

# Program Notice

FGIS-PN-18-02

November 14, 2017

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## NEAR INFRARED TRANSMITTANCE (NIRT) PROCEDURES FOR FOSS INFRATEC NOVA

### Contents

1. PURPOSE .....	2
2. BACKGROUND .....	2
3. APPROVED INFRATEC NOVA CALIBRATION PACKAGES .....	2
4. ENTERING INSTRUMENT IN FGISOnline Equipment Capability Testing (ECT) .....	4
5. STANDARDIZATION AND OPERATING PROCEDURES .....	4
6. EFFECTIVE DATE .....	8
7. FILING INSTRUCTIONS .....	8
8. QUESTIONS .....	8

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## **1. PURPOSE**

This program notice announces that the Federal Grain Inspection Service (FGIS) has updated procedures for the FOSS Model Infratec Nova NIRT instrument used for official testing services of barley protein; corn oil, protein, and starch; soybean protein and oil; and wheat protein and wet gluten under the United States Grain Standards Act (USGSA).

## **2. BACKGROUND**

On September 11, 2017, FGIS announced that the FOSS Infratec Nova NIRT instrument was approved for official testing services of barley protein; corn oil, protein, and starch; soybean protein and oil; and wheat protein and wet gluten content as “official criteria” authorized under Section 7(b) of the USGSA, as amended. FGIS is responsible for officially determining and certifying, monitoring the accuracy, and approving the official equipment used for determining barley protein; corn oil, protein, and starch; soybean protein and oil; and wheat protein and wet gluten content.

## **3. APPROVED INFRATEC NOVA CALIBRATION PACKAGES**

FGIS worked with FOSS to prepare official calibration packages for use on the Infratec Nova that contains all of the application models needed to test barley protein; corn oil, protein, and starch; soybean protein and oil; and wheat protein and wet gluten constituents.

The packages include the FGIS approved calibrations with protein and/or oil and/or starch and/or wet gluten only beginning with FGIS. They also include the National Type Evaluation Program (NTEP) approved moisture and test weight (only available on units with the test weight module) calibrations that may be used under the provisions found in FGIS Directive 9180.55 for Official Commercial Inspection Services.

The following official calibration packages may be obtained from FOSS North America at (800) 547-6275. Each package is licensed to a specific instrument serial number.

FOSS Part number/ Package Name	Grain/Class	Display Name	Constituent	Prediction Model Name
S900499 FGIS Wheat and Barley	Barley	FGIS BARLEY	Protein 0%	BAPR0025-0
	Two-Row Barley	2 ROW BARLEY	Moisture Protein 0% Test Weight  Temperature	WBMO0032_BA BAPR0025 Test Weight Barley Model (Pounds per Bushel)_B2 BATE0002
	Six-Row Barley	6 ROW BARLEY	Moisture Protein 0% Test Weight  Temperature	WBMO0032_BA BAPR0025 Test Weight Barley Model (Pounds per Bushel)_B6 BATE0002
	Wheat	FGIS WHEAT	Protein 12%	WBPR0028-0
	Wheat with Wet Gluten	FGIS WHEAT PRO & GLUTEN	Protein 12% Wet Gluten 14%	WBPR0028-0 WHGL0028-0
	Durum Wheat	DURUM WHEAT	Moisture Protein 12% Test Weight  Temperature	WBMO0032_WU WBPR0028 Test Weight Wheat Model (Pounds per Bushel)_WU WHTTE0002
	Hard White Wheat	HARD WHITE WHEAT	Moisture Protein 12% Test Weight  Temperature	WBMO0032_WH WBPR0028 Test Weight Wheat Model (Pounds per Bushel) WHTTE0002
	Hard Red Spring Wheat	HARD RED SPRING WHEAT	Moisture Protein 12% Test Weight  Temperature	WBMO0032_WH WBPR0028 Test Weight Wheat Model (Pounds per Bushel) WHTTE0002
	Hard Red Winter Wheat	HARD RED WINTER WHEAT	Moisture Protein 12% Test Weight  Temperature	WBMO0032_WH WBPR0028 Test Weight Wheat Model (Pounds per Bushel)_WW WHTTE0002
	Soft Red Winter Wheat	SOFT RED WINTER WHEAT	Moisture Protein 12% Test Weight  Temperature	WBMO0032_WD WBPR0028 Test Weight Wheat Model (Pounds per Bushel) WHTTE0002
	Soft White Wheat	SOFT WHITE WHEAT	Moisture Protein 12% Test Weight  Temperature	WBMO0032_WT WBPR0028 Test Weight Wheat Model (Pounds per Bushel)_WT WHTTE0002
	S900540 FGIS Corn and Soybeans	Corn	FGIS CORN	Oil 0% Protein 0% Starch 0%
Soybeans		FGIS SOYBEANS	Oil 13% Protein 13%	SOOI0213-0 SOPR0016-0
Soybeans		SOYBEANS	Moisture Oil 13% Protein 13% Test Weight  Temperature	SOMO0012 SOOI0213 SOPR0016 Test Weight Custom Model (Pounds per Bushel)_SO SOTE0009

