

GE Healthcare

# Signa 8 or 16 Channel HD to HDxt System Upgrade for 1.5T & 3.0T



OPERATING DOCUMENTATION


5166004  
Revision 10



# WARNING



STRONG MAGNETIC FIELD



**NO PACEMAKERS\***  
**NO NEUROSTIMULATORS\***  
**NO CONDUCTIVE/METALLIC IMPLANTS\***

**Persons with pacemakers,  
neurostimulators or metallic  
implants must not enter this area.**

**Serious injury may result.**

\* In general, patients with conductive (e.g. metallic) implants are contraindicated for MR scans. For patients with implants that are labeled as 'MR Safe' or 'MR Conditional', consult the implant device manufacturer's documentation.

\* WARNING: Only use quadrature transmit for 'MR Conditional' devices.

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# Important Information

## LANGUAGE

- ПРЕДУПРЕЖДЕНИЕ (BG)** Това упътване за работа е налично само на английски език.
- Ако доставчикът на услугата на клиента изиска друг език, задължение на клиента е да осигури превод.
  - Не използвайте оборудването, преди да сте се консултирали и разбрали упътването за работа.
  - Неспазването на това предупреждение може да доведе до нараняване на доставчика на услугата, оператора или пациента в резултат на токов удар, механична или друга опасност.
- 警告 (ZH-CN)** 本维修手册仅提供英文版本。
- 如果客户的维修服务人员需要非英文版本，则客户需自行提供翻译服务。
  - 未详细阅读和完全理解本维修手册之前，不得进行维修。
  - 忽略本警告可能对维修服务人员、操作人员或患者造成电击、机械伤害或其他形式的伤害。
- 警告 (ZH-HK)** 本服務手冊僅提供英文版本。
- 倘若客戶的服務供應商需要英文以外之服務手冊，客戶有責任提供翻譯服務。
  - 除非已參閱本服務手冊及明白其內容，否則切勿嘗試維修設備。
  - 不遵從本警告或會令服務供應商、網絡供應商或病人受到觸電、機械性或其他危險。
- 警告 (ZH-TW)** 本維修手冊僅有英文版。
- 若客戶的維修廠商需要英文版以外的語言，應由客戶自行提供翻譯服務。
  - 請勿試圖維修本設備，除非您已查閱並瞭解本維修手冊。
  - 若未留意本警告，可能導致維修廠商、操作員或病患因觸電、機械或其他危險而受傷。
- UPOZORENJE (HR)** Ovaj servisni priručnik dostupan je na engleskom jeziku.
- Ako davatelj usluge klijenta treba neki drugi jezik, klijent je dužan osigurati prijevod.
  - Ne pokušavajte servisirati opremu ako niste u potpunosti pročitali i razumjeli ovaj servisni priručnik.
  - Zanimarite li ovo upozorenje, može doći do ozljede davatelja usluge, operatera ili pacijenta uslijed strujnog udara, mehaničkih ili drugih rizika.

**VÝSTRAHA  
(CS)**

Tento provozní návod existuje pouze v anglickém jazyce.

- V případě, že externí služba zákazníkům potřebuje návod v jiném jazyce, je zajištění překladu do odpovídajícího jazyka úkolem zákazníka.
- Nesnažte se o údržbu tohoto zařízení, aniž byste si přečetli tento provozní návod a pochopili jeho obsah.
- V případě nedodržování této výstrahy může dojít k poranění pracovníka prodejního servisu, obslužného personálu nebo pacientů vlivem elektrického proudu, respektive vlivem mechanických či jiných rizik.

**ADVARSEL  
(DA)**

Denne servicemanual findes kun på engelsk.

- Hvis en kundes tekniker har brug for et andet sprog end engelsk, er det kundens ansvar at sørge for oversættelse.
- Forsøg ikke at servicere udstyret uden at læse og forstå denne servicemanual.
- Manglende overholdelse af denne advarsel kan medføre skade på grund af elektrisk stød, mekanisk eller anden fare for teknikeren, operatøren eller patienten.

**WAARSCHUWING  
(NL)**

Deze onderhoudshandleiding is enkel in het Engels verkrijgbaar.

- Als het onderhoudspersoneel een andere taal vereist, dan is de klant verantwoordelijk voor de vertaling ervan.
- Probeer de apparatuur niet te onderhouden alvorens deze onderhoudshandleiding werd geraadpleegd en begrepen is.
- Indien deze waarschuwing niet wordt opgevolgd, zou het onderhoudspersoneel, de operator of een patiënt gewond kunnen raken als gevolg van een elektrische schok, mechanische of andere gevaren.

**WARNING  
(EN)**

This service manual is available in English only.

- If a customer's service provider requires a language other than English, it is the customer's responsibility to provide translation services.
- Do not attempt to service the equipment unless this service manual has been consulted and is understood.
- Failure to heed this warning may result in injury to the service provider, operator or patient from electric shock, mechanical or other hazards.

**HOIATUS  
(ET)**

See teenindusjuhend on saadaval ainult inglise keeles.

- Kui klienditeeninduse osutaja nõuab juhendit inglise keelest erinevas keeles, vastutab klient tõlketeenuse osutamise eest.
- Ärge üritage seadmeid teenindada enne eelnevalt käesoleva teenindusjuhendiga tutvumist ja sellest aru saamist.
- Käesoleva hoiatuse eiramine võib põhjustada teenuseosutaja, operaatori või patsiendi vigastamist elektrilöögi, mehaanilise või muu ohu tagajärjel.

- VAROITUS (FI)**
- Tämä huolto-ohje on saatavilla vain englanniksi.
- Jos asiakkaan huoltohenkilöstö vaatii muuta kuin englanninkielistä materiaalia, tarvittavan käännöksen hankkiminen on asiakkaan vastuulla.
  - Älä yritä korjata laitteistoa ennen kuin olet varmasti lukenut ja ymmärtänyt tämän huolto-ohjeen.
  - Mikäli tätä varoitusta ei noudateta, seurauksena voi olla huoltohenkilöstön, laitteiston käyttäjän tai potilaan vahingoittuminen sähköiskun, mekaanisen vian tai muun vaaratilanteen vuoksi.
- ATTENTION (FR)**
- Ce manuel d'installation et de maintenance est disponible uniquement en anglais.
- Si le technicien d'un client a besoin de ce manuel dans une langue autre que l'anglais, il incombe au client de le faire traduire.
  - Ne pas tenter d'intervenir sur les équipements tant que ce manuel d'installation et de maintenance n'a pas été consulté et compris.
  - Le non-respect de cet avertissement peut entraîner chez le technicien, l'opérateur ou le patient des blessures dues à des dangers électriques, mécaniques ou autres.
- WARNUNG (DE)**
- Diese Serviceanleitung existiert nur in englischer Sprache.
- Falls ein fremder Kundendienst eine andere Sprache benötigt, ist es Aufgabe des Kunden für eine entsprechende Übersetzung zu sorgen.
  - Versuchen Sie nicht diese Anlage zu warten, ohne diese Serviceanleitung gelesen und verstanden zu haben.
  - Wird diese Warnung nicht beachtet, so kann es zu Verletzungen des Kundendienst-technikers, des Bedieners oder des Patienten durch Stromschläge, mechanische oder sonstige Gefahren kommen.
- ΠΡΟΕΙΔΟΠΟΙΗΣΗ (EL)**
- Το παρόν εγχειρίδιο σέρβις διατίθεται μόνο στα αγγλικά.
- Εάν ο τεχνικός σέρβις ενός πελάτη απαιτεί το παρόν εγχειρίδιο σε γλώσσα εκτός των αγγλικών, αποτελεί ευθύνη του πελάτη να παρέχει τις υπηρεσίες μετάφρασης.
  - Μην επιχειρήσετε την εκτέλεση εργασιών σέρβις στον εξοπλισμό αν δεν έχετε συμβουλευτεί και κατανοήσει το παρόν εγχειρίδιο σέρβις.
  - Αν δεν προσέξετε την προειδοποίηση αυτή, ενδέχεται να προκληθεί τραυματισμός στον τεχνικό σέρβις, στο χειριστή ή στον ασθενή από ηλεκτροπληξία, μηχανικούς ή άλλους κινδύνους.
- FIGYELMEZTETÉS (HU)**
- Ezen karbantartási kézikönyv kizárólag angol nyelven érhető el.
- Ha a vevő szolgáltatója angoltól eltérő nyelvre tart igényt, akkor a vevő felelőssége a fordítás elkészíttetése.
  - Ne próbálja elkezdni használni a berendezést, amíg a karbantartási kézikönyvben leírtakat nem értelmezték.
  - Ezen figyelmeztetés figyelmen kívül hagyása a szolgáltató, működtető vagy a beteg áramütés, mechanikai vagy egyéb veszélyhelyzet miatti sérülését eredményezheti.

**AÐVÖRUN  
(IS)**

Þessi þjónustuhandbók er aðeins fánleg á ensku.

- Ef að þjónustuveitandi viðskiptamanns þarfnast annas tungumáls en ensku, er það skylda viðskiptamanns að skaffa tungumálþjónustu.
- Reynið ekki að afgreiða tækið nema að þessi þjónustuhandbók hefur verið skoðuð og skilin.
- Brot á sinna þessari aðvörðun getur leitt til meiðsla á þjónustuveitanda, stjórnanda eða sjúklings frá raflosti, vélrænu eða öðrum áhættum.

**AVVERTENZA  
(IT)**

Il presente manuale di manutenzione è disponibile soltanto in lingua inglese.

- Se un addetto alla manutenzione richiede il manuale in una lingua diversa, il cliente è tenuto a provvedere direttamente alla traduzione.
- Procedere alla manutenzione dell'apparecchiatura solo dopo aver consultato il presente manuale ed averne compreso il contenuto.
- Il mancato rispetto della presente avvertenza potrebbe causare lesioni all'addetto alla manutenzione, all'operatore o ai pazienti provocate da scosse elettriche, urti meccanici o altri rischi.

**警告  
(JA)**

このサービスマニュアルには英語版しかありません。

- サービスを担当される業者が英語以外の言語を要求される場合、翻訳作業はその業者の責任で行うものとさせていただきます。
- このサービスマニュアルを熟読し理解せずに、装置のサービスを行わないでください。
- この警告に従わない場合、サービスを担当される方、操作員あるいは患者さんが、感電や機械的又はその他の危険により負傷する可能性があります。

**경고  
(KO)**

본 서비스 매뉴얼은 영어로만 이용하실 수 있습니다.

- 고객의 서비스 제공자가 영어 이외의 언어를 요구할 경우, 번역 서비스를 제공하는 것은 고객의 책임입니다.
- 본 서비스 매뉴얼을 참조하여 숙지하지 않은 이상 해당 장비를 수리하려고 시도하지 마십시오.
- 본 경고 사항에 유의하지 않으면 전기 쇼크, 기계적 위험, 또는 기타 위험으로 인해 서비스 제공자, 사용자 또는 환자에게 부상을 입힐 수 있습니다.

**BRĪDINĀJUMS  
(LV)**

Šī apkopes rokasgrāmata ir pieejama tikai angļu valodā.

- Ja klienta apkopes sniedzējam nepieciešama informācija citā valodā, klienta pienākums ir nodrošināt tulkojumu.
- Neveiciet aprīkojuma apkopi bez apkopes rokasgrāmatas izlasīšanas un saprašanas.
- Šī brīdinājuma neievērošanas rezultātā var rasties elektriskās strāvas trieciena, mehānisku vai citu faktoru izraisītu traumu risks apkopes sniedzējam, operatoram vai pacientam.

**ĮSPĖJIMAS  
(LT)**

Šis eksploataavimo vadovas yra tik anglų kalba.

- Jei kliento paslaugų tiekėjas reikalauja vadovo kita kalba – ne anglų, suteikti vertimo paslaugas privalo klientas.
- Nemėginkite atlikti įrangos techninės priežiūros, jei neperskaitėte ar nesupratote šio eksploataavimo vadovo.
- Jei nepaisysite šio įspėjimo, galimi paslaugų tiekėjo, operatoriaus ar paciento sužalojimai dėl elektros šoko, mechaninių ar kitų pavojų.

**ADVARSEL  
(NO)**

Denne servicehåndboken finnes bare på engelsk.

- Hvis kundens serviceleverandør har bruk for et annet språk, er det kundens ansvar å sørge for oversettelse.
- Ikke forsøk å reparere utstyret uten at denne servicehåndboken er lest og forstått.
- Manglende hensyn til denne advarselen kan føre til at serviceleverandøren, operatøren eller pasienten skades på grunn av elektrisk støt, mekaniske eller andre farer.

**OSTRZEŻENIE  
(PL)**

Niniejszy podręcznik serwisowy dostępny jest jedynie w języku angielskim.

- Jeśli serwisant klienta wymaga języka innego niż angielski, zapewnienie usługi tłumaczenia jest obowiązkiem klienta.
- Nie próbować serwisować urządzenia bez zapoznania się z niniejszym podręcznikiem serwisowym i zrozumienia go.
- Niezastosowanie się do tego ostrzeżenia może doprowadzić do obrażeń serwisanta, operatora lub pacjenta w wyniku porażenia prądem elektrycznym, zagrożenia mechanicznego bądź innego.

**ATENÇÃO  
(PT-BR)**

Este manual de assistência técnica encontra-se disponível unicamente em inglês.

- Se outro serviço de assistência técnica solicitar a tradução deste manual, caberá ao cliente fornecer os serviços de tradução.
- Não tente reparar o equipamento sem ter consultado e compreendido este manual de assistência técnica.
- A não observância deste aviso pode ocasionar ferimentos no técnico, operador ou paciente decorrentes de choques elétricos, mecânicos ou outros.

**ATENÇÃO  
(PT-PT)**

Este manual de assistência técnica só se encontra disponível em inglês.

- Se qualquer outro serviço de assistência técnica solicitar este manual noutra idioma, é da responsabilidade do cliente fornecer os serviços de tradução.
- Não tente reparar o equipamento sem ter consultado e compreendido este manual de assistência técnica.
- O não cumprimento deste aviso pode colocar em perigo a segurança do técnico, do operador ou do paciente devido a choques eléctricos, mecânicos ou outros.

**ATENȚIE  
(RO)**

Acest manual de service este disponibil doar în limba engleză.

- Dacă un furnizor de servicii pentru clienți necesită o altă limbă decât cea engleză, este de datoria clientului să furnizeze o traducere.
- Nu încercați să reparați echipamentul decât ulterior consultării și înțelegerii acestui manual de service.
- Ignorarea acestui avertisment ar putea duce la rănirea depanatorului, operatorului sau pacientului în urma pericolelor de electrocutare, mecanice sau de altă natură.

**ОСТОРОЖНО!  
(RU)**

Данное руководство по техническому обслуживанию представлено только на английском языке.

- Если сервисному персоналу клиента необходимо руководство не на английском, а на каком-то другом языке, клиенту следует самостоятельно обеспечить перевод.
- Перед техническим обслуживанием оборудования обязательно обратитесь к данному руководству и поймите изложенные в нем сведения.
- Несоблюдение требований данного предупреждения может привести к тому, что специалист по техобслуживанию, оператор или пациент получит удар электрическим током, механическую травму или другое повреждение.

**UPOZORENJE  
(SR)**

Ovo servisno uputstvo je dostupno samo na engleskom jeziku.

- Ako klijentov serviser zahteva neki drugi jezik, klijent je dužan da obezbedi prevodilačke usluge.
- Ne pokušavajte da opravite uređaj ako niste pročitali i razumeli ovo servisno uputstvo.
- Zanemarivanje ovog upozorenja može dovesti do povređivanja serviser, rukovaoca ili pacijenta usled strujnog udara ili mehaničkih i drugih opasnosti.

**UPOZORNENIE  
(SK)**

Tento návod na obsluhu je k dispozícii len v angličtine.

- Ak zákazník poskytovateľ služieb vyžaduje iný jazyk ako angličtinu, poskytnutie prekladateľských služieb je zodpovednosťou zákazníka.
- Nepokúšajte sa o obsluhu zariadenia, kým si neprečítate návod na obsluhu a neporozumiete mu.
- Zanedbanie tohto upozornenia môže spôsobiť zranenie poskytovateľa služieb, obsluhujúcej osoby alebo pacienta elektrickým prúdom, mechanické alebo iné ohrozenie.

**ATENCION  
(ES)**

Este manual de servicio sólo existe en inglés.

- Si el encargado de mantenimiento de un cliente necesita un idioma que no sea el inglés, el cliente deberá encargarse de la traducción del manual.
- No se deberá dar servicio técnico al equipo, sin haber consultado y comprendido este manual de servicio.
- La no observancia del presente aviso puede dar lugar a que el proveedor de servicios, el operador o el paciente sufran lesiones provocadas por causas eléctricas, mecánicas o de otra naturaleza.

**VARNING  
(SV)**

Den här servicehandboken finns bara tillgänglig på engelska.

- Om en kunds servicetekniker har behov av ett annat språk än engelska, ansvarar kunden för att tillhandahålla översättningstjänster.
- Försök inte utföra service på utrustningen om du inte har läst och förstår den här servicehandboken.
- Om du inte tar hänsyn till den här varningen kan det resultera i skador på serviceteknikern, operatören eller patienten till följd av elektriska stötar, mekaniska faror eller andra faror.

**OPOZORILO  
(SL)**

Ta servisni priročnik je na voljo samo v angleškem jeziku.

- Če ponudnik storitve stranke potrebuje priročnik v drugem jeziku, mora stranka zagotoviti prevod.
- Ne poskušajte servisirati opreme, če tega priročnika niste v celoti prebrali in razumeli.
- Če tega opozorila ne upoštevate, se lahko zaradi električnega udara, mehanskih ali drugih nevarnosti poškoduje ponudnik storitev, operater ali bolnik.

**DİKKAT  
(TR)**

Bu servis kılavuzunun sadece ingilizcesi mevcuttur.

- Eğer müşteri teknisyeni bu kılavuzu ingilizce dışında bir başka lisandan talep ederse, bunu tercüme ettirmek müşteriye düşer.
- Servis kılavuzunu okuyup anlamadan ekipmanlara müdahale etmeyiniz.
- Bu uyarıya uyulmaması, elektrik, mekanik veya diğer tehlikelerden dolayı teknisyen, operatör veya hastanın yaralanmasına yol açabilir.

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## Revision History

Revision	Date	Description
1.0	February 14, 2006	Initial release.
2.0	June 26, 2006	Section 2-3: Added CAUTION note to upgrade flowchart that refers to the IIS Key and SaveINFO operation. Revised RFS System cabinet flow. Revised s/w load instructions and added LCD monitor adjustments (MRIhc15805, MRIhc16251, MRIhc16325). Added blocks for restoreINFO, ICW, and update of eLicense (MRIh15873, MRIhc5892, MRIhc5894, MRIhc6209). Section 4-3: Revised the cable relabeling information by adding CAUTION Note and emphasizing the rerouting of cables to J5 and J10 on Driver Module. Section 4-4: Revised cable maps to reflect relabeled cable routing of Runs 1329 and 1330. Added existing term server cables connected to ports 3 and 4 (MRIhc5271). Switched ethernet cables 5145044-5 & 5145044-7 in System and RF cabinets (MRIhc5895). Section 5: Corrected info on Run 2053, orientation of Humidity iButton, and added more info for using onlt CAT6 cable, Run1323. (MRIhc16091). Added note informing the installer not ot connect additional monitors to host computer prior to operating system software load (MRIhc15870). Section 6: Added note to install ICN modules in correct orientation (MRIhc16057). Added note not to disconnect cables that are not part of this upgrade (MRIhc16127).
3.0	February 19, 2007	Section 2-3: Reversed flowchart procedures Software Option Install w/eLicense and Install and Calibration Wizard. Section 5: Added note that HumidityiButton can be installed in either direction. Section 6: Updated instructions for installing new Power Panel in 1.5T FRS cabinet. Revised installation location of ICN brackets (CQA 13078452). Added relabeling information for cables connected to Driver Module (CQA 13091096).
4.0	May 23, 2007	Section 4: Clarified USB-Serial Adapter/Serial-1Wire Adapter in cable maps. Section 5: Updated iButton positioning. Added block diagram for Environmental Sensor installation.
5.0	June 12, 2008	Section 2: Added note for installing IIQ S" bracket, if required (PQR 13162911). Section 4: Revised cable maps to show upgrade of GOC components and cables, not the complete GOC as was previously replaced. Updated the temperature/humidity sensor installation to new design. Section 5: Revised upgrade instructions for replacing components in GOC rather than the entire GOC cabinet (PCN 290212). Revised the temperature/humidity sensor installation procedure. Revised Barcode upgrade instructions (PQR 13121131).
6.0	September 18, 2008	Updated information in manual to include HDxt (Release 15.x) where applicable. Section 6: Revised installation of VRE modules with new SUN ICN 's (ECO 2062202).
7.0	September 27, 2010	Section 2: Updated eLicense model type to MR from Signa HDx (per Direction 2397845). Section 4: Updated cable maps for removal of OW components and installation of Z400 GOC (ECO 2096124). Section 5: Updated instructions for removal of obsolete components and GOC. Added instructions for installing Z400 GOC and new components (ECO 2096124). Section 6: Removed second set of ICN brackets in cabinet because new Sun 4170 ICN replaces two ICN's installed in previous upgrades (ECO 2101939).
8.0	August 1, 2011	Changes made to reflect HD 16.0v2 update, ICN end-of-life, and IRF2b & RRF-DIF3 hardware configurations. Updated title to include 8 or 16 Channel to reflect changes for upgrading to 16.0v2. Updated throughout manual for RRF-DIF3, IRF2b, and IRF-I/O2 boards.
9.0	January 27, 2012	Section 2: Updated flowchart for optional SSM to ASC upgrade. Added Section 6-5 for sites with older system cabinet that are updating to HD23.x. (SPR HCSDM00101291)
10.0	September 6, 2012	Manual converted from Interleaf to CLS. Chapter 1: Added material return address for Asia region. Added Required Tools and General Safety Requirements tables. Chapter 2: Updated flow chart to include new chapter 7. Chapter 6: Revised MGD Chassis board upgrade procedures by removing instructions for installing IRF2B, IRF I/O2, and RRF-DIF3 boards. Inserted a new Chapter 7 which provides procedures for adding ASC boards and cables for 3T sites with RF Accessory Cabinet upgrading to HD23 (ECO 2136783).

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# Table of Contents

<b>Chapter 1 GETTING STARTED.....</b>	<b>19</b>
1 GETTING STARTED.....	19
1.1 Upgrade Introduction .....	19
1.2 Site Ready Check .....	19
1.3 Pre-Delivery FDO Checks for Signa Excite .....	19
1.4 Upgrade Schedule Considerations .....	19
1.5 Product Delivery Instructions and Packing .....	19
1.6 Damage in Transportation .....	20
1.7 Discarded Material Return Policy .....	20
1.7.1 Material Policy Overview .....	20
1.7.1.1 Returned Material .....	20
1.7.1.2 Disposed Material .....	20
1.7.2 Material to be Returned .....	20
1.7.3 Return Kit .....	21
1.7.4 Deinstallation Procedures .....	21
1.7.5 Region Specific Return Information .....	21
1.7.5.1 Sites in Americas .....	21
1.7.5.2 Sites in Asia .....	22
1.7.5.3 Sites in Europe .....	22
1.7.6 Product Locator Information .....	22
1.8 Product Locator .....	22
1.9 Required Equipment and Tools.....	23
1.10 Upgrade Sequence .....	24
1.11 Upgrade System Configuration .....	25
<b>Chapter 2 INSTALLATION PROCESS.....</b>	<b>27</b>
1 Upgrade Installation Process.....	27
1.1 Site Readiness .....	27
1.2 Upgrade Procedure .....	27
1.3 System Mechanical Upgrade Flowchart .....	28

<b>Chapter 3 POWER OFF</b> .....	<b>31</b>
1 System Power Shutdown.....	31
<b>Chapter 4 SYSTEM UPGRADE CABLES</b> .....	<b>33</b>
1 System Upgrade Cables.....	33
1.1 Introduction.....	33
1.2 Sorting And Routing Cables.....	33
1.3 Cable Re-labeling.....	34
1.4 Cable Maps.....	35
1.4.1 Affected (removed) Cables for Upgrade to HDxt from Upgraded HD 1.5T.....	36
1.4.2 Affected (removed) Cables for Upgrade to HDxt from Excite HD 1.5T.....	37
1.4.3 Affected (removed) Cables for Upgrade to HDxt from Upgraded HD 3.0T.....	38
1.4.4 Affected (removed) Cables for Upgrade to HDxt from Excite HD 3.0T.....	39
1.4.5 Affected (added) Cables For Upgrade To HDxt From Upgraded Excite HD 1.5t.....	40
1.4.6 Affected (added) Cables for Upgrade to HDxt from Excite HD 1.5T.....	41
1.4.7 Affected (added) Cables for Upgrade to HDxt from Upgraded Excite HD 3.0T.....	42
1.4.8 Affected (added) Cables for Upgrade to HDxt from Excite HD 3.0T.....	43
<b>Chapter 5 OPERATOR WORKSPACE UPGRADE</b> .....	<b>45</b>
1 Operator Workspace Upgrade.....	45
1.1 Introduction.....	45
1.2 Install New GOC Containing Z400 Computer.....	46
1.2.1 De-install Operator Workspace Components.....	46
1.2.2 Position Computer Cabinet.....	46
1.2.3 Seismic Anchoring (if Required).....	47
1.2.4 Computer Cabinet Cable Routing And Connections.....	48
1.2.5 GOC Cabinet Cover Removal.....	49
1.2.6 Install Modem Cable To GOC Cabinet (if Applicable).....	50
1.2.7 GOC Cable Connections.....	51
1.2.8 Power Cable Connections .....	52
1.3 Install New Z400 Computer In Existing GOC.....	53

1.3.1	De-install Operator Workspace Components.....	53
1.3.2	GOC Cabinet Cover Removal.....	54
1.3.2.1	Older Style GOC Covers.....	54
1.3.2.2	Newer Style GOC Covers.....	55
1.3.3	GOC Component Replacement.....	55
1.3.4	Installation Of New GOC Components.....	56
1.3.5	GOC Computer Replacement.....	58
1.4	Temperature and Humidity Sensor Kit Installation.....	61
1.4.1	Install ibutton into Holder.....	61
1.4.2	Install Temperature & Humidity Sensor on GOC.....	61
1.4.3	Install Temperature & Humidity Sensor on System Cabinet.....	62
1.4.4	Temperature & Humidity Sensor Wiring Schematics.....	63
1.5	Route Run 1323.....	64
1.6	Install New OW Table Top Components.....	65
1.7	Connect Bar Code Reader (if Part Of Site Configuration).....	66
1.8	Install SCIM/Keyboard.....	67
1.9	Connect Cables to Computer.....	68
1.10	Final Positioning Of GOC Cabinet.....	69
1.11	Power-on Information.....	69
<b>Chapter 6</b>	<b>SYSTEM CABINET UPGRADE.....</b>	<b>71</b>
1	System Cabinet Upgrade.....	71
1.1	System Cabinet Upgrade Instructions for 1.5T HD Site.....	72
1.1.1	Relocate Service Power Panel.....	72
1.1.2	Upgrade Back of Cabinet.....	73
1.1.3	Install New Modules in MGD Chassis - 1.5T.....	74
1.1.4	Install VRE Module Rails.....	75
1.1.5	Install VRE Modules.....	76
1.1.6	Install VRE Cables.....	77
1.2	RF/System Cabinet Upgrade Instructions for 1.5T HD Site.....	79
1.2.1	De-install Existing Power Panel at Back of Cabinet.....	79

1.2.2	Install New Modules in MGD Chassis - 1.5T.....	80
1.2.3	Relabel and Swap Driver Module Cables at J5 and J10.....	81
1.2.4	Assemble New Power Panel.....	82
1.2.5	Install New Power Panel at Back of Cabinet.....	83
1.2.6	Install VRE Module Rails.....	84
1.2.7	Install VRE Module.....	85
1.2.8	Install VRE Cables.....	86
1.3	System Cabinet Upgrade Instructions for 3.0T HD Site.....	88
1.3.1	Upgrade Back Of Cabinet.....	88
1.3.2	Relocate Service Power Panel.....	89
1.3.3	Install New Modules in MGD Chassis - 3.0T.....	90
1.3.4	Install VRE Module Rails.....	91
1.3.5	Install VRE Modules.....	91
1.3.6	Install VRE Cables.....	93
1.4	RF/System Cabinet Upgrade Instructions for 3.0T HD Site.....	95
1.4.1	De-install Lower Rails Inside of Cabinet.....	95
1.4.2	Relabel And Swap Driver Module Cables At J5 And J10.....	96
1.4.3	Install New Modules in MGD Chassis - 3.0T.....	96
1.4.4	Install VRE Module Rails.....	98
1.4.5	Install VRE Modules.....	99
1.4.6	Install VRE Cables.....	100
1.5	SSM to ASC Upgrade.....	102
1.5.1	Cable Removal Procedure for Sites Without MNS.....	102
1.5.2	Cable Removal Procedure for Sites With MNS.....	102
1.5.3	Install ASC Chassis In Cabinet.....	103
1.5.4	Installation of ASC Modules and Cables.....	109
1.5.4.1	For Sites without MNS.....	109
1.5.4.2	For Sites with MNS.....	110
1.6	Remove LOTO.....	111
1.7	Finalization.....	111

**Chapter 7 3.0T G3 RF ACCESSORIES CABINET UPGRADE TO HD23 FOR 12.X OR LATER..... 113**

- 1 ASC Chassis Upgrade for 3.0T G3 System with RF Accessory Cabinet.....113
  - 1.1 Introduction..... 113
  - 1.2 Cable Removal Procedure..... 113
  - 1.3 Upgrade Installation Procedures..... 113
    - 1.3.1 System without MNS Option..... 114
    - 1.3.2 System with MNS Option..... 114
  - 1.4 Finalization..... 116
    - 1.4.1 Remove LOTO..... 116
    - 1.4.2 After LOTO is Removed and System is Powered Up..... 116

**Chapter 8 COMPLETION..... 117**

- 1 Completion..... 117
  - 1.1 Mechanical Installation Completion..... 117
  - 1.2 Returning Shipping Equipment..... 117
  - 1.3 Material Disposition Guidance..... 117
  - 1.4 Final Coordination..... 117
  - 1.5 Power On..... 118

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# Chapter 1 Getting Started

## 1 GETTING STARTED

### 1.1 Upgrade Introduction

This publication documents the mechanical installation information for upgrading a Signa ® 1.5T or 3.0T HD (Release 12.x) to Signa HDxt (Release 16.x or later). Refer to for pictorial overview of areas of system upgraded.



#### **WARNING**

**FERROUS MATERIAL HAZARD!**  
DELIVERY EQUIPMENT AND OTHER TOOLS AND PARTS REQUIRED FOR THIS INSTALLATION CONTAIN FERROUS MATERIAL AND WILL BE STRONGLY ATTRACTED TO MAGNET AND MAY BECOME DANGEROUS PROJECTILES. KEEP ALL FERROUS TOOLS AT LEAST 10 FEET AWAY FROM THE MAGNET.

### 1.2 Site Ready Check

Pre-installation work must be completed before equipment is delivered to avoid delays and confusion.

### 1.3 Pre-Delivery FDO Checks for Signa Excite

Before the shipment is made, Be sure that FDO review has been completed by consultation with the Signa 3.0T Upgrade Specialist. Also verify the Surface coil compatibility issues have also been resolved.

### 1.4 Upgrade Schedule Considerations

FMI, periodic maintenance, installation of prerequisite upgrades and/or options will directly add to the man-hour and system down-time total. Be sure that all planned activity is considered when predicting the return of system to customer. Also verify Application Specialist is scheduled at the end of the installation to instruct users. Additional time must also be scheduled to instruct users following completion of upgrade.

### 1.5 Product Delivery Instructions and Packing

The "Shipping Document" lists catalog numbers delivered. **Review and confirm that order is delivered complete.** Check impact on installation schedule if Catalogs and/or packing boxes are missing and/or noted as shipped short.

Labels that are attached to the outside of packing boxes summarize box contents. PDI (Product Delivery Instructions) specify box contents, part numbers, and shipping procedure. The PDI is numbered according to the catalog number. Lists of items included with each box are detailed by separate checklists, or a separate sheet that provides a summary of that box contents. Refer to PDI and packing lists for information specific to your shipment.

A set of service and operator manuals is delivered with the Fixed Site Kit. Refer to checklists packed with "Technical Publication" boxes for a list of delivered documents.

## 1.6 Damage in Transportation

All packages should be closely examined at time of delivery. If damage is apparent, have notation "**damage in shipment**" written on **all** copies of the freight or express bill **before** delivery is accepted or "signed for" by a General Electric representative or a hospital receiving agent. Whether noted or concealed, damage **MUST** be reported to the carrier **immediately** upon discovery, or in any event, within **14** days after receipt, and the contents and containers held for inspection by the carrier. A transportation company will not pay a claim for damage if an inspection is not requested within this **14** day period. File a report with:

- Call 1-800-548-3366. Select "Install Support Services for FOA and MIS"
- Contact your local service coordinator for more information on this process.

## 1.7 Discarded Material Return Policy

The equipment or material being removed by the upgrade have a potential value for service of the installed base. The disposition of such must be controlled by GE. Disposition of the removed material is per GE Medical Systems Policy and Procedures.

### 1.7.1 Material Policy Overview

#### 1.7.1.1 Returned Material

Per GE Healthcare Policy 3.9: all requested material is to be returned, as directed, intact and promptly either to GoldSeal or Renewable Resources. Do not remove or swap any parts from the material to be returned.

#### 1.7.1.2 Disposed Material

Regulations governing the disposal of this equipment or material vary from location to location and from country to country. In order to insure compliance with all local, state, or national environment, health, and safety regulations, dispose of all items in the per local GEMS policy and procedures and other applicable published guidance. Contact GEMS Recycling Center for assistance.

### 1.7.2 Material to be Returned

Return to GoldSeal all parts, cables, modules, and equipment deinstalled for the HDxt upgrade which includes:

- De-installed Modules
- Cables

All RF-DIF, IRF, and IRF-I/O boards should be contained in anti-static bags (reused from new boards) for return. Follow proper procedures for handling of ESD-sensitive components. Return all old boards and cables in upgrade packaging if possible. Mark and send each box as follows:

- Mark each box:

## MR HDx UPGRADE

- Send the boxes to the following address:

GE Renewable Resources  
Attn: Asset Recovery Leader, Harvest  
7624 South 10th Street  
Oak Creek, WI 53154

### 1.7.3 Return Kit

Packaging and/or transportation details can be obtained through the local Installation Specialist. If unavailable, call GoldSeal. The following material may have been provided to facilitate return of material.

- Shipping labels
- Waybill
- Address labels
- Reuse appropriate containers that new hardware and modules were shipped to site for return of above material.
- Packing material

### 1.7.4 Deinstallation Procedures

Refer to instructions in this manual for deinstallation procedures of site.

### 1.7.5 Region Specific Return Information

#### 1.7.5.1 Sites in Americas

A GoldSeal return pre-printed BAX waybill and mailing label(s) may be included with the upgrade kit. The upgrade returns kit (p/n 2352804) consists of:

- 2358604 – Waybill
- 2357240 - GoldSeal Return Labels
- 2357241- Upgrade Return Envelope (waybill and return labels)

Gold Seal Address and contact for coordination of transportation arrangements and packaging:

GE Medical Systems - GoldSeal  
3114 North Grandview Blvd  
Waukesha, WI 53188  
Phone: 1-877-251-4468 or 262-513-4147

For non-GoldSeal Returns, utilize GEMS Renewable Resources. For coordination of transportation arrangements and packaging:

Phone: (414)-747-6997 or Dial Comm 8\*579-6997  
Fax: (414)-747-6855  
Field ASPEN: 1-800-525-1516, Box #26041

### 1.7.5.2 Sites in Asia

Return procedure for GEMS–Asia countries, contact:

GE HEALTHCARE JAPAN CORPORATION  
ATTN: Yoshiaki Tsujii (SWaP/HARVEST)  
67-4, Takakura-machi, Hachioji-shi-Tokyo  
192-0033 Japan  
Contact at Destination: 81-426-48-2595  
FAX: 81-426-48-2902

### 1.7.5.3 Sites in Europe

The GoldSeal Returns Coordinator contacts each site individually and reviews the material to be returned and the logistics for the return. A list of material and a printable shipping label is sent to the site's primary FE, service providers, and forwarders.

GoldSeal Europe return information:

GEMS-E - GOLD SEAL OPERATION & RECYCLING CENTER  
GEODIS LOGISTICS - CD 26 - Pièce de la Remise - Bâtiment EVL  
Quai 45 à 49 - 91090 LISSES - FRANCE  
Tel: (+33) 1-60-91-57-35 or (+33) 1 64 97 55 41  
Fax: (+33) 1-60-86-12-31

For non-Gold Seal returns in Europe:

European Renewable Resources Center  
GEODIS LOGISTICS - CD 26 - Pièce de la Remise - Bâtiment EVL2  
Quai 45 à 49 - 91090 LISSES - FRANCE  
TEL = (+33)-1-64-97-55-41 FAX = (+33)-1-60-86-12-31

### 1.7.6 Product Locator Information

Process product locator information for all serialized components removed from the system according to policy. Refer to [Section 1.8](#).

## 1.8 Product Locator

The Global Install Base Database (also known as Product Locator System) tracks shipment, trans-shipment, and field location of the serialized models. There are now two methods for submitting Product Locator information.

1. At this time, for **U.S. ONLY**, the preferred method of submitting information is the FE Site Verification Web Site at:

<http://gein2.med.ge.com/gib>

The FE Site Verification consists of three components that are available on the web from the main menu. They are:

- Install/deinstall product locator model and serial numbers
- Add/modify ship to address information
- Update CARES FE data for primary/secondary FEs

To obtain a copy of the FE training tutorial for using this website, a downloadable copy is available at the following: Product Locator Support Central Page - <http://supportcentral.ge.com/15563>

2. One "Shipping Card" is filled out and submitted when shipped (extra cards are supplied for trans-shipments between storage and distribution points), and the "Installation Card" and extra shipment cards are attached.

Verify that serial and model number on each rating plate matches installation card numbers before removing installation card. Note that there may be one or more shipment cards and bar code labels with the installation card. These shipment cards are used to trace the transfer of serialized units between various inventory storage and distribution points until the product reaches its final installation destination. Process just the installation card and discard any extra shipment cards and labels.

