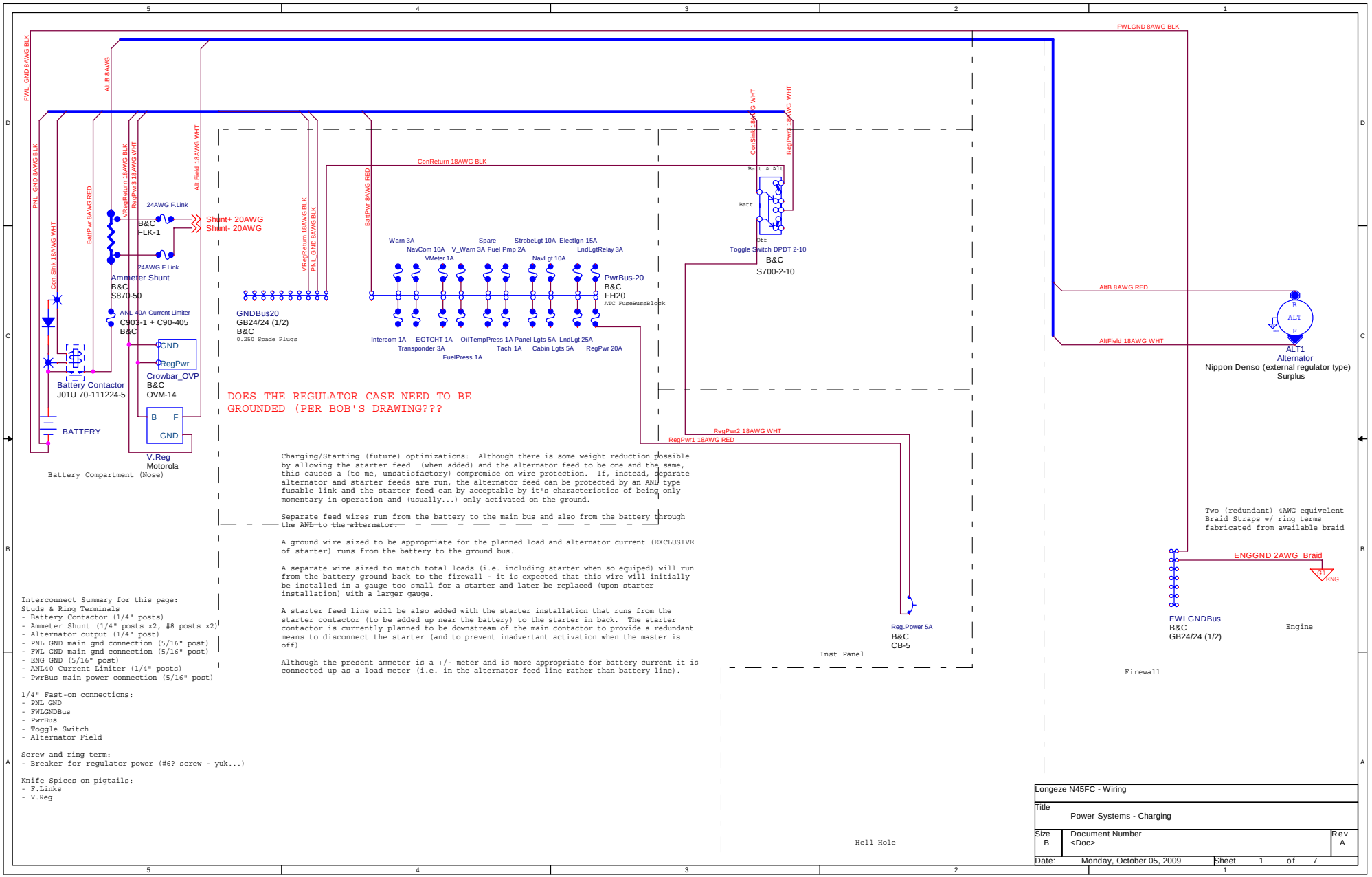


DOES THE REGULATOR CASE NEED TO BE GROUNDED (PER BOB'S DRAWING???

Charging/Starting (future) optimizations: Although there is some weight reduction possible by allowing the starter feed (when added) and the alternator feed to be one and the same, this causes a (to me, unsatisfactory) compromise on wire protection. If, instead, separate alternator and starter feeds are run, the alternator feed can be protected by an ANL type fusable link and the starter feed can by acceptable by it's characteristics of being only momentary in operation and (usually...) only activated on the ground.

Separate feed wires run from the battery to the main bus and also from the battery through the ANL to the alternator.

A ground wire sized to be appropriate for the planned load and alternator current (EXCLUSIVE of starter) runs from the battery to the ground bus.

A separate wire sized to match total loads (i.e. including starter when so equiped) will run from the battery ground back to the firewall - it is expected that this wire will initially be installed in a gauge too small for a starter and later be replaced (upon starter installation) with a larger gauge.

A starter feed line will be also added with the starter installation that runs from the starter contactor (to be added up near the battery) to the starter in back. The starter contactor is currently planned to be downstream of the main contactor to provide a redundant means to disconnect the starter (and to prevent inadvertant activation when the master is off)

Although the present ammeter is a +/- meter and is more appropriate for battery current it is connected up as a load meter (i.e. in the alternator feed line rather than battery line).

