveled all over the globe (places like Central America, South America, Europe and Asia, selling and purchasing casino equipment.

Worldwide Gaming Inc. can be broken down in to two segments: Wholesale & Retail. It all starts in purchasing. Their sales staff spends countless hours on the phone every day speaking with casinos around the globe, locating used casino equipment whose floor life has come to an end. This tends to occur for a number of reasons: The casinos want to replace them with newer models (the majority of the machines they purchase are between two and four years old), the machines are un-repairable by onsite staff, they are going out of business, moving, and even seizures.

At the same time they take orders from casinos around the world for specific styles of machines, new and old, coin & TITO. In order to fulfill the customers' orders, the slot machines must take a journey from their current location to the warehouse and up in their own storage or repair racking. In order for all of this to occur, every detail about every machine must be rated for tracking by the seller, buyer, and the regulatory agencies - things like software revision numbers, serial numbers, game themes, pay schedules, and cabinet styles.

Every machine is examined and categorized into different levels: Parts Complete & Working, Parts Complete, and As-Is. The vast majority of their business centers around "shopping" or repairing slot machines that come in, including the Parts

Complete & Working machines. In a form of slot machine triage, they label each machine with the items that are visibly missing or broken, determine what software and game kit is installed, and if the machine will power up and play. Once a slot machine has been repaired, they assign it to either the retail or wholesale space, if it's not already been purchased. Wholesale slot machines go into their storage racking while retail ones make their way to the show floor or a special part of the warehouse set aside for either eBay sales or "Cash & Carry" (the latter can also serve as an emergency fill for our wholesale customers).

From their location, they ship slot machines and other gaming equipment (everything from dice to full size Roulette tables) to locations around the world

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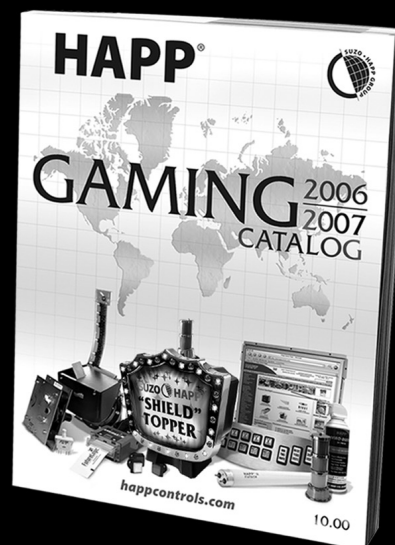


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via truckload, LTL (Less-Than-Load), overseas container and metro home delivery. They also provide casino design, development and general contracting. Worldwide Gaming Inc. can also assist in the development, design layout, including installation and training with security surveillance equipment.

Each year they import and export thousands of used games worldwide. Worldwide gaming Inc can distribute and sell Gaming Equipment internationally but will accept trade-ins as well as purchase entire lots from casinos when offered. They have a global network designed to track any game type offered. Worldwide Gaming also works hand in hand with some of the major manufacturers that have entrusted them in handling all their trade-in games when offered from major casinos. Due to the large number of games going through their warehouse, they need to move equipment as fast as they can.

Overview

Whether it is a small family business dealing with one manufacturer or a large warehouse selling multiple manufacturers, they all have to obey the same set of rules. Slot ownership laws are not uniform throughout the United States and depending on what state you live in, you can only ship and sell to legal States making it a level playing field. I asked one businessman about the competition and he wrote "Equal playing yes. Then it comes down to who is a better salesperson".

With more and more states loosening the restrictions on owning a Slot machine in a residential home, the need for technical support is even greater. Many of the websites mentioned above offer training, technical support (password protected), troubleshooting, game literature, and all the up to legal information on purchasing your machine.

- **Kevin Noble**
knoble@slot-techs.com

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Randy Fromm's Casino School is a practical, no-nonsense look at how gaming machines work and how to repair them when they don't. **No previous knowledge of electronics is required** to get the most out of the school. The Casino School is geared for those who want to learn how to fix gaming devices without having to learn complex electronic theory or purchase expensive test equipment.

Be prepared for six hours of accelerated learning each day. Class begins at 9:00 am sharp each day and continues until 4:00 pm. The Casino School provides each student with reference materials and troubleshooting guides that will be valuable aids for repairing equipment on location and in the shop.

Students learn how to work with:



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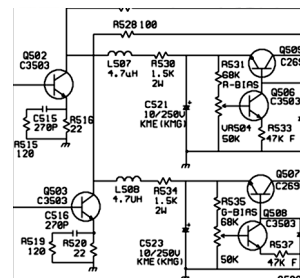
This relatively inexpensive piece of test equipment is easy to operate. Casino School students learn to use the digital multimeter to perform tests and measurements that will pinpoint the cause of a failure down to a single component.

ELECTRONIC COMPONENTS

The individual components used in games are introduced. Parts such as resistors, capacitors, diodes, potentiometers and transistors are covered individually. Students learn how the components work and how to test them using the meter.

SCHEMATIC DIAGRAMS

Schematic diagrams are the "blueprints" for electronics. Learning to read schematics is easy once you know how the parts work!



POWER SUPPLIES

Power supply failure is a common complaint in many different types of systems. Power supply failures are discussed during the class, along with shortcuts for troubleshooting and repairing them.



CRT and LCD MONITOR REPAIR

The monitors used in video slots are designed for quick, easy, and safe repair. Students will learn the theory of operation of all types of monitors and how to repair monitors down to the component level. Of course, monitor safety will also be discussed.

You do not have to send your slot techs to Las Vegas or Atlantic City for training. The Casino School brings the training to you. Contact Randy Fromm's Casino School today to reserve a date for your tech school

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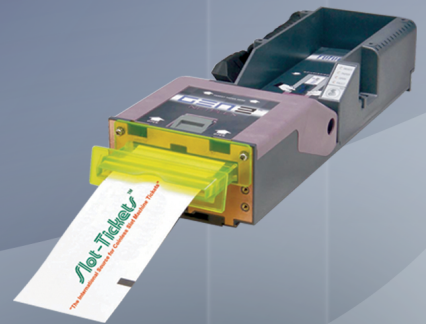
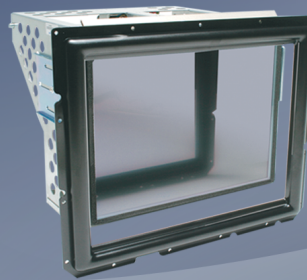
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