



WITE32™  
Release Notes  
(Complete version)

**Version 2.68**

**01/16/2002**

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# CHAPTER 1 INTRODUCTION

The 2.68 release incorporates new features and bug fixes introduced after WITE32 2.67 release. (This document uses WITE32 2.67 release notes as a base line for comparison.).

Wite32 2.68 has a new online Help, which provides more information about the system. The online Help includes eighteen books – ten software manuals and eight hardware manuals. You can get access to the help contents through the *Help / Contents* menu on the engineering *Dashboard*. The online Help is updated to reflect the changes in WITE32 up to the 2.67 release. The help system is based on a new version of HTML Help Control software.

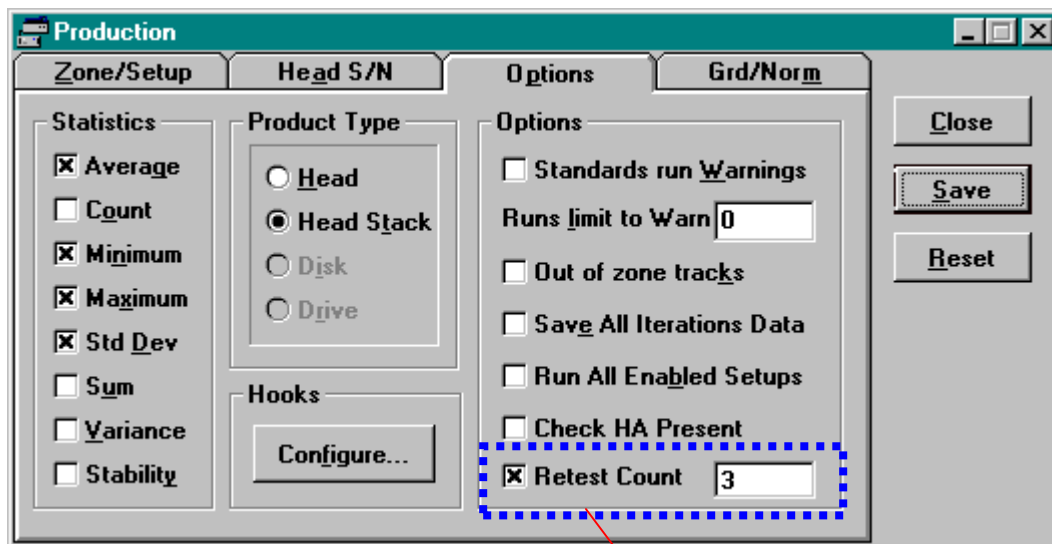
# CHAPTER 2 NEW FEATURES

## 2.1 Production Configuration

The *Production* test configuration is modified in the current release of WITE32. The *Retest Count* option and the *Check HA Present* option are added. The functionality of the *Skip failed head* option is changed in the case when the *Run All Enabled Setups* option is checked.

### 2.1.1 Retest Count Option

The *Retest Count* option is added to the *Options* tab of the *Production* test setup. The *Retest Count* option enables or disables the retest sequence while the text box next to it determines the retest limit.

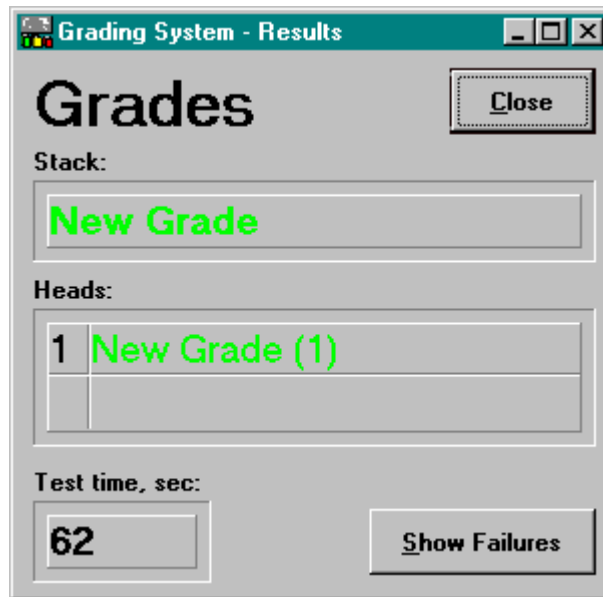


Retest Count option

The *Retest Count* option runs in the following way. When a head fails the runtime grading in a particular setup, the failed head is retested in that setup again until the setup passes the grading or the retest limit is reached. For example, if the retest limit is set to 5, a failed setup is retested up to five times before confirming the failure of the setup. Note that the setup is executed totally six times in this case to confirm

the failure (one for the initial run and five for the retests). If the setup passes the runtime grading within the retest limit, the setup is taken as passed, and retesting of this setup is stopped. The results of the failed retests are discarded. They are neither displayed nor counted toward the final grading. Only the results from the last passing retest for each setup are used for display and final grading.

Retest information is displayed in the final grading result window. If the *Retest Count* option is enabled, the successful retest number is displayed in brackets after the grading name for each head. See the figure below.



