Competitor Software Revisions

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VERSION 2.19 RELEASE NOTES Steve Logue @ Grain Systems, Inc. Release Date: Sept 17, 2001

- If J1-15 is at zero volts the dryer acts the same as version 2.18 is programmed within. If j1-15 is held to +12VDC before the unload cycle in batch is reached, when it does reach unload the dryer will turn off the fan and heater (only if switches in AUTO position), turn off the unload and wait for j1-15 to go back to zero. When it does the dryer will resume normal operation. This function cannot be activated if the unload cycle has already begun.
- Total batches are now reset by holding in on the INCREASE KEY while turning on the control power.

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VERSION 2.18 RELEASE NOTES Release Date: 08/15/2001

- Removed warnings for grain temperature sensor short and open except when plenum temp is greater than 86 degrees F. When that is the case a grain sensor shorted error can be reported. Also, the grain temp is monitored by thermistor for overheat at all times except when plenum temp is below 64 degrees F. There is a snap switch monitoring the grain temp for an overheat at all times in addition to the computer monitoring the grain temp thermistor sensor.

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VERSION 2.17 RELEASE NOTES Release Date: 10/31/00

- Fixed software so when dryer shuts down in unload cycle, while in dual grain mode, when it is restarted it will begin where it left off regardless of the grain temp.

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VERSION 2.16 RELEASE NOTES Release Date: 10/13/00

- In on/off mode the burner plenum differential is 1 degree, and in hi/lo it is 3 degrees.
- Out of grain shutdown was not stopping the batch timers from running - it does now.
- Unload 2 speed setting in batch now does the exact same thing as Unload 1 speed setting.
- You can no longer view the dry timer while in the dual grain mode.

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VERSION 2.15 RELEASE NOTES Release Date: 09/22/00

- Fixed problem of dryer stopping at the unload timer and never finishing the drying cycle.

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VERSION 2.14 RELEASE NOTES Release Date: 11/16/99

- If dipswitch #4 is on the dryer has two plenum setpoints and two grain temp setpoints. If grain temp is less than LOW GRAIN TEMP setpoint the dryer cycles with the HIGH PLENUM TEMP setpoint. If the grain temp is above the LOW GRAIN TEMP setpoint and below the HIGH GRAIN TEMP set the dryer cycles with the LOW PLENUM TEMP setpoint.
- Also fixed time clock and batch counter. If you press the up arrow the following is displayed on the screen one at a time:
  1) Total hours * 100
  2) Total hours
  3) Total minutes
  4) Batch count
  5) Time in minutes since last shutdown

* Holding in on the PROGRAM TEMP key while turning on the power resets the total time.

==========

VERSION 2.13 RELEASE NOTES Release Date: October 15, 1997

- Changed software so that if the dryer is running with low heat timer selected (dip switch 5) then during unload or cool cycle, with burner and fan switch in ON position, the dryer will determine plenum temp from low heat setting.

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VERSION 2.12 RELEASE NOTES Release Date: November ?, 1997

- Added software to make hour meter and batch counter work., Press the up arrow.

==========

VERSION 2.11 RELEASE NOTES Release Date: October ?, 1998

- New software that added a lo heat temperature and timer just like a strictly batch dryer. Dipswitch 5 selects this option.

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VERSION 2.10 RELEASE NOTES Release Date: November ?, 1997

- It had been reported that a very high percentage of the eprom (93c46) chips on the competitor dryer boards were going bad. My initial guess was low quality ICs, but in version 2.10 I attempted to reduce the number of writes per unit time to this device. Time will tell.

==========

VERSION 2.09 RELEASE NOTES Release Date: October 23, 1997

- In software release 2.07 there was a problem concerning the fashion in which warnings are reported to the user. If a safety opened up on the dryer the correct error was reported until that safety closed, at which time an error #9 is displayed. This has now been fixed. When a safety warning is given now the computer stops checking all the others until the user presses the stop button.

==========

VERSION 2.08 RELEASE NOTES Release Date: N.A.

- Because of work in progress on 2.08 and the immediate need for the Error 9 update this version number was skipped.

