

**SEALED**

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF UTAH**

2012 SEP 17 A 10:27

UNITED STATES OF AMERICA

*ex rel.* TODD DONALDSON,

Plaintiff,

vs.

NORTHROP GRUMMAN CORPORATION,

Defendant.

Civil Action No. 12-10001

FALSE CLAIMS CASE, pursuant to 31 U.S.C. Sec. 3729

**FILED UNDER SEAL**  
**Pursuant to 31 U.S.C. § 3730(b)(2)**

Case: 2:12-cv-00884  
Assigned To : Nuffer, David  
Assign. Date : 09/17/2012  
Description: Qui Tam Donaldson

**COMPLAINT**

The United States of America, through *qui tam* Relator Todd Donaldson (“Relator”), brings this action under the federal False Claims Act, 31 U.S.C. §§ 3729, *et seq.* (“FCA”), against Defendant Northrop Grumman Corp. (“Northrop” or “Defendant”), and in support thereof, states as follows:

1. Northrop is a defense contractor that provides advanced weapons and navigation systems to the U.S. Government.
2. Relator is employed by Defendant in its Navigations Systems Division in the area of Salt Lake City, Utah, and has been employed by Defendant for over 25 years.
3. Defendant manufactures, *inter alia*, the LN-100 Inertial Navigation System/Global Positioning System (INS/GPS) navigation system. Because the LN-100 is absolutely essential to the proper functioning of the myriad weapons, vehicles, and other equipment in which it is installed, each LN-100 unit must undergo a battery of tests

called “acceptance test procedures,” or ATP’s. Passage of these ATP’s is material to the Government’s decision to pay for each LN-100 unit and for the equipment in which each LN-100 is installed.

4. Unbeknownst to the Government, however, Northrop has been faking “pass” results for these ATP’s. This has resulted in the Government paying for LN-100 units that do not function properly or as promised to work by Defendant.

5. As described herein, these falsely-passed LN-100 units were submitted to the Government for purchase in violation of the FCA. At the times Defendant made, or caused to be made, each such claim for payment, Defendant knew that the claim was false and fraudulent. Defendant presented, or caused to be presented, each such claim for payment to the United States, knowing that it was false and fraudulent, in order to defraud the United States by causing them to pay these claims.

#### **I. JURISDICTION AND VENUE**

6. Pursuant to the *qui tam* provisions of the FCA, Relator brings this action on his own behalf and on behalf of the United States.

7. This Court has subject matter jurisdiction pursuant to 28 U.S.C. § 1331 and 31 U.S.C. §§ 3732(a) and (b), which confer jurisdiction over actions brought under 31 U.S.C §§ 3729 and 3730.

8. This Court has personal jurisdiction over Defendants and venue is proper in this District pursuant to 31 U.S.C. § 3732(a) because Defendants are found, transact business, and committed violations of the FCA in this District.

9. This action is not based upon prior public disclosure of allegations or transactions in a criminal, civil, or administrative hearing, lawsuit or investigation; in a

Government Accountability Office or Auditor General's report, hearing, audit, or investigation; in news media; or in any other form as the term "publicly disclosed" is defined in 31 U.S.C. § 3730(e)(4)(A).

10. To the extent there has been a public disclosure unknown to Relator, he is an original source under 31 U.S.C. § 3730(e)(4). Relator has direct and independent knowledge of the information on which the allegations are based, and voluntarily provided this information to the United States before filing this action.

## II. PARTIES

11. Relator Donaldson is a citizen of the United States and a resident of the State of Utah. Relator is a resident of the State of Utah with his principal residence in the Salt Lake City metropolitan area. Relator has been employed by Defendant since 1986. Relator was a floor manager for over a decade and subsequently exercised management responsibilities in the LN-120G system before becoming third shift plant manager. Notwithstanding his excellent performance of these duties, Defendant demoted Relator as a result of his internal complaints regarding fake testing results on the LN-100 and other improper acts of Defendant.

12. Defendant is incorporated in the State of Delaware and its headquarters are in Falls Church, Virginia. Defendant sells the LN-100 to the U.S. Army, Navy, Marine Corps, Air Force, and Coast Guard, where it is incorporated into various aircraft, including helicopters and unmanned drones (including the Predator drone), missiles, submarines, and other vehicles.

13. The United States is the real party in interest in this case, ultimately paid the false claims alleged herein, and is entitled to the bulk of Relator's recovery.

### **III. RELEVANT LAW**

14. The FCA imposes liability on any person or entity who knowingly presents, or causes to be presented, a false or fraudulent claim for payment or approval (31 U.S.C. § 3729(a)(1)(A)); knowingly makes, uses, or causes to be made or used, a false record or statement material to a false or fraudulent claim (§ 3729(a)(1)(B)); or conspires to commit such violations (§ 3729(a)(1)(C)).

15. The FCA defines the term “knowingly” to mean actual knowledge, deliberate ignorance of truth or falsity, or reckless disregard of truth or falsity, and no proof of specific intent to defraud is required (§ 3729(b)(1)) and defines “claim” to include any request or demand, whether under contract or otherwise, for money that is made to an agent of the United States or to a contractor if the money is to be spent to advance a government program or interest and the government provides or will reimburse any portion of the money (§ 3729(b)(2)).

### **IV. DEFENDANTS' UNLAWFUL CONDUCT**

16. Defendant sells delicate, advanced electronic systems to the government, including the LN-100 INS/GPS system. Each LN-100 unit sells for at least \$60,000 and often sells for \$100,000 or more.

17. Because of the complex nature of these systems, Defendant is required to perform various ATP's on every single LN-100 unit that it sells, and to provide the government only units that have passed each of these ATP's, including the “GPS Communication Test.”

### **GPS Communication Test**

18. The GPS Communication Test assesses GPS satellite continuity, *i.e.* whether the LN-100 unit is able to communicate properly with the GPS satellites, such that the LN-100-100 is thus able to know its exact position in three-dimensional space.

19. Satellite continuity is essential to the proper functioning of the LN-100 units because the inertial navigation component (“inertial unit”) is imperfect. Even worse, because the inertial unit has no means of directly determining its position other than via GPS navigation (*i.e.*, determining its position by triangulating multiple satellite signals), the errors it makes accumulate in the system over time, such that its misreading of position becomes progressively worse.

20. While brief interruptions of satellite continuity are appropriate, the length of non-continuity that goes with a defective GPS unit (*i.e.*, a LN-100 unit that has failed the GPS Communication Test) presents a grave danger of erroneous navigation, leading to crashes and weapons failing to hit their targets.

21. Because the GPS Communication Test is somewhat time-consuming (it takes about 10 minutes to run) and the LN-100 units typically fail, Defendant has taken to having its technicians manually key in positive responses, such that the word “pass” appears on a print-out of the tests without the test actually being run. *See* attached Ex. A, wherein the GPS Communication test was supposedly started at 7:39:50 and passed four seconds later, at 7:39:54, when in fact no such test was ever actually run on this unit.