Runtime grading must be enabled in order to make *Retest Count* option work. In other words, the *Enable* checkbox on the *Grading* frame (*Grd/Norm* tab of the *Production* test) must be checked and any option other than *Ignore* must be selected in the *On Runtime Limit Failure* group.

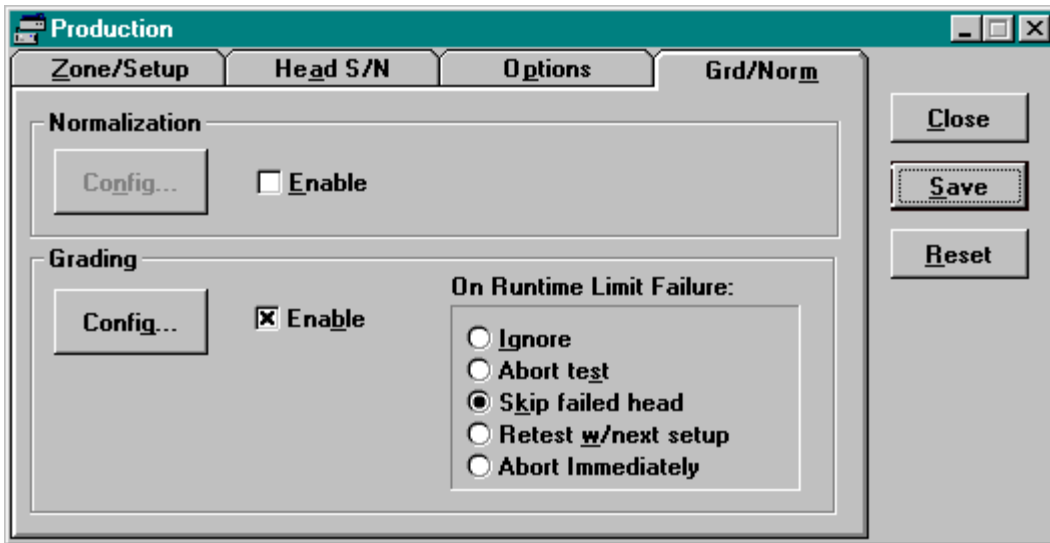
### 2.1.2 Check HA Present option

The *Check HA Present* option is added to the *Options* tab of the *Production* test setup. If checked, this option enables running the production sequence only for the head/heads installed in the currently loaded cartridges. When you press the *Production* button on the Operator panel or start the *Production* test from the engineering *Dashboard*, software checks which amplifier cartridges are installed. Then it runs the *Production* test as if only the heads installed in the detected cartridges are selected for testing.

The *Check HA Present* option works only in case of head amplifiers (not head stacks). Both heads have to be enabled in the *Configure / System* dialog box.

### 2.1.3 Skip failed head option

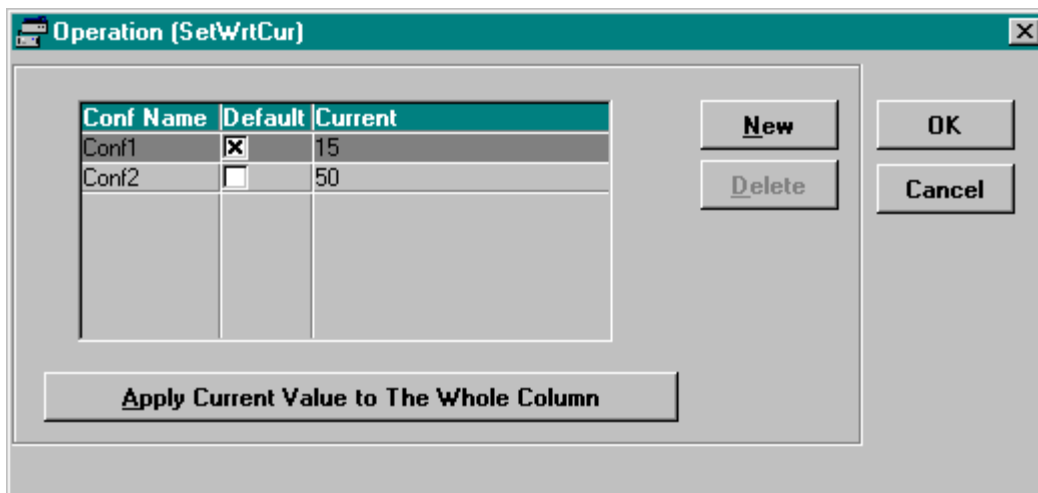
When the *Skip failed head* radio button is active, a runtime grading aborts testing of the failed head and proceeds with testing of the next head even when the *Run All Enabled Setups* Check box on the *Option* tab is checked. (In the previous revisions of WITE32, the priority of the *Run All Enabled Setups* option was higher and testing of the failed head continued.)



