ENGINEERING RELEASE

Butler National Corporation
Olathe, Kansas

DRAWING. NO.:	MODEL:	SHEET:
02907011	LEARJET MODEL 20 AND 35/36 SERIES	1 OF 1

DRAWING TITLE:
INSTRUCTIONS FOR CONTINUED AIRWORTHINESS FOR REPLACEMENT VERTICAL STALL WARNING ACCELEROMETER ON LEARJET MODELS 24,24A/B/24B-A/D/D-A/E/F/F-A, 25,25A/B/C/D/F, 28, 29, 35, 35A, 36, AND 36A AIRPLANES (WITHOUT FC-530 OR FC-535 AUTOPILOTS)

REV. OR ITEM	RELEASE DATE	SUPERCEDED BY	RELEASE INFORMATION
IR	08/09/14 10/31/14		INITIAL RELEASE

REMARKS:

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

FOR

Replacement Stall Warning Vertical Accelerometer

ON

Learjet Models 24/24A/24B/24B-A/24C/24D/24E/24F/24F-A, 25/25A/25B/25C/25D/25F, 28, 29, 35, 35A, 36, and 36A Airplanes

(Without FC-530 or FC-535 Autopilots)

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1 INTRODUCTION

1.1 Purpose

This document is designed for use by the installing facility of the replacement vertical accelerometer Butler National part number 02904001-101, for the stall warning system in the Learjet model 24, 24A, 24B-A, 24C, 24D, 24D-A, 24E, 24F, 24F-A, 25, 25A, 25B, 25C, 25D, 25F, 28, 29, 35, 35A, 36, and 36A (when not equipped with the FC-530 or FC-535 autopilot) as Instructions for Continued Airworthiness in response to 14 CFR Part 25, and 14 CFR Part 25 Appendix G. This ICA includes information required by the operator to adequately maintain the replacement stall warning accelerometer.

1.2 Scope

This document identifies the Instructions for Continued Airworthiness for the modification of the aircraft for installation of the replacement stall warning vertical accelerometer, Butler National part number 02904001-101, as provided in the Supplemental Type Certificate.

1.3 Document Control

This document shall be released, archived, and controlled in accordance with the Butler National Corporation document control system. When this document is revised, the document will be made available on the Butler National Corporation website.

1.4 Restriction to Use Certain Documents

No entity or person applying for approval of an installation of the replacement Stall warning vertical accelerometer may use or reference STC documents or these Instructions for Continued Airworthiness to show compliance with any regulations unless authorized in writing by Butler National Corporation.

1.5 Definitions

The following terminology is used within this document:

ACO:	Aircraft Certification Office	LRU:	Line Replacement Unit
AEG:	Aircraft Evaluation Group	PMI:	Principal Maintenance Inspector
CFR:	Code of Federal Regulations	POI:	Principal Operations Inspector
FAA:	Federal Aviation Administration	ICA:	Instructions for Continued Airworthiness
STC:	Supplemental Type Certificate		

1.6 Terminology

Except where specifically noted, references made to the ‘Vertical Accelerometer’ will be only to the replacement vertical accelerometer having Butler National part number 02904001-101.

2 INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

2.1 Introduction

Content, Scope, Purpose and Arrangement:		This document identifies the Instructions for Continued Airworthiness for the modification of the aircraft by replacement of the stall warning vertical accelerometer with Butler National part number 02904001-101.
Applicability:		Applies to Learjet Model 24, 24A, 24B, 24B-A, 24C, 24D, 24D-A, 24E, 24F, 24F-A, 25, 25A, 25B, 25C, 25D, 25F, 28, 29, 35, 35A, 36, and 36A aircraft not equipped with the FC-530 or FC-535 autopilot when altered by installation of the Vertical Accelerometer in accordance with Butler National Corporation STC.
Definition of Abbreviations:		See Sections 1.5 and 1.6
Precautions:		None
Units of measurement		None
Referenced publications*: * or later FAA Approved revisions		Learjet Service Manual, Sections 2 and 7
		Learjet Maintenance Manual, Chapter 24 and 27
		Learjet Wiring Manual, Chapter 20
		Learjet Illustrated Parts Catalog, Chapter 27
		Butler National Installation Drawings 02902001, 02903001
Retention:		This Document, or the information contained within, will be included in the aircraft permanent records.