### 1.9 Required Equipment and Tools



#### NOTICE

Follow all required safety and PPE procedures customary for your organization when working on this product.

Table 1-1: General Safety Requirements

Item	Description
1	Wear composite safety shoes for foot protection.
2	Wear gloves for hand protection.
3	Wear safety glasses for eye protection.



#### ⚠ DANGER

**FERROUS MATERIAL HAZARD!**  
**IF MAGNET IS ENERGIZED, TOOLS, COMPONENTS, AND PARTS REQUIRED FOR THIS INSTALLATION THAT CONTAIN FERROUS MATERIAL WILL BE STRONGLY ATTRACTED TO MAGNET AND MAY BECOME DANGEROUS PROJECTILES.**  
**KEEP ALL FERROUS TOOLS AS FAR FROM THE MAGNET AS POSSIBLE.**

Tools to upgrade the system are listed in following table:

**Table 1-2: Installation Equipment**

Item	GE Part Number	Description
1	46-183029P61	100 MHz Scope (equivalent or greater)
2	46-317724G1 or G2	RF Power Measurement Kit (1.5T)
	5307511 or 5307511-2	RF Power Measurement Kit (3.0T)
	5307511-3	RF Power Measurement Kit (1.5T or 3.0T)
3	46-317724P14	50 ohm, 200 Watt, 30dB Attenuator (dummy load)
4		Screwdriver, slotted (long & narrow)
5	46-271138G1	Restricted Access Control Kit. Contains two plastic warning signs for posting at site during installation and service activity.
6		Aluminum platform ladder, 47.5 inches (1206.5mm) (See Note 1)
7	5112581	Non-Magnetic Tool Kit - Universal (See Note 2)
8	46-198094P1	Wrist grounding strap
9	---	Volt Meter
10	---	Extension cords, with ground conductor
11	---	Power strip, grounded type, with minimum of five outlets
12	---	Plastic or aluminum flashlight
13	---	Assorted crimp tools.
14	---	Assorted drill bits
15	---	Inspection mirror
16	---	EHS approved utility knife
Note 1: Supplied as part of Signa.		
Note 2: Supplied by GE until turnover of system to customer, then available as part of a GE Cryogen and/or Service Contract.		

## 1.10 Upgrade Sequence

Follow the system Upgrade Flow chart in Chapter 2 for best installation efficiency.

**NOTE:** All on-site construction must be completed before equipment is delivered and installation starts. Attempting to install the system while construction is being completed will impact installation efficiency and further delay site completion. Making sure that all preinstallation and construction work is completed before equipment is delivered will usually result in an earlier turnover date.

Note that many procedures may be performed in parallel and may be performed in any order according to the specific situation of each site. However all parallel tasks are to be completed prior to the next task.

The general sequence of events is:

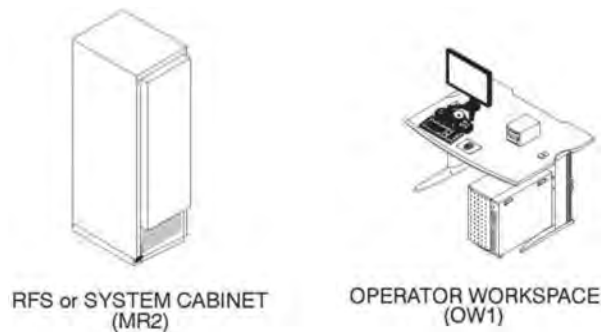
- Verify that all required upgrades have arrived complete and site is ready to shut down.
- Confirm back-up site information. Shut site down.

- Remove obsolete equipment and cables.
- Route new cables
- Install new equipment and modify existing equipment.
- All discarded material (i.e. removed/discarded hardware, packing material) must be returned in accordance with GE recycling policy
- Power up
- Load software.
- Perform Functional Checks, System calibrations, and System performance checks
- Replace covers, complete final tasks, and return site to customer.

## 1.11 Upgrade System Configuration

The following illustration shows the major equipment replaced and modified by Signa HD to HDxt Upgrade.

**Illustration 1-1: Signa Existing Hardware Replaced or Modified For Upgrade to HDx or HDxt**



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## Chapter 2 Installation Process

### 1 Upgrade Installation Process

#### 1.1 Site Readiness

All on-site construction must be completed before equipment is delivered and installation starts. Attempting to upgrade the system while construction is being completed will impact installation efficiency and further delay site completion. Making sure that all preinstallation and construction work is completed before equipment is delivered will usually result in an earlier turnover date.



#### **WARNING**

**FERROUS MATERIAL HAZARD!**  
DELIVERY EQUIPMENT AND OTHER TOOLS AND PARTS REQUIRED FOR THIS UPGRADE CONTAIN FERROUS MATERIAL AND WILL BE STRONGLY ATTRACTED TO MAGNET AND MAY BECOME DANGEROUS PROJECTILES. KEEP ALL FERROUS TOOLS AT LEAST 10 FEET AWAY FROM THE MAGNET.

#### 1.2 Upgrade Procedure

**NOTE:** For a system being upgraded, whether it is a fixed-site or a mobile, if the gradient lead restraint is using the 90 degree mobile van bracket or the IIQ "S" bracket assembly, do not modify or upgrade it. If the system being upgraded does not contain either of these, then install the IIQ "S" bracket assembly.

The following upgrade flow charts contain information for upgrading to Signa HDxt 1.5T Release 16.x or later from Signa EXCITE HD Upgrade Release 12.x.

The upgrade flow chart should be followed for an orderly and efficient installation. Note that procedures may be performed in parallel and may be performed in any order according to the specific situation of each site.

This upgrade flowchart has been developed assuming that all Signa HDxt equipment has been delivered together. **Make sure that every part required is available before starting.**

### 1.3 System Mechanical Upgrade Flowchart

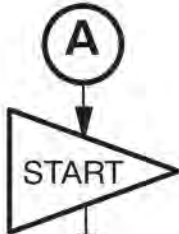
-----  
 Procedures to be Completed by Field Engineer

MARK OFF  
 PERFORMED  
 ITEMS

IMPORTANT : PER ISO  
 9001 REQUIREMENTS

**CAUTION**

Do not proceed without an IIS Key on the SaveINFO media. Installation calibration wizard will not permit the exit from Installation mode in 14.x without IIS Key.



Signa EXCITE HD to Signa HDxt  
 1.5T or 3.0T UGRADE CHECKLIST

RE-GENERATE IIS KEY.  
 This must be done before upgrade starts to make sure that sytem meets specifications.

PERFORM "saveINFO" PROCEDURE  
 using a DVD

-----  
 Procedures to be Completed by FE and/or Mechanical Installers

Chapter 1  
 Section 1-5  
**PRODUCT DELIVERY INSTRUCTIONS**

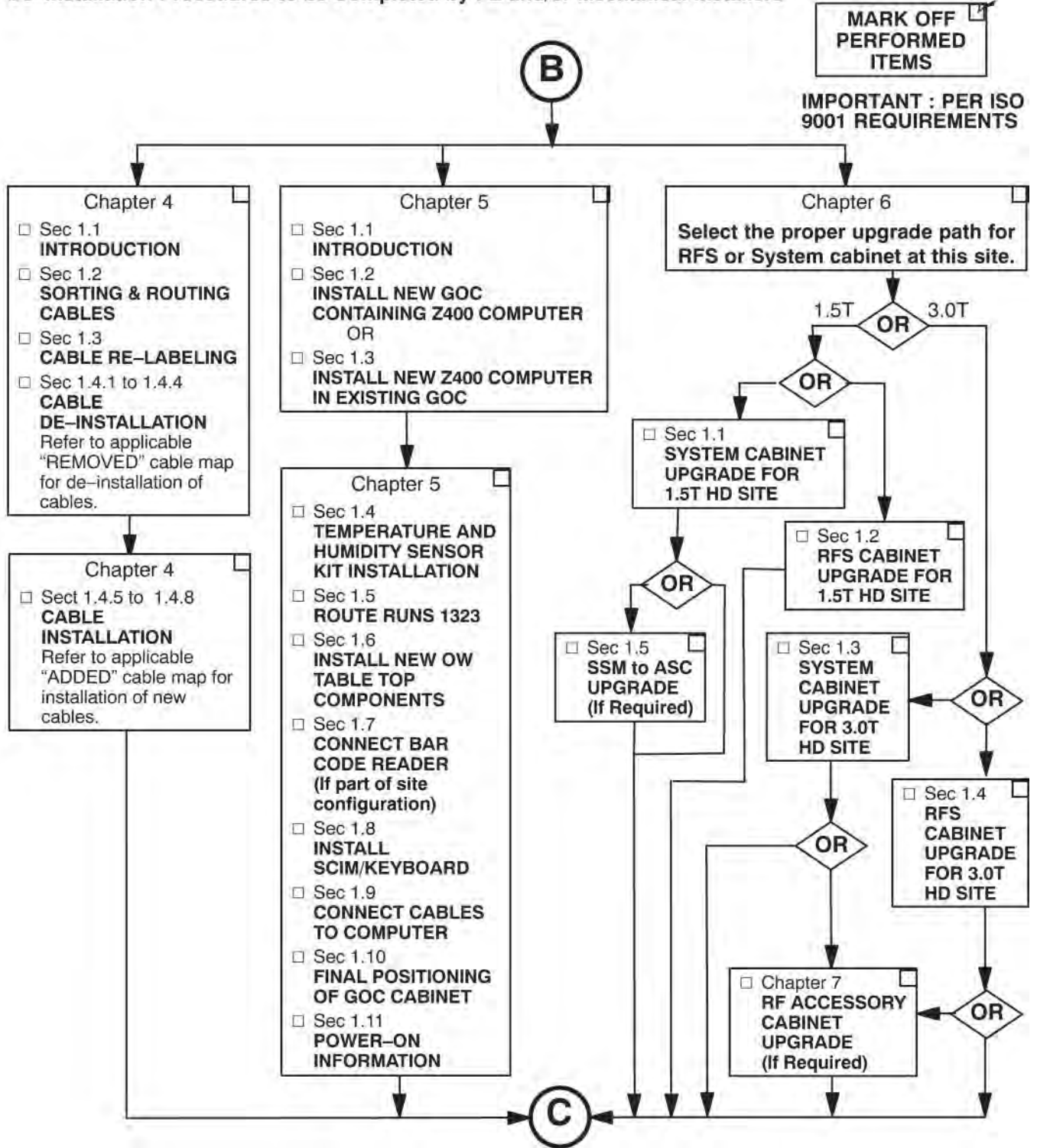
Chapter 1  
 Section 1-6  
**DAMAGE IN TRANSPORTATION**

Chapter 1  
 Section 1-8  
**PRODUCT LOCATOR**

Chapter 3  
 Section 1  
**SYSTEM POWER SHUTDOWN**  
 LOCKOUT & TAGOUT MAIN DISCONNECT



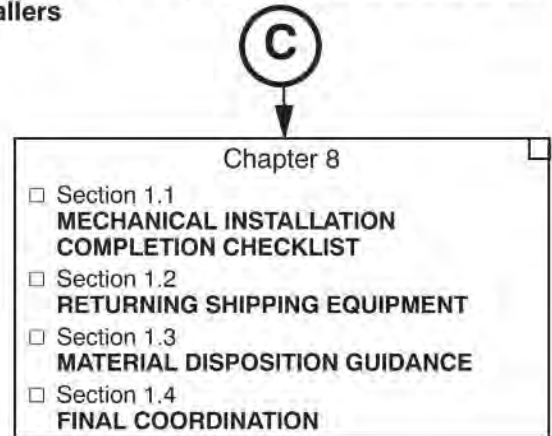
De-Installation Procedures to be Completed by FE and/or Mechanical Installers



Procedures to be Completed by FE and/or Mechanical Installers

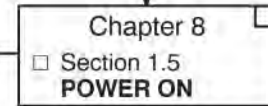
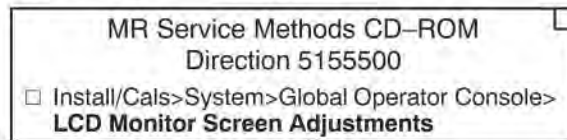
**MARK OFF PERFORMED ITEMS**

**IMPORTANT : PER ISO 9001 REQUIREMENTS**

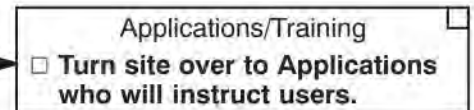
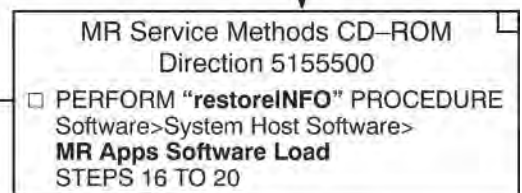
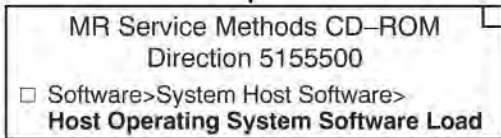


**MECHANICAL INSTALLATION COMPLETE**

Procedures to be Completed by FE and Applications



If Host Software is NOT loaded? **OR** If Host Software is loaded?



**TURN OVER TO CUSTOMER**

**Note:**  
 HD to HDx upgrade does not require Grafidy calibration.

## Chapter 3 Power Off

### 1 System Power Shutdown



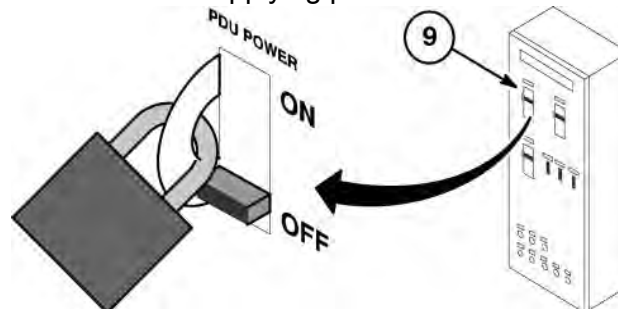
#### **DANGER**

**FATAL ELECTRIC SHOCK HAZARD!!**

**LETHAL VOLTAGES ARE PRESENT WITHIN THE PDU EVEN IF ALL PDU BREAKERS ARE OFF.**

**TO PREVENT POSSIBLE FATAL ELECTRIC SHOCK VERIFY THAT FACILITY DISCONNECT IS OFF, LOCKED OUT AND TAGGED OUT (LOTO) BEFORE PROCEEDING. SERIOUS INJURY OR DEATH BY ELECTROCUTION MAY OTHERWISE RESULT.**

1. Verify that System performance baseline measurements have been obtained, especially:
  - SPT Full Test Mode
  - White Pixel Test
  - LV Shim
  - IIS
2. Ensure site customer has archived all patient information. Execute "Save Info" using a DVD.
3. Record center frequency.
4. Ensure that Patient Transport is undocked with cradle in place and Head Coil carriage is at rear of travel.
5. Perform normal software shutdown procedures.
6. Press the POWER OFF button on the PDU front control panel.
7. Notify field service and other installation personnel that are working at the site that the PDU main disconnect is to be shut off, locked out, and tagged.
8. Locate and shut off main disconnect supplying power to the PDU.



9. Perform LOTO procedures at main disconnect to prevent inadvertent power restoration.
10. Verify absence of power in the PDU by checking for 0 volts on incoming power wiring.

---

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# Chapter 4 System Upgrade Cables

## 1 System Upgrade Cables

### 1.1 Introduction

This section provides information on removing, relabeling and installing system cables for upgrading a Signa HD (Release 12.x) to HDxt (Release 16.x or later) for 1.5T and 3.0T.

- "Affected" (removed) Cable maps
- "Affected" (added) Cable maps
- Depending on site requirements, certain upgrades will require the installation of a complete new GOC with Z400 computer and new GOC power cord

Tape map in a convenient location to check off routed cable. Upon completion of connecting cables, return fold-out map to the binder for future reference.

### 1.2 Sorting And Routing Cables



#### Laceration Hazards

Sharp edges or points on trimmed ty-wraps.

Ty-wraps must be cut flush with no protruding sharp edges or points. Failure to do so can result in numerous laceration hazards when servicing the equipment.

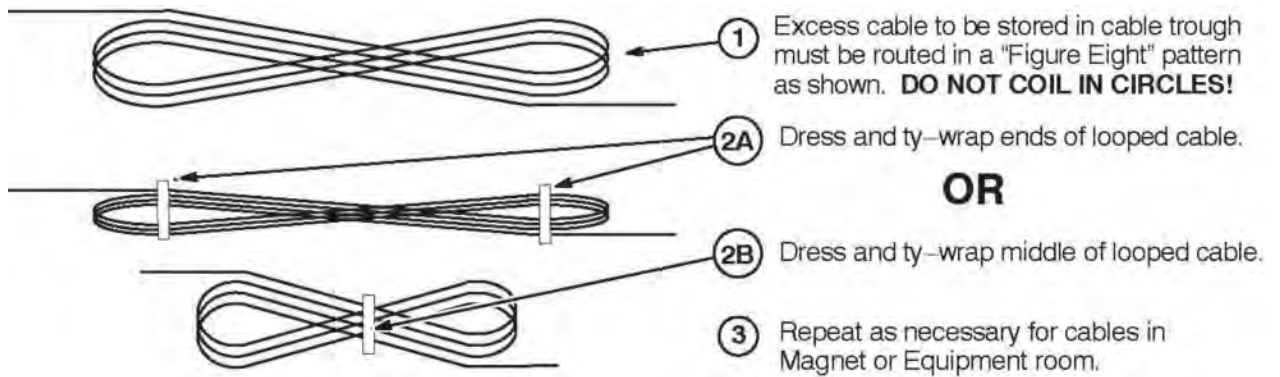
System power, ground, and data cables are color coded at each end by destination per colors shown on Cable Map.

1. Sort cables by destination. Normally, it is best to sort cables originating from the farthest cabinet or component from the PDU first. This will make it easier to pull cables through the troughs.

**NOTE:** Carefully review architectural drawings to insure that all ducts are properly installed and that all signal and power cables are accounted for before starting to route cable runs.

2. Unroll coiled cables along the intended route to insure that they will lay freely without twists or kinks. Route cables in accordance with the applicable System Interconnect Diagram.
3. Plan for storage of coiled cable excess length if cables are to remain at delivered length. See [Illustration 4-1](#).

Illustration 4-1: Proper Storage Of Excess Cables



- Place cables in provided troughs, conduit, or ducts. Leave sufficient slack for later connection when cabinets are in final position according to site architectural plans. Route cables inside exam room to Rear Pedestal area with sufficient length remaining to complete routing and connecting within Magnet Enclosure.

### 1.3 Cable Re-labeling

Relabel existing cables as described below:

- The new GOC upgrades the WIM to a GOCAA. This requires that Run 1084 be relabeled as Run 1255. Attach blank label to each end of cable and mark with information below.

Table 4-1: Relabel Run 1084 to Run 1255

ONE END		OTHER END	
NEW LABEL	NEW LABEL	OLD LABEL	NEW LABEL
RUN #1084 MR1-A11-J26 2354601	RUN #1255 MR2-A11-J26 5120763-3	RUN #1084 OW1-J21-J6 VIA RUN #1062 2354601	RUN #1255 OW1-A21-J18 5120763-3



**CAUTION**

One of the following relabeling actions must be completed for this upgrade. Failure to do so will cause MC Bias Faults.

- For systems that were upgraded to HD prior to this HDx upgrade - Swap and relabel existing equipment room cable Runs 1030 and 1251 as instructed below.

Table 4-2: Swap & Relabel Run 1030 and Run 1251

ONE END		OTHER END	
OLD LABEL	NEW LABEL	OLD LABEL	NEW LABEL
RUN #1030 PP1-J78 2329624	RUN #1329 PP1-J78 5160765	RUN #1030 MR2-A11-J61 2329624	RUN #1329 MR2-DVR-J10 5160765
RUN #1251 PP1-J203 5113186-11	RUN #1330 PP1-J203 5160765-4	RUN #1251 MR2-J66 5113186-11	RUN #1330 MR2-DVR-J5 5160765-4

- For systems that were installed new at HD (with RFS cabinet) prior to this HDx upgrade - Swap and relabel existing equipment room cable Runs 1189 and 1190 as instructed below.

**Table 4-3: Swap & Relabel Run 1189 and Run 1190**

ONE END		OTHER END	
OLD LABEL	NEW LABEL	OLD LABEL	NEW LABEL
RUN #1189 PP1-J78 5113186-2	RUN #1329 PP1-J78 5160765	RUN #1189 MR2-DVR-J5 5113186-2	RUN #1329 MR2-DVR-J10 5160765
RUN #1190 PP1-J203 5113186-5	RUN #1330 PP1-J203 5160765-4	RUN #1190 MR2-DVR-J10 5113186-5	RUN #1330 MR2-DVR-J5 5160765-4

## 1.4 Cable Maps

The Affected (removal) cable maps are located on the following pages. Select the applicable map for site being upgraded.

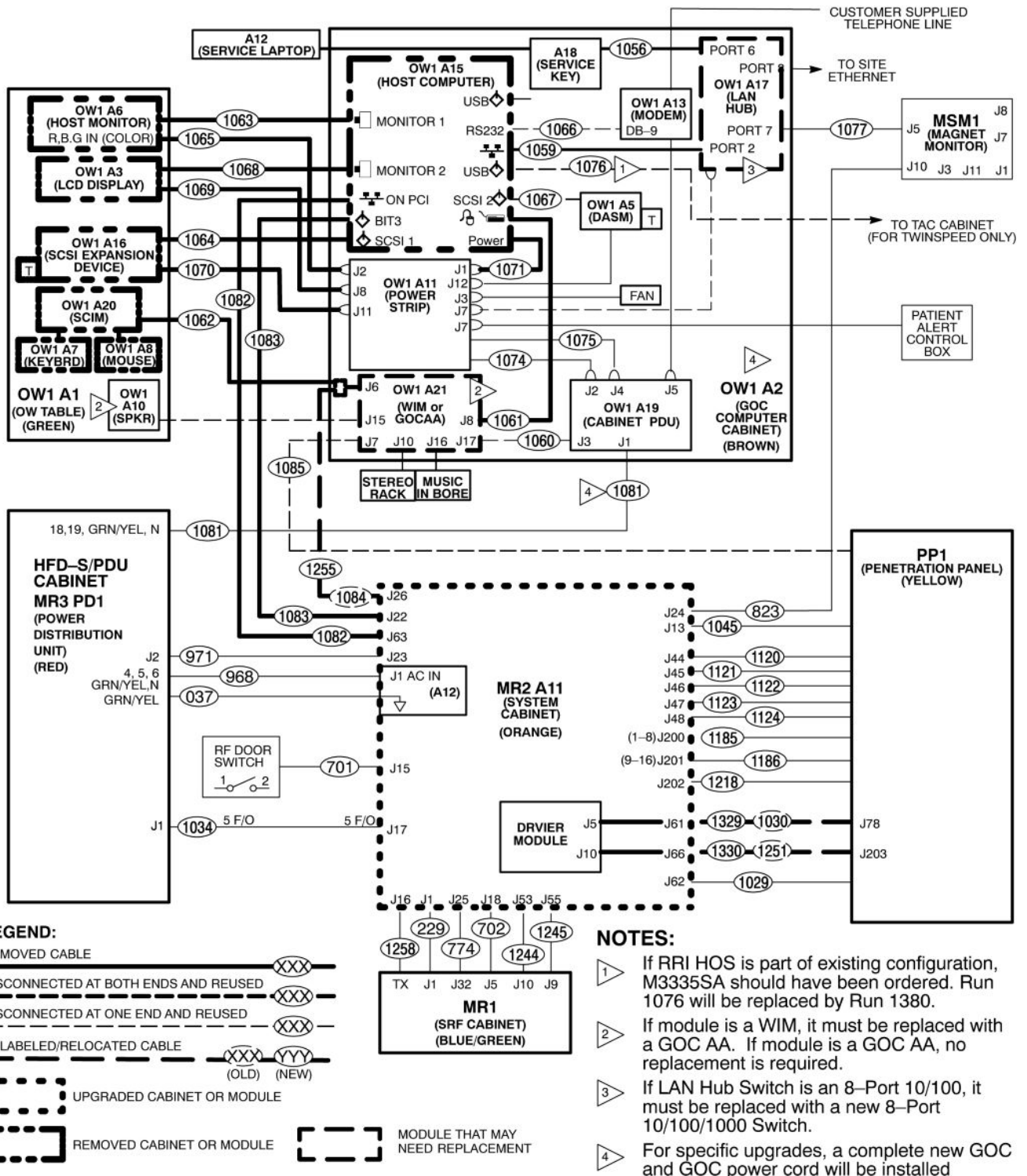
- [Section 1.4.1](#) — Removed Cables for Upgrade to HDxt from Upgraded Excite HD 1.5T
- [Section 1.4.2](#) — Removed Cables for Upgrade to HDxt from Excite HD 1.5T
- [Section 1.4.3](#) — Removed Cables for Upgrade to HDxt from Upgraded Excite HD 3.0T
- [Section 1.4.4](#) — Removed Cables for Upgrade to HDxt from Excite HD 3.0T

The Affected (removal) cable maps are located on the following pages. Select the applicable map for site being upgraded.

- [Section 1.4.5](#) — Added Cables for Upgrade to HDxt from Upgraded Excite HD 1.5T
- [Section 1.4.6](#) — Added Cables for Upgrade to HDxt from Excite HD 1.5T
- [Section 1.4.7](#) — Added Cables for Upgrade to HDxt from Upgraded Excite HD 3.0T
- [Section 1.4.8](#) — Added Cables for Upgrade to HDxt from Excite HD 3.0T

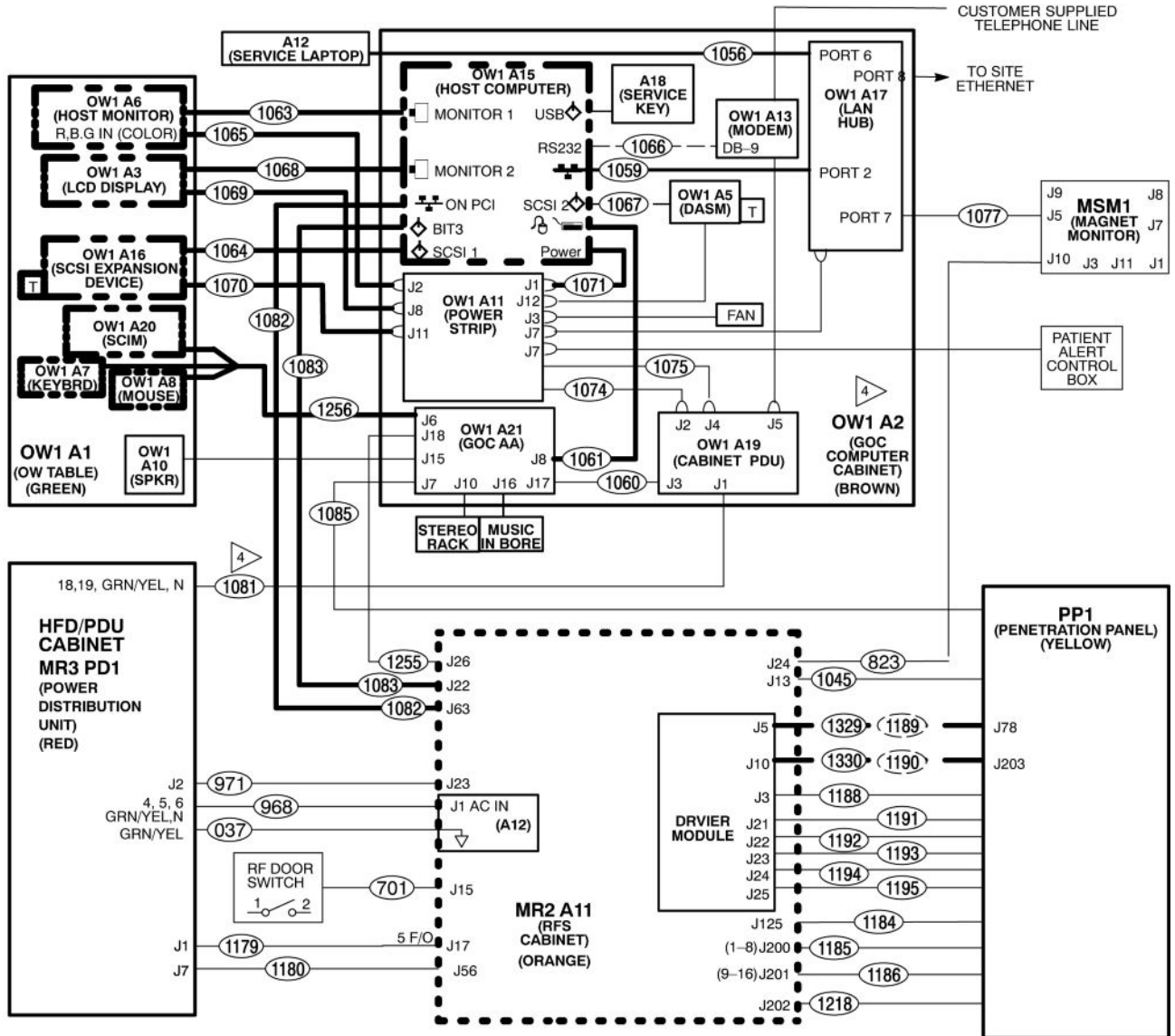
1.4.1 Affected (removed) Cables for Upgrade to HDxt from Upgraded HD 1.5T

The cable map represents a site that was upgraded to EXCITE HD prior to the upgrade being performed now. This configuration uses a System Cabinet.



1.4.2 Affected (removed) Cables for Upgrade to HDxt from Excite HD 1.5T

The cable map represents a site that was installed new as EXCITE HD prior to the upgrade being performed now. This configuration uses a RFS Cabinet.



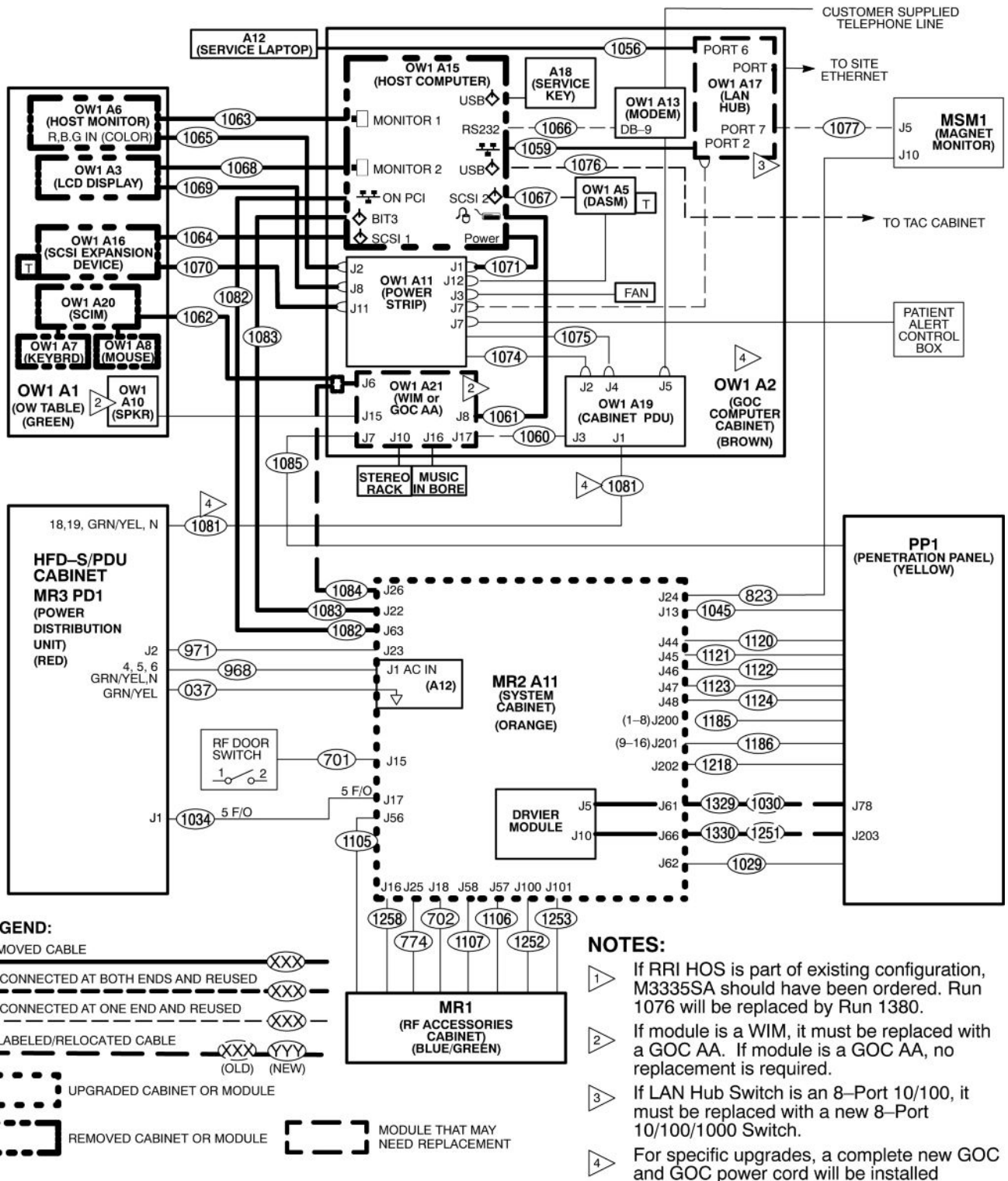
LEGEND:

- REMOVED CABLE
- DISCONNECTED AT BOTH ENDS AND REUSED
- DISCONNECTED AT ONE END AND REUSED
- RELABELED/RELOCATED CABLE
- UPGRADED CABINET OR MODULE
- REMOVED CABINET OR MODULE

For specific upgrades, a complete new GOC and GOC power cord will be installed

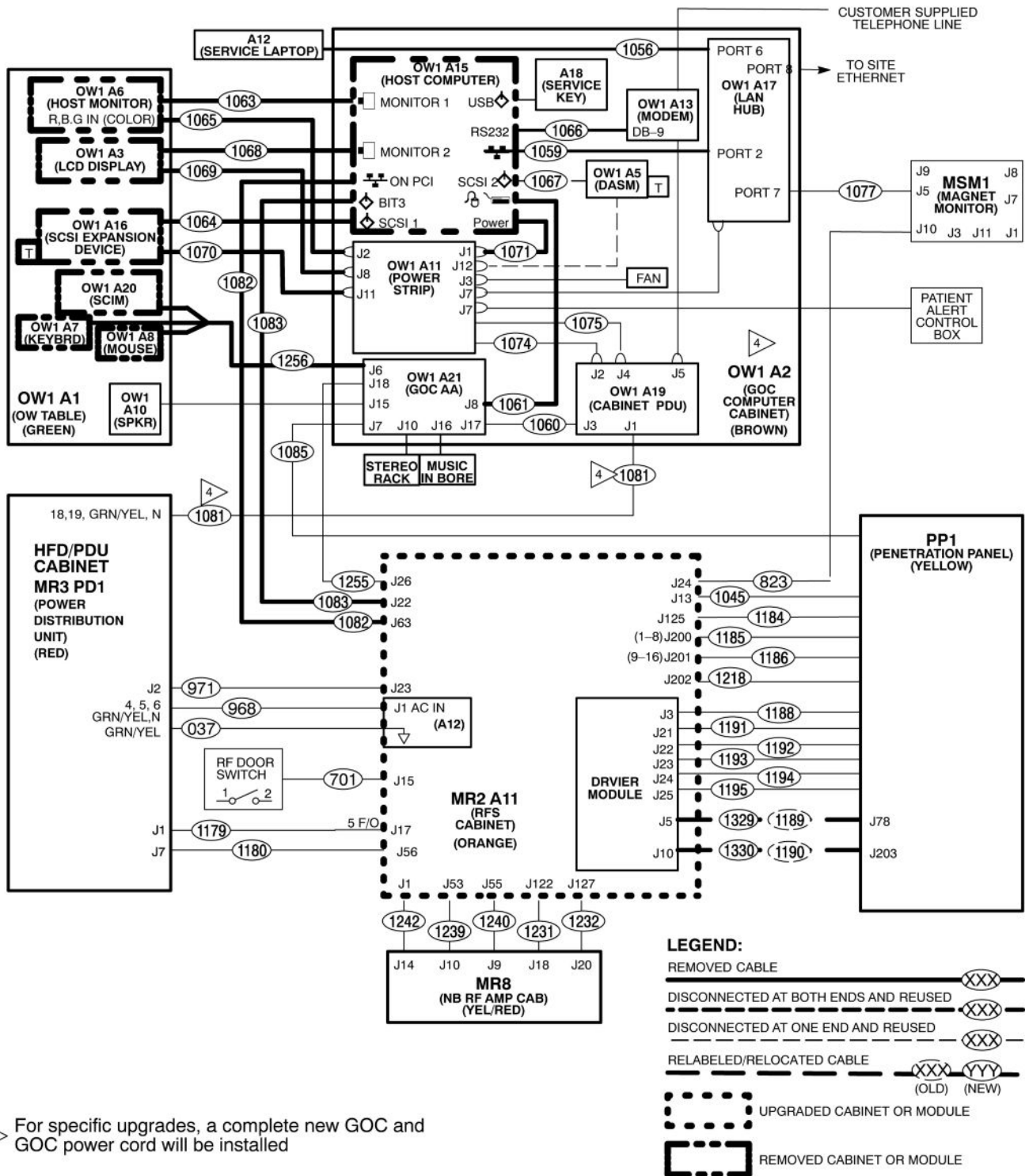
1.4.3 Affected (removed) Cables for Upgrade to HDxt from Upgraded HD 3.0T

The cable map represents a site that was upgraded to EXCITE HD prior to the upgrade being performed now. This configuration uses a System Cabinet.