22. Defendant told his supervisor, manager Glenn Kemp, and human resources representative Ken Bishop about these problems, but technicians continue to manually insert spurious data causing a “pass” reading of the test on units that would fail

if tested properly. Knowing about these failures, Defendant then sells the defective units to the United States without disclosing the improper testing, in violation of the FCA.

**Improper Unit Calibration**

23. Because of variations in the magnetic and other properties of the LN-100 units, including gyroscopic and accelerometer biases, each configuration must be calibrated. The information from the correct calibration file then needs to be entered into the device's memory using the CIRT software that is built into each workstation.

24. However, Defendant has not been using the correct calibration files. The LN-100 units with the wrong calibration files are usually not detected in the ATP tests, but then the units fail when used by the U.S. armed forces in field conditions.

**COUNT ONE**  
**FEDERAL FALSE CLAIMS ACT**

25. Relator incorporates by reference the allegations above.

26. This is a claim for treble damages and civil penalties under the False Claims Act, 31 U.S.C. §§ 3729(a)(1)(A), 3729(a)(1)(B), and 3729(a)(1)(C).

27. As a result of the misconduct alleged herein, Defendants knowingly presented, or caused to be presented, to the United States a false or fraudulent claim for payment or approval in violation of 31 U.S.C. § 3729(a)(1)(A).

28. As a result of the misconduct alleged herein, Defendants knowingly made, used, or caused to be made or used, a false record or a statement material to a false or fraudulent claim in violation of 31 U.S.C. § 3729(a)(1)(B).

29. As a result of the misconduct alleged herein, Defendants knowingly conspired to present, or cause to be presented, a false or fraudulent claim for payment or approval to the United States, and knowingly conspired to make, use, or caused to be

made or used, a false record or statement material to false or fraudulent claims in violation of 31 U.S.C. § 3729(a)(1)(C).

30. The United States, unaware of the false or fraudulent nature of these claims, paid such claims when they would not otherwise have been paid.

31. By reason of these payments, the United States has been damaged, and continues to be damaged, in a substantial amount.

**PRAYER FOR RELIEF**

WHEREFORE, Relator respectfully prays that judgment be entered against the Defendants, ordering that:

- A. Defendants cease and desist from violating the FCA;
- B. Defendants pay \$10,000, as adjusted by the Federal Civil Penalties Inflation Adjustment Act of 1990 (28 U.S.C. § 2461) for each violation of the FCA, plus three times the amount of damages that the United States has sustained because of Defendants' actions;
- C. Relator be awarded the maximum relator's share allowed under the FCA;
- D. Relator be awarded all costs of this action, including attorneys' fees and costs pursuant to the FCA;
- E. Defendants be enjoined from concealing, removing, encumbering, or disposing of assets which may be required to pay the damages, penalties, fines, attorneys' fees, and costs awarded by the Court;
- F. Defendants disgorge all sums by which they have been enriched unjustly by their wrongful conduct; and

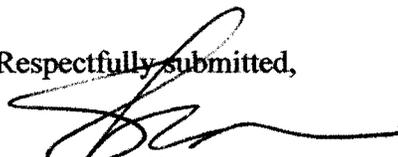
G. The United States and Relator be awarded such other relief as the Court deems just and proper.

**TRIAL BY JURY**

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, Relator hereby demands a trial by jury.

DATED September 6, 2012

Respectfully submitted,



/s/ Steve Russell

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# **Exhibit A**

Litton CIRT5 -637 1261 S/N 0049

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7:33:13 UUT ON/OFF SWITCH SET TO 'OFF' STATE INFO  
 7:33:16 DC POWER SUPPLY CURRENT AFTER UUT TURN-OFF, ACT: 0.03 AMPS INFO  
 7:33:16 DC POWER REMOVED FROM UUT INFO

*Actual test station print out with technician pressing enter to verify that the test passed.*

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    *****
    TEST 1: SAASM          -- GPS COMMUNICATION TEST
                       -- RS-422 TEST (MANUAL)
                       -- ONE PPS TEST (MANUAL)
    *****
    
