

SLOT TECH

MAGAZINE

Slot Machine Technology for the International Gaming Industry

The Touch Screen Hits The Heart
 SDS Reports continued...
 Downloadable Button Deck
 Quick Simple Repairs #22
 Troubleshooting SENET
 Oasis - Parts 7 & 8



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February 2007

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Dear Randy,

I very much enjoyed Mr. Michael Brennan's article in the December 2006 issue of Slot Tech Magazine titled 'The Gaming White North' but for the sake of historical accuracy I would like to point out that Mr. Alexander Graham Bell was in fact from Scotland, and not Canada as stated by Michael.

I hope this finds you both well,

Best regards,

Kenny Simpson
Service Gaming Technology Europe Ltd
Scotland

OK. OK, so we're a little short on historical accuracy. As you pointed out in your Wikipedia attachment, Bell emigrated to Canada so we're not totally incorrect here. We also mixed up fictitious character "Austin Powers" with actor Michael Meyers so what the heck was THAT

Randy Fromm's Slot Tech Magazine

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Slot Tech Magazine is published monthly by Slot Tech Magazine
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all about? We should probably stick to the technical side of things.

From: Tom Chaplin
Hey Ted,

Just wanted to make a couple of comments about your article in the Slot Tech Magazine.

- SDS is event driven so MLISTs don't show everything that happens with a game, only those events which trigger an XC code. Often I'm quite frustrated trying to figure out what happened on a game BETWEEN events. That being said, I agree that when troubleshooting an issue, the first place a person should go is the MLIST. Can save a walk out to a game.

- The basic MLIST is great, but the other lists are just as useful. CLISTs are great for identifying particular XC codes on the floor. I use them when ticketing goes down to see how many handpays we're getting, etc. ELIST is good for finding a lost employee card. MCLIST is something I use all the time to research variances because it allows you to look from drop to drop with XC79. PLIST helps in researching player ratings variances, etc.

- The CODE report is pretty useless. We ignore it. Instead we have specific SPC files to find the things we're interested in. One report just looks at card reader related codes, another at BV related codes, another at GMU malfunction related codes, another for door switches, etc. These help pinpoint the problem without trudging through pages and pages of CODE report for machines which are just fine. An example would be from your XC code summary. It's not important that our casino had 957 door opens and 943 door closes for the day, the important thing is that a game at HC04 had 112 opens and 112 closes.

- Except for a couple of canned SDS reports (nocomm, door) all reports show yesterday's XC codes. If you run a report, go fix or clean a bunch of games and run it again, you'll see the exact same games on the report... until tomorrow. It's also important to know the timeframe (ours is 6am to 6am), so our Graves



guys running a report at 3am are actually looking at the day before yesterday's XC codes. We've also found it very helpful to keep a log of reports so today's tech can look back at yesterday and see if a game was on a report and what the previous tech did to it.

Regards,

Tom Chaplin

Slot Data System Administrator
Horseshoe Casino & Harrah's Casino
Council Bluffs, Iowa

Thanks Tom,

I'm going to disagree a little about the CODE report, I do like to use it too look for machines with excessive exception codes (we have WMS games that sometimes come up with a lot of XC64s for no apparent reason). I do like the fact that you have SPEC files for everything, you certainly have streamlined things.

I've never actually used the CLIST report, we covered it briefly in the training (if you can call it training) that we got.

You obviously know your SDS! I can only hope to become as proficient.

Regards,

Ted

Enjoy this month's magazine. See you at the casino.

Randy Fromm
Randy Fromm



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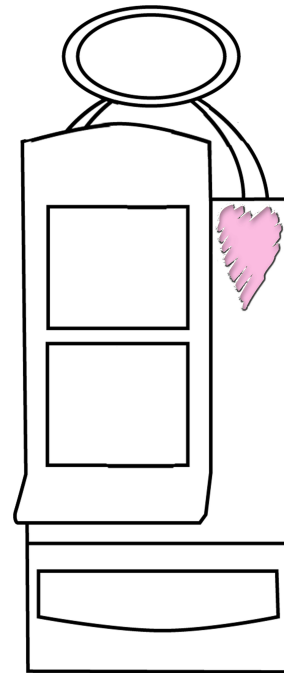
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The Touch Screen Hits The Heart

by Danielle Copper



It's time for another story based on Atronic e-motion™ trouble-shooting experiences, where an unexpected solution follows a frustrating problem. This tale is in honor of every man's least favorite holiday, Valentine's Day:

As Tiffany's work boots reluctantly mated with the vibrant pink and red carpet underfoot, the initial jangle of coins and the smell of stale smoke brought her back, physically and emotionally, to a familiar place.

She stopped and gazed at the sights of Lucky Love's Casino. Everything she saw was tinged with heartache.

An elderly couple was seated side-by-side at two slot ma-

chines, their non-button-pushing hands gracefully intertwined. And the casino's not-so-subtle décor was littered with hundreds of heart-shaped signs and decorations.

Once a casino technician in this very place, Tiffany was now working for a slot machine manufacturer, here to convert game titles. She hadn't been back in years, but her feet instinctively remembered where machines 067 through 074 were located. But as she turned the final corner, Tiffany froze in her tracks. It was him.

"I'm sorry to inform you, Ms. Allenwrench," the burly man told her without looking up from his clipboard, "but Harold Torx will not be help-

ing you with this conversion. He had a heart attack this morning, so I will be assisting you."

Tiffany couldn't believe her eyes. He still worked here? He didn't recognize her? She recoiled, sheepishly putting her suddenly sweaty palms in her pockets, feeling shock, regret, insecurity, and re-kindled love.

His name was Bruce Phillips and he was the Lead Technician at Lucky Love's. Tiffany and he were in love years ago... before the accident

Bruce did not look up to make eye contact. Instead, he walked to the other side of the bank, and both ex-lovers silently started their tasks at hand.

As Tiffany worked, she watched him through the space between machines, as if they were on opposite sides

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of a supermarket shelf. His brawny arms were buried in the cabinet. These same arms once embraced her on a daily basis.

His face was a weathered version of the one she remembered, like a neglected toy left out in the sun too long. His brooding eyes were now resting on shallow bags, his prominent brow was decorated with wrinkles, and his jet-black hair was flecked with grey.

"Why are these four buttons lit?" He asked with a detectable amount of melancholy in his voice.

Tiffany opened her mouth to answer him, but nothing came out. He asked again, then finally walked around to her side of the bank. "I don't know if you're deaf, but I just asked you a simple--" He halted as he got his first good look at her. For the first time in five years, their eyes locked.

"Oh, uh, I'm sorry," she stammered. "Which buttons?" She thought to herself, "He doesn't recognize me!"

More focused, she explained, "Those buttons indicate that the touch screen or its controller have failed, because they are the exact buttons used to maneuver the cursor on the lower TFT to set some options." She continued, "Try swapping the controller with the game next to it."

Tiffany eluded his steely gaze

and retreated to her side of the game bank, heart thumping.

Back at Bruce's e-motion cabinet, the lit-button issue followed the touch screen controller to the next game. Tiffany was right, it was a bad controller. Tiffany handed Bruce a new controller, and their hands touched under the crimson glow of Lucky's giant heart-shaped KENO board.

Bruce stared at her and whispered, "I have this strange feeling we've met before..." Tiffany heard herself nervously say, "Uh, I don't think so," and went back to work.

Confused by this familiar female enigma and this touch screen issue, Bruce installed the new controller in his original game-- but the problem persisted. Those same four button panel lights were illuminated. Was this touch screen controller bad as well? No, it had to be something else.

Once again Bruce enlisted Tiffany's help, and she wondered if the issue could be due to a bad multimedia board, since the touch screen controller plugs into that board. A malfunctioning multimedia board could possibly blow out the controller, so she scampered outside to get a spare one.

When she reached her truck, Tiffany looked at herself in the side-view mirror. She traced the lines of her face

with her fingers. The scars had all healed. The doctor had rebuilt her face through multiple surgeries. It took years.

She looked different, but this fact made it easier to move on. She had dyed her hair, changed her name, moved far away and began a new life. (How she could pass a gaming license background check is another story).

But the emotional scars remained, and she was still in love with Mr. Bruce Phillips, no matter what he did to her. She knew it was an accident. It wasn't really his fault, right?

With the energy of a girl attending her first high school dance, she jogged back into Lucky Love's feeling renewed, reconstructed and ready for anything.

When Tiffany returned, she decided to change the multimedia board herself, so she crouched down and stuck her head into the cabinet.