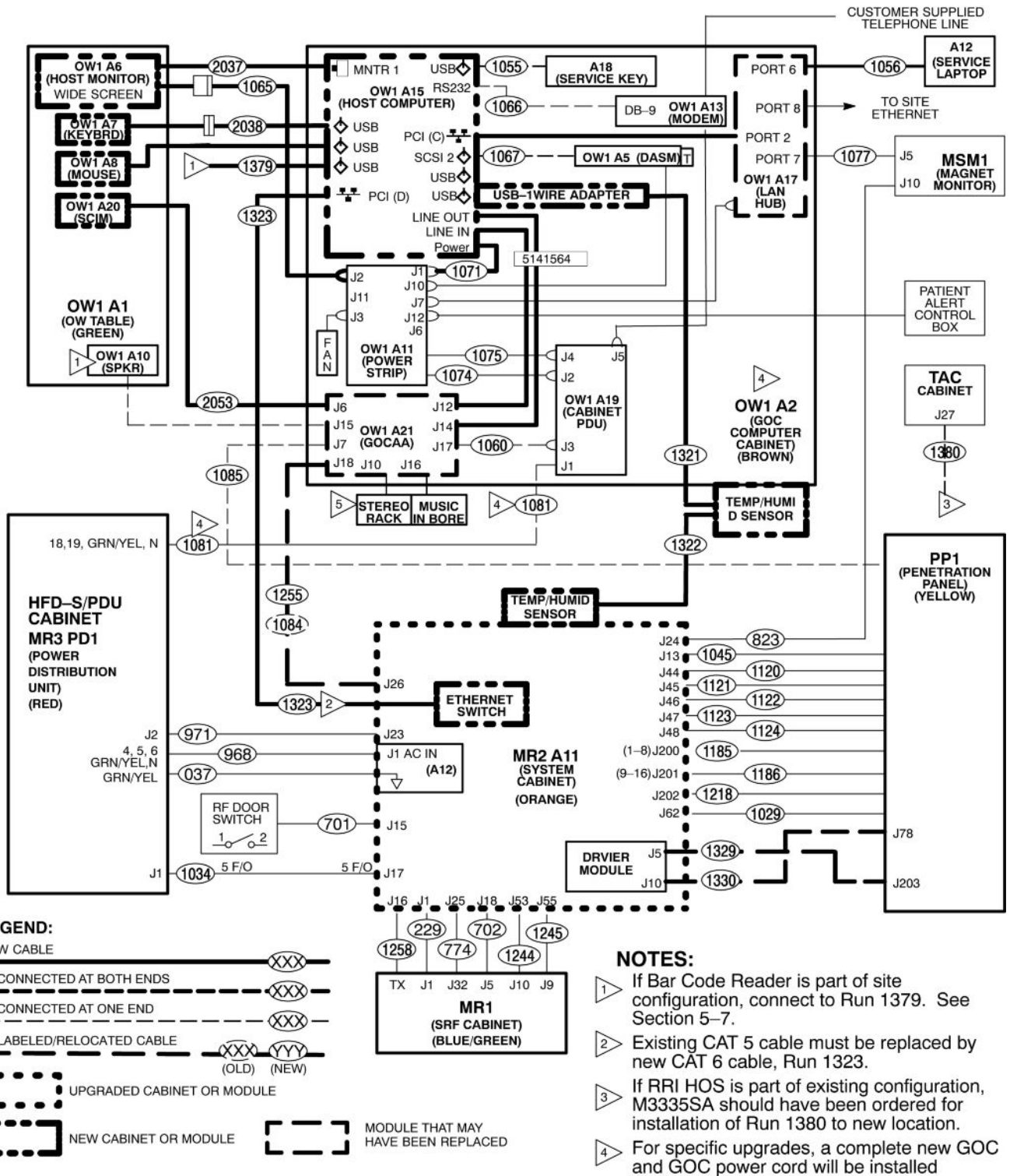
1.4.4 Affected (removed) Cables for Upgrade to HDxt from Excite HD 3.0T

The cable map represents a site that was installed new as EXCITE HD prior to the upgrade being performed now. This configuration uses a RFS Cabinet.



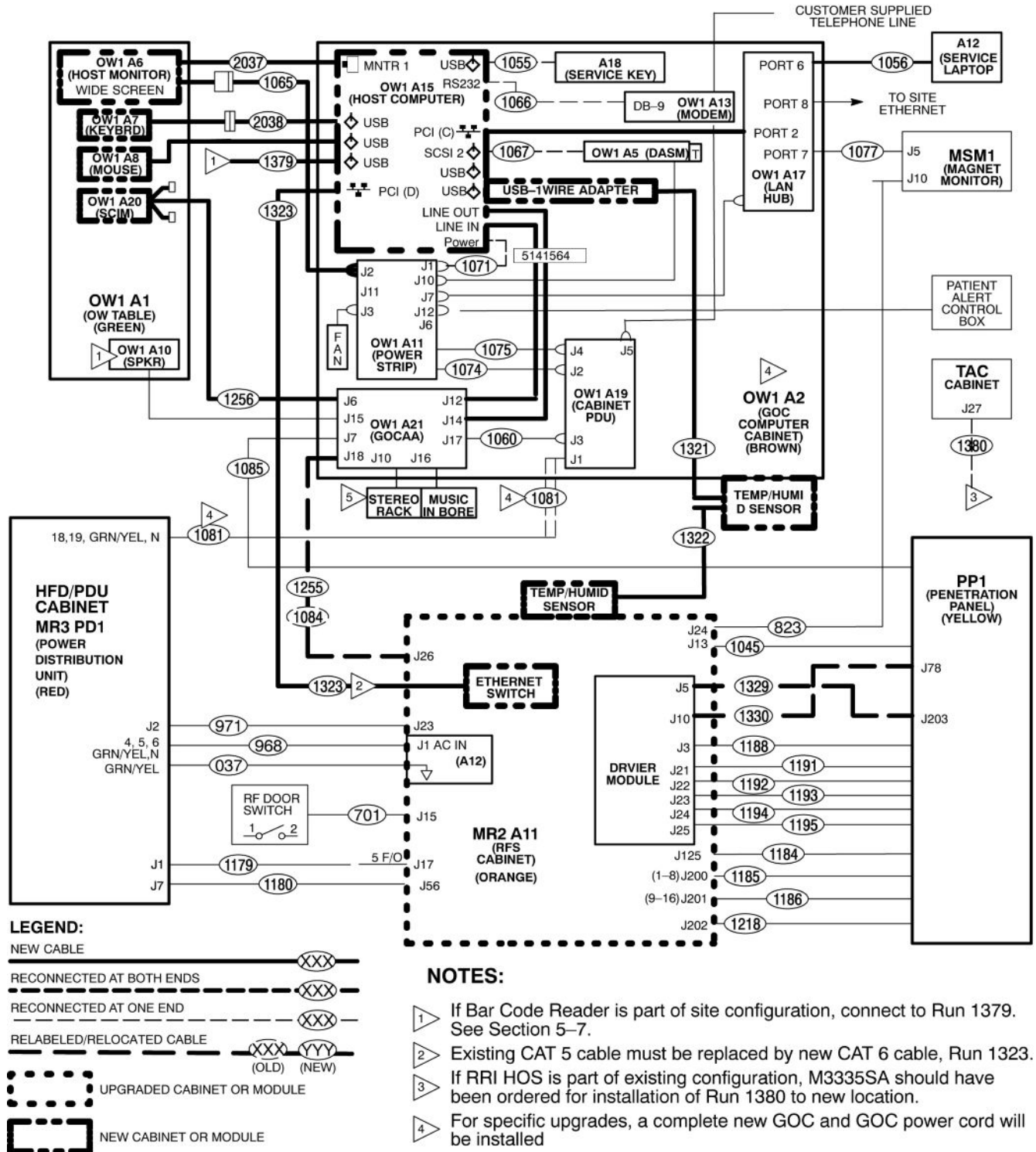
1.4.5 Affected (added) Cables For Upgrade To HDxt From Upgraded Excite HD 1.5t

The cable map represents a site that was upgraded to EXCITE HD prior to the upgrade being performed now. This configuration uses a System Cabinet.



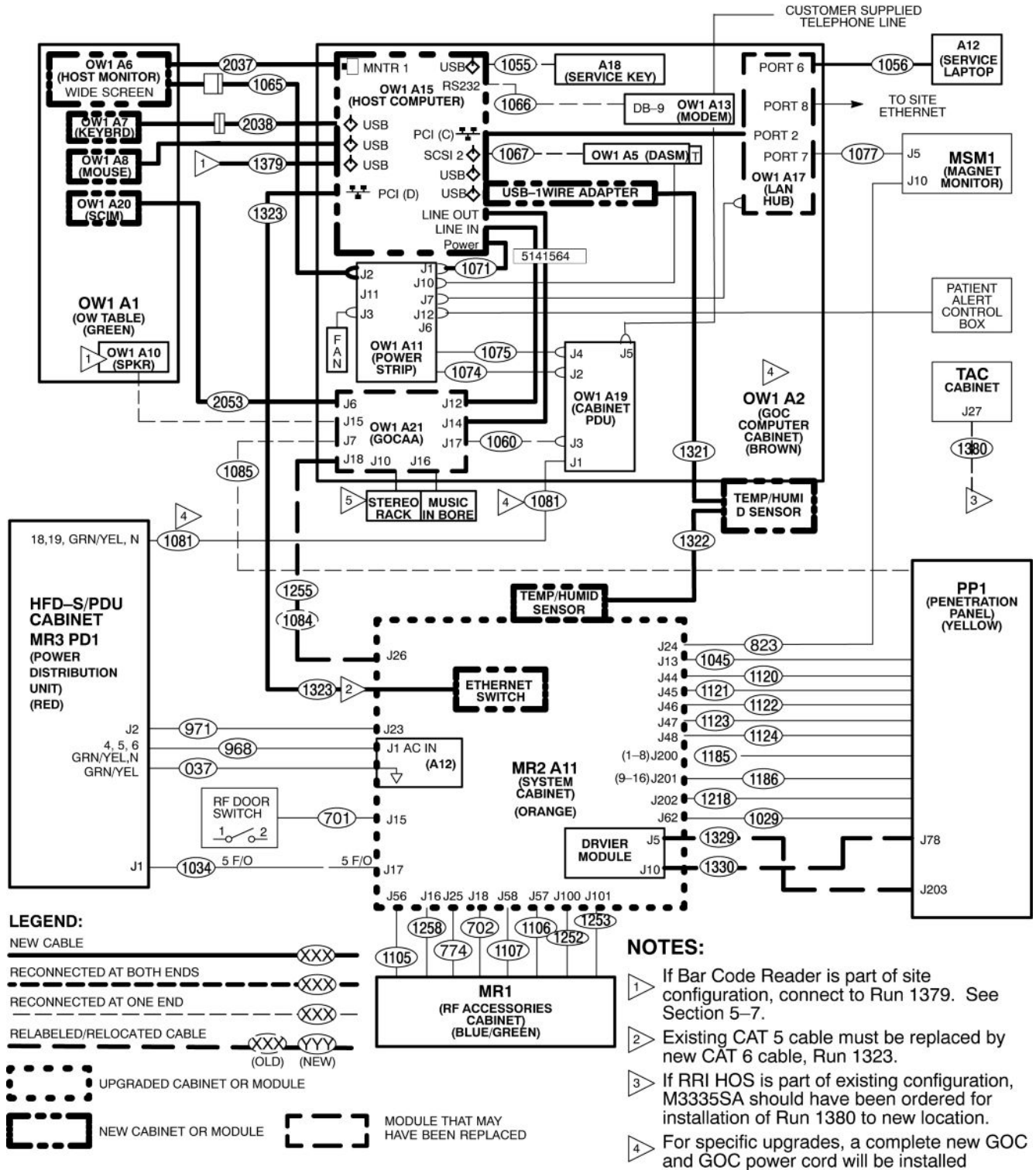
1.4.6 Affected (added) Cables for Upgrade to HDxt from Excite HD 1.5T

The cable map represents a site that was installed new as EXCITE HD prior to the upgrade being performed now. This configuration uses a RFS Cabinet.



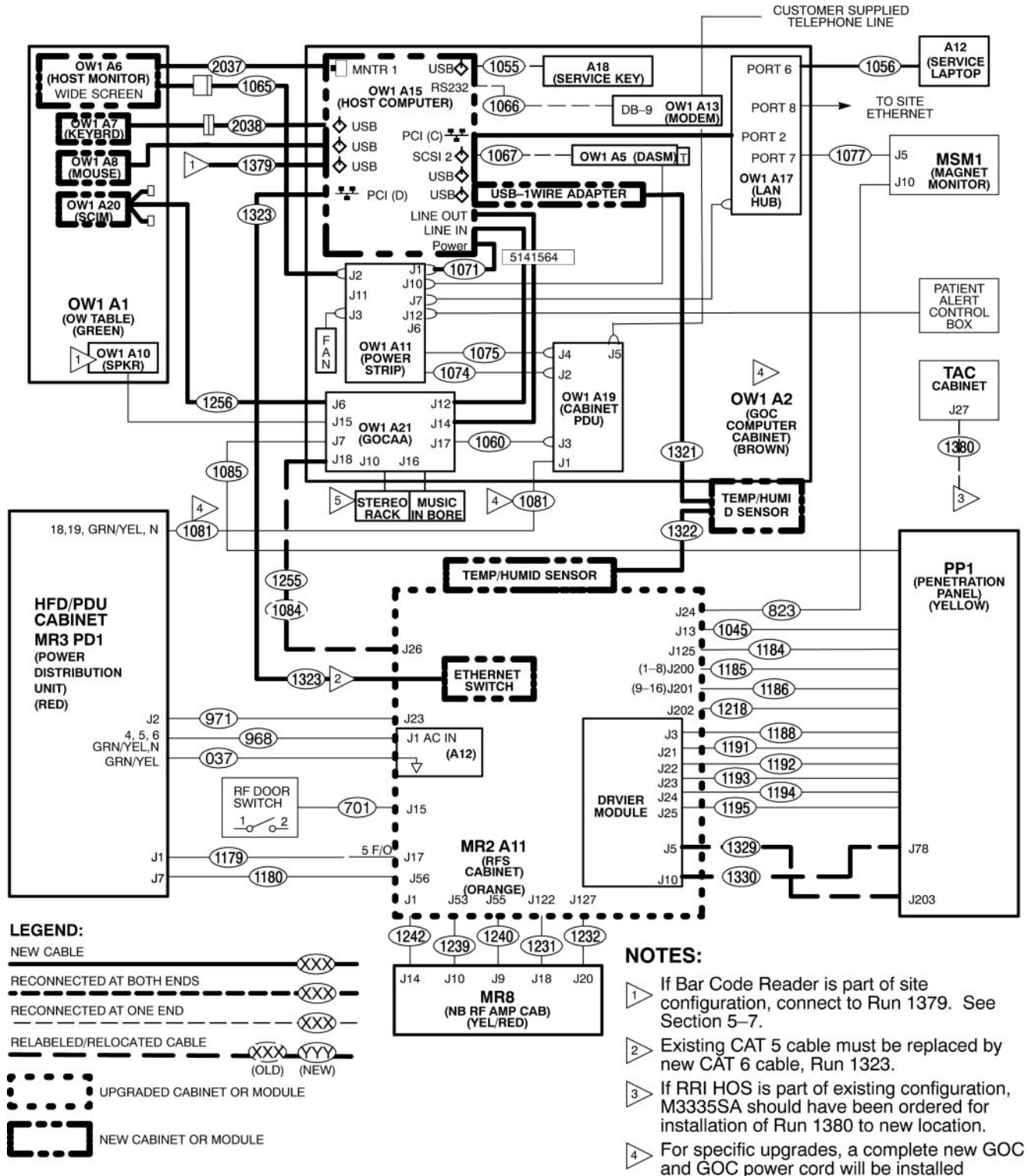
1.4.7 Affected (added) Cables for Upgrade to HDxt from Upgraded Excite HD 3.0T

The cable map represents a site that was upgraded to EXCITE HD prior to the upgrade being performed now. This configuration uses a System Cabinet.



1.4.8 Affected (added) Cables for Upgrade to HDxt from Excite HD 3.0T

The cable map represents a site that was installed new as EXCITE HD prior to the upgrade being performed now. This configuration uses a RFS Cabinet.



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# Chapter 5 Operator Workspace Upgrade

## 1 Operator Workspace Upgrade

### 1.1 Introduction

A new Monitor, SCIM, and Keyboard will replace existing components on the Operator Workspace Table. Also, the new Temperature and Humidity kit will be installed along with the new Z400 computer.

A new Z400 computer is also installed for this upgrade. Depending on site requirements, there are two options for this computer upgrade. They are:

- A replacement of the existing GOC with a new GOC containing the Z400 computer. Refer to [Section 1.2](#)
- A replacement of only the existing computer with the new Z400 computer. Refer to [Section 1.3](#).

After completing one of the above options, continue the Operator Workspace upgrade with [Section 1.4](#).



#### **WARNING**

**ELECTRIC SHOCK HAZARD!  
LETHAL VOLTAGE ARE PRESENT  
POWER TO SYSTEM MUST BE OFF, LOCKED AND TAGGED, BEFORE  
STARTING ANY UPGRADE PROCEDURES. REFER TO SECTION 3 FOR  
POWER OFF PROCEDURES.**

**NOTE:** At the completion of the upgrade, repackage the replaced computer for return.

## 1.2 Install New GOC Containing Z400 Computer

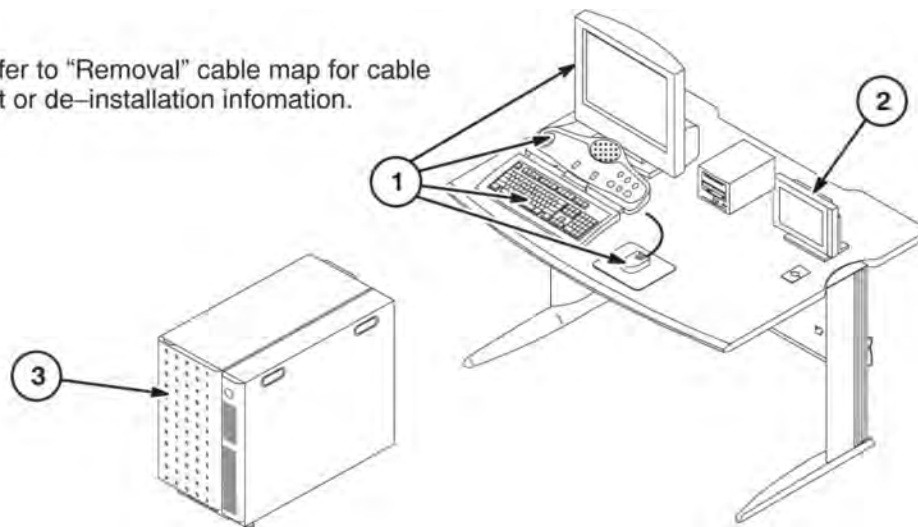
### 1.2.1 De-install Operator Workspace Components

1. Existing Monitor including Runs 1063 and 1065, SCIM, Keyboard, and Mouse will be de-installed and returned for recycling.

**NOTE:** If Run 1062 is connected to the SCIM, remove and return for recycling. Install new Run 2053 which is provided with this upgrade (A few early versions of the cable upgrade kit provided a new Run 1256, without the short cables for connecting the keyboard and mouse. If received at this site, relabel as Run 2053). If existing SCIM cable is Run 1256, retain and reconnect to new SCIM.

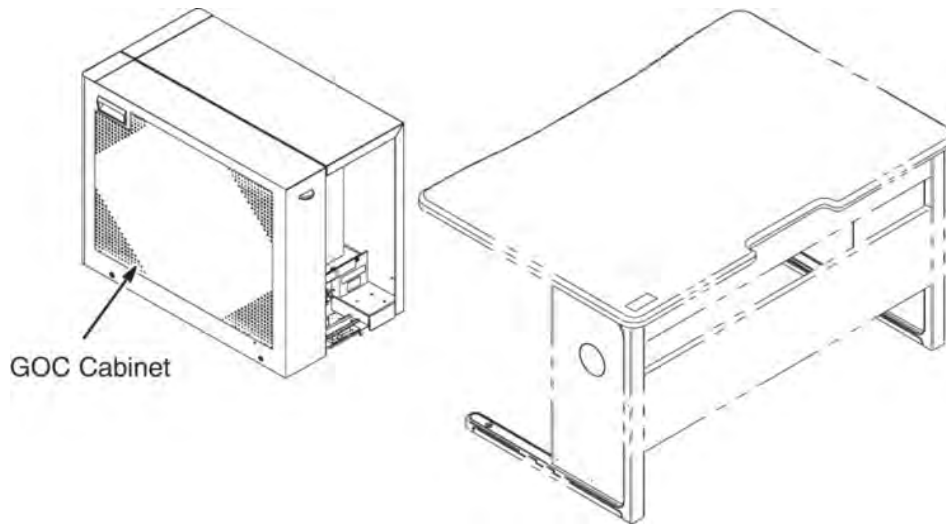
2. De-install LCD Display, Runs 1068 and 1069, and return for recycling.
3. Existing GOC will be replaced by a new GOC containing the Z400 computer:

**Note:** Refer to "Removal" cable map for cable retainment or de-installation information.



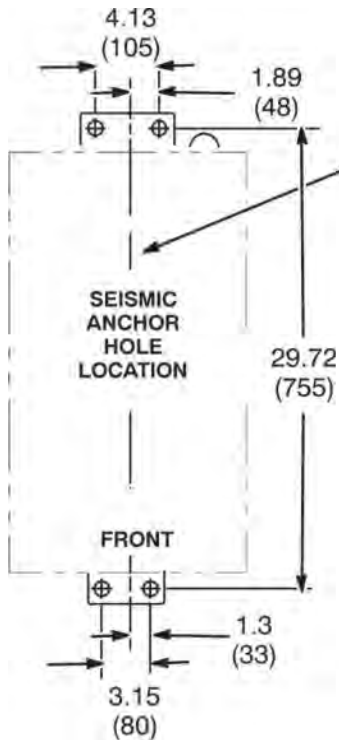
### 1.2.2 Position Computer Cabinet

Consult with Site customer for exact location of Global Operator Console (GOC). The location could be underneath the left or right side of the Operator Workspace table, or on the outside left or right side of the table.

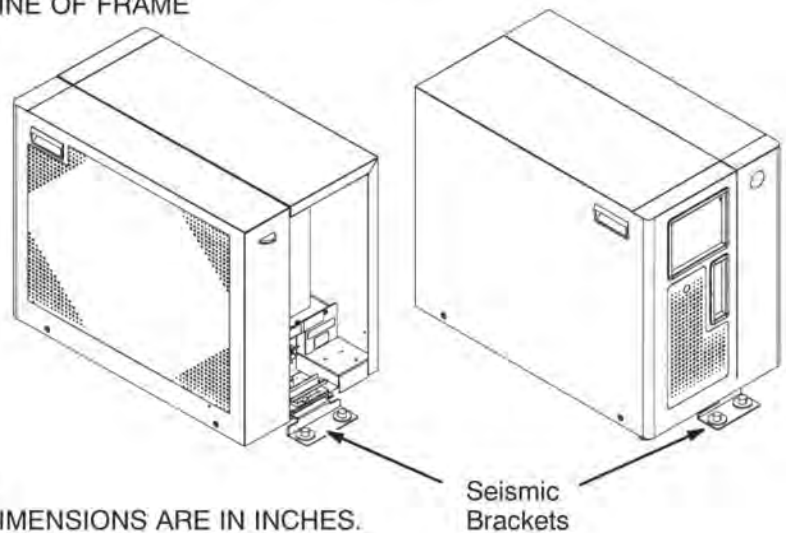


**1.2.3 Seismic Anchoring (if Required)**

GOC Seismic Mount kit is shipped with GOC. Find kit inside of plastic bag.



If seismic anchoring is required, refer to site architectural drawings for fastener type details or applicable Pre-installation manual. Illustration below indicates hole location for installing brackets



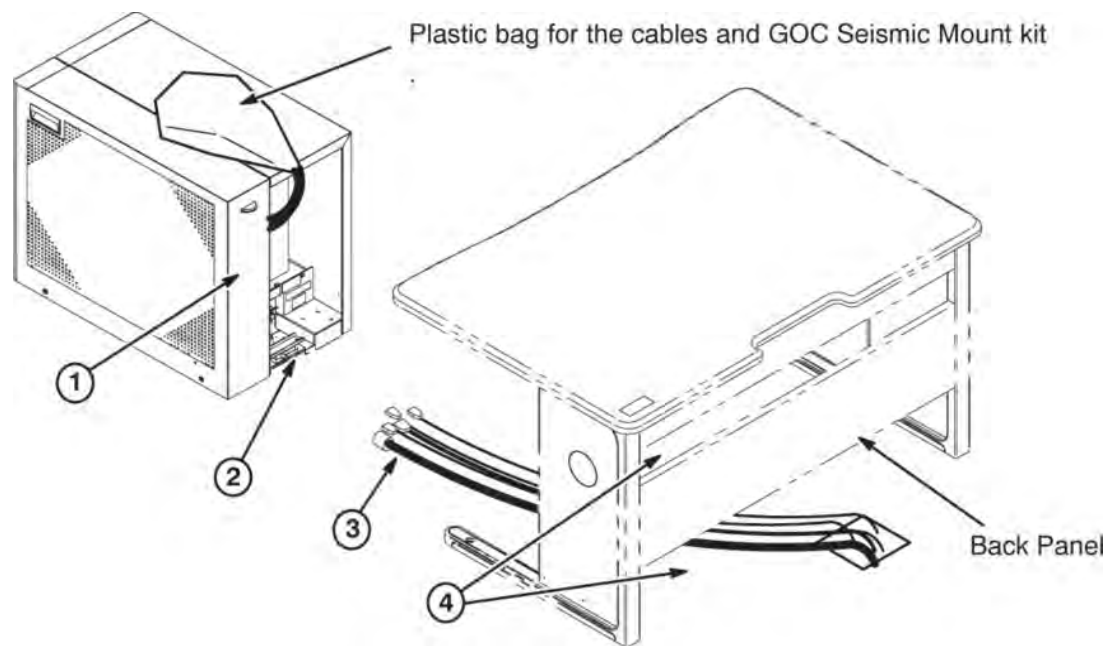
**NOTE:**  
 ● ALL DIMENSIONS ARE IN INCHES.  
 ● ALL BRACKETED ( ) DIMENSIONS ARE IN MILLIMETERS.

### 1.2.4 Computer Cabinet Cable Routing And Connections

The GOC (Computer) Cabinet is shipped with cables connected to the computer that will be routed and connected to equipment that will be installed on the top of the OW Table. The cables are:

- Two power cords
- One video output cable
- Keyboard output cable
- SCIM output cable
- SCSI output cable
- Modem output cable

These cables are already connected to the computer and routed thru the opening located at the top of the rear of the GOC cabinet as shown in the illustration below. The remainder of the cables to be connected to designated modules within the GOC Cabinet will have to be routed through the lower opening.

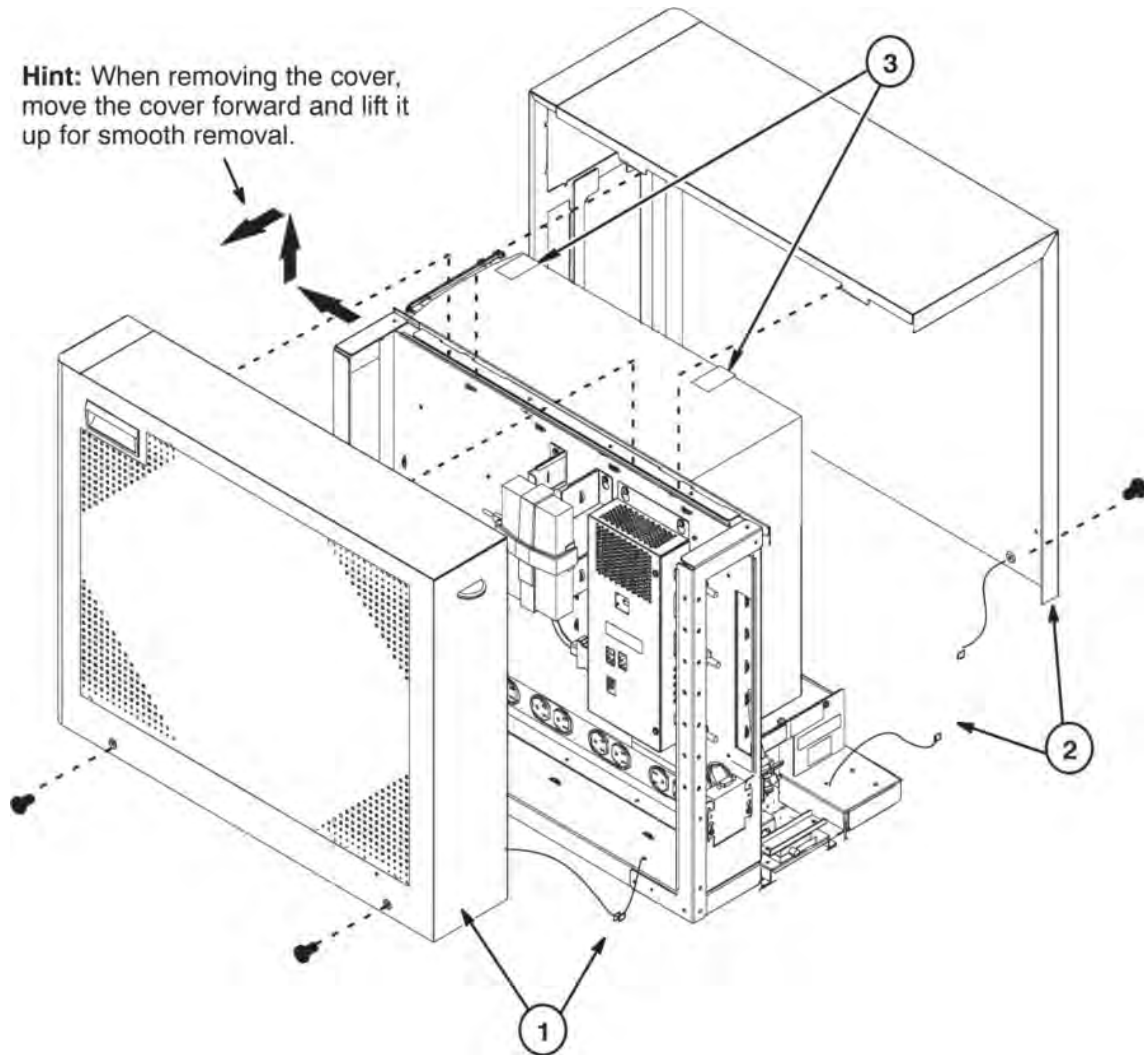


1. Runs 1064, 1070, E0015, E3045, E3046, E3047 and E3048 are pre-connected to computer and are routed at top of opening.  
(These cables are inside of plastic bag)
2. Runs 1381, 1085, 1255, 1371, power cord for the Patient Alert system, and any other option cables will be routed through lower opening.
3. Route all cables before connecting any cables. Refer to cable map for connection information.

4. If GOC Cabinet is to be located under OW Table, the cable coming out of the top opening of the cabinet will be routed above the Back Panel. The cables coming out of the lower opening will be routed below the Back Panel.

### 1.2.5 GOC Cabinet Cover Removal

The Computer Cabinet covers need to be removed to access the cable connection points.



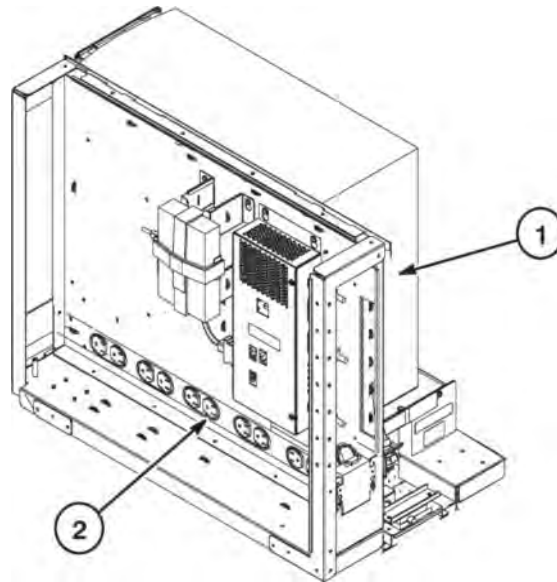
1. For right side cover, remove two screws and lift up. Disconnect Ground cable connector and remove the cover.
2. For left side cover, remove two screws and lift up. Disconnect Ground cable connector and remove the cover.

**NOTE:** A ground wire is connected to each side cover. Use care when removing side covers.

3. Peel the two shipping tapes off from PC.

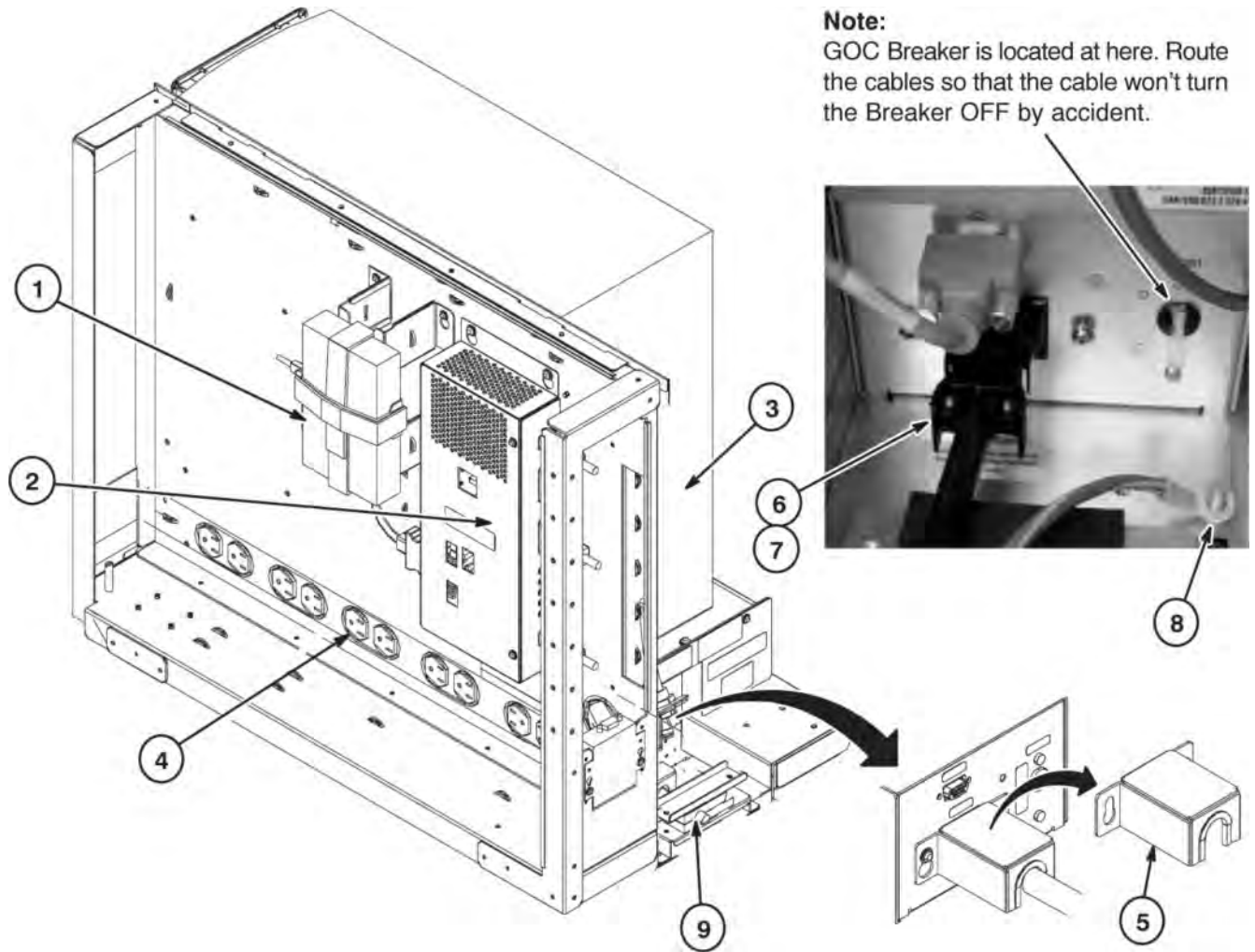
### 1.2.6 Install Modem Cable To GOC Cabinet (if Applicable)

If Modem is part of system installation or upgrade, it will be placed on Operator Table or GOC.



1. Modem cable to the Linux PC is provided. Connect Run E3045 to Modem.
2. Modem power cord must be connected to J7 on GOC PDU Module. Route this cable to the rear top of the GOC Cabinet.

1.2.7 GOC Cable Connections

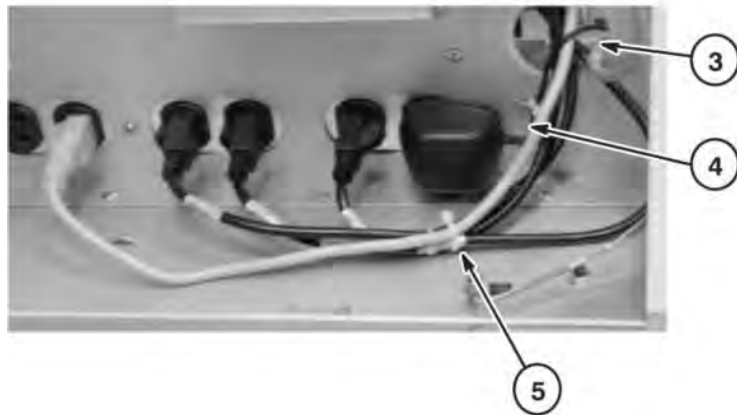
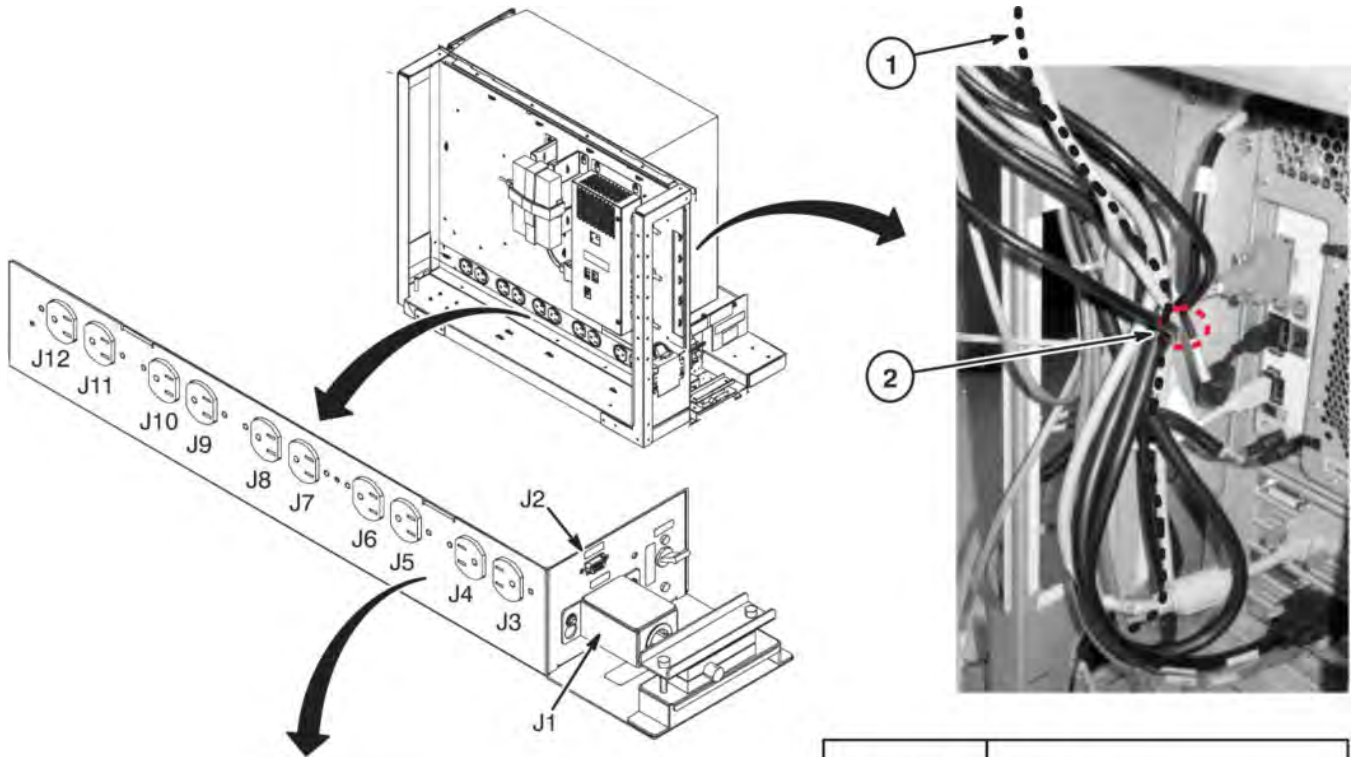


Refer to cable map for information on cables to be connected through lower area of rear opening.