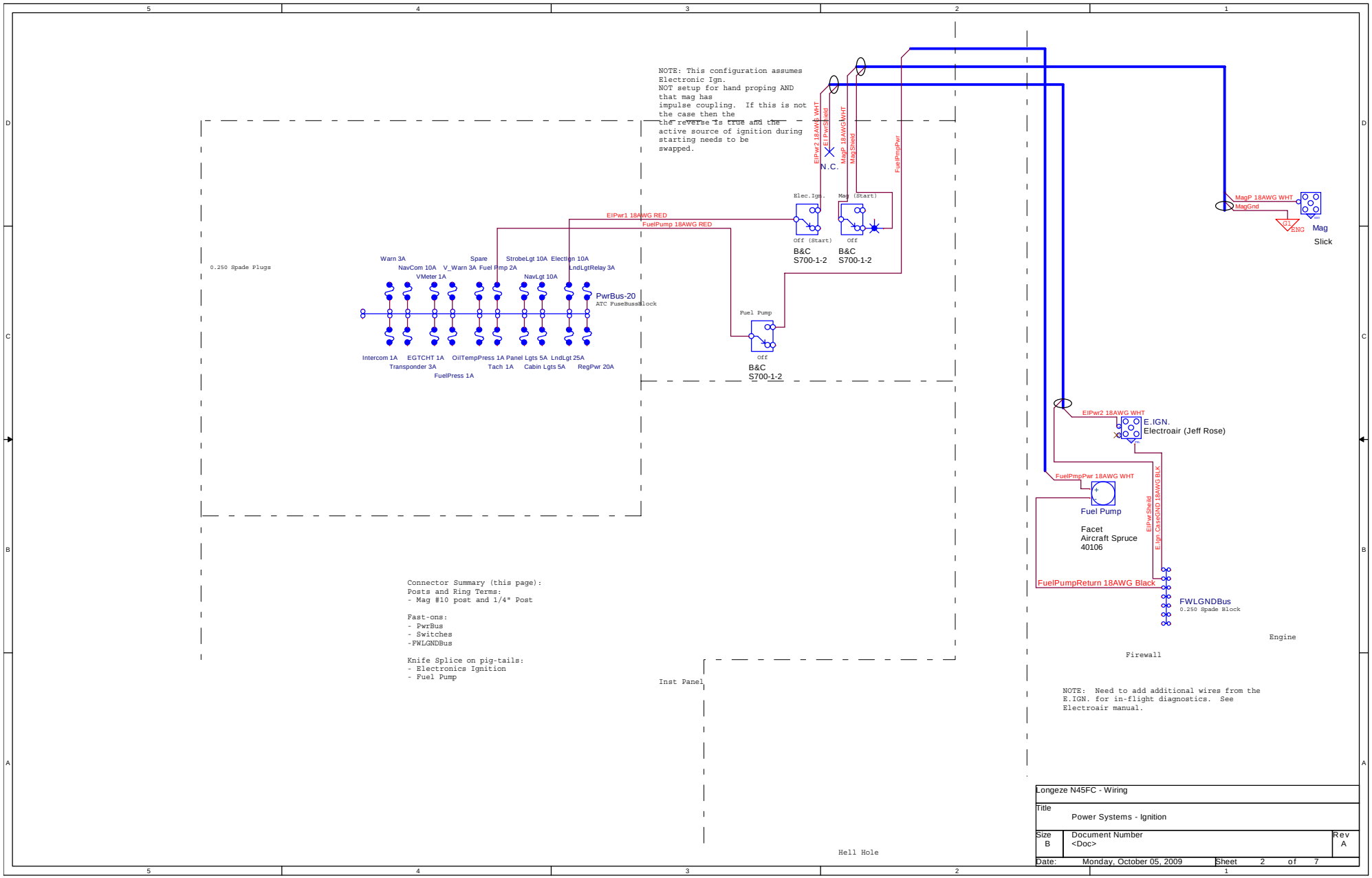
Interconnect Summary for this page:
Studs & Ring Terminals
- Battery Contactor (1/4" posts)
- Ammeter Shunt (1/4" posts x2, #8 posts x2)
- Alternator output (1/4" post)
- PNL GND main gnd connection (5/16" post)
- FWL GND main gnd connection (5/16" post)
- ENG GND (5/16" post)
- ANL40 Current Limiter (1/4" posts)
- PwrBus main power connection (5/16" post)