"Hey, I know this is going to sound weird," Bruce began, "But I swear you, uh, jeez-- you really remind me of someone to the point it's driving me nuts, here, I mean--"

And then, in that instant, they both had their respective moments of clarity. Bruce, hovering over Tiffany, caught a glimpse of her lower back as she leaned forward. There, Bruce noticed her heart-shaped birthmark, in

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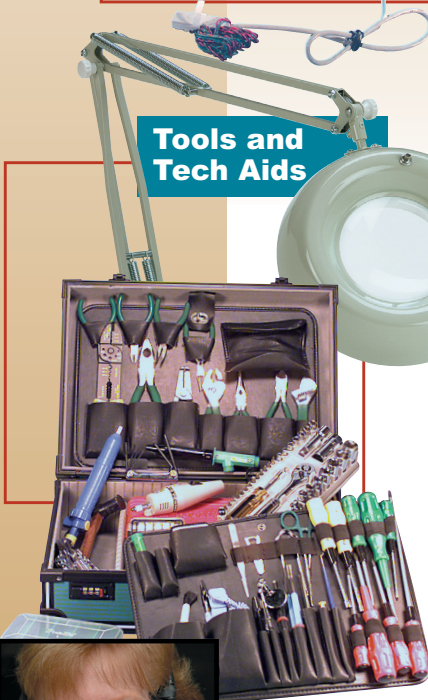


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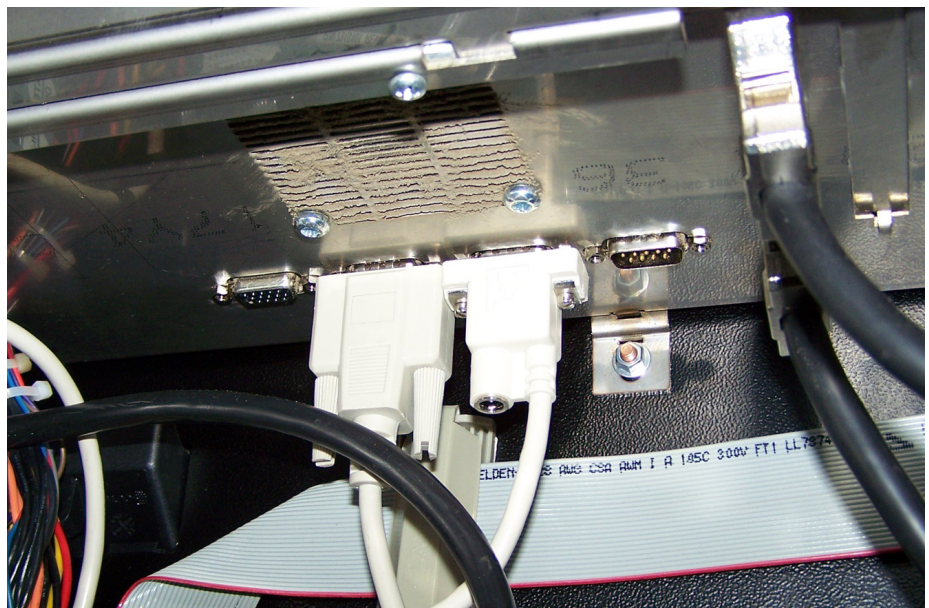
Source Code ST44

The aftermath was drastic.

He meant to embrace her. She just meant to slap him. But in the heat of the moment she forgot she was holding not one, but two, crescent wrenches. Bruce

The impact of the wrenches formed two near identical tear-shaped red scars. One could say that from a certain angle these marks bore a striking resemblance to a broken heart.

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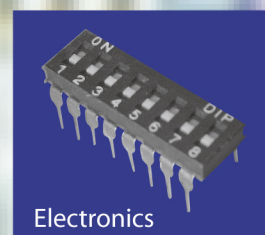
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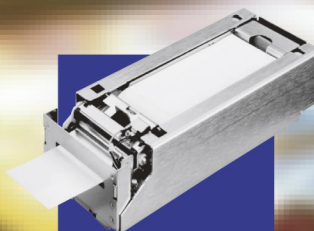
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Ok, now for the continuation of our up close and personal look into SDS reports. Today we're going to look at the Door Status Report, the Ticket barcode Inquiry and the Ticket error report.

Before we get started, I'd like to show you how something really simple can cause big problems. I came in for my shift on New Years Day hoping that it would be a day of little trouble, you know kick back, relax getting some decent holiday pay. When I came in I immediately noticed a copy of a NOCOMM report sitting on my desk. Hmmmmm, there goes my nice calm day. It turns out that sometime earlier that morning, approximately 40 games decided to stop communicating.

Our early morning tech had looked at them briefly. Everything appeared to be fine with no sign of problems showing up on the EPI panel. If there

SDS Reports continued...

By Ted Befus

are no comms from the system, the GMU will have a row of asterisks on the bottom of the display.

He ran the usual checks. All lines were connected and the fuserack TX/RX leds were cycling, so there were comms of some kind there. When I arrived, we checked to see if player cards or staff cards were functioning. They were not. Ahhh, now we've got something. We disconnected the banks from the homerun and focused on the first bank. All games were good. The same was found with the second bank. The problem

had to be on the third bank. As we disconnected all the games, we found a feedthrough board that was a sticky disgusting mess. Someone had spilled coke on a slot base and somehow, it had found its way into our feedthrough board (I have no idea exactly how). We cleaned up the cables and replaced the board. Problem solved.

Just in case some of you don't think that coke can cause this problem I refer you to exhibit "A" the picture of the affected feedthrough board. Maybe Pepsi would have been less of a problem.

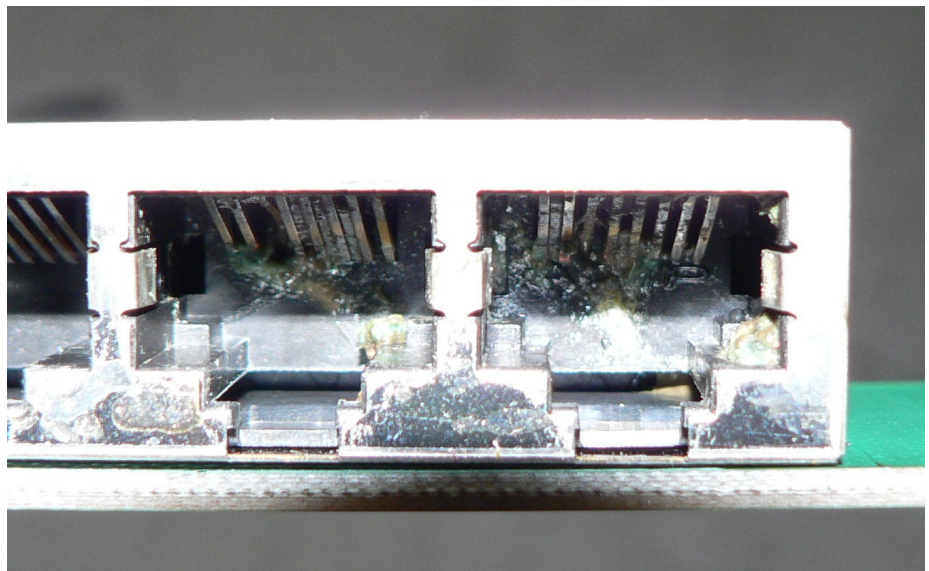


Exhibit A - A Coke spill on a feedthrough board caused this mess

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I know that has nothing to do with the article at hand but I just had to share this with you.

Ok, now we can start.

The door status report can usually be found on the main SDS screen (depending on what your access levels are or how your menus are configured). The door status report shows you a list of all games on the floor that have doors open, and what time the doors were opened. You might remember that I mentioned this in my previous article on SDS reporting. If these door switches are defective or wired backwards the GMU will not send jackpot information to the bank.

Let me clarify this a little more for all of you. The parallel wires on the input to the GMU are used in case the machine is turned off and

there is no serial comms. As long as the GMU has power you will always have door switch monitoring. Here's where some people get confused. When the machine door is closed and the switches are working properly, these harnesses should be OPEN. The confusion starts when technicians wire these harnesses to the NORMALLY OPEN side of a cherry switch. But wait, didn't I just say that when all is working the harnesses will be open? Yes I did, but the normal state of the door switches inside your games work in the opposite fashion.

Confused yet?

Look at it this way, when the plunger on the switch is fully extended, that is the NORMAL state of that switch. When the plunger is fully extended (or the door is open) there is closure on the NOR-

MALLY CLOSED leads and the NORMALLY OPEN leads are open. When the door is closed, these states are the reversed, meaning that there is closure on the OPEN leads and an open on the CLOSED leads. This means that the SDS wires should be wired to the NORMALLY CLOSED poles of the switch. One thing worth mentioning, if you have cherry switches with a lockout, the lockout acts as if the switch is fully pressed.

I know that some of you are thinking that this is all obvious, but believe me you have to drill this into people's heads. I've even had to take a multimeter and use it to explain it to people.

Editor's note: It's like the light in a refrigerator or the dome light of a '56 Buick. When the door is open, the switch is closed and vice-versa.