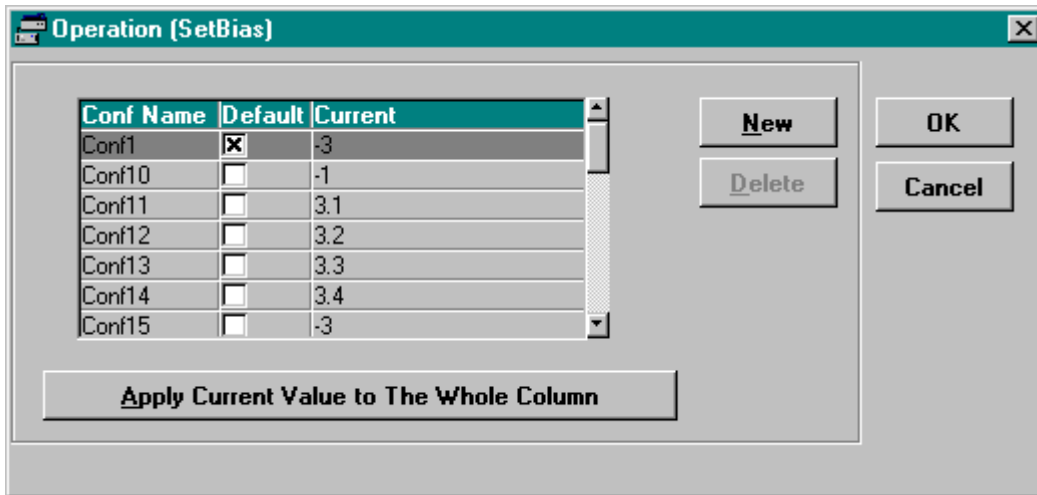
## 2.2 New Production Operations

Two new operations for using in production sequence are added in this version of WITE32:

- "Set Write Current" (SetWrtCur) – changes the system write current value. The *Current* value is specified in mA.



- "Set Bias" (SetBias) – changes the system read bias value. The *Current* value is specified in mA or mV depending on the head amplifier bias mode.



## 2.3 Measurements through Spectrum Analyzer

Several changes are made in the tests, which have the possibility to perform measurements through Spectrum Analyzer. The purpose of these changes is to implement additional measurement options and error diagnostic.

### 2.3.1 Read Gate Validation

The minimal read gate must be greater than or equal to 12  $\mu$ Sec for measurements through Spectrum Analyzer. WITE32 2.68 checks if this condition is met for every test, which performs measurements through Spectrum Analyzer. If the read gate is shorter than 12  $\mu$ Sec, an error message *"Spectrum Analyzer: Read Gate is too short, 12.00 uSec required "* pops up once. Another error message *"Invalid settings for working via Spectrum Analyzer: Read Gate is too short"* pops up every time when you run a test. The test is interrupted. If you get one of these messages or both of them, you have to go to the *Control | Gate and Track Format* menu and enlarge the read gate.

This read gate check is added to the following tests:

- Spectrum Analyzer
- Spectral SNR
- SNR test
- Spectrum Integral SNR
- TAA test
- Track Profile,
- Overwrite test

- Triple Track

### 2.3.2 TAA measurement through Spectrum Analyzer

Results of TAA measurements through Spectrum Analyzer are reported as amplitude value (0-peak) for sine wave signal. This is twice less compared to WITE32 2.67 and earlier.

## 2.4 Spectrum Analyzer Test

The Spectrum Analyzer test is changed to plot an Effective TAA value instead of Amplitude value. It reports the results in dBmV or mV (instead of dB and dBm).

$\text{dBmV} = 20 \lg(\text{Effective TAA in mV} / 1\text{mV})$ .

$\text{Effective TAA} = \text{TAA} / \sqrt{2}$ , for sinusoidal signal.

The measured values can be recalculated to represent the signal on a head or on an Analog Box input (UP output).

The new test setup form is shown below:

New test options

Two new options are added:

- *Measure in mV*. If checked, specifies that the results are calculated and represented on the plot in mV, otherwise in dBmV.
- *Measure at Analog Box Input*. If checked, specifies that the results are normalized to an Analog Box input; otherwise the results are normalized to a head output.

After updating your revision of WITE32 to the 2.68 revision, the Spectrum Analyzer test settings saved in your product are converted in the following way:

*Measure in mV* and *Measure at Analog Box Input* are both disabled. (*Measure in dBm* option from the old setup is ignored.)

All other settings are left unchanged.

Spectrum Analyzer Test generates two different plots: “Spectrum Analyzer Plot in dBmV” and “Spectrum Analyzer Plot in mV”. Each of these plots has its own set of preferences, which are different from the preferences of the old plot. After updating of the WITE32 revision and converting of a product, plot preferences are set to default, and they have to be newly selected.

