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October 11, 2002

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APPLICATION NUMBER: *60/325,538*
FILING DATE: *October 01, 2001*
RELATED PCT APPLICATION NUMBER: *PCT/US02/30857*

By Authority of the
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Certifying Officer

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JC923 U.S. PTO 10/01/01

PROVISIONAL APPLICATION COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION under 37 CFR 1.53(c).

Docket Number	110273.121PO1	Type a plus sing (+) inside this box →

JC979 U.S. PTO 60/325538 10/01/01

INVENTOR(s)/APPLICANT(s)

LAST NAME	FIRST NAME	MIDDLE INITIAL	RESIDENCE (CITY AND EITHER STATE OR FOREIGN COUNTRY
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TITLE OF THE INVENTION (280 characters max)

THE PFN/TAC SYSTEM™ FAA UPGRADES FOR ACCOUNTABLE REMOTE AND ROBOTICS CONTROL TO STOP THE UNAUTHORIZED USE OF AIRCRAFT AND TO IMPROVE EQUIPMENT MANAGEMENT AND PUBLIC SAFETY IN TRANSPORTATION

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ENCLOSED APPLICATION PARTS (check all that apply)

[X] Specification (including cover sheet, drawings, etc.) Number of pages [82] [X] Applicant Claims Small Entity Status
[ ] Drawings Number of sheets [ ] [ ] Other (specify):_____

METHOD OF PAYMENT (check one)

[ ] A check or money order is enclosed to cover the Provisional filing fees [] The Commissioner is hereby authorized to charge filing fee and credit Deposit Account Number: 08-0219	PROVISIONAL FILING FEE AMOUNT ($)	$80.00

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

[X] No.

[] Yes, the name of the U.S. Government agency and the Government contract number are:_

_____

[] Additional inventors are being named on separately numbered sheets attached hereto.

Respectfully submitted,

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Date: 10/1/01

WASHINGTON 150620v1

APPLICATION

FOR

UNITED STATES PROVISIONAL PATENT

To all whom it may concern:

Be it known that I, Richard Clark Walker, have intended certain new and useful improvements out of extreme sorrow and love of country in:

THE PFN/TAC System™ FAA UPGRADES FOR ACCOUNTABLE REMOTE AND ROBOTICS CONTROL TO STOP THE UNAUTHORIZED USE OF AIRCRAFT AND TO IMPROVE EQUIPMENT MANAGEMENT AND PUBLIC SAFETY IN TRANSPORTATION.

of which the following is a full, clear and exact description:

110273-800

ABSTRACT

This invention, a Protected Primary Focal Node PFN is a Trusted Remote Activity Controller TRAC and mobile communication router platform, that provides accountable remote and robotics control to transportation vehicles by interfacing with the vehicles E/E systems. It connects each vehicle either on the earths surface or near the earths surface with application specific intranets for air, sea, and land travel, via either host commercial servers or agency providers through wireless communication gateways and then further interfaces these vehicles in a larger machine messaging matrix via wireless and IP protocols to further coordinate movement assess and manage equipment use and impact on the world resources, societies infrastructure and the environment. This filing focuses directly on PFN/TRAC System use to augment and upgrade public safety and security in the Airline Industry and restrict any unauthorized use of an aircraft. Additionally, this application and related filings teaches the PFN/TRAC System™ use for all vehicle platforms to increase safety and security in a free society like the United State of America. The other related filings instruct in the technology's use for robust and accountable remote control for personal applications, stationary equipment and standalone functions, and coordinates them and interfaces them within the communication matrix. The TRAC controller also performs translation and repeating functions across a wide variety of communication protocols to complete a more mobile flexible matrix or web. This connected communication matrix of computers and humans provides an enhanced Human Machine Interfacing HMI scenario both locally and systemically in real-time for improve equipment management and world stability.

RELATED APPLICATIONS:

This provisional application docket number 110273-700 claims priority from US Provisional Patent Application 60/200,872 filed May 1 2000 which claims priority from U.S. Provisional Patent Application 60/176,818 filed January, 19 2000 which claims priority from U.S. Provisional Patent Application docket 60/139,759 filed June 15, 1999 which claims priority from US Provisional Patent Application number 60/140,029 June 18 1998 which claims priority from U.S. Provisional Patent Application number January 15, 1998 This application is related to U.S. Patent Application No. 08/975,140, filed

November 20, 1997, and PCT Application No. PCT/US 97/21516, filed on November 24, 1997, which claim priority to U.S. Provisional Patent Application No. 60/032,217 filed on December 2, 1996, all of which are hereby incorporated by reference.

BACKGROUND OF THE INVENTION

Field of the Invention

The prior related patents have covered accountable automated and remote control of all vehicle platforms, equipment , machines, including human, animal tracking telemetry and aggressive remote control as well as stand alone functions and units as part of a great machine messaging matrix of interfaced communications and computer controls (Telematics) for more freedom , public safety, and better management of the earths resources, environment and social /Individual needs and to function as part of any economic tool.

Due to the recent terrorist events both in New York and Washington DC. It has become imperative to step up the development of protected remote control and robotics in aircraft and commercial air travel systems. The PFN/TRAC System is an ideal technical choice for this scenario as it was created to stop and control the unauthorized use of vehicles and equipment via accountable remote control. Additionally, the technology incorporates existing technology as it exists in a present distributed architecture and coordinates and manages the essential function to stop and control an unwanted event and improve public safety. This requires hardware, software and wetware (people –the procedures and protocols) a technology demanding a Science, Technology and Societal approach or STS approach to be effective in described completely for aircraft and air travel in this filing.

This invention from the first stop and control box system to restrict unauthorized use of a vehicle has addressed responsible and accountable machine intelligence as a very important and unique quality to perform remote or shared control of any vehicle or equipment in a free society.

Historically, avionics has had flight recorders, processors, flight computers wireless communications, navigational systems, auto pilots, protective containers for electronic packaging. Even in aircraft hobbies and in the military there have been remote control or robotic droans . However, shared controls or total robotics control of an aircraft with humans on board has always struck a watershed of unacceptability for a host of good and valid social economic reasons. And not just in the air, but on the ground as well. This is where the PFN/TRAC System fits into humanities present technical management needs. It can harness existing technology and apply constitutional protocol in real-time via local machine robotics and remote human/equipment control to prevent the hijacking, thwart the hijacking, manage all behavior in the plane, control and lower the planes destructive crash potential, or safely land the plane via the PFN/TRAC System including the PFN/TRAC protocols.

This specialized quality of socially structured technology that coordinates disparate and distributed technologies in a acceptable and usable architecture starting from existing COTS products and consolidating an acceptable structure and set of operational protocols into one management system is uniquely the PFNTRAC system. It in know way competes with existing technology it merely enhance those technologies interfaced via a larger more acceptable machine messaging matrix of mindful machinery with accountable artificial intelligence.

The seven earlier prior related patent and filings addressed the use of the PFN Trusted Remote Activity Controller in flight application to augment the aging FAA system, as a communication control unit for the carplane invention and to coordinate air surface traffic in transportation.

Due in no small part to the sad events current to our nation, Kline & Walker Remote Management System the assignee of the PFN/TRAC System wishes to work in any collaborative effort with all commercial and government interests to safe the skies and build back the trust in the flying public. This spirit of cooperation is basic to developing this technology as a trusted system and to increase public safety, individual freedom and national and global security.

BRIEF DESCRIPTION OF THE DRAWINGS

(FROM EMERGENCY FAA SLIDE SHOW TO RESTRICT THE USE OF AIRLINERS AS TERRORIST BOMBING DEVICES

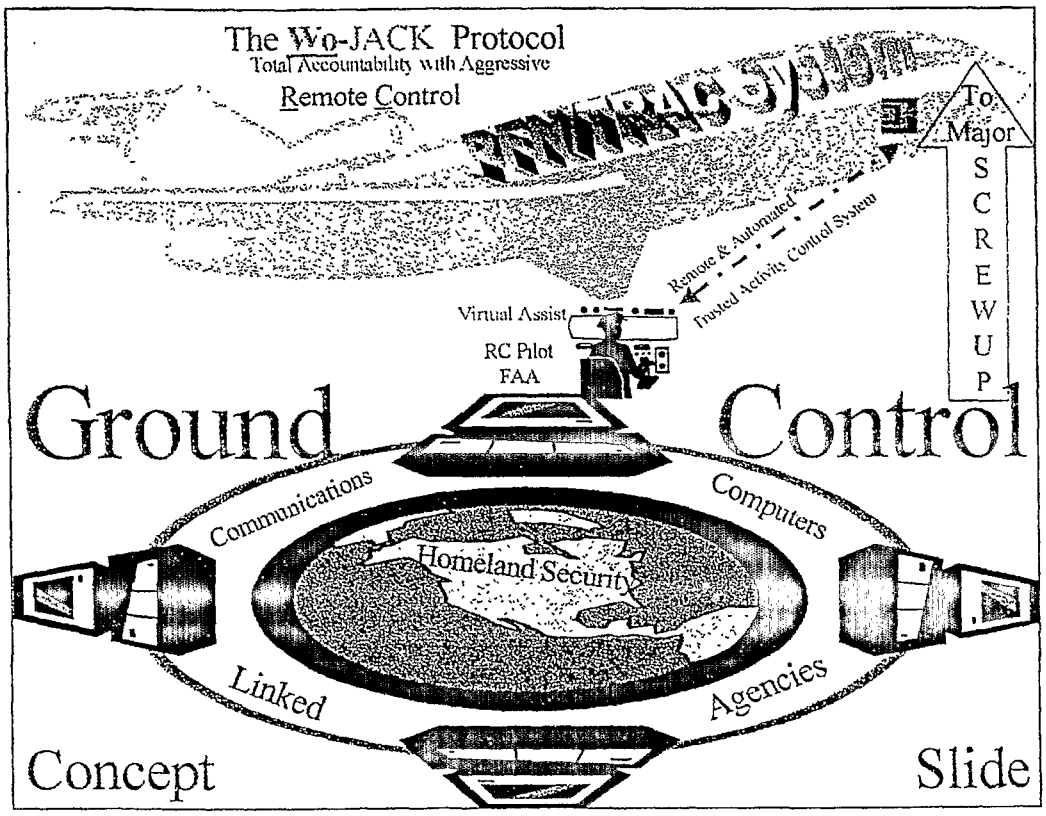


FIG 1 This diagram is a concept slide for the PFN/TRAC System ™ to control the unauthorized use of an airplane. It represents the technology and action protocols necessary to effectively stop a hi-Jacking . At the top of the page the title WO Jack stands for War Operations and / or emergency flight control scenarios. Employing the Ground control systems that will be capable of controlling the flight and landing at secured bases strategically placed around the a nation. An out of control aircraft will be safely controlled and managed in the air and landed with an accountable record of the event . In the center of the Page is a pilot at a virtual flight control station (converted simulator receiving all the actual data in realtime from the aircrft above . This Remote Control or RC pilot can fly the plane and land the plane with an override capacity on all local aircraft controls, via the little green locked up and protected secluded PFN/TRAC ASIC interfaced into the flight control bus and components. Optimally this will be un obtainable in flight and require the strictest of security to access , augment or repair on the surface. Ground control is many different agencies and services linked to gether to monitor and provide expertise to the troubled aircraft, while in flight and when it is safely recovered at safe bases on the ground via this Homeland security System for dangerous aircraft.

PFN/TRAC Air Travel Security

First Generation Benefits

Commercial Off The Shelf Products (COTS) = Rapid Deployment

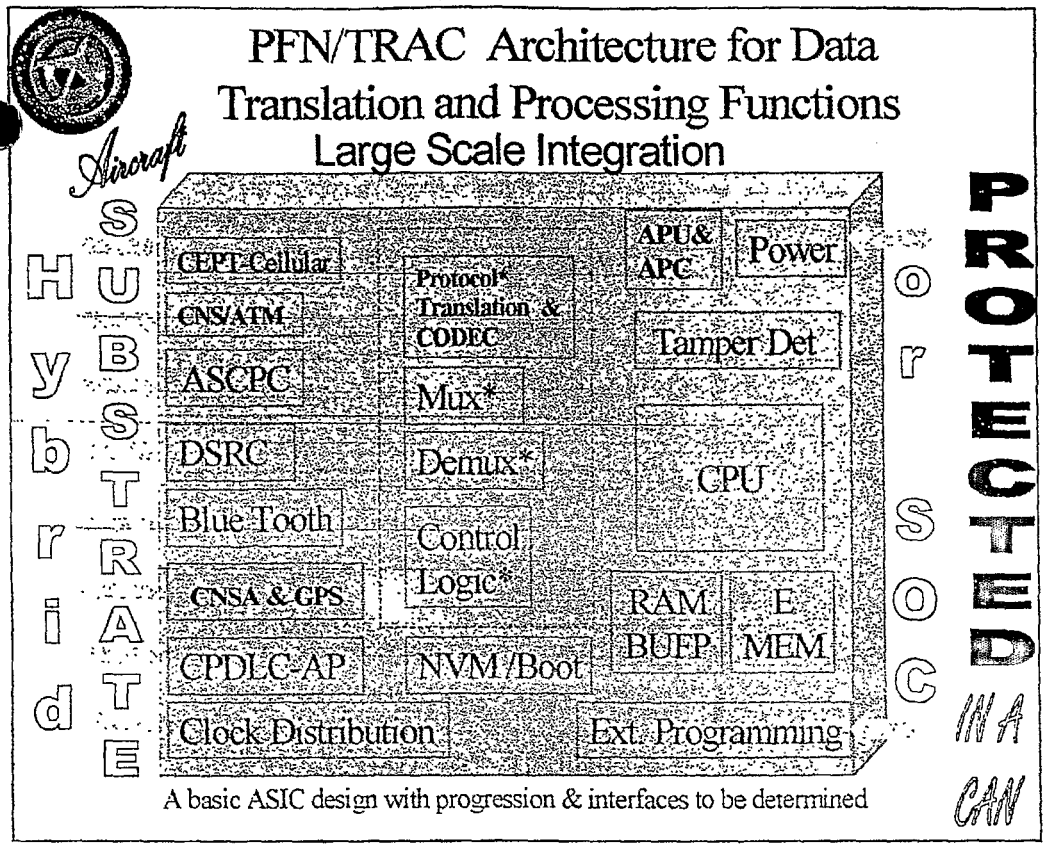
- 78+% in place in less than 9 Mos. **With American Cooperation**
- **Progressive Functionality = Every Step Increases Security**
- Greater Real-Time & Flexible Response in a **Free Society**
- Easier to **Protect Machine Controls** Vs. Cock pit or Cabin.
- Increases Cockpit and Cabin Protection, Security & Management
- **Coordinates Government Services for Homeland Security**

Via Advanced Ground/Air— Human Machine Interfacing

Fig 2 This is a slide showing an important characteristics and benefits of the PFN/TRAC technology; as a timeless system that incorporates new technology into an architecture that provides accountable aggressive automated and remote control. In this diagram Commercial Off The Shelf Products (Consistent with PFN?TRAC technology) are initially used and interfaced through hard ware and software to enhance human and machine interfacing through accountable and redundant systems for greater machine responsibility and reliability.

In this slide through corporate and commercial cooperation existing flight computers (Auto pilots), recording devices along with cock pit and cabin, audio video and remote control auto defense systems, wireless carryon devices (Blue tooth) will allow for the master control (PFN\TRAC) of all E/E systems/ components in or as part of any aircraft at a given time . The progressive development and inclusiveness of the system will be performed so that any isolated step increases public safety and security. This system like all PFN/TRAC technology has been created uniquely to maintain personal freedoms and rights in a free society, while being available in real-time to help secure public safety. PFN/TRAC is not just a technology of hardware and software components. It is also a set of protocols to help humanity manage it's machine and resource use and any environmental and social impact

Public safety is enhanced via the protected PFN/TRAC technology vs a focus on enhancing security of human control areas. All Human machine interfacing is enhanced both in the air and on the ground via the PFN/TRAC machine messaging matrix of communications (IP protocols Wireless interfacing, telephony, land



Figur 3 Is an application specific integrated circuit for an avionics PFN/TRAC System interface. This architecture provides for the translation of communication protocols for universal emergency messaging. It also, provides processing for all essential E/E systems for flight management. It is a large scale integration and depicts a progressive interfacing from present COTS distributed systems to a protected hybrid substrate architecture or even further consolidation as Systems On a Chip or SOC technology. Of course all versions will have to meet current standards, rules, regulations and codes as a necessary part to be PFN/TRAC technology.

This is only a concept ASIC and is used to represent a minimal control system that could fly the plane via five programmed flights and landings with real-time flexibility for conditions, equipment and personnel to land at five specified safe bases (first generation) (later; Programming for all air ports late). Due to the many onboard systems & computers in present commercial avionics the PFN/TRAC System will initially monitor these systems for failure (abnormalities tampering) and be able to control any essential peripherals in an event failure by local programming or ground up loads (future generation will provide more system protection.

Continued Figure 3 Description

This figure is not to be considered specific or restrictive of the PFN ASIC architecture. The technical teachings of this patent for the PFN/TRAC System are discussed in an alphabetical avionics acronym list to better organize a progressive handling and development of the technology. The total objective is a remote control or robotic aircraft with a human safety construct program (operating system) of accountable HMI; both on the ground and in aircraft avionics for total flight management. Due to the need for mass understanding and cooperation this patent seeks solely to structure the concept and the development process not to define the exact embodiments of hardware and software or action protocols used. However any construction performing accountable aggressive remote control for this purpose is considered to fall within the nature and scope of the PFN/TRAC invention.

The boxes on the left side of the green block are used to give examples of the communication and data interfaces that TRAC processing could be responsible for. It is important to remember that the essential controls and communications will be determined by the security agencies and industry standards efforts. The remote control communications will be ded or dedicated digital channels for individual activity controls for flight surfaces on special military possibly DES communications that can take place form aircraft to aircraft and for close in landing. Otherwise robotics flight will be employed to maintain the highest level of real-time responsiveness for air craft performance. To insure absolute maximum redundancy in communication from the plane to the surface blue tooth and 1850 wireless contact to carryon devices will interface all communication devices with the TRAC processor and the system will be capable of activating any such device to call NENA/FACT numbers for direct download to the FAA homeland hot operations center to download all data that the on board TRAC wants relayed to the surface. More than one PFN/TRAC unit can be interfaced in the aircraft Electrical bus, each having a separate FACT ESN and communication protocol to coordinate master slave relation ship to insure protected secure control of the plane for various non accessible in flight secluded locations. All automated flight control systems will have a slave relation ship to the TRAC process. These systems will be subsystems or Systems Under Control by TRAC; SUC.

Many automated controls (auto pilots, flight computers flight and voice recorders sub system controllers exist in a distributed architecture in present and legacy aircraft. Many of these systems are reliable trusted and well engineered and there is no real need to eliminate or replace them. The goal of TRAC is to organize a progressive architecture to increase security and back up human controls in all flying commercial aircraft in an efficient manner. This will be accomplished in a number of ways for all the various aircraft and the procedure to apply this secure robotics and accountable remote control technology is the essence of the PFN/TRAC invention and the Nature and scope of the invention.

First generation TRAC will link and control hardware and software to robotically fly the plane to designated safe zones and landing bases of high security, there will be the capability to eliminate local flight controls, there will be the capability to land the plane at designated safe bases via remote control flying, there will be the ability for multiple communication with the aircraft and continual tracking, there will be the capability to dump the fuel remotely and robotically. There will be a means to incapacitate passengers and crew, there will be real-time audio and video to ground and escort aircraft, there will be isolation capability for cabin air, there will be a capability to terminate the flight if the need arises . As part of this inventions first generation any and all functions not obtainable through hardware and software will be obtained through well trained and security cleared humans until such systems are available.