```

7:33:20 POWER APPLIED TO UUT AND ON/OFF DISCRETE SET TO 'ON' STATE INFO  
 7:34:15 EQUIPMENT-READY VALID DISCRETE WAS 'TRUE' AS EXPECTED PASS

07:34:26	ALIGN DATA	UUT 1
Power on time	0:01:07 h:m:ss	0 1=no-go
Align Time	13 sec	1000
Align Quality	127.938 NM/hr	e308 hex
Align Complete	0 1=true	0525 hex
INS Mode Wd	4006 hex	3000 hex
Store Hdq Mode	0 1=Valid	1048 hex
GND Align	1 1=true	0180 hex
CV Align	0 1=true	8102 hex
SINS Valid	0 1=valid	e308 hex
In Init Bit Mode	0 1=true	0049
Filtered SE Temp	49.17 deg C	9917 hex
Equipment ready	1 1=true	-179.445 deg
SA/AS Status	0000	0.148 deg
GPS Status/FOM	8001 hex	-0.016 deg
Hy Vertical Vel	0.000 ft/sec	4272.70 ft
Hy N/S Vel	0.000 ft/sec	40.770650 deg
Hy E/W Vel	-0.125 ft/sec	-111.956169 deg

7:34:26 UUT ON/OFF SWITCH SET TO 'OFF' STATE INFO  
 7:34:30 DC POWER SUPPLY CURRENT AFTER UUT TURN-OFF, ACT: 0.03 AMPS INFO  
 7:34:30 DC POWER REMOVED FROM UUT INFO

7:35:54 OPERATOR LOADED GPS CRYPTO KEYS INFO

7:35:57 POWER APPLIED TO UUT AND ON/OFF DISCRETE SET TO 'ON' STATE INFO

7:36:28 START OF GPS VERIFICATION INFO  
 7:36:39 GPS FOM < 9, UTC\_VALID = 1 VERIFIED IN ALLOTTED TIME OF 0:20:00 PASS  
 7:39:46 GPS RS-422 TEST PASS  
 7:39:52 GPS HAVE QUICK TEST PASS  
 7:39:54 GPS 1-PULSE PER SECOND (1PPS) TEST PASS

7:39:54 UUT ON/OFF SWITCH SET TO 'OFF' STATE INFO  
 7:39:58 DC POWER SUPPLY CURRENT AFTER UUT TURN-OFF, ACT: 0.03 AMPS INFO  
 7:39:58 DC POWER REMOVED FROM UUT INFO

*The GPS communication test takes ~ 8-10 min to run, the time stamp shows the complete test taking a few seconds*

END OF GPS COMMUNICATION TEST PASS

# **Exhibit B**

# Sample of the ATP Procedure

- 4.7.1.8.3 Verify Outer Gimbal "STOW LOCK LEVER" is down (locked position).
- 4.7.1.8.4 On the Rate Table Controller's AC Power Panel, press <MASTER RESET> push button. Go to step 4.7.1.9.
- 4.7.1.8.5 On the Acutronic Rate Table Controller touch screen do the following:
  - a. Select the Controls Tab.
  - b. Select the Activate Servo Tab.
  - c. Press the "Reset Servo Faults" button.

**CAUTION:** THE RATE TABLE IS A DANGEROUS PIECE OF EQUIPMENT THAT CAN MOVE WITHOUT WARNING !! THE RATE TABLE ROOM DOOR IS TO REMAIN CLOSED WHEN THE TESTER IS IN CONTROL OF THE TABLE.

**NOTE:** The Temperature Chamber Hood is to remain open. If a Contraves table is used, the Outer Gimbal "STOW LOCK LEVER" is to remain down (locked position) while the GPS antenna cable is connected to the UUT.

During the GPS Communications Test the Rate Table Torquers are to remain OFF.

**4.7.1.9 GEM Test Set Cable-up Procedure.** Connect the GEM Test Set cables per the GEM interconnection diagram Figure 4-2 (LPATS or ATPS) or Figure 4-3 (ISATS). This will require that connectors P5 and P6 of W640 (LPATS or ATPS) or W637 (ISATS) be disconnected from the UUT, and connected to the GEM Test Set Breakout Box.

The GEM test set is shared in 7 different test areas, it is the only test set in the plant. 95% of the Nav units sold out of the LW-100 test area have GPS crypto keys loaded and then are required to run the GPS communication test. I have never seen the test run in the year I've been in the area. There are times the GEM TEST set isn't even in the area for weeks at a time. Para. 4.7.1.9 show through 4.7.3.5.3 should be

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FORM SW28-238 (11/02)

~~RUN ON EVERY UNIT SOLD and are not being run~~

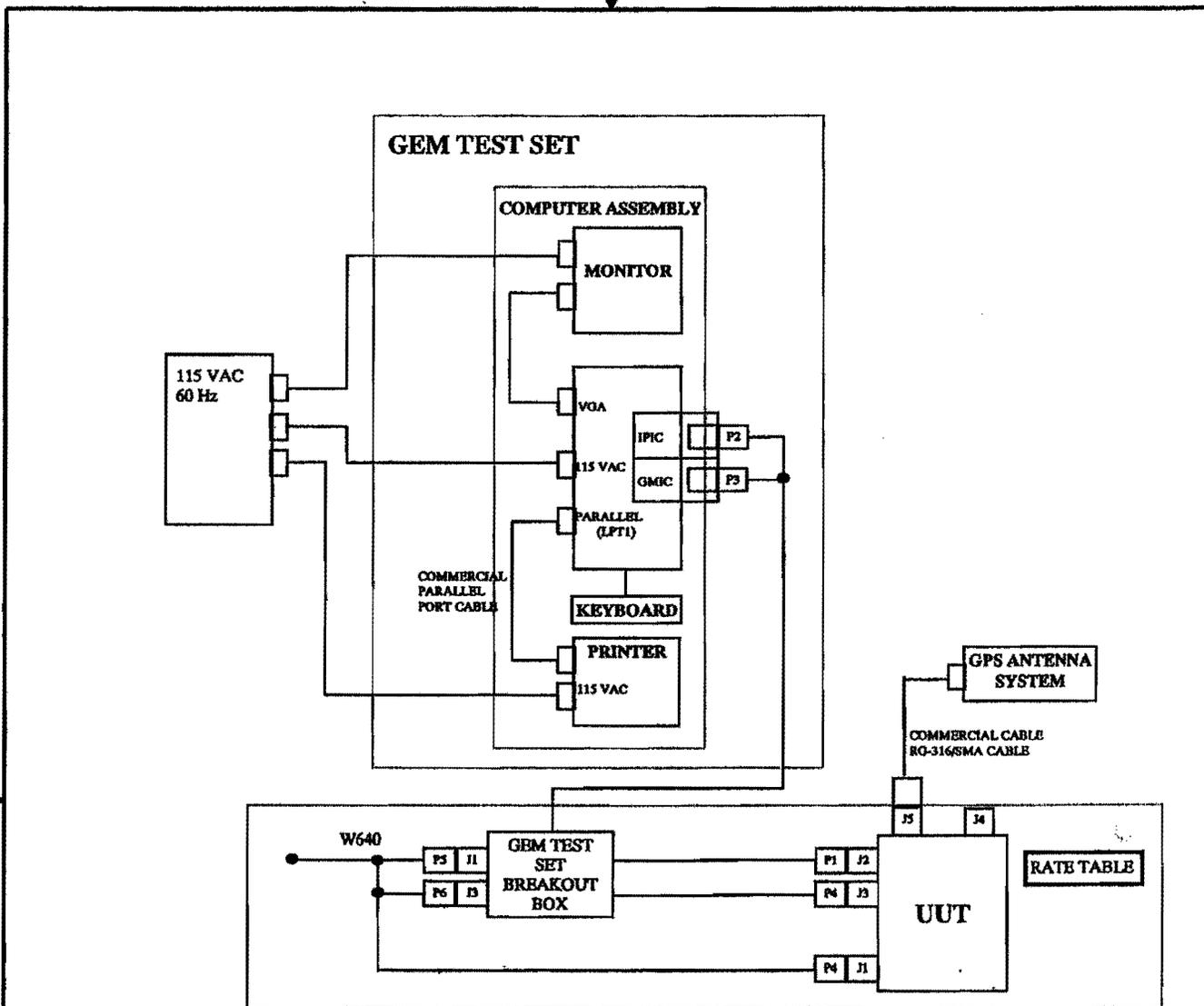


Figure 4-2. GEM Test Set Interconnection Diagram for LPATS or ATPS

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FORM SV28-238 (11/02)

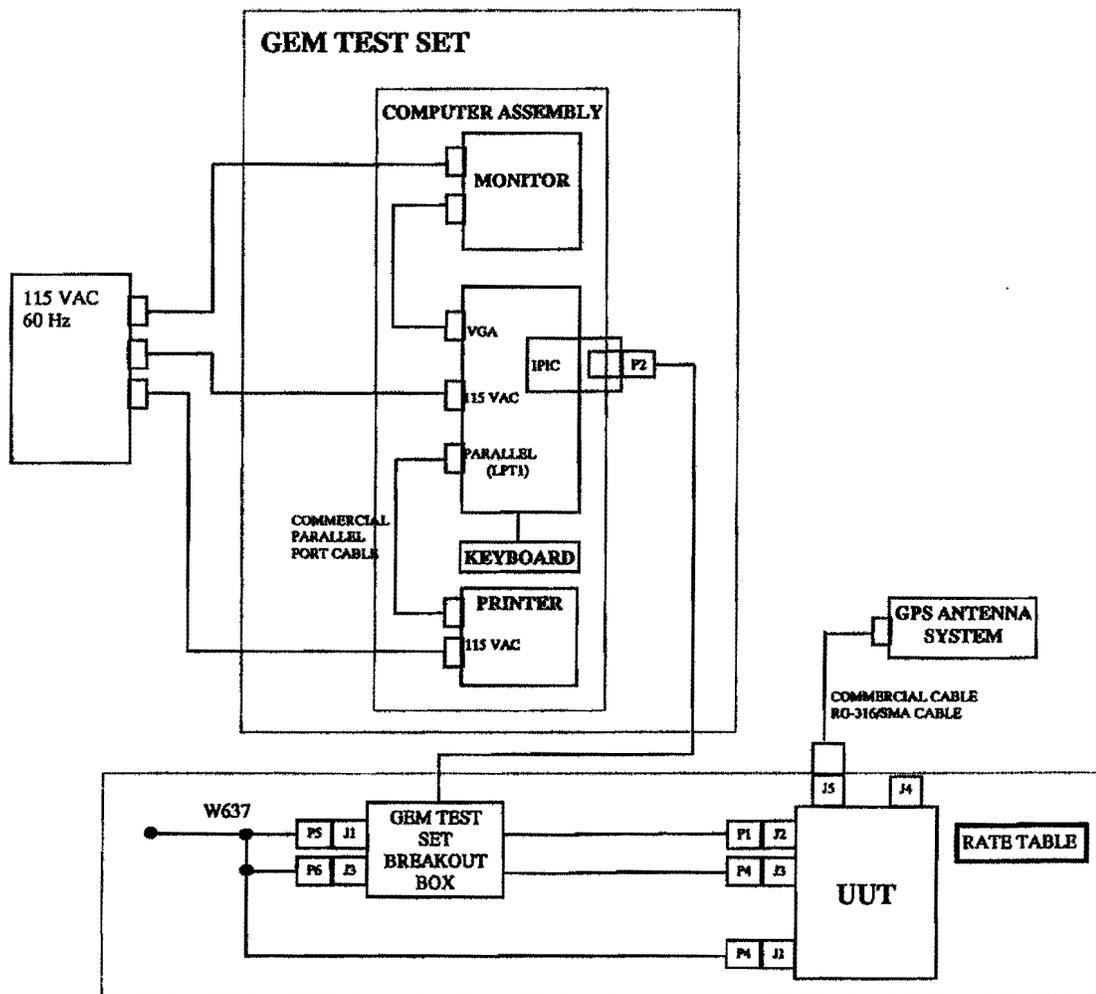


Figure 4-3. GEM Test Set Interconnection Diagram for ISATS

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**4.7.2 Tester Power-Up And Operator Action.**

4.7.2.1 *If using the LPATS or ATPS*, ensure all toggle switches on the front panel are in the "cc" position. They should remain in this position until instructed by the software.

4.7.2.2 Set the Heading, Pitch and Roll Synchro **LOAD** switch to the **ON** position.

4.7.2.3 Set the F22/Normal switch to Normal position

4.7.2.4 Connect the following assets to 115 VAC 60 Hz and 115 VAC 400 Hz facility power, then:

- Turn on the **MONITOR** (green indicator illuminated).
- Ensure that the printer is loaded with paper.
- Turn on the printer - the **ON LINE** led should be illuminated.
- Turn on the computer (switch up to "|") - the computer will go through a boot up routine.
- *If the Manual Power Control Box (276164-1) is connected*, disconnect it from the tester.
- *If using the LPATS or ATPS*, set the 28 VDC, 400 Hz and the two 60 Hz AC switches to the "ON" position.
- *If using the ISATS*, set the 400 Hz and 60 Hz AC switches to the "ON" position, and press the green "Station Power" push button (button shall be illuminated).
- Turn on the programmable power supply (LPATS only).

4.7.2.5 Verify that the Functional Test Control-file has been installed and start CIRTSS software. Follow procedure in Appendix G and use the following references when required:

INSTALL DISK      FTP disk P/N 812751 (dash number in paragraph 4.5)

DIRECTORY.....HSSM\_FTP

4.7.2.6 At the CIRTSS Main Menu: Press <F1> to select the ATP selection menu.