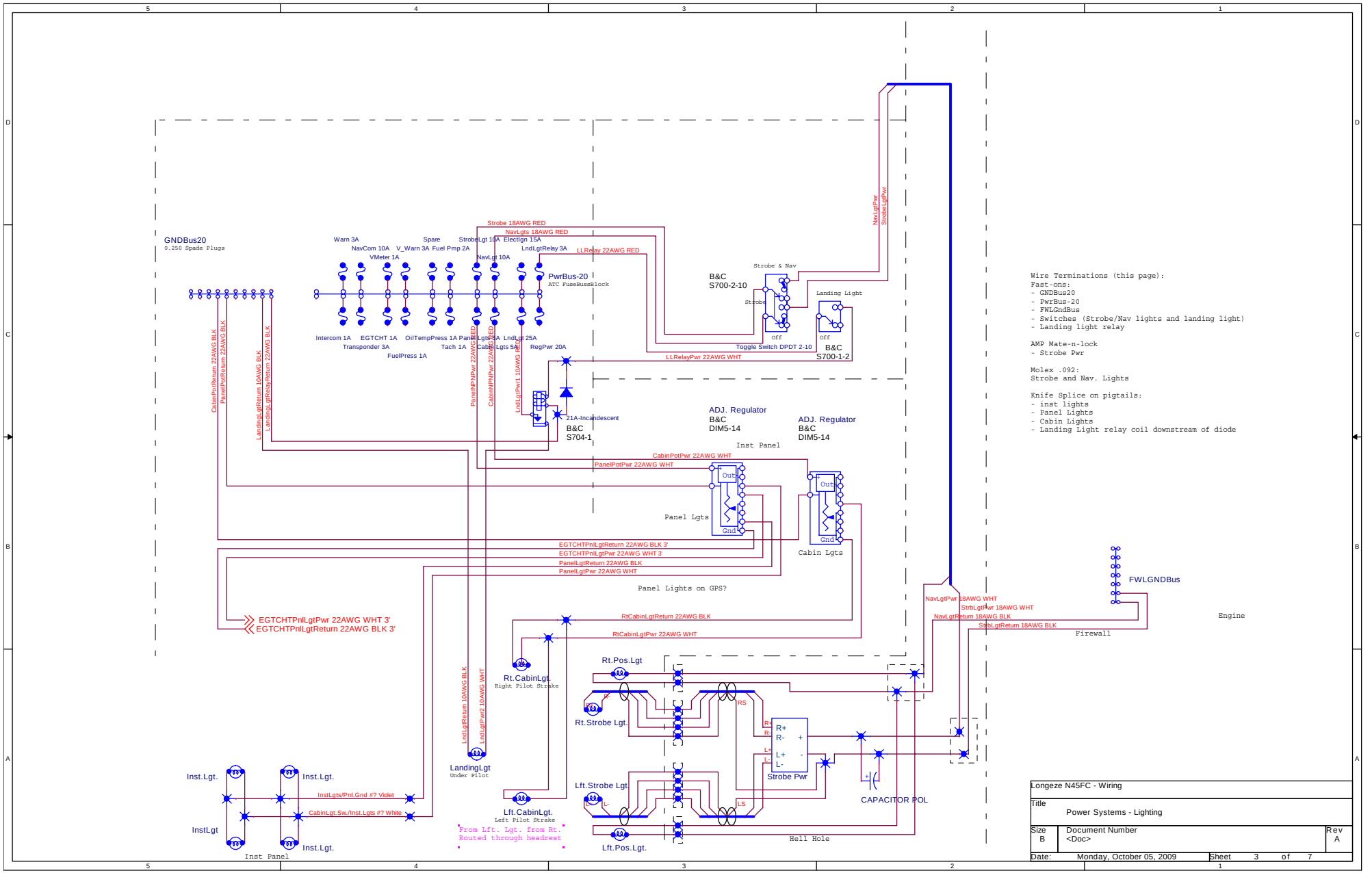
1/4" Fast-on connections:
- PNL GND
- FWLGNDBus
- PwrBus
- Toggle Switch
- Alternator Field

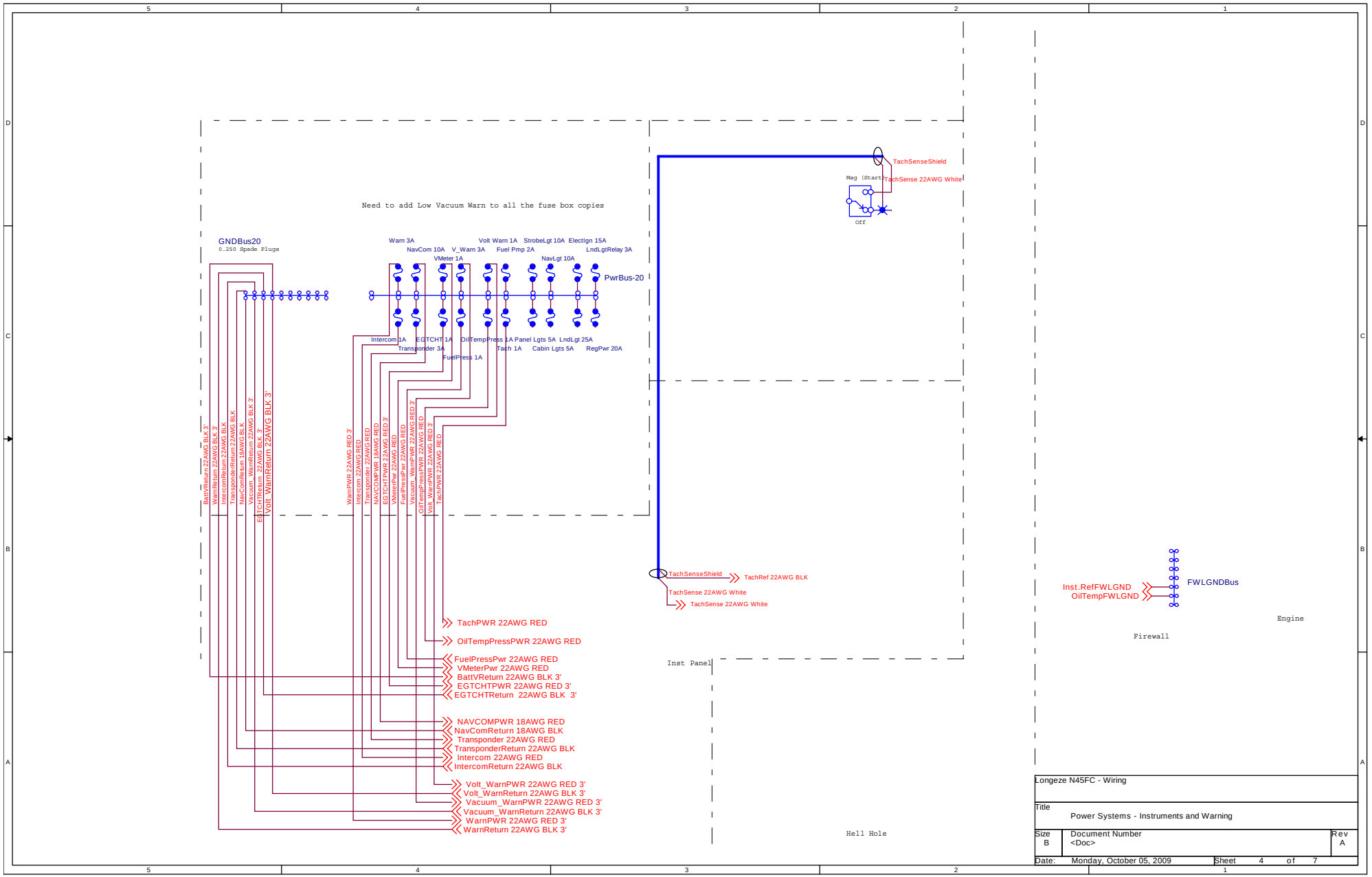
Screw and ring term:
- Breaker for regulator power (#6? screw - yuk...)