(STATUS.RPT) 01-Jan-07 11:12				DOOR STATUS AND MECHANICS DELTA STATUS REPORT				Page: 1		
STAND NUMBER	SLOT NUMBER	LINE ADDR	TIME	SLOT DOOR OPEN AFTER BLACKOUT	SLOT DOOR OPEN	DROP DOOR OPEN	MECHANICS DELTA	BILL CASSETTE DOOR OPEN	AUX. FILL DOOR OPEN	
A4005	4005	1A-0E	10:45	NO	NO	NO	NO	NO	YES	
A4006	4006	1A-0F	10:46	NO	NO	NO	NO	NO	YES	
A4008	4008	1A-10	10:56	NO	NO	NO	NO	NO	YES	
A4015	4015	1A-17	10:47	NO	NO	NO	NO	NO	YES	
A4016	4016	1A-18	11:03	NO	NO	NO	NO	NO	YES	
A4017	4017	1A-19	10:47	NO	NO	NO	NO	NO	YES	
A4019	4019	1A-1B	11:02	NO	NO	NO	NO	YES	NO	
A4020	4020	1A-1C	11:11	NO	NO	NO	NO	NO	YES	
A4021	4021	1A-1D	11:09	NO	NO	NO	NO	NO	YES	
A4351	4351	2B-81	10:37	NO	NO	NO	NO	YES	NO	
A4401	4401	2B-85	11:12	NO	NO	YES	NO	NO	NO	
A4532	4532	3B-8F	10:34	NO	NO	NO	NO	YES	NO	
A4554	4554	3B-84	10:53	NO	NO	NO	NO	NO	YES	
A5155	5155	4B-93	11:07	YES	YES	NO	NO	NO	NO	
A5555	5555	6B-8F	10:55	NO	NO	YES	NO	NO	NO	
A6032	6032	7A-30	11:03	YES	YES	NO	NO	NO	NO	
A6063	6063	7B-9D	11:12	NO	NO	NO	NO	YES	NO	
A6303	6303	8B-83	10:54	NO	NO	NO	NO	NO	YES	
A6784	6784	15B-8B	11:05	NO	NO	NO	NO	NO	YE S	
A6913	6913	16A-13	11:11	YES	YES	NO	NO	NO	NO	
A7008	7008	10B-88	11:11	NO	NO	NO	NO	NO	YES	



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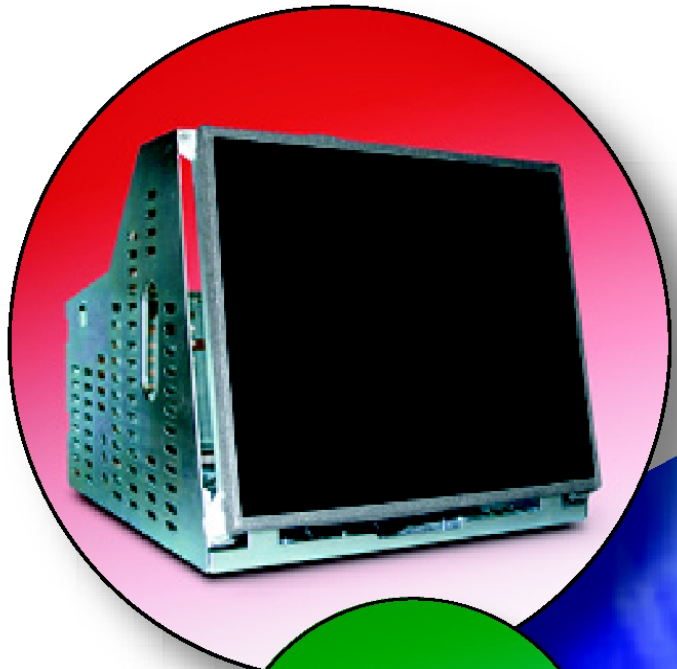
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\$Revision: 82.5.2.1 \$ TPBC.BAS UNIVERSAL (00)

Ticket Barcode Query

Barcode : 5362-04109-09004-**** Amount : 8.00

Status : Pending Type : Cashable

Time	Location	Transaction	Result	Player ID SRC
31 -DEC-06 23:42	4109	Created	Success	1000046938 S
31 -DEC-06 23:42	4109	Redeem Request	Success	1000046938 S
31 -DEC-06 23:43	4109	Commit w/o Ticke	TIMED OUT WAITING FOR GAM	1000046938 S
31 -DEC-06 23:44	4108	Redeem Request	TICKET IS PENDING	1000046938 S
31 -DEC-06 23:44	4108	Commit w/o Ticke	SYSTEM REJECTS TICKET	1000046938 S
31 -DEC-06 23:44	4108	Redeem Request	TICKET IS PENDING	1000046938 S
31 -DEC-06 23:44	4108	Commit w/o Ticke	SYSTEM REJECTS TICKET	1000046938 S
31 -DEC-06 23:45	4163	Redeem Request	TICKET IS PENDING	1000046938 S
31 -DEC-06 23:45	4163	Commit w/o Ticke	SYSTEM REJECTS TICKET	1000046938 S
31 -DEC-06 23:45	4163	Redeem Request	TICKET IS PENDING	1000046938 S
31 -DEC-06 23:45	4163	Commit w/o Ticke	SYSTEM REJECTS TICKET	1000046938 S
31 -DEC-06 23:45	4163	Redeem Request	TICKET IS PENDING	1000046938 S

The report is pretty easy to read. As you can see from the example, there are headers for each of the four switches that are monitored. On the left hand column there is a machine number for the machines that are reporting door opens. In each column, there is either a YES or NO indicating whether the door

is open or not. If all the doors on your machines are closed, there should be nothing in the report.

Next up is the Ticket Barcode Inquiry. This report will let you check the status of tickets in the SDS database. It will show you when it was created, whether the creation

was successful or if there were errors.

This can come in handy if you have tickets that just won't be accepted. It tells you exactly what state that ticket is in. To run this, you'll need at least the first 14 digits of the 18 digit ticket number. The

\$Revision: 82.9.2.3 \$ TPTE.BAS UNIVERSAL (00)

Ticket Error Report

Select for (A)ll slots, (M)ultiple slots, or use a (S)pc file ? <A> m

%Selected Multiple Slots

Select for (A)ll errors or (M)ultiple errors ? <A> a

Select Primary Sort Field or <Error> : slot

Selected Field : slot

Please Enter Dates/Times As: dd-mon-yy HH:MM:SS

Enter Beginning Date/Time ? 12 -dec-06

Enter Ending Date/Time ?

%Date defaulting to current date

Display to the (T)erminal or create a (R)eport? <T> t

Generating Report....

TICKET ERROR REPORT

FROM: 12 -Dec-06 00:00:00 TO: 01 -Jan-07 10:38:27

SLOT	Stand	Date	Time	Type	Description	Ticket Number	Value	Player ID	Status
4150	A4150	12 -DEC-06	14:06	N -Promo	PLAYER CARD REQUIRED	7362 -11306 -02072 -6480	5.00		Redeemed
			14:06	N -Promo	SYSTEM REJECTS T ICKET	7362 -11306 -02072 -6480	5.00		Redeemed
			14:06	N -Promo	PLAYER CARD REQUIRED	7362 -11306 -02072 -6480	5.00		Redeemed
			14:06	N -Promo	SYSTEM REJECTS TICKET	7362 -11306 -02072 -6480	5.00		Redeemed
			23:46	Cash	TICKET IS PENDING	5362 -04109 -09004 -***5	8.00	1000046938	Pending
			23:46	Cash	SYSTEM REJECTS TICKET	5362 -04109 -09004 -***5	8.00	1000046938	Pending

last 4 digits can be filled with asterisks (****). If you don't have the full 18 digits, you may also need the dollar value of the ticket.

We can see by the example that there was a ticket successfully created in the database. However, the customer then tried to redeem the ticket, the system recognized this ticket as valid but did not see a response from the game in the time allotted, making the ticket status pending. This ticket will not be redeemable at a game. As you can see in the report, there is a redeem request but the ticket is rejected by the system.

This report will not give you a detailed description of what happened but an MLIST will show a specific ticket error number that can be referenced to an SDS ticket error list. I won't bore you with the MLIST but I will tell you that the error was an error -205 which means that the system timed out waiting for game confirmation. As far as SDS is concerned, that ticket is redeemed in the database. However, since there was no game confirmation, the status has now changed from active to pending. Pending tickets cannot be redeemed by machines, meaning that the ticket will have to be redeemed by a manager.

The ticket error report is somewhat like the ticket barcode enquiry but it is specific to the game side of it. It won't show you if there were errors when the ticket was created but it will show you why the game is having problems accepting tickets. This report will let you gather a large amount of data at one time if you need it. Word to the wise: only run it for the days for which you need the information. If you run a really large report, it can affect system performance.