1. Route and connect Ethernet cables to LAN Hub.  
**NOTE:** Use ports 3, 7 or 8 for connecting site ethernet cables such as AW. Don not use any other ports for site ethernet cables.
2. Connect Run 1085 to J7 and Run 1255 to J18 on GOC AA.
3. Refer to [Section 1.9](#) for all cables connected to Linux PC computer.
4. Refer to [Section 1.2.8](#) for power cable connections to GOC PDU. Make sure Patient Alert power is connected to J3. If Modem is installed, power cable is connected to J7.
5. Before connecting GOC power cable Run 1381 to J1, loosen screws and remove cover.
6. Route and connect GOC power cable Run 1381 to J1 on PDU.
7. Confirm that GOC Power Cable is firmly connected to J1 by pulling the cable once. Re-install cover removed in Step after connecting cable and tighten screws.

8. Connect Run 1382 to GND. Make sure nut securing GND cable is firmly tightened to GND stud.
9. Tighten clamp to secure cables in place.

**1.2.8 Power Cable Connections**



POSITION	NAME
J1	GOC Input
J2	GOCAA
J3	Patient Alert
J4	Host Computer
J5	Host LCD
J6	SCSI Tower
J7	Modem
J8	
J9	LAN Hub
J10	
J11	
J12	One Wire Hub

The illustration shows the power cable connection locations to the power strip in the GOC cabinet. Make sure power cables are attached as shown.

Refer to cable map for information on power cable connections to OW1-PDM.

1. If Modem is installed, route power cable and connect to J7.

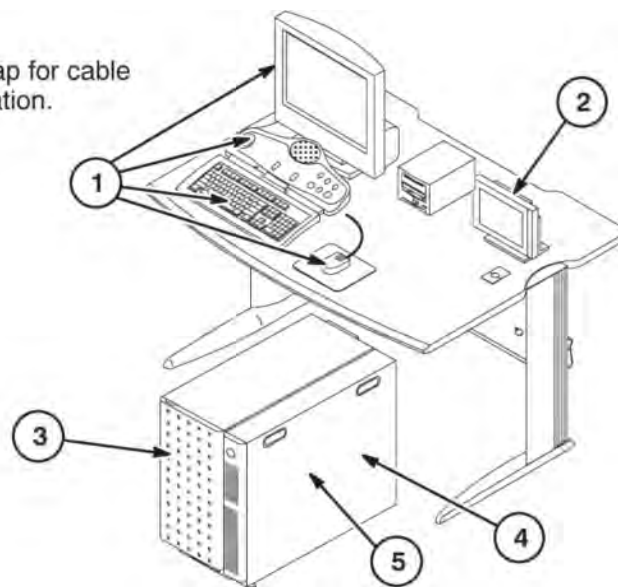
2. Tie-wrap point for Modem power cable.
3. Route power cables connected to J3 through J7 through access hole.
4. route and connect Patient Alert power cable to J3 and tie-wrap at this point.
5. Tie-wrap power cables J4 to J7 at this point.

## 1.3 Install New Z400 Computer In Existing GOC

### 1.3.1 De-install Operator Workspace Components

Make sure that all system applications are shut down and that power at the PDU is turned off and LOTO applied.

**Note:** Refer to "Removal" cable map for cable retainment or de-installation information.



1. Existing Monitor including Runs 1063 and 1065, SCIM, Keyboard, and Mouse will be de-installed and returned for recycling.

**NOTE:** If Run 1062 is connected to the SCIM, remove and return for recycling. Install new Run 2053 which is provided with this upgrade (A few early versions of the cable upgrade kit provided a new Run 1256, without the short cables for connecting the keyboard and mouse. If received at this site, relabel as Run 2053). If existing SCIM cable is Run 1256, retain and reconnect to new SCIM.

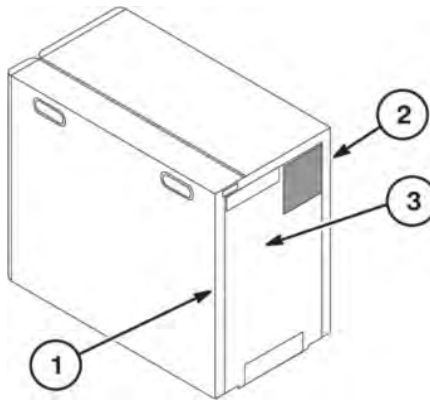
2. De-install LCD Display, Runs 1068 and 1069, and return for recycling.
3. Existing PC computer in the GOC will be replaced by a new computer:
4. The GOC AA module has been delivered as part of the upgrade kit.
  - If the existing GOC already has a GOC AA module installed, the new GOC AA is not required.
  - If the existing GOC has a WIM installed, it must be replaced by the new GOC AA module.

5. An 8-Port 10/100/1000 Mbps Gigabit Ethernet Switch has been delivered as part of the upgrade kit.
  - If the existing GOC already has this Switch installed, the new Switch is not required.
  - If the existing LAN Hub Switch is an 8-Port 10/100, then it must be replaced by the new 10/100/1000 Switch.

### 1.3.2 GOC Cabinet Cover Removal

The Computer Cabinet covers need to be removed to access the cable connection points.

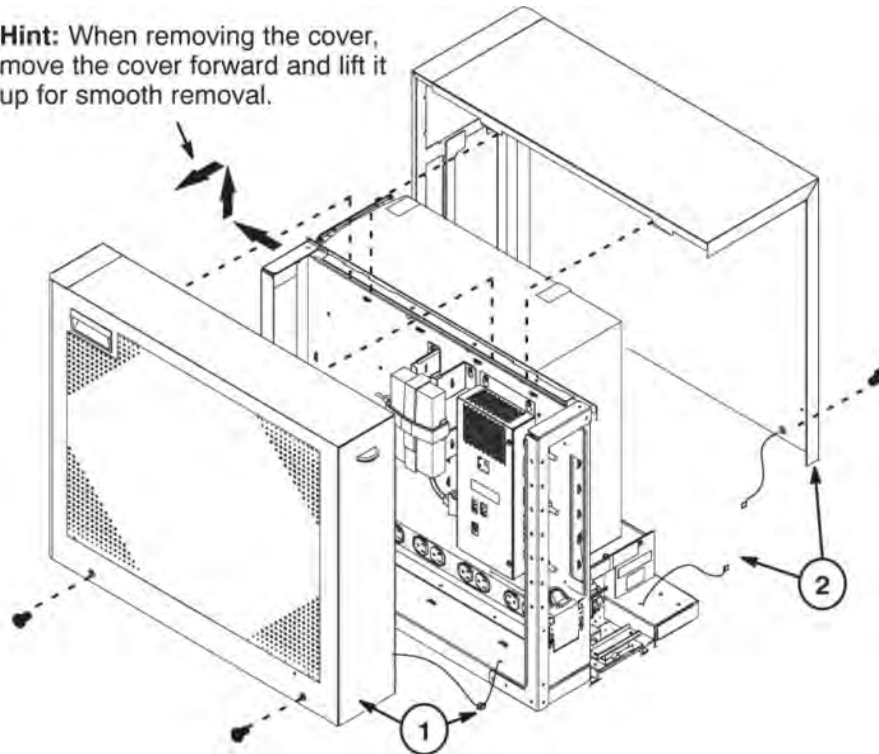
#### 1.3.2.1 Older Style GOC Covers



1. For right side cover, remove three screws at rear of cover, slide toward rear of cabinet and then lift up.
2. For left side cover, remove four screws at rear of cover, slide toward rear of cabinet and then lift up.
3. Loosen four screws holding the back cover. Lift and remove cover.

### 1.3.2.2 Newer Style GOC Covers

**Hint:** When removing the cover, move the cover forward and lift it up for smooth removal.

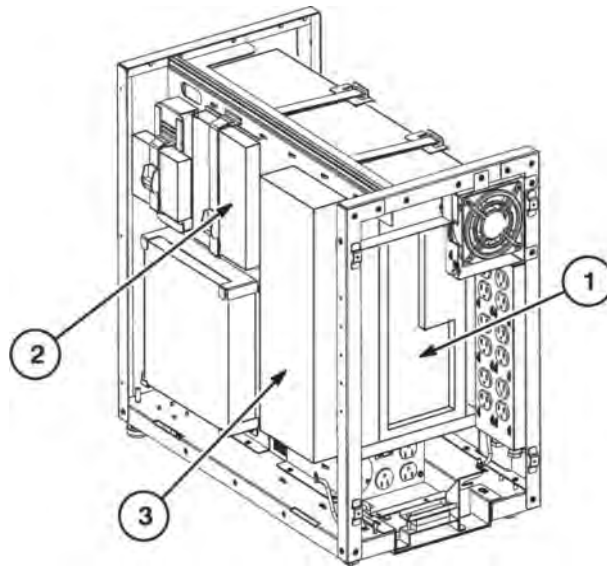


**NOTE:** A ground wire is connected to each side cover. Use care when removing side covers.

1. For right side cover, remove two screws and lift up. Disconnect Ground cable connector and remove the cover.
2. For left side cover, remove two screws and lift up. Disconnect Ground cable connector and remove the cover.

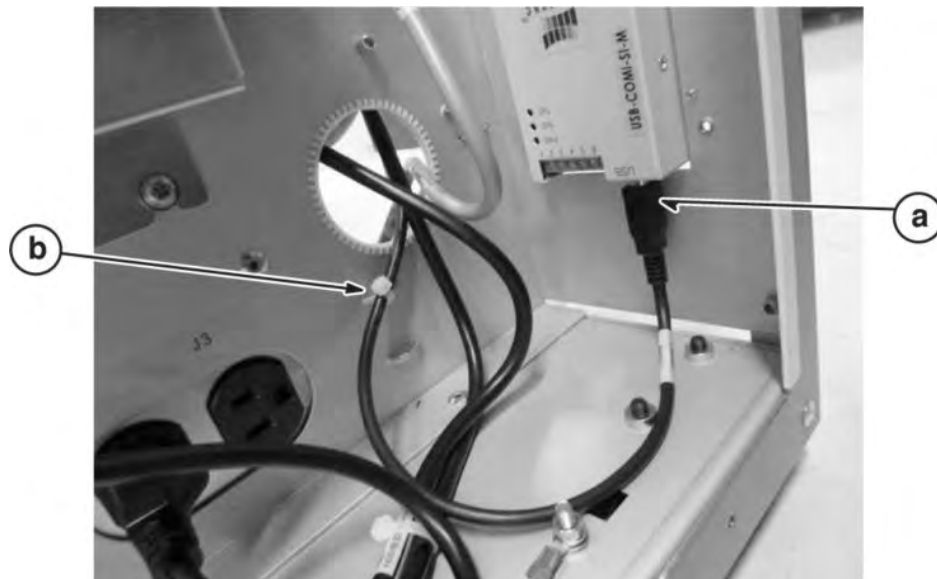
### 1.3.3 GOC Component Replacement

Refer to applicable cable removal map for de-installation of existing cables that will be replaced by new cables. The cable maps also show which cables will be disconnected from existing components and reconnected to new components.

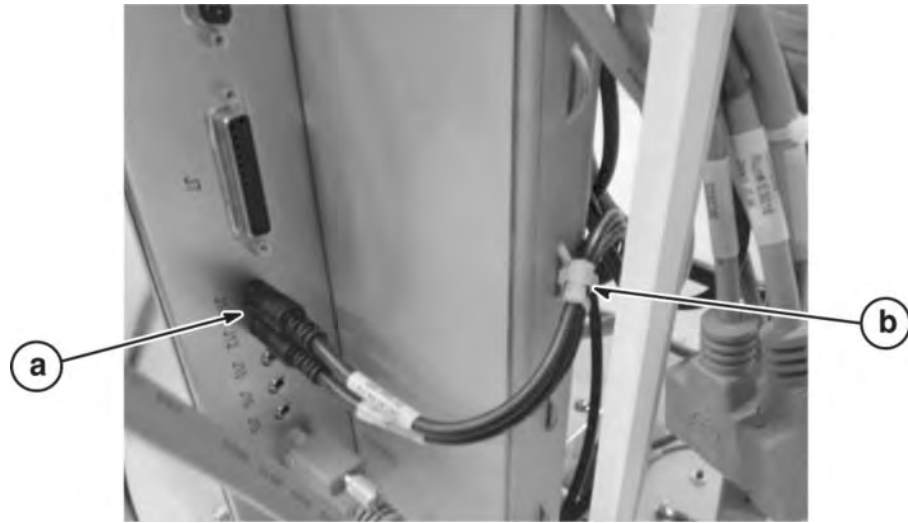


1. Disconnect all cables from existing computer. Make sure they are properly labeled.
2. If required, replace existing LAN Hub Switch with new 10/100/1000 Mbps Gigabit Ethernet Switch (5139480-2).
3. If required, replace existing WIM with new GOC AA module (2395043).

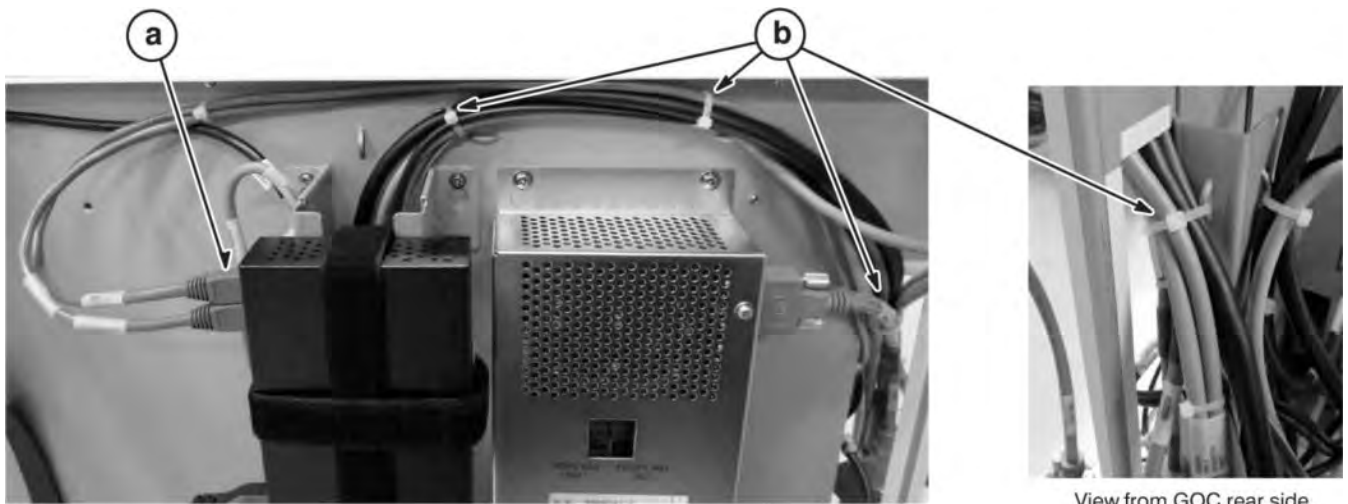
#### 1.3.4 Installation Of New GOC Components



1. Replace the Host to USB-Serial Converter USB Cable.
  - a. Reconnect the Host to USB-Serial Converter USB Cable.
  - b. Cut and restore tie-wrap(s) as required during cable replacement.

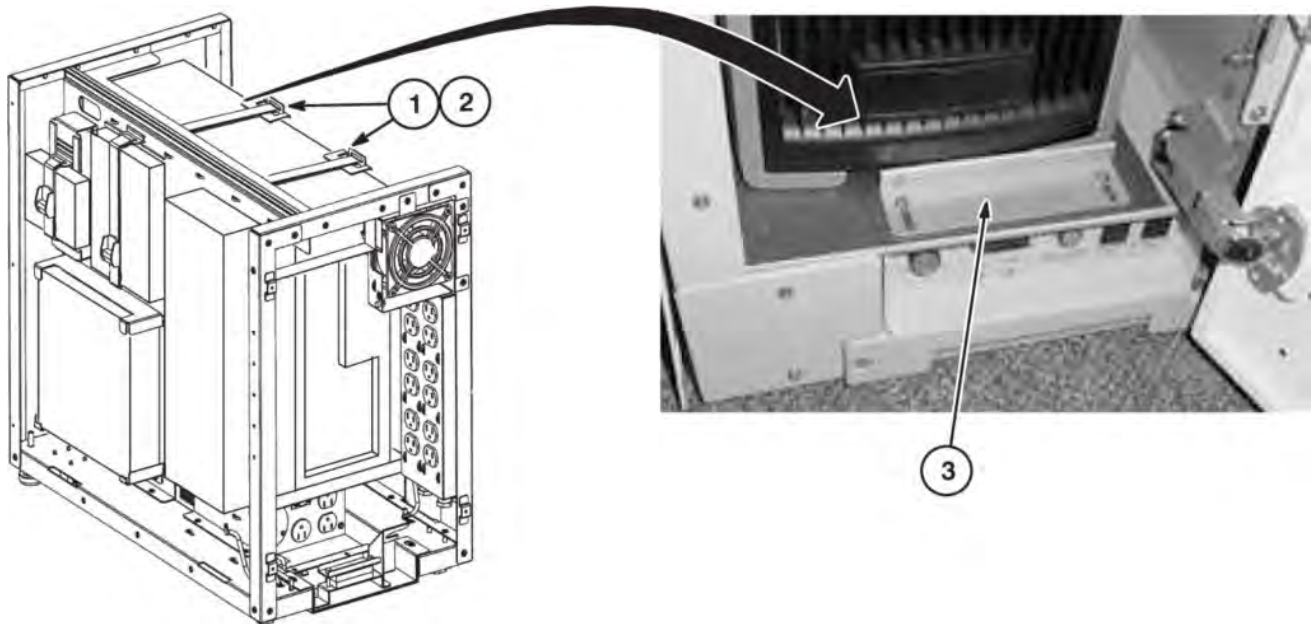


2. Replace the Audio Cable Assembly.
  - a. Reconnect the Audio Cable Assembly, connected to J12 and J14 on GOCAA.
  - b. Cut and restore tie-wrap(s) as required during cable replacement.



3. Replace the Host-Hub Ethernet Cable.
  - a. Reconnect the Ethernet Cable between the Host and Port 1 of Ethernet Switch Hub.
  - b. Cut and restore tie-wrap(s) as required during cable replacement.

### 1.3.5 GOC Computer Replacement



#### NOTICE

XW8000, 8200, 8400, or 9300 PC internal hardware, such as any hard drive, is not compatible with the Z400 computer. Do not attempt to transfer any internal hardware between any of these and the Z400 computer.

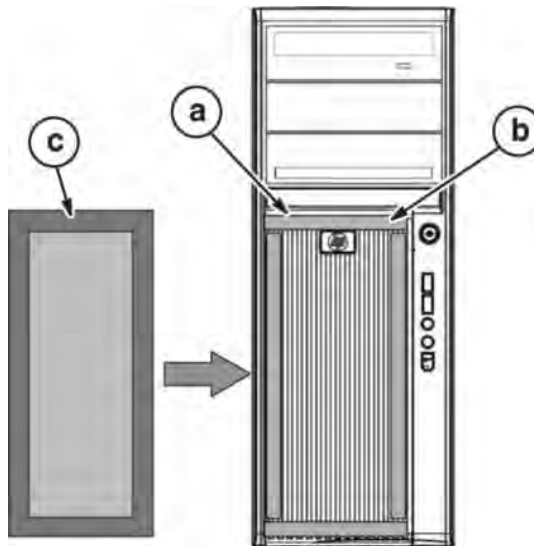


#### CAUTION

Possible Muscle Strain!

The computer weighs about 50 pounds (23Kg).  
This requires two people to handle the computer.

1. Unfasten straps and carefully remove computer.
2. Because the new Z400 computer is shorter than the original PC being replaced, install the new computer to the rear-most position and secure in place with straps.
3. If required, install PC Stopper Bracket (5127954) at front of computer using existing screws.

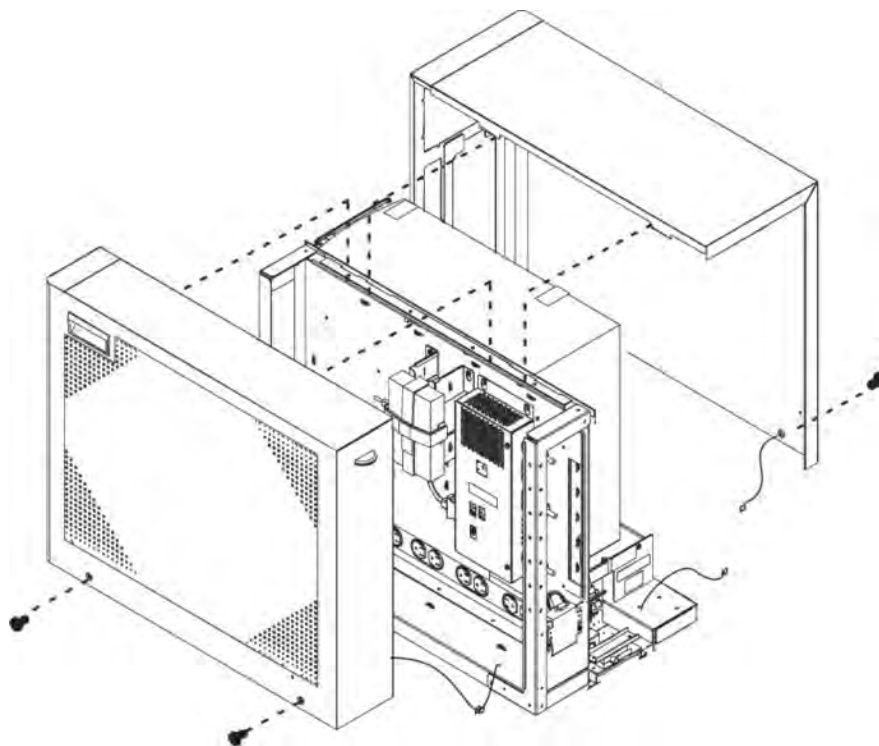


4. If applicable, attach the Dust Filter to the front panel after following the cleaning instructions below.
  - a. Clean the velcro area of front panel with alcohol and cloth. Peel the velcro from backside of filter.
  - b. Attach the velcro around front panel.
  - c. Attach the filter to front panel.



### NOTICE

Make sure the Z400 computer is installed at the rear-most position before installing covers. This position will aid in connecting existing cables to rear of Z400 computer.



5. Reinstall the GOC covers.

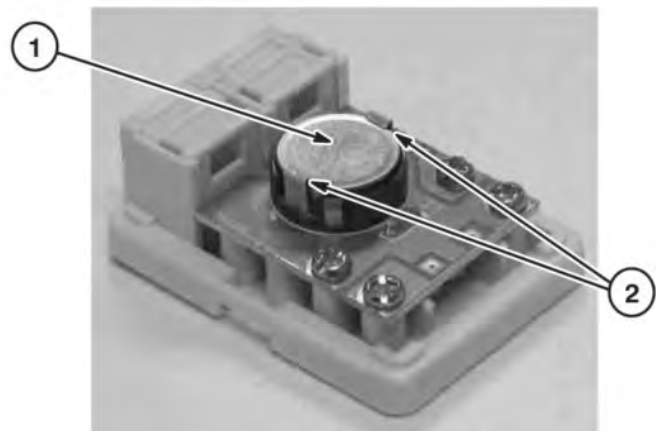
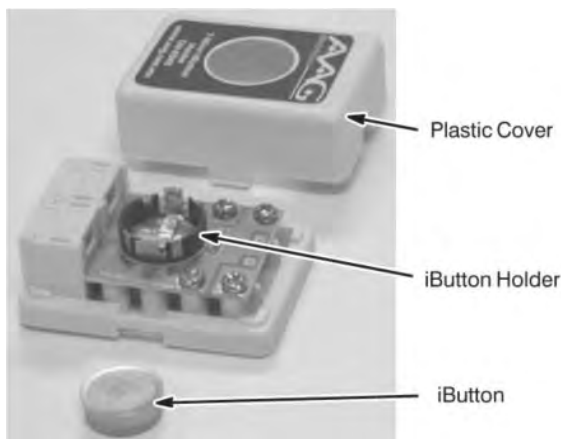
## 1.4 Temperature and Humidity Sensor Kit Installation

The components of the Temperature and Humidity Sensor Kit (5147136-2) will be installed on the back of the GOC cabinet and on the back of the System Cabinet with one cable routed from the GOC and connected to it.

### 1.4.1 Install iButton into Holder

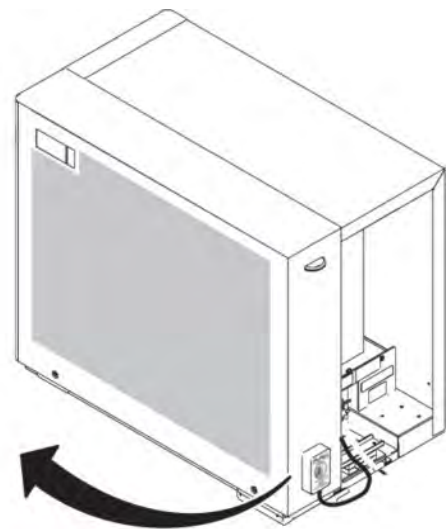
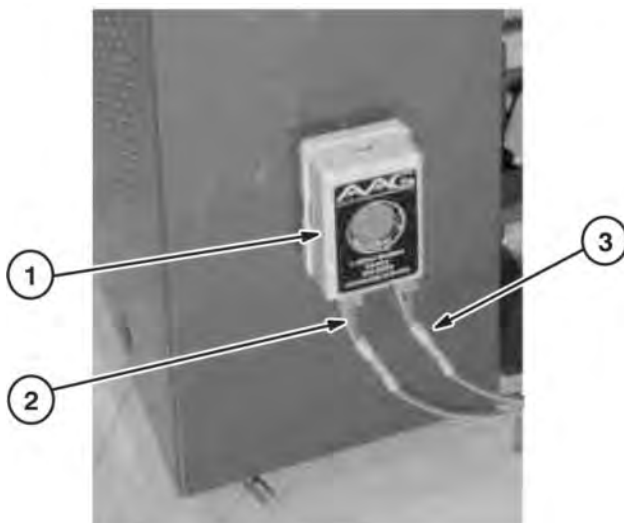
Install the iButton into the holder in the orientation shown in the illustration.

**NOTE:** The pictures below show the plastic cover removed although this is not necessary to install the iButton .



1. Install the iButton in the holder so that the solid part of the case is exposed.
2. Make sure the "fingers" latch over the top of the iButton and secure it in the holder.
3. If removed, reinstall the Plastic Cover.

### 1.4.2 Install Temperature & Humidity Sensor on GOC



1. Attach iButton Sensor assembly (Holder, 5141856, and iButton 5141857-5), to back of GOC Cabinet at this location using Dual Locking Velcro Tape (2341779 & 2341779-2).
2. Route and connect Run 1322 (5143794-2) from System cabinet to Sensor at back of GOC.
3. Connect cable Run 1321 (5143794-2) to Sensor and route other end thru bottom opening of GOC and connect to USB to 1-Wire Adapter (5307784) installed in GOC USB port. Refer to Section .

### 1.4.3 Install Temperature & Humidity Sensor on System Cabinet

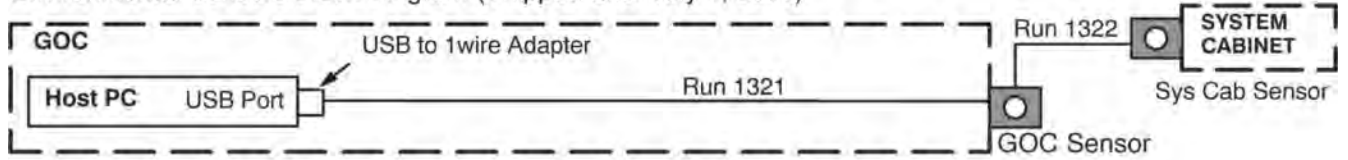


**NOTE:** iButton Holders are unique to each location. Make sure to install 5141857-4 to System Cabinet and 5141857-5 to GOC.

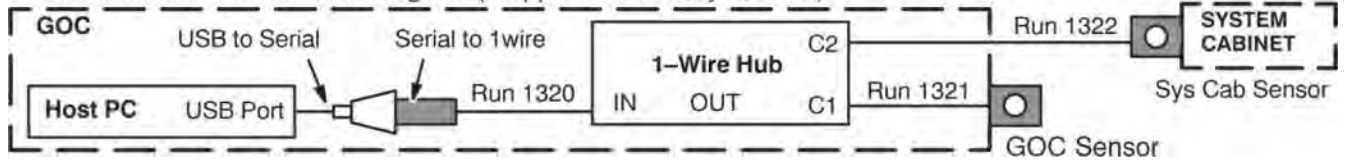
1. Attach iButton Sensor assembly (Holder, 5141856, and Humidity iButton (5141857-4), to back of System/RFS Cabinet at this location using Dual Locking Velcro Tape (2341779 & 2341779-2).
2. Route and connect cable Run 1322 (5143794) from GOC rear cover.

### 1.4.4 Temperature & Humidity Sensor Wiring Schematics

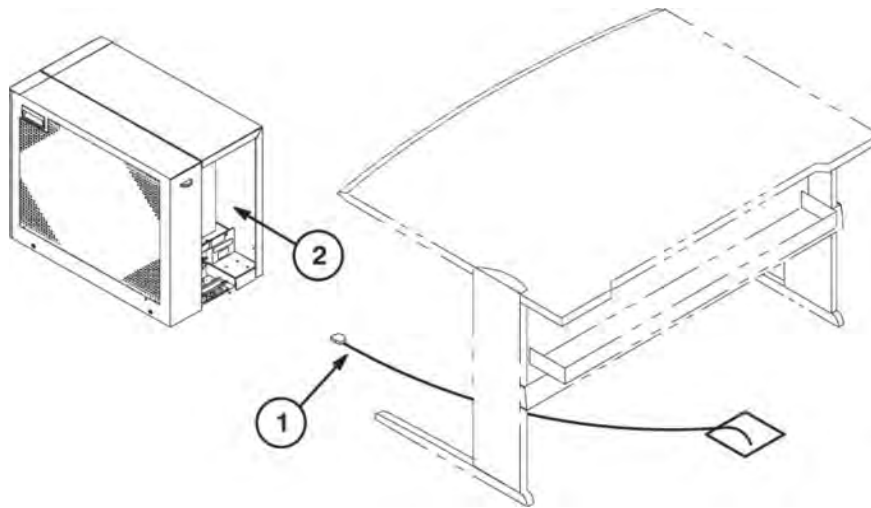
Environmental Sensors Block Diagram (Shipped after July 1, 2008)



Environmental Sensors Block Diagram (Shipped before July 1, 2008)



## 1.5 Route Run 1323

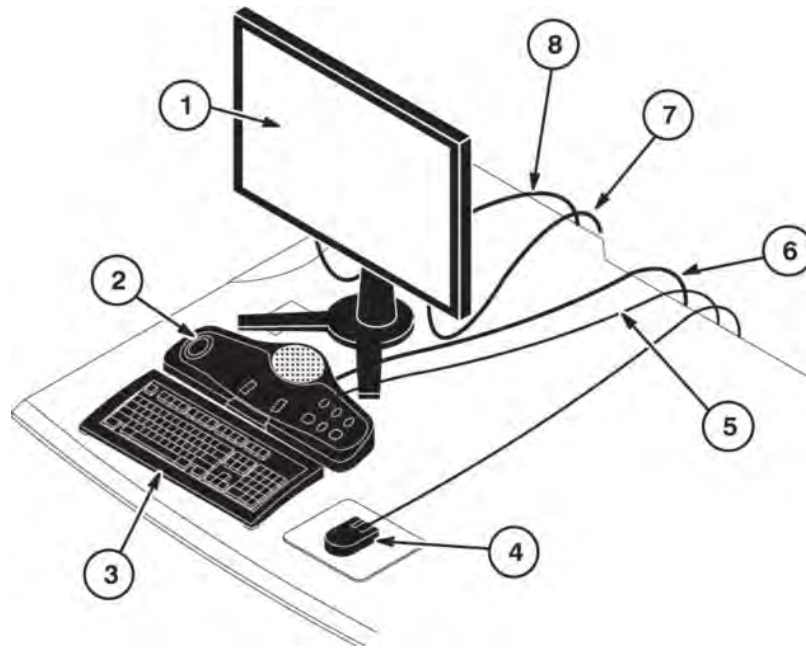


1. Route Run 1323 from RFS or System Cabinet to location of GOC. This is a new CAT6 cable that must be installed. Existing CAT5 cables cannot be reused.

**NOTE:** For optimal efficiency, route Run 1322, Section , at the same time as Run 1323. It is also routed between RFS/System Cabinet and GOC.

2. Cable will be routed through the opening to the PC for connection.

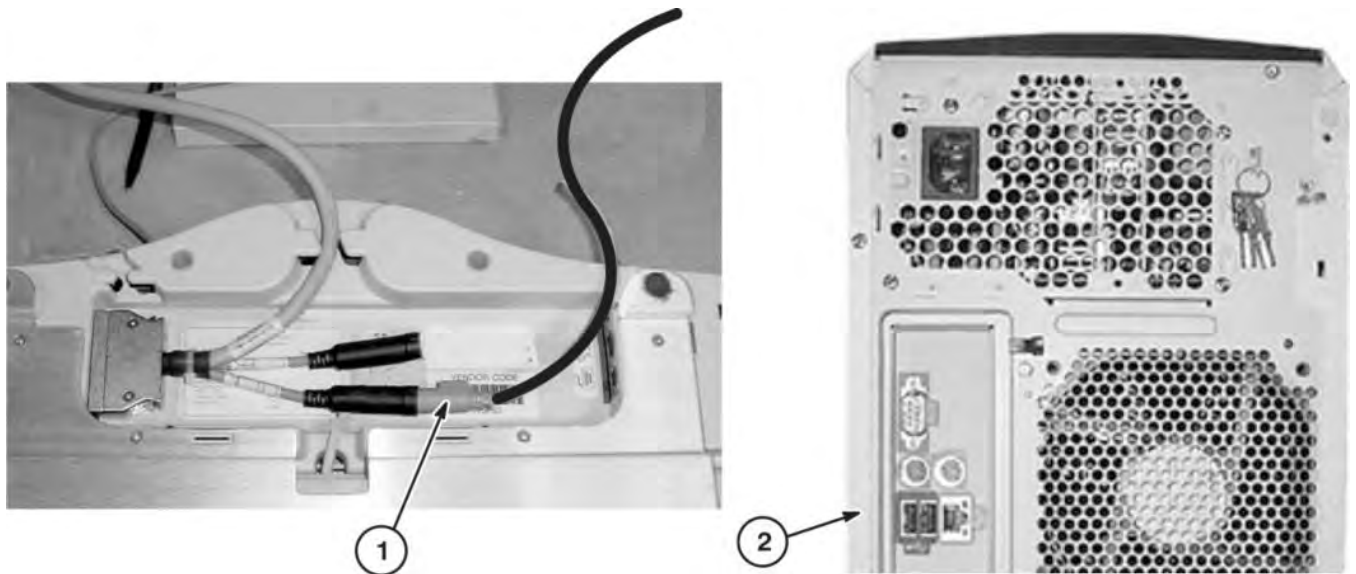
## 1.6 Install New OW Table Top Components



**NOTE:** Do not use or connect provided VGA cable.

1. Install new Monitor on table.
2. Place new SCIM (5148388-x) on table.
3. Place new Keyboard (5143798-x) on table.
4. Install new Mouse (5143798-6) on table and route USB cable to computer in GOC. Attach provided extension USB cable if necessary.
5. Connect extension cable Run 2038 to USB Keyboard cable and route to computer in GOC.
6. Connect Run 2053 (or 1256) to SCIM and route to rear of GOC.
7. Connect provided monitor power cable to monitor. Connect other end of cable to Run 1065, which is connected to OW power strip.
8. Connect DVI cable, Run 2037, to monitor and route to rear of computer in GOC.

## 1.7 Connect Bar Code Reader (if Part Of Site Configuration)



1. *If Run 1256 is present* - Disconnect the Bar Code Reader cable from Run 1256 Y-connector under SCIM.
2. Connect cable Run 1379 to rear of computer and Bar Code Reader.