For this reason figure 3 is going to change over time and this technology is timeless, because it will evolve and become ore consolidated and protected all the time. The ASIC translator and processor will be interfaced with IC hybrid substrate for the varied communication protocols into systems on a chip or SOC technology in cans and specialized containments and electronic security package and tamper detection. Most importantly all manufacturers are going to have to move towards this TRAC systems with their components in the best manner they can . PFN/TRAC was designed as an organizational. architecture to coordinate and enhance products , industries and their markets not compete with individual manufacturers.

PFN TRAC will have it's own protected back up power or use any that meets protected standard s. Any systems in place that can perform or be brought up to PFN/TRAC standard for protected operation and security access will be incorporated in the first generation to perfor accountable automated and robotics flight. The Asic in figure 3 ad any TRAC system will be progressively put inplaced and address avionics as described in the alphabetical avionics terms and definition section and implemented as per standards and applicable to the aircraft being converted for robotics and remote control flight.

Flight computers in some aircraft will hold the five flight plans that are activated by a FACT event flag for compromised control of an aircraft. Flight plan software recognizing course deviation coupled with un justified communication and legitimate pilot identity and surface approval will be one flag to robotically tack control of the flight and land it at a safe base for safe handling. Many such protocols have to be programmed for FACT managemnt of equipment programming WoJack is just one scenario. Flight contamination or illness might be other reasons and must be developed as well.

This invention in any application has always been a stand alone system ultimately, but based on progressively getting there through COTS to provide the most rapid modalities to save lives and perfect and refine the systems application specific, and as universal and secure as possible. Nothing could be more true and accurate as this state existing for aviation in the America today. PFN/TRAC and the Machine messaging matrix is exactly what is needed.

PFN/TRAC Air Travel Security

Second Generation PFN

- SOC Consolidation and Greater System Protection
- More Affordable and Available in Smaller Aircraft
- More Pilot Assist Programmed Flights and Landings
  Eliminate JFK Jr. Limited Skill Scenario for any Pilot.
- Redundant Accountable Event Storage Locally & Remotely
- More Control Over Carryon Electronics and Materials
- Better Occupant Identification and Emergency Management

Fig 4 Whether there is a distinct product development difference between first and second generation PFN/TRAC systems depends on application and cost. Ultimately, the system will be SOC miniaturized redundant fail safe trusted and much cheaper as volume standards and acceptance evolves for more universal use of the technology to manage or share machine controls in our lives. This is planed for as a development of the technology to be forward and backward engineered. Generally the system will move to be more centralized as a complete TRAC protected unit and distributed in duplicate on aircraft electrical bus only for redundancy protection for reliability. However, this will always be sensitive to application specific industry and component requirements as determined by skilled artisans\ engineers.

The initial flight and landing software library will be for 5 select safe bases with emergency response application specific specialists available for any incoming flight condition. Future software flight and landing libraries will be developed for all airports and aircraft types to help a skill deficient person at the controls of an aircraft fly safely and return to the surface in a controlled manner these software flight programs will be wireless ly uploaded to flight control system in real time via the PFN/TRAC system and unit. For first generation flight and landing at the 5 safe bases any COTS software for commercial or military airliners should be incorporated, along with automated flight simulator programming. A converted simulator responsive to real flight conditions at the 5 bases will serve as the initial RC pilot station to take control from the auto pilot for landing in the first generation ; second generation complete robotics capability.

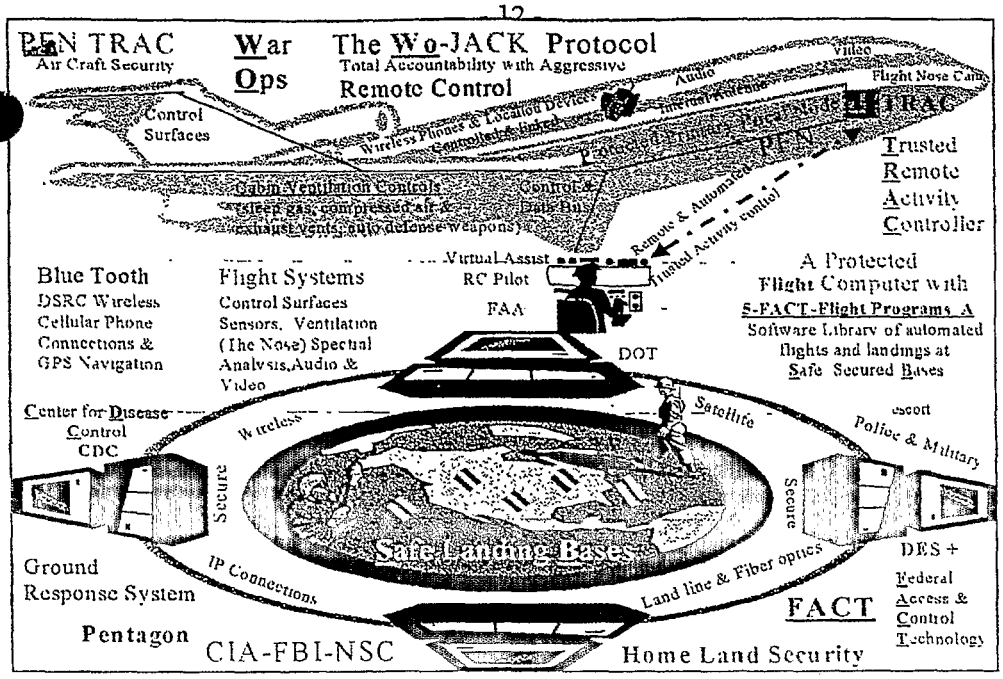


Fig 5 There is 2 basic sections to this drawing the Plane and the ground control system interfaced via the PFN/TRAC robotics unit and the Remote Control RC pilot in the center of the figure. In the lower front of the aircraft is a green lock box PFN/TRAC unit, a protected gateway interface node for vital aircraft controls, any essential flight and landing programming and communications controller with the ground control system. PFN units can be duplicated and placed anywhere and secluded and protected and interface with the aircraft electrical bus in an fashion determined suitable by component engineers. Additionally, connected to the PFN/TRAC unit is an antenna to receive wireless communication via hand held carryon devices such as cellular phones, personal navigational devices other personal PFNs, mobile office units, personal computers and palm pilots. The dominant aircraft PFN operating is the master controller and communication router and can use any comm. link to down load data to surface providers and special NENA numbers linked to the FAA / DOD Compromised flight control. No good name for the control center is set up here. What is in place can be configured to handle the FACT control protocols. FACT robotics flight plans have to be developed by the Military and aircraft security contractors with DES Parallel chipset and the Home land security Czar CIA, FBI, NSC, pentagon, CDC and essential other agencies all have to develop procedure and protocols for their role and access to TRAC information and individual encoding if appropriate. Flight and landing program libraries for the SBs and different airliners need to be written in 60 days- Virtual RC pilots for ground an pursuit aircraft trained 60days. Five ground RC simulator Stations with RC comm. Link have to be built at the 5 SBs in75 days. 5 safe bases, air routes and airspace have to be determined, out fitted supplied, manned and secured converted from military and federal property 60 days. All flights to have TRAC protocol inplace

Figure 5 continued

a aircraft manufacturers, airlines, government agencies hardware software or humans to forcefully fly and maintain control of any flight that experiences a hijacking or compromised flight controls effective in 60 days. Air marshals or plane police to be assisted by educated citizen passengers and more and more automated flight controls

technology that provides the capacity to organize, record, report, relay and control data and equipment through a machine messaging matrix that assists or replaces the standard Human Machine Interface HMI with accountable robotics and or remote control. First generation TRAC can be rapidly deployed through present avionics for today's air travel.

Acronyms

The following are basic terms and definitions used for this invention: The PFN is a Protected Primary Focal Node (an accountable controller/ telematics interface unit and communication router. The **PFN** contains TRAC a Trusted Remote Activity Controller to perform accountable & reliable robotics and remote control. FACT stands for Federal Access and Control Technology. RC=Remote Control , WoJack =Wo War ops and **Jack** is taken from hi jacking. **TRUSTED** for this invention means; Reliable, Accountable, and Acceptable **to all the public** (the citizens, government, and commerce.

Of particular value right now, TRAC technology can be embedded into aircraft (at the design stage or after-market) and perform accountable functions for the purpose of gaining control and stopping the unauthorized or unsafe use of an aircraft. Known as the **PFN/TRAC System™,** the architecture utilizes existing Commercial Off the Shelf COTS aircraft technology to create the automated controls for robotics flight and remote controlled landings absent any (local) human to pilot the aircraft.

However, in a hijacking the lack of flying skill is not the only concern. The aircraft might well be commandeered and deliberately used and guided for it's destructive potential (e.g.

a human guided missile into the WTC). In this scenario it is necessary to restrict the local flying controls immediately. For fly by wire controls the conversion to exclude a local pilot on board the aircraft can be achieved far faster than those aircraft still using physical links. Total hydraulic systems and hydraulic assist systems can be converted to exclude local controls easer than physical link systems, but still more difficult than fly by wire systems. Physical lockouts on human controls and remote control automation are workshop tasks for anyone skilled in the art. Engineers/technicians can construct a secure RC operated or robotics aircraft from existing aircraft. Aircraft automation and computer controls are quite advanced today. The big jump is psychological to TRUST an automated system with the well respected job of pilot. However, it is easier to protect and secure a small electrical control package in comparison to a human and a cockpit. And this TRAC package is backed by a massive mindful machine messaging matrix of coordinated human and artificial intelligence and help.

The initial goal after eliminating local control is to stabilize the planes flight path. This second objective is accomplished via local robotics for better real-time responsiveness in flying the plane a distance to a predetermined Safe Base. The TRAC processor will have five preprogrammed flight plans . TRAC is interfaced with the essential E/E bus to operate the planes flight control surfaces. Additional controls interfaced with PFN/TRAC are to be the cabin air pressure controller. TRAC can restrict any air exhausted from the cabin by either routing the air through carbon dioxide scrubbers/converters. TRAC will also add fresh air (O2-?). Removed cabin air will be compressed and canned. This un-recyclable air or waste air is then presented to a sensor array to detect bio-hazards and toxins. Once transducers have converted any molecular substance into an electrical signature, the signal is transmitted to TRAC . TRAC running recognition software will analyze it locally. If not identified by the local software library it is recorded and reported to the surface by any secure on board TRAC interfaced communication if the ded frequencies are compromised. The data is to be used locally for emergency in flight options and on the surface for the Safe Base system to prescribe the appropriate safe base response for the incoming troubled aircraft. Informed decisions will be made to terminate flight, bag it when it is down, sterilize it, or how to unseal it on the ground and deal with it). Also, connected to the aircrafts ventilation system will be a TRAC controlled valve with debilitating gas (sleep

gas or chloroform, etc. ?) that can be activated from the ground or robotically for what is [redacted]med a **Wo** Jack scenario or **FACT** protocol..

During the final approach to the designated safe base landing zone the robotics flight and glide path control gets a hand off to a Remote Control RC pilot in a surfaced based converted flight simulator receiving secure and redundant essential data streams via a protected multiple digital control channels for the greatest real-time responsiveness of aircraft. Additional control is added by a software algorithm (fuzzy logic) for a heightened and more accurate glide path; a TRAC guarding angle function. The result is an intelligent airplane with an accountable autopilot and RC pilot performing an uneventful landing with sleeping occupants. Worse case scenario being the bad guys have their own air supply. However, their hostages will be dead weight and un reactive to their commands terror tactics, which in some circumstances could lower collateral damage due to passengers erratic movement when the plane is boarded by swat teams. TRAC can always change the atmosphere and revive the passengers if this proves more beneficial to a security protocol.

Abhorrent RC and robotics accessory Options

TRAC will have the ability to dump any fuel from a remote location or via robotics. Obviously, TRAC could perform many undesirable functions including the ultimate destruction of the aircraft. A proper decision tree has to be determined for RC choices and these emergency **FACT** software protocols like **WoJack**. PFN/TRAC was created to improve human life and public safety in transportation. This inventor quotes three laws from The Handbook of Robotics 56 edition and feel's they apply to this use of artificial intelligence. Additionally they can serve as a construct for writing code for TRAC/FACT operating systems and programming.

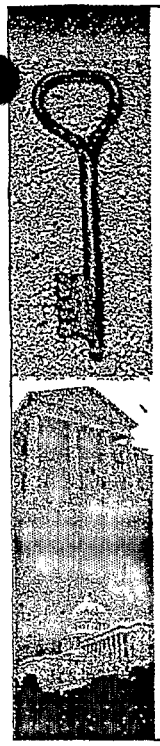
1. A Robot may not injure a human being, or, through inaction, allow a human being to come to harm.

2. A Robot must obey the orders given it by human beings except where such orders would conflict with the First Law.

3. A robot must protect it's own existence so long as such protection does not conflict with the First or Second Laws."

e PFN/TRAC technology was developed to accountably operate automate and remote controlled vehicles, machines and equipment and human controls on all types of equipment have been explained and taught through out the prior related patent application filings so thant anyone skilled in the art of aircraft design can easily fabricate the necessary augmentations to their aircraft controls to first eliminate their local use and secondly automate these same controls or control pathways un obtainable by anyone on the aircraft to create the robotics and remote control qualities to perform these TRAC first generation protocols in relatively brief time.

Because of the variety of aircraft performing commercial flying to day this will vary from plane to plane in every airline. However , all large jetliners should be fully TRAC automated for Robotics Flight and Landing at the Safe bases in 280 days. All commercial air craft automated to land at the 5 bases in 365 days . and all private aircraft out fitted with TRAC ESN trackable automated systems and flight plans in new FAA flight logging and reporting system in 800 days. Total accountable air space security. Ultimately as TRAC systems become inexpensive and more sophisticated to help the inexperienced pilot fly there plane more efficiently auto take downs for everything that flights will be an absolute and hostile take downs by authorized pursuit aircraft a viable option for public safety and national security threats by air or in any transportation vehicle for that matter.



GOVERNMENT

- Develop the Nations Software Codes For FACT
  - Security Contractors & Military (Omaha)
  - Set Up FACT Registry
- Legislate Laws, Rules, Regulations & Codes
- Fund & Back PFN/TRAC Interface Development
  - Create a Collaborative Inter Agency Effort
  - Call for a Unified Commercial Effort
- Instill Domestic Tranquility By
  - Increasing Public Safety (Security)
  - Insuring Individual Rights Freedom and Respect
  - Leading in Proper Citizenry

Fig 6 The federal government will be responsible for developing it's own code for Federal Access and control Technology and the protocols and procedures. Just how different the codes need to be per agency and application is a decision that must be determined and may vary from time to time. FACT Registry provides a flexible structure to track component use with in it'd vast machine messaging matrix to guard against bogus RC parts or devices being used to perform terrorist remote control activities or to steal parts or devices and use them in a different location or as part of a different system. This will eliminate vehicle part theft and provided better tax structure for the sale of used materials . New product controls and product performance can be followed for greater public safety and awareness. The government needs to help develop this management system for more intelligent use of resources, greater economic development and better watch on technology's impact on the environment and societies infrastructure. Finally the government should take advantage that this technology was created on a constitution construct to process data efficiently and manage machine use, while protecting personal privacy and individual freedoms in a free society like America.

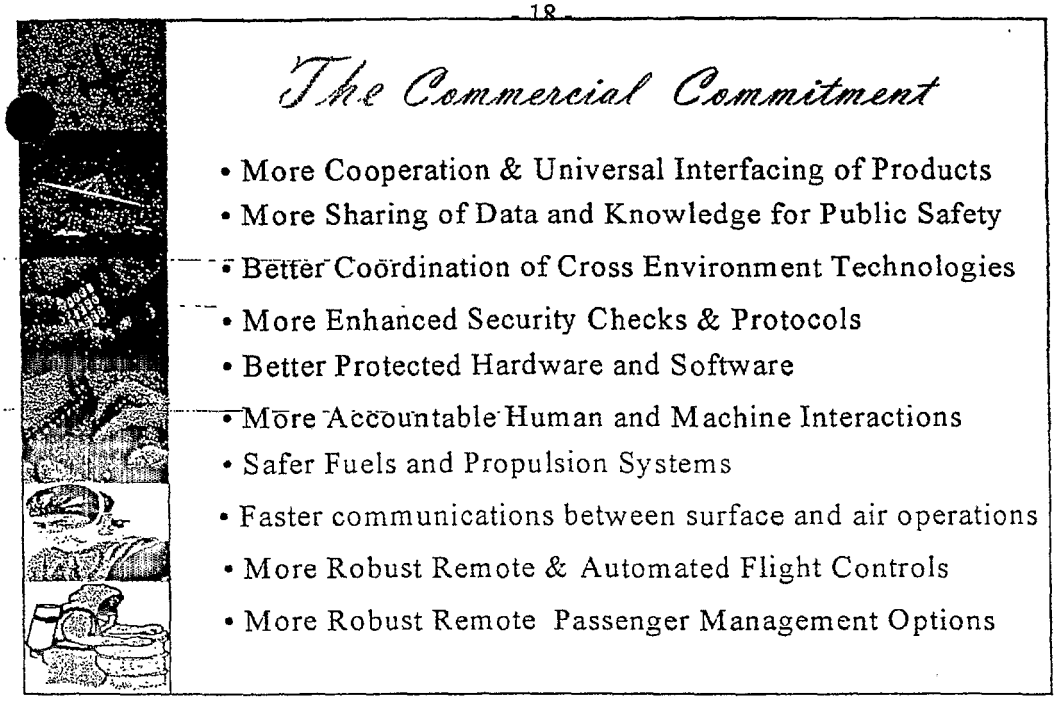


Fig7 This is the biggest challenge for the PFN/TRAC System. To develop a cooperative environment of working with all manufacturers and all industries to construct this vast machine messaging matrix and make it efficient. This technology was created to solve driver distraction from cellular phones navigational aids virtually anything by making machines and vehicles more robotic to assist human workload in operating the equipment. The other objective was to coordinate use and movement for more efficient use.

This slide was made for the aircraft industry but as will become abundantly clear in the following slides is that this invention ties all Transportation together to help achieve all the objectives of this slide.

After the recent events in New York and Washington American cooperation between corporation in the aircraft industry and the airlines are bound to be forth coming , but it is also need and coming to combine all modes of transportation for greater public safety and national security.

This invention can truly help America and it's economy be more stable and secure through the organizational architecture of this accountable machine messaging matrix

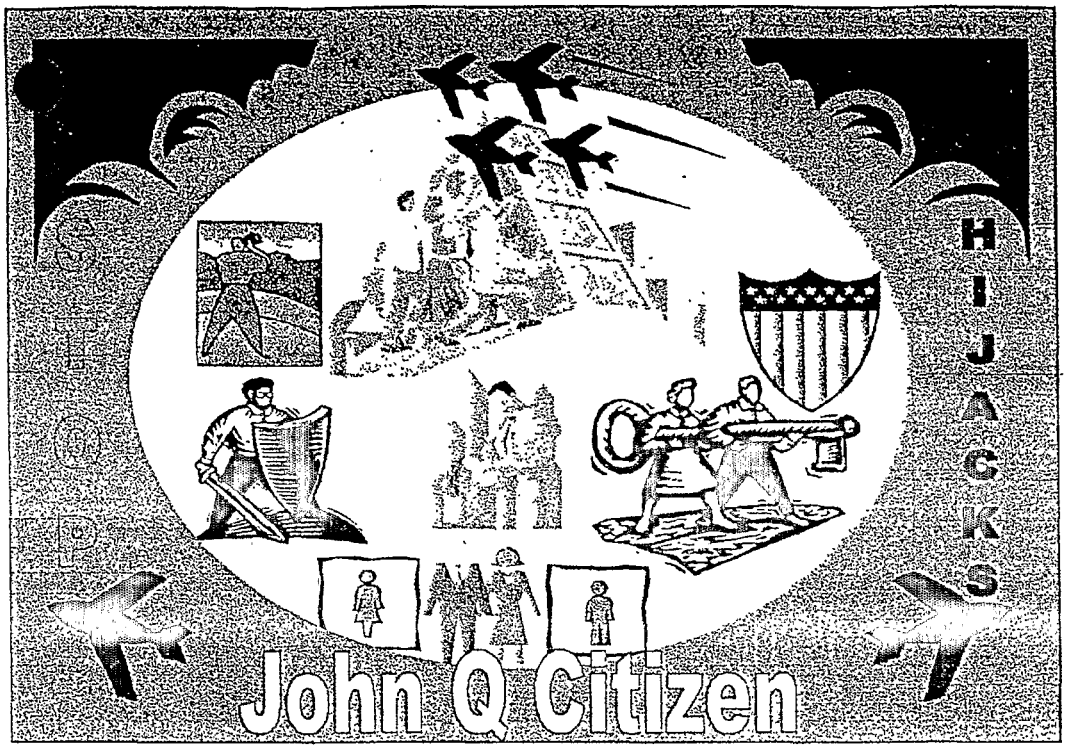


Fig 8 This slide is to point out how each individual person must rally to put the PFN/TRAC System Protocols and first generation technology in place. Much of the early security will require vigilant observation and a willingness to get involved and stop terrorist in any manner necessary as systems are being put in place. One such citizen step might involve the aggressive physical thwarting of a hijacking and assault on the cockpit and pilot as the only best option for all concerned until the robotics and remote control systems are in place to take control of the aircraft's controls and fly the plane keeping the hijacker from killing the pilot and taking control in an only option.