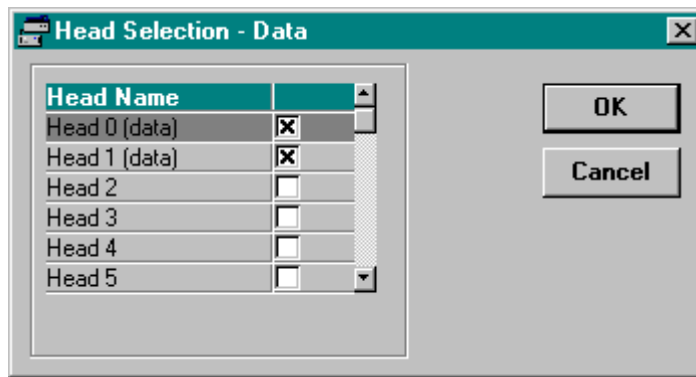
If you compare the Spectrum Analyzer Plot in dB from the previous revisions of WITE32 to the Spectrum Analyzer Plot in dBmV in the new revision, you will see the vertical shift due to current setting of the Peak Detector option, TAA calibration factor, the difference between TAA and Effective TAA. Even though the absolute values are different, the difference between peak values and the noise level remains the same.

**Note:** The value of Effective amplitude reported by the Spectrum Analyzer Test matches with the one reported by the standalone Spectrum Analyzer.

TAA calibration coefficients are used to calculate the TAA value measured through Spectrum Analyzer. So TAA must be calibrated or the Internal TAA calibration enabled before running tests.

## 2.5 Head Selection operation.

When assigned to a soft button on the *Operator Panel*, the *Select Head* operation allows selecting multiple (up to 32) heads. (In previous revisions of WITE you can select *Head 0*, *Head 1*, or *Head 0 and 1*.) The *Head Selection* dialog is identical to the one in the *System / Configure* dialog box. See the figure below.



You can select or deselect a head by enabling / disabling the corresponding check box.

The *Production* test is performed only for the selected heads.

## 2.6 Servo Erase Operation

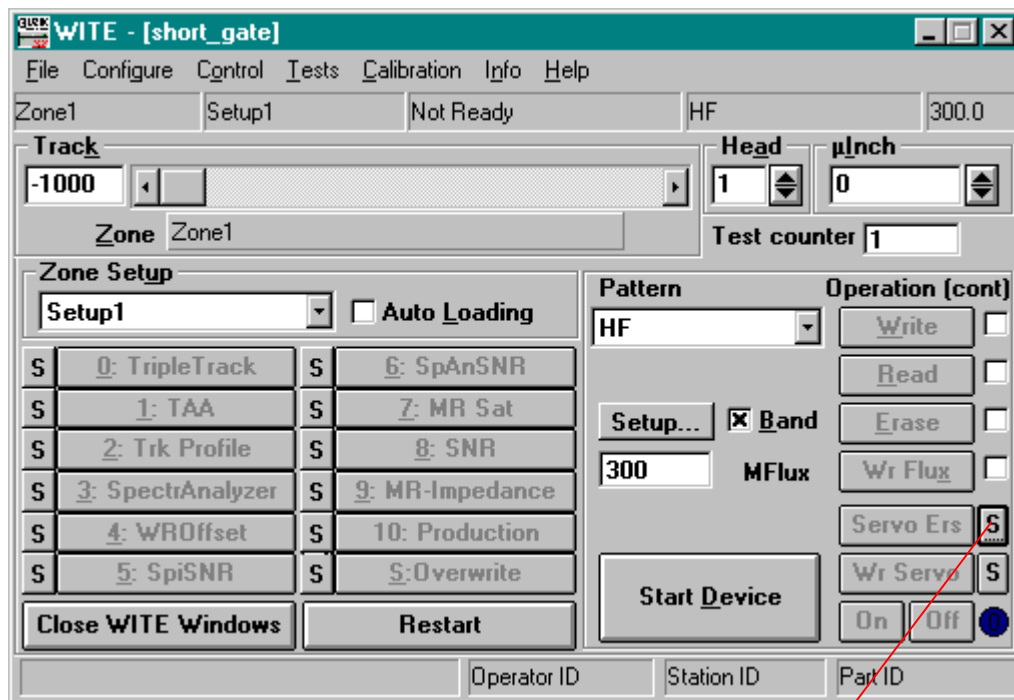
The Servo Erase operation becomes configurable. You can select to perform the erasure whether using the settings of the *Write Servo* configuration default settings or using the custom range. In the last case you specify the *From*, *To* and *Step* values. In the default case software selects the *From*, *To* and *Step* parameters so that to erase all previously written servo bursts. There are independent setups for the servo

erasure from the engineering *Dashboard* (Section 2.6.1) and for the production Servo Erase operation (Section 2.6.2).

For each offset from the range (either default or custom) the Servo Erase operation performs complete erasure along the track. In WITE32 2.67 the Servo Erase operation does not erase small area around each sector pulse.