4.7.2.7 This screen is the main header that will print out at the start of the test. The <↑> and <↓> and <ENTER> keys will move the cursor to the different items of the screen. The <HOME> and <END> keys will move the cursor to the 1st and last items on the screen respectively. Yes/No and IEEE-488/Manual items may be changed with the <SPACE-BAR>.

4.7.2.8 Move the cursor through the screen and enter the appropriate information. The following items are required as a minimum:

- a. Set "OPERATOR" to your operator ID
- b. Set "UUT 1, ACTIVE" selection to "Yes".
- c. Enter 812700 for the UUT Part Number.
- d. Verify/enter the correct Rate Table parameters.
- e. Set "Chamber" selection to "JC\_SYSTEM".
- f. Set "Table" selection to "IEEE-488".
- g. Verify/enter the correct Location parameters.
- h. Set "Printer Active" selection to "Yes".

**NOTE:** To print a single test data record, wait until the end of the test then select the desired test record to print (individual test data record will be logged under HSSM\_FTP/PRINT subdirectory).

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4.7.2.9 When the header data is correct press <F8>. Press <SPACE-BAR> until the "*FTP test*" selection appears in the program selection item and press <ENTER>.

A. Activate the CIRTS window.

4.7.2.10 Follow the MONITOR prompts, and press <ENTER> on the keyboard after the completion of the indicated action.

#### 4.7.3 Semi-Automatic Tests.

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**NOTE:** During these tests, the Tester will set UUT 1553 #1 address to 2, and UUT 1553 RT #2 address to 8. The 1553 bus message traffic will be set to communicate on bus A.

The following tests will be performed with the Rate Table -Temperature Chamber hood open, and the GPS Antenna cable connected:

1. **OFF Checksum Verification.** The OFF Checksum will be read and printed for manual verification by the operator.

2. **CVID Discrete/ DS101 Keys Loading Verification.** The UUT will be set to DS-101 key loading format, and then the operator will be instructed to load the GPS Crypto Keys using the SKL or CYZ-10 data loader.

3. **GPS Crypto Keys Loading Verification.** The UUT will be powered off, and then the operator will be instructed to load the GPS Crypto Keys.

4. **GPS Communication Tests.** The operator will be instructed to perform the RS-422 /test, HaveQuick test and 1 Pulse Per Second test.

5. **Power Tests.** The Power tests consist of an Off Power test, Operational Power Consumption test, Power Interrupt test, and a Secondary Power Consumption test.

6. **GC Alignment/Navigation Performance (Stand Alone and Coupled) Test.** The Tester will perform a 4 minute GC Alignment with the IN/GPS positioned for a heading of 0 degrees. After the GC Alignment period, the UUT will be commanded into Navigate mode and rotated 180 degrees in azimuth. Upon completion of 84 minutes of Navigation, the UUT will be turned OFF and results printed.

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#### 4.7.3.1 OFF Checksum Verification.

4.7.3.1.1 Compare the printed Software Identifiers and Checksums for the OFF, GEM, Boot Firmware and Kernel Firmware against the expected values shown on the OFF Software Drawing and GEM Software Drawing called out on the UUT Parts List. Use the following criteria to determine the PASS/FAIL result:

- If the printed Software Identifier or Checksum matches the value for the respective parameter from the software drawings, record PASS on Test Data Sheets D8 and D9.
- If the printed Software Identifier or Checksum does NOT match the value for the respective parameter from the software drawings, record FAIL on Test Data Sheets D8 and D9.

#### 4.7.3.2 CVID Discrete/ DS101 Keyload Test.

4.7.3.2.1 While the MONITOR is displaying the message "Load Crypto Keys via SKL or CYZ-10 as per the ATP.", attach the SKL or CYZ-10 and load the black keys per document 812723.

4.7.3.2.2 Use the following criteria to determine the PASS/FAIL result:

- If the keys were transferred successfully, record PASS on Test Data Sheet D8.
- If the keys were not transferred, record FAIL on Test Data Sheet D8.

4.7.3.2.3 Disconnect the SKL or CYZ-10 data loader from the UUT per document 812723.

4.7.3.2.4 On the keyboard, while the MONITOR is displaying the message "Load GPS Crypto Keys via SKL or CYZ-10 as per the ATP.", press <ENTER>.

#### 4.7.3.3 KYK-13 Cold Keying Test.

4.7.3.3.1 While the MONITOR is displaying the message "Load GPS Crypto Keys via KYK-13 as per the ATP.", attach the KYK-13 data loader to the UUT J4 connector as shown in Figure 4-5.

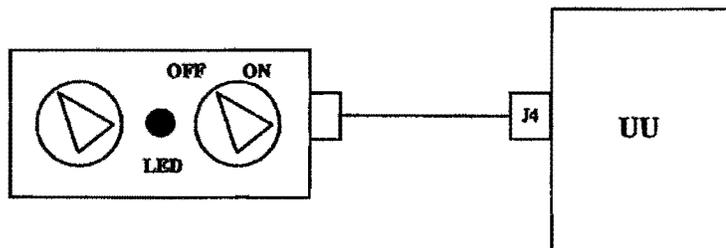


Figure 4-4. KYK-13 Interconnection Diagram

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- 4.7.3.3.2 Load Crypto variables into the UUT by turning the ON/OFF knob to the ON position and hold for several seconds or until the KYK-13 LED flashes On and Off, then release the knob.
- 4.7.3.3.3 Use the following criteria to determine the PASS/FAIL result:
  - If the KYK-13 LED was observed to flash On and Off, record PASS on Test Data Sheet D8.
  - If the KYK-13 LED did NOT flash On and Off, record FAIL on Test Data Sheet D8.
- 4.7.3.3.4 Disconnect the KYK-13 data loader from the UUT.
- 4.7.3.3.5 On the keyboard, while the MONITOR is displaying the message "Load GPS Crypto Keys via KYK-13 as per the ATP.", press <ENTER>.
- 4.7.3.4 **GPS Communication Tests (Serial Bus and Discrete Functional Test).**
- 4.7.3.4.1 **GEM Test Set Power On Procedure.**