2.2 Description of Alteration

This project replaces the existing stall warning system vertical accelerometer with the replacement Vertical Accelerometer, Butler National part number 02904001-101, that is the same form, fit and function as the previously approved vertical accelerometer.

Note: There is a connector and wiring change: see Butler National Drawing 02903001

The stall warning system accelerometer provides a sensor input to limit the stall warning pusher force on the yoke. The system design is intended to limit the pusher in case of an erroneous stall indication at high speeds.

The Vertical Accelerometer, Butler National part number 02904001-101, is for installation in the stall warning system in the Learjet Model 24, 24A, 24B, 24B-A, 24C, 24D, 24D-A, 24E, 24F, 24F-A, 25, 25A, 25B, 25C, 25D, 25F, 28, 29, 35, 35A, 36, and 36A.

2.3 Control, Operating, and Testing Information

Note: The Vertical Accelerometer check is performed with the accelerometer removed from the mounting location. Perform the (Vertical) Accelerometer Power Source and Operational Checks as provided in the references below:

On aircraft 24-100 thru 24-357, 25-003 thru 25-060 and 25-062 thru 25-064 refer to Section 2 of the Service Manual for the Accelerometer Operational Check as well as the Power Source Check as described in Table 1 below.

On aircraft 25-061, 25-070 thru 25-373, 28-001 thru 28-005, 29-001 thru 29-004, 35-003 thru 35-505 and 36-003 thru 36-053 refer to Chapter 27 of the Maintenance Manual for the Operational Check of the Stall Warning Accelerometer as well as the Power Source Check as described in Table 1 below.

2.4 Servicing Information

Follow the scheduled Power Source and Operational Checks of the stall warning accelerometer at 220 hour intervals. The Learjet Maintenance Manual and Table 1 below identify the Power Source and Operational Check procedures applicable to the aircraft.

In the event of system failure, troubleshoot the stall warning system in accordance with Section 2.6 Troubleshooting Information below. Contact Butler National Corporation for any required additional information.

2.5 Periodic Maintenance

There is no change to maintenance requirements of the stall warning accelerometer with the installation of the replacement Vertical Accelerometer. The Vertical Accelerometer must be inspected and tested in 220 hour intervals as provided in Table 1 below.

Table 1: Maintenance Intervals

Item	Description/Procedure	Interval
Equipment Removal & Replacement	Removal and replacement of Vertical Accelerometer Removal and replacement instructions are contained in Section 2.7 of this document and in Butler National installation drawing 02902001.	On Condition

Item	Description/Procedure	Interval
Power Source Check	Perform stall warning vertical accelerometer power check as follows. Vertical accelerometer power will be verified by measuring the DC voltage between accelerometer connector P221 pins A (+) and D (-). 1. Remove the LH nose compartment access door. 2. Remove connector P221 from Stall Warning Vertical Accelerometer assembly 02904001-101. 3. Verify that the LH and RH Stall Warning Switches are OFF. 4. Set Battery Switch(es) to ON. (Check for 28 VDC ± 1.0). 5. Verify stall warning power input measures approximately 0VDC (Ground). 6. Set LH Stall Warning Switch to ON. 7. Verify voltage is approximately 28VDC. 8. Set RH Stall Warning Switch to ON. 9. Verify voltage is approximately 28VDC. 10. Set LH Stall Warning Switch to OFF (RH still ON). 11. Verify voltage is approximately 28VDC. 12. Set RH Stall Warning Switch to OFF (both OFF). 13. Verify voltage is approximately 0VDC (ground).	Every 220 hours