#### 4. ENTERING INSTRUMENT IN FGISOnline Equipment Capability Testing (ECT)

- a. Log into the ECT application in FGISOnline.
- b. Select the Equipment Browse by Subject option.
- c. Click on Create New Equipment.
- d. Select NIRT from the Equipment Type drop down menu.
- e. Select Foss from the Manufacturer drop down menu.
- f. Click on Search.
- g. Click on Select for the Infratec Nova.
- h. Enter the following information into the Create Equipment page.
  - (1) Service Point code where the instrument is located.
  - (2) Serial Number of instrument.
  - (3) Click on Yes if the instrument is Cross-utilized, otherwise click on No.
  - (4) Click on Save.

#### 5. STANDARDIZATION AND OPERATING PROCEDURES

##### a. SETUP

Contact the Inspection Instrumentation Branch to obtain Standard Reference Samples (SRS) and instrument final settings worksheet.

##### b. REQUIRED SAMPLE SIZE

A larger sample size is required for testing purposes. The minimum size is 650 grams for barley and wheat, and 825 grams for corn and soybeans.



Figure 1. FOSS Nova display showing the Care menu options.

c. BIAS ADJUSTMENT FOR FGIS CALIBRATIONS ONLY

- (1) Select the Care button to access the Care menu options (refer to Figure 1).
- (2) Select the Slope & Intercept button.
- (3) Enter the PIN code.
- (4) Select the Product (calibration) that requires the adjustment from the drop down menu.
- (5) Highlight the Intercept field by tapping the number itself.
- (6) Enter the new intercept value from ECT.
- (7) Select OK to save the change.
- (8) Select OK to exit the Slope & Intercept menu.

d. OFFICIAL COMMERCIAL INSPECTION SERVICES (OCIS) TESTING

- (1) The NTEP calibrations, for example Hard Red Winter Wheat, have a signature associated with each prediction model that prevents the user from making a bias adjustment directly on the instrument for any parameter. The Mosaic network administrator is the only person who may make the bias adjustment via the Mosaic network. Currently, FGIS is not set up to either manage or provide guidance on managing instruments through the internet.
- (2) If the requirements for conducting OCIS are met for moisture and/or TW, then the sample must be tested twice. Once for protein and/or oil using the FGIS designated calibration models and a second time for moisture and/or TW using the NTEP calibration models.

e. CUSTOMIZE DISPLAY OF CALIBRATION MODELS

- (1) Select the Care button to access the Care menu options (refer to Figure 1).
- (2) Select the Configuration button.
- (3) Click on the Import tab at the top of the window.
- (4) Press Edit, and then press OK to launch Mosaic Solo.
- (5) Enter the Admin password.
- (6) Select the Products tab at the bottom left side of the screen.
- (7) Select the product you wish to hide on the upper left box.
- (8) Select (check on to view)/ deselect (check off to hide) the Active checkbox above the description box.
- (9) Select the Save button in the upper left hand corner.
- (10) Exit the window by pressing the X on the upper right corner of the screen.
- (11) Press OK on the Import/Edit window.

f. CHANGE NUMBER OF DECIMALS DISPLAYED

- (1) Select the Care button to access the Care menu options (refer to Figure 1).
- (2) Select the Configuration button.
- (3) Click on the Import tab at the top of the window.
- (4) Press Edit, and then press OK to launch Mosaic Solo.
- (5) Enter the Admin password.
- (6) Select the Parameter Profiles tab at the bottom left side of the screen.
- (7) Change the number in the Number of Decimals field to the desired number of decimal places.
- (8) Select the Save button in the upper left hand corner.
- (9) Exit the window by pressing the X on the upper right corner of the screen.
- (10) Press OK on the Import/Edit window.

g. OUTLIER INDICATIONS

- (1) The Infracore Nova is also designed to give an outlier indication warning that a result may be in error. If an outlier occurs, the instrument will not display a result and the result field will be highlighted in red. Any outlier information will be displayed to the right of the result field and below the results under Sample event, refer to figure 2. Outlier indications should rarely occur.