As part of the TRAC first generation protocol any planes not equipped with automated TRAC WoJack protocol systems the Passenger information bulletin should instruct the passengers how to take an aggressive option with fellow passengers and warn them of the risks. Additionally citizens should be educated to observe radical groups and report any such questionable behavior to the proper authorities. Not like nazi brown shirts nor should government agencies operate in such a manner.

Fig 9 This slide is to help develop the cooperation between the four basic elements that must work together to commercialize the PFN/TRAC system in aviation. The Bush administration the president , Congress, the commercial interests and the regular citizen. The technology is taught well through out the first seven related applications and the full nature and scope of this technology is the working and using of the technology together to make a better life.

Flight security is public safety today and it requires all of us looking out for each other today . The Patriot sign on stamps is an area to show all the companies and agencies as well as recognize the public into the development of the invention.

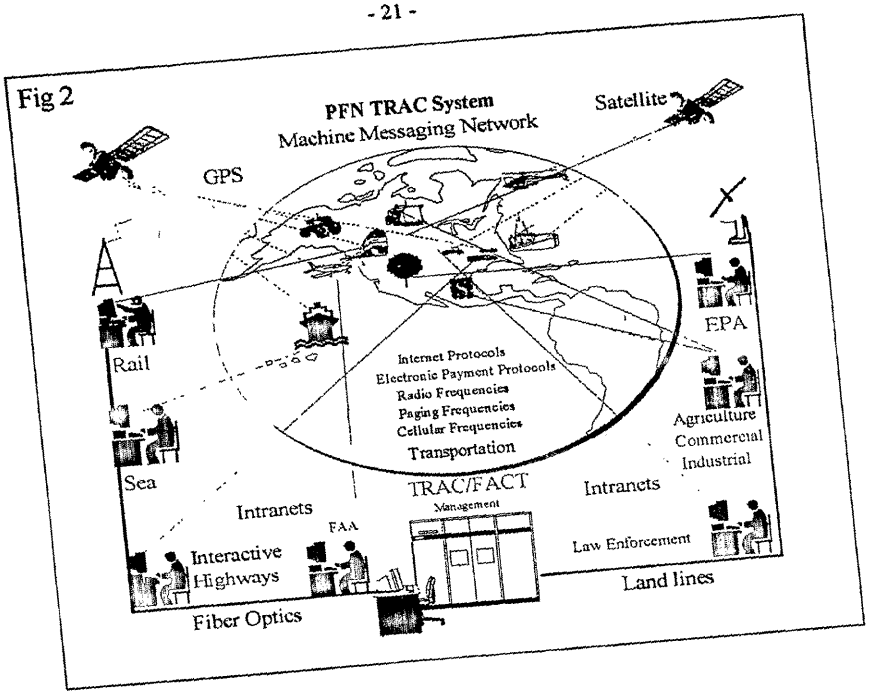


Fig 10 This illustration is taken from earlier related patent filings and show the Transportation machine matrix with a world of machines having PFN/TRAC units communicating wither wireless intranets and being connected to a TRANSPORTATO MACHINE MESSAGING MATRIX including the FAA

These intra nets provide for greater equipment management and traffic movement as well as improve the data acquisition for government agencies. The system provides greater government service to the public, quicker Public safety notices, quicker government response for emergency services as well. Greater coordination between government agencies and and tighter communication and understanding between industry and government

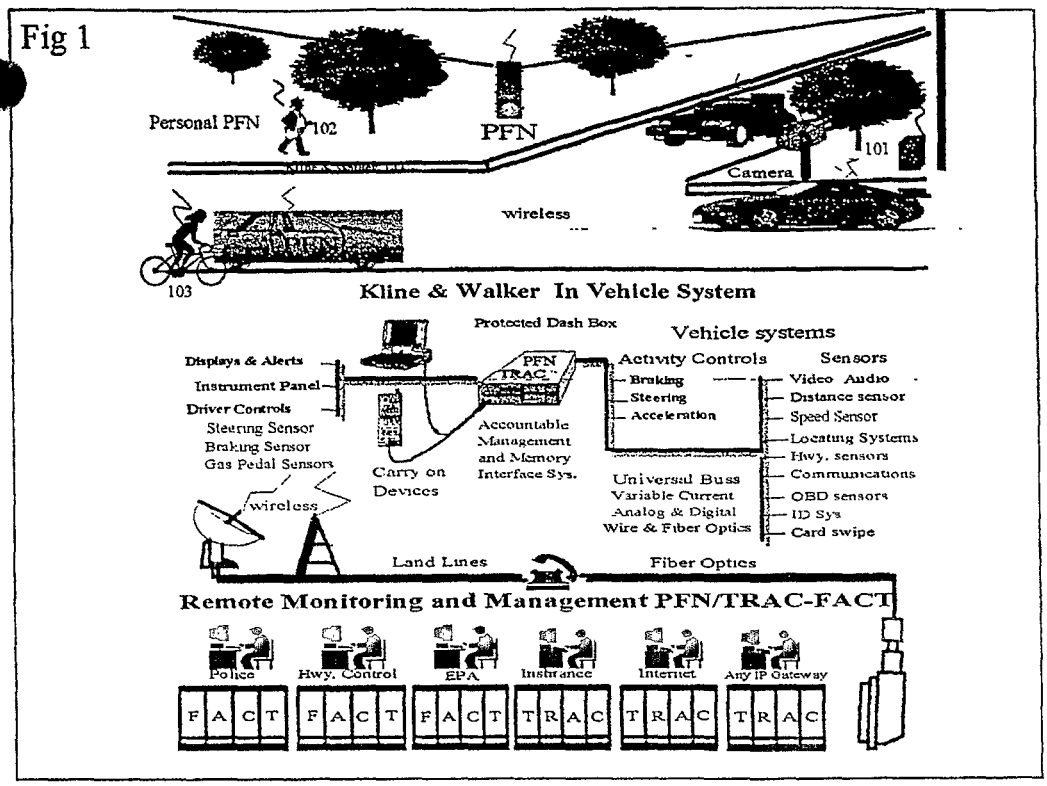


Fig 11 This drawing is of land surface transportation but shows how a vehicle PFN?TRAC unit , Personal PFN/TRAC unit and a stand alone PFN/TRAC unit all work together to create an interactive intersection and improve public safety.

In the top third of the page there is a man walking 102 a PFN controlled traffic light and traffic communication controller PFN 101 a cyclis with a personal PFN 103 along with 3 PFN vehicle approaching the intersection . All of the above are in communication and 101 is master in the intersection command structure . However the blue car is aware of the cyclist 1o2 and the driver is warned. If any of the drivers wer not paying attention and their were going through a red light their car would automatically stop and they would be warned.

In the center of the drawing all the Systems SUC for the vehicle's CAN Bus are interfaced and under the auto PFNASIC controller, including carryon devices cellular phones and personal computers and are controlled with the car via an operational algorithm

At the bottom shows the wireless, wired IP protocol machine messaging matrix of TRAC and FACT protocols to serve and protect surface vehicle and their improper un safe or unauthorized use

Fig 4

Accountable Equipment Repeating/Digitpeating
Wireless PFN/TRAC Routing Transceiver & IP Interface

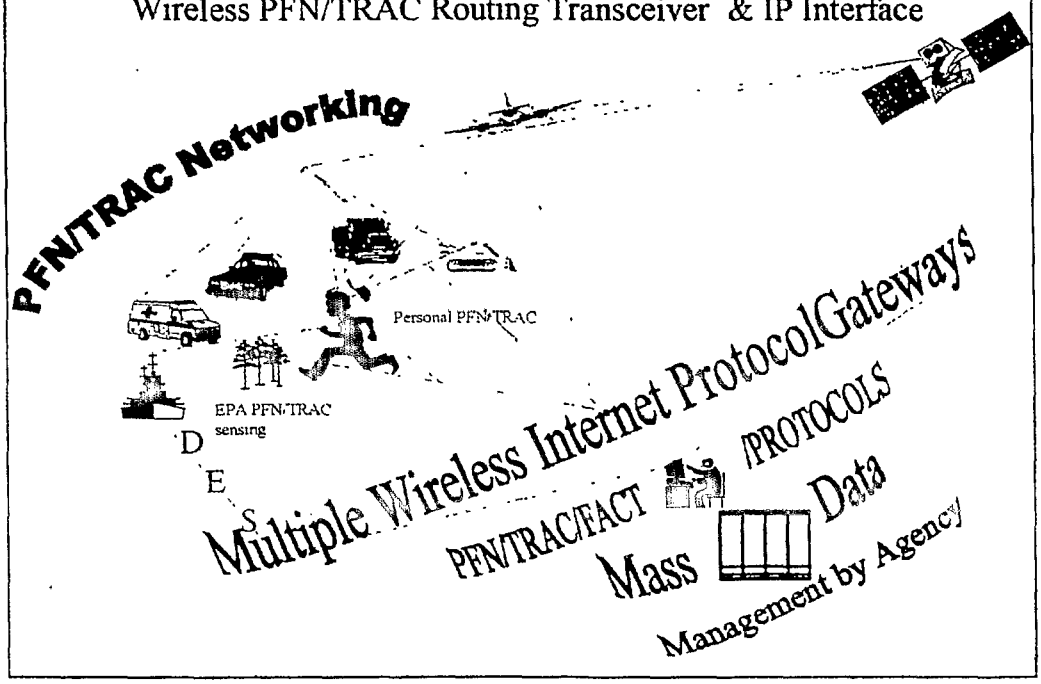


Figure 12 This illustration shows personal PFN/TRAC units that can be attached to individuals and the PFNs interface with all equipment and machine vehicle and stand alone PFNs capable of repeating their emergency communications through translated communication protocols and relaying their message via more powerful equipment PFNs for longer range. The mobile flexible mobile web allows for endless tracking and aggressive accountable remote control if deemed necessary. Personal systems have be designed for criminal applications, child tracking medical telemetry and automated medications. These systems will interface with the aircraft, car, train , bull dozer, printing press any machine using TRAC management allowing for the tracking through out the matrix. Obviously of value for questionable foreign nationals and conditional release of freedom of movement individuals.

These systems for flight crew or the medically ill when transported would have value or tracking child travelers or those with diminished mental capacities

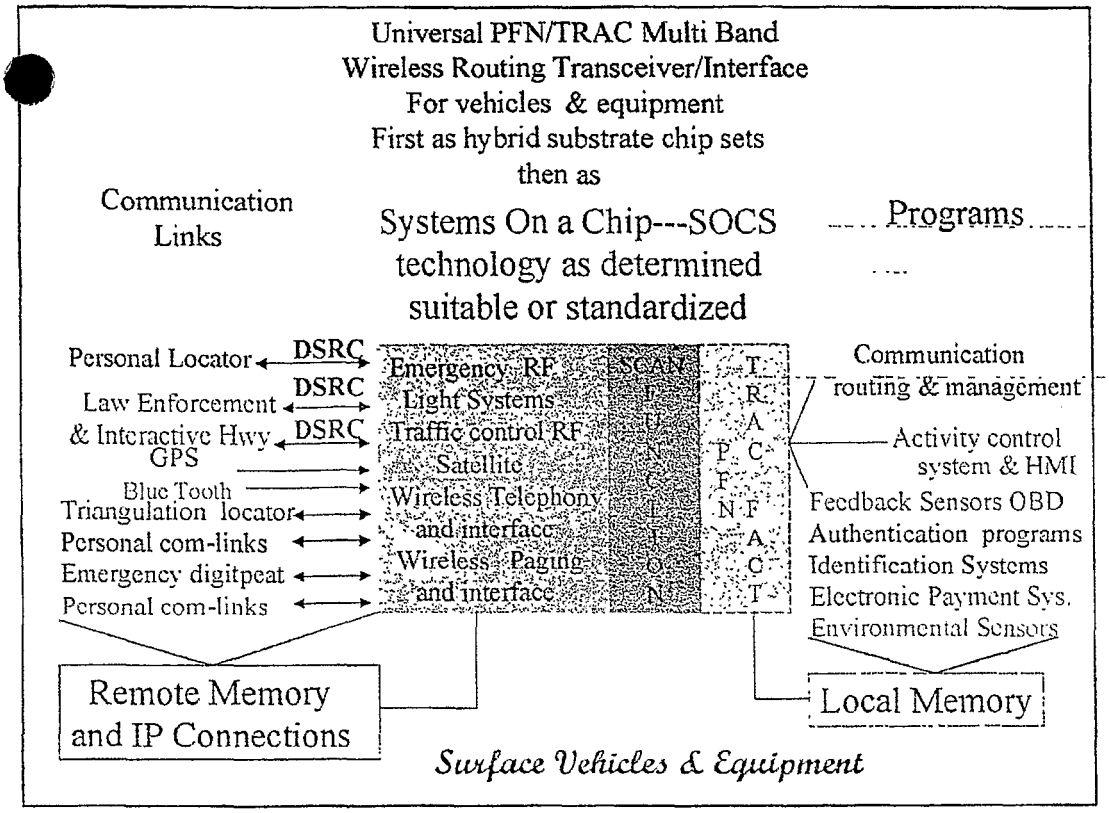


Fig 14 This diagram is taken from a prior Surface communication application and is presented here to show the multi-wireless communication systems that are scanned and used to complete a larger emergency communication matrix . This is the repeater and routing function for the PFN/TRAC technology. The aircraft industry will use more specialized communications systems that are more application specific to air travel. However, the PFN/TRAC air travel systems will also interface the same commercial off the shelf customer carry on device frequencies to control the use of these devices during air craft operations and have other viable communication routes available to an aircraft in trouble. The specialize communication protocols for air travel are addressed in the avionics alphabetical directory that is part of this application.

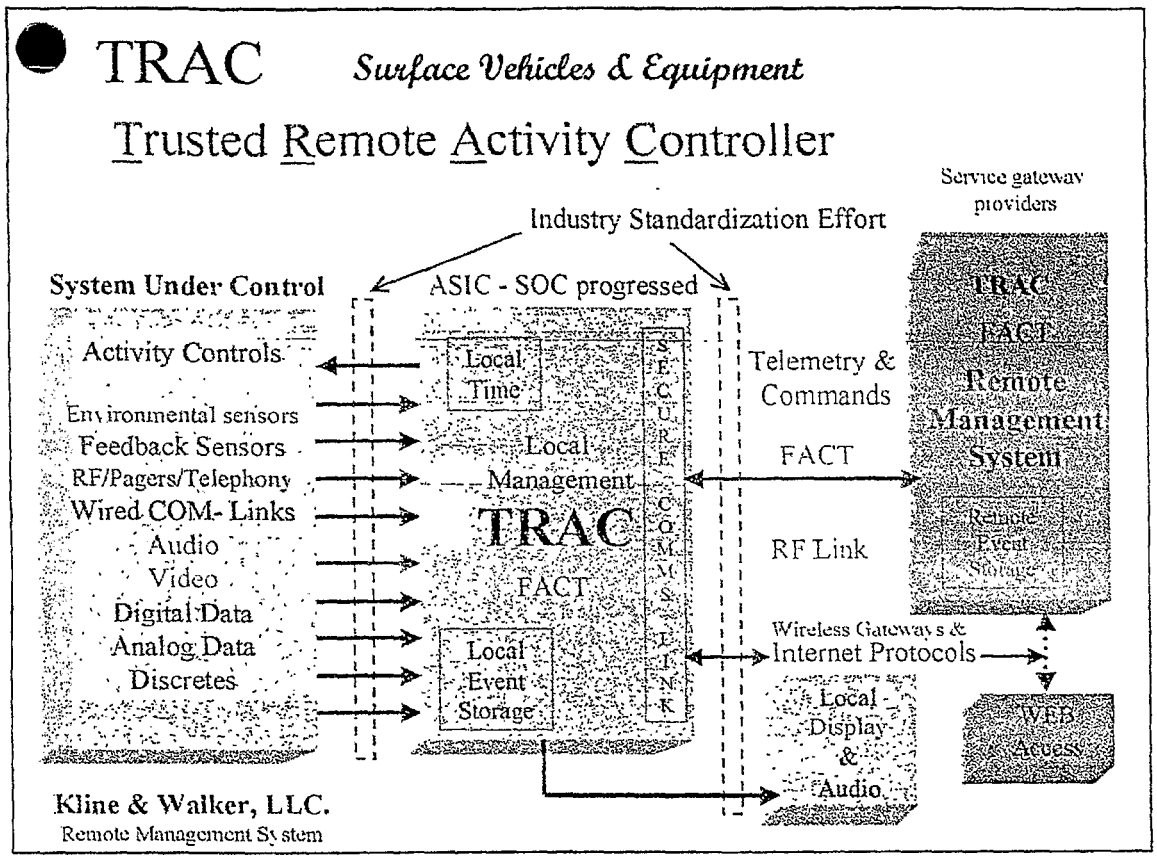


Fig 15 This also is an illustration well described in earlier related filings and basically gives an overview of the Trusted Remote Activity Controller or TRAC system. The illustration is geared for surface applications, however the basic design is the same technology. The green block to the left shows SUC systems , sub systems or systems under control. These systems are detailed in the alphabetical index for the aircraft. The center TRAC block is the processor running the local software and routing and processing the communication and various data streams. Figure 14 better shows the routing and scanning function and may be part of an integrated circuit or board, surface mount, a hybrid substrate of application with specific chipsets to handle the different protocols or a SOC design Systems on a chip . All hardware and software configurations will be application specific but always be improved by minaturiation greater number of systems interfaced, better redundancy or backup and protection , more universal and less expensive, and greater security reliability and accountability. The blue box is the gate way portion of the TRAC system to any intranets and the large machine messaging matrix or IP network for data acquisitions management and strorage.

Discription of drawings will be further explained and structured in formal filing. No new [illegible]terial is expected, other than is understandably inherent from this document, prior related filings and claims made to any skilled in the arts and sciences effected by this accountable management technology. Time and the present national circumstance did not allow for the formal formatting of this aviation PFN/TRAC protocol completely to detail. The FAA and avionics has always been an intricate part of the PFN/TRAC technology transportation and mobile management section and has been planned for in the development of this machine messaging matrix for humanity to better manage it's machines with the earths environment. Additionally, the PFN/TRAC System was created to provide a stable artificial intelligence for the abnormalities experienced from our different individual learning curves, behaviors or individual terms of existence through out the world. The system is designed to enfranchise all and help, provision for all with fair and just management by all, while maintaining public safety for all. No small task indeed, so it will require us all.