Item	Description/Procedure	Interval
Operational Check	Perform stall warning accelerometer operational check as follows: **CAUTION** Limit this Operational Check to a short duration so as not to overheat the components. 1. Remove the LH nose compartment access door. 2. Remove accelerometer mounting screws 3. Set Battery Switch(es) to ON. (Check for 28 VDC ± 0.5). 4. Set LH Stall Warning Switch to ON. 5. Hold the accelerometer normal side up. 6. Adjust horizontal stabilizer position until a neutral feel of the LH control column is obtained. 7. Move the LH stall vane up. 8. Using a spring scale, observe that the LH control column pusher force reaches 40 to 80 pounds. 9. Rotate accelerometer 180° (upside down from normal). 10. Observe that the column pusher force has reduced to 20 pounds or less. 11. Repeat steps 4 thru 10 using the RH Stall Warning Switch, RH Stall Vane and RH Control Column. 12. If the above conditions are not met, repair or replace system components as required and repeat the Operational Check. 13. If the above conditions are met, reinstall accelerometer (normal side up) and set Stall Warning switches and Battery Switch(es) to OFF. 14. Reinstall the nose compartment access door. 15. Complete the aircraft flight records in accordance with 14 CFR Part 43.9.	Every 220 hours
Equipment Visual Check	Conduct a visual check (see Section 3.1) of the Vertical Accelerometer and its wire harness to ensure continued installation integrity. Inspect the Vertical Accelerometer for security of attachment, including visual inspection of screws and other supporting structure attaching the Vertical Accelerometer to aircraft.	Every 600 hours or 24 months
Test-Bonding Check	Perform an electrical bonding check (See Section 3.2): Perform electrical bond check between the Vertical Accelerometer and separate ground screw on frame and verify that it is less than 2.5 milliohms.	Every 600 hours or 24 months

2.6 Troubleshooting Information

If erroneous indications occur with respect to the Stall Warning System, consult the applicable Learjet Service manual, Section 2 or Maintenance Manual Chapter 27.

2.7 Removal and Replacement Information

For Vertical Accelerometer removal and replacement instructions, refer to Butler National Installation Drawing, Document 02902001.

If the Vertical Accelerometer is removed and to be reinstalled verify that the Vertical Accelerometer is functioning properly using the Power Source and Operational Checks described above in Table 1.

If any work has been performed on the aircraft that could affect the system wiring, or any interconnected equipment, verify the operation of the stall warning per the Stall Warning System checks in the Airplane Flight Manual.

2.8 Diagrams

The Vertical Accelerometer installation wiring diagram is contained in Appendix A of this document.

2.9 Special Inspection Requirements

2.9.1 Lightning Protection Checks

In the event of a suspected or actual lightning strike to the aircraft, perform the Power Source and Operational Checks described in Table 1 above.

2.10 Application of Protective Treatments

Not Applicable.

2.11 Data Relative to Structural Fasteners

Not Applicable.

2.12 Special Tools

For electrical bonding testing; a milliohm meter is required.

2.13 Additional Instructions

None.

2.14 Overhaul Period

The Vertical Accelerometer does not require overhaul at a specific time period. Power Source and Operational Checks of the Vertical Accelerometer must be performed in 220 hour intervals.

2.15 ICA Revision and Distribution

To revise this ICA, Butler National Corporation will distribute revisions to the Instructions for Continued Airworthiness according to the company procedures. The latest revision of this ICA document is available on the Butler National website (http://www.butlernational.com).

2.16 Assistance

Flight Standards Inspectors or the certificate holder's PMI have the required resources to respond to questions regarding this ICA. In addition, the customer may refer questions regarding the Vertical

Accelerometer and its installation to Butler National Corporation during normal business hours via telephone 913-780-9595

2.17 Implementation and Record Keeping

Modification of an aircraft by this Supplemental Type Certificate obligates the aircraft operator to include the maintenance information provided by this document in the operator's aircraft maintenance manual and/or the operator's aircraft scheduled maintenance program.

3 MAINTENANCE AND SERVICING INSTRUCTIONS

3.1 Inspection Procedures

The maintenance inspections found in Table 1 are carried out using the following Visual Inspection Criteria:

General Visual Inspection: A visual inspection that will detect obvious unsatisfactory conditions/discrepancies. This type of inspection may require cleaning, removal of fillets, fairings, access panels/doors, etc. Work stands, ladders, etc. may be required to gain proximity.