## 1.8 Install SCIM/Keyboard

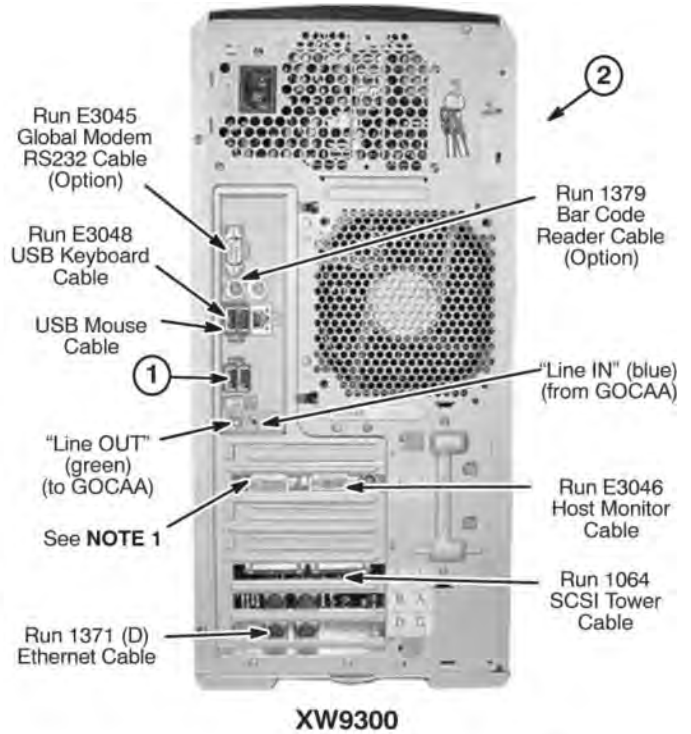
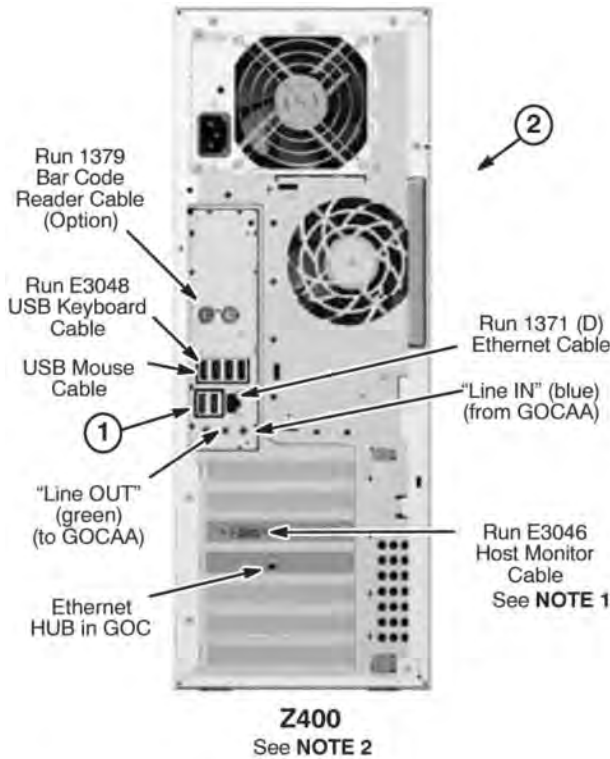
1. Place keyboard in front of SCIM, pull the keyboard forward, flip it, and place on top of the SCIM up side down.
2. Remove the plastic strips from the velcro located on SCIM plate, exposing the adhesive surface.
3. Guide the cable back into the center notched opening until all the cable is under the SCIM base.
4. Place the keyboard tight against the SCIM, Center it as best as possible, and drop into place. The Velcro pads will now be sticking to the bottom of the keyboard.



### Note

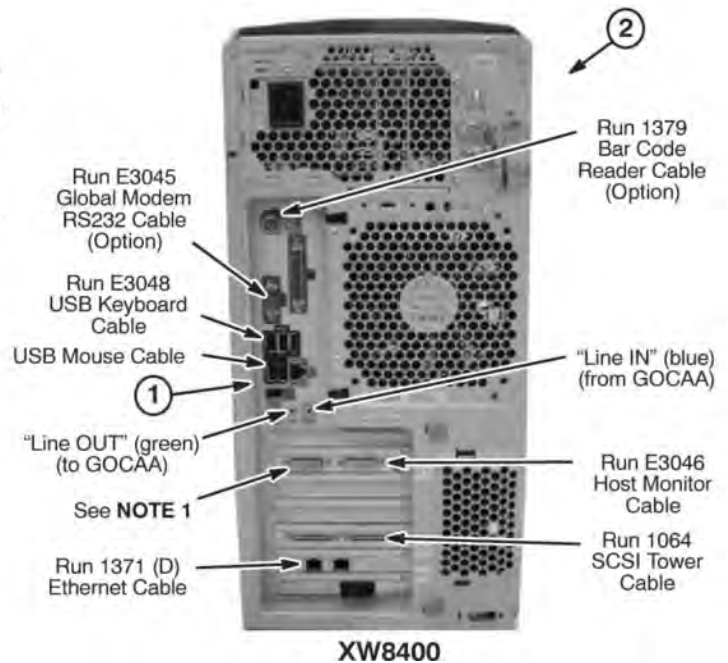
The adhesive on the velcro takes 24 hours to completely adhere to the bottom of the keyboard. Allow the adhesive to dry completely before removing keyboard from SCIM base.

### 1.9 Connect Cables to Computer



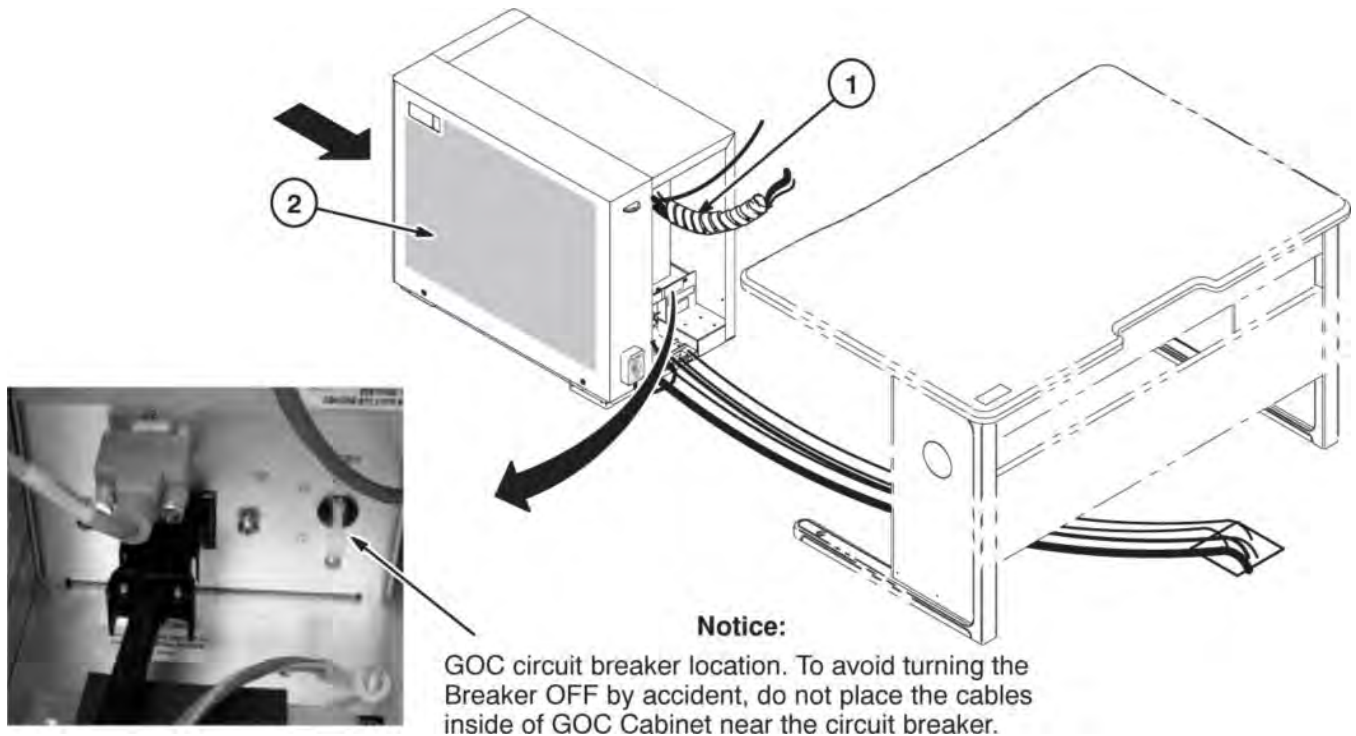
**NOTE 1:**  
 Do not connect any additional monitors prior to loading operating system software. Doing so will cause boot-up to stop.

**NOTE 2:**  
 SCSI Tower and DASM are not supported for Z400PC.



1. Refer to [Section 1.4.4](#) for installing the USB to 1-Wire Adapter (5307784) to USB port.
2. Connect remaining cables as marked at rear of computer.

## 1.10 Final Positioning Of GOC Cabinet



Complete positioning of GOC Cabinet.

1. Use the spiral tube to bind the following cables. (Length of spiral tube is about 1 m).

**NOTE:** Do Not include Modem power cable in Spiral Tube.

- Two power cords
- One video cable
- Keyboard cable
- SCIM cable
- Modem cable (if applicable)

2. Place cabinet in final position as determined by customer.

## 1.11 Power-on Information

Refer to [Chapter 8, Completion](#) for power-on procedures.

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# Chapter 6 System Cabinet Upgrade

## 1 System Cabinet Upgrade

This section provides information on upgrading the existing HD System or RFS cabinet to HDxt. The upgrade procedures refer to parts being relocated, replaced, and removed for 1.5T and 3.0T systems that were either installed new for HD or upgraded to HD.

Refer to the applicable section for the site being upgraded:

[Section 1.1](#) - System cabinet upgrade instructions for 1.5T HD site.

[Section 1.2](#) - RFS cabinet upgrade instructions for 1.5T HD site.

[Section 1.3](#) - System cabinet upgrade instructions for 3.0T HD site.

[Section 1.4](#) - RFS cabinet upgrade instructions for 3.0T HD site.

[Section 1.5](#) - SSM to ASC Upgrade for 1.5T Systems without UPM upgrading to HD23

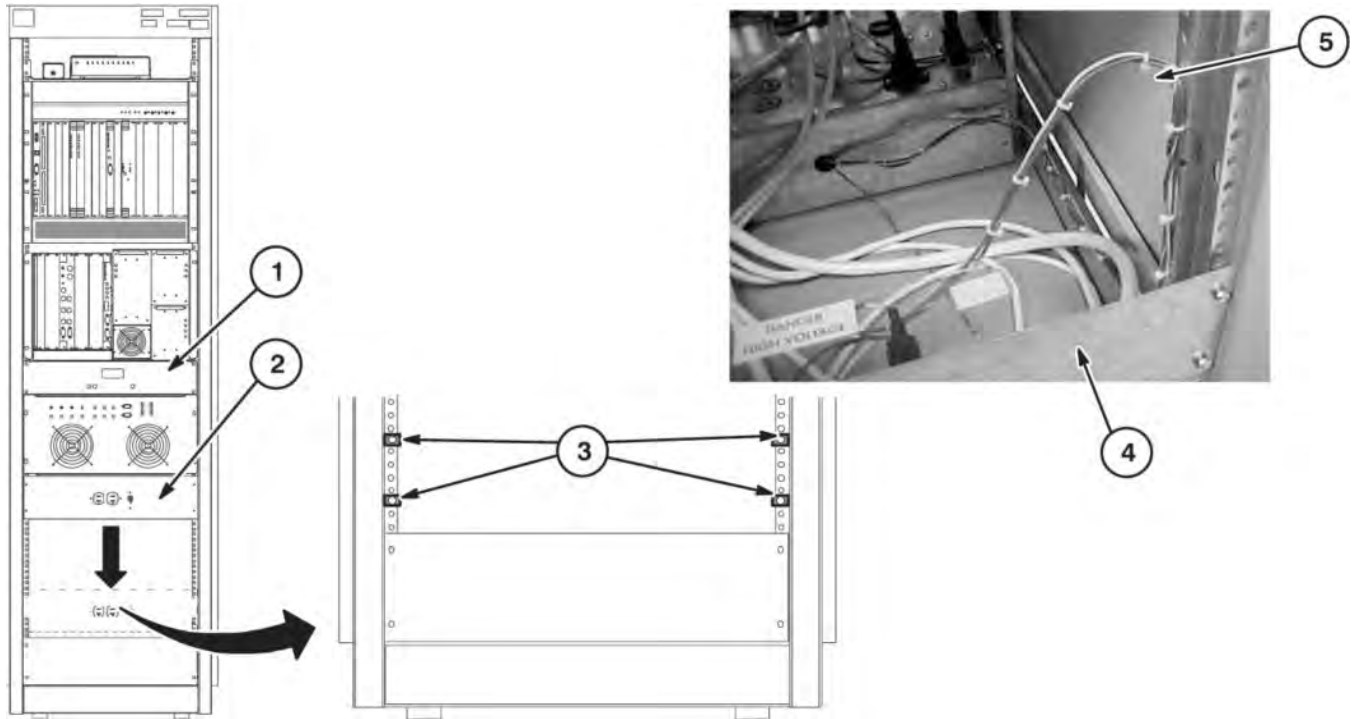
[Chapter 7, ASC Chassis Upgrade for 3.0T G3 System with RF Accessory Cabinet](#) — 3.0T G3 Systems with RF Accessories Cabinet upgrading to HD23.

All de-installed modules and materials are to be returned for harvest.

## 1.1 System Cabinet Upgrade Instructions for 1.5T HD Site

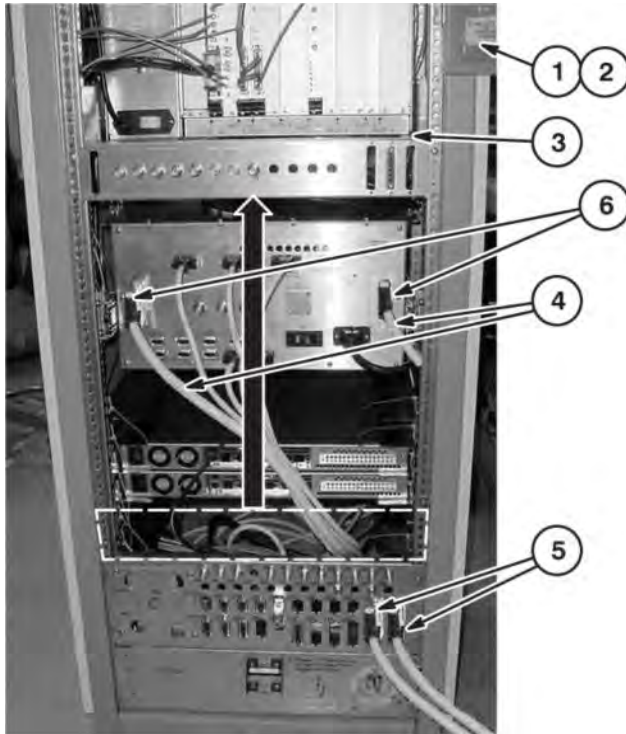
The 1.5T HD System Cabinet upgrade relocates the interface panel at the back of the cabinet and installs the new VRE modules and cables.

### 1.1.1 Relocate Service Power Panel



1. If Cryogen Meter is part of cabinet, de-install and return for recycling.
2. Service Power Panel has to be relocated down to new location.
3. Install Clip Nuts at the 3rd and 8th hole above the blank panel on each vertical rail.
4. Fasten the Panel in place using the same mounting hardware. There will be a gap between Service Power Panel and the blank panel below.
5. Cut tie-wraps holding Service Power Panel wires to vertical rail, re-position cables and tie-wrap as shown.

1.1.2 Upgrade Back of Cabinet



**Note:**  
 Remainder of cables connected to Interface panels are not shown for clarity.

1. De-install existing rear door and replace with new Rear Door (2394019-2).
2. Reconnect door ground wire.
3. Relocate Interface Panel to this location and align top of Panel to with bottom of RRF Chassis.
4. Disconnect and remove cables routed from:
  - Driver Module J5 to Interface Panel J61
  - Driver Module J10 to Interface Panel J66
5. Disconnect Runs 1030 and 1251 from J61 and J66 and relabel per instructions on table below.

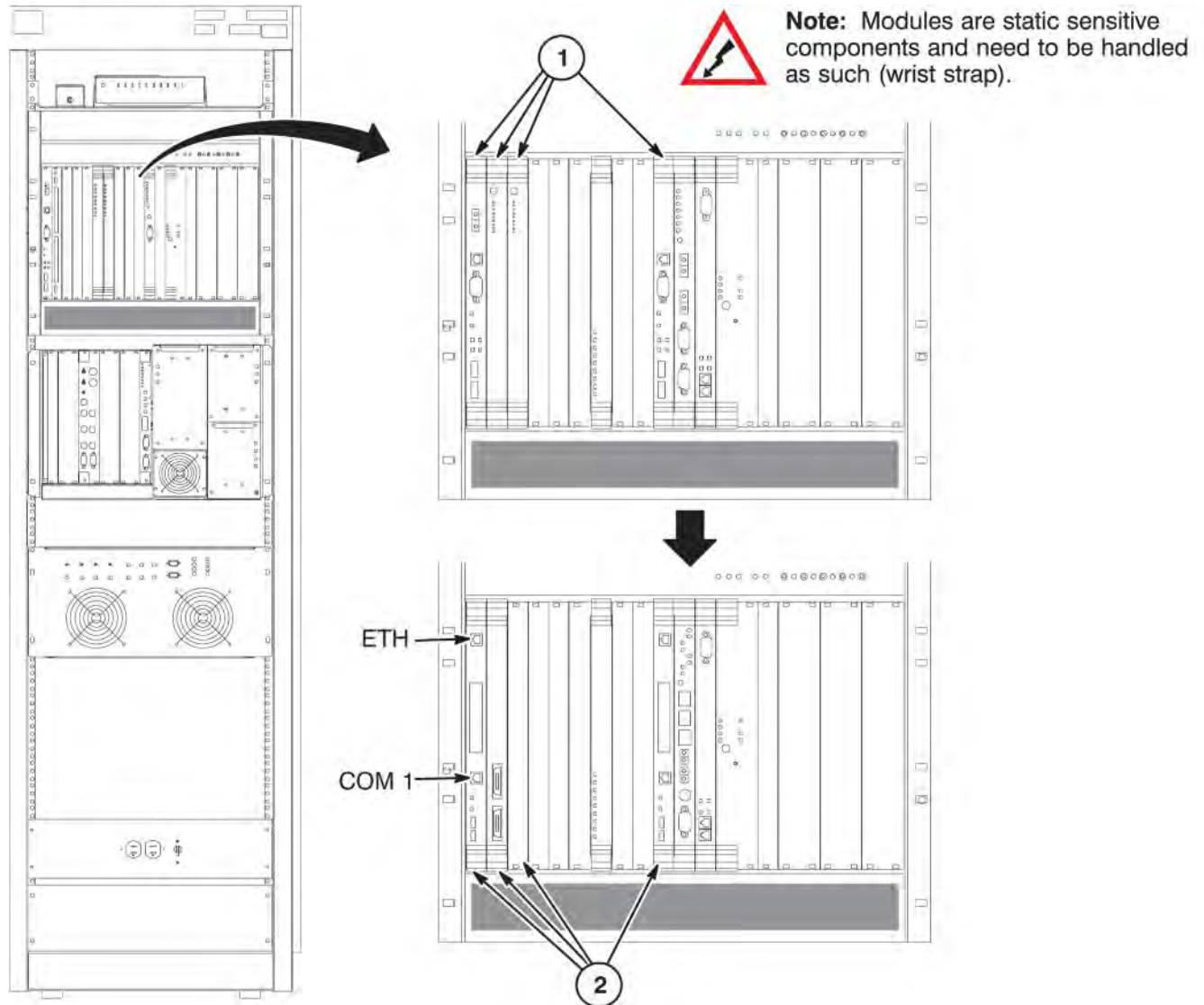
**Table 6-1: Relabel Runs 1030 and 1251**

ONE END		OTHER END	
OLD LABEL	NEW LABEL	OLD LABEL	NEW LABEL
RUN #1030 PP1-J78 2329624	RUN #1329 PP1-J78 5160765	RUN #1030 MR2-A11-J61 2329624	RUN #1329 MR2-DVR-J10 5160765
RUN #1251 PP1-J203 5113186-11	RUN #1330 PP1-J203 5160765-4	RUN #1251 MR2-J66 5113186-11	RUN #1330 MR2-DVR-J5 5160765-4

6. Route and connect relabeled Runs 1329 and 1330 directly to Driver Module and connect to J5 and J10 as marked.

### 1.1.3 Install New Modules in MGD Chassis - 1.5T

The following System Cabinet upgrade boards are only compatible with themselves and HD16.0V02 software or later:



1. De-install and return for harvest the following boards:

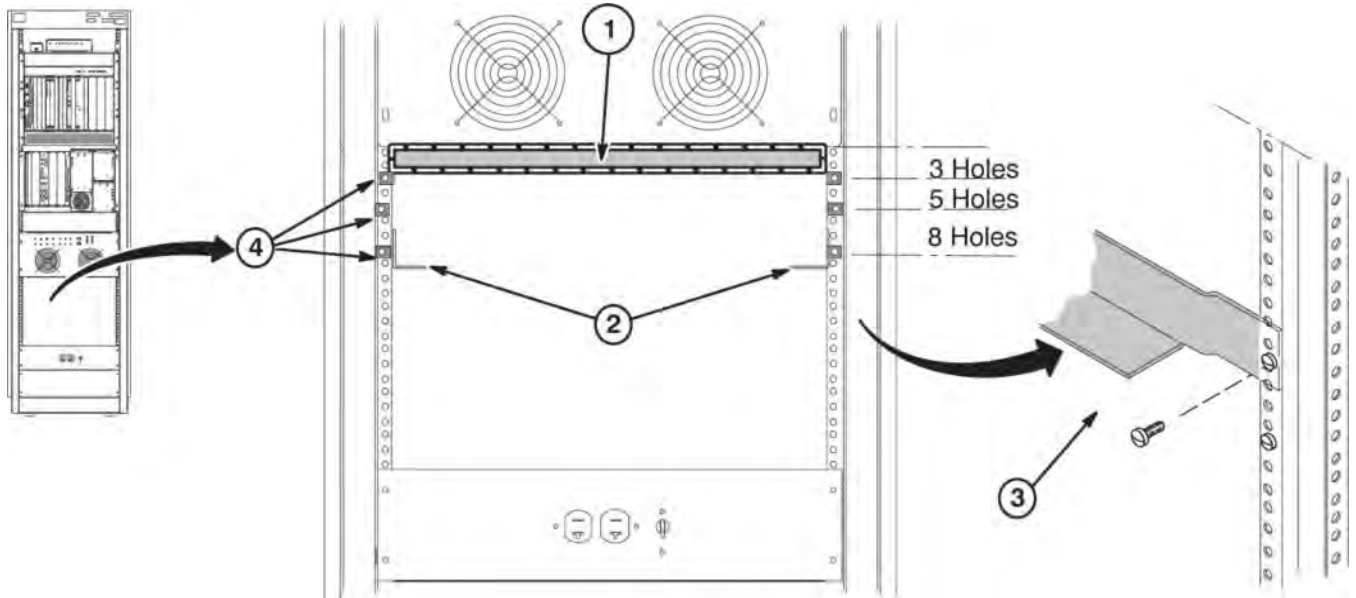
- Slot 1 - APS Board
- Slot 2 & 3 - AP Boards
- Slot 10 - AGP Board

2. Install the following new boards:

- Slot 1 - APS Board (2294300-18)
- Slot 2 - Infiniband Board (5139563)

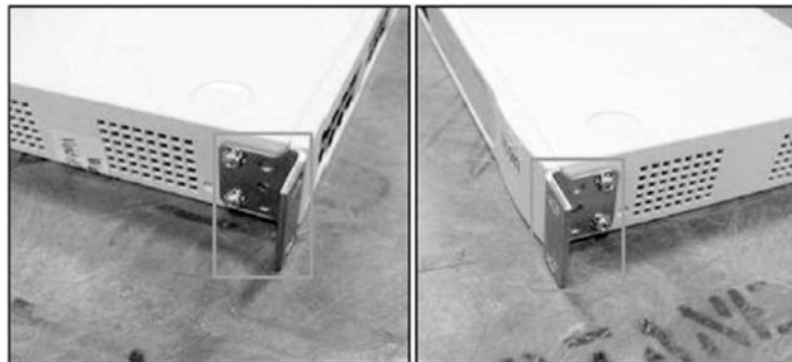
- Slot 3 - blank cover (2319152)
- Slot 10 - AGP Board (2294300-18)

**1.1.4 Install VRE Module Rails**

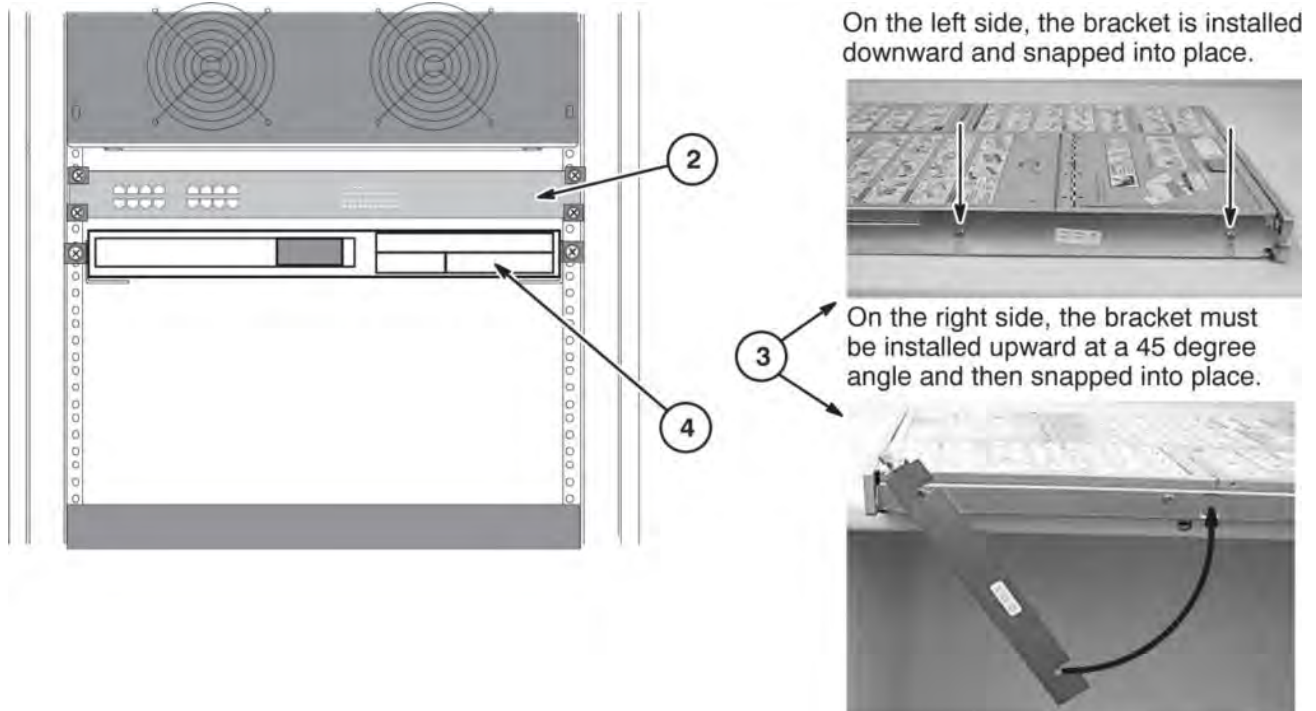


1. Make sure that the clip nuts are located below two mounting holes on the vertical rail. This area between Driver Module and Ethernet Switch will be used for routing cables from the Ethernet Switch to applicable modules.
2. Location of rails (5158758), one on each side, at the positions shown for the ICN Module.
3. Position rails behind vertical rails and attach with M5 Screws (2279742-2). Rails are attached at hole locations 8 of vertical rail.
4. For securing VRE modules - Install 3 Clip Nuts (2180698-2) on front of vertical rail on each side at locations indicated.

1.1.5 Install VRE Modules

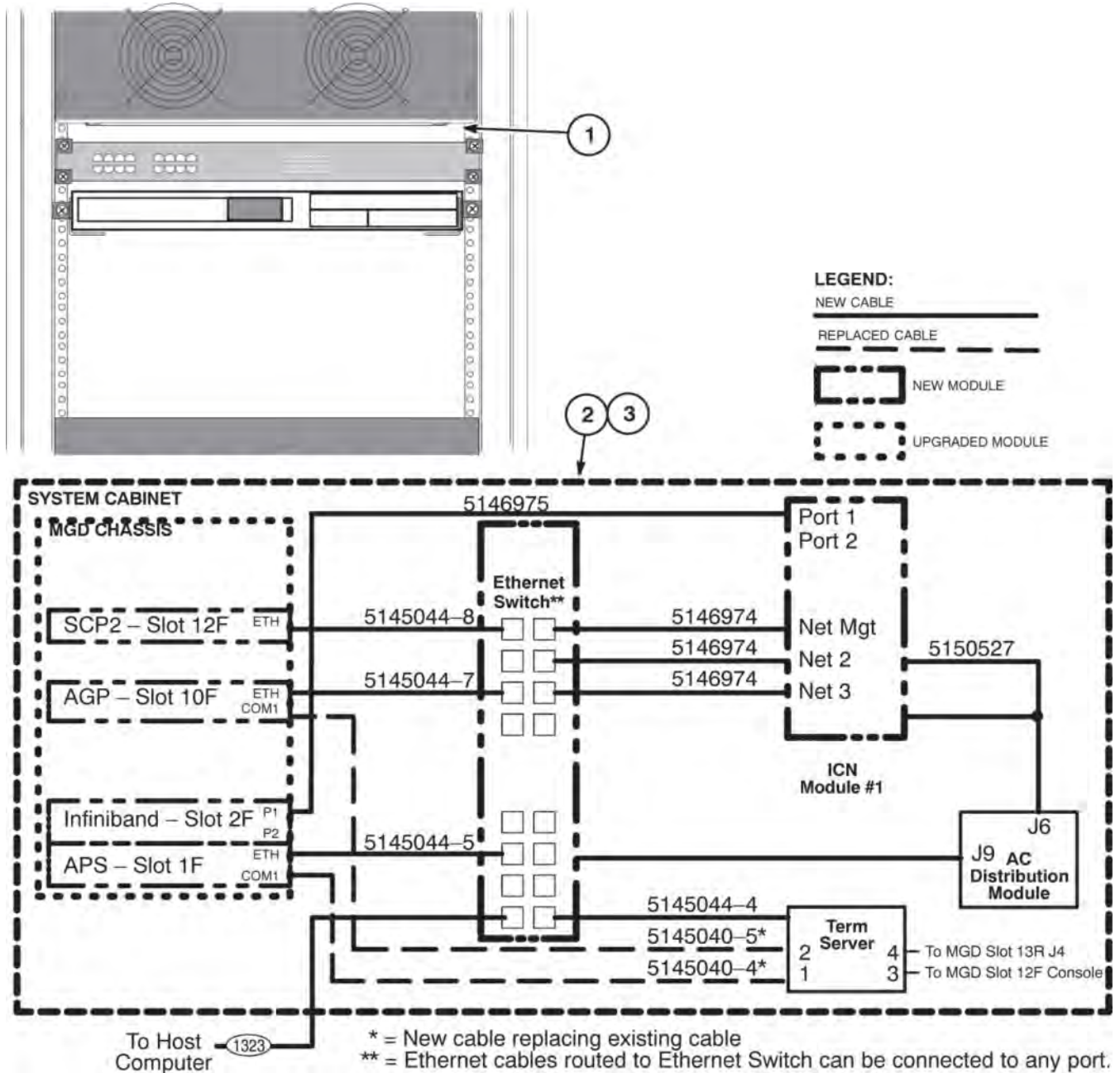


1. Install brackets on front corners of Ethernet Switch as shown. Hardware kit comes with unit.



2. Install Ethernet Switch at this location using M5 Screws (2279742-2).
3. Install two brackets on the ICN as shown. The brackets attach by snapping them into place.
4. Install ICN Module on Slide Rail at the location shown. Tighten the PEM screws on the ICN brackets to secure.

1.1.6 Install VRE Cables



Route and connect new VRE Cables as shown below.

1. All cables connecting between Ethernet Switch and ICN Module must be routed thru area above Ethernet Switch. Ethernet cables routed to Ethernet Switch can be connected to any ethernet port.
2. Route and connect new VRE Cables as shown below. Cables 5145040-4 and 5145040-5 are replacing existing cables. Make sure 5146975 is connected to P1 (Port 1) and not P2 on the back of the ICN.

3. Use power cable supplied with Ethernet Switch and connect to J9.

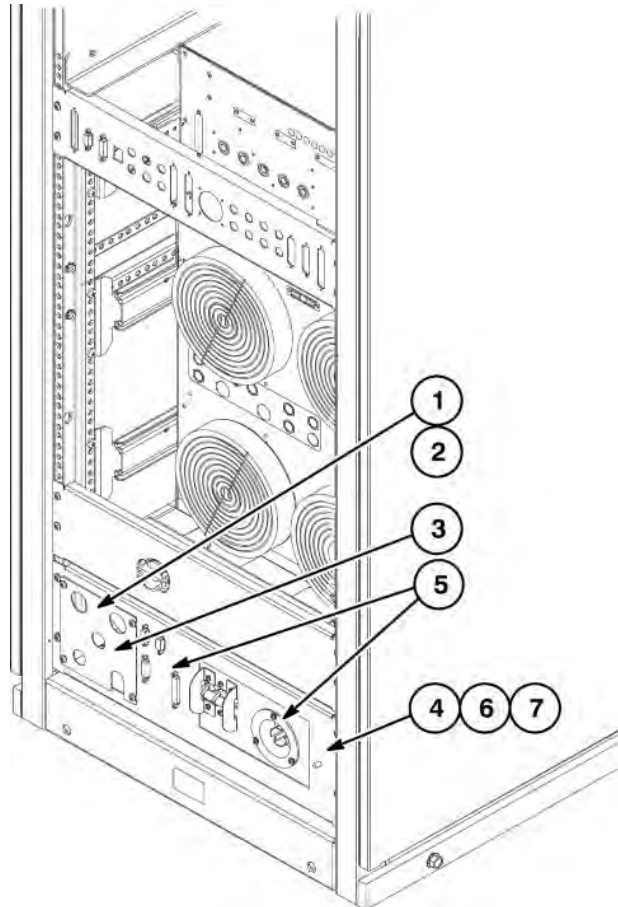
**NOTE:** Any existing cables connected to the MGD Chassis, or any other modules, that are not identified below should remain connected. They are not affected by this upgrade.

4. Secure all modules in place with supplied fastening hardware.

## 1.2 RF/System Cabinet Upgrade Instructions for 1.5T HD Site

The 1.5T RFS Cabinet upgrade replaces and relocates the interface panel at the back of the cabinet and installs the new VRE modules and cables.

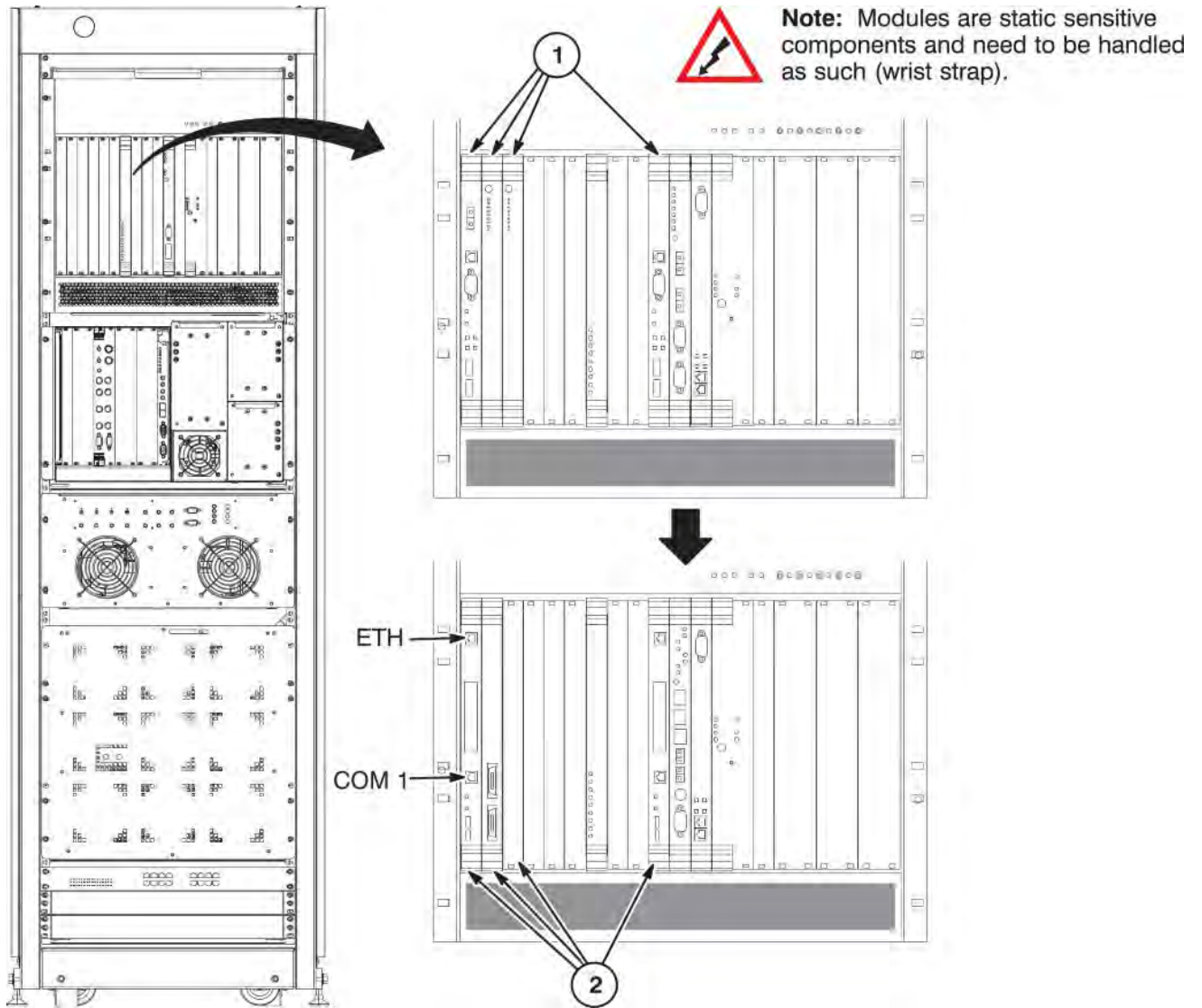
### 1.2.1 De-install Existing Power Panel at Back of Cabinet



1. Disconnect all fiber optic leads connected to modules within cabinet.
2. Unfasten fiber optic connectors from mounting plate. Save Mounting Plate for reconnecting fiber optic conduits at new location.
3. Unfasten, remove, and save fiber optic mounting plate. Plate will be installed on new Interface Panel.
4. Remove ground cable and save nut. Remove screws on right side of Power Panel and loosen, but do not remove, screws on left side of panel.
5. Disconnect all power and data cables connected to Interface panel, both inside and outside of cabinet. Use care to capture data cable hardware.
6. Unfasten remaining screws securing Power Panel to cabinet and de-install panel.
7. Return Power Panel for recycling.