- 4.7.3.4.1.1 On the GEM Cable Breakout Box, set the switches labeled "TMMRK WRAP AROUND" and "ENABLE ZEROIZE" to the down position.
- 4.7.3.4.1.2 Connect the GEM Test Set to 115 VAC 60 Hz power, then turn on the computer (switch up to "1") - the computer will go through a boot up routine.
- 4.7.3.4.1.3 On the GEM computer, a menu should be displayed titled "LITTON MAIN MENU".
  - If the menu is present, then proceed to paragraph 4.7.3.4.2.
  - If the menu is NOT present, then at the DOS command line, type "C:\M" and press <ENTER>.

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**NOTE:** On the GEM Test Set, if the menu titled "LITTON MAIN MENU" is not displayed after powering-up the GEM Test Set, or does not appear after typing "C:\M" and <ENTER> at the DOS prompt, then the GEM Test Set software needs to be installed or re-installed.

*Refer to Appendix E for instructions on installing the GEM Test Set software.*

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4.7.3.4.2 **GPS Communication Tests Functional Operating Procedure.**

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**NOTE:** The GEM must be tracking satellites in order for the GPS Communication Tests to pass.

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**NOTE:** The Tester will turn the UUT on and command Standby Mode, and will await verification of the GPS Crypto keys before proceeding. Verification of the Crypto keys can take up to 20 minutes.

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4.7.3.4.2.1 Wait until the MONITOR displays the message *“Perform RS-422, HaveQuick, and 1 PPS Tests as per the ATP.”*, then proceed on to the next paragraph.

4.7.3.4.2.2 **RS-422 Test.**

4.7.3.4.2.2.1 On the GEM Test Set, at the display titled *“LITTON MAIN MENU”*, press numeric key <1>.

4.7.3.4.2.2.2 At the next screen prompt, press <ENTER>.

4.7.3.4.2.2.3 At the *“GEM INTEGRATION AND TEST MAIN MENU”* display, use the arrow keys to select the *“IPIC COMMUNICATION (IPBUG)”* option, then press <ENTER>.

4.7.3.4.2.2.4 Press the <B> key to select the Navigation Display menu.

4.7.3.4.2.2.5 Determine the PASS/FAIL results for the RS-422 test, by observing the upper-right corner of the GEM Test Set MONITOR and making the determination as follows:

**PASS:** If there is NOT a flashing display message *“UE NOT RESPONDING”*, then the test is considered to be passing.

**FAIL:** If there IS a flashing display message *“UE NOT RESPONDING”*, then the test is considered to be failing.

4.7.3.4.2.2.6 Record the PASS/FAIL result on Test Data Sheet D9.

4.7.3.4.2.2.7 Press <Esc> two times to return to the menu titled *“GEM INTEGRATION AND TEST MAIN MENU”*.

4.7.3.4.2.3 **HaveQuick Test.**

4.7.3.4.2.3.1 If using Gem Test Set P/N 270775-2 go to paragraph 4.7.3.4.2.4.9 else at the *“GEM INTEGRATION AND TEST MAIN MENU”* display, use the arrow keys to select the *“GMIC COMMUNICATION”* option, then press <ENTER>.

4.7.3.4.2.3.2 At the *“GMIC COMMUNICATION MENU”* display, use the arrow keys to select the *“RCVR INTEGRATION”* option, then press <ENTER>.

4.7.3.4.2.3.3 At the *“RCVR INTEGRATION MENU”* display, use the arrow keys to select the *“HAVEQUICK INTEGRATION”* option, then press <ENTER>.

4.7.3.4.2.3.4 Observe a pop-up window displaying the message *“WAITING FOR HAVEQUICK DATA...”*.

4.7.3.4.2.3.5 Determine the PASS/FAIL results for the HaveQuick test, by observing the GEM Test Set MONITOR and making the determination as follows:

**PASS:** A pop-up window displaying Time, Day, Year and TFOM data should appear within five minutes from the time the message *“WAITING FOR HAVEQUICK DATA...”* first appears.

The appearance of this display indicates that the test is passing.

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**FAIL:** If the Time, Day, Year and TFOM are NOT displayed in the pop-up window within five minutes after the message "*WAITING FOR HAVEQUICK DATA...*" first appears, the test shall be considered failed.

- 4.7.3.4.2.3.6 Record the PASS/FAIL result on Test Data Sheet D9.
- 4.7.3.4.2.3.7 Press <Esc> three times to return to the menu titled "*GEM INTEGRATION AND TEST MAIN MENU*".
- 4.7.3.4.2.3.8 Go to paragraph 4.7.3.5
- 4.7.3.4.2.3.9 Using an Oscilloscope, connect to Have Quick test points. Verify Have Quick output data is a  $5.0 \pm 1.0$  volt p-p signal with a period of  $600 \pm 10$  us.
- 4.7.3.4.2.3.10 Record the PASS/FAIL result on Test Data Sheet D9.
- 4.7.3.4.2.4 **1 Pulse Per Second Test.**
- 4.7.3.4.2.4.1 If using Gem Test Set P/N 270775-2 go to paragraph 4.7.3.4.2.4.9 else at the "*GEM INTEGRATION AND TEST MAIN MENU*" display, use the arrow keys to select the "**GMIC COMMUNICATION**" option, then press <ENTER>.
- 4.7.3.4.2.4.2 At the "*GMIC COMMUNICATION MENU*" display, use the arrow keys to select the "**RCVR INTEGRATION**" option, then press <ENTER>.
- 4.7.3.4.2.4.3 At the menu titled "*RCVR INTEGRATION MENU*", use the arrow keys to select the "**1PPS INTEGRATION**" option, then press <ENTER>.
- 4.7.3.4.2.4.4 A pop-up window should appear displaying the message "**RECEIVING 1 PPS**".
- 4.7.3.4.2.4.5 Determine the PASS/FAIL results for the 1 Pulse Per Second test as follows:
- PASS:** Observe that the message "**RECEIVING 1 PPS**" is displayed on the GEM Test Set MONITOR for a minimum period of 10 seconds. This condition shall constitute that the test is passing.