1. Metal Parts (all metal parts, bodies, or casings of units in systems and in electrical, instrument, and radio installations, ducting, tubing, rods, and levers). Inspect for the following:
    a. Cleanliness, external signs of damage, leaks, overheating, discharge, or fluid contamination.
    b. Obstruction of drainage or vent holes.
    c. Correct seating and sealing of fairings and serviceability of fasteners.
    d. Security of attachment, fasteners, and connections.
    e. Distortion, dents, scores, chafing, pulled or missing fasteners, rivets, bolts, or screws.
    f. Signs of cracks or wear.
    g. Separation of bond.
    h. Failure of welds or spot welds.
    i. Deterioration of protective treatment and corrosion.
2. Electrical Wires and Components
    a. Cleanliness, obvious damage, corrosion, security of attachments and connections.
    b. Overheating or fluid contamination.
    c. Chaffing of wires and bare or exposed wires.
    d. Evidence of erosion of connectors, pins, and wires.
    e. Check terminal ends and connectors for loose or damaged pins.

3.2 Electrical Bonding Check Procedures

The maintenance inspections found in Table 1 are carried out using the following maintenance practices:

1. All installed components and equipment should be bonded and grounded to prevent malfunctions of equipment and eliminate electrical spark hazards.
2. Electrical bond measurements should be made from the component under test to primary aircraft structure. If the measured bond resistance exceeds specifications, troubleshoot the installation by measuring the bond resistance of each interface between the tested component and primary structure.
3. Electrical bond measurements should be made with all power off of the aircraft.
4. If it is not possible to make electrical bond measurements with the power off of the aircraft, use the following procedure:
    a. Measure the resistance with the red lead on unit and black lead on structure. Record this measurement as R1.

b. Measure the resistance with the black lead on the unit and the red lead on structure. Record this measurement as R2.

c. Average the two measurements. R = (R1 + R2) / 2.

d. If R meets the requirement, the installation is acceptable.

CAUTION: IF THE SPECIFIED BONDING VALUES ARE NOT MET, REWORK BONDING AREAS IN ACCORDANCE WITH THE PROCEDURES FOUND IN THE BASIC AIRCRAFT WIRING MANUAL.

4 AIRWORTHINESS LIMITATIONS SECTION

The Airworthiness Limitations section is FAA approved and specifies maintenance required under §43.16 and §91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

These inspections are in addition to all other inspections specified in the Airworthiness Limitations Section of the basic Learjet Maintenance Manuals.

The following are maintenance tasks due to FAA Airworthiness Directive (AD) 82-01-05. The tasks are mandatory stall warning vertical accelerometer checks for the aircraft.

The Task Interval column provides the maximum allowable threshold (T) and repeat (R) intervals as approved by the FAA. The repeat interval is defined from the last time that particular task was done. The inspection intervals are in hours (H).

The Reference Section column contains the ICA paragraph number where inspection procedures may be found.

Task No.	Task Title	Task Interval	Ref. Section
1	Power Source Check	T 220 H R 220 H	2.5, Table 1
2	Operational Check	T 220 H R 220 H	2.5, Table 1

FAA Approved: _____ Date: 10/31/14

for Ross Landes, ~~Acting~~ Manager
Aircraft Certification Office
Federal Aviation Administration
Renton, WA

Appendix A. EQUIPMENT LOCATION, ELECTRICAL INTERCONNECT, AND IDENTIFICATION

A.1 LRU Locations

The table below describes the location of the Vertical Accelerometer

LRU	Description of Location
Stall Warning Vertical Accelerometer	Frame 2 (Nose Compartment) See Butler National drawing 02902001

A.2 Electrical Interconnect

The diagrams in this Appendix depict the electrical interconnect configurations of the Stall Warning Vertical Accelerometer for the applicable Learjet aircraft.

A.3 Wire Marking Codes

The electrical wiring diagram also contains the wire marking codes.

A.4 Electrical Load Data

There is no change to electrical loads information for the replacement Vertical Accelerometer.