Knife Spices on pigtails:
- F.Links
- V.Reg

Longeze N45FC - Wiring		
Title: Power Systems - Charging		
Size: B	Document Number: <Doc>	Rev: A
Date: Monday, October 05, 2009	Sheet 1 of 7	


NOTE: This configuration assumes Electronic Ign. NOT setup for hand proping AND that mag has impulse coupling. If this is not the case then the the reverse is true and the active source of ignition during starting needs to be swapped.
N.C.
EIPwr2 18AWG WHT
EI PwrShield
MagP 18AWG WHT
MagShield
FuelPmpPwr
Elec.Ign.
Mag (Start)
Off (Start)
Off
B&C S700-1-2
B&C S700-1-2
EIPwr1 18AWG RED
FuelPump 18AWG RED
0.250 Spade Plugs
Warn 3A
NavCom 10A
VMeter 1A
V_Warn 3A
Spare
Fuel Pmp 2A
StrobeLgt 10A
NavLgt 10A
Electign 10A
LndLgtRelay 3A
PwrBus-20
ATC FuseBussBlock
Intercom 1A
Transponder 3A
EGTCHT 1A
FuelPress 1A
OilTempPress 1A
Tach 1A
Panel Lgts 5A
Cabin Lgts 5A
LndLgt 25A
RegPwr 20A
Fuel Pump
Off
B&C S700-1-2
MagP 18AWG WHT
MagGnd
G1
ENG
Mag Slick
EIPwr2 18AWG WHT
E.IGN.
Electroair (Jeff Rose)
FuelPmpPwr 18AWG WHT
Fuel Pump
Facet
Aircraft Spruce
40106
EIPwrShield
E.Ign CaseGND 18AWG BLK
FuelPumpReturn 18AWG Black
FWLGNDBus
0.250 Spade Block
Engine
Firewall
Connector Summary (this page):
Posts and Ring Terms:
- Mag #10 post and 1/4" Post
Fast-ons:
- PwrBus
- Switches
-FWLGNDBus
Knife Splice on pig-tails:
- Electronics Ignition
- Fuel Pump
Inst Panel
Hell Hole
NOTE: Need to add additional wires from the E.IGN. for in-flight diagnostics. See Electroair manual.
Longeze N45FC - Wiring
Title
Power Systems - Ignition
Size B
Document Number
<Doc>
Rev A
Date: Monday, October 05, 2009
Sheet 2 of 7