**1.2.2 Install New Modules in MGD Chassis - 1.5T**

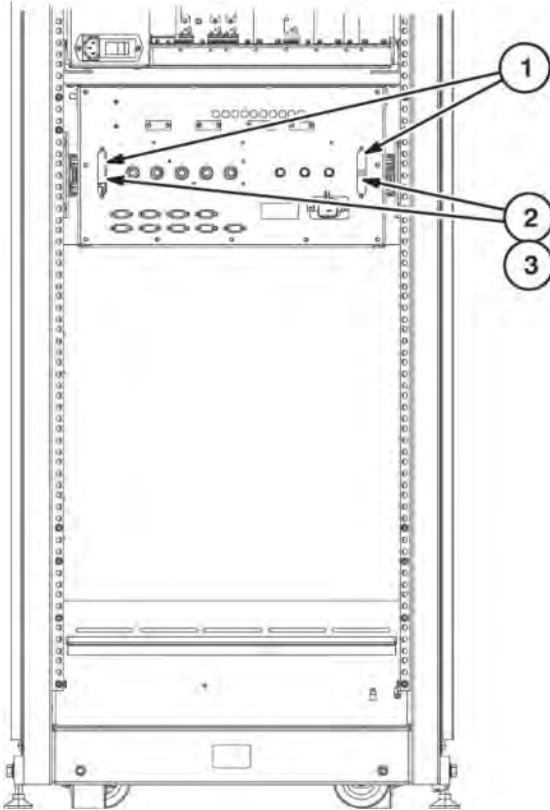
The following RFS Cabinet upgrade boards are only compatible with themselves and HD16.0V02 software or later:



1. De-install and return for harvest the following boards:
  - Slot 1 - APS Board
  - Slot 2 & 3 - AP Boards
  - Slot 10 - AGP Board
2. Install the following new boards:
  - Slot 1 - APS Board (2294300-18)

- Slot 2 - Infiniband Board (5139563)
- Slot 3 - blank cover (2319152)
- Slot 10 - AGP Board (2294300-18)

**1.2.3 Relabel and Swap Driver Module Cables at J5 and J10**



**Note:**  
 Relabeled cables are swapped from original connections.

1. Disconnect Runs 1189 and 1190 from J5 and J10 on Driver Module.
2. Relabel ends of cables with instructions provided in table below.

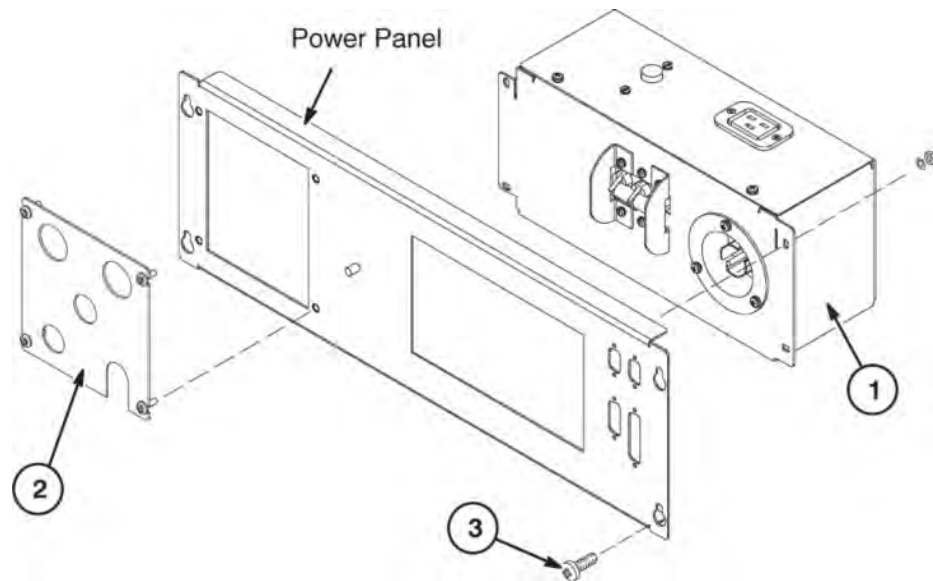
**Table 6-2: Relabel Runs 1189 and 1190**

ONE END		OTHER END	
OLD LABEL	NEW LABEL	OLD LABEL	NEW LABEL
RUN #1189 PP1-J78 5113186-2	RUN #1329 PP1-J78 5160765	RUN #1189 MR2-DVR-J5 5113186-2	RUN #1329 MR2-DVR-J10 5160765
RUN #1190 PP1-J203 5113186-5	RUN #1330 PP1-J203 5160765-4	RUN #1190 MR2-DVR-J10 5113186-5	RUN #1330 MR2-DVR-J5 5160765-4

3. Connect cable Run 1329 (J10) and Run 1330 (J5) to Driver Module per new label information.

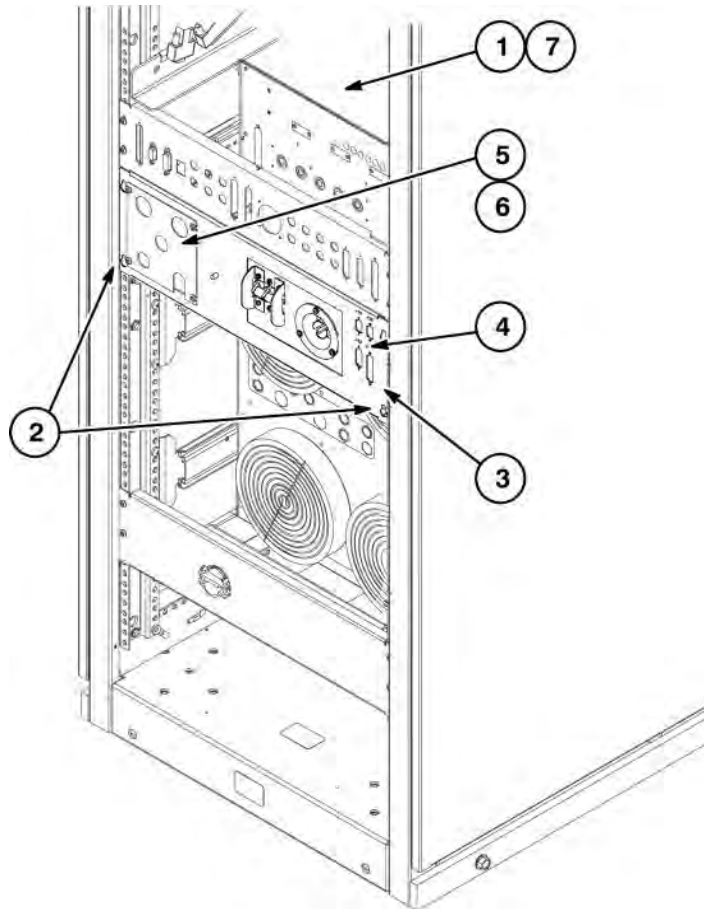
**NOTE:** Cables are swapped from their original positions.

### 1.2.4 Assemble New Power Panel



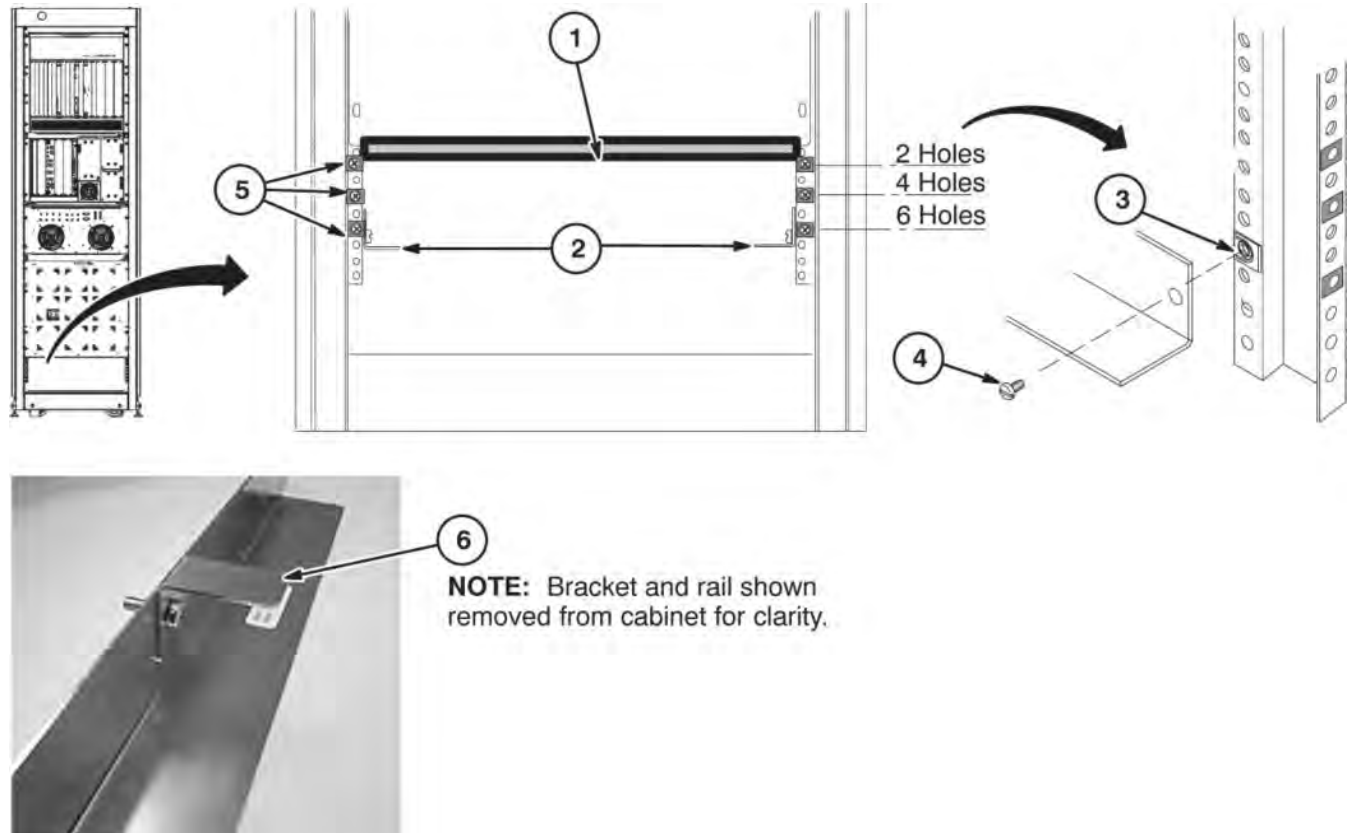
1. Attach AC Distribution Box (5139347) to Power Panel (5147682) using four M4 Nuts (46-328425P1) and four M4 Lock Washers (46-328433P2).
2. Attach Fiber Optic Mounting Plate, transferred from de-installed Interface Panel, with existing hardware.
3. New Interface Panel Assembly will be attached to cabinet using four M5 x 12mm Flat Head Screws.

### 1.2.5 Install New Power Panel at Back of Cabinet



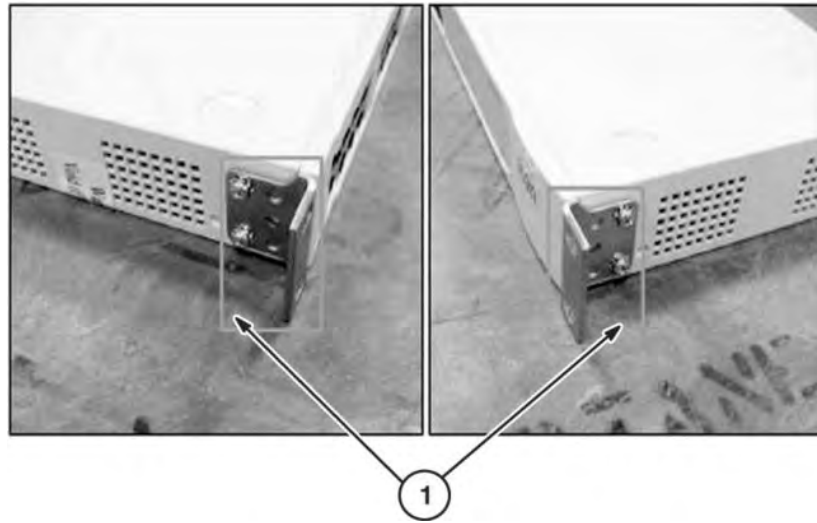
1. Remove screws retaining Driver Module at front of cabinet and extend Driver Module from cabinet 2 to 3 inches (50 to 75mm).
2. Position four Nut Clips (2180698-2), two on each vertical rail, so that new Interface Panel Assembly can be mounted directly below existing I/O Panel.
3. Attach Interface Panel Assembly using four M5 x 12mm (46-312234P46) Flat Head Screws.  
**NOTE:** If required, reroute Multicoil Driver cables to left and/or right side of cabinet to make room for new panel assembly.
4. Connect all previously disconnected power and data cables to Interface panel, both inside and outside of cabinet.
5. Re-attach fiber optic conduits, Runs 1034 and 1045, to fiber optic plate. Run 1083 has been deleted from this upgrade and is not re-installed.
6. Route and re-connect all fiber optic lead to modules within cabinet.
7. Reinstall Driver Module.

### 1.2.6 Install VRE Module Rails



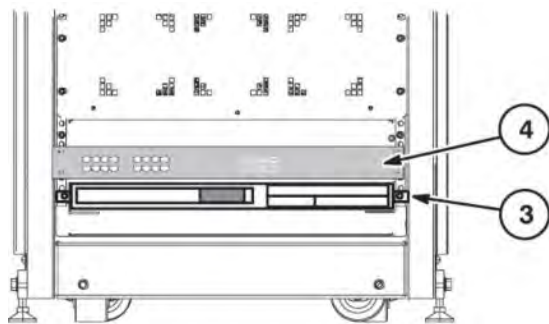
1. Make sure that the clip nuts are located below one mounting hole on the vertical rail. This area between RF chassis and Ethernet Switch will be used for routing cables from the Ethernet Switch to applicable modules.
2. Location of Rails (5306484), one on each side.
3. Position four Nut Clips (2180698-2), one on each vertical rail, at front and rear of cabinet, at locations shown.
4. Attach Rails using M5 x 12mm (46-312234P46) Flat Head Screws. Rails are attached at hole locations 6 of vertical rail.
5. Install 3 Clip Nuts (2180698-2) on front surface of each front vertical rail at locations indicated.
6. Install one (5306487) L-brackets at the back of the cabinet on top rail only.

1.2.7 Install VRE Module



1. Install brackets on front corners of Ethernet switch as shown. Hardware kit comes with unit.

On the left side, the bracket is installed downward and snapped into place.

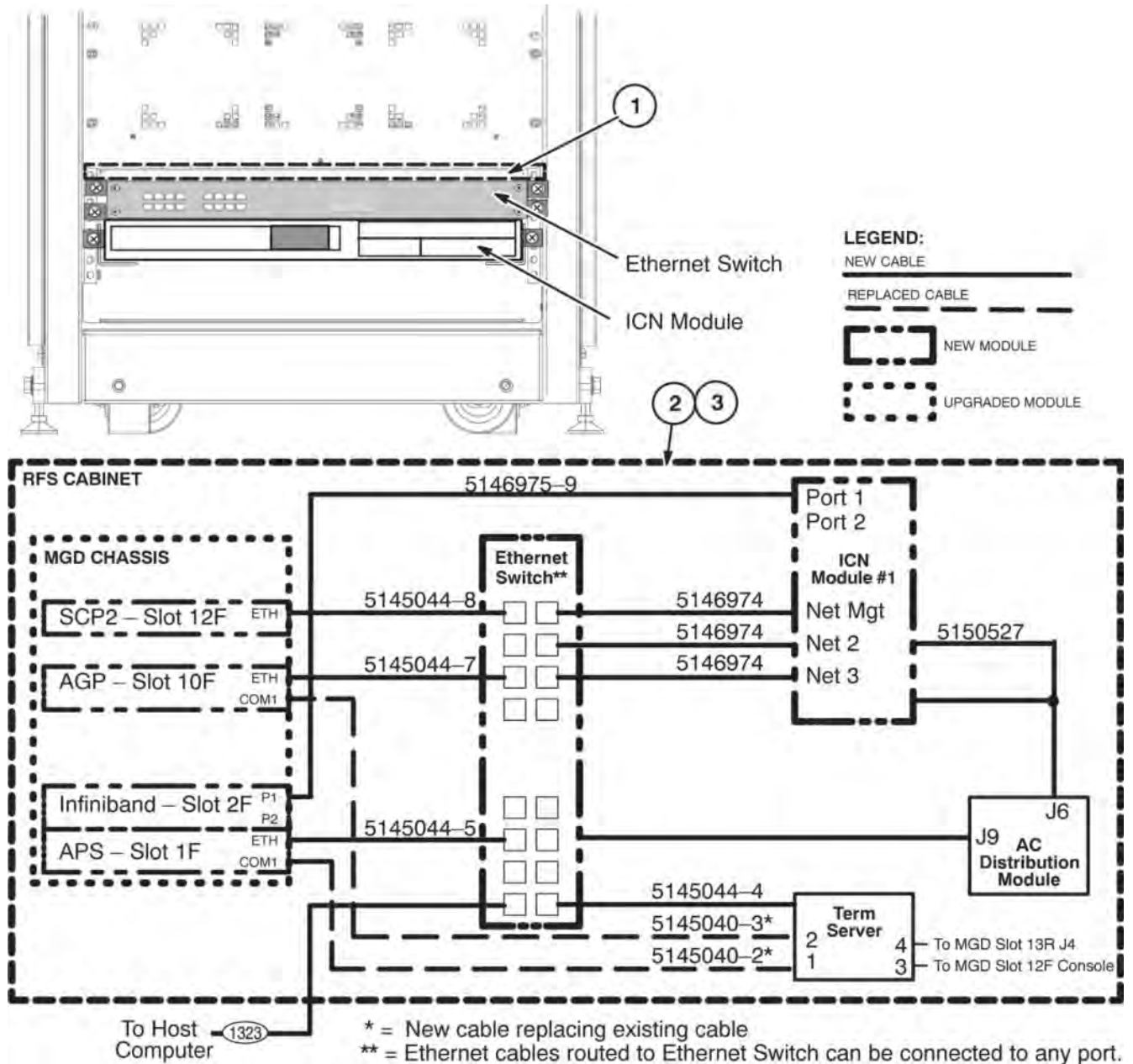


On the right side, the bracket must be installed upward at a 45 degree angle and then snapped into place.



2. Install two brackets on the ICN as shown.
3. Install ICN Module on Top Rail at the location shown. Tighten PEM screws on the ICN brackets to secure.
4. Install Ethernet Switch at this location. Make sure power switch is turned on.

1.2.8 Install VRE Cables



1. All cables connecting between Ethernet Module and ICN Module must be routed thru area above Ethernet Switch. Ethernet cables routed to Ethernet Switch can be connected to any ethernet port.
2. Route and connect new VRE Cables as shown below. Cables 5145040-2 and 5145040-3 are replacing existing cables. Make sure 5146975 is connected to P1 (Port 1) and not P2 on the back of the ICN.
3. Use power cable supplied with Ethernet Switch and connect to J9.

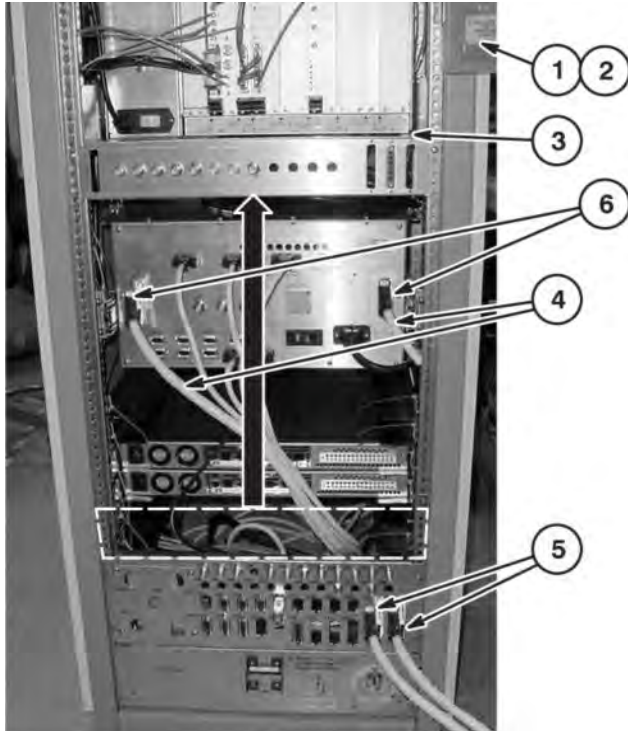
**NOTE:** Any existing cables connected to the MGD Chassis, or any other modules, that are not identified in illustration should remain connected. They are not affected by this upgrade.

4. Secure all modules in place with supplied fastening hardware.

### 1.3 System Cabinet Upgrade Instructions for 3.0T HD Site

The 3.0T HD System Cabinet upgrade relocates the interface panel at the back of the cabinet and installs the new VRE modules and cables.

#### 1.3.1 Upgrade Back Of Cabinet



**Note:**  
 Remainder of cables connected to Interface panels are not shown for clarity.

1. De-install existing rear door and replace with new Rear Door (2394019-2).
2. Reconnect door ground wire.
3. Relocate Interface Panel to this location and align top of Panel to with bottom of RRF Chassis.
4. Disconnect and remove cables routed from:
  - Driver Module J5 to Interface Panel J61
  - Driver Module J10 to Interface Panel J66
5. Disconnect Runs 1030 and 1251 from J61 and J66 and relabel per instructions on table below.

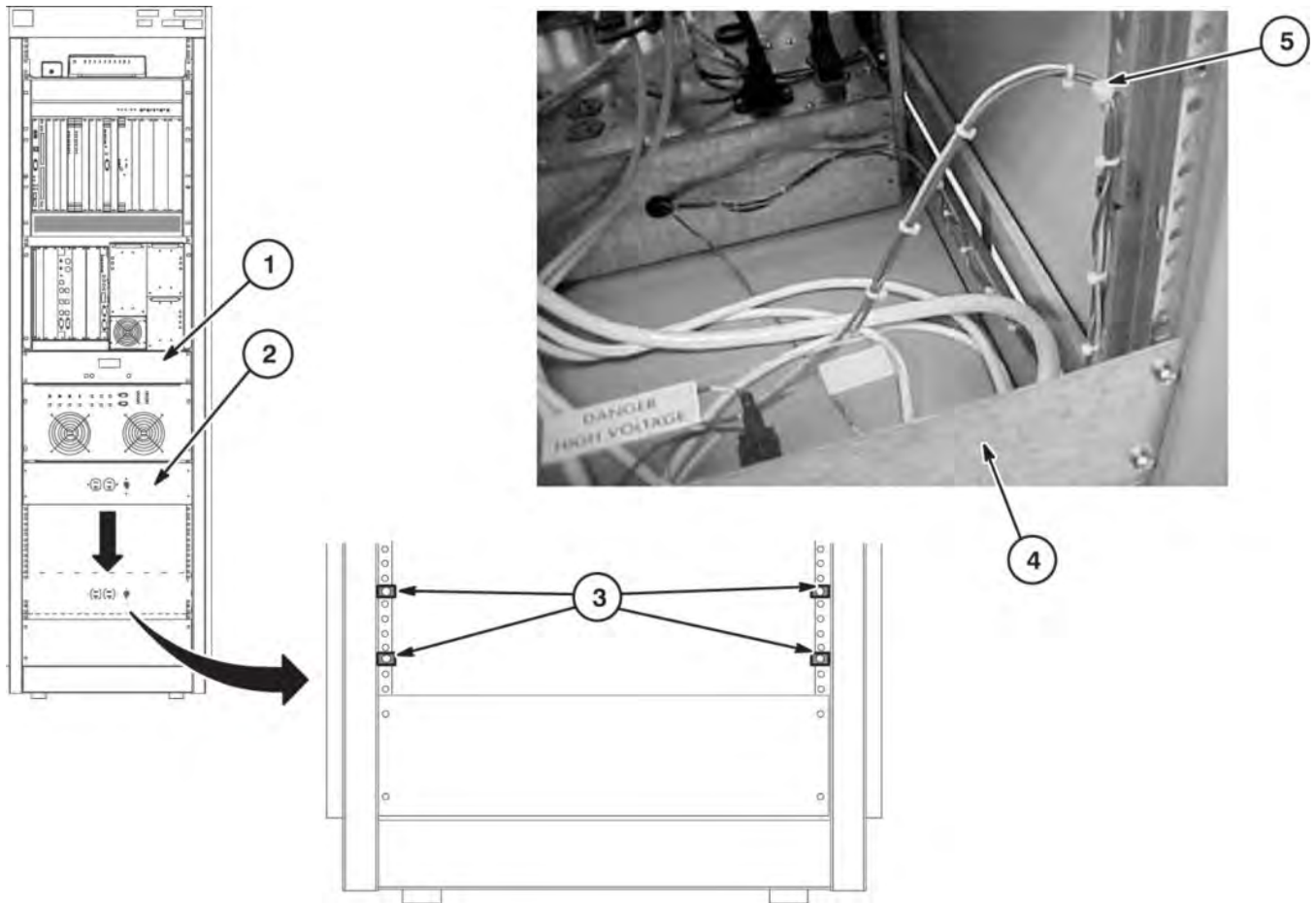
**Table 6-3: Relabel Runs 1030 and 1251**

ONE END		OTHER END	
OLD LABEL	NEW LABEL	OLD LABEL	NEW LABEL
RUN #1030 PP1-J78 2329624	RUN #1329 PP1-J78 5160765	RUN #1030 MR2-A11-J61 2329624	RUN #1329 MR2-DVR-J10 5160765

ONE END		OTHER END	
OLD LABEL	NEW LABEL	OLD LABEL	NEW LABEL
RUN #1251 PP1-J203 5113186-11	RUN #1330 PP1-J203 5160765-4	RUN #1251 MR2-J66 5113186-11	RUN #1330 MR2-DVR-J5 5160765-4

- Route and connect relabeled Runs 1329 and 1330 directly to Driver Module and connect to J5 and J10 as marked.

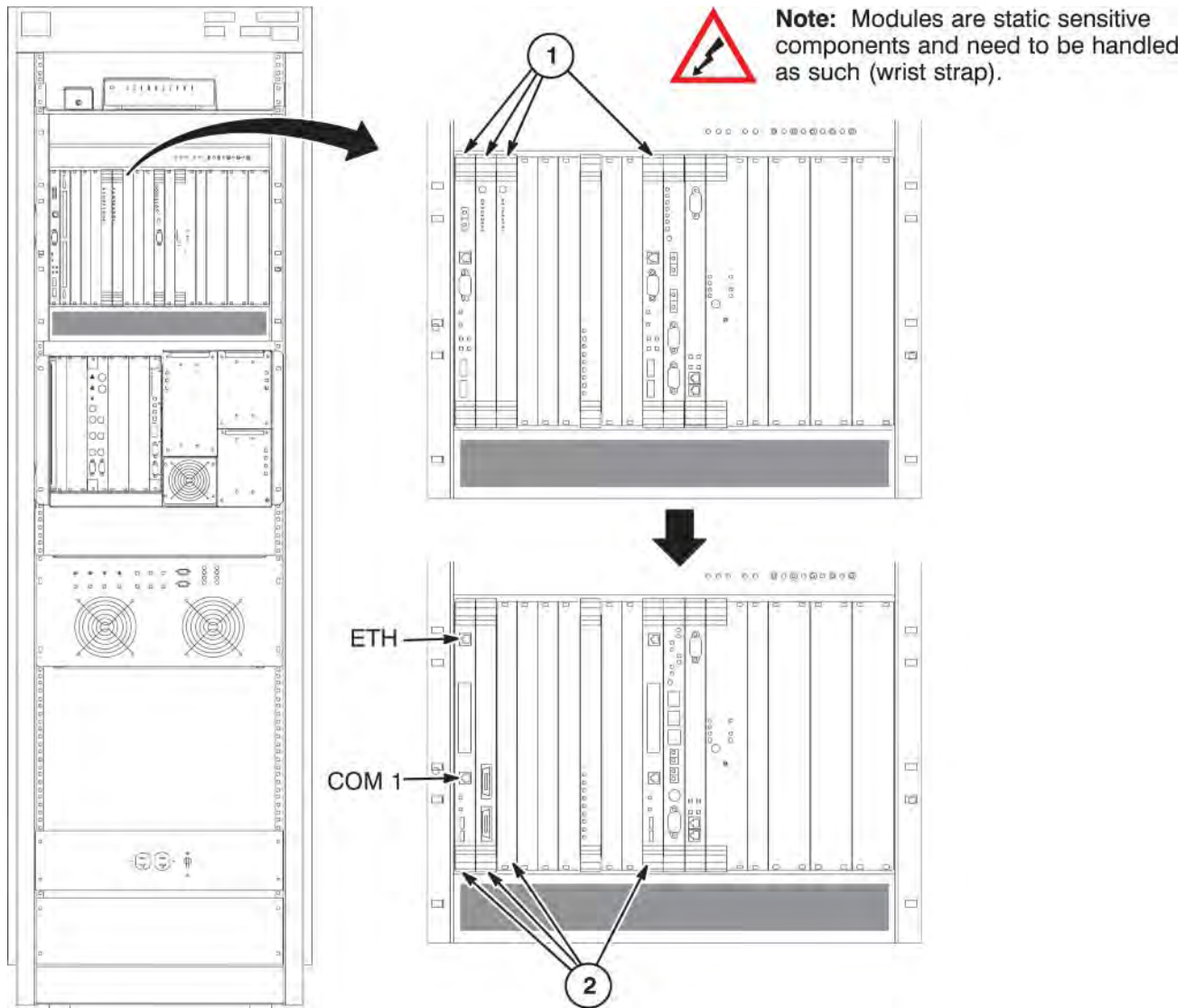
### 1.3.2 Relocate Service Power Panel



- If Cryogen Meter is part of cabinet, de-install and return for recycling.
- Service Power Panel has to be relocated down to new location.
- Install Clip Nuts at the 3rd and 8th hole above the blank panel on each vertical rail.
- Fasten the Panel in place using the same mouting hardware. There will be a gap between Service Power Panel and the blank panel below.
- Cut tie-wraps holding Service Power Panel wires to vertical rail, re-postion cables and tie-wrap as shown.

### 1.3.3 Install New Modules in MGD Chassis - 3.0T

The following RFS / System Cabinet upgrade boards are only compatible with themselves and HD16.0V02 software or later:



1. De-install and return for harvest the following boards:

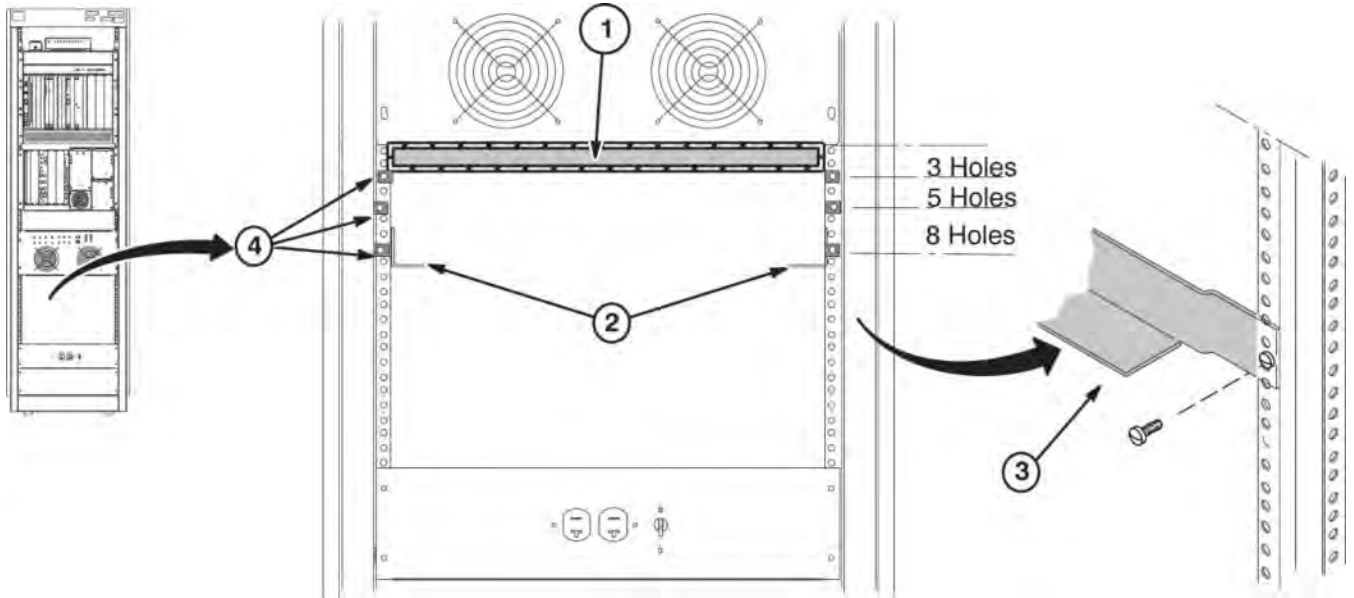
- Slot 1 - APS Board
- Slot 2 & 3 - AP Boards
- Slot 10 - AGP Board

2. Install the following new boards:

- Slot 1 - APS Board (2294300-18)
- Slot 2 - Infiniband Board (5139563)

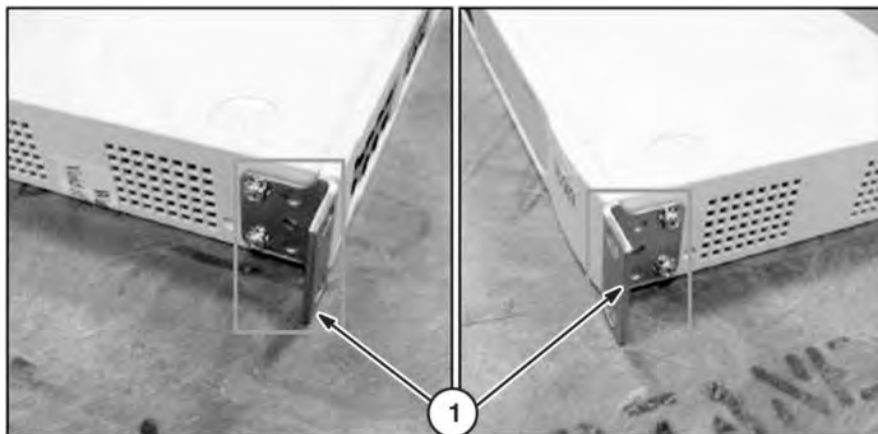
- Slot 3 - blank cover (2319152)
- Slot 10 - AGP Board (2294300-18)

**1.3.4 Install VRE Module Rails**

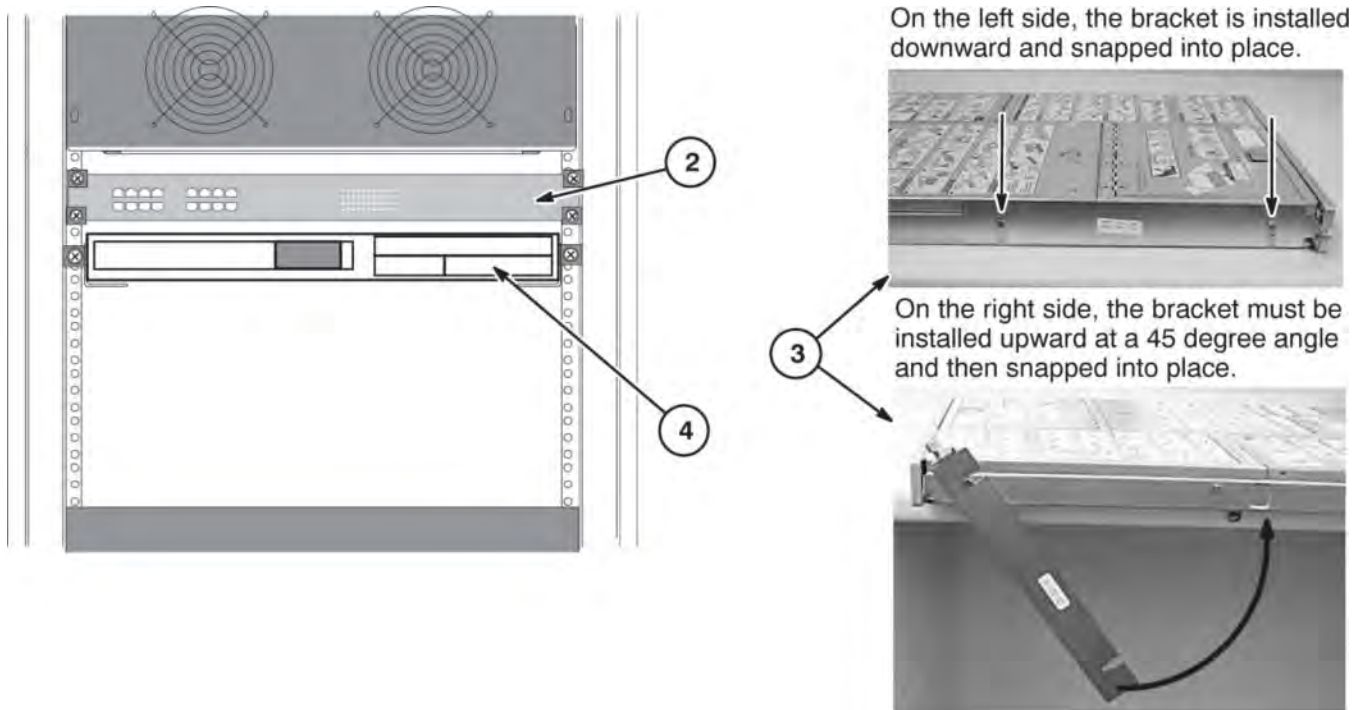


1. Make sure that the clip nuts are located below two mounting holes on the vertical rail. This area between Driver Module and Ethernet Switch will be used for routing cables from the Ethernet Switch to applicable modules.
2. Location of rails (5158758), one on each side, at the positions shown for the ICN Module.
3. Position rails behind vertical rails and attach with M5 Screws (2279742-2). Rails are attached at hole location 8 of vertical rail.
4. For securing VRE modules - Install 3 Clip Nuts (2180698-2), on front of vertical rail on each side at locations indicated.