==========

VERSION 2.07 RELEASE NOTES Release Date: April 15, 1997

- It was noticed by the Keith selbach that the unload and load were coming on momentarily when the dryer was turned on. This has been fixed, but the load and unload still come on for a moment when the dryer is being programmed.

==========

VERSION 2.06 RELEASE NOTES Release Date: April 14, 1997

- When the increment key was pressed and held the upper limit was two minutes. This has now been corrected.

==========

VERSION 2.05 RELEASE NOTES Release Date: Feb21, 1997

- The ignition time is now limited to 10 seconds instead of 15, and this stops the computer from performing a reset before the ignition grace timer expires. Note: Version 2.04, I am told, was unsuccessful in fixing the out of grain shutdown problem. Minor glitch does not effect operation. Minor glitch does not effect operation.

==========

VERSION 2.04 RELEASE NOTES Release Date: Feb21, 1997

- In testing Keith had noticed that in an out of grain warning situation the start light comes back on, which is connected directly to the maxon power. This has now been fixed.

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VERSION 2.03 RELEASE NOTES Release Date: Jan 31, 1997

- It was reported that if the ambient temperature went below zero F the dryer would report an error 4 (plenum temperature probe is open) and would not run until the plenum or grain temp probe was warmed above zero (usually with your hand). This has now been fixed for a full scale reading of -40 to 275 F. There however may be problems if there is more than about a 100 degree differential centered at around 70 F. This is due to the change of temperature scales

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VERSION 2.02 RELEASE NOTES Release Date: September 9, 1996

- Fixed the user safety. In 2.00 and 2.01 if you had an error when the dryer was turned on it would give a user safety. The I/O board is never initially read if an error exists during startup. I didn't know.

==========

VERSION 2.01 RELEASE NOTES Release Date: August 24, 1996

- Added mercoid sensor for canada as pin J1-16. *****REMEMBER You must jump 12 volts from J7-8 to J1-16. *****ERROR 11 is Mercoid failur

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VERSION 2.00 RELEASE NOTES Release Date: August 19, 1996

- User safety added as pin J1-17. *****REMEMBER You must jump 12 volts from J7-8 to J1-17. *****ERROR 10 is User safety

==========

VERSION 1.23 RELEASE NOTES Release Date: April 31, 1996

- Changed the warning display to show three zeroes anytime a non- numerical error is indicated.
- Changed the way in which the a good communication line between the I/O board and the main computer is determined. J1-18 must be disconnected all the time or the main board will report a communications failure.

==========

VERSION 1.22 RELEASE NOTES Release Date: April 24, 1996

Steve Logue @ Grain Systems, Inc.

- A bogus plenum hi limit occurred after any program key was pressed for the first time after turning on the dryer, if the plenum and grain temperatures were below 64 degrees F. This was caused by the pull up resistor on the analog input being changed and then sampled without providing adequate time for the circuit to reach equilibrium.

==========

VERSION 1.21 RELEASE NOTES Release Date: April 2, 1996

Tim McDonough @ Illini Technology, Inc.

- When one of the fixed safety inputs that connect to the main fan/heater board opened the proper error was briefly displayed and then the indicated error changed to "#9 - I/O Board Error". This was caused because the shutdown sequence turns off the I/O board for safety reasons. The software has been changed so the displayed error will remain on the display.
- When one of the program switches was pressed as the first operator action after turning on power to the system, a bogus high plenum temperature error was detected. This condition did not occur all the time but occurred randomly. The temperature measurement software was changed so that the analog to digital converter is read several times during the display of the version number, etc. This will provide more time for a good reading to be obtained before normal error testing begins.

==========

VERSION 1.20 RELEASE NOTES Release Date: March 11, 1996

- Corrected the problem that caused the control to reset on a loss of flame. The grace timer was not getting started when the air switch testing was disabled. When this occurred the software would never shut down on a loss of flame until the hardware safety timer on the electronics timed out and reset the system.
- Emergency cooling mode is now controlled by both the grain and plenum temperature high limits. The fan can be run if either temperature is high and once started will continue to run until both temperatures are below the fixed limits.

==========

VERSION 1.19 RELEASE NOTES Release Date: January 24, 1996

- The test for the I/O board being connected is now only done when the triac that provides AC power to the board is on. This should prevent Error #9 codes from shutting down the dryer during emergency cooling mode.
- Added an additional logic test to keep the heater solenoids from kicking on at the end of the unload cleanout following an out of grain shutdown.