For those of us that fear the real dangers in robotics and machine intelligence, I am listing a quote I used in my earlier writings to the DOT on collision avoidance systems and enhance Human Machine Interfacing HMI for the DOT Driver distraction website. It is taken from the Handbook of Robotics, 56 edition and should be part of any construct or a software operating program written for mindful machines in the future. It Provides a good conceptual basis for the Primary Operating Algorithm (construct) to have constitutional code written to. An optimum logic tree for shared Human/Machine control scenarios and total robotics.

"The Three Laws of Robotics (for any artificial intelligence)

1. **A Robot may not injure a human being, or, through inaction, allow a human being to come to harm.**
2. **A Robot must obey the orders given it by human beings except where such orders would conflict with the First Law.**
3. **A robot must protect it's own existence so long as such protection does not conflict with the First or Second Laws."**

Additionally, for most all of recorded time man's greatest threat of an early demise has come from, non aware machinery, another or pestilence things that more stable,

responsible, respectful management eliminate. A management that all of humanity can participates in, in an efficient manner both locally and on world issues that impact individual lives. The PFN/TRAC System ™ can eliminate the chads, dimples and the feeling of no votes for what ever reason as well as, help stop in real-time the unauthorized use of vehicles, machines and equipment so injurious to public safety of recent times.

This acronyms text is taken from the "Allied Signal Terms and Definitions of Avionics". It is used to key note the specification of the PFN/TRAC System and relate to the initial figures which were used as a slide show for the DOD, FAA, Airlines and major Aircraft Manufacturers. PFN/TRAC System by design is a work in progress from this US Provisional Application though the PCT process and all formal national filings for the entire technology. It is meant to serve as a tool to address the issues and improve this technology in aircraft for optimum public safety on a continuing basis. The basic invention is well defined in this application and the seven related filings; and deals specifically with protected accountable machine controls, artificial intelligence (robotics), communication and data routing, equipment and system interfacing with an inherent concern for impacts on humans and the environment.

This list of definitions is edited to deal with aircraft systems, ground systems and the affecting, sovereign nations, their government agencies, their rules, regulations, law, protocols and standards. The PFN/TRAC System is designed to organize and make more universal and secure interfacing between machine systems, people and thier societies; both on the surface and near the surface of the earth to increase public safety and to protect the environment for a free, respectful and peaceful world.

Alphabetical check list for TRAC interfacing with present Avionic systems in aircraft and on the ground for enhanced FAA HMI forHardware, Software and Wetware (Humans)

A

AEP Audio Entertainment Player (interfaced and controlled as needed by TRAC)
AERA Automated En Route traffic control **(Direct inface with TRAC)**

ATCSS Air Traffic Control Signaling System. A system to provide information between pilot and air traffic control using the VHF communications transceiver inconjunction with data link equipment(**Direct interface with TRAC)**
ADF Automatic Direction Finder (Direct TRAC interface)
ATE Automatic Test Equipment **(A TRAC Performance check protocol w/failure flag)**
ATIS (1) Automatic Terminal Information System
(2) Automatic Terminal Information Service
ATIS (1) Automatic Terminal Information System
(2) Automatic Terminal Information Service
ATNP Aeronautical Telecommunications Network Panel (TRAC Accessible)
ATOMS Air Traffic Operations Management System **(control TRAC protocol)**
ATP (1)Acceptance Test Procedure (Air Transport)**(Confirmation test of TRAC)**
(2) FAA Air Traffic Rules and Procedures Service
ATP (1)Acceptance Test Procedure (Air Transport) **Confirmation test of TRAC and equipment readiness**
(2) FAA Air Traffic Rules and Procedures Service (**To be programmed as needed in TRAC software)**
ATS (1) Autothrottle System (**TRAC Access and Control)**
(2) Air Traffic Services(**Connectable as needed)**
(3) Air Turbine Starter **(TRAC connected)**
ATSC Air Traffic Services Communication **(DATA Connected TRAC)**
ATSU ATS Unit **(Interfaced)**
AVLAN Avionics Local Area Network **(Interfaced w/TRAC)**
AVPAC Aviation VHF Packet Communications **Interfaced w/TRAC)**
AVR FAA Regulation & Certification**(For TRAC)**
AWOS Automated Weather Observation System. A system that gathers surface weather information and transmits the information
B717 Boeing Model 717 Aircraft (formerly the MD-95)**(TRAC IN)**
B737 Boeing Model 737 Aircraft **TRAC IN)**
B747 Boeing Model 747 Aircraft **TRAC IN)**
B767 Boeing Model 767 Aircraft **TRAC IN)**
B767ER Boeing Model 767 Extended Range Aircraft **TRAC IN)**
B777 Boeing Model 777 Aircraft **TRAC IN)**
B7x7 Boeing Model 7x7 Aircraft **TRAC IN)**
BA British Airways **TRAC IN or part of) FACT & TRAC for any flying Domestically)**
BAP Bank Angle Protection **---overspeed (sensed by TRAC processor or substems controlled by TRAC for programmed flights t5o safe base**
B a ro - C o r r e c t e d Pressure altitude-corrected local barometric pressure.
Altitude (Data & connection acquired & protected from any subsystem as needed By TRAC processor or Systems Under Control SUC)
BGI Bus Grant Inhibit. A term used in CAPS transfer bus processing. **(utilized as needed to complete TRAC SUC System and Protocols**
BIST Built-in Self Test **For TRAC to determine system failures and to be standardized and approved as a TRUSTED SYSTEM for Remote and Automated flight controls**
BITE-equipment

BPCU Bus Power Control Unit **(Access to operate and maintain TRAC power requirements sustain TRAC emergency power pack readiness and energize all essentil TRAC peripherals in a TRAC event**
CAA Civil Aviation Authority. A regulatory agency in the
United Kingdom. **(Test and Approve TRAC and Develop national FACT command codes) All commercial aircraft will have geographic location sensitive FACT key codes and identification communication protocols activated by TRAC processed I/O data for the sovereign air space**
CAAC Civil Aviation Administration of China **(situational determination of FACT protocols and use will be determined by the owned and operating country of the aircraft**
CAASD Center for Advanced Aviation System **(to play an appropriate role in TRAC System Development)**
Development(The Mitre Corp.)
C/A Code (1) GPS Course Acquisition Code
(2) Course-Acquisition Code **SUC system to TRAC and used jointly with other navigational data to determine air space and operate the aircraft**
CAC Caution Advisory Computer **(Tied into TRAC computer and running FACT command software communications**
CACP Cabin Area Control Panel **(electrically monitored and video recorded and reported byTRAC locally and to ground support regional IP buffers and FAA,NTSB mass data storage unit or any other agency determined as necessary**
CAE Component Application Engineer **To address TRAC & FACT System and protocol gerational configuration, interfacing and deployment with forward and backward engineering concerns**
CAGE Commercial Avionics GPS Engine **(on board TRAC system responsive)**
CAH Cabin Attendant Handsets **all audio and video in the cabin and in the cock pit or in the storage compartments as well as all sensed data is recorded and reported in real-time both locally and to the ground via stream data or packet ized data with reception confirmation- Some data acquisition isdetermined as continual monitoring and event programming dictates data handling. Protection for all such systems is to be application specific for aircraft with special consideration to seclusion and limited access**
CAMI FAA Civil Aero medical Institute **along with the Center for Disease Control is to be an intricate part of the Wo (Jack (War OPS) protocol a FACT protocol for compromised flights that have to land at safe bases due to biological or chemical contamination**
CAPT Captain **TRAC identification and monitor forCompetency Assessment system software algorithm (Eye evaluation HMI over control reaction as a symptom of fatigue or deminished consciousness, head tilt and atmospheric changes in the cabin sensed by spectral analysis or the nose, fight crew out fitted with bio-telemetry transmitted to the TRAC processor monitoring flight crew and critically ill passengers with PFN/TRAC personal units on(telemetry accomplished either wirelessly or connected**
CAS (1) Computed Airspeed **(interfaced with TRAC programming)**
(2) Collision Avoidance System **SUC Interfaced system with TRAC)**
CAT III c Operational performance Category III c. An ILS facility

providing operation with no decision height limit
and along the surface of the runway and taxiways
without reliance on external visual reference. **An absolute minimum for SAFE BASE field technology along with a ground based virtual RC pilot in a converted flight simulator with actual troubled aircraft flight data telemetry and video imaging for the RC pilot to fligh the pilotless aircraft to a safe landing**
CBA Cost Benefit Analysis (**(Always TRAC)**
C-BAND The frequency range between 4000 and 8000 MHz. **TRAC interfaced**
CCIR International Radio Consultative Committee types of **Commuications/frequencies and emergency cross translation protocol approved by the committee**
CCITT International Telegraph and Telephone **Consultative TRAC aproval**
CDI Course Deviation Indicator **SUC TRAC interface and an initual flag for the Wo Jack Protocol to sense the change of control of the aircraft or determine the plane is being used in an unauthorized manner**
CDR Critical Design Review **should incorporate all effected agencies and industry organizations and safety stands for all technologies interfaced in the RC program or robotics programming for the PFN/TRAC System™**
CDTI Cockpit Display of Traffic Information **capured on video for TRAC system automated flying use and Record**
CDU Control Display Unit **directly interfaced with TRAC Processor**
CEPT Conference Europeene des Postes et
Telecommunications **To approve communication interface protocols with (TRAC)**
CF Change Field **SUC as determined necessary**
CFDIU Central Fault Display Interface Unit **direct connect with TRAC processor**
CFDS Centralized Fault Display System **Video and audio recorded with all possible data transmitted to the surface for as long as the event is occurring via any and all communications available to include passenger cellular phones wirelessly interfaced to the TRAC processor(like bluetooth) and transmitted to a preprogrammed phone address and computer modem- set up as part of emergency protocol for cellular and wireless telephony with IP connections to FAA and government real-time emergency air emergency response computers involved**
CFIT Controlled Flight Into Terrain (As part of TRAC
CHI Computer Human Interface **as part of (TRAC)**
CHOL Collins High Order Language **(if acceptable to be used in FACT programming)**
CI (1) Configuration Item
(2) Cabin Interphone is recorded **with voce recognition technology and identity algorithm**
CIDIN Common ICAO Data Interchange Network **TRAC interfaced**
CIDS Cabin Interphone Distribution System **(quarried for flags in TRAC boot up and monitored**
CIE Commission Internationale de I Eclairag **Approval for TRAC**
CMS Cabin Management System **SUC by TRAC**
CMU Communications Management Unit **is a Slave SUC to TRAC with redundant connectables physical or wireless links between the systems if they are distributed**
CNDB Customized Navigation Database **interfaced with TRAC**
CNS/A Communications,Navigation,and
Surveillance/Airborne **interfaced with TRAC**

Coasted A track that is continued based on previous track
Track characteristics in the absence of surveillance data
reports (TCAS). Plus Surface track data up up loads through the TRAC system
CODEC Coder/Decoder **Redundant in TRAC**
COMAC ICAO's Communications Advisory Committee **(To approve communications and interface protocols used and routed through TRAC**
COMM Communications
Compass A low-powered radio beacon,used in conjunction **Data Quarried by TRAC to confirm event activation protocols**
Locator with ILS. A compass locator has a 2-letter identifica
tion and a range of at least 15 miles. **Also monitored by TRAC and used in determining event protocol and robotics flying via software algorithm running in the processor as well as data reported to RC Pilot for final approach and landing**
COMP Compressor **TRAC will monitor and control the compressor for cabin air pressure and be capable of stopping it as a SUC if determined necessary under any Wo Jack or FACT protocol**
CPC (1) Cabin Pressure Controller **TRAC will have SUC here as well**
(2) Cursor Position Control
CPCI Computer Program Configuration Item. A CPCI number
identifies the configuration of a computer software
program. **All such TRAC/FACT Config and module software numbers will be created with the strictest of security and individuals will be aware strictly on a need to know basis. Sovereign nations should write their own code and SN them in a proprietary manner, unless it is determined that allied security is acceptable.**
CPDLC Controller-Pilot Data Link Communications This is an obvious data link for the TRAC Flight system for robotics or remote control flying and will provide data to the local TRAC unit on board and down to the RC station for final Robotics hand off RC landing – First generation 2 step Remote and auto control protocols (Proprietary to this PFN/TRAC System
CPI Continuous Process Improvement TRAC evolution
CPM Core Processor Module **if not with in the TRAC protected system must be slave to TRAC processor and have redundant option to TRAC if deemed essential in TRAC protocol**
CPS Cabin Pressure Sensor **SUC interfaced under TRAC**
CPU Central Processing Unit **Existing systems if capable can be set up to perform first generation TRAC protocols as rapidly as possible with systems becoming more consolidated**
CR (1) Change Request **(all CRs to the TRAC system requires special accountable security clearance and identity checks before the system will allow access**
(2) Contrast Ratio
CRADA Cooperative Research and Development Agreement **This is an absolute necessity for TRAC technology to be put in place**
CRES Corrosion Resistant Steel **An obvious component construct for protective cans packaging essential TRAC components**
CRC (1) Cyclic Redundancy Code
(2) Cyclic Redundancy Check **BothCRCs are to be employed to insure security and reliable service in the TRAC system**

CRPA Controlled Reception Pattern Antenna **As necessary TRAC**
CRS CourseTrac monitor
CRZ Cruise
CSC Cargo System Controller **Nose sence explosives Bio hazard, radiation, video audio weight TRAC monitored and warningFlag software preflight during and postfligth residuals**
CSCP Cabin System Control Panel **interfaced or SUC to TRAC**
CSDB Commercial Standard Data Bus **Connected to TRAC with multiple or redundant ACCESS FOR TRAC AND TRAC PROTOCOLS**
CSDS Cargo Smoke Detector System **monitored by TRAC recoded and reported event**
CSEU Control Systems Electronics Unit **SUC by TRAC**
CSMM Crash Survivable Memory Modules **Redundent in TRAC and event reported to the surface**
CSMU Cabin System Management Unit **Slave and event SUC to TRAC**
CU Control Unit **Either TRAC or slave to TRAC processor and protocols**
CVR Cockpit Voice Recorder **Redundant in TRAC and REPORT via versatile high speed communication options of TRAC Routing**
C & W Control and Warning **TRAC providing as to event TRAC/FACT protocols and Monitoring and responding to as to TRAC/FACY protocols**
CWP (1) Controlled Working Position **if necessary TRAC monitored**
(2) Controller Working Position **(TRAC interfaced)**
CWS Control Wheel Steering **SUC TRAC**
DARC Direct Access Radar Channel. An independent backup
to main ATC computers. **TRAC system Access**
DARPA Defense Advanced Research Projects Agency **TRAC Developed by and with this agency support and management**
Data Link A system that allows exchange of digital data over an
rf link. ATCSS is a data link system used by the air
traffic control system. ACARS is a data link system
used by airline command ,control and management
system, using vhf communication frequencies. **TRAC directly connected and interfaced with to provide real-time accountable emergency control of unauthorized aircraft use**
D-ATIS Digital Automatic Terminal Information System **TRAC connected TRAC event master**
DBU Data Base Unit **TRAC connected any system in place presently inany part of the PFN/TRAC system can be incorporated to complete the more secure and remote control system**
DC10 Douglas Model DC-10 Aircraft **TRAC outfitted aircraft systems interfaced and slave to TRAC**
DCE Data Communications Equipment **interfaced and SUC to TRAC**
DCGF Data Conversion Gateway Function **any present system performing communication translation between protocols (wireless or connected) to handle data or process commands can be incorporated in the TRAC protocol of a specific aircraft, made redundant by TRAC if deemed appropriate or inexpensively duplicated across the industry if deemed practical and expediant to complete TRAC PFN Routing functions**

DCMF Data Communication Management Function (**obvious TRAC/FACT interface and Protocol application**
DCMS Data Communication Management System **(TRAC operation and Protocols locally and systemically)**
DCN (1) Drawing Change Notice
(2) Design Change Notice
(3) Document Change Notice **all 3 of the above DCNs are to have an Efficient but Secure review and handling on a need to no basis when pertaining to TRAC components and Interfacing- (reasonable to service needs but all identity clearance for access and change orders (Secret clarences with respect to national security (depcon rating)**
DCP Display Control Panel **video and audio recorded and reported to surface in real time and per TRAC/FAACT event of deemed necessary protocol 30 second loop to to surface buffers for data dumping if deemed unessential**
DCPC Direct Controller Pilot Communication **DCS is additionally connected to TRAC and management and use to be determined for TRAC protocols**
DCU Data Concentration Unit **TRAC system can utilize any DATA compression or storage system in place both in the air and on the ground if determined adequate for TRAC/FACT**
DCV Directional Control Valve **(possible SUC)**
DDA Digital Differential Analyzer **(utilized by TRAC)**
DDD Dual Disk Drive Redundant **systems in place can be used and with TRAC/FACT protocol**
DDM Difference in Depth of Modulation **TRAC use to be determined**
DDP Declarations of Design and Performance. A control
document required by the United Kingdom Civil
Aviation Authority (CAA) for certification of avionics
equipment. **A must for for TRAC to be Trusted in the United Kingdom for commercial use**
DDS Direct Digital Synthesizer SUC for TRAC or SOC or hybrid substrate for any necessary Data recovery from disparate protocols to TRAC system
DDT Downlink Data Transfer **(to TRAC surface controls and storage facilities)**
DECCA A navigation system widely used by shipping in
Europe. The ground facilities consist of a master station
and several slave stations **interface hybrid substrate to TRAC processor or coprable technical solution for position confirmation protocols to TRAC/FACT/Wo jack I/O processor for robotics flight or remote control for location and timing information**
ded Dedicated **as determined by the proper authorities for standard TRAC routes of communication and an emergency ded response for any communication protocol and frequency used by TRAC/FACT processor in a flagged emergency event to include a specialized cross communication emergency translating softwar algorithm to make more universal and extensive essentiual messaging**
DEFDARS Digital Expandable Flight Data Acquisition And
Recording System **This system when present employed in or by TRAC with real-time reporting capability and event storage at the surface via TRAC directed and interfaced communication systems**
Demand AN ACARS mode of operation in which communica

Mode tions may be initiated by the ground processor or the
orne system. **Used imperatively by TRAC system DES and FACT with present security for first generation and higher language and code developed by defense contractors and DOD (Omaha div)**
DEST Destination (any deviation from fligh plan throws a software flag in TRAC/FACT Wo Jack Programming
DEV Deviation **TRAC Software Flag for any flight plan DEV**
DFA Direction Finding Antenna **Date supplied to TRAC system for processing**
DFCS Digital Flight Control System **as a consolidated part of future TRAC systems or interface as available**
DFDAF Digital Flight Data Acquisition Function **Continual monitoring process for TRAC processor and this SUC will be used in robotics or remote control flying scenario if it can be reasonably protected from tampering to satisfy TRAC/FACT security requirements**
DFDAU Digital Flight Data Acquisition Unit. The DFDAU samples, conditions and digitizes the flight data.**(protected and used in TRAC systems)**
DFDR Digital Flight Data Recorder
DFDU Digital Flight Data Unit
DGNSS Differential Global Navigation Satellite System
DGPS Differential Global Positioning System
DGSS Data-link Ground System Standard
DH (1) Decision Height ---all five of the above in BOLD lettering are all SUC to TRAC for robotics and remote control flying and supply the necessary data to flag a FACT Wo Jack reponse
(2) Dataflash Header **on all FACT transmissions for accountability and encoded for security**
DI Data Interrupt **A TRAC control Function if output and flag in data input for on board preprogrammed TRAC robotics for any effected sub system or SUC**
DIAS DGPS Instrument Approach System **all instrument data essential to robotics or remote control flying is provided to and from TRAC processor and PFN TRAC system as Master in a flagged event**
DID Data Item Description part of **TRAC accountability (encrypted for FACT headers)**
DIP (1) Dual In line Package. The most common package configuration for integrated circuits. **And used in TRAC system or created by the necessary components to meet /TRAC redundancy requirements determineed by developed protocols component engineers**
(2) Data Interrupt Program **to be a TRAC monitored and managed function**
Directed A DME operating mode that allows an FMCS to select
Mode one to five DME stations for interrogation. **Data employed by TRAC system and protection of this system a requirement of TRAC**
DITS Data Information Transfer System **used where present or performed by TRAC as an up grade or second generation**
DL Data Link **for all essential SUC to the TRAC processor**
DLC Data Link Control Display Unit **video and aidio recorded and reported per TRAC event**