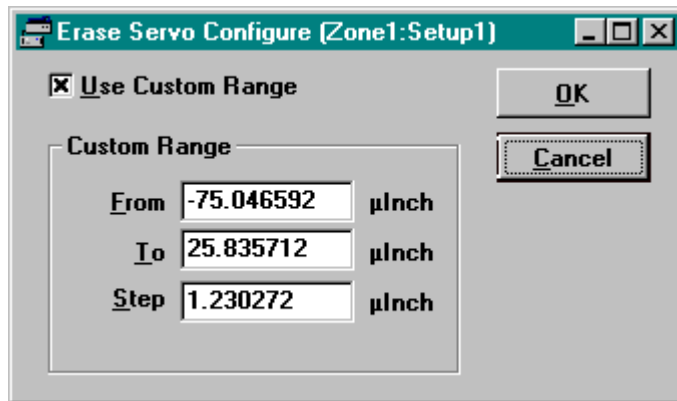
### 2.6.1 Servo Erase Configuration from the Dashboard

To configure Servo Erase from the engineering *Dashboard*, click the *S* button to the right from the *Servo Ers* button. See the figure below:



Servo erase configuration button

The *Erase Servo Configure* dialog box appears:



If the *Use Custom Range* check box is **unchecked** (default), the erasure is performed in the region where servo signal has been written (like it was in previous revisions of WITE32). Note that the default erase range is slightly larger than the servo write range in the *Write Servo* setup. These settings guarantee a complete erasure of the servo bursts.

To customize servo erasure, check the *Use Custom Range* check box and specify *From*, *To*, and *Step* values. Click the *OK* button to save the settings.

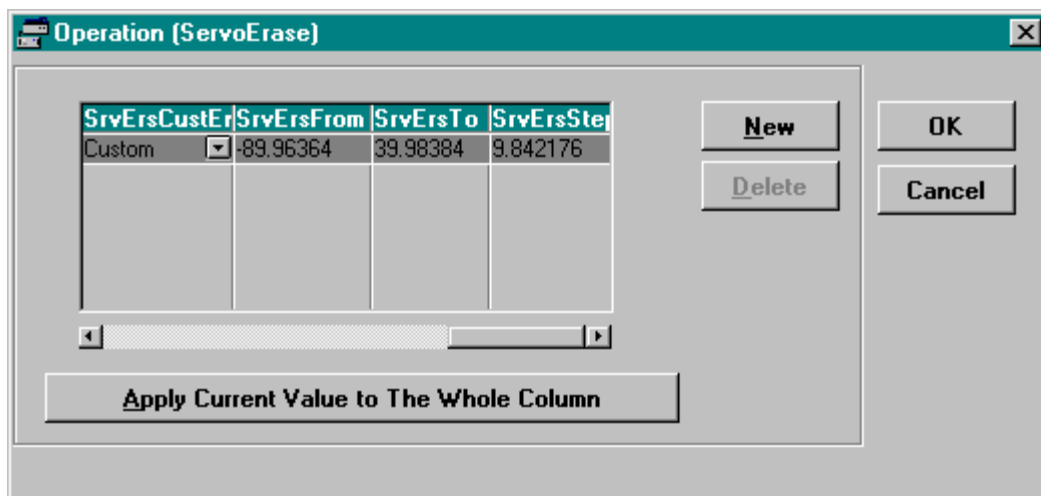
If the specified range is less than the range where servo bursts have been written, the following warning message pops up when you click the *Servo Ers* button:

“The region to be erased is smaller than the servo range. Would you like to continue?”

You have two options – either to press the *Yes* button and erase servo signal in the specified range, or to press the *No* button and change the settings.

## 2.6.2 Production Servo Erase Operation.

The configuration table for the “Servo Erase” (ServoErase) operation is shown bellow.



It includes the following fields:

*SrvErsCustEnab*: Selects *Default* or *Custom* range (in the *Default* case the fields below are ignored)

*SrvErsFrom*: From

*SrvErsTo*: To

*SrvErsStep*: Step

The parameters *From*, *To* and *Step* are specified in  $\mu$ Inch and adjusted to the spindstand micro-step.

No warning message pops up during the *Production* test if the custom servo erase range is narrower than the servo write range.

## 2.7 Using the W/R Offset and UP gain values on a per-head basis.

There is a group of WITE32 parameters, which are different for different heads. WITE32 tests may be included in a production sequence to measure these parameters for each head in each setup and apply them to a system. This approach has been used in the previous revisions of WITE32. In the 2.68 revision a new feature is introduced to keep two most critical parameters (W/R Offset and UP gain) on a “per-head” basis. This feature allows you to save testing time and improve a system performance in the case of testing multiple heads.