==========

VERSION 1.18 RELEASE NOTES Release Date: January 8, 1996

- Changed display routines to turn off the meter roll speed indications when the drive shuts off during emergency cooling mode.
- Added a better test to see if we're communicating with the I/O board. This error appears on the display as error #9. The main purpose is to detect the I/O board not being connected after new software is flashed into the system. This error test could also detect a bad input shift register although this type of failure is less likely.

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VERSION 1.17 RELEASE NOTES Release Date: November 20, 1995

- During Emergency Cooling Mode, the safety test for the plenum and grain backup thermostats is bypassed so that the fan can be run to cool down the dryer.

==========

VERSION 1.16 RELEASE NOTES Release Date: November 13, 1995

- Added an error display for a shutdown due to high grain temperature. The dryer previously shut down, but did not indicate the cause of the shutdown.
- Changed the startup code so that holding down either the up and down arrows or just the down arrow will restore values to factory defaults. Holding both is consistent with the 2000 Series fan/heater controls.
- The dryer will now clean out the unload auger after an out of grain condition is detected before it shuts down.
- Added a display mode to show the user how long ago the dryer shut down when an error is being displayed on screen. While an error condition is being displayed, pressing the decrement key will show how long ago the dryer shut down. The time is displayed in hours and tenths of an hour. If the dryer has shut down and ".0" is displayed the dryer has been shut down less than 6 minutes. The maximum amount of time that can be displayed is 99.9 hours. Once the stop switch is pressed to clear the error, the counter is reset.

==========

VERSION 1.15 RELEASE NOTES Release Date: October 17, 1995

- Changed the power up sequence to try and avoid the "plenum high limit" error that occurs if one of the program switches is pressed without first pressing the stop switch. I believe this occurs because some of the error handling flags, etc. weren't properly cleared before the dryer was run the first time.

==========

VERSION 1.14 RELEASE NOTES Release Date: August 24, 1995

- Added software tests to see if the power supply is producing the limit switch voltage that runs through the control and limit switches. If this supply is shorted the dryer now shuts down and the display shows an Error #8

==========

VERSION 1.13 RELEASE NOTES Release Date: August 8, 1995

- Changed the way timer and startup processing works to address the following reported problems:
  1. If the fan was turned off during the unload cycle, the unload auger and meter roll would never stop.
  2. In "dry & hold" after the dryer stopped at the end of the cool cycle it would restart and run through the cool cycle a second time when restarted.

==========

VERSION 1.12 RELEASE NOTES Release Date: August 7, 1995

- Changed the software for batch mode fan processing to correct a problem that caused the fan to operate during the batch unload cycle when the control switch was in the "auto" position.

==========

VERSION 1.11 RELEASE NOTES Release Date: August 2, 1995

- Corrected a problem that was preventing the running timer values from being updated when the new value was less than the currently running value.
- Reversed the polarity of the switch that controls how the burner cycles between high/low or high/off.
- Corrected a problem that prevented some errors from being cleared by pressing the "stop" switch.
- Corrected a problem that caused the burner to re-purge when the fan had not quit running when the air switch was bypassed.

==========

VERSION 1.10 RELEASE NOTES Release Date: July 28, 1995

CODE FOR ILLEGAL FLAME SENSE IS TEMPORARILY DISABLED UNTIL WE CAN TEST IT FURTHER. ERROR "999" BEING GENERATED.

- Added code to detect "Illegal Flame Sense" where there is an indication of flame in the burner and the gas valves are supposed to be shut. This error is designated Error 7.

==========

VERSION 1.09 RELEASE NOTES Release Date: July 21, 1995

- Added a test to the start switch processing to prevent the dryer from being started if there is a shutdown that has not been cleared by pressing the stop switch.
- Added additional error checking and numerical error codes for the following conditions:

Code ~~~~

01 Continuous to batch mode change
02 Grain Temperature Probe Open
03 Grain Temperature Probe Short
04 Plenum Temperature Probe Open
05 Plenum Temperature Probe Shorted
06 Flame Probe Short

==========

VERSION 1.08 RELEASE NOTES Release Date: July 13, 1995

- Changed the code that lets the user change the timer values so that if the newly changed value is less than the current running count the new value will take effect immediately instead of waiting until the start of the next cycle.
- When the dryer is stopped and the display is showing the timers, the displayed time is the amount of time remaining on the next timer that will run when the start button is pressed.