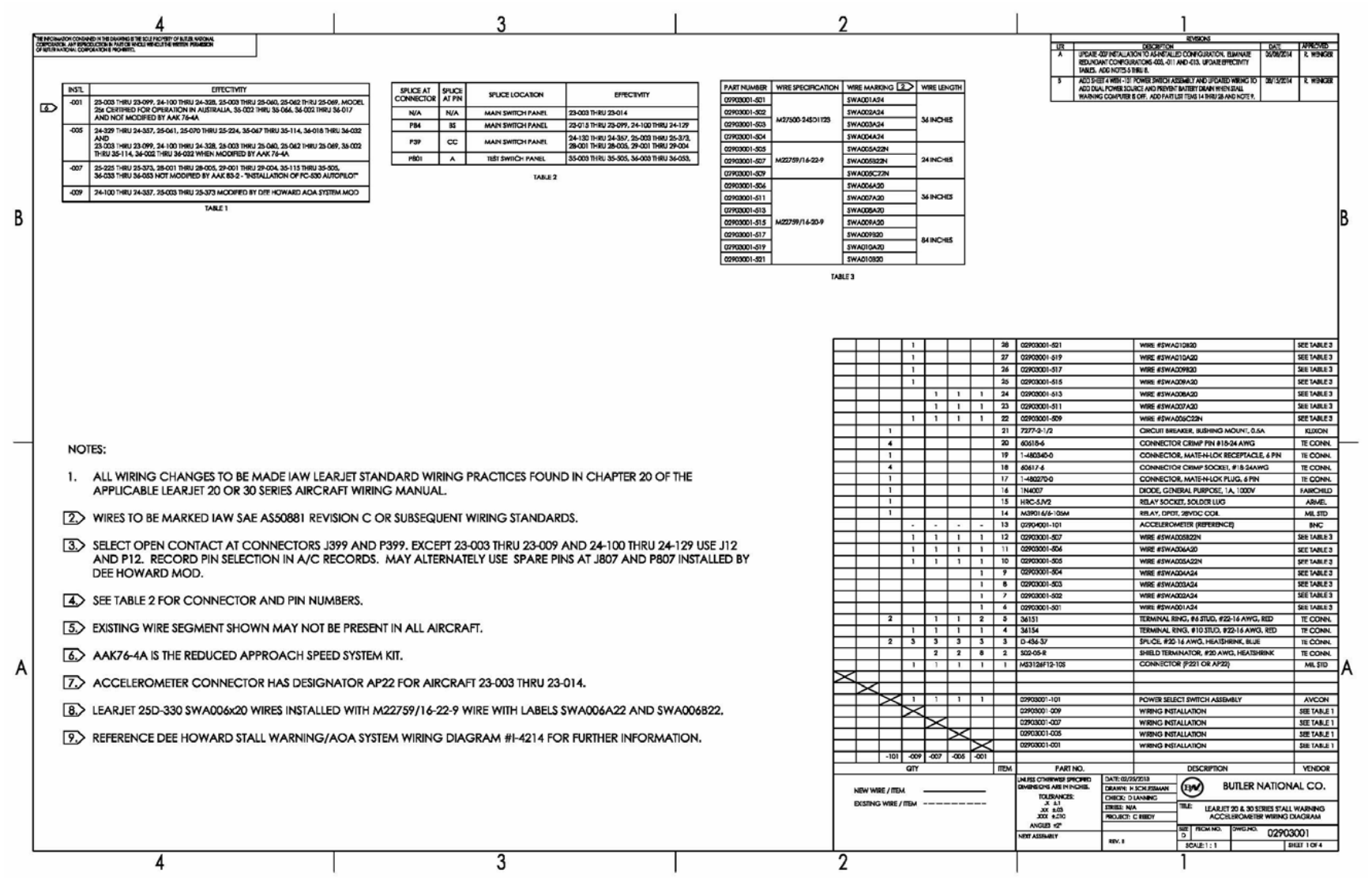

Figure 1 - Stall Warning Vertical Accelerometer Electrical Interconnect