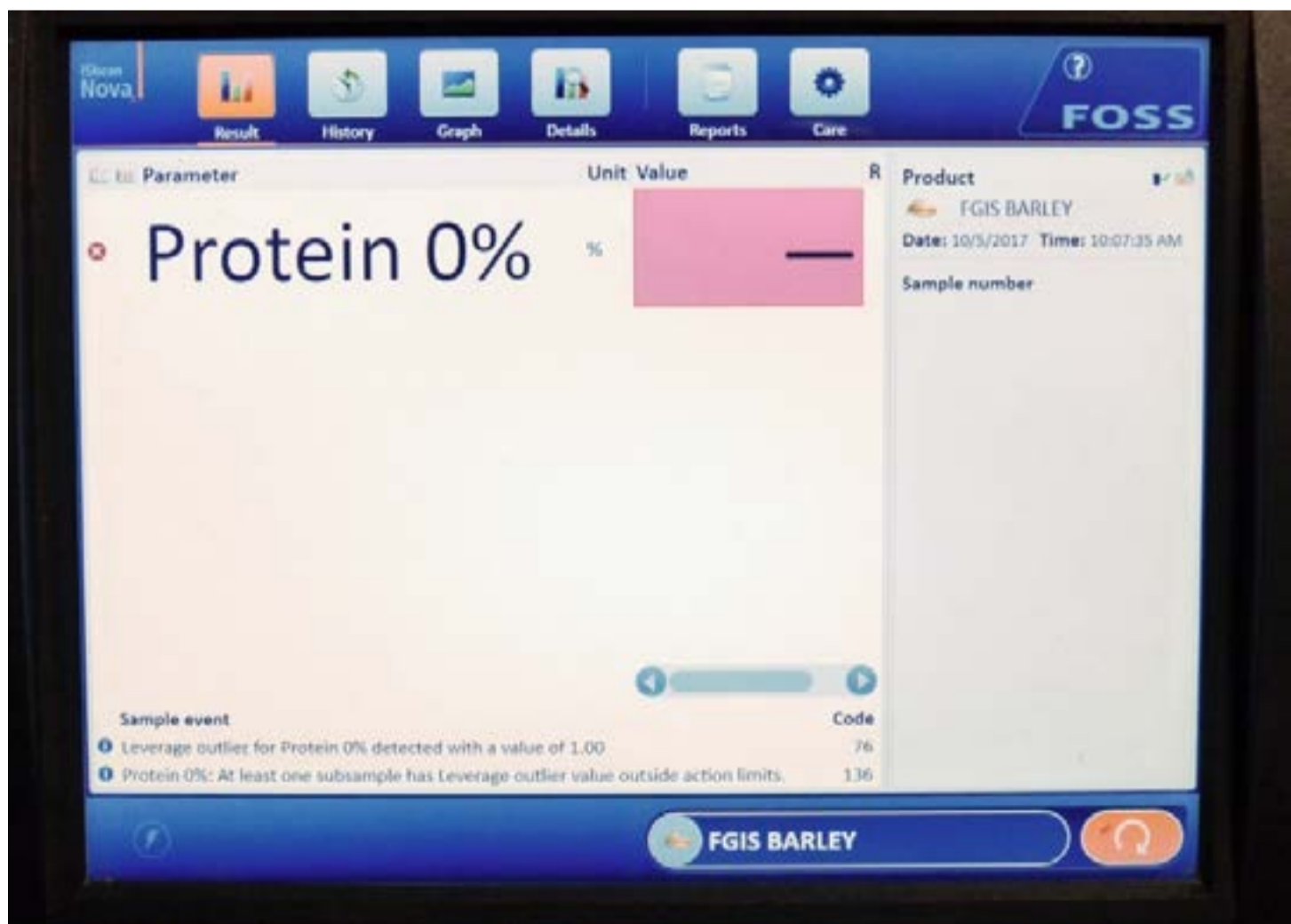


Figure 2. FOSS Nova display showing an analysis with an outlier.

- (2) What to do when an outlier occurs?
  - (a) Verify that the correct calibration was used.
  - (b) Make sure the sample is cleaned per official procedures.
  - (c) Mix the sample thoroughly before retesting.
  - (d) Rerun the sample through the instrument.
  - (e) If the second run does not show an outlier indication, certify the results of the second run.
  - (f) If the second run shows an outlier indication, contact TSD for guidance.

h. ERROR MESSAGES

- (1) Ambient Temperature outside range of 0 – 45 °C or 32 – 113 °F.
  - (a) Result fields will be blank and highlighted in red.
  - (b) The Sample event log at the bottom of the display will list messages like the following example.