**1.3.5 Install VRE Modules**

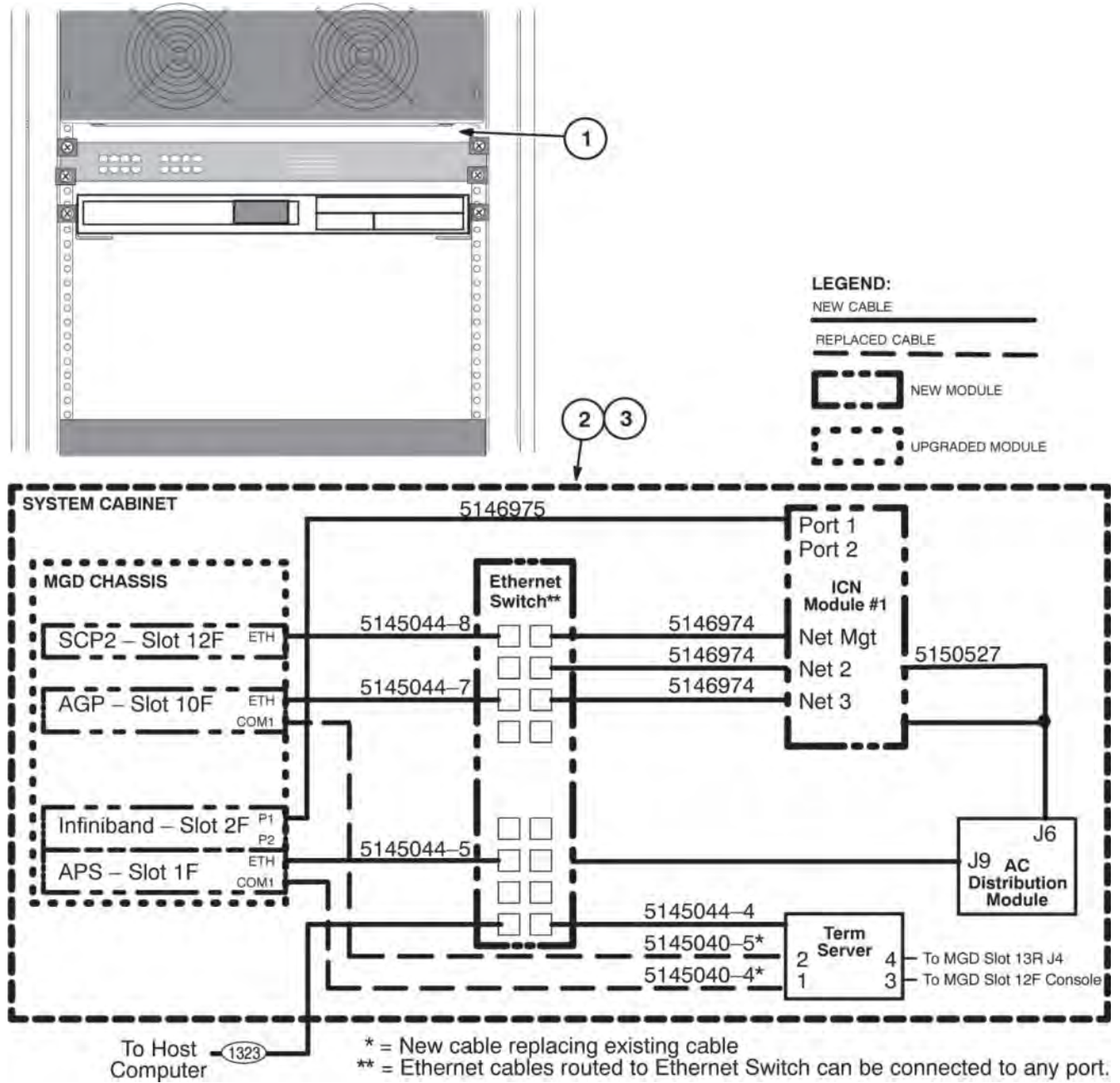


1. Install brackets on front corners of Ethernet Switch as shown. Hardware kit comes with unit.



2. Install Ethernet Switch at this location using Clip Nuts and M5 Screws (2279742-2).
3. Install two brackets on the ICN as shown.
4. Install ICN Module on Rail at the location.

1.3.6 Install VRE Cables



1. All cables connecting between Ethernet Module and ICN Modules must be routed thru area above Ethernet Switch. Ethernet cables routed to Ethernet Switch can be connected to any ethernet port.
2. Route and connect new VRE Cables as shown below. Cables 5145040-4 and 5145040-5 are replacing existing cables. Make sure 5146975 is connected to P1 (Port 1) and not P2 on the back of the ICN.
3. Use power cable supplied with Ethernet Switch (not shown) and connect to J9.

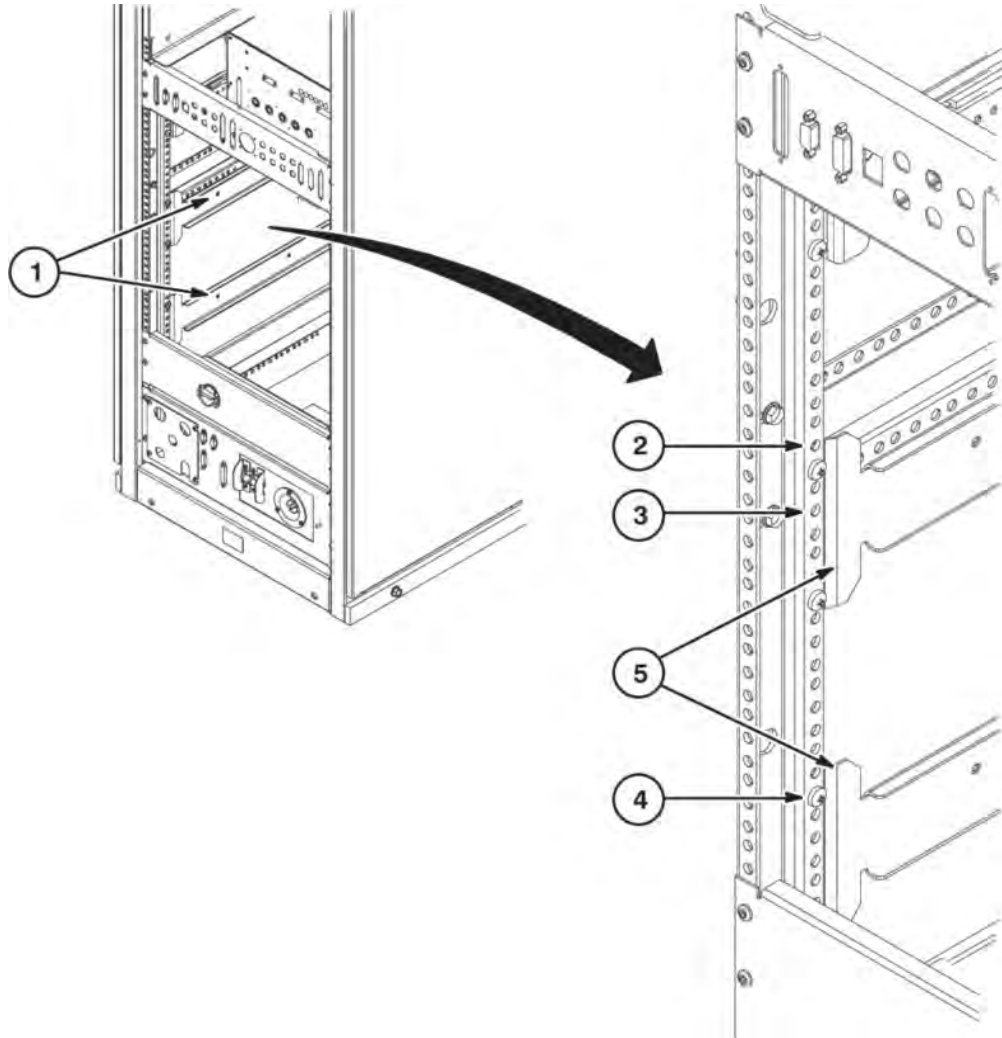
**NOTE:** Any existing cables connected to the MGD Chassis, or any other modules, that are not identified below should remain connected. They are not affected by this upgrade.

4. Secure all modules in place with supplied fastening hardware.

## 1.4 RF/System Cabinet Upgrade Instructions for 3.0T HD Site

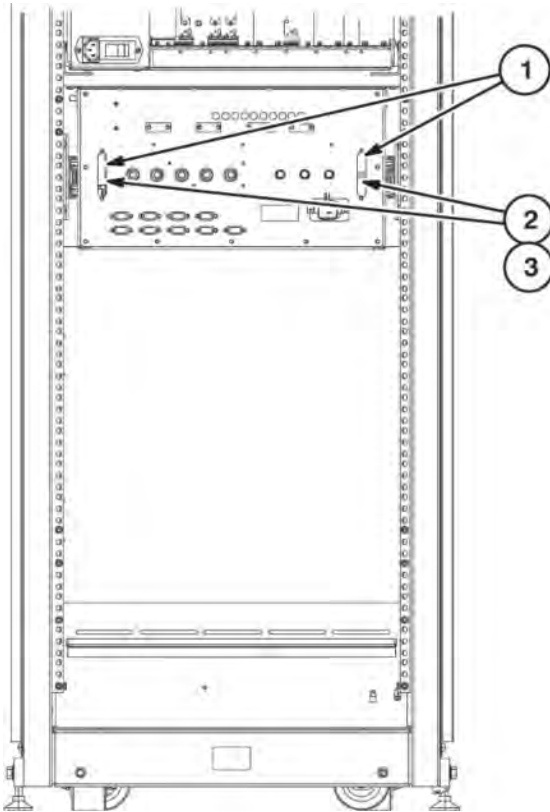
The 3.0T RFS Cabinet upgrade removes rails inside of the cabinet and installs the new VRE modules and cables.

### 1.4.1 De-install Lower Rails Inside of Cabinet



1. The two sets of rails on the left and right side of the cabinet have to be removed for the upgrade. **Before removing rails, the hole locations for the new VRE brackets have to be located and marked.**
2. Mark the hole on front and back vertical channels directly above the existing screw on the rail to be removed.
3. Mark the third hole down from the above marked hole on front and back vertical channels.
4. Mark the hole of the existing top screw of the lower rail on front and back vertical channels.
5. After all hole locations have been marked, remove the two sets of existing rails.

**1.4.2 Relabel And Swap Driver Module Cables At J5 And J10**



**Note:**  
 Relabeled cables are swapped from original connections.

1. Disconnect Runs 1189 and 1190 from J5 and J10 on Driver Module.
2. Relabel ends of cables with instructions provided in table below.

**Table 6-4: Relabel Runs 1189 and 1190**

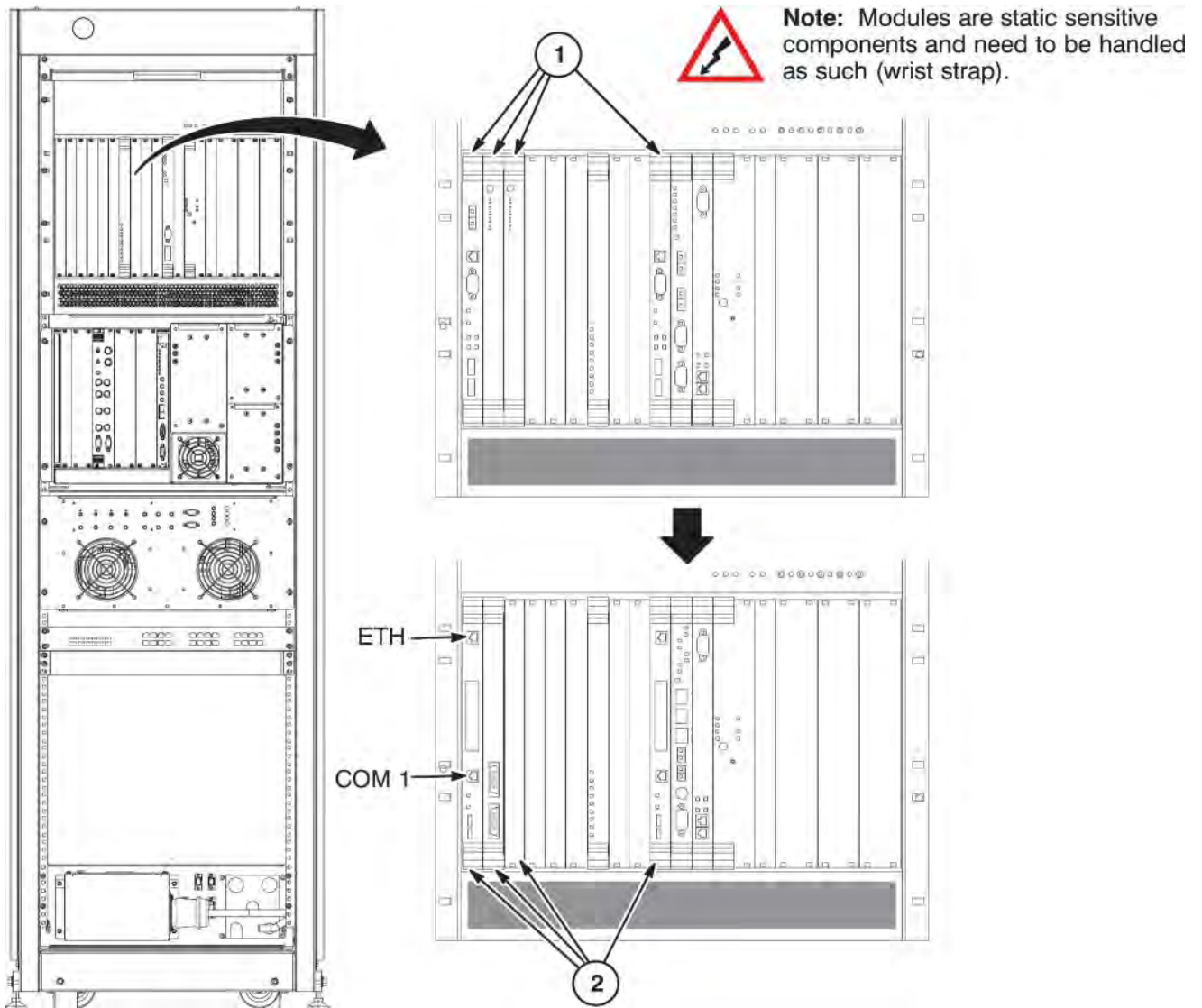
ONE END		OTHER END	
OLD LABEL	NEW LABEL	OLD LABEL	NEW LABEL
RUN #1189 PP1-J78 5113186-2	RUN #1329 PP1-J78 5160765	RUN #1189 MR2-DVR-J5 5113186-2	RUN #1329 MR2-DVR-J10 5160765
RUN #1190 PP1-J203 5113186-5	RUN #1330 PP1-J203 5160765-4	RUN #1190 MR2-DVR-J10 5113186-5	RUN #1330 MR2-DVR-J5 5160765-4

3. Connect cable Run 1329 (J10) and Run 1330 (J5) to Driver Module per new label information.

**NOTE:** Cables are swapped from their original positions.

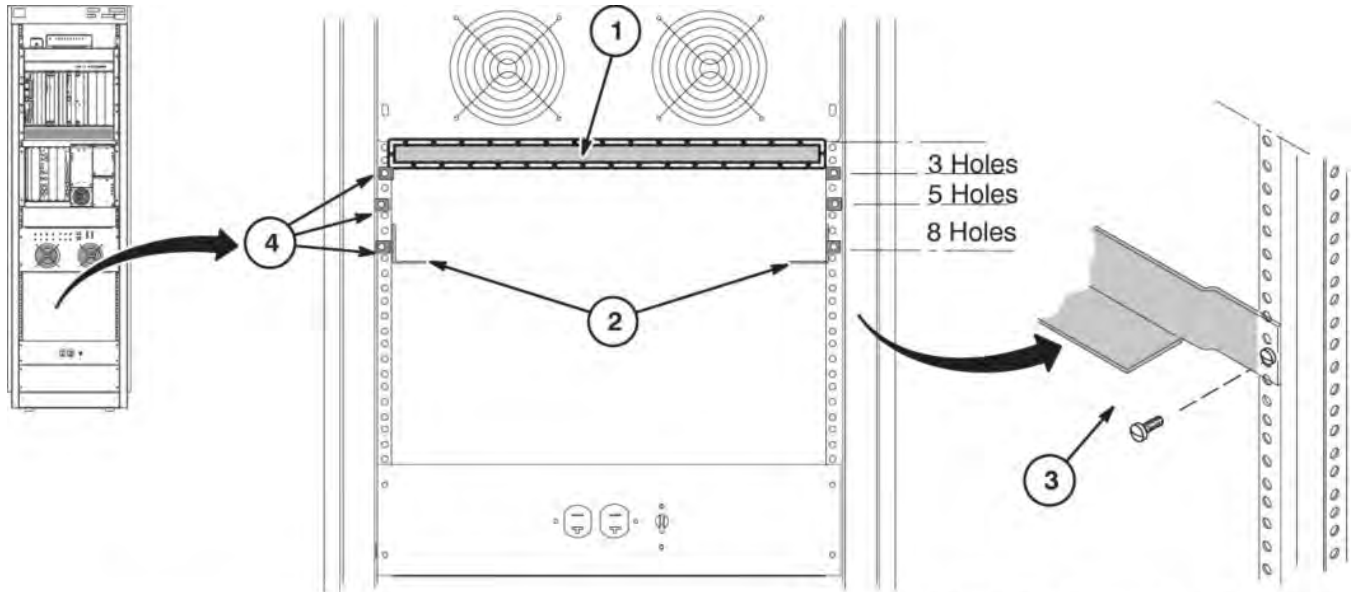
**1.4.3 Install New Modules in MGD Chassis - 3.0T**

The following RFS / System Cabinet upgrade boards are only compatible with themselves and HD16.0V02 software or later:



1. De-install and return for harvest the following boards:
  - Slot 1 - APS Board
  - Slot 2 & 3 - AP Boards
  - Slot 10 - AGP Board
2. Install the following new boards:
  - Slot 1 - APS Board (2294300-18)
  - Slot 2 - Infiniband Board (5139563)
  - Slot 3 - blank cover (2319152)
  - Slot 10 - AGP Board (2294300-18)

1.4.4 Install VRE Module Rails



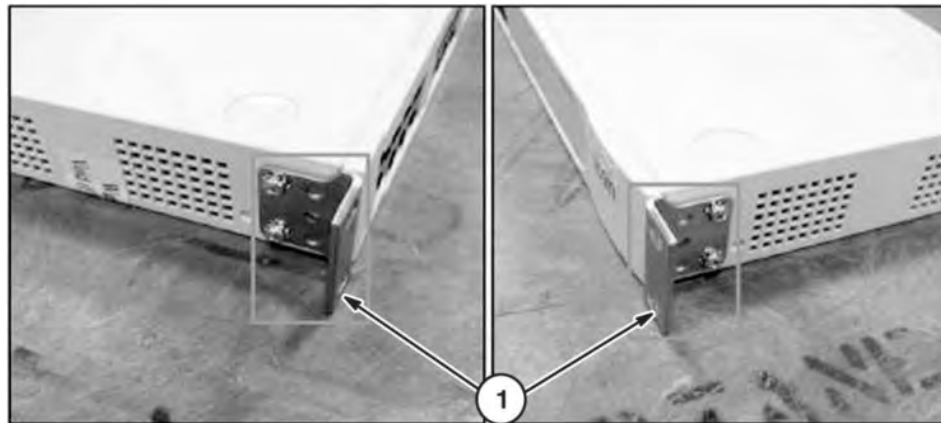
**NOTE:** The lower rail on each side is installed now for future installation of additional VRE options.



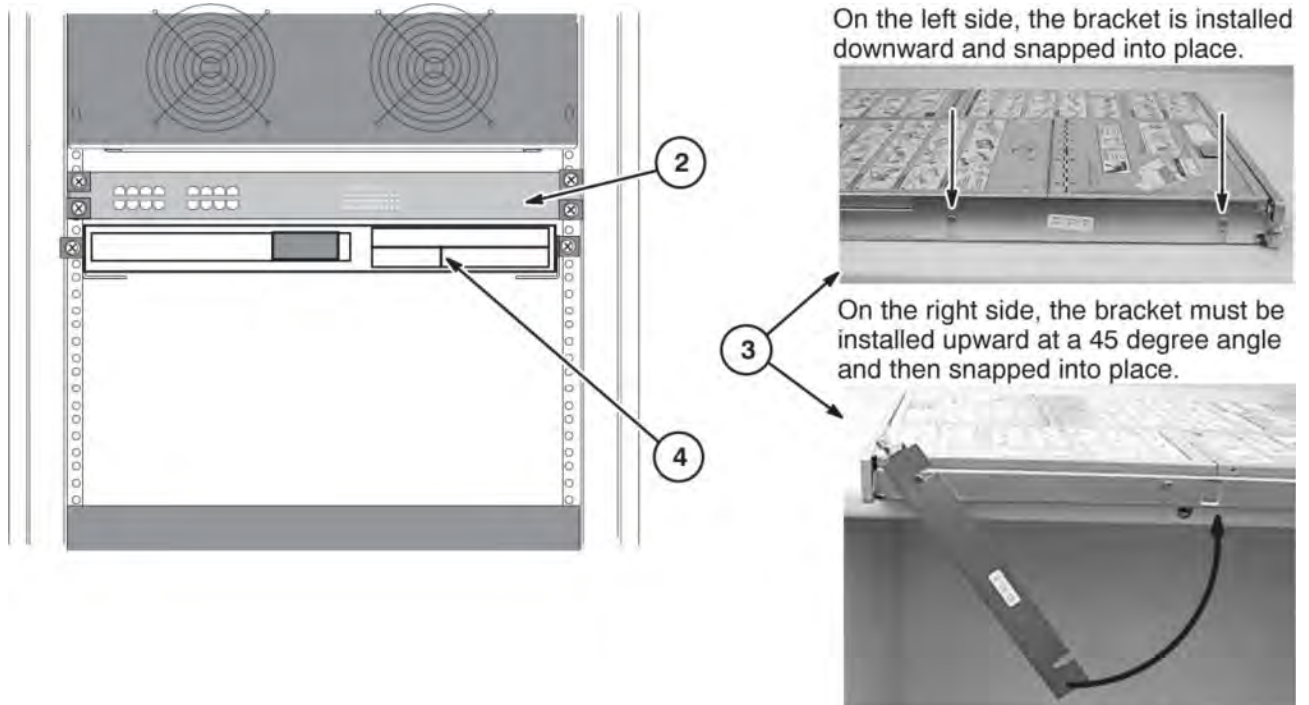
**NOTE:** Bracket and rail shown removed from cabinet for clarity.

1. Make sure that the clip nuts are located below two mounting holes on the vertical rail. This area between Driver Module and Ethernet Switch will be used for routing cables from the Ethernet Switch to applicable modules.
2. Location of rails (5306484), one on each side, at the positions shown for the ICN Modules.
3. Position rails behind vertical rails and attach with M5 Screws (2279742-2). Rails are attached at hole location 8 of vertical rail.
4. For securing VRE modules - Install 3 Clip Nuts (2180698-2) on front of vertical rail on each side at locations indicated.
5. Install two (5306487) L-brackets at the back of the cabinet on top rail only.

### 1.4.5 Install VRE Modules

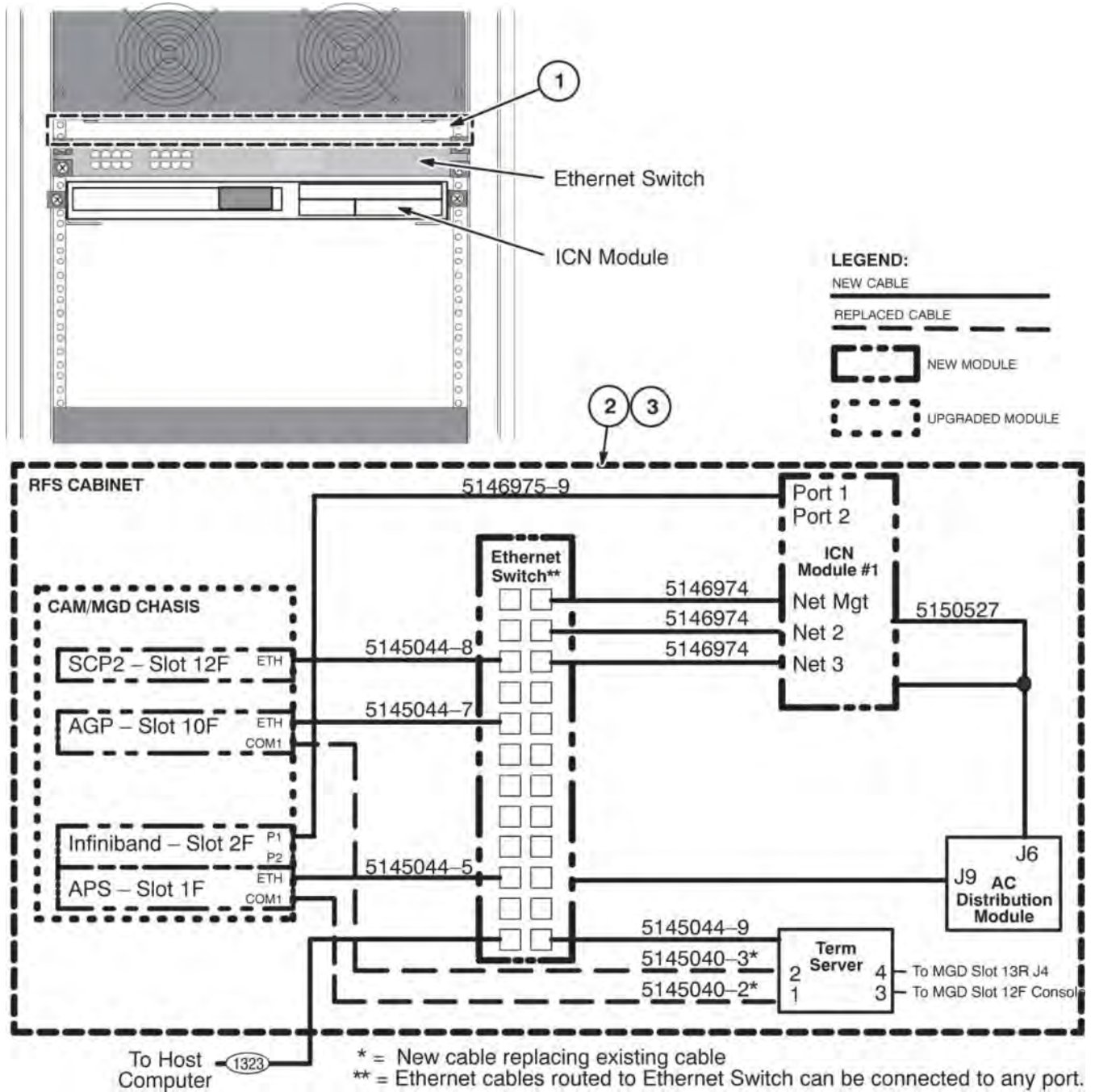


1. Install brackets on front corners of Ethernet Switch as shown. Hardware kit comes with unit.



2. Install Ethernet Switch at this location using M5 Screws (2279742-2).
3. Install two brackets on the ICN as shown.
4. Install ICN Module on Top Rail at the location shown.

1.4.6 Install VRE Cables



1. All cables connecting between Ethernet Module and ICN Modules must be routed thru area above Ethernet Switch. Ethernet cables routed to Ethernet Switch can be connected to any ethernet port.
2. Route and connect new VRE Cables as shown below. Cables 5145040-2 and 5145040-3 are replacing existing cables. Make sure 5146975-9 is connected to P1 (Port 1) and not P2 on the back of the ICN.

3. Use power cable supplied with Ethernet Switch and connect to J9.

**NOTE:** Any existing cables connected to the MGD Chassis, or any other modules, that are not identified below should remain connected. They are not affected by this upgrade.

4. Secure all modules in place with supplied fastening hardware.

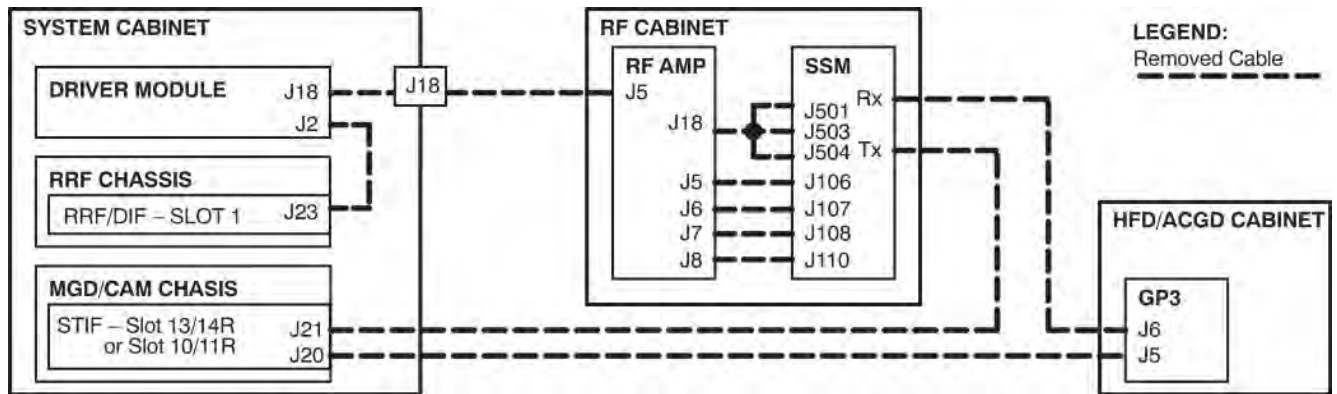
### 1.5 SSM to ASC Upgrade

The upgrade procedure in this section applies to 1.5T systems that do not have an ASC Chassis or CAM Chassis.

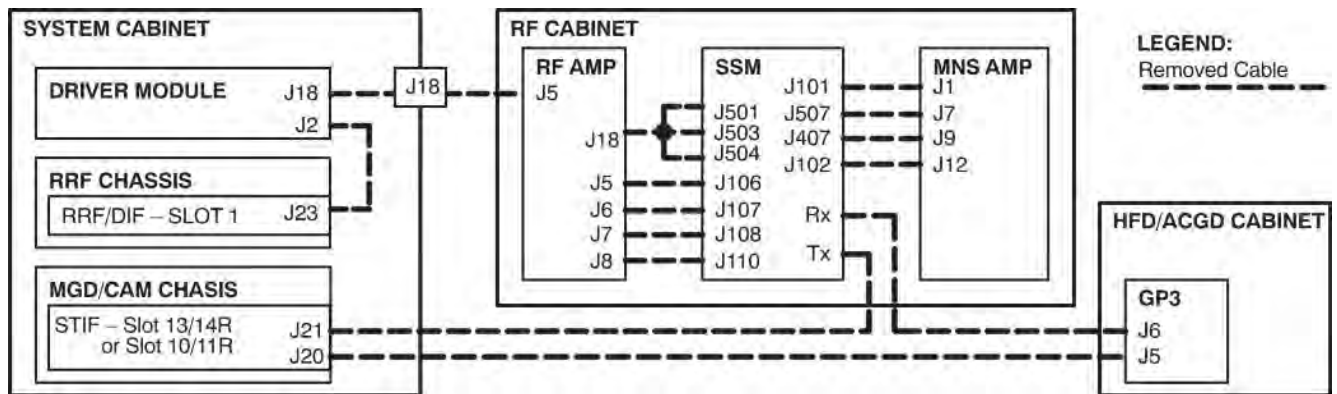
- For sites without MNS - Components in catalogs M3341JE will be installed. This upgrade applies to sites with EXCITE System Cabinet p/n 2294302 or EXCITE II System Cabinet p/n 2357500-2 having a common RF Cabinet p/n 2315350. The System Cabinet houses the MGD Chassis, Driver Module, and RF Modules. The RF Cabinet houses the RF Amplifier and SSM Module. Refer to [Section 1.5.1](#) for cable removal, then proceed to [Section 1.5.3](#).
- For sites with MNS - Components in catalogs M3341JE and M3341JF will be installed. This upgrade applies to sites with EXCITE System Cabinet p/n 2294302 or EXCITE II System Cabinet p/n 2357500-2 having a common RF Cabinet with MNS p/n 2391014. The System Cabinet houses the MGD Chassis, Driver Module, and RF Modules. The RF Cabinet houses the MNS Amplifier, RF Amplifier, and SSM Module. Refer to [Section 1.5.2](#) for cable removal, then proceed to [Section 1.5.3](#).

All de-installed modules and materials are to be returned for harvest.

#### 1.5.1 Cable Removal Procedure for Sites Without MNS



#### 1.5.2 Cable Removal Procedure for Sites With MNS



### 1.5.3 Install ASC Chassis In Cabinet



#### **WARNING**

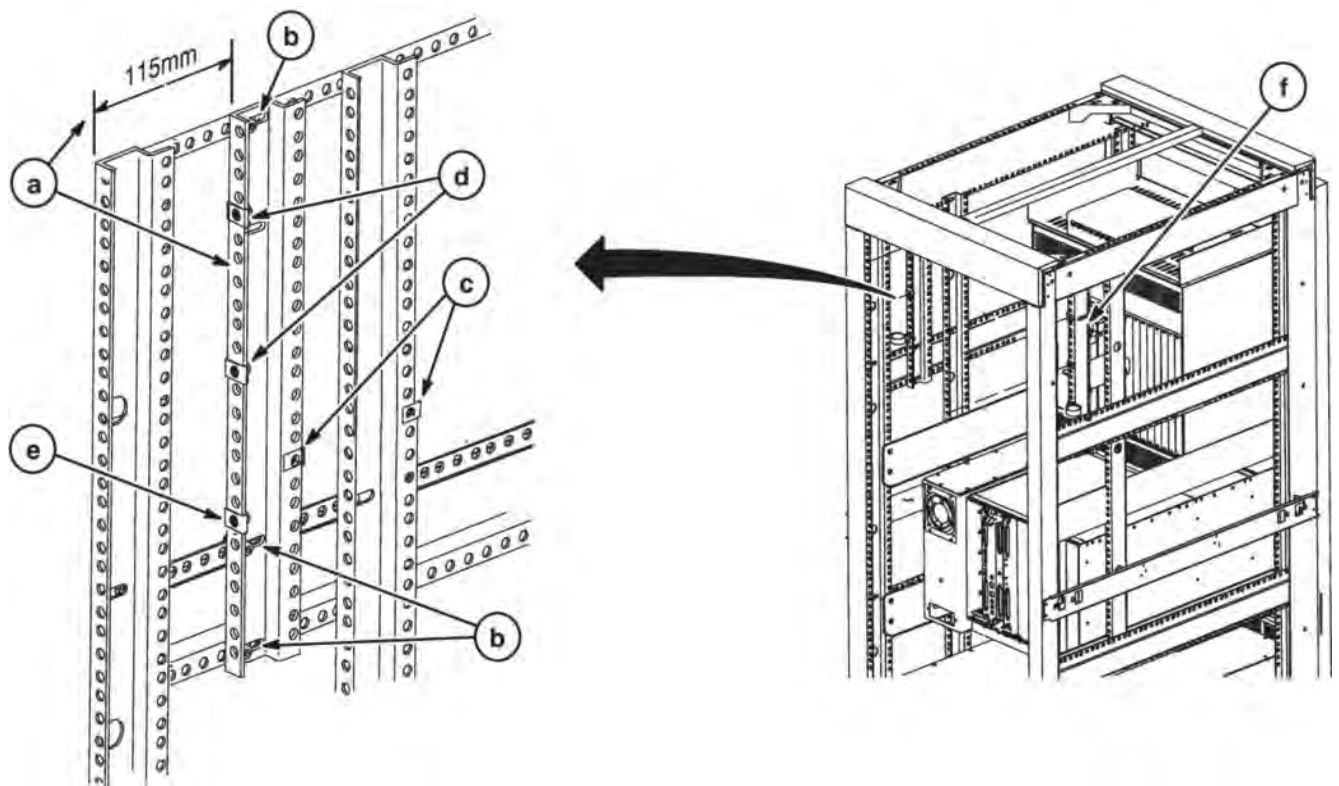
POSSIBLE PERSONAL INJURY

THE ASC CHASSIS IS HEAVY AND THE AREA FOR INSTALLING THE CHASSIS IS SMALL.

DO NOT ATTEMPT TO LIFT AND SECURE THE ASC CHASSIS TO THE RAILS IN THE CABINET UNLESS TWO PEOPLE ARE AVAILABLE TO COMPLETE THIS TASK.



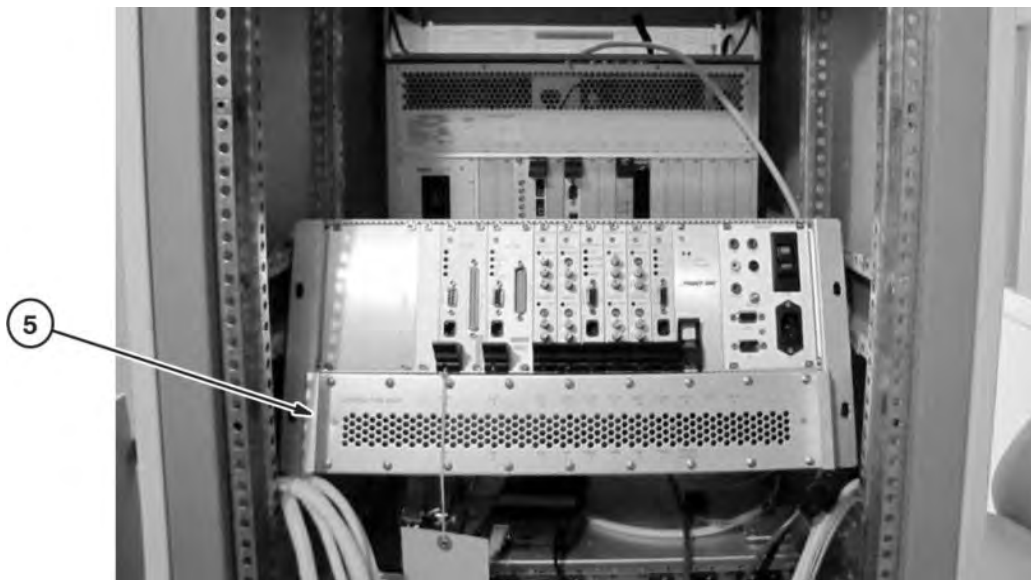
1. Disconnect and move out of the way all cables from rear of MGD Chassis. Make note of the connection points for reconnecting at the end of the procedure.
2. Make sure all cables are moved out of the way for ASC Chassis installation.
3. Refer to next illustration for the location of the Vertical Mounting Rail (5434656) and the installation of the sixteen (16) M5 Clip Nuts (2180698-2).