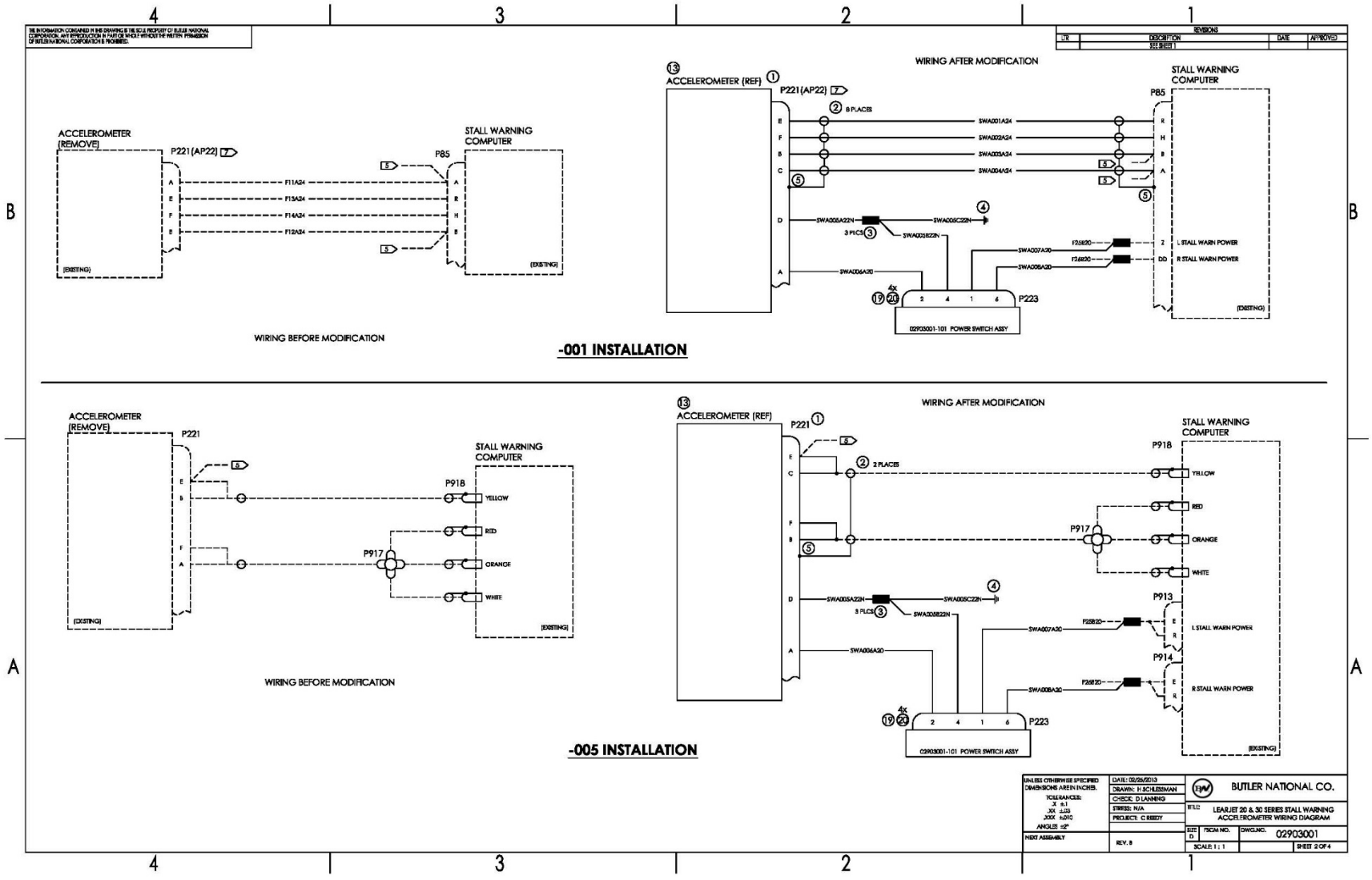

Figure 1 - Stall Warning Vertical Accelerometer Electrical Interconnect, cont'd