When you run the report it will ask you to provide a few details so it can configure the report the way you want it (much like an MLIST). It will ask for specific dates and times, whether you want it sorted by slot number, error, etc.

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If you look at this report closely, you can see that it includes the ticket number (if the ticket isn't redeemed it won't give you all 18 digits for security reasons). It also gives the date and time that the ticket was inserted, the type of ticket it was (promo, cash etc) and the reason it was rejected. Notice that on the far right column, it gives you a ticket status. This will tell you if the ticket is active, pending or redeemed. Only active tickets can be redeemed. This ticket status is not relative to the error at hand on the screen; it is the current status of the ticket in the database. In other words, if I ran this report for a day two weeks ago and found that there were errors that day (but the ticket was cashed in by a cashier or accepted by a slot at a time later than the report was run) the status of that ticket will show as redeemed

That brings me to the end of another fascinating look at the wonderful world of SDS.

Til next time.

- Ted Befus
tbefus@slot-techs.com

Slot Tech Press Release

Downloadable Button Deck Honored

Coin Mechanisms Inc and Gamesman Ltd scored an honorable mention for Best Slot Product in the fourth annual Gaming & Technology Awards presented by Global Gaming Business magazine and Spectrum Gaming. The award recognizes excellence in innovation and an understanding of marketplace trends.

The Programmable Player Interface (PPI) was selected from numerous products submitted for consideration. The PPI significantly advances the technology of server-based play by providing the capability to program the legends and graphics of slot buttons to support dynamic downloading of games and features.

Company spokesman Mike Meisinger said "Coin Mechanisms and Gamesman salute the other companies recognized in this category: WMS, IGT, Aristocrat, and Bally. It is an honor to be included in their company."

For further information, contact:

Coin Mechanisms Inc.
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By Jason Czito

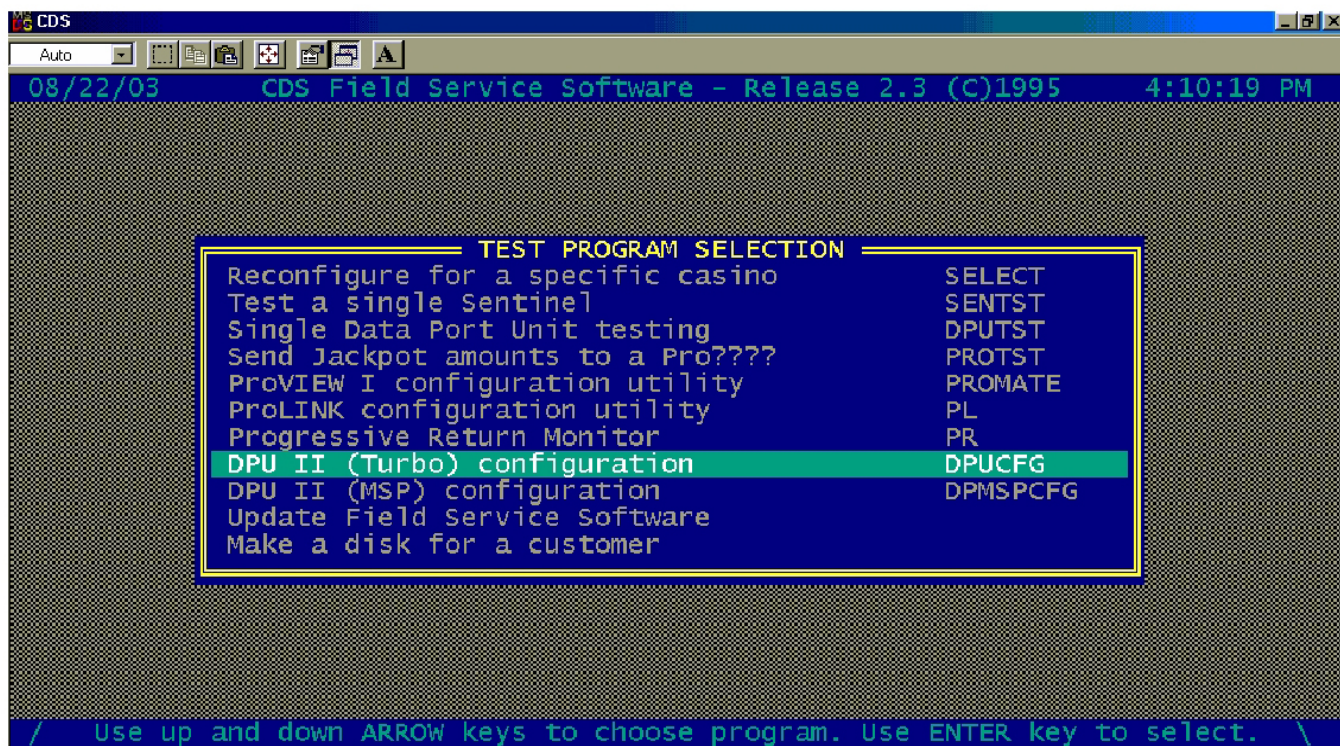
Chapter 7 - DPU Configuration Chapter 8 - The Drop

D PUs are configured by connecting them to a laptop computer running this software. The only module in this suite that correctly works is the one we need: DPUCFG (highlighted

in this menu). DPUs connect to the 9-pin serial port on the laptop by way of their RS-232 ports under AUX-2 on the back of the DPU. Just connect the laptop to the DPU and start the program. Press the Enter key to select DPUCFG when it is highlighted. Below is the main menu of the program. As you use the program, this menu will scroll out of the window. Press ESC to bring you back

to this screen. It will prompt you once in the beginning for the number of the com port the DPU is connected to. Our laptop uses port 1.

The software is divided into two sections. The commands in the top half will change the value of the menu option you choose. For example, if you press I, you will be prompted to change the DPU communication ID. The commands



in the bottom half are read-only, meant for viewing the settings without changing them. These are accessed by pressing G. Pressing G will give you the prompt you see above. The first time you press a button to communicate with the DPU, you will see it establishing communication, as shown in figure 3.

To set up a DPU, only one thing needs to be set: the DPU communication ID ("I" in the menu above). A new DPU may need to have its "Casino Communication ID" and "Oasis com parameters" set as well. Ask your IT department what the Casino Com ID is if you don't know.

The Drop

The Drop is the process of removing money from the slot machines. Since the bills are contained separately from the coins, there are two different Drops: the Hard Drop (coins) and the Soft Drop (bills). At a time specified as the End of Day (we will use 3:00am as an example), the Poller collects all the information from the slot machines and writes them in the database as the final daily meters. This process (called the Poller Rollover) will take a little time, so you will notice that the Drop Team may typically not start for 15-20 minutes after the Poller Rollover.

Guests playing after the Poller Rollover may put money into a machine before the Drop Team gets there. This would cause the amount of

money coming out of that machine to be different from what the Poller recorded, which is called a Variance. Variances are bad, but Oasis has a way around this particular problem.

There is a specified amount of time during which the money may be removed, which is called the Drop Window. The Drop Window is

defined by the Finance/IT department, and in this example will be from 3:00am to 9:00am. This "window" is the amount of time that the Drop Team has to remove the money from the slot machines. The Drop Team carries a Currency card, and when they empty a machine, the card is inserted and removed: no entries or buttons need to be pressed. This card

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```

CDS - DPUCFG
Auto
Casino Data Systems
DPU-II configuration Program-Version 1.10 (MSP) (TEST ONLY)
-----
"A" - Set progressive amount
"I" - Set DPU-II communication ID
"D" - Set DPU-II Date & Time
"W" - Set DPU-II Link down timeout
"L" - Set Link configuration
"M" - Set MSP configuration
"P" - Set ProVIEW meter sync params
"V" - Configure a ProVIEW Sign
"Y" - Download Link Error Message to ProVIEW

"C" - Set the Casino Communication ID
"O" - Set Oasis com parameters
"R" - Set RF parameters
"T" - Test Mode

"0" - Zero Memory
"X" - Download message to ProVIEW

"G" - Get data from DPU-II
"A" - Get progressive amounts
"D" - Get DPU-II Date & Time
"V" - Get DPU-II EPROM Version
"O" - Get Oasis configuration (Poller/Sentinel communication parameters)
"P" - Get ProVIEW sync params
"S" - Get Info
"M" - Get MSP configuration
"Q" - Quit Program

"I" - Get DPU-II communication ID
"L" - Get active link numbers
"W" - Get link down timeout value
"R" - Get RF parameters

Enter Command:

```

sends a signal to the Poller that the money has been removed from that machine. Any money the machine took from the time of the Poller Rollover and the time the Currency card was inserted is added to the previous day.

By doing this, any money the machines take while the Drop Team is at work will be posted to the correct day.

What the Drop Window does is enable the Currency card signal. When the Currency card is inserted in a machine

during the Drop Window, the Poller updates the currency meters for that machine. If the Currency card is inserted outside of the Drop Window, it has no effect. For this reason it is imperative that the Drop Crew only work within the Drop Window. If they