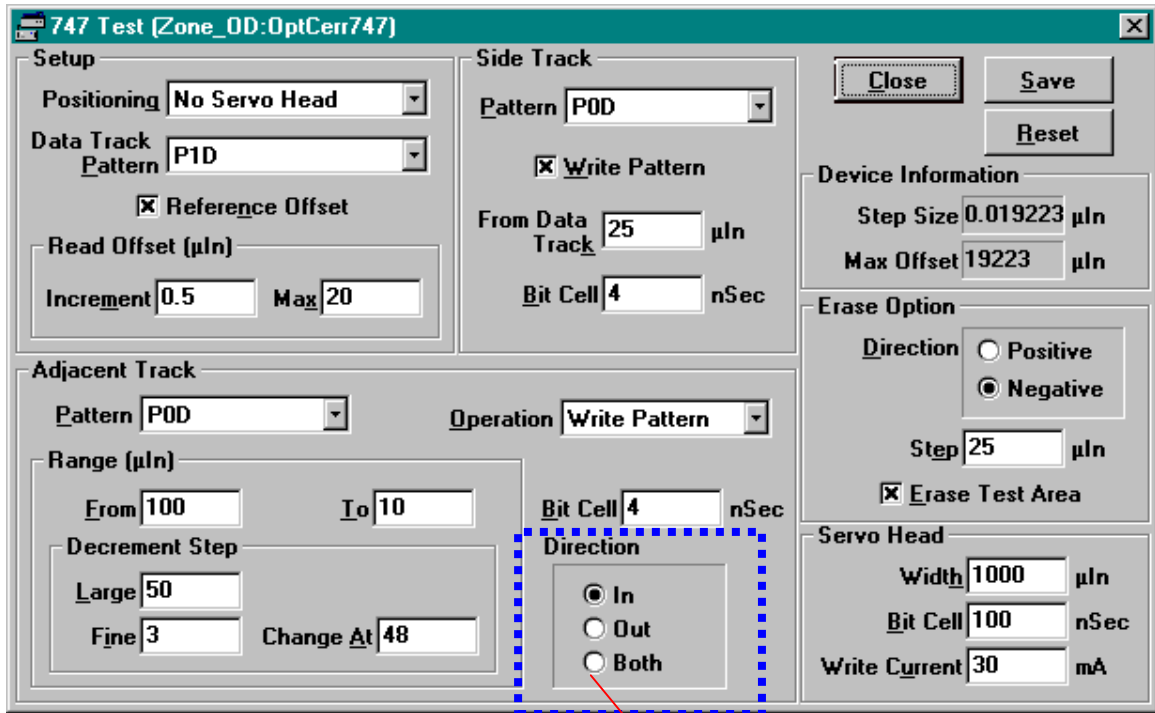
In WITE32 2.68 the storage for W/R Offset and UP gain for each Zone/Setup/Head is provided. So if you are testing a head stack with 4 heads, and your product consists of 2 zones with 3 setups in each zone, the storage will have  $4*2*3 = 24$  sets of W/R Offset /UP gain values. These values are applied each time when you select a different head or setup.

The most helpful this provision is in the situation of a production sequence with multiple setups per zone performed on the same track. In this case we recommend you to include the *WROffset* test in the first setup in a zone. Enable the *Adjust UP Gain* and *Save to all Setups in the Current Zone* options in the *WROffset* test setup. In this case WITE32 measures *W/R Offset* and *UP Gain* only once for each head (in the first setup) and applied to a system when heads are changed.

**Note:** Only the last measured and saved values of W/R Offset and UP Gain are stored in the product database (as in WITE32 2.67). If you want to apply the head specific parameters you have to measure W/R Offset and calibrate UP gain after loading WITE32. If you rename Zone or Setup, the corresponding data will be lost. Saving of these parameters to a product database and loading them upon zone/setup changing will be supported in future releases of WITE32.

## 2.8 Modification of the 747 Test Standard Setup

The *Both* radio button is added to the *Direction* option of the *747 Test Standard Setup* (Figure below). If this radio button is checked, the test runs two times – the first time in the *In* direction and the second time in the *Out* direction. The postfix “\_IN” or “\_OUT” is added to the corresponding result name.

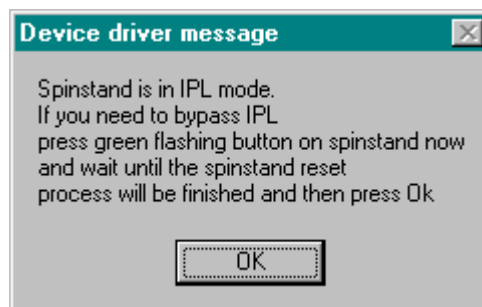


New radio button

## 2.9 1701B Spinstand

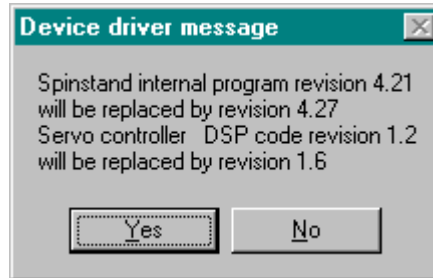
Starting from WITE32 2.68 release, software uploads the DSP codes for the Motion and Servo controller boards in the 1701B spinstand. These boards belong to the spinstand control box. MotionController\_0.i0 and ServoController\_0.i0 files with DSP code for the Motion and Servo controller boards are included in the WITE32 installation CD. There are two cases when the microprocessor code (1701B.s) and codes for two controller boards are uploaded into spinstand.

1. A spinstand is in IPL mode. In this case the following message appears:



If you click the *OK* button, the microprocessor code 1701B.s, MotionController\_0.i0 and ServoController\_0.i0 files are uploaded into spinstand without checking code revisions.

2. A spinstand is not in IPL mode, so software can check the revisions. If differences are found the prompt message appears.