GNDBus20
0.250 Spade Plugs
Warn 3A
NavCom 10A
VMeter 1A
V_Warn 3A
Fuel Pmp 2A
Spare
StrobeLgt 10A
NavLgt 10A
ElectIgn 15A
LndLgtRelay 3A
PwrBus-20
ATC FuseBussBlock
Intercom 1A
Transponder 3A
EGTCHT 1A
FuelPress 1A
OilTempPress 1A
Tach 1A
PanelLgts 5A
CabinLgts 5A
LndLgt 25A
RegPwr 20A
Strobe 18AWG RED
NavLgts 18AWG RED
LLRelay 22AWG RED
NavLgtPwr
StrobeLgtPwr
B&C
S700-2-10
Strobe & Nav
Strobe
Landing Light
Off
Toggle Switch DPDT 2-10
B&C
S700-1-2
LLRelayPwr 22AWG WHT
CabinPotReturn 22AWG BLK
PanelPotReturn 22AWG BLK
LandingLgtReturn 10AWG BLK
LandingLgtRelayReturn 22AWG BLK
PanelNPNPwr 22AWG RED
CabinNPNPwr 22AWG RED
LndLgtPwr1 10AWG RED
21A-Incandescent
B&C
S704-1
ADJ. Regulator
B&C
DIM5-14
Inst Panel
CabinPotPwr 22AWG WHT
PanelPotPwr 22AWG WHT
Out
Gnd
Panel Lgts
Cabin Lgts
EGTCHTPnlLgtReturn 22AWG BLK 3'
EGTCHTPnlLgtPwr 22AWG WHT 3'
PanelLgtReturn 22AWG BLK
PanelLgtPwr 22AWG WHT
Panel Lights on GPS?
EGTCHTPnlLgtPwr 22AWG WHT 3'
EGTCHTPnlLgtReturn 22AWG BLK 3'
RtCabinLgtReturn 22AWG BLK
RtCabinLgtPwr 22AWG WHT
Rt.CabinLgt.
Right Pilot Strake
LndLgtReturn 10AWG BLK
LndLgtPwr2 10AWG WHT
LandingLgt
Under Pilot
Rt.Pos.Lgt
Rt.Strobe Lgt.
RS
LS
R+
R-
L+
L-
Strobe Pwr
CAPACITOR POL
Lft.Strobe Lgt.
Lft.CabinLgt.
Left Pilot Strake
Lft.Pos.Lgt.
Hell Hole
Inst.Lgt.
InstLgt
InstLgts/Pnl.Gnd #? Violet
CabinLgt.Sw./Inst.Lgts #? White
Inst Panel
From Lft. Lgt. from Rt.
Routed through headrest
NavLgtPwr 18AWG WHT
StrbLgtPwr 18AWG WHT
NavLgtReturn 18AWG BLK
StrbLgtReturn 18AWG BLK
FWLGNDBus
Firewall
Engine
Wire Terminations (this page):
Fast-ons:
- GNDBus20
- PwrBus-20
- FWLGndBus
- Switches (Strobe/Nav lights and landing light)
- Landing light relay
AMP Mate-n-lock
- Strobe Pwr
Molex .092:
Strobe and Nav. Lights
Knife Splice on pigtails:
- inst lights
- Panel Lights
- Cabin Lights
- Landing Light relay coil downstream of diode
Longeze N45FC - Wiring
Title
Power Systems - Lighting
Size
B
Document Number
<Doc>
Rev
A
Date:
Monday, October 05, 2009
Sheet
3
of
7