```

CDS - DPUCFG
Auto
"A" - Set progressive amount
"I" - Set DPU-II communication ID
"D" - Set DPU-II Date & Time
"W" - Set DPU-II Link down timeout
"L" - Set Link configuration
"M" - Set MSP configuration
"P" - Set ProVIEW meter sync params
"V" - Configure a ProVIEW Sign
"Y" - Download Link Error Message to ProVIEW

"C" - Set the Casino Communication ID
"O" - Set Oasis com parameters
"R" - Set RF parameters
"T" - Test Mode

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"O" - Get Oasis configuration (Poller/Sentinel communication parameters)
"P" - Get ProVIEW sync params
"S" - Get Info
"M" - Get MSP configuration
"Q" - Quit Program

"I" - Get DPU-II communication ID
"L" - Get active link numbers
"W" - Get link down timeout value
"R" - Get RF parameters

Enter Command:
Reading ID...Controller ID = 1
Device Type = DPU-II Turbo

Get what:

```

work outside of the Drop Window, the Currency card will not work, and the system will not know that money was removed. During the next Drop, there will be a Variance because the system will be expecting that money to be in the machine.

The Currency card is only for the Soft Drop, however. For the Hard Drop, the signal that tells the Poller when the coin has been removed is the opening of the Drop Door. While these signals come from different devices, the process is the same for the Hard and Soft Drop.

Because of this, it is imperative that all card readers and Drop Door switches (for machines that handle coin) are working and that all Sentinel boards are online. If a card reader is bad, the Drop Team will usually notice, and get someone's attention. The Currency card must be inserted and recognized by a machine or the money cannot be removed from it without causing a variance. If a Sentinel is offline, the Currency card will be read but the Poller will not see the signal until communication is established. If a Drop Door switch is bad, the Drop Team will not notice, so it is up to the Slot Techs to be vigilant about the maintenance of both of these systems. Before the Poller Rollover, Slot Techs should check the status of the Drop Doors and Sentinels (via Omniview) daily. If any Drop Doors (or any door for that matter) shows open, it

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```
CDS - DPUCFG
Auto
Enter Command:
Zero All Memory or Jackpots (A/J) ?
No jackpots active!

Enter Command:
Select poller protocol:
    0=Old poller format (DPU I), 1=New poller format (DPU II)
>New poller
Select poller baud rate (0=9600, 1=19200) >19200 Baud
Select Sentinel type (0=Sentinel I, 1=Sentinel II, 2=GDAP) >Sentinel II
Select Sentinel baud rate
    (0=9600, 1=19200, 2=38400, 3=300, 4=1200, 5=2400, 6=4800) >19200 Baud
Oasis Parameters Set...

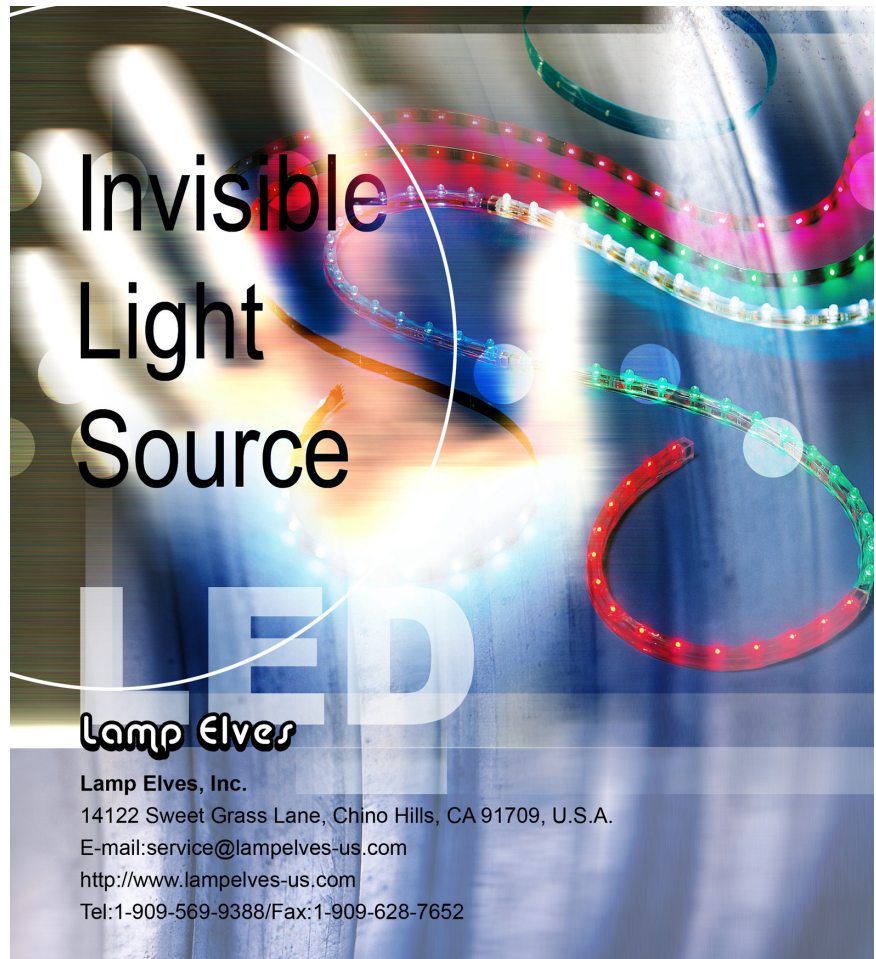
Enter Command:
Get what: 0
DPU Poller Communication configuration:
    New poller
    19200 Baud (DPU-PC)
Sentinel Communication configuration:
    Sentinel II
    19200 Baud (DPU-Sentinel)
Casino Com ID = 1

Enter Command: _
```

should be fixed immediately because if a Drop Door shows open when the Drop Window opens, the signal is immediately sent that the money has been removed from the machine, and a Variance may happen.

Slot Techs must also be diligent about the placement and maintenance of the barcodes used by the Drop Team (found inside the door to access the cash box). These are used to match the cash boxes with the machines they are pulled out of. If the barcode is on the wrong machine, Variances will occur. If a barcode is illegible, it will cause headaches for the Drop Team and Soft Count.

- Jason Czito
jczito@slot-techs.com



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New Marketing Director at Aristocrat Europe



Aristocrat Technologies Europe has announced the appointment of Marc Campman to the post of Marketing Director for Aristocrat, with responsibility across Europe, CIS, Middle East and North Africa, and the global marketing of ACE Interactive.

Campman has over 25 years marketing and business development experience in the IT, Telecoms, and Gaming sector, working for companies like IBM, Unisys Logica and Glu Mobile. He is working alongside Natalie Spicer, pending her return to Australia.

Nick Khin, the General Manager for Europe, Middle East and Africa, confirmed: "Aristocrat is delighted to have Marc on board. He brings with him a combination of experience, creativity and insight and his skills in the mobile and e-Gaming sectors will prove a major asset to the business as we embrace the opportunities of 2007."

Commenting on his appointment, Campman said: "Aristocrat is a major brand which has earned its reputation as a premium supplier of technologies and services to the international gaming industry. It is a fascinating company clearly rich in heritage but with an energy, dynamism and vision to take the gaming experience into new dimensions. I have joined at an incredibly exciting time for the business as it gears up for the challenges and opportunities of 2007, starting with its high profile exhibition at London's ICE show."

For more information please visit the Company's website at www.aristocratgaming.com or contact Lakshmi Kerr on +44 (0) 7801 849 189



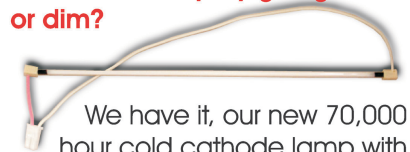
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Quick Simple Repairs #22

By Pat Porath



Code "92" on a Bally EVO Stepper?

In my 12 years experience working on games, I hadn't heard of an error code 92 on a Bally. First of all, what does the error even mean? There wasn't even a clue at this point, though I did know a few things about this particular game. It had a RAM error, and RAM was cleared and the options were set. The game only needed to be tested, something that is now required after all RAM clears. To make a long story short, once upon a time I cleared a game, used the WRONG clear chip and made a nickel game into a quarter game. A payout was also authorized and about \$400 was overpaid on the game. I made a mistake, got a three-day suspension and ninety days probation (this was some years back). Now, once RAM is cleared, paperwork has to be completed and the game needs to be verified by two techs.

Anyway, back to the Bally. The options were set and we only needed to test the game but this error code 92 was in the way. I tried the usual things such as rebooting the game, opening and closing the door a few times, reseating the main board, and turning the reset key but nothing helped. I also noticed that we were not getting an open and closed door on the CDS display, which meant that the game was not communication with the tracking system.