You have two options – to click *Yes* and upload the codes, or to click *No* and bypass uploading.

## 2.10 Sector Amplitude Stability Test

Two new gradable parameters are added to the Sector Amplitude Stability test:

- "SAA\_TAAPosAvg" – the average positive TAA value.
- "SAA\_TAANegAvg" – the average negative TAA value.

These results are reported only if positive and negative pulses are measured separately.

## 2.11 Saturation Test

An algorithm of the overwrite measurements is changed to the one that is used in the Overwrite test and the Parametric test / Overwrite option (see the Standard Test Description Engineer's Reference or WITE32 2.45 Release Notes). The results of the overwrite measurements become more stable, however, the test runs slightly longer.

## 2.12 Balancing Test

The Balancing test for WDCP now supports the balancing ring (P/N 60-701327-01).

The Balancing test for new balancing rings is described in "The Balancing Ring for Spinstand S1701B Installation, Calibration, and Balancing Guide" (P/N 02-107120-01).

## 2.13 Head Amplifiers

1. The following head amplifiers are initially supported in WITE32 2.68:
  - 81G5004
  - CXA3574
  - SR1767
  - SR1767AC
  - SR1797
  - VM7240
2. The following head stacks are initially supported in WITE32 2.68:
  - 81G5002 - NEPTUN
  - 81G5004 - NEPTUN\_5004
  - LILIPUT2 - ARES\_LILIPUT2
  - SR1710AGA - ARES\_1710
  - SR1715AC - ROMULUS2
  - TIBURON - LEMANS
  - VM7240- INVADER7240

## 2.14 Miscellaneous

1. In the Triple Track test setup the "Default Write Current" label is changed to the "Use System Write Current" label.
2. Spectral Integral SNR Test: The option label "*Measure at UP output*" is changed to "*Measure at Analog Box Input*".

# CHAPTER 3

## FIXED BUGS

The following bugs were discovered in WITE32 2.67 or earlier, and fixed in WITE32 2.68. The description below explains the bug behavior as it appeared in WITE32 2.67.

### 3.1 Servo

1. After the servo erasure the traces of the previously written servo signal can be observed near the sector boundaries.
2. The number of sectors for S1701B spinstand can be set to value other than power of two, causing wrong results of measurements in Positive Sector mode. Starting from WITE32 2.68 the number of sectors for S1701B spinstand can be set to 1, 2, 4, 8, 16, 32, 64, or 128.
3. Servo calibration fails intermittently if it is selected as the first test in the production sequence.
4. The optimal servo range for spinstand model 1701B is calculated incorrectly (too short). It happens when the “Optimize Servo Range” option is enabled in the *Servo Calibration* dialog box. Due to the small servo range servo bursts do not cover the whole track profile range. In this case you can observe spikes on the floor level especially for narrow heads.

### 3.2 Grading System.

1. On the grading configuration menu, if some settings are changed and the *Reset* button is clicked, the settings are restored back to the original values; but the menu still displays the settings in green (changed color).
2. After you delete some grades, the menu does not show the correct grade names (deleted grade names are still shown while some not deleted grade names are missing). Note that this is only a menu display problem. The deleted grades are actually removed from the grading engine.
3. If a head fails the runtime grading in all setups in *Retest w/next setup* mode, but it passes some other enabled grades, it is still assigned a passing grade.
4. The *Retest w/next setup* mode does not work if there are three or more setups in a zone.

**Note:** Look for the grading configuration menu and the *Retest w/next setup* option in the *Production* test setup, tab *Grd/Norm, Grading* frame.

### 3.3 Head Amplifiers

Fixed bugs in the head amplifier drivers:

- CALUMET2 – “HDL: array RDCurr Tbl index out” error occurs on loading the head amplifier driver.
- SJBAGOOD – “HDL: array RDCurr Tbl index out” error occurs on loading the head amplifier driver.

Fixed bugs in the head stack drivers:

- CALUMET2 – “HDL: array RDCurr Tbl index out” error occurs on loading the head amplifier driver.
- SJBAGOOD – “HDL: array RDCurr Tbl index out” error occurs on loading the head amplifier driver.