DLGF Data Load Gateway Function **either performed by TRAC (hybrid substrates or interfaces or SUC in present and legacy aircraft**
DLM Data Link Management Unit **a part of or interfaced with TRAC**
DLODS Duct Leak and Overheat Detection **monitored by TRAC**
DLP Data Link Processor **a part of TRAC physically protected or interfaced with first generation**
DLS Data Load System **interfaced with TRAC**
DLU Download Unit **protected and connected to TRAC communication routing system** appropriate
DMA Direct Memory Access **but accountable and recorded TRAC/FACT DES Collins protocols as determined**
DME Distance Measuring Equipment. A system that provides
distance information from a ground station to
an aircraft. **Interface for FACT WO Jack programming flaged events and for robotics flight and remote control flying via TRAC**
DME/N Abbreviation for a DME normal system.
DME/P Abbreviation for a DME precision system. **Both quarried for essential data to TRAC operations**
DMM (1) Digital Multimeter
(2) Data Memory Module **redundant in TRAC system**
DMS Debris Monitoring Sensor **monitored recoded and reported by TRAC if needed**
DMU Data Management Unit **(a TRAC protected function)**
Doppler The change in frequency observed at the receiver
Effect when the transmitter and receiver are in motion rela
tive to each other. **Data used by TRAC system**
DOTS Dynamic Ocean Tracking System **Additionally, used and interfaced data when applicable and present to a TRAC system**
Downlink The radio transmission path downward from the aircraft
to the earth. **This is in multitude through TRAC communication routing especially in second generation units**
DPR Dual Port RAM **(special to TRAC/FACT and Wo jack programming**
DPSK Differential Phase Shift Keying **reg electronics and present in TRAC system**
DRER Designated Radio Engineering Representative (FAA) **to have high security clearance and part of the design review used for TRAC /FACT and Wojack in aircraft**
Drift Angle The angle between heading and track. It is due to the
effect of wind currents. Sometimes called the crab
angle. **Computed data for remote control landing and robotics flight with TRAC**
DSARC Defense System Acquisition Review Cycle **a necessary process to update TRAC FACT and wojack from time to time**
DSB Double Side Band. An AM signal with the carrier
removed. Requires the same bandwidth as the AM
signal. **Incorporated for location and communication as needed by TRAC system**
DSDU Data Signal Display Unit **video and audio recorded and reported in real-time flagged event stored**
DSF Display System Function—**monitored by TRAC**
DSNS Differential Satellite Navigation System **Data incorporated in TRAC programs**

DTD (1) Data Terminal Display **TRAC video**
DTE Data Terminal Equipment **interfaced and represented as need be for TRAC**
DTU Data Transfer Unit **will connect or be able to down load TRAC with ptoper security protocols**
Dual Mode An airborne DME rt capable of processing DME/N **reg. To TRAC ops**
DME and DME/P ground station signals.Operation is in the
L-band frequency range. **Monitored data recovered for TRAC Ops**
DUATS Direct User Access Terminal System **has accountable access recored in TRAC/FACT security for accountability and management control-identity check TRAC**
Duplex A communication operation that uses the simultaneous
operation of the transmit and receive equipment
at two locations. **TRAC employed realtime data transfer for RC**
Dynamic RAM constructed of capacitor elements. Memory (TRAC employed as standards require
RAM cells must be periodically refreshed to keep capaci
tors from discharging and losing data (see "Static
RAM"). **TRAC employed application specific or in sub systems**
EADI Electronic Attitude Director Indicator **TRAC robotics uses DATA recovered to fly**
EANPG European Air Navigation Planning Group **consulted and apprroval for TRAC**
EAP Engine Alert Processor **monitored in the subsystems by TRAC**
EAROM Electrically Alterable ROM – **possible technology for FACT flight plans if can be secured from tampering**
EARTS En route Automated Radar Tracking System **TRAC continual communication to surface**
EASIE Enhanced ATM and Mode S Implementation in Europe
EATCHIP European ATC Harmonization and Integration
Program
EATMS European Air Traffic Management System
EC Event Criterion
ECAC European Civil Aviation Conference **the five above will be used in all TRAC/FACT systems and protocols in Europe**
ECAM Electronic Caution Alert Module **will be monitored by TRAC and signaled to surface for remote flight and surface response**
ECEF Earth-Centered,Earth-**Fixed TRAC interfaced guidance**
ECP EICAS Control Panel **SUC to TRAC**
ECS (1) Engineering Compiler System. An automated data
storage system. **Used for TRAC accountability function**
(2) Environmental Control System **TRAC SUC as needed to manage the planes occupants and public safety**
(3) Event Criterion Subfield **Coordinated or altered for preferred TRAC /FACT protocols**
ECSL Left Environmental Control System Card **TRAC sub system SUC**
ECSMC ECS Miscellaneous Card **TRAC interfaced as applicable**
ECSR Right Environmental Control System Card **TRAC sub system**
ED EICAS Display **monitored**

EDA Electronic Design Automation **a major renovation activity to create the automated remotecintrol and robotics flight in all commercial aircraft and data routing**
EDAC Error Detection and Correction (used interchangeably with EDC) **Subsystem SUC to TRAC-TRAC governance**
EDC Error Detection and Correction **TRAC highest level processing**
EDCT Expected Departure Clearance Time
EDI Engine Data Interface
EDIF Engine Data Interface Function
EDIU Engine Data Interface Unit
EDMS Electronic Data Management System
EDP (1) Electronic Data Processing **the 6 above data generating and handling functions will be interfaced in the appropriate manned for efficiency and rapid application to TRAC**
(2) Engine Driven Pump
(3) Engineering Development Pallet
EDU Electronic Display Unit
EEC Electronic Engine Control
EEPROM Electrical Erasable Programmable Read Only Memory
EEU ELMS Electronics Unit
EFD Electronic Flight Display
EFIP Electronic Flight Instrument Processor
EFIS Electronic Flight Instrument System
EFIS CP EFIS Control Panel **the eight above will be utilized or interfaced with TRAC as appropriate for TRAC/FACT effectiveness**
EGNOS European Geostationary Overlay System **interfaced for flight deviation in Europe TRAC Systems**
EGT Exhaust Gas Temperature
EHSI Electronic Horizontal Situation Indicator **TRAC used with SUC systems for automated flight**
EHV Electro-Hydraulic Valve
EIA Electronic Industries Association
EICAS Engine Indication and CrewAlert System
EIS Engine Indication System
EISA Extended Industry Standard Architecture
EIU EFIS/EICAS Interface Unit
ELAN Ethernet Local Area Network
ELC Emitter Coupled Logic
ELEC Electrical
ELM Extended Length Message
ELMS Electrical Load Management System
ELS Electronic Library System
ELT Emergency Locator Transmitter
EMC (1)Entertainment Multiplexer Controller
(2)Electro Magnetic Capability
EMER Emergency
EMI Electro-Magnetic Interference

List note. Due to the obvious use of the remaining avionics in creating the well defined PFN/TRAC system for aircraft and the specific use of any individual component for each separate aircraft this list will not be completed in this provisional but will be completely detailed in the formal application, because of the great need for the TRAC system to be commercialized with existing technology immediately for public safety and national security----The remaining avionics will be incorporated in TRAC as essentially needed and progressively desired. This list will be detailed out to reflect the engineering and development through out the industry. The list will be filed and dated via mail or some approved method to prove time of completion even it it is not filed the formal application is due. The lack of completion should in know way restrict this applications complete use of avionics as defined here when compared to similar technology in other industries that has already been completely detailed and taught in prior related filings

EMS Engine Management System
EP (1) External Power
EPCS Engine Propulsion Control System
ENQ Enquire
EOT End-Of-Text
EP (1) External Power
(2) Engineering Project
EPC External Power Contractor
EPCS Engine Propulsion Control System
E-Plane The E-Plane is the plane of an antenna that contains the electric field. The principal E-Plane also contains the direction of maximum radiation.
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EPLD Electrically Programmable Logic Device
EPROM Erasable Programmable ROM
Equivalent Airspeed (EAS) Equivalent Airspeed is a direct measure of the incompressible freestream of dynamic pressure. It is CAS cor rected for compressibility effects.
ERP Eye Reference Point
ERSDS En Route Software and Development Support
ERU Engine Relay Unit
ESA European Space Agency
ESAS (1) Enhanced Situational Awareness System
(2) Electronic Situation Awareness System
E-Scan Electronic Scanning
ESD Electrostatic Discharge
ESDS Electrostatic Sensitive Devices. Also known as ESSD.
ESID Engine and System Indication Display
ESIS Engine and System Indication System
ESR Energy Storage/Control
ESS (1) Electronic Switching System
(2) Environmental Stress Screening
ESSD Electro Static Sensitive Devices (see ESDS)
ETA Estimated Time of Arrival
ETD Estimated Time of Departure
ETI Elapsed Time Indicator
ETM Elapsed Time Measurement
ETMS Enhanced Traffic Management System
ETOP Extended Twin Engine Operations
ETRC Expected Taxi Ramp Clearances
ETX End-of-transmission
EUR European
Eurocae European Organization for Civil Aviation Electronics. A regulatory agency for avionics certification in Europe.
EURO- European Organization for the Safety of Air Navigation

CONTROL Operations
VS Enhanced Vision Systems

FAA (1) Federal Aviation Administration (U.S.)
(2) Federal Aviation Authority
FAC Flight Augmentation Computer
FADEC Full Authority Digital Electronic Control
FAF Final Approach Fix
FAI First Article Inspection
FAATC FAA Technical Center
FADE FAA-Airline Data Exchange
FADEC Full Authority Digital Electronic Control
FANS Future Air Navigation System
Fan Marker A marker beacon used to provide identification of positions along airways. Standard fan marker produces an elliptical-shaped pattern. A second type produces a dumbbell-shaped pattern.
FAR Federal Aviation Regulation
FAST Final Approach Spacing Tool
FBL Fly By Light
FBW Fly By Wire
FCAF Flight Data Acquisition
FCC (1) Federal Communications Commission
(2) Flight Control Computer
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FCDC Flight Critical dc
FCP Flight Control Panel
FD (1) Flight Director
(2) Final Data
FDAF Flight Data Acquisition Function
FDAU Flight Data Acquisition Unit
FDB Flight Plan Data Bank
FDDI Fiber Distributed Data Interface
FDE Fault Detection and Exclusion
FDEP Flight Data Entry Panel
FDH Flight Deck Handset
FDI Fault Detection and Isolation
FDM Frequency Division Multiplex is a system where the messages are transmitted over a common path by employing a different frequency band for each signal.
FDMA Frequency Division Multiple Access
FDR Flight Data Recorder
FDRS Flight Data Recorder System
FEATS Future European Air Traffic Management System
FEC Forward Error Correction
FF (1) Free Flight
(2) Flitefone

FGC Flight Guidance Computer
FHA Fault Hazard Analysis
FLT CTRL Flight Control
FLT INST Flight Instrument
FLW Forward Looking Windshear Radar
FM Frequency Modulation
FMA Flight Mode Annunciator
FPA Flight Path Angle
FPAC Flight Path Acceleration
FPC Flight Profile Comparator
FPGA Field Programmable Gate Array
FPV Flight Path Vector
FQIS Fuel Quantity Indicating System
FQPU Fuel Quantity Processor Unit
Frequency (1) Function in 960E-5 (-005/-006) to allow tuning 2-Agile by-5 inputs from on-board FMCS/PNCS systems. Channeling may be as often as every 5 seconds. The 6-wire output data is modified for input to an FMCS or PNCS.
FRP Federal Radionavigation Plan
FSE Field Service Engineer
FSEU Flap Slat Electronics Unit
FSIC ATA Flight Systems Integration Committee
FW FailureWarning
FWS Flight Warning System
FWC Flight Warning Computer
GAMA General Aviation Manufacturers Association
GANS Government Air Navigation System
GBST Ground Based Software Tool
GCA Ground-Controlled Approach. A system that uses a ground-based controller to control the approach of an aircraft by transmitting instructions to the pilot.
GCAS Ground Collision Avoidance System
GCA Ground-Controlled Approach. A system that uses a ground-based controller to control the approach of an aircraft by transmitting instructions to the pilot.
GCAS Ground Collision Avoidance System
GCB Generator Circuit Breaker
GCS Ground Clutter Suppression
GCU Generator Control Unit
GDLP Ground Data Link Processor
GDOP Geometric Dilution Of Precision. A term referring to error introduced in a GPS calculation due to the positioning of the satellites and the receiver.
GDP Ground Delay Program
GECAS General Electric Capital Aviation Services
GEN Generator

GEO Geostationary Earth Orbit
GEOS Geostationary Earth Orbit Satellite
GES Ground Earth Station
GG Graphics Generator
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GH Ground Handling
GHz Gigahertz
GIB GNSS Integrity Broadcast
GIC GPS Integrity Channel
GICB Ground-Initiated Comm-B
GIGO Garbage-In Garbage-Out
GIS Geodetic Information System
Glidepath The approach path used by an aircraft during an instrument landing or the portion of the glideslope that intersects the localizer. The glidepath does not provide guidance completely to a touchdown point on the runway.
Glideslope The vertical guidance portion of an ILS system.
GLONASS Global Navigation Satellite System (Russian)
GLS GPS Landing System
GLU GPS Landing Unit
GM Guidance Material
GMC Ground Movement Control
GMPLS Global Multimode Precision Landing ,System
GMT Greenwich Mean Time. GMT is a universal time scale based upon the mean angle of rotation of the earth about its axis in relation to the sun. It is referenced to the prime meridian that passes through Greenwich,England.
GND Ground
GNE Gross Navigational Error
GNLU GNSS-based Navigation and Landing Unit
GNR Global Navigation Receiver
GNSS Global Navigation Satellite System
GNSSP ICAO Global Navigation Satellite System Panel
GNSSU GNSS Unit
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Goniometer A device that combines the two signals from two loop antennas. The goniometer (or resolver) contains two fixed coils and one rotating coil. The rotating coil is connected to the ADF bearing indicator needle to indicate the relative bearing from the aircraft to the NDB station. The mechanical position of the rotor represents the bearing of the station,and the position is electrically transmitted to the RMI.
GOS Grade of Service
GPADIRS Global Positioning,Air Data,Inertial Reference System

GPIB General Purpose Instrument Bus
GPWS Ground Proximity Warning System
GPS (1) Global Positioning System (see NAVSTAR)
(2) Global Positioning Satellite
GPSSU Global Positioning System Sensor Unit
GPU Ground Power Unit
GPWC Ground Proximity Warning Computer
GPWS Ground Proximity Warning System
Gradient The rate at which a variable quantity increases or decreases.
Gray Code Special binary code used to transmit altitude data between framing pulses of a transponder reply. A cyclic code having only one digit change at a time. Used in Mode C to transmit aircraft barometric altitude. Also known as Gilham code.
Ground Wave A radio wave that travels along the earthÕs surface.
GRP Geographic Reference Point
GS (1) Glideslope
(2) Ground Speed
G/S Glideslope
GSE Ground Support Equipment
GSP Glare Shield Panel
GSV Gray Scale Voltage(s)
GT Greater Than
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GTA General Terms Agreement
GTC Data Link Ground Terminal Computer
GTR General Technical Requirements
GUI Graphic/User Interface
GVE Graphics Vector Engine
GWS Graphical Weather Services
Gyroscope A rotating device that will maintain its original plane of rotation,no matter which direction the gyroscope mount is turned.
H
HDBK Handbook
HDG Heading
HDLC High Level Data Link Control
HDOP Horizontal Dilution Of Precision
HDP Hardware Development Plan
Heading The direction of an aircraft path with respect to magnetic or true north.
HF High Frequency. The portion of the radio spectrum from 3 to 30 MHz. HF communication systems operate in the 2 to 30 MHz portion of the spectrum.
HFDL High-Frequency Data Link
HFS High-Frequency System

HGA High Gain Antenna
HLD Heading Hold
HIL Horizontal Integrity Limit
HIRF High Intensity Radiated Field
HLCS High Lift Control System
HLE Higher Layer Entity
HLL High Level Language
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HMI Human Machine Interface
HMOS High Density Metal Oxide Semiconductor
HOW Hand-Over Word
HP High Pressure
HPA High Power Amplifier
hPa hecto Pascal
HPC High Pressure Compressor
H-Plane The H-Plane is the plane in which the magnetic field of the antenna lies. The H-Plane is perpendicular to the E-Plane.
HPR High Power Relay
HPSOV High Pressure Shutoff Valve
HPT High Pressure Turbine
HSI Horizontal Situation Indicator. An indicator that displays bearing,glideslope,distance, radio source, course and heading information.
HSL Heading Select
HSR High Stability Reference
HUD Heads Up Display
HVPS High Voltage Power Supply
HW Hardware
HX Heat Exchanger
HYD Hydraulic
HYDIM Hydraulic Interface Module
Hz Hertz (cycles per second)
I
IACSP International Aeronautical Communications Service Provider
IAF Initial Approach Fix
38 The AlliedSignal Glossary of Avionics Te rms & Acro n y m s
IAOPA International Council of Aircraft Owners and Pilots
IAP Instrument Approach Procedure
IAPS Integrated Avionics Processing System
IAS Indicated Air Speed
IATA International Air Transport Association
IC (1) Intercabinet
(2) Integrated Circuit
ICAO International Civil Aviation Organization (Montreal)
ICC IAPS Card Cage

ICD (1) Installation Control Drawing
(2) Interface Control Drawing
(3) Interactive Design Center
ICNIA Integrated Communications,Navigation and Identification Avionics
ICU Instrument Comparator Unit
IDC Indicator Display/Control
Ident The action of the transponder transmitting an extra pulse along with its identification code (at the request of a controller).
IDG Integrated Drive Generator
IDS (1) Ice Detection System
(2) Integrated Display System
IEC IAPS Environmental Control Module
IED Insertion Extraction Device
IEEE Institute of Electrical and Electronic Engineers
IF (if) Intermediate Frequency. A frequency to which a signal is shifted as an in-between step in the reception or transmission of a signal.
IFALPA International Federation of Airline Pilots Association
IFATCA International Federation of Air Traffic ControllersÕ Associations
IFPS Integrated Initial Flight Plan Processing System
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IFR Instrument Flight Rules
IGES Standardized Graphics Exchange File
IGV Inlet Guide Vane
ILM Independent Landing Monitor
ILS Instrument Landing System. The system provides lateral, along-course and vertical guidance to aircraft attempting a landing.
IMA Integrated Modular Avionics
IMC Instrument Meteorological Conditions
IMPATT Impact Avalanche and Transmit Time. This type of
Diode diode,when mounted in an appropriate cavity, pro duces microwave oscillations and amplification.
IMTEG ICAO ILS/MLS Transition Group Europe
IND Indicator
INU Inertial Navigation Unit
IAS Indicated Airspeed is the speed indicated by a differential pressure airspeed indicator which measures the actual pressure differential in the pitot-static head. It is the actual instrument indication for a given flight condition.
Indicated The altitude above mean sea level (uncorrected for
Altitude temperature).
INMARSAT International Maritime Satellite Organization