At that point we thought it might be a Sentinel problem. The power was cycled on it and the connections were checked but no luck there either. Now it was narrowed down to the game options. On my handy Dell PDA I have the options for a Bally, so they were checked and not long into the option process, there were differences. Instead of digging out the manual, we compared the options to a similar game next to it. The options were set PROPERLY, and the error code disappeared. We also had a main door open and closed on the CDS display, which meant that we now had communication.

The Future Logic GEN 2

I recently received a couple of emails regarding the GEN 2 printer so I thought it might make a nice topic for Slot Tech Magazine.

There are two different types of the GEN 2: One is the PSA-66-ST2R, which uses the RS232 type interface. The other is the PSA-66-ST2N, which uses the IGT Netplex interface. Only the PSA-66-ST2N can be used in IGT games. If the RS232 type is installed, it will not work and vice versa.

A few of the cool features of the GEN 2 are as follows:

"ITH" (Intelligent Ticket Handling) which prevents player interference during a ticket



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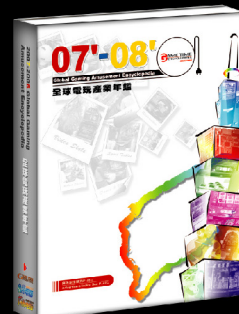
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print, so a customer can't pull out a ticket when it's partially printed. It has a variety of paper tray capacities, 300, 600, and 900. A 3.5-inch per second print speed A 4k input buffer Multi color troubleshooting indicators A self-test mode The print resolution is 203 dpi 24VDC at an average of 2.7 amps Print and present in 2.2 seconds

The printer has status lights, which can be used for troubleshooting. The keypad lights are green, which means the printer is ready, yellow, which means it is out of paper or has a paper problem. The orange color means it is open, and the red means the unit has an error.

There are six printer sensor functions on the GEN 2, and they are as follows:

Paper out - the paper out sensor is on the printer head. It looks to see if paper is inserted.

Paper low - The paper low optic is located on the right side of the paper tray when looking straight on at it. The bezel and/or the change light will blink once there are about 14 tickets left in the tray. It is reset once the paper is refilled in the game. Paper taken - This sensor is in the chute of the GEN 2. It looks to see if the customer has taken the ticket that has just printed. Drawer open - The optic checks to see if the printer is open, such as to fill paper.

Platen engaged - This sensor is inside of the printer head. It detects when the platen is in use. The yellow colored platen lever is used to clear a bad paper jam or to clean the thermal print head.

Printer open - The printer open sensor is in the front of the unit, it detects when the printer head is opened. This may be opened to clear a jam or for cleaning.

The Printer Bezel Indications

When walking around the gaming floor, have you ever noticed that on a few games, the printer bezel is blinking? They are blinking for a reason, not just to look pretty. When the bezel is "solid on" it means the printer is in idle mode and ready to print. A slow blink means the paper is low or it has a type of error. When it is blinking very fast, it means the printer is printing. If the bezel is off, there may not be power to the printer or power to the bezel.

Printer Errors

These printers, in my personal opinion, run very well. At the casino where I work, we have very few problems with the units. When an error does occur, here are some pointers:

"Head up or head open" - The printer head may not have been closed

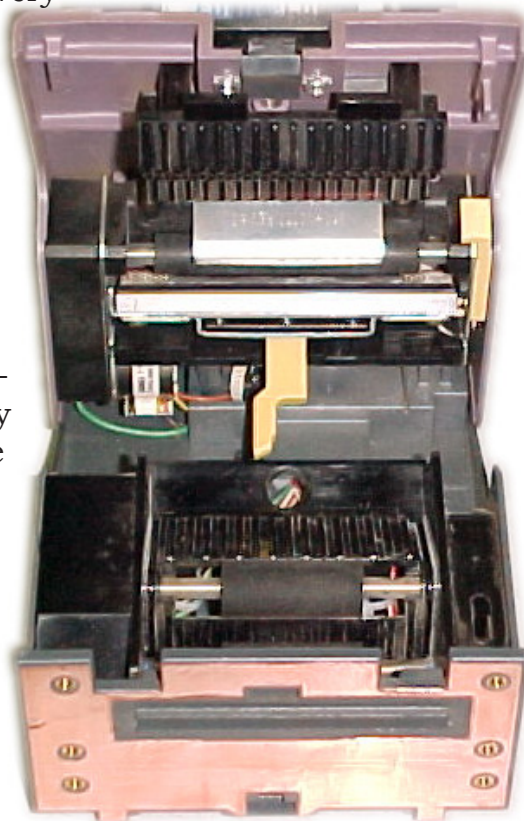
properly. Try opening and closing the head again.

"Temperature error" - The printer has overheated, it should go back to normal operation if it wasn't too severe (I haven't run into this error yet).

"Voltage error" - This will happen if the DC voltage is under 24vdc and if it is over 25vdc.

"Head error" - The unit has some type of internal error, such as the thermal board, or a cable problem between the motherboard of the printer and the head. The error condition remains until the power is cycled on the unit or until the problem is repaired.

More information can be found at www.futurelogic-inc.com



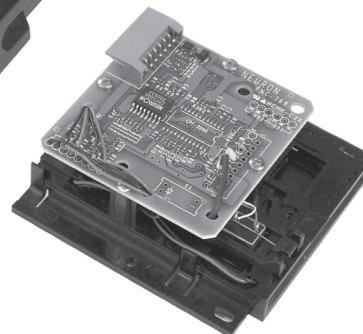
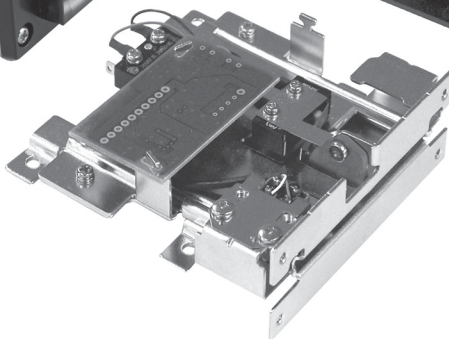
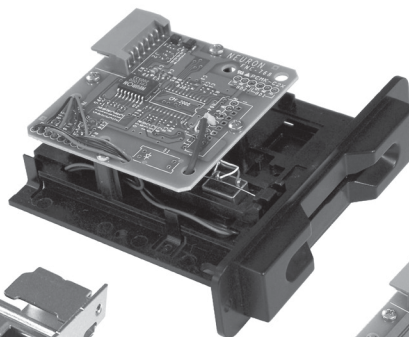
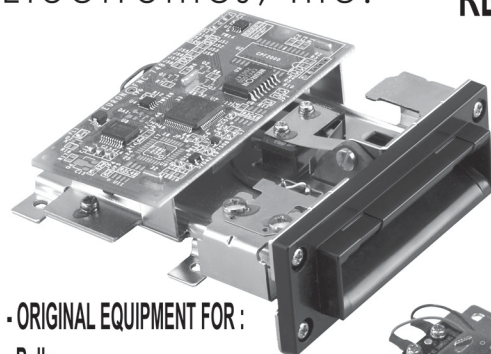
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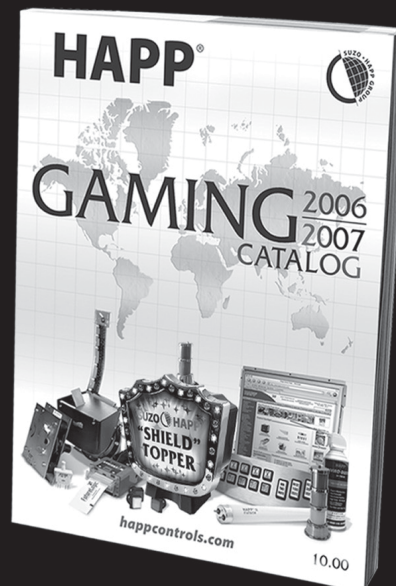


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Aristocrat Communication Problem on a Mark VI “Spring Carnival”

This game had communication problems since just about day one when it was installed on the gaming floor. Once the RAM was cleared on the COM board, the CDS Sentinel was rebooted and the game power was cycled. What was left? The communication would last for a day or two, then a slot attendant would come across the radio and call that it locked up for a payout instead of printing out a ticket. The Aristocrat COM board was replaced a few times, the Sentinel was replaced a few times, the connectors were checked, the main and I/O boards were reseated too but nothing seemed to help. It worked for a little while then STILL loses COM. I worked on it, co-workers worked on it and we all had a heck of a time figuring out what the deal was with this game. Since it wasn't something “broken” all the time and parts were replaced, what was going on? Different techs tried more things, such as comparing game options, and then one tech thought to ohm out the cable that goes from the COM board to the backplane. First he firmly pressed on all of the wires in the connector and then he used the VOM to read the ohms on each wire (There are only six, so nothing too major). The readings came out great, .001 ohms on each. Once the cable was reconnected to the backplane board (connector P19 marked

“BDACOM”) and reconnected to the COM board up top in the game (at the connector on the far right) the GAME WORKED PERFECTLY. The problem was a slightly loose connection in a connector that would only communicate part of the time. To the eye, the wires looked okay but they were not snug enough to work properly. We haven't had a problem with the game since.