- FAIL:** If the message "**RECEIVING 1 PPS**" is not observed on the GEM Test Set MONITOR for at least 10 seconds, the test shall be considered failed.
- 4.7.3.4.2.4.6 Record the PASS/FAIL result on Test Data Sheet D9.
- 4.7.3.4.2.4.7 Press <Esc> three times to return to the menu titled "*GEM INTEGRATION & TEST MAIN MENU*".
- 4.7.3.4.2.4.8 Go to paragraph 4.7.3.5
- 4.7.3.4.2.4.9 Perform the 1 Pulse Per Second test with an oscilloscope. Connect the oscilloscope to the 1PPS output. Verify the 1PPS data is as follows:
- |             |                                   |
|-------------|-----------------------------------|
| Amplitude   | $10 \pm 1$ volts p-p into 50 ohms |
| Rise Time   | < 20 nanoseconds                  |
| Fall Time   | < 1 microsecond                   |
| Pulse Width | $20.0 \pm 1$ microseconds         |

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4.7.3.4.2.4.10 Record the PASS/FAIL result on Test Data Sheet D9.

4.7.3.5 **GEM Test Set Removal and Rate Table Initialization.**

4.7.3.5.1 On the keyboard, while the MONITOR is displaying the message *"Perform RS-422, HaveQuick, and 1 PPS Tests as per the ATP."*, press <ENTER>.

4.7.3.5.2 Follow the MONITOR prompts to indicate whether the RS-422, HaveQuick and 1PPS tests passed or failed.

---

**NOTE:** While the MONITOR is displaying the message *"Remove GEM TEST SET and connect Rate Table / UUT cables."*, DO NOT press <ENTER> until instructed to do so.

---

4.7.3.5.3 When the tester displays the message *"Remove GEM TEST SET and connect Rate Table / UUT cables."*, perform the following steps:

- a. If using a Contraves table, verify Outer Gimbal *"STOW LOCK LEVER"* is down (locked position).
- b. Remove the GEM Test Set Breakout Box by disconnecting all cabling connected to it.
- c. Re-connect all cabling to the UUT per Figure 4-1.
- d. If rate table controller is outside of the rate table enclosure, leave the enclosure and close the door.

---

**CAUTION:** THE RATE TABLE IS A DANGEROUS PIECE OF EQUIPMENT THAT CAN MOVE WITHOUT WARNING !! THE RATE TABLE ROOM DOOR IS TO REMAIN CLOSED WHEN THE TESTER IS IN CONTROL OF THE TABLE.

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**NOTE:** The Temperature Chamber Hood/Door is to remain open. If a Contraves table is used, the Outer Gimbal *"STOW LOCK LEVER"* is to remain down (locked position) while the GPS antenna cable is connected to the UUT.

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4.7.3.5.4 Set up the Rate Table Controller as follows:

Contraves Setup

- a. If rate table controller is outside of the rate table enclosure, leave the enclosure and close the door.
- b. On the Rate Table Controller's AC Power Panel, press <MASTER RESET> push button.
- c. Press AC Power Panel <TORQUER CONTROL> "ON" push buttons for Axis 1. The Linear Power Amplifier OUTPUT ON indicator 1 shall illuminate.

Acutronic Setup

- a. If rate table controller is outside of the rate table enclosure, leave the enclosure and close the door.

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*This is what sells with every unit.*

<b>NORTHROP GRUMMAN</b> <i>Electronic Systems</i>		<b>DATA SHEET</b> CAGE CODE 06481		D7				
TITLE <b>IN/GPS FUNCTIONAL TEST PART NO:</b>			PAGE 81	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">NUMBER</td> <td style="text-align: center;">REV.</td> </tr> <tr> <td style="text-align: center;">812750</td> <td style="text-align: center;">H</td> </tr> </table>	NUMBER	REV.	812750	H
NUMBER	REV.							
812750	H							
FACILITY  <input type="checkbox"/> Woodland Hills <input type="checkbox"/> Salt Lake City <input type="checkbox"/> Aselsan		Part No: _____ Serial No: _____ Other No: _____						
Major Test Equipment Utilized Name:								
	Part No:		Serial No:					
LPATS Console	278871-5 & Up or							
	282965-2 & Up							
ATPS (ATP Station)	334061							
ISATS	279825-2							
Contraves Two Axis Rate Table	57CD or 57CD-2							
Acutronic Two Axis Rate Table	BD267							
Unincorporated ECO's Utilized in Test: ECO NO: _____ ECO NO: _____ ECO NO: _____ ECO NO: _____ ECO NO: _____								
Date and Time: _____ Test Technician: _____ Test Inspector: _____ Other: _____								
NOTES: <u>Attach computer printout to Test Data sheets.</u> _____ _____ _____ _____								

<b>NORTHROP GRUMMAN</b> <i>Electronic Systems</i>			<b>TEST DATA</b>			TITLE:			PAGE				
						IN/GPS FUNCTIONAL TEST			82				
						DOC:			812750				
MO.	DAY	YEAR	PART NUMBER			DASH NO.			SERIAL NUMBER			REV:	H
													D8
PARA		DESCRIPTION					UNIT S	TOLERANCE MIN MAX		P/F	OBSERVATION		
4.7.3.2.2		CVID Discrete/DS101 Keying Test					---	PASS	FAIL				
4.7.3.3.3		KYK-13 Cold Keying Test					---	PASS	FAIL				
4.7.3.1.1		OFP Version Identifier					---	PASS	FAIL				
4.7.3.1.1		OFP Checksum					---	PASS	FAIL				
4.7.3.1.1		GEM Software Identifier					---	PASS	FAIL				
4.7.3.1.1		GEM Software Checksum					---	PASS	FAIL				
4.7.3.1.1		Boot Loader Firmware Identifier					---	PASS	FAIL				
4.7.3.1.1		Boot Loader Firmware Checksum					---	PASS	FAIL				
4.7.3.1.1		Kernel Firmware Identifier					---	PASS	FAIL				

FORM 26-376 [B]

USE OR DISCLOSURE OF DOCUMENT DATA IS SUBJECT TO THE RESTRICTION ON THE TITLE PAGE OF THIS DOCUMENT

<b>NORTHROP GRUMMAN</b> <i>Electronic Systems</i>				<b>TEST DATA</b>		TITLE: IN/GPS FUNCTIONAL TEST				PAGE 83	
										DOC: 812750	