I/O Input/Output. Refers to bi-directional data ports.
PH Interphone
INS Inertial Navigation System. A self-contained,deadreckoning system that senses the acceleration along the three axes of the aircraft and calculates the distance traveled from a reference point. Accuracy of the system decreases with respect to time.
INST Instrument
Intruder An altitude reporting aircraft that is being considered as a potential threat and that is being processed by the threat detection logic (TCAS).
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IOC Initial Operational Capability
ION Institute of Navigation
IOR Indian Ocean Region
IOT & E Initial Operational Test and Evaluation
IP Intermediate Pressure
IPB Illustrated Parts Breakdown
IPC (1) Intermediate Pressure Compressor
(2) Illustrated Parts Catalog
IPD Industrial Products Division
IPL Illustrated Parts List
IPT (1)Intermediate Pressure Turbine
(2) Integrated Product Team (FAA)
IRP Integrated Refuel Panel
IRS Inertial Reference System
IRU Inertial Reference Unit
ISA (1) Industry Standard Architecture
(2) International Standard Atmosphere
ISDN Integrated Services Digital Network
ISDOS Information System Design and Optimization System
ISLN Isolation
ISO (1) International Organization for Standardization
(2) International Standards Organization
(3) Isolation
Iso-Contour Refer to contour
ISPA International Symposium on Precision Approach and Instrument Landing
ISPACG Informal South Pacific ATC Coordinating Group
ISSS Initial Sector Suite System
ISU Initial Signal Unit
ITM Information Technology Management is the ground based portion of an ADMS (see also EDMS).
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ITO Indium-Tin Oxide
ITS Integrated Test System
ITT (1) Interstage Turbine Temperature

(2) Inter-Turbine Temperature
IU International Telecommunications Union
IV Isolation Valve
ITWS Integrated Terminal Weather System
J
JAA European Joint Airworthiness Authority
JAL Japan Air Lines
JAR Joint Airworthiness Requirement
JAR-AWO Joint Airworthiness Requirements - All Weather Operations
JFET Junction Field Effect Transistor
JPO Joint Program Office
J/S Jammer to Signal Ratio
JTAG Joint Test Action Group
JTIDS Joint Tactical Information Distribution System
K
KAL Korean Air Lines
Key A hand-operated switching device or the act of operating such a device.
KGLS Kinematic GPS Landing System
kHz Kilohertz (1000 cycles per second)
kb/s Kilobits Per Second
KBU Keyboard Unit
KPS Kilobytes Per Second
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kts Knots
kVA Kilovolt-ampere
L
L Left
L1 Frequency on which GPS SPS signals are transmitted, L-Band carrier (1575.42 Mhz)
L1011 Lockheed Model 1011 Aircraft
L2 L-Band carrier (1227.6 MHz)
LAAS Local Area Augmentation System
LAC Lineas Aereas Del Caribe (an airline)
LADGPS Local Area Differential GPS
LAN Local Area Network
LAT Latitude
L-Band A radio frequency band from 390 to 1550 MHz.
LCC Leadless Chip Carrier
LCD Liquid Crystal Display
LCP Lighting Control Panel
LCSTB Low Cost Simulation Testbed
LD Lower Data
LDCC Leaded Chip Carrier
LDGPS Local Area Differential Global Positioning Satellite
LDU Lamp Driver Unit

LED Light Emitting Diode
Leg The section of the flight between two waypoints.
LF Low Frequency. The frequency range from 30 to 300 kHz.
LGA Low Gain Antenna
LH Lufthansa
43 The AlliedSignal Glossary of Avionics Te rms & Acro n y m s
LHP Lightning HIRF Protection
LIB Left Inboard
LISN Line Impedance Stabilization Network
LLP Left Lower Plug. Identifies the plug on the rear connector of an avionics unit.
LLWAS Low-Level Wind Shear Alert System
L/M List of Materials
LMM Locator Middle Marker. An NDB that is co-located at the same site as the 75 MHz middle marker beacon.
LMP Left Middle Plug. Identifies the plug on the rear connector of an avionics unit.
LMT Local Mean Time
LNA Low Noise Amplifier
LNAV Lateral Navigation
LOB Left Outboard
LOC Localizer. The lateral guidance portion of an ILS system.
Lock-On The condition that exists when the DME receives reply pulses to at least 50 percent of the interrogations. Valid distance information is then available.
LOM Locator Outer Marker. An NDB that is co-located at the same site as the 75 MHz outer marker beacon.
LON Longitude
LORAN Long Range Navigation. A system using a ground facility composed of a master station and a slave station. The airborne receiver computes the position of the aircraft by using two or more received master-slave pairs of signals. LORAN-A operates at 1850,1900 and 1950 kHz. LORAN-C operates at 100 kHz. LORAN A was replaced by LORAN C in 1980.
LORAN C Long Range Navigation System
LOS Line Of Sight
LPC Low Pressure Compressor
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LPT Low Pressure Turbine
LRA (See RALT)
LRM Line Replaceable Module
LRRA (See RALT)
LRU Line Replaceable Unit
LSB (1) Lower Sideband. The lower sideband is the difference in frequency between the AM carrier signal and

the modulation signal.
LSB Least Significant Bit
LSD Least Significant Digit
LSI Large Scale Integration
LSK Line Select Key
LTP Left Top Plug. Identifies the plug on the rear connector of an avionics unit.
Lubber Line A fixed line placed on an indicator to indicate the front-to-rear axis of the aircraft.
LV Lower Sideband Voice
LVDT Linear Voltage Differential Transducer (used with aircraft control surface servos)
LVLCH Level Change
LVPS LowVoltage Power Supply
M
m Meter
m/s Meter per Second
MAC Medium Access Controller
Mach Number Mach number is the ratio of the true airspeed to the speed of sound at a particular flight condition. It is the chief criterion of airflow pattern and is usually represented by the free-stream steady-state value.
Mag Magnetic
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Magnetic The bearing with respect to magnetic north.
Bearing
Magnetic The direction north as determined by the earth's mag
North netic field. The reference direction for measurement of magnetic directions.
MAMS Military Airspace Management System
MAR Managed Arrival Reservoir
Marker A transmitter operating at 75 MHz that provides iden
Beacon tification of a particular position along an airway or on the approach to an instrument runway. The mark er beacon is continuously tone-modulated by a 400-Hz,a 1300-Hz or a 3000-Hz tone. Marker beacons along an instrument runway provide along-course (range) guidance and designate when an aircraft should be at a certain altitude if the aircraft is follow ing the glidepath.
MASPS Minimum Aviation System Performance Standards
MAT Maintenance Access Terminal
MAWP Missed Approached Waypoint
MB Marker Beacon
MBE Multiple Bit Error
MC Master Change
MCB Microwave Circuit Board

MCC Maintenance Control Computer
MCDP Maintenance Control Display Panel
MCDU Multifunctional Control Display Unit
MCN Manufacturing Control Number
MCP (1) Maintenance Control Panel
(2) Mode Control Panel
MCT Max Continuous Thrust
MCU (1) Modular Concept Unit (approximately 1/8-ATR, Airline Transport Rack)
(2) Multifunction Concept Unit
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MD11 Boeing Model 11 Aircraft (formerly McDonnell Douglas)
MD90 Boeing Model 90 Aircraft (formerly McDonnell Douglas)
MDA Minimum Descent Altitude
MDC Maintenance Diagnostic Computer
MDCRS Meteorological Data collection and Reporting System
MDS Minimum Discernible Signal. The MDS is the lowest rf signal level that can be detected as a valid signal.
MDT Maintenance Display Terminal
MEA Minimum En route Altitude
MEC Main Equipment Center
MEDLL Multipath Estimating Delay Lock Loop
MEL Minimum Equipment List. The list of equipment that the FCC requires be aboard an aircraft before flying.
MES Main Engine Start
MF Medium Frequency. The portion of the radio spectrum from 300 kHz to 3 MHz.
MFCP Multifunction Control Display Panel
MFD Multifunction Display
MFDS Multifunction Display System
MDFU Multifunction Display Unit
MFM Maintenance Fault Memory
MGSCU Main Gear Steering Control Unit
MHD Magnetic Hard Drive
MHz Megahertz (1,000,000 cycles per second)
MIC Microphone. Also refers to the output signal of the microphone.
Micro-EARTS Microprocessor En route Automated Radar Tracking System
MIDU Multi-purpose Interactive Display Unit
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MIL Military
MIPS Million Instructions Per Second
MKR Marker
MLS Microwave Landing System

MLW Maximum Landing Weight
M Mass Memory
MMI Man-Machine Interface
MMIC Monolithic Microwave Integrated Circuit
Mmo The maximum Mach number at which an aircraft has been certified to operate.
MMR Multi-Mode Receiver
MNPS Minimum Navigation Performance Specification
MNT Mach Number Technique
MO Magneto-Optical
MOA Military Operation Area
MOCA Minimum Obstacle Clearance Altitude
MOD (1) Modulator
(2) Modification
(3) Magneto-Optical Drive
Mode A The pulse format for an identification code interrogation of an ATCRBS transponder.
Mode B An optional mode for transponder interrogation.
Mode C The pulse format for an altitude information interrogation of an ATCRBS transponder.
Mode D An unassigned,optional transponder mode.
Mode S (1) Mode Select (A transponder format to allow discrete interrogation and data link capability.)
(2) Selective interrogation mode of SSR
MODEM Modulator/Demodulator
MOPR Minimum Operational Performance Requirements
MOPS Minimum Operational Performance Standards
48 The AlliedSignal Glossary of Avionics Te rms & Acro n y m s
MORA Minimum Off-Route Altitude
MOS Metal Oxide Semiconductor
MOSFET Metal Oxide Semiconductor Field Effect Transmitter
MOU Memorandum Of Understanding
MP (1) Middle Plug. Identifies the plug position on the rear connector of an avionics unit.
(2) Main Processor
MPEL Maximum Permissable Exposure Level
MROSE Multiple-tasking Real-time Operating System Executive
MRR Manufacturing Revision Request
MS Millisecond
MSB Most Significant Bit
MSCP Mobile Satellite Service Provider
MSD (1) Most Significant Digit
(2) Mass Storage Device
MSG Message
MSI Medium Scale Integration
MSL Mean Sea Level

MSP Mode S Specific Protocol
MSSS Mode S Specific Services
MSU Mode Select Unit
MT Minimum Time
MTBF Mean Time Between Failures. A performance figure calculated by dividing the total unit flying hours (airborne) accrued in a period of time by the number of unit failures that occurred during the same time. Where total unit hours are available,this may be used in lieu of total unit flying hours.
49 The AlliedSignal Glossary of Avionics Te rms & Acro n y m s
MTBR (1) Mean Time Between Removal
(2) Mean Time Between Repairs. A performance figure calculated by dividing the total unit flying hours accrued in a period by the number of unit removals (scheduled plus unscheduled) that occurred during the same period.
MTBUR (1) Mean Time Between Unscheduled Removal
(2) Mean Time Between Unit Replacements. A performance figure calculated by dividing the total unit flying hours (airborne) accrued in a period by the number of unscheduled unit removals that occurred during the same period.
MTC Maintenance Terminal Cabinet
MTD Maintenance Terminal Display
MTF Maintenance Terminal Function
MTI Moving Target Indicator. This type of radar display will show only moving targets.
MTM Module Test and Maintenance
MTMIU Module Test and Maintenance Bus Interface Unit
MTTDA Mean Time To Dispatch Alert
MTTF Mean Time To Failure. A performance figure calculated by dividing the summation of times to failure for a sample of failed items by the number of failed items in the sample. The same item failing N times constitutes N failed items in the sample. This is different from mean time between failures since no allowance is given to items that have not failed.
MTTM Mean Time To Maintenance. The arithmetic mean of the time intervals between maintenance actions.
MTTMA Mean Time To Maintenance Alert
MTTR Mean Time To Repair. A performance figure calculated by dividing the sum of the active repair elapsed times accrued in a period on a number of designated items by the number of these items repaired in the same period.
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MTTUR Mean Time To Unscheduled Removal. A performance measure calculated by dividing the summation of times to unscheduled removal for a sample of removed items by the number of removed items in the sample. This is different from MTBUR since no allowance is given to items that have not been removed.
MU ACARS Management Unit
MULT Multiplier
MUS Minimum Use Specification. A generic description by parameter and characteristics of the test equipment and resources required for testing a unit or system.
MUX Multiplexer
N
N1 Fan speed
N2 Intermediate compressor speed
N3 High speed compressor
NACA National Air Carriers Association
NADIN National Airspace Data Interchange Network
NAS National Airspace System
NASA National Aeronautics and Space Administration
NASPALS NAS Precision Approach and Landing System
NAS/TRB National Academy of Science,Transportation Research Board
NAT North Atlantic Region
NAT SPG North Atlantic Systems Planning Group
NATCA National Association of Air Traffic Controllers
NATRSSIG ICAO North Atlantic ReducedSeparation Standard Implementation Group
NATS (1) North Atlantic Track System
(2) UK National Air Traffic Services
NAV Navigation
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NAVAID Navigational Aid
Navigation Datacard A medium holding the customized navigation database.
NAVSTAR The NAVSTAR global positioning system (GPS) is a system using 24 satellites,all reporting precise time signals,along with location keys. Eight satellites are in each of three 63-degree inclined plane circular orbits at 11,000 nmi in altitude. The system is used for navigation and determining exact position.
Nautical Mile (nmi) Equivalent to 6,076.1 feet, or approximately 1.15 statute miles.
NBAA National Business Aircraft Association
NC Numerical Control
N/C New installation Concept
NCA National Command Authority

NCD No Computed Data
NCR National Cash Register
NCS Network Coordination Station
ND Navigation Display. An EFIS presentation substituting for the horizontal situation indicator (HSI).
NDB (1) Non-Directional Radio Beacon. A ground station designed specifically for ADF use that operates in the 190-to-550-kHz range. Transmits a continuous carrier with either 400-or-1020 Hz modulation (keyed) to provide identification.
(2) Navigation Data Base (as stored in FMC memory)
NDI Non-Developmental Item
NEG Negative
NERC UK New En Route Center
NH High Pressure Gas Generator RPM
NHE Notes and Helps Editor
NIC AEEC New Installation Concepts Subcommittee
NIS Not-In-Service
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NIST National Institute of Standards and Technology
N-Layer N is set for any layer name (such as link,network, etc.) or for the initial (e.g.N-SDU mean LSDU at the link layer). OSI model definition.
NL Low Pressure Gas Generator RPM
NLR Netherlands National Aerospace Laboratory
NLT Not Less Than
nm Nautical Mile
NMI Nautical Mile
NMOS N-type Metal Oxide Semiconductor
NMT Not More Than
NOAA National Oceanic and Atmospheric Administration
NOC Notice Of Change
NO COM No Communication. A NO COM annunciation indicates that a downlink message has not been acknowledged in an ACARS system.
Noise Undesired random electromagnetic disturbances or spurious signals which are not part of the transmitted or received signal.
NOTAM Notice to Airmen
NPA Non-Precision Approach
NPDU Network Protocol Data Unit
NPRM Notice of Public Rule Making
NRP National Route Program
NRZ Non-Return to Zero
NSEU Neutron Single Event Upset
NSSL National Severe Storms Laborator y
NTF No Trouble Found (referring to testing or checkout of

unit/module)
NTSB National Transportation Safety Board
NVM Non-Volatile Memory
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NWA Northwest Airlines
NWS National Weather Service. The NWS provides a ground-based weather radar network throughout the United States. The radar network operates continuously and transmits the data to the National Meteorological Center, where it correlates with other weather observations.
O
OAC Oceanic Area Control Center
OAG Official Airline Guide
OAT (1) Optional Auxiliary Terminal. The OAT may be in the form of a CRT/Keyboard device capable of interfacing with other sources of data on the aircraft and supplying data to a hard copy printer. (Used in an ACARS system.)
(2) Outside Air Temperature. The uncorrected reading of the outside temperature gauge. Different types of gauges require different correction factors to obtain static air temperature.
OBS (1) Omnibearing Selector. A panel instrument which contains the controls and circuits to select an omnibearing and determine the TO-FROM indication.
(2) Optical Bypass Switch
Octal Base-8 counting system. Numbers include 0,1,2,3,4, 5,6,7,8.
ODAP Oceanic Display And Planning system. Will present oceanic flight data to controllers in a display that will enable better route and altitude assignments.
ODID Operational Display and Input Development
ODL (1) Optical Data Link
(2) Oceanic Display and Planning System
OEM Original Equipment Manufacturer
OEU Overhead Electronics Units
Off-Block Time The time that the aircraft leaves the gate.
OFP Operational Flight Program
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OID Outline Installation Drawing
OIU Orientation/Introduction Unit
OLAN Onboard Local Area Network
OM Outer Marker
OMEGA A navigation system that uses two high-powered transmitter ground stations to broadcast a continuous wave signal. The receiver measures the range difference

between the two stations to determine position.
Omnibearing The bearing indicated by a navigational receiver on transmissions from an omnidirectional radio range (VOR).
OMS (1) Onboard Maintenance System
(2) Order Management System
OOOI OUT-OFF-ON-IN. An OOOI event is recorded as part of the ACARS operation. The OUT event is recorded when the aircraft is clear of the gate and ready to taxi. The OFF event occurs when the aircraft has lifted off the runway. The ON event occurs when the aircraft has landed. The IN event occurs when the aircraft has taxied to the ramp area.
On-Block Time The time that the aircraft arrives at the gate.
OPAS Overhead Panel ARINC 629 System
OPBC Overhead Panel Bus Controller
OPR Once Per Revolution
OPS Operations Per Second
OPU Overspeed Protection Unit
OR Operational Requirements
OSC Order Status Report
OSI (1) Open Systems Interconnection
(2) Open System Interface
OTH Over The Horizon
OTS Organized Track System
OVRD Override
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oxy Oxygen
P
PA (1) Passenger Address
(2) Power Amplifier
PAC Path Attenuation Compensation
PA/CI Passenger Address/Cabin Interphone
PACIS Passenger Address and Communication Interphone System
Paired DME channels are paired with a VORTAC or ILS fre
Channels quency and are automatically selected when the VOR TAC or ILS frequency is selected.Most navigation con trols have this feature.
PAL Programmable Array Logic
PAM Pulse Amplitude Modulation
PAR Precision Approach Radar. An X-band radar which scans a limited area and is part of the ground-controlled approach system.
PATA Polish Air Traffic Agency
PAU Passenger Address Unit
PAX Passenger

PBID Post Burn-In Data
PBX Private Branch Exchange
PC (1) Personal Computer
(2) Printed Circuit
P-Code The GPS precision code
PCB Printed Circuit Board
PCC Pilot Controller Communication
PCI Protocol Control Information. The N-PCI is exchanged between peer network members (OSI Model) to coordinate joint information.
PCIP Precipitation
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PCM Pulse Code Modulation
PCU (1) Passenger Control Unit
(2) Power Control Unit
PDC Pre-Departure Clearance
PDCU Panel Data Concentrator Unit
PDDI Product Definition Data Interface. Standardizes digital descriptions of part configurations and properties needed for manufacturing.
PDF Primary Display Function
P-DME Precision Distance Measuring Equipment
PDN Public Data Network
PDOP Position Dilution Of Precision. A GPS term for error introduced into the GPS calculations.
PDOS Powered Door Opening System
PDR Preliminary Design Review
PDS Primary Display System
PDU (1) Protocol Data Unit. The N-PDU is a combination of the N-PCI and the N-UD or N-SDU. The N-PDU is the total information that is transferred between peer network members (OSI Model) as a unit.
(2) Power Drive Unit
Performance Index A relative number used to compare the performance of different radar systems. It is calculated from trans mitter peak power, antenna gain,pulse width,prf, antenna beam width and the receiver noise figure.
PED Portable Electronic Devices
PET Pacific Engineering Trials
PF Power Factor
PFC Primary Flight Computer
PFCS Primary Flight Control System
PFD (1) Primary Flight Display. An EFIS presentation substituting for the ADI.
(2) Primary Flight Director.
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PFE Path Following Error