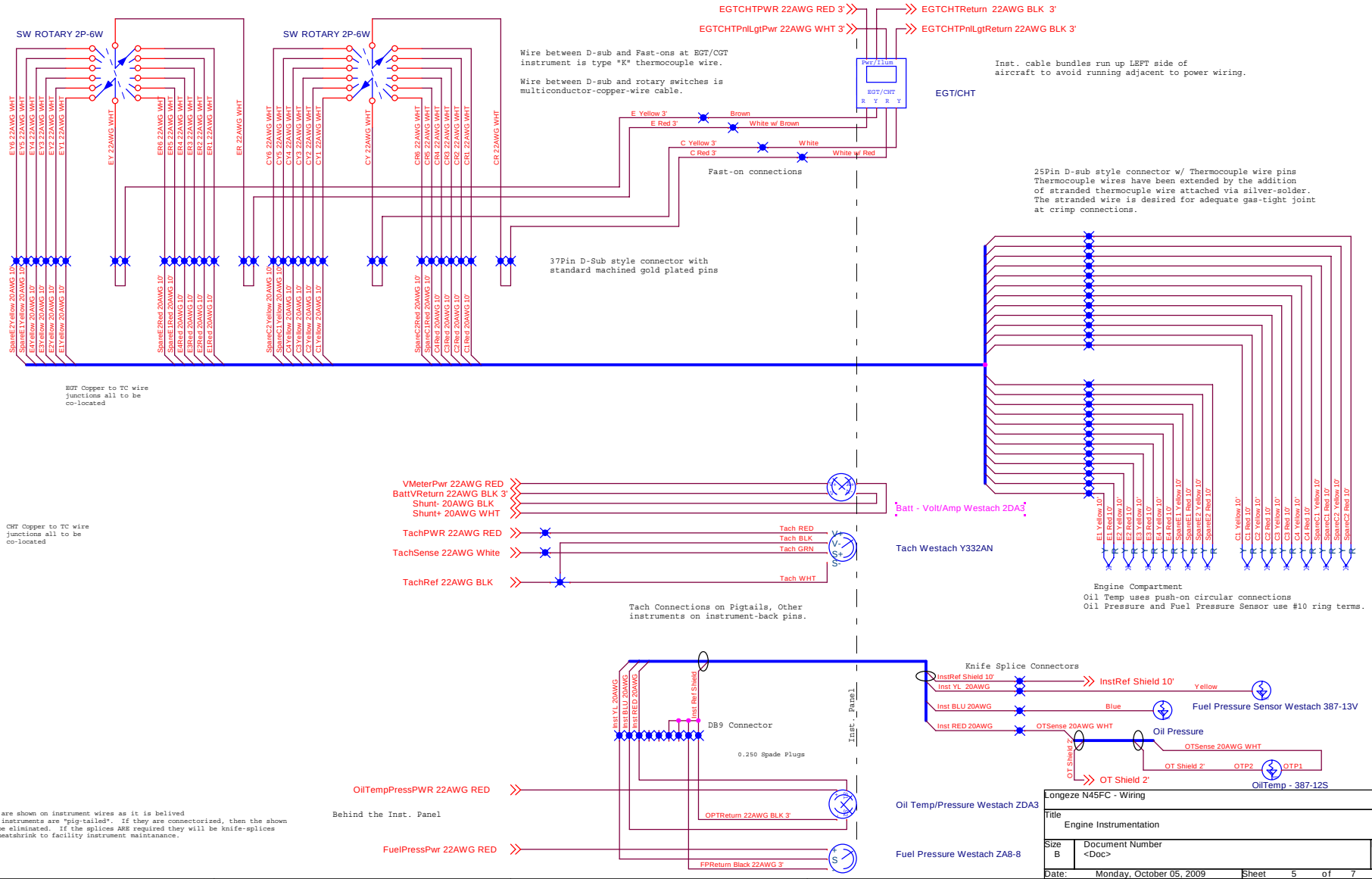


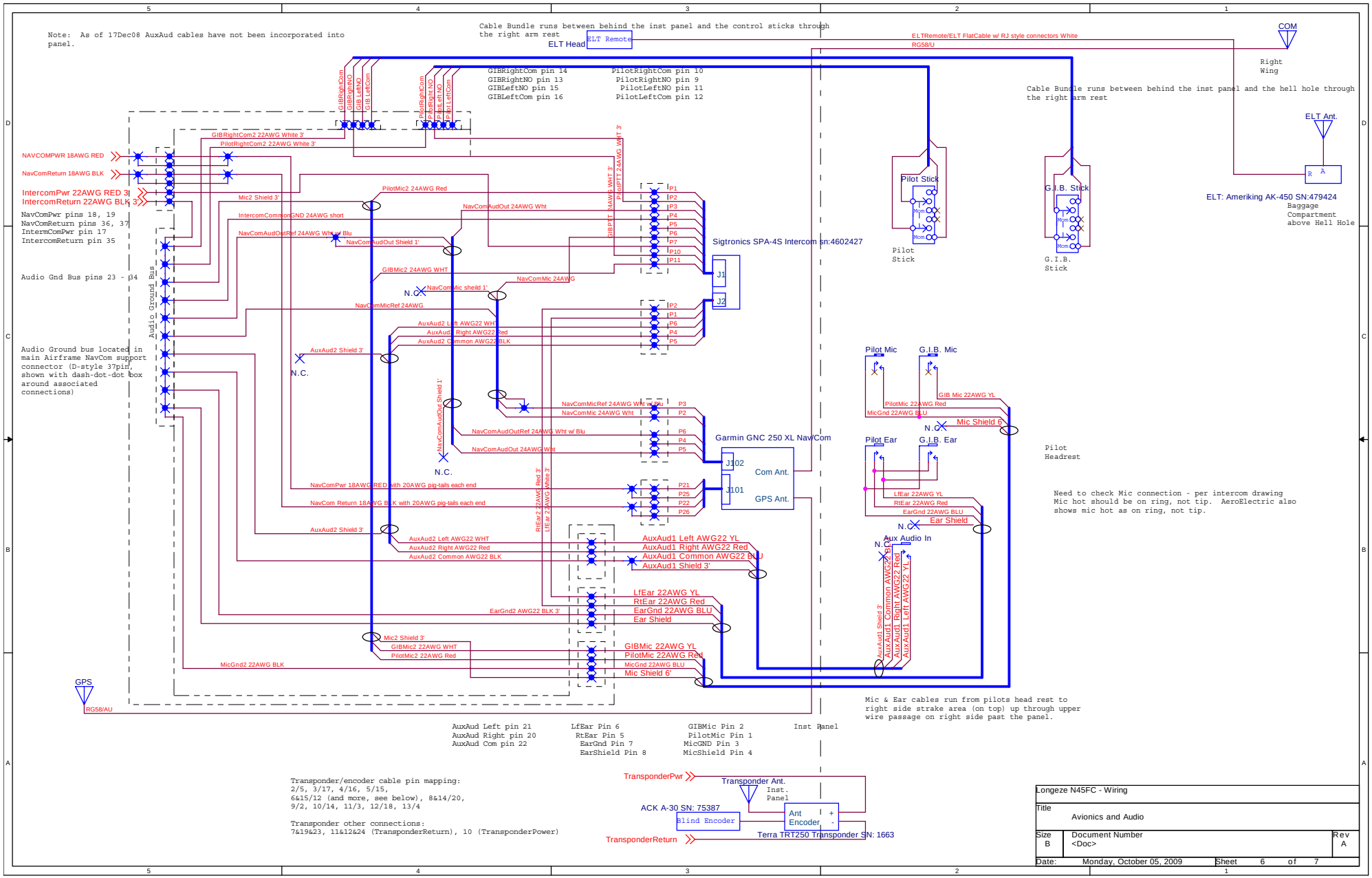
Longeze N45FC - Wiring

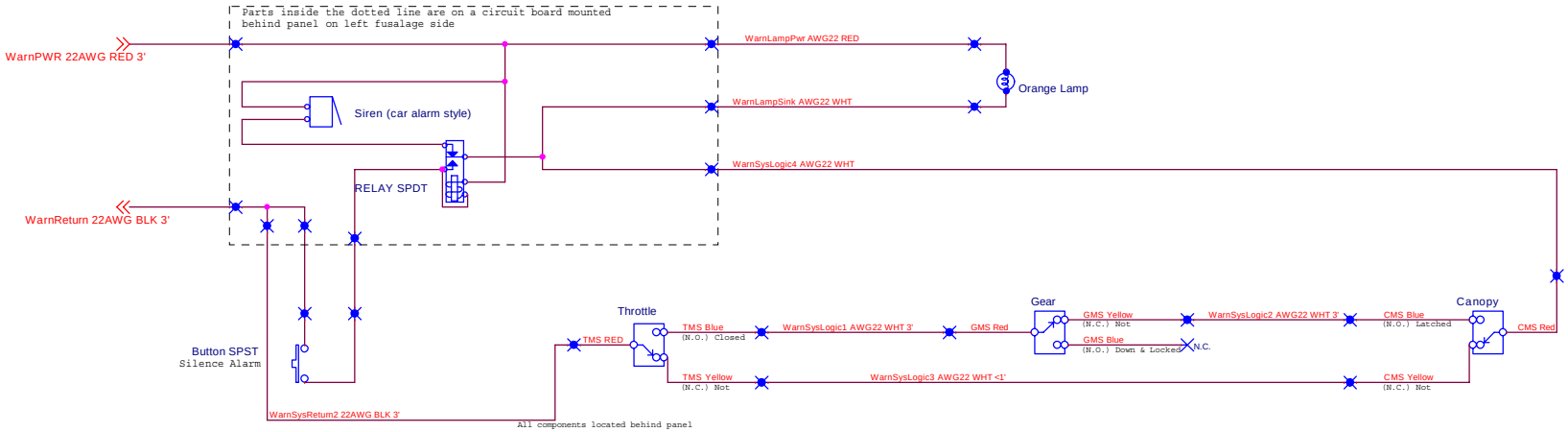
Title: Power Systems - Instruments and Warning

Size	Document Number	Rev
B	<Doc>	A

Date: Monday, October 05, 2009 Sheet 4 of 7


SW ROTARY 2P-6W
SW ROTARY 2P-6W
EGTCHTPWR 22AWG RED 3'
EGTCHTReturn 22AWG BLK 3'
EGTCHTPnlLgtPwr 22AWG WHT 3'
EGTCHTPnlLgtReturn 22AWG BLK 3'
Wire between D-sub and Fast-ons at EGT/CGT instrument is type "K" thermocouple wire.
Wire between D-sub and rotary switches is multiconductor-copper-wire cable.
Inst. cable bundles run up LEFT side of aircraft to avoid running adjacent to power wiring.
EGT/CHT
E Yellow 3'
E Red 3'
Brown
White w/ Brown
C Yellow 3'
C Red 3'
White
White w/ Red
Fast-on connections
25Pin D-sub style connector w/ Thermocouple wire pins
Thermocouple wires have been extended by the addition of stranded thermocouple wire attached via silver-solder.
The stranded wire is desired for adequate gas-tight joint at crimp connections.
37Pin D-Sub style connector with standard machined gold plated pins
EGT Copper to TC wire junctions all to be co-located
CHT Copper to TC wire junctions all to be co-located
VMeterPwr 22AWG RED
BattVReturn 22AWG BLK 3'
Shunt- 20AWG BLK