MO.	DAY	YEAR	PART NUMBER	DASH NO.	SERIAL NUMBER				REV: H		
										D9	
PARA		DESCRIPTION			UNIT S	TOLERANCE MIN MAX		P/F	OBSERVATION		
4.7.3.1.1		Kernel Firmware Checksum			--	PASS	FAIL				
4.7.3.4.2.2.6		RS-422 Test			---	PASS	FAIL				
4.7.3.4.2.3.6 or		Have Quick Test			--	PASS	FAIL				
4.7.3.4.2.3.10		Have Quick Test			--	PASS	FAIL				
4.7.3.4.2.4.6 or		1 Pulse per Second Test			---	PASS	FAIL				
4.7.3.4.2.4.10		1 Pulse per Second Test			---	PASS	FAIL				
4.7.5.4		Run Summary Status			--	PASS	FAIL				
4.7.5.5		Start of Test ETI Readings			HRS	---	---				
					MIN	---	---				
4.7.5.5		End of Test ETI Readings			HRS	---	---				
					MIN	---	---				

FORM 26-376 [B]

USE OR DISCLOSURE OF DOCUMENT DATA IS SUBJECT TO THE RESTRICTION ON THE TITLE PAGE OF THIS DOCUMENT

JS 44 (Rev. 09/11)

**CIVIL COVER SHEET**

The JS 44 civil cover sheet and the information contained herein neither replace nor supplement the filing and service of pleadings or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. (SEE INSTRUCTIONS ON NEXT PAGE OF THIS FORM)

<p><b>I. (a) PLAINTIFFS</b>                  UNITED STATES OF AMERICA                  EX. 121 Todd Donaldson                  2012 SEP 17</p> <p><b>(b) County of Residence of First Listed Plaintiff</b>                  (EXCEPT IN U.S. PLAINTIFF CASES)                  Steve Russell                  729 Bartlett Circle                  MA 018, VT 84532                  435.259.7321</p> <p><b>(c) Attorneys (Firm Name, Address, and Telephone Number)</b>                  MPA 018, VT 84532                  435.259.7321</p>	<p><b>DEFENDANTS</b>                  Northrup Grumman Corp                  County of Residence of First Listed Defendant                  (IN U.S. PLAINTIFF CASES ONLY)</p> <p><b>NOTE:</b>                  IN LAND CONDEMNATION CASES, USE THE LOCATION OF THE TRACT OF LAND INVOLVED.</p> <p><b>Attorneys (If Known)</b>                  Unknown</p>
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<p><b>II. BASIS OF JURISDICTION</b> (Place an "X" in One Box Only)</p> <p><input checked="" type="checkbox"/> 1 U.S. Government Plaintiff</p> <p><input type="checkbox"/> 2 U.S. Government Defendant</p> <p><input type="checkbox"/> 3 Federal Question (U.S. Government Not a Party)</p> <p><input type="checkbox"/> 4 Diversity (Indicate Citizenship of Parties in Item III)</p>	<p><b>III. CITIZENSHIP OF PRINCIPAL PARTIES</b> (Place an "X" in One Box for Plaintiff and One Box for Defendant)</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:33%;"></td> <td style="width:33%; text-align: center;"><b>PTF</b></td> <td style="width:33%; text-align: center;"><b>DEF</b></td> <td style="width:33%;"></td> <td style="width:33%; text-align: center;"><b>PTF</b></td> <td style="width:33%; text-align: center;"><b>DEF</b></td> </tr> <tr> <td>Citizen of This State</td> <td style="text-align: center;"><input type="checkbox"/> 1</td> <td style="text-align: center;"><input type="checkbox"/> 1</td> <td>Incorporated or Principal Place of Business In This State</td> <td style="text-align: center;"><input type="checkbox"/> 4</td> <td style="text-align: center;"><input type="checkbox"/> 4</td> </tr> <tr> <td>Citizen of Another State</td> <td style="text-align: center;"><input type="checkbox"/> 2</td> <td style="text-align: center;"><input type="checkbox"/> 2</td> <td>Incorporated and Principal Place of Business In Another State</td> <td style="text-align: center;"><input type="checkbox"/> 5</td> <td style="text-align: center;"><input checked="" type="checkbox"/> 5</td> </tr> <tr> <td>Citizen or Subject of a Foreign Country</td> <td style="text-align: center;"><input type="checkbox"/> 3</td> <td style="text-align: center;"><input type="checkbox"/> 3</td> <td>Foreign Nation</td> <td style="text-align: center;"><input type="checkbox"/> 6</td> <td style="text-align: center;"><input type="checkbox"/> 6</td> </tr> </table>		<b>PTF</b>	<b>DEF</b>		<b>PTF</b>	<b>DEF</b>	Citizen of This State	<input type="checkbox"/> 1	<input type="checkbox"/> 1	Incorporated or Principal Place of Business In This State	<input type="checkbox"/> 4	<input type="checkbox"/> 4	Citizen of Another State	<input type="checkbox"/> 2	<input type="checkbox"/> 2	Incorporated and Principal Place of Business In Another State	<input type="checkbox"/> 5	<input checked="" type="checkbox"/> 5	Citizen or Subject of a Foreign Country	<input type="checkbox"/> 3	<input type="checkbox"/> 3	Foreign Nation	<input type="checkbox"/> 6	<input type="checkbox"/> 6
	<b>PTF</b>	<b>DEF</b>		<b>PTF</b>	<b>DEF</b>																				
Citizen of This State	<input type="checkbox"/> 1	<input type="checkbox"/> 1	Incorporated or Principal Place of Business In This State	<input type="checkbox"/> 4	<input type="checkbox"/> 4																				
Citizen of Another State	<input type="checkbox"/> 2	<input type="checkbox"/> 2	Incorporated and Principal Place of Business In Another State	<input type="checkbox"/> 5	<input checked="" type="checkbox"/> 5																				
Citizen or Subject of a Foreign Country	<input type="checkbox"/> 3	<input type="checkbox"/> 3	Foreign Nation	<input type="checkbox"/> 6	<input type="checkbox"/> 6																				

**IV. NATURE OF SUIT** (Place an "X" in One Box Only)

<b>CONTRACT</b>	<b>TORTS</b>	<b>FORFEITURE/PENALTY</b>	<b>BANKRUPTCY</b>	<b>OTHER STATUTES</b>