==========

VERSION 1.07 RELEASE NOTES Release Date: July 13, 1995

NOTE: WIRING CHANGES ARE REQUIRED WHEN UPGRADING FROM PREVIOUS VERSIONS OF THE COMPETITOR SOFTWARE TO V1.07 OR GREATER.

- The load auger contactor has been moved from J6-20 on the computer board to J3-11 on the I/O board. This change was made because of the glitch that occurs on the original output while new software is being flashed into the control system. BOTH THE HOT LEAD TO THE CONTACTOR AND ITS ASSOCIATED AC NEUTRAL CONNECTION SHOULD BE ON THE INPUT/OUTPUT BOARD.
- The operation of the burner control has been altered. If the burner shuts off but airflow through the plenum does not stop, the burner will not run through the purge cycle the next time it relights.

==========

VERSION 1.06 RELEASE NOTES

- Corrected a problem that caused the unload system to keep running if the fan control switch was turned to off during the unload portion of the batch processing.
- Changed the plenum and grain temperatures back to the original adc filtering routines.
- Virgil at GSI has confirmed that the load contactor briefly closes when the flash programming sequence is started. Vic and I reviewed the hardware and software. When the flash programming voltage is first applied (pressing start) there is no circuitry on the fan/heater board to reset the microprocessor. There is a brief time when the output used for the load auger may briefly turn on before the actual programming begins. This situation cannot be corrected in software and would require a redesign of the fan/heater printed circuit board and the addition of components to correct.

==========

VERSION 1.05 RELEASE NOTES Release Date: July 11, 1995

- Changed the cycle solenoid control to use a +3/-3 degree window per Randy Sheley.
- DIP Switch #6 provides two modes of burner operation.

OFF - Burner cycles between high and low flame base on plenum setpoint.
ON - Burner cycles on and off based on plenum setpoint.

==========

VERSION 1.04 RELEASE NOTES Release Date: July 10, 1995

- Reversed the polarity of the "emergency cooling mode" DIP switch in software. The feature should now work as described in the V1.03 release notes.
- Changed the cycle solenoid control to use a +0/-10 degree window per Randy Sheley and Dave Morrison.
- Changed the delay on the increase/decrease switches so that the values start changing rapidly more quickly than before.
- Changed the adc filtering to allow the system to respond more quickly to rapidly changing temperatures.
- Could not duplicate Virgil's report that the fan kicked on while he was adjusting the flame probe in the burner area.
- Have been unable to find any reason for the contactors briefly bumping on when the program is flashed in. I can't duplicate this problem on my simulator.

==========

VERSION 1.03 RELEASE NOTES Release Date: June 1995

- Added Emergency Cooling Feature. DIP Switch 7 in the "ON" position will let the fan run when "start" is pressed. While running in this mode the computer will ignore grain temperature warnings and continue to run the fan until either the grain temperature drops below the setpoint or the "stop" switch is pressed.
- Changed the fixed setpoints for temperature high limits to the following values provided by GSI:

Grain Temperature High Limit: 175 degrees Plenum Temperature High Limit: 260 degrees

==========

VERSION 1.02 RELEASE NOTES Release Date: June 20, 1995

- Changed the information in the data table that the Flash programmer uses to allow programming a 64K ROM instead of a 32K Production units will ship with a 64K Flash EPROM instead of the 32K size originally planned.
- Fixed a problem that caused the unload timer to time down when the unload control was in the off position in batch mode. If the unload switch is "off", the dryer will run through the dry and cool cycles, then shut off. If start is pressed without manually resetting the timers, operation will begin with the unload cycle.