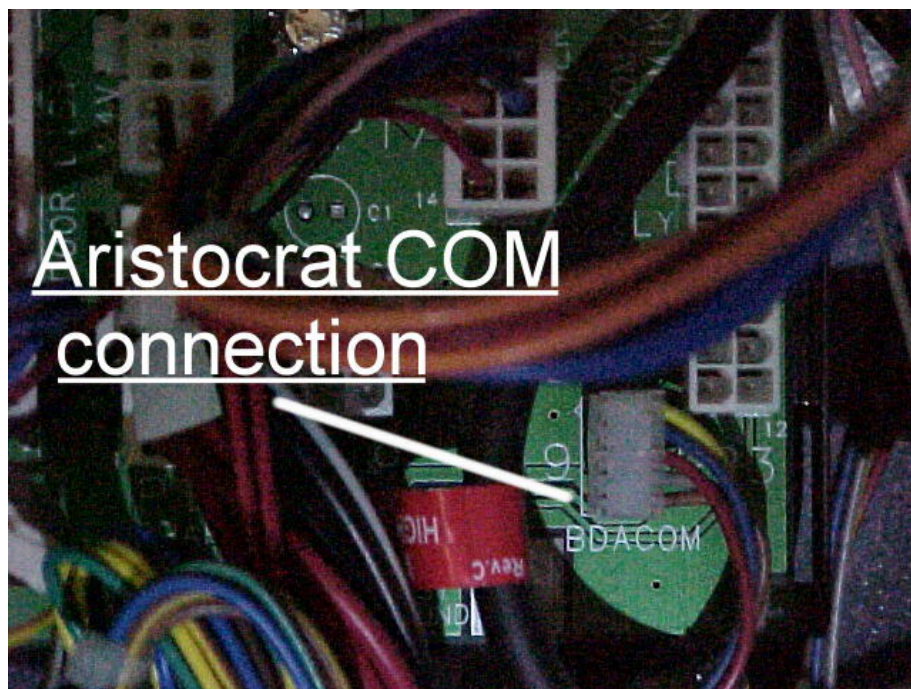
WMS Bluebird Stepper Reel Tilts

Once, we setup a pile of Bluebird reel games and after our tracking system and locks were installed, we started powering them up. Some of them had reel tilts that didn't want to clear. The games were rebooted and the same thing occurred. After recalling that reel number five had to be pulled to install the door lock, I made sure that it was seated properly. The reel

WAS seated, but not properly. The connection was made for power, but it didn't “click” into place. Once I noticed that they were rubbing on the door a bit and seated the reel PROPERLY, it was fine; there were no more reel tilts.

Bally Cinevision “Hot Shot Progressive” Button Panel Problem

Have you had a situation where none of the buttons would work on a Bally Cinevision? It took a little time but the problem eventually was resolved. First of all, the button connections were checked. They all looked ok. Next, the connections on the game's “backplane interface” were checked followed by the backplane connections themselves. All looked to be fine. The main board was reseated (there may have been a loose connection) but not this time. Well, time to



start replacing parts. The backplane board was changed out (not a fun job at all) and the main board was changed out. Still nothing affected the buttons; none of them would work at all. Wiring was compared to the game next to it but that all looked fine too. This game has more or less been gone through completely and the yet problem still exists. What the heck? Come to find out, there was a ground issue with the button wire harness, therefore none of them would work. A temporary ground was made and bingo, it worked. Buttons on the older IGT PE can be tricky too. Here at the Island Resort, we have a bank of "Double Double Bonus Poker" games that periodically have player button problems. On these games, the wire connections have to be PERFECT.

AC-Coin "Bingo Nights" Progressive DCU Error

We have a bank of AC-Coin "Bingo Nights" progressives that had a "secondary SAS down" error on all of the games. Obviously it was a major communication problem that involved every game in the bank but what could be the problem? The tracking system was working fine. Once the Mikohn DCU (data collection unit) was checked, the problem was right on the display. It showed "CRC corrupt." A few reboots were done to the unit and the error would come right back. Connections were checked and everything looked to be okay. Time to call the ser-



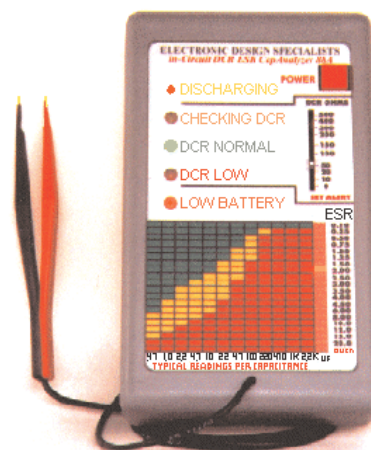
vice tech. After talking to him, he stated that more than likely, the DCU had died. I told him what we had done and he said that's what he would have done too, so he had one shipped out. Later on in the week the unit was replaced and the games were back "online." The DCU is a neat unit. It will tell how many games are communicating, such as "channel 1,

8,0" which means all eight of the games are online. It has a "heart beat" LED to show it is working properly and of course, transmit and receive LEDs. The units run very well. That is the first unit I have seen that needed to be replaced.

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Troubleshooting SENET

By Herschel Peeler

SENET problems always seem to be a pain on IGT games. No matter where I go I always seem to find IGT games with SENET problems. Even the best of techs get hung up here. Maybe we should start with a short story about what SENET is all about.

SENET is a great idea in its concepts. We take most of the high failure circuits off the MPU board and put them on smaller assemblies outside the locked MPU so they can be changed easily. Simple circuits like lamps, switches, solenoids, meters and such have no microprocessors in them as bill acceptors and ticket printers do. SENET boards are flexible semi-smart circuits that act as an interface between the smart MPU and the simple circuit world of switches and lamps. By design, you can have up to 16 devices on SENET. Each device can have 16 I/Os. So the maximum system can have 256 Inputs and 256 Outputs. All this change can be done without changing the MPU design. Each device is assigned an address. The MPU talks to each device

by referencing this address and reading or writing information to it.

In between the CPU and the I/O world outside the MPU is the SENET Controller chip. This is an Application Specific Programmable Logic chip made specifically for IGT, and yes, they do come in different types. I don't think ones made for a video game, for example, will work in a reel game. The same basic design may be used, but there must be differences. I confess to never having made a study of it.

SENET is a form of serial I/O. The signals are open-collector running from the +13 Volt supply, so our signals should be either ground or +13 Volt levels when idle. When the bus is active, trying to measure the voltages may be meaningless. Trying to measure a changing signal with a meter yields weird voltages. Since malfunctions would also show up as weird voltages, trying to measure voltages on an active system is futile. Before you try to make voltage measurements on the SENET bus, kill SENET by pulling the MPU out of the backplane then take voltage measurements. If that isn't possible due to a locked MPU, hold the Reset button in while making the voltage measurements. This keeps the MPU in RESET

and thus not making SENET active. Reset stops the SENET Controller from operating.

SENET Signals

SENET is a Synchronous Serial Bus system. All operations are done one bit at a time, accompanied by a Clock Pulse. We only have a few signals to be concerned with:

SENET Ground SENET Power (+13 V DC) SENET Clock – Our synchronous clock pulse that must accompany all operations except Reset. SENET Reset – Often labeled as SENET Enable. When active it resets the SENET bus. We would typically find this signal active between SENET operations or on Power-On Reset. SENET Transmit Data A, and Transmit Data B – We have two outgoing paths from the SENET Controller on the MPU. Typically TxDA is used for lamps, solenoids, counters and such, while TxDB is used for 7-segment displays and Reel Back Light Control Boards. SENET Receive Data – Only one used. This is data coming into the SENET Controller and MPU from switches and other inputs. This is only for the same channel as the TxDA side. I have never seen it used to read data in from a device that uses the TxDB side data. I guess that would be possible, but I don't think I have ever seen a SENET

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board that uses TxDB output and returns data on RxD. SENET Strobe – Data is sent out from the MPU 8 or 16 bits at a time. 8 bits for sending an address. 16 bits for data. At the end of each operation the Strobe pulse ends the operation.

A typical SENET operation might start with the following steps: First the SENET Controller selects the device it wants to talk to on the bus by sending out an address.

SENET Reset (to clear the bus). 8 SENET address bits, each accompanied by a Clock pulse. (Set the bit, clock pulse, set the next bit, clock pulse, set the next bit, clock pulse... most significant bit first.) SENET Strobe

All devices get this information. When a device recognizes its address it gets ready to send and receive information.