Ambient temperature too low.  
Increase ambient temperature.
- (2) Sample Temperature outside range of 0 – 40 °C or 32 – 104 °F for the NTEP only calibrations.
  - (a) Result fields will be blank and highlighted in red.
  - (b) The Sample event log at the bottom of the display will list messages like the following example. (Refer to figure 2)
    - 1 Ambient temperature too high.  
Decrease ambient temperature.  
Or
    - 2 Ambient temperature too low.  
Increase ambient temperature.
- (3) Difference between Ambient and Sample Temperature exceeds 20 °C or 36 °F for the NTEP only calibrations.
  - (a) Result fields will be blank and highlighted in red.
  - (b) The Sample event log at the bottom of the display will list messages like the following examples.
    - 1 All parameters are marked as error because difference between sample temperature and ambient exceeds action limit.
    - 2 Temperature difference for Temperature: 1.40 is above action limit 1.00

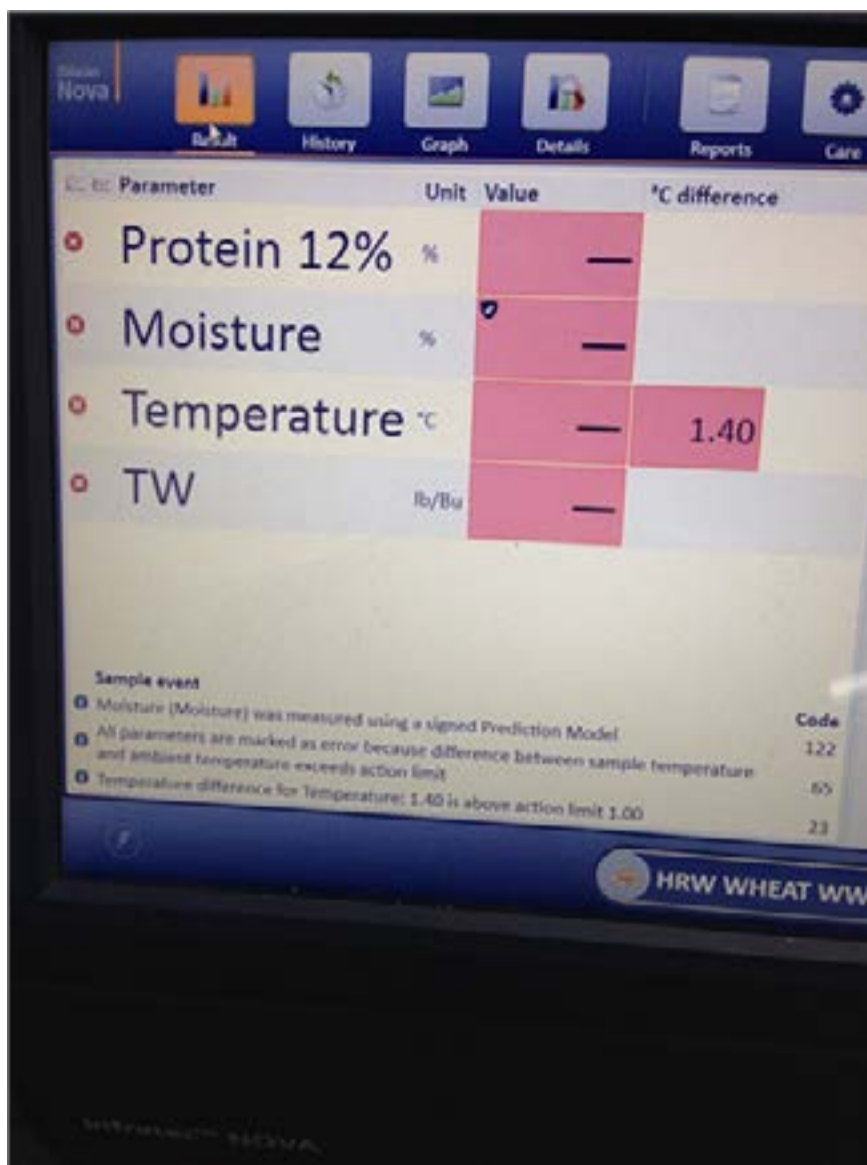


Figure 3. FOSS Nova display showing a Temperature error message under Sample event.

- (4) In the event one of the above messages appears, adjust either the ambient and/or sample temperature to the appropriate limits.
- (5) For the FGIS calibrations, the user must ensure that the sample temperature is within 0 – 40 °C or 32 – 104 °F prior to testing the sample.

## 6. EFFECTIVE DATE

This program notice is effective upon receipt.

## 7. FILING INSTRUCTIONS

File a copy of this program notice with the NIRT Handbook. The handbook will be revised at a later date to include these changes.

## 8. QUESTIONS

Direct any questions concerning this program notice to the Inspection Instrumentation Branch at (816) 891-0401.