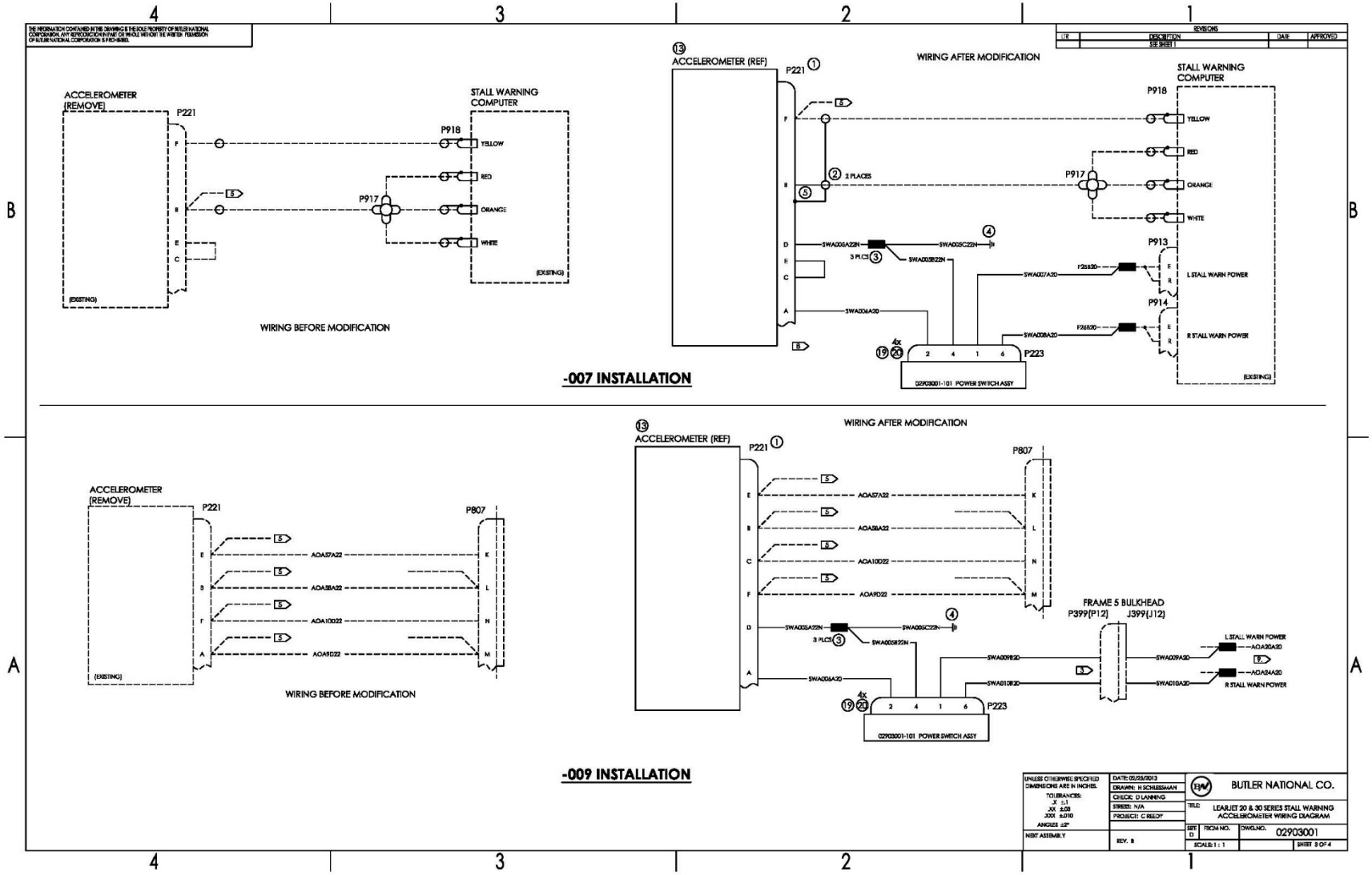

Figure 1 - Stall Warning Vertical Accelerometer Electrical Interconnect, cont'd