==========

VERSION 1.01 RELEASE NOTES Release Date: June 13, 1995

- Changed the programming modes so that when the increment or decrement switch is held down, the value for temperatures will be changed 10 degrees at a time and the timer and delay values will be changed a minute at a time instead of in tenths of a minute. The switch must be released andn pressed again to get back to the "slow" change mode.
- I was unable to duplicate the problem reported with the unload delay in continuous flow and 1 speed but I did find a place where the delay timer was not being stopped when the auger and meter rolls were turned on. This may correct the problem.
- In batch mode when the dryer is stopped, the amount of time on the next timer to run (dry, cool, or unload) and the appropriate cursor is displayed when the mode select is cycled to display the timers.

==========

VERSION 1.00A RELEASE NOTES Release Date: June 9, 1995

- Changed unload software so that when moisture control is off and the dryer is in continuous flow, the meter roll runs at the high speed when the grain is at or above the temperature setpoint.
- I cannot reproduce the occasional problems reported with the load and unload delays not always working.

==========

VERSION 1.00 RELEASE NOTES Release Date: June 8, 1995

- Production GSI-0014 Systems are nearing final test at Illini Technology. The software version number was incremented to V1.00 to reflect product that's shipping.
- Per Steve Logue, I've designated output J3-09 on the I/O board for a Moisture Control Light. Whenever the moisture control switch is turned on and the measured grain temperature is below the programmed setpoint, this output will turn on a lamp as an indication that the grain is too cool, the dryer may be holding for temperature, etc.
- Fixed a problem with the HI SPEED / LO SPEED indicator that crept in when the polarity of the meter roll signal was changed in V0.17.
- Changed the way the hi/lo speed switch occurs during moisture control operation to prevent the speeds from constantly switching back and forth right at the setpoint. The control now switches to high speed when temperature is reached but does not drop back to low speed until a full degree below the setpoint.

==========

VERSION 0.17 RELEASE NOTES Release Date: June 6, 1995

- Modified the fan, burner, and error processing software so that testing of the air switch can be defeated by placing DIP Switch Position #8 on the computer board in the "ON" position.

****

* SAFETY NOTE: WHEN AIR SWITCH TESTING IS DISABLED IT IS *
* POSSIBLE FOR THE GAS VALVES TO OPEN WITH *
* NO AIRFLOW IN THE DRYER. *

****

- Reversed the signal to the metering roll speed pot select logic so the pots are selected as indicated on the factory prints.
- Checked my system for problems with not resetting the timers when the stop switch is held down. It reset them to the programmed values every time.

==========

VERSION 0.16 RELEASE NOTES Release Date: June 6, 1995

- Discovered that the control would only control the cycle gas solenoid when the plenum temperature was being displayed. This was corrected and I've confirmed that the solenoid is controlled no matter what value is being displayed on the screen.

==========

VERSION 0.15 RELEASE NOTES Release Date: June 5, 1995

Comments on the June 5, 10:20AM fax...

- The new display LCD display indicates HI SPEED and LO SPEED. There is no OFF-CYCLE text.
- A shutdown due to a loss of airflow indicates NO AIRFLOW when the new LCD is installed in the dryer.
- There is no text available on the new LCD display to indicate the dryer is holding for the grain to reach the temperature setpoint.

Changes new to V0.15B...

- In continuous flow mode with moisture control turned on and the unload system in one speed mode, the meter rolls now run when the grain temperature is at or above the setpoint and stop when the grain is below the setpoint.
- When the meter roll turns off due to moisture control, the unload auger will also stop after running through the "unload delay" time period.
- A vapor high limit warning now lights the "vapor" and "temp hi limit" portions of the LCD.
- Corrected a problem that caused the dryer to lock up in the error display mode when a continuous to batch mode change error was detected.

VERSION 0.15A

- Corrected problem with the polarity of the vapor high limit signal.

==========

VERSION 0.14 RELEASE NOTES Release Date: June 1, 1995

- Added support for lighting the LO/HI SPEED messages on the LCD whenever the SCR Drive is operating. Fixed a problem in the cursor display table that prevented the "LO" and "SPEED" display segments from being lit at the same time.
- Updated "factory default" values for timers, etc. to match those in the other portable dryer software.