PFR Pulse Repetition Frequency. The rate at which pulses are transmitted.
PGA Pin Grid Array
PHY Physical Interface Device
Phase Modulation A signal in which the phase varies (with respect to the original signal) with the amplitude of the modulatory signal,while the amplitude of the carrier wave remains constant. Similar to a modified frequency modulated signal.
PIO Processor Input/Output
PIREP Pilot Report
Pitot Pressure The sum of the static and dynamic pressures and is the total force per unit area exerted by the air on the surface of a body in motion.
Pitot Tube A forward facing probe attached to the outside of the aircraft to sense the relative pressure of the aircraft moving through the atmosphere. Named for Henri Pitot who first used this method of measuring fluid flow pressure.
PLA Power Level Angle
PLL Phase Locked Loop
PM Phase Modulation
PMA (1) Permanent Magnet Alternator
(2) Parts Manufacturing Approval
PMAT Portable Maintenance Access Terminal
PMC Provisional Memory Cover
PMG Permanent Magnet Generator
PMOS P-Type Metal Oxide Semiconductor
PN Pseudo Noise
PNCS Performance Navigation Computer System
PNEU Pneumatic

POC (1) Proof Of Concept
(2) Point of Contact
Polled Mode An ACARS mode of operation in which the airborne system transmits only in response to received uplink messages (polls).
POR Pacific Ocean Region
POS Position
POS/NAV Positioning/Navigation
POT Potentiometer
PPI Planned Position Indicator. A type of radar display which shows aircraft positions and airways chart on the same display.
PPM (1) Pulse Position Modulation
(2) Parts Per Million
PPS Precise Positioning Service

P/RAT Prediction/Resolution Advisory Tool
PRAM Prerecorded Announcement Machine
PRAIM Predictive Receiver Autonomous Integrity Monitoring
PRELIM Preliminary Data
PRESS Pressure
Pressure The altitude measured above standard pressure level.
Altitude Based on the relationship of pressure and altitude
with respect to a standard atmosphere.
Preventive A resolution advisory that instructs the pilot to avoid
Advisory certain deviations from current vertical rate (TCAS).
PRF Pulse Repetition Frequency
PRI Primary
PRM Precision Runway Monitoring
PRN Pseudo Random Noise
PROM Programmable ROM
Protocol A set of rules for the format and content of messages
between communicating processes.
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PROX Proximity
PRSOV Pressure Regulating and Shutoff Valve
P/RST Press To Reset
PRTR Printer
PS Power Supply
PSA Power Supply Assembly
PSDN Packet Switched Data Network
PSEU Proximity Sensor Electronic Unit
PSL/PSA Problem Statement Language/Problem Statement
Analyzer
PSPL Preferred Standard Parts List
PSR Primary Surveillance Radar. The part of the ATC system
that determines the range and azimuth of an aircraft
in a controlled air space.
PSS Proximity Sensor System
PSU Passenger Service Unit
PTR Production Test Requirements
PTSD Production Test Specification Document
PTT (1) Post,Telephone and Telegraph
(2) Push To Talk. Also refers to the switching signal
that enables the transmitter.
PTU Power Transfer Unit
PVT Position,Velocity,Time
PWM Pulse-Width Modulation
PWR Power
PwxA Pilot Weather Advisory
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Q
QAR Quick Access Recorder

QC Quality Control
QEC Quadrantral Error Corrector
QFE A method of setting the altimeter to compensate for changes in barometric pressure and runway elevation. Pilot receives information from airfield and adjusts his altimeter accordingly and it will read zero altitude at touchdown on the runway.
QNE The method of setting the altimeter to the standard atmosphere datum -29.92 inches of mercury (1,013.25 mb). This setting is used in the United States airspace by all aircraft above FL180.
QNH The more common method of setting the altimeter to compensate for changes in barometric pressure. Pilot receives information from airfield,adjusts his altimeter accordingly and the altimeter will read airfield elevation at touchdown.
QOP Quality Operating Procedures
QOS Quality of Service
QRH Quick Reference Handbook
Quadrantral Error Error in the relative bearing caused by the distortion of the received radio signal (rf fields) by the structure of the aircraft.
R
R Right
RA (1) Resolution Advisory (generated by TCAS)
(2) Radio Altimeter
Rabbit Tracks Rabbit Tracks,or running rabbits, refer to the distinctive display produced by another (alien radar) radar system transmission.
Radar Radio Detecting And Ranging. A system that measures distance and bearing to an object.
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Radar Mile The time interval (approximately 12.359 microseconds) required for radio waves to travel one nautical mile and return (total of 2 nmi).
Radial A line of direction going out from a VOR station measured as a bearing with respect to magnetic north.
Radome The radome is the protective cover on the aircraft nose that fits over the weather radar system antenna. The radome is transparent at radar frequencies.
RAI Radio Altimeter Indicator
RAIM Receiver Autonomous Integrity Monitoring
RALT Radio Altimeter (also RA,RADALT, LRA,LRRA)
RAM Random Access Memory. Generally used to describe read/write integrated circuit memory.
RAPPS Remote Area Precision Positioning System
RAS RowAddress Strobe

RAT RAM Air Temperature is the temperature of the air entering an air scoop inlet. It is a factor in engine performance.
RBS Ration by Schedule
R-C Resistor-Capacitor network
RCC Remote Charge Converter
RCP Radio Control Panel
RCVR Receiver
Rd R-Channel used for data
R & D Research and Development
RDMI Radio Distance Magnetic Indicator
RDR Radar
RDSS Radio Determination Satellite Service
RE&D Research,Engineering and Development
RECAP Reliability Evaluation and Corrective Action Program
REFL Reflection
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Reflectivity This is a measurement of the ability of a target to
Factor (Z) reflect the energy from a radar beam.
Relative The bearing of a ground station relative to the direc
Bearing tion the aircraft nose points,or the direction of an air craft to or from an NDB.
REL Relative
Resolution A display indication given to the pilot recommending
Advisory a maneuver to increase vertical separation relative to an intruding aircraft. A resolution advisory is also clas sified as corrective or preventive.
RET (1) Rapid Exit Taxiway
(2) Reliability Evaluation Test
REU Remote Electronics Unit
RF Radio Frequency. A general term for the range of frequencies above 150 kHz,to the infra-red region (1012 Hertz).
RFI Radio Frequency Interference
RFP Request For Proposal
RFTP Request For Technical Proposal
RFU Radio Frequency Unit
RGCSP Review of the General Concept of Separation Panel
RIB Right Inboard
RIN UK Royal Institute of Navigation
RLS (1) Remote Light Sensor
(2) Reliable Link Source
RLY Relay
R & M Reliability and Maintainability
RMI Radio Magnetic Indicator
RMP Remote Maintenance Panel
RMS Root Mean Square

RNAV Random Navigation/Area Navigation
RNG Range
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RNGA Range Arc
RNP Required Navigation Performance
RO Roll Out
ROB Right Outboard
ROC Rate Of Climb
ROD Rate of Descent
ROI Return On Investment
ROM Read Only Memory
ROTHR Relocatable Over-The-Horizon Radar
RPM Revolutions Per Minute
RSP Reversion Select Panel
RT Receiver-Transmitter (rt). Also referred to as a transceiver (see T/R).
RTA (1) Receiver Transmitter Antenna
(2) Required Time of Arrival
RTCA Radio Technical Commission for Aeronautics
RTF Radiotelephony
RTI Real-Time Interrogate
RTP Reliability Test Plan
RTO Rejected Takeoff
RTP Radio Tuning Panel
RTS Request To Send
RTU Radio Tuning Unit
Runway Incursion The act of inadvertently crossing the runway holding point without ATC clearance.
RVDT Rotary Voltage Differential Transducer
RVR Runway Visual Range
RVSM Required Vertical Separation Minimums
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RWM Read-Write Memory. A memory in which each cell is selected by applying appropriate electrical input signals, and the stored data may be either sensed at the appropriate output terminal or changes in response to other electrical input signals.
RWY Runway
RZ Return to Zero
S
SA Selective Availability
SAA Service Access Area
SAARU Secondary Attitude Air Data Reference Unit
SAE Society of Automotive Engineers
SAI AEEC Systems Architecture and Interfaces Subcommittee
SAMS Special Use Airspace Management System

a l l ows a ground-based radio operator to call a single
i rc raft or group of airc raft without the airc raft personnel
onitoring the ground station radio fre q u e n c y.

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Sensitivity Level An instruction given to the TCAS equipment for control of its threat volume.

Command

SEPC Secondary Electrical Power Contactor

SEPP Stress Evaluation Prediction Program

SERNO Serial Number

SEU (1) Single Event Upset
(2) Seat Electronics Unit

SFE Supplier Furnished Equipment

SG Signal Generator

SGPNS Enhanced Ground Proximity Warning System

SI (1) Standby Instruments
(2) Supporting Interrogator

SICAS Secondary Surveillance Radar Improvements and Collision Avoidance System

SICASP Secondary Surveillance Radar Improvements and Collision Avoidance System Panel

SID Standard Instrument Departure

Sidetone The reproduction of sounds in a headset (or speaker) from the transmitter of the same communication set. This allows a person to hear his/her own voice when transmitting.

SIF Standard Interchange Format

SIGMETS Significant Meteorological Observations

SIL (1) Systems Integration Lab
(2) Service Information Letter

Simplex A communication operation that uses only a single channel for transmit and receive operations. Communications can take place in only one direction at a time.

SIP Single In-line Package

SITA Societe Internationale de Telecommunications Aeronautiques

SIU Satellite Interface Unit

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Skywave A radio wave that is reflected by the ionosphere. Depending upon the state of the ionosphere,the reflected radio wave may propagate along the layer of the ionosphere or be reflected at some angle. It is also known as ionospheric or indirect wave.

SL Sensitivity Level

S/L Sub-Level

Slant Range The line-of-sight distance from the aircraft to a DME

ground station.
SLEP Service Life Extension Program
SLM Standard Length Message
SLS Side-Lobe Suppression. A system that prevents a transponder from replying to the side-lobe interrogations of the SSR. Replying to side-lobe interrogations would supply false replies to the ATC ground station and obscure the aircraft location.
SLV Sync Lock Valve
SMC System Management and Communication
SMD Surface Mount Device
SMGCS Surface Movement Guidance and Control Systems
SMI Standard Message Identifiers
SMR Surface Movement Radar
SMSO Space and Missile Systems Organization
SMT (1) Aileron/Rudder Servo Mount
(2) Elevator Servo Mount
(3) Servo Mount
(4) Stabilizer Trim Servo Mount
(5) Station Management
SNR Signal-to-Noise Ratio
SOIT Satellite Operational Implementation Team
SOP Standard Operating Procedure
SOS Silicon On Sapphire
SPATE Special Purpose Automatic Test Equipment
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SPC Statistical Process Control
SPD Speed
SPE Seller Purchased Equipment
Speed of Light Represented by the symbol c and has a value of 2.9979250 x 10 metres/second or 983,571,194 feet/second.
SPI Special Position Identification
SPIP Designation for a transponder ident pulse.
SPKR Speaker
SPM (1) Surface Position Monitor
(2) Stabilizer Position Modules
Spoking Spoking refers to a display presentation which radiates outward from the display origin like the spokes on a wagon wheel.
SPR Sync Phase Reversal (term used in Mode S transponders)
SPS Standard Positioning Service
SQ or Sql Squelch
Squall Line A squall line is a line of thunderstorms and developing thunderstorms.
Squawk Reply to interrogation signal (XPD).
Squelch A control and/or circuit which reduces the gain in

response of a receiver. The squelch is used to eliminate the output noise of the receiver when a signal is not being received.

Squitter (1) The random pulse pairs generated by the ground station as a filler signal.
(2) The transmission of a specified reply format at a minimum rate without the need to be interrogated (filler pulses transmitted between interrogations) [XPD].
(3) Spontaneous Transmission generated once per second by transponders.

SR SwissAir

SRADD Software Requirements And Design Description

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SRAM Static Random Access Memory

SRD Systems Requirements Document

SR Service Request

SRU Shop Replaceable Unit

SSB Single Sideband. An AM signal that has a reduced carrier, with the power applied to a single sideband. Since the bandwidth of the information-carrying signal is reduced,a better signal-to-noise ratio is obtained at the receiver.

SSCVR Solid State Cockpit Voice Recorder

SSEC Static Source Error Correction

SSFDR Solid State Flight Data Recorder

SSM Sign Status Matrix

SSR Secondary Surveillance Radar. A radar-type system that requires a transponder to transmit a reply signal.

SSSC Single Sideband Suppressed Carrier. A SSSC signal is a band of audio intelligence frequencies which have been translated to a band of radio frequencies without distortion of the intelligence signal.

SSU Subsequent Signal Unit

sta Station

STAB Stabilizer

Standard Atmosphere Represents the mean or average properties of the atmosphere. At sea level static pressure is 29.92 InHg and temperature is +15° C.

Standby Mode A DME mode that applies power to the DME RT but the unit does not transmit.

STAR Standard Terminal Arrival Routes

STARS Standard Terminal Automation Replacement System

Static Ports Flush-mounted openings in the skin of the aircraft fuselage used to sense static pressure.

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Static Ambient atmospheric pressure or static pressure is

Pressure the force per unit area exerted by the air on the sur
ce of a body at rest relative to the air.
Static Ram RAM constructed of bistable transistor elements.
Memory cells do not require refreshing (see "Dynamic
RAM").
Static Source A correction applied to static source pressure mea
Error (SSEC) surements to partly or completely correct for pres
sure errors which are caused by airflow changes. It is
computed as a function of Mach and altitude based
on measured errors for a particular static system
STBY Standby
STC (1) Sensitivity Time Control. A control circuit used in
radar applications to control receiver gain with
respect to time.
(2) Supplemental Type Certificate
STCA Short Term conflict Alert
STCM Stabilizer Trim Control Module
STD Standard
STP Standard Temperature and Pressure
STS Stable Time Subfield
STVS Small Tower Voice Switch
SUA Special Use Airspace
SUL Yaw Damper Actuator
SUO (1) Aileron/Elevator/Rudder Servo
(2) Servo Actuator
Super- A receiver in which the incoming RF signal is mixed
heterodyne to produce a lower intermediate frequency.
Receiver
Suppressor A pulse used to disable L-band avionics during the
Pulse transmitting period of another piece of L-band air
borne equipment. It prevents the other avionics
aboard the aircraft from being damaged or interfered
with by the transmission and any noise associated
with that transmission.
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SUT (1) Autothrottle Servo
(2) Stabilizer Trim Servo
SV Space Vehicle
SVC Service
SVO Servo
SVT Servo Throttle
SVU Satellite Voice Unit
S/W Software
sys System
T
TA Traffic Advisory
TAC (1) Test Access Control

(2) Thrust Assymetry Compensation
TACAN Tactical Air Navigation System Provides azimuth and distance information to an aircraft from a fixed ground station (as opposed to DME providing only distance information).
Tach Tachometer
TACIU Test Access Control Interface Unit
TAG AEEC Technical Advisory Group
TAI Thermal Anti-Icing
Target An aircraft within the surveillance range of TCAS.
TAS True Airspeed
TAT (1) Total Air Temperature. The air temperature including heat rise due to compressibility.
(2) True Air Temperature
TATCA Terminal Air Traffic Control Automation
TAU TAU is the minimum time a flight crew needs to discern a collision threat and take evasive action. It represents the performance envelope (speed and path of aircraft) divided by the closure rate of any intruder aircraft (TCAS).

TBB Transfer Bus Breaker
TBD To Be Determined
TBS To Be Supplied
TC Type Certificate
TCA Terminal Control Area
TCAS Traffic Alert Collision Avoidance System
TCAS I A baseline system that provides a warning (TA) to the flight crew of the presence of another aircraft (potential collision threat) within the surveillance area. No avoidance maneuver is suggested.
TCAS II A collision avoidance system providing traffic information (within approximately 30 nmi of the aircraft) to the flight crew, in addition to the resolution advisories (RA) (for vertical maneuvers only). A TCAS IIequipped aircraft will coordinate with TCAS IIequipped intruder aircraft to provide complementary maneuvers.
TCC Turbine Case Cooling
TCCC Tower Control Computer Complex
TCM Technical Coordination Meeting
TCS Touch Control Steering
TCXO Temperature Controlled Crystal Oscillator
TDLS Tower Data Link System
TDM In the Time Division Multiplex Systems a common carrier is shared to transmit multiple messages (to multiple receivers) by time sharing the carrier

between the message sources.
TDMA Time Division Multiplex Access. When multiple transmitters are using a single carrier to transmit to a single receiver, the carrier is time shared between each of the transmitters,so the multiple messages are not garbled at the receiver.
TDOP Time Dilution of Precision. A term used to describe the error introduced by variances in the calculated time.
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TDR Transponder
TEC Thermo-Electric Cooler
TEI Text Element Identifiers
TEMP Temperature
Temperature A sensor protruding into the airstream to sense air
Probe temperature. Requires correction to get static air tem perature.
TERPS Terminal Instrument Procedures
TF1 RTCA Task Force One,GNSS Transition and Implementation Strategy
TF2 RTCA Task Force Two,Transition to Digital Communications
TF3 RTCA Task Force Three,Free Flight Implementation
TFM Traffic Flow Management
TFM-ART TFM Architecture and Requirements Team
TFT Thin Film Transitor
TG Transmission Gate
TGC Turbulence Gain Control
Threat A target that has satisfied the threat detection logic and thus requires a traffic or resolution advisor y (TCAS).
TIS Traffic Information Service
TK Track Angle
TKE Track Angle Error
T/L Top-Level
TLA Thrust Lever Angle
TLM TelemetryWord
TLS Target Level of Safety
TMA Terminal Airspace
TMAC TFM Modeling and Analysis Capability
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TMC (1) Thrust Management Computer
(2) RTCA Technical Management Committee
TMCF Thrust Management Computer Function
TMCS Thrust Management Computer System
TMS Thrust Management System
TMU Traffic Management Unit

TO Take Off
TOC (1) Top of Climb
(2) Traffic Operations Center
(3) Transfer of Communication
TOD Top Of Descent
TO/FROM Indicates whether the omnibearing selected is the
Indicator course to or from the VOR ground station.
TOGA Take-Off, Go-Around. Also seen as TO/GA.
TOR Terms of Reference
Touch-down The point at which the predetermined glidepath intercepts the runway.
TOW Time Of Week
TP Telecommunications Processor
TPMU Tire Pressure Monitor Unit
TPR Transponder
TR Temporary Revision. A document printed on yellow paper which temporarily amends a page or pages of a component maintenance manual.
T/R (1) Thrust Reversers
(2) Transceiver (see RT)
(3) Receiver-Transmitter
TRA Temporary Reserved Airspace
TRAC Terminal Radar Approach Control
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Track (1) The actual path, over the ground,traveled by an aircraft (navigation).
(2) In this mode the DME transmits a reduced pulse pair rate after acquiring lock-on (DME).
(3) Estimated position and velocity of a single aircraft based on correlated surveillance data reports (TCAS).
TRACON Terminal Radar Approach Control
TRACS Test and Repair Control System. An automated data retrieval system. TRACS functions include:1) provide the location of any given unit at any time;2) provide an efficient flow of work to and from test stations;3) provide quick access to quality information generated by the actual testing process (performed by the technician); (4) provide statistical and historical data regarding throughput time for products, failure,yield rates,WIP, etc.
Traffic Information given to the pilot pertaining to the posi
Advisory tion of another aircraft in the immediate vicinity. The information contains no suggested maneuvers.
(Traffic advisory airspace is 1200 feet above and below the aircraft and approximately 45 seconds dis tant with respect to closure speed of the aircraft.)
[TCAS]