- a. Temporarily locate the Vertical Mounting Rail (5434656) at a distance of 115mm from the cabinet vertical rail.
- b. Install three (3) M5 Clip Nuts (2180698-2) on the existing horizontal rails as indicated. Remove the vertical rail. Do not install any screws at this time.
- c. Install two (2) M5 Clip Nuts (2180698-2), one at hole location 9 from the bottom of the Vertical Mounting Rail and the other on the adjacent vertical rail at the same level.
- d. Install two (2) M5 Clip Nuts (2180698-2) at hole locations 14 and 21 from the bottom of the Vertical Mounting Rail.
- e. At hole location 7 from the bottom of the Vertical Mounting Rail, install a M5 Clip Nut (2180698-2).
- f. Repeat the above steps for installing the brackets on the other side of the rear of the cabinet.



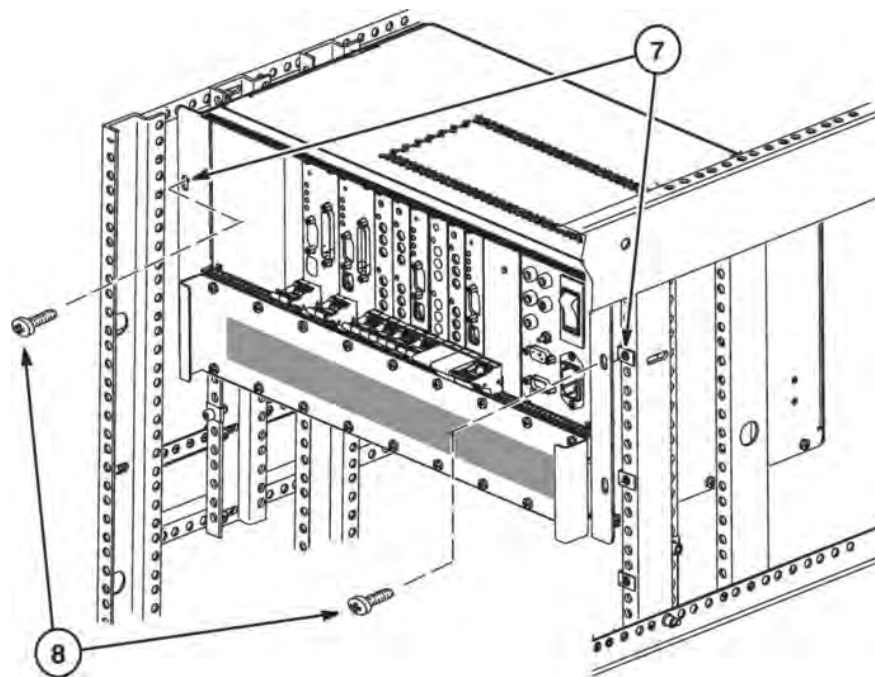
4. Carefully lift and angle in the ASC Chassis into the back of the System Cabinet.



5. Lower the ASC Chassis so it rests on top of the Driver Module. The front of the ASC Chassis will not sit flat on Driver Module due to the ear brackets on the chassis.

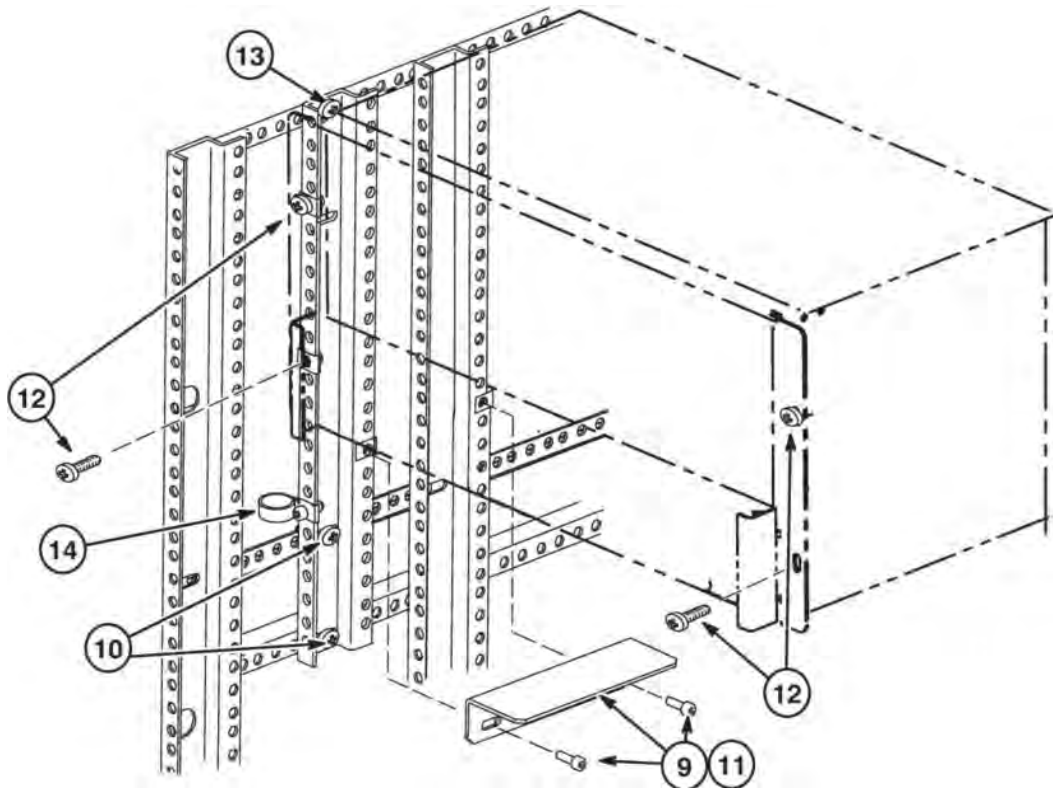


6. Install, but do not tighten, the vertical rail at only the top location on each side of cabinet using a M5 x 16mm Hex Head Cap Screw (1000-M5C016-04).

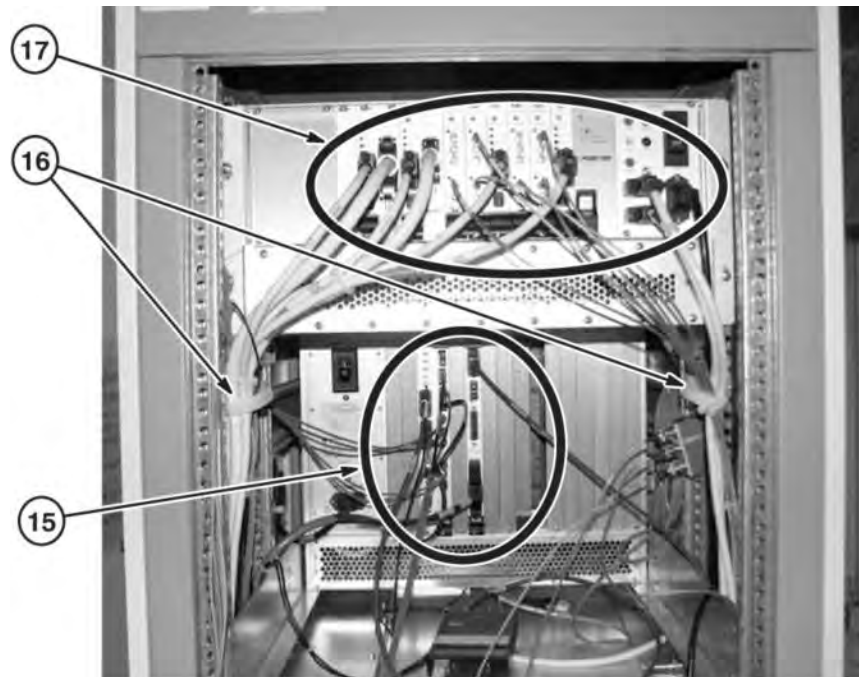


7. Lift the ASC Chassis and align the mounting ear holes with the (4) clip nut locations on the vertical rail.

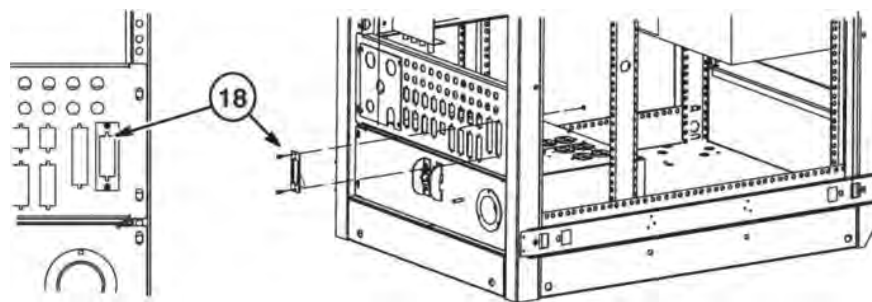
8. At the top hole locations on each side, install one M5 x 16mm Hex Head Cap Screw (1000-M5C016-04). Do not fully tighten. Screws should be loose but threaded enough to support the chassis.



9. Install the ASC Support Bracket (5434655) using two (2) M5 x 16mm Hex Head Cap Screws (1000-M5C016-04) Do not fully tighten. The ASC Chassis will be repositioned as the Support Bracket is being attached. Repeat step for Support Bracket on other side of cabinet.
10. At the two lower locations of the vertical rail, install and tighten a M5 x 16mm Hex Head Cap Screws (1000-M5C016-04). Repeat for other side of cabinet.
11. Tighten the screws attaching the Support Brackets on each side of cabinet. They must be supporting the ASC Chassis.
12. Install the remaining two M5 x 16mm Hex Head Cap Screws (1000-M5C016-04) at the lower locations on the ASC Chassis mounting ears. Tighten all four screws to the vertical bracket.
13. Tighten the screw at the top of the vertical rail.
14. Attach the Wire Harness Clip (5149590) using a M5 x 16mm Hex Head Cap Screw (1000-M5C016-04). Repeat for other side of cabinet.



15. Reconnect all cables to MGD Module.
16. Route cables through the Wire Harness Clips as shown when installing ASC Chassis cables.
17. Refer to one of the following applicable sections for routing the new ASC Chassis cables dependent on whether MNS is installed or not.

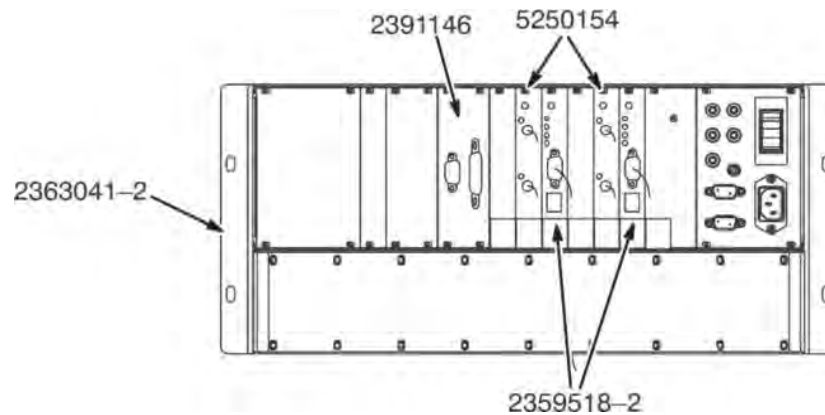


18. If MNS is being installed - At J66 on the I/F panel, install 25 Pin Adaptor Plate (5447051) using two (2) M3 x 10mm Hex Socket Head Cap Screws (1000-M3C010-04) and two (2) M3 Hex Nuts (3000-Mc3-04).

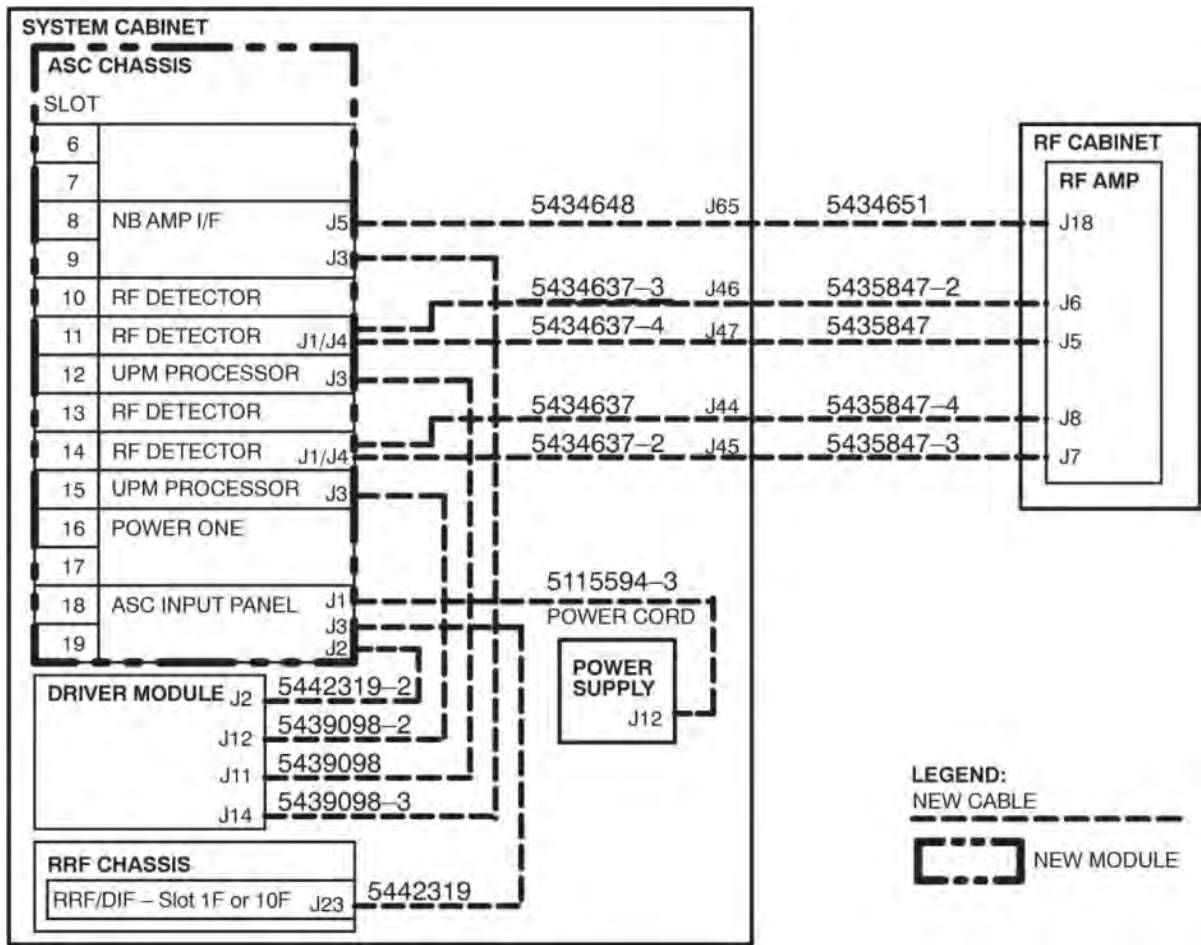
## 1.5.4 Installation of ASC Modules and Cables

### 1.5.4.1 For Sites without MNS

Install the two (2) RF Detector boards (5250154), one (1) Narrow Band Amplifier I/F board (2391146), and two (2) UPM Processor Boards (2359518-2) in the slots as indicated in the following illustration.

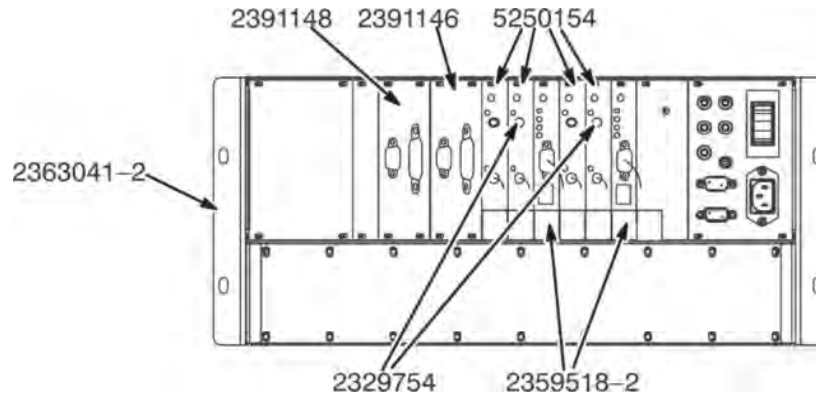


Refer to the following illustration for installation and connection points of new cables.

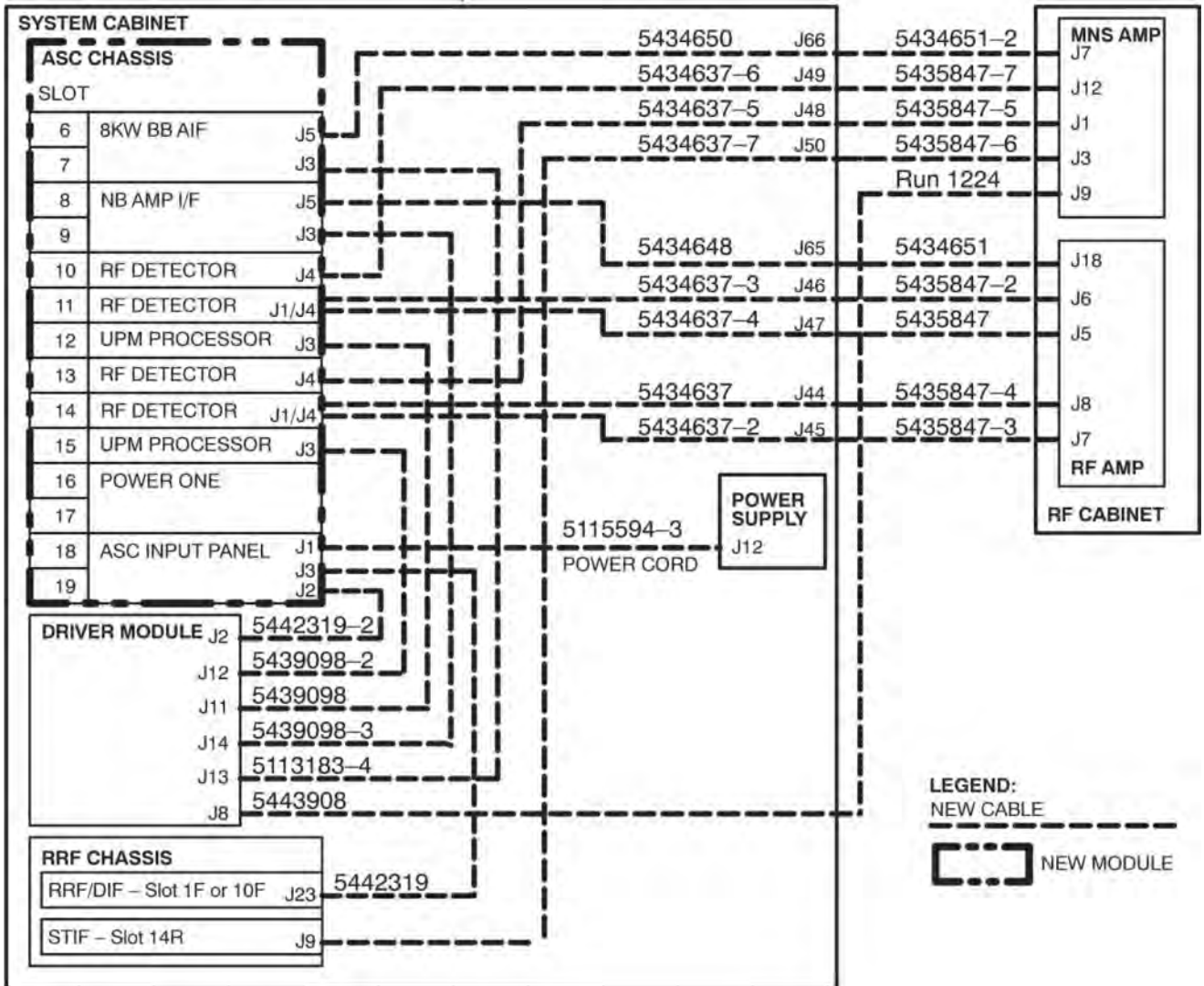


**1.5.4.2 For Sites with MNS**

Install the four (4) RF Detector boards (5250154), one (1) Narrow Band Amplifier I/F board (2391146), one (1) Broad Band Amplifier I/F Board (2391148), and two (2) UPM Processor Boards (2359518-2) in the slots as indicated in the following illustration. Also install two (2) 50 Ohm Terminators (2329754) on the empty J1 ports on RF Detector Boards in slots 10 and 13



Refer to the following illustration for installation and connection points of new cables.



### 1.6 Remove LOTO

1. Prepare for re-energizing the equipment. Notify affected personnel working in the area that LOTO will be removed.
2. Remove personal LOTO device(s) from the front panel of the PDU.
3. At the front panel of the PDU, flip the circuit breaker switches for the following to the **ON** position for the following:
  - RF / System Cabinet
  - RFI / Amplifier

### 1.7 Finalization

After LOTO is removed and system is powered up:

1. Install new HD23 software. Refer to "Load Host System Software" in applicable Service Methods DVD.
2. Perform the following necessary calibrations for 1.5T systems. 3.0T systems without the RF Accessory Cabinet Upgrade do not need to perform the listed calibrations. An RF Power Measurement Kit with Dummy Load is required. Refer to Required Tools table in [Chapter 1, Getting Started](#) for applicable 1.5T or 3.0T kit.
  - a. RF Amp Cal (optional - recommended but not required)
  - b. UPM Calibration (required)
  - c. UPM Functional Check (required)
3. Refer to applicable Service Methods DVD for ICN Reconfiguration procedures
4. Perform a test scan to ensure the system is working properly.

# Chapter 7 3.0T G3 RF Accessories Cabinet Upgrade to HD23 for 12.x or Later

## 1 ASC Chassis Upgrade for 3.0T G3 System with RF Accessory Cabinet

### 1.1 Introduction

The upgrade instructions listed in this section is only applicable to those 3T G3 systems in the field that has an RF Accessories Cabinet and is currently running software versions 12x, 15x or 16x.

A 3.0T RF Power Measurement Kit is required. Refer to Required Tools table in [Chapter 1, Getting Started](#) for applicable kit information.



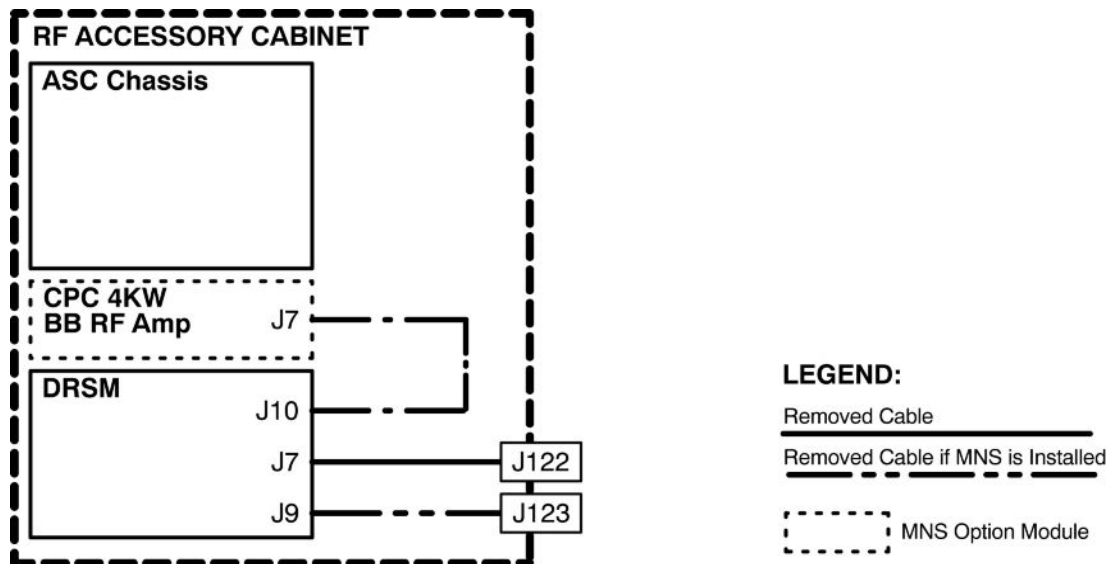
**WARNING**

ELECTRIC SHOCK HAZARD!  
 LETHAL VOLTAGE ARE PRESENT  
 POWER TO SYSTEM MUST BE OFF, LOCKED AND TAGGED, BEFORE STARTING ANY UPGRADE PROCEDURES. REFER TO SECTION 3 FOR POWER OFF PROCEDURES.

### 1.2 Cable Removal Procedure

Remove cables as indicated in the following illustration.

Illustration 7-1: RF Accessories Cabinet Cable Removal



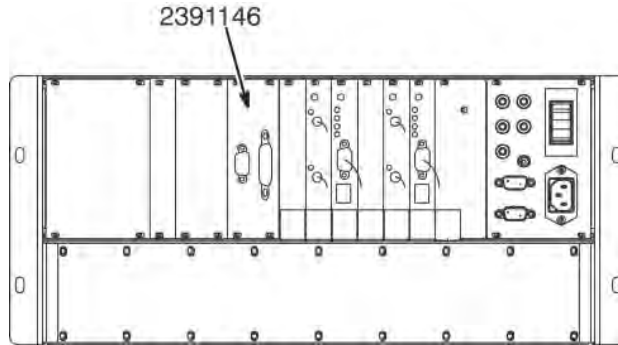
### 1.3 Upgrade Installation Procedures

Select and complete the applicable procedure, with MNS or without MNS, for the site being upgraded.

**1.3.1 System without MNS Option**

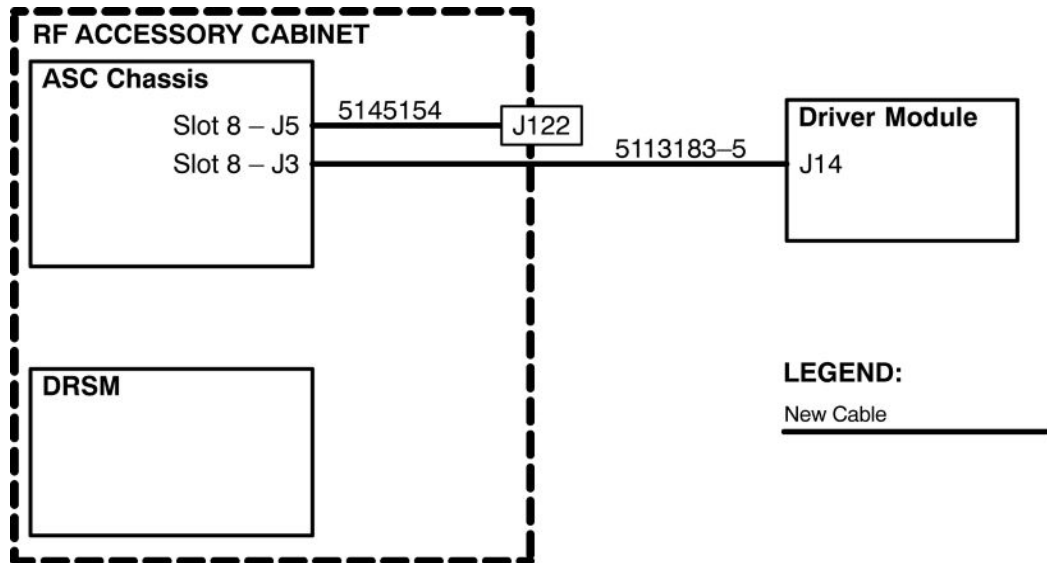
1. Install the ASC NB RF Amp I/F Board, 2391146, in slot 8.

**Illustration 7-2: ASC Chassis without MNS Option**



2. Route and connect cables 5113183-5 and 5145154 as shown in following illustration.

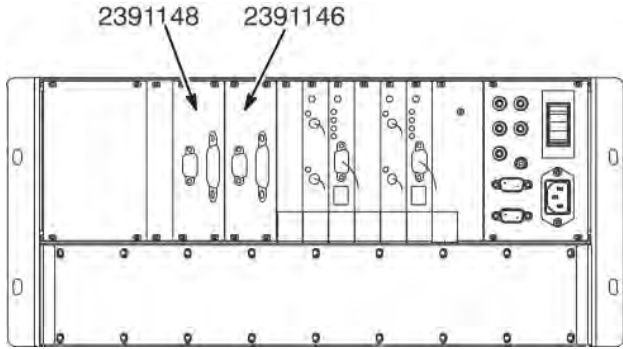
**Illustration 7-3: New Cables for System without MNS Option**



**1.3.2 System with MNS Option**

1. 1. Install the ASC NB RF Amp I/F Board, 2391146, in slot 8 and ASC BB RF Amp I/F Board, 2391148, in slot 6.

Illustration 7-4: ASC Chassis with MNS Option



2. Refer to the applicable illustration for the cable upgrade procedure:

- [Illustration 7-5](#) — System with CPC 4Kw BB RF Amp
- [Illustration 7-6](#) — System with External 8Kw AMT MNS RF Amp

Illustration 7-5: New Cables for System with CPC 4Kw BB RF Amp Option

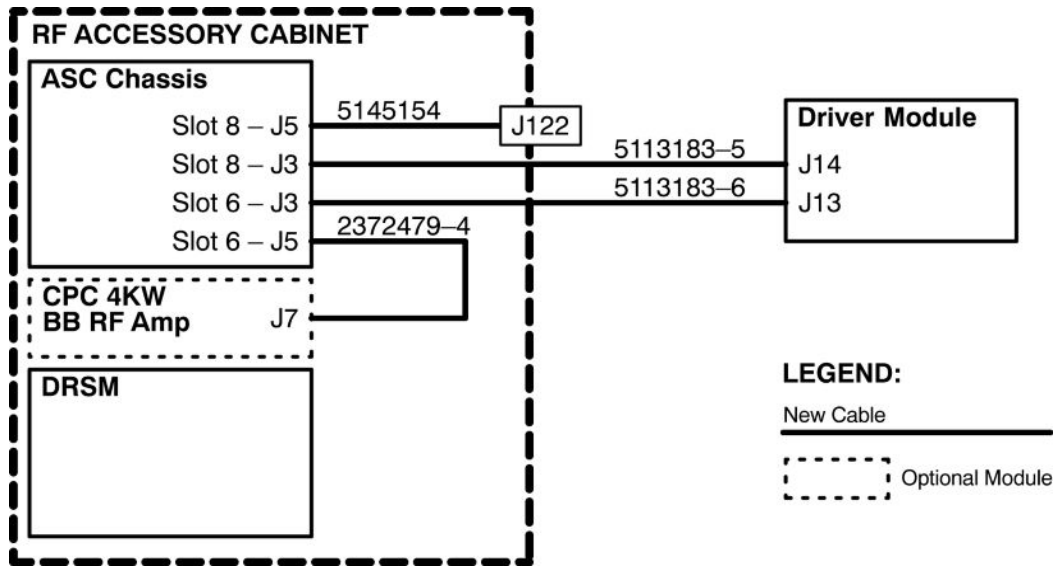
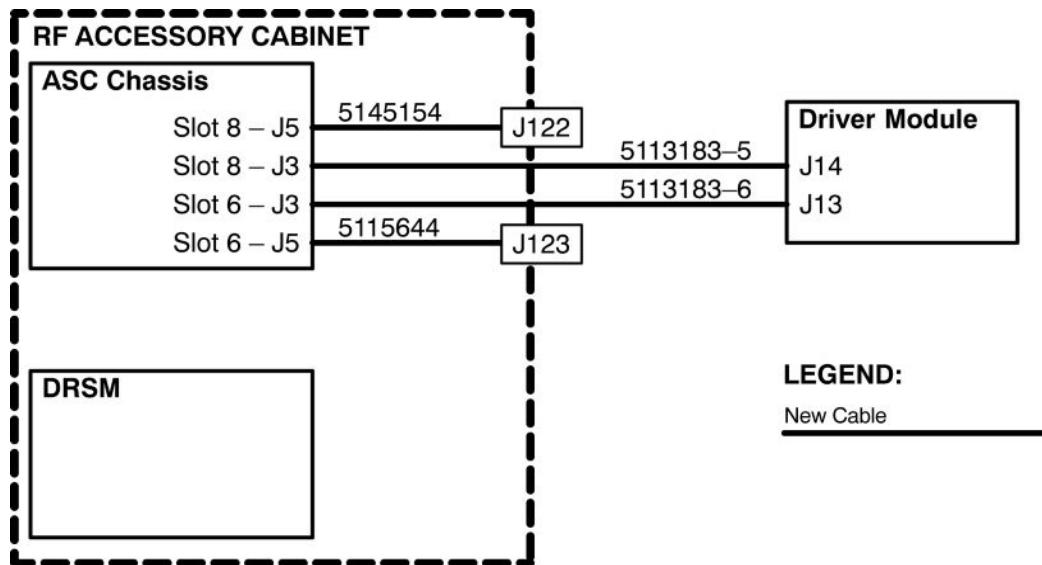


Illustration 7-6: New Cables for System with External 8Kw AMT MNS RF Amp Option



## 1.4 Finalization

### 1.4.1 Remove LOTO

1. Prepare for re-energizing the equipment. Notify affected personnel working in the area that LOTO will be removed.
2. Remove personal LOTO device(s) from the front panel of the PDU.
3. At the front panel of the PDU, flip the circuit breaker switches for the following to the ON position for the following:
  - RF / System Cabinet
  - RFI / Amplifier

### 1.4.2 After LOTO is Removed and System is Powered Up

1. Install new HD23 software. Refer to "Load Host System Software" in applicable Service Methods DVD.
2. Perform the following necessary calibrations for upgrading 3.0T systems with the RF Accessory Cabinet. An RF Power Measurement Kit with Dummy Load is required. Refer to Required Tools table in [Chapter 1, Getting Started](#) for applicable 3.0T kit.
  - a. RF Amp Cal (optional - recommended but not required)
  - b. UPM Calibration (required)
  - c. UPM Functional Check (required)
3. Perform a test scan to ensure the system is working properly.

# Chapter 8 Completion

## 1 Completion

### 1.1 Mechanical Installation Completion

The following steps need to be reviewed and completed by GE Field Engineer, especially if the system was installed by non-GE personnel. Check off boxes at the front of each item below when complete.

- Check mechanical flowchart to make sure all steps are complete (Section 2)
- Resolve shipment shortages
- Resolve omissions by mechanical contractors
- Make sure all rating plates are installed
- Recheck all wiring connections using cable map ([Chapter 4, System Upgrade Cables](#))
- Correct for wiring errors if necessary
- Complete [Section 1.2](#), [Section 1.3](#), and [Section 1.4](#).

### 1.2 Returning Shipping Equipment

The shipping material must be returned **as soon as possible**. Prompt return is required so that production shipments can continue with these labor saving dollies. These can be included with the obsolete equipment and materials being returned in [Section 1.3](#). Recycling Operation will route them to appropriate location.

### 1.3 Material Disposition Guidance

Refer to [Chapter 1, Discarded Material Return Policy](#). The equipment or material being disposed by the upgrade have a potential value for service of the installed base. The disposition of such must be controlled by GE. Disposition of the removed material is per GE Medical Systems Policy and Procedures.

### 1.4 Final Coordination

1. Replace cabinet covers that have not been previously replaced.
2. Replace Magnet Enclosure covers and Rear Pedestal covers (If required)
3. Dock Patient Transport in position at front of bore.
4. Record and enter applicable data into applicable site configuration files and records.
5. Complete Product Locator information. See [Chapter 1, Getting Started](#).

**NOTE:** Failure to fill out and return Product Locator Cards may result in failure of your site to receive future FMI's.

6. Leave the site's set of Manuals and CD-ROM at site. Organize and set up reference cabinet for the Manuals.
7. Locate any new Material Safety Data Sheets (MSDS). They must be retained on site. Customer is to be informed that material with MSDS information was brought into site and customer should know/decide where MSDS be retained.
8. Verify that coordination of application support for instruction of site users on Software Release 16.0v2 or later has been made before returning system to the users. Turn site over to applications who will instruct users.

## 1.5 Power On

1. Notify field service and other installation personnel that are working at the site that the PDU main disconnect locks and tags will be removed so PDU power can be turned on. Remove LOTO from the PDU.
2. Restore power to the PDU from main disconnect.
3. Refer to the CD-ROM, Installation Calibration Flow, and perform the following:
  - PDU Voltage Checks Compact > PDU E-Stop Check
  - Startup Checks Compact
  - Transformer Taps Compact
4. Press the FULL ON button on the PDU front control panel.
5. Except for the HFD Gradient power modules, switch all cabinet circuit breakers to ON. The HFD Gradient power module circuit breakers should remain OFF for one hour after HVAC power up to allow room humidity to stabilize.



### NOTICE

When turning on the circuit breaker in the PDU, both the PC and Host circuit breakers must be energized.

6. **Make sure the UPS circuit breaker is switched to the ON position.** This is required to feed power to the Operator Workspace.
7. Operator Workspace power-on procedure:

**NOTE:** When powering up the GOC, there is a Main breaker located in the front of the GOC. There are also two switches for the GOC AA and Modem power.

  - a. Restore power to the GOC, boot software, and ensure proper system operation.

**NOTE:** If necessary, reconnect the optional UPS accessory and ensure power is restored.
  - b. Perform the applicable Loading Host System Software procedure to load software and applications onto the operating system.

**NOTE:** The Load from Cold must be performed to properly transfer customer options

- c. Update the elicence with the new Host ID.
- d. Perform a scan to ensure the system and applications are working properly.

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