==========

VERSION 0.13 RELEASE NOTES Release Date: May 31, 1995

- When you are in one of the three program modes you can now immediately exit the current mode by pressing the "MODE SELECT" switch. This avoids the user having to step through each section if they are only changing one of the first values.
- When the "START" switch is pressed in batch operation, the timer values are restored to the state they were in when "STOP" was pressed or an error occurred.
- Pressing the "STOP" switch and holding it down for 4 seconds or longer causes the dry, cool, and unload timers to be reset to the values programmed by the user.
- Corrected a problem with the error display where a "HOUSING HI LIMIT" was incorrectly displayed as "PLENUM HOUSING".
- Added the software test for a "VAPOR HIGH LIMIT" that was left out of earlier software versions.
- I discovered that the OUT OF GRAIN TIMER was timing down and would generate an error any time the computer was on and the grain switch was not satisfied. The GRAIN TIMER timer will now only run if the dryer is actually running, i.e.--"start" has been pressed and there are no detected errors.

==========

VERSION 0.12 RELEASE NOTES Release Date: May 26, 1995

- Fixed a problem that caused the hour meter to increment any time the system was powered up instead of only when the dryer was running.
- Fixed a problem noticed in 0.11 that caused the dryer to shut down with a continuous to batch mode change error when any program mode was entered while the dryer was running in batch mode.
- Fixed several problems related to the dryer being able to operate while the user was in one of the program modes.

==========

VERSION 0.11 RELEASE NOTES Release Date: May 25, 1995

- Fixed a problem that caused the display to be garbled up after displaying the hour meter.
- Changed the screen updating code to beef up the error display and improve the response time between buttons being pressed and the display indicating something has happened.

==========

VERSION 0.10 RELEASE NOTES Release Date: May 23, 1995

- Changed the time limit on the airflow system to 10 seconds. On portable dryers the limit is not a time constant but the number of times through a certain program loop. This works out to be about10 seconds.
- Safety inputs and the stop switch will now shut down the dryer while you are in one of the program modes.
- Switching from continuous flow to batch and back now shuts down the dryer (Error Code #1) but does not lock up the computer as it did in Version 0.09.
- The moisture control input is at J1-14 on the I/O board. When moisture control is "off" (0 volts @ J1-14) the 2nd speed pot is selected. When moisture control is "on" (12) volts @ J1-14) the 2nd pot is selected if the grain temperature is equal to or above the set point. The 1st pot is selected if the grain temperature is below the moisture control setpoint.
- During both batch and continuous mode operation, the LCD's "airflow" segment lights any time airflow is detected and the dryer is not stopped.

==========

VERSION 0.09 RELEASE NOTES Release Date: May 9, 1995

- Added code to select the meter roll speed pot based on the grain temperature and the programmed moisture control setpoint.
- Holding down the "HOURS" button while applying power to the board will reset all NOVRAM values to their factory default values.
- When moisture control is "ON", the dryer will stay in the dry cycle until the grain temperature reaches the moisture control setpoint.

==========

VERSION 0.08 RELEASE NOTES Release Date: May 5, 1995

- Revised temperature measurement and display code.
- Changed the flame detection threshold.

==========

GSI SERIES 2000 "COMPETITOR" SOFTWARE Release Date: May 3, 1995

- Changed the purge time from 20 seconds to 10 seconds.
- Added error messages to let the user know the dryer isn't starting because of the fan or burner switch position (batch mode only).
- Changed the delay setting program to allow a range of 0-99.9 minutes.
- Corrected a bug that caused the delays to be reloaded as seconds instead of tenths of minutes.
- Modified the unload processing so that if there is no error and the unload control switch is moved to "off", the auger will run through the delay period to clean out grain.

==========

VERSION 0.06 RELEASE NOTES Release Date: April 28, 1995

- Assigned J1-14 on the I/O board to the "moisture control on" switch function.
- Changed the display update software so that no airflow information is displayed when the fan control switch is in the "off" position.
- Changed the display update software so that the "error" message on the LCD is not displayed when the system shuts down.
- The "FLAME ERROR" display will now read "FLAME OUT".
- Changed the timer value editing software so that the user can not alter the dry, cool, or unload times when the dryer is in continuous flow mode.
- Changed the display software to hide the temperature display information when timers or delays are programmed while temperatures are being displayed.
- Corrected a bug in the load delay timer that caused it to load the wrong time delays when starting.
- Changed the startup procedure so that the dryer will not start in batch mode unless the fan and burner switches are set so they can be run.