Traffic Density The number of transponder-equipped aircraft within R nautical miles (nmi) of own aircraft,divided by p x (R nmi)½. Transponder-equipped aircraft include Mode-S and ATCRBS Mode A and Mode C, and excludes own aircraft (TCAS).
Transceiver A receiver and transmitter combined in a single unit. Same as RT.
Transponder Avionics equipment that returns an identifying coded signal.
TRK Track
TRP (1) Mode S Transponder
(2) ARPA Technology Reinvestment Program
TRR Test Rejection and Repair
TRSB Time Reference Scanning Beam. The international standard for MLS installations.
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TRU Transformer Rectifier Unit
True Airspeed The true velocity of the aircraft through the surrounding air mass.
True Altitude The exact distance above mean sea level (corrected for temperature).
True Bearing The bearing of a ground station with respect to true north.
True North The direction of the north pole from the observer.
TSA Tail Strike Assembly
TSE Total System Error
TSM Autothrottle Servo Mount (without Clutch)
TSO Technical Standard Order. Every unit built with a TSO nameplate must meet TSO requirements. TSO operating temperature extremes are not the same as the manufacturing burn-in limits.
TTFF Time To First Fix
TTL Transistor - Transistor Logic
TTR TCAS II Receiver/Transmitter
TTS Time To Station,an indication that displays the amount of time for an aircraft to reach a sclected DME ground station while traveling at a constant speed.
TTY Teletypewriter
TURB Turbulence
Turbulence The US National Weather Service defines light turbulence as areas where wind velocity shifts are 0 to 19 feet per second (0 to 5.79 metres per second) and moderate turbulence as wind velocity shifts of 19 to 35 feet per second (5.79 to 10.67 metres per second).
TVBC Turbine Vane and Blade Cooling
TVC Turbine Vane Cooling

TWDL TwoWay Data Link
TWIP Terminal Weather Information for Pilots
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TWP Technical Work Program
TWT Traveling Wave Tube
TX Transmit (see XMIT)
U
UART Universal Asynchronous Receiver/Transmitter
UAL United Airlines
UB Utility Bus
UBI Uplink Block Identifier
UCS Uniform Chromaticity Scale
UD User Data. The N-User data may also be transferred between peer network members (OSI Model) as required.
UFDR Universal Flight Data Recorder
UHF Ultra-High Frequency. The portion of the radio spectrum from 300 MHz to 3 GHz.
ULB Underwater Locator Beacon
ULD Unit Load Device
UMT Universal Mount
Unpaired Channel A DME channel without a corresponding VOR or ILS frequency.
Uplink The radio transmission path upward from the earth to the aircraft.
UPS Uninterruptible Power System
USAF United States Air Force
USB Upper Sideband is the information-carrying band and is the frequency produced by adding the carrier frequency and the modulating frequency.
USGIC U.S.GPS Industry Council
USTB Unstabilized
UTC Universal Coordinated Time
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UUT Unit Under Test
UV Upper Sideband Voice
UW Unique Word
V
V1 Critical engine failure velocity
V2 Takeoff climb velocity
VA Volt-Amperes
VAC Volts AC
VAP Visual Aids Panel
VAPS (1) Virtual Avionics Prototyping System
(2) Virtual Applications Prototyping System
VAU Voltage Averaging Unit
VBV Variable Bypass Valve

VCCS Voice Communication Council System
VCD (1) Voltage Controlled Device
(2) Variable Capacitance Diode
VCO Variable Controlled Oscillator
VDC Volts Direct Current
VDL VHF Data Link
VDOP Vertical Dilution of Precision
VDR VHF Data Radio
Vertical Speed The rate of change of pressure altitude,usually calibrated in hundreds of feet per minute.
VFO Variable Frequency Oscillator
VFOP Visual Flight Rules Operations Panel
VFR Visual Flight Rules
VHF Very High Frequency. The portion of the radio spectrum from 30 to 300 MHz.
VHS Very High Speed
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VHSIC-2 Very High Speed Integrated Circuits - phase 2
VIGV Variable Integral Guide Vane
VISTA Virtual Integrated Software Testbed for Avionics
VIU Video Interface Unit
V/L VOR/Localizer
VLSI Very Large Scale Integration
VLV Valve
V/M Voltmeter
Vmo The maximum airspeed at which an aircraft is certified to operate. This can be a fixed number or a function of configuration (gear, flaps,etc.) or altitude, or both.
VNAV Vertical Navigation
VNR VHF Navigation Receiver
Voispond A calsel function that would automatically identify an aircraft by a voice recording. Voispond is not yet implemented.
VOR VHF Omnidirectional Radio Range. A system that provides bearing information to an aircraft.
VOR/DME A system in which a VOR and DME station are colocated.
VOR/MB VOR/marker beacon
VORTAC A system in which a VOR and a TACAN station are colocated.
VOS Velocity Of Sound
VOX Voice Transmission
VPN Vendor Part Number
VR Takeoff Rotation Velocity
VRAM Video Random Access Memory
VS Vertical Speed
VSAT Very Small Aperture Terminal
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VSCF Variable Speed Constant Frequency
VSCS Voice Switching and Control System
VSI Vertical Speed Indicator
VSL Advisory Vertical Speed Limit advisory may be preventive or corrective (TCAS).
VSM Vertical Separation Minimum
VSV Variable Station Vane
VSWR Voltage-Standing Wave Ratio. The ratio of the amplitude of the voltage (or electric field) at a voltage maximum to that of an adjacent voltage minimum. Vswr is a measurement of the mismatch between the load and the transmission line.
VTO Volumetric Top-Off
VTOL Vertical Takeoff and Landing
W
WAAS Wide Area Augmentation System (Method of Differential GPS)
WADGNSS Wide Area Differential Global Navigation Satellite System
WADGPS Wide Area DGPS
WAFS World Area Forecast System
WAI Wing Anti-Ice
WARC-92 World Administrative Radio Conference (1992)
WARC-MOB World Administrative Radio Conference for the Mobile Service
Waypoint A position along a route of flight.
WCP WXR Control Panels
WD Wind Direction
WES Warning Electronic System
WEU Warning Electronic Unit
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WFA WXR Flat Plate Antenna
WGS World Geodetic System
WGS-72 World Geodetic Survey of 1972
WGS-84 World Geodetic System 1984
Whisper- A sequence of ATCRBS interrogations and suppres
Shout sions of varying power levels transmitted by TCAS equipment to reduce severity of synchronous interfer ence and multipath problems.
WIP Work In Progress
WMA WXR Antenna Pedestal & WXR Waveguide Adapter
WMI WXR Indicator Mount
WMS Wide-area Master Station
WMT WXR Mount
WN Week Number
WORD Grouping of bits. Size of group varies from microprocessor to microprocessor.

WOW Weight On Wheels
WP Working Paper
WPT Waypoint
WRC World Radiocommunication Conference
WRS Wide-area Reference Station
WRT WXR Receiver/Transmitter
WWW Internet World Wide Web
WX Weather
WXI WXR Indicator
WXP Weather Radar Panel
WXR Weather Radar System
WYPT Waypoint Altitude
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X
X - BA N D The frequency ra n ge between 8000 and 12500
C h a n n e l MHzX- A DME ch a n n e l . T h e re are 126 X-Channels for DME opera t i o n . For the fi rst 63 ch a n n e l s , the gro u n d - to-air frequency is 63 MHz below the air-to-ground f re q u e n c y. For the second 63 X-channels the gro u n d - to-air frequency is 63 MHz ab ove the air-to-ground f re q u e n c y.
X.25 Packet Switched Data Network
XCVR Transceiver
XFR Transfer
XLTR Translator
XM External Master
XMIT Transmit
XMTR Transmitter
XPD ATC Transponder (also XPDR,XPNDR,TPR)
XPDR Transponder
Y
Yagi Antenna An antenna with its maximum radiation parallel to the long axis of its array, consisting of a driven dipole, a parasitic dipole reflector, and one parasitic dipole director or more.
YSAS Yaw Stability Augmentation System
YD Yaw Damper
Z
Z Refer to reflectivity factor
ZFW Zero Fuel Weight
Z-Marker A marker beacon,sometimes referred to as a station locator, that provides positive identification to the pilot when the aircraft is passing directly over a lowfrequency navigation aid.

NOTE: PFN/TRAC INVENTION, NATURE AND SCOPE, IS INDIVIDUALLY APPLIED FOR EACH AIRCRAFT OR PIECE OF EQUIPMENT BY ADDRESSING ALL AVIONICS OR E/E SYSTEMS OF A PIECE OF EQUIPMENT AND DETEMINING IF IT IS PFN/TRAC APPLICABLE TO BE A SUC COMPONENT OR OPERATION TO TRAC SUC = SYSTEM UNDER CONTROL.

Summary

The PFN/TRAC technology provides the capacity to organize, record, report, relay and control data and equipment through a large machine messaging matrix, by either sharing or replacing local and standard Human Machine Interfacing HMI with accountable robotics and or remote control. This patent filing deals with transportation and specifically avionics and air travel.

The following are basic terms and definitions used for this invention: The PFN is a Protected Primary Focal Node (an accountable telematics interface unit and communication router. The PFN contains TRAC a Trusted Remote Activity Controller to perform accountable & reliable robotics and remote control. FACT stands for Federal Access and Control Technology. RC=Remote Control , WoJack =Wo War ops and Jack is taken from hi jacking. TRUSTED for this invention means; Reliable, Accountable, and Acceptable **to all the public** (the citizens, government, and commerace.

Of particular value right now, TRAC technology can be embedded into aircraft (at the design stage or after-market) and perform accountable functions for the purpose of gaining control and stopping the unauthorized or unsafe use of an aircraft. Known as the **PFN/TRAC System™**, the architecture utilizes existing Commercial Off the Shelf COTS aircraft technology to create the automated controls for robotics flight and remote controlled landings absent any human (local) to pilot the aircraft.

However, in a hijacking the lack of flying skill is not the only concern. The aircraft might well be commandeered and deliberately used and guided for it's destructive potential (e.g. a human guided missile into the **WTC**). In this scenario it is necessary to restrict the local flying controls immediately. For fly by wire controls the conversion to exclude a local pilot on board the aircraft can be achieved far faster than those aircraft still using physical links. Total hydraulic systems and hydraulic assist systems can be converted to exclude local controls easer than physical link systems, but still more difficult than fly by wire systems. Systems and modalities for physical lockouts on human controls and the automation of

those controls is taught in prior related filings so that anyone skilled in the art (engineers) can shop up the necessary devices to construct a protect an RC capable or robotics flight aircraft.

The initial goal after eliminating local control is to stabilize the planes flight path. This second objective is accomplished via robotics (for better real-time responsiveness) in flying the plane to a Safe Base This control protocol PFN/TRAC System is secured and secluded onboard with preprogrammed software (5 preprogrammed flight plans available to TRAC processor) The TRAC processor is interfaced with the essential E/E system bus to operate the planes flight control surfaces to guide it to the best location emergency response specific safe base. All available location systems and communication systems are interfaced with the TRAC processor. Additional controls interfaced with PFN/TRAC are to be the cabin and cockpit air pressure controller to restrict any air exhausted from the aircraft by either routing the air through carbon dioxide scrubbers/converters, as well as adding fresh air (O2-?) . The removed and compressed atmosphere is canned . This un-recyclable air or waste air is then presented to a sensor array to detect bio-hazards and toxins. Once transducers have converted any molecular substance to an electrical signature, the signal is analyzed for recognition by the TRAC system software library, recorded and reported to the surface by any secure on board TRAC unit for the surface Safe Base system to prescribe the appropriate safe base response to the troubled landing craft. Informed decisions to determine whether to terminate it, bag it, sterilize it or how to unseal it on the ground). Also, connected to the ventilation system the TRAC processor controls a valve with debilitating gas (sleep gas or chloroform) that can be activated from the ground or robotically for what is termed a **Wo** Jack scenario or **FACT** protocol..

During the final approach to the designated safe base landing zone the robotics flight and glide path control does a hand off to a Remote Control RC pilot in a surfaced based converted flight simulator receiving secure and redundant essential data streams via a protected communication system with the greatest real-time responsiveness of the aircraft heightened by a guardian software algorithm . The result is an intelligent airplane with an accountable autopilot and a Remote Control RC pilot

Abhorrent RC accessory Options

TRAC will have the ability to dump any fuel from a remote location or as a robotics function – an another option that must be reviewed, but can be available. Obviously, the PFN/TRAC system could perform all these undesirable functions as well; including the ultimate destruction of the aircraft. The proper Decision Tree protocol has to be determined ahead a time by all the public for these emergency **FACT** . PFN/TRAC was created to improve public safety, the quality of human life and to save lives in transportation.
e.g. **A detected FACT/ WoJack flagged event**

The robotics fail safe response for this condition- when there is no RC ground control or communications-Anti-Auto destruct code on ground

Robotics Software algoritm-pre-programmed response

No time- Dispatch the aircraft

Some Time- sedate-defuel /sterilize & Dispatch the aircraft

Time permitting -- fly to preprogram safe land/ dump zone-land if programming can or sedate

-de-fuel---de power/land attempt------ --dispatch the aircraft-----

A CLAIM IS MADE;

NOTE: TRAC CONTROL AND STRUCTURE CAN BE Completely CONSTRUCTED FROM COTS. PFN/TRAC UNIT – INDIVIDUAL AIRCRAFT SYSTEM OR EXTERNAL. STRUCTURE CAN BE CONSTRUCTED AS A DISTRIBUTED ARCHITECTURE OR AS A CENTRALIZED CONSOLIDATED DESIGN. IT IS APPLICATION SPECIFIC TO INDIVIDUAL AIRCRAFT DESIGN, IT IS GENERATIONAL AND FLEXIBLE IN DESIGN AND DEPLOYMENT AND IT IS PROGRESSIVE IN ACCOUNTABLE SECURE, PROTECTED HUMAN MACHINE INTERFACING AS A APPROVED AND TRUSTED SYSTEM TO INCREASE PUBLIC SAFETY AND NATIONAL SECURITY.

CLAIM 24

CLAIM 25 AN ADDIONAL CLAIM IS MADE ACCORDING TO CLAIM 24 TO USE THE ALPHEBETICAL AVIONICS LIST OR AN UPDATED VERSION ALONG W/ ANY STANDARDS CODES RULES REGULATIONS APPLICABLE AS A CHECK LIST TOOL FOR DETEMINING SUC. AND COMPONENTS TO BE INCORPORATED IN ANY SINGLE PFN/TRAC AIRCRAFT, STRUCTURE, DESIGN, UPDATE. MAINTENANCE CHECK, PROGRESS W/THE OBJECTIVE BEING "SAFEST FLIGHT possible"

What s Claimed:

1.A claim is made for an aircraft management system that interfaces essential flight controls and data streams to detect a troubled aircraft and provide Remote Control or robotics to safely thwart the unauthorized or un safe use of aircraft, and control the return to surface of such air craft to a safe designated secure landing base.

2. A claim according to 1 for the soft ware FACT and hijack Protocol Wojack be a national sanctioned protocol to perform this necessary management and to be developed under government supervision with air carriers, electronics, aviation and security manufacturers and service companies

3. A claim is made for a Remote management system to accountably perform robust or accountable aggressive remote control of aircraft no matter what the platform or architecture.

4. A claim is made according to claims 1,2,3,4 to create this robotic or remote management system as a technology termed PFN/TRAC System for existing avionics and COTS products interfaced from a distributed architecture into a progressive consolidation of control systems with the necessary redundancy for fail safe and backup; to create a Protected Primary Focal Nodes termed PFNS that contain a Trusted Remote Activity Controller which is termed TRAC; which is accountably interfaced to a surface machine messaging network or matrix .of management and control

5.A claim is made for a robust activity control system to control an aircraft as part of a remote Management system.

6. A claim is made for blue tooth or wireless interfacing with hand held or carry on devices, cellular phones, navigational devices, personal computers Internet communications and for the aircraft E/E bus and systems for the PFN/TRAC unit or units if system redundancy, series , parallel or Ethernet configurations are required to achieve any system requirements as determined by any rules regulations, standard or law.

A claim is made for the development Safe landing bases, safe air space and safe flight pattern to these areas with determining criterion being public safety and national security

8. A claim according 1, 2 and 7 is made for the Safe air bases equipped with emergency medical personnel and equipment to handle germ warfare , epidemic or public health risk scenarios with CDC, the capability to handle a chemical threat or bomb threat., the bbase will have military and swat team boarding teams, contamination sealing bag system to contain an entire aircraft with a connected isolated compressed breathing air and recovery system and analysis apparatus TRAC system connected

9. A claim is made for ded dedicated wireless interface of Medical tracking or telemetry or robust remote control for treatment or handling of a person or animal via the repeater function of any long range communication system on board the aircraft, or any subsystem under the control of the PFN/TRAC unit or directly processed and routed by any on board PFN/TRAC unit to include any wireless technology or connected physically via the PFN or any of the E/E system of the aircraft.

10. A claim is made for any robust remote control or preprogrammed /robotics weapons or hijack countermeasures that incapacitate, render unconscious, change the behavior or destroy the perpetrator by gas, projectile, electrical shock, chemical substance, physical means effecting either a single individual or the entire planes occupants

11.A claim is made for any robust remote control or pre programmed robotics for the dumping of fuel, the control of cabin atmosphere, the release of cabin atmosphere, the injection of incapacitating chemicals into the cabin atmosphere, the automated destruction of the aircraft.

12 A claim is made for a protected incapacitating injection of a debilitating substance, incapacitating shock or projectile automated delivery system to be embedded in the essential flight crew seats that is responsive to the PFN/TRAC unit.

13. A claim is made for the automatic lock down of all local flight controls when the seat defense measures have been deployed, additionally the PFNTRAC System has the aircraft flight controls with robotics safe base flight coordinates and escort RC plot in route to intercept the robotic flight for close in support and flight management check.

14 A claim is made for a Remote Control surface based Pilot to take the handoff off of flight control responsibility from the PFN/TRAC robotics flight and air born assist RC chase pilot for the final landing,

15 A claim is made for the surface remote control pilot station to be more rapidly configured from existing appropriate flight simulators that receive dirrect flight data and the RC pilot experience the real flight in real-time due to the short distance flying just for the landing.

16 A claim is made for a safe base7/24 duty ready squadron of RC pilots qualified on various aircraft with application specific interface software for the compromised flight and specific air craft, a squadron made up either of commercial companies posting employees to this duty the military supplying and staffing the squadron or the FAA, to be determined by rules regulations standards code and law.

17 A claim is made for adequate sets support and assist air cover squadrons , their location determined by DOD and FAA with a 24/7 readiness to be scrambled on any TRAC/FACT WoJack flagged with intercept coordinates downloaded immediately via FACT/ DES in real time to pursuit aircraft flight computer closest in the air and to RC assist pilot craft.

18. A claim is made for data from the TRAC unit flagged with a FACT emergency event like a WoJack scenario for the down load of telemetry data from the troubled air craft to prescribe the ground response at the safe bases, and to be in continual flight control via the preprogrammed robotics flight for ground support and surface waning to clear any impact areas to eliminate as much collateral damage as possible

19. A claim is made according to claims 1-18 for the accountable robust remote and robotics activity controls when any event recordings of the activities are made and is considered part of the PFN/TRAC/FACT WoJack system and protocols with any exact configurations and use to be determined by rules regulations standards requirements codes or law .

20. A claim is made including all claims 1-19 as proprietary PFN/TRAC FACT Wojack protocols and teachings for progressive interfacing of hardware, software and wet ware (human Response and interaction)providing the complete technology with procedures , policies and protocols for the needed increase in public safety and national security in a free society.

21 A claim is made for the interfacing of all machines, vehicles air land or sea, stationary equipment, stand alone equipment people animals and inanimate object to be monitored managed with accountability for robust remote control and robotics through a large machine messaging matrix or network for better management socially, economically and environmentally

22. A claim is made for the redundant use of the cellular phones interfaced with the PFN/TRAC router to insure surface to air comm. Link s will exist during the event

23. A claim is made for the wireless tracking of the dispersed operating and non working carryon cellular devices will help establish hard to determine debris field

24. ON PAGE 78

25. ON PAGE 78

13. A

Plane bag

Seal vent
Sense cabin air

Dump fuel
Multile TRAC units

Incorporate existing systems
Existing systems SUC to TRAC

FAA connected to DOT
Mass transit management traffic
Mass data management

A claim is made progre ssive protocol machine and people – total machine –consolidated and universal, big planes smaller C planes private planes

A claim is made for Machin messaging network

Duel recoding systems in the air on the ground

Protocol to lock out controls

Robotics flight to base

RC chase plane RC pilot

RC connect convert simulator

RC local land.

Coordinated ground air response to clear impending crash area

Down the air craft

Cellular Tracking of Debris field