Shunt+ 20AWG WHT
Batt - Volt/Amp Westach 2DA3
TachPWR 22AWG RED
TachSense 22AWG White
TachRef 22AWG BLK
Tach RED
Tach BLK
Tach GRN
Tach WHT
Tach Westach Y332AN
Tach Connections on Pigtails, Other instruments on instrument-back pins.
Engine Compartment
Oil Temp uses push-on circular connections
Oil Pressure and Fuel Pressure Sensor use #10 ring terms.
Knife Splice Connectors
InstRef Shield 10'
Inst YL 20AWG
Inst BLU 20AWG
Inst RED 20AWG
InstRef Shield 10'
Yellow
Blue
Fuel Pressure Sensor Westach 387-13V
OTSense 20AWG WHT
Oil Pressure
OTSense 20AWG WHT
OT Shield 2'
OTP2
OTP1
OilTemp - 387-12S
OT Shield 2'
DB9 Connector
0.250 Spade Plugs
Inst. Panel
OilTempPressPWR 22AWG RED
OPTReturn 22AWG BLK 3'
Oil Temp/Pressure Westach ZDA3
FuelPressPwr 22AWG RED
FPReturn Black 22AWG 3'
Fuel Pressure Westach ZA8-8
Behind the Inst. Panel
Note: Splices are shown on instrument wires as it is belived that existing instruments are "pig-tailed". If they are connectorized, then the shown splices will be eliminated. If the splices ARE required they will be knife-splices covered with heatshrink to facility instrument maintanance.
Longeze N45FC - Wiring
Title
Engine Instrumentation
Size B
Document Number <Doc>
Rev A
Date: Monday, October 05, 2009
Sheet 5 of 7