==========

GSI SERIES 2000 "COMPETITOR" SOFTWARE Release Date: April 18, 1995

- We need to establish the limits for the grain and plenum temperature "high limits".
- Computer will now shut down the dryer if airflow is not detected while the main gas valve is open.
- Fixed loss of flame detection so that when the dryer shuts down due to loss of flame, the error indication stays on the screen until the stop switch is pressed. Other similar errors such as loss of airflow, etc. will be "latched" on as well.
- Fixed a bug that allowed the cycle solenoid to open before the purge cycle was complete.
- Changed the display update routine so that the "PLENUM" segment is lit while plenum temperature is displayed. There will be a "GRAIN" segment on the production LCD.

==========

VERSION 0.04 RELEASE NOTES Release Date: April 13, 1995

- Changed temperature programming code so the setpoints can be varied from 0-250.
- Wiring of the fan contactor on the computer board was changed so the normally open contact is used to actuate the blower.
- Changed the A-D setpoint where airflow is detected so that it should properly detect the change in the air switch.
- Constant values in the Flash programming table were changed to reflect the use of a 32K byte memory device in the production units. The assembly language code that helps catch runaway program execution was relocated as well.

==========

VERSION 0.03 RELEASE NOTES Release Date: March 27, 1995

- Fixed a problem in the temperature programming code that would not allow the temperature to be set higher than 20 degrees when the increment switch was held down to quickly change the temperatures.
- Changed the display code so that either "airflow" or "no airflow" should always be displayed and the air switch should be properly sensed.

==========

VERSION 0.02 RELEASE NOTES Start Date: March 20, 1995

- Changed startup sequence so that the software version number is shown on the 3-digit display just after the display test. Because of the way the display routines work version 0.02 is displayed as ". 2" which looks odd. Once the product ships and the version starts at 1.?? the display will look fine, i.e.-- "1.00", etc.

==========

VERSION 0.01 RELEASE NOTES Start Date: March 15, 1995

- Vic is in the process of adding a hardware timer to the Fan/Heater control board that will act as a backup safety circuit to the software. This may require some further adjustment to the burner processing software.
- I wasn't happy with the burner control software and have revised the "process_burner()" and "light_burner()" procedures. There's still some work to do on the cycle solenoid control.
- Fixed some intermittent problems I've seen with display glitches on startup.

==========

VERSION 0.00 RELEASE NOTES Start Date: December 20, 1994

SAFETY CIRCUITS

- Some error conditions may not show a message on the LCD--no appropriate message exists until the new LCDs arrive.

BURNER IGNITION

- There is a twenty second plenum purge at the start of the burner ignition sequence. At the end of the purge the gas valves will open and the igniter will be energized. As soon as flame is detected the igniter will be switched off. If the burner does not ignite within 15 seconds of the purge being finished, a dryer shutdown and warning will be generated.
- Once the burner has been lit the system constantly tests for a loss of flame. When flame is lost it will try to re-ignite the burner as long as airflow has not been lost. If the burner cannot be lit after 20 seconds, the dryer will be shutdown and an error generated

(See Next Page)

SAVED TIMER VALUES

The COMPETITOR saves the currently running timer values to the system NOVRAM once every five minutes while the dryer is running in batch mode operation. The five minute timing was chosen to maximize the life of the NOVRAM.

RUN TIME METER

A software run time meter accumulates operational time whenever the dryer is running. Pressing the "increment" button wil display this time to the nearest hundred hours. Pressing the "decrement button displays a value from 00.0 to 99.9 hours. By viewing both displays the total runtime can be determined.

CHANGING TIMER, DELAY, AND TEMPERATURE SETPOINTS:

- Set points may be changed while the dryer is running.
- Press the appropriate PROGRAM button on the main keypad. The cursor for the parameter being changed will flash. Each time the PROGRAM button is pressed the cursor will move to the next item. Once the last item has been reached, pressing PROGRAM again will return the display to normal operation.
- While the cursor for a parameter is flashing, the value can be changed with the INC and DEC buttons. The new value will take effect the next time the program reloads that value from the NOVRAM.