<input type="checkbox"/> 110 Insurance <input type="checkbox"/> 120 Marine <input type="checkbox"/> 130 Miller Act <input type="checkbox"/> 140 Negotiable Instrument <input type="checkbox"/> 150 Recovery of Overpayment & Enforcement of Judgment <input type="checkbox"/> 151 Medicare Act <input type="checkbox"/> 152 Recovery of Defaulted Student Loans (Excl. Veterans) <input type="checkbox"/> 153 Recovery of Overpayment of Veteran's Benefits <input type="checkbox"/> 160 Stockholders' Suits <input type="checkbox"/> 190 Other Contract <input type="checkbox"/> 195 Contract Product Liability <input type="checkbox"/> 196 Franchise	<b>PERSONAL INJURY</b> <input type="checkbox"/> 310 Airplane <input type="checkbox"/> 315 Airplane Product Liability <input type="checkbox"/> 320 Assault, Libel & Slander <input type="checkbox"/> 330 Federal Employers' Liability <input type="checkbox"/> 340 Marine <input type="checkbox"/> 345 Marine Product Liability <input type="checkbox"/> 350 Motor Vehicle <input type="checkbox"/> 355 Motor Vehicle Product Liability <input type="checkbox"/> 360 Other Personal Injury <input type="checkbox"/> 362 Personal Injury - Med. Malpractice	<input type="checkbox"/> 625 Drug Related Seizure of Property 21 USC 881 <input type="checkbox"/> 690 Other	<input type="checkbox"/> 422 Appeal 28 USC 158 <input type="checkbox"/> 423 Withdrawal 28 USC 157	<input checked="" type="checkbox"/> 375 False Claims Act <input type="checkbox"/> 400 State Reapportionment <input type="checkbox"/> 410 Antitrust <input type="checkbox"/> 430 Banks and Banking <input type="checkbox"/> 450 Commerce <input type="checkbox"/> 460 Deportation <input type="checkbox"/> 470 Racketeer Influenced and Corrupt Organizations <input type="checkbox"/> 480 Consumer Credit <input type="checkbox"/> 490 Cable/Sat TV <input type="checkbox"/> 850 Securities/Commodities/Exchange <input type="checkbox"/> 890 Other Statutory Actions <input type="checkbox"/> 891 Agricultural Acts <input type="checkbox"/> 893 Environmental Matters <input type="checkbox"/> 895 Freedom of Information Act <input type="checkbox"/> 896 Arbitration <input type="checkbox"/> 899 Administrative Procedure Act/Review or Appeal of Agency Decision <input type="checkbox"/> 950 Constitutionality of State Statutes
<b>REAL PROPERTY</b>	<b>CIVIL RIGHTS</b>	<b>LABOR</b>	<b>PROPERTY RIGHTS</b>	<b>SOCIAL SECURITY</b>
<input type="checkbox"/> 210 Land Condemnation <input type="checkbox"/> 220 Foreclosure <input type="checkbox"/> 230 Rent Lease & Ejectment <input type="checkbox"/> 240 Torts to Land <input type="checkbox"/> 245 Tort Product Liability <input type="checkbox"/> 290 All Other Real Property	<input type="checkbox"/> 440 Other Civil Rights <input type="checkbox"/> 441 Voting <input type="checkbox"/> 442 Employment <input type="checkbox"/> 443 Housing/Accommodations <input type="checkbox"/> 445 Amer. w/Disabilities - Employment <input type="checkbox"/> 446 Amer. w/Disabilities - Other <input type="checkbox"/> 448 Education	<input type="checkbox"/> 710 Fair Labor Standards Act <input type="checkbox"/> 720 Labor/Mgmt. Relations <input type="checkbox"/> 740 Railway Labor Act <input type="checkbox"/> 751 Family and Medical Leave Act <input type="checkbox"/> 790 Other Labor Litigation <input type="checkbox"/> 791 Empl. Ret. Inc. Security Act	<input type="checkbox"/> 820 Copyrights <input type="checkbox"/> 830 Patent <input type="checkbox"/> 840 Trademark	<input type="checkbox"/> 861 HIA (1395ff) <input type="checkbox"/> 862 Black Lung (923) <input type="checkbox"/> 863 DIWC/DIWW (405(g)) <input type="checkbox"/> 864 SSID Title XVI <input type="checkbox"/> 865 RSI (405(g))
	<b>PRISONER PETITIONS</b>	<b>IMMIGRATION</b>	<b>FEDERAL TAX SUITS</b>	
	<input type="checkbox"/> 510 Motions to Vacate Sentence <b>Habeas Corpus:</b> <input type="checkbox"/> 530 General <input type="checkbox"/> 535 Death Penalty <input type="checkbox"/> 540 Mandamus & Other <input type="checkbox"/> 550 Civil Rights <input type="checkbox"/> 555 Prison Condition <input type="checkbox"/> 560 Civil Detainee - Conditions of Confinement	<input type="checkbox"/> 462 Naturalization Application <input type="checkbox"/> 463 Habeas Corpus - Alien Detainee (Prisoner Petition) <input type="checkbox"/> 465 Other Immigration Actions	<input type="checkbox"/> 870 Taxes (U.S. Plaintiff or Defendant) <input type="checkbox"/> 871 IRS—Third Party 26 USC 7609	

**V. ORIGIN** (Place an "X" in One Box Only)

1 Original Proceeding     2 Removed from State Court     3 Remanded from Appellate Court     4 Reinstated or Reopened     5 Transferred from another district (specify)     6 Multidistrict Litigation

**VI. CAUSE OF ACTION**

Cite the U.S. Civil Statute under which you are filing (Do not cite jurisdictional statutes unless diversity): 31 U.S.C. 3729

Brief description of cause: Qui Tam Under False Claims Act

**VII. REQUESTED IN COMPLAINT:**     CHECK IF THIS IS A CLASS ACTION UNDER F.R.C.P. 23    **DEMAND \$**    CHECK YES only if demanded in complaint: **JURY DEMAND:**     Yes     No

**VIII. RELATED CASE(S) IF ANY** None (See instructions):    **JUDGE**    **DOCKET NUMBER**

**DATE** 9.17.12    **SIGNATURE OF ATTORNEY OF RECORD**

**FOR OFFICE USE ONLY**

RECEIPT #    AMOUNT    APPLYING IFP

Case: 2:12-cv-00884  
 Assigned To : Nuffer, David  
 Assign. Date : 09/17/2012  
 Description: Qui Tam Donaldson