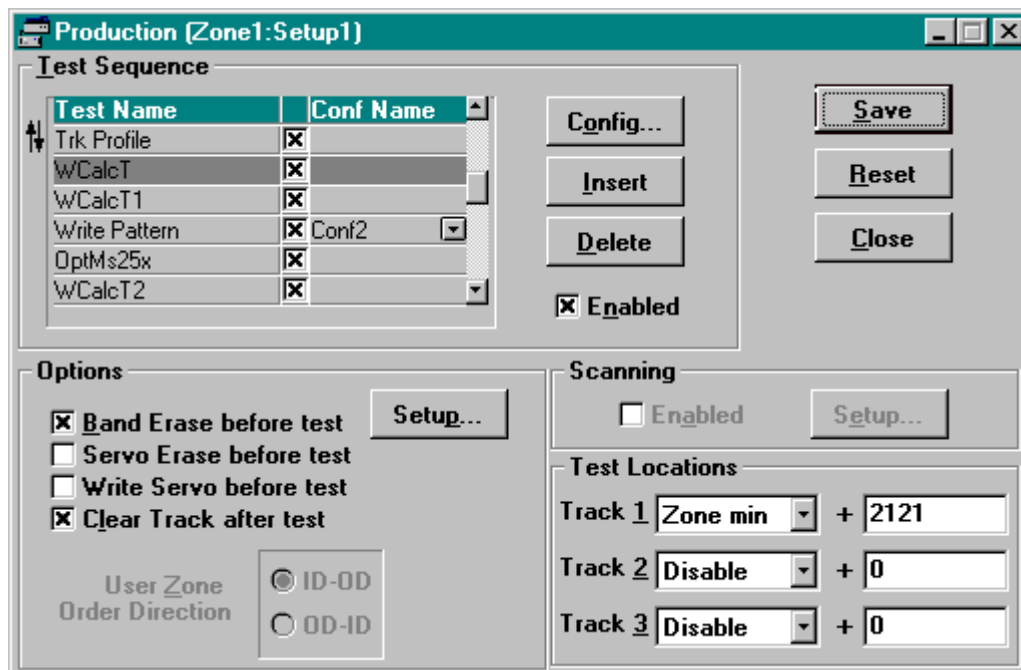
### 3.4 Miscellaneous

1. For head amplifiers that support *Current* and *Voltage* read bias modes the read bias is not set properly upon Zone / Setup change.
2. The “No record” error message pops up, and WITE32 hangs if the “Calibrate All” operation is included (selected as a hook) in the production sequence (*Production* test setup, tap *Options*, *Hooks* frame, *Configure* button).
3. If any operation is included (selected as a hook) in the production sequence (*Production* test setup, tap *Options*, *Hooks* frame, *Configure* button) the *Production* test cannot be aborted. There is no Abort button on the screen.
4. The pre-production head selection test (*Production* test setup, tap *Head S/N*) always fails in case of RWA2585.
5. When the pre-production test fails (*Production* test setup, tab *Head S/N: MR Impedance Test* or *Head Selection Test*), WITE32 continues to perform testing of the failed head.
6. It is impossible to specify custom result names for the Spectral Integral SNR test in the result processor.
7. In the Spectrum Analyzer Test the “Error: Overflow” error message appears when a large number of measurements is specified in the setup and the “Output to Database” option is enabled.
8. Band erase in the WITE32 tests, which have a band erase option, intermittently does not perform erasure if the erase current is the same as the system write current.
9. The Spectral Integral SNR Test fails to measure a signal intermittently.

# CHAPTER 4

## WITE32 CALCULATOR (WCALC)

The purpose of the WCalc module is to perform arithmetic calculations on the results of the tests in the production sequence. The results of the calculations are directed to the result processor and can be graded. In other words WCalc allows grading the results of arithmetic operation on the results of the previously performed tests in the production sequence.

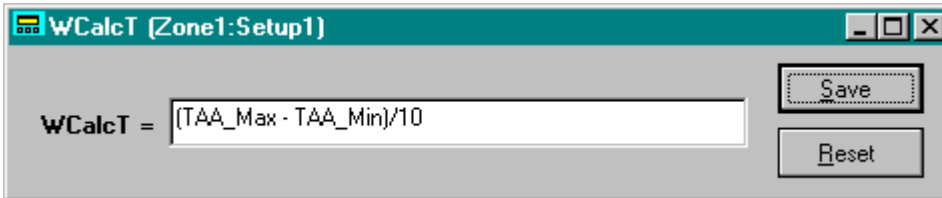


The WCalc module contains 10 tests WCalcT, WCalcT1 ... WCalcT9, which are practically identical. It allows performing the calculations up to 10 values in each setup.

The names of the test results are the same as the test names (i.e. WCalcT, WcalcT1, etc).

## 4.1 Test Configuration Setup

The configuration setup for the WCalc tests is shown below:



It consists of a text box and *Save* and *Reset* buttons. To configure a test you have to type an arithmetic expression in the text box, where the expression is an operation on operands. When you finish, click the *Save* button and close the window. You can also restore the last saved expression clicking the *Reset* button.

## 4.2 Operations

The following operations are supported in the Wcalc tests: +, -, \*, /. The priority of the Wcalc test operations is the same as that of the regular arithmetic operations. To change the sequence of calculation you can use brackets ( and ).

**Note:** The operands (result names) must not include the symbols listed above and a digit as the first symbol.

## 4.3 Operands

Operands should be composed from two identifiers separated by the underscore symbol. The first identifier is a test result name as it defined in the Wresult.mdb / GenRsltDesc table / Result Name field. The second identifier is one of the following statistic names: *Max*, *Min*, *Avg*, *Count*, *Nrm*, *Stb*, *StDev*, *Sum*, *Var*.

You can also use the results of the previous WCalc tests in the subsequent WCalc tests.

For example,

**TAA\_Avg, TAA\_Max, SNR\_Min, WCalcT2\_Avg.**

The names of the operands are case sensitive.