The SENET controller then sends out 16 bits of information, one bit at a time. At the same time it is sending information it is reading information from the selected device too.

Set the output bit, clock pulse, read the input bit; set the next output bit, clock pulse, read the next input bit... until 16 bits have been transferred, most significant bit first.

SENET Strobe ends the cycle and the next operation can start.

Send the next address, read and write the data, end with Strobe.

Speed of the operation is unimportant. This is one advantage of using a synchronous system. Speed of our clock pulses can be as slow as manually setting inputs or as fast as the logic will

allow. I have built manual test fixtures to operate a Door I/O board and I know this procedure is good.

Troubleshooting hints and tips

Most problems can be resolved by just swapping out the boards, but sometimes you need a way of troubleshooting those problems that just aren't so obvious. Following are some troubleshooting hints that may seem useful.

“Meter disconnected” This is one of the first checks the IGT game makes when it comes up. If SENET is dead the error reported might indicate “Meter Disconnected” but the problem is really best described as “SENET is not working at all.” In this case, you can swap out all the boards with known good boards.

Making continuity checks of SENET With game power off you should be able to make continuity checks from the 14-pin MiniFit connectors on the end of the boards. All these are connected together.

Pin 1 – Ground (SENET Ground)
Pin 2 – SEN CLK, SENET Clock
Pin 3 – SEN ADR, SENET Address
Pin 4 – SEN RxD, SENET Receive Data
Pin 5 – SEN TxDA, SENET Transmit Data, A channel
Pin 6 – SEN TxDB, SENET Transmit Data, B channel
Pin 7 – SEN STB, SENET Strobe Pulse
Pin 8 – SEN RST, SENET Reset line
Pin 9 – +13 V DC
Pin 10 – +25 V DC
Pin 11 – Ground (for the 25 Volt line)
Pin 12 – Ground (for the 13 Volt line)
Pin 13 – (not used usually)
Pin 14 – (not used usually)

The square solder pad on the board can identify pin 1 of the connector. Following down that

side to pin 7. Pin 8 starts back beside pin 1 and proceeds down the other side.

Making voltage checks of SENET Turn power off. Pull the MPU board out a bit. Return power on. The SENET is powered from the backplane. Pins 2 through 8 should be high, roughly +13 Volts. Pin 9 should be +13 Volt Power (typically +12.5 to +13 V). Pin 10 should be +25 Volt Power (typically +24 to +26 Volts). Pins 1, 11 and 12 should be ground. If you find an odd voltage, turn off power and pull the SENET boards one at a time, then restoring power until you find the one that is pulling that line down.

Using the game to test boards Not all circuits are used on all the boards. On Game King Plus games, there is a second Door I/O board (75427802, or just “802”) that only controls the added buttons of the “Plus” games. These are the five “Play x Lines” buttons on the top row of the Player Panel. So using a game to test a board may not be a good idea. Another reason not to use a game to test a board is the possibility that a damaged board may have caused damage to the game. Putting the questionable board into a good game could take down the good game too. It is better to replace the board with a known good one and test the boards on a test fixture or a game that is not in play.

Which boards control what? On S2000 the Door I/O is typically a 75427801, or referred to as an “801” board. This board controls most of the player panel switches and lamps and coin-in circuits. The Cabinet I/O, 75427601, or just “601”, board controls circuits in the lower cabinet area. On TITO games



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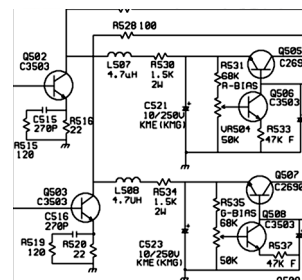
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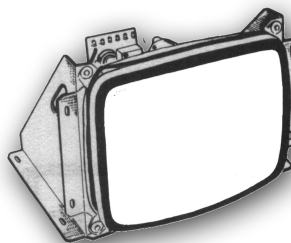
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this board might only control the “Meter Disconnected” circuit and Tower Lamps. Not all the functions may be in use.

On Game Kings the Main Door I/O board may be an “801” or “802” board depending on the model of the game. Game King Plus designs add a second Door I/O that must be an “802” board.

What is the difference between an “801” and an “802”? Both of these boards are almost identical on the schematic. The main difference is the part of the circuit that sets the addressing for that board. On the “801” board you will find jumpers “B0” and “B2” on the board itself. Look for R13 to R16 on the bottom of the board. On “802” designs the addressing is done in the cabling by putting in jumpers “B0” through “B3” lines. The board is designed to use a DIP switch to set addressing also. Four LEDs on the board indicate what address the board is currently set for.

Use of the “802” boards may differ between model types, so take the preceding statement with a bit of consideration in any specific game. Generally speaking general statements are only generally true.

Editor’s note: I am laughing my ass off!

Yes, you can take the jumpers off of the “801” and have it function as an “802” but this would be confusing for those who follow you. The board would no longer function as an “801” in an S2000.

On the Motherboard You have three connectors dedicated to SENET on the motherboard. One is labeled for “Door I/O.”

One is labeled for “Cabinet I/O.” The other is SENET going to other areas, such as the top box on games that have features to control up there. These are all wired together. A problem on one can effect all others.

What normally fails? Two areas fail most of the time. When SENET boards are “Hot Swapped” the chip that dies most often is the 40106 (or 4106) which is the first inverter on the SENET signals on the board. Otherwise it is an output transistor that is on the outputs. These are a dual N-MOSFET. One side melting often takes out the other side as well.

Input signals are fairly well protected by a resistor network, but I have seen them fail in rare instances. Since the circuit is a good design I can only suspect that static electricity was to blame, but that is like blaming it on the devil. I don’t think I could ever prove it to anybody.

Other board failures I have seen are due to “mis-adventure” and are not a failure of the SENET board itself. One side of the player panel switches is connected to ground. One side of the player panel lamps is connected to +13 Volts. If a loose wire is found and reconnected improperly, there is a possibility of creating a short between +13 V and Ground. Since this power runs through the SENET Bus, the weakest link in the system is what blows. One possibility is the Door I/O board. If you replace a Door I/O board that has heavy damage, look for a reason before replacing the board. Check for overheated wires on the Player’s Panel and burned contacts on the SENET connectors.

Problems on the motherboard The “Mis-adventure” problem mentioned in the previous paragraph often plays havoc with the motherboard and MPU board. Traces burn out. Continuity checks between the SENET sockets will usually find this damage.

Problems on the MPU board. There are only three ICs on the MPU that are concerned with SENET. One is the SENET controller itself, which is on a socket. Consult your schematic for which one this is on your model. The SENET controller runs on +5 Volts DC and the SENET bus runs on +13 VDC, so we have to have a Voltage Level Converter between these two circuits. This is typically a “4504” inverter. In between the 4504 and the bus is another buffer. This is usually a “74HC240.” The 74HC240 takes damage often, also. The damage seldom gets back as far as the 4504 or SENET Controller, but it can happen. When troubleshooting this area, check for damage on all three chips.

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Slot Tech Magazine is
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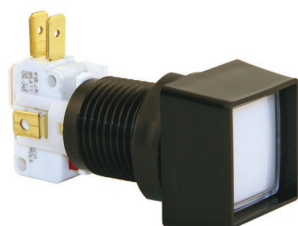
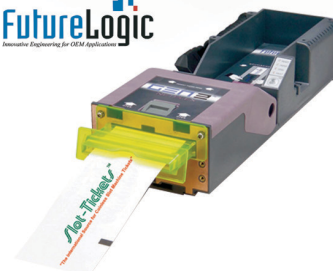
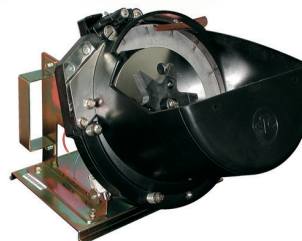
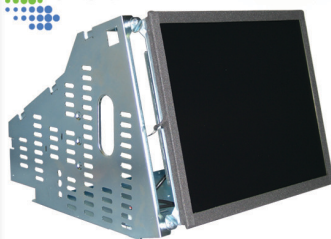
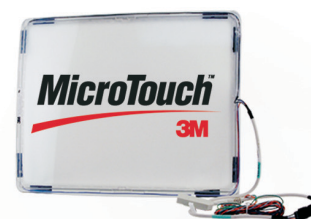
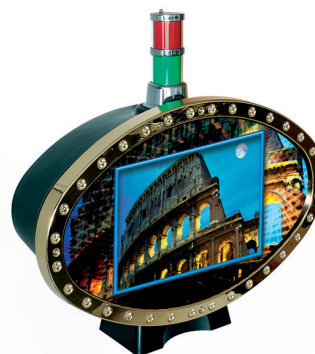
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