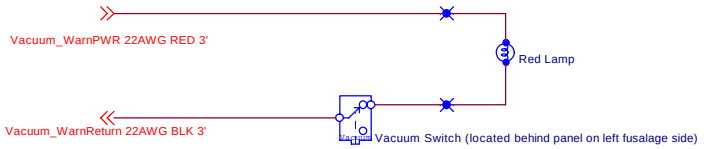

Note: As of 17Dec08 AuxAud cables have not been incorporated into panel.
Cable Bundle runs between behind the inst panel and the control sticks through the right arm rest
ELT Head
ELT Remote
ELTRemote/ELT FlatCable w/ RJ style connectors White
RG58/U
COM
Right Wing
Cable Bundle runs between behind the inst panel and the hell hole through the right arm rest
ELT Ant.
ELT: Ameriking AK-450 SN:479424
Baggage Compartment above Hell Hole
GIBRightCom pin 14
GIBRightNO pin 13
GIBLeftNO pin 15
GIBLeftCom pin 16
PilotRightCom pin 10
PilotRightNO pin 9
PilotLeftNO pin 11
PilotLeftCom pin 12
GIBRightCom2 22AWG White 3'
PilotRightCom2 22AWG White 3'
NAVCOMPWR 18AWG RED
NavComReturn 18AWG BLK
IntercomPwr 22AWG RED 3'
IntercomReturn 22AWG BLK 3'
NavComPwr pins 18, 19
NavComReturn pins 36, 37
IntermComPwr pin 17
IntercomReturn pin 35
Audio Gnd Bus pins 23 - 34
Audio Ground Bus
Audio Ground bus located in main Airframe NavCom support connector (D-style 37pin, shown with dash-dot-dot box around associated connections)
Mic2 Shield 3'
PilotMic2 24AWG Red
IntercomCommonGND 24AWG short
NavComAudOutRef 24AWG Wht w/ Blu
NavComAudOut Shield 1'
NavComAudOut 24AWG Wht
GIBMic2 24AWG WHT
NavComMic shield 1'
NavComMic 24AWG
NavComMicRef 24AWG
AuxAud2 Left AWG22 WHT
AuxAud2 Right AWG22 Red
AuxAud2 Common AWG22 BLK
AuxAud2 Shield 3'
N.C.
GIBPTT 24AWG WHT 3'
PilotPTT 24AWG WHT 3'
Sigtronics SPA-4S Intercom sn:4602427
J1
J2
P1
P2
P3
P4
P5
P6
P7
P10
P11
Pilot Stick
G.I.B. Stick
Mom
Pilot Stick
G.I.B. Stick
Garmin GNC 250 XL NavCom
J102
J101
Com Ant.
GPS Ant.
P3
P2
P6
P4
P5
P21
P25
P22
P26
NavComMicRef 24AWG Wht w/ Blu
NavComMic 24AWG Wht
NavComAudOutRef 24AWG Wht w/ Blu
NavComAudOut 24AWG Wht
NavComPwr 18AWG RED with 20AWG pig-tails each end
NavCom Return 18AWG BLK with 20AWG pig-tails each end
RtEar 22AWG Red 3'
LfEar 22AWG White 3'
AuxAud1 Left AWG22 YL
AuxAud1 Right AWG22 Red
AuxAud1 Common AWG22 BLU
AuxAud1 Shield 3'
LfEar 22AWG YL
RtEar 22AWG Red
EarGnd 22AWG BLU
Ear Shield
EarGnd2 AWG22 BLK 3'
GIBMic 22AWG YL
PilotMic 22AWG Red
MicGnd 22AWG BLU
Mic Shield 6'
MicGnd2 22AWG BLK
Pilot Mic
G.I.B. Mic
GIB Mic 22AWG YL
PilotMic 22AWG Red
MicGnd 22AWG BLU
Mic Shield 6'
Pilot Ear
G.I.B. Ear
LfEar 22AWG YL
RtEar 22AWG Red
EarGnd 22AWG BLU
Ear Shield
Aux Audio In
AuxAud1 Common AWG22 BLU
AuxAud1 Right AWG22 Red
AuxAud1 Left AWG22 YL
AuxAud1 Shield 3'
Pilot Headrest
Need to check Mic connection - per intercom drawing
Mic hot should be on ring, not tip. AeroElectric also shows mic hot as on ring, not tip.
Mic & Ear cables run from pilots head rest to right side strake area (on top) up through upper wire passage on right side past the panel.
GPS
RG58/AU
AuxAud Left pin 21
AuxAud Right pin 20
AuxAud Com pin 22
LfEar Pin 6
RtEar Pin 5
EarGnd Pin 7
EarShield Pin 8
GIBMic Pin 2
PilotMic Pin 1
MicGND Pin 3
MicShield Pin 4
Inst Panel
Transponder/encoder cable pin mapping:
2/5, 3/17, 4/16, 5/15,
6&15/12 (and more, see below), 8&14/20,
9/2, 10/14, 11/3, 12/18, 13/4
Transponder other connections:
7&19&23, 11&12&24 (TransponderReturn), 10 (TransponderPower)
TransponderPwr
Transponder Ant.
Inst. Panel
ACK A-30 SN: 75387
Blind Encoder
Ant Encoder
Terra TRT250 Transponder SN: 1663
TransponderReturn
Longeze N45FC - Wiring
Title
Avionics and Audio
Size B
Document Number <Doc>
Rev A
Date: Monday, October 05, 2009
Sheet 6 of 7

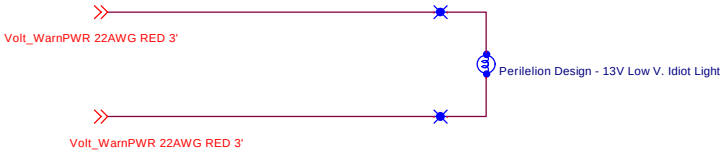


Connection Summary:
1/4" Fast-on:
- PCB Connections
- (off-page) PWR and Return connections

non-1/4" Fast-ons:
- Vacuum switch

Knife-spice:
- Button
- Lamps
- Microswitches





Longeze N45FC - Wiring		
Title: Avionics and Audio		
Size: B	Document Number: <Doc>	Rev: A
Date: Monday, October 05, 2009	Sheet 3 of 3	